



STATE OF CONNECTICUT  
*CONNECTICUT SITING COUNCIL*

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**VIA ELECTRONIC MAIL**

May 18, 2021

Colin Robinson  
Project Manager  
Network Building + Consulting  
100 Apollo Drive Suite 303  
Chelmsford, MA 01824  
[crobinson@nbcllc.com](mailto:crobinson@nbcllc.com)

RE: **EM-T-MOBILE-164-210416** - T-Mobile notice of intent to modify an existing telecommunications facility located at 99 Day Hill Road, Windsor, Connecticut.

Dear Mr. Robinson:

The Connecticut Siting Council (Council) is in receipt of correspondence dated May 14, 2021 submitted in response to the Council's May 14, 2021 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,

*s/Melanie A. Bachman*

Melanie A. Bachman  
Executive Director

MAB/FOC/laf

c: Charles Bruce, Network Building + Consulting ([cbruce@nbcllc.com](mailto:cbruce@nbcllc.com))

**From:** Charles Bruce <cbruce@nbcllc.com>  
**Sent:** Friday, May 14, 2021 3:56 PM  
**To:** Robidoux, Evan <Evan.Robidoux@ct.gov>; CSC-DL Siting Council <Siting.Council@ct.gov>  
**Cc:** Colin Robinson <crobinson@nbcllc.com>; Ersilia Davis <edavis@nbcllc.com>  
**Subject:** RE: Council Incomplete Letter for EM-T-MOBILE-164-210416 (99 Day Hill Road, Windsor)

EXTERNAL EMAIL: This email originated from outside of the organization. Do not click any links or open any attachments unless you trust the sender and know the content is safe.

Good afternoon Evan,  
In response to the Council's request for an accurate Mount Analysis, please find attached the correct report for 99 Day Hill Road in Windsor, CT. We apologize for this error in the initial submission. Please acknowledge receipt of this update and do not hesitate to reach out for any additional information if necessary.

Thank you and have a wonderful weekend!

## Charles Bruce

*Market Director*

### NETWORK BUILDING + CONSULTING

1777 Sentry Parkway W | Veve 17, Suite 400 | Blue Bell, PA | 19422  
M 215.275.7527 | P 267.460.0122 x2019

**From:** Colin Robinson <crobinson@nbcllc.com>  
**Sent:** Friday, May 14, 2021 10:59 AM  
**To:** Charles Bruce <cbruce@nbcllc.com>  
**Subject:** Fwd: Council Incomplete Letter for EM-T-MOBILE-164-210416 (99 Day Hill Road, Windsor)

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**From:** Robidoux, Evan <Evan.Robidoux@ct.gov>  
**Sent:** Friday, May 14, 2021 10:12:24 AM  
**To:** Colin Robinson <crobinson@nbcllc.com>  
**Cc:** CSC-DL Siting Council <Siting.Council@ct.gov>  
**Subject:** Council Incomplete Letter for EM-T-MOBILE-164-210416 (99 Day Hill Road, Windsor)

Please see the attached correspondence.

# Exhibit E

## **Mount Analysis**

Date: **February 22, 2021**

Darcy Tarr  
Crown Castle  
6325 Ardrey Kell Road, Suite 600  
Charlotte, NC 28277  
(704) 405-6589



**GPD Engineering and Architecture  
Professional Corporation**  
520 South Main Street, Suite 2531  
Akron, Ohio 44311  
(216) 927-8663  
CrownMA@gpdgroup.com

**Subject:** **Mount Replacement Analysis Report**

**Carrier Designation:** **Sprint PCS Loading Modification**  
**Carrier Site Number:** CTHA267A

**Crown Castle Designation:** **Crown Castle BU Number:** 842875  
**Crown Castle Site Name:** WINDSORDAY HILL  
**Crown Castle JDE Job Number:** 628837  
**Crown Castle Order Number:** 538783 Rev. 1

**Engineering Firm Designation:** **GPD Report Designation:** 2021777.842875.02

**Site Data:** **99 Day Hill Road, Windsor, Hartford County, CT 06095**  
**Latitude 41° 52' 16.10" Longitude -72° 40' 16.00"**

**Structure Information:** **Tower Height & Type:** **168.0 ft Monopole Tower**  
**Mount Elevation:** **130.0 ft**  
**Mount Type:** **12.5 ft Platform Mount**

Dear Darcy Tarr,

GPD is pleased to submit this "**Mount Replacement Analysis Report**" to determine the structural integrity of Sprint PCS's antenna mounting system with the proposed appurtenance and equipment addition on the above mentioned 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 for fall protection or rigging 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:

**Platform Mount**

**Sufficient – 47.6%\***

**\*See Section 4.1 of this report for the loading and structural modifications required in order for the mount to support the loading listed in Table 1.**

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

Mount analysis prepared by: Matt Steward

Respectfully Submitted by:



Christopher J. Scheks, P.E.  
Connecticut #: 0030026

2/22/2021

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### 1) INTRODUCTION

This is a proposed 12.5' Platform Mount designed by Site Pro 1 (Part #: RMQP-496-HK, dated 7/14/2014).

### 2) ANALYSIS CRITERIA

<b>TIA-222 Revision:</b>	TIA-222-H
<b>Risk Category:</b>	II
<b>Ultimate Wind Speed:</b>	125 mph
<b>Exposure Category:</b>	C
<b>Topographic Factor at Base:</b>	1
<b>Topographic Factor at Mount:</b>	1
<b>Ice Thickness:</b>	2 in
<b>Wind Speed with Ice:</b>	50 mph
<b>Live Loading Wind Speed:</b>	30 mph
<b>Man Live Load at Mid/End-Points:</b>	250 lb
<b>Man Live Load at Mount Pipes:</b>	500 lb

**Table 1 - Proposed Equipment Configuration**

Mount Centerline (ft)	Antenna Centerline (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Mount Details
130.0	131.0	3	Ericsson	AIR6449 B41_T-MOBILE	(3) 12.5 ft. Platform Mounts
		3	RFS/Celwave	APX16DWV-16DWV-S-E-A20	
		3	RFS/Celwave	APXVAALL24_43-U-NA20_TMO	
		3	Ericsson	RADIO 4415 B66A	
		3	Ericsson	RADIO 4424 B25_TMO	
		3	Ericsson	RADIO 4449 B71 B85A_T-MOBILE	

### 3) ANALYSIS PROCEDURE

**Table 2 - Documents Provided**

Document	Remarks	Reference	Source
CCI Application	Crown Order Number 538783 Rev. 1	-	CCI
Mount Design	Site Pro 1 Part #: RMQP-496-HK, dated 7/14/2014	-	Site Pro 1
RF Data Sheet	T-Mobile Site ID: CTHA267A, dated 1/15/2021	-	CCI

#### 3.1) Analysis Method

RISA-3D Edition (Version 17.0.2), a commercially available analysis software package, was used to create a three-dimensional model of the antenna mounting system and calculate member stresses for various loading cases.

A tool internally developed by GPD, using Microsoft Excel, was used to calculate wind loading on all appurtenances, dishes, and mount members for various load cases. Selected output from the analysis is included in Appendix B.

This analysis was performed in accordance with Crown Castle's ENG-SOW-10208 *Tower Mount Analysis* (Revision C).

**3.2) Assumptions**

- 1) The antenna mounting system was properly fabricated, installed and maintained in good condition in accordance with its original design and manufacturer's specifications.
- 2) The configuration of antennas, mounts, and other appurtenances are as specified in Table 1 and the referenced drawings.
- 3) All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
- 4) This analysis assumes all information reference in Table 2 is current and correct.
- 5) Steel grades have been assumed as follows, unless noted otherwise:
 

Angle, Plate	ASTM A36 (GR 36)
HSS (Square)	ASTM 500 (GR B-46)
Pipe	ASTM A53 (GR 35)
Connection Bolts	ASTM A325

This analysis may be affected if any assumptions are not valid or have been made in error. GPD should be notified to determine the effect on the structural integrity of the antenna mounting system.

**4) ANALYSIS RESULTS**

**Table 3 - Mount Component Stresses vs. Capacity (Platform Mount)**

Notes	Component	Critical Member	Centerline (ft)	% Capacity	Pass / Fail
1,3	Standoff Arm	M47	130.0	19.2	Pass
	Cross Arm	M47		19.2	Pass
	Grating Angle	M49		39.7	Pass
	Toe Rail	M16		12.4	Pass
	Connection Plate (End)	M51A		23.8	Pass
	Connection Plate (Mid)	M56		34.1	Pass
	Pipe Mount	A3		43.7	Pass
	Support Rail	M73		37.9	Pass
	Support Rail Corner	M84		47.6	Pass
	Platform Reinforcement Kicker	M92A		11.5	Pass
	Reinforcement Connection Plate	M91A		9.9	Pass
2,3	Mount to Tower Connection	-	15.9	Pass	
	Tieback to Tower Connection	-	8.8	Pass	

<b>Structure Rating (max from all components) =</b>	<b>47.6%<sup>3</sup></b>
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Notes:

- 1) See additional documentation in "Appendix C - Software Analysis Output" for calculations supporting the % capacity consumed.
- 2) See additional documentation in "Appendix D - Additional Calculations" for calculations supporting the % capacity consumed.
- 3) Ratings per TIA-222-H section 15.5.

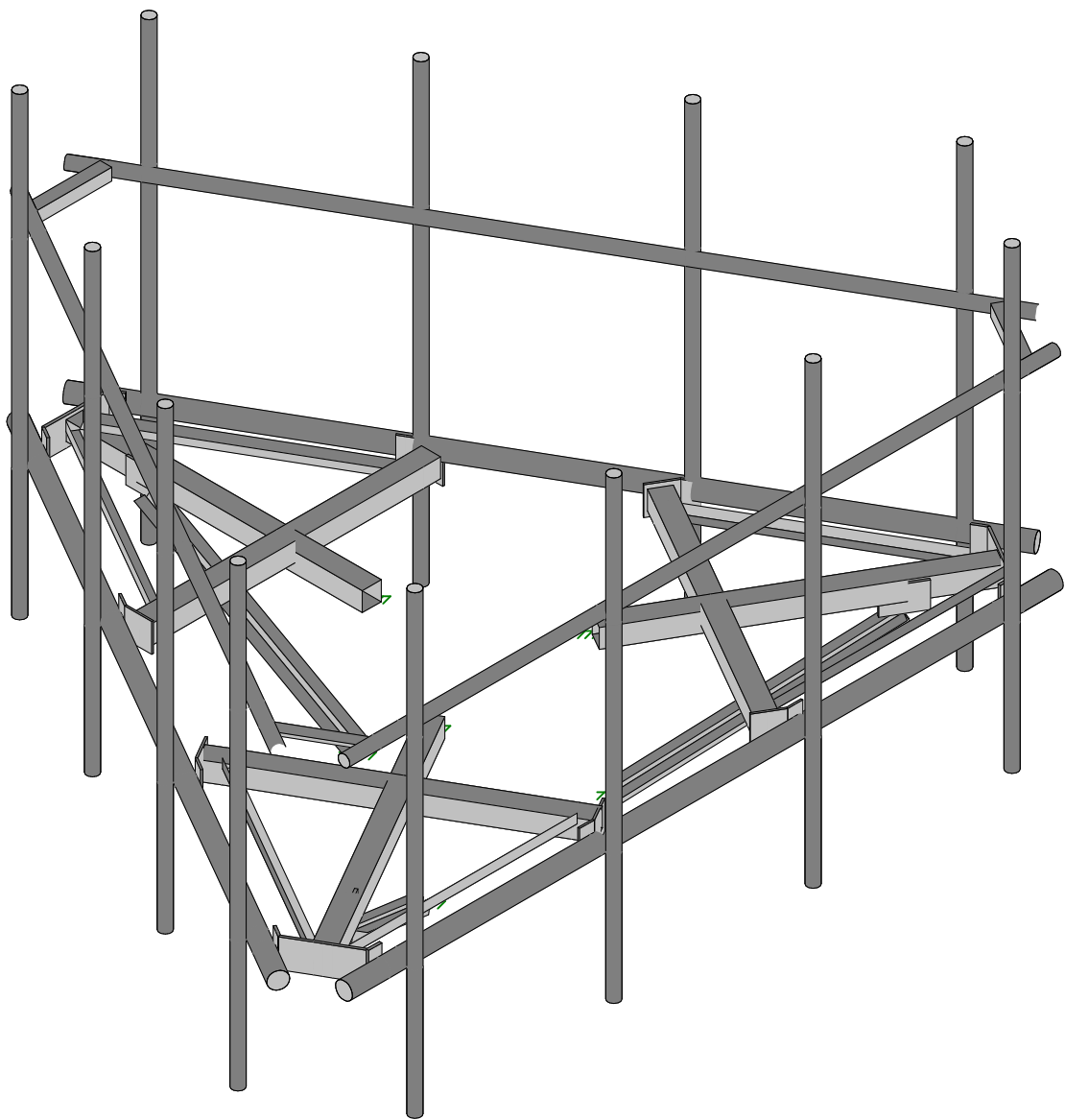
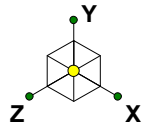
**4.1) Recommendations**

The mount has sufficient capacity to carry the proposed loading configuration. In order for the results of this analysis to be considered valid, the mount listed below shall be installed to support the proposed loading configuration.

Site Pro 1 RMQP-496-HK

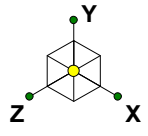
**APPENDIX A**  
**WIRE FRAME AND RENDERED MODELS**



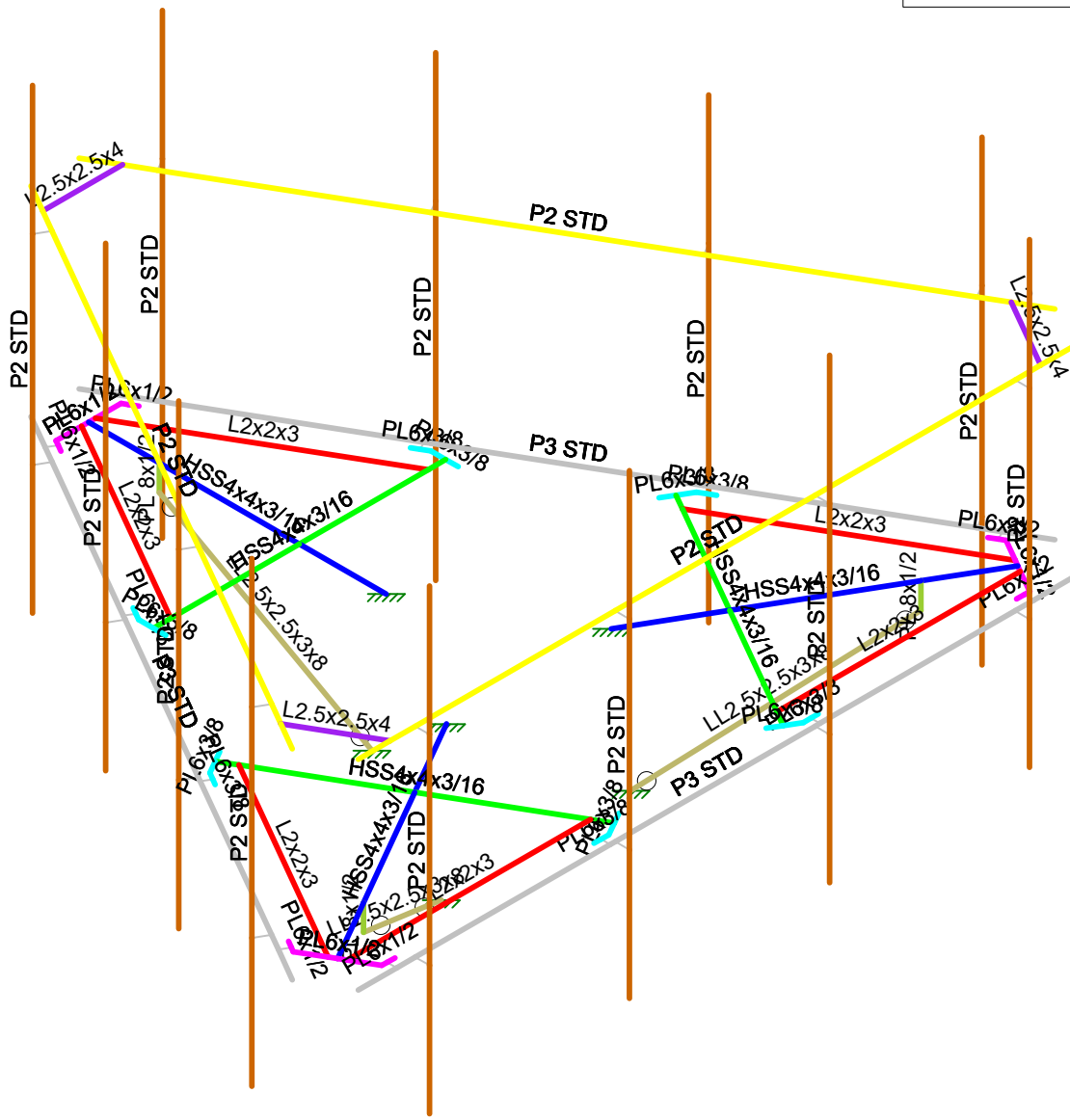


Envelope Only Solution

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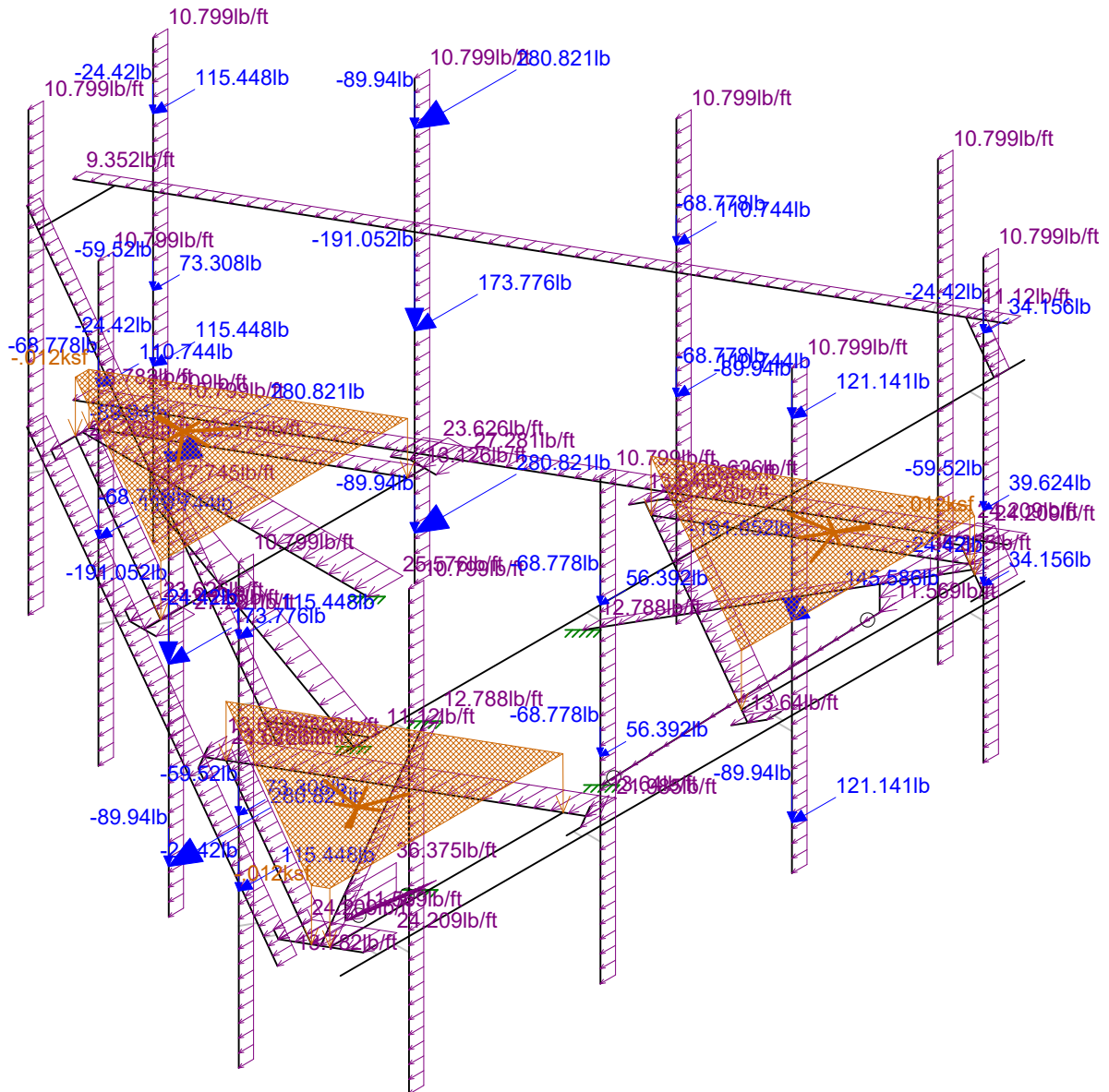
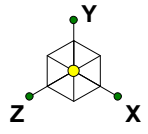


- Section Sets
- █ Standoff Arm
  - █ Cross Arm
  - █ Grating Angle
  - █ Toe Rail
  - █ Connection Plate (End)
  - █ Connection Plate (Mid)
  - █ Pipe Mount
  - █ Support Rail
  - █ Support Rail Corner
  - █ Platform Reinforcement Kicker
  - █ Reinforcement Connection Plate
  - █ RIGID



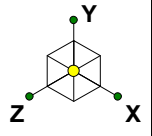
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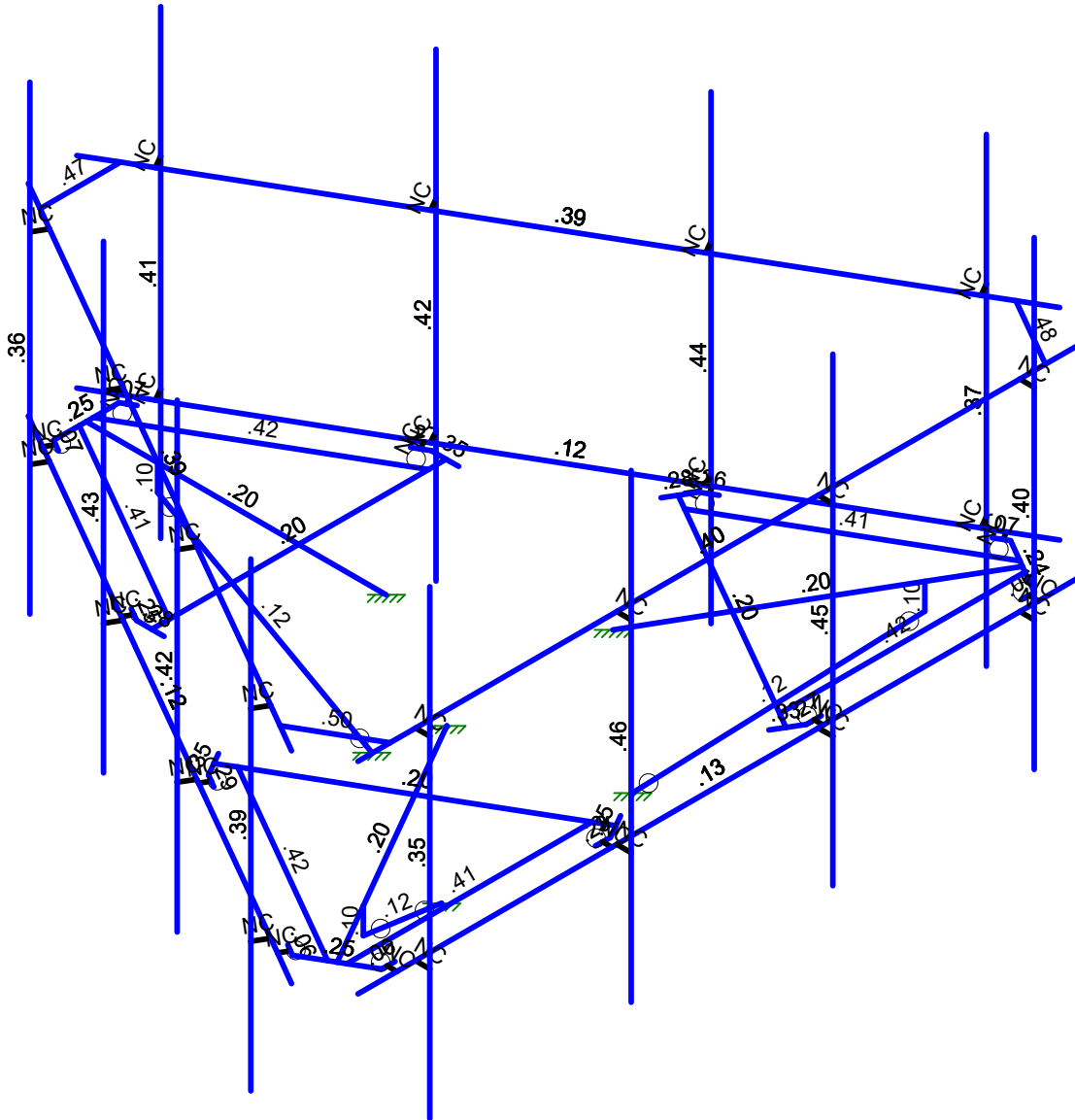


Loads: LC 8, 1.2 Dead + 1.0 Wind @ 90° - No Ice  
Envelope Only Solution

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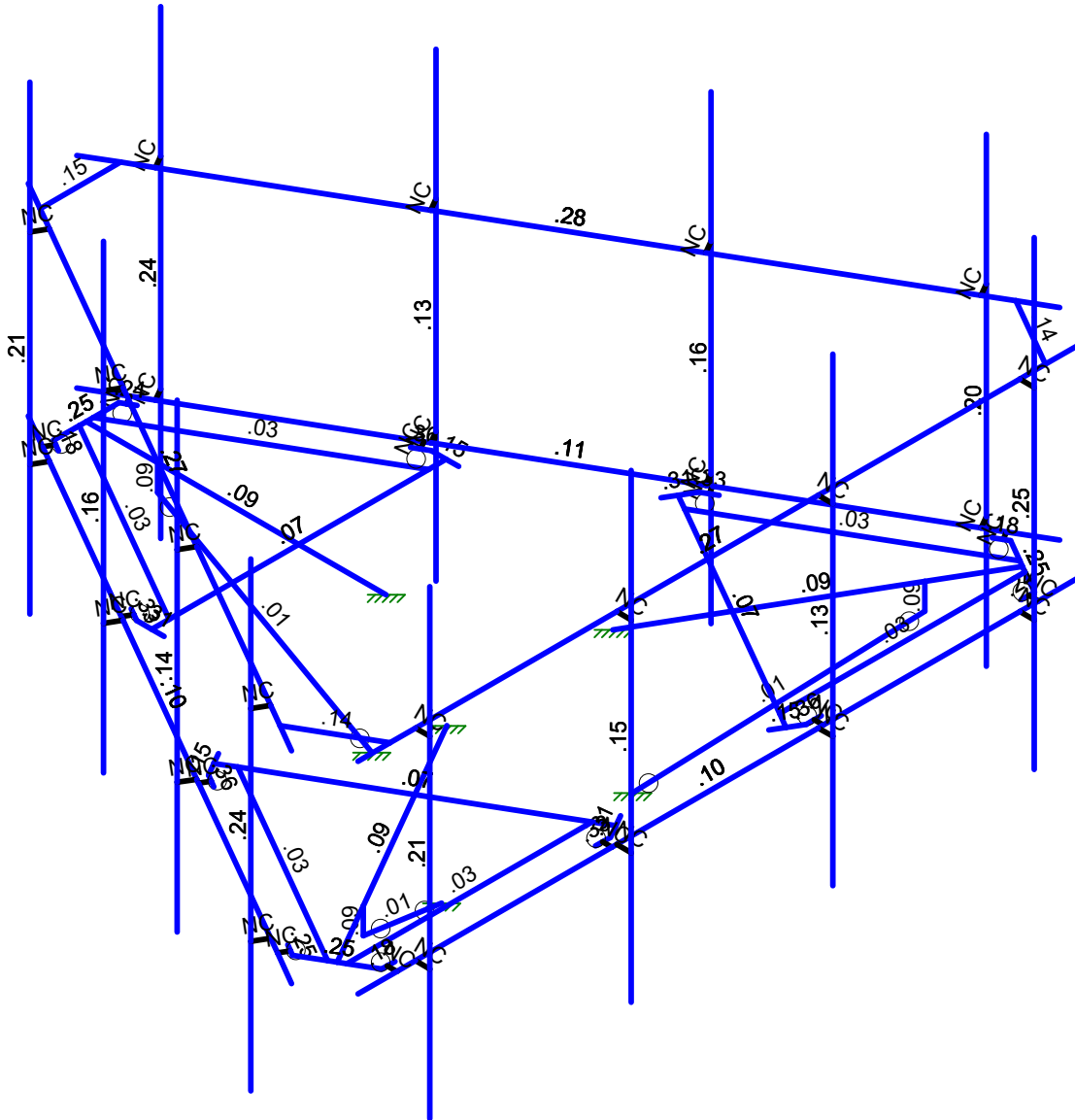
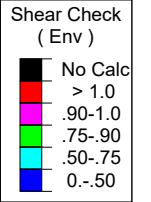
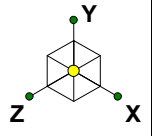


Code Check (Env)	
Black	No Calc
Red	> 1.0
Magenta	.90-1.0
Green	.75-.90
Cyan	.50-.75
Blue	0-.50



Member Code Checks Displayed (Enveloped)  
Envelope Only Solution

GPD	842875 - WINDSORDAY HILL	SK - 1
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Member Shear Checks Displayed (Enveloped)  
Envelope Only Solution

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**APPENDIX B**  
**SOFTWARE INPUT CALCULATIONS**



Structure Information	
Structure Type:	Monopole
Structure Height:	168 ft
z (Mount Centerline) =	130 ft
Gh (Mount Gust Effect Factor) =	1.00
Risk Category:	II

Code Specifications	
TIA/EIA Code:	H
Ultimate Wind Speed (No Ice) =	125 mph (3-s gust)
Ultimate Wind Speed (With Ice) =	50 mph (3-s gust)
Ice Thickness	2 in
Exposure Category	C
Tower Base Elevation (AMSL)	166 ft

Topographic Inputs	
Topographic Feature:	N/A

Section Sets											No Ice		Ice Output	
Mount Components	Member Type	Length (in)	Side (Longest seeing wind) (in)	Other Side (in)	Calculated Dc, for ice weight (in)	Dc, for ice weight (in)	Area Type (Round or Flat)	K <sub>s</sub>	User's Wind Multiplier	Normal Wind Force (lb/ft)*	Normal Ice Wind Force (lb/ft)*	Ice Weight (lb/ft)*		
Standoff Arm	Square/Rect.	62.500	4	4		5.66	Flat	0.90	1.00	28.42	6.29	22.28		
Cross Arm	Square/Rect.	61.000	4	4		5.66	Flat	0.90	1.00	28.21	6.26	22.28		
Grating Angle	Angle	52.000	2	2		2.83	Flat	0.90	1.00	16.84	4.46	14.36		
Toe Rail	Pipe	150.000	3.5	3.5		3.50	Round	0.90	1.00	17.68	5.76	16.24		
Connection Plate (End)	Square/Rect.	19.000	6	0.5		6.02	Flat	0.90	1.00	31.06	7.01	23.30		
Connection Plate (Mid)	Square/Rect.	8.500	6	0.375		6.01	Flat	0.90	1.00	30.31	7.01	23.28		
Pipe Mount	Pipe	96.000	2.375	2.375		2.38	Round	0.90	1.00	12.00	4.46	13.08		
Support Rail	Pipe	150.000	2.375	2.375		2.38	Round	0.90	1.00	12.00	5.27	13.08		
Support Rail Corner	Angle	15.000	2.5	2.5		3.54	Flat	0.90	1.00	14.27	4.18	16.34		
Platform Reinforcement Kicker	Other	53.000	2.5	5.5	5.5	5.50	Flat	0.90	1.00	19.72	4.89	21.84		
Reinforcement Connection Plate	Square/Rect.	4.000	8	0.5		8.02	Flat	0.90	1.00	40.42	8.63	28.89		

\*All forces are unfactored.

Appurtenances							Shielding			No Ice		Ice Output	
Appurtenance Model	Loading Elevation (ft)	Height (in)	Front Width (in)	Side Depth (in)	Wt (lbs)	Type for Area	Front Shielding (%)	Side Shielding (%)	K <sub>s</sub> and/or block shielding	Normal Wind Force (lbs)*	Wt (lbs) (no ice)*	Normal Wind Force (lbs) (w/ ice)*	Wt (lbs) (only ice)*
(3) AIR6449 B41_T-MOBILE	131	33.11	20.51	8.54	114.63	Flat	0%	0%	0.90	257.72	114.63	50.70	214.78
(3) APX16DWV-16DWV-S-E-A20	131	55.9	13.3	3.15	40.7	CFD	0%	0%	0.90	285.09	40.70	66.46	201.22
(3) APXVAALL24_43-U-NA20_TMO	131	95.9	24	8.5	149.9	CFD	0%	0%	0.90	668.09	149.90	133.36	593.89
(3) RADIO 4415 B66A	131	16.5	13.5	6.3	49.6	Flat	0%	0%	0.90	84.54	49.60	19.15	89.20
(3) RADIO 4424 B25_TMO	131	17.1	14.4	11.3	86	Flat	0%	0%	0.90	93.45	86.00	20.82	121.98
(3) RADIO 4449 B71 B85A_T-MOBILE	131	17.91	13.2	10.63	73.21	Flat	0%	0%	0.90	89.72	73.21	20.16	116.03

\*All forces are unfactored.

**APPENDIX C**  
**SOFTWARE ANALYSIS OUTPUT**



### Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (1E...	Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
2	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
3	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3

### Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design R...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Standoff Arm	HSS4x4x3/16	None	None	A500 Gr.B Rect	Typical	2.859	6.944	6.944	10.39
2	Cross Arm	HSS4x4x3/16	None	None	A500 Gr.B Rect	Typical	2.859	6.944	6.944	10.39
3	Grating Angle	L2x2x3	None	None	A36 Gr.36	Typical	.722	.271	.271	.009
4	Toe Rail	P3 STD	None	None	A53 Gr.B	Typical	2.228	3.017	3.017	6.034
5	Connection Plate (End)	PL6x1/2	None	None	A36 Gr.36	Typical	3	.063	9	.237
6	Connection Plate (Mid)	PL6x3/8	None	None	A36 Gr.36	Typical	2.25	.026	6.75	.101
7	Pipe Mount	P2 STD	None	None	A53 Gr.B	Typical	1.075	.666	.666	1.331
8	Support Rail	P2 STD	None	None	A53 Gr.B	Typical	1.075	.666	.666	1.331
9	Support Rail Corner	L2.5x2.5x4	None	None	A36 Gr.36	Typical	1.19	.692	.692	.026
10	Platform Reinforcement ...	LL2.5x2.5x3x8	None	None	A36 Gr.36	Typical	1.805	2.703	1.093	.02
11	Reinforcement Connecti...	PL 8x1/2	None	None	A36 Gr.36	Typical	4	.083	21.333	.32

### Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M46	SA	N88			Standoff Arm	None	None	A500 Gr.B...	Typical
2	M47	N89	N90			Cross Arm	None	None	A500 Gr.B...	Typical
3	M48	N92	N93			Grating Angle	None	None	A36 Gr.36	Typical
4	M49	N94	N95		270	Grating Angle	None	None	A36 Gr.36	Typical
5	M50	N96	N97			Connection Pl...	None	None	A36 Gr.36	Typical
6	M51	N97	N98			Connection Pl...	None	None	A36 Gr.36	Typical
7	M52	N98	N99			Connection Pl...	None	None	A36 Gr.36	Typical
8	M53	N100	N101			Connection Pl...	None	None	A36 Gr.36	Typical
9	M54	N101	N102			Connection Pl...	None	None	A36 Gr.36	Typical
10	M55	N103	N104			Connection Pl...	None	None	A36 Gr.36	Typical
11	M56	N104	N105			Connection Pl...	None	None	A36 Gr.36	Typical
12	M57	N106	N107			RIGID	None	None	RIGID	Typical
13	M58	N108	N109			RIGID	None	None	RIGID	Typical
14	M59	N110	N111			RIGID	None	None	RIGID	Typical
15	M60	N112	N113			RIGID	None	None	RIGID	Typical
16	M16	N29	N30			Toe Rail	None	None	A53 Gr.B	Typical
17	M46A	SB	N93A			Standoff Arm	None	None	A500 Gr.B...	Typical
18	M47A	N94A	N95A			Cross Arm	None	None	A500 Gr.B...	Typical
19	M48A	N97A	N98A			Grating Angle	None	None	A36 Gr.36	Typical
20	M49A	N99A	N100A		270	Grating Angle	None	None	A36 Gr.36	Typical
21	M50A	N101A	N102A			Connection Pl...	None	None	A36 Gr.36	Typical
22	M51A	N102A	N103A			Connection Pl...	None	None	A36 Gr.36	Typical
23	M52A	N103A	N104A			Connection Pl...	None	None	A36 Gr.36	Typical
24	M53A	N105A	N106A			Connection Pl...	None	None	A36 Gr.36	Typical
25	M54A	N106A	N107A			Connection Pl...	None	None	A36 Gr.36	Typical
26	M55A	N108A	N109A			Connection Pl...	None	None	A36 Gr.36	Typical
27	M56A	N109A	N110A			Connection Pl...	None	None	A36 Gr.36	Typical
28	M57A	N111A	N112A			RIGID	None	None	RIGID	Typical
29	M58A	N113A	N114			RIGID	None	None	RIGID	Typical



Company : GPD  
 Designer : Steward, Matthew  
 Job Number : 2021777.842875.02  
 Model Name : 842875 - WINDSORDAY HILL

Feb 22, 2021  
 8:47 PM  
 Checked By: \_\_\_\_\_

**Member Primary Data (Continued)**

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
30	M59A	N115	N116			RIGID	None	None	RIGID	Typical
31	M60A	N117	N118			RIGID	None	None	RIGID	Typical
32	M61	N119	N120			Toe Rail	None	None	A53 Gr.B	Typical
33	M91	SC	N183			Standoff Arm	None	None	A500 Gr.B...	Typical
34	M92	N184	N185			Cross Arm	None	None	A500 Gr.B...	Typical
35	M93	N187	N188			Grating Angle	None	None	A36 Gr.36	Typical
36	M94	N189	N190		270	Grating Angle	None	None	A36 Gr.36	Typical
37	M95	N191	N192			Connection Pl...	None	None	A36 Gr.36	Typical
38	M96	N192	N193			Connection Pl...	None	None	A36 Gr.36	Typical
39	M97	N193	N194			Connection Pl...	None	None	A36 Gr.36	Typical
40	M98	N195	N196			Connection Pl...	None	None	A36 Gr.36	Typical
41	M99	N196	N197			Connection Pl...	None	None	A36 Gr.36	Typical
42	M100	N198	N199			Connection Pl...	None	None	A36 Gr.36	Typical
43	M101	N199	N200			Connection Pl...	None	None	A36 Gr.36	Typical
44	M102	N201	N202			RIGID	None	None	RIGID	Typical
45	M103	N203	N204			RIGID	None	None	RIGID	Typical
46	M104	N205	N206			RIGID	None	None	RIGID	Typical
47	M105	N207	N208			RIGID	None	None	RIGID	Typical
48	M106	N209	N210			Toe Rail	None	None	A53 Gr.B	Typical
49	M49B	N89A	N90A			RIGID	None	None	RIGID	Typical
50	M50B	N91A	N92A			RIGID	None	None	RIGID	Typical
51	M51B	N93B	N94B			RIGID	None	None	RIGID	Typical
52	M52B	N95B	N96B			RIGID	None	None	RIGID	Typical
53	A1	N97B	N101B			Pipe Mount	None	None	A53 Gr.B	Typical
54	A2	N98B	N102B			Pipe Mount	None	None	A53 Gr.B	Typical
55	A3	N99B	N103B			Pipe Mount	None	None	A53 Gr.B	Typical
56	A4	N100B	N104B			Pipe Mount	None	None	A53 Gr.B	Typical
57	M57B	N105B	N106B			RIGID	None	None	RIGID	Typical
58	M58B	N107B	N108B			RIGID	None	None	RIGID	Typical
59	M59B	N109B	N110B			RIGID	None	None	RIGID	Typical
60	M60B	N111B	N112B			RIGID	None	None	RIGID	Typical
61	B1	N113B	N117A			Pipe Mount	None	None	A53 Gr.B	Typical
62	B2	N114A	N118A			Pipe Mount	None	None	A53 Gr.B	Typical
63	B3	N115A	N119A			Pipe Mount	None	None	A53 Gr.B	Typical
64	B4	N116A	N120A			Pipe Mount	None	None	A53 Gr.B	Typical
65	M65	N121	N122			RIGID	None	None	RIGID	Typical
66	M66	N123	N124			RIGID	None	None	RIGID	Typical
67	M67	N125	N126			RIGID	None	None	RIGID	Typical
68	M68	N127	N128			RIGID	None	None	RIGID	Typical
69	C1	N129	N133			Pipe Mount	None	None	A53 Gr.B	Typical
70	C2	N130	N134			Pipe Mount	None	None	A53 Gr.B	Typical
71	C3	N131	N135			Pipe Mount	None	None	A53 Gr.B	Typical
72	C4	N132	N136			Pipe Mount	None	None	A53 Gr.B	Typical
73	M73	N137	N138			Support Rail	None	None	A53 Gr.B	Typical
74	M74	N139	N140			RIGID	None	None	RIGID	Typical
75	M75	N141	N142			RIGID	None	None	RIGID	Typical
76	M76	N143	N144			RIGID	None	None	RIGID	Typical
77	M77	N145	N146			RIGID	None	None	RIGID	Typical
78	M78	N147	N148		180	Support Rail C...	None	None	A36 Gr.36	Typical
79	M79	N149	N150			Support Rail	None	None	A53 Gr.B	Typical
80	M80	N151	N152			RIGID	None	None	RIGID	Typical
81	M81	N153	N154			RIGID	None	None	RIGID	Typical
82	M82	N155	N156			RIGID	None	None	RIGID	Typical
83	M83	N157	N158			RIGID	None	None	RIGID	Typical
84	M84	N159	N160		180	Support Rail C...	None	None	A36 Gr.36	Typical
85	M85	N161	N162			Support Rail	None	None	A53 Gr.B	Typical
86	M86	N163	N164			RIGID	None	None	RIGID	Typical





Company : GPD  
 Designer : Steward, Matthew  
 Job Number : 2021777.842875.02  
 Model Name : 842875 - WINDSORDAY HILL

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**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...
33	1.2 Dead + 1.0 Ice Wind @ ...	Yes	Y		1	1.2	22	1	14	1		1	0	0	0	0	0							
34	1.2 Dead + 1.0 Ice Wind @ ...	Yes	Y		1	1.2	23	1	14	1		1	0	0	0	0	0							
35	1.2 Dead + 1.0 Ice Wind @ ...	Yes	Y		1	1.2	24	1	14	1		1	0	0	0	0	0							
36	1.2 Dead + 1.0 Ice Wind @ ...	Yes	Y		1	1.2	25	1	14	1		1	0	0	0	0	0							
37	1.2 Dead + 1.0 Ice Wind @ ...	Yes	Y		1	1.2	26	1	14	1		1	0	0	0	0	0							
38	1.2 Dead + 1.5 Live_M - A1 ...	Yes	Y		1	1.2	27	1.5	2	.058	0		0	0	0	0	0							
39	1.2 Dead + 1.5 Live_M - A1 ...	Yes	Y		1	1.2	27	1.5	3	.058	0		0	0	0	0	0							
40	1.2 Dead + 1.5 Live_M - A1 ...	Yes	Y		1	1.2	27	1.5	4	.058	0		0	0	0	0	0							
41	1.2 Dead + 1.5 Live_M - A1 ...	Yes	Y		1	1.2	27	1.5	5	.058	0		0	0	0	0	0							
42	1.2 Dead + 1.5 Live_M - A1 ...	Yes	Y		1	1.2	27	1.5	6	.058	0		0	0	0	0	0							
43	1.2 Dead + 1.5 Live_M - A1 ...	Yes	Y		1	1.2	27	1.5	7	.058	0		0	0	0	0	0							
44	1.2 Dead + 1.5 Live_M - A1 ...	Yes	Y		1	1.2	27	1.5	8	.058	0		0	0	0	0	0							
45	1.2 Dead + 1.5 Live_M - A1 ...	Yes	Y		1	1.2	27	1.5	9	.058	0		0	0	0	0	0							
46	1.2 Dead + 1.5 Live_M - A1 ...	Yes	Y		1	1.2	27	1.5	10	.058	0		0	0	0	0	0							
47	1.2 Dead + 1.5 Live_M - A1 ...	Yes	Y		1	1.2	27	1.5	11	.058	0		0	0	0	0	0							
48	1.2 Dead + 1.5 Live_M - A1 ...	Yes	Y		1	1.2	27	1.5	12	.058	0		0	0	0	0	0							
49	1.2 Dead + 1.5 Live_M - A1 ...	Yes	Y		1	1.2	27	1.5	13	.058	0		0	0	0	0	0							
50	1.2 Dead + 1.5 Live_M - A2 ...	Yes	Y		1	1.2	28	1.5	2	.058	0		0	0	0	0	0							
51	1.2 Dead + 1.5 Live_M - A2 ...	Yes	Y		1	1.2	28	1.5	3	.058	0		0	0	0	0	0							
52	1.2 Dead + 1.5 Live_M - A2 ...	Yes	Y		1	1.2	28	1.5	4	.058	0		0	0	0	0	0							
53	1.2 Dead + 1.5 Live_M - A2 ...	Yes	Y		1	1.2	28	1.5	5	.058	0		0	0	0	0	0							
54	1.2 Dead + 1.5 Live_M - A2 ...	Yes	Y		1	1.2	28	1.5	6	.058	0		0	0	0	0	0							
55	1.2 Dead + 1.5 Live_M - A2 ...	Yes	Y		1	1.2	28	1.5	7	.058	0		0	0	0	0	0							
56	1.2 Dead + 1.5 Live_M - A2 ...	Yes	Y		1	1.2	28	1.5	8	.058	0		0	0	0	0	0							
57	1.2 Dead + 1.5 Live_M - A2 ...	Yes	Y		1	1.2	28	1.5	9	.058	0		0	0	0	0	0							
58	1.2 Dead + 1.5 Live_M - A2 ...	Yes	Y		1	1.2	28	1.5	10	.058	0		0	0	0	0	0							
59	1.2 Dead + 1.5 Live_M - A2 ...	Yes	Y		1	1.2	28	1.5	11	.058	0		0	0	0	0	0							
60	1.2 Dead + 1.5 Live_M - A2 ...	Yes	Y		1	1.2	28	1.5	12	.058	0		0	0	0	0	0							
61	1.2 Dead + 1.5 Live_M - A2 ...	Yes	Y		1	1.2	28	1.5	13	.058	0		0	0	0	0	0							
62	1.2 Dead + 1.5 Live_M - A3 ...	Yes	Y		1	1.2	29	1.5	2	.058	0		0	0	0	0	0							
63	1.2 Dead + 1.5 Live_M - A3 ...	Yes	Y		1	1.2	29	1.5	3	.058	0		0	0	0	0	0							
64	1.2 Dead + 1.5 Live_M - A3 ...	Yes	Y		1	1.2	29	1.5	4	.058	0		0	0	0	0	0							
65	1.2 Dead + 1.5 Live_M - A3 ...	Yes	Y		1	1.2	29	1.5	5	.058	0		0	0	0	0	0							
66	1.2 Dead + 1.5 Live_M - A3 ...	Yes	Y		1	1.2	29	1.5	6	.058	0		0	0	0	0	0							
67	1.2 Dead + 1.5 Live_M - A3 ...	Yes	Y		1	1.2	29	1.5	7	.058	0		0	0	0	0	0							
68	1.2 Dead + 1.5 Live_M - A3 ...	Yes	Y		1	1.2	29	1.5	8	.058	0		0	0	0	0	0							
69	1.2 Dead + 1.5 Live_M - A3 ...	Yes	Y		1	1.2	29	1.5	9	.058	0		0	0	0	0	0							
70	1.2 Dead + 1.5 Live_M - A3 ...	Yes	Y		1	1.2	29	1.5	10	.058	0		0	0	0	0	0							
71	1.2 Dead + 1.5 Live_M - A3 ...	Yes	Y		1	1.2	29	1.5	11	.058	0		0	0	0	0	0							
72	1.2 Dead + 1.5 Live_M - A3 ...	Yes	Y		1	1.2	29	1.5	12	.058	0		0	0	0	0	0							
73	1.2 Dead + 1.5 Live_M - A3 ...	Yes	Y		1	1.2	29	1.5	13	.058	0		0	0	0	0	0							
74	1.2 Dead + 1.5 Live_M - A4 ...	Yes	Y		1	1.2	30	1.5	2	.058	0		0	0	0	0	0							
75	1.2 Dead + 1.5 Live_M - A4 ...	Yes	Y		1	1.2	30	1.5	3	.058	0		0	0	0	0	0							
76	1.2 Dead + 1.5 Live_M - A4 ...	Yes	Y		1	1.2	30	1.5	4	.058	0		0	0	0	0	0							
77	1.2 Dead + 1.5 Live_M - A4 ...	Yes	Y		1	1.2	30	1.5	5	.058	0		0	0	0	0	0							
78	1.2 Dead + 1.5 Live_M - A4 ...	Yes	Y		1	1.2	30	1.5	6	.058	0		0	0	0	0	0							
79	1.2 Dead + 1.5 Live_M - A4 ...	Yes	Y		1	1.2	30	1.5	7	.058	0		0	0	0	0	0							
80	1.2 Dead + 1.5 Live_M - A4 ...	Yes	Y		1	1.2	30	1.5	8	.058	0		0	0	0	0	0							
81	1.2 Dead + 1.5 Live_M - A4 ...	Yes	Y		1	1.2	30	1.5	9	.058	0		0	0	0	0	0							
82	1.2 Dead + 1.5 Live_M - A4 ...	Yes	Y		1	1.2	30	1.5	10	.058	0		0	0	0	0	0							
83	1.2 Dead + 1.5 Live_M - A4 ...	Yes	Y		1	1.2	30	1.5	11	.058	0		0	0	0	0	0							
84	1.2 Dead + 1.5 Live_M - A4 ...	Yes	Y		1	1.2	30	1.5	12	.058	0		0	0	0	0	0							
85	1.2 Dead + 1.5 Live_M - A4 ...	Yes	Y		1	1.2	30	1.5	13	.058	0		0	0	0	0	0							
86	1.2 Dead + 1.5 Live_M - B1 ...	Yes	Y		1	1.2	31	1.5	2	.058	0		0	0	0	0	0							
87	1.2 Dead + 1.5 Live_M - B1 ...	Yes	Y		1	1.2	31	1.5	3	.058	0		0	0	0	0	0							
88	1.2 Dead + 1.5 Live_M - B1 ...	Yes	Y		1	1.2	31	1.5	4	.058	0		0	0	0	0	0							
89	1.2 Dead + 1.5 Live_M - B1 ...	Yes	Y		1	1.2	31	1.5	5	.058	0		0	0	0	0	0							











Company : GPD  
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 Job Number : 2021777.842875.02  
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**Basic Load Cases (Continued)**

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed Area(Me...	Surface(P...
30	Live Load - A4	None					1		
31	Live Load - B1	None					1		
32	Live Load - B2	None					1		
33	Live Load - B3	None					1		
34	Live Load - B4	None					1		
35	Live Load - C1	None					1		
36	Live Load - C2	None					1		
37	Live Load - C3	None					1		
38	Live Load - C4	None					1		
39	Live Load - M46 (Start)	None					1		
40	Live Load - M46 (Mid...	None					1		
41	Live Load - M46 (End)	None					1		
42	Live Load - M47 (Start)	None					1		
43	Live Load - M47 (Mid...	None					1		
44	Live Load - M47 (End)	None					1		
45	Live Load - M48 (Start)	None					1		
46	Live Load - M48 (Mid...	None					1		
47	Live Load - M48 (End)	None					1		
48	Live Load - M49 (Start)	None					1		
49	Live Load - M49 (Mid...	None					1		
50	Live Load - M49 (End)	None					1		
51	Live Load - M16 (Start)	None					1		
52	Live Load - M16 (Mid...	None					1		
53	Live Load - M16 (End)	None					1		
54	Live Load - M46A (St...	None					1		
55	Live Load - M46A (Mi...	None					1		
56	Live Load - M46A (E...	None					1		
57	Live Load - M47A (St...	None					1		
58	Live Load - M47A (Mi...	None					1		
59	Live Load - M47A (E...	None					1		
60	Live Load - M48A (St...	None					1		
61	Live Load - M48A (Mi...	None					1		
62	Live Load - M48A (E...	None					1		
63	Live Load - M49A (St...	None					1		
64	Live Load - M49A (Mi...	None					1		
65	Live Load - M49A (E...	None					1		
66	Live Load - M61 (Start)	None					1		
67	Live Load - M61 (Mid...	None					1		
68	Live Load - M61 (End)	None					1		
69	Live Load - M91 (Start)	None					1		
70	Live Load - M91 (Mid...	None					1		
71	Live Load - M91 (End)	None					1		
72	Live Load - M92 (Start)	None					1		
73	Live Load - M92 (Mid...	None					1		
74	Live Load - M92 (End)	None					1		
75	Live Load - M93 (Start)	None					1		
76	Live Load - M93 (Mid...	None					1		
77	Live Load - M93 (End)	None					1		
78	Live Load - M94 (Start)	None					1		
79	Live Load - M94 (Mid...	None					1		
80	Live Load - M94 (End)	None					1		
81	Live Load - M106 (St...	None					1		
82	Live Load - M106 (Mi...	None					1		
83	Live Load - M106 (En...	None					1		
84	BLC 1 Transient Area...	None						51	
85	BLC 14 Transient Are...	None						51	





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### Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	SA	max	1724.707	15	1739.406	30	4332.985	22	1.685	33	1.726	4	1.44	27
2		min	-2767.076	2	410.812	23	-2523.137	11	.257	5	-1.711	17	.025	17
3	SB	max	1357.254	19	1739.407	34	2785.277	21	-.303	23	1.727	12	.969	73
4		min	-2457.179	28	410.777	7	-4586.09	8	-2.048	31	-1.71	25	-.089	13
5	SC	max	5362.254	14	1739.871	26	1375.841	21	.688	155	1.93	20	-.458	3
6		min	-3275.173	3	409.605	15	-1378	8	-.493	113	-1.913	9	-2.121	32
7	RC	max	607.713	3	2539.364	32	36.778	21	0	141	0	5	0	226
8		min	-4489.756	32	-333.679	3	-36.754	9	0	5	0	141	0	1
9	RA	max	2225.816	36	2517.871	36	443.822	11	0	175	0	175	0	49
10		min	-259.702	11	-279.807	11	-3855.352	36	0	49	0	49	0	175
11	RB	max	2227.936	29	2517.924	28	3854.695	28	0	21	0	21	0	21
12		min	-259.605	19	-279.884	19	-444.039	19	0	89	0	89	0	89
13	Totals:	max	5837.399	15	12107.641	31	5868.55	21						
14		min	-5837.4	2	2844.993	25	-5868.551	9						

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

Member	Shape	Code Check	Loc[...]	LC	Shear	Loc[...]	Dir	LC	phi*	Pnc...	phi*	Pnt...	phi*	Mn...	phi*	Mn...	Cb	Eqn
1	M46	HSS4x4x3...	.198	0	27	.093	0	y	27	106237...	118378...	14.115	14.115	2...	H1-1b			
2	M47	HSS4x4x3...	.202	30.6	35	.072	30.6	y	27	106648...	118378...	14.115	14.115	1...	H1-1b			
3	M48	L2x2x3	.411	25.5	1...	.031	51.1	y	1...	15920...	23392.8	.558	1.169	1...	H2-1			
4	M49	L2x2x3	.417	25.5	1...	.030	0	z	1...	15920...	23392.8	.558	1.166	1...	H2-1			
5	M50	PL6x1/2	.067	1.642	20	.181	2.765	y	1...	95340...	97200	1.012	12.15	3...	H1-1b			
6	M51	PL6x1/2	.238	6.81	20	.249	6.81	y	26	60829...	97200	1.012	12.15	1...	H1-1b			
7	M52	PL6x1/2	.061	1.123	22	.242	0	y	37	95340...	97200	1.012	12.15	3...	H1-1b			
8	M53	PL6x3/8	.276	2.627	16	.308	2.627	y	29	62895...	72900	.57	9.113	1...	H1-1b			
9	M54	PL6x3/8	.260	1.595	8	.332	0	y	36	9770.62	72900	.57	9.113	1...	H1-1b			
10	M55	PL6x3/8	.327	2.627	4	.154	2.627	y	33	62895...	72900	.57	9.113	1...	H1-1b			
11	M56	PL6x3/8	.266	1.595	12	.358	0	y	35	9770.62	72900	.57	9.113	1...	H1-1b			
12	M16	P3 STD	.130	53.1	20	.105	96.8		4	29986.1	70196...	6.124	6.124	3...	H1-1b			
13	M46A	HSS4x4x3...	.197	0	31	.093	0	y	31	106237...	118378...	14.115	14.115	2...	H1-1b			
14	M47A	HSS4x4x3...	.202	30.6	29	.072	30.6	y	31	106648...	118378...	14.115	14.115	1...	H1-1b			
15	M48A	L2x2x3	.411	25.5	2...	.031	51.1	y	2...	15920...	23392.8	.558	1.169	1...	H2-1			
16	M49A	L2x2x3	.417	25.5	2...	.030	0	z	2...	15920...	23392.8	.558	1.166	1...	H2-1			
17	M50A	PL6x1/2	.064	1.642	6	.181	2.765	y	75	95340...	97200	1.012	12.15	3...	H1-1b			
18	M51A	PL6x1/2	.247	6.81	8	.250	6.81	y	29	60829...	97200	1.012	12.15	1...	H1-1b			
19	M52A	PL6x1/2	.061	1.123	6	.245	0	y	29	95340...	97200	1.012	12.15	3...	H1-1b			
20	M53A	PL6x3/8	.250	2.627	24	.307	2.627	y	32	62895...	72900	.57	9.113	1...	H1-1b			
21	M54A	PL6x3/8	.231	1.595	16	.332	0	y	29	9770.62	72900	.57	9.113	1...	H1-1b			
22	M55A	PL6x3/8	.353	2.627	12	.153	2.627	y	37	62895...	72900	.57	9.113	1...	H1-1b			
23	M56A	PL6x3/8	.295	1.595	20	.358	0	y	28	9770.62	72900	.57	9.113	1...	H1-1b			
24	M61	P3 STD	.120	54.6	33	.105	96.8		12	29986.1	70196...	6.124	6.124	2...	H1-1b			
25	M91	HSS4x4x3...	.202	0	35	.094	0	y	35	106237...	118378...	14.115	14.115	2...	H1-1b			
26	M92	HSS4x4x3...	.201	30.6	31	.073	30.6	y	35	106648...	118378...	14.115	14.115	1...	H1-1b			
27	M93	L2x2x3	.411	25.5	2...	.031	51.1	y	2...	15920...	23392.8	.558	1.169	1...	H2-1			
28	M94	L2x2x3	.417	25.5	2...	.030	0	z	2...	15920...	23392.8	.558	1.166	1...	H2-1			
29	M95	PL6x1/2	.068	1.642	14	.181	2.765	y	1...	95340...	97200	1.012	12.15	3...	H1-1b			
30	M96	PL6x1/2	.250	6.81	14	.248	6.81	y	33	60829...	97200	1.012	12.15	1...	H1-1b			
31	M97	PL6x1/2	.066	1.123	14	.243	0	y	33	95340...	97200	1.012	12.15	3...	H1-1b			
32	M98	PL6x3/8	.276	2.627	8	.307	2.627	y	37	62895...	72900	.57	9.113	1...	H1-1b			
33	M99	PL6x3/8	.251	1.595	2	.333	0	y	32	9770.62	72900	.57	9.113	1...	H1-1b			
34	M100	PL6x3/8	.353	2.627	20	.154	2.627	y	29	62895...	72900	.57	9.113	1...	H1-1b			
35	M101	PL6x3/8	.273	1.595	4	.358	0	y	32	9770.62	72900	.57	9.113	1...	H1-1b			
36	M106	P3 STD	.125	53.1	12	.110	96.8		20	29986.1	70196...	6.124	6.124	3...	H1-1b			
37	A1	P2 STD	.399	69	20	.248	27		2	15808...	33847...	1.997	1.997	4...	H1-1b			



Company : GPD  
 Designer : Steward, Matthew  
 Job Number : 2021777.842875.02  
 Model Name : 842875 - WINDSORDAY HILL

Feb 22, 2021  
 8:47 PM  
 Checked By: \_\_\_\_\_

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

Member	Shape	Code Check	Loc	LC	Shear	Loc	Dir	LC	phi*	Pnc	phi*	Pnt	phi*	Mn	phi*	Mn	Cb	Eqn
38	A2	P2 STD	.447	69	20	.129	69	24	15808	33847	1.997	1.997	3	H1-1b				
39	A3	P2 STD	.459	69	8	.155	69	4	15808	33847	1.997	1.997	3	H1-1b				
40	A4	P2 STD	.354	69	8	.210	27	2	15808	33847	1.997	1.997	4	H1-1b				
41	B1	P2 STD	.388	69	6	.239	27	8	15808	33847	1.997	1.997	3	H1-1b				
42	B2	P2 STD	.419	69	4	.138	69	8	15808	33847	1.997	1.997	3	H1-1b				
43	B3	P2 STD	.429	69	16	.156	69	12	15808	33847	1.997	1.997	4	H1-1b				
44	B4	P2 STD	.358	69	14	.213	69	20	15808	33847	1.997	1.997	4	H1-1b				
45	C1	P2 STD	.412	69	14	.240	27	18	15808	33847	1.997	1.997	3	H1-1b				
46	C2	P2 STD	.417	69	12	.130	69	16	15808	33847	1.997	1.997	3	H1-1b				
47	C3	P2 STD	.441	69	2	.163	69	20	15808	33847	1.997	1.997	4	H1-1b				
48	C4	P2 STD	.367	69	20	.200	27	18	15808	33847	1.997	1.997	3	H1-1b				
49	M73	P2 STD	.398	53.1	2	.269	7.813	16	6684.464	33847	1.997	1.997	3	H3-6				
50	M78	L2.5x2.5x4	.481	0	24	.138	0	y	16	36167	38556	1.114	2.537	1	H2-1			
51	M79	P2 STD	.390	53.1	8	.269	7.813	24	6684.464	33847	1.997	1.997	3	H3-6				
52	M84	L2.5x2.5x4	.500	0	8	.138	0	y	24	36167	38556	1.114	2.537	1	H2-1			
53	M85	P2 STD	.389	53.1	18	.285	7.813	8	6684.464	33847	1.997	1.997	3	H3-6				
54	M90	L2.5x2.5x4	.471	0	16	.147	0	y	8	36167	38556	1.114	2.537	1	H2-1			
55	M91A	PL 8x1/2	.104	0	32	.087	0	y	32	120475	129600	1.35	21.6	1	H1-1b			
56	M92A	LL2.5x2.5x...	.121	50.9	32	.006	0	y	33	42543	58482	4.246	2.614	1	H1-1b*			
57	M93A	PL 8x1/2	.104	0	35	.086	0	y	36	120475	129600	1.35	21.6	1	H1-1b			
58	M94A	LL2.5x2.5x...	.120	50.9	36	.006	50.9	y	37	42543	58482	4.246	2.614	1	H1-1b*			
59	M95A	PL 8x1/2	.103	0	28	.086	0	y	29	120475	129600	1.35	21.6	1	H1-1b			
60	M96A	LL2.5x2.5x...	.120	50.9	28	.006	0	y	29	42543	58482	4.246	2.614	1	H1-1b*			

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

Member	Shape	Code Check Actual	Code Check Allowable	Ratio (Act./Allow.)	Loc[in]	LC	Shear Check	Shear Check Allowable	Ratio (Act./Allow.)	Loc[in]	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [k-ft]	phi*Mn z-z [k-ft]	Cb	Egn	
1	M46	HSS4x4x3/16	0.198	1.05	0.189*	0	27	0.093	1.05	0.089*	0	106237.62	118378.13	14.115	14.115	2.983	H1-1b
2	M47	HSS4x4x3/16	0.202	1.05	0.192*	30.69	35	0.072	1.05	0.069*	30.69	106648.52	118378.13	14.115	14.115	1.325	H1-1b
3	M48	L2x2x3	0.411	1.05	0.391*	25.58	189	0.031	1.05	0.03*	51.17	15920.319	23392.8	0.558	1.169	1.757	H2-1
4	M49	L2x2x3	0.417	1.05	0.397*	25.58	192	0.03	1.05	0.029*	0	15920.319	23392.8	0.558	1.166	1.728	H2-1
5	M50	PL6x1/2	0.067	1.05	0.064*	1.642	20	0.181	1.05	0.172*	2.765	95340.363	97200	1.012	12.15	3.272	H1-1b
6	M51	PL6x1/2	0.238	1.05	0.227*	6.81	20	0.249	1.05	0.237*	6.81	60829.391	97200	1.012	12.15	1.286	H1-1b
7	M52	PL6x1/2	0.061	1.05	0.058*	1.123	22	0.242	1.05	0.23*	0	95340.363	97200	1.012	12.15	3.724	H1-1b
8	M53	PL6x3/8	0.276	1.05	0.263*	2.627	16	0.308	1.05	0.293*	2.627	62895.756	72900	0.57	9.113	1.51	H1-1b
9	M54	PL6x3/8	0.26	1.05	0.248*	1.595	8	0.332	1.05	0.316*	0	69770.62	72900	0.57	9.113	1.403	H1-1b
10	M55	PL6x3/8	0.327	1.05	0.311*	2.627	4	0.154	1.05	0.147*	2.627	62895.756	72900	0.57	9.113	1.435	H1-1b
11	M56	PL6x3/8	0.266	1.05	0.253*	1.595	12	0.358	1.05	0.341*	0	69770.62	72900	0.57	9.113	1.676	H1-1b
12	M16	P3 STD	0.13	1.05	0.124*	53.13	20	0.105	1.05	0.1*	96.88	29986.1	70196.802	6.124	6.124	3.396	H1-1b
13	M46A	HSS4x4x3/16	0.197	1.05	0.188*	0	31	0.093	1.05	0.089*	0	106237.62	118378.13	14.115	14.115	2.964	H1-1b
14	M47A	HSS4x4x3/16	0.202	1.05	0.192*	30.69	29	0.072	1.05	0.069*	30.69	106648.52	118378.13	14.115	14.115	1.325	H1-1b
15	M48A	L2x2x3	0.411	1.05	0.391*	25.58	204	0.031	1.05	0.03*	51.17	15920.319	23392.8	0.558	1.169	1.757	H2-1
16	M49A	L2x2x3	0.417	1.05	0.397*	25.58	207	0.03	1.05	0.029*	0	15920.319	23392.8	0.558	1.166	1.728	H2-1
17	M50A	PL6x1/2	0.064	1.05	0.061*	1.642	6	0.181	1.05	0.172*	2.765	95340.363	97200	1.012	12.15	3.004	H1-1b
18	M51A	PL6x1/2	0.247	1.05	0.235*	6.81	8	0.25	1.05	0.238*	6.81	60829.391	97200	1.012	12.15	1.374	H1-1b
19	M52A	PL6x1/2	0.061	1.05	0.058*	1.123	6	0.245	1.05	0.233*	0	95340.363	97200	1.012	12.15	3.752	H1-1b
20	M53A	PL6x3/8	0.25	1.05	0.238*	2.627	24	0.307	1.05	0.292*	2.627	62895.756	72900	0.57	9.113	1.503	H1-1b
21	M54A	PL6x3/8	0.231	1.05	0.22*	1.595	16	0.332	1.05	0.316*	0	69770.62	72900	0.57	9.113	1.409	H1-1b
22	M55A	PL6x3/8	0.353	1.05	0.336*	2.627	12	0.153	1.05	0.146*	2.627	62895.756	72900	0.57	9.113	1.437	H1-1b
23	M56A	PL6x3/8	0.295	1.05	0.281*	1.595	20	0.358	1.05	0.341*	0	69770.62	72900	0.57	9.113	1.622	H1-1b
24	M61	P3 STD	0.12	1.05	0.114*	54.69	33	0.105	1.05	0.1*	96.88	29986.1	70196.802	6.124	6.124	2.324	H1-1b
25	M91	HSS4x4x3/16	0.202	1.05	0.192*	0	35	0.094	1.05	0.09*	0	106237.62	118378.13	14.115	14.115	2.973	H1-1b
26	M92	HSS4x4x3/16	0.201	1.05	0.191*	30.69	31	0.073	1.05	0.07*	30.69	106648.52	118378.13	14.115	14.115	1.325	H1-1b
27	M93	L2x2x3	0.411	1.05	0.391*	25.58	219	0.031	1.05	0.03*	51.17	15920.319	23392.8	0.558	1.169	1.757	H2-1
28	M94	L2x2x3	0.417	1.05	0.397*	25.58	222	0.03	1.05	0.029*	0	15920.319	23392.8	0.558	1.166	1.728	H2-1
29	M95	PL6x1/2	0.068	1.05	0.065*	1.642	14	0.181	1.05	0.172*	2.765	95340.363	97200	1.012	12.15	3.056	H1-1b
30	M96	PL6x1/2	0.25	1.05	0.238*	6.81	14	0.248	1.05	0.236*	6.81	60829.391	97200	1.012	12.15	1.304	H1-1b
31	M97	PL6x1/2	0.066	1.05	0.063*	1.123	14	0.243	1.05	0.231*	0	95340.363	97200	1.012	12.15	3.789	H1-1b
32	M98	PL6x3/8	0.276	1.05	0.263*	2.627	8	0.307	1.05	0.292*	2.627	62895.756	72900	0.57	9.113	1.503	H1-1b
33	M99	PL6x3/8	0.251	1.05	0.239*	1.595	2	0.333	1.05	0.317*	0	69770.62	72900	0.57	9.113	1.413	H1-1b
34	M100	PL6x3/8	0.353	1.05	0.336*	2.627	20	0.154	1.05	0.147*	2.627	62895.756	72900	0.57	9.113	1.435	H1-1b
35	M101	PL6x3/8	0.273	1.05	0.26*	1.595	4	0.358	1.05	0.341*	0	69770.62	72900	0.57	9.113	1.672	H1-1b
36	M106	P3 STD	0.125	1.05	0.119*	53.13	12	0.11	1.05	0.105*	96.88	29986.1	70196.802	6.124	6.124	3.327	H1-1b
37	A1	P2 STD	0.399	1.05	0.38*	69	20	0.248	1.05	0.236*	27	15808.485	33847.742	1.997	1.997	4.306	H1-1b
38	A2	P2 STD	0.447	1.05	0.426*	69	20	0.129	1.05	0.123*	69	15808.485	33847.742	1.997	1.997	3.247	H1-1b
39	A3	P2 STD	0.459	1.05	0.437*	69	8	0.155	1.05	0.148*	69	15808.485	33847.742	1.997	1.997	3.486	H1-1b
40	A4	P2 STD	0.354	1.05	0.337*	69	8	0.21	1.05	0.2*	27	15808.485	33847.742	1.997	1.997	4.966	H1-1b
41	B1	P2 STD	0.388	1.05	0.37*	69	6	0.239	1.05	0.228*	27	15808.485	33847.742	1.997	1.997	3.848	H1-1b
42	B2	P2 STD	0.419	1.05	0.399*	69	4	0.138	1.05	0.131*	69	15808.485	33847.742	1.997	1.997	3.401	H1-1b
43	B3	P2 STD	0.429	1.05	0.409*	69	16	0.156	1.05	0.149*	69	15808.485	33847.742	1.997	1.997	4.677	H1-1b
44	B4	P2 STD	0.358	1.05	0.341*	69	14	0.213	1.05	0.203*	69	15808.485	33847.742	1.997	1.997	4.236	H1-1b
45	C1	P2 STD	0.412	1.05	0.392*	69	14	0.24	1.05	0.229*	27	15808.485	33847.742	1.997	1.997	3.7	H1-1b
46	C2	P2 STD	0.417	1.05	0.397*	69	12	0.13	1.05	0.124*	69	15808.485	33847.742	1.997	1.997	3.181	H1-1b
47	C3	P2 STD	0.441	1.05	0.42*	69	2	0.163	1.05	0.155*	69	15808.485	33847.742	1.997	1.997	4.409	H1-1b
48	C4	P2 STD	0.367	1.05	0.35*	69	20	0.2	1.05	0.19*	27	15808.485	33847.742	1.997	1.997	3.459	H1-1b
49	M73	P2 STD	0.398	1.05	0.379*	53.13	2	0.269	1.05	0.256*	7.813	6684.464	33847.742	1.997	1.997	3.645	H3-6
50	M78	L2.5x2.5x4	0.481	1.05	0.458*	0	24	0.138	1.05	0.131*	0	36167.335	38556	1.114	2.537	1.773	H2-1
51	M79	P2 STD	0.39	1.05	0.371*	53.13	8	0.269	1.05	0.256*	7.813	6684.464	33847.742	1.997	1.997	3.805	H3-6
52	M84	L2.5x2.5x4	0.5	1.05	0.476*	0	8	0.138	1.05	0.131*	0	36167.335	38556	1.114	2.537	1.745	H2-1
53	M85	P2 STD	0.389	1.05	0.37*	53.13	18	0.285	1.05	0.271*	7.813	6684.464	33847.742	1.997	1.997	3.688	H3-6
54	M90	L2.5x2.5x4	0.471	1.05	0.449*	0	16	0.147	1.05	0.14*	0	36167.335	38556	1.114	2.537	1.702	H2-1
55	M91A	PL 8x1/2	0.104	1.05	0.099*	0	32	0.087	1.05	0.083*	0	120475.67	129600	1.35	21.6	1.667	H1-1b
56	M92A	LL2.5x2.5x3x8	0.121	1.05	0.115*	50.97	32	0.006	1.05	0.006*	0	42543.862	58482	4.246	2.614	1	H1-1b*
57	M93A	PL 8x1/2	0.104	1.05	0.099*	0	35	0.086	1.05	0.082*	0	120475.67	129600	1.35	21.6	1.667	H1-1b
58	M94A	LL2.5x2.5x3x8	0.12	1.05	0.114*	50.97	36	0.006	1.05	0.006*	50.97	42543.862	58482	4.246	2.614	1.136	H1-1b*
59	M95A	PL 8x1/2	0.103	1.05	0.098*	0	28	0.086	1.05	0.082*	0	120475.67	129600	1.35	21.6	1.667	H1-1b
60	M96A	LL2.5x2.5x3x8	0.12	1.05	0.114*	50.97	28	0.006	1.05	0.006*	0	42543.862	58482	4.246	2.614	1.136	H1-1b*

\*Rating per TIA-222-H, Section 15.5

**APPENDIX D**  
**ADDITIONAL CALCULATIONS**



**TIA-222-H CONNECTION CHECK**  
**Mount to Tower Connection - Typ. All Sectors**  
**2021777.842875.02**

Bolt Information	
Bolt Diameter (d)	0.625 in
Net Tensile Area (A <sub>n</sub> )	0.226 in <sup>2</sup>
# of Bolts Total (n)	4
Bolt Distance Up-Down	6 in
Bolt Distance Left-Right	6 in
Bolt Grade	A325N
Bolt Tensile Strength (F <sub>ub</sub> )	120 ksi

Flange Information	
Height (h)	8 in
Width (w)	8 in
Thickness (t)	0.75 in
Steel Grade	A36
Plate Yield Strength (F <sub>y</sub> )	36 ksi
Support Arm Height	4 in
Support Arm Width	4 in

RISA 3D Reactions (Up-Down)	
Moment (M)	2.12 k-ft
Axial (T)	5.09 kips
Shear (V)	1.73 kips

RISA 3D Reactions (Left-Right)	
Moment (M)	1.93 k-ft
Axial (T)	1.37 kips
Shear (V)	1.49 kips

Bolt Capacity (Up-Down)	
Nominal Tensile Strength (R <sub>nt</sub> )	27.120 kips
Nominal Shear Strength (R <sub>nv</sub> )	18.41 kips
Bolt Tensile Force (T <sub>ub</sub> )	3.39 kips
Bolt Shear Force (V <sub>ub</sub> )	0.432 kips
T <sub>ub</sub> /φR <sub>nt</sub>	0.15885
V <sub>ub</sub> /φR <sub>nv</sub>	0.02983
(V <sub>ub</sub> /φR <sub>nv</sub> ) <sup>2</sup> +(T <sub>ub</sub> /φR <sub>nt</sub> ) <sup>2</sup>	0.02743
<b>Bolt Capacity =</b>	<b>15.9% OK</b>

Bolt Capacity (Left-Right)	
Nominal Tensile Strength (R <sub>nt</sub> )	27.120 kips
Nominal Shear Strength (R <sub>nv</sub> )	18.41 kips
Bolt Tensile Force (T <sub>ub</sub> )	2.27 kips
Bolt Shear Force (V <sub>ub</sub> )	0.372 kips
T <sub>ub</sub> /φR <sub>nt</sub>	0.10635
V <sub>ub</sub> /φR <sub>nv</sub>	0.02566
(V <sub>ub</sub> /φR <sub>nv</sub> ) <sup>2</sup> +(T <sub>ub</sub> /φR <sub>nt</sub> ) <sup>2</sup>	0.01257
<b>Bolt Capacity =</b>	<b>10.6% OK</b>

\*Rating per TIA-222-H, Section 15.5

\*Rating per TIA-222-H, Section 15.5

Plate Capacity (Up-Down)	
Bolt Circle (D <sub>BC</sub> )	8.485 in
Effective Width (B <sub>eff</sub> )	7.48 in
Flexural Moment (M <sub>u</sub> )	6.79 k-in
Flexural Strength (φM <sub>n</sub> )	34.10 k-in
<b>Plate Capacity=</b>	<b>19.0% OK</b>

Plate Capacity (Left-Right)	
Bolt Circle (D <sub>BC</sub> )	8.485 in
Effective Width (B <sub>eff</sub> )	7.48 in
Flexural Moment (M <sub>u</sub> )	4.54 k-in
Flexural Strength (φM <sub>n</sub> )	34.10 k-in
<b>Plate Capacity=</b>	<b>12.7% OK</b>

\*Rating per TIA-222-H, Section 15.5

\*Rating per TIA-222-H, Section 15.5



**TIA-222-H CONNECTION CHECK**  
**Kicker to Tower Connection - Typ. All Sectors**  
**2021777.842875.02**

<b>Bolt Information</b>	
Bolt Diameter (d)	0.625 in
Net Tensile Area (A <sub>n</sub> )	0.226 in <sup>2</sup>
# of Bolts Total (n)	2
Bolt Grade	A325N
Bolt Tensile Strength (F <sub>ub</sub> )	120 ksi

<b>RISA 3D Reactions</b>	
Moment (M)	0.00 k-ft
Axial (T)	-4.49 kips
Shear (V)	2.54 kips

<b>Bolt Capacity</b>	
Nominal Tensile Strength (R <sub>nt</sub> )	27.120 kips
Nominal Shear Strength (R <sub>nv</sub> )	18.41 kips
Bolt Tensile Force (T <sub>ub</sub> )	-2.24 kips
Bolt Shear Force (V <sub>ub</sub> )	1.270 kips
T <sub>ub</sub> /φR <sub>nt</sub>	-0.10511
V <sub>ub</sub> /φR <sub>nv</sub>	0.08759
(V <sub>ub</sub> /φR <sub>nv</sub> ) <sup>2</sup> +(T <sub>ub</sub> /φR <sub>nt</sub> ) <sup>2</sup>	0.01966
<b>Bolt Capacity =</b>	<b>8.8% OK</b>

\*Rating per TIA-222-H, Section 15.5

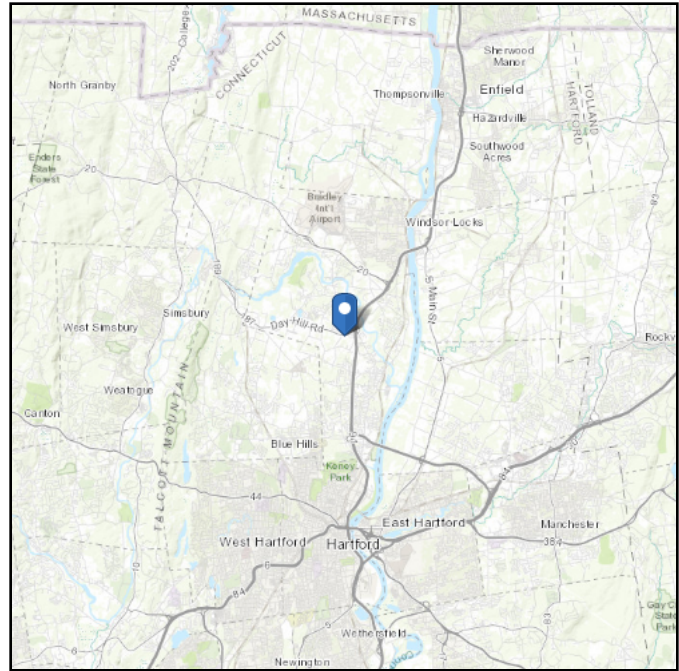
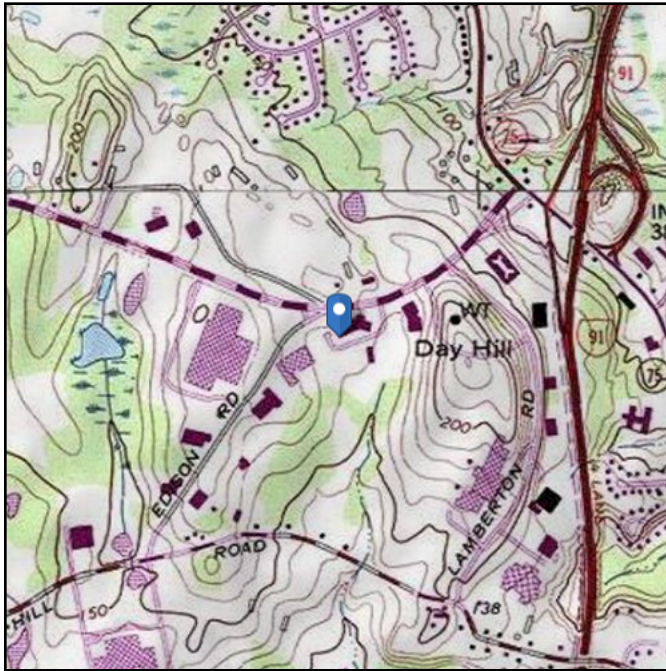


# ASCE 7 Hazards Report

**Address:**  
No Address at This Location

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

**Elevation:** 166.35 ft (NAVD 88)  
**Latitude:** 41.871139  
**Longitude:** -72.671111



## Wind

### Results:

Wind Speed:	<del>121 Vmph</del>	125 mph per jurisdiction requirement
10-year MRI	76 Vmph	
25-year MRI	86 Vmph	
50-year MRI	92 Vmph	
100-year MRI	99 Vmph	

**Data Source:** ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, and Section 26.5.2, incorporating errata of March 12, 2014

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).

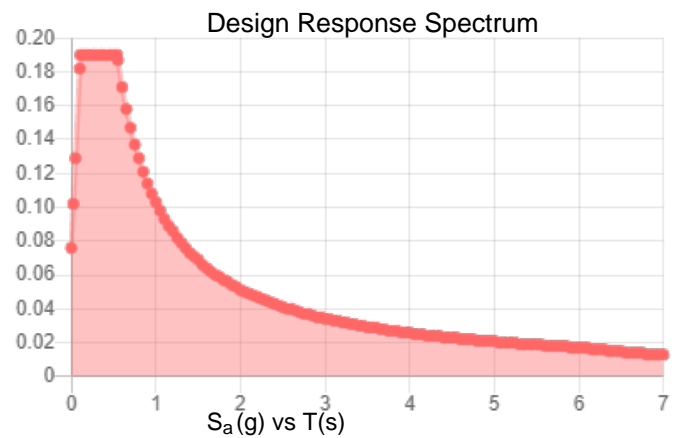
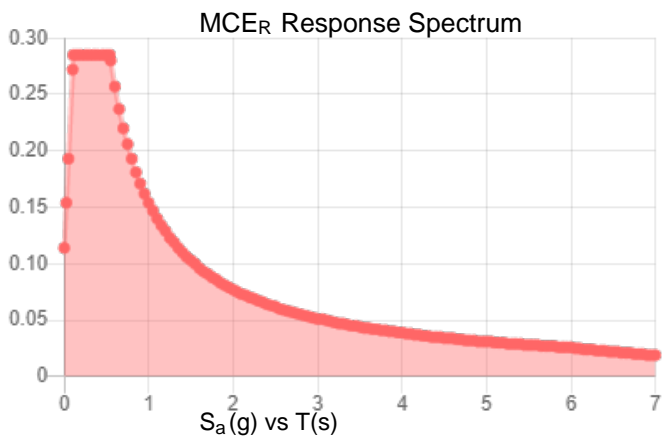
Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

**Site Soil Class:** D - Stiff Soil

**Results:**

$S_S$ :	0.178	$S_{DS}$ :	0.19
$S_1$ :	0.064	$S_{D1}$ :	0.103
$F_a$ :	1.6	$T_L$ :	6
$F_v$ :	2.4	PGA :	0.089
$S_{MS}$ :	0.285	PGA <sub>M</sub> :	0.142
$S_{M1}$ :	0.154	F <sub>PGA</sub> :	1.6
		$I_e$ :	1

**Seismic Design Category** B



**Data Accessed:**

Fri Feb 19 2021

**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

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**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 Feb 19 2021

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.

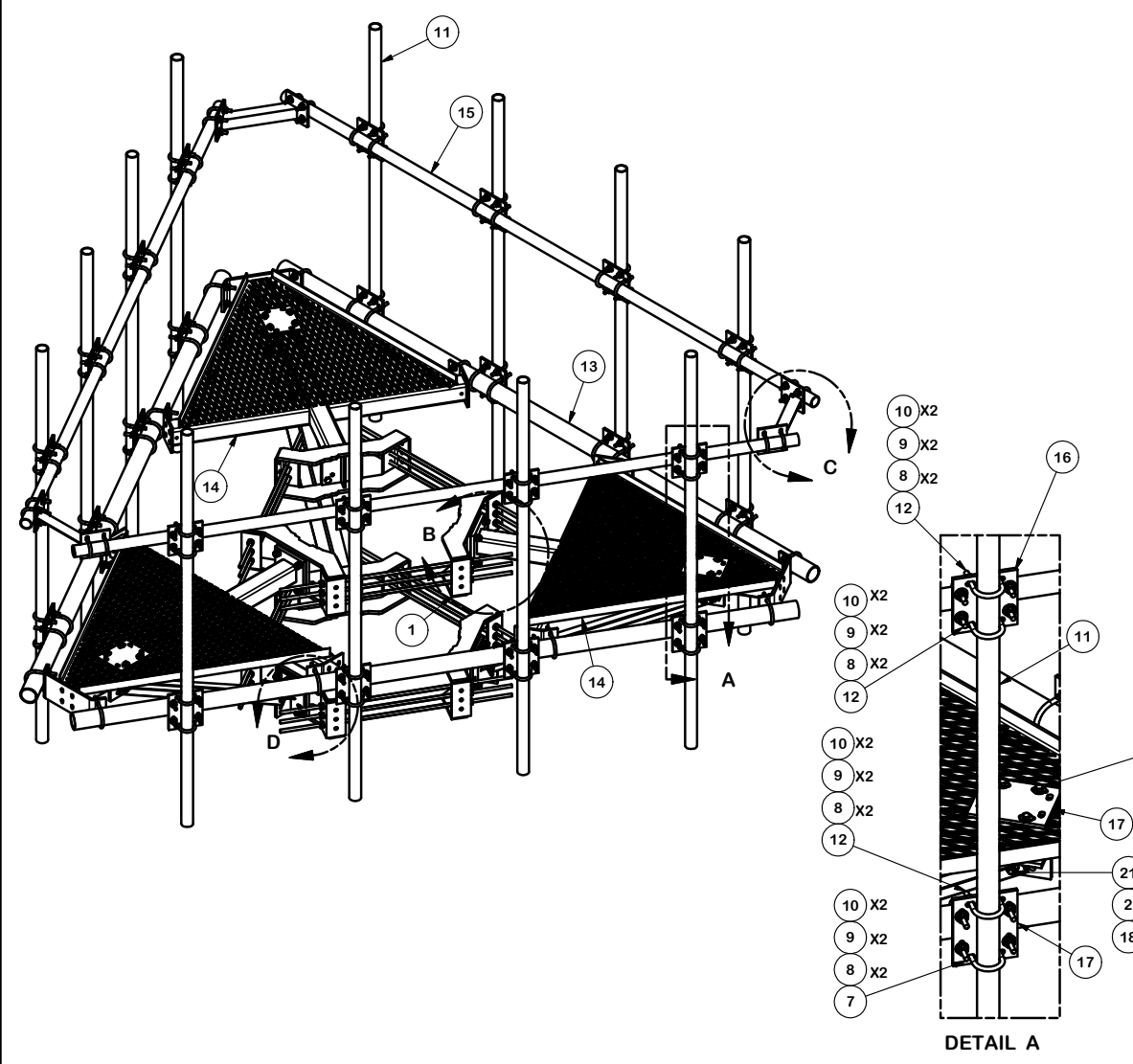
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**APPENDIX E**  
**SUPPLEMENTAL DRAWINGS**



PARTS LIST						
ITEM	QTY	PART NO.	PART DESCRIPTION	LENGTH	UNIT WT.	NET WT.
1	6	X-LWRM	RING MOUNT WELDMNT		68.16	408.95
2	66	G58LW	5/8" HDG LOCKWASHER		0.03	1.72
3	60	A58NUT	5/8" HDG A325 HEX NUT		0.13	7.78
4	18	G58R-24	5/8" x 24" THREADED ROD (HDG.)		0.55	9.88
4	18	G58R-48	5/8" x 48" THREADED ROD (HDG.)		0.55	9.88
5	24	A58234	5/8" x 2-3/4" HDG A325 HEX BOLT	2 3/4 in	0.36	8.53
6	24	A58FW	5/8" HDG A325 FLATWASHER		0.03	0.82
7	36	X-UB1306	1/2" X 3-5/8" X 6" X 3" U-BOLT (HDG.)		0.73	26.34
8	264	G12FW	1/2" HDG USS FLATWASHER		0.03	8.99
9	252	G12LW	1/2" HDG LOCKWASHER		0.01	3.50
10	252	G12NUT	1/2" HDG HEAVY 2H HEX NUT		0.07	18.03
11	12	P296	2-3/8" X 96" SCH. 40 GALVANIZED PIPE	96 in	30.76	369.08
12	84	X-UB1212	1/2" X 2-1/2" X 4-1/2" X 2" U-BOLT (HDG.)		0.73	61.46
13	3	P3150	3-1/2" X 150" SCH 40 GALVANIZED PIPE	150 in	94.80	284.40
14	3	X-SV196	LOW PROFILE PLATFORM CORNER		212.10	636.31
15	3	P2150	2-3/8" OD X 150" SCH 40 GALVANIZED PIPE	150 in	48.06	144.17
16	12	SCX2	CROSSOVER PLATE	7 in	4.80	57.56
17	15	SCX4	CROSSOVER PLATE	8 1/2 in	6.02	90.32
18	6	G58NUT	5/8" HDG HEAVY 2H HEX NUT		0.13	0.78
19	6	X-253993	PLATFORM REINFORCEMENT KIT ANGLE	52 25/32 in	14.33	85.99
20	6	X-253992	T-BRACKET FOR REINFORCEMENT KIT		13.55	81.27
21	6	G5802	5/8" x 2" HDG HEX BOLT GR5		0.27	1.62
22	12	G12065	1/2" x 6-1/2" HDG HEX BOLT GR5 FULL THREAD	6 1/2 in	0.41	4.91
23	3	X-AHCP	ANGLE HANDRAIL CORNER PLATE		12.92	38.76
					TOTAL WT. #	2448.72

**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 ( $\pm 0.060"$ )

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 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.

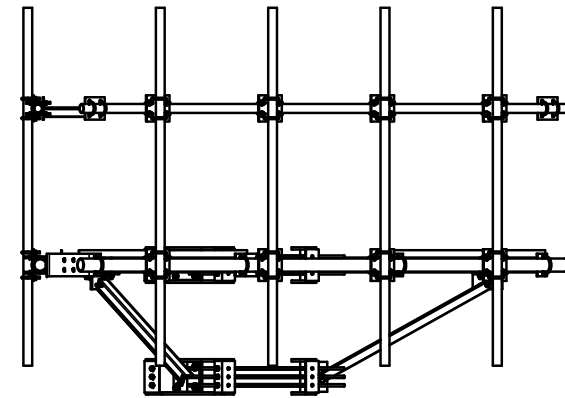
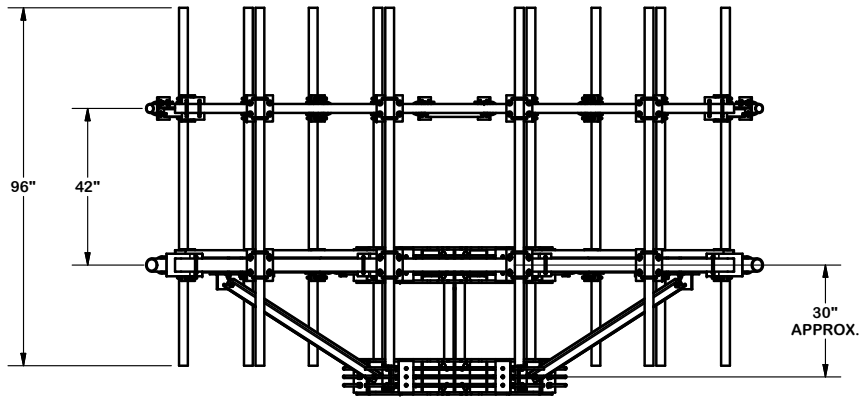
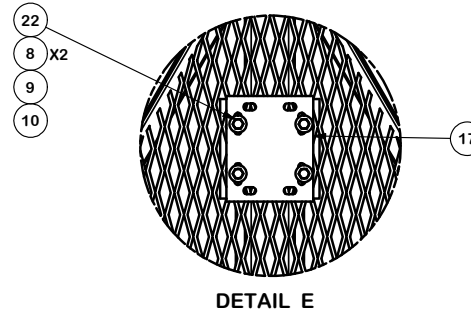
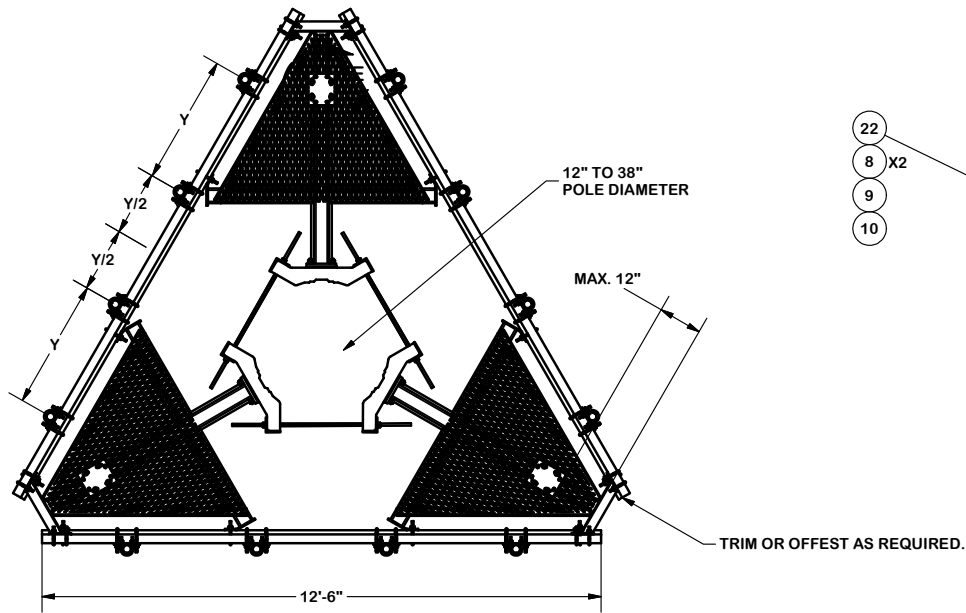
**DESCRIPTION**  
 12' 6" LOW PROFILE PLATFORM  
 WITH TWELVE 2-3/8" ANTENNA MOUNTING  
 PIPES, AND HANDRAIL

CPD NO. 4488	DRAWN BY CEK 7/14/2014	ENG. APPROVAL
CLASS 81	SUB 02	DRAWING USAGE CUSTOMER
CHECKED BY BMC 7/14/2014		

**SITE PRO 1**  
 Engineering Support Team:  
 1-888-753-7446

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

PART NO. RMQP-496-HK	PAGE 1 OF 3
DWG. NO. RMQP-496-HK	



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 PIPES, AND HANDRAIL

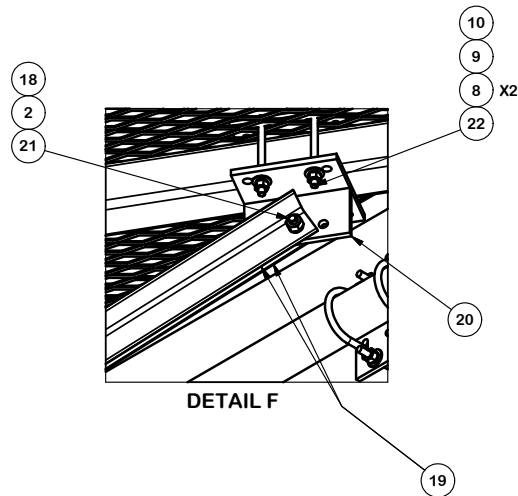
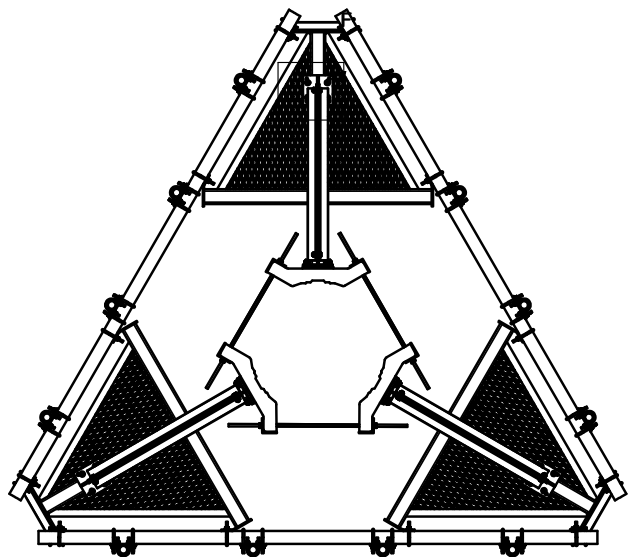
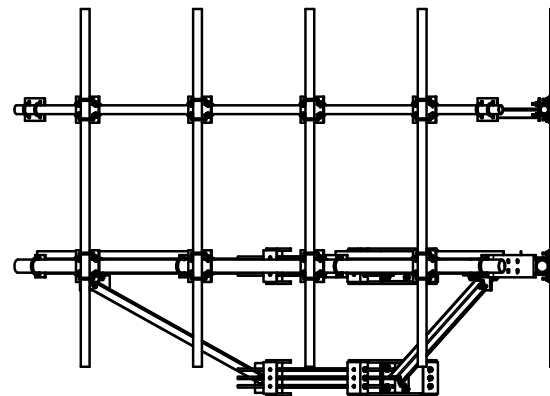
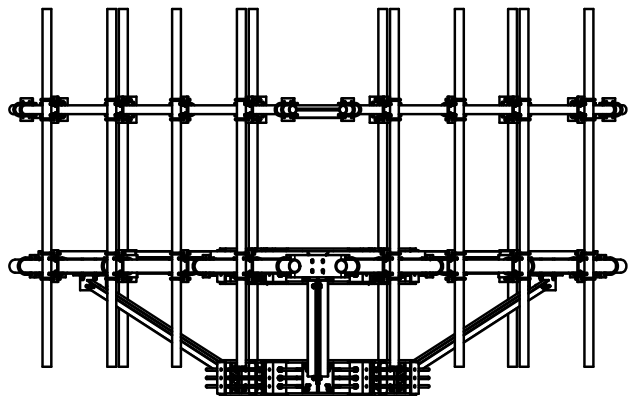
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 PIPES, AND HANDRAIL**

CPD NO. <b>4488</b>	DRAWN BY <b>CEK 7/14/2014</b>	ENG. APPROVAL
CLASS <b>81</b>	SUB <b>02</b>	DRAWING USAGE <b>CUSTOMER</b>
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PART NO. <b>RMQP-496-HK</b>	PAGE <b>3 OF 3</b>
DWG. NO. <b>RMQP-496-HK</b>	