

From: Aja Chase <aja.chase@ericsson.com>
Sent: Thursday, August 8, 2024 12:30 PM
To: CSC-DL Siting Council <Siting.Council@ct.gov>
Subject: RE: EM-AT&T-062-221005

Good Afternoon All,

To follow up, please see the attached structural analysis and RF analysis.

Please let me know if anything else is required. Thank you!

Aja

Date: April 13, 2022



520 South Main Street Suite 2531
Akron, Ohio 44311
(216) 927-8663

Subject: Structural Analysis Report

Carrier Designation: AT&T Mobility Co-Locate
Site Number: CT2039
Site Name: HAMDEN SR 10

Crown Castle Designation: BU Number: 800529
Site Name: CT HAMDEN NORTH CAC
JDE Job Number: 686183
Work Order Number: 2099298
Order Number: 586250 Rev. 0

Engineering Firm Designation: GPD Project Number: 2022777.800529.13

Site Data: 890 Evergreen Avenue, Hamden, New Haven County, CT 06518
Latitude 41° 24' 23.9", Longitude -72° 54' 16.32"
100 Foot – Stealth Self Support Tower

We are pleased to submit this “**Structural Analysis Report**” to determine the structural integrity of the above mentioned tower.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC7: Proposed Equipment Configuration

Sufficient Capacity – 52.6%

This analysis utilizes an ultimate 3-second gust wind speed of 119 mph as required by the 2018 Connecticut Building Code. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Structural analysis prepared by: Krisli Mocka

Respectfully submitted by:

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


Christopher J. Scheks 4/13/2022

TABLE OF CONTENTS

1) INTRODUCTION

2) ANALYSIS CRITERIA

Table 1 – Proposed Equipment Configuration

Table 2 – Other Considered Equipment

3) ANALYSIS PROCEDURE

Table 3 – Documents Provided

3.1) Analysis Method

3.2) Assumptions

4) ANALYSIS RESULTS

Table 4 – Section Capacity (Summary)

Table 5 – Tower Component Stresses vs. Capacity

4.1) Recommendations

5) APPENDIX A

Program Output

6) APPENDIX B

Base Level Drawing

7) APPENDIX C

Additional Calculations

1) INTRODUCTION

This tower is a 100 ft self support tower designed by Stealth Network Technologies Inc. in December of 2000.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	119 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	1.0 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
85.0	87.0	3	Ericsson	AIR 6419 B77G_CCIV3	14 5 3	7/8 13/16 3/8
	85.0	3	CCI Antennas	DMP65R-BU6D		
		3	CCI Antennas	TPA65R-BU6DA-K		
		3	Ericsson	RADIO 4415 B30		
		3	Ericsson	RRUS 32 B2		
		3	Ericsson	RRUS 4426 B66		
		3	Ericsson	RRUS 4449 B5/B12		
		3	Ericsson	RRUS 4478 B14_CCIV2		
		2	Raycap	DC6-48-60-18-8F		
		1	Raycap	DC9-48-60-24-8C-EV		
	83.0	3	Ericsson	AIR 6449 B77D_CCVI2		

Table 2 – Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
100.0	104.0	3	RFS/Celwave	APXVAA4L18_43-U-NA20_TMO	6	1-5/8
		3	Ericsson	AIR6449 B41_T-MOBILE		
		3	Ericsson	RADIO 4415 B66A_CCIV3		
		6	Ericsson	RADIO 2212 B2		
		3	Ericsson	RADIO 4449 B71 B85A_T-MOBILE		
	100.0	3	Site Pro 1	USF-2U Standoff Frame		
		3	Site Pro 1	P360 Horizontal Pipe		
		6	Site Pro 1	P272 Mount Pipe		
95.0	98.0	3	Samsung Telecommunications	RFV01U-D2A	6 2	1-5/8 1-1/4
	95.0	3	Antel	BXA-80080/4CF		
		6	Commscope	JAHH-65B-R3B		
		3	VZW	Sub6 Antenna - VZS01		
		3	Commscope	CBC78TDS-43-2X		
		2	RFS Celwave	DB-T1-6Z-8AB-0Z		
		3	Samsung Telecommunications	RFV01U-D1A		
		3	Samsung Telecommunications	RFV01U-D2A		
75.0	75.0	2	CSA Wireless	A-18A24N-U	11	1-1/4
		10	Decibel	DB844H90E-XY		
65.0	67.0	1	Raycap	RDIDC-9181-PF-48	1	1-3/8
	66.0	3	JMA Wireless	MX08FRO665-21		
		3	Fujitsu	TA08025-B605		
	65.0	3	Commscope	MTC3975083		
	64.0	3	Fujitsu	TA08025-B604		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Reference	Source
Geotechnical Reports	6400183	CCISITES
Tower Foundation Drawings/Design/Specs	671923	CCISITES
Tower Manufacturer Drawings	605026	CCISITES

3.1) Analysis Method

tnxTower (version 8.1.1.0) and RISA 3D (Version 17.0.4), commercially available analysis software packages, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

- 1) Tower and structures were maintained in accordance with the TIA-222 standard.
- 2) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.

This analysis may be affected if any assumptions or items in Table 3 are not valid or have been made in error. GPD should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	% Capacity	Pass / Fail
L1	100 - 90	Leg	HSS6x6x1/4	6.1	Pass
		Diagonal	2L2x2x3/16x1/2	7.4	Pass
		Top Girt	C6x10.5	0.5	Pass
L2	90 - 80	Leg	HSS6x6x1/4	7.7	Pass
		Diagonal	2L2x2x3/16x1/2	15.8	Pass
		Top Girt	C6x10.5	6.1	Pass
L3	80 - 70	Leg	HSS6x6x1/4	13.1	Pass
		Diagonal	2L2x2x3/16x1/2	23.6	Pass
		Top Girt	C6x10.5	6.2	Pass
L4	70 - 60	Leg	HSS6x6x1/4	28.8	Pass
		Diagonal	2L2x2x3/16x1/2	32.4	Pass
		Top Girt	C6x10.5	6.4	Pass
L5	60 - 40	Leg	HSS8x8x1/4	15.2	Pass
		Diagonal	2L4x4x3/8x1/2	14.9	Pass
		Top Girt	W16x45	49.4	Pass
		Inner Bracing	W10x33	52.6	Pass
L6	40 - 20	Leg	HSS8x8x1/4	29.9	Pass
		Diagonal	2L4x4x3/8x1/2	22.0	Pass
		Top Girt	W6x12	15.8	Pass
L7	20 - 0	Leg	HSS8x8x1/4	39.8	Pass
		Diagonal	2L4x4x3/8x1/2	31.2	Pass
		Top Girt	W6x12	27.8	Pass
				Summary	
			Leg	39.8	Pass
			Diagonal	32.4	Pass
			Top Girt	49.4	Pass
			Inner Bracing	52.6	Pass
			Bolt Checks	52.0	Pass
			Rating =	52.6	Pass

Table 5 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0.0	31.7	Pass
1	Base Foundation Reinforcement	0.0	12.4	Pass
1	Base Foundation Soil Interaction	0.0	35.7	Pass
Structure Rating (max from all components) =				52.6%

Notes:

- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

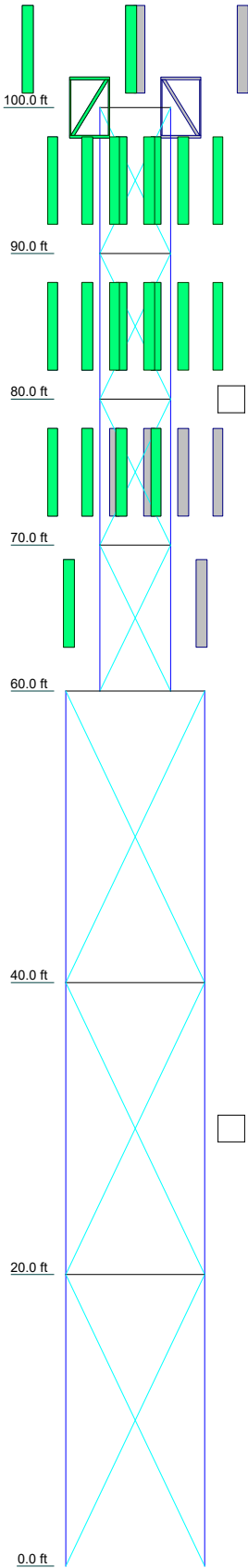
4.1) Recommendations

The tower has sufficient capacity to carry the proposed load configuration. No modifications are required at this time.

APPENDIX A

PROGRAM OUTPUT

Section	T3	T2	T1	L4	L3	L2	L1
Legs	HSS8x8x1/4						
Leg Grade	A500-46						
Diagonals	2L4x4x3/8x1/2			2L2x2x3/16x1/2			
Diagonal Grade	A36						
Top Girts	W6x12	W16x45		C6x10.5			
Face Width (ft)	9.52083						
# Panels @ (ft)	4.83333						
	4 @ 10						
Weight (lb)	24182.1	5941.2	7104.7	1348.8	1348.8	1348.8	1348.8



TOWER DESIGN NOTES

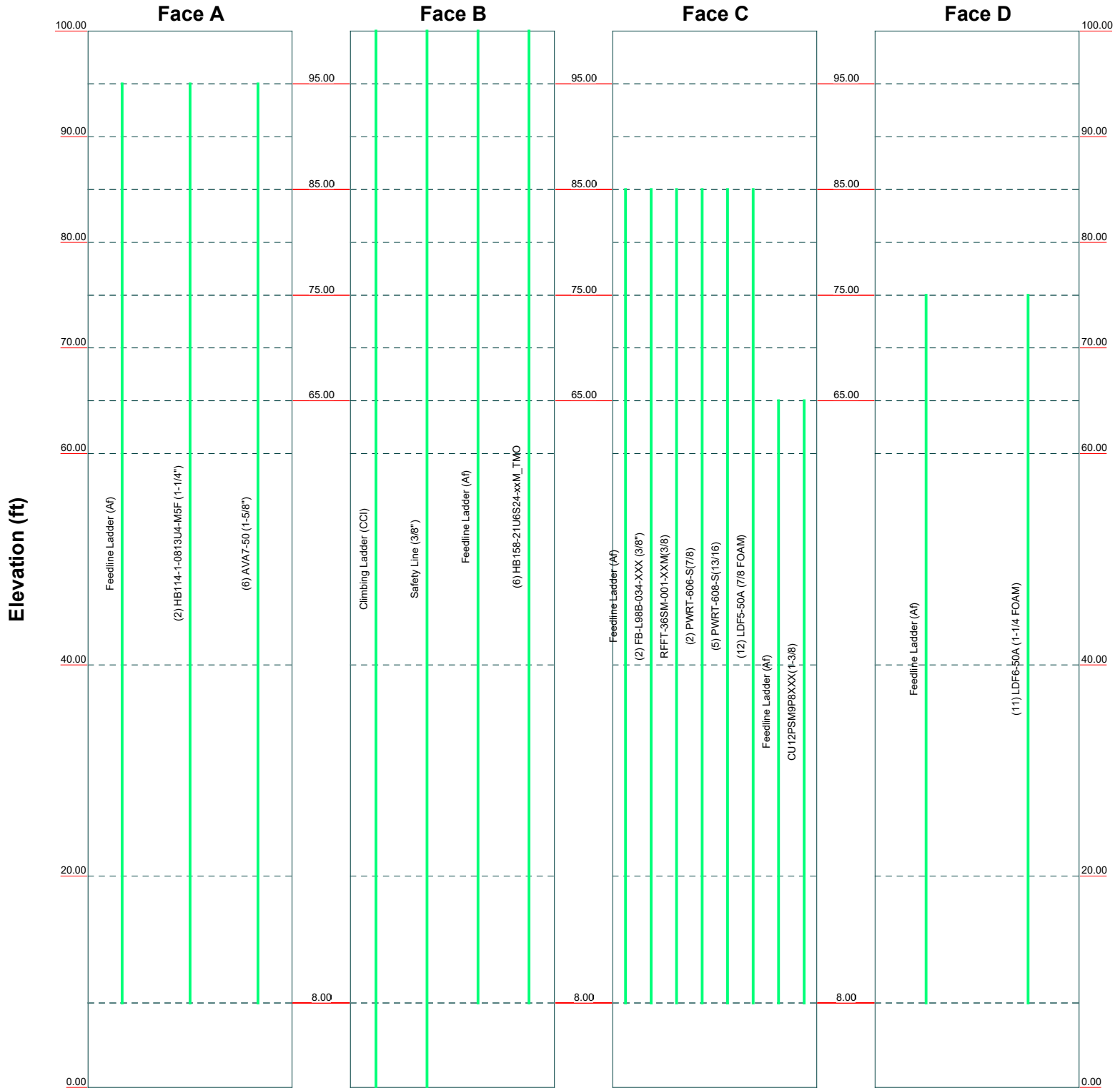
1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 119 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft

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	Project: 2022777.800529.13		
	Client: Crown Castle	Drawn by: kmocka	App'd:
	Code: TIA-222-H	Date: 04/12/22	Scale: NTS
	Path: T:\Crown\800529\13\5_Structural\00_Structure\00_Rev 0\03_Modeling\tnx\800529.dgn		Dwg No. E-1

Feed Line Distribution Chart

0' - 100'

Round Flat App In Face App Out Face Truss Leg



tnxTower GPD 520 South Main Street Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2100 FAX: (330) 572-2101	Job BU #: 800529, CT HAMDEN NORTH CAC	Page 1 of 16
	Project 2022777.800529.13	Date 09:31:43 04/12/22
	Client Crown Castle	Designed by kmocka

Tower Input Data

The main tower is a 4x free standing tower with an overall height of 100.00 ft above the ground line.

The base of the tower is set at an elevation of 0.00 ft above the ground line.

The face width of the tower is 9.52 ft at the top and 9.52 ft at the base.

An index plate is provided at the 4 sided -tower connection.

There is a 4 sided latticed pole with a face width of 4.83 ft.

This tower is designed using the TIA-222-H standard.

The following design criteria apply:

Tower is located in New Haven County, Connecticut.

Tower base elevation above sea level: 199.00 ft.

Basic wind speed of 119 mph.

Risk Category II.

Exposure Category C.

Simplified Topographic Factor Procedure for wind speed-up calculations is used.

Topographic Category: 1.

Crest Height: 0.00 ft.

Nominal ice thickness of 1.0000 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

A wind speed of 50 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 60 mph.

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in latticed pole member design is 1.

Stress ratio used in tower member design is 1.

Tower analysis based on target reliabilities in accordance with Annex S.

Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.

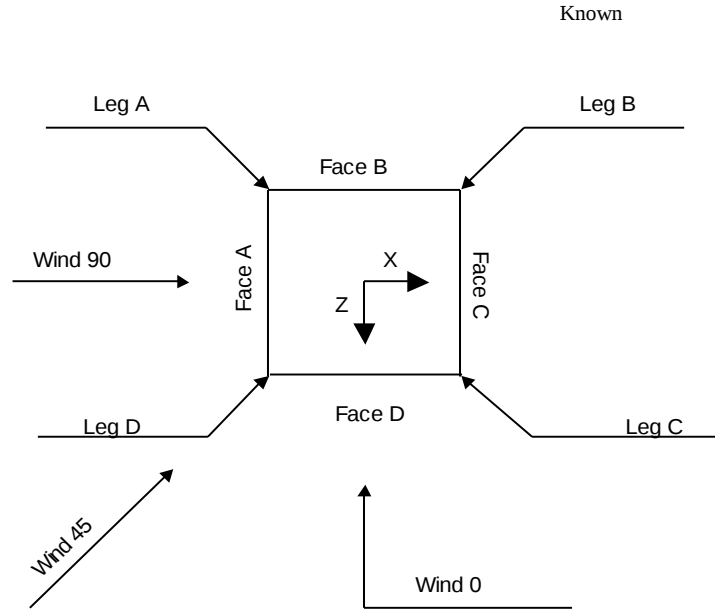
Maximum demand-capacity ratio is: 1.05.

Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs	Distribute Leg Loads As Uniform	Use ASCE 10 X-Brace Ly Rules
Consider Moments - Horizontals	Assume Legs Pinned	√ Calculate Redundant Bracing Forces
Consider Moments - Diagonals	√ Assume Rigid Index Plate	Ignore Redundant Members in FEA
Use Moment Magnification	√ Use Clear Spans For Wind Area	SR Leg Bolts Resist Compression
√ Use Code Stress Ratios	√ Use Clear Spans For KL/r	√ All Leg Panels Have Same Allowable
√ Use Code Safety Factors - Guys	Retension Guys To Initial Tension	Offset Girt At Foundation
Escalate Ice	√ Bypass Mast Stability Checks	√ Consider Feed Line Torque
Always Use Max Kz	√ Use Azimuth Dish Coefficients	√ Include Angle Block Shear Check
Use Special Wind Profile	√ Project Wind Area of Appurt.	Use TIA-222-H Bracing Resist. Exemption
Include Bolts In Member Capacity	Autocalc Torque Arm Areas	Use TIA-222-H Tension Splice Exemption
Leg Bolts Are At Top Of Section	Add IBC .6D+W Combination	Poles
Secondary Horizontal Braces Leg	Sort Capacity Reports By Component	Include Shear-Torsion Interaction
Use Diamond Inner Bracing (4 Sided)	Triangulate Diamond Inner Bracing	Always Use Sub-Critical Flow
SR Members Have Cut Ends	Treat Feed Line Bundles As Cylinder	Use Top Mounted Sockets
SR Members Are Concentric	Ignore KL/ry For 60 Deg. Angle Legs	Pole Without Linear Attachments
		Pole With Shroud Or No Appurtenances
		Outside and Inside Corner Radii Are

tnxTower GPD 520 South Main Street Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2100 FAX: (330) 572-2101	Job BU #: 800529, CT HAMDEN NORTH CAC	Page 2 of 16
	Project 2022777.800529.13	Date 09:31:43 04/12/22
	Client Crown Castle	Designed by kmocka



Square Tower

4 Sided Latticed Pole Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
L1	100.00-90.00			4.83	1	10.00
L2	90.00-80.00			4.83	1	10.00
L3	80.00-70.00			4.83	1	10.00
L4	70.00-60.00			4.83	1	10.00

4 Sided Latticed Pole Section Geometry (cont'd)

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
L1	100.00-90.00	10.00	X Brace	No	Yes	0.0000	0.0000
L2	90.00-80.00	10.00	X Brace	No	Yes	0.0000	0.0000
L3	80.00-70.00	10.00	X Brace	No	Yes	0.0000	0.0000
L4	70.00-60.00	10.00	X Brace	No	Yes	0.0000	0.0000

4 Sided Latticed Pole Section Geometry (cont'd)

tnxTower GPD 520 South Main Street Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2100 FAX: (330) 572-2101	Job	Page
	BU #: 800529, CT HAMDEN NORTH CAC	3 of 16
	Project	Date
	2022777.800529.13	09:31:43 04/12/22
	Client	Designed by
	Crown Castle	kmocka

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
L1 100.00-90.00	Tube	HSS6x6x1/4	A500-46 (46 ksi)	Double Equal Angle	2L2x2x3/16x1/2	A36 (36 ksi)
L2 90.00-80.00	Tube	HSS6x6x1/4	A500-46 (46 ksi)	Double Equal Angle	2L2x2x3/16x1/2	A36 (36 ksi)
L3 80.00-70.00	Tube	HSS6x6x1/4	A500-46 (46 ksi)	Double Equal Angle	2L2x2x3/16x1/2	A36 (36 ksi)
L4 70.00-60.00	Tube	HSS6x6x1/4	A500-46 (46 ksi)	Double Equal Angle	2L2x2x3/16x1/2	A36 (36 ksi)

4 Sided Latticed Pole Section Geometry (cont'd)

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
L1 100.00-90.00	Channel	C6x10.5	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
L2 90.00-80.00	Channel	C6x10.5	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
L3 80.00-70.00	Channel	C6x10.5	A36 (36 ksi)	Flat Bar		A36 (36 ksi)
L4 70.00-60.00	Channel	C6x10.5	A36 (36 ksi)	Flat Bar		A36 (36 ksi)

4 Sided Latticed Pole Section Geometry (cont'd)

Tower Elevation ft	Gusset Area (per face) ft ²	Gusset Thickness in	Gusset Grade	Adjust. Factor A _f	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 100.00-90.00	0.00	0.0000	A36 (36 ksi)	0	0	1	Mid-Pt	36.0000	36.0000
L2 90.00-80.00	0.00	0.0000	A36 (36 ksi)	0	0	1	Mid-Pt	36.0000	36.0000
L3 80.00-70.00	0.00	0.0000	A36 (36 ksi)	0	0	1	Mid-Pt	36.0000	36.0000
L4 70.00-60.00	0.00	0.0000	A36 (36 ksi)	0	0	1	Mid-Pt	36.0000	36.0000

4 Sided Latticed Pole Section Geometry (cont'd)

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors ¹							
			Legs	X Brace Diags	K Brace Diags	Single Diags	Girts	Horiz.	Sec. Horiz.	Inner Brace
				X Y	X Y	X Y	X Y	X Y	X Y	X Y
L1	Yes	No	1	1	1	1	1	1	1	1

tnxTower GPD 520 South Main Street Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2100 FAX: (330) 572-2101	Job	Page
	BU #: 800529, CT HAMDEN NORTH CAC	4 of 16
	Project	Date
	2022777.800529.13	09:31:43 04/12/22
	Client	Designed by
	Crown Castle	kmocka

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors ¹							
			Legs	X Brace Diags	K Brace Diags	Single Diags	Girts	Horiz.	Sec. Horiz.	Inner Brace
				X Y	X Y	X Y	X Y	X Y	X Y	X Y
100.00-90.00				1	1	1	1	1	1	1
L2	Yes	No	1	1	1	1	1	1	1	1
90.00-80.00				1	1	1	1	1	1	1
L3	Yes	No	1	1	1	1	1	1	1	1
80.00-70.00				1	1	1	1	1	1	1
L4	Yes	No	1	1	1	1	1	1	1	1
70.00-60.00				1	1	1	1	1	1	1

¹Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.

4 Sided Latticed Pole Section Geometry (cont'd)

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
L1 100.00-90.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
L2 90.00-80.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
L3 80.00-70.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
L4 70.00-60.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
L1 100.00-90.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
L2 90.00-80.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
L3 80.00-70.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
L4 70.00-60.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

4 Sided Latticed Pole Section Geometry (cont'd)

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
L1 100.00-90.00	Flange	0.7500 A325N	0	0.8750 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

tnxTower GPD 520 South Main Street Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2100 FAX: (330) 572-2101	Job	Page
	BU #: 800529, CT HAMDEN NORTH CAC	5 of 16
	Project	Date
	2022777.800529.13	09:31:43 04/12/22
	Client	Designed by
	Crown Castle	kmocka

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
L2 90.00-80.00	Flange	0.7500 A325N	0	0.8750 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
L3 80.00-70.00	Flange	0.7500 A325N	0	0.8750 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
L4 70.00-60.00	Flange	0.8750 A325N	4	0.8750 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	60.00-40.00			9.52	1	20.00
T2	40.00-20.00			9.52	1	20.00
T3	20.00-0.00			9.52	1	20.00

Tower Section Geometry (cont'd)

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontal	Top Girt Offset in	Bottom Girt Offset in
T1	60.00-40.00	20.00	X Brace	No	Yes	0.0000	0.0000
T2	40.00-20.00	20.00	X Brace	No	Yes	0.0000	0.0000
T3	20.00-0.00	20.00	X Brace	No	Yes	0.0000	0.0000

Tower Section Geometry (cont'd)

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 60.00-40.00	Tube	HSS8x8x1/4	A500-46 (46 ksi)	Double Equal Angle	2L4x4x3/8x1/2	A36 (36 ksi)
T2 40.00-20.00	Tube	HSS8x8x1/4	A500-46 (46 ksi)	Double Equal Angle	2L4x4x3/8x1/2	A36 (36 ksi)
T3 20.00-0.00	Tube	HSS8x8x1/4	A500-46 (46 ksi)	Double Equal Angle	2L4x4x3/8x1/2	A36 (36 ksi)

Tower Section Geometry (cont'd)

tnxTower GPD 520 South Main Street Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2100 FAX: (330) 572-2101	Job	Page
	BU #: 800529, CT HAMDEN NORTH CAC	7 of 16
	Project	Date
	2022777.800529.13	09:31:43 04/12/22
	Client	Designed by
	Crown Castle	kmocka

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T3 20.00-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Elevation ft	Redundant Horizontal		Redundant Diagonal		Redundant Sub-Diagonal		Redundant Sub-Horizontal		Redundant Vertical		Redundant Hip		Redundant Hip Diagonal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 60.00-40.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 40.00-20.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 20.00-0.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry (cont'd)

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 60.00-40.00	Flange	0.7500	0	0.8750	2	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T2 40.00-20.00	Flange	0.7500	0	0.8750	2	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T3 20.00-0.00	Flange	0.7500	0	0.8750	2	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#		C _A A _A ft ² /ft	Weight plf
Climbing Ladder (CCI)	B	No	No	CaAa (Out Of Face)	100.00 - 0.00	0.0000	0.45	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	4.81 6.97 9.48
Safety Line (3/8")	B	No	No	CaAa (Out Of Face)	100.00 - 0.00	0.0000	0.45	1	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.22 0.75 1.28
Feedline Ladder (Af)	B	No	No	CaAa (Out Of Face)	100.00 - 8.00	0.0000	0	1	No Ice 1/2" Ice	0.00 0.00	8.40 13.50 18.60

tnxTower GPD 520 South Main Street Suite 2531 Akrón, Ohio 44311 Phone: (330) 572-2100 FAX: (330) 572-2101	Job BU #: 800529, CT HAMDEN NORTH CAC	Page 8 of 16
	Project 2022777.800529.13	Date 09:31:43 04/12/22
	Client Crown Castle	Designed by kmocka

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#		CAAA ft ² /ft	Weight plf
HB158-21U6S 24-xxM_TMO	B	No	No	CaAa (Out Of Face)	100.00 - 8.00	0.0000	0	6	Ice		
									1" Ice		
									No	0.00	1.90
									Ice	0.00	3.42
Feedline Ladder (Af)	A	No	No	CaAa (Out Of Face)	95.00 - 8.00	0.0000	0	1	1/2"	0.00	5.55
									Ice		
									1" Ice	0.00	8.40
									No	0.00	13.50
HB114-1-081 3U4-M5F (1-1/4")	A	No	No	CaAa (Out Of Face)	95.00 - 8.00	0.0000	0	2	1/2"	0.00	18.60
									Ice		
									1" Ice	0.00	1.20
									No	0.00	2.45
AVA7-50 (1-5/8")	A	No	No	CaAa (Out Of Face)	95.00 - 8.00	0.0000	0	6	1/2"	0.00	4.30
									Ice		
									1" Ice	0.00	0.70
									No	0.00	2.23
Feedline Ladder (Af)	C	No	No	CaAa (Out Of Face)	85.00 - 8.00	0.0000	0	1	1/2"	0.00	4.38
									Ice		
									1" Ice	0.00	8.40
									No	0.00	13.50
FB-L98B-034- XXX (3/8")	C	No	No	CaAa (Out Of Face)	85.00 - 8.00	0.0000	0	2	1/2"	0.00	18.60
									Ice		
									1" Ice	0.00	0.06
									No	0.00	0.60
RFFT-36SM-0 01-XXM(3/8)	C	No	No	CaAa (Out Of Face)	85.00 - 8.00	0.0000	0	1	1/2"	0.00	1.76
									Ice		
									1" Ice	0.00	0.09
									No	0.00	0.64
PWRT-606-S(7/8)	C	No	No	CaAa (Out Of Face)	85.00 - 8.00	0.0000	0	2	1/2"	0.00	1.80
									Ice		
									1" Ice	0.00	0.89
									No	0.00	1.76
PWRT-608-S(13/16)	C	No	No	CaAa (Out Of Face)	85.00 - 8.00	0.0000	0	5	1/2"	0.00	3.24
									Ice		
									1" Ice	0.00	0.62
									No	0.00	1.43
LDF5-50A (7/8 FOAM)	C	No	No	CaAa (Out Of Face)	85.00 - 8.00	0.0000	0	12	1/2"	0.00	2.84
									Ice		
									1" Ice	0.00	0.33
									No	0.00	1.30
Feedline Ladder (Af)	C	No	No	CaAa (Out Of Face)	65.00 - 8.00	0.0000	0.45	1	1/2"	0.00	2.88
									Ice		
									1" Ice	0.00	8.40
									No	0.00	13.50
CU12PSM9P8 XXX(1-3/8)	C	No	No	CaAa (Out Of Face)	65.00 - 8.00	0.0000	0.45	1	1/2"	0.00	18.60
									Ice		
									1" Ice	0.00	1.66
									No	0.00	2.83
									1/2"	0.00	4.61

tnxTower GPD 520 South Main Street Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2100 FAX: (330) 572-2101	Job BU #: 800529, CT HAMDEN NORTH CAC	Page 9 of 16
	Project 2022777.800529.13	Date 09:31:43 04/12/22
	Client Crown Castle	Designed by kmocka

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	C _{AA} ft ² /ft	Weight plf
Feedline Ladder (Af)	D	No	No	CaAa (Out Of Face)	75.00 - 8.00	0.0000	0	1	Ice 1" Ice No	8.40
									Ice 1/2"	13.50
									Ice 1" Ice No	18.60
									Ice 1/2"	0.00
LDF6-50A (1-1/4 FOAM)	D	No	No	CaAa (Out Of Face)	75.00 - 8.00	0.0000	0	11	Ice 1" Ice No	0.66
									Ice 1/2"	1.91
									Ice 1" Ice No	3.78
									Ice 1/2"	0.00

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight lb
L1	100.00-90.00	A	0.000	0.000	0.000	0.000	75.00
		B	0.000	0.000	0.000	0.000	248.30
		C	0.000	0.000	0.000	0.000	0.00
		D	0.000	0.000	0.000	0.000	0.00
L2	90.00-80.00	A	0.000	0.000	0.000	0.000	150.00
		B	0.000	0.000	0.000	0.000	248.30
		C	0.000	0.000	0.000	0.000	87.22
		D	0.000	0.000	0.000	0.000	0.00
L3	80.00-70.00	A	0.000	0.000	0.000	0.000	150.00
		B	0.000	0.000	0.000	0.000	248.30
		C	0.000	0.000	0.000	0.000	174.45
		D	0.000	0.000	0.000	0.000	78.30
L4	70.00-60.00	A	0.000	0.000	0.000	0.000	150.00
		B	0.000	0.000	0.000	0.000	248.30
		C	0.000	0.000	0.000	0.000	224.75
		D	0.000	0.000	0.000	0.000	156.60
T1	60.00-40.00	A	0.000	0.000	0.000	0.000	300.00
		B	0.000	0.000	0.000	0.000	496.60
		C	0.000	0.000	0.000	0.000	550.10
		D	0.000	0.000	0.000	0.000	313.20
T2	40.00-20.00	A	0.000	0.000	0.000	0.000	300.00
		B	0.000	0.000	0.000	0.000	496.60
		C	0.000	0.000	0.000	0.000	550.10
		D	0.000	0.000	0.000	0.000	313.20
T3	20.00-0.00	A	0.000	0.000	0.000	0.000	180.00
		B	0.000	0.000	0.000	0.000	338.20
		C	0.000	0.000	0.000	0.000	330.06
		D	0.000	0.000	0.000	0.000	187.92

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight lb
L1	100.00-90.00	A	0.945	0.000	0.000	0.000	0.000	255.39
		B		0.000	0.000	0.000	0.000	603.71

tnxTower GPD 520 South Main Street Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2100 FAX: (330) 572-2101	Job	Page
	BU #: 800529, CT HAMDEN NORTH CAC	10 of 16
	Project	Date
	2022777.800529.13	09:31:43 04/12/22
	Client	Designed by
	Crown Castle	kmocka

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight lb
L2	90.00-80.00	C	0.934	0.000	0.000	0.000	0.000	0.00
		D		0.000	0.000	0.000	0.000	0.00
		A		0.000	0.000	0.000	0.000	506.24
		B		0.000	0.000	0.000	0.000	599.33
L3	80.00-70.00	C	0.923	0.000	0.000	0.000	0.000	371.37
		D		0.000	0.000	0.000	0.000	0.00
		A		0.000	0.000	0.000	0.000	501.21
		B		0.000	0.000	0.000	0.000	594.47
L4	70.00-60.00	C	0.910	0.000	0.000	0.000	0.000	734.00
		D		0.000	0.000	0.000	0.000	280.87
		A		0.000	0.000	0.000	0.000	495.52
		B		0.000	0.000	0.000	0.000	588.98
T1	60.00-40.00	C	0.886	0.000	0.000	0.000	0.000	833.95
		D		0.000	0.000	0.000	0.000	555.03
		A		0.000	0.000	0.000	0.000	970.62
		B		0.000	0.000	0.000	0.000	1158.24
T2	40.00-20.00	C	0.842	0.000	0.000	0.000	0.000	1845.61
		D		0.000	0.000	0.000	0.000	1085.94
		A		0.000	0.000	0.000	0.000	932.35
		B		0.000	0.000	0.000	0.000	1121.29
T3	20.00-0.00	C	0.754	0.000	0.000	0.000	0.000	1767.10
		D		0.000	0.000	0.000	0.000	1040.77
		A		0.000	0.000	0.000	0.000	513.84
		B		0.000	0.000	0.000	0.000	702.93
		C		0.000	0.000	0.000	0.000	966.75
		D		0.000	0.000	0.000	0.000	570.65

Feed Line Center of Pressure

Section	Elevation	CP _x	CP _z	CP _x	CP _z
	ft	in	in	Ice in	Ice in
L1	100.00-90.00	0.0000	0.0000	0.0000	0.0000
L2	90.00-80.00	0.0000	0.0000	0.0000	0.0000
L3	80.00-70.00	0.0000	0.0000	0.0000	0.0000
L4	70.00-60.00	0.0000	0.0000	0.0000	0.0000
T1	60.00-40.00	0.0000	0.0000	0.0000	0.0000
T2	40.00-20.00	0.0000	0.0000	0.0000	0.0000
T3	20.00-0.00	0.0000	0.0000	0.0000	0.0000

tnxTower GPD 520 South Main Street Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2100 FAX: (330) 572-2101	Job	Page
	BU #: 800529, CT HAMDEN NORTH CAC	11 of 16
	Project	Date
	2022777.800529.13	09:31:43 04/12/22
	Client	Designed by
	Crown Castle	kmocka

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight lb
APXVAA4L18_43-U-NA20_ TMO w/ Mount Pipe	A	From Leg	2.00 0.00 4.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	156.85 261.21 374.41
APXVAA4L18_43-U-NA20_ TMO w/ Mount Pipe	B	From Leg	2.00 0.00 4.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	156.85 261.21 374.41
APXVAA4L18_43-U-NA20_ TMO w/ Mount Pipe	D	From Leg	2.00 0.00 4.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	156.85 261.21 374.41
AIR6449 B41_T-MOBILE w/ Mount Pipe	A	From Leg	2.00 0.00 4.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	136.53 191.31 251.99
AIR6449 B41_T-MOBILE w/ Mount Pipe	B	From Leg	2.00 0.00 4.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	136.53 191.31 251.99
AIR6449 B41_T-MOBILE w/ Mount Pipe	D	From Leg	2.00 0.00 4.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	136.53 191.31 251.99
RADIO 4449 B71 B85A_T-MOBILE	A	From Leg	2.00 0.00 4.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	73.21 92.97 115.64
RADIO 4449 B71 B85A_T-MOBILE	B	From Leg	2.00 0.00 4.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	73.21 92.97 115.64
RADIO 4449 B71 B85A_T-MOBILE	D	From Leg	2.00 0.00 4.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	73.21 92.97 115.64
RADIO 4415 B66A_CCIV3	A	From Leg	2.00 0.00 4.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	46.30 58.71 73.48
RADIO 4415 B66A_CCIV3	B	From Leg	2.00 0.00 4.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	46.30 58.71 73.48
RADIO 4415 B66A_CCIV3	D	From Leg	2.00 0.00 4.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	46.30 58.71 73.48
(2) RADIO 2212 B2	A	From Leg	2.00 0.00 4.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	40.80 55.35 72.44
(2) RADIO 2212 B2	B	From Leg	2.00 0.00 4.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	40.80 55.35 72.44
(2) RADIO 2212 B2	D	From Leg	2.00 0.00 4.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	40.80 55.35 72.44
Site Pro 1 P360 Horizontal	A	From Leg	2.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	38.00 47.60 62.00
Site Pro 1 P360 Horizontal	B	From Leg	2.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	38.00 47.60 62.00
Site Pro 1 P360 Horizontal	D	From Leg	2.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	38.00 47.60 62.00

tnxTower GPD 520 South Main Street Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2100 FAX: (330) 572-2101	Job	BU #: 800529, CT HAMDEN NORTH CAC	Page 12 of 16
	Project	2022777.800529.13	Date 09:31:43 04/12/22
	Client	Crown Castle	Designed by kmocka

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight lb
Site Pro 1 USF-2U Standoff Frame	A	From Leg	1.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	128.25 160.30 192.35
Site Pro 1 USF-2U Standoff Frame	B	From Leg	1.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	128.25 160.30 192.35
Site Pro 1 USF-2U Standoff Frame	D	From Leg	1.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	128.25 160.30 192.35
BXA-80080/4CF w/ Mount Pipe	A	From Centroid-Le g	3.00 0.00 0.00	0.0000	95.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	39.85 89.34 145.14
BXA-80080/4CF w/ Mount Pipe	C	From Centroid-Le g	3.00 0.00 0.00	0.0000	95.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	39.85 89.34 145.14
BXA-80080/4CF w/ Mount Pipe	D	From Centroid-Le g	3.00 0.00 0.00	0.0000	95.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	39.85 89.34 145.14
(2) JAHH-65B-R3B w/ Mount Pipe	A	From Centroid-Le g	3.00 0.00 0.00	0.0000	95.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	86.15 162.72 247.46
(2) JAHH-65B-R3B w/ Mount Pipe	C	From Centroid-Le g	3.00 0.00 0.00	0.0000	95.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	86.15 162.72 247.46
(2) JAHH-65B-R3B w/ Mount Pipe	D	From Centroid-Le g	3.00 0.00 0.00	0.0000	95.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	86.15 162.72 247.46
Sub6 Antenna - VZS01 w/ Mount Pipe	A	From Centroid-Le g	3.00 0.00 0.00	0.0000	95.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	87.10 108.88 130.65
Sub6 Antenna - VZS01 w/ Mount Pipe	C	From Centroid-Le g	3.00 0.00 0.00	0.0000	95.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	87.10 108.88 130.65
Sub6 Antenna - VZS01 w/ Mount Pipe	D	From Centroid-Le g	3.00 0.00 0.00	0.0000	95.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	87.10 108.88 130.65
CBC78T-DS-43-2X	A	From Centroid-Le g	3.00 0.00 0.00	0.0000	95.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	20.70 25.88 31.05
CBC78T-DS-43-2X	C	From Centroid-Le g	3.00 0.00 0.00	0.0000	95.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	20.70 25.88 31.05
CBC78T-DS-43-2X	D	From Centroid-Le g	3.00 0.00 0.00	0.0000	95.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	20.70 25.88 31.05
RFV01U-D1A	A	From Centroid-Le g	3.00 0.00 0.00	0.0000	95.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	84.40 105.50 126.60
RFV01U-D1A	C	From Centroid-Le g	3.00 0.00 0.00	0.0000	95.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	84.40 105.50 126.60
RFV01U-D1A	D	From Centroid-Le g	3.00 0.00 0.00	0.0000	95.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	84.40 105.50 126.60
RFV01U-D2A	A	From Centroid-Le g	3.00 0.00 0.00	0.0000	95.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	70.30 87.88 105.45

tnxTower GPD 520 South Main Street Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2100 FAX: (330) 572-2101	Job	Page
	BU #: 800529, CT HAMDEN NORTH CAC	13 of 16
	Project	Date
	2022777.800529.13	09:31:43 04/12/22
	Client	Designed by
	Crown Castle	kmocka

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight lb
RFV01U-D2A	C	From	3.00	0.0000	95.00	No Ice	0.00	0.00	70.30
		Centroid-Le	0.00			1/2" Ice	0.00	0.00	87.88
		g	0.00			1" Ice	0.00	0.00	105.45
RFV01U-D2A	D	From	3.00	0.0000	95.00	No Ice	0.00	0.00	70.30
		Centroid-Le	0.00			1/2" Ice	0.00	0.00	87.88
		g	0.00			1" Ice	0.00	0.00	105.45
RFV01U-D2A	A	From	3.00	0.0000	95.00	No Ice	0.00	0.00	73.00
		Centroid-Le	0.00			1/2" Ice	0.00	0.00	89.43
		g	3.00			1" Ice	0.00	0.00	108.53
RFV01U-D2A	C	From	3.00	0.0000	95.00	No Ice	0.00	0.00	73.00
		Centroid-Le	0.00			1/2" Ice	0.00	0.00	89.43
		g	3.00			1" Ice	0.00	0.00	108.53
RFV01U-D2A	D	From	3.00	0.0000	95.00	No Ice	0.00	0.00	73.00
		Centroid-Le	0.00			1/2" Ice	0.00	0.00	89.43
		g	3.00			1" Ice	0.00	0.00	108.53
DB-T1-6Z-8AB-0Z	A	From	3.00	0.0000	95.00	No Ice	0.00	0.00	44.00
		Centroid-Le	0.00			1/2" Ice	0.00	0.00	80.13
		g	0.00			1" Ice	0.00	0.00	120.22
DB-T1-6Z-8AB-0Z	C	From	3.00	0.0000	95.00	No Ice	0.00	0.00	44.00
		Centroid-Le	0.00			1/2" Ice	0.00	0.00	80.13
		g	0.00			1" Ice	0.00	0.00	120.22
DMP65R-BU6D w/ Mount Pipe	A	From	3.00	0.0000	85.00	No Ice	0.00	0.00	104.71
		Centroid-Le	0.00			1/2" Ice	0.00	0.00	196.98
		g	0.00			1" Ice	0.00	0.00	297.77
DMP65R-BU6D w/ Mount Pipe	C	From	3.00	0.0000	85.00	No Ice	0.00	0.00	104.71
		Centroid-Le	0.00			1/2" Ice	0.00	0.00	196.98
		g	0.00			1" Ice	0.00	0.00	297.77
DMP65R-BU6D w/ Mount Pipe	D	From	3.00	0.0000	85.00	No Ice	0.00	0.00	104.71
		Centroid-Le	0.00			1/2" Ice	0.00	0.00	196.98
		g	0.00			1" Ice	0.00	0.00	297.77
TPA65R-BU6DA-K w/ Mount Pipe	A	From	3.00	0.0000	85.00	No Ice	0.00	0.00	93.61
		Centroid-Le	0.00			1/2" Ice	0.00	0.00	185.88
		g	0.00			1" Ice	0.00	0.00	286.67
TPA65R-BU6DA-K w/ Mount Pipe	C	From	3.00	0.0000	85.00	No Ice	0.00	0.00	93.61
		Centroid-Le	0.00			1/2" Ice	0.00	0.00	185.88
		g	0.00			1" Ice	0.00	0.00	286.67
TPA65R-BU6DA-K w/ Mount Pipe	D	From	3.00	0.0000	85.00	No Ice	0.00	0.00	93.61
		Centroid-Le	0.00			1/2" Ice	0.00	0.00	185.88
		g	0.00			1" Ice	0.00	0.00	286.67
AIR 6419 B77G_CCIV3 w/ Mount Pipe	A	From	3.00	0.0000	85.00	No Ice	0.00	0.00	57.11
		Centroid-Le	0.00			1/2" Ice	0.00	0.00	95.91
		g	2.00			1" Ice	0.00	0.00	139.63
AIR 6419 B77G_CCIV3 w/ Mount Pipe	C	From	3.00	0.0000	85.00	No Ice	0.00	0.00	57.11
		Centroid-Le	0.00			1/2" Ice	0.00	0.00	95.91
		g	2.00			1" Ice	0.00	0.00	139.63
AIR 6419 B77G_CCIV3 w/ Mount Pipe	D	From	3.00	0.0000	85.00	No Ice	0.00	0.00	57.11
		Centroid-Le	0.00			1/2" Ice	0.00	0.00	95.91
		g	2.00			1" Ice	0.00	0.00	139.63
AIR 6449 B77D_CCIV2 w/ Mount Pipe	A	From	3.00	0.0000	85.00	No Ice	0.00	0.00	94.49
		Centroid-Le	0.00			1/2" Ice	0.00	0.00	133.47
		g	-2.00			1" Ice	0.00	0.00	177.35
AIR 6449 B77D_CCIV2 w/ Mount Pipe	C	From	3.00	0.0000	85.00	No Ice	0.00	0.00	94.49
		Centroid-Le	0.00			1/2" Ice	0.00	0.00	133.47
		g	-2.00			1" Ice	0.00	0.00	177.35
AIR 6449 B77D_CCIV2 w/ Mount Pipe	D	From	3.00	0.0000	85.00	No Ice	0.00	0.00	94.49
		Centroid-Le	0.00			1/2" Ice	0.00	0.00	133.47
		g	-2.00			1" Ice	0.00	0.00	177.35

tnxTower GPD 520 South Main Street Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2100 FAX: (330) 572-2101	Job	Page
	BU #: 800529, CT HAMDEN NORTH CAC	14 of 16
	Project	Date
	2022777.800529.13	09:31:43 04/12/22
	Client	Designed by
	Crown Castle	kmocka

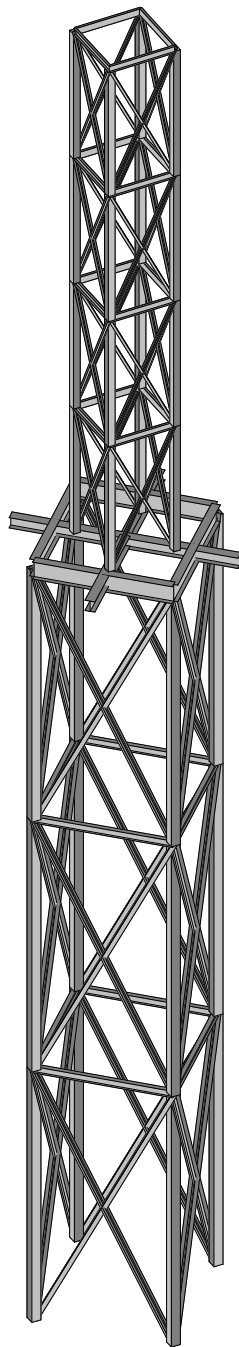
Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight lb
RADIO 4415 B30	A	From	3.00	0.0000	85.00	No Ice	0.00	0.00	42.90
		Centroid-Le	0.00			1/2" Ice	0.00	0.00	54.99
		g	0.00			1" Ice	0.00	0.00	69.43
RADIO 4415 B30	C	From	3.00	0.0000	85.00	No Ice	0.00	0.00	42.90
		Centroid-Le	0.00			1/2" Ice	0.00	0.00	54.99
		g	0.00			1" Ice	0.00	0.00	69.43
RADIO 4415 B30	D	From	3.00	0.0000	85.00	No Ice	0.00	0.00	42.90
		Centroid-Le	0.00			1/2" Ice	0.00	0.00	54.99
		g	0.00			1" Ice	0.00	0.00	69.43
RRUS 32 B2	A	From	3.00	0.0000	85.00	No Ice	0.00	0.00	52.90
		Centroid-Le	0.00			1/2" Ice	0.00	0.00	73.96
		g	0.00			1" Ice	0.00	0.00	98.21
RRUS 32 B2	C	From	3.00	0.0000	85.00	No Ice	0.00	0.00	52.90
		Centroid-Le	0.00			1/2" Ice	0.00	0.00	73.96
		g	0.00			1" Ice	0.00	0.00	98.21
RRUS 32 B2	D	From	3.00	0.0000	85.00	No Ice	0.00	0.00	52.90
		Centroid-Le	0.00			1/2" Ice	0.00	0.00	73.96
		g	0.00			1" Ice	0.00	0.00	98.21
RRUS 4426 B66	A	From	3.00	0.0000	85.00	No Ice	0.00	0.00	48.40
		Centroid-Le	0.00			1/2" Ice	0.00	0.00	61.22
		g	0.00			1" Ice	0.00	0.00	76.43
RRUS 4426 B66	C	From	3.00	0.0000	85.00	No Ice	0.00	0.00	48.40
		Centroid-Le	0.00			1/2" Ice	0.00	0.00	61.22
		g	0.00			1" Ice	0.00	0.00	76.43
RRUS 4426 B66	D	From	3.00	0.0000	85.00	No Ice	0.00	0.00	48.40
		Centroid-Le	0.00			1/2" Ice	0.00	0.00	61.22
		g	0.00			1" Ice	0.00	0.00	76.43
RRUS 4449 B5/B12	A	From	3.00	0.0000	85.00	No Ice	0.00	0.00	71.00
		Centroid-Le	0.00			1/2" Ice	0.00	0.00	89.51
		g	0.00			1" Ice	0.00	0.00	110.84
RRUS 4449 B5/B12	C	From	3.00	0.0000	85.00	No Ice	0.00	0.00	71.00
		Centroid-Le	0.00			1/2" Ice	0.00	0.00	89.51
		g	0.00			1" Ice	0.00	0.00	110.84
RRUS 4449 B5/B12	D	From	3.00	0.0000	85.00	No Ice	0.00	0.00	71.00
		Centroid-Le	0.00			1/2" Ice	0.00	0.00	89.51
		g	0.00			1" Ice	0.00	0.00	110.84
RRUS 4478 B14_CCIV2	A	From	3.00	0.0000	85.00	No Ice	0.00	0.00	59.40
		Centroid-Le	0.00			1/2" Ice	0.00	0.00	77.01
		g	0.00			1" Ice	0.00	0.00	97.40
RRUS 4478 B14_CCIV2	C	From	3.00	0.0000	85.00	No Ice	0.00	0.00	59.40
		Centroid-Le	0.00			1/2" Ice	0.00	0.00	77.01
		g	0.00			1" Ice	0.00	0.00	97.40
RRUS 4478 B14_CCIV2	D	From	3.00	0.0000	85.00	No Ice	0.00	0.00	59.40
		Centroid-Le	0.00			1/2" Ice	0.00	0.00	77.01
		g	0.00			1" Ice	0.00	0.00	97.40
(2) DC6-48-60-18-8F Surge Suppression Unit	A	From	3.00	0.0000	85.00	No Ice	0.00	0.00	18.90
		Centroid-Le	0.00			1/2" Ice	0.00	0.00	36.62
		g	0.00			1" Ice	0.00	0.00	56.82
DC9-48-60-24-8C-EV	D	From	3.00	0.0000	85.00	No Ice	0.00	0.00	26.20
		Centroid-Le	0.00			1/2" Ice	0.00	0.00	63.27
		g	0.00			1" Ice	0.00	0.00	104.42
A-18A24N-U w/ Mount pipe	A	From	3.00	0.0000	75.00	No Ice	0.00	0.00	43.55
		Centroid-Le	0.00			1/2" Ice	0.00	0.00	88.76
		g	0.00			1" Ice	0.00	0.00	139.53
A-18A24N-U w/ Mount pipe	D	From	3.00	0.0000	75.00	No Ice	0.00	0.00	43.55
		Centroid-Le	0.00			1/2" Ice	0.00	0.00	88.76
		g	0.00			1" Ice	0.00	0.00	139.53

tnxTower GPD 520 South Main Street Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2100 FAX: (330) 572-2101	Job	Page
	BU #: 800529, CT HAMDEN NORTH CAC	15 of 16
	Project	Date
	2022777.800529.13	09:31:43 04/12/22
	Client	Designed by
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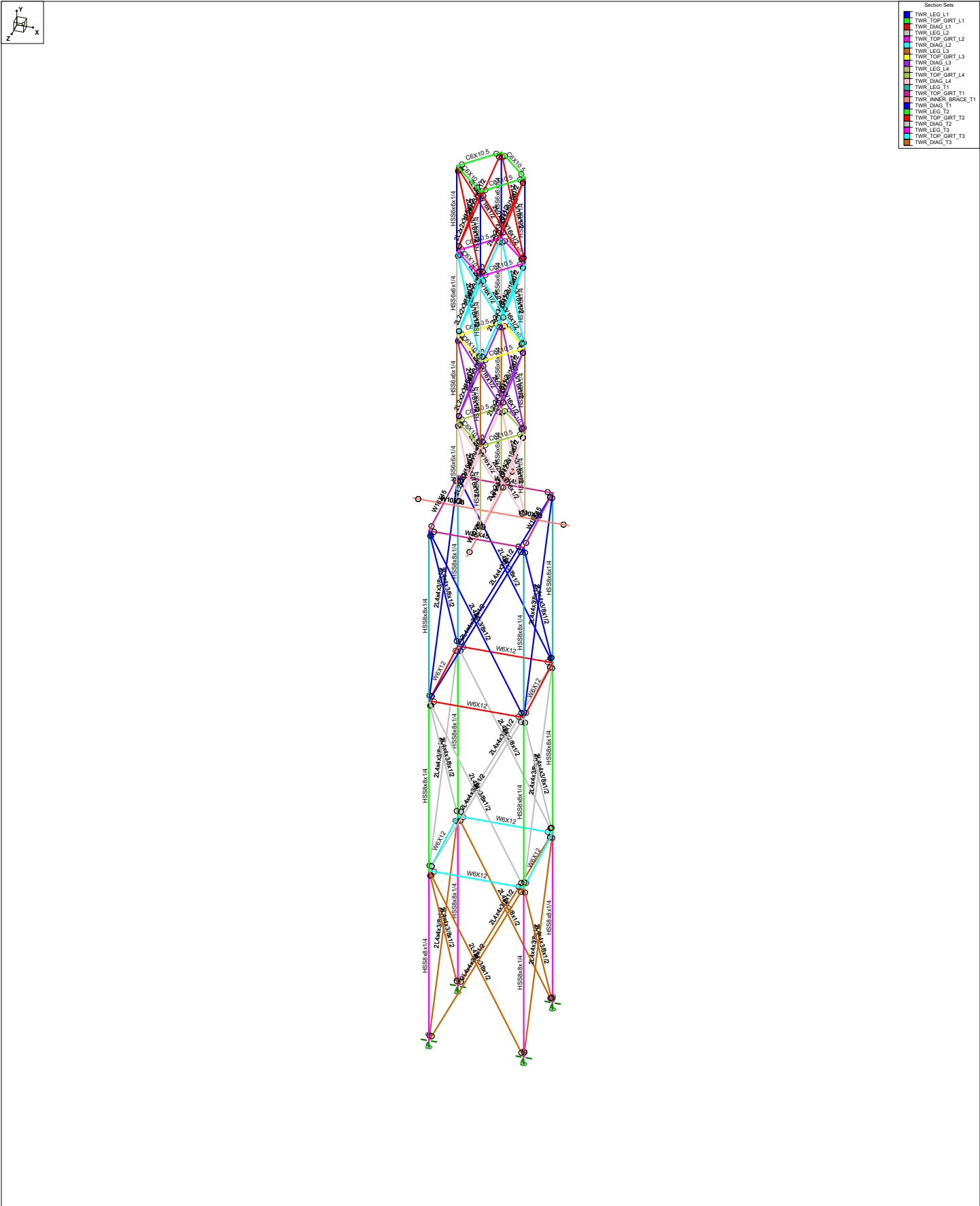
Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight lb
(3) DB844H90E-XY w/ Mount Pipe	A	From Centroid-Le g	3.00 0.00 0.00	0.0000	75.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	43.20 90.60 144.32
(4) DB844H90E-XY w/ Mount Pipe	B	From Centroid-Le g	3.00 0.00 0.00	0.0000	75.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	43.20 90.60 144.32
(3) DB844H90E-XY w/ Mount Pipe	D	From Centroid-Le g	3.00 0.00 0.00	0.0000	75.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	43.20 90.60 144.32
MX08FRO665-21 w/ Mount Pipe	A	From Leg	3.00 0.00 1.00	0.0000	65.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	86.40 176.08 274.11
MX08FRO665-21 w/ Mount Pipe	B	From Leg	3.00 0.00 1.00	0.0000	65.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	86.40 176.08 274.11
MX08FRO665-21 w/ Mount Pipe	D	From Leg	3.00 0.00 1.00	0.0000	65.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	86.40 176.08 274.11
TA08025-B604	A	From Leg	3.00 0.00 -1.00	0.0000	65.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	63.90 80.65 100.10
TA08025-B604	B	From Leg	3.00 0.00 -1.00	0.0000	65.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	63.90 80.65 100.10
TA08025-B604	D	From Leg	3.00 0.00 -1.00	0.0000	65.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	63.90 80.65 100.10
TA08025-B605	A	From Leg	3.00 0.00 1.00	0.0000	65.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	75.00 92.97 113.72
TA08025-B605	B	From Leg	3.00 0.00 1.00	0.0000	65.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	75.00 92.97 113.72
TA08025-B605	D	From Leg	3.00 0.00 1.00	0.0000	65.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	75.00 92.97 113.72
RDIDC-9181-PF-48	A	From Leg	3.00 0.00 2.00	0.0000	65.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	21.85 42.90 66.97
(3) Commscope MTC3975083	C	None		0.0000	65.00	No Ice 1/2" Ice 1" Ice	0.00 0.00 0.00	0.00 0.00 0.00	1056.00 1320.00 1650.00
Top Cap	C	None		0.0000	103.40	No Ice 1/2" Ice 1" Ice	50.27 50.27 50.27	50.27 50.27 50.27	116.00 145.00 174.00
Tower Silo 90' - 100'	C	None		0.0000	95.00	No Ice 1/2" Ice 1" Ice	80.00 80.00 80.00	80.00 80.00 80.00	146.70 183.38 220.06
Tower Silo 80' - 90'	C	None		0.0000	85.00	No Ice 1/2" Ice 1" Ice	80.00 80.00 80.00	80.00 80.00 80.00	146.70 183.38 220.06
Tower Silo 70' - 80'	C	None		0.0000	75.00	No Ice 1/2" Ice 1" Ice	80.00 80.00 80.00	80.00 80.00 80.00	146.70 183.38 220.06
Tower Silo 60' - 70'	C	None		0.0000	65.00	No Ice 1/2" Ice 1" Ice	80.00 80.00 80.00	80.00 80.00 80.00	146.70 183.38 220.06

tnxTower GPD 520 South Main Street Suite 2531 Akron, Ohio 44311 Phone: (330) 572-2100 FAX: (330) 572-2101	Job	Page
	BU #: 800529, CT HAMDEN NORTH CAC	16 of 16
	Project	Date
	2022777.800529.13	09:31:43 04/12/22
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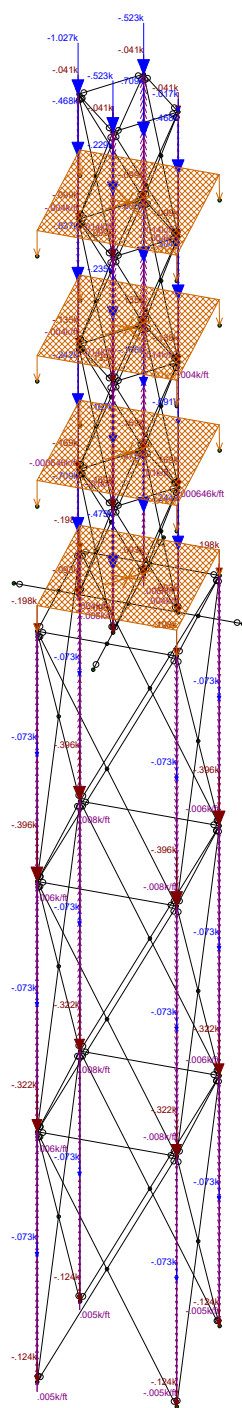
<i>Description</i>	<i>Face or Leg</i>	<i>Offset Type</i>	<i>Offsets: Horz Lateral Vert ft ft ft</i>	<i>Azimuth Adjustment °</i>	<i>Placement ft</i>	<i>C_AA_A Front ft²</i>	<i>C_AA_A Side ft²</i>	<i>Weight lb</i>
Tower Silo 40' - 60'	C	None		0.0000	50.00	No Ice 160.00 1/2" Ice 160.00 1" Ice 160.00	160.00 160.00 160.00	293.40 366.75 440.10
Tower Silo 20' - 40'	C	None		0.0000	30.00	No Ice 160.00 1/2" Ice 160.00 1" Ice 160.00	160.00 160.00 160.00	293.40 366.75 440.10
Tower Silo 0' - 20'	C	None		0.0000	10.00	No Ice 160.00 1/2" Ice 160.00 1" Ice 160.00	160.00 160.00 160.00	293.40 366.75 440.10



GPD	BU #: 800529, CT HAMDEN NORTH CAC 100' Stealth Self Support Tower	SK - 1
KM		
2022777.800529.13		800529.13.rt3



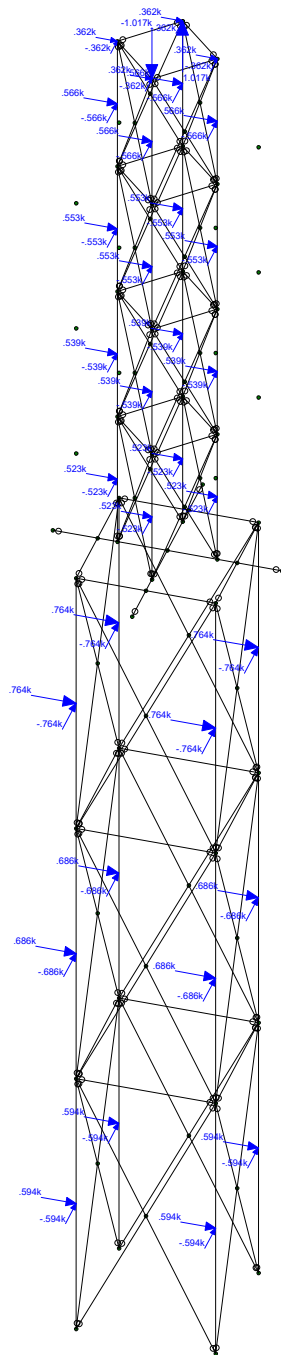
GPD	BU #: 800529, CT HAMDEN NORTH CAC	SK - 2
KM		
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GPD
KM
2022777.800529.13

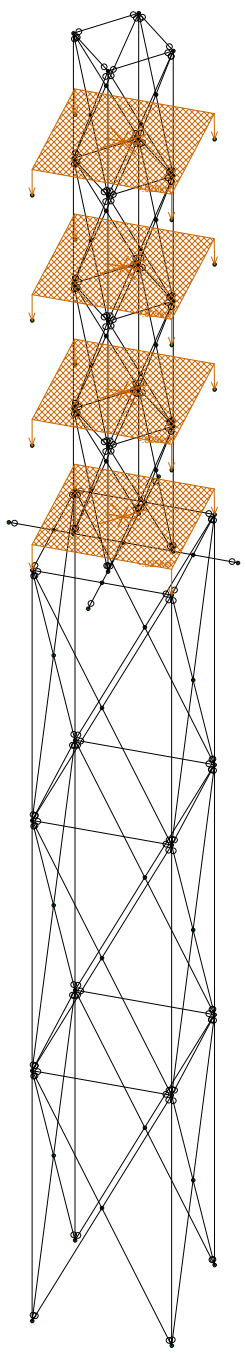
BU #: 800529, CT HAMDEN NORTH CAC
Dead Loads

SK - 3
800529.13.rt3



Loads: BLC 3, No Ice Wind 45°

GPD	BU #: 800529, CT HAMDEN NORTH CAC Example Wind Loading (BLC #3 - Wind @ 45 deg.)	SK - 4
KM		
2022777.800529.13		800529.13.rt3



Loads: BLC 10, Live

GPD	BU #: 800529, CT HAMDEN NORTH CAC Platform Live Loads	SK - 5
KM		
2022777.800529.13		800529.13.rt3

(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?	No
Max Iterations for Wall Stiffness	3
Gravity Acceleration (ft/sec^2)	32.2
Wall Mesh Size (in)	24
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Standard Solver

Hot Rolled Steel Code	AISC 14th(360-10): 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	None
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

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1E...Density[k/ft...	Yield[ksi]	Ry	Fu[ksi]	Rt	
1	A500-46	29000	11200	.295	.65	.49	46	1.2	58	1.1
2	A36	29000	11200	.295	.65	.49	36	1.5	58	1.2
3	A992-50	29000	11200	.295	.65	.49	50	1.5	65	1.2

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rules	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	TWR_LEG_...	HSS6x6x1/4	Column	None	A500-46	Typical	5.24	28.6	28.6	45.6
2	TWR_TOP_...	C6X10.5	Beam	None	A36	Typical	3.07	.86	15.1	.128
3	TWR_DIAG...	2L2x2x3/16x...	Column	None	A36	Typical	1.43	1.504	.545	.017
4	TWR_LEG_...	HSS6x6x1/4	Column	None	A500-46	Typical	5.24	28.6	28.6	45.6
5	TWR_TOP_...	C6X10.5	Beam	None	A36	Typical	3.07	.86	15.1	.128
6	TWR_DIAG...	2L2x2x3/16x...	Column	None	A36	Typical	1.43	1.504	.545	.017
7	TWR_LEG_...	HSS6x6x1/4	Column	None	A500-46	Typical	5.24	28.6	28.6	45.6
8	TWR_TOP_...	C6X10.5	Beam	None	A36	Typical	3.07	.86	15.1	.128
9	TWR_DIAG...	2L2x2x3/16x...	Column	None	A36	Typical	1.43	1.504	.545	.017
10	TWR_LEG_...	HSS6x6x1/4	Column	None	A500-46	Typical	5.24	28.6	28.6	45.6
11	TWR_TOP_...	C6X10.5	Beam	None	A36	Typical	3.07	.86	15.1	.128
12	TWR_DIAG...	2L2x2x3/16x...	Column	None	A36	Typical	1.43	1.504	.545	.017
13	TWR_LEG_...	HSS8x8x1/4	Column	None	A500-46	Typical	7.1	70.7	70.7	111
14	TWR_TOP_...	W16X45	Beam	None	A992-50	Typical	13.3	32.8	586	1.11
15	TWR_INNE...	W10X33	Beam	None	A992-50	Typical	9.71	36.6	171	.583
16	TWR_DIAG...	2L4x4x3/8x1/2	Column	None	A36	Typical	5.719	19.74	8.717	.268
17	TWR_LEG_...	HSS8x8x1/4	Column	None	A500-46	Typical	7.1	70.7	70.7	111
18	TWR_TOP_...	W6X12	Beam	None	A992-50	Typical	3.55	2.99	22.1	.09
19	TWR_DIAG...	2L4x4x3/8x1/2	Column	None	A36	Typical	5.719	19.74	8.717	.268
20	TWR_LEG_...	HSS8x8x1/4	Column	None	A500-46	Typical	7.1	70.7	70.7	111
21	TWR_TOP_...	W6X12	Beam	None	A992-50	Typical	3.55	2.99	22.1	.09
22	TWR_DIAG...	2L4x4x3/8x1/2	Column	None	A36	Typical	5.719	19.74	8.717	.268

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M9	N2	N3			TWR_DIAG_L1	Column	None	A36	Typical
2	M10	N4	N1			TWR_DIAG_L1	Column	None	A36	Typical
3	M11	N4	N5			TWR_DIAG_L1	Column	None	A36	Typical
4	M12	N6	N3			TWR_DIAG_L1	Column	None	A36	Typical
5	M13	N6	N7			TWR_DIAG_L1	Column	None	A36	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
6	M14	N8	N5			TWR_DIAG_L1	Column	None	A36	Typical
7	M15	N8	N1			TWR_DIAG_L1	Column	None	A36	Typical
8	M16	N2	N7			TWR_DIAG_L1	Column	None	A36	Typical
9	M25	N13	N4			TWR_DIAG_L2	Column	None	A36	Typical
10	M26	N14	N2			TWR_DIAG_L2	Column	None	A36	Typical
11	M27	N14	N6			TWR_DIAG_L2	Column	None	A36	Typical
12	M28	N15	N4			TWR_DIAG_L2	Column	None	A36	Typical
13	M29	N15	N8			TWR_DIAG_L2	Column	None	A36	Typical
14	M30	N16	N6			TWR_DIAG_L2	Column	None	A36	Typical
15	M31	N16	N2			TWR_DIAG_L2	Column	None	A36	Typical
16	M32	N13	N8			TWR_DIAG_L2	Column	None	A36	Typical
17	M41	N21	N14			TWR_DIAG_L3	Column	None	A36	Typical
18	M42	N22	N13			TWR_DIAG_L3	Column	None	A36	Typical
19	M43	N22	N15			TWR_DIAG_L3	Column	None	A36	Typical
20	M44	N23	N14			TWR_DIAG_L3	Column	None	A36	Typical
21	M45	N23	N16			TWR_DIAG_L3	Column	None	A36	Typical
22	M46	N24	N15			TWR_DIAG_L3	Column	None	A36	Typical
23	M47	N24	N13			TWR_DIAG_L3	Column	None	A36	Typical
24	M48	N21	N16			TWR_DIAG_L3	Column	None	A36	Typical
25	M57	N29	N22			TWR_DIAG_L4	Column	None	A36	Typical
26	M58	N30	N21			TWR_DIAG_L4	Column	None	A36	Typical
27	M59	N30	N23			TWR_DIAG_L4	Column	None	A36	Typical
28	M60	N31	N22			TWR_DIAG_L4	Column	None	A36	Typical
29	M61	N31	N24			TWR_DIAG_L4	Column	None	A36	Typical
30	M62	N32	N23			TWR_DIAG_L4	Column	None	A36	Typical
31	M63	N32	N21			TWR_DIAG_L4	Column	None	A36	Typical
32	M64	N29	N24			TWR_DIAG_L4	Column	None	A36	Typical
33	M73	N38	N39			TWR_DIAG_T1	Column	None	A36	Typical
34	M74	N40	N37			TWR_DIAG_T1	Column	None	A36	Typical
35	M75	N40	N41			TWR_DIAG_T1	Column	None	A36	Typical
36	M76	N42	N39			TWR_DIAG_T1	Column	None	A36	Typical
37	M77	N42	N43			TWR_DIAG_T1	Column	None	A36	Typical
38	M78	N44	N41			TWR_DIAG_T1	Column	None	A36	Typical
39	M79	N44	N37			TWR_DIAG_T1	Column	None	A36	Typical
40	M80	N38	N43			TWR_DIAG_T1	Column	None	A36	Typical
41	M89	N49	N40			TWR_DIAG_T2	Column	None	A36	Typical
42	M90	N50	N38		360	TWR_DIAG_T2	Column	None	A36	Typical
43	M91	N50	N42			TWR_DIAG_T2	Column	None	A36	Typical
44	M92	N51	N40		360	TWR_DIAG_T2	Column	None	A36	Typical
45	M93	N51	N44			TWR_DIAG_T2	Column	None	A36	Typical
46	M94	N52	N42		360	TWR_DIAG_T2	Column	None	A36	Typical
47	M95	N52	N38			TWR_DIAG_T2	Column	None	A36	Typical
48	M96	N49	N44		360	TWR_DIAG_T2	Column	None	A36	Typical
49	M105	N57	N50			TWR_DIAG_T3	Column	None	A36	Typical
50	M106	N58	N49			TWR_DIAG_T3	Column	None	A36	Typical
51	M107	N58	N51			TWR_DIAG_T3	Column	None	A36	Typical
52	M108	N59	N50			TWR_DIAG_T3	Column	None	A36	Typical
53	M109	N59	N52			TWR_DIAG_T3	Column	None	A36	Typical
54	M110	N60	N51			TWR_DIAG_T3	Column	None	A36	Typical
55	M111	N60	N49			TWR_DIAG_T3	Column	None	A36	Typical
56	M112	N57	N52			TWR_DIAG_T3	Column	None	A36	Typical
57	M1	N2	N1		45	TWR_LEG_L1	Column	None	A500-46	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
58	M2	N4	N3		135	TWR_LEG_L1	Column	None	A500-46	Typical
59	M3	N6	N5		225	TWR_LEG_L1	Column	None	A500-46	Typical
60	M4	N8	N7		315	TWR_LEG_L1	Column	None	A500-46	Typical
61	M17	N13	N2		45	TWR_LEG_L2	Column	None	A500-46	Typical
62	M18	N14	N4		135	TWR_LEG_L2	Column	None	A500-46	Typical
63	M19	N15	N6		225	TWR_LEG_L2	Column	None	A500-46	Typical
64	M20	N16	N8		315	TWR_LEG_L2	Column	None	A500-46	Typical
65	M33	N21	N13		45	TWR_LEG_L3	Column	None	A500-46	Typical
66	M34	N22	N14		135	TWR_LEG_L3	Column	None	A500-46	Typical
67	M35	N23	N15		225	TWR_LEG_L3	Column	None	A500-46	Typical
68	M36	N24	N16		315	TWR_LEG_L3	Column	None	A500-46	Typical
69	M49	N29	N21		45	TWR_LEG_L4	Column	None	A500-46	Typical
70	M50	N30	N22		135	TWR_LEG_L4	Column	None	A500-46	Typical
71	M51	N31	N23		225	TWR_LEG_L4	Column	None	A500-46	Typical
72	M52	N32	N24		315	TWR_LEG_L4	Column	None	A500-46	Typical
73	M65	N38	N37		45	TWR_LEG_T1	Column	None	A500-46	Typical
74	M66	N40	N39		135	TWR_LEG_T1	Column	None	A500-46	Typical
75	M67	N42	N41		225	TWR_LEG_T1	Column	None	A500-46	Typical
76	M68	N44	N43		315	TWR_LEG_T1	Column	None	A500-46	Typical
77	M81	N49	N38		45	TWR_LEG_T2	Column	None	A500-46	Typical
78	M82	N50	N40		135	TWR_LEG_T2	Column	None	A500-46	Typical
79	M83	N51	N42		225	TWR_LEG_T2	Column	None	A500-46	Typical
80	M84	N52	N44		315	TWR_LEG_T2	Column	None	A500-46	Typical
81	M97	N57	N49		45	TWR_LEG_T3	Column	None	A500-46	Typical
82	M98	N58	N50		135	TWR_LEG_T3	Column	None	A500-46	Typical
83	M99	N59	N51		225	TWR_LEG_T3	Column	None	A500-46	Typical
84	M100	N60	N52		315	TWR_LEG_T3	Column	None	A500-46	Typical
85	M5	N1	N3		180	TWR_TOP_GI...	Beam	None	A36	Typical
86	M6	N3	N5		180	TWR_TOP_GI...	Beam	None	A36	Typical
87	M7	N5	N7		180	TWR_TOP_GI...	Beam	None	A36	Typical
88	M8	N7	N1		180	TWR_TOP_GI...	Beam	None	A36	Typical
89	M21	N2	N4		180	TWR_TOP_GI...	Beam	None	A36	Typical
90	M22	N4	N6		180	TWR_TOP_GI...	Beam	None	A36	Typical
91	M23	N6	N8		180	TWR_TOP_GI...	Beam	None	A36	Typical
92	M24	N8	N2		180	TWR_TOP_GI...	Beam	None	A36	Typical
93	M37	N13	N14		180	TWR_TOP_GI...	Beam	None	A36	Typical
94	M38	N14	N15		180	TWR_TOP_GI...	Beam	None	A36	Typical
95	M39	N15	N16		180	TWR_TOP_GI...	Beam	None	A36	Typical
96	M40	N16	N13		180	TWR_TOP_GI...	Beam	None	A36	Typical
97	M53	N21	N22		180	TWR_TOP_GI...	Beam	None	A36	Typical
98	M54	N22	N23		180	TWR_TOP_GI...	Beam	None	A36	Typical
99	M55	N23	N24		180	TWR_TOP_GI...	Beam	None	A36	Typical
100	M56	N24	N21		180	TWR_TOP_GI...	Beam	None	A36	Typical
101	M69	N37	N39			TWR_TOP_GI...	Beam	None	A992-50	Typical
102	M70	N39	N41			TWR_TOP_GI...	Beam	None	A992-50	Typical
103	M71	N41	N43			TWR_TOP_GI...	Beam	None	A992-50	Typical
104	M72	N43	N37			TWR_TOP_GI...	Beam	None	A992-50	Typical
105	M85	N38	N40		360	TWR_TOP_GI...	Beam	None	A992-50	Typical
106	M86	N40	N42		360	TWR_TOP_GI...	Beam	None	A992-50	Typical
107	M87	N42	N44		360	TWR_TOP_GI...	Beam	None	A992-50	Typical
108	M88	N44	N38		360	TWR_TOP_GI...	Beam	None	A992-50	Typical
109	M101	N49	N50			TWR_TOP_GI...	Beam	None	A992-50	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
110	M102	N50	N51			TWR_TOP_GI...	Beam	None	A992-50	Typical
111	M103	N51	N52			TWR_TOP_GI...	Beam	None	A992-50	Typical
112	M104	N52	N49			TWR_TOP_GI...	Beam	None	A992-50	Typical
113	M113	N67	N65			TWR_INNER_...	Beam	None	A992-50	Typical
114	M114	N65	N69			TWR_INNER_...	Beam	None	A992-50	Typical
115	M115	N66	N65			TWR_INNER_...	Beam	None	A992-50	Typical
116	M116	N65	N68			TWR_INNER_...	Beam	None	A992-50	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	M9	BenPIN	BenPIN				Yes	** NA **			None
2	M10	BenPIN	BenPIN				Yes	** NA **			None
3	M11	BenPIN	BenPIN				Yes	** NA **			None
4	M12	BenPIN	BenPIN				Yes	** NA **			None
5	M13	BenPIN	BenPIN				Yes	** NA **			None
6	M14	BenPIN	BenPIN				Yes	** NA **			None
7	M15	BenPIN	BenPIN				Yes	** NA **			None
8	M16	BenPIN	BenPIN				Yes	** NA **			None
9	M25	BenPIN	BenPIN				Yes	** NA **			None
10	M26	BenPIN	BenPIN				Yes	** NA **			None
11	M27	BenPIN	BenPIN				Yes	** NA **			None
12	M28	BenPIN	BenPIN				Yes	** NA **			None
13	M29	BenPIN	BenPIN				Yes	** NA **			None
14	M30	BenPIN	BenPIN				Yes	** NA **			None
15	M31	BenPIN	BenPIN				Yes	** NA **			None
16	M32	BenPIN	BenPIN				Yes	** NA **			None
17	M41	BenPIN	BenPIN				Yes	** NA **			None
18	M42	BenPIN	BenPIN				Yes	** NA **			None
19	M43	BenPIN	BenPIN				Yes	** NA **			None
20	M44	BenPIN	BenPIN				Yes	** NA **			None
21	M45	BenPIN	BenPIN				Yes	** NA **			None
22	M46	BenPIN	BenPIN				Yes	** NA **			None
23	M47	BenPIN	BenPIN				Yes	** NA **			None
24	M48	BenPIN	BenPIN				Yes	** NA **			None
25	M57	BenPIN	BenPIN				Yes	** NA **			None
26	M58	BenPIN	BenPIN				Yes	** NA **			None
27	M59	BenPIN	BenPIN				Yes	** NA **			None
28	M60	BenPIN	BenPIN				Yes	** NA **			None
29	M61	BenPIN	BenPIN				Yes	** NA **			None
30	M62	BenPIN	BenPIN				Yes	** NA **			None
31	M63	BenPIN	BenPIN				Yes	** NA **			None
32	M64	BenPIN	BenPIN				Yes	** NA **			None
33	M73	BenPIN	BenPIN				Yes	** NA **			None
34	M74	BenPIN	BenPIN				Yes	** NA **			None
35	M75	BenPIN	BenPIN				Yes	** NA **			None
36	M76	BenPIN	BenPIN				Yes	** NA **			None
37	M77	BenPIN	BenPIN				Yes	** NA **			None
38	M78	BenPIN	BenPIN				Yes	** NA **			None
39	M79	BenPIN	BenPIN				Yes	** NA **			None
40	M80	BenPIN	BenPIN				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...
41	M89	BenPIN	BenPIN				Yes	** NA **			None
42	M90	BenPIN	BenPIN				Yes	** NA **			None
43	M91	BenPIN	BenPIN				Yes	** NA **			None
44	M92	BenPIN	BenPIN				Yes	** NA **			None
45	M93	BenPIN	BenPIN				Yes	** NA **			None
46	M94	BenPIN	BenPIN				Yes	** NA **			None
47	M95	BenPIN	BenPIN				Yes	** NA **			None
48	M96	BenPIN	BenPIN				Yes	** NA **			None
49	M105	BenPIN	BenPIN				Yes	** NA **			None
50	M106	BenPIN	BenPIN				Yes	** NA **			None
51	M107	BenPIN	BenPIN				Yes	** NA **			None
52	M108	BenPIN	BenPIN				Yes	** NA **			None
53	M109	BenPIN	BenPIN				Yes	** NA **			None
54	M110	BenPIN	BenPIN				Yes	** NA **			None
55	M111	BenPIN	BenPIN				Yes	** NA **			None
56	M112	BenPIN	BenPIN				Yes	** NA **			None
57	M1						Yes	** NA **			None
58	M2						Yes	** NA **			None
59	M3						Yes	** NA **			None
60	M4						Yes	** NA **			None
61	M17						Yes	** NA **			None
62	M18						Yes	** NA **			None
63	M19						Yes	** NA **			None
64	M20						Yes	** NA **			None
65	M33						Yes	** NA **			None
66	M34						Yes	** NA **			None
67	M35						Yes	** NA **			None
68	M36						Yes	** NA **			None
69	M49	BenPIN					Yes	** NA **			None
70	M50	BenPIN					Yes	** NA **			None
71	M51	BenPIN					Yes	** NA **			None
72	M52	BenPIN					Yes	** NA **			None
73	M65						Yes	** NA **			None
74	M66						Yes	** NA **			None
75	M67						Yes	** NA **			None
76	M68						Yes	** NA **			None
77	M81						Yes	** NA **			None
78	M82						Yes	** NA **			None
79	M83						Yes	** NA **			None
80	M84						Yes	** NA **			None
81	M97						Yes	** NA **			None
82	M98						Yes	** NA **			None
83	M99						Yes	** NA **			None
84	M100						Yes	** NA **			None
85	M5	BenPIN	BenPIN				Yes				None
86	M6	BenPIN	BenPIN				Yes				None
87	M7	BenPIN	BenPIN				Yes				None
88	M8	BenPIN	BenPIN				Yes				None
89	M21	BenPIN	BenPIN				Yes				None
90	M22	BenPIN	BenPIN				Yes				None
91	M23	BenPIN	BenPIN				Yes				None
92	M24	BenPIN	BenPIN				Yes				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...
93	M37	BenPIN	BenPIN				Yes				None
94	M38	BenPIN	BenPIN				Yes				None
95	M39	BenPIN	BenPIN				Yes				None
96	M40	BenPIN	BenPIN				Yes				None
97	M53	BenPIN	BenPIN				Yes				None
98	M54	BenPIN	BenPIN				Yes				None
99	M55	BenPIN	BenPIN				Yes				None
100	M56	BenPIN	BenPIN				Yes				None
101	M69	BenPIN	BenPIN				Yes				None
102	M70	BenPIN	BenPIN				Yes				None
103	M71	BenPIN	BenPIN				Yes				None
104	M72	BenPIN	BenPIN				Yes				None
105	M85	BenPIN	BenPIN				Yes				None
106	M86	BenPIN	BenPIN				Yes				None
107	M87	BenPIN	BenPIN				Yes				None
108	M88	BenPIN	BenPIN				Yes				None
109	M101	BenPIN	BenPIN				Yes				None
110	M102	BenPIN	BenPIN				Yes				None
111	M103	BenPIN	BenPIN				Yes				None
112	M104	BenPIN	BenPIN				Yes				None
113	M113	BenPIN					Yes				None
114	M114		BenPIN				Yes				None
115	M115	BenPIN					Yes				None
116	M116		BenPIN				Yes				None

Hot Rolled Steel Design Parameters

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	L-torqu...	Kyy	Kzz	Cb	Function
1	M9	TWR_DIAG...	11.107	4.7	4.7	4.7	4.7	4.7	1.3	1		Lateral
2	M10	TWR_DIAG...	11.107	4.7	4.7	4.7	4.7	4.7	1.3	1		Lateral
3	M11	TWR_DIAG...	11.107	4.7	4.7	4.7	4.7	4.7	1.3	1		Lateral
4	M12	TWR_DIAG...	11.107	4.7	4.7	4.7	4.7	4.7	1.3	1		Lateral
5	M13	TWR_DIAG...	11.107	4.7	4.7	4.7	4.7	4.7	1.3	1		Lateral
6	M14	TWR_DIAG...	11.107	4.7	4.7	4.7	4.7	4.7	1.3	1		Lateral
7	M15	TWR_DIAG...	11.107	4.7	4.7	4.7	4.7	4.7	1.3	1		Lateral
8	M16	TWR_DIAG...	11.107	4.7	4.7	4.7	4.7	4.7	1.3	1		Lateral
9	M25	TWR_DIAG...	11.107	4.7	4.7	4.7	4.7	4.7	1.3	1		Lateral
10	M26	TWR_DIAG...	11.107	4.7	4.7	4.7	4.7	4.7	1.3	1		Lateral
11	M27	TWR_DIAG...	11.107	4.7	4.7	4.7	4.7	4.7	1.3	1		Lateral
12	M28	TWR_DIAG...	11.107	4.7	4.7	4.7	4.7	4.7	1.3	1		Lateral
13	M29	TWR_DIAG...	11.107	4.7	4.7	4.7	4.7	4.7	1.3	1		Lateral
14	M30	TWR_DIAG...	11.107	4.7	4.7	4.7	4.7	4.7	1.3	1		Lateral
15	M31	TWR_DIAG...	11.107	4.7	4.7	4.7	4.7	4.7	1.3	1		Lateral
16	M32	TWR_DIAG...	11.107	4.7	4.7	4.7	4.7	4.7	1.3	1		Lateral
17	M41	TWR_DIAG...	11.107	4.7	4.7	4.7	4.7	4.7	1.3	1		Lateral
18	M42	TWR_DIAG...	11.107	4.7	4.7	4.7	4.7	4.7	1.3	1		Lateral
19	M43	TWR_DIAG...	11.107	4.7	4.7	4.7	4.7	4.7	1.3	1		Lateral
20	M44	TWR_DIAG...	11.107	4.7	4.7	4.7	4.7	4.7	1.3	1		Lateral
21	M45	TWR_DIAG...	11.107	4.7	4.7	4.7	4.7	4.7	1.3	1		Lateral
22	M46	TWR_DIAG...	11.107	4.7	4.7	4.7	4.7	4.7	1.3	1		Lateral
23	M47	TWR_DIAG...	11.107	4.7	4.7	4.7	4.7	4.7	1.3	1		Lateral

Hot Rolled Steel Design Parameters (Continued)

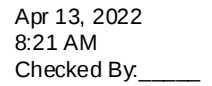
	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	L-torqu...	Kyy	Kzz	Cb	Function
24	M48	TWR_DIAG...	11.107	4.7	4.7	4.7	4.7	4.7	1.3	1		Lateral
25	M57	TWR_DIAG...	11.107	4.7	4.7	4.7	4.7	4.7	1.3	1		Lateral
26	M58	TWR_DIAG...	11.107	4.7	4.7	4.7	4.7	4.7	1.3	1		Lateral
27	M59	TWR_DIAG...	11.107	4.7	4.7	4.7	4.7	4.7	1.3	1		Lateral
28	M60	TWR_DIAG...	11.107	4.7	4.7	4.7	4.7	4.7	1.3	1		Lateral
29	M61	TWR_DIAG...	11.107	4.7	4.7	4.7	4.7	4.7	1.3	1		Lateral
30	M62	TWR_DIAG...	11.107	4.7	4.7	4.7	4.7	4.7	1.3	1		Lateral
31	M63	TWR_DIAG...	11.107	4.7	4.7	4.7	4.7	4.7	1.3	1		Lateral
32	M64	TWR_DIAG...	11.107	4.7	4.7	4.7	4.7	4.7	1.3	1		Lateral
33	M73	TWR_DIAG...	22.151	10.02	10.02	10.02	10.02	10.02	1.25	1		Lateral
34	M74	TWR_DIAG...	22.151	10.02	10.02	10.02	10.02	10.02	1.25	1		Lateral
35	M75	TWR_DIAG...	22.151	10.02	10.02	10.02	10.02	10.02	1.25	1		Lateral
36	M76	TWR_DIAG...	22.151	10.02	10.02	10.02	10.02	10.02	1.25	1		Lateral
37	M77	TWR_DIAG...	22.151	10.02	10.02	10.02	10.02	10.02	1.25	1		Lateral
38	M78	TWR_DIAG...	22.151	10.02	10.02	10.02	10.02	10.02	1.25	1		Lateral
39	M79	TWR_DIAG...	22.151	10.02	10.02	10.02	10.02	10.02	1.25	1		Lateral
40	M80	TWR_DIAG...	22.151	10.02	10.02	10.02	10.02	10.02	1.25	1		Lateral
41	M89	TWR_DIAG...	22.151	10.02	10.02	10.02	10.02	10.02	1.25	1		Lateral
42	M90	TWR_DIAG...	22.151	10.02	10.02	10.02	10.02	10.02	1.25	1		Lateral
43	M91	TWR_DIAG...	22.151	10.02	10.02	10.02	10.02	10.02	1.25	1		Lateral
44	M92	TWR_DIAG...	22.151	10.02	10.02	10.02	10.02	10.02	1.25	1		Lateral
45	M93	TWR_DIAG...	22.151	10.02	10.02	10.02	10.02	10.02	1.25	1		Lateral
46	M94	TWR_DIAG...	22.151	10.02	10.02	10.02	10.02	10.02	1.25	1		Lateral
47	M95	TWR_DIAG...	22.151	10.02	10.02	10.02	10.02	10.02	1.25	1		Lateral
48	M96	TWR_DIAG...	22.151	10.02	10.02	10.02	10.02	10.02	1.25	1		Lateral
49	M105	TWR_DIAG...	22.151	10.02	10.02	10.02	10.02	10.02	1.25	1		Lateral
50	M106	TWR_DIAG...	22.151	10.02	10.02	10.02	10.02	10.02	1.25	1		Lateral
51	M107	TWR_DIAG...	22.151	10.02	10.02	10.02	10.02	10.02	1.25	1		Lateral
52	M108	TWR_DIAG...	22.151	10.02	10.02	10.02	10.02	10.02	1.25	1		Lateral
53	M109	TWR_DIAG...	22.151	10.02	10.02	10.02	10.02	10.02	1.25	1		Lateral
54	M110	TWR_DIAG...	22.151	10.02	10.02	10.02	10.02	10.02	1.25	1		Lateral
55	M111	TWR_DIAG...	22.151	10.02	10.02	10.02	10.02	10.02	1.25	1		Lateral
56	M112	TWR_DIAG...	22.151	10.02	10.02	10.02	10.02	10.02	1.25	1		Lateral
57	M1	TWR_LEG...	10	10	10	10	10	10	1	1		Lateral
58	M2	TWR_LEG...	10	10	10	10	10	10	1	1		Lateral
59	M3	TWR_LEG...	10	10	10	10	10	10	1	1		Lateral
60	M4	TWR_LEG...	10	10	10	10	10	10	1	1		Lateral
61	M17	TWR_LEG...	10	10	10	10	10	10	1	1		Lateral
62	M18	TWR_LEG...	10	10	10	10	10	10	1	1		Lateral
63	M19	TWR_LEG...	10	10	10	10	10	10	1	1		Lateral
64	M20	TWR_LEG...	10	10	10	10	10	10	1	1		Lateral
65	M33	TWR_LEG...	10	10	10	10	10	10	1	1		Lateral
66	M34	TWR_LEG...	10	10	10	10	10	10	1	1		Lateral
67	M35	TWR_LEG...	10	10	10	10	10	10	1	1		Lateral
68	M36	TWR_LEG...	10	10	10	10	10	10	1	1		Lateral
69	M49	TWR_LEG...	10	10	10	10	10	10	1	1		Lateral
70	M50	TWR_LEG...	10	10	10	10	10	10	1	1		Lateral
71	M51	TWR_LEG...	10	10	10	10	10	10	1	1		Lateral
72	M52	TWR_LEG...	10	10	10	10	10	10	1	1		Lateral
73	M65	TWR_LEG...	20	20	20	20	20	20	1	1		Lateral
74	M66	TWR_LEG...	20	20	20	20	20	20	1	1		Lateral
75	M67	TWR_LEG...	20	20	20	20	20	20	1	1		Lateral

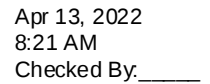
Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	L-torqu...	Kyy	Kzz	Cb	Function
76	M68	TWR_LEG...	20	20	20	20	20	20	1	1		Lateral
77	M81	TWR_LEG...	20	20	20	20	20	20	1	1		Lateral
78	M82	TWR_LEG...	20	20	20	20	20	20	1	1		Lateral
79	M83	TWR_LEG...	20	20	20	20	20	20	1	1		Lateral
80	M84	TWR_LEG...	20	20	20	20	20	20	1	1		Lateral
81	M97	TWR_LEG...	20	20	20	20	20	20	1	1		Lateral
82	M98	TWR_LEG...	20	20	20	20	20	20	1	1		Lateral
83	M99	TWR_LEG...	20	20	20	20	20	20	1	1		Lateral
84	M100	TWR_LEG...	20	20	20	20	20	20	1	1		Lateral
85	M5	TWR_TOP...	4.833	4.33	4.33	4.33	4.33	4.33	1	1		Lateral
86	M6	TWR_TOP...	4.833	4.33	4.33	4.33	4.33	4.33	1	1		Lateral
87	M7	TWR_TOP...	4.833	4.33	4.33	4.33	4.33	4.33	1	1		Lateral
88	M8	TWR_TOP...	4.833	4.33	4.33	4.33	4.33	4.33	1	1		Lateral
89	M21	TWR_TOP...	4.833	4.33	4.33	4.33	4.33	4.33	1	1		Lateral
90	M22	TWR_TOP...	4.833	4.33	4.33	4.33	4.33	4.33	1	1		Lateral
91	M23	TWR_TOP...	4.833	4.33	4.33	4.33	4.33	4.33	1	1		Lateral
92	M24	TWR_TOP...	4.833	4.33	4.33	4.33	4.33	4.33	1	1		Lateral
93	M37	TWR_TOP...	4.833	4.33	4.33	4.33	4.33	4.33	1	1		Lateral
94	M38	TWR_TOP...	4.833	4.33	4.33	4.33	4.33	4.33	1	1		Lateral
95	M39	TWR_TOP...	4.833	4.33	4.33	4.33	4.33	4.33	1	1		Lateral
96	M40	TWR_TOP...	4.833	4.33	4.33	4.33	4.33	4.33	1	1		Lateral
97	M53	TWR_TOP...	4.833	4.33	4.33	4.33	4.33	4.33	1	1		Lateral
98	M54	TWR_TOP...	4.833	4.33	4.33	4.33	4.33	4.33	1	1		Lateral
99	M55	TWR_TOP...	4.833	4.33	4.33	4.33	4.33	4.33	1	1		Lateral
100	M56	TWR_TOP...	4.833	4.33	4.33	4.33	4.33	4.33	1	1		Lateral
101	M69	TWR_TOP...	9.521	8.85	8.85	8.85	8.85	8.85	1	1		Lateral
102	M70	TWR_TOP...	9.521	8.85	8.85	8.85	8.85	8.85	1	1		Lateral
103	M71	TWR_TOP...	9.521	8.85	8.85	8.85	8.85	8.85	1	1		Lateral
104	M72	TWR_TOP...	9.521	8.85	8.85	8.85	8.85	8.85	1	1		Lateral
105	M85	TWR_TOP...	9.521	8.85	8.85	8.85	8.85	8.85	1	1		Lateral
106	M86	TWR_TOP...	9.521	8.85	8.85	8.85	8.85	8.85	1	1		Lateral
107	M87	TWR_TOP...	9.521	8.85	8.85	8.85	8.85	8.85	1	1		Lateral
108	M88	TWR_TOP...	9.521	8.85	8.85	8.85	8.85	8.85	1	1		Lateral
109	M101	TWR_TOP...	9.521	8.85	8.85	8.85	8.85	8.85	1	1		Lateral
110	M102	TWR_TOP...	9.521	8.85	8.85	8.85	8.85	8.85	1	1		Lateral
111	M103	TWR_TOP...	9.521	8.85	8.85	8.85	8.85	8.85	1	1		Lateral
112	M104	TWR_TOP...	9.521	8.85	8.85	8.85	8.85	8.85	1	1		Lateral
113	M113	TWR_INNE...	7.813	7.813	7.813	7.813	7.813	7.813	2.1	2.1		Lateral
114	M114	TWR_INNE...	7.813	7.813	7.813	7.813	7.813	7.813	2.1	2.1		Lateral
115	M115	TWR_INNE...	7.813	7.813	7.813	7.813	7.813	7.813	2.1	2.1		Lateral
116	M116	TWR_INNE...	7.813	7.813	7.813	7.813	7.813	7.813	2.1	2.1		Lateral

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed Area(Me...	Surface(...
1	Dead	DL		-1		56	388	28	4
2	No Ice Wind 0Å	None					36		
3	No Ice Wind 45Å	None					66		
4	No Ice Wind 90Å	None					36		
5	No Ice Wind 135Å	None					66		
6	No Ice Wind 180Å	None					36		





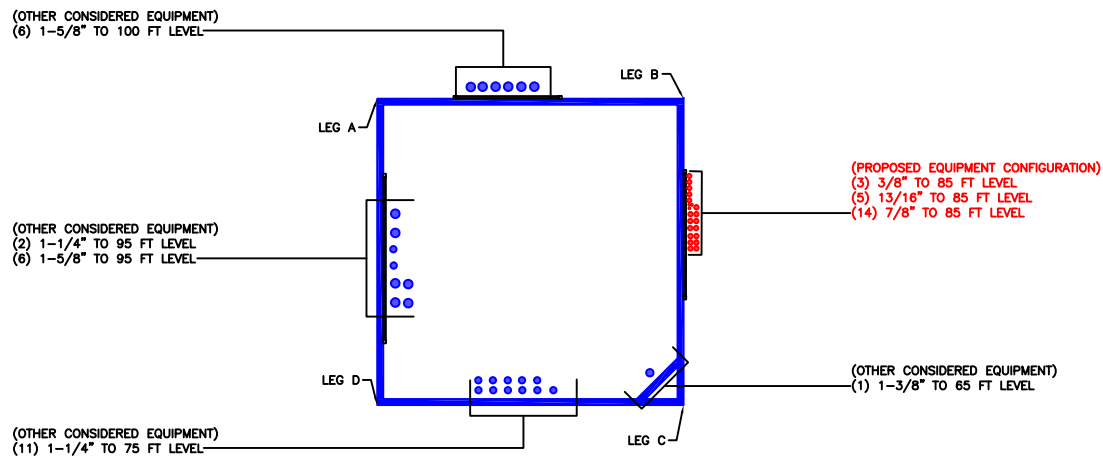
Envelope AISC 14th(360-10): LRFD Steel Code Checks (Continued)

	Member	Shape	Code Check	Loc[ft]	LC	Shear	Loc[ft]	Dir	LC	phi*Pnc...	phi*Pnt...	phi*Mn...	phi*Mn...	Cb	Eqn
30	M62	2L2x2x3/16x1/2	.324	4.975	17	.004	0	y	13	29.85	46.322	2.888	1.645	1	H1-1a
31	M63	2L2x2x3/16x1/2	.323	4.859	13	.004	0	y	17	29.85	46.322	2.888	1.645	1	H1-1a
32	M64	2L2x2x3/16x1/2	.317	4.859	5	.004	0	y	17	29.85	46.322	2.888	1.645	1	H1-1a
33	M73	2L4x4x3/8x1/2	.145	0	13	.002	11.0...	y	11	112.46	185.287	20.065	13.16	1	H1-1b*
34	M74	2L4x4x3/8x1/2	.146	0	9	.002	11.0...	y	3	112.46	185.287	20.065	13.16	1	H1-1b*
35	M75	2L4x4x3/8x1/2	.146	0	9	.002	11.0...	y	15	112.46	185.287	20.065	13.16	1	H1-1b*
36	M76	2L4x4x3/8x1/2	.145	0	5	.002	11.0...	y	7	112.46	185.287	20.065	13.16	1	H1-1b*
37	M77	2L4x4x3/8x1/2	.145	0	5	.002	11.0...	y	3	112.46	185.287	20.065	13.16	1	H1-1b*
38	M78	2L4x4x3/8x1/2	.146	0	17	.002	11.0...	y	11	112.46	185.287	20.065	13.16	1	H1-1b*
39	M79	2L4x4x3/8x1/2	.149	0	17	.002	11.0...	y	7	112.46	185.287	20.065	13.16	1	H1-1b*
40	M80	2L4x4x3/8x1/2	.147	0	13	.002	11.0...	y	15	112.46	185.287	20.065	13.16	1	H1-1b*
41	M89	2L4x4x3/8x1/2	.217	5.307	13	.002	11.0...	y	9	112.46	185.287	20.065	13.16	1	H1-1a
42	M90	2L4x4x3/8x1/2	.218	5.307	9	.002	11.0...	y	29	112.46	185.287	20.065	13.16	1	H1-1a
43	M91	2L4x4x3/8x1/2	.219	5.307	9	.002	11.0...	y	23	112.46	185.287	20.065	13.16	1	H1-1a
44	M92	2L4x4x3/8x1/2	.217	5.307	5	.002	11.0...	y	9	112.46	185.287	20.065	13.16	1	H1-1a
45	M93	2L4x4x3/8x1/2	.217	5.307	5	.002	11.0...	y	33	112.46	185.287	20.065	13.16	1	H1-1a
46	M94	2L4x4x3/8x1/2	.218	5.307	17	.002	11.0...	y	23	112.46	185.287	20.065	13.16	1	H1-1a
47	M95	2L4x4x3/8x1/2	.220	5.307	17	.002	11.0...	y	29	112.46	185.287	20.065	13.16	1	H1-1a
48	M96	2L4x4x3/8x1/2	.218	5.307	13	.002	11.0...	y	33	112.46	185.287	20.065	13.16	1	H1-1a
49	M105	2L4x4x3/8x1/2	.309	5.768	13	.002	11.0...	y	9	112.46	185.287	20.065	13.16	1	H1-1a
50	M106	2L4x4x3/8x1/2	.311	5.768	9	.002	11.0...	y	13	112.46	185.287	20.065	13.16	1	H1-1a
51	M107	2L4x4x3/8x1/2	.312	5.768	9	.002	11.0...	y	5	112.46	185.287	20.065	13.16	1	H1-1a
52	M108	2L4x4x3/8x1/2	.310	5.768	5	.002	11.0...	y	9	112.46	185.287	20.065	13.16	1	H1-1a
53	M109	2L4x4x3/8x1/2	.309	5.768	5	.002	11.0...	y	17	112.46	185.287	20.065	13.16	1	H1-1a
54	M110	2L4x4x3/8x1/2	.310	5.768	17	.002	11.0...	y	5	112.46	185.287	20.065	13.16	1	H1-1a
55	M111	2L4x4x3/8x1/2	.312	5.768	17	.002	11.0...	y	13	112.46	185.287	20.065	13.16	1	H1-1a
56	M112	2L4x4x3/8x1/2	.310	5.768	13	.002	11.0...	y	17	112.46	185.287	20.065	13.16	1	H1-1a
57	M1	HSS6x6x1/4	.056	4.896	3	.009	0	z	17	181.658	216.936	38.64	38.64	1	H1-1b
58	M2	HSS6x6x1/4	.058	5	7	.009	0	y	17	181.658	216.936	38.64	38.64	1	H1-1b
59	M3	HSS6x6x1/4	.056	5	11	.009	0	z	17	181.658	216.936	38.64	38.64	1	H1-1b
60	M4	HSS6x6x1/4	.061	5	15	.009	0	y	17	181.658	216.936	38.64	38.64	1	H1-1b
61	M17	HSS6x6x1/4	.071	10	3	.007	5	z	10	181.658	216.936	38.64	38.64	1	H1-1b
62	M18	HSS6x6x1/4	.073	10	7	.007	5	y	17	181.658	216.936	38.64	38.64	1	H1-1b
63	M19	HSS6x6x1/4	.071	10	11	.007	5	z	18	181.658	216.936	38.64	38.64	1	H1-1b
64	M20	HSS6x6x1/4	.077	10	15	.007	5	y	10	181.658	216.936	38.64	38.64	1	H1-1b
65	M33	HSS6x6x1/4	.122	0	3	.007	0	y	13	181.658	216.936	38.64	38.64	1	H1-1b
66	M34	HSS6x6x1/4	.123	0	7	.007	0	y	17	181.658	216.936	38.64	38.64	1	H1-1b
67	M35	HSS6x6x1/4	.121	0	11	.007	0	z	17	181.658	216.936	38.64	38.64	1	H1-1b
68	M36	HSS6x6x1/4	.131	0	15	.007	0	y	9	181.658	216.936	38.64	38.64	1	H1-1b*
69	M49	HSS6x6x1/4	.276	10	3	.009	5	z	17	181.658	216.936	38.64	38.64	1	H1-1a
70	M50	HSS6x6x1/4	.278	10	7	.009	5	y	17	181.658	216.936	38.64	38.64	1	H1-1a
71	M51	HSS6x6x1/4	.275	10	11	.009	5	z	17	181.658	216.936	38.64	38.64	1	H1-1a
72	M52	HSS6x6x1/4	.288	10	15	.009	5	y	17	181.658	216.936	38.64	38.64	1	H1-1a
73	M65	HSS8x8x1/4	.149	0	13	.008	0	y	13	199.192	293.94	66.288	66.288	1	H1-1b*
74	M66	HSS8x8x1/4	.151	0	9	.008	0	y	9	199.192	293.94	66.288	66.288	1	H1-1b*
75	M67	HSS8x8x1/4	.148	0	5	.008	0	y	5	199.192	293.94	66.288	66.288	1	H1-1b*
76	M68	HSS8x8x1/4	.152	0	17	.008	0	y	17	199.192	293.94	66.288	66.288	1	H1-1b*
77	M81	HSS8x8x1/4	.297	20	13	.006	10	y	13	199.192	293.94	66.288	66.288	1	H1-1a
78	M82	HSS8x8x1/4	.298	0	9	.006	10	y	9	199.192	293.94	66.288	66.288	1	H1-1a
79	M83	HSS8x8x1/4	.295	0	5	.006	10	y	5	199.192	293.94	66.288	66.288	1	H1-1a
80	M84	HSS8x8x1/4	.299	20	17	.006	10	y	17	199.192	293.94	66.288	66.288	1	H1-1a
81	M97	HSS8x8x1/4	.396	20	13	.007	10	z	9	199.192	293.94	66.288	66.288	1	H1-1a

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

	Member	Shape	Code Check	Loc[ft]	LC	Shear	Loc[ft]	Dir	LC	phi*Pnc...	phi*Pnt...	phi*Mn...	phi*Mn...	Cb	Eqn
82	M98	HSS8x8x1/4	.398	20	9	.007	10	z	13	199.192	293.94	66.288	66.288	1	H1-1a
83	M99	HSS8x8x1/4	.395	20	5	.007	10	z	9	199.192	293.94	66.288	66.288	1	H1-1a
84	M100	HSS8x8x1/4	.398	20	17	.007	10	z	13	199.192	293.94	66.288	66.288	1	H1-1a
85	M5	C6X10.5	.004	2.417	23	.001	4.833	y	23	59.887	99.468	2.428	15.224	1	H1-1b
86	M6	C6X10.5	.005	2.417	25	.001	4.833	y	25	59.887	99.468	2.428	15.224	1	H1-1b
87	M7	C6X10.5	.005	2.417	31	.001	4.833	y	25	59.887	99.468	2.428	15.224	1	H1-1b
88	M8	C6X10.5	.005	2.417	33	.001	0	y	23	59.887	99.468	2.428	15.224	1	H1-1b
89	M21	C6X10.5	.052	2.417	2	.016	4.833	y	2	59.887	99.468	2.428	15.224	1	H1-1b
90	M22	C6X10.5	.056	2.417	2	.017	4.833	y	2	59.887	99.468	2.428	15.224	1	H1-1b
91	M23	C6X10.5	.060	2.417	2	.019	4.833	y	2	59.887	99.468	2.428	15.224	1	H1-1b
92	M24	C6X10.5	.055	2.467	2	.017	4.833	y	2	59.887	99.468	2.428	15.224	1	H1-1b
93	M37	C6X10.5	.054	2.417	2	.016	4.833	y	2	59.887	99.468	2.428	15.224	1	H1-1b
94	M38	C6X10.5	.057	2.417	2	.017	4.833	y	2	59.887	99.468	2.428	15.224	1	H1-1b
95	M39	C6X10.5	.062	2.417	2	.019	4.833	y	2	59.887	99.468	2.428	15.224	1	H1-1b
96	M40	C6X10.5	.057	2.467	2	.017	4.833	y	2	59.887	99.468	2.428	15.224	1	H1-1b
97	M53	C6X10.5	.055	2.417	2	.016	4.833	y	2	59.887	99.468	2.428	15.224	1	H1-1b
98	M54	C6X10.5	.058	2.417	2	.017	4.833	y	2	59.887	99.468	2.428	15.224	1	H1-1b
99	M55	C6X10.5	.063	2.417	2	.019	4.833	y	2	59.887	99.468	2.428	15.224	1	H1-1b
100	M56	C6X10.5	.058	2.467	2	.017	4.833	y	2	59.887	99.468	2.428	15.224	1	H1-1b
101	M69	W16X45	.476	4.76	11	.134	0	y	11	426.018	598.5	54.375	273.12	1	H1-1b
102	M70	W16X45	.479	4.76	7	.134	9.521	y	7	426.018	598.5	54.375	273.12	1	H1-1b
103	M71	W16X45	.477	4.76	3	.134	9.521	y	3	426.018	598.5	54.375	273.12	1	H1-1b
104	M72	W16X45	.494	4.76	15	.139	9.521	y	15	426.018	598.5	54.375	273.12	1	H1-1b
105	M85	W6X12	.154	0	4	.003	9.521	y	31	59.891	159.75	8.7	22.79	1	H1-1b*
106	M86	W6X12	.158	0	16	.003	9.521	y	27	59.891	159.75	8.7	22.79	1	H1-1b*
107	M87	W6X12	.154	0	12	.003	9.521	y	31	59.891	159.75	8.7	22.79	1	H1-1b*
108	M88	W6X12	.156	0	8	.003	9.521	y	27	59.891	159.75	8.7	22.79	1	H1-1b*
109	M101	W6X12	.275	4.76	4	.003	9.521	y	31	59.891	159.75	8.7	22.79	1	H1-1a
110	M102	W6X12	.278	4.76	16	.003	9.521	y	27	59.891	159.75	8.7	22.79	1	H1-1a
111	M103	W6X12	.275	4.76	12	.003	9.521	y	31	59.891	159.75	8.7	22.79	1	H1-1a
112	M104	W6X12	.278	4.76	8	.003	9.521	y	27	59.891	159.75	8.7	22.79	1	H1-1a
113	M113	W10X33	.404	4.395	11	.503	3.092	y	11	205.996	436.95	52.5	142.087	1	H1-1b
114	M114	W10X33	.408	3.418	3	.504	4.72	y	3	205.996	436.95	52.5	142.087	1	H1-1b
115	M115	W10X33	.407	4.395	7	.506	3.092	y	7	205.996	436.95	52.5	142.087	1	H1-1b
116	M116	W10X33	.425	3.418	15	.526	4.72	y	15	205.996	436.95	52.5	142.087	1	H1-1b

APPENDIX B
BASE LEVEL DRAWING



CROWN REGION ADDRESS

USA

5 4 3 2 1 0 9 8 7 6 5 4 3 2 1 0

29/05/20
27/05/20
31/05/20
18/11/20
18/02/21
16/03/21
12/04/21
07/06/21
07/04/22
UPDATED PER WORK ORDER 1806025
UPDATED PER WORK ORDER 1801217
UPDATED PER WORK ORDER 1802464
UPDATED PER WORK ORDER 1806333
UPDATED PER WORK ORDER 1806775
UPDATED PER WORK ORDER 1806007
UPDATED PER WORK ORDER 1921723
UPDATED PER WORK ORDER 2014682
UPDATED PER WORK ORDER 2006294

DRAWN BY: AAM
CHECKED BY:
DRAWING DATE: 19/05/06

SITE NUMBER:
SITE NAME:
SITE NAME

CT HAMDEN NORTH CAC

BUSINESS UNIT NUMBER

800529

SITE ADDRESS

890 EVERGREEN AVENUE
HAMDEN, CT 06518
NEW HAVEN COUNTY
USA

SHEET TITLE

BASE LEVEL DRAWING

SHEET NUMBER

N.T.S.

A1-0

APPENDIX C

ADDITIONAL CALCULATIONS

Bolt Checks

Section #	Elevation	Component Type	Bolt Grade	Bolt Size (in)	# of Bolts	Maximum Load (k)	Maximum Load per Bolt (k)	Allowable Load per Bolt (k)	Ratio	Allowable Ratio	% Capacity	Criteria
L1	100	Diagonal	A325N	0.875	2	2.203	1.102	15.588	0.071	1.000	7.1%	1
L2	90	Diagonal	A325N	0.875	2	4.712	2.356	15.588	0.151	1.000	15.1%	1
L3	80	Diagonal	A325N	0.875	2	6.898	3.449	15.588	0.221	1.000	22.1%	1
L4	70	Leg	A325N	0.875	4	43.181	21.59	41.556	0.520	1.000	52.0%	1
		Diagonal	A325N	0.875	2	9.151	4.576	15.588	0.294	1.000	29.4%	1
T1	60	Diagonal	A325N	0.875	2	16.704	8.352	41.372	0.202	1.000	20.2%	1
T2	40	Top Girt	A325N	0.875	2	13.76	6.88	24.354	0.283	1.000	28.3%	1
		Diagonal	A325N	0.875	2	23.58	11.79	41.372	0.285	1.000	28.5%	1
T3	20	Top Girt	A325N	0.875	2	21.689	10.844	24.354	0.445	1.000	44.5%	1
		Diagonal	A325N	0.875	2	33.797	16.898	41.372	0.408	1.000	40.8%	1
										Maximum Capacity	52.0%	

Self Support Anchor Rod Capacity



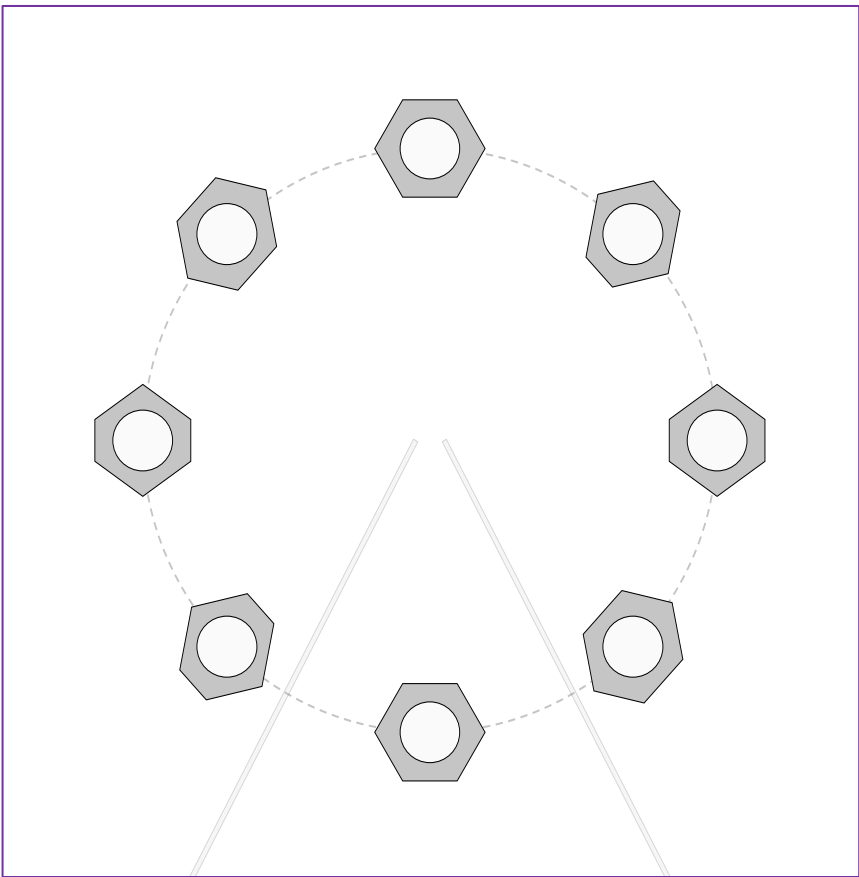
Site Info	
BU #	800529
Site Name	T HAMDEN NORTH CA
Order #	586250 Rev. 0

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	Yes
l_{ar} (in)	0

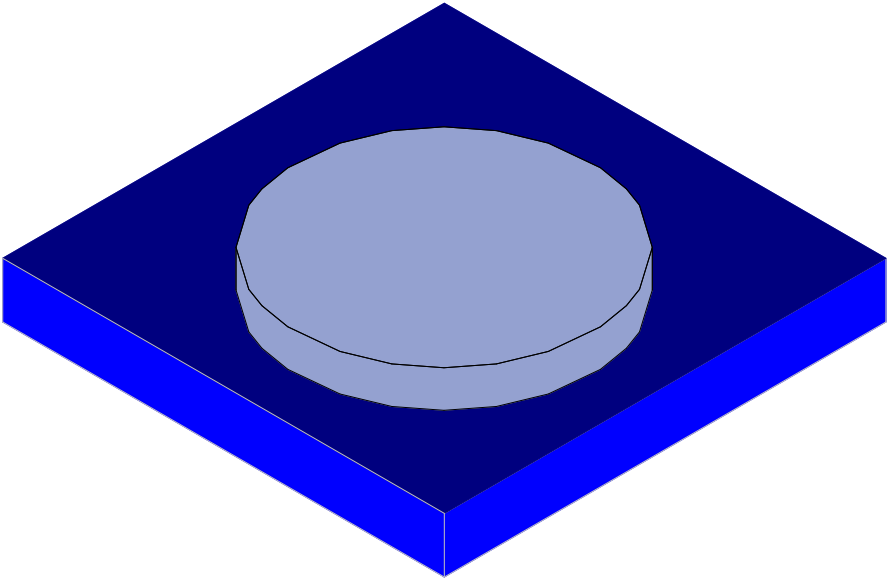
Applied Loads		
	Comp.	Uplift
Axial Force (kips)	132.46	106.78
Shear Force (kips)	20.61	15.52

Considered Eccentricity	
Leg Mod Eccentricity (in)	0.000
Anchor Rod N.A Shift (in)	0.000
Total Eccentricity (in)	0.000

*Anchor Rod Eccentricity Applied



Connection Properties		Analysis Results	
Anchor Rod Data		Anchor Rod Summary (units of kips, kip-in)	
(8) 1-1/4" ϕ bolts (A36 N; Fy=36 ksi, Fu=58 ksi)		$Pu_t = 13.35$	$\phi Pn_t = 42.15$
l_{ar} (in): 0		$Vu = 1.94$	$\phi Vn = 26.69$
		$Mu = n/a$	$\phi Mn = n/a$
			Stress Rating
			31.7%
			Pass



Results for LC 1, 1.4 D

GPD

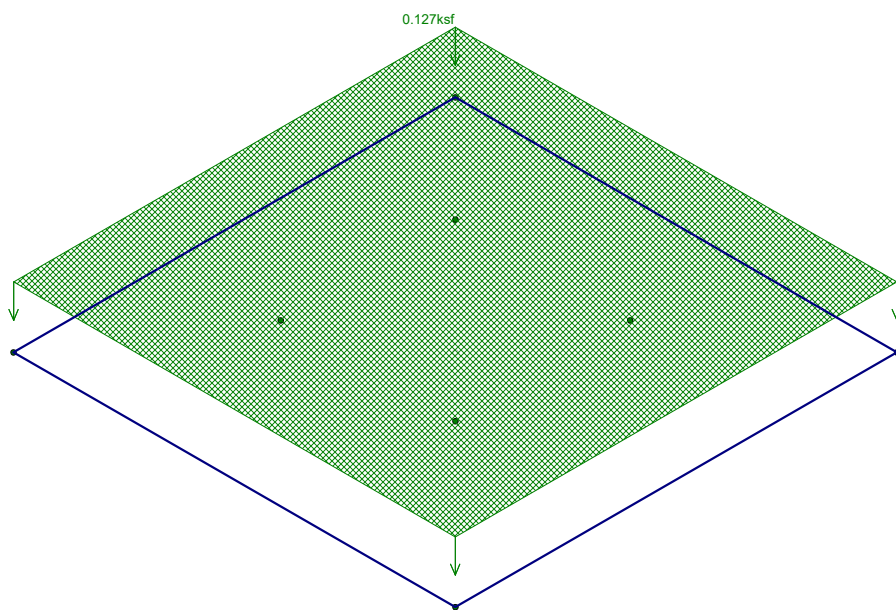
KM

2022777.800529.13

CT HAMDEN NORTH CAC
Tower Foundation

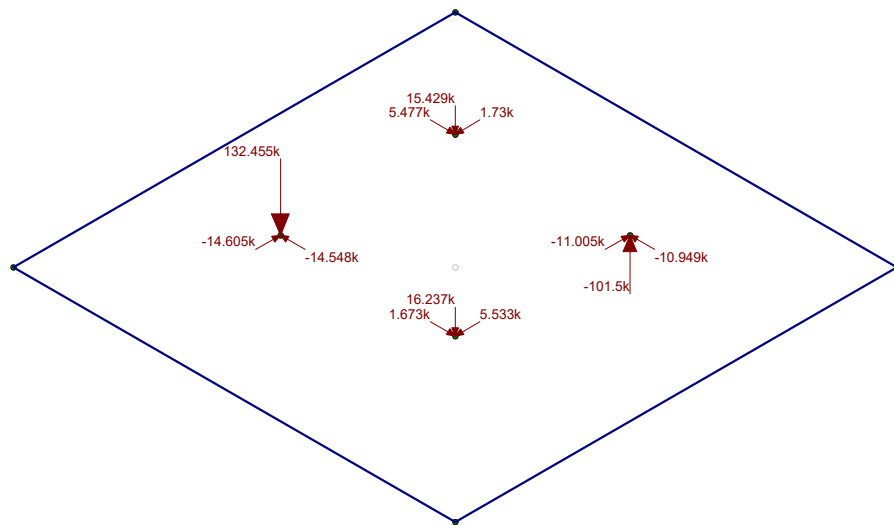
SK - 1

800529.fnd



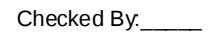
Loads: DL - Dead Load
Results for LC 1, 1.4 D

GPD	CT HAMDEN NORTH CAC Soil Dead Load	SK - 2
KM		
2022777.800529.13		800529.fnd



Loads: OL9 - Other Load 9
Results for LC 1, 1.4 D

GPD	CT HAMDEN NORTH CAC Tower Leg Forces	SK - 3
KM		
2022777.800529.13		800529.fnd

Page 1

Load Combinations (Continued)

	Label	Solve	S...A...	SF	Ca...	Fa...	Cat...	Fa...	Ca...	Fa...	Ca...	Fa...	Ca...	Fa...	Ca...	Fa...	Ca...	Fa...	Ca...	Fa...
29	1.2 D + 1 L + 1 W @ 180Å	Yes	Y...		DL	1.2	OL11	1												
30	0.9 D + 1 W @ 180Å	Yes	Y...		DL	0.9	OL12	1												
31	1.2 D + 1 L + 1 W @ 225Å	Yes	Y...		DL	1.2	OL13	1												
32	0.9 D + 1 W @ 225Å	Yes	Y...		DL	0.9	OL14	1												
33	1.2 D + 1 L + 1 W @ 270Å	Yes	Y...		DL	1.2	OL15	1												
34	0.9 D + 1 W @ 270Å	Yes	Y...		DL	0.9	OL16	1												
35	1.2 D + 1 L + 1 W @ 315Å	Yes	Y...		DL	1.2	OL17	1												
36	0.9 D + 1 W @ 315Å	Yes	Y...		DL	0.9	OL18	1												

Design Strips

	Label	Rebar Angle from PL...	No. of Design Cuts	Design Rule
1	DS1	0	50	Square
2	DS2	90	50	Square

Envelope Slab Soil Pressures (By Combination)

	Label	UC	LC	Soil Pressure[ksf]	Allowable Bearing[ksf]	Point
1	S2	0.357	27	1.608	4.5	S2

Slab Overturning Safety Factors (By Combination)

	LC	Slab	Angle[deg]	Mo-xx[k-ft]	Ms-xx[k-ft]	Mo-zz[k-ft]	Ms-zz[k-ft]	Ms-xx/Mo-xx	Ms-zz/Mo-zz
1	19	S2	0	0	7345.228	0	7343.736	9.99+	9.99+
2	20	S2	0	0	6469.59	0	6469.296	9.99+	9.99+
3	21	S2	0	0	6477.353	808.776	5651.992	9.99+	6.988
4	22	S2	0	0	4794.844	1075.735	4238.994	9.99+	3.941
5	23	S2	0	411.708	5651.992	293.2	5651.992	9.99+	9.99+
6	24	S2	0	679.013	4238.994	561.014	4238.994	6.243	7.556
7	25	S2	0	820.1	5651.992	0	6486.616	6.892	9.99+
8	26	S2	0	1086.536	4238.994	0	4803.755	3.901	9.99+
9	27	S2	0	308.631	5651.992	411.037	5651.992	9.99+	9.99+
10	28	S2	0	575.924	4238.994	678.061	4238.994	7.36	6.252
11	29	S2	0	0	6331.591	809.524	5651.992	9.99+	6.982
12	30	S2	0	0	4649.035	1075.704	4238.994	9.99+	3.941
13	31	S2	0	409.627	5651.992	293.925	5651.992	9.99+	9.99+
14	32	S2	0	677.125	4238.994	560.976	4238.994	6.26	7.556
15	33	S2	0	818.038	5651.992	0	6321.012	6.909	9.99+
16	34	S2	0	1084.653	4238.994	0	4638.186	3.908	9.99+
17	35	S2	0	306.567	5651.992	410.309	5651.992	9.99+	9.99+
18	36	S2	0	574.023	4238.994	678.082	4238.994	7.385	6.251

Slab Sliding Safety Factors (By Combination)

	LC	Slab	Angle[deg]	Va-xx[k]	Vr-xx[k]	Va-zz[k]	Vr-zz[k]	SR-xx	SR-zz
1	19	S2	0	0	183.594	0	183.594	9.99+	9.99+
2	20	S2	0	0	161.717	0	161.717	9.99+	9.99+
3	21	S2	0	0	160.086	25.946	160.086	9.99+	6.17
4	22	S2	0	0	118.025	25.947	118.025	9.99+	4.549
5	23	S2	0	18.348	160.086	18.349	160.086	8.725	8.725
6	24	S2	0	18.348	118.025	18.347	118.025	6.433	6.433
7	25	S2	0	25.946	160.086	0	160.086	6.17	9.99+
8	26	S2	0	25.947	118.025	0	118.025	4.549	9.99+
9	27	S2	0	18.347	160.086	18.347	160.086	8.725	8.725

Slab Sliding Safety Factors (By Combination) (Continued)

	LC	Slab	Angle[deg]	Va-xx[k]	Vr-xx[k]	Va-zz[k]	Vr-zz[k]	SR-xx	SR-zz
10	28	S2	0	18.347	118.025	18.349	118.025	6.433	6.432
11	29	S2	0	0	160.086	25.945	160.086	9.99+	6.17
12	30	S2	0	0	118.025	25.947	118.025	9.99+	4.549
13	31	S2	0	18.348	160.086	18.348	160.086	8.725	8.725
14	32	S2	0	18.348	118.025	18.348	118.025	6.433	6.433
15	33	S2	0	25.946	160.086	0	160.086	6.17	9.99+
16	34	S2	0	25.947	118.025	0	118.025	4.549	9.99+
17	35	S2	0	18.348	160.086	18.348	160.086	8.725	8.725
18	36	S2	0	18.347	118.025	18.347	118.025	6.433	6.433

Strip Reinforcing (Envelope)

	Label	UC Top	LC	Top Bars	Governin...	UC Bot	LC	Bot Bars/...	Governin...	UC Shear	LC	Governin...
1	DS1	0.051	8	#8@9in	DS1-X17	0.107	7	#8@9in	DS1-X34	0.124	7	DS1-X25
2	DS2	0.051	4	#8@9in	DS2-X17	0.107	11	#8@9in	DS2-X17	0.123	11	DS2-X29

Pedestals/Posts Design Values

	Label	UC	Gov LC	Shear UC	Gov LC	Dir	Phi Used	Vertical Reinf	Shear Reinf
1	Pier	0.003	2	0	N/A	x	0.65	CUSTOM	CUSTOM

Pedestals/Posts Punching Shear Values

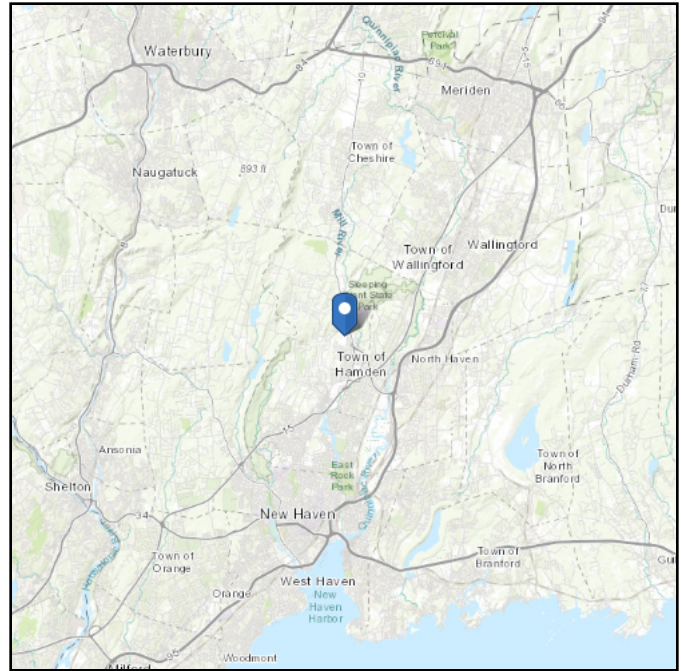
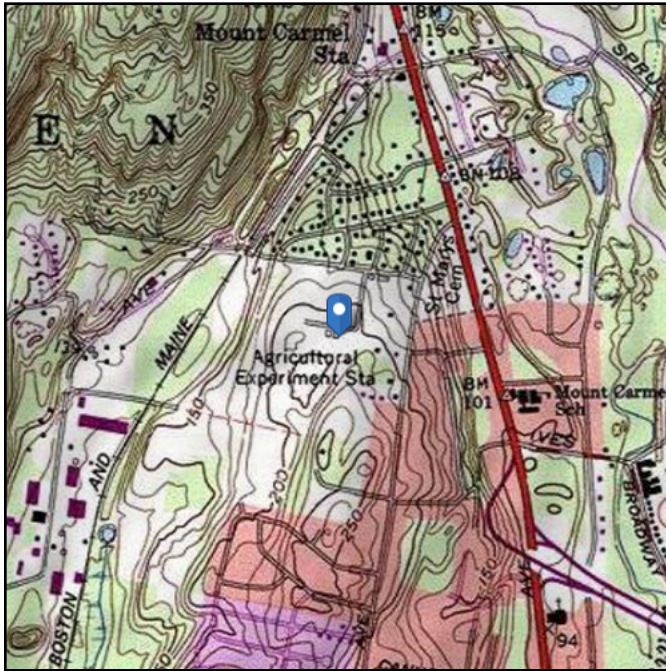
	Label	UC	Gov LC	Location	Vuy[k]	Muz[k-ft]	Mux[k-ft]	Total Stress[...]	Phi*Vny[ksi]
1	Pier	0.008	2	INTERIOR	27.946	0	0	0.001	0.155

ASCE 7 Hazards Report

Address:
No Address at This
Location

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Default (see
Section 11.4.3)

Elevation: 205.84 ft (NAVD 88)
Latitude: 41.406639
Longitude: -72.904533



Wind

Results:

Wind Speed:	119 Vmph
10-year MRI	75 Vmph
25-year MRI	85 Vmph
50-year MRI	90 Vmph
100-year MRI	98 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Fri Sep 10 2021

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 7-16 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

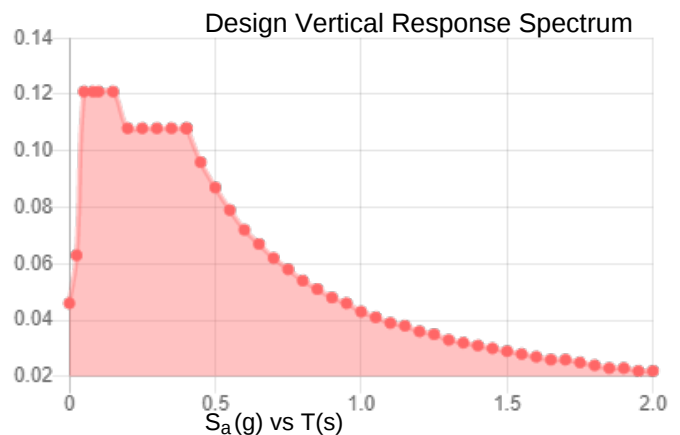
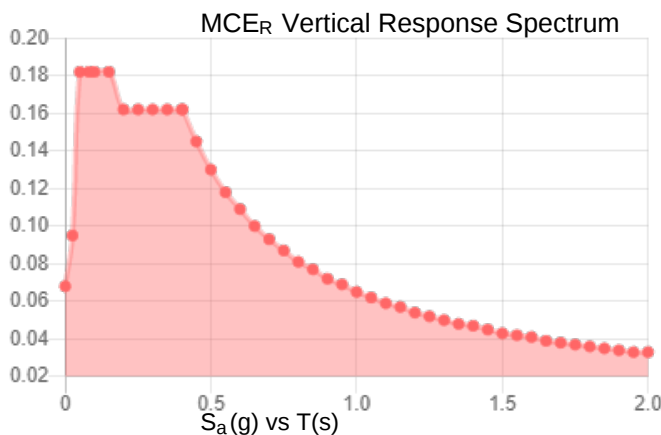
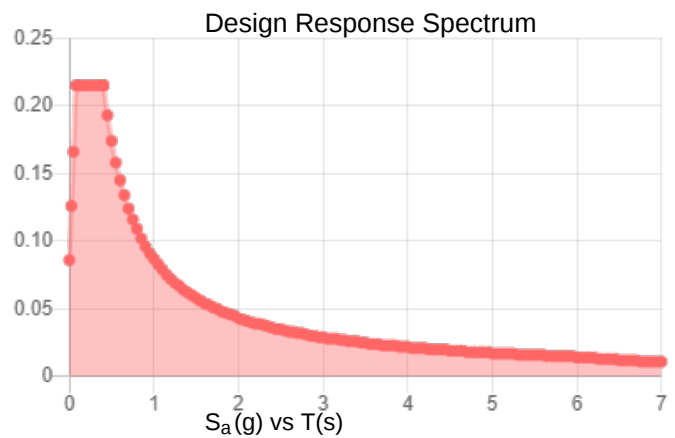
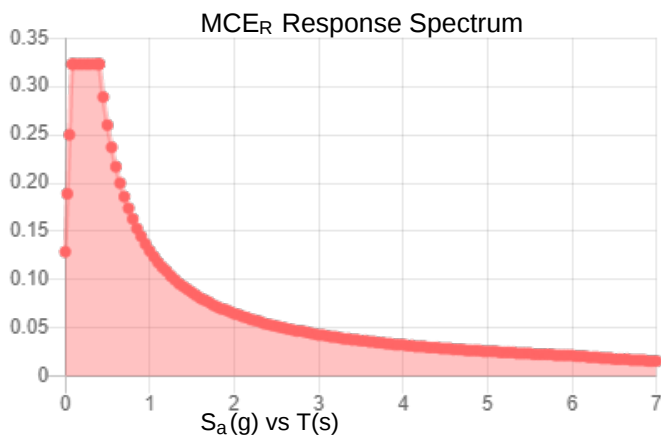
Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

Site Soil Class: D - Default (see Section 11.4.3)

Results:

S_S :	0.202	S_{D1} :	0.087
S_1 :	0.054	T_L :	6
F_a :	1.6	PGA :	0.113
F_v :	2.4	PGA _M :	0.178
S_{MS} :	0.323	F_{PGA} :	1.575
S_{M1} :	0.13	I_e :	1
S_{DS} :	0.215	C_v :	0.704

Seismic Design Category B



Data Accessed:

Fri Sep 10 2021

Date Source:

USGS Seismic Design Maps based on ASCE/SEI 7-16 and ASCE/SEI 7-16 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-16 Ch. 21 are available from USGS.

Results:

Ice Thickness: 1.00 in.
Concurrent Temperature: 15 F
Gust Speed: 50 mph

Data Source: Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8

Date Accessed: Fri Sep 10 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 500-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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RADIO FREQUENCY EMISSIONS ANALYSIS REPORT **EVALUATION OF HUMAN EXPOSURE POTENTIAL TO NON-IONIZING EMISSIONS**



Site Name:	HAMDEN SR 10
Crown Castle Site#	800529
Site ID:	CTL02039
Project Name:	5G NR 1SR C-BAND
Address:	890 EVERGREEN AVENUE, HAMDEN, CT 06518
County:	NEW HAVEN
Latitude:	41.4067139
Longitude:	-72.9042211
Structure Type:	SILO
Property Owner:	CONN AGRICULTURAL EXPT STATION
Property Contact:	VERONICA CHAPMAN

AT&T Existing Facility

Report Information

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Site Compliance Statement

Compliance Status	Compliant
Cumulative General Population % MPE (Ground Level)	94.55%

September 26, 2022

Emissions Analysis for Site: **CTL02039-- HAMDEN SR 10**

MobileComm Professionals, Inc was directed to analyze the proposed AT&T facility located at **890 EVERGREEN AVENUE, HAMDEN, CT 06518**, for the purpose of determining whether the emissions from the Proposed AT&T Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of milliwatts per square centimeter (mW/cm²). The number of mW/cm² calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of milliwatts per square centimeter (mW/cm²). The general population exposure limits for the 700 and 850 MHz Bands are approximately 0.467 mW/cm² and 0.567 mW/cm² respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS), 2300 MHz (WCS), 3450 MHz (DoD Band) and 3840 MHz (C Band) bands is 1 mW/cm². Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

1. Theoretical Calculations

Calculations were done for the proposed AT&T Wireless antenna facility located at **890 EVERGREEN AVENUE, HAMDEN, CT 06518** using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower.

For all calculations, all equipment was calculated using the following assumptions:

- 1) 4 LTE channels (700 MHz Band 14) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 2) 4 LTE/5G channels (1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 3) 4 LTE channels (WCS Band – 2300 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 25 Watts per Channel.
- 4) 1 NR channel (DoD Band - 3450 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 108.44 Watts per Channel.
- 5) 1 NR channel (C Band - 3840 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 108.44 Watts per Channel.
- 6) 4 LTE channels (700 MHz Band 12) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 7) 4 5G channels (850 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 8) 4 LTE/5G channels (2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 9) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

- 10) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 11) The antennas used in this modeling are the CCI TPA65R-BU6D for the 700 MHz(Band 14) / 1900 MHz / 2300 MHz channel(s), the Ericsson AIR6419 for the DoD Band (3450 MHz) channel(s), the Ericsson AIR6449 for the C Band (3840 MHz) channel(s), the CCI DMP65R-BU6D for the 700 MHz(B12) / 850 MHz / 2100 MHz channel(s) in Sector A, CCI TPA65R-BU6D for the 700 MHz(Band 14) / 1900 MHz / 2300 MHz channel(s), the Ericsson AIR6419 for the DoD Band (3450 MHz) channel(s), the Ericsson AIR6449 for the C Band (3840 MHz) channel(s), the CCI DMP65R-BU6D for the 700 MHz(B12) / 850 MHz / 2100 MHz channel(s) in Sector B, CCI TPA65R-BU6D for the 700 MHz(Band 14) / 1900 MHz / 2300 MHz channel(s), the Ericsson AIR6419 for the DoD Band (3450 MHz) channel(s), the Ericsson AIR6449 for the C Band (3840 MHz) channel(s), the CCI DMP65R-BU6D for the 700 MHz(B12) / 850 MHz / 2100 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 12) The antenna mounting height centerline of the proposed antennas is 85 feet above ground level (AGL).
- 13) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.
- 14) All calculations were done with respect to uncontrolled / general population threshold limits.

2. Antenna Inventory & Power Data

Sector	Ant ID	Operator	Antenna Mfg	Antenna Model	Antenna Type	FREQ. (MHz)	TECH.	AZ. (°)	H B W (°)	Antenna Gain (dBd)	Antenna Aperture (ft)	#of Channels	Transmitter Power (Watts)	Total ERP (Watts)	Total EIRP (Watts)	Total Ant Transmitter Power (Watts)	Total Ant ERP(Watts)	Ant MPE%
A	1	AT&T	CCI	TPA65R-BU6D	Panel	700	LTE(B14)	60	73	12.35	6	4	160.00	2748.65	4509.41	420	12891.37	7.98%
A	1	AT&T	CCI	TPA65R-BU6D	Panel	1900	LTE/5G	60	66	15.95	6	4	160.00	6296.80	10330.47			
A	1	AT&T	CCI	TPA65R-BU6D	Panel	2300	LTE	60	60	15.85	6	4	100.00	3845.92	6309.57			
A	2-1	AT&T	Ericsson	AIR 6419 B77G	Panel	3450	5G	60	11	23.5	2.55	1	108.44	24277.05	39828.68	108.44	24277.05	11.61%
A	2-2	AT&T	Ericsson	AIR 6449 B77D	Panel	3840	5G	60	11	23.5	2.55	1	108.44	24277.05	39828.68	108.44	24277.05	12.60%
A	3	AT&T	CCI	DMP65R-BU6D	Panel	700	LTE(B12)	60	74	11.85	6	4	160.00	2449.74	4019.02	560	14707.62	9.79%
A	3	AT&T	CCI	DMP65R-BU6D	Panel	850	5G	60	63	12.45	6	4	160.00	2812.68	4614.45			
A	3	AT&T	CCI	DMP65R-BU6D	Panel	2100	LTE/5G	60	68	15.95	6	4	240.00	9445.20	15495.70			
B	4	AT&T	CCI	TPA65R-BU6D	Panel	700	LTE(B14)	190	73	12.35	6	4	160.00	2748.65	4509.41	420	12891.37	7.98%
B	4	AT&T	CCI	TPA65R-BU6D	Panel	1900	LTE/5G	190	66	15.95	6	4	160.00	6296.80	10330.47			
B	4	AT&T	CCI	TPA65R-BU6D	Panel	2300	LTE	190	60	15.85	6	4	100.00	3845.92	6309.57			
B	5-1	AT&T	Ericsson	AIR 6419 B77G	Panel	3450	5G	190	11	23.5	2.55	1	108.44	24277.05	39828.68	108.44	24277.05	11.61%
B	5-2	AT&T	Ericsson	AIR 6449 B77D	Panel	3840	5G	190	11	23.5	2.55	1	108.44	24277.05	39828.68	108.44	24277.05	12.60%
B	6	AT&T	CCI	DMP65R-BU6D	Panel	700	LTE(B12)	190	74	11.85	6	4	160.00	2449.74	4019.02	560	14707.62	9.79%
B	6	AT&T	CCI	DMP65R-BU6D	Panel	850	5G	190	63	12.45	6	4	160.00	2812.68	4614.45			
B	6	AT&T	CCI	DMP65R-BU6D	Panel	2100	LTE/5G	190	68	15.95	6	4	240.00	9445.20	15495.70			
C	7	AT&T	CCI	TPA65R-BU6D	Panel	700	LTE(B14)	300	73	12.35	6	4	160.00	2748.65	4509.41	420	12891.37	7.98%
C	7	AT&T	CCI	TPA65R-BU6D	Panel	1900	LTE/5G	300	66	15.95	6	4	160.00	6296.80	10330.47			
C	7	AT&T	CCI	TPA65R-BU6D	Panel	2300	LTE	300	60	15.85	6	4	100.00	3845.92	6309.57			
C	8-2	AT&T	Ericsson	AIR 6419 B77G	Panel	3450	5G	300	11	23.5	2.55	1	108.44	24277.05	39828.68	108.44	24277.05	11.61%
C	8-1	AT&T	Ericsson	AIR 6449 B77D	Panel	3840	5G	300	11	23.5	2.55	1	108.44	24277.05	39828.68	108.44	24277.05	12.60%
C	9	AT&T	CCI	DMP65R-BU6D	Panel	700	LTE(B12)	300	74	11.85	6	4	160.00	2449.74	4019.02	560	14707.62	9.79%
C	9	AT&T	CCI	DMP65R-BU6D	Panel	850	5G	300	63	12.45	6	4	160.00	2812.68	4614.45			
C	9	AT&T	CCI	DMP65R-BU6D	Panel	2100	LTE/5G	300	68	15.95	6	4	240.00	9445.20	15495.70			

Table 2.1: Antenna Inventory & Power Data

**NOTE: 75% Duty Cycle and adjusted power reduction factor of 0.32 was applied to the AIR6449 & AIR6419 antennas per guidance from AT&T. Specifications were not available for the Ericsson AIR 6419 antenna. Per AT&T, specifications for the AIR 6449 antenna were used to model the 6419 due to its similarity.*

Cumulative Site MPE%	
Carrier	MPE%
AT&T (Max MPE% at Sector A)	41.98%
T-Mobile	13.37%
Verizon	22.84%
Sprint	5.89%
Clearwire	0.40%
MetroPCS	3.49%
Dish	6.58%
Site Total MPE%	94.55%

Table 2.2: Cumulative Site MPE%

AT&T Max MPE% Per Sector	
AT&T Sector A Total	41.98%
AT&T Sector B Total	41.98%
AT&T Sector C Total	41.98%
Site Total MPE%	94.55%

Table 2.3: AT&T MPE% Per Sector

Sector	Ant ID	Operator	Antenna Mfg	Antenna Model	FREQ. (MHz)	TECH.	#of Channels	Transmitter Power (Watts)	Total ERP (Watts)	Total EIRP (Watts)	Height (ft)	Total Power Density (mW/cm ²)	Allowable MPE (mW/cm ²)	Calculated MPE%
A	1	AT&T	CCI	TPA65R-BU6D	700	LTE(B14)	4	160.00	2748.65	4509.41	85.00	0.013686	0.467	2.93%
A	1	AT&T	CCI	TPA65R-BU6D	1900	LTE/5G	4	160.00	6296.80	10330.47	85.00	0.031354	1.000	3.14%
A	1	AT&T	CCI	TPA65R-BU6D	2300	LTE	4	100.00	3845.92	6309.57	85.00	0.019150	1.000	1.92%
A	2-1	AT&T	Ericsson	AIR 6419 B77G	3450	5G	1	108.44	24277.05	39828.68	86.75	0.116054	1.000	11.61%
A	2-2	AT&T	Ericsson	AIR 6449 B77D	3840	5G	1	108.44	24277.05	39828.68	83.25	0.126017	1.000	12.60%
A	3	AT&T	CCI	DMP65R-BU6D	700	LTE(B12)	4	160.00	2449.74	4019.02	85.00	0.012198	0.467	2.61%
A	3	AT&T	CCI	DMP65R-BU6D	850	5G	4	160.00	2812.68	4614.45	85.00	0.014005	0.567	2.47%
A	3	AT&T	CCI	DMP65R-BU6D	2100	LTE/5G	4	240.00	9445.20	15495.70	85.00	0.047031	1.000	4.70%
													Total	41.98%

Table 2.4: Detailed MPE% at AT&T Sector A

3. Compliance Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general public exposure to RF Emissions.

The anticipated maximum composite contributions from the AT&T facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general public exposure to RF Emissions are shown here:

AT&T Sector	Power Density Value (%)
Sector A	41.98%
Sector B	41.98%
Sector C	41.98%
AT&T Maximum Total (per sector)	41.98%
Site Total MPE%	94.55%
Site Compliance Status	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is 94.55% of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were within the allowable 100% threshold standard per the federal government.