

# 38' Steel Arch Frame

## DESIGN ENGINEER:



206 S. Main Street, P.O. Box 509 Kouts, IN 46347  
219.766.2499 Fax: 219.766.2394

## CONTRACTOR / BUILDER:

YoderWay Fabric Buildings  
299 Jonestown Road  
Thompsontown, PA 17094  
Ph: 717.535.5149  
Fax: 717.535.4491

## DRAWING INDEX:

COVER PAGE - Project description & notes  
PAGE 1 - Bracing Plans, Cross Sections, Details  
PAGE 2 - Details

### Note:

This plan is intended to reflect only the structural design of this building. The contractor shall review all local, state, and federal building codes prior to the start of construction to insure building conformance.

### GENERAL NOTES

All notes do not necessarily apply due to different requirements on each project. This plan is intended to reflect only the structural design of this building. The contractor shall review all applicable local, state, and federal building codes prior to the start of construction to ensure building conformance. Timber Tech Engineering, Inc. is not responsible for information pertaining to this project if not shown on drawings or listed below. Revisions to the plans shall be approved by engineer of record.

### DESIGN REQUIREMENTS

- Governing Code: ASCE 7-05  
(Agricultural Use, Low Occupancy)
- Dead Loads:

A. Roof	3 psf
B. Floor	n/a psf
C. Other	n/a psf
- Live Loads:

A. Roof (See also note #5)	20 psf
B. Floor	n/a psf
C. Other	n/a psf
- Truss Loads:

A. Top Chord Live	20 psf
B. Top Chord Dead	2 psf
C. Bottom Chord Live	0 psf
D. Bottom Chord Dead	1 psf
- Snow Loads:

A. Ground Snow (Pg)	35 psf
B. Flat Roof Snow (Pf)	19.6 psf
C. Snow Exposure Factor (Ce)	0.9
D. Snow Load Importance Factor (I)	0.8
- Wind Load:

A. Basic Wind Speed (V)	90 mph
B. Wind Load Importance Factor (I)	0.87
C. Wind Exposure Category	C

### STRUCTURAL STEEL

- Hot-rolled structural steel sections shall be designed and constructed according to the "Manual of Steel Construction" by the American Institute of Steel Construction (AISC), and shall conform to the following:
  - Wide flange shapes and WT's: ASTM A992 with a minimum yield strength of 50,000 psi.
  - Angles, plates, bars and miscellaneous connection material: ASTM A36 with a minimum yield strength of 36,000 psi, unless otherwise noted.
  - Steel pipe: ASTM A501 with a minimum yield strength of 36,000 psi.
  - Round Steel Tube: ASTM A500, with a minimum yield strength of 50,000 psi.
  - All steel shall be hot dipped galvanized, powder coated, or have ZRC Cold Galvanizing Compound applied.
- Cold-formed light-gage structural steel sections shall be designed and constructed according to the 1996 edition of the "Cold-Formed Steel Design Manual" by the American Iron and Steel Institute (AISI), and shall conform to the following:
  - C-shapes, Z-shapes, hat shapes and angles: ASTM A607 for painted members and ASTM A653 for galvanized members. All sections shall have a minimum yield strength of 50,000 psi.
  - Field cutting to be done by sawing or shearing. Torch cutting of cold-formed members is not acceptable.
- Connections shall be designed and constructed according to AISC, and shall conform to the following:
  - Bolted connections shall be snug-tightened bearing type connections using indicated diameter ASTM A325 grade 5 bolts typical, and ASTM A307 eyebolts for cable connections, unless noted otherwise.
  - Welded connections shall be in strict accordance with the standards of the American Welding Society (AWS), and the AISC. Use E-70 series electrodes for all welds.
  - Anchor bolts shall meet ASTM A307 or A36. Use 3/4" diameter bolts with a 3' hook and 1'-0" minimum embedment into concrete or grout-filled masonry (unless otherwise indicated).
  - Expansion bolts: Use expansive anchors of the diameter and length indicated on the drawings as manufactured by Hilti Fastening Systems or approved equal. Use Kwik Bolt II anchors in concrete, and use sleeve anchors in brick and C.M.U. Fill C.M.U. cells at all bolt locations.
  - Connections exposed to weather or high relative humidities shall be hot-dip galvanized per ASTM A153.

### Miscellaneous

- Fabric
  - Roof and wall cover is Nova-Thene RU88X-6 woven coated fabric by Intertape Polymer Group or equal.
  - The fabric is tensioned both vertically and horizontally to prevent wear abrasion, and is secured at bottom w/ tensioning bar and ratchet, and at ends with lacing.
  - Roof fabric shall have a minimum weft tear of 125 lbs. for a 2 inch wide strip.
- Bracing Material
  - "X" and "Sway" bracing to be 7x19 construction cable with the following nominal breaking strengths:  $\frac{5}{16}$ " diameter-9800 lbs.,  $\frac{1}{4}$ " diameter-7000 lbs.,  $\frac{3}{16}$ " diameter-4200 lbs.
- Steel tube frames to be constructed and erected according to YoderWay Fabric Buildings standard practices and standard industry guidelines.

This drawing is the property of Timber Tech Engineering, Inc. and reproduction, alteration or use of this drawing without the written consent of Timber Tech Engineering, Inc. is prohibited. Drawings shall not be scaled to obtain dimensions. The contractor and builders involved on this project shall verify all dimensions and conditions before starting work, and any discrepancy shall be reported to the engineer in writing before starting work.

**IMPORTANT NOTE:**  
This plan is intended to reflect only the structural design of this building.

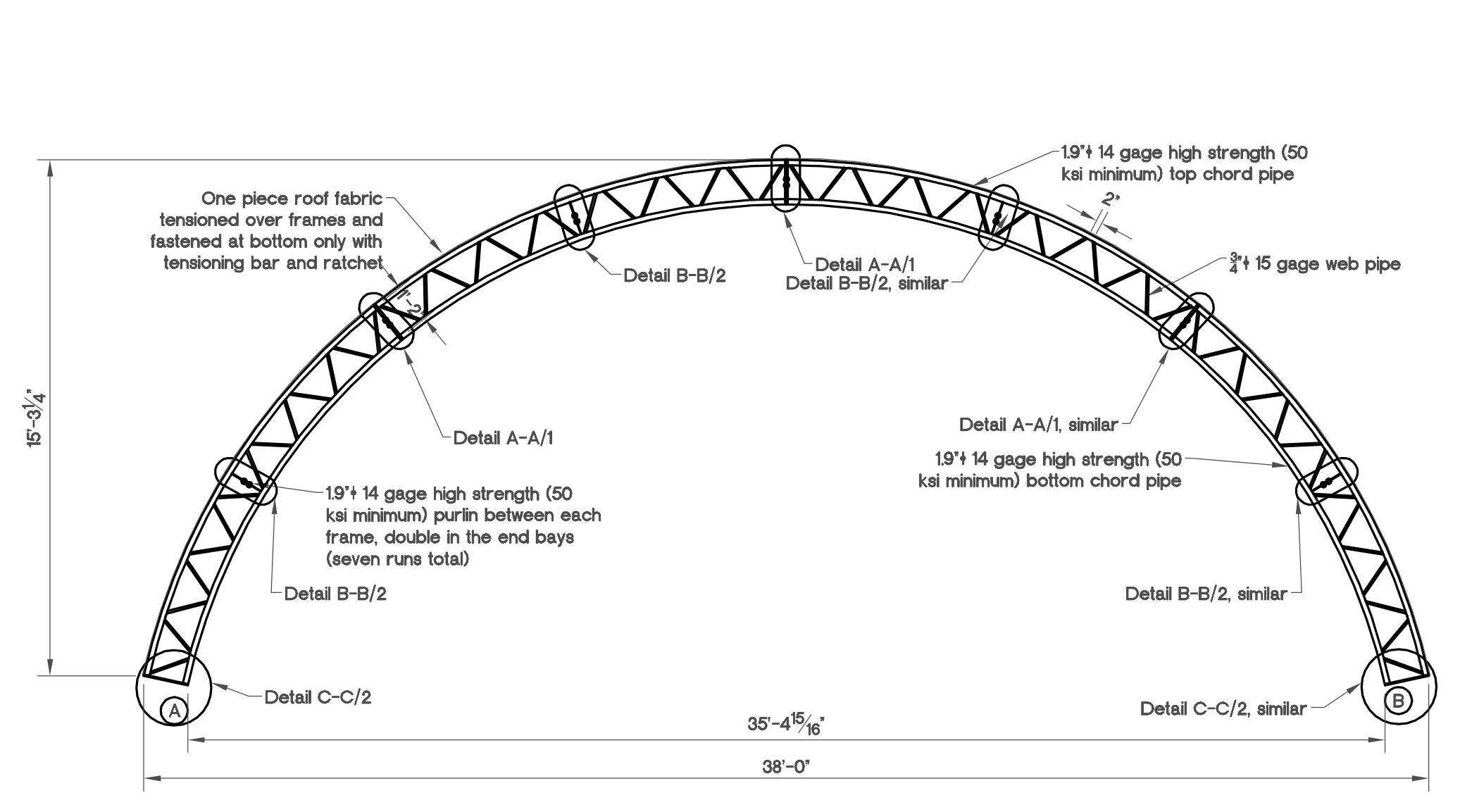
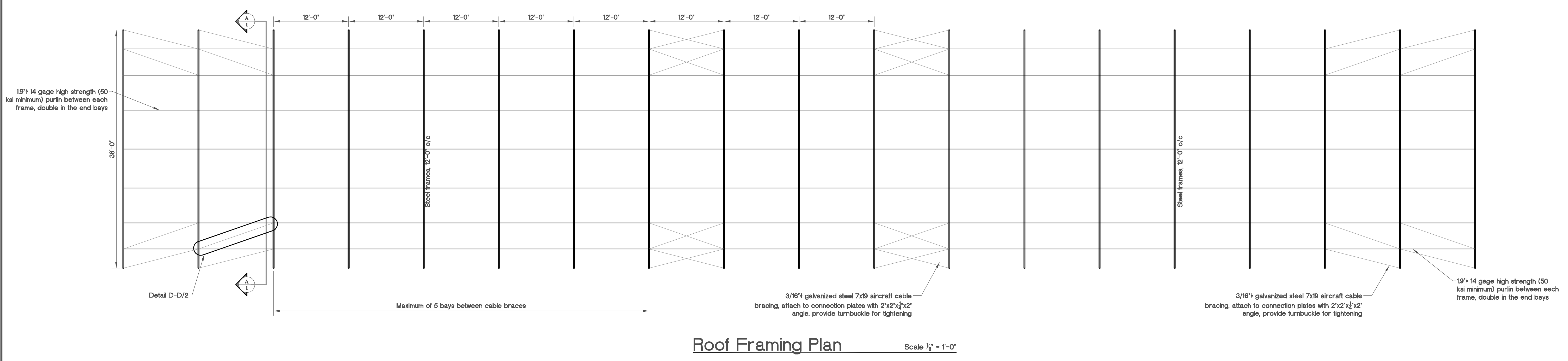
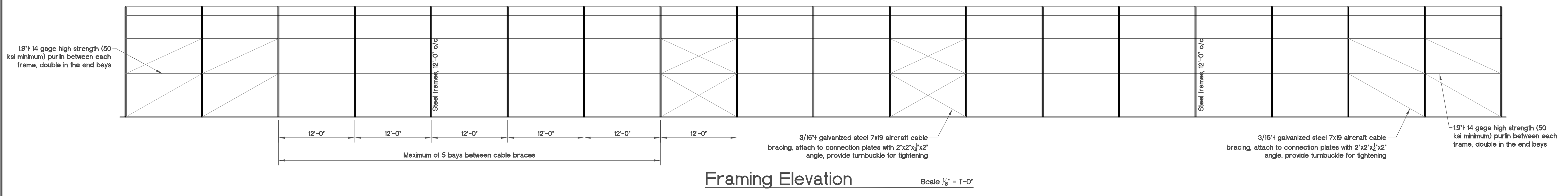
**CONTRACTOR:**  
YoderWay Fabric Buildings  
Emery Yoder  
299 Jonestown Road  
Thompsontown, PA 17094  
Phone: (717) 535-5149  
Fax: (717) 535-4491

**DRAWING TITLE:**  
Framing Elevation  
Roof Bracing Plan  
Cross Section A/1  
Detail A-A/1

**PROJECT:**  
Standard Design of 38'  
Steel Arch Frame

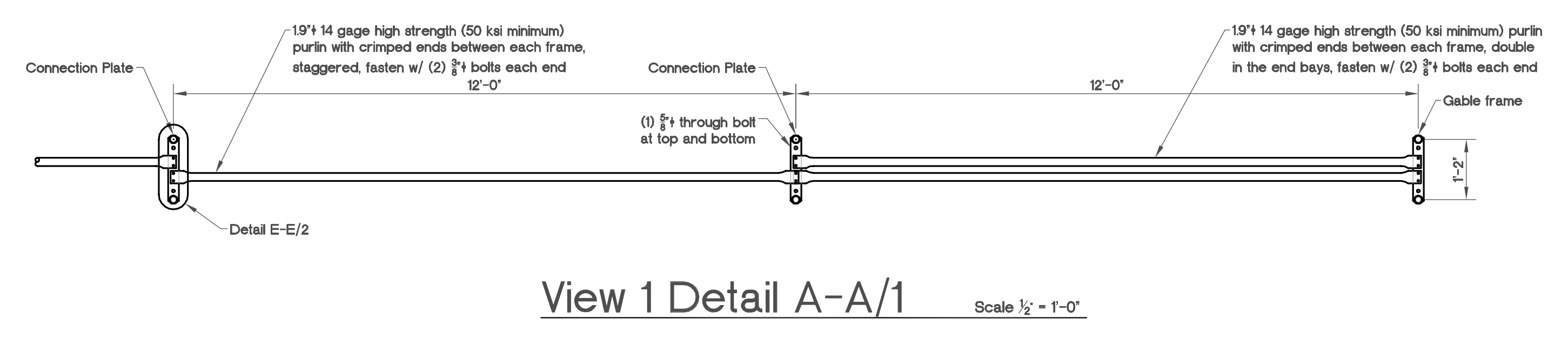
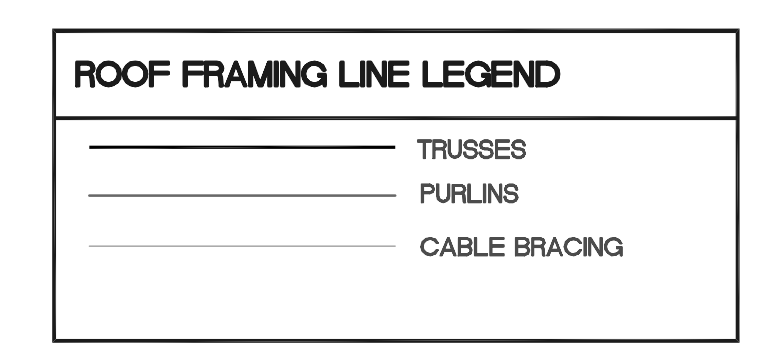
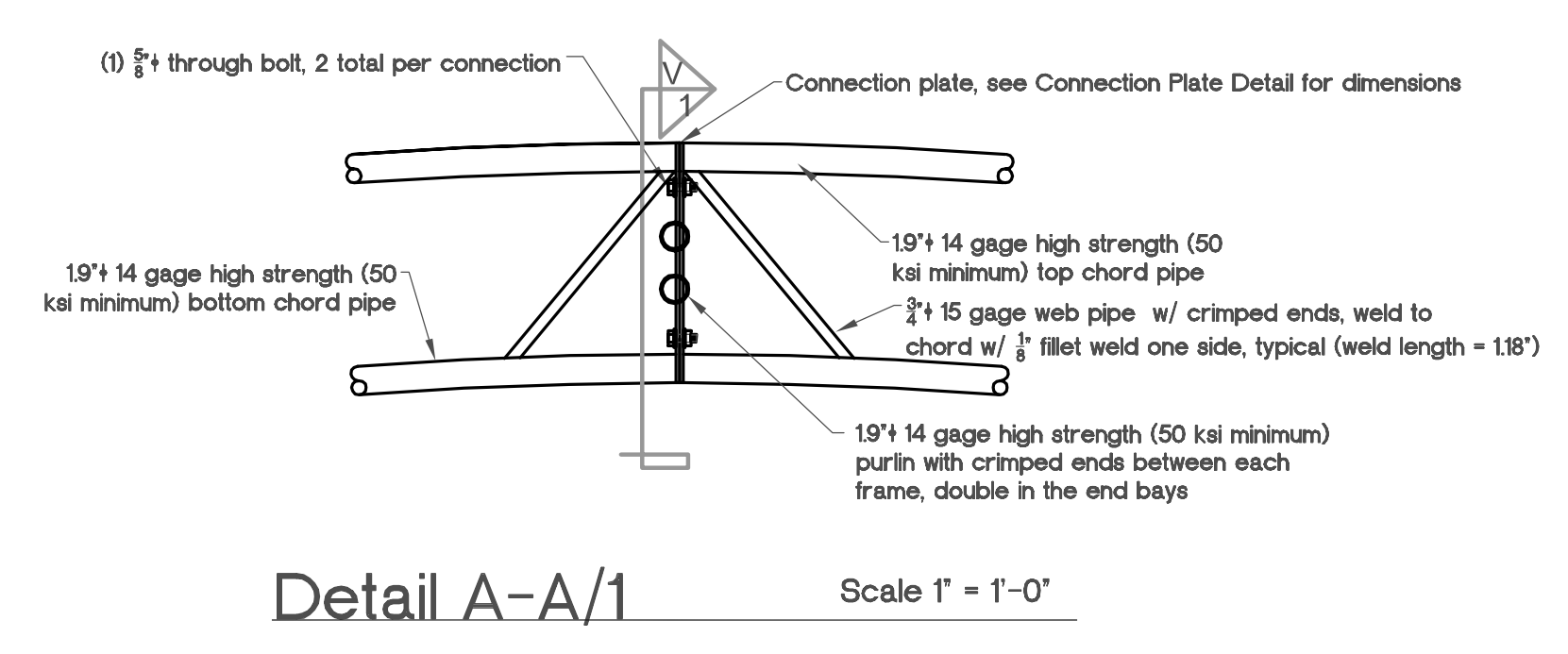
REVISIONS:	DATE:	BY:

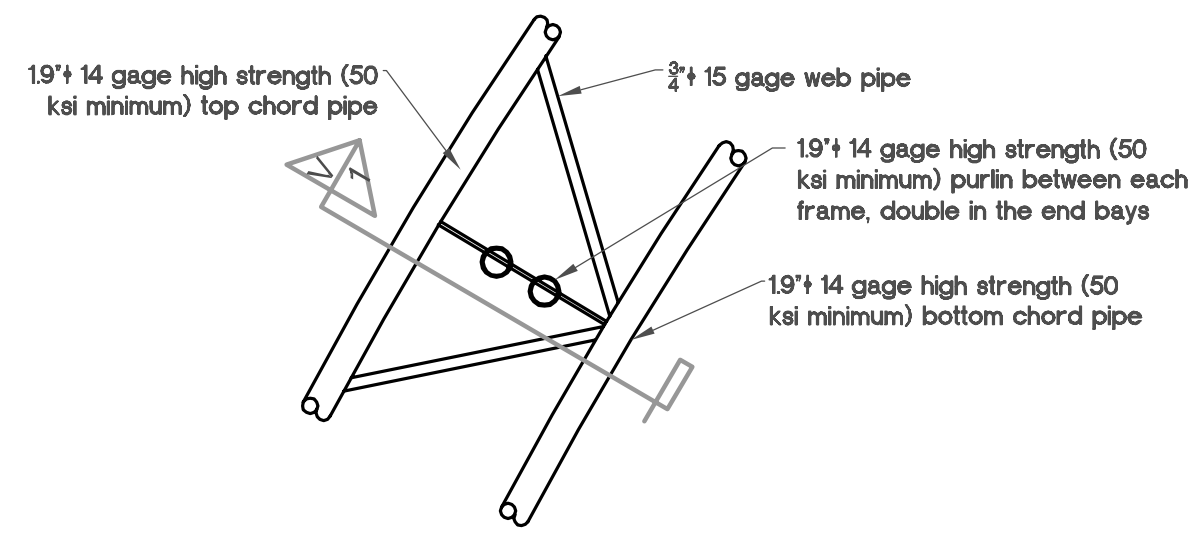
**DRAWING NUMBER:**  
E123-10  
**DATE:** 9/3/2010 **PAGE:** 1 of 2  
**BY:** kms **SCALE:** as noted



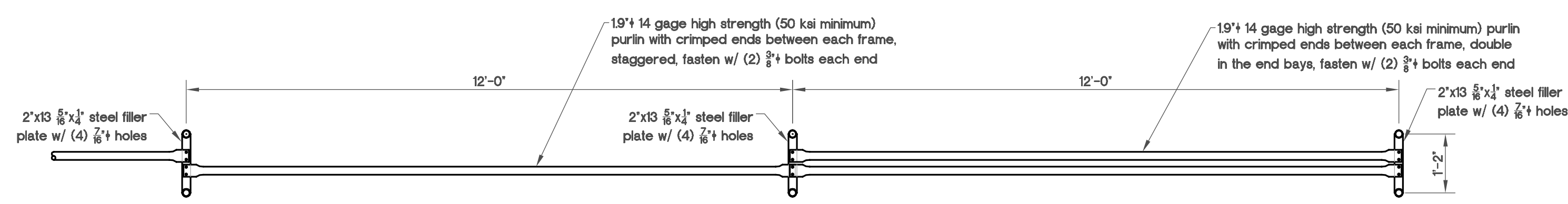
Reactions (lbs.)			
Case	Dead Snow	Wind	Wind*
Horz.	400	2300	1150
Vert.	750	3250	1100
Horz.	-400	-2300	-1150
Vert.	750	3250	2650

Horizontal reaction positive acting to right  
Vertical reaction positive acting upwards  
\* Add 1,400 lbs. uplift at cable brace locations

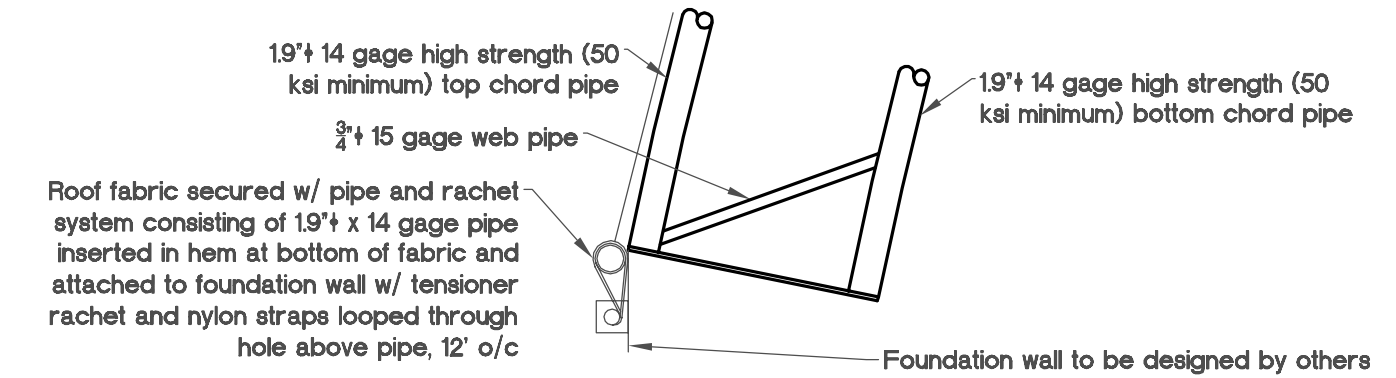




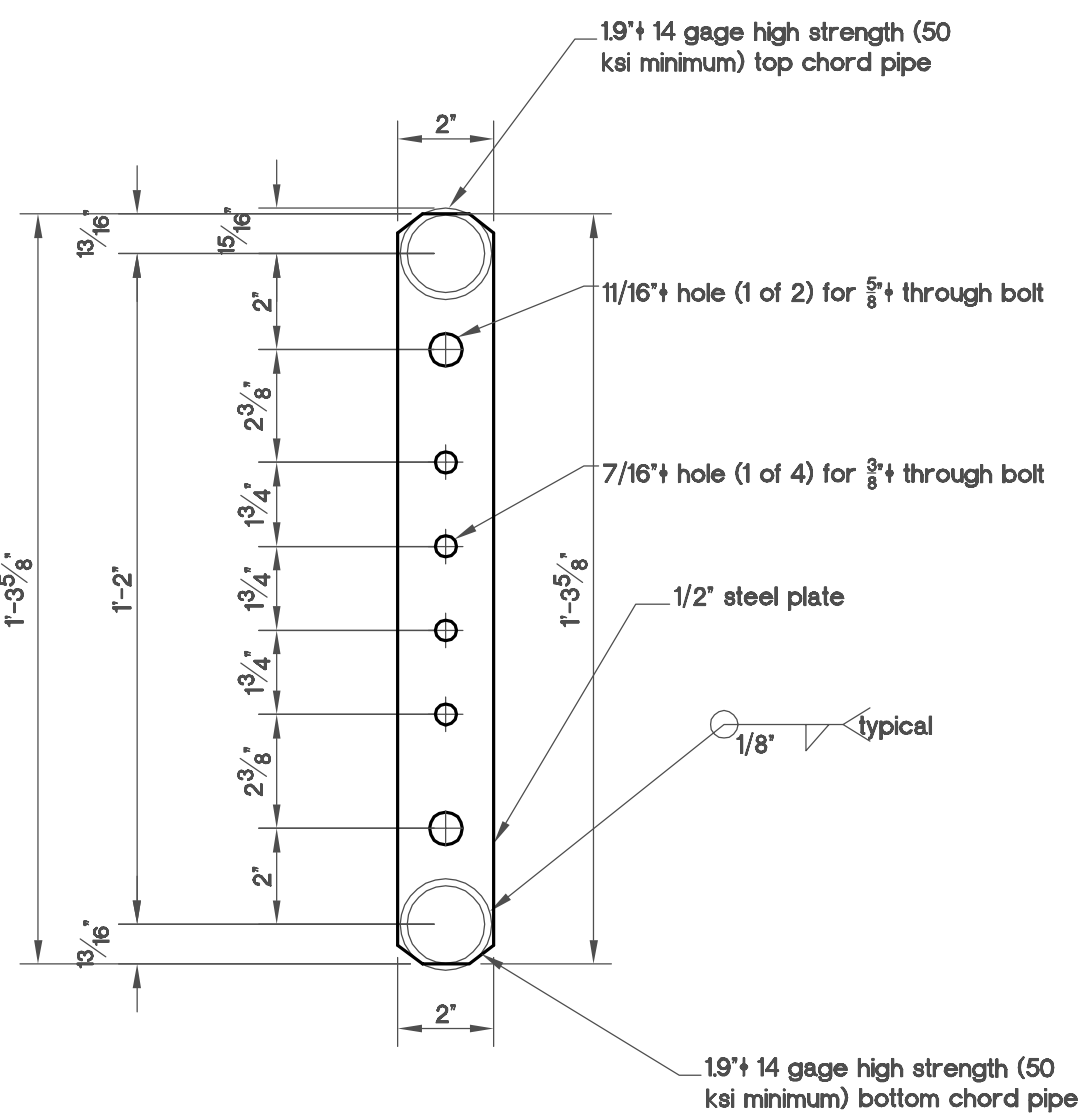
Detail B-B/2 Scale 1" = 1'-0"



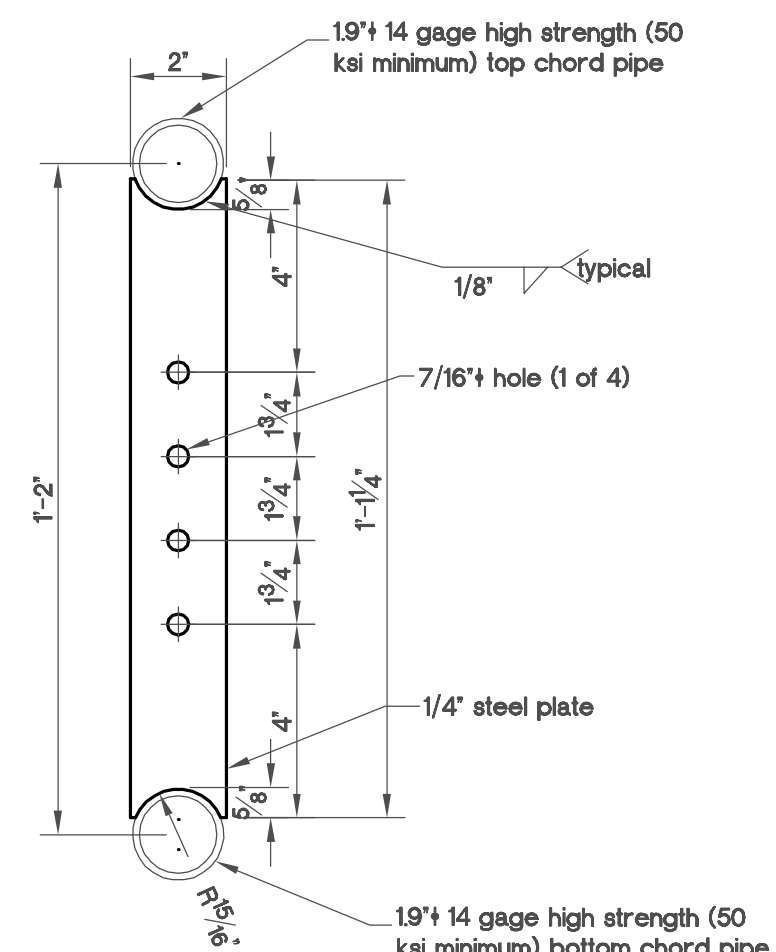
View 1 Detail B-B/2 Scale 1/2" = 1'-0"



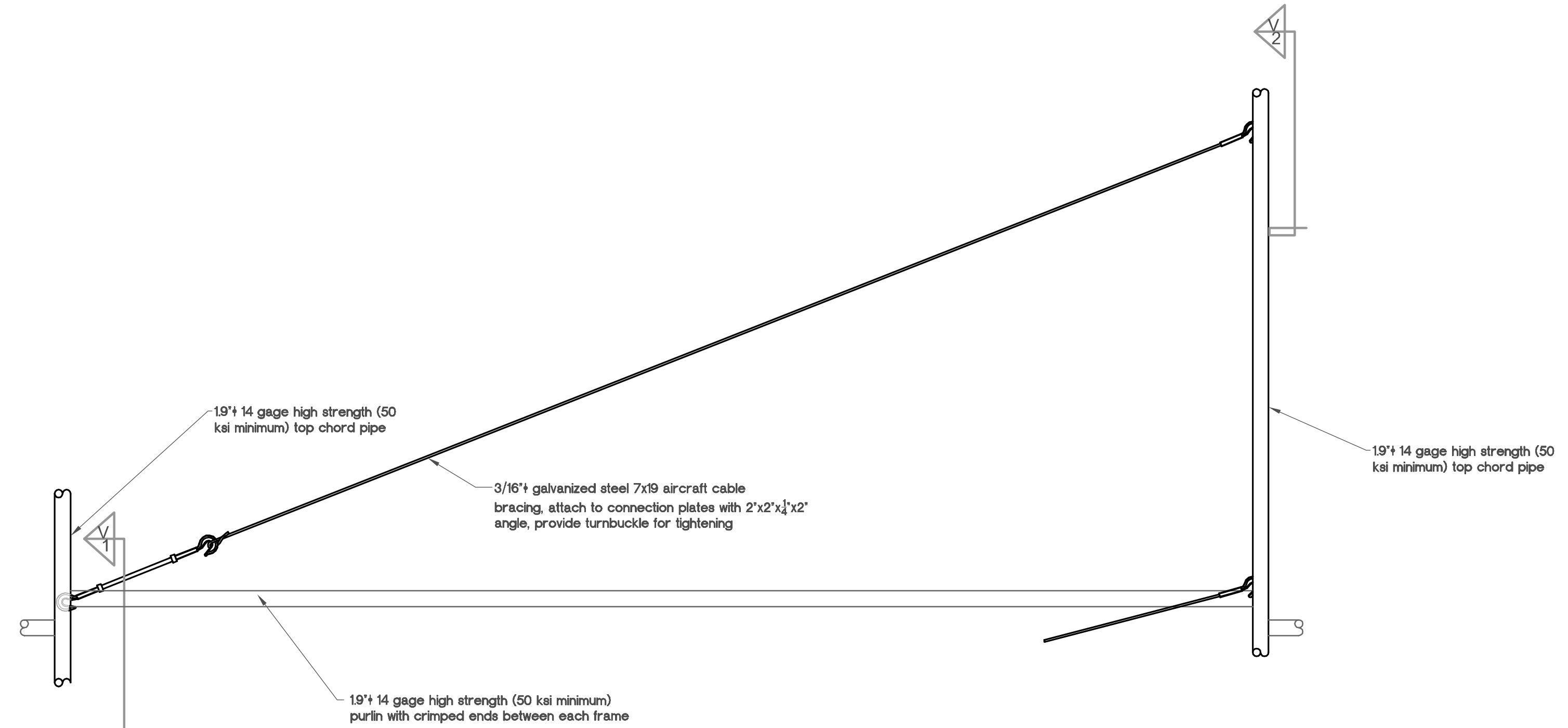
Detail C-C/2 Scale 1" = 1'-0"



Connection Plate Detail Scale 3" = 1'-0"

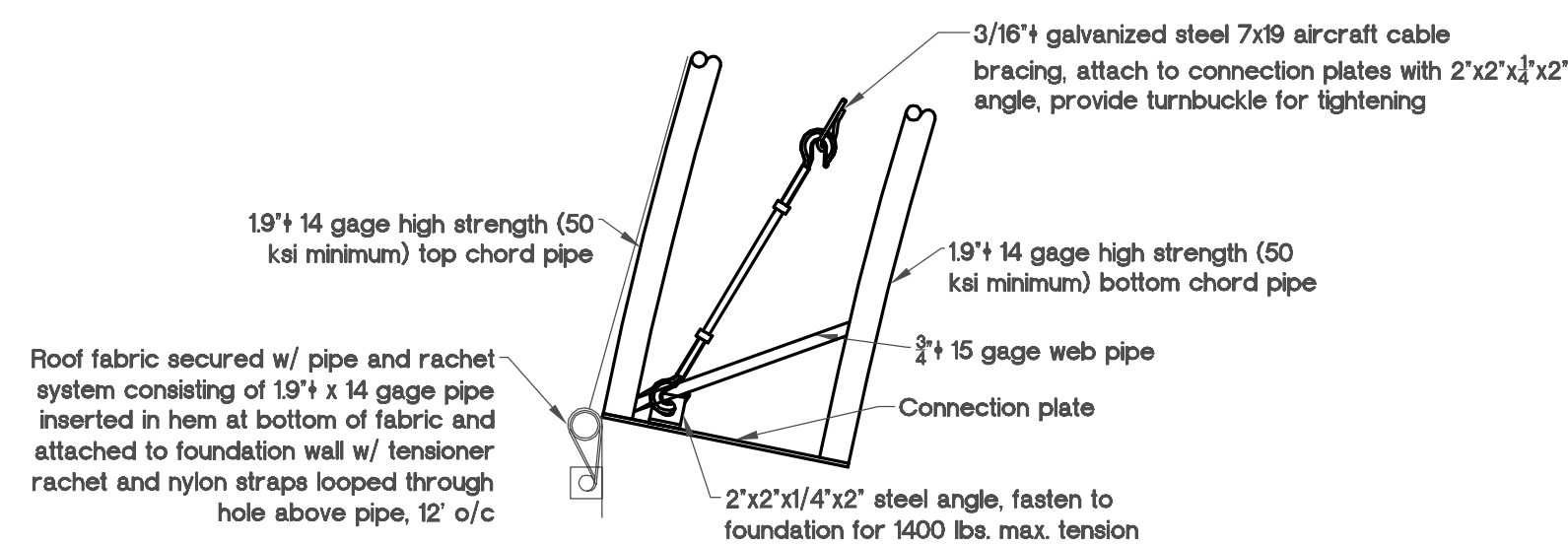


Filler Plate Detail Scale 3" = 1'-0"

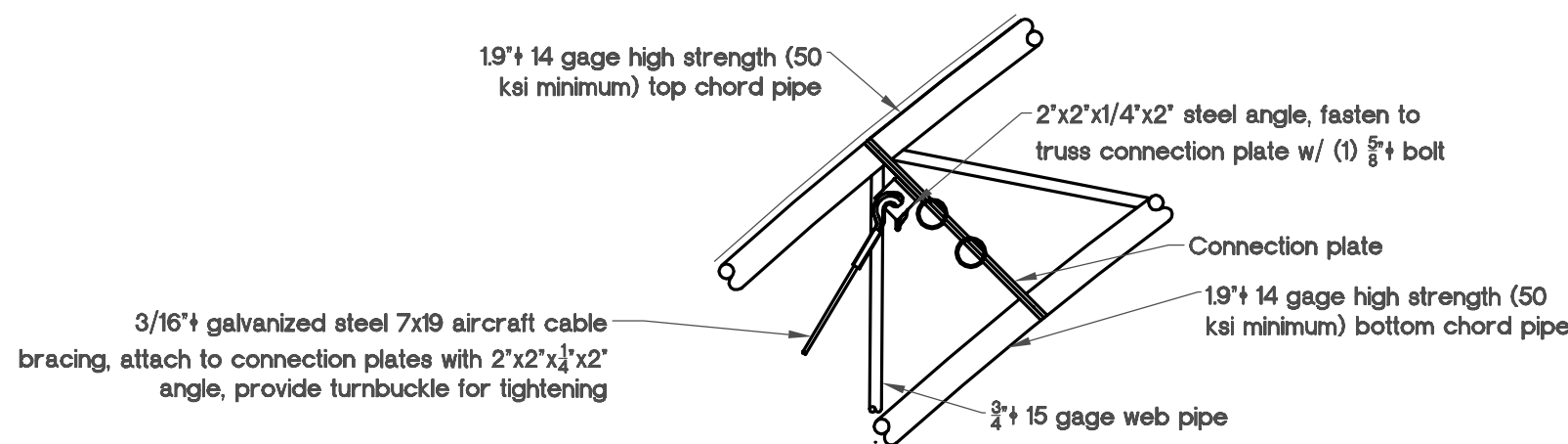


Detail D-D/2 Scale 1" = 1'-0"

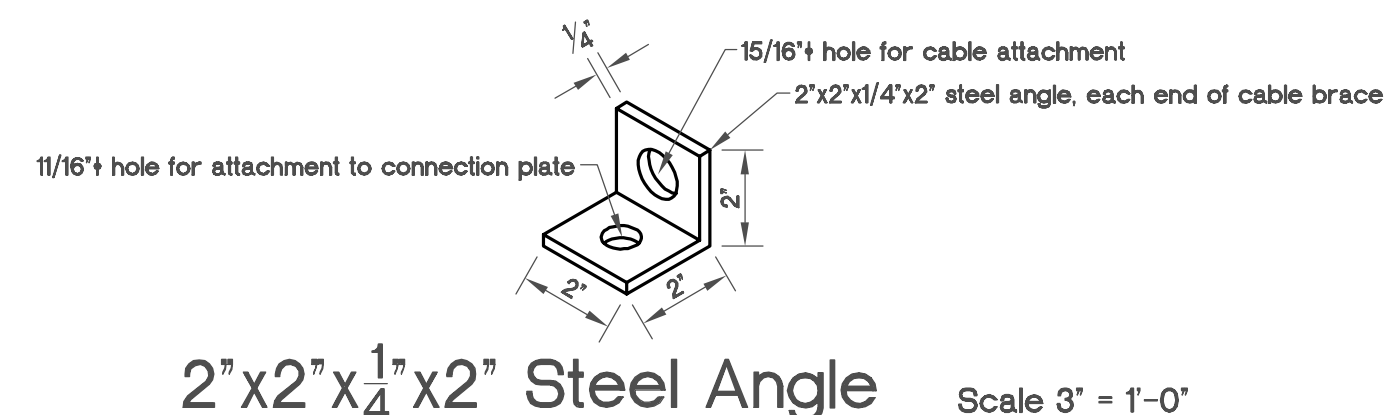
Note:  
All cable hardware to be rated for a working load of 1400 lbs. minimum



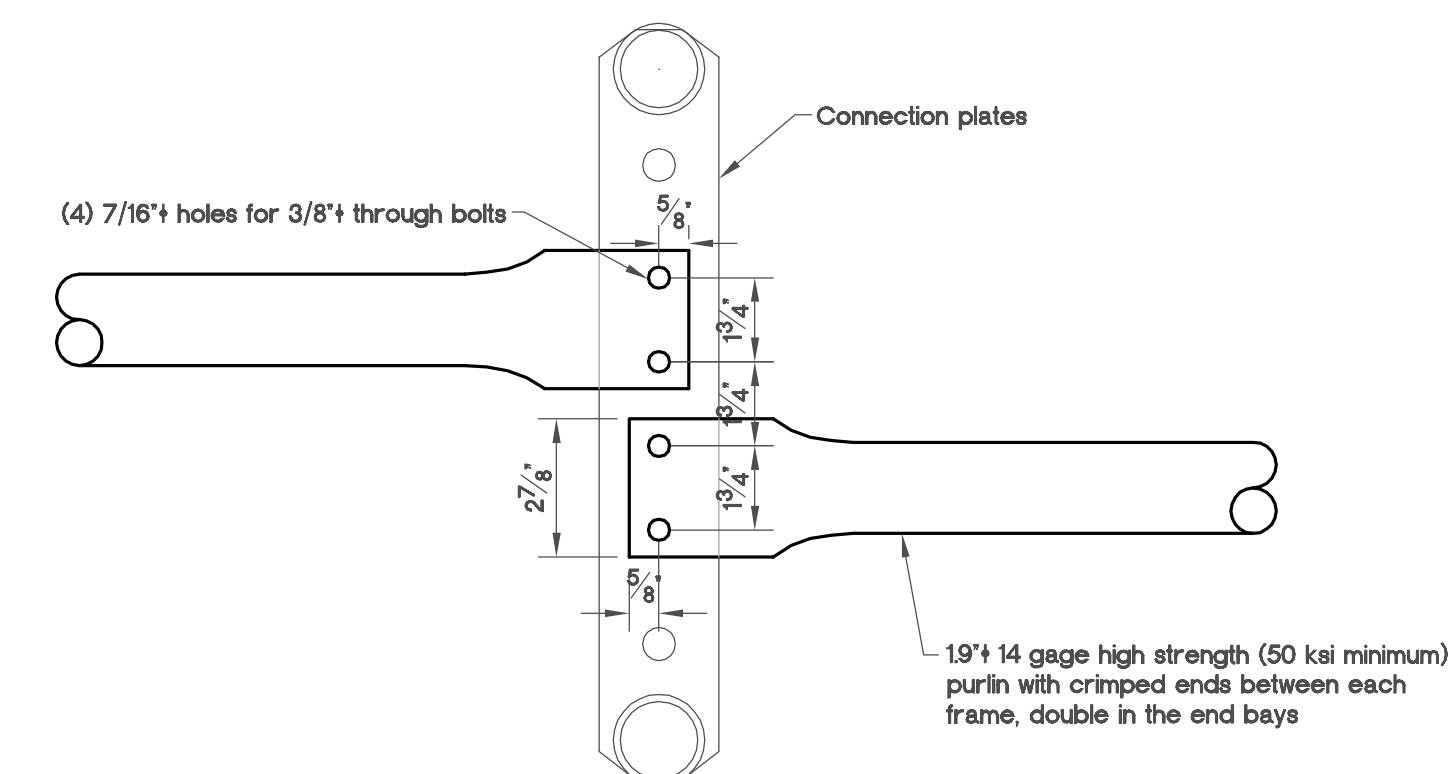
View 1 Detail D-D/2 Scale 1" = 1'-0"



View 2 Detail D-D/2 Scale 1" = 1'-0"



2" x 2" x 1/4" Steel Angle Scale 3" = 1'-0"



Detail E-E/2 Scale 3" = 1'-0"



East: 22 Denver Road, Suite B, Denver, PA 17517  
717.335.2750 Fax: 717.335.2753  
West: 206 S Main Street, PO Box 509, Kouts, IN 46347  
219.766.2499 Fax: 219.766.2394

www.timbertecheng.com

a creative engineering firm, providing solutions and building relationships

This drawing is the property of Timber Tech Engineering, Inc. and reproduction, alteration or use of this drawing without the written consent of Timber Tech Engineering, Inc. is prohibited. Drawings shall not be scaled to obtain dimensions. The contractor and builders involved on this project shall verify all dimensions and conditions before starting work, and any discrepancy shall be reported to the engineer in writing before starting work.

**IMPORTANT NOTE:**  
This plan is intended to reflect only the structural design of this building.

CONTRACTOR:  
**YoderWay Fabric Buildings**  
Emery Yoder  
299 Jonestown Road  
Thompsontown, PA 17094  
Phone: (717) 535-5149  
Fax: (717) 535-4491

DRAWING TITLE:  
Detail B-B/2  
Detail C-C/2  
Connection Plate Detail  
Filler Plate Detail  
Detail D-D/2  
Detail E-E/2

PROJECT:  
Standard Design of 38'  
Steel Arch Frame

REVISIONS:	DATE:	BY:

DRAWING NUMBER: <b>E123-10</b>	
DATE: <b>9/3/2010</b>	PAGE: <b>2 of 2</b>
BY: <b>kms</b>	SCALE: <b>as noted</b>