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PROJECT NAME: ATHERSTONE HOA

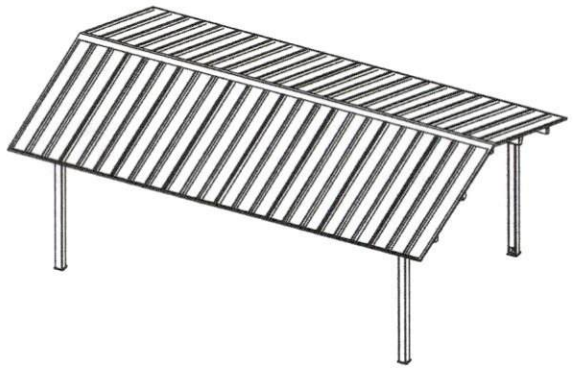
PROJECT LOCATION: ANGIER, NC

BUILDING TYPE: REK 16X24

ROOF TYPE: MULTI-RIB

BUILDING NUMBER: P13805

ORDER NUMBER: 71607



DRAWING LIST:

SHEET NUMBER	DRAWING DESCRIPTION
CS	COVER SHEET
1	ARCHITECTURAL ELEVATIONS
2-2.1	ANCHOR AND FOOTING LAYOUT / DETAILS
3	STRUCTURAL FRAMING PLAN
4-4.1	FRAME CONNECTION DETAILS
5-5.1	ROOF LAYOUT
6-6.1	ROOF CONNECTION DETAILS

MANUFACTURER NOTES:

MATERIALS:

DESCRIPTION	ASTM DESIGNATION
TUBE STEEL	A500 (GRADE B)
SCHEDULE PIPE	A53 (GRADE B)
RMT PIPE	A519
LIGHT GAGE COLD FORMED	A1003 (GRADE 50)
STRUCTURAL STEEL PLATE	A36
ROOF PANELS (STEEL)	A653
ANCHOR BOLTS	SEE SHEET 2.1

GENERAL NOTES:
UNLESS NOTED OTHERWISE, THIS STRUCTURE WAS DESIGNED TO ONLY SUPPORT WHAT IS SHOWN ON THESE DRAWINGS. POLIGON MUST BE CONTACTED IF ANYTHING ELSE IS TO BE ATTACHED TO THIS STRUCTURE (WALLS, COLUMN WRAPS, RAILINGS, ETC.) SO THE DESIGN OF THIS STRUCTURE CAN BE REVIEWED AND POSSIBLY REVISED.

UNLESS NOTED OTHERWISE, THIS STRUCTURE WAS DESIGNED ASSUMING A 20' SEPARATION BETWEEN ANY ADJACENT STRUCTURE WITH AN EAVE HEIGHT EQUAL TO OR GREATER THAN THE EAVE HEIGHT OF THIS STRUCTURE. IF THAT SEPARATION DOES NOT EXIST, POLIGON MUST BE CONTACTED SO THE DESIGN OF THIS STRUCTURE CAN BE REVIEWED AND POSSIBLY REVISED.

STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED, AND ERECTED IN ACCORDANCE WITH THE LATEST EDITION OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) SPECIFICATION MANUAL.

ALL WELDING IS PERFORMED BY AMERICAN WELDING SOCIETY CERTIFIED WELDERS AND CONFORMS TO THE LATEST EDITION OF AWS D1.1 OR D1.3 AS REQUIRED.

PARTS SHOWN MAY BE UPGRADED DUE TO STANDARDIZED FABRICATION. REFER TO THE SHIPPING BILL OF MATERIALS AND FINAL INSTALLATION INSTRUCTIONS INCLUDED WITH THE STRUCTURE FOR POSSIBLE SUBSTITUTIONS AND IMPROVEMENTS.

FOR PROPER FIELD INSTALLATION OF THE BUILDING IT IS RECOMMENDED THAT THE PRIMARY FRAME INSTALLER AND THE ROOF INSTALLER HAVE A MINIMUM FIVE (5) YEARS DOCUMENTED EXPERIENCE INSTALLING THIS TYPE OF PRODUCT.

FOR PROPER FIELD INSTALLATION OF THE BUILDING IT IS RECOMMENDED THAT ELECTRIC WIRING, IF REQUIRED, BE RUN THROUGH THE STRUCTURAL MEMBERS BEFORE THE BUILDING IS ERECTED.

CERTIFICATES:
MIAMI-DADE COUNTY CERTIFICATE OF COMPETENCY NO. 21-0819.13
PCI (POWDER COATING INSTITUTE) 4000 CERTIFIED

FABRICATOR APPROVALS:
CITY OF PHOENIX, AZ APPROVED FABRICATOR #C08-2010
CITY OF LOS ANGELES, CA APPROVED FABRICATOR #FB01596
CITY OF RIVERSIDE, CA APPROVED FABRICATOR #SF_000042
CITY OF HOUSTON, TX APPROVED FABRICATOR #470
CLARK COUNTY, NV APPROVED FABRICATOR #264
STATE OF UTAH APPROVED FABRICATOR 02008-14
AISC APPROVED FABRICATOR C-00018751

DESIGN CRITERIA:

GENERAL:
2018 NORTH CAROLINA BUILDING CODE
RISK CATEGORY: II

DEAD LOAD:
ROOF DEAD LOAD: 2 PSF
FRAME DEAD LOAD: SELF WEIGHT

LIVE LOAD:
ROOF LIVE LOAD: 20 PSF

SNOW DESIGN DATA:
GROUND SNOW LOAD (Pg): 15 PSF
FLAT ROOF SNOW LOAD (Pf): 15 PSF
SNOW EXPOSURE FACTOR (Ce): 1.0
SNOW LOAD IMPORTANCE FACTOR (Is): 1.0
THERMAL FACTOR (Ct): 1.2

WIND DESIGN DATA:
BASIC WIND SPEED (V): 115 MPH
GUST EFFECT FACTOR (G): 0.85
INTERNAL PRESSURE COEFFICIENT (GCpi): 0
WIND EXPOSURE: C

SEISMIC DESIGN DATA:
STEEL SYSTEMS NOT SPECIFICALLY DETAILED FOR SEISMIC RESISTANCE
SEISMIC IMPORTANCE FACTOR (Ie): 1.0
SEISMIC DESIGN CATEGORY: C
SEISMIC SITE CLASS: D
SEE CALCULATIONS FOR ADDITIONAL DATA

ADDITIONAL CRITERIA:
NONE

NOTICE TO CONTRACTOR
Reviewed for Code Compliance
08/15/2022
Harnett COUNTY NORTH CAROLINA

NORTH CAROLINA PROFESSIONAL SEAL 036743 ENGINEER CHRISTOPHER M EVANS

Christopher Evans 2021.12.15 08:58:17 -05'00'

IF THESE DRAWINGS ARE SEALED, THE SEAL APPLIES ONLY TO BUILDING COMPONENTS (AND FOUNDATION DESIGN IF APPLICABLE) DETAILED WITHIN THESE DRAWINGS.

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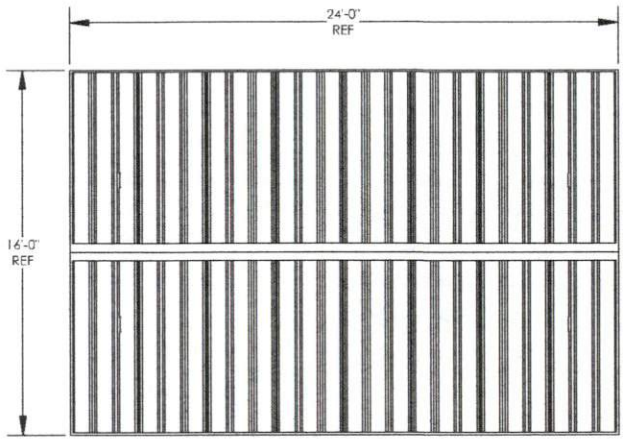
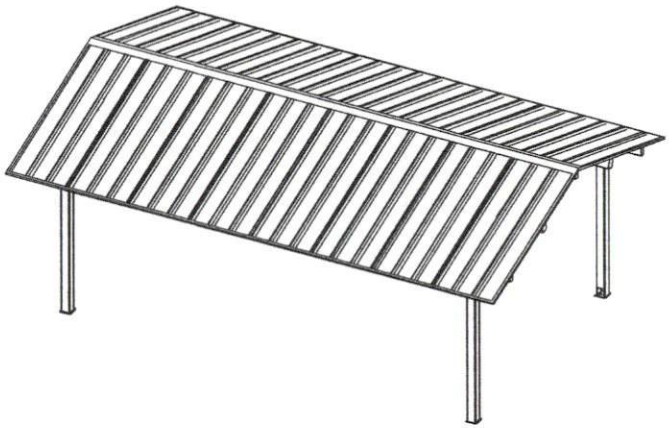
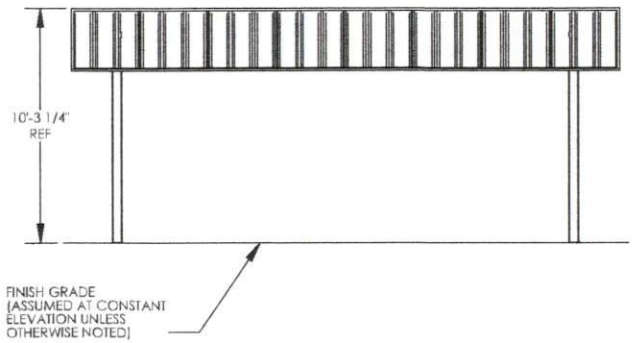
PRINT DATE: 12/13/2021
DRAWN BY: zach.buchwaltz
SCALE: 1:75
REV LEVEL: A
CREATION DATE: 4/4/2016
ORDER NO: 71607
CAD MODEL: -P13805

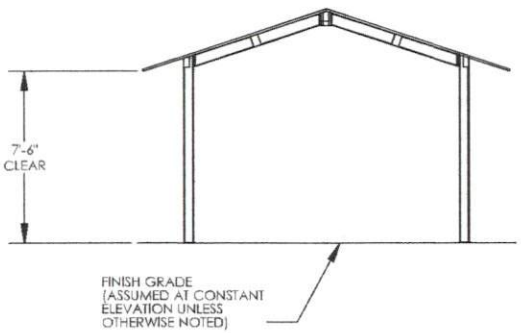
PROJECT: ATHERSTONE HOA
PROJECT LOCATION: ANGIER, NC
DRAWING: COVER SHEET

SHEET CS









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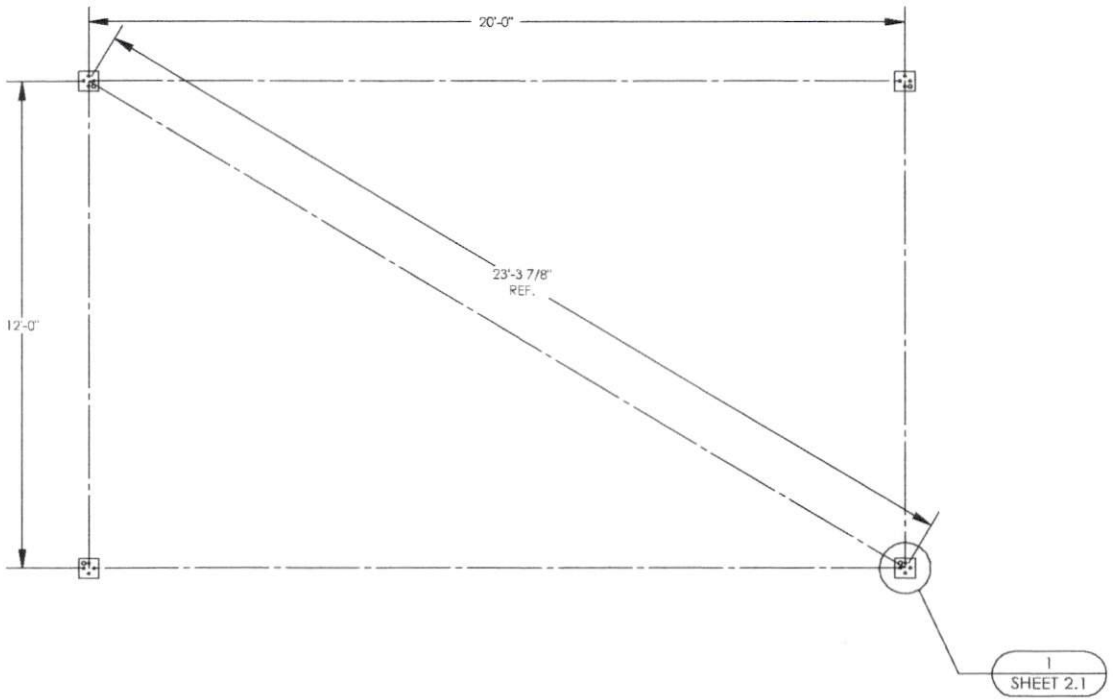
CREATION DATE: 4/4/2016
ORDER NO: 71607
CAD MODEL: ~P13805

PROJECT: ATHERSTONE HOA
PROJECT LOCATION: ANGIER, NC
DRAWING: ARCHITECTURAL ELEVATIONS

SHEET
1

ANCHOR AND FOOTING LAYOUT NOTES:

1. ANCHORS MUST BE CENTERED IN FOOTINGS
2. FOOTINGS MUST BE TURNED TO ALIGN WITH COLUMN AND TRUSS CENTERLINE.



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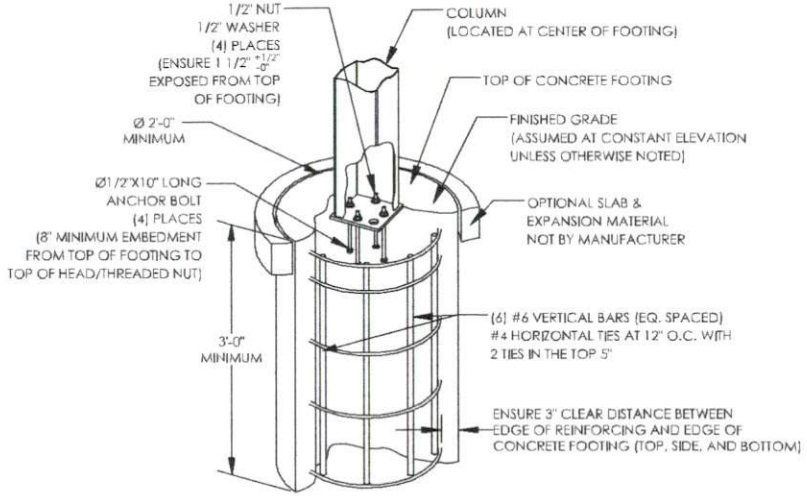
REV LEVEL: A
CREATION DATE: 4/4/2016
ORDER NO: 71607
CAD MODEL: ~P13805

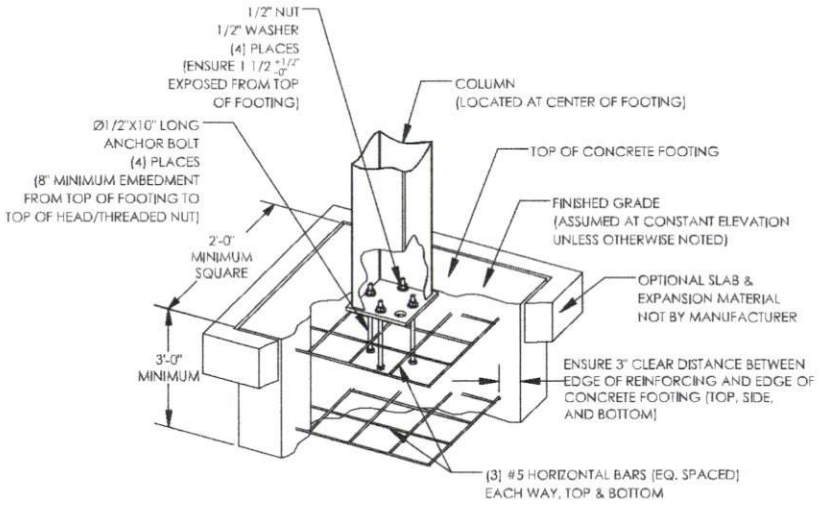
PROJECT: ATHERSTONE HOA
PROJECT LOCATION: ANGIER, NC
DRAWING: ANCHOR AND FOOTING LAYOUT

SHEET 2



PIER FOOTING OPTION (INTERNAL ANCHOR BOLTS)

FOOTING DESIGN BY MANUFACTURER. FOOTING MATERIALS BY OTHERS.
(TYPICAL WITH EACH COLUMN, QTY OF REINFORCING AND ANCHOR BOLTS SPECIFIED IN NOTES REFLECT SITE SPECIFIC REQUIREMENTS)

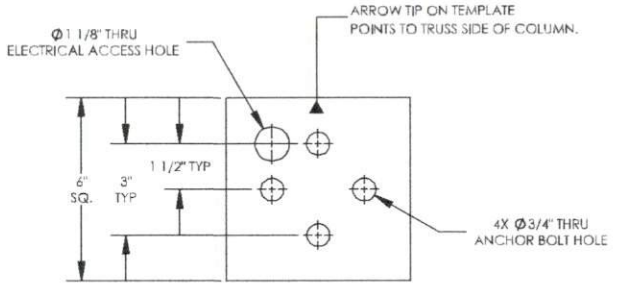


PAD FOOTING OPTION (INTERNAL ANCHOR BOLTS)

FOOTING DESIGN BY MANUFACTURER. FOOTING MATERIALS BY OTHERS.
(TYPICAL WITH EACH COLUMN, QTY OF REINFORCING AND ANCHOR BOLTS SPECIFIED IN NOTES REFLECT SITE SPECIFIC REQUIREMENTS)

ANCHOR BOLT NOTES - INTERNAL (ANCHOR BOLTS LOCATED WITHIN COLUMN):

1. ANCHOR BOLTS SHALL BE ASTM A307 (GRADE A) MATERIAL UNLESS OTHERWISE NOTED.
2. ANCHOR BOLTS SHALL BE EITHER "HEADED" OR "THREADED WITH NUT" AS DEFINED IN THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION MANUAL.
3. HOOKED ANCHOR BOLTS ARE NOT ACCEPTABLE.
4. ACCURATE ANCHOR BOLT PLACEMENT IS CRITICAL. TO ENSURE THE ANCHOR BOLT LAYOUT MEETS THE DIMENSIONS REQUIRED ON THE DRAWINGS, SURVEY (OR MEASURE) THE LOCATION OF ALL ANCHOR BOLTS PRIOR TO POURING THE FOOTINGS. AN ADDITIONAL SURVEY (OR MEASUREMENT) SHOULD BE MADE AFTER THE FOOTINGS ARE POURED TO CONFIRM THE ANCHOR BOLTS DID NOT SHIFT DURING THE CONCRETE POUR.
5. THE MANUFACTURER STRONGLY RECOMMENDS USING ANCHOR BOLT TEMPLATES BECAUSE THEY SIGNIFICANTLY IMPROVE THE ACCURACY OF ANCHOR BOLT PLACEMENT. AN ANCHOR BOLT TEMPLATE IS PROVIDED WITH ANY ANCHOR BOLT KIT PURCHASED.
6. IF OUTSIDE CONSULTING ENGINEERS ARE DESIGNING THE FOUNDATIONS FOR THIS STRUCTURE, THEY MUST REFER TO THE MANUFACTURER'S CALCULATIONS FOR MINIMUM CONCRETE PROPERTIES (COMPRESSIVE STRENGTH, EDGE DISTANCE, ETC.) REQUIRED FOR THE ANCHOR BOLT DESIGN.
7. ELECTRICAL ACCESS HOLE IS ALWAYS LOCATED IN THE COLUMN BASE PLATE AS SHOWN. BE SURE TO KEEP THE ANCHOR BOLT TEMPLATE PROPERLY ORIENTED WHEN ELECTRICAL ACCESS TO THE COLUMN IS REQUIRED. TEMPLATE MUST BE REMOVED BEFORE INSTALLING COLUMNS.
8. THE CALCULATIONS FOR THIS STRUCTURE ASSUME A PINNED COLUMN BASE.
9. THE FOLLOWING ADHESIVE ANCHORS MAY BE SUBSTITUTED FOR THE CAST-IN-PLACE ANCHOR BOLTS:
   -HILTI HIT-HY 200 (A OR R) ADHESIVE WITH Ø 1/2" HAS-E ROD WITH MINIMUM 6" EMBEDMENT.
   CONTRACTOR SHALL FOLLOW ALL INSTALLATION SPECIFICATIONS AND REQUIREMENTS OF ANCHOR MANUFACTURER.



1 ANCHOR BOLT PATTERN
2 BASE PLATE THICKNESS: 1/2"

FOUNDATION NOTES:

1. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE REQUIREMENTS OF THE BUILDING CODE, AMERICAN CONCRETE INSTITUTE, AND ALL APPLICABLE STATE AND LOCAL ORDINANCES AND REQUIREMENTS.
2. THE CONCRETE DESIGN IS BASED ON THE FOLLOWING PROPERTIES:
   - 28 DAY STRENGTH OF 4500 psi.
   - SLUMP OF 4" (+/-1").
3. THE FOOTING SHALL BEAR ON COMPETENT UNDISTURBED SOIL OR 95% COMPACTED FILL. IF SIGNS OF ORGANIC MATERIAL, UNCONTROLLED FILL, CLAY OR SILT, HIGH WATER TABLE OR OTHER POSSIBLE DETRIMENTAL CONDITIONS ARE FOUND, INSTALLATION OF THE FOUNDATION MUST BE DISCONTINUED AND A SOILS ENGINEER CONTACTED.
4. THE REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A615, GRADE 60.
5. IF FOOTING DEPTH SHOWN DOES NOT MEET LOCAL FROST REQUIREMENTS, THE DRILLED PIER FOOTING MAY BE EXTENDED. EXTEND VERTICAL BARS AS REQUIRED AND PROVIDE ADDITIONAL TIES TO MEET SPACING REQUIREMENTS AS SHOWN. IF LOCAL FROST DEPTH REQUIREMENTS ARE NOT MET AND NO DRILLED PIER FOOTING OPTION IS GIVEN, CONTACT ENGINEERING. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCAL FROST LINE DEPTH BELOW GRADE PRIOR TO CONSTRUCTION.

THE FOUNDATION DESIGN SHOWN ON THESE DRAWINGS IS NOT SITE SPECIFIC, BUT BASED ON THE PRESUMPTIVE ALLOWABLE FOUNDATION PRESSURES IN CHAPTER 18 OF THE BUILDING CODE (CLASS 5 SOIL). THE BUILDING OFFICIAL IN THE JURISDICTION IN WHICH THIS STRUCTURE IS LOCATED MAY REQUIRE A SITE SPECIFIC GEOTECHNICAL REPORT OR LETTER FROM A QUALIFIED LOCAL PROFESSIONAL ENGINEER ATTESTING TO WHETHER THE ACTUAL SITE CONDITIONS MEET THE ASSUMPTIONS IDENTIFIED ABOVE.

NORTH CAROLINA PROFESSIONAL SEAL 036743 ENGINEER CHRISTOPHER M EVANS

Christopher Evans
2021.12.15
08:58:52
-05'00'

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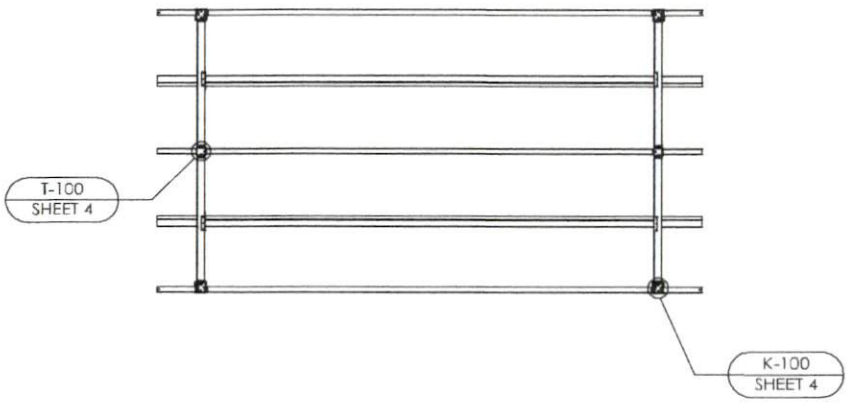
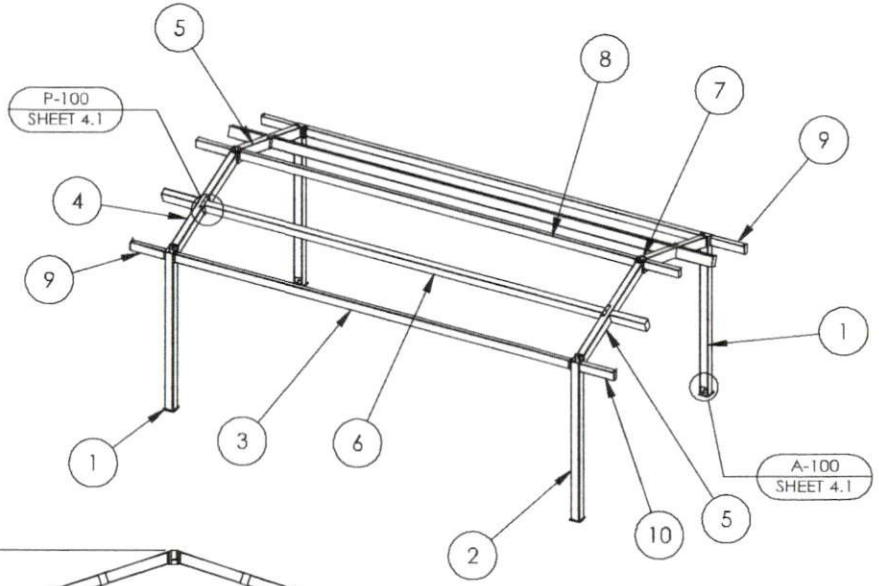
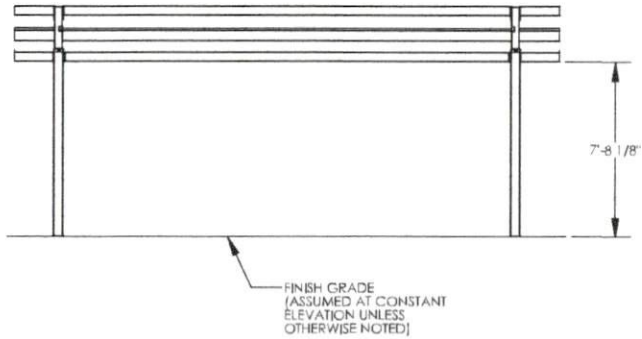
PRINT DATE: 12/13/2021
SCALE: 1:1
DRAWN BY: zach.buchwalte
REV LEVEL: A
CREATION DATE: 4/4/2016
ORDER NO: 71607
CAD MODEL: -P13805

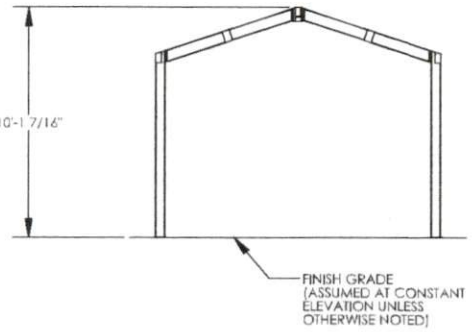
PROJECT: ATHERSTONE HOA
PROJECT LOCATION: ANGIER, NC
DRAWINGS: ANCHOR AND FOOTING DETAILS

SHEET
2.1









ITEM	QTY.	PART NO.	DESCRIPTION	MATERIAL	WEIGHT
10	2	-	TMEM TAIL 2 ASM	HSS5X3X1/8	12.84
9	2	-	TMEM TAIL 1 ASM	HSS5X3X1/8	12.84
8	1	-	RIDGE ASM	HSS5X3X1/8	128.90
7	2	-	CTUBE ASM	HSS5X5X1/2	31.14
6	2	-	PURLIN ASM	HSS6X4X1/8	238.27
5	2	-	TRUSS 2 ASM	HSS6X4X1/8	68.99
4	2	-	TRUSS 1 ASM	HSS6X4X1/8	68.99
3	2	-	TMEM ASM	HSS5X3X1/8	128.96
2	2	-	COL 2 ASM	HSS5X5X3/16	108.09
1	2	-	COL 1 ASM	HSS5X5X3/16	108.09

NORTH CAROLINA PROFESSIONAL SEAL 036743 ENGINEER CHRISTOPHER M EVANS

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2021.12.15
08:59:03
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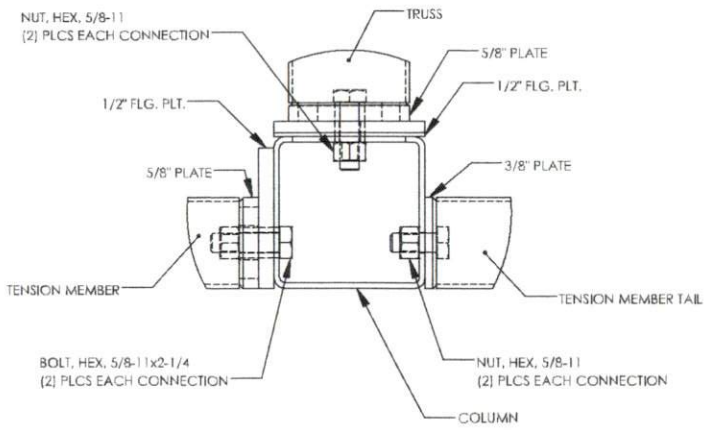
REV LEVEL: A
CREATION DATE: 4/4/2016
ORDER NO: 71607
CAD MODEL: -P13805

PROJECT: ATHERSTONE HOA
PROJECT LOCATION: ANGIER, NC
DRAWING: STRUCTURAL FRAMING PLAN

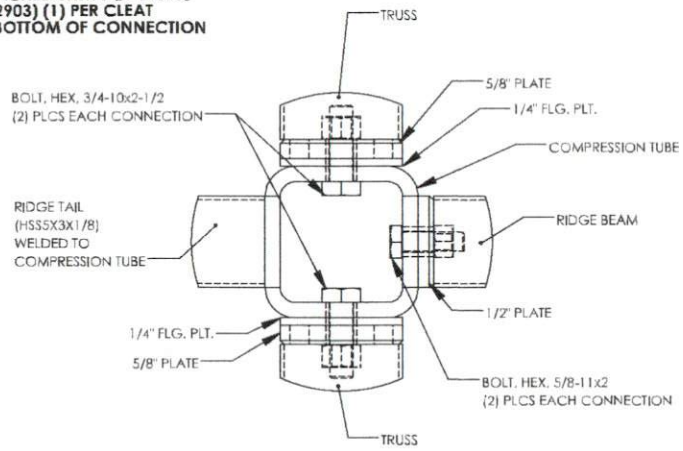
SHEET 3

NOTE:
SEE UC-100 FOR U-CLIP INSTALLATION



COLUMN CONNECTIONS | K-100

NOTE:
COVER PLATE
ATTACHED WITH POP RIVETS
(1P2903) (1) PER CLEAT
AT BOTTOM OF CONNECTION

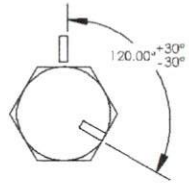


COMPRESSION MEMBER CONNECTION | T-100

TURN-OF-NUT PRETENSIONING METHOD:
THESE STEPS ILLUSTRATE THE REQUIREMENTS OUTLINED IN THE AISC SPECIFICATION. THE ROTATION INDICATED IS ACCURATE FOR MOST BOLT DIAMETERS AND LENGTHS BUT IT IS THE RESPONSIBILITY OF THE INSTALLER TO MEET AISC REQUIREMENTS.

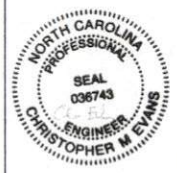
STEP ONE:
AFTER SNUG TIGHT,
MATCH MARK PLATE

STEP TWO:
THEN TURN BOLT/NUT PAST
SNUG TIGHT 1/3 TURN



CONNECTION NOTES:

1. HIGH STRENGTH BOLTS SHALL BE ASTM F3125 (A325, TYPE 1) MATERIAL.
2. HIGH STRENGTH NUTS SHALL BE ASTM A563 (GRADE DH) MATERIAL.
3. HIGH STRENGTH WASHERS SHALL CONFORM TO ASTM F436.
4. ALL BOLTS TO BE INSTALLED BY THE "TURN -OF-NUT" PRETENSIONING METHOD AS SPECIFIED IN THE LATEST EDITION OF THE AISC "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS", (SEE ILLUSTRATION). A325 BOLTS MAY BE INSTALLED WITHOUT WASHERS WHEN TIGHTENED BY THE "TURN-OF-NUT" PRETENSIONING METHOD. IT IS THE RESPONSIBILITY OF THE ERECTOR TO ENSURE PROPER TIGHTNESS. THIS METHOD IS ONLY REQUIRED ON A325 BOLTS. ANCHOR BOLTS ONLY NEED TO BE SNUG TIGHT.
5. WHEN INSTALLING BOLTS, REFER TO RCSC SECTION 8 IN 4.1 SNUG-TIGHTENED JOINTS, 4.2 PRETENSIONED JOINTS, AND 4.3 SLIP-CRITICAL JOINTS FOR GUIDENCE.
6. LOCAL JURISDICTIONS MAY REQUIRE AN INSPECTOR TO BE PRESENT TO WITNESS HARDWARE INSTALLATION AND INDEPENDENT TESTING. INSPECTION REQUIREMENTS SHOULD BE VERIFIED BY INSTALLER PRIOR TO STEEL ERECTION.
7. ERECTION OF THE FRAMING MEMBERS WILL REQUIRE THE MAIN COLUMNS TO BE PLUMB SQUARE AND TIGHTENED TO THE TRUSSES AND/OR TENSION MEMBERS BEFORE INSTALLING THE PURLINS. PURLINS, IF REQUIRED, MUST BE PARALLEL TO THE EAVE BEAMS AND TENSION MEMBERS OR AS SHOWN IN FRAMING PLAN.
8. PRIOR TO THE ERECTION OF SHELTER COMPONENTS, IT IS RECOMMENDED TO CHASE AND TAP STRUCTURAL HARDWARE.
9. ALL BOLTS MUST BE LUBRICATED WITH WAX TO ASSIST IN PROPER TIGHTENING. TO LUBRICATE A BOLT IN THE FIELD, APPLY THE WAX STICK DOWN THE LENGTH OF THE BOLT'S THREADS.
10. TO PREVENT RUST STAINING OF FINISH, ALL METAL SHAVINGS MUST BE REMOVED AFTER INSTALLATION. ENSURE NO SHAVING ARE TRAPPED BETWEEN MATING SURFACES.
11. TOUCH-UP PAINT MUST BE APPLIED TO ALL EXPOSED FASTENERS. PERIODIC TOUCH-UP AT THESE CONNECTIONS IS REQUIRED.



Christopher Evans
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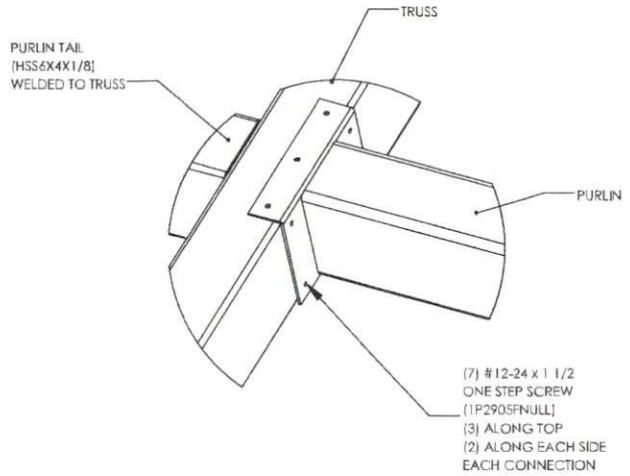
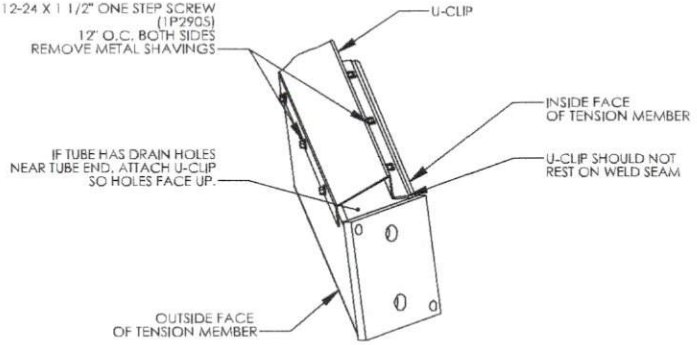
DRAWN BY: zach.buchwaltz
REV LEVEL: A
CREATION DATE: 4/4/2016
ORDER NO: 71607
CAD MODEL: ~P13805
PROJECT: ATHERSTONE HOA
PROJECT LOCATION: ANGIER, NC
DRAWING: FRAME CONNECTION DETAILS
SHEET 4

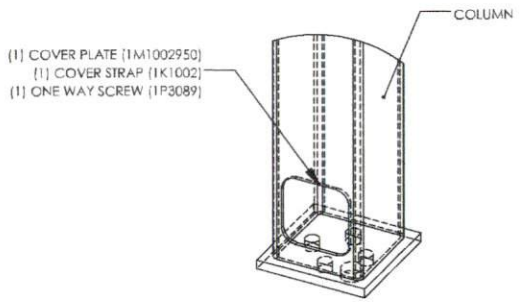


PURLIN CONNECTION | P-100

NOTE:
U-CLIP MUST BE ATTACHED TO TENSION MEMBER AS SHOWN PRIOR TO BUILDING ASSEMBLY.



U-CLIP CONNECTION | UC-100



ANCHOR ACCESS COVER PLATE | A-100

NORTH CAROLINA PROFESSIONAL SEAL 036743 ENGINEER CHRISTOPHER M EVANS

Christopher Evans
2021.12.15
08:59:26
-05'00'

IF THESE DRAWINGS ARE SEALED, THE SEAL APPLIES ONLY TO BUILDING COMPONENTS (AND FOUNDATION DESIGN IF APPLICABLE) DETAILED WITHIN THESE DRAWINGS.

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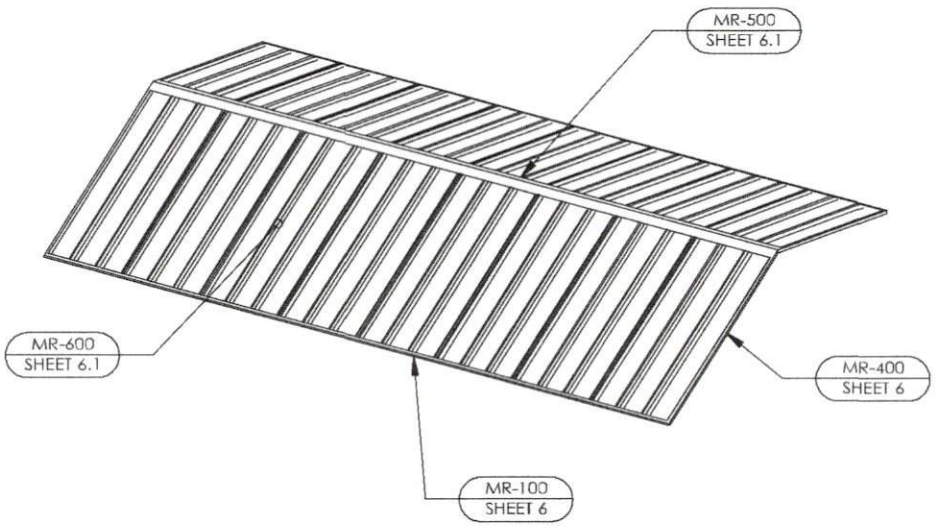
PRINT DATE: 12/13/2021
DRAWN BY: zach.buchwaltz
REV LEVEL: A
SCALE: 1:4
CREATION DATE: 4/4/2016
ORDER NO: 71607
CAD MODEL: ~P13805

PROJECT: ATHERSTONE HOA
PROJECT LOCATION: ANGIER, NC
DRAWING: FRAME CONNECTION DETAILS

SHEET
4.1



Christopher Evans
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08:59:37
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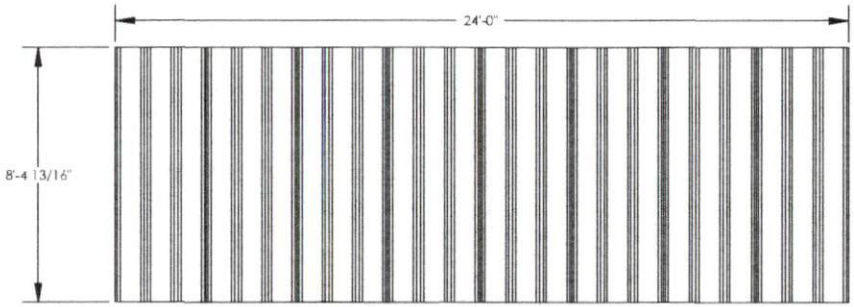
SCALE: 1:50
DRAWN BY: zach.buchwaltz
REV LEVEL: A
CREATION DATE: 4/4/2016
ORDER NO: 71607
CAD MODEL: -P13805

PROJECT: ATHERSTONE HOA
PROJECT LOCATION: ANGIER, NC
DRAWINGS: ROOF OVERVIEW

SHEET
5



MULTI-RIB NOTES:

THE DETAILS SHOWN ARE SUGGESTIONS OR GUIDELINES ON HOW TO ERECT THE SYSTEMS. THE INFORMATION SHOWN IS ACCURATE, BUT IT IS NOT INTENDED TO COVER ALL INSTANCES, BUILDING REQUIREMENTS, DESIGNS OR CODES. THE DETAILS MAY REQUIRE CHANGES OR REVISIONS DUE TO FIELD CONDITIONS.

IT SHALL BE THE RESPONSIBILITY OF THE ERECTOR TO ENSURE THAT THE DETAILS MEET PARTICULAR BUILDING REQUIREMENTS AND TO ASSURE ADEQUATE WATER TIGHTNESS.

THE ERECTOR SHOULD THOROUGHLY FAMILIARIZE HIMSELF/HERSELF WITH ALL ERECTION INSTRUCTIONS BEFORE STARTING WORK.

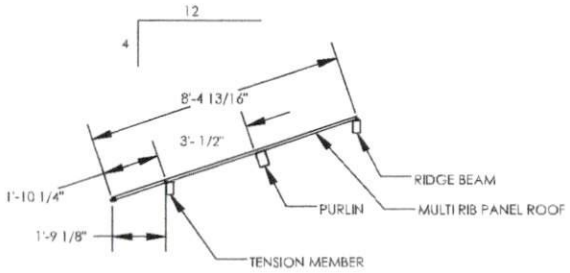
THE PANELS SHOULD BE INSTALLED PLUMB, STRAIGHT, AND ACCURATELY TO THE ADJACENT WORK.

FLASHING AND TRIM SHALL BE INSTALLED TRUE, AND IN PROPER ALIGNMENT, WITH ANY EXPOSED FASTENERS EQUALLY SPACED FOR THE BEST APPEARANCE.

SEALANT SHALL BE FIELD APPLIED ON DRY, CLEAN SURFACES. SOME FIELD CUTTING AND FITTING OF PANELS AND FLASHING IS TO BE EXPECTED BY THE ERECTOR AND MINOR FIELD CORRECTIONS ARE A PART OF NORMAL ERECTION WORK.

WORKMANSHIP SHALL BE OF THE BEST INDUSTRY STANDARDS AND INSTALLATION SHALL BE PERFORMED BY EXPERIENCED METAL CRAFTSMEN.

METAL SHAVINGS FROM DRILLING OR INSTALLATION OF ROOF FASTENERS MUST BE CAREFULLY REMOVED FROM THE ROOF BY BRUSHING OR SWEEPING AT THE END OF EACH DAY DURING INSTALLATION. SHAVINGS LEFT ON THE ROOF WILL QUICKLY RUST AND STAIN THE ROOF FINISH.



NORTH CAROLINA PROFESSIONAL SEAL 036743 ENGINEER CHRISTOPHER M EVANS

Christopher Evans 2021.12.15 08:59:48 -05'00'

IF THESE DRAWINGS ARE SEALED, THE SEAL APPLIES ONLY TO BUILDING COMPONENTS (AND FOUNDATION DESIGN IF APPLICABLE) DETAILED WITHIN THESE DRAWINGS.

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PRINT DATE: 12/13/2021
SCALE: 1:48
DRAWN BY: zach.buchwaltz
REV LEVEL: A
CREATION DATE: 4/4/2016
ORDER NO: 71607
CAD MODEL: ~P113805

PROJECT: ATHERSTONE HOA
PROJECT LOCATION: ANGIER, NC
DRAWING: ROOF LAYOUT

SHEET
5.1

CALCULATIONS FOR:

POLIGON REK 16X24
MULTI RIB
2018 NORTH CAROLINA BUILDING CODE

PREPARED UNDER THE CONTROL AND SUPERVISION
OF THE DESIGN PROFESSIONAL ABOVE

TABLE OF CONTENTS

DESIGN CRITERIA

GENERAL

Building Code:	See Cover Sheet		Roof Slope (°):	18.43	*4:12 Pitch*
Design Code:	ASCE 7-10				
Risk Category:	II		Equivalent Roof Height:	15.00	ft

DEAD LOAD

Weight of Roofing System	2	psf	
Frame Dead Load	Frame Self-Weight		*(See RISA Analysis Report)*

LIVE LOAD

Roof Live Load, L_r	20	psf	*ASCE 7 Table 4-1*

SNOW LOAD

Ground Snow Load, p_g	20.0	psf	
Importance Factor, *I (Snow Loads)*	1.0		*ASCE 7 Table 1.5-2*
Slope Factor, C_s	1.0		*ASCE 7 Figure 7-2*
Thermal Factor, C_t	1.2		*ASCE 7 Table 7-3*
Exposure Factor, C_e	1.0		*ASCE 7 Table 7-2*
Flat Roof Snow Load, p_f	20.0	psf	*ASCE 7 Section 7.3*
Leeward Unbalanced Snow Load	20.0	psf	*ASCE 7 Section 7.6.1*

WIND LOAD

Basic Wind Speed,	V_{ult}	115	mph	V_{asd}	90 mph	*ASCE 7 Section 26.5*
Exposure Category		C				*ASCE 7 Section 26.7*
Gust Effect Factor, *G*		0.85				*ASCE 7 Section 26.9.1*
Velocity Pressure Exposure Coefficient, K_z		0.85				*ASCE 7 Table 27.3.1*
Wind Directionality Factor, K_d		0.85				*ASCE 7 Table 26.6-1*
Topographic Factor, K_{zt}		1.00				*ASCE 7 Section 26.8.2*
Velocity Pressure, q_z		24.46	psf			*ASCE 7 Section 27.3.2*

Main Wind-Force Resisting System *ASCE 7 Section 27.4*

Open Building, Clear Wind Flow (Cn from ASCE 7 Fig. 27.4-4 - 27.4-7)

	Roof	
Load Case	A	B
γ = 0		
Windward Cp =	1.10	0.01
p (psf):	22.87	0.17
γ = 180		
Leeward Cp=	-0.17	-0.96
p (psf):	-3.56	-20.01
γ = 90		
Sideward Cp=	-0.80	0.80
p (psf):	-16.63	16.63

Component and Cladding Elements *ASCE 7 Section 30.8.2*

Open Building, Clear Wind Flow (Cn from ASCE 7 Fig. 30.8-1 - 30.8-3)

	Wind Direction	*Toward Roof*	*Away From Roof*
Zone 3	Cn:	2.29	-2.11
	p (psf):	47.65	-43.84
Zone 2	Cn:	1.77	-1.63
	p (psf):	36.77	-33.92
Zone 1	Cn:	1.15	-1.05
	p (psf):	23.82	-21.92

SEISMIC LOAD

Analysis Procedure	Equivalent Lateral Force Procedure	*ASCE 7 Section 12.8*
Seismic Site Class	D	*ASCE 7 Section 11.4.2*
Basic Seismic Force Resisting System	Steel Systems Not Specifically Detailed For Seismic Resistance	*ASCE 7 Table 12.2-1*
Short Spectral Response Parameter, S_s	0.55	
1-Sec Spectral Response Parameter, S_1	0.13	
Seismic Design Category	C	*ASCE 7 Section 11.6*
Importance Factor, *I*	1.00	*ASCE 7 Table 11.5-1*
Response Modification Coefficient, *R*	3.00	*ASCE 7 Table 12.2-1*
Redundancy Factor, ρ	1.00	*ASCE 7 Table 12.2-1*
Overstrength Factor, Ω_o	3.00	*ASCE 7 Table 12.2-1*
Design Short Spectral Response Parameter, S_{DS}	0.50	*ASCE 7 Section 11.4.4*
1-Sec Design Spectral Response Parameter, S_{D1}	0.20	*ASCE 7 Section 11.4.4*
Seismic Response Coefficient, C_s	0.17	*ASCE 7 Section 12.8.1*
Effective Seismic Weight, *W*	2.00 psf	*ASCE 7 Section 12.7.2*
Seismic Base Shear, *V*	0.33 psf	*ASCE 7 Section 12.8.1*
Seismic Load, *E*	0.33 psf	*ASCE 7 Section 12.4*
Seismic Load with Overstrength Factor, E_m	1.00 psf	*ASCE 7 Section 12.4*

STRUCTURAL ENGINEERING NOTES

GENERAL NOTES

All field connections must be made with A325 High Strength bolts using the "Turn-of-Nut Pretensioning" method of tightening as described in the latest AISC Manual.

Loads applied to the structure may be greater than required for the project location.

Actual structure dimensions may be smaller than shown in this document.

STRUCTURAL ANALYSIS NOTES

RISA-3D structural analysis software was used to model the 3-D space frame.

To reduce the amount of computer printout, the analysis results only show each member's controlling load case.

Unless noted otherwise in the ‘RISA Analysis Report’, the roof deck was not utilized in the structural analysis to provide lateral support to the members.

From the analysis, all member deflections and structural drift are within allowable limits.

STRUCTURAL DESIGN NOTES

End plates were designed by applying beam end forced to the edges of the plate and calculating the resulting prying moment at the edge of the bolt holes. In determining the prying moment it was assumed that the area of the plate between bolts was fixed.

Light gage members were designed in accordance with the latest edition of the AISC specifications and the AISI Cold-Formed Steel Design Manual.

STRUCTURAL CONNECTION NOTES

Bolt threads were assumed to not be excluded from the connections.

LOAD COMBINATIONS

Key

Abbreviation	Description
DL	Dead Load
Lr	Roof Live Load
S	Snow Load
Su	Unbalanced Snow Load
Wx	Wind Load (X-Direction)
Wz	Wind Load (Z-Direction)
Wx (Minimum)	10 psf Minimum Wind Load (X-Direction)
Wz (Minimum)	10 psf Minimum Wind Load (Z-Direction)
Ex	Seismic Load (X-Direction)
Ez	Seismic Load (Z-Direction)
Emx	Seismic Load (X-Direction) with Overstrength Factor
Emz	Seismic Load (Z-Direction) with Overstrength Factor
Sds	Design Spectral Acceleration Parameter

Service (Unfactored)

Number	Description
1	SERVICE D
2	SERVICE Lr
3	SERVICE S
4	SERVICE Su
5	SERVICE Wx (Load Case A)
6	SERVICE Wx (Load Case B)
7	SERVICE Wz (Load Case A)
8	SERVICE Wz (Load Case B)
9	SERVICE Ex
10	SERVICE Ez

Allowable Stress Design (Factored)

Number	Description
14	D
15	D + Lr
16	D + S
17	D + Su
18	D + 0.6Wx (Load Case A)
19	D + 0.6Wx (Load Case B)
20	D + (0.6Wx (Minimum))
21	D + 0.75(0.6Wx (Load Case A)) + 0.75Lr
22	D + 0.75(0.6Wx (Minimum)) + 0.75Lr
23	D + 0.75(0.6Wx (Load Case A)) + 0.75S
24	D + 0.75(0.6Wx (Minimum)) + 0.75S
25	0.6D + 0.6Wx (Load Case A)
26	0.6D + 0.6Wx (Load Case B)
27	0.6D + (0.6Wx (Minimum))
28	D + 0.6Wz (Load Case A)
29	D + 0.6Wz (Load Case B)
30	D + (0.6Wz (Minimum))
31	D + 0.75(0.6Wz (Load Case A)) + 0.75Lr
32	D + 0.75(0.6Wz (Minimum)) + 0.75Lr
33	D + 0.75(0.6Wz (Load Case A)) + 0.75S
34	D + 0.75(0.6Wz (Minimum)) + 0.75S
35	0.6D + 0.6Wz (Load Case A)
36	0.6D + 0.6Wz (Load Case B)
37	0.6D + (0.6Wz (Minimum))
38	(1.0+0.14*Sds)D+ 0.7Ex
39	(1.0+0.105*Sds)D + 0.525Ex + 0.75S
40	(0.6-0.14*Sds)D + 0.7Ex
41	(1.0+0.14*Sds)D + 0.7Ez
42	(1.0+0.105*Sds)D + 0.525Ez + 0.75S
43	(0.6-0.14*Sds)D + 0.7Ez

Strength Design (Factored)

Number	Description
54	1.4D
55	1.2D + 0.5Lr
56	1.2D + 0.5S
57	1.2D + 0.5Su
58	1.2D + 1.6Lr + 0.5Wx (Load Case A)
59	1.2D + 1.6Lr + 0.5Wx (Minimum)
60	1.2D + 1.6S + 0.5Wx (Load Case A)
61	1.2D + 1.6S + 0.5Wx (Minimum)
62	1.2D + 1.0Wx (Load Case A) + 0.5Lr
63	1.2D + 1.0Wx (Load Case B) + 0.5Lr
64	1.2D + 1.0Wx (Minimum) + 0.5Lr
65	1.2D + 1.0Wx (Load Case A) + 0.5S
66	1.2D + 1.0Wx (Load Case B) + 0.5S
67	1.2D + 1.0Wx (Minimum) + 0.5S
68	0.9D + 1.0Wx (Load Case A)
69	0.9D + 1.0Wx (Load Case B)
70	0.9D + 1.0Wx (Minimum)
71	1.2D + 1.6Lr + 0.5Wz (Load Case A)
72	1.2D + 1.6Lr + 0.5Wz (Minimum)
73	1.2D + 1.6S + 0.5Wz (Load Case A)
74	1.2D + 1.6S + 0.5Wz (Minimum)
75	1.2D + 1.0Wz (Load Case A) + 0.5Lr
76	1.2D + 1.0Wz (Load Case B) + 0.5Lr
77	1.2D + 1.0Wz (Minimum) + 0.5Lr
78	1.2D + 1.0Wz (Load Case A) + 0.5S
79	1.2D + 1.0Wz (Load Case B) + 0.5S
80	1.2D + 1.0Wz (Minimum) + 0.5S
81	0.9D + 1.0Wz (Load Case A)
82	0.9D + 1.0Wz (Load Case B)
83	0.9D + 1.0Wz (Minimum)
84	(1.2+0.2*Sds)D + 1.0Ex + 0.2S
85	(0.9-0.2*Sds)D + 1.0Ex
86	(1.2+0.2*Sds)D + 1.0Ez + 0.2S
87	(0.9-0.2*Sds)D + 1.0Ez
88	

Notes:

1. Load combinations are effective in all states that have adopted IBC as a base code.
2. See "RISA Analysis Report" for the load combinations that are not listed above.

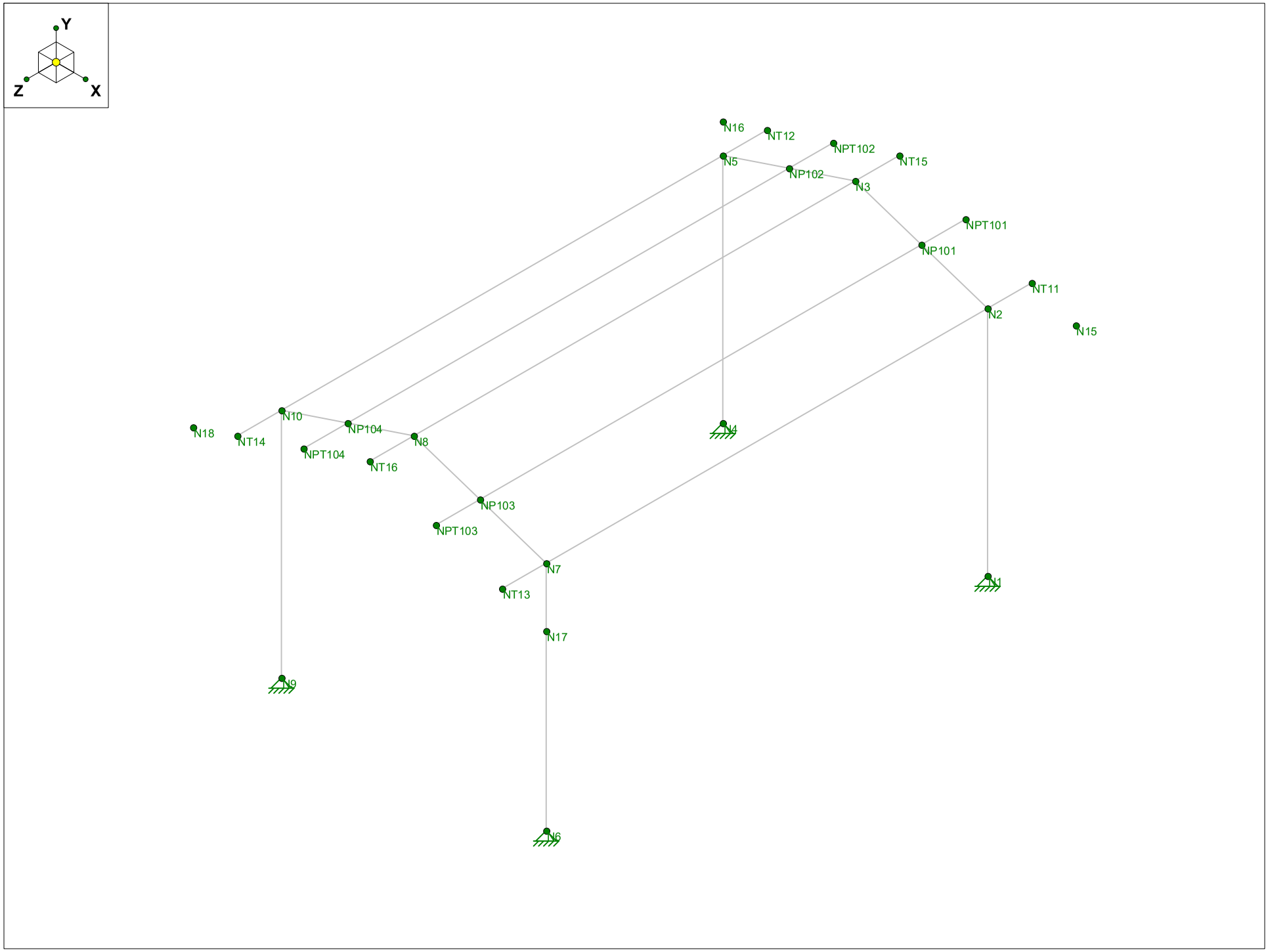
MATERIALS

Column	HSS5x5x3/16
Truss	HSS6x4x1/8
Eave	HSS5x3x1/8
Ridge	HSS5x3x1/8
Purlin	HSS6x4x1/8
Purlin Tail	HSS6x4x1/8
Eave Tail	HSS5x3x1/8
Ridge Tail	HSS5x3x1/8
Compression Tube	HSS5x5x1/2

HSS Sections:	ASTM A500 Gr. B
Pipe Sections:	ASTM A53 Gr. B
RMT Sections:	ASTM A519
Channel & Angle Sections:	ASTM A36
Connection Plates:	ASTM A36
Connections Bolts	ASTM A325
Welding Process:	Gas Metal Arc Welding
Welding Electrode:	E70xx

RISA MODEL VIEWS

Joint Labels
Member Labels
Member Shapes
Member Lengths
Member Local Axis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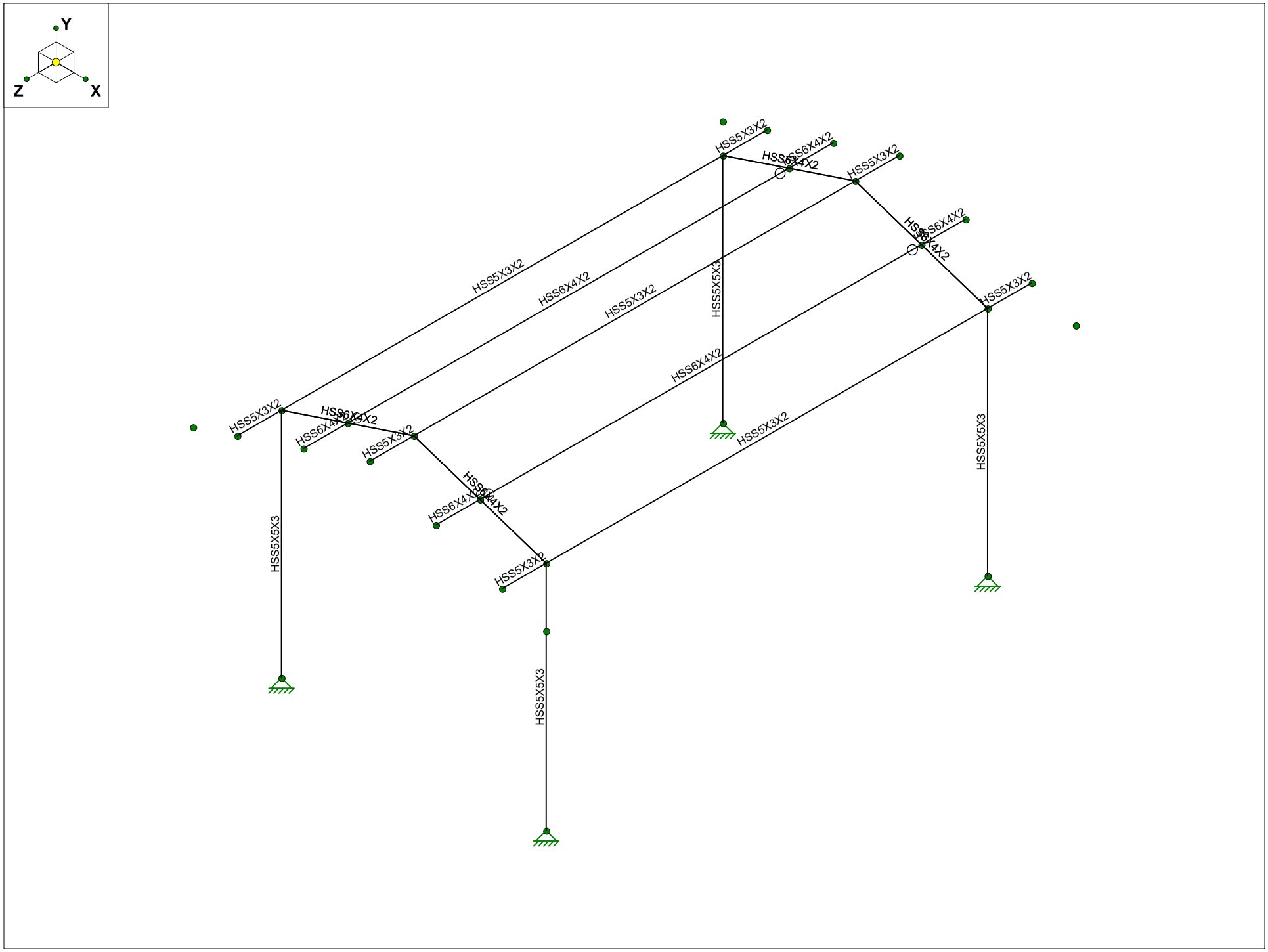
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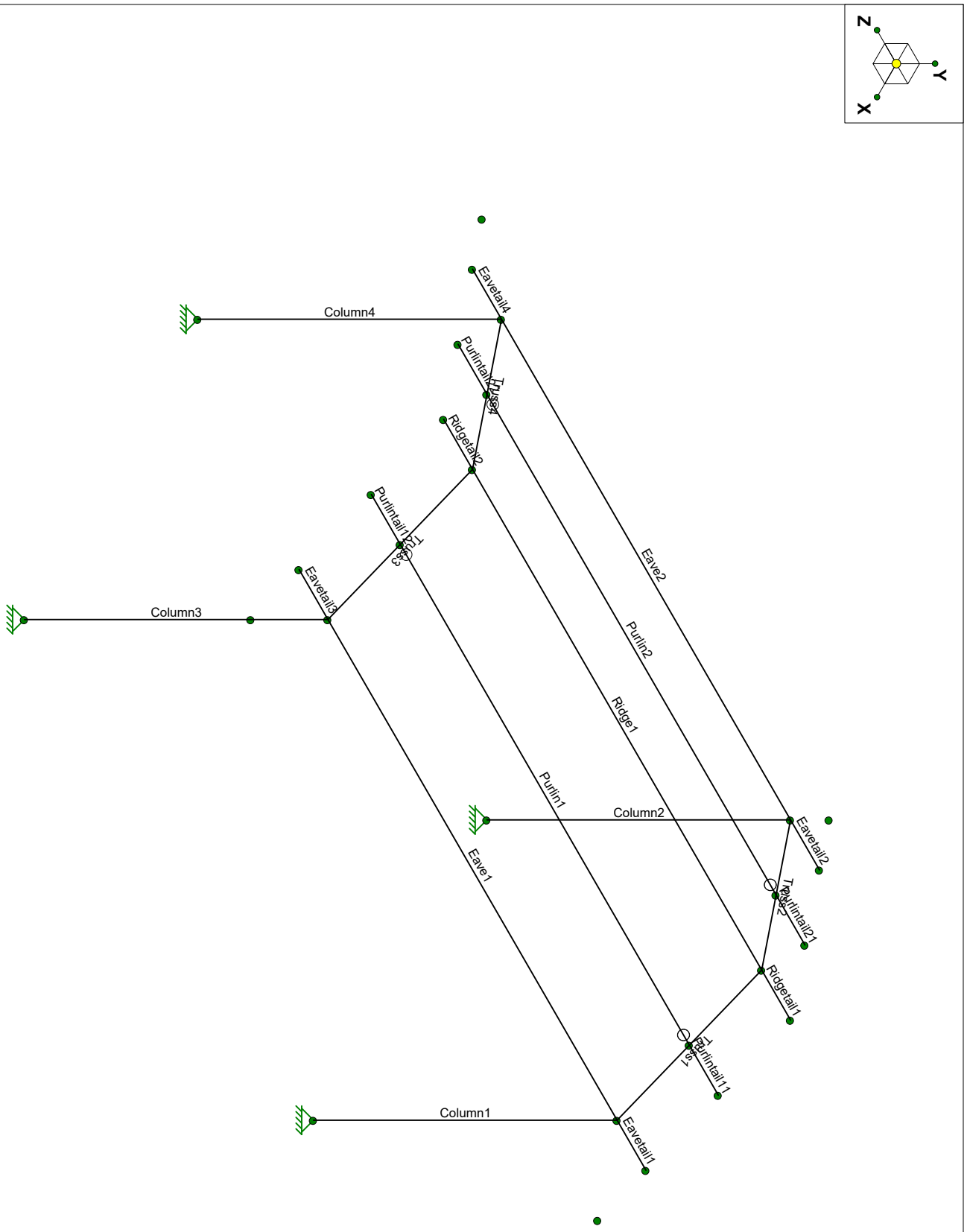
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Eave2
Purlin2
Ridge1
Purlin1
Column2
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Eave1
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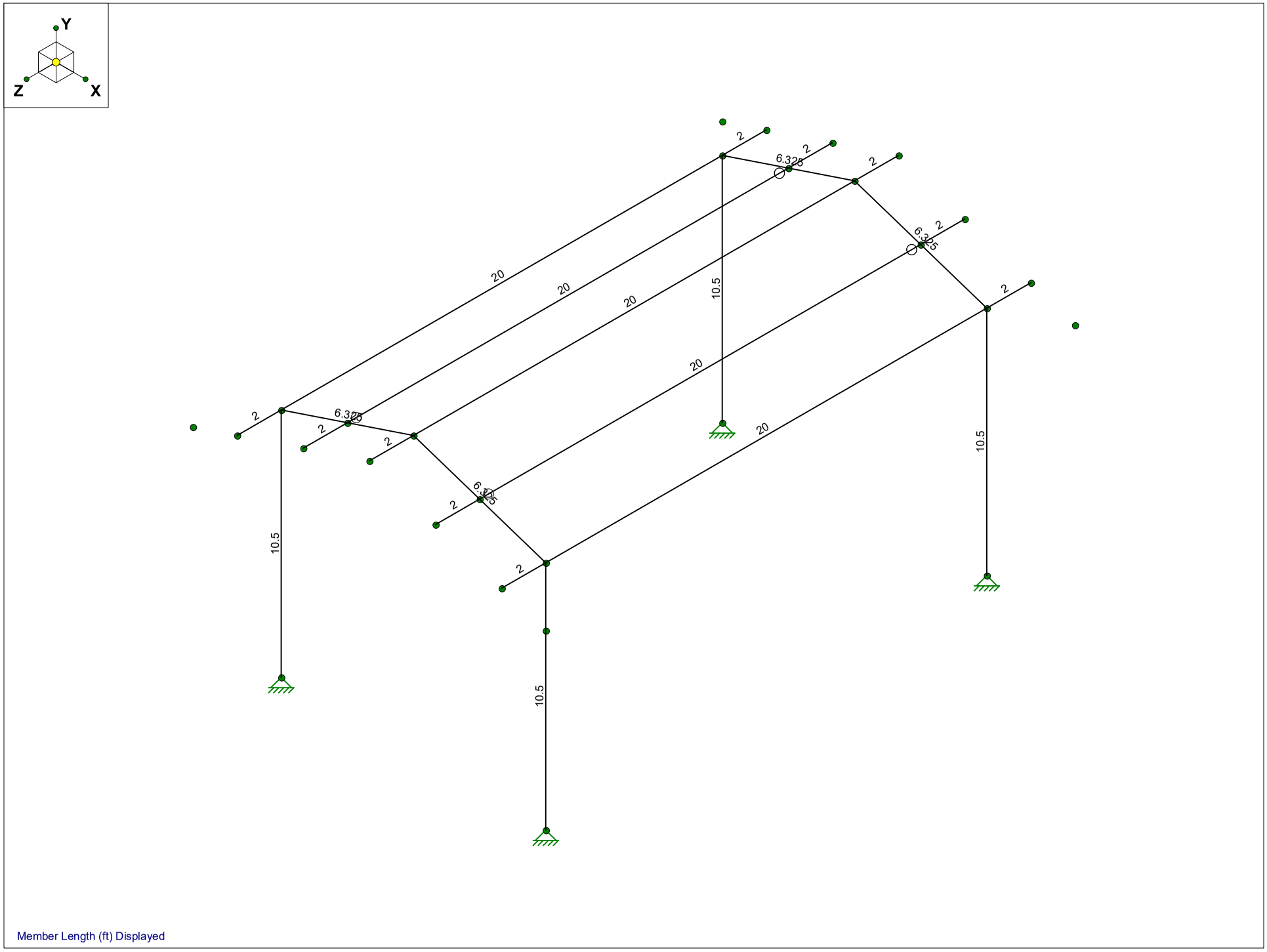
Ridgetail1
Truss1
Purlintail11
Column1
Eavetail1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10.5
10.5
10.5
2
6.325
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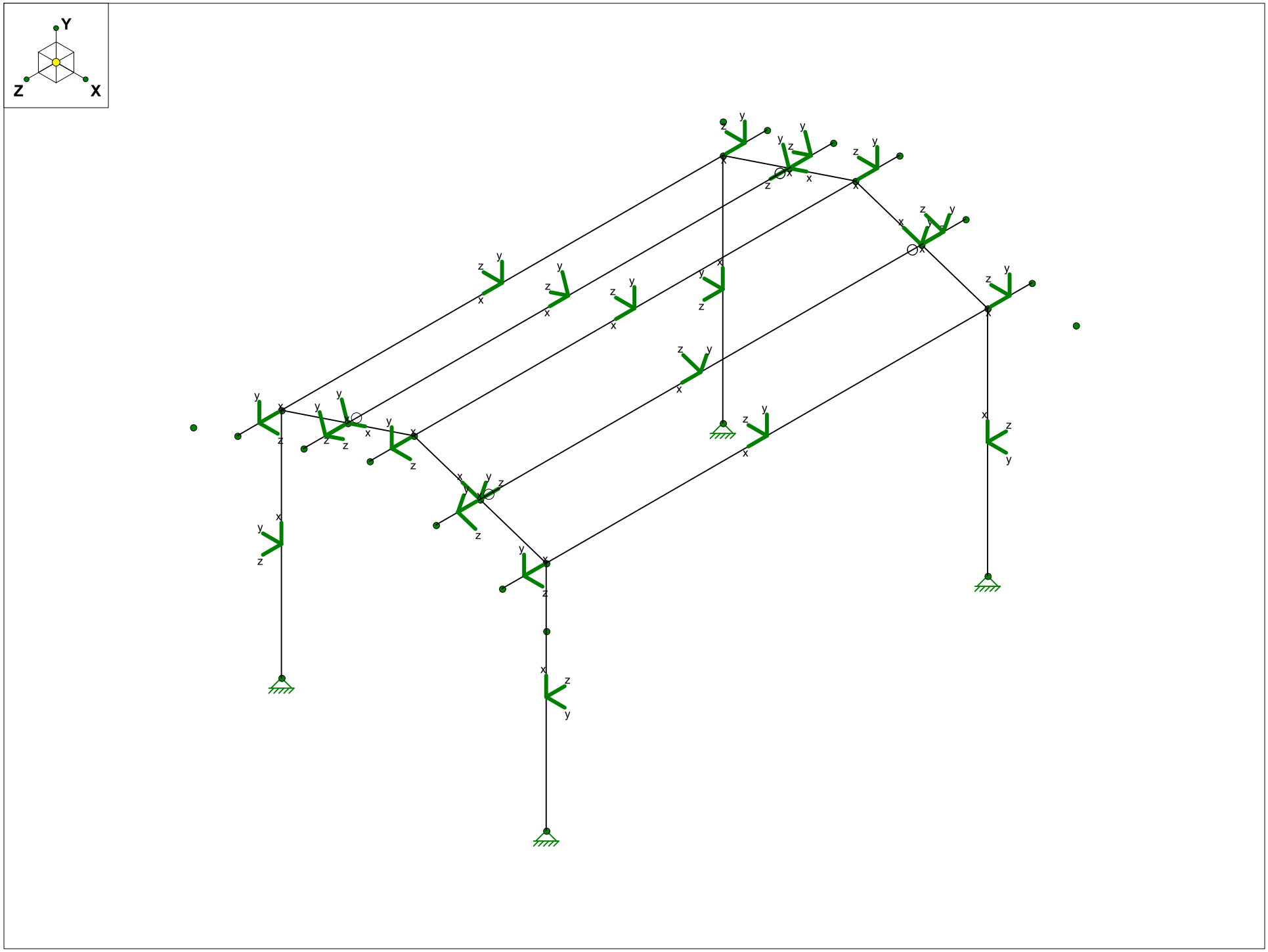

Y
Z
X

FOUNDATION DESIGN

FOUNDATION DESIGN

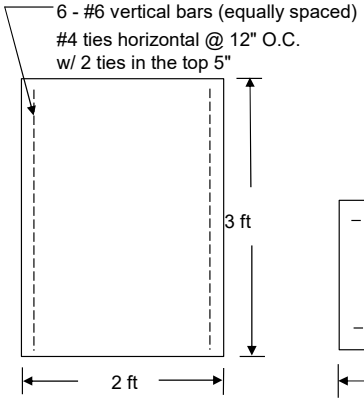
PINNED BASE (INTERNAL BOLTS)

Drilled Pier			**Allowable**	**Actual**	**Load Combination / Member**	
1	Bearing Pressure	(Chapter 18 of the Building Code)	1500 psf	799 psf	15 / Column1	**OK**
2	Uplift Check	*SF = 1.20*	820 lbs	681 lbs	35 / Column3	**OK**
3	Sliding Check	*SF = 5.56*	2339 lbs	421 lbs	21 / Column2	**OK**
4	Area of Reinforcement	(ACI Chapter 10)	0.02 in^2	2.26 in^2	81 / Column3	**OK**

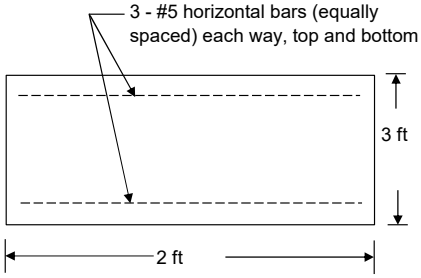
Spread Footing			**Allowable**	**Actual**	**Load Combination / Member**	
5	Bearing Pressure	(Chapter 18 of the Building Code)	1500 psf	628 psf	15 / Column1	**OK**
6	Uplift Check	*SF = 1.53*	1044 lbs	681 lbs	35 / Column3	**OK**
7	Sliding Check	*SF = 6.00*	2526 lbs	421 lbs	21 / Column2	**OK**
8	Area of Reinforcement	(ACI Chapter 7)	0.01 in^2	1.86 in^2	58 / Column2	**OK**

Design Forces / Moments

Check	Load Combination	Member	Fx (Axial) [k]	Fy [k]	Fz [k]	Mx [k-in]	My [k-in]	Mz [k-in]
1	15	Column1	2.51	-0.22	-0.23	0.00	0.00	0.00
2	35	Column3	-0.68	0.05	-0.18	0.00	0.00	0.00
3	21	Column2	2.49	-0.42	0.18	0.00	0.00	0.00
4	81	Column3	-1.19	0.09	-0.30	0.00	0.00	0.00
5	15	Column1	2.51	-0.22	-0.23	0.00	0.00	0.00
6	35	Column3	-0.68	0.05	-0.18	0.00	0.00	0.00
7	21	Column2	2.49	-0.42	0.18	0.00	0.00	0.00
8	58	Column2	4.34	-0.63	0.35	0.00	0.00	0.00



Drilled Pier Option



Spread Footing Option

The foundation design contained herein is not site specific, but is based on the presumptive allowable foundation pressures in Chapter 18 of the Building Code (Class 5 soil). The building official in the jurisdiction in which this structure is located may require a site specific geotechnical report or letter from a qualified local professional engineer attesting to whether the actual site conditions meet the assumptions identified above.

Drilled Pier Diameter (ft):	2.0	Spread Footing Width (ft):	2.0
Drilled Pier Depth (ft):	3.0	Spread Footing Thickness (ft):	3.0

f'c (psi): 4500

Concrete Unit Weight (lb/ft^3): 145

OK

CONNECTION DESIGN

COLUMN BASE PLATE CONNECTION

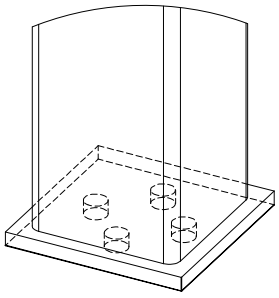
PINNED CONNECTION (INTERNAL BOLTS)

Base Plate Check: 6"x6"x1/2"			**Allowable**	**Actual**	**Load Combination / Member**	
1	Plate Size	(AISC J8-1)	1.3 in^2	36.0 in^2	15 / Column1	**OK**
2	Plate Thickness	(AISC PART 14)	0.13 in	0.50 in	35 / Column3	**OK**
3	Concrete Bearing	(AISC J8-1)	1530 psi	70 psi	15 / Column1	**OK**
4	Weld Check	(AISC J2-3)	2.78 k/in	0.05 k/in	21 / Column2	**OK**

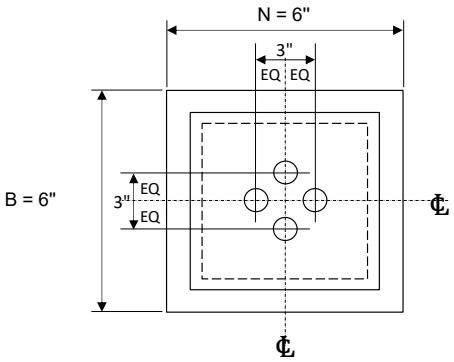
Anchor Bolt Check: (4) 1/2" A307 Anchors			**Allowable**	**Actual**	**Load Combination / Member**	
5	Tension	(ACI D5.1)	24.7 kip	1.2 kip	81 / Column3	**OK**
6	Concrete Breakout	(ACI D5.2)	27.3 kip	1.2 kip	81 / Column3	**OK**
7	Concrete Pullout	(ACI D5.3)	54.0 kip	1.2 kip	81 / Column3	**OK**
8	Sideface Blowout	(ACI D5.4)	N/A	N/A	Not Considered Per RD5.4	**OK**
9	Shear	(ACI D6.1)	10.6 kip	0.7 kip	58 / Column2	**OK**
10	Shear Breakout	(ACI D6.2)	16.3 kip	0.7 kip	58 / Column2	**OK**
11	Shear Pryout	(ACI D6.3)	38.2 kip	0.7 kip	58 / Column2	**OK**
12	Interaction	(ACI RD.7)	1.0	0.01	58 / Column2	**OK**

Design Forces / Moments

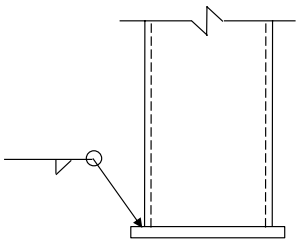
Check	Load Combination	Member	Fx (Axial) [k]	Fy [k]	Fz [k]	Mx [k-in]	My [k-in]	Mz [k-in]
1	15	Column1	2.51	-0.22	-0.23	0.00	0.00	0.00
2	35	Column3	-0.68	0.05	-0.18	0.00	0.00	0.00
3	15	Column1	2.51	-0.22	-0.23	0.00	0.00	0.00
4	21	Column2	2.49	-0.42	0.18	0.00	0.00	0.00
5	81	Column3	-1.19	0.09	-0.30	0.00	0.00	0.00
6	81	Column3	-1.19	0.09	-0.30	0.00	0.00	0.00
7	81	Column3	-1.19	0.09	-0.30	0.00	0.00	0.00
8	x	x	x	x	x	x	x	x
9	58	Column2	4.34	-0.63	0.35	0.00	0.00	0.00
10	58	Column2	4.34	-0.63	0.35	0.00	0.00	0.00
11	58	Column2	4.34	-0.63	0.35	0.00	0.00	0.00
12	58	Column2	4.34	-0.63	0.35	0.00	0.00	0.00



Base Plate Isometric



Base Plate Plan



Base Plate Elevation

Anchor Bolt Diameter (in):	1/2	Column Size:	HSS5X5X3
Min. Embedment Depth (in):	8.0	Min. Base Plate Size:	6"x6"x1/2"
Concrete Cover From ℄ of Bolt (in):	10.5	Weld Size (in):	0.188
f'c (psi):	4500		

OK

TENSION MEMBER TO COLUMN

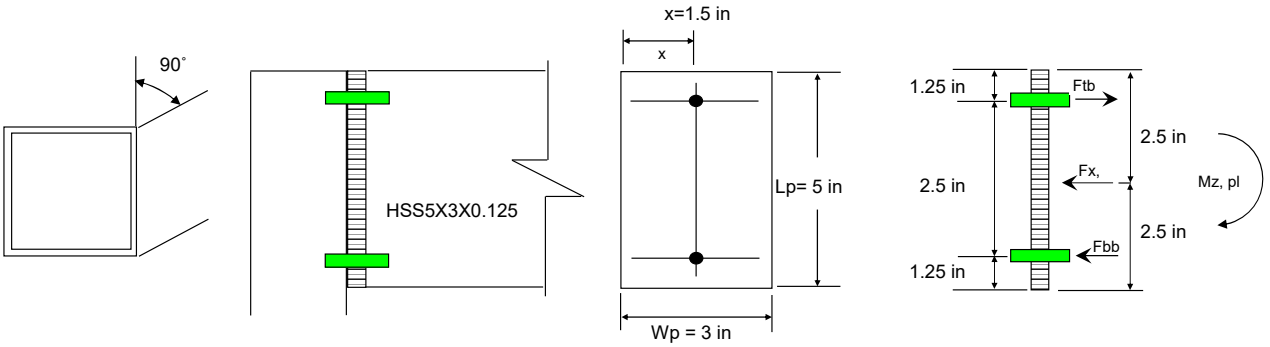
2 BOLTS

Bolt Check: (2) 0.625" Diameter, A325 Bolts				**Allowable**	**Actual**	**Load Combination / Member**	
1	Shear	AISC (J3-1)	R_N/Ω	8.3 kip	0.5 kip	21 / Eave1	**OK**
2	Tension	AISC (J3-1)	R_N/Ω	13.8 kip	11.6 kip	21 / Eave1	**OK**
3	Bearing	AISC (J3-6b)	R_N/Ω	24.6 kip	0.5 kip	21 / Eave1	**OK**

End Plate Check: 0.625" Thick				**Allowable**	**Actual**	**Load Combination / Member**	
4	Shear Yielding	AISC (J4-3)	R_N/Ω	45.0 kip	1.0 kip	21 / Eave1	**OK**
5	Shear Rupture	AISC (J4-4)	R_N/Ω	39.4 kip	1.0 kip	21 / Eave1	**OK**
6	Weld Check *w = 0.125"*	AISC (J2-3)	R_N/Ω	1.9 kip/in	1.7 kip/in	21 / Eave1	**OK**
7	Plate Thickness (t_P)		$\sqrt{\frac{4M_{PL}}{22W_P}}$	0.53 in	0.63 in	21 / Eave1	**OK**

Design Forces / Moments

Check	Load Combination	Member	Fx (Axial) [k]	Fy [k]	Fz [k]	Mx [k-in]	My [k-in]	Mz [k-in]
1	21	Eave1	0.5	1.0	-0.1	0.0	3.8	35.2
2	21	Eave1	0.5	1.0	-0.1	0.0	3.8	35.2
3	21	Eave1	0.5	1.0	-0.1	0.0	3.8	35.2
4	21	Eave1	0.5	1.0	-0.1	0.0	3.8	35.2
5	21	Eave1	0.5	1.0	-0.1	0.0	3.8	35.2
6	21	Eave1	0.5	1.0	-0.1	0.0	3.8	35.2
7	21	Eave1	0.5	1.0	-0.1	0.0	3.8	35.2



Plan View | Connection Elevation | End Plate Elevation | End Plate Section

Member Height (in):	5	Number of Bolts:	2
Member Width (in):	3	Bolt Diameter (in):	0.625
Member Thickness (in):	0.125	End Plate Thickness (in):	0.625
End Plate Weld Size (in):	0.125	Flange Plate Thickness (in):	0.500

OK

TRUSS TO COLUMN

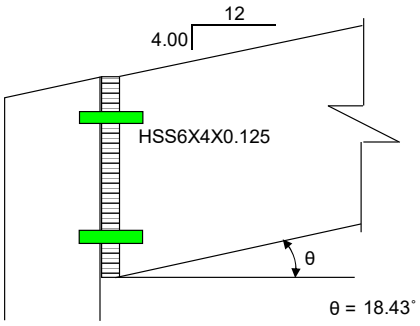
2 BOLTS

Bolt Check: (2) 0.625" Diameter, A325 Bolts				**Allowable**		**Actual**	**Load Combination / Member**	
1	Shear		AISC (J3-1)	R_N/Ω	8.3 kip	1.3 kip	21 / Truss4	**OK**
2	Tension		AISC (J3-1)	R_N/Ω	13.8 kip	11.5 kip	21 / Truss2	**OK**
3	Bearing		AISC (J3-6b)	R_N/Ω	24.6 kip	1.3 kip	21 / Truss4	**OK**

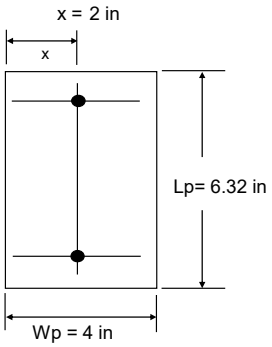
End Plate Check: 0.625" Thick				**Allowable**		**Actual**	**Load Combination / Member**	
4	Shear Yielding		AISC (J4-3)	R_N/Ω	56.9 kip	1.6 kip	21 / Truss2	**OK**
5	Shear Rupture		AISC (J4-4)	R_N/Ω	53.8 kip	1.6 kip	21 / Truss2	**OK**
6	Weld Check	*w = 0.125"*	AISC (J2-3)	R_N/Ω	1.9 kip/in	1.4 kip/in	21 / Truss2	**OK**
7	Plate Thickness (t_P)			$\sqrt{\frac{4M_{PL}}{22W_P}}$	0.49 in	0.63 in	21 / Truss2	**OK**

Design Forces / Moments

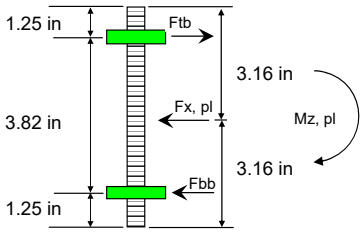
Check	Load Combination	Member	Fx (Axial) [k]	Fy [k]	Fz [k]	Mx [k-in]	My [k-in]	Mz [k-in]
1	21	Truss4	0.9	1.4	0.1	3.6	0.1	53.1
2	21	Truss2	0.9	1.4	-0.1	-3.6	-0.1	53.1
3	21	Truss4	0.9	1.4	0.1	3.6	0.1	53.1
4	21	Truss2	0.9	1.4	-0.1	-3.6	-0.1	53.1
5	21	Truss2	0.9	1.4	-0.1	-3.6	-0.1	53.1
6	21	Truss2	0.9	1.4	-0.1	-3.6	-0.1	53.1
7	21	Truss2	0.9	1.4	-0.1	-3.6	-0.1	53.1



Connection Elevation



End Plate Elevation



End Plate Section

Member Height (in):	6	Number of Bolts:	2
Member Width (in):	4	Bolt Diameter (in):	0.625
Member Thickness (in):	0.125	End Plate Thickness (in):	0.625
End Plate Weld Size (in):	0.125	Flange Plate Thickness (in):	0.500

OK

TRUSS TO COMPRESSION MEMBER

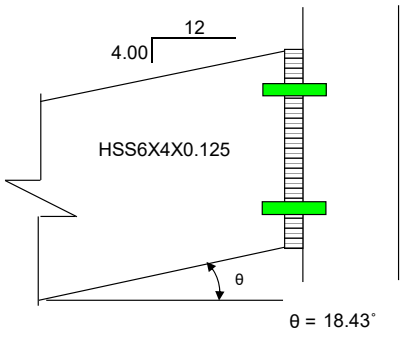
2 BOLTS

Bolt Check: (2) 0.75" Diameter, A325 Bolts				Allowable		Actual	Load Combination / Member	
1	Shear		AISC (J3-1)	R_N/Ω	11.9 kip	3.9 kip	21 / Truss2	**OK**
2	Tension	*allowable per J3.7*	AISC (J3-2)	R_N/Ω	19.9 kip	12.3 kip	15 / Truss1	**OK**
3	Bearing		AISC (J3-6b)	R_N/Ω	29.7 kip	3.9 kip	21 / Truss2	**OK**

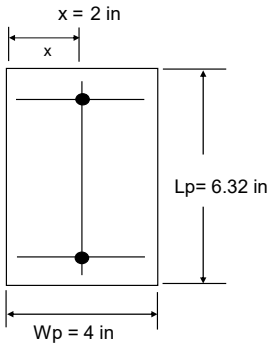
End Plate Check: 0.625" Thick				Allowable		Actual	Load Combination / Member	
4	Shear Yielding		AISC (J4-3)	R_N/Ω	36.0 kip	0.7 kip	21 / Truss2	**OK**
5	Shear Rupture		AISC (J4-4)	R_N/Ω	34.7 kip	0.7 kip	21 / Truss2	**OK**
6	Weld Check	*w = 0.125"*	AISC (J2-3)	R_N/Ω	1.9 kip/in	1.5 kip/in	15 / Truss1	**OK**
7	Plate Thickness (t_P)			$\sqrt{\frac{4M_{PL}}{22W_P}}$	0.44 in	0.63 in	15 / Truss1	**OK**

Design Forces / Moments

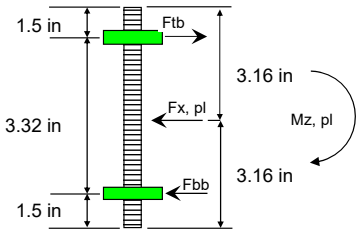
Check	Load Combination	Member	Fx (Axial) [k]	Fy [k]	Fz [k]	Mx [k-in]	My [k-in]	Mz [k-in]
1	21	Truss2	0.6	0.8	0.7	-4.8	22.4	-31.2
2	15	Truss1	0.3	0.3	-0.6	3.6	-21.1	-33.4
3	21	Truss2	0.6	0.8	0.7	-4.8	22.4	-31.2
4	21	Truss2	0.6	0.8	0.7	-4.8	22.4	-31.2
5	21	Truss2	0.6	0.8	0.7	-4.8	22.4	-31.2
6	15	Truss1	0.3	0.3	-0.6	3.6	-21.1	-33.4
7	15	Truss1	0.3	0.3	-0.6	3.6	-21.1	-33.4



Connection Elevation



End Plate Elevation



End Plate Section

Member Height (in):	6	Number of Bolts:	2
Member Width (in):	4	Bolt Diameter (in):	0.750
Member Thickness (in):	0.125	End Plate Thickness (in):	0.625
End Plate Weld Size (in):	0.125	Flange Plate Thickness (in):	0.250

RIDGE BEAM TO COMPRESSION TUBE

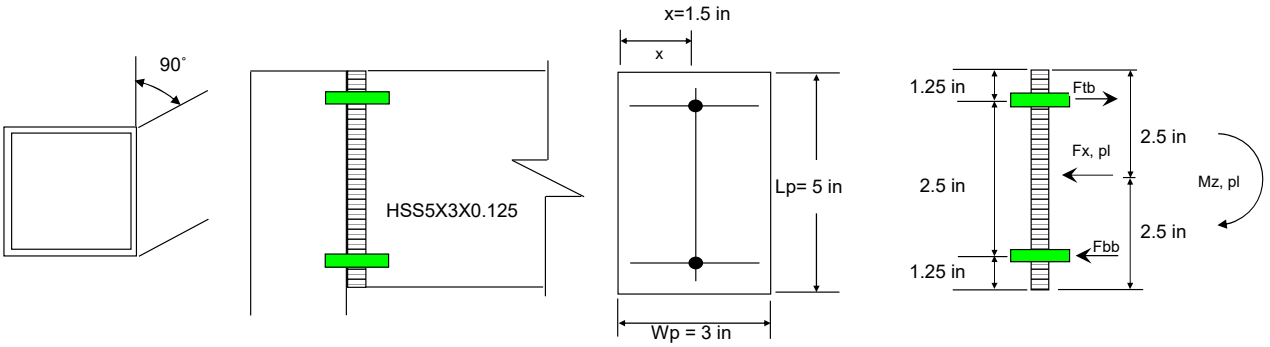
2 BOLTS

Bolt Check: (2) 0.625" Diameter, A325 Bolts				**Allowable**	**Actual**	**Load Combination / Member**	
1	Shear	AISC (J3-1)	R_N/Ω	8.3 kip	0.4 kip	15 / Ridge1	**OK**
2	Tension	AISC (J3-1)	R_N/Ω	13.8 kip	6.5 kip	21 / Ridge1	**OK**
3	Bearing	AISC (J3-6b)	R_N/Ω	19.7 kip	0.4 kip	15 / Ridge1	**OK**

End Plate Check: 0.5" Thick				**Allowable**	**Actual**	**Load Combination / Member**	
4	Shear Yielding	AISC (J4-3)	R_N/Ω	36.0 kip	0.7 kip	15 / Ridge1	**OK**
5	Shear Rupture	AISC (J4-4)	R_N/Ω	31.5 kip	0.7 kip	15 / Ridge1	**OK**
6	Weld Check *w = 0.125"*	AISC (J2-3)	R_N/Ω	1.9 kip/in	1.0 kip/in	21 / Ridge1	**OK**
7	Plate Thickness (t_P)		$\sqrt{\frac{4M_{PL}}{22W_P}}$	0.41 in	0.50 in	15 / Ridge1	**OK**

Design Forces / Moments

Check	Load Combination	Member	Fx (Axial) [k]	Fy [k]	Fz [k]	Mx [k-in]	My [k-in]	Mz [k-in]
1	15	Ridge1	1.3	0.7	0.0	0.0	0.0	22.0
2	21	Ridge1	1.3	0.7	-0.1	0.0	2.3	21.3
3	15	Ridge1	1.3	0.7	0.0	0.0	0.0	22.0
4	15	Ridge1	1.3	0.7	0.0	0.0	0.0	22.0
5	15	Ridge1	1.3	0.7	0.0	0.0	0.0	22.0
6	21	Ridge1	1.3	0.7	-0.1	0.0	2.3	21.3
7	15	Ridge1	1.3	0.7	0.0	0.0	0.0	22.0



Plan View | Connection Elevation | End Plate Elevation | End Plate Section

Member Height (in):	5	Number of Bolts:	2
Member Width (in):	3	Bolt Diameter (in):	0.625
Member Thickness (in):	0.125	End Plate Thickness (in):	0.500
End Plate Weld Size (in):	0.125	Flange Plate Thickness (in):	NONE

PURLIN CONNECTION

TWO-SIDED

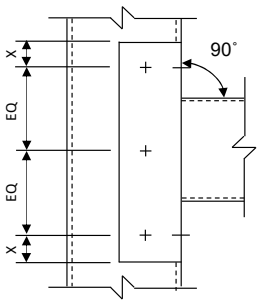
Top Flange Checks: (3) 12-24 Screws				**Allowable**	**Actual**	**Load Combination / Member**	
1	Shear (3 of the screws)			2420 lb	803 lb	21 / Purlin1	**OK**
2	Tension (none of the screws)			0 lb	0 lb	n/a	**OK**
3	Shear Yielding (plate)	AISC (J4-3)	R_N/Ω	15494 lb	803 lb	21 / Purlin1	**OK**
4	Shear Rupture (plate)	AISC (J4-4)	R_N/Ω	16967 lb	803 lb	21 / Purlin1	**OK**

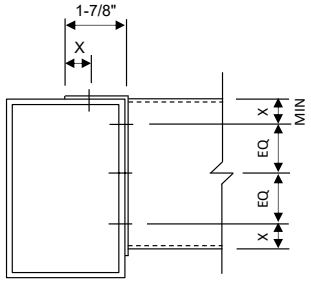
Side Flange Checks: (4) 12-24 Screws				**Allowable**	**Actual**	**Load Combination / Member**	
5	Shear (4 of the screws)			3227 lb	1078 lb	21 / Purlin1	**OK**
6	Tension (none of the screws)			0 lb	0 lb	n/a	**OK**
7	Shear Yielding (plate)	AISC (J4-3)	R_N/Ω	23242 lb	1078 lb	21 / Purlin1	**OK**
8	Shear Rupture (plate)	AISC (J4-4)	R_N/Ω	23403 lb	1078 lb	21 / Purlin1	**OK**

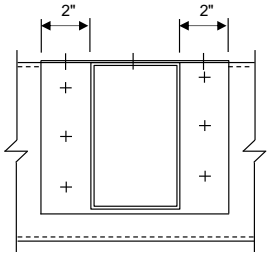
Weld Check: 0.125" Fillet Weld				**Allowable**	**Actual**	**Load Combination / Member**	
9	Weld Check	AISC (J2-3)	R_N/Ω	1.94 kip/in	0.09 kip/in	21 / Purlin1	**OK**

Design Forces / Moments

Check	Load Combination	Member	Fx (Axial) [k]	Fy [k]	Fz [k]	Mx [k-in]	My [k-in]	Mz [k-in]
1	21	Purlin1	-0.8	0.9	0.2	0.0	0.0	0.0
2	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
3	21	Purlin1	-0.8	0.9	0.2	0.0	0.0	0.0
4	21	Purlin1	-0.8	0.9	0.2	0.0	0.0	0.0
5	21	Purlin1	-0.8	0.9	0.2	0.0	0.0	0.0
6	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
7	21	Purlin1	-0.8	0.9	0.2	0.0	0.0	0.0
8	21	Purlin1	-0.8	0.9	0.2	0.0	0.0	0.0
9	21	Purlin1	-0.8	0.9	0.2	0.0	0.0	0.0







x = 3/4"

** Purlin on opposite side of truss not shown for clarity*

** Screw quantity in sketches above may not reflect actual requirements*

Plan View | Connection Elevation | End Plate Elevation

Member Height (in):	6	Sheet Metal Thickness:	10 gage *0.1345 in*
Member Width (in):	4	Screw Size:	12-24 *# 1P2905*
Member Thickness (in):	0.125	Screw Quantity (Top):	3
End Plate Weld Size (in):	1/8	Screw Quantity (Side):	4 *total*

PURLIN CONNECTION - TWO-SIDED **OK**

TAIL CONNECTION

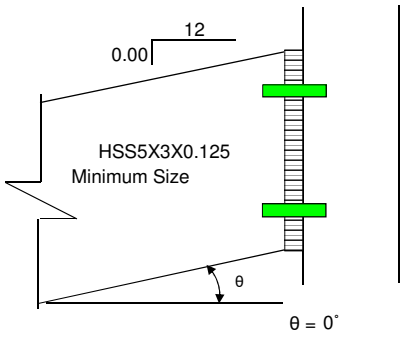
2 BOLTS

Bolt Check: (2) 0.625" Diameter, A325 Bolts				**Allowable**	**Actual**	**Load Combination / Member**	
1	Shear	AISC (J3-1)	R_N/Ω	8.3 kip	0.2 kip	21 / Eavetail3	**OK**
2	Tension	AISC (J3-1)	R_N/Ω	13.8 kip	0.8 kip	21 / Eavetail1	**OK**
3	Bearing	AISC (J3-6b)	R_N/Ω	14.8 kip	0.2 kip	21 / Eavetail3	**OK**

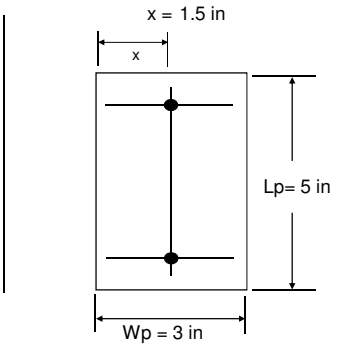
End Plate Check: 0.375" Thick				**Allowable**	**Actual**	**Load Combination / Member**	
4	Shear Yielding	AISC (J4-3)	R_N/Ω	27.0 kip	0.2 kip	21 / Eavetail1	**OK**
5	Shear Rupture	AISC (J4-4)	R_N/Ω	23.7 kip	0.2 kip	21 / Eavetail1	**OK**
6	Weld Check *w = 0.125"*	AISC (J2-3)	R_N/Ω	1.9 kip/in	0.1 kip/in	21 / Eavetail1	**OK**
7	Plate Thickness (t_P)		$\sqrt{\frac{4M_{PL}}{22W_P}}$	0.14 in	0.38 in	21 / Eavetail1	**OK**

Design Forces / Moments

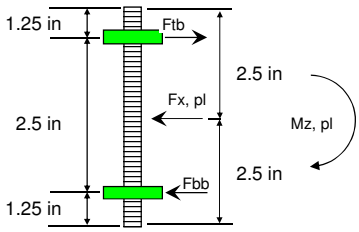
Check	Load Combination	Member	Fx (Axial) [k]	Fy [k]	Fz [k]	Mx [k-in]	My [k-in]	Mz [k-in]
1	21	Eavetail3	0.0	-0.2	0.0	0.0	-0.3	2.5
2	21	Eavetail1	0.0	-0.2	0.0	0.0	0.3	2.5
3	21	Eavetail3	0.0	-0.2	0.0	0.0	-0.3	2.5
4	21	Eavetail1	0.0	-0.2	0.0	0.0	0.3	2.5
5	21	Eavetail1	0.0	-0.2	0.0	0.0	0.3	2.5
6	21	Eavetail1	0.0	-0.2	0.0	0.0	0.3	2.5
7	21	Eavetail1	0.0	-0.2	0.0	0.0	0.3	2.5



Connection Elevation



End Plate Elevation



End Plate Section

Member Height (in):	5	Number of Bolts:	2
Member Width (in):	3	Bolt Diameter (in):	0.625
Member Thickness (in):	0.125	End Plate Thickness (in):	0.375
End Plate Weld Size (in):	0.125	Flange Plate Thickness (in):	NONE

WELDED CONNECTION IS PERMITTED

TAIL CONNECTION - 2 BOLTS **OK**

RISA ANALYSIS REPORT

Basic Load Cases

	BLC Description	Category	X Gra...	Y Gra...	Z Gra...	Joint	Point	Distribut...	Area(Memb...	Surface(Plate/...
1	FRAMEWEIGHT	DL		-1						
2	DL	DL							2	
3	LL	LL							2	
4	SL	SL							2	
5	SLU	SL							1	
6	X WINDWARD LOW	WL							3	
7	X LEEWARD LOW	WL							3	
8	X SIDEWARD LOW	WL								
9	X WINDWARD UPP...	WL								
10	X LEEWARD UPPER	WL								
11	X SIDEWARD UPPER	WL								
12	X10MINWIND	WL							1	
13	Z WINDWARD LOW	WL							2	
14	Z LEEWARD LOW	WL								
15	Z SIDEWARD LOW	WL							6	
16	Z WINDWARD UPP...	WL								
17	Z LEEWARD UPPER	WL								
18	Z SIDEWARD UPPER	WL								
19	Z10MINWIND	WL							2	
20	EX FRAME	EL	-1							
21	EX ROOF	EL							2	
22	EZ FRAME	EL			-1					
23	EZ ROOF	EL							2	
24	BLC 2 Transient Are...	None						15		
25	BLC 3 Transient Are...	None						15		
26	BLC 4 Transient Are...	None						15		
27	BLC 5 Transient Are...	None						9		
28	BLC 6 Transient Are...	None						18		
29	BLC 7 Transient Are...	None						18		
30	BLC 12 Transient Ar...	None						9		
31	BLC 13 Transient Ar...	None						8		
32	BLC 15 Transient Ar...	None						30		
33	BLC 19 Transient Ar...	None						8		
34	BLC 21 Transient Ar...	None						15		
35	BLC 23 Transient Ar...	None						15		

Load Combinations

	Description	S...	PDe...	S...	BLC	Factor	BLC	Factor	B...	Factor	B...	Fa...	B...	F...	B...	F...	B...	F...	B...	F...	B...	F...	B...	F...	B...	F...
1	SERVICE D				1	1	2	2																		
2	SERVICE Lr				3	20																				
3	SERVICE S				4	20																				
4	SERVICE Su				5	20																				
5	SERVICE Wx (Load Case A)				6	13.723	7	-2.133	8	-9.98	9		10		11											
6	SERVICE Wx (Load Case B)				6	.105	7	-12.009	8	9.98	9		10		11											
7	SERVICE Wz (Load Case A)				13	13.723	14	-2.133	15	-9.98	16		17		18											
8	SERVICE Wz (Load Case B)				13	.105	14	-12.009	15	9.98	16		17		18											
9	SERVICE Ex				20	.167	21	.333																		
10	SERVICE Ez				22	.167	23	.333																		
11																										
12																										
13																										
14	D	Y...	Y		L1	1																				
15	D + Lr	Y...	Y		L1	1	L2	1																		
16	D + S	Y...	Y		L1	1	L3	1																		

RISA A NEMETSCHEK COMPANY
Company : RISA Technologies
Designer :
Job Number :
Model Name :
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Load Combinations (Continued)

	Description	S...	PDe...	S...	BLC	Factor	BLC	Factor	B...	Factor	B...	Fa...	B...	F...	B...	F...	B...	F...	B...	F...	B...	F...	B...	F...	B...	F...
17	D + Su	Y...	Y		L1	1	L4	1																		
18	D + 0.6Wx (Load Case A)	Y...	Y		L1	1	L5	1																		
19	D + 0.6Wx (Load Case B)	Y...	Y		L1	1	L6	1																		
20	D + (0.6Wx (Minimum))	Y...	Y		L1	1	12	9.6																		
21	D + 0.75(0.6Wx (Load Cas...	Y...	Y		L1	1	L5	.75	L2	.75																
22	D + 0.75(0.6Wx (Minimum))...	Y...	Y		L1	1	12	7.2	L2	.75																
23	D + 0.75(0.6Wx (Load Cas...	Y...	Y		L1	1	L5	.75	L3	.75																
24	D + 0.75(0.6Wx (Minimum))...	Y...	Y		L1	1	12	7.2	L3	.75																
25	0.6D + 0.6Wx (Load Case A)	Y...	Y		L1	.6	L5	1																		
26	0.6D + 0.6Wx (Load Case B)	Y...	Y		L1	.6	L6	1																		
27	0.6D + (0.6Wx (Minimum))	Y...	Y		L1	.6	12	9.6																		
28	D + 0.6Wz (Load Case A)	Y...	Y		L1	1	L7	1																		
29	D + 0.6Wz (Load Case B)	Y...	Y		L1	1	L8	1																		
30	D + (0.6Wz (Minimum))	Y...	Y		L1	1	19	9.6																		
31	D + 0.75(0.6Wz (Load Cas...	Y...	Y		L1	1	L7	.75	L2	.75																
32	D + 0.75(0.6Wz (Minimum))...	Y...	Y		L1	1	19	7.2	L2	.75																
33	D + 0.75(0.6Wz (Load Cas...	Y...	Y		L1	1	L7	.75	L3	.75																
34	D + 0.75(0.6Wz (Minimum))...	Y...	Y		L1	1	19	7.2	L3	.75																
35	0.6D + 0.6Wz (Load Case A)	Y...	Y		L1	.6	L7	1																		
36	0.6D + 0.6Wz (Load Case B)	Y...	Y		L1	.6	L8	1																		
37	0.6D + (0.6Wz (Minimum))	Y...	Y		L1	.6	19	9.6																		
38	(1.0+0.14*Sds)D+ 0.7Ex	Y...	Y		L1	1.07	L9	.7																		
39	(1.0+0.105*Sds)D + 0.525E...	Y...	Y		L1	1.052	L9	.525	L3	.75																
40	(0.6-0.14*Sds)D + 0.7Ex	Y...	Y		L1	.53	L9	.7																		
41	(1.0+0.14*Sds)D + 0.7Ez	Y...	Y		L1	1.07	L10	.7																		
42	(1.0+0.105*Sds)D + 0.525E...	Y...	Y		L1	1.052	L10	.525	L3	.75																
43	(0.6-0.14*Sds)D + 0.7Ez	Y...	Y		L1	.53	L10	.7																		
44																										
45																										
46																										
47																										
48																										
49																										
50																										
51																										
52																										
53																										
54	1.4D				L1	1.4																				
55	1.2D + 0.5Lr				L1	1.2	L2	.5																		
56	1.2D + 0.5S				L1	1.2	L3	.5																		
57	1.2D + 0.5Su				L1	1.2	L4	.5																		
58	1.2D + 1.6Lr + 0.5Wx (Load...				L1	1.2	L2	1.6	L5	.833																
59	1.2D + 1.6Lr + 0.5Wx (Mini...				L1	1.2	L2	1.6	12	8																
60	1.2D + 1.6S + 0.5Wx (Load...				L1	1.2	L3	1.6	L5	.833																
61	1.2D + 1.6S + 0.5Wx (Mini...				L1	1.2	L3	1.6	12	8																
62	1.2D + 1.0Wx (Load Case ...				L1	1.2	L5	1.667	L2	.5																
63	1.2D + 1.0Wx (Load Case ...				L1	1.2	L6	1.667	L2	.5																
64	1.2D + 1.0Wx (Minimum) + ...				L1	1.2	12	16	L2	.5																
65	1.2D + 1.0Wx (Load Case ...				L1	1.2	L5	1.667	L3	.5																
66	1.2D + 1.0Wx (Load Case ...				L1	1.2	L6	1.667	L3	.5																
67	1.2D + 1.0Wx (Minimum) + ...				L1	1.2	12	16	L3	.5																
68	0.9D + 1.0Wx (Load Case A)				L1	.9	L5	1.667																		
69	0.9D + 1.0Wx (Load Case B)				L1	.9	L6	1.667																		
70	0.9D + 1.0Wx (Minimum)				L1	.9	12	16																		
71	1.2D + 1.6Lr + 0.5Wz (Load...				L1	1.2	L2	1.6	L7	.833																
72	1.2D + 1.6Lr + 0.5Wz (Mini...				L1	1.2	L2	1.6	19	8																
73	1.2D + 1.6S + 0.5Wz (Load...				L1	1.2	L3	1.6	L7	.833																

Load Combinations (Continued)

	Description	S..	PDe..	S...	BLC	Factor	BLC	Factor	B...	Factor	B...	Fa..	B..	F...	B..	F...	B..	F...	B..	F...	B..	F...	B..	F...	B..	F...
74	1.2D + 1.6S + 0.5Wz (Mini...				L1	1.2	L3	1.6	19	8																
75	1.2D + 1.0Wz (Load Case ...				L1	1.2	L7	1.667	L2	.5																
76	1.2D + 1.0Wz (Load Case ...				L1	1.2	L8	1.667	L2	.5																
77	1.2D + 1.0Wz (Minimum) + ...				L1	1.2	19	16	L2	.5																
78	1.2D + 1.0Wz (Load Case ...				L1	1.2	L7	1.667	L3	.5																
79	1.2D + 1.0Wz (Load Case ...				L1	1.2	L8	1.667	L3	.5																
80	1.2D + 1.0Wz (Minimum) + ...				L1	1.2	19	16	L3	.5																
81	0.9D + 1.0Wz (Load Case A)				L1	.9	L7	1.667																		
82	0.9D + 1.0Wz (Load Case B)				L1	.9	L8	1.667																		
83	0.9D + 1.0Wz (Minimum)				L1	.9	19	16																		
84	(1.2+0.2*Sds)D + 1.0Ex + 0...				L1	1.3	L9	1	L3	.2																
85	(0.9-0.2*Sds)D + 1.0Ex				L1	.8	L9	1																		
86	(1.2+0.2*Sds)D + 1.0Ez + 0...				L1	1.3	L10	1	L3	.2																
87	(0.9-0.2*Sds)D + 1.0Ez				L1	.8	L10	1																		
88																										
89																										
90																										
91																										
92																										
93																										
94																										
95																										
96																										
97																										
98																										
99																										
100																										
101																										
102																										
103																										
104	SERVICE Emx				20	.5	21	1																		
105	SERVICE Emz				22	.5	23	1																		
106																										
107	(1.0+0.14*Sds)D + 0.7Emx				L1	1.07	L1...	.7																		
108	(1.0+0.105*Sds)D + 0.525E...				L1	1.052	L1...	.525	L3	.75																
109	(0.6-0.14*Sds)D + 0.7Emx				L1	.53	L1...	.7																		
110	(1.0+0.14*Sds)D + 0.7Emz				L1	1.07	L1...	.7																		
111	(1.0+0.105*Sds)D + 0.525E...				L1	1.052	L1...	.525	L3	.75																
112	(0.6-0.14*Sds)D + 0.7Emz				L1	.53	L1...	.7																		
113																										
114																										
115																										
116	(1.2+0.2*Sds)D + 1.0Emx +...				L1	1.3	L1...	1	L3	.2																
117	(0.9-0.2*Sds)D + 1.0Emx				L1	.8	L1...	1																		
118	(1.2+0.2*Sds)D + 1.0Emz +...				L1	1.3	L1...	1	L3	.2																
119	(0.9-0.2*Sds)D + 1.0Emz				L1	.8	L1...	1																		
120																										
121																										
122																										
123																										
124																										
125																										
126																										
127																										
128																										
129																										
130																										

Company : RISA Technologies
Designer :
Job Number :
Model Name :

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Load Combinations (Continued)

	Description	S..	PDe..	S...	BLC	Factor	BLC	Factor	B...	Factor	B...	Fa..	B..	F...	B..	F...	B..	F...	B..	F...	B..	F...	B..	F...	B..	F...
131																										
132																										
133																										
134																										
135																										

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N1	Reaction	Reaction	Reaction			
2	N4	Reaction	Reaction	Reaction			
3	N6	Reaction	Reaction	Reaction			
4	N9	Reaction	Reaction	Reaction			

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Ru...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Column	HSS5X5X3	Column	TUBE	A500 Gr.46	Typical	3.28	12.6	12.6	19.9
2	Truss	HSS6X4X2	Beam	TUBE	A500 Gr.46	Typical	2.23	6.15	11.4	12.6
3	Eave	HSS5X3X2	Beam	TUBE	A500 Gr.46	Typical	1.77	2.75	6.03	6.02
4	Ridge	HSS5X3X2	Beam	TUBE	A500 Gr.46	Typical	1.77	2.75	6.03	6.02
5	Purlin	HSS6X4X2	Beam	TUBE	A500 Gr.46	Typical	2.23	6.15	11.4	12.6
6	Purlin Tail	HSS6X4X2	Beam	TUBE	A500 Gr.46	Typical	2.23	6.15	11.4	12.6
7	Eave Tail	HSS5X3X2	Beam	TUBE	A500 Gr.46	Typical	1.77	2.75	6.03	6.02
8	Ridge Tail	HSS5X3X2	Beam	TUBE	A500 Gr.46	Typical	1.77	2.75	6.03	6.02

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	Column1	N1	N2		180	Column	Column	TUBE	A500 Gr.46	Typical
2	Column2	N4	N5			Column	Column	TUBE	A500 Gr.46	Typical
3	Column3	N6	N7		180	Column	Column	TUBE	A500 Gr.46	Typical
4	Column4	N9	N10			Column	Column	TUBE	A500 Gr.46	Typical
5	Truss1	N2	N3			Truss	Beam	TUBE	A500 Gr.46	Typical
6	Truss2	N5	N3			Truss	Beam	TUBE	A500 Gr.46	Typical
7	Truss3	N7	N8			Truss	Beam	TUBE	A500 Gr.46	Typical
8	Truss4	N10	N8			Truss	Beam	TUBE	A500 Gr.46	Typical
9	Eave1	N2	N7			Eave	Beam	TUBE	A500 Gr.46	Typical
10	Eave2	N5	N10			Eave	Beam	TUBE	A500 Gr.46	Typical
11	Ridge1	N3	N8			Ridge	Beam	TUBE	A500 Gr.46	Typical
12	Eavetail1	NT11	N2			Eave Tail	Beam	TUBE	A500 Gr.46	Typical
13	Eavetail2	NT12	N5			Eave Tail	Beam	TUBE	A500 Gr.46	Typical
14	Eavetail3	NT13	N7			Eave Tail	Beam	TUBE	A500 Gr.46	Typical
15	Eavetail4	NT14	N10			Eave Tail	Beam	TUBE	A500 Gr.46	Typical
16	Ridgetail1	NT15	N3			Ridge Tail	Beam	TUBE	A500 Gr.46	Typical
17	Ridgetail2	NT16	N8			Ridge Tail	Beam	TUBE	A500 Gr.46	Typical
18	Purlin1	NP101	NP103		341.57	Purlin	Beam	TUBE	A500 Gr.46	Typical
19	Purlintail11	NPT101	NP101		341.57	Purlin Tail	Beam	TUBE	A500 Gr.46	Typical
20	Purlintail12	NPT103	NP103		18.43	Purlin Tail	Beam	TUBE	A500 Gr.46	Typical
21	Purlin2	NP102	NP104		18.43	Purlin	Beam	TUBE	A500 Gr.46	Typical
22	Purlintail21	NPT102	NP102		18.43	Purlin Tail	Beam	TUBE	A500 Gr.46	Typical
23	Purlintail22	NPT104	NP104		341.57	Purlin Tail	Beam	TUBE	A500 Gr.46	Typical

Member Advanced Data

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl R...	Analysis...	Inactive	Seismi...
1	Column1						Yes	** NA **			None
2	Column2						Yes	** NA **			None
3	Column3						Yes	** NA **			None
4	Column4						Yes	** NA **			None
5	Truss1						Yes				None
6	Truss2						Yes				None
7	Truss3						Yes				None
8	Truss4						Yes				None
9	Eave1						Yes				None
10	Eave2						Yes				None
11	Ridge1						Yes				None
12	Eavetail1						Yes				None
13	Eavetail2						Yes				None
14	Eavetail3						Yes				None
15	Eavetail4						Yes				None
16	Ridgetail1						Yes				None
17	Ridgetail2						Yes				None
18	Purlin1	AllPIN	BenPIN				Yes				None
19	Purlintail11						Yes				None
20	Purlintail12						Yes				None
21	Purlin2	AllPIN	BenPIN				Yes				None
22	Purlintail21						Yes				None
23	Purlintail22						Yes				None

Hot Rolled Steel Design Parameters

	Label	Shape	Length...	Lbyy[ft]	Lbzz[ft]	Lcomp top[...	Lcomp bot[ft]	L-torque...	Kyy	Kzz	Cb	Function
1	Column1	Column	10.5						2	2		Lateral
2	Column2	Column	10.5						2	2		Lateral
3	Column3	Column	10.5						2	2		Lateral
4	Column4	Column	10.5						2	2		Lateral
5	Truss1	Truss	6.325	Segment					.65	.65		Lateral
6	Truss2	Truss	6.325	Segment					.65	.65		Lateral
7	Truss3	Truss	6.325	Segment					.65	.65		Lateral
8	Truss4	Truss	6.325	Segment					.65	.65		Lateral
9	Eave1	Eave	20						.65	.65		Lateral
10	Eave2	Eave	20						.65	.65		Lateral
11	Ridge1	Ridge	20						.65	.65		Lateral
12	Eavetail1	Eave Tail	2						2.1	2.1		Lateral
13	Eavetail2	Eave Tail	2						2.1	2.1		Lateral
14	Eavetail3	Eave Tail	2						2.1	2.1		Lateral
15	Eavetail4	Eave Tail	2						2.1	2.1		Lateral
16	Ridgetail1	Ridge Tail	2						2.1	2.1		Lateral
17	Ridgetail2	Ridge Tail	2						2.1	2.1		Lateral
18	Purlin1	Purlin	20						1	1		Lateral
19	Purlintail11	Purlin Tail	2						2.1	2.1		Lateral
20	Purlintail12	Purlin Tail	2						2.1	2.1		Lateral
21	Purlin2	Purlin	20						1	1		Lateral
22	Purlintail21	Purlin Tail	2						2.1	2.1		Lateral
23	Purlintail22	Purlin Tail	2						2.1	2.1		Lateral

Company : RISA Technologies
Designer :
Job Number :
Model Name :
Dec 3, 2020
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Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E...	Density[lb/f...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A36 Gr.36	29000	11154	.3	.65	490	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	.3	.65	490	50	1.1	65	1.1
3	A992	29000	11154	.3	.65	490	50	1.1	65	1.1
4	A500 Gr.42	29000	11154	.3	.65	490	42	1.4	58	1.3
5	A500 Gr.46	29000	11154	.3	.65	527	46	1.4	58	1.3
6	A53 Gr. B	29000	11154	.3	.65	490	35	1.5	60	1.2

Envelope AISC 14th(360-10): ASD Steel Code Checks

	Member	Shape	Code Check	Loc...	LC	Shea...	Lo...	Dir	LC	Pnc/o...	Pnt/o...	Mnyy/...	Mnzz/...	Cb	Eqn
1	Column1	HSS5...	.383	10.5	16	.010	0	z	23	29.823	90.347	162.24	162.24	1.6...	H1-1b
2	Column2	HSS5...	.506	10.5	23	.016	0	y	23	29.823	90.347	162.24	162.24	1.6...	H1-1b
3	Column3	HSS5...	.383	10.5	16	.010	0	z	23	29.823	90.347	162.24	162.24	1.6...	H1-1b
4	Column4	HSS5...	.506	10.5	23	.016	0	y	23	29.823	90.347	162.24	162.24	1.6...	H1-1b
5	Truss1	HSS6...	.580	6.3...	16	.087	3....	z	16	52.543	61.425	73.197	115.6...	1.6...	H1-1b
6	Truss2	HSS6...	.581	6.3...	23	.108	0	y	23	52.543	61.425	73.197	115.6...	2.5...	H1-1b
7	Truss3	HSS6...	.580	6.3...	16	.087	3....	z	16	52.543	61.425	73.197	115.6...	1.6...	H1-1b
8	Truss4	HSS6...	.581	6.3...	23	.108	0	y	23	52.543	61.425	73.197	115.6...	2.5...	H1-1b
9	Eave1	HSS5...	.530	0	23	.057	0	y	23	16.985	48.754	47.569	80.707	1.7...	H1-1b
10	Eave2	HSS5...	.384	0	42	.047	20	y	16	16.985	48.754	47.569	80.707	1.9...	H1-1b
11	Ridge1	HSS5...	.350	20	23	.041	20	y	16	16.985	48.754	47.569	80.707	1.3...	H1-1b
12	Eavetail1	HSS5...	.037	2	23	.011	2	y	23	41.676	48.754	47.569	80.707	2.3...	H1-1b
13	Eavetail2	HSS5...	.025	2	16	.009	2	y	16	41.676	48.754	47.569	80.707	2.3...	H1-1b
14	Eavetail3	HSS5...	.037	2	23	.011	2	y	23	41.676	48.754	47.569	80.707	2.3...	H1-1b
15	Eavetail4	HSS5...	.025	2	16	.009	2	y	16	41.676	48.754	47.569	80.707	2.3...	H1-1b
16	Ridgetail1	HSS5...	.024	2	23	.008	2	y	16	41.676	48.754	47.569	80.707	2.3...	H1-1b
17	Ridgetail2	HSS5...	.024	2	23	.008	2	y	16	41.676	48.754	47.569	80.707	2.3...	H1-1b
18	Purlin1	HSS6...	.622	9.8...	23	.041	20	y	23	16.048	61.425	73.197	115.6...	1.14	H1-1b
19	Purlintail11	HSS6...	.025	2	23	.008	2	y	23	51.177	61.425	73.197	115.6...	2.3...	H1-1b
20	Purlintail12	HSS6...	.025	2	23	.008	2	y	23	51.177	61.425	73.197	115.6...	2.3...	H1-1b
21	Purlin2	HSS6...	.566	9.8...	16	.033	20	y	16	16.048	61.425	73.197	115.6...	1.14	H1-1b
22	Purlintail21	HSS6...	.022	2	16	.007	2	y	16	51.177	61.425	73.197	115.6...	2.3...	H1-1b
23	Purlintail22	HSS6...	.022	2	16	.007	2	y	16	51.177	61.425	73.197	115.6...	2.3...	H1-1b

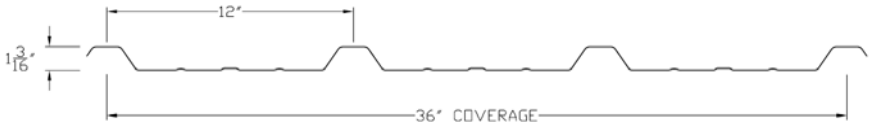
Material Takeoff

	Material	Size	Pieces	Length[ft]	Weight[LB]
1	Hot Rolled Steel				
2	A500 Gr.46	HSS5X3X2	9	72	466.395
3	A500 Gr.46	HSS5X5X3	4	42	504.163
4	A500 Gr.46	HSS6X4X2	10	73.3	598.2
5	Total HR Steel		23	187.3	1568.758

PANEL DATA

Multi-Rib

Bare Galvalume & Painted Galvalume



SECTION PROPERTIES						TOP IN COMPRESSION			BOTTOM IN COMPRESSION		
GAUGE	FY (ksi)	WEIGHT (psf)	V_a (kip/ft.)	P_{a_end} (lbs/ft.)	P_{a_int} (lbs/ft.)	I_x ($in.^4$/ft.)	S_e ($in.^3$/ft.)	M_a (kip-in./ft.)	I_x ($in.^4$/ft.)	S_e ($in.^3$/ft.)	M_a (kip-in./ft.)
24	50.0	1.10	0.7727	235.0	320.8	0.050	0.055	1.375	0.029	0.046	1.148

1. Section properties are calculated in accordance with the 2016 AISI North American Specification for the Design of Cold-Formed Steel Structural Members.
2. Va is the allowable shear.
3. Pa is the allowable load for web crippling on end & interior supports.
4. Ix is for deflection determination.
5. Se is for bending.
6. Ma is the allowable bending moment.
7. All values are for one foot of panel width.

Allowable Uniform Loads (PSF)

		Span in Feet															
Span Type	Load Type	1.50	2.00	2.50	3.00	3.50	4.00	4.50	5.00	5.50	6.00	6.50	7.00	7.50	8.00	8.50	9.00
Single	Positive Wind	407	229	146	101	74	57	45	36	30	25	21	18	16	14	12	11
	Negative Wind	340	191	122	85	62	47	37	30	25	21	18	15	13	11	10	9
	Live	407	229	146	101	74	57	45	36	30	25	21	18	16	14	12	11
	Deflection (L/180)	500	500	279	161	101	68	47	34	26	20	15	12	10	8	7	5
	Deflection (L/240)	500	409	209	121	76	51	35	26	19	15	11	9	7	6	5	4
2 Span	Positive Wind	314	182	118	83	61	47	37	30	25	21	18	15	13	11	10	9
	Negative Wind	365	214	140	98	73	56	44	36	30	25	21	18	16	14	12	11
	Live	314	182	118	83	61	47	37	30	25	21	18	15	13	11	10	9
	Deflection (L/180)	500	500	500	309	194	130	91	66	50	38	30	24	19	16	13	11
	Deflection (L/240)	500	500	400	231	146	97	68	50	37	28	22	18	14	12	10	8
3 Span	Positive Wind	380	224	146	103	76	58	46	37	31	26	22	19	16	14	13	11
	Negative Wind	438	261	172	122	90	69	55	45	37	31	26	23	20	17	15	14
	Live	380	224	146	103	76	58	46	37	31	26	22	19	16	14	13	11
	Deflection (L/180)	500	500	418	242	152	102	71	52	39	30	23	19	15	12	10	8
	Deflection (L/240)	500	500	314	181	114	76	53	39	29	22	17	14	11	9	7	6
4 Span	Positive Wind	359	210	137	96	71	54	43	35	29	24	21	18	15	13	12	10
	Negative Wind	414	246	162	114	84	65	51	42	34	29	25	21	18	16	14	13
	Live	359	210	137	96	71	54	43	35	29	24	21	18	15	13	12	10
	Deflection (L/180)	500	500	444	257	161	108	76	55	41	32	25	20	16	13	11	9
	Deflection (L/240)	500	500	333	192	121	81	57	41	31	24	18	15	12	10	8	7

Notes:
1. Allowable uniform loads are based upon equal span lengths.
2. Live is the allowable live or snow load.
3. Deflection (L/180) is the allowable load that limits the panel's deflection to L/180 while under positive or live load.
4. Deflection (L/240) is the allowable load that limits the panel's deflection to L/240 while under positive or live load.
5. The weight of the panel has **NOT** been deducted from the allowable loads.
6. Positive Wind, Negative Wind, and Live Load values are limited to combined shear & bending using Eq. H2-1 of the AISI Specification.
7. Positive Wind and Live Load values are limited by web crippling using a bearing length of 2".
8. Web crippling values are determined using a ratio of the uniform load **actually** supported by the top flanges of the section.
9. Load Tables are limited to a maximum allowable load of 500 psf.