STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

VIA ELECTRONIC MAIL

March 6, 2020

Richard Zajac
Network Real Estate Specialist
Crown Castle
4545 East River Road, Suite 320
West Henrietta, NY 14586

RE: **EM-VER-119-200303** - Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 52 New Britain Avenue, Rocky Hill, Connecticut.

Dear Mr. Zajac:

The Connecticut Siting Council (Council) is in receipt of your correspondence of March 5, 2020, 2018 submitted in response to the Council's March 4, 2020 notification of an incomplete request for exempt modification with regard to the above-referenced matter.

The submission renders the request for exempt modification complete and the Council will process the request in accordance with the Federal Communications Commission 60-day timeframe.

Thank you for your attention and cooperation.

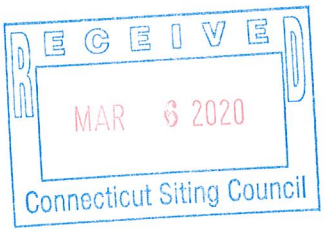
Sincerely,

Melanie A. Bachman
Executive Director

MAB/IN/lm

4545 East River Road, Suite 320
West Henrietta, NY 14586

March 5, 2020



Melanie A. Bachman
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

RE: **Council Incomplete Letter - EM-VER-119-200303**
Crown Site #: 842872
52 New Britain Avenue, Rocky Hill, CT 06067
Latitude: 41° 39' 36.89"/ Longitude: -72° 40' 50.58"

Dear Ms. Bachman:

Pursuant to the Council Incomplete Letter dated March 4, 2020 for EM-VER-119-200303, please see the attached revised Mount Analysis. Should you have any questions or require additional information in order to resume the review process, please let me know. Thank you.

Sincerely,

Richard Zajac
Network Real Estate Specialist
4545 East River Road, Suite 320
West Henrietta, NY 14586
585-445-5896
richard.zajac@crowncastle.com

Exhibit E

Mount Analysis

PAUL J. FORD & COMPANY

Date: March 5, 2020

Kevin Morrow
Crown Castle
3530 Toringdon Way
Charlotte, NC 28277

Paul J Ford and Company
250 E. Broad Street, Suite 600
Columbus, OH 43215
614.221.6679

Subject:	**Mount Modification Report**	
Carrier Designation:	***Verizon Wireless* Equipment Change-out**	
	Carrier Site Number:	NG37621
	Carrier Site Name:	ROCKY HILL 3 CT
Crown Castle Designation:	**Crown Castle BU Number:**	842872
	Crown Castle Site Name:	Rocky HIll
	Crown Castle JDE Job Number:	593541
	Crown Castle Purchase Order Number:	1487323
	Crown Castle Order Number:	507430 Rev. 0
Engineering Firm Designation:	**Paul J Ford and Company Project Number:**	A37519-3739.002.7191
Site Data:	**52 New Britain Ave, Rocky Hill, Hartford County, CT 06067** **Latitude 41.660247°, Longitude -72.680717°**	
Structure Information:	**Tower Height & Type:**	**182 Foot Monopole**
	Mount Elevation:	**90 Foot**
	Mount Type:	**(1) 14 Foot Platform**

Dear Kevin Morrow,

Paul J Ford and Company is pleased to submit this "Mount Modification Report" to determine the structural integrity of the Verizon Wireless antenna mounting system with the proposed appurtenance and equipment addition on the abovementioned supporting tower structure. Analysis of the existing supporting tower structure is to be completed by others and therefore is not part of this analysis. Analysis of the antenna mounting system as a tie-off point is not part of this document.

The purpose of the analysis is to determine acceptability of the mount stress level. Based on our analysis we have determined the mount stress level to be:

14' Platform	**81.4%**	**SUFFICIENT***

***The mount has sufficient capacity once the modifications, as described in Section 4.1 Recommendations of this report, are completed.**

This analysis utilizes an ultimate 3-second gust wind speed of 125 mph as required by the 2018 Connecticut State Building Code and Appendix N. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Mount analysis prepared by: Angela Sage JGF

Respectfully submitted by:

03.05.2020

Joseph Jacobs, P.E., S.E.
Project Manager
jjacobs@pauljford.com

PAUL J. FORD & COMPANY

Date: March 5, 2020

Kevin Morrow
Crown Castle
3530 Toringdon Way
Charlotte, NC 28277

Paul J Ford and Company
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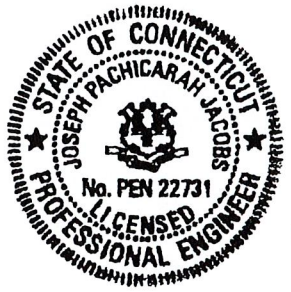


03.05.2020

Joseph Jacobs, P.E., S.E.
Project Manager
jjacobs@pauljford.com

TABLE OF CONTENTS

1) INTRODUCTION

The existing mount under consideration is (1) 14' Platform mount identified as a Valmont TMF 14' LP PLATFORM based on photos.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Ultimate Wind Speed:	125 mph
Exposure Category:	C
Topographic Factor at Base:	1.00
Topographic Factor at Mount:	1.00
Ice Thickness:	2 in
Wind Speed with Ice:	50 mph
Live Loading Wind Speed:	30 mph
Maintenance Load at Mid/End-Points:	250 lb
Maintenance Load at Mount Pipes:	500 lb

Table 1 - Proposed Equipment Configuration

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount / Modification Details
90	90	3	COMMSCOPE	BSAMNT-SBS-1-2	(1) 14' Platform
		3	ANDREW	HBXX-6517DS-A2M	
		3	ANTEL	BXA-70080-4BF-EDIN-0	
		6	COMMSCOPE	NHH-65B-R2B	
		1	GPS	GPS_A	
		1	RFS CELWAVE	DB-T1-6Z-8AB-0Z	
		3	SAMSUNG TELE	RFV01U-D1A	
		3	SAMSUNG TELE	RFV01U-D2A	

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Reference	Source
Mount Manufacturer Drawings	TMF 14' LP PLATFORM Dated: 10/27/2009	-	Valmont
Photos	Dated: 10/9/2019	-	CCISites
Order	ID: 507430 Rev. 0 Dated: 12/9/2019	-	CCISites
RFDS	846565 Dated: 10/28/2019	-	Crown Castle

3.1) Analysis Method

RISA-3D (version 17.0.3), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases.

This analysis was performed in accordance with Crown Castle's ENG-SOW-10208 *Tower Mount Analysis* (Revision C). In addition, this analysis is in accordance with Verizon's NSTD-446 *Antenna Mount Analysis and Modification Process (dated 03/29/19).*

3.2) Assumptions

1) *The analysis of the existing tower or the effect of the mount attachment to the tower is not within the current scope of work.*
2) *The antenna mounting system was properly fabricated, installed and maintained in good condition, twist free and plumb in accordance with its original design and manufacturer's specifications and all bolts are tightened as specified by the manufacturer and AISC requirements.*
3) *The configuration of antennas, mounts, and other appurtenances are as specified in Table 1.*
4) *All member connections have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report. All U-Bolt connections have been properly tightened. This analysis will be required to be revised if the existing conditions in the field differ from those shown in the above referenced documents or assumed in this analysis. No allowance was made for any damaged, missing, or rusted members.*
5) *Steel grades are as follows, unless noted otherwise:*
   - *a) Channel, Solid Round, Angle, Plate, Unistrut* — *ASTM A36 (GR 36)*
   - *b) Pipe* — *ASTM A53 (GR 35)*
   - *c) HSS (Rectangular)* — *ASTM 500 (GR B-46)*
   - *d) HSS (Round)* — *ASTM 500 (GR B-42)*
   - *e) Threaded Rods* — *ASTM F1554 (GR 36)*
   - *f) Connection Bolts* — *ASTM A325*
   - *g) U-Bolts* — *SAE J429 (GR 2)*
6) *Proposed equipment is to be installed in the locations specified in Appendix A. Any changes to the proposed equipment locations will render this report invalid.*
7) *Mount has been modeled based on the photographs and/or the TIA inspection referenced in Table 2, indicating a match to the Valmont TMF 14' LP PLATFORM. Member information and dimensions not provided have been assumed to match those specified in the manufacturer drawings referenced in Table 2. No guarantee can be made as to the accuracy of these assumptions without a complete mount mapping.*

This analysis may be affected if any assumptions are not valid or have been made in error. Paul J Ford and Company should be notified to determine the effect on the structural integrity of the mount.

4) ANALYSIS RESULTS

Table 3- Mount Component Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Face Horizontals	90	56.3	Pass
1	Grating Support Members		39.2	Pass
1	Support Rails		47.1	Pass
1	Bracing Members		13.8	Pass
1	Standoff Members		60.0	Pass
1	Mount Pipes		38.2	Pass
1	Mount to Tower Connection		81.4	Pass

Mount Rating (max from all components) =	**81.4%**

Notes:
1) See additional documentation in "Appendix C – Software Analysis Output" for calculations supporting the % capacity consumed.

4.1) Recommendations

The mount has sufficient capacity to carry the proposed loading configuration. In order for the results of the analysis to be considered valid, the structural modifications listed below must be completed.

- Install SitePro1 HRK12 Support Rail Kit or EOR approved equivalent as indicated in "Appendix D – Supplemental Modification Information" and in conformance with the attached manufacturer drawings.
- Install SitePro1 PRK-SFS-L Handrail Reinforcement Kit or EOR approved equivalent on proposed support rail. Refer to "Appendix D – Supplemental Modification Information" for additional information and clarification.

Connection from the mount to the tower and local stresses on the tower are sufficient.

Verizon Mount Rating: M500R(350)-4[18]

STANDARD CONDITIONS FOR FURNISHING OF PROFESSIONAL ENGINEERING SERVICES ON EXISTING MOUNTS BY PAUL J. FORD AND COMPANY

1) It is the responsibility of the client to ensure that the information provided to Paul J. Ford and Company is accurate and complete. Paul J. Ford and Company will rely on the accuracy and completeness of such information in performing or furnishing services under this project.

2) If the existing conditions are not as represented on the referenced drawings and/or documents, Paul J. Ford and Company should be contacted immediately to evaluate the significance of the deviation.

3) The mount has been analyzed according to the minimum design loads recommended by the Reference Standard. If additional design loads are required, Paul J. Ford and Company should be made aware of this prior to the start of the project.

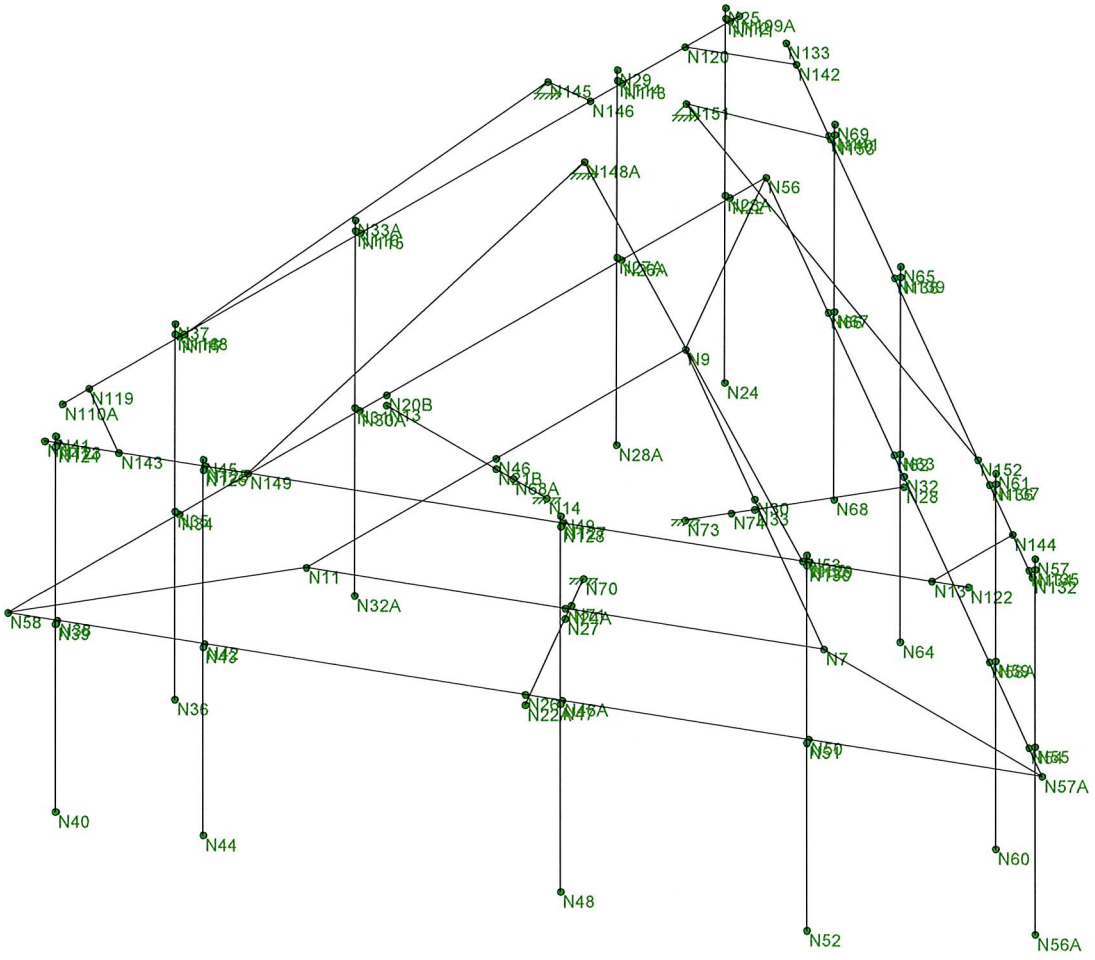
4) The standard of care for all Professional Engineering Services performed or furnished by Paul J. Ford and Company under this project will be the skill and care used by members of the Consultant's profession practicing under similar circumstances at the same time and in the same locality.

5) All Services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. Paul J. Ford and Company is not responsible for the conclusions, opinions and/or recommendations made by others based on the information supplied herein.

****

APPENDIX A

WIRE FRAME AND RENDERED MODELS



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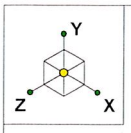


LEGEND
EXISTING: BLUE
PROPOSED: RED

GAMMA SECTOR
ANTENNA AZIMUTH-270°

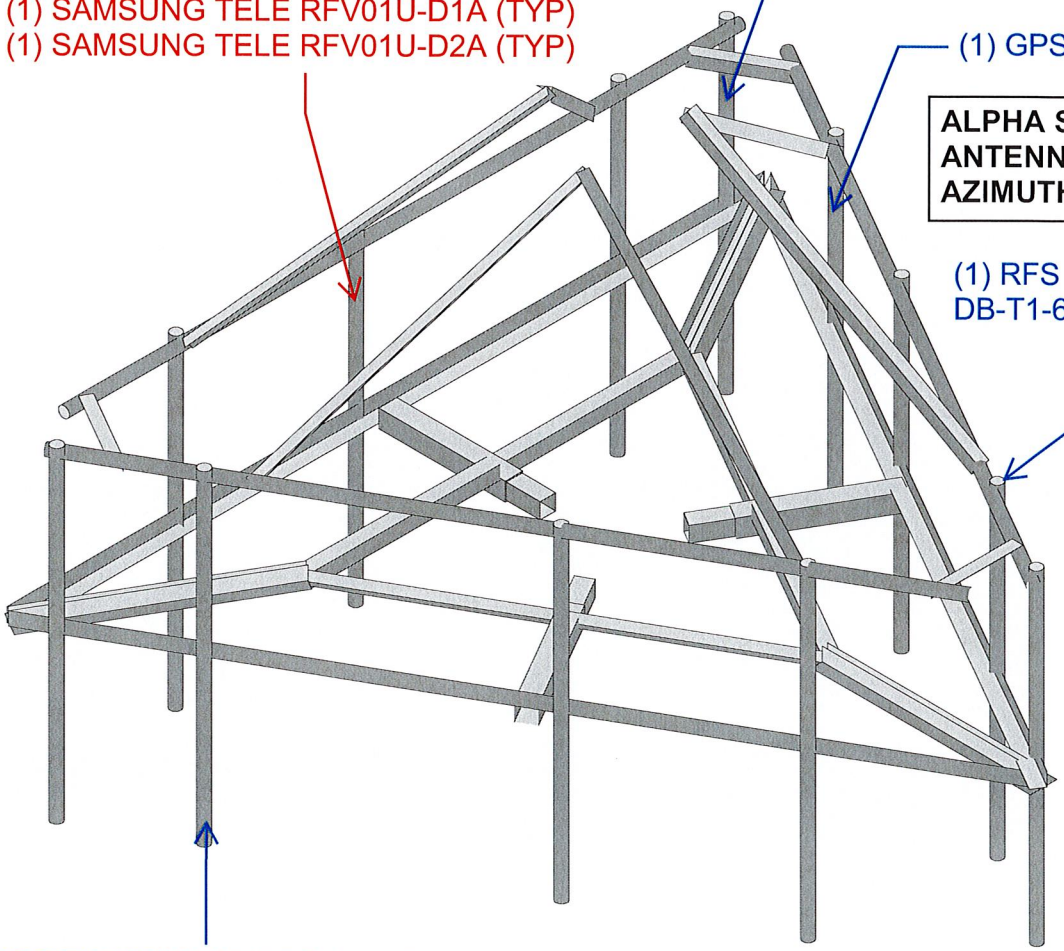
(1) ANTEL BXA-70080-4BF-EDIN-0 (TYP)

(2) COMMSCOPE NHH-65B-R2B (TYP)
(1) COMMECOPE BSAMNT-SBS-1-2 (TYP)
(1) SAMSUNG TELE RFV01U-D1A (TYP)
(1) SAMSUNG TELE RFV01U-D2A (TYP)

(1) GPS GPS_A

ALPHA SECTOR
ANTENNA
AZIMUTH-30°

(1) RFS CELWAVE
DB-T1-6Z-8AB-0Z



(1) ANDREW HBXX-6517DS-A2M (TYP)

BETA SECTOR
ANTENNA AZIMUTH-150°

NOTES:
1) A 6" VERTICAL TOLERANCE FOR PROPOSED EQUIPMENT IS ACCEPTABLE.
2) CONTRACTOR TO VERIFY LOCATION OF EXISTING EQUIPMENT PRIOR TO INSTALLATION OF PROPOSED EQUIPMENT. NOTIFY EOR FOR ANY DEVIATIONS.
3) INSTALL SHALL NOT CAUSE HARM TO THE STRUCTURE, CLIMBING FACILITY, SAFETY CLIMB OR ANY SYSTEM INSTALLED ON THE STRUCTURE.

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APPENDIX B

SOFTWARE INPUT CALCULATION

PAUL J. FORD & COMPANY
250 E Broad St, Ste 600 • Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

Project # 37519-3739.002.7191
By AMS

Analysis 30 degrees
EPA Method Projected Area
File _Client.r3d

Date: 01/09/20

v2.1, Effective 11/15/19

Mount Loading per TIA-222-H

Structure & Wind Speed

Analysis Scope=	Client	
Structure Type =	Mount	
Mount Type =	3 Sectors	
Mount Centerline (z) =	90	ft
C/L Y Coordinate =	0	in
Ultimate Wind Speed =	125	mph
Service Wind Speed =	30	mph
Ice Wind Speed =	50	mph
Ice Thickness =	2	in
Const. Duration =		
Non-Op Wind Speed =	#N/A	mph
Op Wind Speed =	30	mph

Topography

Risk Category =	II	
Exposure Category =	C	
Topographic Category =	1	
Structure Base Height (Z_b) =	198.53	ft
Crest Height (H) =		ft

Maintenance Point Loads

	Load	Label	Node #
L_{m1} =	500 lbs	N38	36
L_{m2} =	500 lbs	N42	40
L_{m3} =	500 lbs	N46A	44
L_{m4} =	500 lbs	N50	48

	Load	Label	Node #
L_{v1} =	250 lbs	N57A	9
L_{v2} =	250 lbs	N57A	9
L_{v3} =	250 lbs	N58	8
L_{v4} =	250 lbs	N58	8

Velocity Pressure Coefficients

z_g =	900	ft	(Table 2-4)
α' =	9.50		(Table 2-4)
K_z =	1.24		(Section 2.6.5.2)
K_{zmin} = 0.85			
K_{zcalc} = 1.24			
K_{zmax} = 2.01			
K_{zt} =	1.00		(Section 2.6.6.2.1)
K_d =	0.95		(Section 16.6)
K_e =	0.99		(Section 2.6.8)
G_h =	1.00		(Section 16.6)
K_{es} =	1.0		(Annex S - Wind Force)
q_z =	46.70	psf	(Section 2.6.11.6)

Ice Loading

I_i =	1.00		(Table 2-3)
K_{es} =	1.0		(Annex S - Ice)
q_{iz} =	7.53	psf	(Section 2.6.11.6)
K_{iz} =	1.11		(Section 2.6.10)
t_{iz} =	2.21	in	(Section 2.6.10)
h =	1.00	in	(Bar Grating Height)
W_i =	14.99	psf	(Grating Ice Weight)

Wind Pressure

		Override	
K_a =	0.9		(on all Appurt. / Member Forces)
$(q_z)(G_h)(K_{es})$ =	46.70		psf (42.03 after Ka applied)
$(q_{iz})(G_h)(K_{es})$ =	7.53		psf (Ice)

Antennas

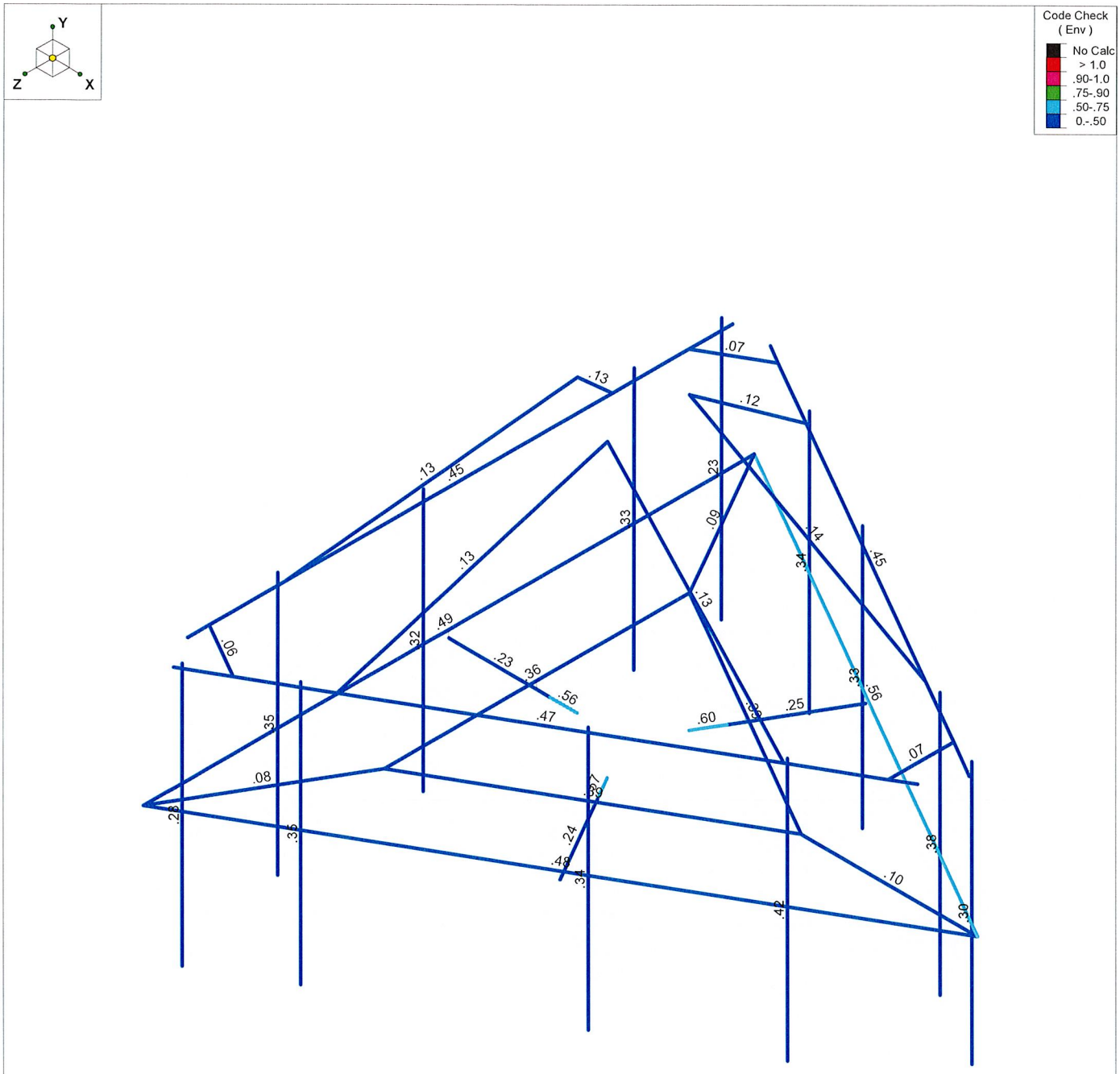
Item	Status	Manufacturer	Antenna	Height (in)	Width (in)	Depth (in)	Flat or Round	Weight (lbs)	Sector / Face	Position	Quantity	Orientation	Use tnxTower C_1A_n (CFD)	Top/Bottom Mounting Point Spacing	Override Spacing (in)	Max Antenna C/L (ft)	Min Antenna C/L (ft)	Antenna C/L (ft)	Antenna Top Mount Location from Mount Pipe Bottom (in)	Antenna Bottom Mount Location from Mount Pipe Bottom (in)	Override Top Antenna Mounting Location (in)	Override Bottom Antenna Mounting Location (in)	Normal Wind Force per Antenna (lbs)	Transverse Wind Force per Antenna (lbs)
1	I	ANDREW	HBXX-6517DS-A2M_CCI CFD	75	12	6.5	Flat	49.3	A	3	1	Normal	Yes	69.00		90.125	89.875	90	70.50	1.50			337.092	183.678
2	I	ANDREW	HBXX-6517DS-A2M_CCI CFD	75	12	6.5	Flat	49.3	B	3	1	Normal	Yes	69.00		90.125	89.875	90	70.50	1.50			337.092	183.678
3	I	ANDREW	HBXX-6517DS-A2M_CCI CFD	75	12	6.5	Flat	49.3	C	3	1	Normal	Yes	69.00		90.125	89.875	90	70.50	1.50			337.092	183.678
4	I	ANTEL	BXA-70080-4BF-EDIN-0	47.5	8	5.9	Flat	12	A	4	1	Normal	No	41.50		91.271	88.729	90	56.75	15.25			150.045	117.387
5	I	ANTEL	BXA-70080-4BF-EDIN-0	47.5	8	5.9	Flat	12	B	4	1	Normal	No	41.50		91.271	88.729	90	56.75	15.25			150.045	117.387
6	I	ANTEL	BXA-70080-4BF-EDIN-0	47.5	8	5.9	Flat	12	C	4	1	Normal	No	41.50		91.271	88.729	90	56.75	15.25			150.045	117.387
7	P	COMMSCOPE	NHH-65B-R2B_CCI CFD	72	11.9	7.1	Flat	43.7	A	2	2	Normal	Yes	66.00		90.250	89.750	90	69.00	3.00			174.851	104.658
8	P	COMMSCOPE	NHH-65B-R2B_CCI CFD	72	11.9	7.1	Flat	43.7	B	2	2	Normal	Yes	66.00		90.250	89.750	90	69.00	3.00			174.851	104.658
9	P	COMMSCOPE	NHH-65B-R2B_CCI CFD	72	11.9	7.1	Flat	43.7	C	2	2	Normal	Yes	66.00		90.250	89.750	90	69.00	3.00			174.851	104.658
10	P	COMMSCOPE	BSAMNT-SBS-1-2 (MOUNT BRACKET)	1	1	1	Flat	26	A	2	1	Normal	No	1.00		92.958	87.042	90	36.50	35.50			0.350	0.350
11	P	COMMSCOPE	BSAMNT-SBS-1-2 (MOUNT BRACKET)	1	1	1	Flat	26	B	2	1	Normal	No	1.00		92.958	87.042	90	36.50	35.50			0.350	0.350
12	P	COMMSCOPE	BSAMNT-SBS-1-2 (MOUNT BRACKET)	1	1	1	Flat	26	C	2	1	Normal	No	1.00		92.958	87.042	90	36.50	35.50			0.350	0.350
13	I	GPS	GPS_A	5	6.12	6.12	Flat	0.9	A	1	1	Normal	No	1.00		92.958	87.042	90	36.50	35.50			10.718	10.718
14	I	RFS CELWAVE	DB-T1-6Z-8AB-0Z	24	24	10	Flat	44	A	3	1	Normal	No	18.00		92.250	87.750	91	57.00	39.00			201.751	84.083
15	P	SAMSUNG TELECOMMUNICATIONS	RFV01U-D1A	15	15	10	Flat	84.4	A	2	1	Normal	No	9.00		92.625	87.375	91	52.50	43.50			78.809	52.539
16	P	SAMSUNG TELECOMMUNICATIONS	RFV01U-D1A	15	15	10	Flat	84.4	B	2	1	Normal	No	9.00		92.625	87.375	91	52.50	43.50			78.809	52.539
17	P	SAMSUNG TELECOMMUNICATIONS	RFV01U-D1A	15	15	10	Flat	84.4	C	2	1	Normal	No	9.00		92.625	87.375	91	52.50	43.50			78.809	52.539
18	P	SAMSUNG TELECOMMUNICATIONS	RFV01U-D2A	15	15	8.1	Flat	70.3	A	2	1	Normal	No	9.00		92.625	87.375	91	52.50	43.50			78.809	42.557
19	P	SAMSUNG TELECOMMUNICATIONS	RFV01U-D2A	15	15	8.1	Flat	70.3	B	2	1	Normal	No	9.00		92.625	87.375	91	52.50	43.50			78.809	42.557
20	P	SAMSUNG TELECOMMUNICATIONS	RFV01U-D2A	15	15	8.1	Flat	70.3	C	2	1	Normal	No	9.00		92.625	87.375	91	52.50	43.50			78.809	42.557

Dishes

Item	Status	Manufacturer	Microwave Dish	Dia (in)	Dish Type	Weight (lbs)	Sector / Face	Position	Top/Bottom Mounting Point Spacing	Override Spacing (in)	Max Dish C/L (ft)	Min Dish C/L (ft)	Dish C/L (ft)	Dish Top Mount Location from Mount Pipe Bottom	Dish Bottom Mount Location from Mount Pipe Bottom	Override Top Dish Mounting Location (in)	Override Bottom Dish Mounting Location (in)

APPENDIX C

SOFTWARE ANALYSIS OUTPUT



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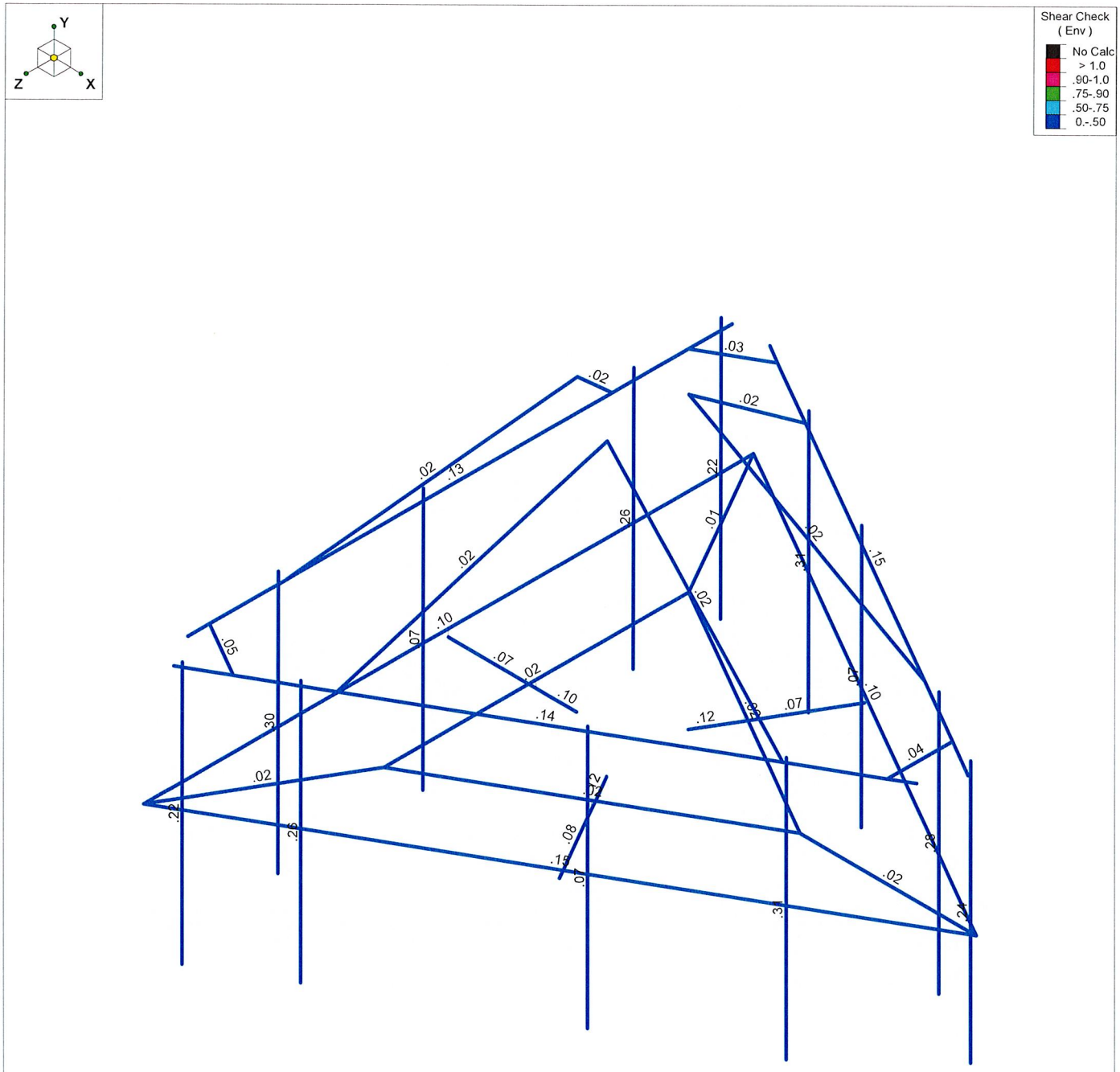

Member Shear Checks Displayed (Enveloped)
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AMS		Jan 9, 2020 at 1:09 PM
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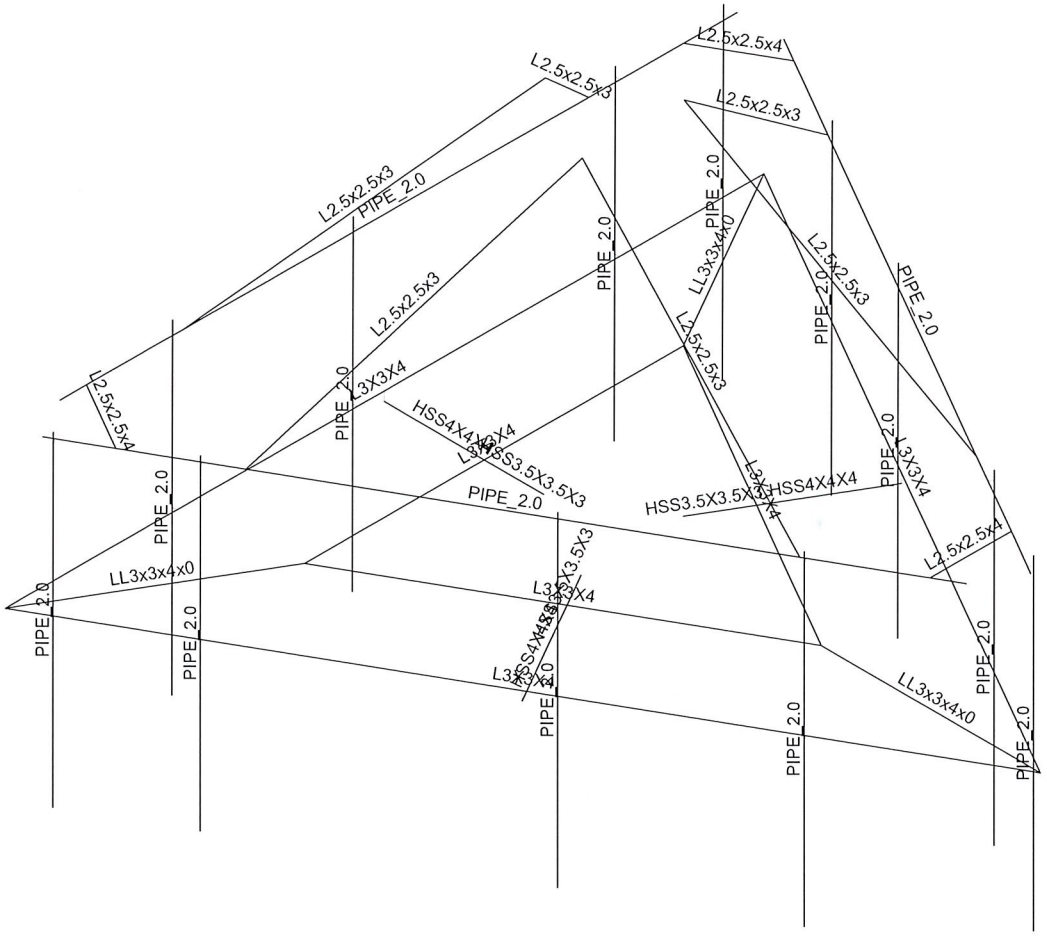
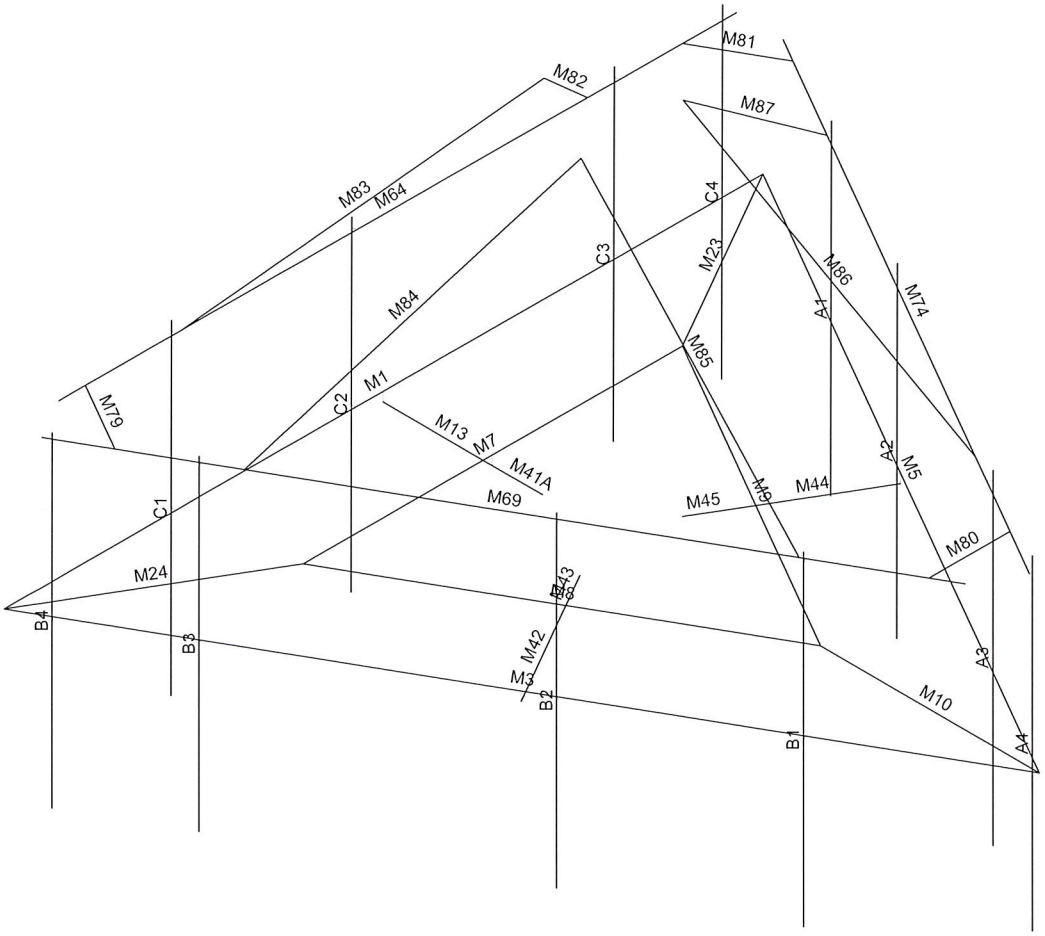


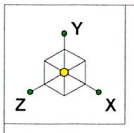
Envelope Only Solution

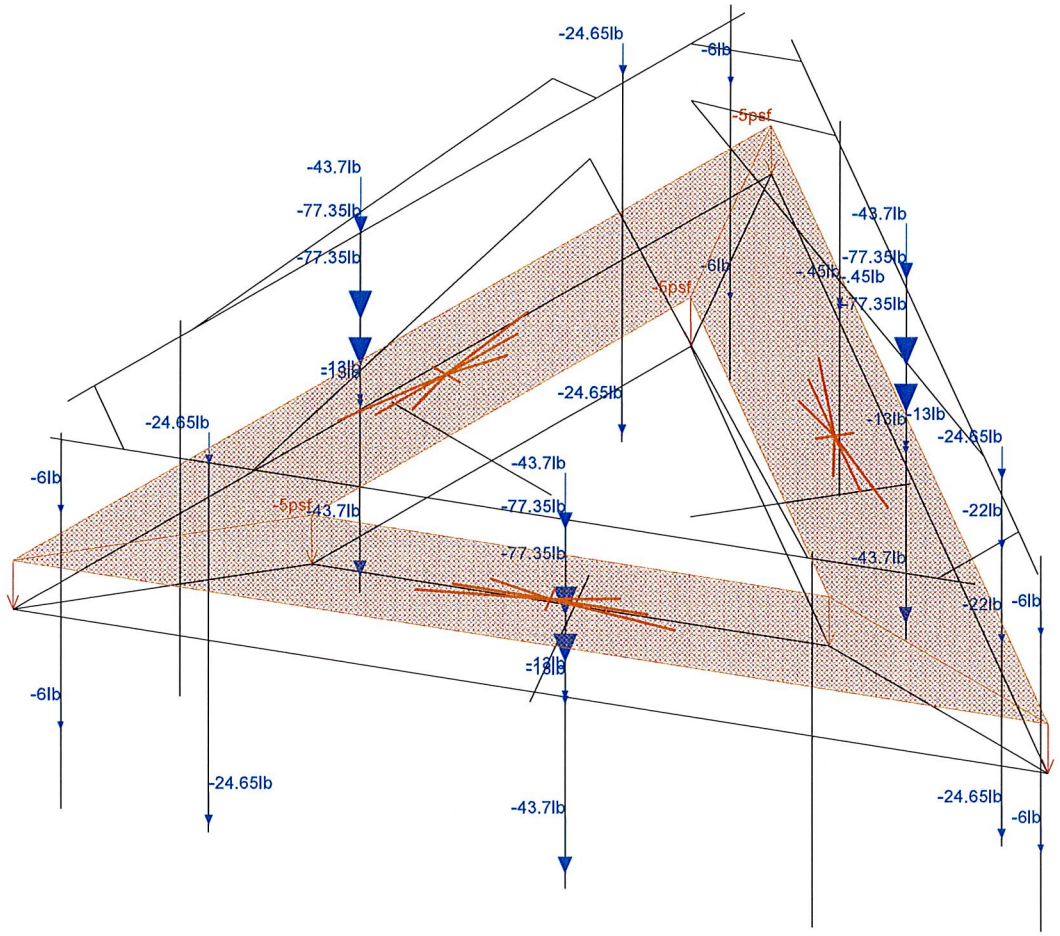
Paul J. Ford and Company	842872 / ROCKY HILL	SK - 5
AMS		Jan 9, 2020 at 9:53 AM
37519-3739.002.7191		37519-3739.002.7191_Client.r3d



Envelope Only Solution

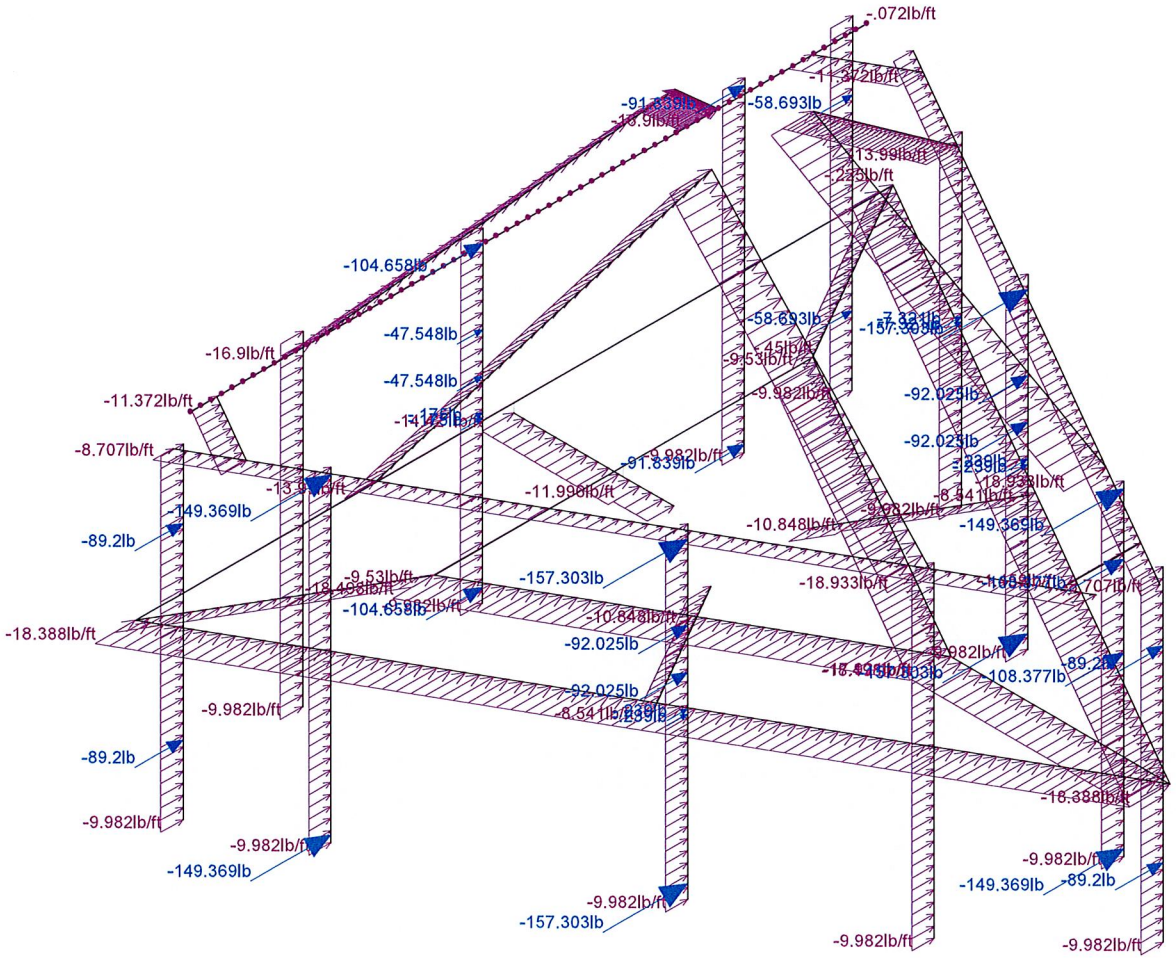
Paul J. Ford and Company	842872 / ROCKY HILL	SK - 6
AMS		Jan 9, 2020 at 9:53 AM
37519-3739.002.7191		37519-3739.002.7191_Client.r3d





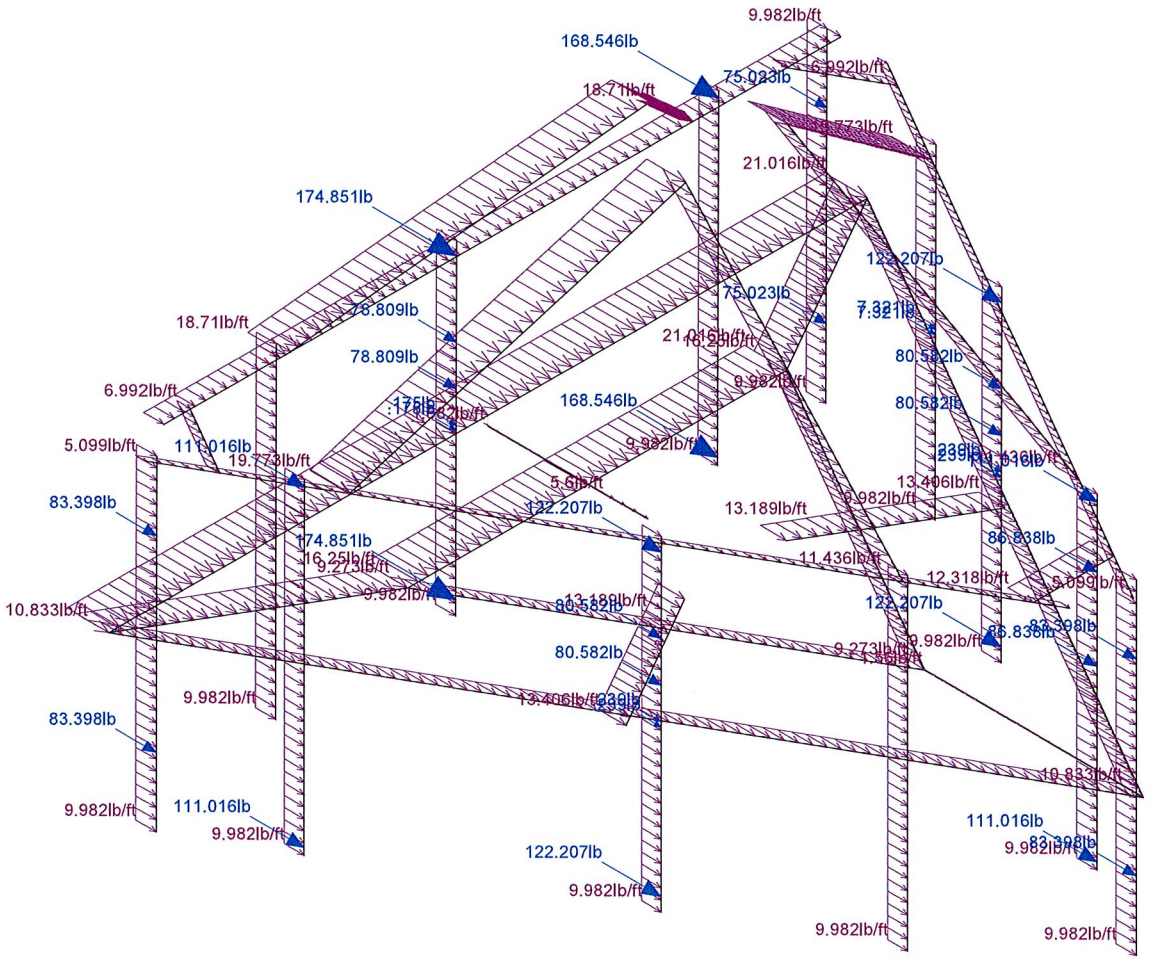
Loads: BLC 1, Dead
Envelope Only Solution

Paul J. Ford and Company	842872 / ROCKY HILL	SK - 7
AMS		Jan 9, 2020 at 9:53 AM
37519-3739.002.7191		37519-3739.002.7191_Client.r3d



Loads: BLC 2, Wind 0
Envelope Only Solution

Paul J. Ford and Company	842872 / ROCKY HILL	SK - 8
AMS		Jan 9, 2020 at 9:53 AM
37519-3739.002.7191		37519-3739.002.7191_Client.r3d



Loads: BLC 5, Wind 90
Envelope Only Solution

Paul J. Ford and Company	842872 / ROCKY HILL	SK - 9
AMS		Jan 9, 2020 at 9:53 AM
37519-3739.002.7191		37519-3739.002.7191_Client.r3d

(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	Yes
Max Iterations for Wall Stiffness	3
Gravity Acceleration (in/sec^2)	386.4
Wall Mesh Size (in)	24
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 15th(360-16): LRFD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	None
Cold Formed Steel Code	None
Wood Code	None
Wood Temperature	< 100F
Concrete Code	None
Masonry Code	None
Aluminum Code	None - Building
Stainless Steel Code	None

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parme Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	Yes
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR_SET_ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8

(Global) Model Settings, Continued

Seismic Code	ASCE 7-10
Seismic Base Elevation (in)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Risk Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	4
Cd X	4
Rho Z	1
Rho X	1

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E..	Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
3	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.42	29000	11154	.3	.65	.49	42	1.4	58	1.3
5	A500 Gr.46	29000	11154	.3	.65	.49	46	1.4	58	1.3
6	A53 Gr. B (35 ksi)	29000	11154	.3	.65	.49	35	1.5	60	1.2

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N56	N58		270	L3X3X4	None	None	A36 Gr.36	Typical
2	M3	N58	N57A		270	L3X3X4	None	None	A36 Gr.36	Typical
3	M5	N57A	N56		270	L3X3X4	None	None	A36 Gr.36	Typical
4	M7	N9	N11		90	L3X3X4	None	None	A36 Gr.36	Typical
5	M8	N11	N7		90	L3X3X4	None	None	A36 Gr.36	Typical
6	M9	N7	N9		90	L3X3X4	None	None	A36 Gr.36	Typical
7	M10	N7	N57A		180	LL3x3x4x0	None	None	A36 Gr.36	Typical
8	M13	N13	N68A		90	HSS4X4X4	None	None	A500 Gr.46	Typical
9	M23	N9	N56		180	LL3x3x4x0	None	None	A36 Gr.36	Typical
10	M24	N11	N58		180	LL3x3x4x0	None	None	A36 Gr.36	Typical
11	M14	N13	N20B			RIGID	None	None	RIGID	Typical
12	M15	N21B	N46			RIGID	None	None	RIGID	Typical
13	M17	N22A	N26			RIGID	None	None	RIGID	Typical
14	M18	N27	N24A			RIGID	None	None	RIGID	Typical
15	M20	N28	N32			RIGID	None	None	RIGID	Typical
16	M21	N33	N30			RIGID	None	None	RIGID	Typical
17	M19	N22	N23A			RIGID	None	None	RIGID	Typical
18	C4	N24	N25			PIPE_2.0	None	None	A53 Gr. B (35 ...	Typical
19	M21A	N26A	N27A			RIGID	None	None	RIGID	Typical
20	C3	N28A	N29			PIPE_2.0	None	None	A53 Gr. B (35 ...	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
21	M23A	N30A	N31			RIGID	None	None	RIGID	Typical
22	C2	N32A	N33A			PIPE_2.0	None	None	A53 Gr. B (35 ...	Typical
23	M25	N34	N35			RIGID	None	None	RIGID	Typical
24	C1	N36	N37			PIPE_2.0	None	None	A53 Gr. B (35 ...	Typical
25	M27	N38	N39			RIGID	None	None	RIGID	Typical
26	B4	N40	N41			PIPE_2.0	None	None	A53 Gr. B (35 ...	Typical
27	M29	N42	N43			RIGID	None	None	RIGID	Typical
28	B3	N44	N45			PIPE_2.0	None	None	A53 Gr. B (35 ...	Typical
29	M31	N46A	N47			RIGID	None	None	RIGID	Typical
30	B2	N48	N49			PIPE_2.0	None	None	A53 Gr. B (35 ...	Typical
31	M33	N50	N51			RIGID	None	None	RIGID	Typical
32	B1	N52	N53			PIPE_2.0	None	None	A53 Gr. B (35 ...	Typical
33	M35	N54	N55			RIGID	None	None	RIGID	Typical
34	A4	N56A	N57			PIPE_2.0	None	None	A53 Gr. B (35 ...	Typical
35	M37	N58A	N59			RIGID	None	None	RIGID	Typical
36	A3	N60	N61			PIPE_2.0	None	None	A53 Gr. B (35 ...	Typical
37	M39	N62	N63			RIGID	None	None	RIGID	Typical
38	A2	N64	N65			PIPE_2.0	None	None	A53 Gr. B (35 ...	Typical
39	M41	N66	N67			RIGID	None	None	RIGID	Typical
40	A1	N68	N69			PIPE_2.0	None	None	A53 Gr. B (35 ...	Typical
41	M41A	N68A	N14		90	HSS3.5X3.5X3	None	None	A500 Gr.46	Typical
42	M42	N22A	N71		90	HSS4X4X4	None	None	A500 Gr.46	Typical
43	M43	N71	N70		90	HSS3.5X3.5X3	None	None	A500 Gr.46	Typical
44	M44	N28	N74		90	HSS4X4X4	None	None	A500 Gr.46	Typical
45	M45	N74	N73		90	HSS3.5X3.5X3	None	None	A500 Gr.46	Typical
46	M64	N109A	N110A		270	PIPE_2.0	None	None	A53 Gr. B (35 ...	Typical
47	M65	N111	N112			RIGID	None	None	RIGID	Typical
48	M66	N113	N114			RIGID	None	None	RIGID	Typical
49	M67	N115	N116			RIGID	None	None	RIGID	Typical
50	M68	N117	N118			RIGID	None	None	RIGID	Typical
51	M69	N121	N122		270	PIPE_2.0	None	None	A53 Gr. B (35 ...	Typical
52	M70	N123	N124			RIGID	None	None	RIGID	Typical
53	M71	N125	N126			RIGID	None	None	RIGID	Typical
54	M72	N127	N128			RIGID	None	None	RIGID	Typical
55	M73	N129	N130			RIGID	None	None	RIGID	Typical
56	M74	N132	N133		270	PIPE_2.0	None	None	A53 Gr. B (35 ...	Typical
57	M75	N134	N135			RIGID	None	None	RIGID	Typical
58	M76	N136	N137			RIGID	None	None	RIGID	Typical
59	M77	N138	N139			RIGID	None	None	RIGID	Typical
60	M78	N140	N141			RIGID	None	None	RIGID	Typical
61	M79	N119	N143		90	L2.5x2.5x4	None	None	A36 Gr.36	Typical
62	M80	N131	N144		90	L2.5x2.5x4	None	None	A36 Gr.36	Typical
63	M81	N142	N120		90	L2.5x2.5x4	None	None	A36 Gr.36	Typical
64	M82	N146	N145		90	L2.5x2.5x3	None	None	A36 Gr.36	Typical
65	M83	N148	N145		90	L2.5x2.5x3	None	None	A36 Gr.36	Typical
66	M84	N149	N148A		90	L2.5x2.5x3	None	None	A36 Gr.36	Typical
67	M85	N150	N148A		180	L2.5x2.5x3	None	None	A36 Gr.36	Typical
68	M86	N152	N151		90	L2.5x2.5x3	None	None	A36 Gr.36	Typical
69	M87	N153	N151		180	L2.5x2.5x3	None	None	A36 Gr.36	Typical

Member Advanced Data

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
1	M1						Yes	** NA **			None
2	M3						Yes	** NA **			None
3	M5						Yes	** NA **			None

Member Advanced Data (Continued)

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
4	M7						Yes	** NA **			None
5	M8						Yes	** NA **			None
6	M9						Yes	** NA **			None
7	M10						Yes	** NA **			None
8	M13						Yes	** NA **			None
9	M23						Yes	** NA **			None
10	M24						Yes	** NA **			None
11	M14		BenPIN				Yes	** NA **			None
12	M15		BenPIN				Yes	** NA **			None
13	M17		BenPIN				Yes	** NA **			None
14	M18		BenPIN				Yes	** NA **			None
15	M20		BenPIN				Yes	** NA **			None
16	M21		BenPIN				Yes	** NA **			None
17	M19						Yes	** NA **			None
18	C4						Yes	** NA **			None
19	M21A						Yes	** NA **			None
20	C3						Yes	** NA **			None
21	M23A						Yes	** NA **			None
22	C2						Yes	** NA **			None
23	M25						Yes	** NA **			None
24	C1						Yes	** NA **			None
25	M27						Yes	** NA **			None
26	B4						Yes	** NA **			None
27	M29						Yes	** NA **			None
28	B3						Yes	** NA **			None
29	M31						Yes	** NA **			None
30	B2						Yes	** NA **			None
31	M33						Yes	** NA **			None
32	B1						Yes	** NA **			None
33	M35						Yes	** NA **			None
34	A4						Yes	** NA **			None
35	M37						Yes	** NA **			None
36	A3						Yes	** NA **			None
37	M39						Yes	** NA **			None
38	A2						Yes	** NA **			None
39	M41						Yes	** NA **			None
40	A1						Yes	** NA **			None
41	M41A						Yes	** NA **			None
42	M42						Yes	** NA **			None
43	M43						Yes	** NA **			None
44	M44						Yes	** NA **			None
45	M45						Yes	** NA **			None
46	M64						Yes	** NA **			None
47	M65	OOOXOX					Yes	** NA **			None
48	M66	OOOXOX					Yes	** NA **			None
49	M67	OOOXOX					Yes	** NA **			None
50	M68	OOOXOX					Yes	** NA **			None
51	M69						Yes	** NA **			None
52	M70	OOOXOX					Yes	** NA **			None
53	M71	OOOXOX					Yes	** NA **			None
54	M72	OOOXOX					Yes	** NA **			None
55	M73	OOOXOX					Yes	** NA **			None
56	M74						Yes	** NA **			None
57	M75	OOOXOX					Yes	** NA **			None
58	M76	OOOXOX					Yes	** NA **			None
59	M77	OOOXOX					Yes	** NA **			None
60	M78	OOOXOX					Yes	** NA **			None

Member Advanced Data (Continued)

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
61	M79	OOOOXO	OOOOXO				Yes	** NA **			None
62	M80	OOOOXO	OOOOXO				Yes	** NA **			None
63	M81	OOOOXO	OOOOXO				Yes	** NA **			None
64	M82	BenPIN					Yes	** NA **			None
65	M83	BenPIN					Yes	** NA **			None
66	M84	BenPIN					Yes	** NA **			None
67	M85	BenPIN					Yes	** NA **			None
68	M86	BenPIN					Yes	** NA **			None
69	M87	BenPIN					Yes	** NA **			None

Hot Rolled Steel Design Parameters

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torqu...	Kyy	Kzz	Cb	Function
1	M1	L3X3X4	168			Lbyy						Lateral
2	M3	L3X3X4	168			Lbyy						Lateral
3	M5	L3X3X4	168			Lbyy						Lateral
4	M7	L3X3X4	84			Lbyy						Lateral
5	M8	L3X3X4	84			Lbyy						Lateral
6	M9	L3X3X4	84			Lbyy						Lateral
7	M10	LL3x3x4x0	48.497			Lbyy						Lateral
8	M13	HSS4X4X4	28			Lbyy						Lateral
9	M23	LL3x3x4x0	48.497			Lbyy						Lateral
10	M24	LL3x3x4x0	48.497			Lbyy						Lateral
11	C4	PIPE_2.0	72									Lateral
12	C3	PIPE_2.0	72									Lateral
13	C2	PIPE_2.0	72									Lateral
14	C1	PIPE_2.0	72									Lateral
15	B4	PIPE_2.0	72									Lateral
16	B3	PIPE_2.0	72									Lateral
17	B2	PIPE_2.0	72									Lateral
18	B1	PIPE_2.0	72									Lateral
19	A4	PIPE_2.0	72									Lateral
20	A3	PIPE_2.0	72									Lateral
21	A2	PIPE_2.0	72									Lateral
22	A1	PIPE_2.0	72									Lateral
23	M41A	HSS3.5X3.5...	7.497			Lbyy						Lateral
24	M42	HSS4X4X4	28			Lbyy						Lateral
25	M43	HSS3.5X3.5...	7.497			Lbyy						Lateral
26	M44	HSS4X4X4	28			Lbyy						Lateral
27	M45	HSS3.5X3.5...	7.497			Lbyy						Lateral
28	M64	PIPE_2.0	150			Lbyy						Lateral
29	M69	PIPE_2.0	150			Lbyy						Lateral
30	M74	PIPE_2.0	150			Lbyy						Lateral
31	M79	L2.5x2.5x4	18									Lateral
32	M80	L2.5x2.5x4	18									Lateral
33	M81	L2.5x2.5x4	18									Lateral
34	M82	L2.5x2.5x3	72.257									Lateral
35	M83	L2.5x2.5x3	72.257									Lateral
36	M84	L2.5x2.5x3	72.257									Lateral
37	M85	L2.5x2.5x3	72.257									Lateral
38	M86	L2.5x2.5x3	72.257									Lateral
39	M87	L2.5x2.5x3	72.257									Lateral

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(Me...	Surface(...
1	Dead	None		-1.1			34		3	
2	Wind 0	None					68	78		
3	Wind 30	None					68	78		
4	Wind 60	None					68	78		
5	Wind 90	None					68	78		
6	Wind 120	None					68	78		
7	Wind 150	None					68	78		
8	Ice Load	None					34	39	3	
9	Ice 0	None					68	78		
10	Ice 30	None					68	78		
11	Ice 60	None					68	78		
12	Ice 90	None					68	78		
13	Ice 120	None					68	78		
14	Ice 150	None					68	78		
15	Lm1	None				1				
16	Lm2	None				1				
17	Lm3	None				1				
18	Lm4	None				1				
19	Lv1	None				1				
20	Lv2	None				1				
21	Lv3	None				1				
22	Lv4	None				1				
23	BLC 1 Transient Area Loads	None						27		
24	BLC 8 Transient Area Loads	None						27		

Load Combinations

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	1.4 D	Yes	Y		1	1.4																				
2	1.2 D + 1.0 Wo @ 0	Yes	Y		1	1.2	2	1																		
3	1.2 D + 1.0 Wo @ 30	Yes	Y		1	1.2	3	1																		
4	1.2 D + 1.0 Wo @ 60	Yes	Y		1	1.2	4	1																		
5	1.2 D + 1.0 Wo @ 90	Yes	Y		1	1.2	5	1																		
6	1.2 D + 1.0 Wo @ 120	Yes	Y		1	1.2	6	1																		
7	1.2 D + 1.0 Wo @ 150	Yes	Y		1	1.2	7	1																		
8	1.2 D + 1.0 Wo @ 180	Yes	Y		1	1.2	2	-1																		
9	1.2 D + 1.0 Wo @ 210	Yes	Y		1	1.2	3	-1																		
10	1.2 D + 1.0 Wo @ 240	Yes	Y		1	1.2	4	-1																		
11	1.2 D + 1.0 Wo @ 270	Yes	Y		1	1.2	5	-1																		
12	1.2 D + 1.0 Wo @ 300	Yes	Y		1	1.2	6	-1																		
13	1.2 D + 1.0 Wo @ 330	Yes	Y		1	1.2	7	-1																		
14	1.2 D + 1.0 Di + 1.0 Wi @ 0	Yes	Y		1	1.2	8	1	9	1																
15	1.2 D + 1.0 Di + 1.0 Wi @ 30	Yes	Y		1	1.2	8	1	10	1																
16	1.2 D + 1.0 Di + 1.0 Wi @ 60	Yes	Y		1	1.2	8	1	11	1																
17	1.2 D + 1.0 Di + 1.0 Wi @ 90	Yes	Y		1	1.2	8	1	12	1																
18	1.2 D + 1.0 Di + 1.0 Wi @ ...	Yes	Y		1	1.2	8	1	13	1																
19	1.2 D + 1.0 Di + 1.0 Wi @ ...	Yes	Y		1	1.2	8	1	14	1																
20	1.2 D + 1.0 Di + 1.0 Wi @ ...	Yes	Y		1	1.2	8	1	9	-1																
21	1.2 D + 1.0 Di + 1.0 Wi @ ...	Yes	Y		1	1.2	8	1	10	-1																
22	1.2 D + 1.0 Di + 1.0 Wi @ ...	Yes	Y		1	1.2	8	1	11	-1																
23	1.2 D + 1.0 Di + 1.0 Wi @ ...	Yes	Y		1	1.2	8	1	12	-1																
24	1.2 D + 1.0 Di + 1.0 Wi @ ...	Yes	Y		1	1.2	8	1	13	-1																
25	1.2 D + 1.0 Di + 1.0 Wi @ ...	Yes	Y		1	1.2	8	1	14	-1																
26	1.2 D + 1.5 Lm1 + 1.0 Wm ...	Yes	Y		1	1.2	15	1.5	2	.058																
27	1.2 D + 1.5 Lm1 + 1.0 Wm ...	Yes	Y		1	1.2	15	1.5	3	.058																

Load Combinations (Continued)

	Description	S...	P...	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
28	1.2 D + 1.5 Lm1 + 1.0 Wm ...	Yes	Y		1	1.2	15	1.5	4	.058																	
29	1.2 D + 1.5 Lm1 + 1.0 Wm ...	Yes	Y		1	1.2	15	1.5	5	.058																	
30	1.2 D + 1.5 Lm1 + 1.0 Wm ...	Yes	Y		1	1.2	15	1.5	6	.058																	
31	1.2 D + 1.5 Lm1 + 1.0 Wm ...	Yes	Y		1	1.2	15	1.5	7	.058																	
32	1.2 D + 1.5 Lm1 + 1.0 Wm ...	Yes	Y		1	1.2	15	1.5	2	.058																	
33	1.2 D + 1.5 Lm1 + 1.0 Wm ...	Yes	Y		1	1.2	15	1.5	3	.058																	
34	1.2 D + 1.5 Lm1 + 1.0 Wm ...	Yes	Y		1	1.2	15	1.5	4	.058																	
35	1.2 D + 1.5 Lm1 + 1.0 Wm ...	Yes	Y		1	1.2	15	1.5	5	.058																	
36	1.2 D + 1.5 Lm1 + 1.0 Wm ...	Yes	Y		1	1.2	15	1.5	6	.058																	
37	1.2 D + 1.5 Lm1 + 1.0 Wm ...	Yes	Y		1	1.2	15	1.5	7	.058																	
38	1.2 D + 1.5 Lm2 + 1.0 Wm ...	Yes	Y		1	1.2	16	1.5	2	.058																	
39	1.2 D + 1.5 Lm2 + 1.0 Wm ...	Yes	Y		1	1.2	16	1.5	3	.058																	
40	1.2 D + 1.5 Lm2 + 1.0 Wm ...	Yes	Y		1	1.2	16	1.5	4	.058																	
41	1.2 D + 1.5 Lm2 + 1.0 Wm ...	Yes	Y		1	1.2	16	1.5	5	.058																	
42	1.2 D + 1.5 Lm2 + 1.0 Wm ...	Yes	Y		1	1.2	16	1.5	6	.058																	
43	1.2 D + 1.5 Lm2 + 1.0 Wm ...	Yes	Y		1	1.2	16	1.5	7	.058																	
44	1.2 D + 1.5 Lm2 + 1.0 Wm ...	Yes	Y		1	1.2	16	1.5	2	.058																	
45	1.2 D + 1.5 Lm2 + 1.0 Wm ...	Yes	Y		1	1.2	16	1.5	3	.058																	
46	1.2 D + 1.5 Lm2 + 1.0 Wm ...	Yes	Y		1	1.2	16	1.5	4	.058																	
47	1.2 D + 1.5 Lm2 + 1.0 Wm ...	Yes	Y		1	1.2	16	1.5	5	.058																	
48	1.2 D + 1.5 Lm2 + 1.0 Wm ...	Yes	Y		1	1.2	16	1.5	6	.058																	
49	1.2 D + 1.5 Lm2 + 1.0 Wm ...	Yes	Y		1	1.2	16	1.5	7	.058																	
50	1.2 D + 1.5 Lm3 + 1.0 Wm ...	Yes	Y		1	1.2	17	1.5	2	.058																	
51	1.2 D + 1.5 Lm3 + 1.0 Wm ...	Yes	Y		1	1.2	17	1.5	3	.058																	
52	1.2 D + 1.5 Lm3 + 1.0 Wm ...	Yes	Y		1	1.2	17	1.5	4	.058																	
53	1.2 D + 1.5 Lm3 + 1.0 Wm ...	Yes	Y		1	1.2	17	1.5	5	.058																	
54	1.2 D + 1.5 Lm3 + 1.0 Wm ...	Yes	Y		1	1.2	17	1.5	6	.058																	
55	1.2 D + 1.5 Lm3 + 1.0 Wm ...	Yes	Y		1	1.2	17	1.5	7	.058																	
56	1.2 D + 1.5 Lm3 + 1.0 Wm ...	Yes	Y		1	1.2	17	1.5	2	.058																	
57	1.2 D + 1.5 Lm3 + 1.0 Wm ...	Yes	Y		1	1.2	17	1.5	3	.058																	
58	1.2 D + 1.5 Lm3 + 1.0 Wm ...	Yes	Y		1	1.2	17	1.5	4	.058																	
59	1.2 D + 1.5 Lm3 + 1.0 Wm ...	Yes	Y		1	1.2	17	1.5	5	.058																	
60	1.2 D + 1.5 Lm3 + 1.0 Wm ...	Yes	Y		1	1.2	17	1.5	6	.058																	
61	1.2 D + 1.5 Lm3 + 1.0 Wm ...	Yes	Y		1	1.2	17	1.5	7	.058																	
62	1.2 D + 1.5 Lm4 + 1.0 Wm ...	Yes	Y		1	1.2	18	1.5	2	.058																	
63	1.2 D + 1.5 Lm4 + 1.0 Wm ...	Yes	Y		1	1.2	18	1.5	3	.058																	
64	1.2 D + 1.5 Lm4 + 1.0 Wm ...	Yes	Y		1	1.2	18	1.5	4	.058																	
65	1.2 D + 1.5 Lm4 + 1.0 Wm ...	Yes	Y		1	1.2	18	1.5	5	.058																	
66	1.2 D + 1.5 Lm4 + 1.0 Wm ...	Yes	Y		1	1.2	18	1.5	6	.058																	
67	1.2 D + 1.5 Lm4 + 1.0 Wm ...	Yes	Y		1	1.2	18	1.5	7	.058																	
68	1.2 D + 1.5 Lm4 + 1.0 Wm ...	Yes	Y		1	1.2	18	1.5	2	-.058																	
69	1.2 D + 1.5 Lm4 + 1.0 Wm ...	Yes	Y		1	1.2	18	1.5	3	-.058																	
70	1.2 D + 1.5 Lm4 + 1.0 Wm ...	Yes	Y		1	1.2	18	1.5	4	-.058																	
71	1.2 D + 1.5 Lm4 + 1.0 Wm ...	Yes	Y		1	1.2	18	1.5	5	-.058																	
72	1.2 D + 1.5 Lm4 + 1.0 Wm ...	Yes	Y		1	1.2	18	1.5	6	-.058																	
73	1.2 D + 1.5 Lm4 + 1.0 Wm ...	Yes	Y		1	1.2	18	1.5	7	-.058																	
74	1.2 D + 1.5 Lv1	Yes	Y		1	1.2	19	1.5																			
75	1.2 D + 1.5 Lv2	Yes	Y		1	1.2	20	1.5																			
76	1.2 D + 1.5 Lv3	Yes	Y		1	1.2	21	1.5																			
77	1.2 D + 1.5 Lv4	Yes	Y		1	1.2	22	1.5																			
78	1.0 D	Yes	Y		1	1																					

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-in]	LC	MY [k-in]	LC	MZ [k-in]	LC
1	N14	max	892.458	11	2094.608	17	1727.195	13	3.386	13	13.553	12	-6.782	11
2		min	-1177.404	5	202.114	11	-1755.922	7	-3.444	7	-14	6	-59.125	17
3	N70	max	1758.627	11	2126.592	25	1694.453	2	-5.885	6	17.336	8	30.341	14
4		min	-1616.423	5	207.546	7	-1432.895	8	-51.598	25	-17.619	2	1.582	8
5	N73	max	2000.014	11	2213.103	21	1488.607	2	54.366	21	17.169	8	31.558	20
6		min	-1785.434	5	187.449	3	-1722.864	8	5.631	3	-17.9	2	1.055	2
7	N145	max	1314.875	23	1716.368	23	227.776	14	0	78	0	78	0	78
8		min	-139.385	5	-8.668	5	-188.203	31	0	1	0	1	0	1
9	N148A	max	120.267	12	1748.331	19	109.125	13	0	78	0	78	0	78
10		min	-556.811	18	-16.859	13	-1229.897	19	0	1	0	1	0	1
11	N151	max	100.063	10	1800.392	15	1063.4	15	0	78	0	78	0	78
12		min	-928.579	16	-52.793	9	-163.244	9	0	1	0	1	0	1
13	Totals:	max	5483.585	11	10821.968	21	5387.567	2						
14		min	-5483.656	5	2485.568	78	-5387.568	8						

Envelope AISC 15th(360-16): LRFD Steel Code Checks

	Member	Shape	Code C...	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-...	phi*Mn z-...	Cb	Eqn
1	M45	HSS3.5X3.5X3	.600	7.497	22	.117	7.497	y	11	92542.26	92736	114.264	114.264	1....	H1-1b
2	M43	HSS3.5X3.5X3	.572	7.497	14	.118	7.497	y	3	92542.26	92736	114.264	114.264	1....	H1-1b
3	M5	L3X3X4	.563	0	3	.105	84	z	21	3944.532	46656	20.258	32.165	1....	H2-1
4	M41A	HSS3.5X3.5X3	.562	7.497	18	.104	7.497	y	7	92542.26	92736	114.264	114.264	1....	H1-1b
5	M1	L3X3X4	.493	0	11	.104	84	z	17	3944.532	46656	20.258	31.19	1....	H2-1
6	M3	L3X3X4	.481	0	7	.148	0	z	34	3944.532	46656	20.258	31.23	1....	H2-1
7	M69	PIPE_2.0	.471	125	18	.142	32.813		19	6295.422	32130	22.459	22.459	1....	H1-1b
8	M64	PIPE_2.0	.452	125	21	.131	32.813		23	6295.422	32130	22.459	22.459	1....	H1-1b
9	M74	PIPE_2.0	.450	125	25	.153	32.813		15	6295.422	32130	22.459	22.459	1....	H1-1b
10	B1	PIPE_2.0	.417	36	22	.311	36		24	20866.733	32130	22.459	22.459	1....	H3-6
11	M9	L3X3X4	.392	42	22	.019	42	z	21	15778.129	46656	20.258	38.576	1....	H2-1
12	M8	L3X3X4	.390	42	14	.019	42	z	22	15778.129	46656	20.258	38.562	1....	H2-1
13	A3	PIPE_2.0	.382	36	23	.284	36		22	20866.733	32130	22.459	22.459	1....	H3-6
14	M7	L3X3X4	.360	42	18	.017	42	z	19	15778.129	46656	20.258	38.592	1....	H2-1
15	C1	PIPE_2.0	.353	36	33	.297	36		16	20866.733	32130	22.459	22.459	1....	H1-1b
16	B3	PIPE_2.0	.352	36	33	.264	36		14	20866.733	32130	22.459	22.459	1....	H1-1b
17	A1	PIPE_2.0	.341	36	19	.306	36		20	20866.733	32130	22.459	22.459	1....	H3-6
18	B2	PIPE_2.0	.337	36	12	.071	36		24	20866.733	32130	22.459	22.459	1....	H1-1b
19	A2	PIPE_2.0	.328	36	8	.074	36		8	20866.733	32130	22.459	22.459	1....	H1-1b
20	C3	PIPE_2.0	.327	36	19	.263	36		18	20866.733	32130	22.459	22.459	1....	H3-6
21	C2	PIPE_2.0	.321	36	4	.065	36		16	20866.733	32130	22.459	22.459	1....	H1-1b
22	A4	PIPE_2.0	.303	36	25	.236	36		25	20866.733	32130	22.459	22.459	1....	H3-6
23	B4	PIPE_2.0	.284	36	33	.222	36		17	20866.733	32130	22.459	22.459	1....	H1-1b
24	M44	HSS4X4X4	.246	28	22	.075	28	y	11	136374.9...	139518	194.166	194.166	2....	H1-1b
25	M42	HSS4X4X4	.236	28	14	.076	28	y	3	136374.9...	139518	194.166	194.166	2....	H1-1b
26	C4	PIPE_2.0	.234	36	19	.219	36		21	20866.733	32130	22.459	22.459	1....	H1-1b
27	M13	HSS4X4X4	.232	28	18	.067	28	y	7	136374.9...	139518	194.166	194.166	2....	H1-1b
28	M86	L2.5x2.5x3	.138	32.365	24	.016	72.257	z	22	9057.314	29192.4	10.471	18.312	1....	H2-1
29	M83	L2.5x2.5x3	.135	34.623	17	.019	72.257	z	16	9057.314	29192.4	10.471	19.971	1....	H2-1
30	M84	L2.5x2.5x3	.134	32.365	16	.018	72.257	z	14	9057.314	29192.4	10.471	18.313	1....	H2-1
31	M82	L2.5x2.5x3	.130	31.612	20	.022	72.257	z	18	9057.314	29192.4	10.471	18.302	1....	H2-1
32	M85	L2.5x2.5x3	.127	32.365	22	.023	72.257	y	24	9057.314	29192.4	10.471	18.308	1....	H2-1
33	M87	L2.5x2.5x3	.124	32.365	18	.021	72.257	y	20	9057.314	29192.4	10.471	18.307	1....	H2-1
34	M10	LL3x3x4x0	.104	48.497	9	.017	0	y	21	76243.9	93312	77.76	52.263	1....	H1-1b
35	M23	LL3x3x4x0	.088	48.497	5	.012	0	y	17	76243.9	93312	77.76	52.263	1....	H1-1b
36	M24	LL3x3x4x0	.082	48.497	13	.016	0	y	44	76243.9	93312	77.76	52.263	1....	H1-1b
37	M80	L2.5x2.5x4	.068	0	21	.036	18	z	73	35826.706	38556	13.363	30.449	2....	H2-1
38	M81	L2.5x2.5x4	.065	0	17	.031	0	z	63	35826.706	38556	13.363	30.449	2....	H2-1

Envelope AISC 15th(360-16): LRFD Steel Code Checks (Continued)

	Member	Shape	Code C...	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-...	phi*Mn z-...	Cb	Eqn
39	M79	L2.5x2.5x4	.063	18	21	.049	0	z	32	35826.706	38556	13.363	30.449	2....	H2-1

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Project # 37519-3739.002.7191
By AMS
Date: 01/09/20
v0.1, Effective 07/10/18

MOUNT TO TOWER CONNECTION CHECKS

REACTIONS - Node 73

Px=	1.968	Kip
Py=	2.215	Kip
(Axial)Pz=	1.245	Kip
Mx=	62.635	Kip-in
My=	17.9	Kip-in
(Torque)Mz=	3.867	Kip-in

WELD CHECKS

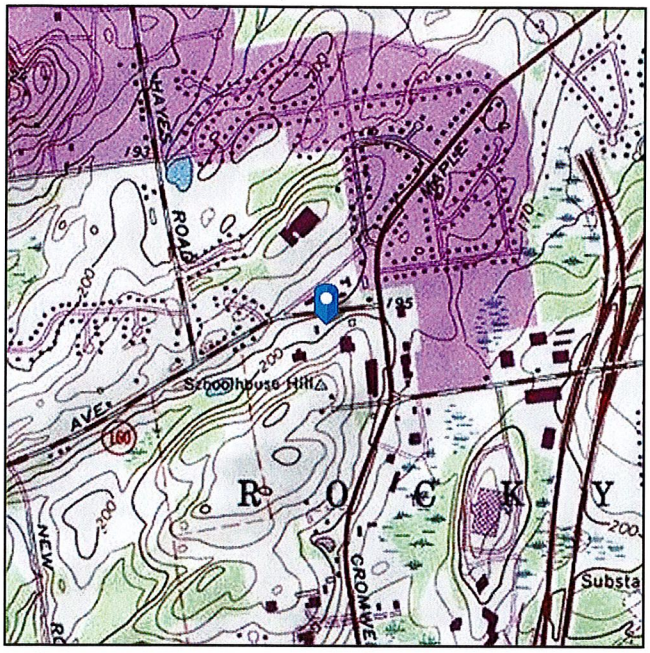
Standoff Member Type		Square	
Width	=	3.5	in
Depth (only for square members)	=	3.5	in
Assumed Weld Size	=	0.1875	
Total Forces in X direction	=	0.400	kips
Total Forces in Y direction	=	0.435	kips
Total Forces in Z direction	=	3.35	kips
Resultant	=	3.40	kips
Φ*Fw (Kip/in)/16" weld	=	1.392	
Capacity used		81.37%	

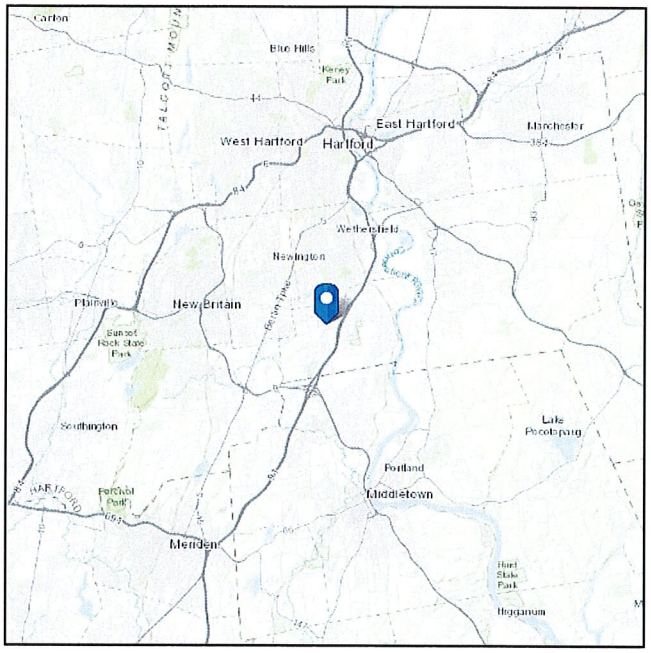
ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-10
Risk Category: II
Soil Class: D - Stiff Soil

Elevation: 198.53 ft (NAVD 88)
Latitude: 41.660247
Longitude: -72.680717





Wind

Results:

Wind Speed:	124 Vmph ⟵ jurisdiction requires 125 mph ultimate wind speed
10-year MRI	77 Vmph
25-year MRI	87 Vmph
50-year MRI	93 Vmph
100-year MRI	101 Vmph
Data Source:	ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, incorporating errata of March 12, 2014
Date Accessed:	Fri Dec 13 2019

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

Mountainous terrain, gorges, ocean promontories, and special wind regions should be examined for unusual wind conditions.

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Seismic

Site Soil Class: D - Stiff Soil

Results:

S_S :	0.181	S_{DS} :	0.193
S_1 :	0.063	S_{D1} :	0.101
F_a :	1.6	T_L :	6
F_v :	2.4	PGA :	0.092
S_{MS} :	0.29	PGA_M :	0.147
S_{M1} :	0.152	F_{PGA} :	1.6
		I_e :	1

Seismic Design Category B

Data Accessed: Fri Dec 13 2019

Date Source: USGS Seismic Design Maps based on ASCE/SEI 7-10, incorporating Supplement 1 and errata of March 31, 2013, and ASCE/SEI 7-10 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-10 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness:	1.00 in.
Concurrent Temperature:	5 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Fri Dec 13 2019

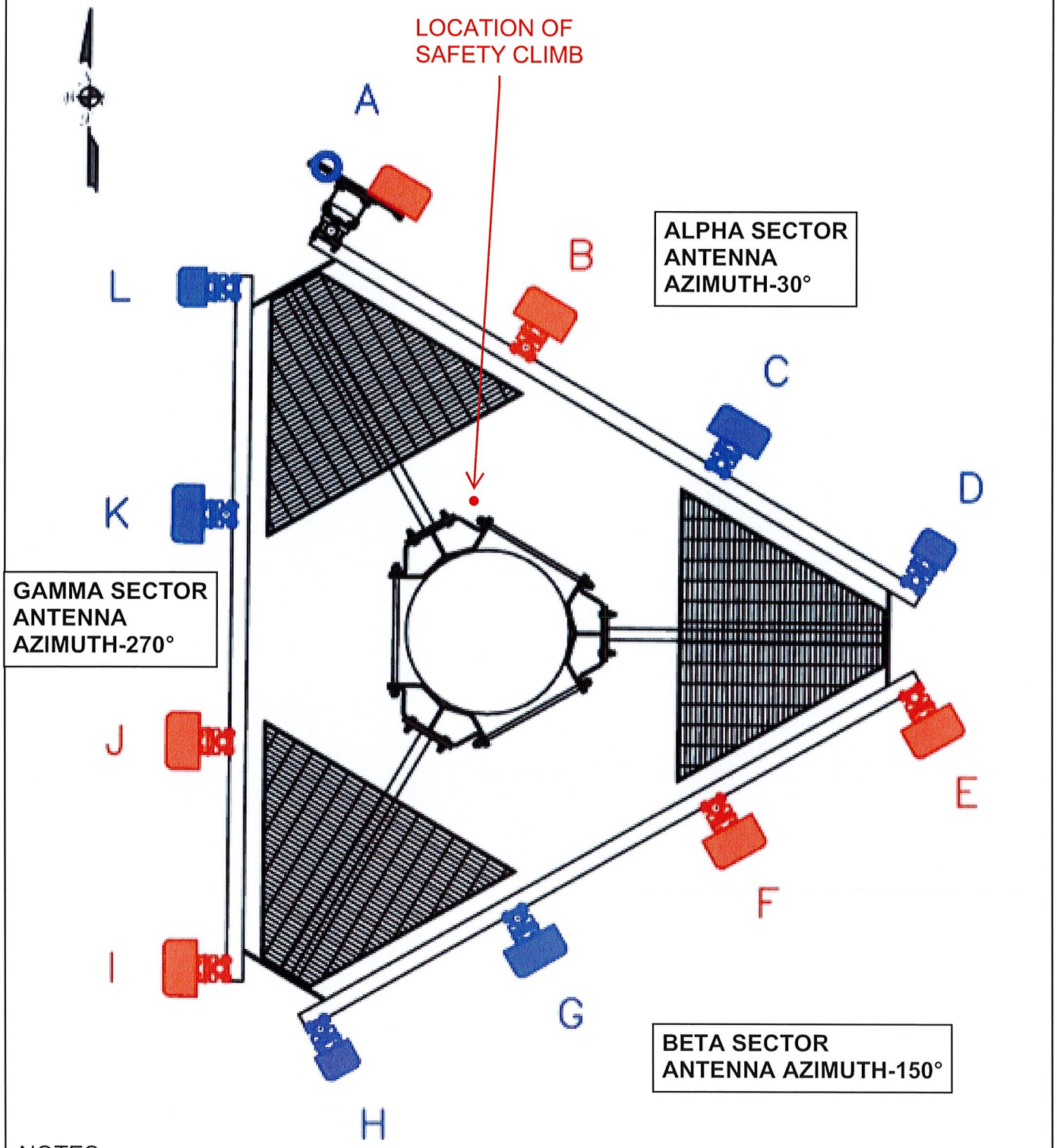
Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

APPENDIX D

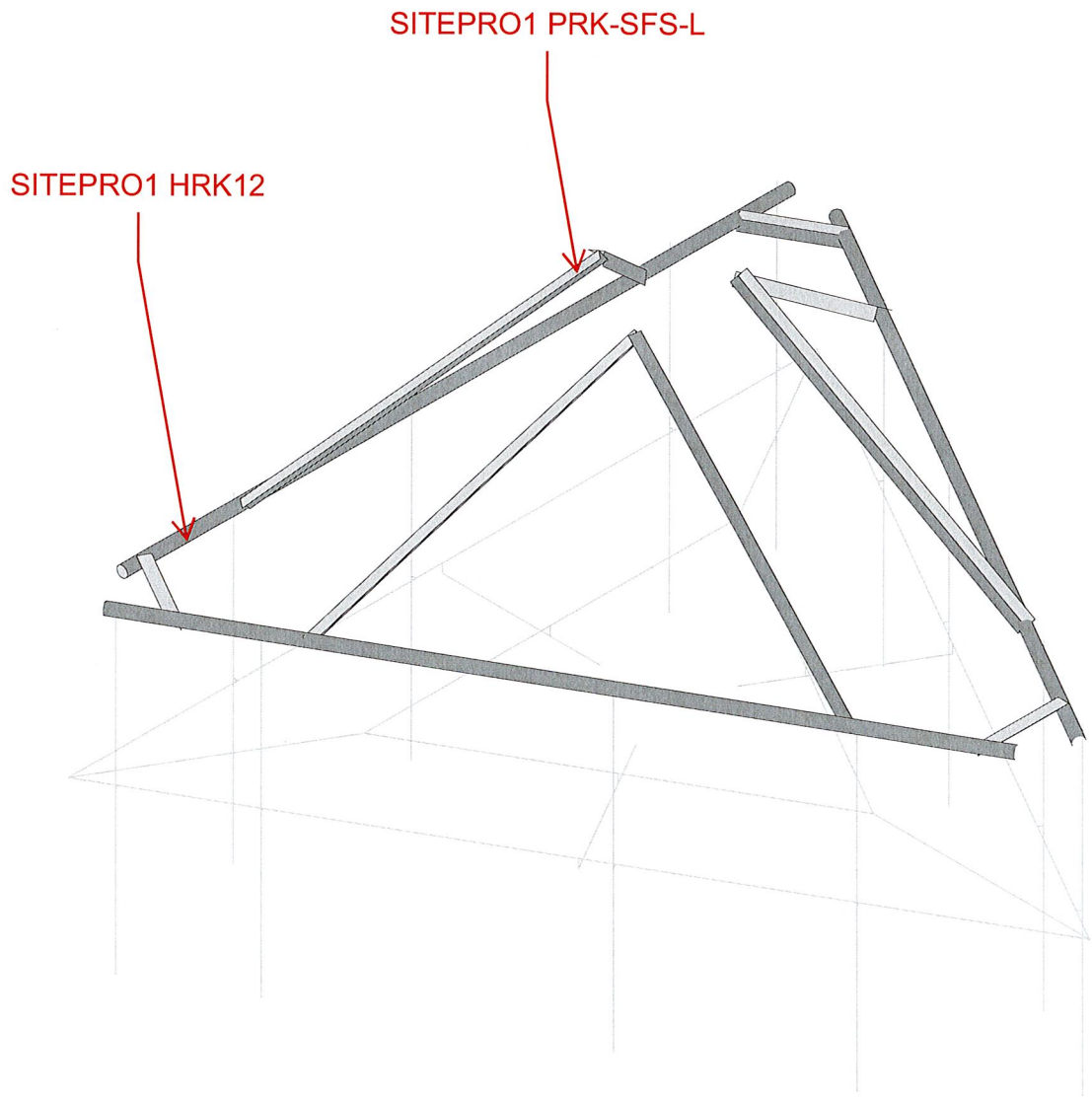
SUPPLEMENTAL MODIFICATION INFORMATION

PLAN VIEW



NOTES:
1) A 6" VERTICAL TOLERANCE FOR PROPOSED EQUIPMENT IS ACCEPTABLE.
2) CONTRACTOR TO VERIFY LOCATION OF EXISTING EQUIPMENT PRIOR TO INSTALLATION OF PROPOSED EQUIPMENT. NOTIFY EOR FOR ANY DEVIATIONS.
3) INSTALL SHALL NOT CAUSE HARM TO THE STRUCTURE, CLIMBING FACILITY, SAFETY CLIMB OR ANY SYSTEM INSTALLED ON THE STRUCTURE.

MODIFICATION DRAWING 1 OF 2



NOTES:
1) A 6" VERTICAL TOLERANCE FOR PROPOSED EQUIPMENT IS ACCEPTABLE.
2) CONTRACTOR TO VERIFY LOCATION OF EXISTING EQUIPMENT PRIOR TO INSTALLATION OF PROPOSED EQUIPMENT. NOTIFY EOR FOR ANY DEVIATIONS.
3) INSTALL SHALL NOT CAUSE HARM TO THE STRUCTURE, CLIMBING FACILITY, SAFETY CLIMB OR ANY SYSTEM INSTALLED ON THE STRUCTURE.

Envelope Only Solution

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AMS		Jan 9, 2020 at 9:57 AM
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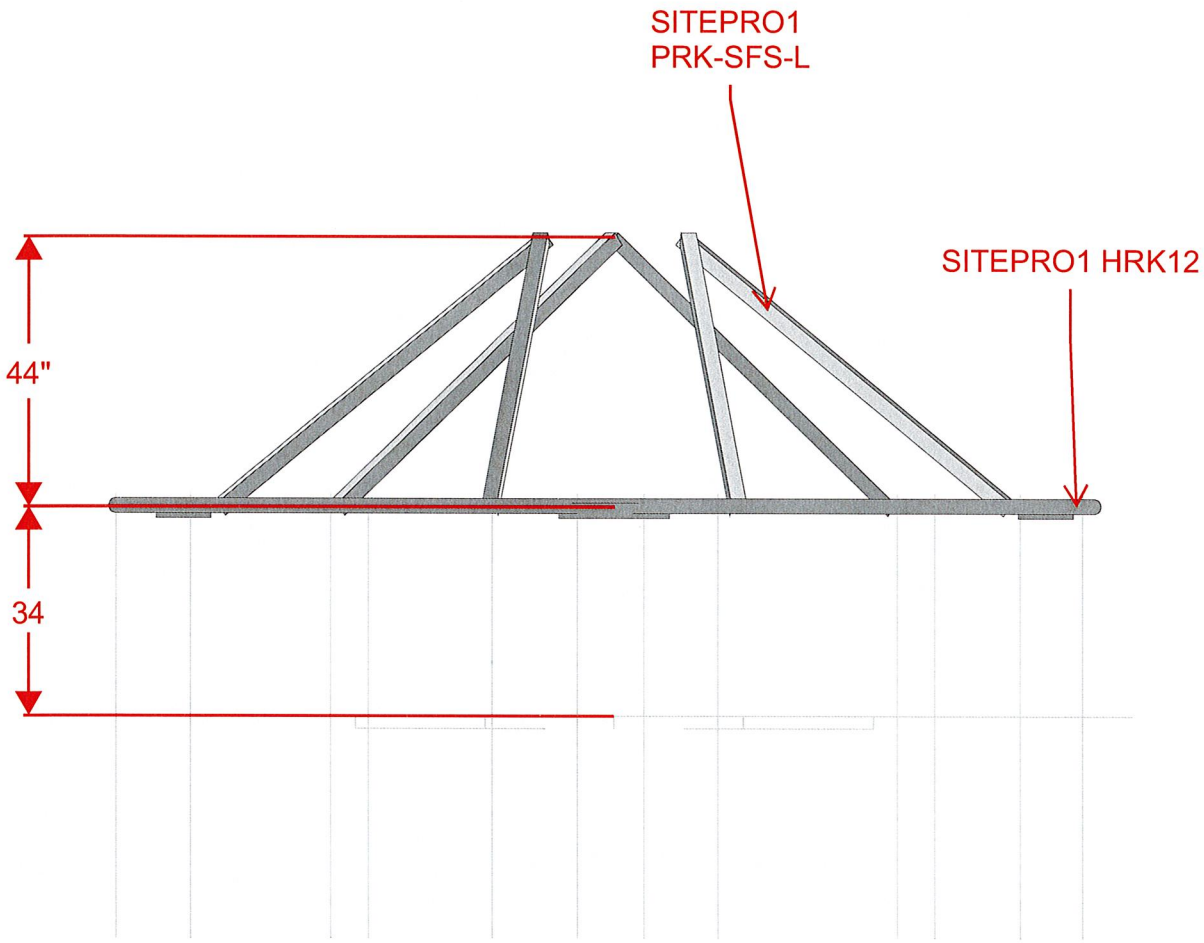
MODIFICATION DRAWING 2 OF 2



NOTES:
1) A 6" VERTICAL TOLERANCE FOR PROPOSED EQUIPMENT IS ACCEPTABLE.
2) CONTRACTOR TO VERIFY LOCATION OF EXISTING EQUIPMENT PRIOR TO INSTALLATION OF PROPOSED EQUIPMENT. NOTIFY EOR FOR ANY DEVIATIONS.
3) INSTALL SHALL NOT CAUSE HARM TO THE STRUCTURE, CLIMBING FACILITY, SAFETY CLIMB OR ANY SYSTEM INSTALLED ON THE STRUCTURE.

Envelope Only Solution

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AMS		Jan 9, 2020 at 9:57 AM
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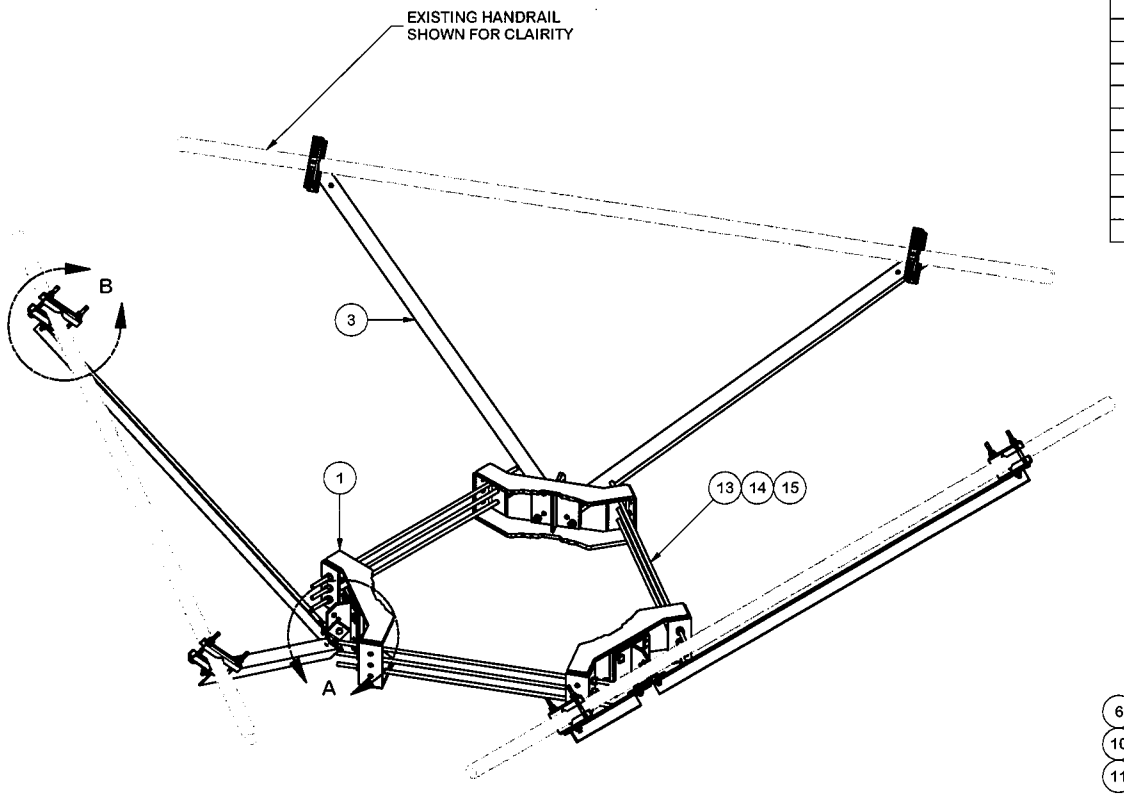
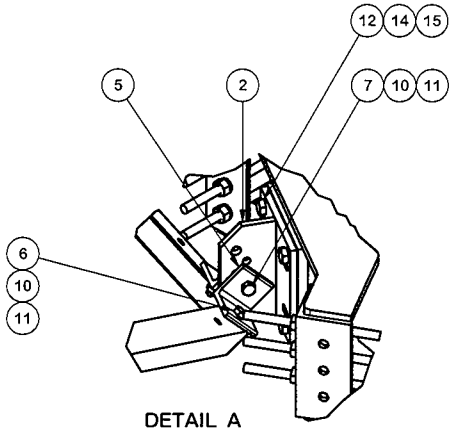
APPENDIX E

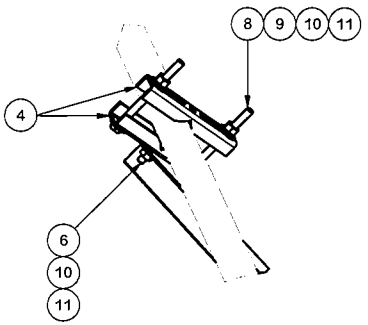
MANUFACTURER DRAWINGS (FOR REFERENCE ONLY)



PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	3	X-LWRM	RING MOUNT WELDMENT		68.81	206.42
2	3	X-TBW	T-BRACKET WELDMENT		13.60	40.80
3	6	X-254924	DIAGONAL ANGLE - SITE PRO 1	72 in	19.71	118.24
4	12	X-STU	STIFF ARM CHANNEL BRACKET	8 1/2 in	1.37	16.46
5	6	SHCM-T	CHAIN MOUNT TIGHTENER BRACKET	3 in	1.86	11.15
6	12	G12112	1/2" x 1-1/2" HDG HEX BOLT GR5	1/2 in	0.15	1.77
7	3	G12212	1/2" x 2-1/2" HDG HEX BOLT GR5	2 1/2 in	0.20	0.61
8	12	G12065	1/2" x 6-1/2" HDG HEX BOLT GR5 FULL THREAD	6 1/2 in	0.41	4.91
9	24	G12FW	1/2" HDG USS FLATWASHER	3/32 in	0.03	0.82
10	27	G12LW	1/2" HDG LOCKWASHER	1/8 in	0.01	0.38
11	27	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	1.93
12	12	A582114	5/8" x 2-1/4" HDG A325 HEX BOLT	2 1/4 in	0.31	3.75
13	9	G58R-24	5/8" x 24" THREADED ROD (HDG.)	24 in	0.40	3.59
13	9	G58R-48	5/8" x 48" THREADED ROD (HDG.)	48 in	0.40	3.59
14	30	G58LW	5/8" HDG LOCKWASHER		0.03	0.78
15	30	G58NUT	5/8" HDG HEAVY 2H HEX NUT		0.13	3.90
					TOTAL WT. #	642.04



DETAIL A



DETAIL B

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	CHANGED MAX. DIA. FOR HANDRAIL CONNECTION	SP1	BC	10/25/2017

REVISION HISTORY

TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
SAWED, SHEARED AND GAS CUT EDGES (± 0.030")
DRILLED AND GAS CUT HOLES (± 0.030") - NO CONING OF HOLES
LASER CUT EDGES AND HOLES (± 0.010") - NO CONING OF HOLES
BENDS ARE ± 1/2 DEGREE
ALL OTHER MACHINING (± 0.030")
ALL OTHER ASSEMBLY (± 0.060")

DESCRIPTION: HANDRAIL REINFORCEMENT KIT (LONG)

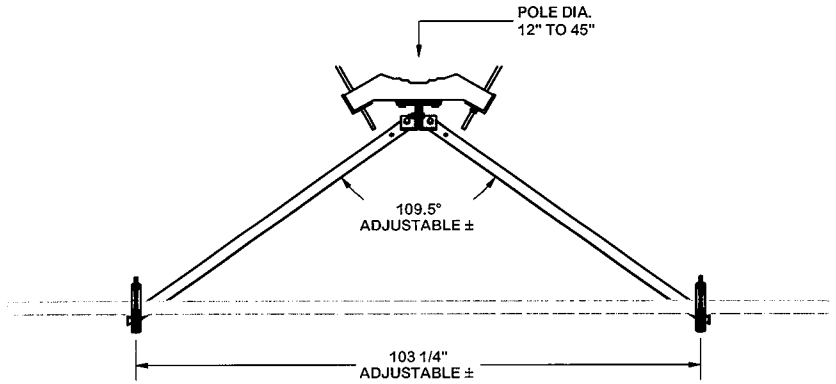
SITE PRO 1 — A valmont COMPANY

Engineering Support Team: 1-888-753-7446

Locations:
New York, NY
Atlanta, GA
Los Angeles, CA
Plymouth, IN
Salem, OR
Dallas, TX

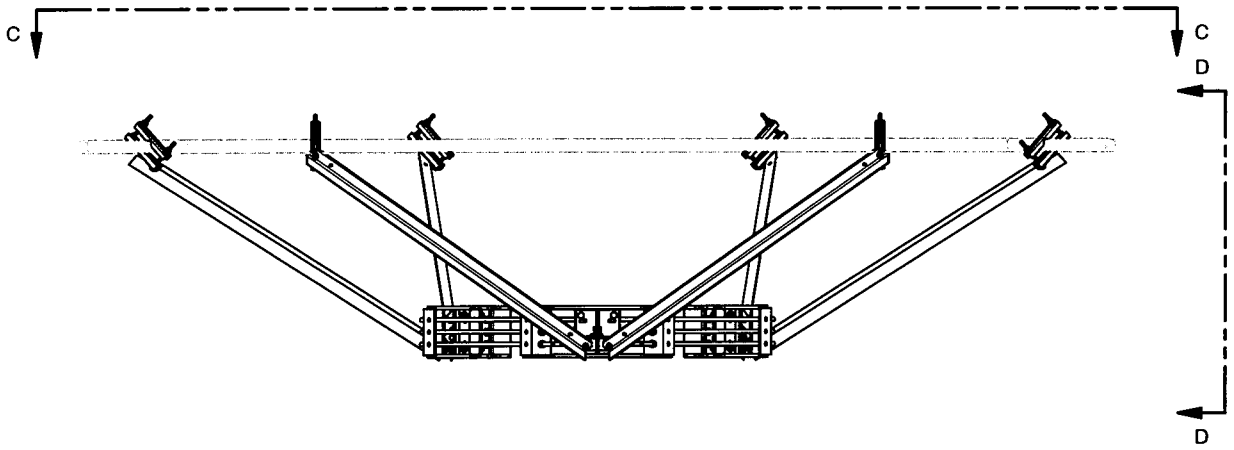
CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
SP1	CSL3 2/23/2017	3RD PARTY	PRK-SFS-L

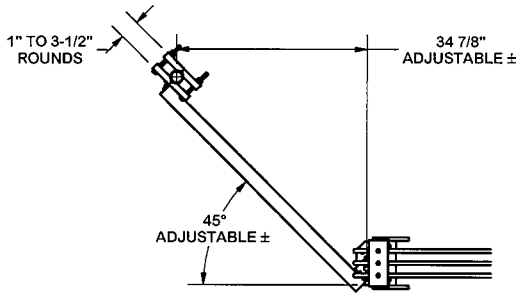
CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	02	SHOP	BMC 9/8/2017	PRK-SFS-L



PARTIAL VIEW C-C

VERTICAL POSITION





PARTIAL VIEW D-D

TOLERANCE NOTES

TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
SAWED, SHEARED AND GAS CUT EDGES (± 0.030")
DRILLED AND GAS CUT HOLES (± 0.030") - NO CONING OF HOLES
LASER CUT EDGES AND HOLES (± 0.010") - NO CONING OF HOLES
BENDS ARE ± 1/2 DEGREE
ALL OTHER MACHINING (± 0.030")
ALL OTHER ASSEMBLY (± 0.060")

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
	REVISION HISTORY			
A	CHANGED MAX. DIA. FOR HANDRAIL CONNECTION	SP1	BC	10/25/2017

DESCRIPTION: HANDRAIL REINFORCEMENT KIT (LONG)

CPD NO.	DRAWN BY	ENG. APPROVAL	PART NO.
SP1	CSL3 2/23/2017	3RD PARTY	PRK-SFS-L

CLASS	SUB	DRAWING USAGE	CHECKED BY	DWG. NO.
81	02	SHOP	BMC 9/8/2017	PRK-SFS-L

SITE PRO 1 — A valmont COMPANY

Engineering Support Team: 1-888-753-7446

Locations: New York, NY; Atlanta, GA; Los Angeles, CA; Plymouth, IN; Salem, OR; Dallas, TX

APPENDIX F

POST MODIFICATION INSPECTION (PMI) REQUIREMENTS FOR DESKTOP REVIEW

Post Modification Inspection (PMI) Report Requirements
Documents & Photos Required from Contractor

Purpose – to provide PJF the proper documentation in order to complete the required Mount Desktop review of the Post Modification Inspection Report.

- Contractor is responsible for making certain the photos provided as noted below provide confirmation that the modification was completed in accordance with the modification drawings.
- Contractor shall relay any data that can impact the performance of the mount or the mount modification, this includes safety issues.

Base Requirements:

- Provide "as built drawings" showing contractor's name, preparer's signature, and date. Any deviations from the drawing (proposed modification) must be shown.
- Notation that all hardware was properly installed, and the existing hardware was inspected for any issues.
- Verification that loading is as communicated in the modification drawings. NOTE if loading is different than what is conveyed in the modification drawing contact PJF immediately.
- Each photo should be time and date stamped.
- Photos should be high resolution and submitted in a Zip File and should be organized in the file structure as depicted in Schedule A attached.
- Any special photos outside of the standard requirements will be indicated on the drawings.
- Contractor shall ensure that the safety climb wire rope is supported and not adversely impacted by the install of the modification components. This may involve the install of wire rope guides, or other items to protect the wire rope.
- The photos in the file structure should be uploaded to **pjfmount@pauljford.com** as depicted on the drawings.

Photo Requirements:

- *Base and "During Installation Photos"*
  - Base pictures include
    - Photo of Gate Signs showing the tower owner, site name, and number.
    - Photo of carrier shelter showing the carrier site name and number if available.
    - Photos of the galvanizing compound and/or paint used (if applicable), clearly showing the label and name.
  - "During Installation" Photos if provided – must be placed only in this folder
- *Photos taken at ground level*
  - Overall tower structure before and after installation of the modifications
  - Photos of the appropriate mount before and after installation of the modifications; if the mounts are at different rad elevations, pictures must be provided for all elevations that the modifications were installed.
- *Photos taken at Mount Elevation*
  - Photos showing each individual sector before and after installation of modifications. Each entire sector must be in one photo to show in the inter-connection of members.
  - Close-up photos of each installed modification per the modification drawings; pictures should also include connection hardware (U-bolts, bolts, nuts, all-threaded rods, etc.)
  - Photos showing the measurements of the installed modification member sizes (i.e. lengths, widths, depths, diameters, thicknesses).
  - Photos showing the elevation or distances of the installed modifications from the appropriate reference locations shown in the modification drawings.

- Photos showing the installed modifications onto the tower with tape drop measurements (if applicable) (i.e. ring/collar mounts, tie-backs, V-bracing kits, etc.); if the existing mount elevations needs to be changed according to the modification drawings, a tape drop measurement shall be provided before the elevation change.
- Photos showing the safety climb wire rope above and below the mount prior to modification.
- Photos showing the safety climb wire rope above and below the mount post modification.

Antenna and equipment placement and Geometry Certification:

- The contractor must certify that the antenna and equipment placement and geometry is in accordance with the antenna placement diagrams as included in this mount analysis.

☐ The contractor certifies per photos that the equipment on the mount is as depicted on the antenna placement diagrams as included in this mount analysis.

☐ The contractor notes that the equipment on the mount is not in accordance with the antenna placement diagrams and has accordingly marked up the diagrams or provided a diagram outlining the differences.

Material Certification:

- Materials utilized must be as per specification on the drawings or the equivalent as validated by PJF.
  - Submission of specifications / invoices certifying / PJF approval of an "equivalent" must be submitted to the noted email box by the PMI contractor.
- The contractor must certify that the materials meet these specifications by one of the methods below.

☐ The Material utilized was as specified on the PJF Mount Modification Drawings

☐ The Material utilized was an "equivalent" and included as part of the PMI are the PJF certification, invoices, or specifications validating accepted status

Certifying Individual: Company _____

Name _____

Signature _____

Schedule A – Photo & Document File Structure

- VzW Site Number / Name
  - Base & "During Installation" Photos
  - Pre-Installation Photos
    - Alpha
    - Beta
    - Gamma
    - Ground Level
    - Tape Drop
  - Post-Installation Photos
    - Alpha
    - Beta
    - Gamma
    - Ground Level
    - Tape Drop
  - Material Certification – Submission of this document including executed certification on Page 2
  - Specific Required Additional Photos
  - Required Additional Photos

Special Instructions / Validation as required from the MA or any other information the contractor deems necessary to share that was identified:

Issue: _____

_____

_____

Response: _____

_____

_____