



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

Web Site: portal.ct.gov/csc

VIA ELECTRONIC MAIL

April 29, 2024

Carolyn Seeley
Smartlink
6 Jasmine Road
Oxford, MA 01540
carolyn.seeley@smartlinkgroup.com

RE: **EM-ATT-093-240322** - New Cingular Wireless PCS, LLC (AT&T) notice of intent to modify an existing telecommunications facility located at 142 Baldwin Drive, New Haven, Connecticut.
Acknowledgement of Complete Request.

Dear Carolyn Seeley:

The Connecticut Siting Council (Council) is in receipt of your correspondence of April 26, 2024 submitted in response to the Council's April 19, 2024 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,

A handwritten signature in black ink, appearing to read "Melanie Bachman".

Melanie Bachman
Executive Director

MAB/ANM/laf

From: Carolyn Seeley <carolyn.seeley@smartlinkgroup.com>
Sent: Friday, April 26, 2024 9:37 AM
To: Fontaine, Lisa <Lisa.Fontaine@ct.gov>
Cc: CSC-DL Siting Council <Siting.Council@ct.gov>
Subject: RE: Council Incomplete Letter - EM-ATT-093-240322 - (Baldwin Drive)- New Haven

Good Morning,

Please see the attached MA referencing the 2022 CSBC.



Carolyn Seeley

Real Estate Specialist II

📞 978-760-5577

✉ carolyn.seeley@smartlinkgroup.com

📍 10 Church Circle, Annapolis, MD 21401

🌐 www.smartlinkgroup.com



April 3, 2024

Kristina Robinson
Smartlink, LCC
10 Church Circle
Annapolis, MD 21401
(410) 263-5465



Tower Engineering Professionals
326 Tryon Road
Raleigh, NC 27603
(919) 661-6351
Structures@tepgroup.net

Subject: Appurtenance Replacement Mount Analysis

Carrier Designation:

AT&T Mobility Reconfiguration

Site Number: CT2013
Site Name: New Haven West Rock
FA Location Code: 10035296

Engineering Firm Designation:

TEP Project Number: 337779.937679

Site Data:

142 Baldwin Drive, New Haven, New Haven County, CT 06514
Latitude 41° 20' 43.57", Longitude -72° 58' 14.50"
120.0± Foot - Self-Support Tower
84.0 Foot Mount Height - Sector

Dear Kristina Robinson,

Tower Engineering Professionals is pleased to submit this “**Appurtenance Replacement Mount Analysis**” to determine the structural integrity of the antenna mount on the above-mentioned tower.

The purpose of the analysis is to determine acceptability of the proposed mount's stress level and to provide a recommendation for the replacement mount's make and model. Based on our analysis we have determined the stress level for the mount structure, under the following load case, to be:

LC1: Existing + Proposed + Reserved Loading

Note: See Table 2 for the existing, proposed, and reserved loading

Sufficient Capacity

Mount Capacity
62.6%

The analysis has been performed in accordance with the ANSI/TIA-222-H Structural Standard for Antenna Supporting Structures, Antennas, and Small Wind Turbine Support Structures, the 2021 International Building Code with 2022 Connecticut State Building Code, and the AT&T Mount Technical Guidance – Revision 22.

All equipment proposed in this report shall be installed in accordance with the appurtenances listed in Table 2 for the determined available structural capacity to be effective.

We at *Tower Engineering Professionals* appreciate the opportunity of providing our continuing professional services to you and *Smartlink Group*. If you have any questions or need further assistance on this or any other projects, please give us a call.

Respectfully submitted by:

Daniel P. Hamm, P.E.,



ANALYSIS CRITERIA

Table 1 - Mount Analysis Parameters

Ultimate Wind Speed (MPH)	Ice Thickness (in)	Ice Wind Speed (MPH)	Exposure Category	Risk Category	Topographic Procedure	Kzt	Seismic Design Category	Maintenance Loads
125	1.0	50	B	II	Method 4	1.913	B	Lm = 250 lbs Lv = 250 lbs

Table 2 - Existing, Proposed, and Reserved Antenna Loading Configuration

Existing/Proposed/Reserved	Mount Level (ft)	Ant CL (ft)	Qty	Antenna Model	Mount Type	Owner/Tenant
Proposed	84.0	84.0	2	Quintel QD8616-7	(3) SitePro1 VFA12-WLL-30120 Sector Mounts	AT&T
			1	Quintel QD6616-7		
			2	Kathrien 800-10966		
			1	Kathrien 800-10965		
			3	Ericsson RRUS 8843 B2/B66A		
			3	Ericsson RRUS 4449 B5/B12		
			3	Ericsson RRUS 2012 B29		
			3	Ericsson RRUS 4478 B14		
			1	Raycap DC6-48-60-18-8F		
Existing	84.0	84.0	3	Ericsson RRUS-32 B30		AT&T
			2	Raycap DC6-48-60-18-8F		

ANALYSIS RESULTS

Table 3 - Mount Component Stresses vs. Capacity

Notes	Component	% Capacity	Pass / Fail
-	Face Horizontals	62.6	Pass
-	Support Horizontals	39.7	Pass
-	Bracing Members	38.0	Pass
-	Stabilizer Arm	11.0	Pass
-	Mount Pipes	31.7	Pass
1	Connection Bolts	23.3	Pass

Structure Rating (max from all components) =	62.6%
---	--------------

Notes:

- 1) See additional documentation in "Appendix B - Additional Calculations" for calculations supporting the % capacity listed.

Table 5 - Documents Provided

Document	Remarks	Source
Mount Assembly Drawings	SitePro1, dated May 3, 2018 Drawing No. VFA12-WLL-30120	TEP
RFDS	AT&T, dated August 1, 2023 (V 5.0) RFDS ID: 4541287	Smartlink

RECOMMENDATIONS

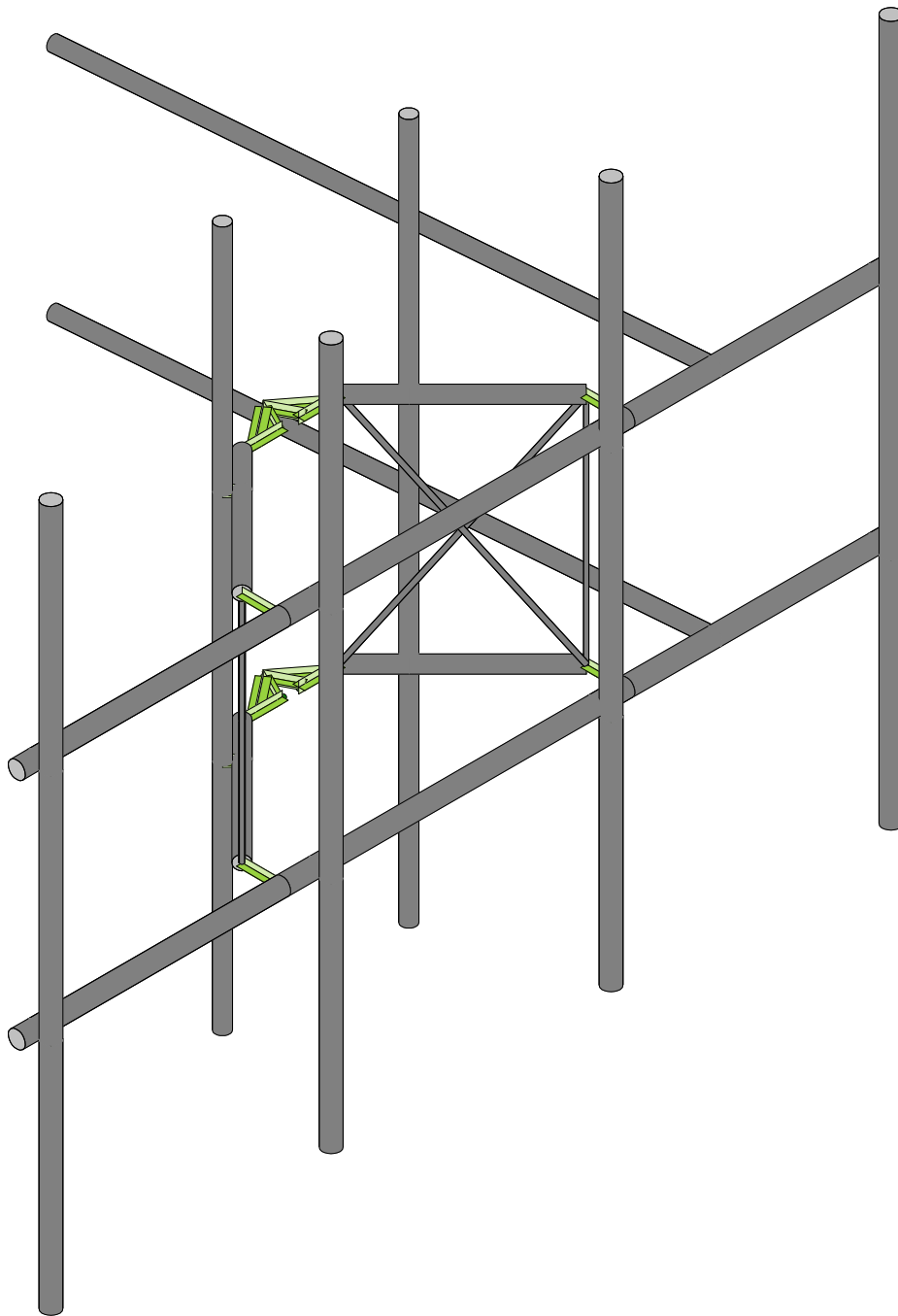
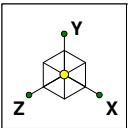
- 1) If the load differs from that described in Table 2 of this report or the provisions of this analysis are found to be invalid, another structural analysis should be performed.
- 2) TEP is proposing the below mount consisting of parts described below. In order for the results of this analysis to be considered valid, the mount listed below should be installed to support the proposed loading configuration.
 - a) (3) SitePro1 VFA12-WLL-30120 Sector Mounts w/ (4) 2.5SCH40 x 10'-0" mount pipes per sector and (2) 2.0SCH40 x 10'-0" mount pipes on the mount standoff per sector (18 total)

ANALYSIS ASSUMPTIONS

- 1) The mount was built in accordance with the manufacturer's specifications.
- 2) The mount has been maintained in accordance with the manufacturer's specification.
- 3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Table 2. All mount components have been assumed to be in sufficient condition to carry their full design capacity for this analysis. Refer to the issued mapping for any structural and/or maintenance issues found during our site visit.
- 4) Serviceability with respect to antenna twist, tilt, roll, or lateral translation, is not checked and is left to the carrier or tower owner to ensure conformance.
- 5) All material grades used for this analysis, unless verified by mount manufacturer design, were assumed per AISC Table 2-4, 15th Edition. See RISA 3-D output for confirmation on grades used in this analysis.

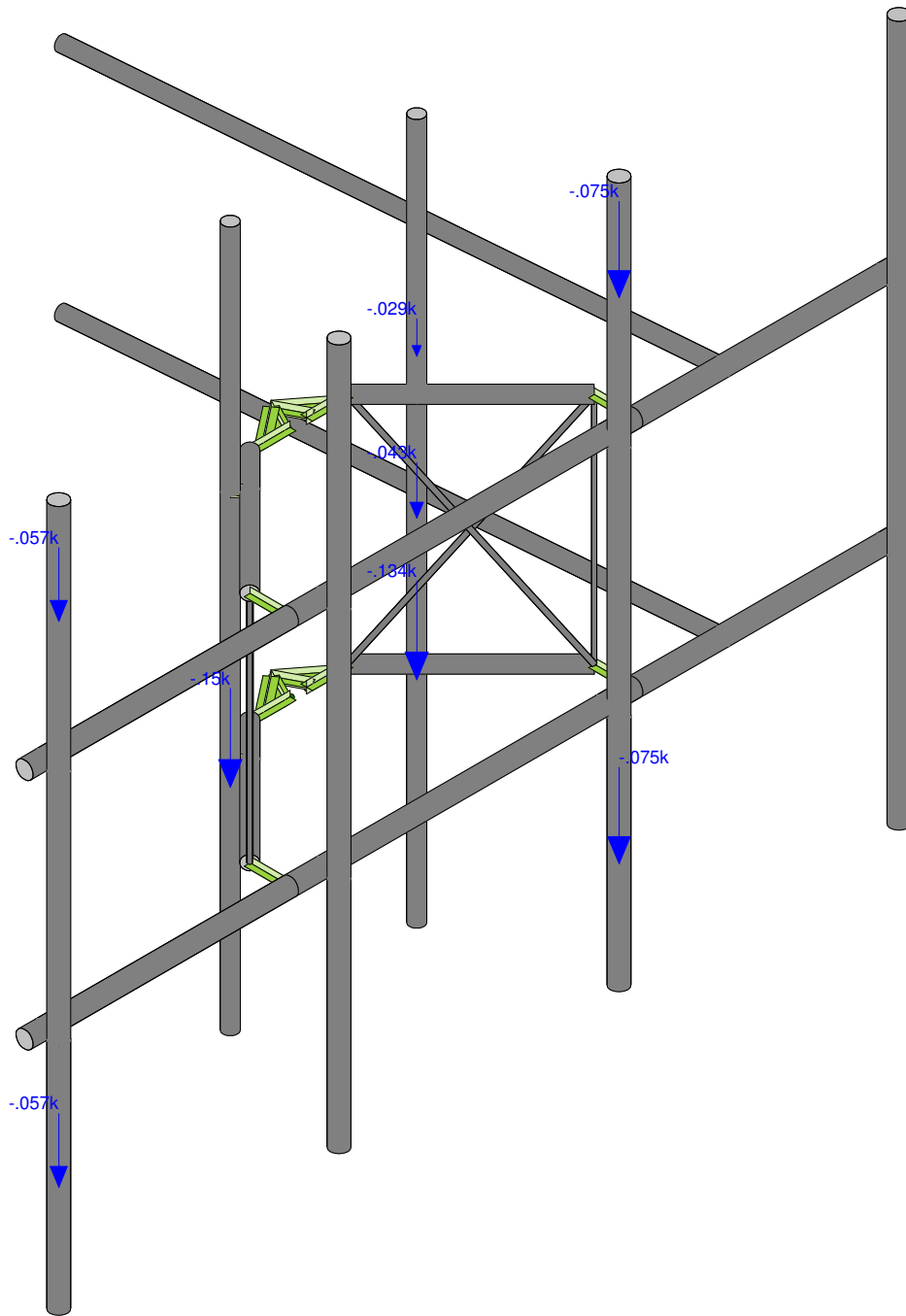
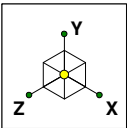
This analysis may be affected if any assumptions are not valid or have been made in error. Tower Engineering Professionals should be notified to determine the effect on the structural integrity of the mount.

APPENDIX A
RISA-3D OUTPUT



Envelope Only Solution

Tower Engineering Profes...	CT2013 (10035296)	SK - 1
PAH		Apr 3, 2024 at 10:39 AM
TEP No. 337779.937679		Mount.r3d



Loads: BLC 1, Dead
Envelope Only Solution

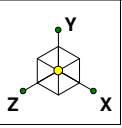
Tower Engineering Profes...
PAH
TEP No. 337779.937679

CT2013 (10035296)

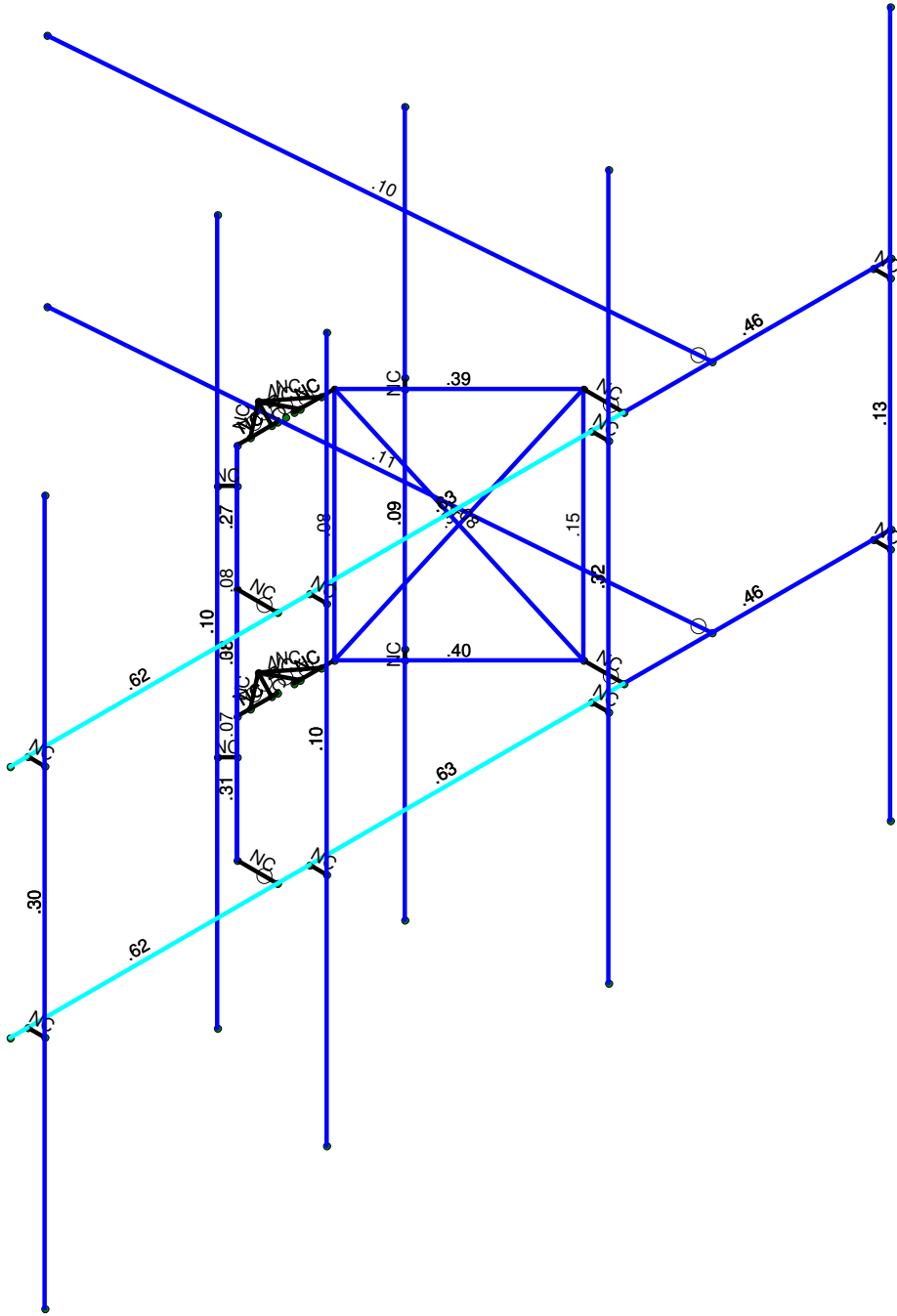
SK - 2

Apr 3, 2024 at 10:40 AM

Mount.r3d

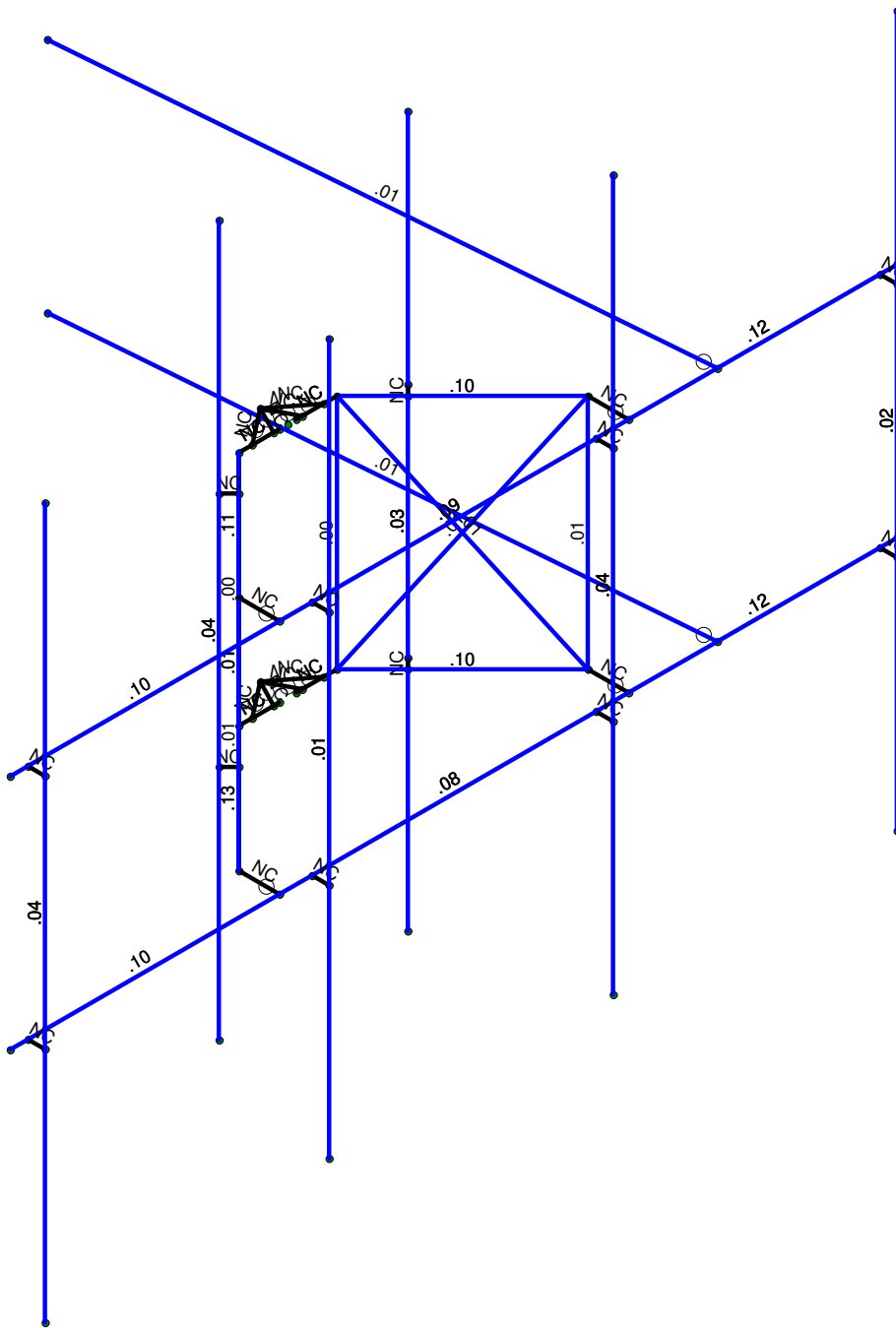
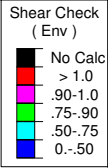
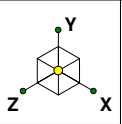


Code Check (Env)	
Black	No Calc
Red	> 1.0
Pink	.90-1.0
Green	.75-.90
Cyan	.50-.75
Blue	0.-.50



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Tower Engineering Profes...	CT2013 (10035296)	SK - 3
PAH		Apr 3, 2024 at 10:40 AM
TEP No. 337779.937679		Mount.r3d



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

Tower Engineering Profes...

PAH

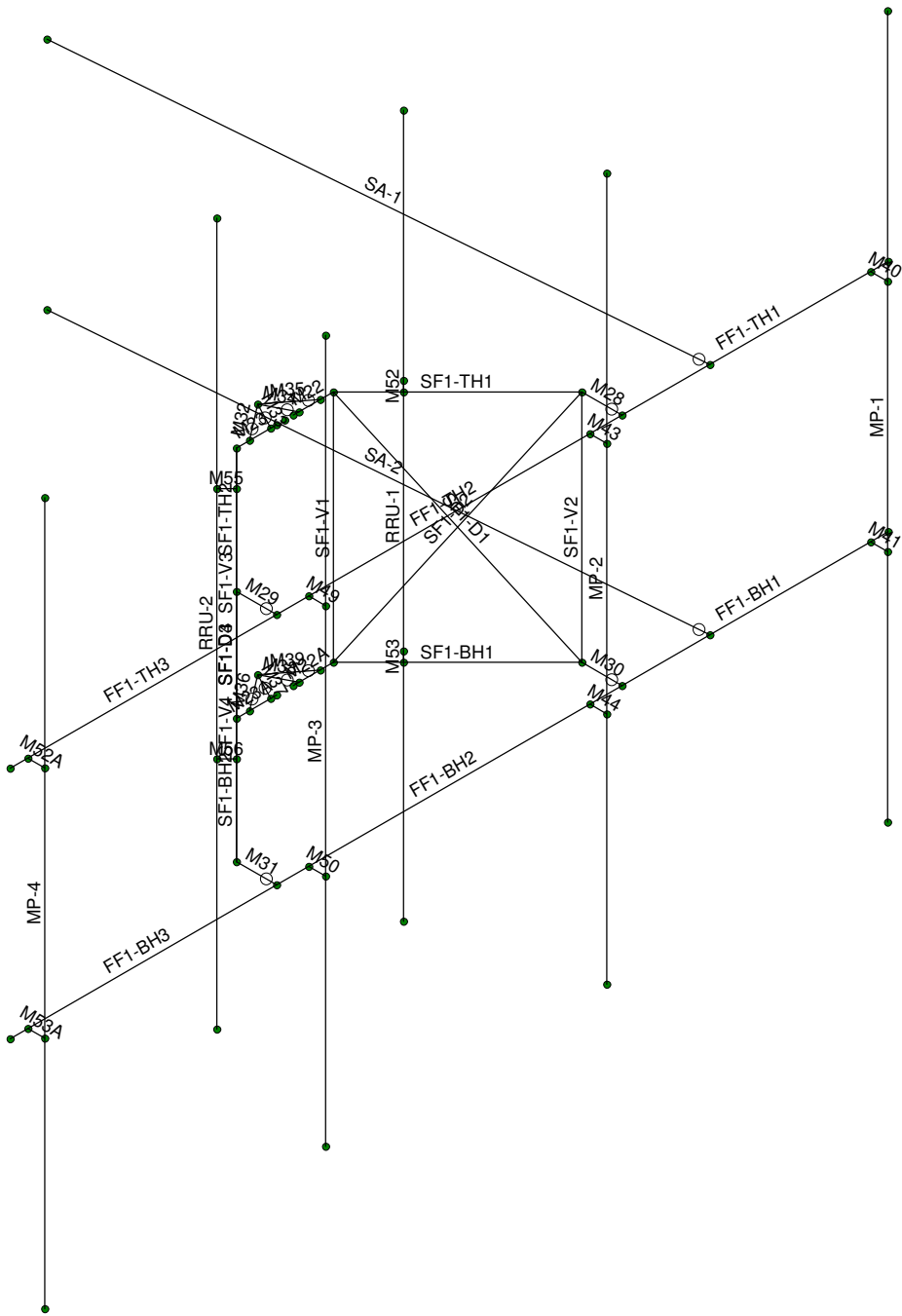
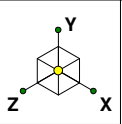
TEP No. 337779.937679

CT2013 (10035296)

SK - 4

Apr 3, 2024 at 10:40 AM

Mount.r3d



Envelope Only Solution

Tower Engineering Profes...

PAH

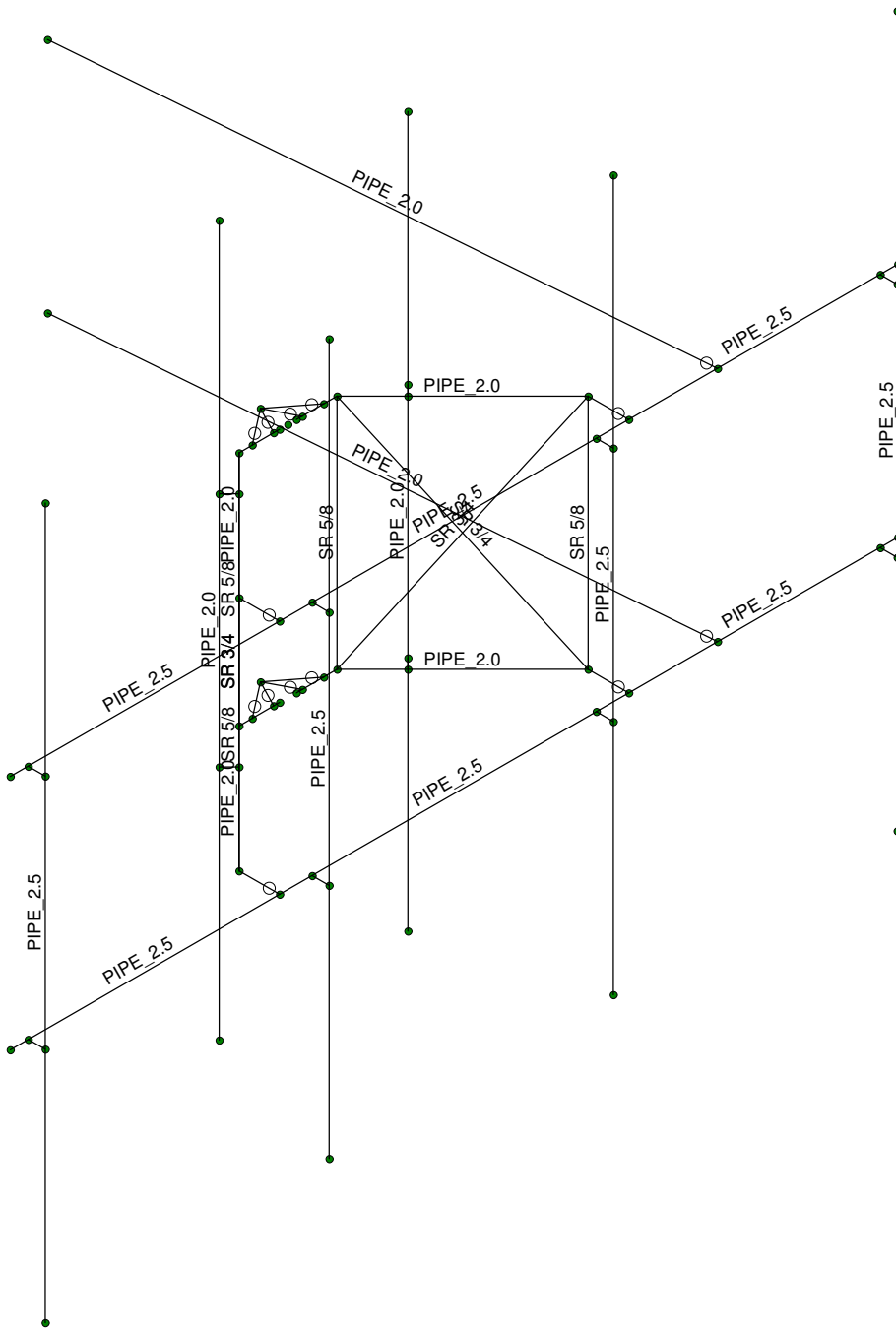
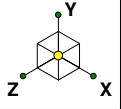
TEP No. 337779.937679

CT2013 (10035296)

SK - 5

Apr 3, 2024 at 10:40 AM

Mount.r3d



Envelope Only Solution

Tower Engineering Profes...

PAH

TEP No. 337779.937679

CT2013 (10035296)

SK - 6

Apr 3, 2024 at 10:41 AM

Mount.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 (ft/sec^2)	32.2
Wall Mesh Size (in)	12
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?	No
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
Parame 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 7-16
Seismic Base Elevation (ft)	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	1
Cd X	1
Rho Z	1
Rho X	1

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E...	Density[k/f...	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-B-35	29000	11154	.3	.65	.49	35	1.6	60	1.2

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design R...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Face Horiz.	PIPE 2.5	None	None	A53-B-35	Typical	1.61	1.45	1.45	2.89
2	Mount Pipe	PIPE 2.5	None	None	A53-B-35	Typical	1.61	1.45	1.45	2.89
3	Raycap Pipe	PIPE 2.0	None	None	A53-B-35	Typical	1.02	.627	.627	1.25
4	Support Diag.	SR 3/4	None	None	A572 Gr.50	Typical	.442	.016	.016	.031
5	Support Vert	SR 5/8	None	None	A36 Gr.36	Typical	.307	.007	.007	.015
6	Support Horiz.	PIPE 2.0	None	None	A53-B-35	Typical	1.02	.627	.627	1.25
7	Stab Arm	PIPE 2.0	None	None	A53-B-35	Typical	1.02	.627	.627	1.25

Cold Formed Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rules	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	CF1A	1.5CU1.25X...	Beam	None	A570 Gr.33	Typical	.131	.022	.052	5.4e-5

Material Takeoff

	Material	Size	Pieces	Length[ft]	Weight[K]
1	General				
2	RIGID		28	11.6	0
3	Total General		28	11.6	0



Material Takeoff (Continued)

	Material	Size	Pieces	Length[ft]	Weight[K]
4					
5	Hot Rolled Steel				
6	A36 Gr.36	SR 5/8	4	13.3	.014
7	A53-B-35	PIPE 2.0	8	47.5	.165
8	A53-B-35	PIPE 2.5	10	65	.356
9	A572 Gr.50	SR 3/4	4	16.7	.025
10	Total HR Steel		26	142.5	.56

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	SF2-01	Reaction	Reaction	Reaction			
2	SF2-02	Reaction	Reaction	Reaction			
3	N152	Reaction	Reaction	Reaction			
4	N78	Reaction	Reaction	Reaction			

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotat...	Section/Shape	Type	Design L...	Material	Design Rules
1	FF1-BH1	FF2	SF2-2			Face Horiz.	None	None	A53-B-35	Typical
2	FF1-BH2	SF2-2	SF3-2			Face Horiz.	None	None	A53-B-35	Typical
3	FF1-BH3	SF3-2	FF4			Face Horiz.	None	None	A53-B-35	Typical
4	FF1-TH1	FF1	SF2-1			Face Horiz.	None	None	A53-B-35	Typical
5	FF1-TH2	SF2-1	SF3-1			Face Horiz.	None	None	A53-B-35	Typical
6	FF1-TH3	SF3-1	FF3			Face Horiz.	None	None	A53-B-35	Typical
7	M22	N41A	N39A			RIGID	None	None	RIGID	Typical
8	M22A	N39B	N41C			RIGID	None	None	RIGID	Typical
9	M23	N42A	N41B			RIGID	None	None	RIGID	Typical
10	M23A	N40A	N42B			RIGID	None	None	RIGID	Typical
11	M28	SF2-1A	SF2-1			RIGID	None	None	RIGID	Typical
12	M29	SF3-1A	SF3-1			RIGID	None	None	RIGID	Typical
13	M30	SF2-2A	SF2-2			RIGID	None	None	RIGID	Typical
14	M31	SF3-2A	SF3-2			RIGID	None	None	RIGID	Typical
15	M32	N41D	SF2-01			RIGID	None	None	RIGID	Typical
16	M33	N40B	SF2-01			RIGID	None	None	RIGID	Typical
17	M34	N42C	SF2-01			RIGID	None	None	RIGID	Typical
18	M35	N43A	SF2-01			RIGID	None	None	RIGID	Typical
19	M36	N46	SF2-02			RIGID	None	None	RIGID	Typical
20	M37	N45	SF2-02			RIGID	None	None	RIGID	Typical
21	M38	N47	SF2-02			RIGID	None	None	RIGID	Typical
22	M39	N48	SF2-02			RIGID	None	None	RIGID	Typical
23	M40	N44	N42			RIGID	None	None	RIGID	Typical
24	M41	N45A	N43			RIGID	None	None	RIGID	Typical
25	M43	N50	N48A			RIGID	None	None	RIGID	Typical
26	M44	N51	N49			RIGID	None	None	RIGID	Typical
27	M49	N62	N60			RIGID	None	None	RIGID	Typical
28	M50	N63	N61			RIGID	None	None	RIGID	Typical
29	M52	N73A	N76			RIGID	None	None	RIGID	Typical
30	M52A	N68A	N66A			RIGID	None	None	RIGID	Typical
31	M53	N75	N74			RIGID	None	None	RIGID	Typical
32	M53A	N69A	N67A			RIGID	None	None	RIGID	Typical
33	MP-1	N46A	N47A			Mount Pipe	None	None	A53-B-35	Typical
34	MP-2	N52	N53			Mount Pipe	None	None	A53-B-35	Typical
35	MP-3	N64A	N65A			Mount Pipe	None	None	A53-B-35	Typical
36	MP-4	N70A	N71A			Mount Pipe	None	None	A53-B-35	Typical
37	RRU-1	N76A	N77			Raycap Pipe	None	None	A53-B-35	Typical



Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotat...	Section/Shape	Type	Design L...	Material	Design Rules
38	SA-1	N72	N152			Stab Arm	None	None	A53-B-35	Typical
39	SF1-BH1	N39B	SF2-2A			Support Horiz.	None	None	A53-B-35	Typical
40	SF1-BH2	N40A	SF3-2A			Support Horiz.	None	None	A53-B-35	Typical
41	SF1-D1	N41A	SF2-2A			Support Diag.	None	None	A572 Gr.50	Typical
42	SF1-D2	SF2-1A	N39B			Support Diag.	None	None	A572 Gr.50	Typical
43	SF1-D3	N42A	SF3-2A			Support Diag.	None	None	A572 Gr.50	Typical
44	SF1-D4	SF3-1A	N40A			Support Diag.	None	None	A572 Gr.50	Typical
45	SF1-TH1	N41A	SF2-1A			Support Horiz.	None	None	A53-B-35	Typical
46	SF1-TH2	N42A	SF3-1A			Support Horiz.	None	None	A53-B-35	Typical
47	SF1-V1	N41A	N39B			Support Vert	None	None	A36 Gr.36	Typical
48	SF1-V2	SF2-1A	SF2-2A			Support Vert	None	None	A36 Gr.36	Typical
49	SF1-V3	N42A	N40A			Support Vert	None	None	A36 Gr.36	Typical
50	SF1-V4	SF3-1A	SF3-2A			Support Vert	None	None	A36 Gr.36	Typical
51	M55	N73B	N72A			RIGID	None	None	RIGID	Typical
52	M56	N75A	N74A			RIGID	None	None	RIGID	Typical
53	RRU-2	N76B	N77A			Raycap Pipe	None	None	A53-B-35	Typical
54	SA-2	N79	N78			Stab Arm	None	None	A53-B-35	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	FF1-BH1						Yes	** NA **			None
2	FF1-BH2						Yes	** NA **			None
3	FF1-BH3						Yes	** NA **			None
4	FF1-TH1						Yes	** NA **			None
5	FF1-TH2						Yes	** NA **			None
6	FF1-TH3						Yes	** NA **			None
7	M22						Yes	** NA **			None
8	M22A						Yes	** NA **			None
9	M23						Yes	** NA **			None
10	M23A						Yes	** NA **			None
11	M28		BenPIN				Yes	** NA **			None
12	M29		BenPIN				Yes	** NA **			None
13	M30		BenPIN				Yes	** NA **			None
14	M31		BenPIN				Yes	** NA **			None
15	M32	BenPIN					Yes	** NA **			None
16	M33	BenPIN					Yes	** NA **			None
17	M34	BenPIN					Yes	** NA **			None
18	M35	BenPIN					Yes	** NA **			None
19	M36	BenPIN					Yes	** NA **			None
20	M37	BenPIN					Yes	** NA **			None
21	M38	BenPIN					Yes	** NA **			None
22	M39	BenPIN					Yes	** NA **			None
23	M40						Yes	** NA **			None
24	M41						Yes	** NA **			None
25	M43						Yes	** NA **			None
26	M44						Yes	** NA **			None
27	M49						Yes	** NA **			None
28	M50						Yes	** NA **			None
29	M52						Yes	** NA **			None
30	M52A						Yes	** NA **			None
31	M53						Yes	** NA **			None
32	M53A						Yes	** NA **			None
33	MP-1						Yes	** NA **			None
34	MP-2						Yes	** NA **			None
35	MP-3						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...
36	MP-4						Yes	** NA **			None
37	RRU-1						Yes	** NA **			None
38	SA-1	BenPIN					Yes	** NA **			None
39	SF1-BH1						Yes	** NA **			None
40	SF1-BH2						Yes	** NA **			None
41	SF1-D1						Yes	** NA **			None
42	SF1-D2						Yes	** NA **			None
43	SF1-D3						Yes	** NA **			None
44	SF1-D4						Yes	** NA **			None
45	SF1-TH1						Yes	** NA **			None
46	SF1-TH2						Yes	** NA **			None
47	SF1-V1						Yes	** NA **			None
48	SF1-V2						Yes	** NA **			None
49	SF1-V3						Yes	** NA **			None
50	SF1-V4						Yes	** NA **			None
51	M55						Yes	** NA **			None
52	M56						Yes	** NA **			None
53	RRU-2						Yes	** NA **			None
54	SA-2	BenPIN					Yes	** NA **			None

Hot Rolled Steel Design Parameters

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[...]	Lcomp bot[...]	L-torq...	Kyy	Kzz	Cb	Functi...
1	FF1-BH1	Face Horiz.	3.792						2.1	2.1		Lateral
2	FF1-BH2	Face Horiz.	4.917						1	1		Lateral
3	FF1-BH3	Face Horiz.	3.792						2.1	2.1		Lateral
4	FF1-TH1	Face Horiz.	3.792						2.1	2.1		Lateral
5	FF1-TH2	Face Horiz.	4.917						1	1		Lateral
6	FF1-TH3	Face Horiz.	3.792						2.1	2.1		Lateral
7	MP-1	Mount Pipe	10	Segment	Segment				2.1	2.1		Lateral
8	MP-2	Mount Pipe	10	Segment	Segment				2.1	2.1		Lateral
9	MP-3	Mount Pipe	10	Segment	Segment				2.1	2.1		Lateral
10	MP-4	Mount Pipe	10	Segment	Segment				2.1	2.1		Lateral
11	RRU-1	Raycap Pipe	10	Segment	Segment				2.1	2.1		Lateral
12	SA-1	Stab Arm	8.758						1	1		Lateral
13	SF1-BH1	Support Horiz.	2.5						1	1		Lateral
14	SF1-BH2	Support Horiz.	2.5						1	1		Lateral
15	SF1-D1	Support Diag.	4.167						.65	.65		Lateral
16	SF1-D2	Support Diag.	4.167						.65	.65		Lateral
17	SF1-D3	Support Diag.	4.167						.65	.65		Lateral
18	SF1-D4	Support Diag.	4.167						.65	.65		Lateral
19	SF1-TH1	Support Horiz.	2.5						1	1		Lateral
20	SF1-TH2	Support Horiz.	2.5						1	1		Lateral
21	SF1-V1	Support Vert	3.333						.65	.65		Lateral
22	SF1-V2	Support Vert	3.333						.65	.65		Lateral
23	SF1-V3	Support Vert	3.333						.65	.65		Lateral
24	SF1-V4	Support Vert	3.333						.65	.65		Lateral
25	RRU-2	Raycap Pipe	10	Segment	Segment				2.1	2.1		Lateral
26	SA-2	Stab Arm	8.758						1	1		Lateral

Cold Formed Steel Design Parameters

Label	Shape	Lengt...	Lbyy[ft]	Lbzz[ft]	Lcomp to...Lcomp b...	Kyy	Kzz	Cm-yyCm-zz	Cb	R	y sway	z sway
No Data to Print ...												



Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(M...	Surface...
1	Dead	None		-1			10			
2	0 Wind - No Ice	None					10	26		
3	30 Wind - No Ice	None					20	52		
4	45 Wind - No Ice	None					20	52		
5	60 Wind - No Ice	None					20	52		
6	90 Wind - No Ice	None					10	26		
7	120 Wind - No Ice	None					20	52		
8	135 Wind - No Ice	None					20	52		
9	150 Wind - No Ice	None					20	52		
10	180 Wind - No Ice	None					10	26		
11	210 Wind - No Ice	None					20	52		
12	225 Wind - No Ice	None					20	52		
13	240 Wind - No Ice	None					20	52		
14	270 Wind - No Ice	None					10	26		
15	300 Wind - No Ice	None					20	52		
16	315 Wind - No Ice	None					20	52		
17	330 Wind - No Ice	None					20	52		
18	Ice Weight	None					10	26		
19	0 Wind - Ice	None					10	26		
20	30 Wind - Ice	None					20	52		
21	45 Wind - Ice	None					20	52		
22	60 Wind - Ice	None					20	52		
23	90 Wind - Ice	None					10	26		
24	120 Wind - Ice	None					20	52		
25	135 Wind - Ice	None					20	52		
26	150 Wind - Ice	None					20	52		
27	180 Wind - Ice	None					10	26		
28	210 Wind - Ice	None					20	52		
29	225 Wind - Ice	None					20	52		
30	240 Wind - Ice	None					20	52		
31	270 Wind - Ice	None					10	26		
32	300 Wind - Ice	None					20	52		
33	315 Wind - Ice	None					20	52		
34	330 Wind - Ice	None					20	52		
35	Lm	None				1				
36	Lv	None				1				
37	Seismic Load X	ELX	-1				10			
38	Seismic Load Z	ELZ			-1		10			

Load Combinations

	Description	So...	P...	S...	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..
1	1.4D	Yes	Y		1	1.4								
2	0.9D+1.0 0-Wind	Yes	Y		1	.9	2	1						
3	0.9D+1.0 30-Wind	Yes	Y		1	.9	3	1						
4	0.9D+1.0 45-Wind	Yes	Y		1	.9	4	1						
5	0.9D+1.0 60-Wind	Yes	Y		1	.9	5	1						
6	0.9D+1.0 90-Wind	Yes	Y		1	.9	6	1						
7	0.9D+1.0 120-Wind	Yes	Y		1	.9	7	1						
8	0.9D+1.0 135-Wind	Yes	Y		1	.9	8	1						
9	0.9D+1.0 150-Wind	Yes	Y		1	.9	9	1						
10	0.9D+1.0 180-Wind	Yes	Y		1	.9	10	1						
11	0.9D+1.0 210-Wind	Yes	Y		1	.9	11	1						
12	0.9D+1.0 225-Wind	Yes	Y		1	.9	12	1						
13	0.9D+1.0 240-Wind	Yes	Y		1	.9	13	1						



Company : Tower Engineering Professionals
 Designer : PAH
 Job Number : TEP No. 337779.937679
 Model Name : CT2013 (10035296)

Apr 3, 2024
 10:41 AM
 Checked By: LBW

Load Combinations (Continued)

	Description	So...	P...	S...	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..
14	0.9D+1.0 270-Wind	Yes	Y		1	.9	14	1							
15	0.9D+1.0 300-Wind	Yes	Y		1	.9	15	1							
16	0.9D+1.0 315-Wind	Yes	Y		1	.9	16	1							
17	0.9D+1.0 330-Wind	Yes	Y		1	.9	17	1							
18	1.2D+1.0 0-Wind	Yes	Y		1	1.2	2	1							
19	1.2D+1.0 30-Wind	Yes	Y		1	1.2	3	1							
20	1.2D+1.0 45-Wind	Yes	Y		1	1.2	4	1							
21	1.2D+1.0 60-Wind	Yes	Y		1	1.2	5	1							
22	1.2D+1.0 90-Wind	Yes	Y		1	1.2	6	1							
23	1.2D+1.0 120-Wind	Yes	Y		1	1.2	7	1							
24	1.2D+1.0 135-Wind	Yes	Y		1	1.2	8	1							
25	1.2D+1.0 150-Wind	Yes	Y		1	1.2	9	1							
26	1.2D+1.0 180-Wind	Yes	Y		1	1.2	10	1							
27	1.2D+1.0 210-Wind	Yes	Y		1	1.2	11	1							
28	1.2D+1.0 225-Wind	Yes	Y		1	1.2	12	1							
29	1.2D+1.0 240-Wind	Yes	Y		1	1.2	13	1							
30	1.2D+1.0 270-Wind	Yes	Y		1	1.2	14	1							
31	1.2D+1.0 300-Wind	Yes	Y		1	1.2	15	1							
32	1.2D+1.0 315-Wind	Yes	Y		1	1.2	16	1							
33	1.2D+1.0 330-Wind	Yes	Y		1	1.2	17	1							
34	1.2D+1.0Di+1.0 0-Wind L...	Yes	Y		1	1.2	18	1	19	1					
35	1.2D+1.0Di+1.0 30-Wind...	Yes	Y		1	1.2	18	1	20	1					
36	1.2D+1.0Di+1.0 45-Wind...	Yes	Y		1	1.2	18	1	21	1					
37	1.2D+1.0Di+1.0 60-Wind...	Yes	Y		1	1.2	18	1	22	1					
38	1.2D+1.0Di+1.0 90-Wind...	Yes	Y		1	1.2	18	1	23	1					
39	1.2D+1.0Di+1.0 120-Win...	Yes	Y		1	1.2	18	1	24	1					
40	1.2D+1.0Di+1.0 135-Win...	Yes	Y		1	1.2	18	1	25	1					
41	1.2D+1.0Di+1.0 150-Win...	Yes	Y		1	1.2	18	1	26	1					
42	1.2D+1.0Di+1.0 180-Win...	Yes	Y		1	1.2	18	1	27	1					
43	1.2D+1.0Di+1.0 210-Win...	Yes	Y		1	1.2	18	1	28	1					
44	1.2D+1.0Di+1.0 225-Win...	Yes	Y		1	1.2	18	1	29	1					
45	1.2D+1.0Di+1.0 240-Win...	Yes	Y		1	1.2	18	1	30	1					
46	1.2D+1.0Di+1.0 270-Win...	Yes	Y		1	1.2	18	1	31	1					
47	1.2D+1.0Di+1.0 300-Win...	Yes	Y		1	1.2	18	1	32	1					
48	1.2D+1.0Di+1.0 315-Win...	Yes	Y		1	1.2	18	1	33	1					
49	1.2D+1.0Di+1.0 330-Win...	Yes	Y		1	1.2	18	1	34	1					
50	1.2D+1.5Lv	Yes	Y		36	1.5	1	1.2							
51	1.2D+1.5Lm+1.0 0-Wind	Yes	Y		1	1.2	2	.058	35	1.5					
52	1.2D+1.5Lm+1.0 30-Wind	Yes	Y		1	1.2	3	.058	35	1.5					
53	1.2D+1.5Lm+1.0 45-Wind	Yes	Y		1	1.2	4	.058	35	1.5					
54	1.2D+1.5Lm+1.0 60-Wind	Yes	Y		1	1.2	5	.058	35	1.5					
55	1.2D+1.5Lm+1.0 90-Wind	Yes	Y		1	1.2	6	.058	35	1.5					
56	1.2D+1.5Lm+1.0 120-Wi...	Yes	Y		1	1.2	7	.058	35	1.5					
57	1.2D+1.5Lm+1.0 135-Wi...	Yes	Y		1	1.2	8	.058	35	1.5					
58	1.2D+1.5Lm+1.0 150-Wi...	Yes	Y		1	1.2	9	.058	35	1.5					
59	1.2D+1.5Lm+1.0 180-Wi...	Yes	Y		1	1.2	10	.058	35	1.5					
60	1.2D+1.5Lm+1.0 210-Wi...	Yes	Y		1	1.2	11	.058	35	1.5					
61	1.2D+1.5Lm+1.0 225-Wi...	Yes	Y		1	1.2	12	.058	35	1.5					
62	1.2D+1.5Lm+1.0 240-Wi...	Yes	Y		1	1.2	13	.058	35	1.5					
63	1.2D+1.5Lm+1.0 270-Wi...	Yes	Y		1	1.2	14	.058	35	1.5					
64	1.2D+1.5Lm+1.0 300-Wi...	Yes	Y		1	1.2	15	.058	35	1.5					
65	1.2D+1.5Lm+1.0 315-Wi...	Yes	Y		1	1.2	16	.058	35	1.5					
66	1.2D+1.5Lm+1.0 330-Wi...	Yes	Y		1	1.2	17	.058	35	1.5					
67	(1.2+0.2Sds)D+1.0 0 Sei...	Yes	Y		1	1.24	ELX	.101	0						
68	(1.2+0.2Sds)D+1.0 30 S...	Yes	Y		1	1.24	ELX	.087	ELZ	.05					
69	(1.2+0.2Sds)D+1.0 45 S...	Yes	Y		1	1.24	ELX	.071	ELZ	.071					
70	(1.2+0.2Sds)D+1.0 60 S...	Yes	Y		1	1.24	ELX	.05	ELZ	.087					

Load Combinations (Continued)

	Description	So..P...	S...	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..
71	(1.2+0.2Sds)D+1.0 90 S...	Yes	Y	1	1.24	0		ELZ	.101					
72	(1.2+0.2Sds)D+1.0 120 ...	Yes	Y	1	1.24	ELX	-.05	ELZ	.087					
73	(1.2+0.2Sds)D+1.0 135 ...	Yes	Y	1	1.24	ELX	-.071	ELZ	.071					
74	(1.2+0.2Sds)D+1.0 150 ...	Yes	Y	1	1.24	ELX	-.087	ELZ	.05					
75	(1.2+0.2Sds)D+1.0 180 ...	Yes	Y	1	1.24	ELX	-.101	0						
76	(1.2+0.2Sds)D+1.0 210 ...	Yes	Y	1	1.24	ELX	-.087	ELZ	-.05					
77	(1.2+0.2Sds)D+1.0 225 ...	Yes	Y	1	1.24	ELX	-.071	ELZ	-.071					
78	(1.2+0.2Sds)D+1.0 240 ...	Yes	Y	1	1.24	ELX	-.05	ELZ	-.087					
79	(1.2+0.2Sds)D+1.0 270 ...	Yes	Y	1	1.24	0		ELZ	-.101					
80	(1.2+0.2Sds)D+1.0 300 ...	Yes	Y	1	1.24	ELX	.05	ELZ	-.087					
81	(1.2+0.2Sds)D+1.0 315 ...	Yes	Y	1	1.24	ELX	.071	ELZ	-.071					
82	(1.2+0.2Sds)D+1.0 330 ...	Yes	Y	1	1.24	ELX	.087	ELZ	-.05					
83	(0.9-0.2Sds)*DL+1.0 0 S...	Yes	Y	1	.86	ELX	.101	0						
84	(0.9-0.2Sds)*DL+1.0 30 ...	Yes	Y	1	.86	ELX	.087	ELZ	.05					
85	(0.9-0.2Sds)*DL+1.0 Sei...	Yes	Y	1	.86	ELX	.071	ELZ	.071					
86	(0.9-0.2Sds)*DL+1.0 60 ...	Yes	Y	1	.86	ELX	.05	ELZ	.087					
87	(0.9-0.2Sds)*DL+1.0 90 ...	Yes	Y	1	.86	0		ELZ	.101					
88	(0.9-0.2Sds)*DL+1.0 120...	Yes	Y	1	.86	ELX	-.05	ELZ	.087					
89	(0.9-0.2Sds)*DL+1.0 135...	Yes	Y	1	.86	ELX	-.071	ELZ	.071					
90	(0.9-0.2Sds)*DL+1.0 150...	Yes	Y	1	.86	ELX	-.087	ELZ	.05					
91	(0.9-0.2Sds)*DL+1.0 180...	Yes	Y	1	.86	ELX	-.101	0						
92	(0.9-0.2Sds)*DL+1.0 210...	Yes	Y	1	.86	ELX	-.087	ELZ	-.05					
93	(0.9-0.2Sds)*DL+1.0 225...	Yes	Y	1	.86	ELX	-.071	ELZ	-.071					
94	(0.9-0.2Sds)*DL+1.0 240...	Yes	Y	1	.86	ELX	-.05	ELZ	-.087					
95	(0.9-0.2Sds)*DL+1.0 270...	Yes	Y	1	.86	0		ELZ	-.101					
96	(0.9-0.2Sds)*DL+1.0 300...	Yes	Y	1	.86	ELX	.05	ELZ	-.087					
97	(0.9-0.2Sds)*DL+1.0 315...	Yes	Y	1	.86	ELX	.071	ELZ	-.071					
98	(0.9-0.2Sds)*DL+1.0 330...	Yes	Y	1	.86	ELX	.087	ELZ	-.05					

Joint Loads and Enforced Displacements (BLC 35 : Lm)

1	Joint Label	L,D,M	Direction	Magnitude[(k.k-ft), (in.rad), (k*s^2/ft...]
1	N45A	L	Y	-.25

Joint Loads and Enforced Displacements (BLC 36 : Lv)

1	Joint Label	L,D,M	Direction	Magnitude[(k.k-ft), (in.rad), (k*s^2/ft...]
1	FF2	L	Y	-.25

Member Area Loads

Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[ksf]
No Data to Print ...						

Envelope Joint Reactions

Joint	X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	SF2-01	max	1.899	17	1.603	36	1.218	7	0	98	0	98
2		min	-3.287	25	.457	12	-1.346	31	0	1	0	1
3	SF2-02	max	3.762	33	1.588	44	1.802	22	0	98	0	98
4		min	-2.36	9	.451	4	-1.67	14	0	1	0	1
5	N152	max	1.018	8	.047	48	.071	33	0	98	0	98
6		min	-1.078	32	.013	87	-.07	9	0	1	0	1
7	N78	max	1.084	24	.047	47	.05	17	0	98	0	98
8		min	-1.029	16	.013	87	-.059	25	0	1	0	1
9	Totals:	max	4.272	2	3.261	36	2.92	6				



Envelope Joint Reactions (Continued)

Joint	X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
10	min	-4.272	10	1.016	91	-2.92	14					

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

Member	Shape	Code Check	Loc[ft]	LC	Shear Check	Loc.....	L..phi*Pn...	phi*Pn...	phi*M...	phi*M...	Eqn		
1	FF1-BH2	PIPE_2.5	.626	4.917	18	.085	0	26 41.612	50.715	3.596	3.596	2...	H1-1b
2	FF1-TH2	PIPE_2.5	.626	4.917	26	.087	0	18 41.612	50.715	3.596	3.596	2...	H1-1b
3	FF1-BH3	PIPE_2.5	.623	0	18	.098	0	18 30.186	50.715	3.596	3.596	2...	H1-1b
4	FF1-TH3	PIPE_2.5	.621	0	26	.096	0	26 30.186	50.715	3.596	3.596	1...	H1-1b
5	FF1-BH1	PIPE_2.5	.465	3.792	25	.119	3.792	33 30.186	50.715	3.596	3.596	2...	H1-1b
6	FF1-TH1	PIPE_2.5	.457	3.792	33	.118	3.792	33 30.186	50.715	3.596	3.596	2...	H1-1b
7	SF1-BH1	PIPE_2.0	.397	2.5	25	.104	.703	49 29.81	32.13	1.872	1.872	1...	H1-1b
8	SF1-TH1	PIPE_2.0	.394	2.5	33	.100	.703	41 29.81	32.13	1.872	1.872	1...	H1-1b
9	SF1-D4	SR 3/4	.380	4.167	34	.011	4.167	20 3.322	19.88	.249	.249	2...	H1-1a
10	SF1-D2	SR 3/4	.339	4.167	34	.013	4.167	32 3.322	19.88	.249	.249	2...	H1-1a
11	MP-2	PIPE_2.5	.317	3.333	26	.041	3.333	18 33.962	50.715	3.596	3.596	1...	H1-1b
12	SF1-BH2	PIPE_2.0	.308	0	33	.127	0	25 29.81	32.13	1.872	1.872	2...	H1-1b
13	MP-4	PIPE_2.5	.297	3.333	18	.039	3.333	26 33.962	50.715	3.596	3.596	1...	H1-1b
14	SF1-TH2	PIPE_2.0	.271	0	25	.109	.703	47 29.81	32.13	1.872	1.872	1...	H1-1b
15	SF1-V2	SR 5/8	.149	3.333	20	.006	0	45 2.503	9.94	.104	.104	1...	H1-1b*
16	MP-1	PIPE_2.5	.125	6.667	50	.024	3.333	50 33.962	50.715	3.596	3.596	2...	H1-1b
17	SA-2	PIPE_2.0	.110	4.379	22	.007	8.758	30 12.809	32.13	1.872	1.872	1...	H1-1b
18	SA-1	PIPE_2.0	.105	4.379	22	.007	0	30 12.809	32.13	1.872	1.872	1...	H1-1b
19	MP-3	PIPE_2.5	.104	3.333	26	.009	3.333	50 33.962	50.715	3.596	3.596	1...	H1-1b
20	RRU-2	PIPE_2.0	.102	6.667	20	.042	6.667	19 17.855	32.13	1.872	1.872	2...	H1-1b
21	RRU-1	PIPE_2.0	.088	6.667	31	.030	6.667	32 17.855	32.13	1.872	1.872	2...	H1-1b
22	SF1-V1	SR 5/8	.084	3.333	34	.005	3.333	31 2.503	9.94	.104	.104	2...	H1-1b
23	SF1-D3	SR 3/4	.084	4.167	37	.011	0	28 3.322	19.88	.249	.249	2...	H1-1b
24	SF1-V3	SR 5/8	.080	3.333	34	.005	3.333	31 2.503	9.94	.104	.104	2...	H1-1b
25	SF1-D1	SR 3/4	.075	4.167	36	.013	0	24 3.322	19.88	.249	.249	2...	H1-1b
26	SF1-V4	SR 5/8	.065	3.333	35	.008	3.333	34 2.503	9.94	.104	.104	2...	H1-1b

Envelope None Cold Formed Steel Code Checks

Member	Shape	Code ...	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	Pn[k]	Tn[k]	Mnyy[k-ft]	Mnzz[k-ft]	Cb	Cmyy	Cmzz	Eqn
No Data to Print ...																

APPENDIX B
ADDITIONAL CALCULATIONS



Code Revisions:	TIA-222-H	IBC 2021
Tower Type:	3 Sided Self-Support	

Wind Inputs:		
Ult. Wind Velocity:	125	mph
Live Load Velocity:	30	mph
Ice Wind Velocity:	50	mph
Base Ice Thickness:	1.00	inches
Mount Centerline:	84.0	ft
Antenna Centerline:	84.0	ft
Exposure Category:	B	
Topo Category:	5	
Risk Category:	II	
Ground Elevation:	423	ft

Wind Calculations:		
K_{zt} :	1.913	Section 2.6.6
K_d :	0.850	
$K_{z-Mount}$:	0.940	Section 2.6.5.2
$K_{z-Antenna}$:	0.940	Section 2.6.5.2
K_{iz} :	1.098	Section 2.6.10
Ice Thickness:	1.378	inches - Section 2.6.10
K_e :	0.985	Table 2-6

Without Ice - (psf)	With Ice - (psf)
$(q_z G_h)_{Mount}$: 67.31	$(q_z G_h)_{Mount}$: 10.77
$(q_z G_h)_{Antenna}$: 67.31	$(q_z G_h)_{Antenna}$: 10.77

Seismic Code Revisions:	TIA-222-H
Seismic Risk Category:	II

Seismic Input		
S_{DS} :	0.201	Design Short Period Spectral Accel.
I_p :	1.0	Importance Factor
R_p :	2.0	Response Modification Factor
ρ :	1.0	
A_s :	1.0	Applification Factor - TIA-222-H Section 2.7.8.1
S_1 :	0.054	Spectral Acceleration at a Period of 1 Second

Seismic Design Force		TIA-H Sec 2.7.7.1.1
Cs:	0.101 kips/kip	TIA-H Sec 2.7.7.1.1
Cs-min:	0.030 kips/kip	



Antenna Loads are Calculated in Accordance with TIA-222-H

Azimuth is the absolute angle measured clockwise from RISA-3D global X-axis.

MFR	Model	Height (in)	Width (in)	Depth (in)	Wt. (lbs)	Azimuth°	Qty	Shape	Member Label	Distance from start node of the member		
										Location #1 (ft,%)	Location #2 (ft,%)	Location #3 (ft,%)
QUINTEL TECHNOLOGY	QD8616-7	96.00	22.00	9.60	150.00	0.00	1	Flat	MP-2	1.50	8.50	
Kathrien	800-10966	96.00	20.00	6.90	114.60	0.00	1	Flat	MP-4	1.50	8.50	
ERICSSON	RADIO 4478 B14	18.10	13.40	8.26	59.40	310.00	1	Flat	RRU-1	7.00		
ERICSSON	RADIO 8843 B2/B66A	14.96	13.19	11.10	75.00	310.00	1	Flat	RRU-1	7.00		
ERICSSON	RADIO 2012 B29	16.54	13.46	5.90	43.21	310.00	1	Flat	RRU-1	5.00		
ERICSSON	RADIO 4449 B5/B12	17.90	13.19	10.43	73.00	50.00	1	Flat	RRU-2	7.00		
ERICSSON	RRUS-32 B30	29.90	13.30	9.50	77.00	50.00	1	Flat	RRU-2	7.00		
RAYCAP	DC6-48-60-18-8F	24.00	11.00	11.00	29.00	0.00	1	Round	RRU-1	3.00		



New Haven West Rock (CT2013)

TEP No. 337779.937679

Analysis By: PAH 4/3/2024

Checked By: LBW 4/3/2024

Member Forces are Calculated in Accordance with TIA-222-H

Member Name	Wind Proj. (in)	Length (in)	Shape	θ (°)	Perimeter (in)
FF1-BH1	2.875	150.00	Round	90.00	9.03
FF1-BH2	2.875	150.00	Round	90.00	9.03
FF1-BH3	2.875	150.00	Round	90.00	9.03
FF1-TH1	2.875	150.00	Round	90.00	9.03
FF1-TH2	2.875	150.00	Round	90.00	9.03
FF1-TH3	2.875	150.00	Round	90.00	9.03
MP-1	2.875	120.00	Round		9.03
MP-2	2.875	120.00	Round		9.03
MP-3	2.875	120.00	Round		9.03
MP-4	2.875	120.00	Round		9.03
RRU-1	2.375	120.00	Round		7.46
SA-1	2.375	105.09	Round	4.64	7.46
SF1-BH1	2.375	30.00	Round	45.00	7.46
SF1-BH2	2.375	30.00	Round	-45.00	7.46
SF1-D1	0.750	50.00	Round		2.36
SF1-D2	0.750	50.00	Round		2.36
SF1-D3	0.750	50.00	Round		2.36
SF1-D4	0.750	50.00	Round		2.36
SF1-TH1	2.375	30.00	Round	45.00	7.46
SF1-TH2	2.375	30.00	Round	-45.00	7.46
SF1-V1	0.625	40.00	Round		1.96
SF1-V2	0.625	40.00	Round		1.96
SF1-V3	0.625	40.00	Round		1.96
SF1-V4	0.625	40.00	Round		1.96
RRU-2	2.375	120.00	Round		7.46
SA-2	2.375	105.09	Round		7.46

Moment Bolt Group - Leg Connection

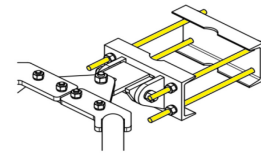
Code Revisions:	ANSI/TIA-222-H
Bolt Type:	Threaded Rods

Connection Inputs:

Bolt Size:	0.625	in
# Bolts:	4	
Plate Width:	N/A	in
Plate Height:	N/A	in
Bolt H Gap:	9.5	in
Bolt V Gap:	3.5	in
Plate T:	N/A	in
Slip Member Ø:	N/A	in
Bolt Grade:	A36	

Capacities:

Double Bolt Capacity =	23.3%	PASS
Bolt Capacity =	9.8%	PASS



Bolt Properties:

$F_{y\text{bolt}}$:	36.0	ksi
$F_{u\text{bolt}}$:	58.0	ksi
r:	5.1	in
J:	102.5	in ⁴ /in ²
A_{bolt} :	0.3	in ²
$A_{\text{bolt, Net Tensile}}$:	0.2	in ²
Pretension:	9.2	kips

A_{gross} :	2.79	in ²
$A_{\text{Net Tensile}}$:	1.88	in ²
T_n =	81.89	

Double Bolt Check:

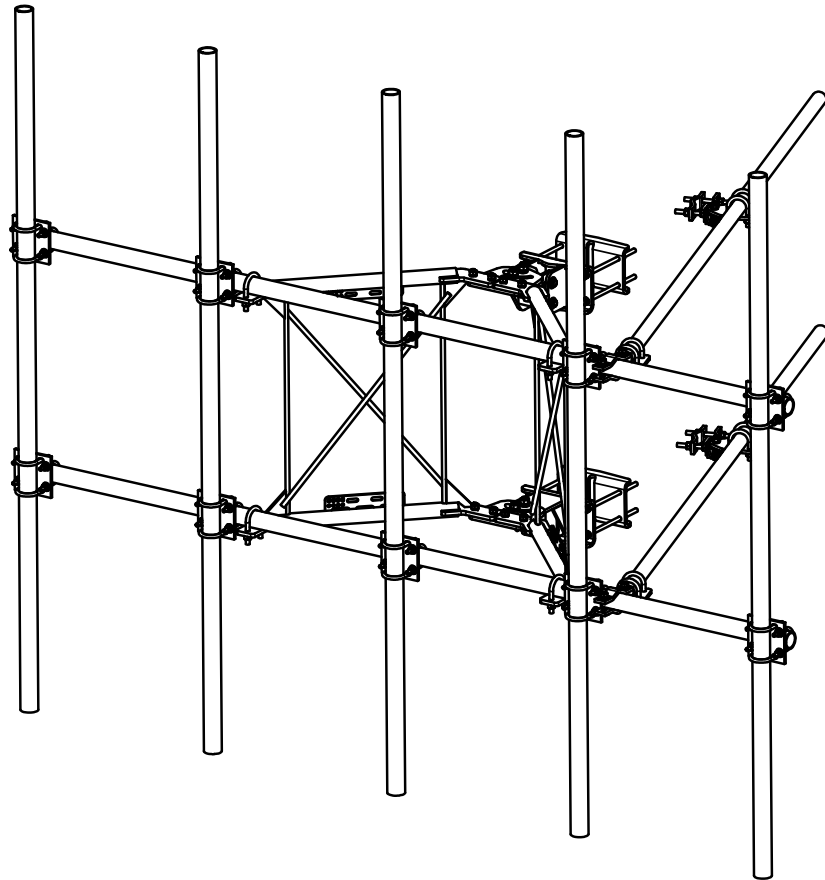
Bolt Size:	0.750	
Bolt F_u :	120	ksi
Bolt $A_{\text{Net Tensile}}$:	0.334	in ²

Max Fx:	3.762	kip
Max Fy:	1.603	kip
Max Fz:	1.802	kip

V_{max} =	4.171	kips
ϕR_{NV} =	17.892	kips

T_{max} =	1.603	kips
ϕR_{NT} =	30.06	kips

APPENDIX C
SUPPLEMENTAL DRAWINGS



PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	2	X-VFAW	SUPPORT ARM		71.41	142.81
2	1	X-HDCAMTBW	CLAMP WELDMENT FOR BCAM-HD		33.86	33.86
3	1	X-MHTPHD	MULTI-HOLE TAPER PLATE WELDMENT		36.24	36.24
4	1	X-HDCAMSS	ANGLE ADJUSTMENT WELDMENT FOR BCAM-HD		16.39	16.39
5	2	X-VFAPL4	VFA-HD PIVOT PLATE	12 in	15.88	31.77
6	2	X-LCBP4	BENT BACKING PLATE	13 in	19.00	38.01
7	4	X-SPTB	SLIDING PIPE TIE BACK PLATE	5 1/2 in	5.87	23.49
8	1	X-HDCAMSP	POSITIONING PLATE WELDMENT FOR BCAM-HD		2.58	2.58
9	4	X-TBCA	TIE BACK CLIP ANGLE		2.01	8.02
10	10	SCX2	CROSSOVER PLATE	7 in	4.80	47.96
11	4	MCP	CLAMP HALF 1/2" THICK, 11-5/8" LONG	12 1/16 in	3.59	14.37
12	8	DCP	1/2" THICK, 5-3/4" CTR TO CENTER CLAMP HALF	8 1/8 in	2.36	18.90
13	2	P2126	2-3/8" X 126" (2" SCH. 40) GALVANIZED PIPE	126 in	40.75	81.50
14	2	P30150	2-7/8" X 150" (2-1/2" SCH. 40) GALVANIZED PIPE	150 in	76.94	153.87
15	4	A34212	3/4" x 2-1/2" UNC HEX BOLT (A325)	2 1/2 in	0.48	1.92
16	4	G34FW	3/4" HDG USS FLATWASHER		0.06	0.24
17	4	G34LW	3/4" HDG LOCKWASHER		0.04	0.17
18	4	G34NUT	3/4" HDG HEAVY 2H HEX NUT		0.21	0.85
19	8	G58R-18	5/8" x 18" THREADED ROD (HDG.)		1.57	12.54
20	4	G58R-12	5/8" x 12" THREADED ROD (HDG.)		1.05	4.18
21	4	G58R-8	5/8" x 8" THREADED ROD (HDG.)		0.70	2.79
22	4	X-UB5300	5/8" X 3" X 5-1/4" X 2-1/2" U-BOLT (HDG.)		1.15	4.60
23	8	X-UB5258	5/8" X 2-5/8" X 4-1/2" X 2" U-BOLT (HDG.)		1.00	8.00
24	2	G5807	5/8" x 7" HDG HEX BOLT GR5 FULL THREAD	7 in	0.70	1.41
25	1	G5806	5/8" x 6" HDG HEX BOLT GR5 FULL THREAD	6 in	0.62	0.62
26	8	G5804	5/8" x 4" HDG HEX BOLT GR5		0.44	3.55
27	4	G5802	5/8" x 2" HDG HEX BOLT GR5		0.27	1.08
28	8	A582114	5/8" x 2-1/4" HDG A325 HEX BOLT	2 1/4 in	0.31	2.50
29	25	G58FW	5/8" HDG USS FLATWASHER	1/8 in	0.07	1.76
30	66	G58LW	5/8" HDG LOCKWASHER		0.03	1.72
31	71	G58NUT	5/8" HDG HEAVY 2H HEX NUT		0.13	9.22
32	48	X-UB1300	1/2" X 3" X 5" X 2" GALV U-BOLT		0.74	35.45
33	20	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" GALV. U-BOLT		0.66	13.13
34	80	G12FW	1/2" HDG USS FLATWASHER	3/32 in	0.03	2.73
35	80	G12LW	1/2" HDG LOCKWASHER	1/8 in	0.01	1.11
36	80	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	5.73
37	5	P30120	2-7/8" x 120" (2-1/2" SCH. 40) GALVANIZED PIPE	120 in	58.07	290.33
					TOTAL WT. #	1055.41

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	UPDATED BCAM VERSION 1 TO BCAM VERSION 2	SP1	CSL	7/2/2018
REVISION HISTORY				

TOLERANCE NOTES

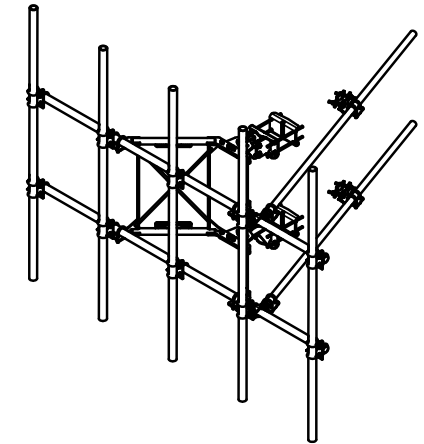
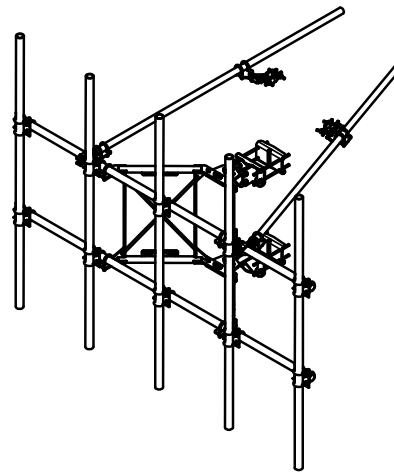
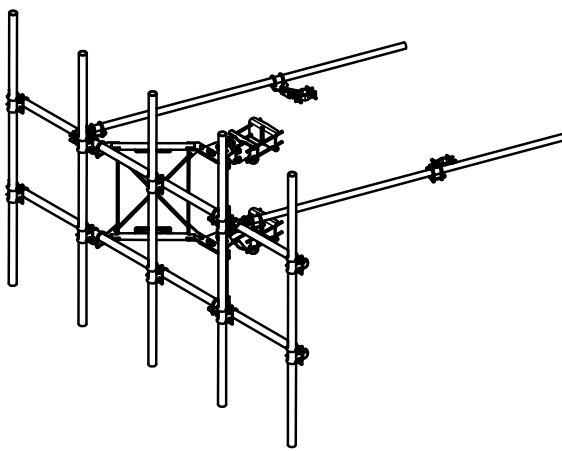
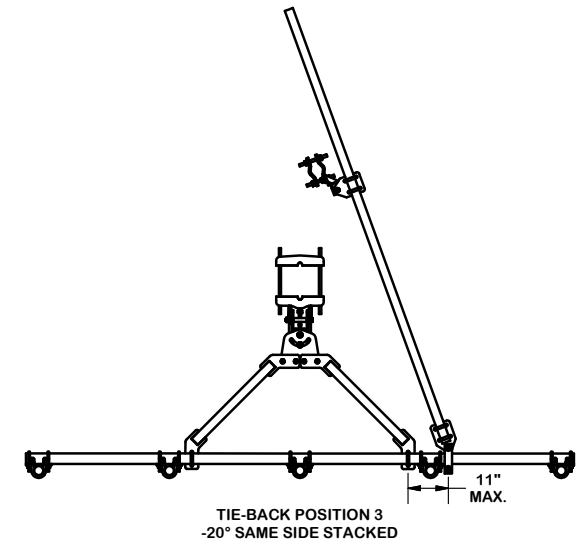
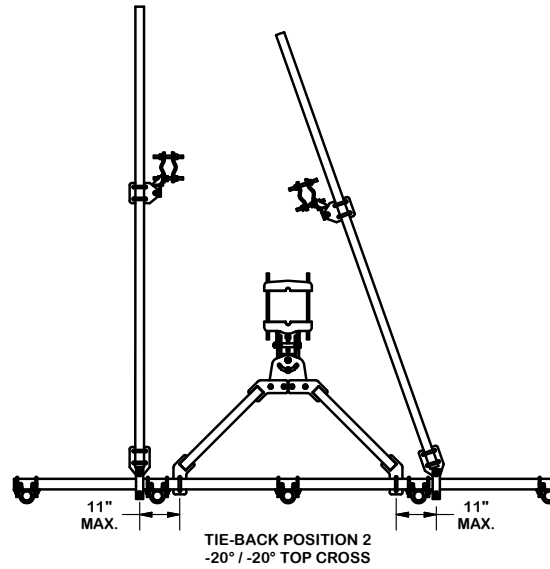
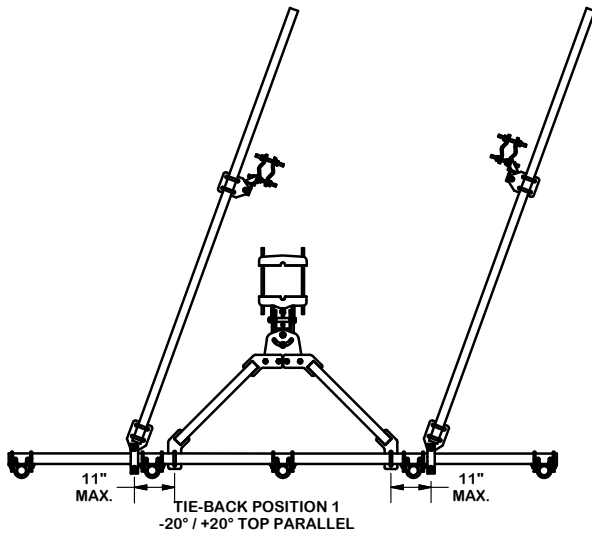
TOLERANCES ON DIMENSIONS, UNLESS OTHERWISE NOTED ARE:
 SAWED, SHEARED AND GAS CUT EDGES ($\pm 0.030"$)
 DRILLED AND GAS CUT HOLES ($\pm 0.030"$) - NO CONING OF HOLES
 LASER CUT EDGES AND HOLES ($\pm 0.010"$) - NO CONING OF HOLES
 BENDS ARE $\pm 1/2$ DEGREE
 ALL OTHER MACHINING ($\pm 0.030"$)
 ALL OTHER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

PROPRIETARY NOTE:
 THE DATA AND TECHNIQUES CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT INDUSTRIES AND CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF VALMONT INDUSTRIES IS STRICTLY PROHIBITED.

DESCRIPTION		12' 6" HEAVY DUTY V-FRAME ASSEMBLY W/ 2 STIFF ARMS & MOUNT PIPES	
CPD NO.	DRAWN BY	ENG. APPROVAL	
SP1	CSL	1/25/2017	
CLASS	SUB	DRAWING USAGE	CHECKED BY
87	02	CUSTOMER	BMC
			5/3/2018

 A valmont COMPANY	Locations: New York, NY Atlanta, GA Los Angeles, CA Plymouth, IN Salem, OR Dallas, TX
	Engineering Support Team: 1-888-753-7446
PART NO.	VFA12-WLL-30120
DWG. NO.	VFA12-WLL-30120

TIE-BACK POSITIONS



TOLERANCE NOTES

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

PROPRIETARY NOTE:
 THE DATA AND TECHNIQUES CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT INDUSTRIES AND CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF VALMONT INDUSTRIES IS STRICTLY PROHIBITED.

DESCRIPTION
 12' 6" HEAVY DUTY
 V-FRAME ASSEMBLY
 W/ 2 STIFF ARMS
 & MOUNT PIPES



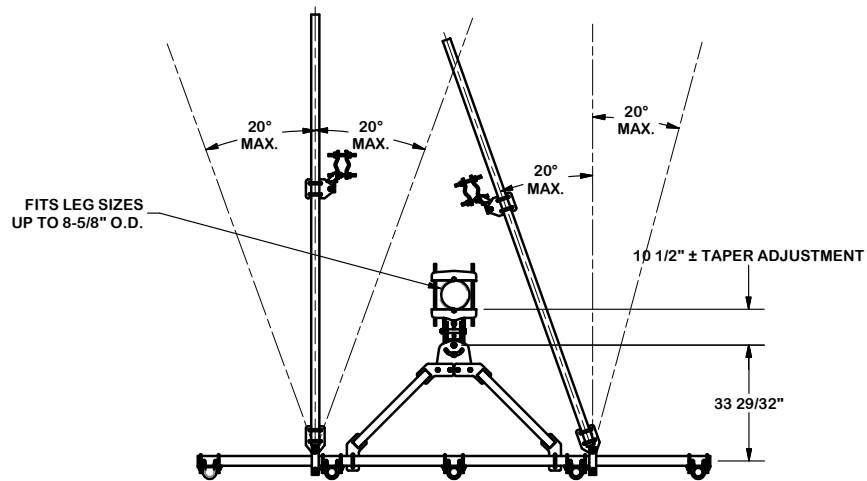
Engineering Support Team:
 1-888-753-7446

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

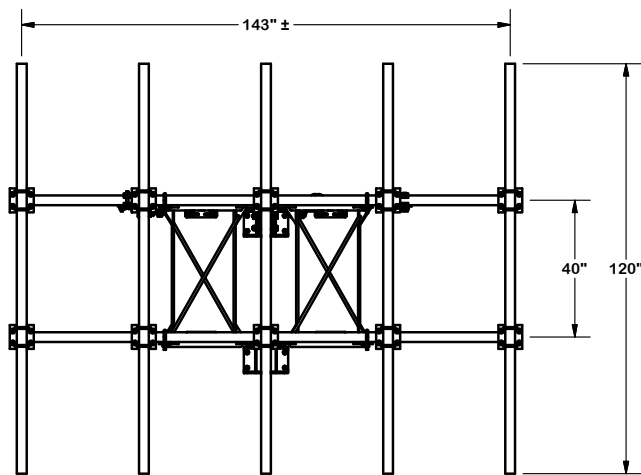
CPD NO. SP1	DRAWN BY CSL 1/25/2017	ENG. APPROVAL
CLASS 87	SUB 02	DRAWING USAGE CUSTOMER
		CHECKED BY BMC 5/3/2018

PART NO. VFA12-WLL-30120	PAGE 2 OF 5
DWG. NO. VFA12-WLL-30120	

A	UPDATED BCAM VERSION 1 TO BCAM VERSION 2	SP1	CSL	7/2/2018
REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
REVISION HISTORY				

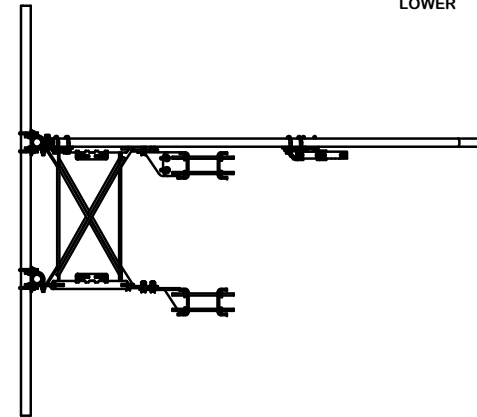
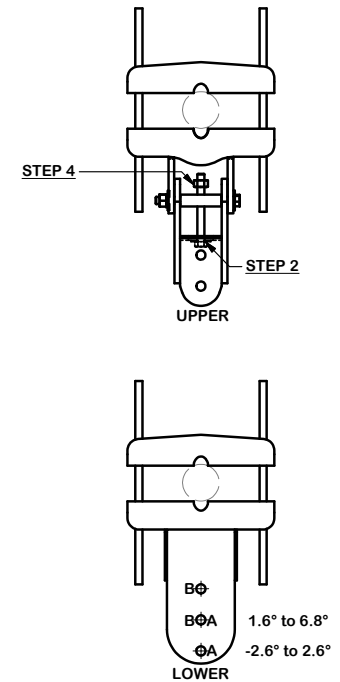


FITS LEG SIZES UP TO 8-5/8" O.D.



ANGLE CALIBRATING PROCEDURE:

1. MEASURE TOWER TAPER AND PICK LOWER BRACKET HOLE:
 - HOLE A = -2.6° TO 2.6°
 - HOLE B = 1.6° TO 6.8°
2. USE CALIBRATING BOLT TO ADJUST FRAME TO DESIRED TAPER
3. TORQUE LOCKING BOLTS TO 100 ft.-lbs.
4. ADVANCE LOCKING NUT TO POSITIONING PLATE, THEN TIGHTEN.



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 $\pm 1/2$ DEGREE
 ALL OTHER MACHINING (± 0.030 ")
 ALL OTHER ASSEMBLY (± 0.060 ")

PROPRIETARY NOTE:
 THE DATA AND TECHNIQUES CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT INDUSTRIES AND CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF VALMONT INDUSTRIES IS STRICTLY PROHIBITED.

DESCRIPTION 12' 6" HEAVY DUTY V-FRAME ASSEMBLY W/ 2 STIFF ARMS & MOUNT PIPES

CPD NO. SP1	DRAWN BY CSL	1/25/2017	ENG. APPROVAL
CLASS 87	SUB 02	DRAWING USAGE CUSTOMER	CHECKED BY BMC
		5/3/2018	

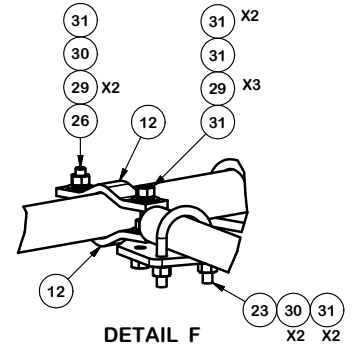
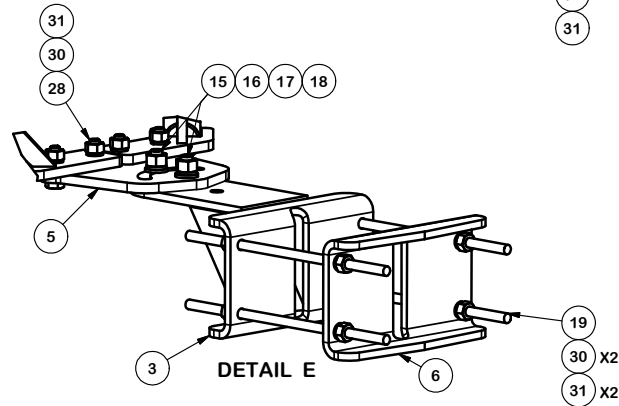
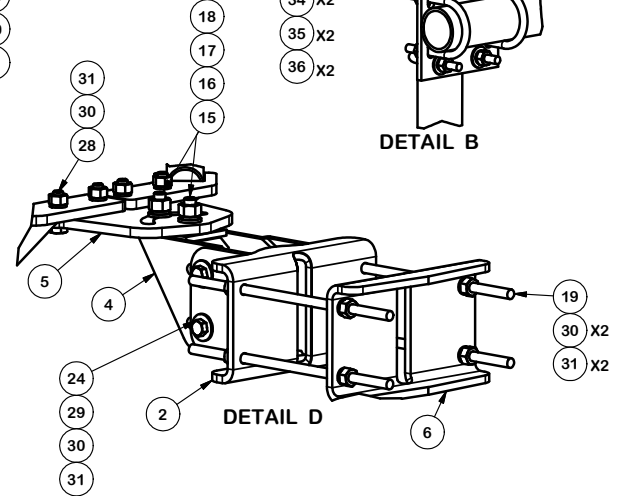
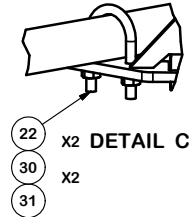
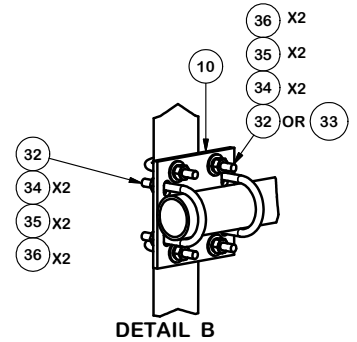
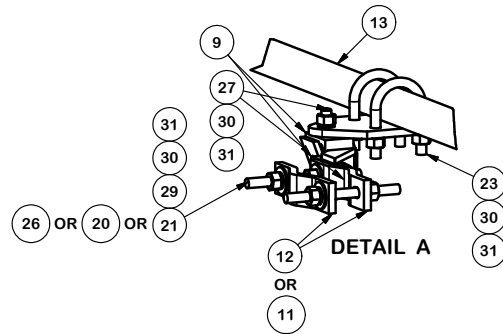
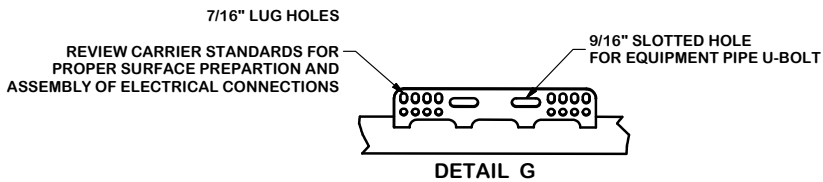
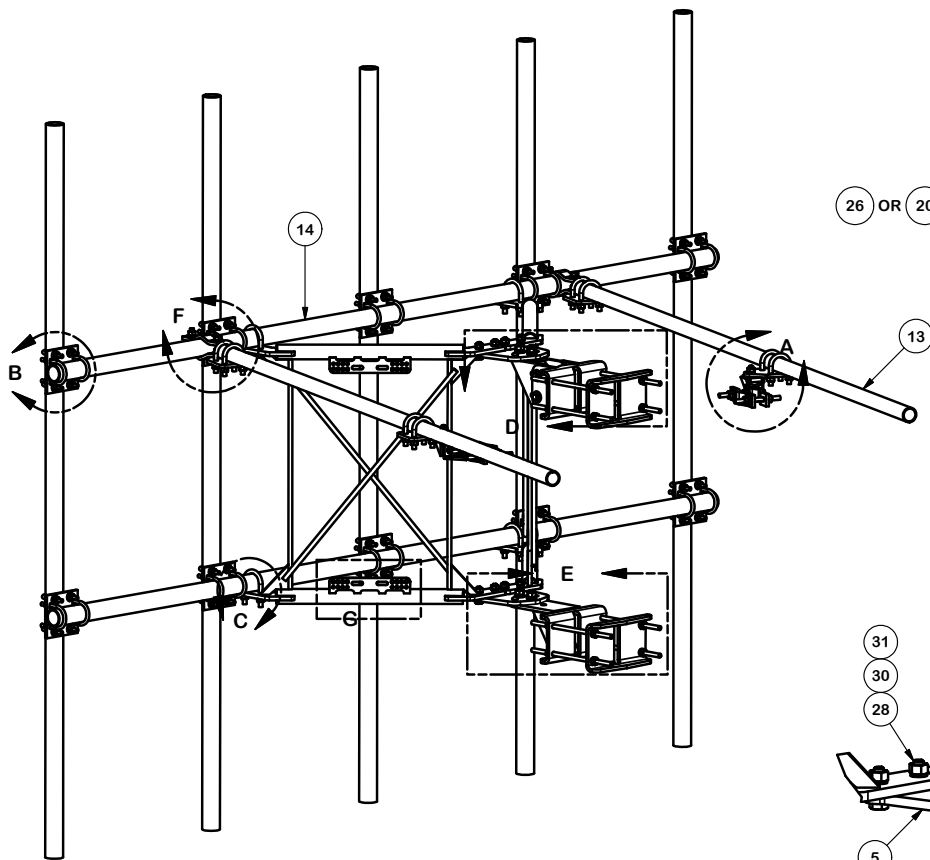


Locations:
 New York, NY
 Atlanta, GA
 Los Angeles, CA
 Plymouth, IN
 Salem, OR
 Dallas, TX

Engineering Support Team:
 1-888-753-7446

PART NO.	VFA12-WLL-30120	PAGE	3 OF 5
DWG. NO.	VFA12-WLL-30120		

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	UPDATED BCAM VERSION 1 TO BCAM VERSION 2	SP1	CSL	7/2/2018
REVISION HISTORY				



TOLERANCE NOTES

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

PROPRIETARY NOTE:
 THE DATA AND TECHNIQUES CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT INDUSTRIES AND CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF VALMONT INDUSTRIES IS STRICTLY PROHIBITED.

DESCRIPTION
 12' 6" HEAVY DUTY
 V-FRAME ASSEMBLY
 W/ 2 STIFF ARMS
 & MOUNT PIPES



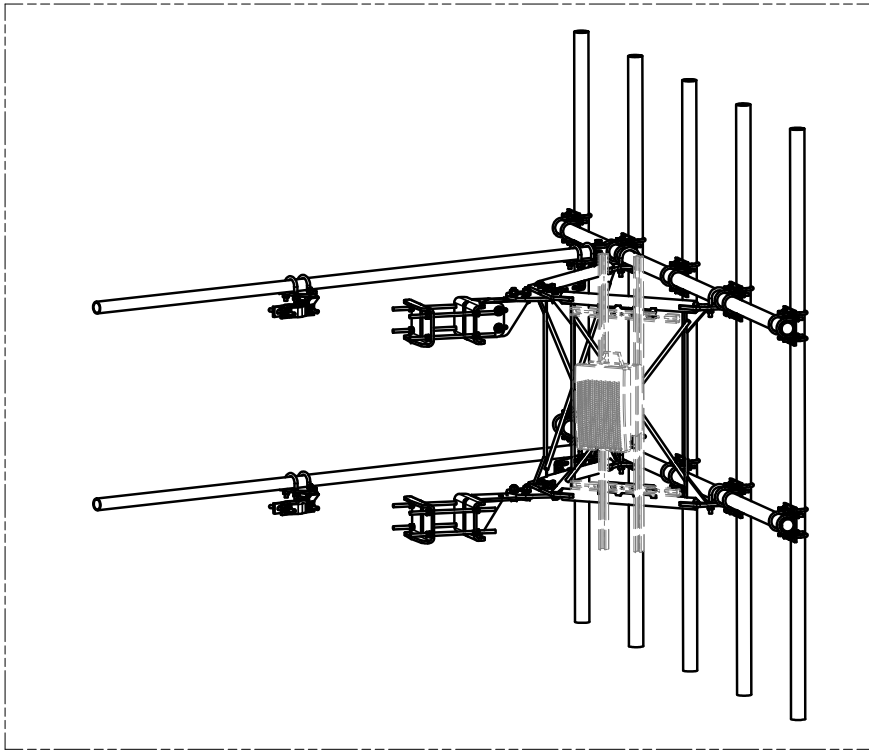
Engineering Support Team:
 1-888-753-7446

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

CPD NO. SP1	DRAWN BY CSL 1/25/2017	ENG. APPROVAL
CLASS 87	SUB 02	DRAWING USAGE CUSTOMER
CHECKED BY BMC		5/3/2018

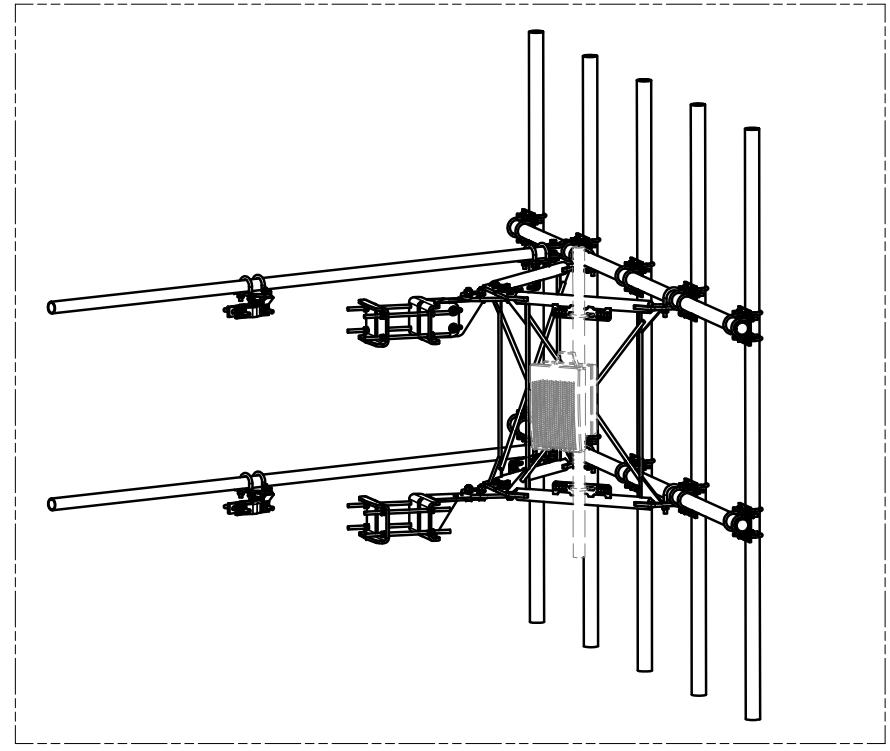
PART NO. VFA12-WLL-30120	PAGE 4 OF 5
DWG. NO. VFA12-WLL-30120	

A	UPDATED BCAM VERSION 1 TO BCAM VERSION 2	SP1	CSL	7/2/2018
REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
REVISION HISTORY				



UNISTRUT AND HARDWARE
SOLD SEPARATELY.

REQUIRES 3/8" HARDWARE



EQUIPMENT PIPE AND HARDWARE
SOLD SEPARATELY.

REQUIRES 1/2" HARDWARE
AND 2-3/8" TO 4-1/2" O.D. PIPE

TOLERANCE NOTES

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

PROPRIETARY NOTE:
 THE DATA AND TECHNIQUES CONTAINED IN THIS DRAWING ARE PROPRIETARY INFORMATION OF VALMONT
 INDUSTRIES AND CONSIDERED A TRADE SECRET. ANY USE OR DISCLOSURE WITHOUT THE CONSENT OF
 VALMONT INDUSTRIES IS STRICTLY PROHIBITED.

DESCRIPTION 12' 6" HEAVY DUTY
 V-FRAME ASSEMBLY
 W/ 2 STIFF ARMS
 & MOUNT PIPES

SITE PRO 1
 A valmont COMPANY

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

Engineering Support Team:
 1-888-753-7446

REV	DESCRIPTION OF REVISIONS	CPD	BY	DATE
A	UPDATED BCAM VERSION 1 TO BCAM VERSION 2	SP1	CSL	7/2/2018
REVISION HISTORY				

CPD NO. SP1	DRAWN BY CSL 1/25/2017	ENG. APPROVAL
CLASS 87	SUB 02	DRAWING USAGE CUSTOMER
CHECKED BY BMC		5/3/2018

PART NO. VFA12-WLL-30120	5 OF 5 PAGE
DWG. NO. VFA12-WLL-30120	