

75' Steel Arch Frame

DESIGN ENGINEER:



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CONTRACTOR / BUILDER:

YoderWay Fabric Buildings
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DRAWING INDEX:

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PAGE 1 - Bracing Plans
PAGE 2 - Cross Section, Details
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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

1. Governing Code: ASCE 7-05
(Agricultural Use, Low Occupancy)
2. Dead Loads:
 - A. Roof 5 psf
 - B. Floor n/a psf
 - C. Other n/a psf
3. Live Loads:
 - A. Roof (See also note #5) 17 psf
 - B. Floor n/a psf
 - C. Other n/a psf
4. Truss Loads:
 - A. Top Chord Live 17 psf
 - B. Top Chord Dead 4 psf
 - C. Bottom Chord Live 0 psf
 - D. Bottom Chord Dead 1 psf
5. Snow Loads:
 - A. Ground Snow (Pg) 30 psf
 - B. Flat Roof Snow (Pf) 17 psf
 - C. Snow Exposure Factor (Ce) 0.9
 - D. Snow Load Importance Factor (I) 0.8
6. Wind Load
 - A. Basic Wind Speed 0.87
 - C. Wind Exposure Category C

STRUCTURAL STEEL

1. 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:
 - A. Wide flange shapes and WT's: ASTM A992 with a minimum yield strength of 50,000 psi.
 - B. Angles, plates, bars and miscellaneous connection material: ASTM A36 with a minimum yield strength of 36,000 psi, unless otherwise noted.
 - C. Steel pipe: ASTM A501 with a minimum yield strength of 36,000 psi.
 - D. Round Steel Tube: ASTM A500, with a minimum yield strength of 50,000 psi.
 - E. All steel shall be hot dipped galvanized, powder coated, or have ZRC Cold Galvanizing Compound applied.
2. 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:
 - A. 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.
 - B. Field cutting to be done by sawing or shearing. Torch cutting of cold-formed members is not acceptable.
3. Connections shall be designed and constructed according to AISC, and shall conform to the following:
 - A. 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.
 - B. 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.
 - C. 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).
 - D. 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.
 - E. Connections exposed to weather or high relative humidities shall be hot-dip galvanized per ASTM A153.

Miscellaneous

1. Fabric
 - A. Roof and wall cover is Nova-Thene RU88X-6 woven coated fabric by Intertape Polymer Group or equal.
 - B. 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.
 - C. Roof fabric shall have a minimum weft tear of 125 lbs. for a 2 inch wide strip.
2. Bracing Material
 - A. "X" and "Sway" bracing to be 7x19 construction cable with the following nominal breaking strengths: 5/8" diameter-9800 lbs., 1/4" diameter-7000 lbs., 3/16" diameter-4200 lbs.
3. Steel tube frames to be constructed and erected according to Yoderway Fabric Buildings standard practices and standard industry guidelines.

Pipe Member Sizes			
Nominal Size	Gauge	Min. Wall Thickness	Typical Yield Strength
0.75"Ø	16	0.065"	45 ksi
0.75"Ø	15	0.072"	50 ksi
1"Ø	16	0.065"	45 ksi
1.9"Ø	14	0.083"	50 ksi
2.875"Ø	14	0.083"	50 ksi
3.5"Ø	13	0.095"	50 ksi

Not all member sizes will be used in every frame

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IMPORTANT NOTE:
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YoderWay Fabric Buildings
Emery Yoder
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Phone: (717) 535-5149
Fax: (717) 535-4491

DRAWING TITLE:
Framing Elevation
Roof Bracing Plan

PROJECT:
Standard Design of 75'
Steel Arch Frame

REVISIONS:	DATE:	BY:

DRAWING NUMBER: E004-08	
DATE: 1-31-2008	PAGE: 1 of 4
BY: kms	SCALE: as noted

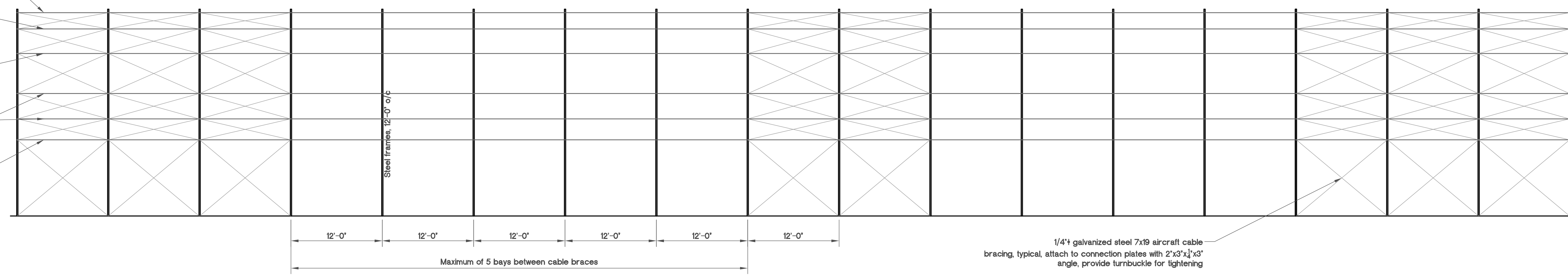
19" x 14 gage high strength (50 ksi minimum) purlin between each frame, double at this location, full length of building and in all end bays (11 runs total)

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Sidewall Framing Elevation Scale 1/8" = 1'-0"

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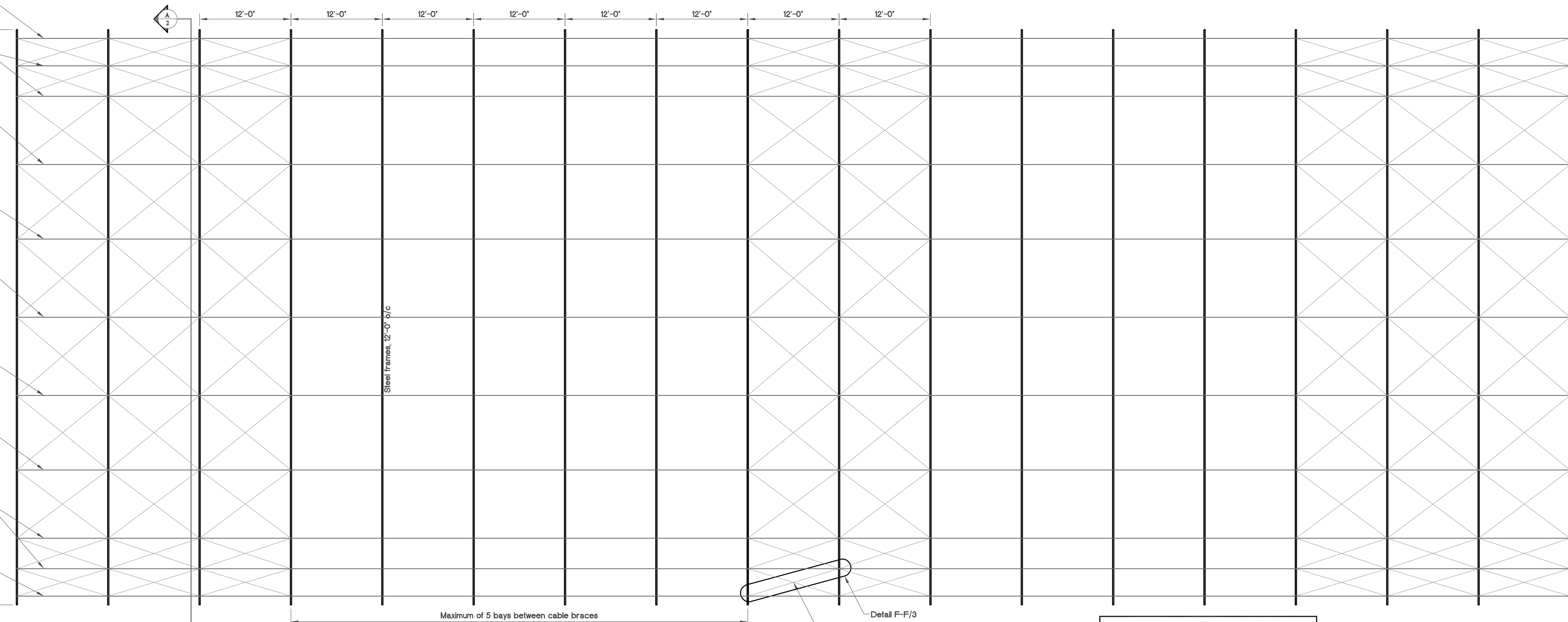
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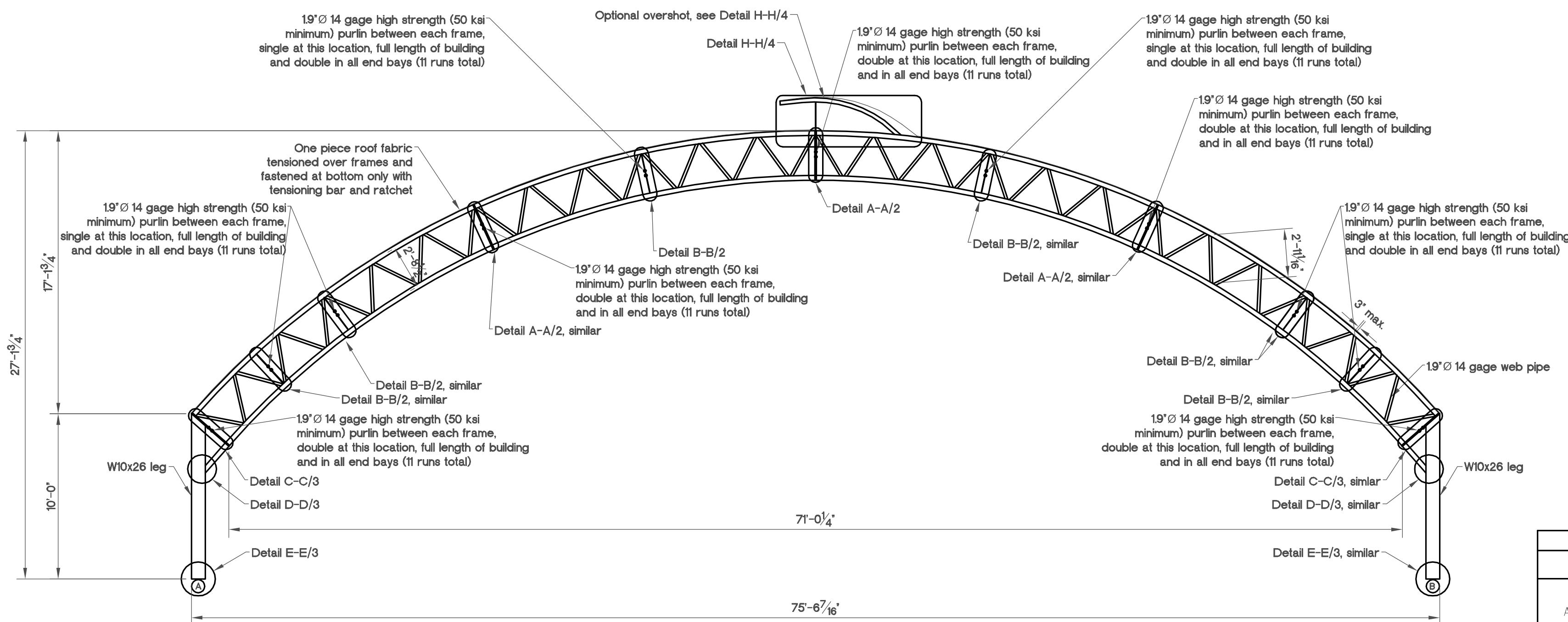
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Roof Framing Plan Scale 1/8" = 1'-0"

ROOF FRAMING LINE LEGEND	
—	TRUSSES
—	PURLINS
—	CABLE BRACING

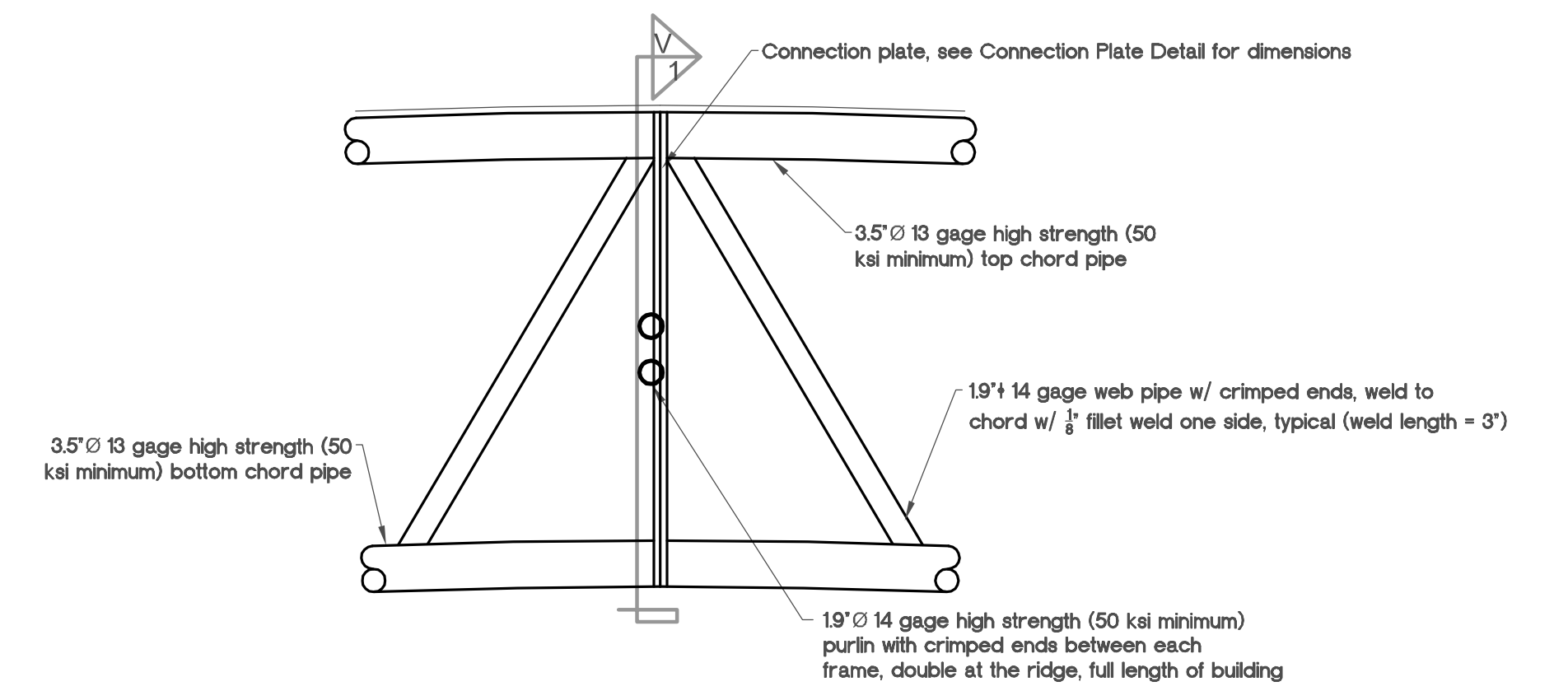


Cross Section A/2 Scale 3/16" = 1'-0"

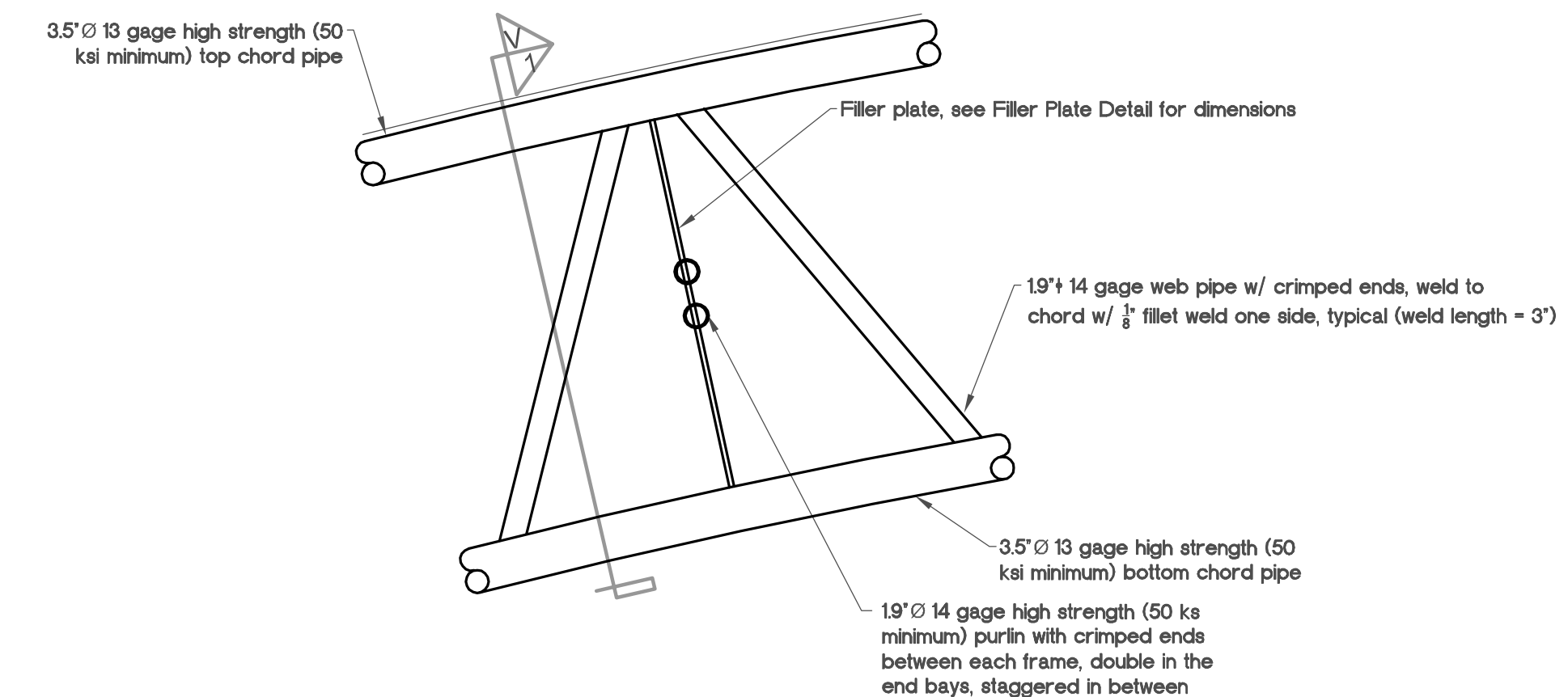
Note:
Each end of webs to be crimped. Webs of bottom truss section to be welded on both sides of crimped end. All other truss sections may be welded on one side of crimped end only

Reactions (lbs.) and (ft.-lbs.)					
Case		Dead	Snow	Unbal. Snow	Wind*
A	Horz.	1350	4800	1800	-5150
	Vert.	2400	7100	1450	-3300
	Moment	0	0	0	0
B	Horz.	-1350	-4800	-1800	1200
	Vert.	2400	7100	1450	-3300
	Moment	0	0	0	0

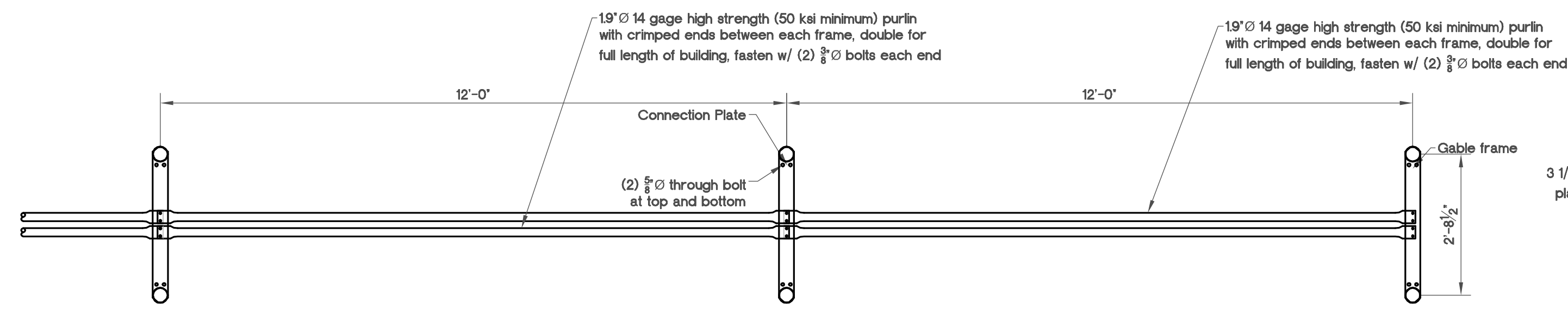
Horizontal reaction positive acting to right
Vertical reaction positive acting upwards
Moment positive acting clockwise
* Add 3,200 lbs. uplift at cable brace locations



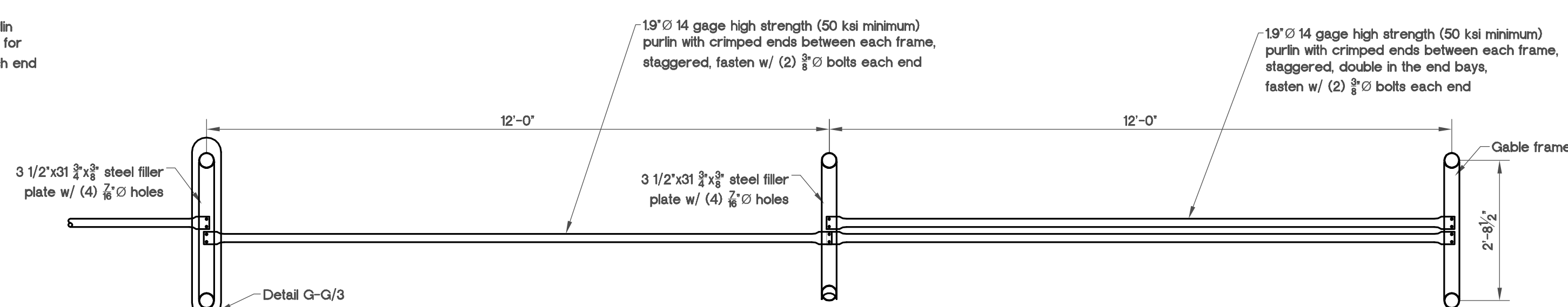
Detail A-A/2 Scale 1" = 1'-0"



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



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



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



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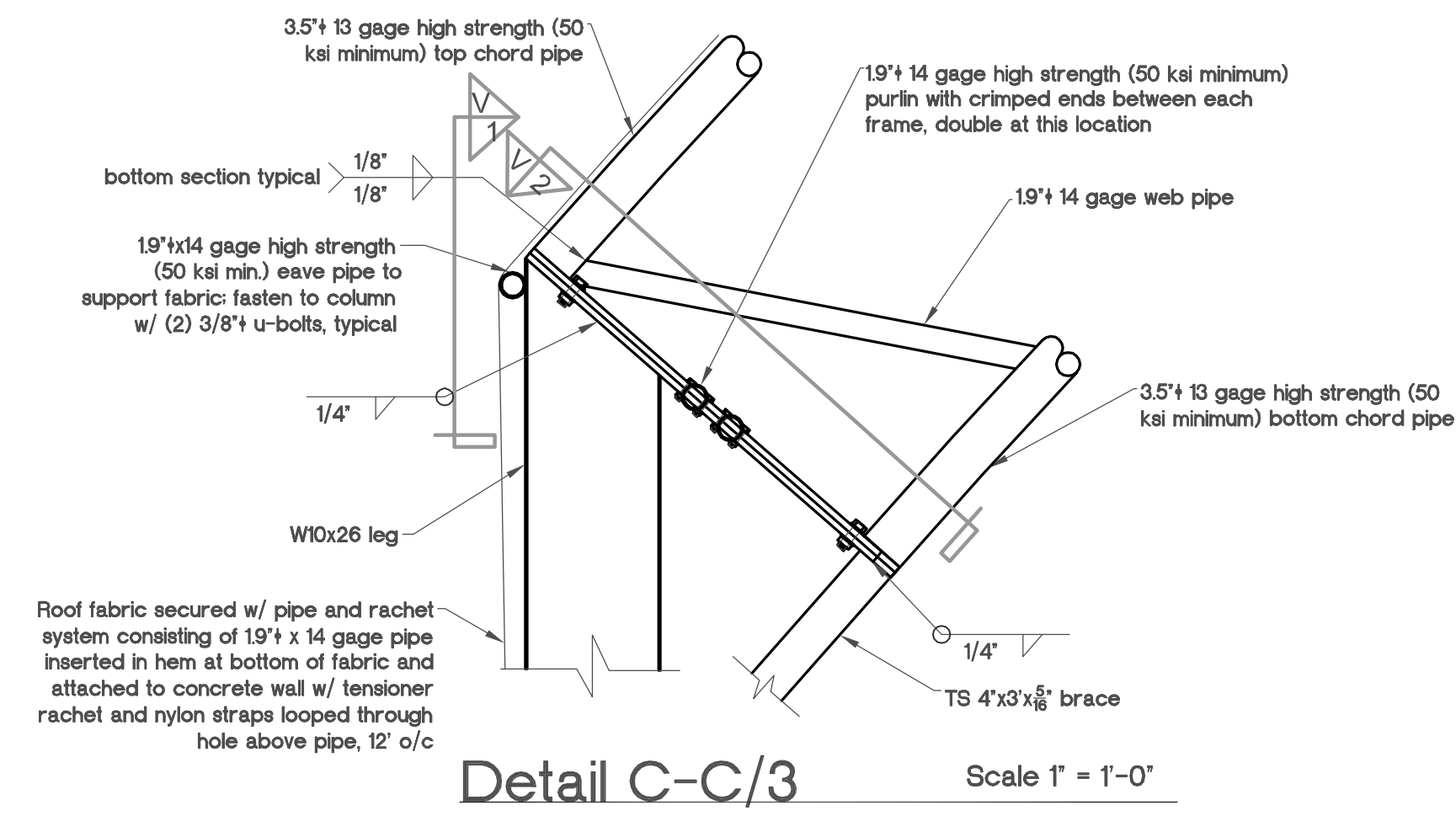
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DRAWING TITLE:
Cross Section A/2
Detail A-A/2
Detail B-B/2

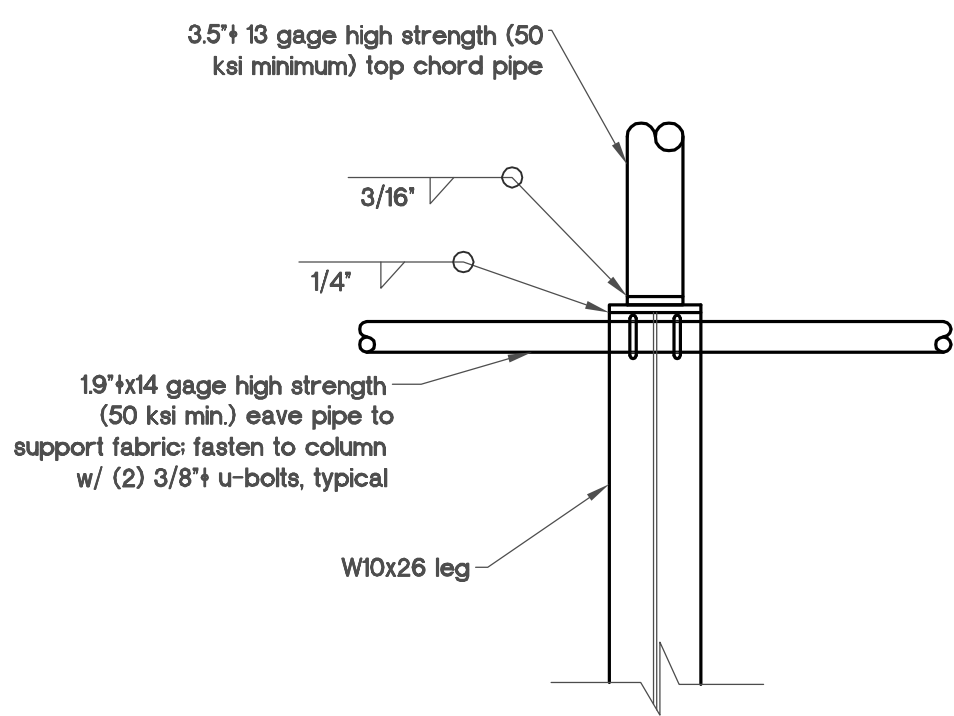
PROJECT:
Standard Design of 75'
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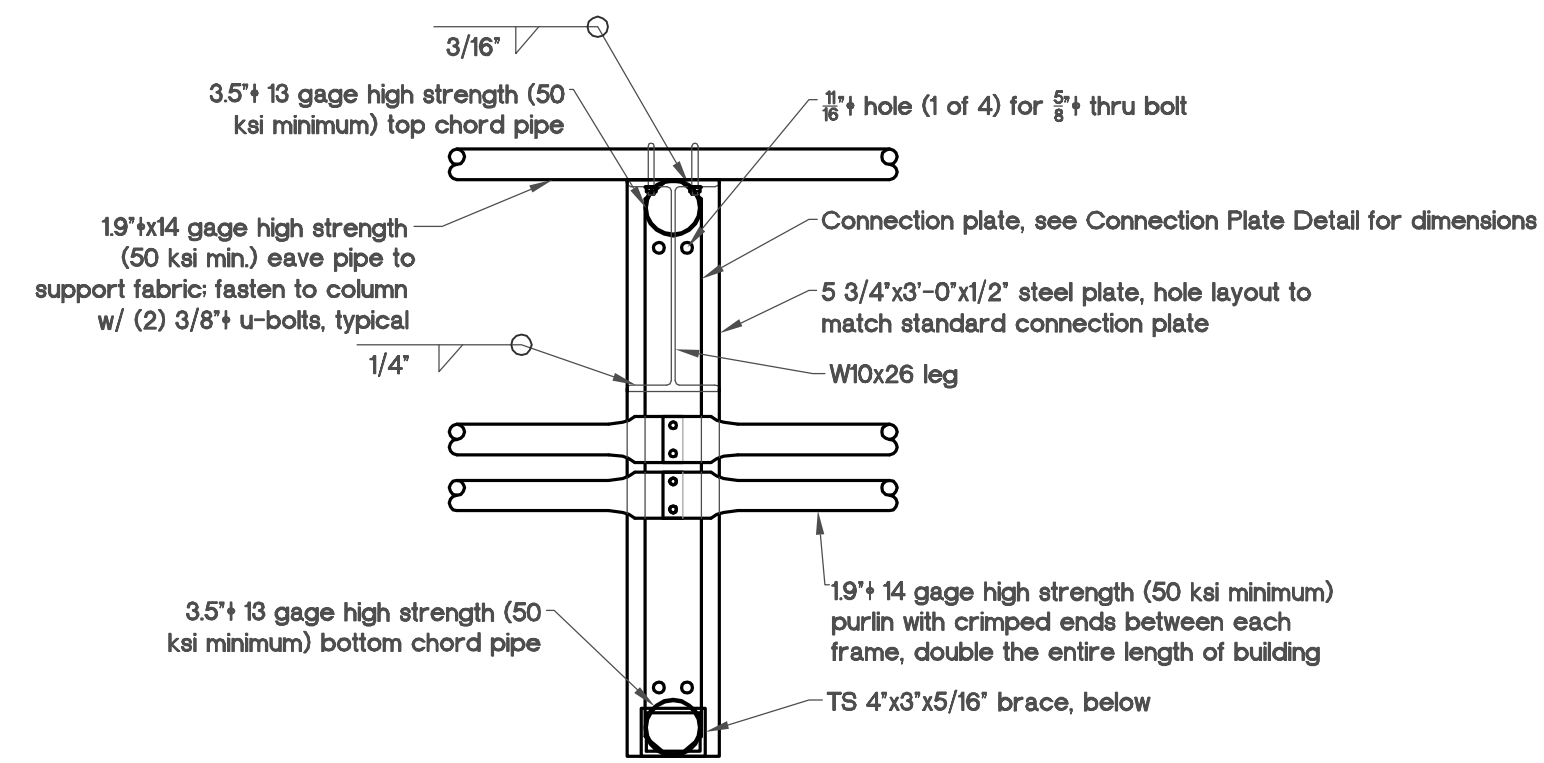
DRAWING NUMBER:
E004-08
DATE: 1-31-2008 **PAGE:** 2 of 4
BY: kms **SCALE:** as noted



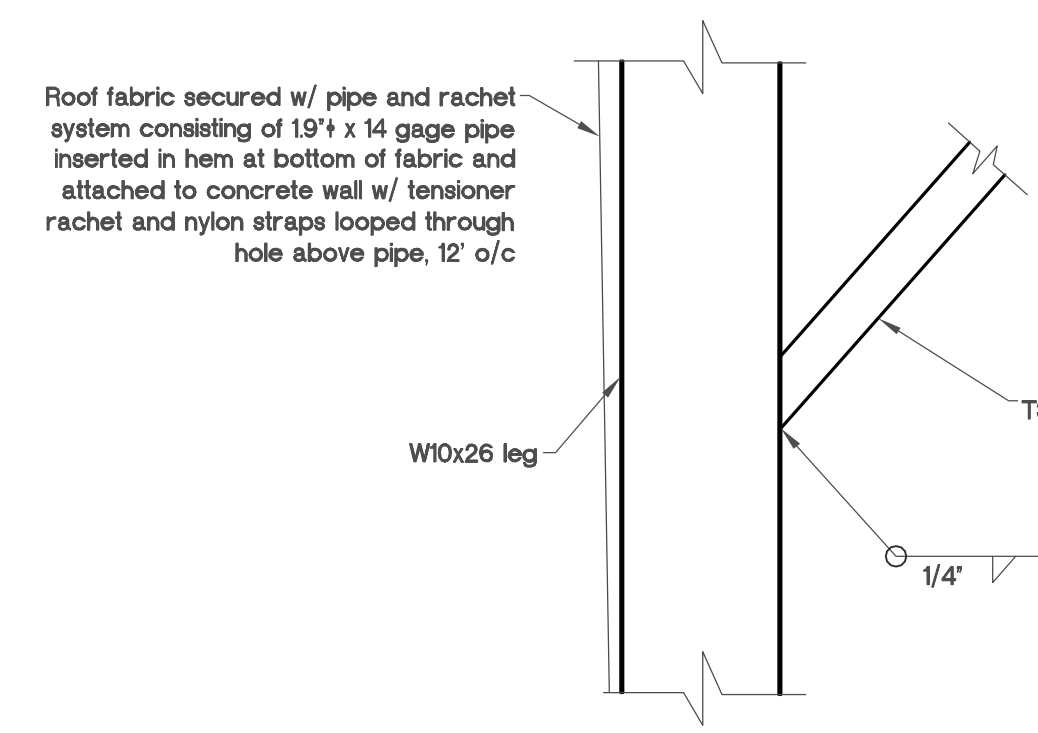
Detail C-C/3 Scale 1" = 1'-0"



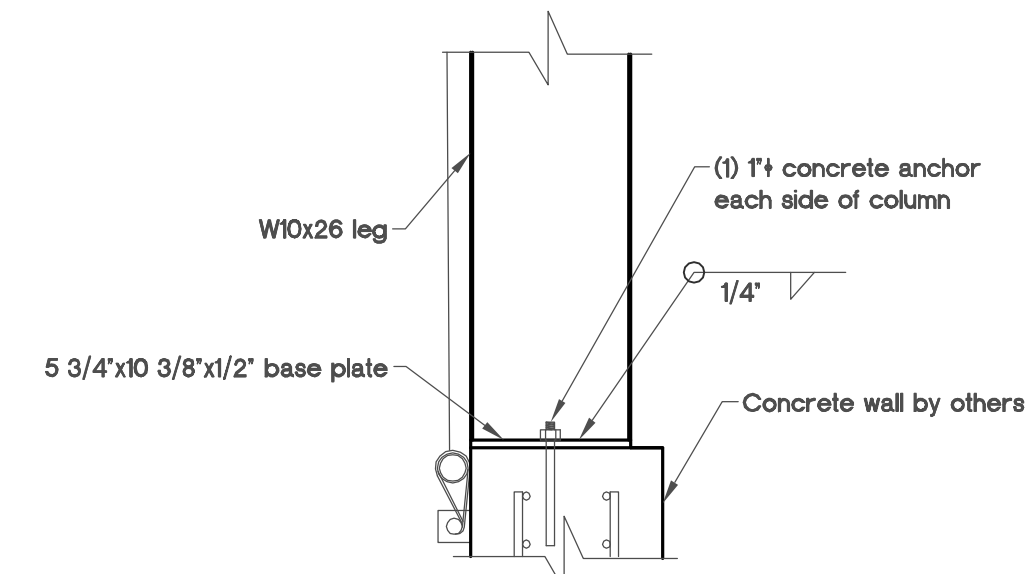
View 1 Detail C-C/3 Scale 1" = 1'-0"



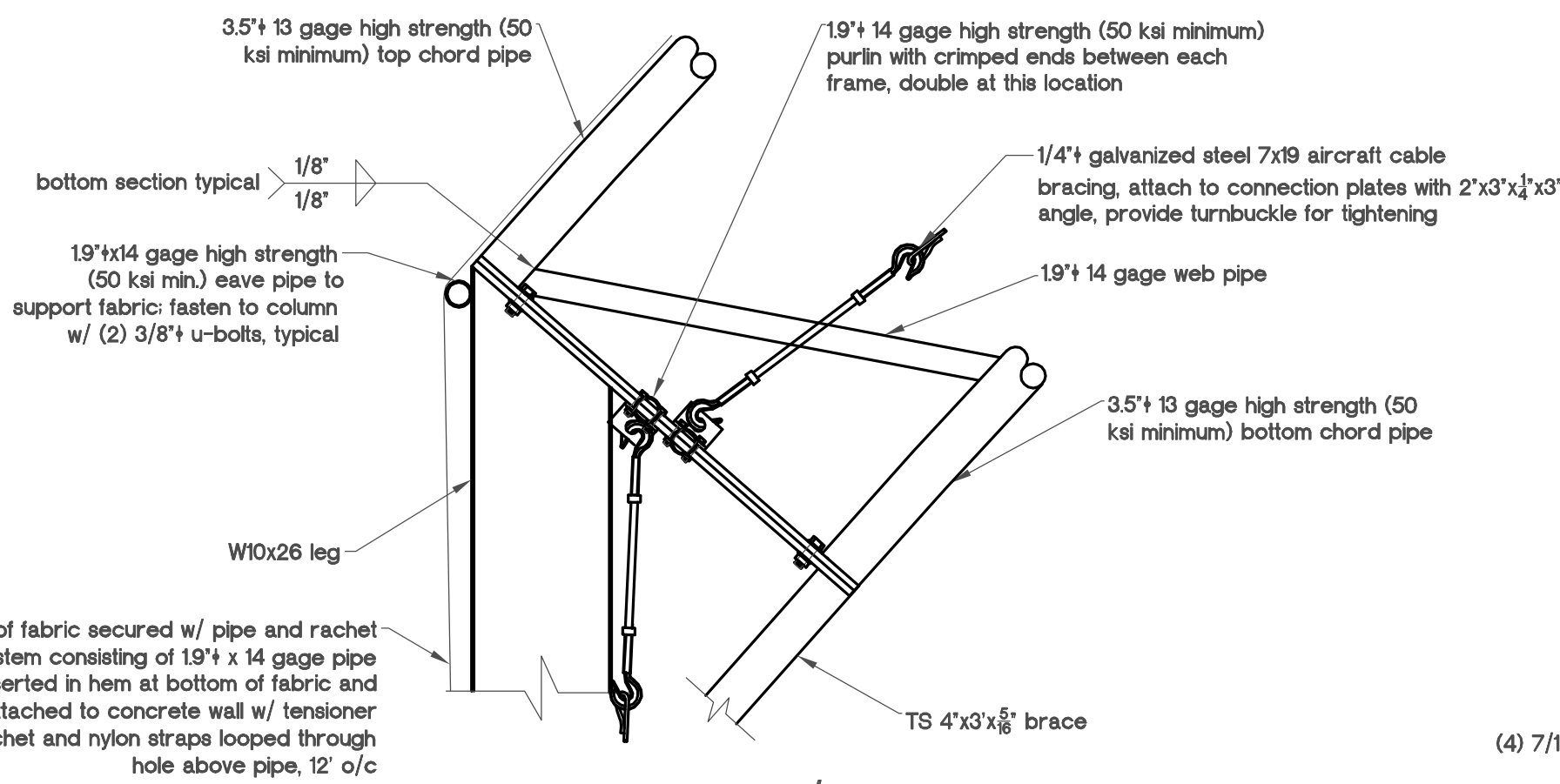
View 2 Detail C-C/3 Scale 1" = 1'-0"



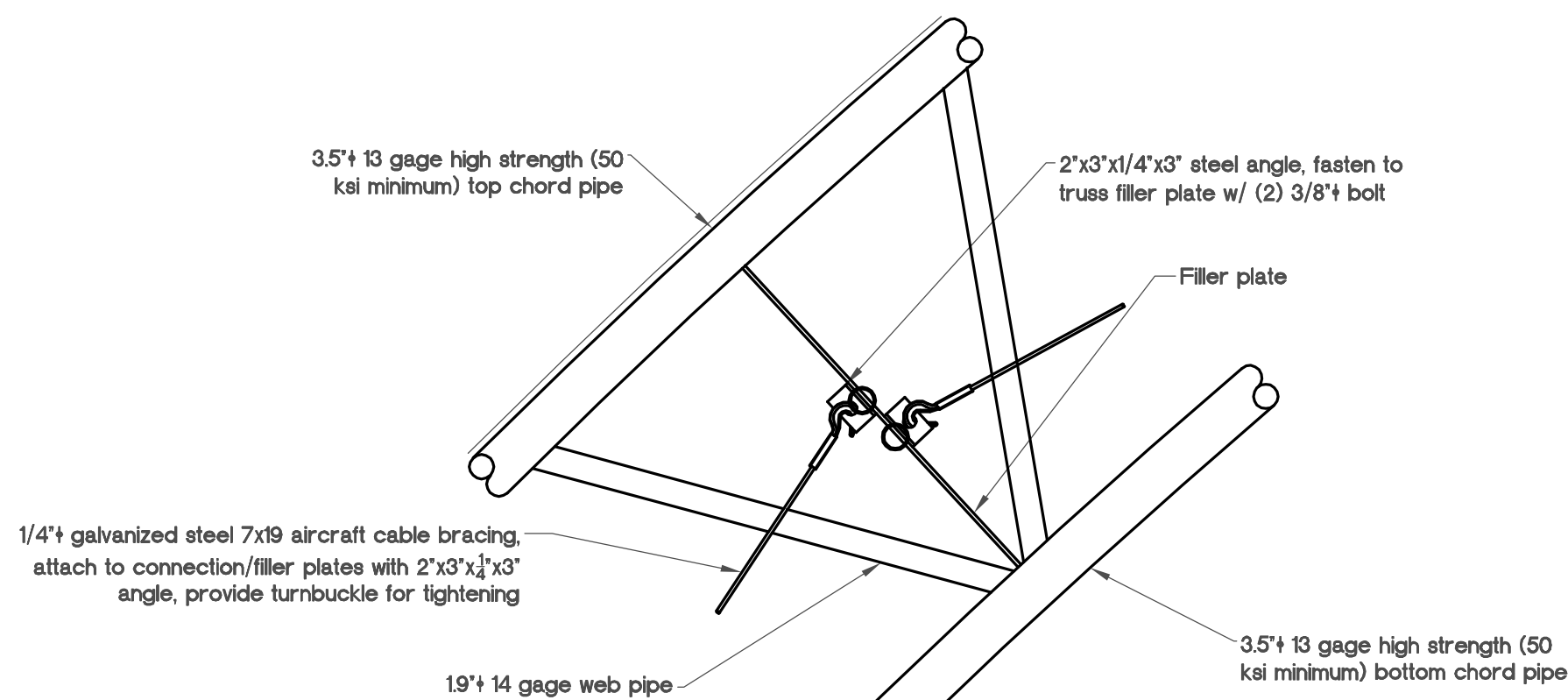
Detail D-D/3 Scale 1" = 1'-0"



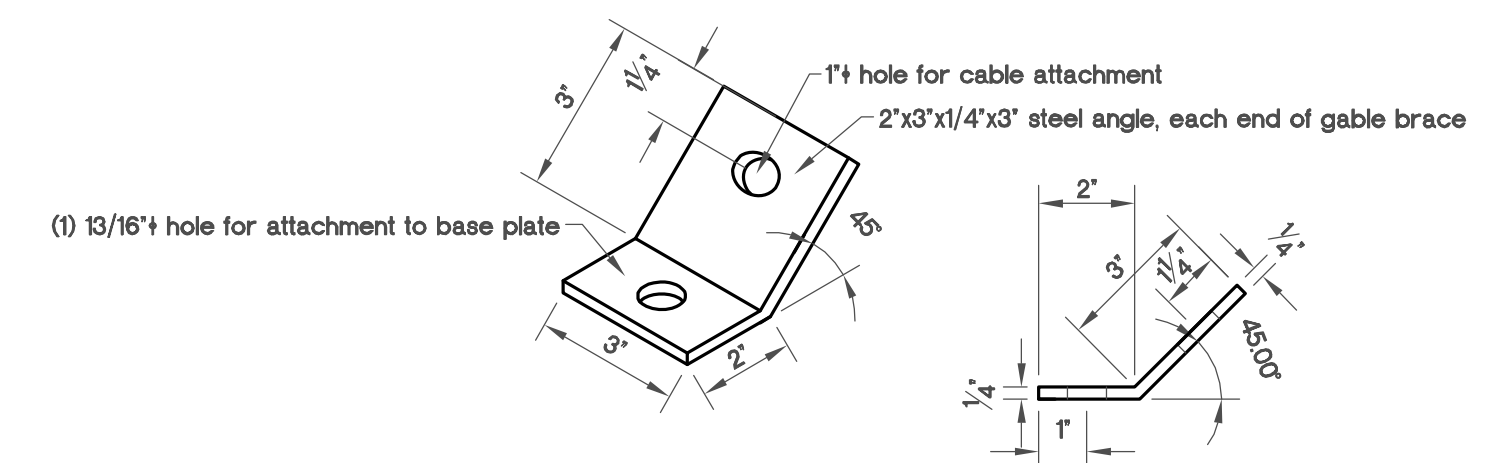
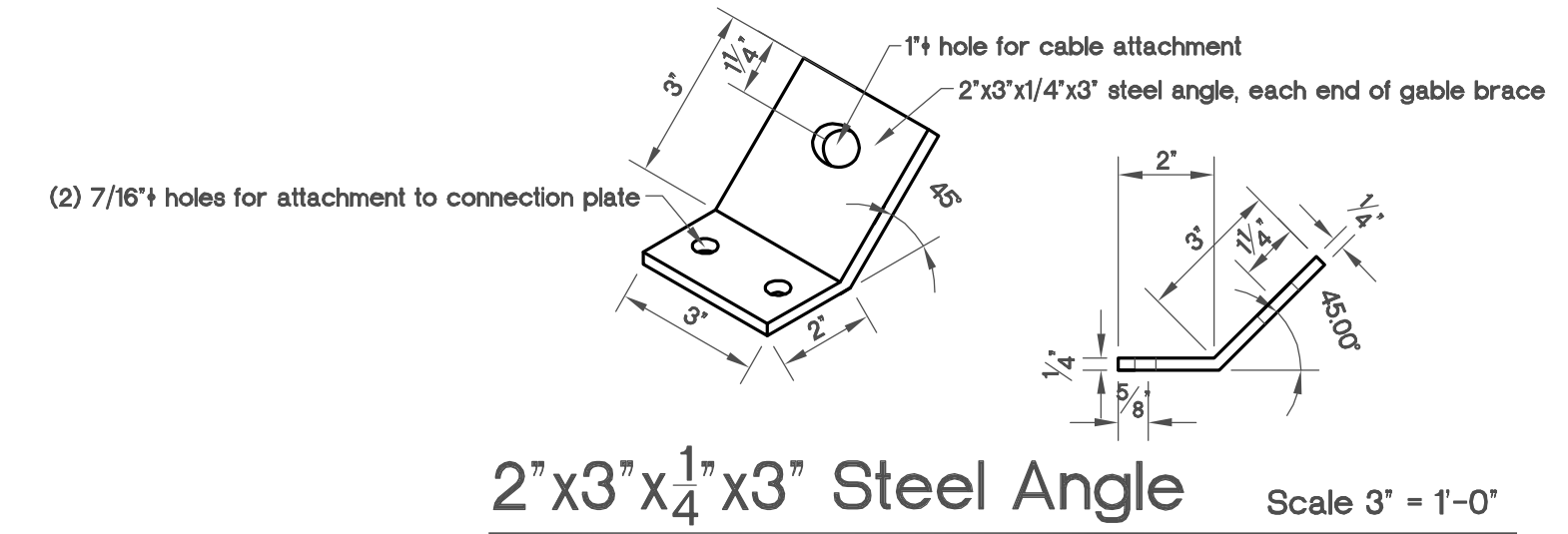
Detail E-E/3 Scale 1" = 1'-0"



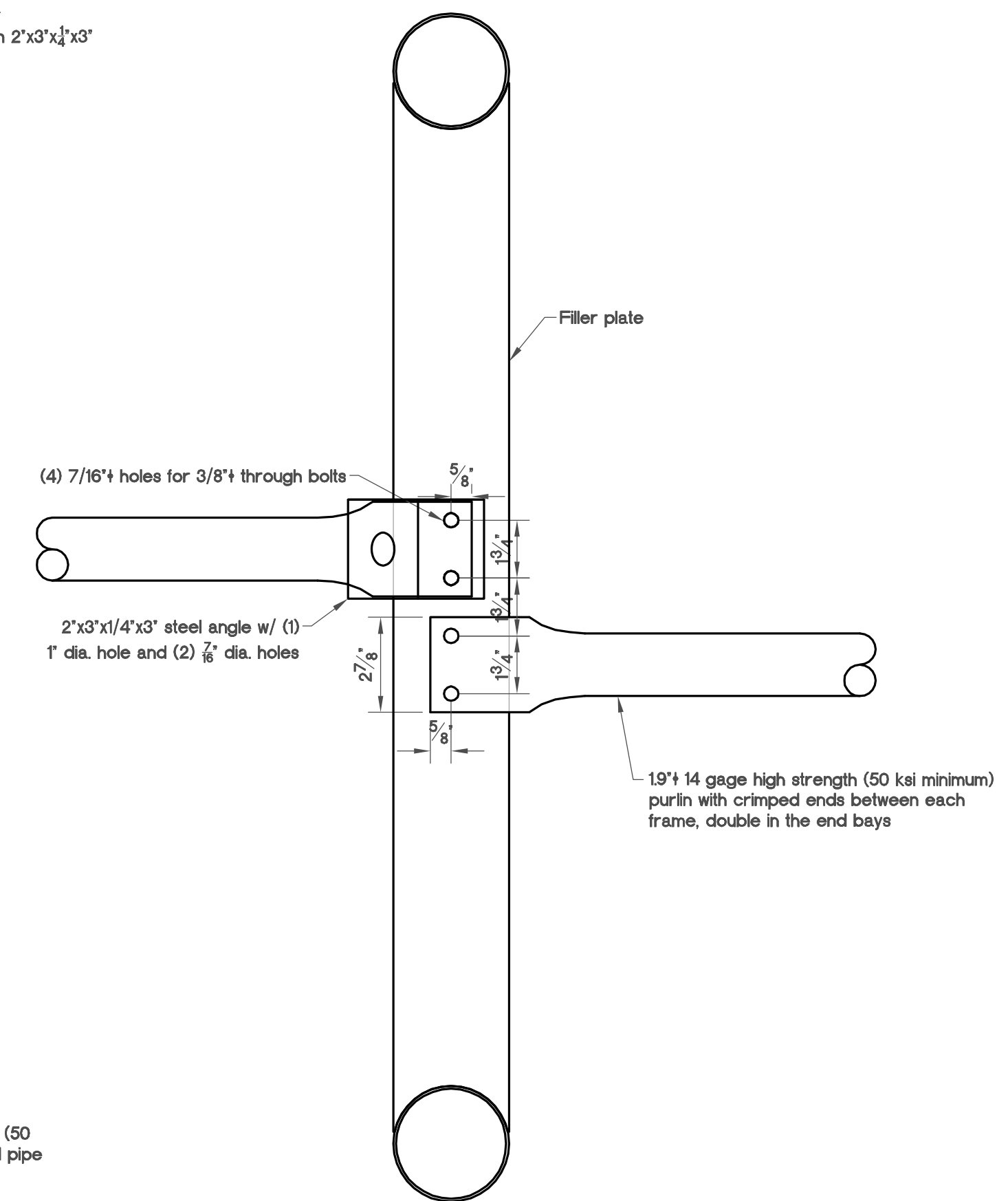
View 1 Detail F-F/3 Scale 1" = 1'-0"



View 2 Detail F-F/3 Scale 1" = 1'-0"

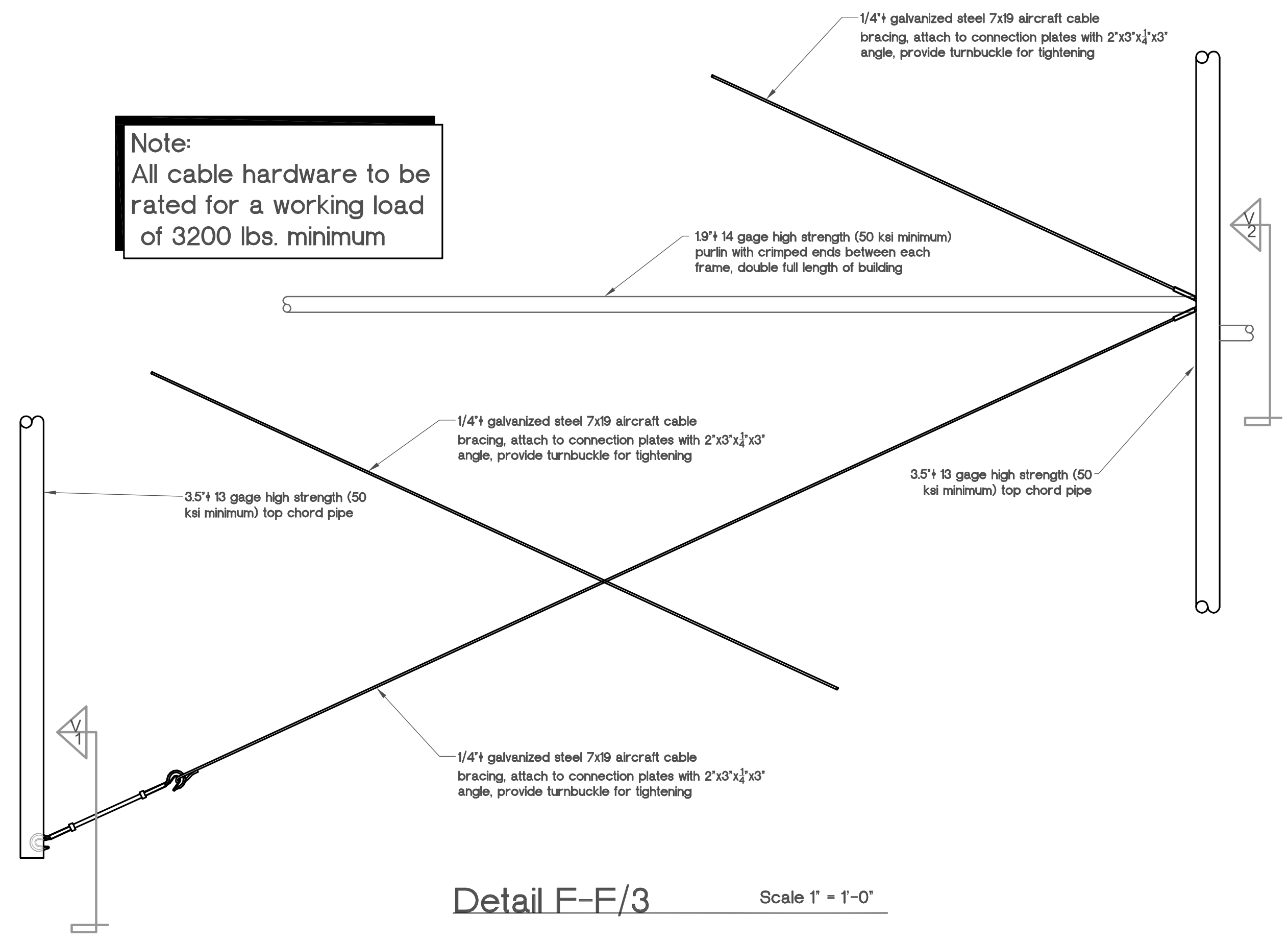


2" x 3" x 1/4" x 3" Steel Angle At Base Plate Scale 3" = 1'-0"



Detail G-G/3 Scale 3" = 1'-0"

Note:
All cable hardware to be rated for a working load of 3200 lbs. minimum



Detail F-F/3 Scale 1" = 1'-0"

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DRAWING TITLE:
Detail C-C/3
Detail D-D/3
Detail E-E/3
Detail F-F/3
Detail G-G/3
2" x 3" x 1/4" x 3" Angle Detail

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