AIROSMITH DEVELOPMENT
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September 11th, 2018

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

RE: Notice of Exempt Modification – Antenna Swap for wireless facility located at 46 FENWOOD LANE, WILTON, CONNECTICUT – CT03XC360 (lat. 41° 10' 21.04" N, long. -73° 26' 2.09" W)

Dear Ms. Bachman:

Sprint Spectrum, LP ("Sprint") currently maintains wireless telecommunications antennas at the (137-foot level) on an existing (146-foot monopole tower) at the above-referenced address. The property is owned by the STATE OF CONNECTICUT and the tower is owned by STATE OF CONNECTICUT DEPARTMENT OF PUBLIC SAFETY DIVISION OF STATE POLICE

Sprint's proposed work involves antenna replacement and tower work. Sprint intends to replace three (3) antennas, add three (3) new antennas, and add three (3) new RRHs onto the tower. All the proposed work is contained within the existing fenced area. Please refer to the attached drawings for site plans prepared by Infinigy Engineering.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Lynne Vanderslice, First Selectwoman and ROBERT NERNEY, Director of Planning and Land Use Management of the Town of Wilton. A copy of this letter is also being sent to Brian Benito the tower manager for STATE OF CONNECTICUT DEPARTMENT OF PUBLIC SAFETY DIVISION OF STATE POLICE, and STATE OF CONNECTICUT who owns the land.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b).

1. The proposed modifications will not result in an increase in the height of the existing tower.
2. The antennas work is a one-for-one replacement of facility components.
3. The proposed modifications will include the addition of ground base equipment as

32 Clinton Street, Saratoga Springs, NY 12866
Office 518-306-1733 – Fax 518-306-1711
www.airosmithdevelopment.com

depicted on the attached drawings; however, the proposed equipment will not require an extension of the site boundaries.

4. The proposed modifications will not increase noise levels at the facility by six decibels or more.

5. The additional ground based equipment will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) adopted safety standard.

For the foregoing reasons, Sprint respectfully submits that the proposed modifications to the above referenced telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b).

If you have any questions or require any additional information regarding this request, please do not hesitate to give me a call at (518) 350-4222 or email me to aperkowski@airosmithdevelopment.com

Kind Regards,

Arthur Perkowski
Airosmith Development Inc.
32 Clinton Street
Saratoga Springs, NY 12866
518-306-1711 desk & fax
518-871-3707 cell
aperkowski@airosmithdevelopment.com

Attachment

CC: Lynne Vanderslice (First Selectwoman / Wilton, CT)
BRIAN BENITO (Manager, CT State Police Towers)
ROBERT NERNEY (Director of Planning and Land Use Management / Wilton, CT)
STATE OF CONNECTICUT (Land Owner)

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Sent To: Lynne Vanderslice CT03xC360
Street and Apt. No., or PO Box No.: 238 William St
City, State, ZIP+4®: Danbury CT 06897

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

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Total Postage and Fees $6.70

Sent To: Robert Nerney CT03xC360
Street and Apt. No., or PO Box No.: 238 Danbury Rd
City, State, ZIP+4®: Wilton CT 06897

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

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Sent To: Daniel Malloy CT03xC360
Street and Apt. No., or PO Box No.: 150 Capitol Ave
City, State, ZIP+4®: Hartford CT 06106

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

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- Adult Signature Required $0.00
- Adult Signature Restricted Delivery $

Postage $0.50
Total Postage and Fees $6.70

Sent To: Brian Benton CT03xC360
Street and Apt. No., or PO Box No.: 1111 Country Club Rd
City, State, ZIP+4®: Middletown CT 06457

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

0867 06
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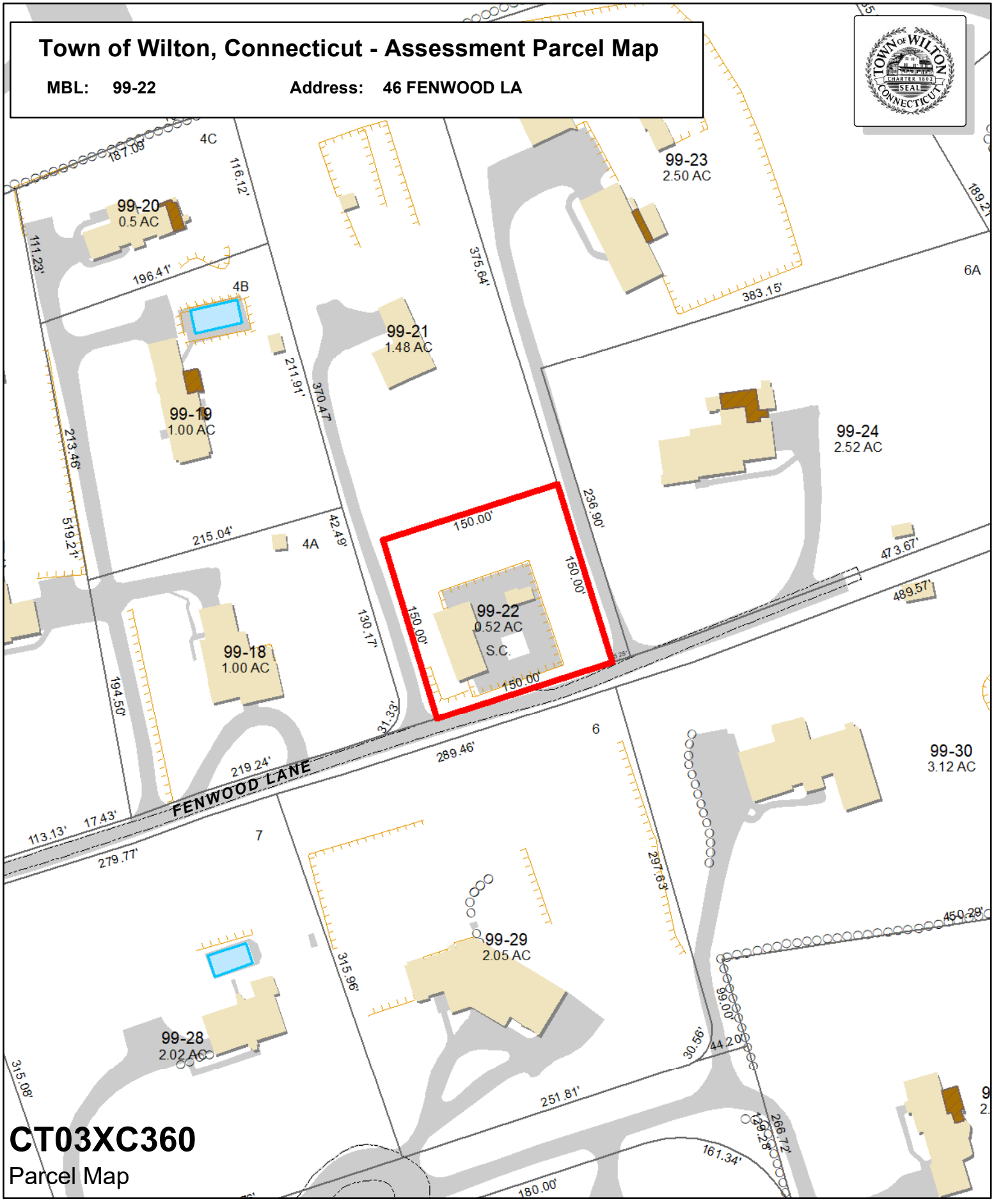
Town of Wilton, Connecticut - Assessment Parcel Map

MBL: 99-22 **Address:** 46 FENWOOD LA



CT03XC360

Parcel Map

Approximate Scale:

1 inch = 100 feet

Disclaimer:
This map is for informational purposes only.
All information is subject to verification by any user.
The Town of Wilton and its mapping contractors
assume no legal responsibility for the information contained herein.

Map Grand List Date: Oct 2017

0 50 100 150 Feet

EBI Consulting
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RADIO FREQUENCY EMISSIONS ANALYSIS REPORT
EVALUATION OF HUMAN EXPOSURE POTENTIAL TO NON-IONIZING EMISSIONS

SPRINT Existing Facility

Site ID: CT03XC360

CTS
46 Fenwood Lane
Wilton, CT 06897

August 29, 2018

EBI Project Number: 6218005888

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	16.50 %

21 B Street · Burlington, MA 01803 · Tel: (781) 273.2500 · Fax: (781) 273.3311

EBI Consulting
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August 29, 2018

SPRINT
Attn: RF Engineering Manager
1 International Boulevard, Suite 800
Mahwah, NJ 07495

Emissions Analysis for Site: **CT03XC360 – CTS**

EBI Consulting was directed to analyze the proposed SPRINT facility located at **46 Fenwood Lane, Wilton, CT**, for the purpose of determining whether the emissions from the Proposed SPRINT 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 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ 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 population 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 population 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.

General population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 850 MHz Band is approximately 567 $\mu W/cm^2$. The general population exposure limit for the 1900 MHz (PCS) and 2500 MHz (BRS) bands is 1000 $\mu W/cm^2$. 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.

CALCULATIONS

Calculations were done for the proposed SPRINT Wireless antenna facility located at **46 Fenwood Lane, Wilton, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since SPRINT 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 manufactures supplied specifications, minus 10 dB for directional panel antennas, 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) 1 CDMA channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.

2) 2 LTE channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 50 Watts per Channel.

3) 5 CDMA channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 16 Watts per Channel.

4) 2 LTE channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

5) 8 LTE channels (2500 MHz (BRS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.

6) 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.

7) 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 manufactures supplied specifications, minus 10 dB for directional panel antennas, 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.

8) The antennas used in this modeling are the **Commscope NNVV-65B-R4 and the Nokia AAHC** for transmission in the 850 MHz, 1900 MHz (PCS) and 2500 MHz (BRS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, 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.

9) The antenna mounting height centerlines of the proposed panel antennas are **105 feet** above ground level (AGL) for **Sector A**, **105 feet** above ground level (AGL) for **Sector B** and **105 feet** above ground level (AGL) for Sector C.

10) 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.

All calculations were done with respect to uncontrolled / general population threshold limits.

SPRINT Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	Commscope NNVV-65B-R4	Make / Model:	Commscope NNVV-65B-R4	Make / Model:	Commscope NNVV-65B-R4
Gain:	12.75 / 15.05 dBd	Gain:	12.75 / 15.05 dBd	Gain:	12.75 / 15.05 dBd
Height (AGL):	**105 feet**	Height (AGL):	**105 feet**	Height (AGL):	**105 feet**
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	10	Channel Count	10	Channel Count	10
Total TX Power(W):	280 Watts	Total TX Power(W):	280 Watts	Total TX Power(W):	280 Watts
ERP (W):	7,378.61	ERP (W):	7,378.61	ERP (W):	7,378.61
Antenna A1 MPE%	**3.34 %**	Antenna B1 MPE%	**3.34 %**	Antenna C1 MPE%	**3.34 %**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Nokia AAHC	Make / Model:	Nokia AAHC	Make / Model:	Nokia AAHC
Gain:	15.05 dBd	Gain:	15.05 dBd	Gain:	15.05 dBd
Height (AGL):	**105 feet**	Height (AGL):	**105 feet**	Height (AGL):	**105 feet**
Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)
Channel Count	8	Channel Count	8	Channel Count	8
Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts
ERP (W):	5,118.23	ERP (W):	5,118.23	ERP (W):	5,118.23
Antenna A2 MPE%	**1.88 %**	Antenna B2 MPE%	**1.88 %**	Antenna C2 MPE%	**1.88 %**

Site Composite MPE%	
Carrier	**MPE%**
SPRINT – Max per sector	**5.22 %**
AT&T	0.70 %
CL&P	0.21 %
T-Mobile	3.22 %
State Police	3.61 %
NEU	0.49 %
WPD	0.23 %
DEA	1.28 %
WTR	0.11 %
USS	1.15 %
FCP	0.27 %
DOE	0.01 %
Site Total MPE %:	**16.50 %**

SPRINT Sector A Total:	5.22 %
SPRINT Sector B Total:	5.22 %
SPRINT Sector C Total:	5.22 %
Site Total:	16.50 %

SPRINT _ Frequency Band / Technology (All Sectors)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
Sprint 850 MHz CDMA	1	376.73	105	1.38	850 MHz	567	0.24%
Sprint 850 MHz LTE	2	941.82	105	6.91	850 MHz	567	1.22%
Sprint 1900 MHz (PCS) CDMA	5	511.82	105	9.39	1900 MHz (PCS)	1000	0.94%
Sprint 1900 MHz (PCS) LTE	2	1,279.56	105	9.39	1900 MHz (PCS)	1000	0.94%
Sprint 2500 MHz (BRS) LTE	8	639.78	105	18.77	2500 MHz (BRS)	1000	1.88%
						Total:	**5.22%**

Summary

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

The anticipated maximum composite contributions from the SPRINT facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

SPRINT Sector	Power Density Value (%)
Sector A:	5.22 %
Sector B:	5.22 %
Sector C:	5.22 %
SPRINT Maximum MPE % (per sector):	5.22 %
Site Total:	16.50 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **16.50 %** of the allowable FCC established general population 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 well within the allowable 100% threshold standard per the federal government.

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1033 WATERVLIET SHAKER RD, ALBANY, NY 12205

Mount Analysis Report

June 2, 2018

Site Number	CT03XC360
Site Name	CTS
Infinigy Job Number	526-104
Client	Airosmith
Carrier	Sprint
Site Location	46 Fernwood Lane Wilton, CT 06897 41° 10' 21.04" N NAD83 73° 26' 2.09" W NAD83
Mount Centerline EL.	105.0 ft
Mount Classification	Sector
Usage	**78.4%**
Overall Result	**Pass**

Upon reviewing the results of this analysis, it is our opinion that the mount meets the specified TIA code requirements. The mounts and connections for the proposed carrier are therefore deemed adequate to support the final loading configuration as listed in this report.

Nathaniel R. Ober, E.I.T.
Northeast Structural Region Lead

Contents

Introduction

Infinigy Engineering has been requested to perform a mount analysis on the existing Sprint mounts. All supporting documents have been obtained from the client and are assumed to be accurate and applicable to this site. The mount was analyzed using RISA-3D Version 16.0.3 analysis software.

Supporting Documentation

RFDS	Sprint RFDS ID #45775, dated March 29, 2018
Construction Drawings	Infinigy Engineering Job #526-104, dated February 12, 2018

Analysis Code Requirements

Wind Speed	90 mph (3-Second Gust, V_{ASD}) / 115 mph (3-Second Gust, V_{ULT})
Wind Speed w/ ice	50 mph (3-Second Gust, V_{ASD}) w/ 3/4" ice
TIA Revision	ANSI/TIA-222-G
Adopted IBC	2012 IBC
Structure Class	II
Exposure Category	B
Topographic Category	1
Calculated Crest Height	0 ft

Conclusion

Upon reviewing the results of this analysis, it is our opinion that the mount meets the specified TIA code requirements. The mounts and connections for the proposed carrier are therefore deemed adequate to support the final loading configuration as listed in this report.

If you have any questions, require additional information, or actual conditions differ from those as detailed in this report please contact me via the information below:

Nathaniel R Ober E.I.T.
Northeast Structural Region Lead | Infinigy
1033 Watervliet Shaker Road, Albany, NY 12205
(O) (518) 690-0790 | (M) (303) 704-0322
nober@infinigy.com | www.infinigy.com

Final Configuration Loading

Mount CL (ft)	Rad. HT (ft)	Vert. O/S (ft)	Horiz. O/S (ft)[1]	Qty	Appurtenance[2],[3]	Carrier
105.0	105.0	0.0	0.5	3	Commscope NNVV-65B-R4	Sprint
			11.5	3	Nokia AAHC	
			0.5, 7.5	6	Alcatel-Lucent 800 MHz 2x50 RRH	
			0.5	3	Alcatel-Lucent TD-RRH 8x20	

(1)Horizontal Offset is defined as the distance from the left most edge of the mount face horizontal when viewed facing the tower.
(2)Radios are mounted behind antennas at respective locations see appended documents for vertical locations.

Structure Usages

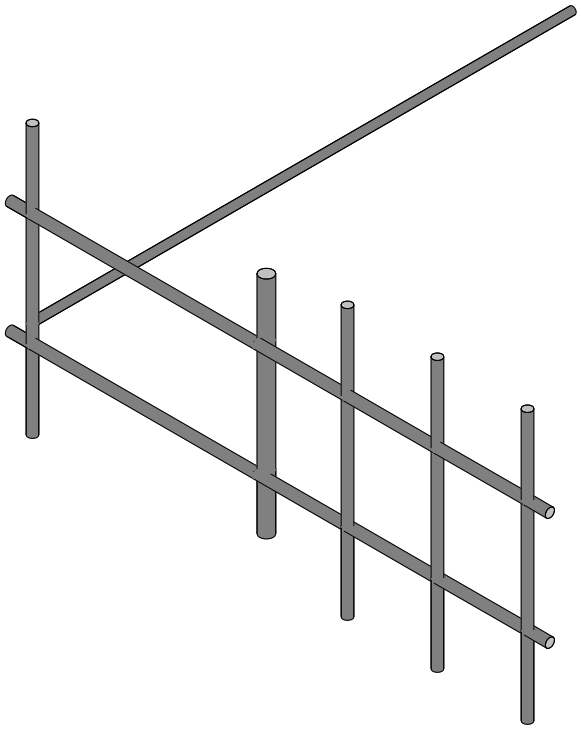
Standoff	17.7	Pass
Mount Pipe	60.0	Pass
Horizontal	78.4	Pass
Results	**78.4**	**Pass**

Assumptions and Limitations

Our structural calculations are completed assuming all information provided to Infinigy Engineering is accurate and applicable to this site. For the purposes of calculations, we assume an overall structure condition of "like new" and all members and connections to be free of corrosion and/or structural defects. The structure owner and/or contractor shall verify the structure's condition prior to installation of any proposed equipment. If actual conditions differ from those described in this report Infinigy Engineering should be notified immediately to complete a revised evaluation.

Our evaluation is completed using standard TIA, AISC, ACI, and ASCE methods and procedures. Our structural results are proprietary and should not be used by others as their own. Infinigy Engineering is not responsible for decisions made by others that are or are not based on our supplied assumptions and conclusions.

This report is an evaluation of the proposed carriers mount structure only and does not reflect adequacy of the existing tower, other mounts, or coax mounting attachments. These elements are assumed to be adequate for the purposes of this analysis and are assumed to have been installed per their manufacturer requirements.



Envelope Only Solution

Infinigy Engineerin, PLLC	CT03XC360	
NRO		June 2, 2018 at 8:22 PM
526-104		CT03XC360.r3d

Site Name:	CT03XC360
Client:	Airosmith
Carrier:	Sprint
Engineer:	NRO
Date:	6/2/2018

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INFINIGY WIND LOAD CALCULATOR 3.0.2

Site Information Inputs:

Adopted Building Code:	2012 IBC
Structure Load Standard:	TIA-222-G
Antenna Load Standard:	TIA-222-G
Structure Risk Category:	II
Structure Type:	Mount - Sector
Number of Sectors:	3
Structure Shape 1:	Round

Rooftop Inputs:

Rooftop Wind Speed-Up?:	No

Wind Loading Inputs:

Design Wind Velocity:	90	mph (nominal 3-second gust)
Wind Centerline 1 (z_1):	105.0	ft
Side Face Angle (θ):	60	degrees
Exposure Category:	B	
Topographic Category:	1	

Wind with No Ice		
q_z (psf)	Gh	F_{ST} (psf)
19.74	1.00	**23.69**

Wind with Ice		
q_z (psf)	Gh	F_{ST} (psf)
6.09	1.00	**17.36**

Ice Loading Inputs:

Is Ice Loading Needed?:	Yes	
Ice Wind Velocity:	50	mph (nominal 3-second gust)
Base Ice Thickness:	0.75	in

Input Appurtenance Information and Load Placements:

Appurtenance Name	Elevation (ft)	Total Quantity	Ka	Front Shape	Side Shape	q_z (psf)	EPA (ft^2)	Fz (lbs)	Fx (lbs)	Fz(60) (lbs)	Fx(30) (lbs)
Commscope NNVV-65B-R4	105.0	3	1.00	Flat	Flat	19.74	12.27	242.24	113.51	145.69	210.06
Nokia AAHC	105.0	3	1.00	Flat	Flat	19.74	4.20	82.96	50.96	58.96	74.96
tel-Lucent 800 MHz 2x50 RRH w/ F	105.0	3	1.00	Flat	Flat	19.74	2.06	40.63	38.13	38.76	40.01
tel-Lucent 800 MHz 2x50 RRH w/ F	105.0	3	1.00	Flat	Flat	19.74	2.06	40.63	38.13	38.76	40.01
Alcatel-Lucent TD-RRH8x20	105.0	3	1.00	Flat	Flat	19.74	3.70	73.12	25.54	37.44	61.23

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N1	N7			Horizontal	Beam	None	A53 Gr.B	Typical
2	M2	N8	N14			Horizontal	Beam	None	A53 Gr.B	Typical
3	MP3	N20	N15			Mount Pipe	Beam	None	A53 Gr.B	Typical
4	MP4	N22	N17			Mount Pipe	Beam	None	A53 Gr.B	Typical
5	MP5	N23	N18			Mount Pipe	Beam	None	A53 Gr.B	Typical
6	MP6	N24	N19			Mount Pipe	Beam	None	A53 Gr.B	Typical
7	M7	N21	N16			Standoff Pipe	Beam	None	A53 Gr.B	Typical
8	M8	N10	N26			RIGID	None	None	RIGID	Typical
9	M9	N3	N25			RIGID	None	None	RIGID	Typical
10	M10	N27	N28			Tie Back	Beam	None	A53 Gr.B	Typical

Material Takeoff

	Material	Size	Pieces	Length[in]	Weight[K]
1	General				
2	RIGID		2	4.8	0
3	Total General		2	4.8	0
4					
5	Hot Rolled Steel				
6	A53 Gr.B	PIPE_1.5	1	144	0
7	A53 Gr.B	PIPE_2.0	6	576	.2
8	A53 Gr.B	PIPE_3.0	1	60	0
9	Total HR Steel		8	780	.2

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut..	Area(M...	Surface...
1	Self Weight	DL		-1			7			
2	Wind Load AZI 000	WLZ					7		1	
3	Wind Load AZI 090	WLX					7		1	
4	Ice Weight	OL1					7	10		
5	Wind + Ice Load AZI 000	OL2					7		1	
6	Wind + Ice Load AZI 090	OL3					7		1	
7	Service Live 1	LL				2				
8	BLC 2 Transient Area Loads	None						7		
9	BLC 3 Transient Area Loads	None						8		
10	BLC 5 Transient Area Loads	None						7		
11	BLC 6 Transient Area Loads	None						8		

Load Combinations

	Description	So..	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..
1	1.4D	Yes	Y		DL	1.4																		
2	1.2D + 1.6W AZI 000	Yes	Y		DL	1.2	W...	1.6																
3	1.2D + 1.6W AZI 030	Yes	Y		DL	1.2	W...	1.3...	W...	.8														
4	1.2D + 1.6W AZI 060	Yes	Y		DL	1.2	W...	.8	W...	1.3...														
5	1.2D + 1.6W AZI 090	Yes	Y		DL	1.2			W...	1.6														
6	1.2D + 1.6W AZI 120	Yes	Y		DL	1.2	W...	-.8	W...	1.3...														
7	1.2D + 1.6W AZI 150	Yes	Y		DL	1.2	W...	-1.3...	W...	.8														
8	1.2D + 1.6W AZI 180	Yes	Y		DL	1.2	W...	-1.6																
9	1.2D + 1.6W AZI 210	Yes	Y		DL	1.2	W...	-1.3...	W...	-.8														
10	1.2D + 1.6W AZI 240	Yes	Y		DL	1.2	W...	-.8	W...	-1.3...														
11	1.2D + 1.6W AZI 270	Yes	Y		DL	1.2			W...	-1.6														
12	1.2D + 1.6W AZI 300	Yes	Y		DL	1.2	W...	.8	W...	-1.3...														

Load Combinations (Continued)

	Description	So..	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
13	1.2D + 1.6W AZI 330	Yes	Y		DL	1.2	W...	1.3...	W...	-.8																
14	0.9D + 1.6W AZI 000	Yes	Y		DL	.9	W...	1.6																		
15	0.9D + 1.6W AZI 030	Yes	Y		DL	.9	W...	1.3...	W...	.8																
16	0.9D + 1.6W AZI 060	Yes	Y		DL	.9	W...	.8	W...	1.3...																
17	0.9D + 1.6W AZI 090	Yes	Y		DL	.9			W...	1.6																
18	0.9D + 1.6W AZI 120	Yes	Y		DL	.9	W...	-.8	W...	1.3...																
19	0.9D + 1.6W AZI 150	Yes	Y		DL	.9	W...	-1.3...	W...	.8																
20	0.9D + 1.6W AZI 180	Yes	Y		DL	.9	W...	-1.6																		
21	0.9D + 1.6W AZI 210	Yes	Y		DL	.9	W...	-1.3...	W...	-.8																
22	0.9D + 1.6W AZI 240	Yes	Y		DL	.9	W...	-.8	W...	-1.3...																
23	0.9D + 1.6W AZI 270	Yes	Y		DL	.9			W...	-1.6																
24	0.9D + 1.6W AZI 300	Yes	Y		DL	.9	W...	.8	W...	-1.3...																
25	0.9D + 1.6W AZI 330	Yes	Y		DL	.9	W...	1.3...	W...	-.8																
26	1.2D + 1.0Di	Yes	Y		DL	1.2	OL1	1																		
27	1.2D + 1.0Di + 1.0Wi A...	Yes	Y		DL	1.2	OL1	1	OL2	1																
28	1.2D + 1.0Di + 1.0Wi A...	Yes	Y		DL	1.2	OL1	1	OL2	.866	OL3	.5														
29	1.2D + 1.0Di + 1.0Wi A...	Yes	Y		DL	1.2	OL1	1	OL2	.5	OL3	.866														
30	1.2D + 1.0Di + 1.0Wi A...	Yes	Y		DL	1.2	OL1	1			OL3	1														
31	1.2D + 1.0Di + 1.0Wi A...	Yes	Y		DL	1.2	OL1	1	OL2	-.5	OL3	.866														
32	1.2D + 1.0Di + 1.0Wi A...	Yes	Y		DL	1.2	OL1	1	OL2	-.866	OL3	.5														
33	1.2D + 1.0Di + 1.0Wi A...	Yes	Y		DL	1.2	OL1	1	OL2	-1																
34	1.2D + 1.0Di + 1.0Wi A...	Yes	Y		DL	1.2	OL1	1	OL2	-.866	OL3	-.5														
35	1.2D + 1.0Di + 1.0Wi A...	Yes	Y		DL	1.2	OL1	1	OL2	-.5	OL3	-.866														
36	1.2D + 1.0Di + 1.0Wi A...	Yes	Y		DL	1.2	OL1	1			OL3	-1														
37	1.2D + 1.0Di + 1.0Wi A...	Yes	Y		DL	1.2	OL1	1	OL2	.5	OL3	-.866														
38	1.2D + 1.0Di + 1.0Wi A...	Yes	Y		DL	1.2	OL1	1	OL2	.866	OL3	-.5														
39	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5	W...	.111																
40	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5	W...	.096	W...	.056														
41	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5	W...	.056	W...	.096														
42	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5			W...	.111														
43	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5	W...	-.056	W...	.096														
44	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5	W...	-.096	W...	.056														
45	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5	W...	-.111																
46	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5	W...	-.096	W...	-.056														
47	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5	W...	-.056	W...	-.096														
48	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5			W...	-.111														
49	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5	W...	.056	W...	-.096														
50	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5	W...	.096	W...	-.056														

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N16	max	556.487	5	984.58	35	757.47	14	0	1	0	1	0	1
2		min	-474.363	23	222.392	16	-804.333	8	0	1	0	1	0	1
3	N21	max	333.721	17	971.923	29	461.484	2	0	1	0	1	0	1
4		min	-416.618	11	221.285	22	-413.616	20	0	1	0	1	0	1
5	N28	max	60.004	17	62.571	33	248.279	2	0	1	0	1	0	1
6		min	-60.013	23	13.44	14	-249.911	8	0	1	0	1	0	1
7	Totals:	max	938.835	5	1993.137	27	1460.808	2						
8		min	-938.835	11	550.262	20	-1460.808	8						

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

	Member	Shape	Code Check	Lo...	...	Shear C...	Loc[in]	...	LC	phi*Pnc...	phi*Pnt ...	phi*...	phi*...	...	Eqn
1	M1	PIPE_2.0	.784	66	...	.085	90		2	6830.97	32130	1.872	1.872	...	H1-...
2	M2	PIPE_2.0	.782	66	8	.165	66		2	6830.97	32130	1.872	1.872	...	H1-...
3	MP3	PIPE_2.0	.600	21	...	.101	21		34	20866....	32130	1.872	1.872	...	H1-...
4	MP5	PIPE_2.0	.284	51	...	.081	21		8	20866....	32130	1.872	1.872	...	H1-...
5	MP4	PIPE_2.0	.282	51	...	.090	51		8	20866....	32130	1.872	1.872	...	H1-...
6	MP6	PIPE_2.0	.227	21	...	.066	51		20	20866....	32130	1.872	1.872	...	H1-...
7	M10	PIPE_1.5	.179	72	...	.009	0		30	3192.144	23593.5	1.105	1.105	...	H1-...
8	M7	PIPE_3.0	.177	45	8	.055	45		14	57037....	65205	5.749	5.749	...	H1-...

AECOM

Submitted to
Empire Telecom USA, LLC
16 Esquire Road
Billerica, MA 01862

Airosmith Development, Inc.
32 Clinton Street
Saratoga Springs, NY 12866

Submitted by
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July 5, 2018

DETAILED STRUCTURAL ANALYSIS AND MODIFICATION OF AN EXISTING 180' SELF SUPPORTING LATTICE TOWER AND FOUNDATION FOR PROPOSED ANTENNA ARRANGEMENT

AT&T Site Name : CT2143
Sprint Site Name : CT03X360
Site Address: 46 Fenwood Lane
Wilton, Connecticut

EMP-007 / 60570722
ASM-007 / 60570721

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY

This report summarizes the structural analysis and modification of the 180' self-supporting lattice tower located at 46 Fenwood Lane in Wilton, Connecticut.

The structural analysis was conducted in accordance with the 2016 Connecticut State Building Code which includes the TIA-222-G[1] Standard, 2012 International Building Code, the 2016 Connecticut State Building Code Amendments, the AISC[2] Load Resistance Factor Design (LRFD), the ASCE 7[3] design Code, and the Connecticut State Police Requirements which include the TIA/EIA-222-F[4].

The antenna loading considered in the analysis consists of all the existing and proposed antennas, transmission lines and ancillary items as outlined in the Introduction Section of this Report.

The proposed AT&T and Sprint antenna installation is listed below:

Proposed Appurtenances	Carrier	Antenna Center Elevation
<u>Remove:</u> **(3) Powerwave 7770 Panels (1 Removal per sector, 1 Remains per sector)** **(3) Powerwave P65-16-XLH-RR Panel Antennas** **(3) Ericsson RRUS-11 RRH Units (1 Removal per sector, 1 Remains per sector)** **(6) LGP21901 Diplexer Units (2 Removal per sector, 2 Remains per sector)** **(3) Powerwave TT19-08BP111-001 TMA units**	**AT&T (Existing)**	**@ 163'**
<u>Install:</u> **(3) Quintel QS66512-2 Panel Antennas** **(3) Kathrein 800-10965 Panel Antennas** **(3) Ericsson B14 4478 RRH Radio Units** **(3) Ericsson RRUS-32 B66 (AWS) RRH Units** **(3) Ericsson RRUS-32 B2 (1900 MHz) RRH Units** **(3) Ericsson RRUS-32 RRH Units** **(2) DC Squid / Surge Arrestor Units** **(1) Fiber Optic Cable** **(4) DC Cables**	**AT&T (Proposed)**	**@ 163'**
(3) Nokia AAHC Panel Antennas **(3) Commscope NNVV-65B-R4 Panel Antennas** **(3) ALU TD-8x20-25W RRH with Solar Shield units** **(2) Nokia MIMO Hybrid Cables (1.69" O.D.)**	**Sprint (Proposed)**	**@ 105'**

1. TIA = Telecommunications Industry Association Structural Standard for Antenna Supporting Structures and Antennas (Version G)

2. AISC = American Institute of Steel Construction (14th Edition)

3. ASCE 7 = American Society of Civil Engineers Standard 7 (2010 Edition)

4. TIA/EIA = Telecommunications Industry Association Structural Standard for Antenna Supporting Structures and Antennas (Version F)

1. EXECUTIVE SUMMARY - *continued*

The results of an initial structural analysis indicated the existing tower did not have enough capacity for the proposed loading conditions. The existing tower structure required modifications shown on SK-1 and SK-2. **Once the modifications indicated on sheets SK-1 and SK-2 are performed, the modified structure is considered structurally adequate with the wind load classification specified above with the existing and proposed antenna loading. No installation of proposed antennas shall occur without the required modification being completed.**

The results of the analysis of the modified tower's sway (deflection) is 0.5917 degrees and the modified tower's twist (rotation) is 0.0484 degrees. These figures are within the Connecticut State Police requirements of 0.75 degrees for combined twist (rotation) and sway (deflection) when applying the TIA/EIA-222-F design conditions.

This analysis is based on:

1) The tower structure's theoretical capacity not including any assessment of the condition of the tower.

2) Tower geometry and structural member sizes utilized in the preparation of this report obtained from the original design documents prepared by Bayar and Associates dated July 1990.

3) Previous structural analysis performed by URS Corporation, on behalf of T-Mobile, project number 36931390.00000 / NSS-017, signed and sealed March 3, 2015

4) Previous structural analysis and modification performed by AECOM, on behalf of T-Mobile, project number 60405835, signed and sealed May 5, 2015.

5) Tower Mapping and Inventory by D&K Nationwide Communications, Inc., dated March 17, 2016.

6) Antenna inventory provided by the Connecticut State Police via email on June 20, 2016.

7) Previous structural analysis and evaluation performed by AECOM, on behalf of Pyramid Network Services, LLC, project number 60509756.03 / PNS-603, signed and sealed on August 9, 2016.

8) Geotechnical Study for Evaluation of Existing State Police Communications Tower, performed by Welti Geotechnical, P.C., dated February 26, 2018.

9) Previous structural analysis and evaluation performed by AECOM, on behalf of AT&T, project number 60566142 / EMP-004, signed and sealed on March, 29, 2018.

10) Previous structural analysis and evaluation performed by AECOM, on behalf of Sprint, project number 60576927 / ASM-008, signed and sealed on May 25, 2018.

11) Antenna and mount configuration as specified on the following pages of this report.

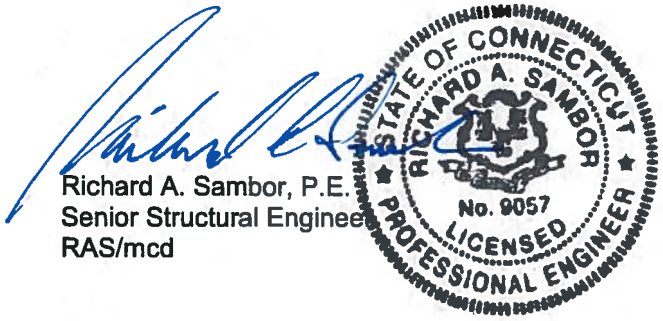
1. EXECUTIVE SUMMARY - *continued*

This report is only valid as per the assumptions and data utilized in this report for antenna inventory, mounts and associated cables. The user of this report shall field verify the antenna, cabling and mount configurations used, as well as the physical condition of tower members, connections and foundations. Notify the engineer in writing immediately if any of the information in this report is found to be other than specified.

If you should have any questions, please contact this office at (860) 529-8882.

Sincerely,

AECOM,



Richard A. Sambor, P.E.
Senior Structural Engineer
RAS/mcd

2. INTRODUCTION

The subject tower is located at 46 Fenwood Lane in Wilton, Connecticut. The structure is a 180' four sided self-supporting lattice tower designed by Bayar and Associates.

The structural analysis was conducted in accordance with the following:

- TIA-222-G Standard for Standard for a wind velocity of range of 90 mph to 110 mph (3-second gust) and 50 mph (3-second gust) concurrent with 0.75" ice thickness, considered to increase in thickness with height
- 2012 International Building Code with 2016 Connecticut State Building Code Amendments for a wind speed of 101 mph (3-second gust)
- 2010 AISC Load Resistance Factor Design (LRFD)
- 2010 ASCE 7 Minimum Design Loads for Buildings and Other Structures for the ice thickness referenced in the TIA-222-G Standard
- Connecticut State Police Requirements for a wind velocity of 90 mph (fastest mile) and 90 mph (fastest mile) concurrent with 0.5" ice. Twist (rotation) and sway (deflection) were determined in accordance with Connecticut State Police Requirements for a wind velocity of 90 mph (fastest mile) concurrent with 0.5" ice, analyzed under the TIA/EIA-222-F design Standard.

The inventory together with the proposed AT&T and Sprint antenna arrangement is summarized in the table below:

Antenna Type	***Carrier***	***Mount***	***Mount Elevation***	***Cable***
(1) 10' Lightning Rod	Tower (existing)	Tower mounted	185'	---
(1) 8'x6-5/8" Dia Omni Antenna	(A31) CSP-4 (existing)	*Shared Mount (See CSP-2 Mount)*	185'	(1) 7/8"
(1) 20' 4-Bay Dipole Antenna (1) 20' 2-Bay Dipole Antenna	(A29) FBI-12, FCP-12 (existing)	*Shared Mount (See CSP-1 Mount)*	185'	(2) 7/8"
(1) Sinclair SC479-HF1LFD (D00-E5764) Omni Antenna	(A30) CSP-3 (existing)	*Shared Mount (See CSP-2 Mount)*	183'	(1) 1-5/8" (existing Cable)
(1) Sinclair SC479-HF1LFD (D00-E5764) Omni Antenna	(A28) CSP-6 (existing)	*Shared Mount (See CSP-1 Mount)*	183'	(1) 1-5/8" (existing Cable)
(1) Bird 432-83H-01T TTA Control Box	(A27) CSP-67 (existing)	*Shared Mount (See CSP-1 Mount)*	181'	(1) 1/2"
(1) 6' Dish with Radome	(A25) CSP-36 (existing)	Pipe Mounted to Tower	173'	(1) WEP65
(1) (inverted) Sinclair SC479-HF1LFD (D00I-E5764) Omni Antenna	(A24) CSP-65 (existing)	*Shared Mount (See CSP-2 Mount)*	172'	(1) 1-5/8" (existing Cable)

Antenna Type	*Carrier*	*Mount*	*Mount Elevation*	*Cable*
(1) (inverted) Sinclair SC479-HF1LFD (D00I-E5764) Omni Antenna	(A23) CSP-2 (existing)	15' V-Frame Mount w/ 5 Antenna Pipes @ 180' (Shared with CSP-65, CSP-3 & CSP-4)	172'	(1) 1-5/8" (existing Cable)
(1) 6' Dish with Radome	(A22) CSP-5 (existing)	Pipe Mounted to Tower	170.5'	(1) WEP65
(1) 6' Dish with Radome	(A33) CSP-59 (existing)	Pipe Mounted to Tower	170'	(1) WEP65
(1) BA-1312 Omni Antenna	(A21) CAP-25 (existing)	15' V-Frame Mount w/ 5 Antenna Pipes @ 170'	170'	(1) 7/8"
(1) (inverted) Sinclair SC479-HF1LFD (D00I-E5764) Omni Antenna	(A26) CSP-1 (existing)	15' V-Frame Mount w/ 5 Antenna Pipes @ 180' (Shared with CSP-67, CSP-6 & FBI/FCP-12)	170'	(1) 1-5/8" (existing Cable)
(1) BA1010-2 Omni Antenna	(A20) CSP-10 (existing)	*Shared with Above Mount*	169'	(1) 7/8"
(3) QS66512-2 Panel Antennas **(3) 800-10965 Panel Antennas** **(3) B14 4478 RRH Units** **(3) RRUS-32 B66 RRH Units** **(3) RRUS-32 B2 RRH Units** **(3) RRUS-32 RRH Units** **(2) DC Squid / Surge Arrestor Units**	**AT&T (Proposed)**	*Shared with Below Mount*	**163'**	**(1) Fiber Optic Cable** **(4) DC Cables**
(3) Powerwave 7770 (6) LGP21401 TMAs (6) RRUS-11 RRU Units (6) LGP21901 Diplexers (1) DC6-48-Surge Protector	AT&T (existing)	(3) T-Frames	163'	(12) 1-5/8" (1) 2" Flex Conduit with (1) Fiber & (2) DC Cables
(1) Decibel DB408-B Dipole Antenna	(A19) FCP-12 (existing)	(2) 6' Standoff	161'	(1) 7/8"

Antenna Type	*Carrier*	*Mount*	*Mount Elevation*	*Cable*
(1) DB636 12’ Omni Antenna	(A15) D&K-30 NEU-57 (existing)	8’ Standoff	140’	(1) 7//8”
-----	(A18) D&K-33 (existing)	6’ Standoff	139’	N/A
(1) ASP-816 3’ Yagi Antenna	(A17) D&K-32 WTR-28 (existing)	6’ Standoff	138’	(1) 7/8”
(1) Decibel DB-222-A 12’ Dipole Antenna	(A16) D&K-31 (existing)	4’ Standoff	136.5’	(1) 7/8”
(1) Bird (TX/RX) 101-83B-08-T5 Omni Antenna	(A14) D&K-29 CSP-63 (existing)	*Shared with Below Mount*	134’	(1) 1-5/8”
(1) Bird 432-83H-01T TTA Junction Box	(A13) D&K-28 CSP-66 (existing)	6’ Standoff	133’	(1) 1/2"
(1) (inverted) Bird (TX/RX) 101-83B-08-T5 Omni Antenna	(A12) D&K-27 CSP-64 (existing)	*Shared with Above Mount*	132’	(1) 1-5/8”
(1) Dish Antenna Ice Shield	(A11) D&K-26 (existing)	*Shared with Below Mount*	131’	N/A
(1) 6’ Dish with Radome	(A10) D&K-25 CSP-35 (existing)	Pipe Mounted to Tower	125’	(1) WEP65

Antenna Type	*Carrier*	*Mount*	*Mount Elevation*	*Cable*
(3) Ericsson AIR21 B2A|B4P Panel Antennas (3) Ericsson AIR21 B4A/B12P Panel Antennas (3) (UMTS) TMA Units (3) (LTE) TMA Units (3) Antenna Mounts (3) Ericsson RRUS-11 RRH Units (3) Ericsson AIR21 B2A|B4P Panel Antennas (3) (UMTS) TMA Units	T-Mobile (existing)	(3) Antenna Mounts	122’	(12) 1-1/4” Coaxial Cables (2) Fiber Optic Cables
(1) 7’ Omni Antenna	(A8) D&K-14 (existing)	10’ Standoff Arm	121’	(1) 7/8”
(1) BDC806-09NE 22’ Omni Antenna	(A7) D&K-13 CSP-62 (existing)	6’ Standoff	107’	(1) 1-5/8”
(1) PD-128 12’ Omni Antenna	(A9) D&K-15 (existing)	6’ Standoff	106’	(1) 7/8”
(1) 4’ Grid Dish	(A6) D&K-12 CSP-11 (existing)	Pipe Mounted to Tower	106’	(1) 7/8”
(3) AAHC Panels **(3) NNVV-65B-R4 Panels** **(3) TD-RRH8x20-25W RRH w/ Solar shield Units**	**Sprint (Proposed)**	*Shared with below*	**105’**	**(2) MIMO/Nokia Hybrid Cable (1.689” O.D.)**
(3) APXVSPP18-C (3) ALU 800 MHz RRH Units (3) ALU 1900 MHz RRH Units	Sprint (existing)	(3) 10’ Frame w/ tie-back arms (existing)	105’	(3) RFS Hybriflex Cables (1-1/4” Dia.)
(1) (inverted) 12’ Omni Antenna	(A4) D&K-4 DEA-32 (existing)	10’ Standoff Arm	91’	(1) 7/8”

Antenna Type	*Carrier*	*Mount*	*Mount Elevation*	*Cable*
(1) 22’ 4-Bay Dipole Antenna	(A5) D&K-11 USS-26 (existing)	3’ Standoff	86’	(1) 7/8”
(1) Ice Shield for Dish Mounted Below	CSP-13 (existing)	Pipe Mounted to Tower	76’	N/A
-----	(A3) D&K-3 (existing)	Pipe Mount for Dish Antenna	71’	N/A
(1) GPS	(A2) D&K-2 Sprint (existing)	6’ Standoff	61’	(1) 1/2”
(1) DB-803 3’ Omni Antenna	(A1) D&K-1 CSP-68 (existing)	3’ Standoff	50’	(1) 1/2"

NOTES: Antenna ID numbering of antenna and appurtenances obtained from Tower Mapping and Existing Inventory via tower climb, performed by D&K Nationwide Communications, Inc. on March 17, 2016.

“A#” refers to the antenna number used in the structural analysis program to identify tower appurtenances.

This structural analysis of the communications tower was performed by AECOM for AT&T and Sprint. The purpose of this analysis was to investigate the structural integrity of the modified tower and existing foundation for existing and proposed antenna loads in compliance with the 2016 Connecticut State Building Code. This analysis was conducted to evaluate stress on the tower and the effect forces to the foundation of the tower resulting from existing and proposed antenna arrangements.

3. ANALYSIS METHODOLOGY AND LOADING CONDITIONS

The structural analysis was done in accordance with, the TIA-222-G–Structural Standard for Antenna Towers and Antenna Supporting Structures and Antennas, the 2012 International Building Code with 2016 Connecticut State Building Code Amendments and the American Institute of Steel Construction (AISC) Manual of Steel Construction – Load Resistance Factor Design (LRFD)

The structural analysis was conducted using TNX Tower version 7.0.8.3 and used the following conditions for this tower review (following the TIA/EIA-222-G Standard):

- Structure Class 3 – (Essential Communications)
  - NOTE: ASCE 7 and CT State Building Code Applied Risk Category 4 for design wind loads (see below)
- Topographic Category 3 – (Tower location on top of hill – rolling wind conditions considered)
  - Crest Height used for analysis: (approximate elevations listed below)
    - Tower Base Elevation = 370 feet
    - High point (2 mile Radius) = 460 feet (Ref. Huckleberry Hills)
    - Low Point (2 mile Radius) = 150 feet (Ref. Winnipauk Millpond)
    - "H" = (Avg of High/Low) – Base Elevation = 65 feet
- Exposure Class C – (Open Terrain with scattered obstructions)
- Load Conditions:
  - Two load conditions were evaluated as shown which were compared to design stresses according to AISC and TIA-222-G Standard.

Basic Wind Speed:

- TIA-222-G:
  - Fairfield County (Wind Speed Range): V = 90 mph - 110 mph (3-second gust) [Annex of TIA/EIA-222-G 2006]
- IBC 2012 w/ 2016 CT State Building Code Amendment:
  - (2012) IBC Section 1609.1.1 – Determination of Wind Loads – Exception 5 "Designs using TIA-222" applies for determination of Design Wind Load obtained as "V.ult" are to be converted to "V.asd" when applying the TIA-222-G design Standard (under Section 1609.3) for Basic Wind Speed.
  - (2016) CT State Building Code Amendment to the IBC Section 1609.3 wind loads are obtained from Appendix N of the State Building Code.
    - **V.asd = 101 mph** (3-Second Gust) Wind Design Parameter for the Town of Wilton, Connecticut for Risk Category four (IV) for essential communications (Connecticut State Police).

LOAD CONDITION 1 = 101 MPH (3-SECOND GUST) WIND LOAD (WITHOUT ICE) + TOWER DEAD LOAD
Load Condition 2 = 50 mph (3-second gust) Wind Load (with ice) + Ice Load + Tower Dead Load

Ice thickness used for this analysis is **0.75 inch** (assumed to start at the base of the tower) and is considered to increase in thickness with height. The initial ice thickness for design is referenced in the Annex of TIA-222-G and follows the same design criteria as the ASCE 7 Standard.

The below load condition implements the design requirements of the Connecticut State Police for the tower structures deflection limits with the allowable deflection limit of the combination of the tower's sway (deflection) and twist (rotation) under the TIA-222-F design Standard. This design limit required the design combined value of sway (deflection) and twist (rotation) to be under 0.75 degrees following the TIA-222-F design Standard.

3. ANALYSIS METHODOLOGY AND LOADING CONDITIONS (cont.)

Load Condition 3 = 90 mph (fastest mile) Wind Load (with ice) + Ice Load + Tower Dead Load

Seismic event consideration factors/values for design:

- S.s = 0.231 (2016 CT State Building Code – Location Specific Value)
- S.1 = 0.068 (2016 CT State Building Code – Location Specific Value)
- Site Classification = "D" – from Geotechnical Report
- Seismic Design Category = "C" – (2012 International Building Code)
- F.a = 1.6 (Obtained from TIA-222-G Table 2-12 Considering above conditions)
- F.v = 2.4 (Obtained from TIA-222-G Table 2-13 Considering above conditions)

Strength Limit State Load Combinations (TIA-222-G Section 2.3.2):

The structural analysis herein has considered the following load combinations within the analysis:

1. ***1.2 Dead Load Tower structure + 1.0 Dead Load Guy Assemblies + 1.6 Wind load without ice***
2. 1.2 Dead Load Tower structure + 1.0 Dead Load Guy Assemblies + 1.0 Dead weight of ice due to factored ice thickness + 1.0 Concurrent wind load with factored ice thickness + 1.0 Load effects due to temperature
3. 1.2 Dead Load Tower structure + 1.0 Dead Load Guy Assemblies + 1.0 Earthquake Load

NOTE 1: The above **bolded** load combination is considered to create the governing design loads per the results of the analysis.

NOTE 2: The above "Dead Load Guy Assemblies" are not considered as part of the analysis and are considered as a value of zero.

NOTE 3: The "Load effects due to temperature" do not apply for structures that are self-sustaining (from the TIA-222-G Standard)

4. FINDINGS AND EVALUATION

The combined axial and bending stresses on the tower structure were evaluated to compare with the strength design in accordance with AISC (LRFD). The results of an initial analysis indicated that the existing tower structure did not have enough capacity to support the proposed loading conditions. The tower structure requires modifications shown on SK-1 and SK-2. **Once the modifications indicated on sheets SK-1 and SK-2 are performed, the modified structure and existing foundation are considered structurally adequate with the wind load specification and with the existing and proposed antenna loading included herein.**

The tower sway (deflection) is 0.5917 degrees and the tower twist (rotation) is 0.0484 degrees. These figures are within the Connecticut State Police specification of 0.75 degrees for combined deflection (sway) and rotation (twist).

Tower Base Reactions:

Description	Current
Pier Compression (kips)	464
Pier Uplift (kips)	425
Overall Overturning (kip-ft)	11085
Overall Shear (kips)	118
Shear per Leg (kips)	47

Controlling Tower Component Stress vs. Capacity Summary:

Component / (Section No.)	Critical Component Size	Controlling Elevation	Stress (% capacity)	Pass/Fail
Leg (T19)	L8x8x1 1/8"	0' – 10'	84.9	Pass
Diagonal (T19)	2L2 1/2x2 1/2x5/16	0' – 10'	90.7	Pass
Horizontal (T19)	2L2 1/2x2 1/2x1/4	0'-10'	56.2	Pass
Secondary Horizontal (T18)	L3 1/2x3 1/2x1/4	10'-20'	37.4	Pass
Top Girt (T16)	2L2-1/2x2-1/2x1/4	30'-40'	21.0	Pass
Redund Horz 1 Bracing (T19)	L2 1/2x2 1/2x3/16	0'-10'	40.1	Pass
Redund Diag 1 Bracing (T19)	L2 1/2x2 1/2x3/16	0'-10'	84.8	Pass
Redund Hip 1 Bracing (T19)	L2 1/2x2 1/2x3/16	0'-10'	0.6	Pass
Redund Sub Horz Bracing (T19)	L3x3x5/16	0'-10'	78.9	Pass
Inner Bracing (T19)	2L2x2 1/2x3/16	0'-10'	2.9	Pass
Tower Connection Bolts	(2) A325X 5/8" Dia. Bolts	90'	68.1	Pass

Foundation Summary:

Component	Required	Computed	% Capacity	Pass/Fail
Anchor Rod Capacity (TIA-222-G – 4.9.9)	Ratio < 1.0	0.688	68.8	Pass
Overturning Moment Factor of Safety TIA-222-G Conditions	Resist OT * (0.75) Reduction Factor (TIA-222-G – Section 9.4.1) 18165 Kip*ft	12210 kip*ft	67.21	Pass
Bearing Pressure (TIA-222-G Conditions)	5.100 ksf max	2.6339 ksf	51.7	Pass

4. FINDINGS AND EVALUATION (cont.)

Maximum Deformations – Proposed Condition

ANSI/TIA-222-G Section 2.8.2 - Limit State Deformations

1. A rotation of 4 degrees about the vertical axis (twist) or any horizontal axis (sway) of the structure
2. A horizontal displacement (in feet) of 3% of the height of the structure.

Load Case Description	Current		Allowable	
	Sway (degree)	Displacement (Feet)	Sway (degree)	Displacement (Feet)
Service Wind Load	0.1322	1.0974	4.0	5.40

Tower Twist & Sway at Top (Connecticut State Police Requirements - TIA-222-F):

Description	Current	Total	Allowable
Tower Twist (degrees)	0.0484	0.6401	0.750
Tower Sway (degrees)	0.5917		

5. CONCLUSIONS

The results of an initial structural analysis indicated the existing tower did not have enough capacity for the proposed loading conditions. The existing tower structure required modifications shown on SK-1 and SK-2. **Once the modifications indicated on sheets SK-1 and SK-2 are performed, the modified structure is considered structurally adequate with the wind load classification specified herein with the existing and proposed antenna loading. No installation of proposed antennas shall occur without the required modification being completed.**

The results of the analysis of the modified tower's sway (deflection) is 0.5917 degrees and the modified tower's twist (rotation) is 0.0484 degrees. These figures are within the Connecticut State Police requirements of 0.75 degrees for combined twist (rotation) and sway (deflection) when applying the TIA/EIA-222-F design conditions.

Limitations/Assumptions:

This report is based on the following:

1) Tower inventory as listed in this report.

2) Tower is properly installed and maintained.

3) All members are as specified in the original design documents and are in good condition.

4) All required members are in place.

5) All bolts are in place and are properly tightened.

6) Tower is in plumb condition.

7) All member protective coatings are in good condition.

8) All tower members were properly designed, detailed, fabricated, and installed and have been properly maintained since erection.

9) Foundations are in good condition without defects and were properly constructed to support original design loads as specified in the original design documents.

AECOM is not responsible for any modifications completed prior to or hereafter in which AECOM is not or was not directly involved. Modifications include but are not limited to:

A. Adding antennas
B. Removing/replacing antennas
C. Adding coaxial cables

AECOM hereby states that this document represents the entire report and that it assumes no liability for any factual changes that may occur after the date of this report. All representations, recommendations, and conclusions are based upon information contained and set forth herein. If you are aware of any information which conflicts with that which is contained herein, or you are aware of any defects arising from original design, material, fabrication, or erection deficiencies, you should disregard this report and immediately contact AECOM. AECOM disclaims all liability for any representation, recommendation, or conclusion not expressly stated herein.

Ongoing and Periodic Inspection and Maintenance:

After the Contractor has successfully completed the installation and the work has been accepted, the tower owner will be responsible for the ongoing and periodic inspection and maintenance of the tower.

The owner shall refer to TIA-222-G Section 14.2 for recommendations for maintenance and inspection. The frequency of the inspection and maintenance intervals is to be determined by the owner based upon actual site and environmental conditions. It is recommended that a complete and thorough inspection of the entire tower structural system be performed at least yearly and more frequently as conditions warrant. It is also recommended that the structure be inspected after severe wind and/or ice storms or other extreme loading conditions.

6.) DRAWINGS AND DATA

REINFORCEMENT DRAWINGS SK-1 AND SK-2

GENERAL CONSTRUCTION NOTES

1. ALL WORK SHALL COMPLY WITH THE CONNECTICUT STATE BUILDING AND LIFE SAFETY CODES, SUPPLEMENTS AND AMENDMENTS.
2. CONTRACTOR IS TO REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUB-CONTRACTORS AND ALL RELATED PARTIES. THE SUB-CONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
3. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON DRAWINGS OR WRITTEN IN SPECIFICATIONS.
4. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
5. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL AND HVAC. SUB-CONTRACTORS SHALL PAY FOR THEIR PERMITS.
6. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND ENSURE THE DISTRIBUTION OF NEW DRAWINGS TO SUB-CONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. CONTRACTOR SHALL FURNISH 'AS-BUILT' SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
7. INSTALLATION OF THIS WIRELESS COMMUNICATIONS EQUIPMENT SITE REQUIRES WORK IN THE IMMEDIATE VICINITY OF EXISTING TELECOMMUNICATION SYSTEMS. THE CONTRACTOR SHALL PROVIDE AND COORDINATE THE METHODS OF PROTECTION WITH THE CONNECTICUT STATE POLICE AND VARIOUS TELECOMMUNICATION CARRIERS.
8. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUB-CONTRACTORS FOR ANY CONDITION PER MFR'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR ARCHITECT.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
10. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ARCHITECT FOR REVIEW. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTAL TO THE ARCHITECT FOR REVIEW.
11. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA. SUBMIT TO THE ARCHITECT ANY DISCREPANCIES FROM THE DRAWINGS.
12. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, OBTAIN CONCURRENCE FROM THE CONNECTICUT STATE POLICE, AND TO ENSURE THE SAFETY OF THE EXISTING BUILDING AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY.
13. COORDINATE ALL CIVIL AND ELECTRICAL DRAWINGS FOR THE LOCATION OF ALL OPENINGS, RECESSES, BUILT-IN WORK, ETC.
14. CONTRACTOR TO CONTACT "CALL BEFORE YOU DIG" AT 1-800-922-4455 TO VERIFY AND IDENTIFY THE EXACT LOCATIONS OF ALL UNDERGROUND UTILITIES AND OBSTRUCTIONS IDENTIFIED PRIOR TO COMMENCING WORK IN THE CONTRACT AREA.
15. DIMENSIONS OF EXISTING TOWER AREA BASED ON MANUFACTURER'S DRAWINGS PREPARED BY BAYAR AND ASSOCIATES, DATED JUNE 1990, AND ARE NOT GUARANTEED. CONTRACTOR SHALL TAKE FIELD DIMENSIONS AS NECESSARY TO ASSURE PROPER FIT OF ALL FINISHED WORK AND SHALL ASSUME FULL RESPONSIBILITY FOR THEIR ACCURACY. WHEN SHOP DRAWINGS BASED ON FIELD MEASUREMENTS ARE SUBMITTED FOR REVIEW, DIMENSIONS ARE PROVIDED FOR THE ENGINEER'S REFERENCE ONLY.
16. CONTRACTOR SHALL VERIFY REQUIRED CLEARANCES INCLUDING BUT NOT LIMITED TO EXISTING BUILDINGS, EQUIPMENT PADS AND SHELTERS PRIOR TO COMMENCING WORK.
17. THE OMISSION OF ANY MATERIAL THAT WAS SHOWN ON THE CONTRACT DRAWINGS SHALL NOT RELIEVE THE CONTRACTOR OF PROVIDING THE SAME.
18. STRUCTURE IS DESIGNED TO BE LEVEL AND PLUMB, SELF-SUPPORTING AND STABLE AFTER WORK IS COMPLETED.
19. COMMENCEMENT OF TOWER STEEL WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.
20. THE CONTRACTOR IS RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE DURING CONSTRUCTION. THE CONTRACTOR SHALL BE AWARE OF WEATHER AND WIND CONDITIONS AND NOT PERFORM STEEL MEMBER REPLACEMENT IN A WIND.

STRUCTURAL NOTES

STRUCTURAL STEEL MATERIAL TO BE PROVIDED:

STRUCTURAL PLATES, STEEL BEAMS & ANGLES..... A36

STRUCTURAL STEEL SHALL CONFORM TO ALL THE REQUIREMENTS OF THE ASTM SPECIFICATION, AS REFERENCED IN THE CODE.

UNLESS OTHERWISE NOTED, ALL STEEL SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM 123 AFTER FABRICATION. TOUCH UP ALL DAMAGED GALVANIZED STEEL WITH APPROVED COLD ZINC, "GALVANOX", "DRY GALV", "ZINC-IT", OR APPROVED EQUIVALENT, IN ACCORDANCE WITH MANUFACTURERS GUIDELINES. TOUCH-UP DAMAGED NON GALVANIZED STEEL WITH SAME PAINT APPLIED IN SHOP OR FIELD.

SHOP AND ERECTION DRAWINGS SHALL BE SUBMITTED FOR ALL STRUCTURAL STEEL WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. SUBMIT 2 SETS OF PRINTS FOR THE ENGINEER REVIEW.

THE OMISSION OF ANY MATERIAL THAT WAS SHOWN ON THE CONTRACT DRAWINGS SHALL NOT RELIEVE THE CONTRACTOR OF PROVIDING THE SAME.

CONNECTIONS / FIELD ASSEMBLY:

BOLTED CONNECTIONS: UNLESS OTHERWISE NOTED, ALL JOINTS ARE SLIP CRITICAL TYPE, REQUIRING 5/8" DIA. A325-X BOLTS, A563 NUTS AND F436 WASHERS, ALL GALVANIZED. BEVELED WASHERS SHALL BE USED ON BEAM FLANGES HAVING A SLOPE GREATER THAN 1:20.

STRUCTURE IS DESIGNED TO BE LEVEL AND PLUMB, SELF-SUPPORTING AND STABLE AFTER WORK IS COMPLETED.

COMMENCEMENT OF WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.

INSPECTIONS:

SPECIAL INSPECTIONS ARE REQUIRED PER THE CODE FOR STRUCTURAL STEEL WORK.

OWNER WILL SUPPLY THE SERVICES OF A SPECIAL INSPECTOR AND TESTING AGENTS AS REQUIRED BY AUTHORITY HAVING JURISDICTION. CONTRACTOR SHALL COORDINATE INSPECTIONS OF FABRICATOR'S AND ERECTOR'S WORK AND MATERIALS TO MEET THE REQUIREMENTS OF THE STATEMENT OF SPECIAL INSPECTIONS FOR THIS PROJECT.

COPIES OF TESTING AND INSPECTION REPORTS WILL BE PROVIDED TO THE OWNER, BUILDING OFFICIAL, ENGINEER OF RECORD AND CONTRACTOR.

SITE ID NO:	60570721
Designed by:	MCD
Drawn by:	GAT
Checked by:	ICA
Approved by:	RAS

AECOM
500 ENTERPRISE DRIVE, SUITE 3B
ROCKY HILL, CONNECTICUT
860-529-8882

AT&T | Sprint

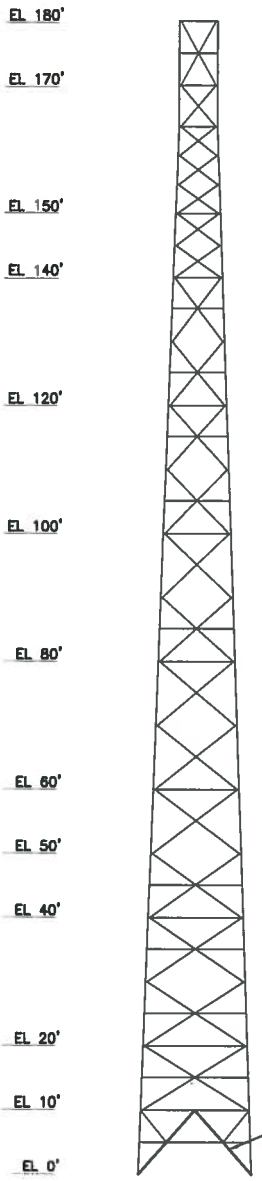
SITE ADDRESS: 180' State Police Tower #31
46 Fenwood Lane
WILTON, CONNECTICUT 06897

REV.	DATE:	DESCRIPTION

Scale: AS NOTED | Date: 07/05/18 | Job No. | File No. SK-1

Dwg. No. SK-1

NOTES:
1. REFER TO SK-1 FOR STRUCTURAL NOTES.
2. CONTRACTOR SHALL FIELD VERIFY EXISTING TOWER INFORMATION PRIOR TO ORDERING MATERIALS.
3. REINFORCEMENT OF TOWER IS REQUIRED FOR ALL 4 SIDES OF EXISTING TOWER STRUCTURE.
4. CONNECTION BOLTS FOR REPLACEMENT MEMBERS SHALL BE REPLACED IN KIND. EXISTING BOLTS SHALL NOT BE RE-USED FOR CONNECTING REPLACEMENT MEMBERS.



1 / SK-2 TOWER ELEVATION
SCALE: 1"=30'

STATE OF CONNECTICUT
RICHARD A. LAMBO
No. 9057
LICENSED PROFESSIONAL ENGINEER

SITE ID NO:	60570721
Designed by:	MCD
Drawn by:	GAT
Checked by:	ICA
Approved by:	RAS

AECOM
500 ENTERPRISE DRIVE, SUITE 3B
ROCKY HILL, CONNECTICUT
860-529-8882

AT&T Sprint

SITE ADDRESS: 180' State Police Tower #31
46 Fenwood Lane
WILTON, CONNECTICUT 06897

REV.	DATE:	DESCRIPTION

Scale: AS NOTED | Date: 07/05/18
Job No. | File No. SK-2 | Dwg. 2 of 2

Dwg. No. SK-2

SEISMIC BASE SHEAR ANALYSIS

AECOM

Seismic (Vs) Base Shear Implementing TIA–222-G, IBC 2012 & Connecticut State Building Code of 2016

Calculation of Seismic Base Shear Implementing TIA-222-G, IBC 2012 & & CT State Building Code 2016.

Location: Wilton, CT -Site Class "D"

$S_{DS} = \frac{2}{3} F_A S_S$, where $S_S = 0.231$ and $F_A = 1.6$ $S_{DS} = \frac{2}{3} F_A S_S = \frac{2}{3} * 1.6 * 0.231 = 0.246$

$S_{D1} = \frac{2}{3} F_V S_1$, where $S_1 = 0.068$ and $F_V = 2.4$ $S_{D1} = \frac{2}{3} F_V S_1 = \frac{2}{3} * 2.4 * 0.068 = 0.109$

TIA-222-G SECTION 2.7 EARTHQUAKE LOADS (PROCEDURES):

1. Importance Factor "I" (tables 2-3 TIA-222-G) = 1.5 (Structure Class 3)

ANSI/TIA-222-G 2.7.7.1 (TOTAL BASE SEISMIC SHEAR (Vs)

W=DL TOWER	=	51.850	Kips
W=Antennas/Mounts	=	14.211	Kips
W=Cables	=	7.816	Kips
		73.877	Kips = WT Total = "W"

$$V_s = \frac{S_{DS} * W * I}{R} = \frac{0.246 * 73.877 kips * 1.5}{3.0} = 9.0869\ kips,$$ where R = 3.0 for Lattice Tower

$$V_{S.min} = \frac{0.5 * S_{D1} * W * I}{R} = \frac{0.5 * 0.109 * 73.877 kips * 1.5}{3.0} = 2.0131 \quad kips$$

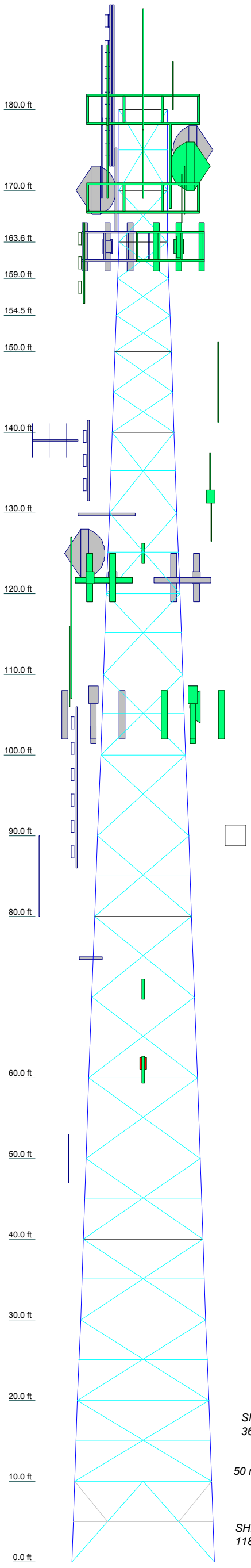
*By visual inspection, the above "Base Shear" value when considering the following Load Combination is less that the base shear of wind on structure.

$1.2 * DL + 1.0\ E < 1.2\ DL + 1.6\ W$, (118 Kips), therefore seismic effect on structure Does NOT control Design.

TNX TOWER INPUT/OUTPUT SUMMARY

Section	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13	T14	T15	T16	T17	T18	T19
Legs	L3 1/2x3 1/2x3/8		L5x5x5/16			L5x5x3/8	L6x6x1/2		L6x6x3/4		L8x8x3/4		L8x8x1 w/ 1/2x7 Plates		L8x8x1-1/8 w/ 1/2x7 Plates		L8x8x1 1/8		
Leg Grade	A36																		
Diagonals	L2 1/2x2 1/2x3/16		A			L2 1/2x2x3/16	L3x2 1/2x1/4	L3x3x1/4			L3 1/2x3x1/4		2L2 1/2x2x3/16			2L2 1/2x2x3/8		2L2 1/2x2 1/2x5/16	
Diagonal Grade											A36								
Top Girts				N.A.			L2 1/2x2 1/2x3/16			N.A.				N.A.			N.A.		
Horizontals	L2x2x3/16				N.A.				L2 1/2x2 1/2x3/16		L2 1/2x2 1/2x1/4		N.A.		2L2x2x3/16		2L2x2x3/16		2L2 1/2x2 1/2x1/4
Sec. Horizontals						N.A.	L2x2x1/4			L2x2x1/4		L2 1/2x2 1/2x1/4		2L2x2x3/16		N.A.		N.A.	
Red. Horizontals											N.A.		N.A.				L3 1/2x3 1/2x1/4		L2 1/2x2 1/2x3/16
Red. Diagonals											N.A.								L2 1/2x2 1/2x3/16
Red. Sub-Horizs											N.A.								L3x3x5/16
Red. Hips											N.A.								L2 1/2x2 1/2x3/16
Inner Bracing	N.A.		N.A.			6.9733	7.6903	8.40735	9.1244	N.A.	10.5585	N.A.	11.9926	N.A.	13.4267	N.A.	14.8608	N.A.	16.2949
Face Width (ft)	6		6.32443		6.64887	2 @ 5				1 @ 10		1 @ 6.427	11.2756			14 @ 10			
# Panels @ (ft)			1 @ 10		3 @ 4.52433														
Weight (K)	0.7	0.5	0.4	0.4	0.4	1.0	1.5	1.4	2.1	1.9	2.5	2.4	8.0	4.6	5.1	4.8	4.3	5.0	4.9

51.8



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod 2"x15' (A32)	185	DB222-A (A16 / DK-31)	136.5
SC479-HF1LDF (D00-E5764) (A28)	183	4' Side Mount Standoff (A16 / DK-31)	136.5
ANT150D (A29a)	183	BA1010 (A12 / DK-27)	132 - 127
DB222 (A29b)	183	432E-83I-01T TTA Unit (A13 / DK-28)	132
SC479-HF1LDF (D00-E5764) (A30)	183	6' Side-Arm Mount (A12,13,14 / DK-27,28,29)	132
ALR8-0 (A31)	183	Dish Ice Shield (A11 / DK-26)	130
TMA 432-83H-01T - Future Decom. (A27)	181	PD128-1 (A8 / DK-14)	128 - 121
SC479-HF1LDF (D00I-E5764) (A23)	180 - 168	3" Dia 20' Omni (A7 / DK-13)	127 - 107
15' T-Frame Sector Mount (1) (A23,24,30,31)	180	2'6"x4" Pipe Mount (A10 / DK-25)	125
SC479-HF1LDF (D00I-E5764) (A24)	180 - 168	6' PAD w/ Radome (A10 / DK-25)	125
SC479-HF1LDF (D00I-E5764) (A26)	180 - 168	RRUS-11 (T-Mobile / DK 16-24)	122
15' T-Frame Sector Mount (1) (A26,27,28,29)	180	RRUS-11 (T-Mobile / DK 16-24)	122
10'6"x4" Pipe Mount (A33)	175	AIR21 B4A|B12P (T-Mobile / DK 16-24)	122
6' PAD w/ Radome (A33)	175	(2) TMA (T-Mobile / DK 16-24)	122
10'6"x4" Pipe Mount (A25)	173	(2) TMA (T-Mobile / DK 16-24)	122
6' PAD w/ Radome (A25 /)	173	(2) TMA (T-Mobile / DK 16-24)	122
DB586-Y (A21)	170	AIR B2A/B4P (T-Mobile / DK 16-24)	122
10'6"x4" Pipe Mount (A22)	170	AIR B2A/B4P (T-Mobile / DK 16-24)	122
6' PAD w/ Radome (A22 /)	170	EUSF10-U (T-Mobile / DK 16-24)	122
BA1010-2 (A20)	169	AIR B2A/B4P (T-Mobile / DK 16-24)	122
15' T-Frame Sector Mount (1) (A20)	169	EUSF10-U (T-Mobile / DK 16-24)	122
T-Frame (ATI)	163	AIR21 B4A|B12P (T-Mobile / DK 16-24)	122
T-Frame (ATI)	163	RRUS-11 (T-Mobile / DK 16-24)	122
T-Frame (ATI)	163	AIR21 B4A|B12P (T-Mobile / DK 16-24)	122
7770.00 (ATI)	163	EUSF10-U (T-Mobile / DK 16-24)	122
(2) LGP 21901 Diplexer Unit (ATI)	163	10' Standoff (A8 / DK-14)	121
Kathrein 800-10965 Panel Antenna (ATI)	163	12' Omni Antenna (A9 - DK-15)	116 - 106
QS66512-3 Quintel Panel (ATI)	163	6' Side-Arm Mount (A7 / DK-13)	107
RRUS-11 (ATI)	163	6' Side-Arm Mount (A9 - DK-15)	106
Raycap DC6-48-60-18-8F DC Power Surge Protection (ATI)	163	DB264-A (A5 / DK-11)	106 - 86
		10'6"x4" Pipe Mount (A6 / DK-12 / CSP-11)	106
7770.00 (ATI)	163	4' Grid Dish (A6 / DK 12 / CSP-11)	106
(2) LGP 21901 Diplexer Unit (ATI)	163	12' Wireless Frame (Sprint / DK 5-10)	105
Kathrein 800-10965 Panel Antenna (ATI)	163	12' Wireless Frame (Sprint / DK 5-10)	105
QS66512-3 Quintel Panel (ATI)	163	12' Wireless Frame (Sprint / DK 5-10)	105
RRUS-11 (ATI)	163	APXVSPP18-C-A20 w/ Mount Pipe (Sprint / DK 5-10)	105
7770.00 (ATI)	163		
(2) LGP 21901 Diplexer Unit (ATI)	163	APXVSPP18-C-A20 w/ Mount Pipe (Sprint / DK 5-10)	105
Kathrein 800-10965 Panel Antenna (ATI)	163		
QS66512-3 Quintel Panel (ATI)	163	APXVSPP18-C-A20 w/ Mount Pipe (Sprint / DK 5-10)	105
RRUS-11 (ATI)	163		
4478 Radio Unit (4x40W) (ATI)	163	ALU 800MHz 2x50W (Sprint / DK 5-10)	105
4478 Radio Unit (4x40W) (ATI)	163	ALU 800MHz 2x50W (Sprint / DK 5-10)	105
4478 Radio Unit (4x40W) (ATI)	163	ALU 800MHz 2x50W (Sprint / DK 5-10)	105
RRUS-32 B66 (ATI)	163	ALU 4x45W (1900 MHz) (Sprint / DK 5-10)	105
RRUS-32 B66 (ATI)	163	ALU 4x45W (1900 MHz) (Sprint / DK 5-10)	105
RRUS-32 B66 (ATI)	163	ALU 4x45W (1900 MHz) (Sprint / DK 5-10)	105
RRUS-32 B2 (ATI)	163	AAHC Panel Antenna (Sprint)	105
RRUS-32 B2 (ATI)	163	AAHC Panel Antenna (Sprint)	105
RRUS-32 B2 (ATI)	163	AAHC Panel Antenna (Sprint)	105
RRUS-32 (ATI)	163	NNVV-65B-R4 Panel Antenna (Sprint)	105
RRUS-32 (ATI)	163	NNVV-65B-R4 Panel Antenna (Sprint)	105
RRUS-32 (ATI)	163	NNVV-65B-R4 Panel Antenna (Sprint)	105
DC6-48-60-18-8C Squid / Surge Arrestor (ATI)	163	TD-RRH8x20-25 (Sprint)	105
DC6-48-60-18-8C Squid / Surge Arrestor (ATI)	163	TD-RRH8x20-25 (Sprint)	105
(2) LPG21401 TMA (ATI)	163	TD-RRH8x20-25 (Sprint)	105
(2) LPG21401 TMA (ATI)	163	10' Standoff (A4 / DK-4)	91
(2) LPG21401 TMA (ATI)	163	SC479-HF1LDF (A4 / DK-4)	91 - 79
DB408-B (A19)	161	4' Side Mount Standoff (A5 / DK-11)	86
(2) 6' Side Mount Standoff (A19)	161	Dish Ice Shield (A3 / DK-3)	75
12' Omni Antenna (A15 / DK-30)	152 - 140.5	2'6"x4" Pipe Mount (A3 / DK-3)	71
8' Side Arm Mount (A15 / DK-30)	140.5	GPS (A2 / Sprint)	61
Yagi ASP-816 (A17 / DK-32)	139	3'4"x4" Pipe Mount (A2 / Sprint)	61
6' Side-Arm Mount (A17 / DK-32)	139	3' Stand-off (A1 / DK-1)	50
6' Side-Arm Mount (A18 / DK-33)	139	DB803M-Y (A1 / DK-1)	50
BA1010 (A14 / DK-29)	137 - 132		

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	L2x2x3/16		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A36	36 ksi	58 ksi			

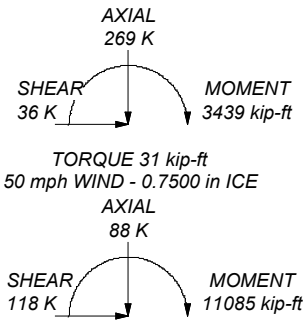
TOWER DESIGN NOTES

1. Tower designed for Exposure C to the TIA-222-G Standard.
2. Tower designed for a 93 mph basic wind in accordance with the TIA-222-G Standard.
3. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Structure Class III.
6. Topographic Category 3 with Crest Height of 65.00 ft
7. TOWER RATING: 90.6%

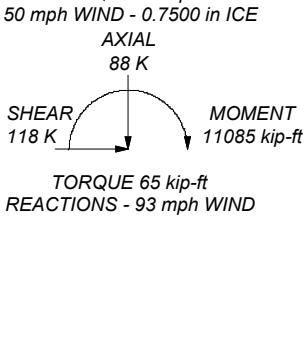
ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 464 K
SHEAR: 47 K

UPLIFT: -425 K
SHEAR: 45 K



TORQUE 31 kip-ft
50 mph WIND - 0.7500 in ICE

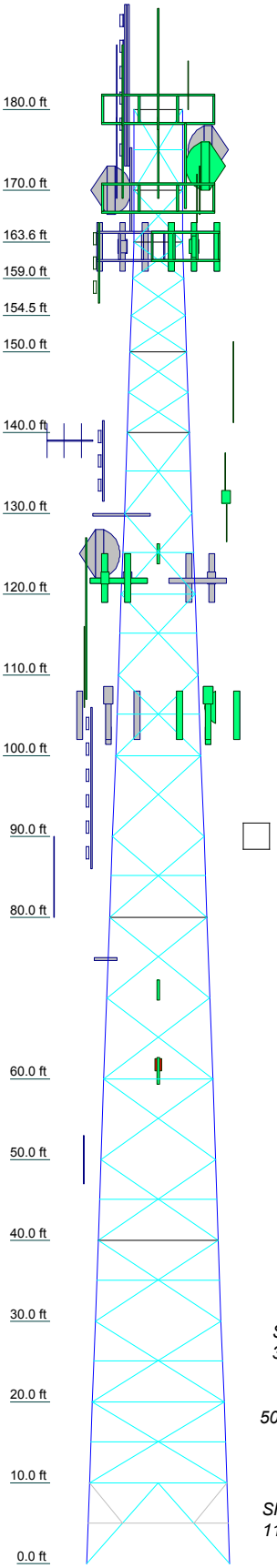


TORQUE 65 kip-ft
REACTIONS - 93 mph WIND

AECOM
500 Enterprise Drive, Suite 3B
Rocky Hill, CT
Phone: 860-529-8882
FAX: 860-529-3991

Job: **180' Lattice Tower - CSP**			
Project: ***Structural Analysis & MODification***			
Client: Wilton, CT / AT&T / Sprint	Drawn by: MCD	App'd:	
Code: TIA-222-G	Date: 07/05/18	Scale: NTS	
Path:		Dwg No. E-1	

Section	T19	T18	T17	T16	T15	T14	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs		L8x8x1 1/8				B	L8x8x1 w/ 1/2x7 Plates		L8x8x3/4	L6x6x3/4		L6x6x1/2		L5x5x3/8			L5x5x5/16		A
Leg Grade									A36										
Diagonals	D		2L2 1/2x2x3/8				2L2 1/2x2x3/16		L3 1/2x3x1/4		L3x3x1/4		L3x2 1/2x1/4	L2 1/2x2x3/16		C		L2 1/2x2 1/2x3/16	
Diagonal Grade									A36										
Top Girts		N.A.		2L2x2x3/16	N.A.		L2 1/2x2 1/2x1/4		N.A.		E		L2 1/2x2 1/2x3/16		N.A.			L2x2x3/16	
Horizontals	F	2L2x2x3/16		N.A.		2L2x2x3/16	N.A.		E	N.A.	L2x2x3/16	L2x2x1/4		N.A.		L2x2x3/16			
Sec. Horizontals	N.A.		L3 1/2x3 1/2x1/4				N.A.		N.A.										
Red. Horizontals	G								N.A.										
Red. Diagonals	G								N.A.										
Red. Sub-Horizs	L3x3x5/16								N.A.										
Red. Hips	G								N.A.										
Inner Bracing		2L2x2 1/2x3/16		N.A.		2L2x2x3/16	N.A.		2L2x2x3/16	N.A.	H	N.A.	L2x2x3/16		N.A.				
Face Width (ft)	17.73	17.0125	16.2949	15.5779	14.8608	14.1438	13.4267	11.9926	11.2756	10.5585	9.1244	8.40735	7.6903	6.9736	6.4887	6.32443			6
# Panels @ (ft)							14 @ 10						2 @ 5	3 @ 4.52433				1 @ 6.427	1 @ 10
Weight (K)	51.8	4.9	5.0	4.3	4.8	5.1	4.6	8.0	2.4	2.5	1.9	2.1	1.4	1.5	1.0	0.4	0.4	0.5	0.4	0.7



SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	L3 1/2x3 1/2x3/8	E	L2 1/2x2 1/2x1/4
B	L8x8x1-1/8 w/ 1/2x7 Plates	F	2L2 1/2x2 1/2x1/4
C	L2x2x3/16	G	L2 1/2x2 1/2x3/16
D	2L2 1/2x2 1/2x5/16	H	L2 1/2x2x3/16

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A36	36 ksi	58 ksi			

TOWER DESIGN NOTES

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SHEAR: 47 K

UPLIFT: -425 K
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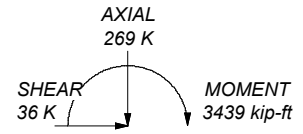
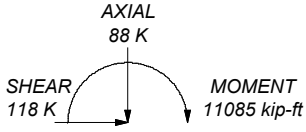


TORQUE 31 kip-ft
50 mph WIND - 0.7500 in ICE



TORQUE 65 kip-ft
REACTIONS - 93 mph WIND

AECOM
500 Enterprise Drive, Suite 3B
Rocky Hill, CT
Phone: 860-529-8882
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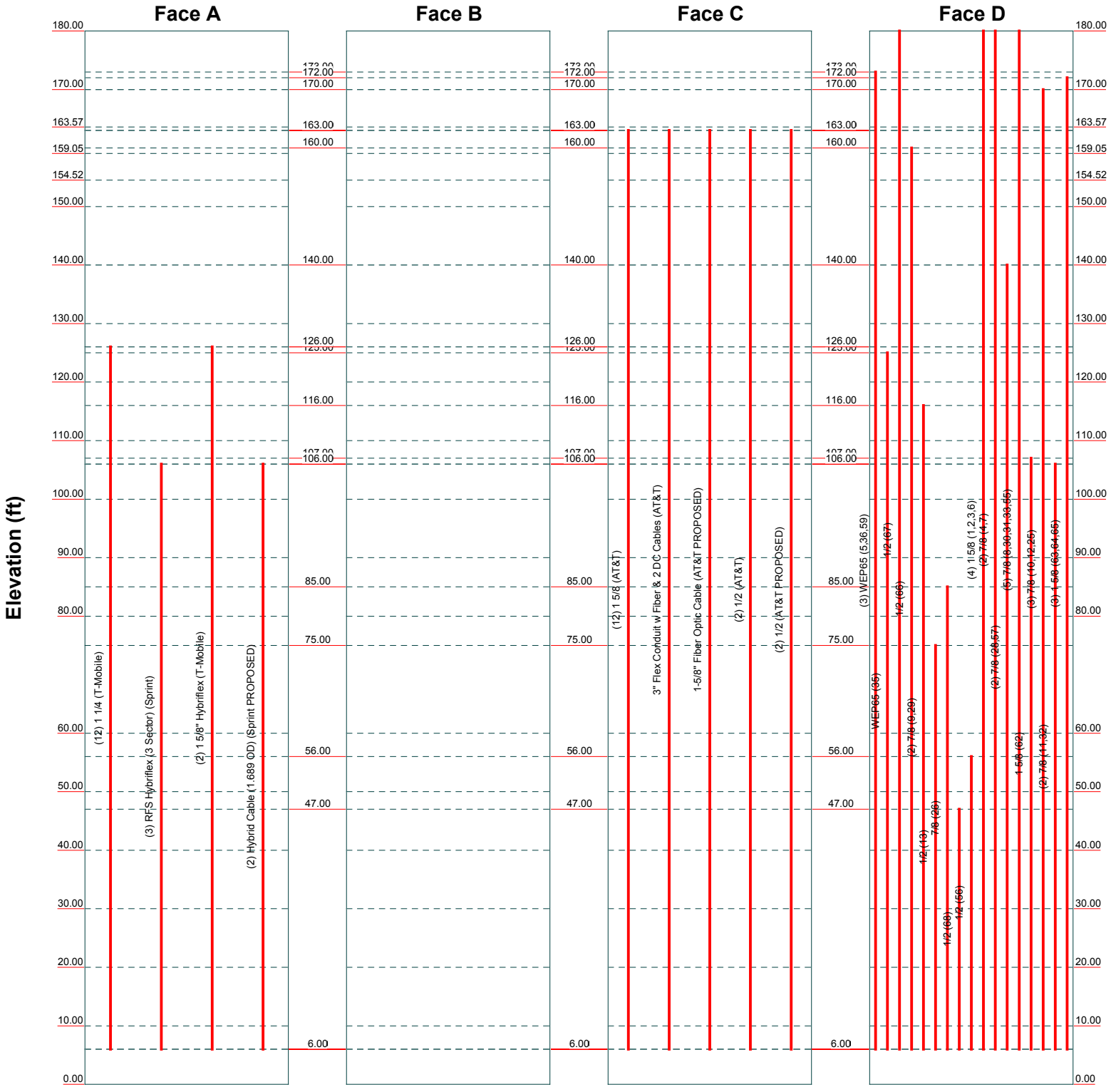
Job: ***180' Lattice Tower - CSP***			
Project: ***Structural Analysis & MODification***			
Client: Wilton, CT / AT&T / Sprint	Drawn by: MCD	App'd:	
Code: TIA-222-G	Date: 07/05/18	Scale: NTS	
Path:		Dwg No. E-1	

TNX TOWER FEEDLINE DISTRIBUTION

Feed Line Distribution Chart
0' - 180'

Round | Flat | App In Face | App Out Face | Truss Leg



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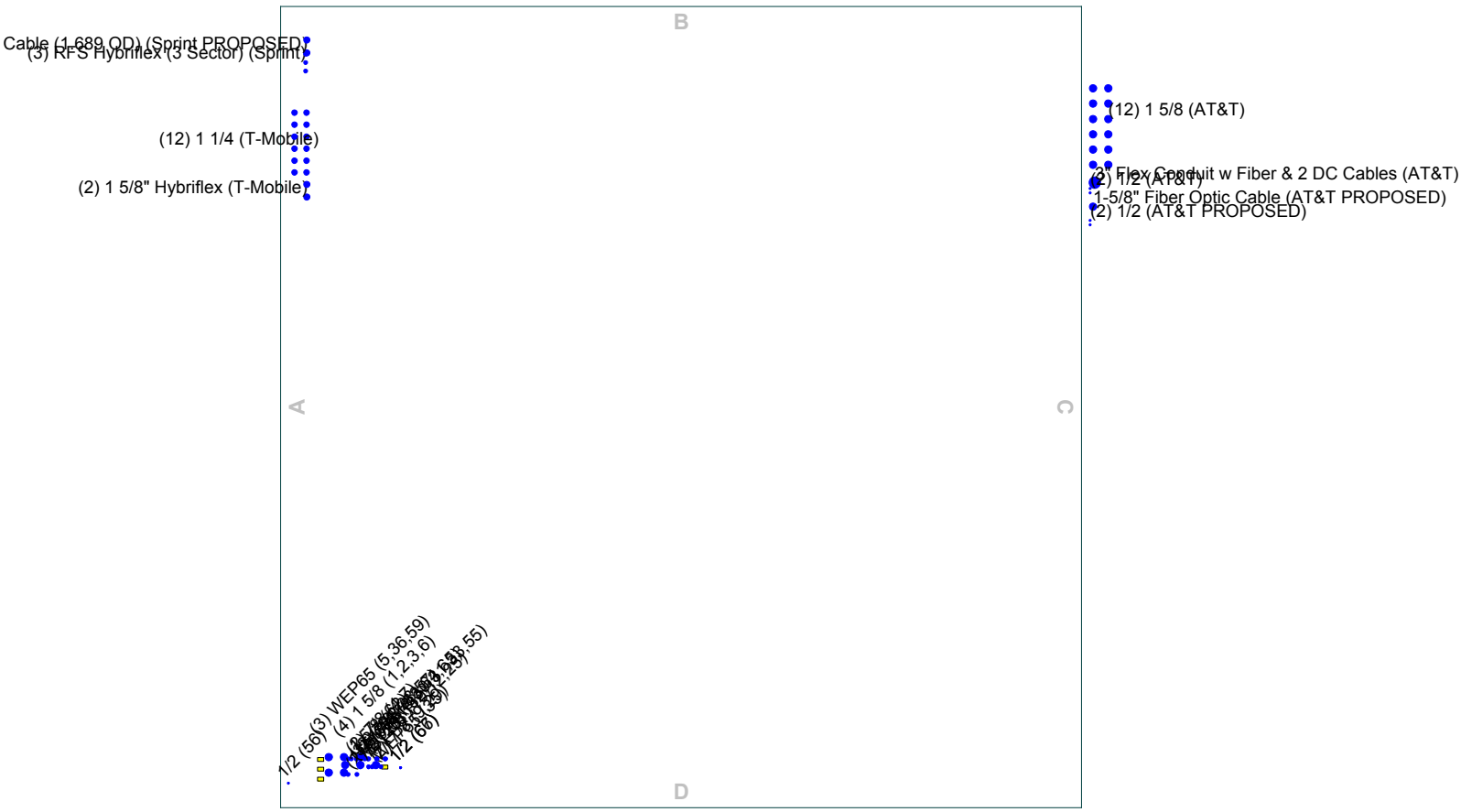
Project:	***Structural Analysis & MODification***		
Client: Wilton, CT / AT&T / Sprint		Drawn by: MCD	App'd:
Code: TIA-222-G		Date: 07/05/18	Scale: NTS
Path:			Dwg No. E-7

TNX TOWER FEEDLINE PLAN

Feed Line Plan

Round Flat App In Face App Out Face



(8) 1-5/8" Coax Cables
(18) 7/8" Coax Cables
(4) 1/2" Coax Cables
(4) WEP65 Elliptical Cables

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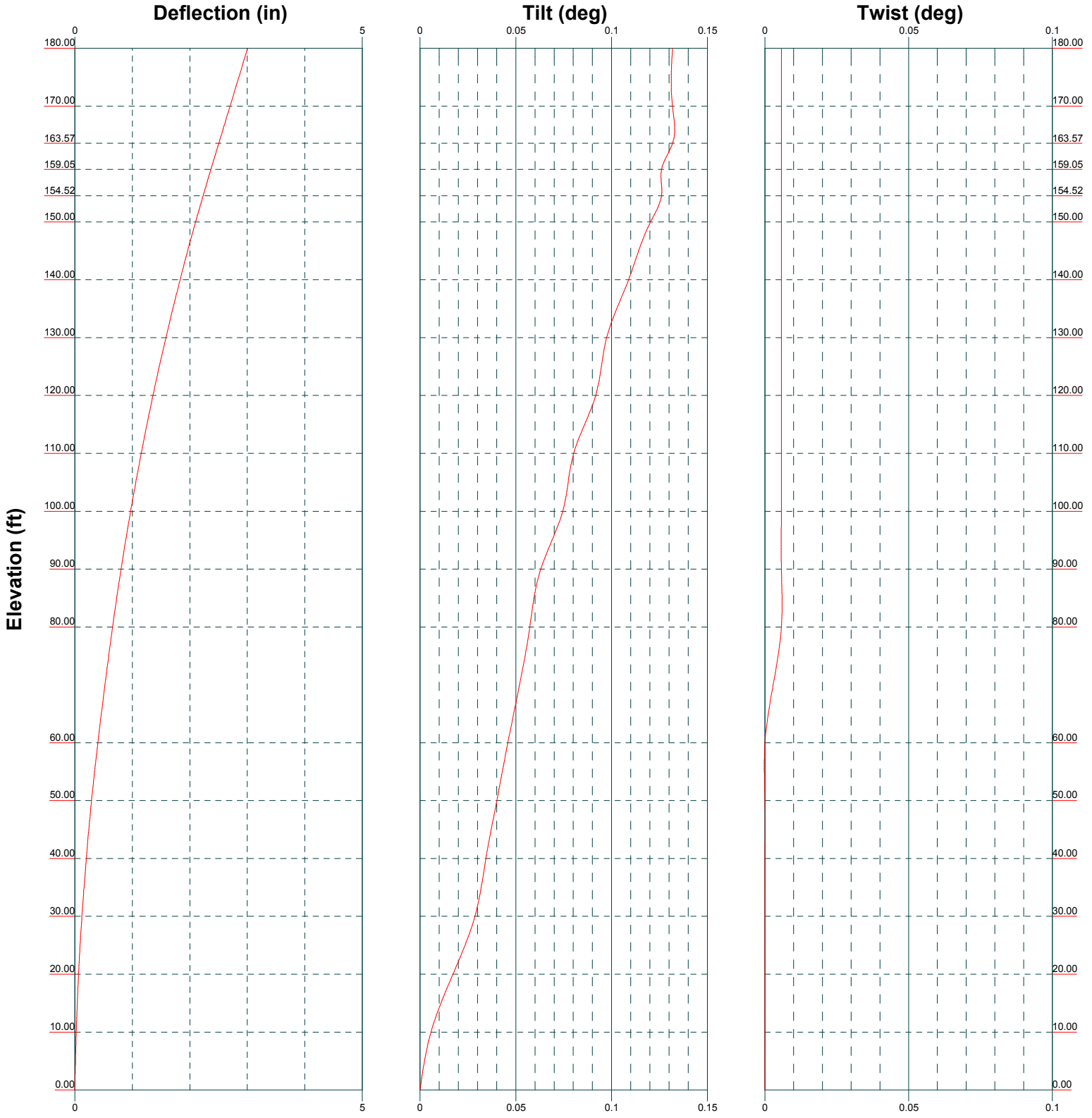
FAX: 860-529-3991

Job: 180' Lattice Tower - CSP			
Project: Structural Analysis & MODification			
Client: Wilton, CT / AT&T / Sprint	Drawn by: MCD	App'd:	
Code: TIA-222-G	Date: 07/05/18	Scale: NTS	
Path:		Dwg No. E-7	

TNX TOWER DEFLECTION, TILT, AND TWIST

TIA-222-G - Service - 60 mph

Maximum Values



AECOM
500 Enterprise Drive, Suite 3B
Rocky Hill, CT
Phone: 860-529-8882
FAX: 860-529-3991

Job: ***180' Lattice Tower - CSP***			
Project: ***Structural Analysis & MODification***			
Client: Wilton, CT / AT&T / Sprint	Drawn by: MCD	App'd:	
Code: TIA-222-G	Date: 07/05/18	Scale: NTS	
Path:		Dwg No. E-5	

TNX TOWER DETAILED OUTPUT

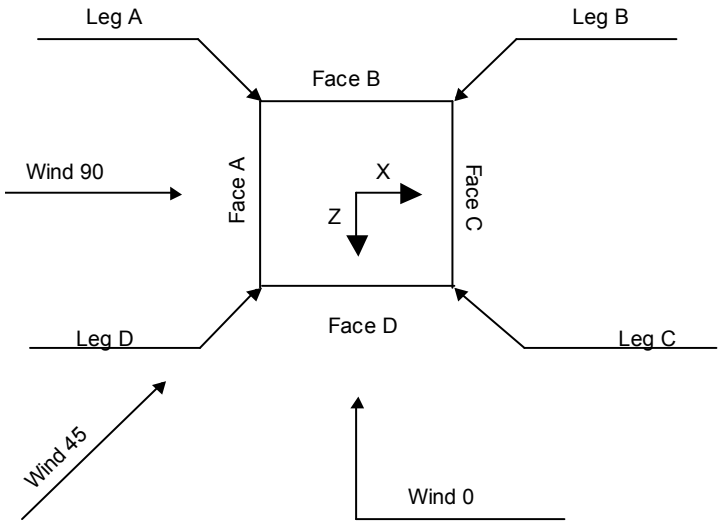
Tower Input Data

The main tower is a 4x free standing tower with an overall height of 180.00 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 6.00 ft at the top and 17.73 ft at the base.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Basic wind speed of 93 mph.
Structure Class III.
Exposure Category C.
Topographic Category 3.
Crest Height 65.00 ft.
Nominal ice thickness of 0.7500 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 tower member design is 1.
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-G Bracing Resist. Exemption
√ Include Bolts In Member Capacity	Autocalc Torque Arm Areas	Use TIA-222-G 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		



Square Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	180.00-170.00			6.00	1	10.00
T2	170.00-163.57			6.00	1	6.43
T3	163.57-159.05			6.00	1	4.52
T4	159.05-154.52			6.32	1	4.52
T5	154.52-150.00			6.65	1	4.52
T6	150.00-140.00			6.97	1	10.00
T7	140.00-130.00			7.69	1	10.00
T8	130.00-120.00			8.41	1	10.00
T9	120.00-110.00			9.12	1	10.00
T10	110.00-100.00			9.84	1	10.00
T11	100.00-90.00			10.56	1	10.00
T12	90.00-80.00			11.28	1	10.00
T13	80.00-60.00			11.99	1	20.00
T14	60.00-50.00			13.43	1	10.00
T15	50.00-40.00			14.14	1	10.00
T16	40.00-30.00			14.86	1	10.00
T17	30.00-20.00			15.58	1	10.00
T18	20.00-10.00			16.29	1	10.00
T19	10.00-0.00			17.01	1	10.00

Tower 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

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	180.00-170.00	10.00	X Brace	No	Yes	0.0000	0.0000
T2	170.00-163.57	6.43	X Brace	No	No	0.0000	0.0000
T3	163.57-159.05	4.52	X Brace	No	No	0.0000	0.0000
T4	159.05-154.52	4.52	X Brace	No	No	0.0000	0.0000
T5	154.52-150.00	4.52	X Brace	No	No	0.0000	0.0000
T6	150.00-140.00	5.00	X Brace	No	No	0.0000	0.0000
T7	140.00-130.00	10.00	X Brace	No	Yes	0.0000	0.0000
T8	130.00-120.00	10.00	X Brace	No	Yes	0.0000	0.0000
T9	120.00-110.00	10.00	X Brace	No	Yes	0.0000	0.0000
T10	110.00-100.00	10.00	X Brace	No	Yes	0.0000	0.0000
T11	100.00-90.00	10.00	X Brace	No	Yes	0.0000	0.0000
T12	90.00-80.00	10.00	X Brace	No	Yes	0.0000	0.0000
T13	80.00-60.00	10.00	X Brace	No	Yes	0.0000	0.0000
T14	60.00-50.00	10.00	X Brace	No	Yes	0.0000	0.0000
T15	50.00-40.00	10.00	X Brace	No	Yes	0.0000	0.0000
T16	40.00-30.00	10.00	X Brace	No	Yes	0.0000	0.0000
T17	30.00-20.00	10.00	X Brace	No	Yes	0.0000	0.0000
T18	20.00-10.00	10.00	X Brace	No	Yes	0.0000	0.0000
T19	10.00-0.00	10.00	K1 Down	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 180.00-170.00	Single Angle	L3 1/2x3 1/2x3/8	A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T2 170.00-163.57	Single Angle	L5x5x5/16	A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T3 163.57-159.05	Single Angle	L5x5x5/16	A36 (36 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T4 159.05-154.52	Single Angle	L5x5x5/16	A36 (36 ksi)	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)
T5 154.52-150.00	Single Angle	L5x5x5/16	A36 (36 ksi)	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)
T6 150.00-140.00	Single Angle	L5x5x3/8	A36 (36 ksi)	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)
T7 140.00-130.00	Single Angle	L6x6x1/2	A36 (36 ksi)	Single Angle	L3x2 1/2x1/4	A36 (36 ksi)
T8 130.00-120.00	Single Angle	L6x6x1/2	A36 (36 ksi)	Single Angle	L3x3x1/4	A36 (36 ksi)
T9 120.00-110.00	Single Angle	L6x6x3/4	A36 (36 ksi)	Single Angle	L3x3x1/4	A36 (36 ksi)
T10 110.00-100.00	Single Angle	L6x6x3/4	A36 (36 ksi)	Single Angle	L3 1/2x3x1/4	A36 (36 ksi)
T11 100.00-90.00	Single Angle	L8x8x3/4	A36 (36 ksi)	Single Angle	L3 1/2x3x1/4	A36 (36 ksi)
T12 90.00-80.00	Single Angle	L8x8x3/4	A36 (36 ksi)	Single Angle	L3 1/2x3x1/4	A36 (36 ksi)
T13 80.00-60.00	Arbitrary Shape	L8x8x1 w/ 1/2x7 Plates	A36 (36 ksi)	Double Angle	2L2 1/2x2x3/16	A36 (36 ksi)
T14 60.00-50.00	Arbitrary Shape	L8x8x1-1/8 w/ 1/2x7 Plates	A36 (36 ksi)	Double Angle	2L2 1/2x2x3/16	A36 (36 ksi)
T15 50.00-40.00	Arbitrary Shape	L8x8x1-1/8 w/ 1/2x7 Plates	A36 (36 ksi)	Double Angle	2L2 1/2x2x3/8	A36 (36 ksi)
T16 40.00-30.00	Single Angle	L8x8x1 1/8	A36 (36 ksi)	Double Angle	2L2 1/2x2x3/8	A36 (36 ksi)

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T17 30.00-20.00	Single Angle	L8x8x1 1/8	A36 (36 ksi)	Double Angle	2L2 1/2x2x3/8	A36 (36 ksi)
T18 20.00-10.00	Single Angle	L8x8x1 1/8	A36 (36 ksi)	Double Angle	2L2 1/2x2x3/8	A36 (36 ksi)
T19 10.00-0.00	Single Angle	L8x8x1 1/8	A36 (36 ksi)	Double Angle	2L2 1/2x2 1/2x5/16	A36 (36 ksi)

Tower 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
T1 180.00-170.00	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T2 170.00-163.57	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T3 163.57-159.05	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T6 150.00-140.00	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T7 140.00-130.00	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T13 80.00-60.00	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T16 40.00-30.00	Double Angle	2L2x2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 180.00-170.00	1	Single Angle	L2x2x3/16	A36 (36 ksi)	Double Angle		A36 (36 ksi)
T9 120.00-110.00	1	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T11 100.00-90.00	None	Single Angle		A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)
T14 60.00-50.00	None	Single Angle		A36 (36 ksi)	Double Angle	2L2x2x3/16	A36 (36 ksi)
T18 20.00-10.00	None	Single Angle		A36 (36 ksi)	Double Angle	2L2x2x3/16	A36 (36 ksi)
T19 10.00-0.00	None	Single Angle		A36 (36 ksi)	Double Angle	2L2 1/2x2 1/2x1/4	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T1 180.00-170.00	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T7 140.00-130.00	Equal Angle	L2x2x1/4	A36 (36 ksi)	Single Angle	L2x2x3/16	A36 (36 ksi)
T8 130.00-120.00	Single Angle	L2x2x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T9 120.00-110.00	Single Angle	L2x2x3/16	A36 (36 ksi)	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)
T10 110.00-100.00	Single Angle	L2x2x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T11 100.00-90.00	Single Angle		A36 (36 ksi)	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)
T12 90.00-80.00	Single Angle	L2 1/2x2 1/2x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T13 80.00-60.00	Equal Angle		A36 (36 ksi)	Double Angle	2L2x2x3/16	A36 (36 ksi)
T14 60.00-50.00	Single Angle		A36 (36 ksi)	Double Angle	2L2x2x3/16	A36 (36 ksi)
T15 50.00-40.00	Single Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T16 40.00-30.00	Single Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)	Double Angle	2L2x2x3/16	A36 (36 ksi)
T17 30.00-20.00	Single Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)	Single Angle		A36 (36 ksi)
T18 20.00-10.00	Single Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)	Double Angle	2L2x2 1/2x3/16	A36 (36 ksi)
T19 10.00-0.00	Single Angle		A36 (36 ksi)	Double Angle	2L2x2 1/2x3/16	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Redundant Bracing Grade		Redundant Type	Redundant Size	K Factor
T19 10.00-0.00	A36 (36 ksi)	Horizontal (1)	Single Angle	L2 1/2x2 1/2x3/16	1
		Diagonal (1)	Single Angle	L2 1/2x2 1/2x3/16	1
		Sub-Horizontal	Single Angle	L3x3x5/16	1
		Hip (1)	Single Angle	L2 1/2x2 1/2x3/16	1

Tower 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
T1 180.00-170.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T2 170.00-163.57	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000

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
T3 163.57-159.05	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T4 159.05-154.52	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T5 154.52-150.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T6 150.00-140.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T7 140.00-130.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T8 130.00-120.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T9 120.00-110.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T10 110.00-100.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T11 100.00-90.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T12 90.00-80.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T13 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T14 60.00-50.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T15 50.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T16 40.00-30.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T17 30.00-20.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T18 20.00-10.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000
T19 10.00-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	24.0000	24.0000	36.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1]: Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1 180.00-170.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T2 170.00-163.57	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T3 163.57-159.05	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T4 159.05-154.52	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T5 154.52-150.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T6 150.00-140.00	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X	X Brace Diags Y	K Single Diags X	K Single Diags Y	Girts X	Girts Y	Horiz. X	Horiz. Y	Sec. Horiz. X	Sec. Horiz. Y	Inner Brace X	Inner Brace Y
T7	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
140.00-130.00				1	1	1	1	1	1	1	1	1	1	1	1
T8	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
130.00-120.00				1	1	1	1	1	1	1	1	1	1	1	1
T9	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
120.00-110.00				1	1	1	1	1	1	1	1	1	1	1	1
T10	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
110.00-100.00				1	1	1	1	1	1	1	1	1	1	1	1
T11	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
100.00-90.00				1	1	1	1	1	1	1	1	1	1	1	1
T12	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
90.00-80.00				1	1	1	1	1	1	1	1	1	1	1	1
T13	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
80.00-60.00				1	1	1	1	1	1	1	1	1	1	1	1
T14	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
60.00-50.00				1	1	1	1	1	1	1	1	1	1	1	1
T15	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
50.00-40.00				1	1	1	1	1	1	1	1	1	1	1	1
T16	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
40.00-30.00				1	1	1	1	1	1	1	1	1	1	1	1
T17	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
30.00-20.00				1	1	1	1	1	1	1	1	1	1	1	1
T18	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
20.00-10.00				1	1	1	1	1	1	1	1	1	1	1	1
T19	Yes	No	1	1	1	1	1	1	1	1	1	1	1	1	1
10.00-0.00				1	1	1	1	1	1	1	1	1	1	1	1

[1]*Note: 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.*

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Net Width Deduct in	Leg U	Diagonal Net Width Deduct in	Diagonal U	Top Girt Net Width Deduct in	Top Girt U	Bottom Girt Net Width Deduct in	Bottom Girt U	Mid Girt Net Width Deduct in	Mid Girt U	Long Horizontal Net Width Deduct in	Long Horizontal U	Short Horizontal Net Width Deduct in	Short Horizontal U
T1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
180.00-170.00														
T2	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
170.00-163.57														
T3	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
163.57-159.05														
T4	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
159.05-154.52														
T5	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
154.52-150.00														
T6	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
150.00-140.00														
T7	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
140.00-130.00														
T8	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
130.00-120.00														

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
T9 120.00-110.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T10 110.00-100.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T11 100.00-90.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T12 90.00-80.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T13 80.00-60.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T14 60.00-50.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T15 50.00-40.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T16 40.00-30.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T17 30.00-20.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T18 20.00-10.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75
T19 10.00-0.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.6250	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation	Connection Offsets							
	Diagonal				K-Bracing			
	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.
ft	in	in	in	in	in	in	in	in
T1 180.00-170.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T2 170.00-163.57	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T3 163.57-159.05	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T4 159.05-154.52	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T5 154.52-150.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T6 150.00-140.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T7 140.00-130.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T8 130.00-120.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T9 120.00-110.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T10 110.00-100.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000

Tower Elevation	Connection Offsets							
	Diagonal				K-Bracing			
	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.
ft	in	in	in	in	in	in	in	in
T11 100.00-90.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T12 90.00-80.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T13 80.00-60.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T14 60.00-50.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T15 50.00-40.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T16 40.00-30.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T17 30.00-20.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T18 20.00-10.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T19 10.00-0.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000

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 180.00-170.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325N	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325X	2
T2 170.00-163.57	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	0
T3 163.57-159.05	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	0
T4 159.05-154.52	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	0
T5 154.52-150.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	0
T6 150.00-140.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	0
T7 140.00-130.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	0
T8 130.00-120.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	2
T9 120.00-110.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325X	2
T10 110.00-100.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	2
T11 100.00-90.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325X	0
T12 90.00-80.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	2
T13 80.00-60.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	0

Tower Elevation ft	Leg Connection Type	Leg Bolt Size in	Leg No.	Diagonal Bolt Size in	Diagonal No.	Top Girt Bolt Size in	Top Girt No.	Bottom Girt Bolt Size in	Bottom Girt No.	Mid Girt Bolt Size in	Mid Girt No.	Long Horizontal Bolt Size in	Long Horizontal No.	Short Horizontal Bolt Size in	Short Horizontal No.
T14 60.00-50.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325X	0
T15 50.00-40.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	2
T16 40.00-30.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	2	0.0000 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	2
T17 30.00-20.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325X	0	0.6250 A325X	2
T18 20.00-10.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325X	2
T19 10.00-0.00	Flange	0.7500 A325X	0	0.6250 A325X	2	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	2	0.6250 A325X	2	0.6250 A325X	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
1 1/4 (T-Mobile)	A	No	Ar (CaAa)	126.00 - 6.00	-6.0000	0.33	12	6	1.5500	1.5500		0.66
WEP65 (5,36,59)	D	No	Af (CaAa)	173.00 - 6.00	-12.0000	0.45	3	1	1.5836	1.5836		0.53
WEP65 (35)	D	No	Af (CaAa)	125.00 - 6.00	-10.0000	0.37	1	1	1.5836	1.5836		0.53
1/2 (67)	D	No	Ar (CaAa)	180.00 - 6.00	-10.0000	0.35	1	1	0.5800	0.5800		0.25
1/2 (66)	D	No	Ar (CaAa)	160.00 - 6.00	-10.0000	0.35	1	1	0.5800	0.5800		0.25
7/8 (9,29)	D	No	Ar (CaAa)	116.00 - 6.00	-10.0000	0.38	2	2	1.1100	1.1100		0.54
1/2 (13)	D	No	Ar (CaAa)	75.00 - 6.00	-10.0000	0.39	1	1	0.5800	0.5800		0.25
7/8 (26)	D	No	Ar (CaAa)	85.00 - 6.00	-10.0000	0.39	1	1	1.1100	1.1100		0.54
1/2 (68)	D	No	Ar (CaAa)	47.00 - 6.00	-10.0000	0.4	1	1	0.5800	0.5800		0.25
1/2 (56)	D	No	Ar (CaAa)	56.00 - 6.00	-6.0000	0.49	1	1	0.5800	0.5800		0.25
1 5/8 (1,2,3,6)	D	No	Ar (CaAa)	180.00 - 6.00	-12.0000	0.43	4	2	1.9800	1.9800		1.04
7/8 (4,7)	D	No	Ar (CaAa)	180.00 - 6.00	-12.0000	0.41	2	2	1.1100	1.1100		0.54
7/8 (28,57)	D	No	Ar (CaAa)	140.00 - 6.00	-12.0000	0.4	2	2	1.1100	1.1100		0.54
7/8 (8,30,31,33,55)	D	No	Ar (CaAa)	180.00 - 6.00	-12.0000	0.39	5	5	1.1100	1.1100		0.54
1 5/8 (62)	D	No	Ar (CaAa)	107.00 - 6.00	-12.0000	0.4	1	1	1.9800	1.9800		1.04
7/8 (10,12,25)	D	No	Ar (CaAa)	170.00 - 6.00	-12.0000	0.38	3	3	1.1100	1.1100		0.54
7/8 (11,32)	D	No	Ar (CaAa)	106.00 - 6.00	-8.0000	0.41	2	2	1.1100	1.1100		0.54
1 5/8	D	No	Ar (CaAa)	172.00 - 6.00	-10.0000	0.4	3	3	1.9800	1.9800		1.04

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
(63,64,65) 1 5/8 (AT&T)	C	No	Ar (CaAa)	163.00 - 6.00	2.0000	-0.35	12	6	1.9800	1.9800		1.04
3" Flex Conduit w Fiber & 2 DC Cables (AT&T)	C	No	Ar (CaAa)	163.00 - 6.00	2.0000	-0.28	1	1	3.0000	3.0000		3.00
RFS Hybriflex (3 Sector) (Sprint)	A	No	Ar (CaAa)	106.00 - 6.00	-6.0000	0.43	3	3	1.0900	1.0900		0.37
1 5/8" Hybriflex (T-Mobile)	A	No	Ar (CaAa)	126.00 - 6.00	-6.0000	0.27	2	2	1.6250	1.6250		0.21
1-5/8" Fiber Optic Cable (AT&T PROPOSED)	C	No	Ar (CaAa)	163.00 - 6.00	2.0000	-0.25	1	1	1.9800	1.9800		1.30
1/2 (AT&T)	C	No	Ar (CaAa)	163.00 - 6.00	2.0000	-0.27	2	2	0.5800	0.5800		0.25
1/2 (AT&T PROPOSED)	C	No	Ar (CaAa)	163.00 - 6.00	2.0000	-0.23	2	2	0.5800	0.5800		0.25
Hybrid Cable (1.689 OD) (Sprint PROPOSED)	A	No	Ar (CaAa)	106.00 - 6.00	-6.0000	0.45	2	2	1.6890	1.6890		2.31

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	180.00-170.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
		D	0.000	0.000	19.833	0.000	0.09
T2	170.00-163.57	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
		D	0.000	0.000	21.503	0.000	0.09
T3	163.57-159.05	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	12.273	0.000	0.07
		D	0.000	0.000	15.193	0.000	0.07
T4	159.05-154.52	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	14.053	0.000	0.08
		D	0.000	0.000	15.400	0.000	0.07
T5	154.52-150.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	14.053	0.000	0.08
		D	0.000	0.000	15.400	0.000	0.07
T6	150.00-140.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	31.060	0.000	0.18
		D	0.000	0.000	34.038	0.000	0.15

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T7	140.00-130.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	31.060	0.000	0.18
		D	0.000	0.000	36.258	0.000	0.16
T8	130.00-120.00	A	0.000	0.000	13.110	0.000	0.05
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	31.060	0.000	0.18
		D	0.000	0.000	37.578	0.000	0.16
T9	120.00-110.00	A	0.000	0.000	21.850	0.000	0.08
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	31.060	0.000	0.18
		D	0.000	0.000	40.229	0.000	0.17
T10	110.00-100.00	A	0.000	0.000	25.839	0.000	0.12
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	31.060	0.000	0.18
		D	0.000	0.000	43.835	0.000	0.19
T11	100.00-90.00	A	0.000	0.000	28.498	0.000	0.14
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	31.060	0.000	0.18
		D	0.000	0.000	45.317	0.000	0.20
T12	90.00-80.00	A	0.000	0.000	28.498	0.000	0.14
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	31.060	0.000	0.18
		D	0.000	0.000	45.872	0.000	0.20
T13	80.00-60.00	A	0.000	0.000	56.996	0.000	0.28
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	62.120	0.000	0.36
		D	0.000	0.000	93.724	0.000	0.41
T14	60.00-50.00	A	0.000	0.000	28.498	0.000	0.14
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	31.060	0.000	0.18
		D	0.000	0.000	47.355	0.000	0.21
T15	50.00-40.00	A	0.000	0.000	28.498	0.000	0.14
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	31.060	0.000	0.18
		D	0.000	0.000	47.993	0.000	0.21
T16	40.00-30.00	A	0.000	0.000	28.498	0.000	0.14
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	31.060	0.000	0.18
		D	0.000	0.000	48.167	0.000	0.21
T17	30.00-20.00	A	0.000	0.000	28.498	0.000	0.14
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	31.060	0.000	0.18
		D	0.000	0.000	48.167	0.000	0.21
T18	20.00-10.00	A	0.000	0.000	28.498	0.000	0.14
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	31.060	0.000	0.18
		D	0.000	0.000	48.167	0.000	0.21
T19	10.00-0.00	A	0.000	0.000	11.399	0.000	0.06
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	12.405	0.000	0.07
		D	0.000	0.000	19.267	0.000	0.08

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_A In Face ft^2	C_AA_A Out Face ft^2	Weight K

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	180.00-170.00	A	2.219	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
		D		0.000	0.000	63.103	0.000	1.07
T2	170.00-163.57	A	2.210	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
		D		0.000	0.000	66.524	0.000	1.14
T3	163.57-159.05	A	2.203	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	27.175	0.000	0.59
		D		0.000	0.000	47.239	0.000	0.80
T4	159.05-154.52	A	2.198	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	31.081	0.000	0.68
		D		0.000	0.000	48.961	0.000	0.83
T5	154.52-150.00	A	2.192	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	31.045	0.000	0.68
		D		0.000	0.000	48.901	0.000	0.83
T6	150.00-140.00	A	2.183	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	68.493	0.000	1.49
		D		0.000	0.000	107.869	0.000	1.82
T7	140.00-130.00	A	2.171	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	68.318	0.000	1.48
		D		0.000	0.000	119.337	0.000	1.95
T8	130.00-120.00	A	2.159	0.000	0.000	25.590	0.000	0.53
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	68.145	0.000	1.47
		D		0.000	0.000	122.477	0.000	1.99
T9	120.00-110.00	A	2.147	0.000	0.000	42.571	0.000	0.88
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	67.975	0.000	1.47
		D		0.000	0.000	132.611	0.000	2.12
T10	110.00-100.00	A	2.136	0.000	0.000	59.131	0.000	1.11
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	67.814	0.000	1.46
		D		0.000	0.000	148.268	0.000	2.33
T11	100.00-90.00	A	2.126	0.000	0.000	70.081	0.000	1.26
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	67.666	0.000	1.46
		D		0.000	0.000	154.400	0.000	2.41
T12	90.00-80.00	A	2.117	0.000	0.000	69.961	0.000	1.26
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	67.540	0.000	1.45
		D		0.000	0.000	156.728	0.000	2.44
T13	80.00-60.00	A	2.108	0.000	0.000	139.677	0.000	2.50
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	134.823	0.000	2.89
		D		0.000	0.000	325.259	0.000	5.05
T14	60.00-50.00	A	2.106	0.000	0.000	69.818	0.000	1.25
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	67.390	0.000	1.44
		D		0.000	0.000	166.638	0.000	2.58
T15	50.00-40.00	A	2.110	0.000	0.000	69.875	0.000	1.25
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	67.450	0.000	1.45
		D		0.000	0.000	172.105	0.000	2.67
T16	40.00-30.00	A	2.118	0.000	0.000	69.984	0.000	1.26

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	67.565	0.000	1.45
		D		0.000	0.000	173.922	0.000	2.70
T17	30.00-20.00	A	2.127	0.000	0.000	70.097	0.000	1.26
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	67.683	0.000	1.46
		D		0.000	0.000	174.309	0.000	2.72
T18	20.00-10.00	A	2.120	0.000	0.000	70.009	0.000	1.26
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	67.591	0.000	1.45
		D		0.000	0.000	174.006	0.000	2.71
T19	10.00-0.00	A	2.018	0.000	0.000	27.449	0.000	0.48
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	26.453	0.000	0.56
		D		0.000	0.000	67.691	0.000	1.02

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	180.00-170.00	-7.3372	6.0513	-7.2154	6.2049
T2	170.00-163.57	-9.6068	7.9739	-10.5279	8.8874
T3	163.57-159.05	0.6480	1.5844	-3.7026	4.6074
T4	159.05-154.52	1.6711	1.2061	-3.1351	4.8111
T5	154.52-150.00	1.6813	1.3880	-3.1800	5.0862
T6	150.00-140.00	1.6633	1.6369	-3.4410	5.5823
T7	140.00-130.00	1.0587	2.3974	-3.7641	6.2271
T8	130.00-120.00	-2.9775	0.3437	-6.2192	5.4316
T9	120.00-110.00	-5.8145	-0.4661	-8.4240	5.6582
T10	110.00-100.00	-8.0587	-0.4820	-10.0891	5.7464
T11	100.00-90.00	-8.9349	-0.6269	-10.9719	5.7232
T12	90.00-80.00	-9.5589	-0.3585	-11.8789	6.5323
T13	80.00-60.00	-13.6950	0.1353	-14.7084	8.8195
T14	60.00-50.00	-14.5955	0.5786	-16.1389	10.1671
T15	50.00-40.00	-14.8032	0.9659	-17.3245	11.4232
T16	40.00-30.00	-12.4433	0.9671	-16.8676	11.3462
T17	30.00-20.00	-13.4113	1.1425	-18.0299	12.2531
T18	20.00-10.00	-13.3193	1.2249	-18.0826	12.3751
T19	10.00-0.00	-6.8758	0.4745	-11.2671	7.6201

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	2	WEP65	170.00 - 173.00	0.6000	0.5020
T1	4	1/2	170.00 - 180.00	1.0000	1.0000
T1	11	1 5/8	170.00 - 180.00	0.6000	0.5020

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	12	7/8	170.00 - 180.00	0.6000	0.5020
T1	14	7/8	170.00 - 180.00	0.6000	0.5020
T1	18	1 5/8	170.00 - 172.00	0.6000	0.5020
T2	2	WEP65	163.57 - 170.00	0.6000	0.4598
T2	4	1/2	163.57 - 170.00	1.0000	1.0000
T2	11	1 5/8	163.57 - 170.00	0.6000	0.4598
T2	12	7/8	163.57 - 170.00	0.6000	0.4598
T2	14	7/8	163.57 - 170.00	0.6000	0.4598
T2	16	7/8	163.57 - 170.00	0.6000	0.4598
T2	18	1 5/8	163.57 - 170.00	0.6000	0.4598
T3	2	WEP65	159.05 - 163.57	0.6000	0.4170
T3	4	1/2	159.05 - 163.57	1.0000	1.0000
T3	5	1/2	159.05 - 160.00	1.0000	1.0000
T3	11	1 5/8	159.05 - 163.57	0.6000	0.4170
T3	12	7/8	159.05 - 163.57	0.6000	0.4170
T3	14	7/8	159.05 - 163.57	0.6000	0.4170
T3	16	7/8	159.05 - 163.57	0.6000	0.4170
T3	18	1 5/8	159.05 - 163.57	0.6000	0.4170
T3	19	1 5/8	159.05 - 163.00	0.6000	0.4170
T3	20	3" Flex Conduit w Fiber & 2 DC Cables	159.05 - 163.00	0.6000	0.4170
T3	23	1-5/8" Fiber Optic Cable	159.05 - 163.00	0.6000	0.4170
T3	24	1/2	159.05 - 163.00	0.6000	0.4170
T3	25	1/2	159.05 - 163.00	0.6000	0.4170
T4	2	WEP65	154.52 - 159.05	0.6000	0.5093
T4	4	1/2	154.52 - 159.05	1.0000	1.0000
T4	5	1/2	154.52 - 159.05	1.0000	1.0000
T4	11	1 5/8	154.52 - 159.05	0.6000	0.5093
T4	12	7/8	154.52 - 159.05	0.6000	0.5093
T4	14	7/8	154.52 - 159.05	0.6000	0.5093
T4	16	7/8	154.52 - 159.05	0.6000	0.5093
T4	18	1 5/8	154.52 - 159.05	0.6000	0.5093

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T4	19	1 5/8	154.52 - 159.05	0.6000	0.5093
T4	20	3" Flex Conduit w Fiber & 2 DC Cables	154.52 - 159.05	0.6000	0.5093
T4	23	1-5/8" Fiber Optic Cable	154.52 - 159.05	0.6000	0.5093
T4	24	1/2	154.52 - 159.05	0.6000	0.5093
T4	25	1/2	154.52 - 159.05	0.6000	0.5093
T5	2	WEP65	150.00 - 154.52	0.6000	0.5224
T5	4	1/2	150.00 - 154.52	1.0000	1.0000
T5	5	1/2	150.00 - 154.52	1.0000	1.0000
T5	11	1 5/8	150.00 - 154.52	0.6000	0.5224
T5	12	7/8	150.00 - 154.52	0.6000	0.5224
T5	14	7/8	150.00 - 154.52	0.6000	0.5224
T5	16	7/8	150.00 - 154.52	0.6000	0.5224
T5	18	1 5/8	150.00 - 154.52	0.6000	0.5224
T5	19	1 5/8	150.00 - 154.52	0.6000	0.5224
T5	20	3" Flex Conduit w Fiber & 2 DC Cables	150.00 - 154.52	0.6000	0.5224
T5	23	1-5/8" Fiber Optic Cable	150.00 - 154.52	0.6000	0.5224
T5	24	1/2	150.00 - 154.52	0.6000	0.5224
T5	25	1/2	150.00 - 154.52	0.6000	0.5224
T6	2	WEP65	140.00 - 150.00	0.6000	0.5110
T6	4	1/2	140.00 - 150.00	1.0000	1.0000
T6	5	1/2	140.00 - 150.00	1.0000	1.0000
T6	11	1 5/8	140.00 - 150.00	0.6000	0.5110
T6	12	7/8	140.00 - 150.00	0.6000	0.5110
T6	14	7/8	140.00 - 150.00	0.6000	0.5110
T6	16	7/8	140.00 - 150.00	0.6000	0.5110
T6	18	1 5/8	140.00 - 150.00	0.6000	0.5110
T6	19	1 5/8	140.00 - 150.00	0.6000	0.5110
T6	20	3" Flex Conduit w Fiber & 2 DC Cables	140.00 - 150.00	0.6000	0.5110
T6	23	1-5/8" Fiber Optic Cable	140.00 - 150.00	0.6000	0.5110
T6	24	1/2	140.00 - 150.00	0.6000	0.5110
T6	25	1/2	140.00 - 150.00	0.6000	0.5110

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T7	2	WEP65	130.00 - 140.00	0.6000	0.5314
T7	4	1/2	130.00 - 140.00	1.0000	1.0000
T7	5	1/2	130.00 - 140.00	1.0000	1.0000
T7	11	1 5/8	130.00 - 140.00	0.6000	0.5314
T7	12	7/8	130.00 - 140.00	0.6000	0.5314
T7	13	7/8	130.00 - 140.00	0.6000	0.5314
T7	14	7/8	130.00 - 140.00	0.6000	0.5314
T7	16	7/8	130.00 - 140.00	0.6000	0.5314
T7	18	1 5/8	130.00 - 140.00	0.6000	0.5314
T7	19	1 5/8	130.00 - 140.00	0.6000	0.5314
T7	20	3" Flex Conduit w Fiber & 2 DC Cables	130.00 - 140.00	0.6000	0.5314
T7	23	1-5/8" Fiber Optic Cable	130.00 - 140.00	0.6000	0.5314
T7	24	1/2	130.00 - 140.00	0.6000	0.5314
T7	25	1/2	130.00 - 140.00	0.6000	0.5314
T8	1	1 1/4	120.00 - 126.00	0.6000	0.6000
T8	2	WEP65	120.00 - 130.00	0.6000	0.6000
T8	3	WEP65	120.00 - 125.00	0.6000	0.6000
T8	4	1/2	120.00 - 130.00	1.0000	1.0000
T8	5	1/2	120.00 - 130.00	1.0000	1.0000
T8	11	1 5/8	120.00 - 130.00	0.6000	0.6000
T8	12	7/8	120.00 - 130.00	0.6000	0.6000
T8	13	7/8	120.00 - 130.00	0.6000	0.6000
T8	14	7/8	120.00 - 130.00	0.6000	0.6000
T8	16	7/8	120.00 - 130.00	0.6000	0.6000
T8	18	1 5/8	120.00 - 130.00	0.6000	0.6000
T8	19	1 5/8	120.00 - 130.00	0.6000	0.6000
T8	20	3" Flex Conduit w Fiber & 2 DC Cables	120.00 - 130.00	0.6000	0.6000
T8	22	1 5/8" Hybriflex	120.00 - 126.00	0.6000	0.6000
T8	23	1-5/8" Fiber Optic Cable	120.00 - 130.00	0.6000	0.6000
T8	24	1/2	120.00 - 130.00	0.6000	0.6000
T8	25	1/2	120.00 - 130.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T9	1	1 1/4	110.00 - 120.00	0.6000	0.5746
T9	2	WEP65	110.00 - 120.00	0.6000	0.5746
T9	3	WEP65	110.00 - 120.00	0.6000	0.5746
T9	4	1/2	110.00 - 120.00	1.0000	1.0000
T9	5	1/2	110.00 - 120.00	1.0000	1.0000
T9	6	7/8	110.00 - 116.00	0.6000	0.5746
T9	11	1 5/8	110.00 - 120.00	0.6000	0.5746
T9	12	7/8	110.00 - 120.00	0.6000	0.5746
T9	13	7/8	110.00 - 120.00	0.6000	0.5746
T9	14	7/8	110.00 - 120.00	0.6000	0.5746
T9	16	7/8	110.00 - 120.00	0.6000	0.5746
T9	18	1 5/8	110.00 - 120.00	0.6000	0.5746
T9	19	1 5/8	110.00 - 120.00	0.6000	0.5746
T9	20	3" Flex Conduit w Fiber & 2 DC Cables	110.00 - 120.00	0.6000	0.5746
T9	22	1 5/8" Hybriflex	110.00 - 120.00	0.6000	0.5746
T9	23	1-5/8" Fiber Optic Cable	110.00 - 120.00	0.6000	0.5746
T9	24	1/2	110.00 - 120.00	0.6000	0.5746
T9	25	1/2	110.00 - 120.00	0.6000	0.5746
T10	1	1 1/4	100.00 - 110.00	0.6000	0.6000
T10	2	WEP65	100.00 - 110.00	0.6000	0.6000
T10	3	WEP65	100.00 - 110.00	0.6000	0.6000
T10	4	1/2	100.00 - 110.00	1.0000	1.0000
T10	5	1/2	100.00 - 110.00	1.0000	1.0000
T10	6	7/8	100.00 - 110.00	0.6000	0.6000
T10	11	1 5/8	100.00 - 110.00	0.6000	0.6000
T10	12	7/8	100.00 - 110.00	0.6000	0.6000
T10	13	7/8	100.00 - 110.00	0.6000	0.6000
T10	14	7/8	100.00 - 110.00	0.6000	0.6000
T10	15	1 5/8	100.00 - 107.00	0.6000	0.6000
T10	16	7/8	100.00 - 110.00	0.6000	0.6000
T10	17	7/8	100.00 - 106.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T10	18	1 5/8	100.00 - 110.00	0.6000	0.6000
T10	19	1 5/8	100.00 - 110.00	0.6000	0.6000
T10	20	3" Flex Conduit w Fiber & 2 DC Cables	100.00 - 110.00	0.6000	0.6000
T10	21	RFS Hybriflex (3 Sector)	100.00 - 106.00	0.6000	0.6000
T10	22	1 5/8" Hybriflex	100.00 - 110.00	0.6000	0.6000
T10	23	1-5/8" Fiber Optic Cable	100.00 - 110.00	0.6000	0.6000
T10	24	1/2	100.00 - 110.00	0.6000	0.6000
T10	25	1/2	100.00 - 110.00	0.6000	0.6000
T10	26	Hybrid Cable (1.689 OD)	100.00 - 106.00	0.6000	0.6000
T11	1	1 1/4	90.00 - 100.00	0.6000	0.6000
T11	2	WEP65	90.00 - 100.00	0.6000	0.6000
T11	3	WEP65	90.00 - 100.00	0.6000	0.6000
T11	4	1/2	90.00 - 100.00	1.0000	1.0000
T11	5	1/2	90.00 - 100.00	1.0000	1.0000
T11	6	7/8	90.00 - 100.00	0.6000	0.6000
T11	11	1 5/8	90.00 - 100.00	0.6000	0.6000
T11	12	7/8	90.00 - 100.00	0.6000	0.6000
T11	13	7/8	90.00 - 100.00	0.6000	0.6000
T11	14	7/8	90.00 - 100.00	0.6000	0.6000
T11	15	1 5/8	90.00 - 100.00	0.6000	0.6000
T11	16	7/8	90.00 - 100.00	0.6000	0.6000
T11	17	7/8	90.00 - 100.00	0.6000	0.6000
T11	18	1 5/8	90.00 - 100.00	0.6000	0.6000
T11	19	1 5/8	90.00 - 100.00	0.6000	0.6000
T11	20	3" Flex Conduit w Fiber & 2 DC Cables	90.00 - 100.00	0.6000	0.6000
T11	21	RFS Hybriflex (3 Sector)	90.00 - 100.00	0.6000	0.6000
T11	22	1 5/8" Hybriflex	90.00 - 100.00	0.6000	0.6000
T11	23	1-5/8" Fiber Optic Cable	90.00 - 100.00	0.6000	0.6000
T11	24	1/2	90.00 - 100.00	0.6000	0.6000
T11	25	1/2	90.00 - 100.00	0.6000	0.6000
T11	26	Hybrid Cable (1.689 OD)	90.00 - 100.00	0.6000	0.6000
T12	1	1 1/4	80.00 - 90.00	0.6000	0.6000
T12	2	WEP65	80.00 - 90.00	0.6000	0.6000
T12	3	WEP65	80.00 - 90.00	0.6000	0.6000
T12	4	1/2	80.00 - 90.00	1.0000	1.0000
T12	5	1/2	80.00 - 90.00	1.0000	1.0000
T12	6	7/8	80.00 - 90.00	0.6000	0.6000
T12	8	7/8	80.00 - 85.00	0.6000	0.6000
T12	11	1 5/8	80.00 - 90.00	0.6000	0.6000
T12	12	7/8	80.00 - 90.00	0.6000	0.6000
T12	13	7/8	80.00 - 90.00	0.6000	0.6000
T12	14	7/8	80.00 - 90.00	0.6000	0.6000
T12	15	1 5/8	80.00 - 90.00	0.6000	0.6000
T12	16	7/8	80.00 - 90.00	0.6000	0.6000
T12	17	7/8	80.00 - 90.00	0.6000	0.6000
T12	18	1 5/8	80.00 - 90.00	0.6000	0.6000
T12	19	1 5/8	80.00 - 90.00	0.6000	0.6000
T12	20	3" Flex Conduit w Fiber & 2 DC Cables	80.00 - 90.00	0.6000	0.6000
T12	21	RFS Hybriflex (3 Sector)	80.00 - 90.00	0.6000	0.6000
T12	22	1 5/8" Hybriflex	80.00 - 90.00	0.6000	0.6000
T12	23	1-5/8" Fiber Optic Cable	80.00 - 90.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T12	24	1/2	80.00 - 90.00	0.6000	0.6000
T12	25	1/2	80.00 - 90.00	0.6000	0.6000
T12	26	Hybrid Cable (1.689 OD)	80.00 - 90.00	0.6000	0.6000
T13	1	1 1/4	60.00 - 80.00	0.6000	0.6000
T13	2	WEP65	60.00 - 80.00	0.6000	0.6000
T13	3	WEP65	60.00 - 80.00	0.6000	0.6000
T13	4	1/2	60.00 - 80.00	1.0000	1.0000
T13	5	1/2	60.00 - 80.00	1.0000	1.0000
T13	6	7/8	60.00 - 80.00	0.6000	0.6000
T13	7	1/2	60.00 - 75.00	0.6000	0.6000
T13	8	7/8	60.00 - 80.00	0.6000	0.6000
T13	11	1 5/8	60.00 - 80.00	0.6000	0.6000
T13	12	7/8	60.00 - 80.00	0.6000	0.6000
T13	13	7/8	60.00 - 80.00	0.6000	0.6000
T13	14	7/8	60.00 - 80.00	0.6000	0.6000
T13	15	1 5/8	60.00 - 80.00	0.6000	0.6000
T13	16	7/8	60.00 - 80.00	0.6000	0.6000
T13	17	7/8	60.00 - 80.00	0.6000	0.6000
T13	18	1 5/8	60.00 - 80.00	0.6000	0.6000
T13	19	1 5/8	60.00 - 80.00	0.6000	0.6000
T13	20	3" Flex Conduit w Fiber & 2 DC Cables	60.00 - 80.00	0.6000	0.6000
T13	21	RFS Hybriflex (3 Sector)	60.00 - 80.00	0.6000	0.6000
T13	22	1 5/8" Hybriflex	60.00 - 80.00	0.6000	0.6000
T13	23	1-5/8" Fiber Optic Cable	60.00 - 80.00	0.6000	0.6000
T13	24	1/2	60.00 - 80.00	0.6000	0.6000
T13	25	1/2	60.00 - 80.00	0.6000	0.6000
T13	26	Hybrid Cable (1.689 OD)	60.00 - 80.00	0.6000	0.6000
T14	1	1 1/4	50.00 - 60.00	0.6000	0.6000
T14	2	WEP65	50.00 - 60.00	0.6000	0.6000
T14	3	WEP65	50.00 - 60.00	0.6000	0.6000
T14	4	1/2	50.00 - 60.00	1.0000	1.0000
T14	5	1/2	50.00 - 60.00	1.0000	1.0000
T14	6	7/8	50.00 - 60.00	0.6000	0.6000
T14	7	1/2	50.00 - 60.00	0.6000	0.6000
T14	8	7/8	50.00 - 60.00	0.6000	0.6000
T14	10	1/2	50.00 - 56.00	0.6000	0.6000
T14	11	1 5/8	50.00 - 60.00	0.6000	0.6000
T14	12	7/8	50.00 - 60.00	0.6000	0.6000
T14	13	7/8	50.00 - 60.00	0.6000	0.6000
T14	14	7/8	50.00 - 60.00	0.6000	0.6000
T14	15	1 5/8	50.00 - 60.00	0.6000	0.6000
T14	16	7/8	50.00 - 60.00	0.6000	0.6000
T14	17	7/8	50.00 - 60.00	0.6000	0.6000
T14	18	1 5/8	50.00 - 60.00	0.6000	0.6000
T14	19	1 5/8	50.00 - 60.00	0.6000	0.6000
T14	20	3" Flex Conduit w Fiber & 2 DC Cables	50.00 - 60.00	0.6000	0.6000
T14	21	RFS Hybriflex (3 Sector)	50.00 - 60.00	0.6000	0.6000
T14	22	1 5/8" Hybriflex	50.00 - 60.00	0.6000	0.6000
T14	23	1-5/8" Fiber Optic Cable	50.00 - 60.00	0.6000	0.6000
T14	24	1/2	50.00 - 60.00	0.6000	0.6000
T14	25	1/2	50.00 - 60.00	0.6000	0.6000
T14	26	Hybrid Cable (1.689 OD)	50.00 - 60.00	0.6000	0.6000
T15	1	1 1/4	40.00 - 50.00	0.6000	0.6000
T15	2	WEP65	40.00 - 50.00	0.6000	0.6000
T15	3	WEP65	40.00 - 50.00	0.6000	0.6000
T15	4	1/2	40.00 - 50.00	1.0000	1.0000
T15	5	1/2	40.00 - 50.00	1.0000	1.0000
T15	6	7/8	40.00 - 50.00	0.6000	0.6000
T15	7	1/2	40.00 - 50.00	0.6000	0.6000
T15	8	7/8	40.00 - 50.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T15	9	1/2	40.00 - 47.00	0.6000	0.6000
T15	10	1/2	40.00 - 50.00	0.6000	0.6000
T15	11	1 5/8	40.00 - 50.00	0.6000	0.6000
T15	12	7/8	40.00 - 50.00	0.6000	0.6000
T15	13	7/8	40.00 - 50.00	0.6000	0.6000
T15	14	7/8	40.00 - 50.00	0.6000	0.6000
T15	15	1 5/8	40.00 - 50.00	0.6000	0.6000
T15	16	7/8	40.00 - 50.00	0.6000	0.6000
T15	17	7/8	40.00 - 50.00	0.6000	0.6000
T15	18	1 5/8	40.00 - 50.00	0.6000	0.6000
T15	19	1 5/8	40.00 - 50.00	0.6000	0.6000
T15	20	3" Flex Conduit w Fiber & 2 DC Cables	40.00 - 50.00	0.6000	0.6000
T15	21	RFS Hybriflex (3 Sector)	40.00 - 50.00	0.6000	0.6000
T15	22	1 5/8" Hybriflex	40.00 - 50.00	0.6000	0.6000
T15	23	1-5/8" Fiber Optic Cable	40.00 - 50.00	0.6000	0.6000
T15	24	1/2	40.00 - 50.00	0.6000	0.6000
T15	25	1/2	40.00 - 50.00	0.6000	0.6000
T15	26	Hybrid Cable (1.689 OD)	40.00 - 50.00	0.6000	0.6000
T16	1	1 1/4	30.00 - 40.00	0.6000	0.6000
T16	2	WEP65	30.00 - 40.00	0.6000	0.6000
T16	3	WEP65	30.00 - 40.00	0.6000	0.6000
T16	4	1/2	30.00 - 40.00	1.0000	1.0000
T16	5	1/2	30.00 - 40.00	1.0000	1.0000
T16	6	7/8	30.00 - 40.00	0.6000	0.6000
T16	7	1/2	30.00 - 40.00	0.6000	0.6000
T16	8	7/8	30.00 - 40.00	0.6000	0.6000
T16	9	1/2	30.00 - 40.00	0.6000	0.6000
T16	10	1/2	30.00 - 40.00	0.6000	0.6000
T16	11	1 5/8	30.00 - 40.00	0.6000	0.6000
T16	12	7/8	30.00 - 40.00	0.6000	0.6000
T16	13	7/8	30.00 - 40.00	0.6000	0.6000
T16	14	7/8	30.00 - 40.00	0.6000	0.6000
T16	15	1 5/8	30.00 - 40.00	0.6000	0.6000
T16	16	7/8	30.00 - 40.00	0.6000	0.6000
T16	17	7/8	30.00 - 40.00	0.6000	0.6000
T16	18	1 5/8	30.00 - 40.00	0.6000	0.6000
T16	19	1 5/8	30.00 - 40.00	0.6000	0.6000
T16	20	3" Flex Conduit w Fiber & 2 DC Cables	30.00 - 40.00	0.6000	0.6000
T16	21	RFS Hybriflex (3 Sector)	30.00 - 40.00	0.6000	0.6000
T16	22	1 5/8" Hybriflex	30.00 - 40.00	0.6000	0.6000
T16	23	1-5/8" Fiber Optic Cable	30.00 - 40.00	0.6000	0.6000
T16	24	1/2	30.00 - 40.00	0.6000	0.6000
T16	25	1/2	30.00 - 40.00	0.6000	0.6000
T16	26	Hybrid Cable (1.689 OD)	30.00 - 40.00	0.6000	0.6000
T17	1	1 1/4	20.00 - 30.00	0.6000	0.6000
T17	2	WEP65	20.00 - 30.00	0.6000	0.6000
T17	3	WEP65	20.00 - 30.00	0.6000	0.6000
T17	4	1/2	20.00 - 30.00	1.0000	1.0000
T17	5	1/2	20.00 - 30.00	1.0000	1.0000
T17	6	7/8	20.00 - 30.00	0.6000	0.6000
T17	7	1/2	20.00 - 30.00	0.6000	0.6000
T17	8	7/8	20.00 - 30.00	0.6000	0.6000
T17	9	1/2	20.00 - 30.00	0.6000	0.6000
T17	10	1/2	20.00 - 30.00	0.6000	0.6000
T17	11	1 5/8	20.00 - 30.00	0.6000	0.6000
T17	12	7/8	20.00 - 30.00	0.6000	0.6000
T17	13	7/8	20.00 - 30.00	0.6000	0.6000
T17	14	7/8	20.00 - 30.00	0.6000	0.6000
T17	15	1 5/8	20.00 - 30.00	0.6000	0.6000
T17	16	7/8	20.00 - 30.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T17	17	7/8	20.00 - 30.00	0.6000	0.6000
T17	18	1 5/8	20.00 - 30.00	0.6000	0.6000
T17	19	1 5/8	20.00 - 30.00	0.6000	0.6000
T17	20	3" Flex Conduit w Fiber & 2 DC Cables	20.00 - 30.00	0.6000	0.6000
T17	21	RFS Hybriflex (3 Sector)	20.00 - 30.00	0.6000	0.6000
T17	22	1 5/8" Hybriflex	20.00 - 30.00	0.6000	0.6000
T17	23	1-5/8" Fiber Optic Cable	20.00 - 30.00	0.6000	0.6000
T17	24	1/2	20.00 - 30.00	0.6000	0.6000
T17	25	1/2	20.00 - 30.00	0.6000	0.6000
T17	26	Hybrid Cable (1.689 OD)	20.00 - 30.00	0.6000	0.6000
T18	1	1 1/4	10.00 - 20.00	0.6000	0.6000
T18	2	WEP65	10.00 - 20.00	0.6000	0.6000
T18	3	WEP65	10.00 - 20.00	0.6000	0.6000
T18	4	1/2	10.00 - 20.00	1.0000	1.0000
T18	5	1/2	10.00 - 20.00	1.0000	1.0000
T18	6	7/8	10.00 - 20.00	0.6000	0.6000
T18	7	1/2	10.00 - 20.00	0.6000	0.6000
T18	8	7/8	10.00 - 20.00	0.6000	0.6000
T18	9	1/2	10.00 - 20.00	0.6000	0.6000
T18	10	1/2	10.00 - 20.00	0.6000	0.6000
T18	11	1 5/8	10.00 - 20.00	0.6000	0.6000
T18	12	7/8	10.00 - 20.00	0.6000	0.6000
T18	13	7/8	10.00 - 20.00	0.6000	0.6000
T18	14	7/8	10.00 - 20.00	0.6000	0.6000
T18	15	1 5/8	10.00 - 20.00	0.6000	0.6000
T18	16	7/8	10.00 - 20.00	0.6000	0.6000
T18	17	7/8	10.00 - 20.00	0.6000	0.6000
T18	18	1 5/8	10.00 - 20.00	0.6000	0.6000
T18	19	1 5/8	10.00 - 20.00	0.6000	0.6000
T18	20	3" Flex Conduit w Fiber & 2 DC Cables	10.00 - 20.00	0.6000	0.6000
T18	21	RFS Hybriflex (3 Sector)	10.00 - 20.00	0.6000	0.6000
T18	22	1 5/8" Hybriflex	10.00 - 20.00	0.6000	0.6000
T18	23	1-5/8" Fiber Optic Cable	10.00 - 20.00	0.6000	0.6000
T18	24	1/2	10.00 - 20.00	0.6000	0.6000
T18	25	1/2	10.00 - 20.00	0.6000	0.6000
T18	26	Hybrid Cable (1.689 OD)	10.00 - 20.00	0.6000	0.6000
T19	1	1 1/4	6.00 - 10.00	0.6000	0.6000
T19	2	WEP65	6.00 - 10.00	0.6000	0.6000
T19	3	WEP65	6.00 - 10.00	0.6000	0.6000
T19	4	1/2	6.00 - 10.00	1.0000	1.0000
T19	5	1/2	6.00 - 10.00	1.0000	1.0000
T19	6	7/8	6.00 - 10.00	0.6000	0.6000
T19	7	1/2	6.00 - 10.00	0.6000	0.6000
T19	8	7/8	6.00 - 10.00	0.6000	0.6000
T19	9	1/2	6.00 - 10.00	0.6000	0.6000
T19	10	1/2	6.00 - 10.00	0.6000	0.6000
T19	11	1 5/8	6.00 - 10.00	0.6000	0.6000
T19	12	7/8	6.00 - 10.00	0.6000	0.6000
T19	13	7/8	6.00 - 10.00	0.6000	0.6000
T19	14	7/8	6.00 - 10.00	0.6000	0.6000
T19	15	1 5/8	6.00 - 10.00	0.6000	0.6000
T19	16	7/8	6.00 - 10.00	0.6000	0.6000
T19	17	7/8	6.00 - 10.00	0.6000	0.6000
T19	18	1 5/8	6.00 - 10.00	0.6000	0.6000
T19	19	1 5/8	6.00 - 10.00	0.6000	0.6000
T19	20	3" Flex Conduit w Fiber & 2 DC Cables	6.00 - 10.00	1.0000	0.6000
T19	21	RFS Hybriflex (3 Sector)	6.00 - 10.00	0.6000	0.6000
T19	22	1 5/8" Hybriflex	6.00 - 10.00	0.6000	0.6000
T19	23	1-5/8" Fiber Optic Cable	6.00 - 10.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T19	24	1/2	6.00 - 10.00	0.6000	0.6000
T19	25	1/2	6.00 - 10.00	0.6000	0.6000
T19	26	Hybrid Cable (1.689 OD)	6.00 - 10.00	0.6000	0.6000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
DB803M-Y	A	From Leg	3.00	0.0000	50.00	No Ice	0.50	0.50	0.00
(A1 / D&K-1)			0.00			1/2" Ice	0.68	0.68	0.01
			0.00			1" Ice	0.87	0.87	0.02
3' Stand-off	A	None		0.0000	50.00	No Ice	1.00	2.00	0.05
(A1 / D&K-1)						1/2" Ice	1.20	2.70	0.07
						1" Ice	1.40	3.40	0.10
GPS	B	From Face	4.00	0.0000	61.00	No Ice	1.00	1.00	0.01
(A2 / Sprint)			0.00			1/2" Ice	1.50	1.50	0.01
			0.00			1" Ice	2.00	2.00	0.02
3'4"x4" Pipe Mount	B	None		0.0000	61.00	No Ice	0.91	0.91	0.04
(A2 / Sprint)						1/2" Ice	1.27	1.27	0.05
						1" Ice	1.49	1.49	0.06
2'6"x4" Pipe Mount	A	None		0.0000	71.00	No Ice	0.66	0.66	0.03
(A3 / D&K-3)						1/2" Ice	0.91	0.91	0.04
						1" Ice	1.09	1.09	0.05
Dish Ice Shield	A	From Leg	0.50	0.0000	75.00	No Ice	4.00	4.00	0.20
(A3 / D&K-3)			0.00			1/2" Ice	5.07	5.07	0.25
			0.00			1" Ice	6.14	6.14	0.30
SC479-HF1LDF	A	From Leg	10.00	0.0000	79.00 - 91.00	No Ice	4.84	4.84	0.03
(A4 / D&K-4)			0.00			1/2" Ice	6.54	6.54	0.07
			0.00			1" Ice	8.04	8.04	0.11
10' Standoff	A	None		0.0000	91.00	No Ice	17.00	17.00	0.55
(A4 / D&K-4)						1/2" Ice	22.00	22.00	0.75
						1" Ice	27.00	27.00	0.95
DB264-A	A	From Leg	4.00	0.0000	106.00 - 86.00	No Ice	3.16	3.16	0.04
(A5 / D&K-11)			0.00			1/2" Ice	5.69	5.69	0.05
			0.00			1" Ice	8.22	8.22	0.06
4' Side Mount Standoff	A	None		0.0000	86.00	No Ice	2.72	2.72	0.05
(A5 / D&K-11)						1/2" Ice	4.91	4.91	0.09
						1" Ice	7.10	7.10	0.13
10'6"x4" Pipe Mount	C	None		0.0000	106.00	No Ice	3.50	3.50	0.11
(A6 / D&K-12 / CSP-11)						1/2" Ice	5.62	5.62	0.15
						1" Ice	6.25	6.25	0.19
3" Dia 20' Omni	D	From Leg	6.00	0.0000	127.00 - 107.00	No Ice	4.00	4.00	0.06
(A7 / D&K-13)			0.00			1/2" Ice	6.00	6.00	0.10
			0.00			1" Ice	8.00	8.00	0.14
6' Side-Arm Mount	D	None		0.0000	107.00	No Ice	10.60	10.60	0.14
(A7 / D&K-13)						1/2" Ice	15.40	15.40	0.21
						1" Ice	20.20	20.20	0.28
PD128-1	C	From Leg	10.00	0.0000	128.00 - 121.00	No Ice	1.00	1.00	0.01
(A8 / D&K-14)			0.00			1/2" Ice	1.80	1.80	0.02
			0.00			1" Ice	2.60	2.60	0.02

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
10' Standoff	C	None		0.0000	121.00	No Ice	17.00	17.00	0.55
(A8 / D&K-14)						1/2" Ice	22.00	22.00	0.75
						1" Ice	27.00	27.00	0.95
12' Omni Antenna	D	From Leg	6.00	0.0000	116.00 - 106.00	No Ice	5.06	5.06	0.03
(A9 - D&K-15)			0.00			1/2" Ice	6.54	6.54	0.07
			0.00			1" Ice	8.04	8.04	0.11
6' Side-Arm Mount	D	None		0.0000	106.00	No Ice	10.60	10.60	0.14
(A9 - D&K-15)						1/2" Ice	15.40	15.40	0.21
						1" Ice	20.20	20.20	0.28
EUSF10-U	A	From Leg	0.50	0.0000	122.00	No Ice	8.91	3.67	0.41
(T-Mobile / D&K 16-24)			0.00			1/2" Ice	12.66	5.24	0.51
			0.00			1" Ice	16.41	6.81	0.61
EUSF10-U	D	From Leg	0.50	0.0000	122.00	No Ice	8.91	3.67	0.41
(T-Mobile / D&K 16-24)			0.00			1/2" Ice	12.66	5.24	0.51
			0.00			1" Ice	16.41	6.81	0.61
EUSF10-U	B	From Leg	0.50	0.0000	122.00	No Ice	8.91	3.67	0.41
(T-Mobile / D&K 16-24)			0.00			1/2" Ice	12.66	5.24	0.51
			0.00			1" Ice	16.41	6.81	0.61
AIR B2A/B4P	A	From Leg	1.00	0.0000	122.00	No Ice	6.42	4.22	0.08
(T-Mobile / D&K 16-24)			-2.00			1/2" Ice	6.86	4.64	0.12
			0.00			1" Ice	7.30	5.06	0.17
AIR B2A/B4P	B	From Leg	1.00	0.0000	122.00	No Ice	6.42	4.22	0.08
(T-Mobile / D&K 16-24)			-2.00			1/2" Ice	6.86	4.64	0.12
			0.00			1" Ice	7.30	5.06	0.17
AIR B2A/B4P	D	From Leg	1.00	0.0000	122.00	No Ice	6.42	4.22	0.08
(T-Mobile / D&K 16-24)			-2.00			1/2" Ice	6.86	4.64	0.12
			0.00			1" Ice	7.30	5.06	0.17
(2) TMA	A	From Leg	1.00	0.0000	122.00	No Ice	1.00	1.00	0.01
(T-Mobile / D&K 16-24)			0.00			1/2" Ice	1.50	1.50	0.02
			0.00			1" Ice	2.00	2.00	0.03
(2) TMA	B	From Leg	1.00	0.0000	122.00	No Ice	1.00	1.00	0.01
(T-Mobile / D&K 16-24)			0.00			1/2" Ice	1.50	1.50	0.02
			0.00			1" Ice	2.00	2.00	0.03
(2) TMA	D	From Leg	1.00	0.0000	122.00	No Ice	1.00	1.00	0.01
(T-Mobile / D&K 16-24)			0.00			1/2" Ice	1.50	1.50	0.02
			0.00			1" Ice	2.00	2.00	0.03
AIR21 B4A|B12P	A	From Leg	1.00	0.0000	122.00	No Ice	11.54	11.20	0.17
(T-Mobile / D&K 16-24)			2.00			1/2" Ice	12.16	12.63	0.27
			0.00			1" Ice	12.79	13.73	0.38
AIR21 B4A|B12P	B	From Leg	1.00	0.0000	122.00	No Ice	11.54	11.20	0.17
(T-Mobile / D&K 16-24)			2.00			1/2" Ice	12.16	12.63	0.27
			0.00			1" Ice	12.79	13.73	0.38
AIR21 B4A|B12P	D	From Leg	1.00	0.0000	122.00	No Ice	11.54	11.20	0.17
(T-Mobile / D&K 16-24)			2.00			1/2" Ice	12.16	12.63	0.27
			0.00			1" Ice	12.79	13.73	0.38
RRUS-11	A	From Leg	1.00	0.0000	122.00	No Ice	2.57	1.07	0.05
(T-Mobile / D&K 16-24)			2.00			1/2" Ice	2.76	1.21	0.07
			0.00			1" Ice	2.97	1.36	0.09
RRUS-11	B	From Leg	1.00	0.0000	122.00	No Ice	2.57	1.07	0.05
(T-Mobile / D&K 16-24)			2.00			1/2" Ice	2.76	1.21	0.07
			0.00			1" Ice	2.97	1.36	0.09
RRUS-11	D	From Leg	1.00	0.0000	122.00	No Ice	2.57	1.07	0.05
(T-Mobile / D&K 16-24)			2.00			1/2" Ice	2.76	1.21	0.07
			0.00			1" Ice	2.97	1.36	0.09
2'6"x4" Pipe Mount	A	None		0.0000	125.00	No Ice	0.65	0.65	0.03
(A10 / D&K-25)						1/2" Ice	0.91	0.91	0.04
						1" Ice	1.09	1.09	0.05

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Dish Ice Shield	A	From Leg	0.50	0.0000	130.00	No Ice	4.00	4.00	0.20
(A11 / D&K-26)			0.00			1/2" Ice	5.07	5.07	0.25
			0.00			1" Ice	6.14	6.14	0.30
BA1010	C	From Leg	6.00	0.0000	127.00 - 132.00	No Ice	1.55	1.55	0.01
(A12 / D&K-27)			0.00			1/2" Ice	2.29	2.29	0.01
			0.00			1" Ice	3.03	3.03	0.02
BA1010	C	From Leg	6.00	0.0000	137.00 - 132.00	No Ice	1.55	1.55	0.01
(A14 / D&K-29)			0.00			1/2" Ice	2.29	2.29	0.01
			0.00			1" Ice	3.03	3.03	0.02
432E-83I-01T TTA Unit	C	From Leg	6.00	0.0000	132.00	No Ice	2.85	0.97	0.03
(A13 / D&K-28)			0.00			1/2" Ice	3.06	1.11	0.04
			0.00			1" Ice	3.28	1.26	0.07
6' Side-Arm Mount	C	None		0.0000	132.00	No Ice	10.60	10.60	0.14
(A12,13,14 / D&K-27,28,29)						1/2" Ice	15.40	15.40	0.21
						1" Ice	20.20	20.20	0.28
12' Omni Antenna	C	From Leg	8.00	0.0000	152.00 - 140.50	No Ice	5.06	5.06	0.03
(A15 / D&K-30)			0.00			1/2" Ice	6.54	6.54	0.07
			0.00			1" Ice	8.04	8.04	0.11
8' Side Arm Mount	C	None		0.0000	140.50	No Ice	17.20	17.20	0.33
(A15 / D&K-30)						1/2" Ice	24.50	24.50	0.45
						1" Ice	31.80	31.80	0.57
DB222-A	A	From Leg	4.00	0.0000	136.50	No Ice	1.60	1.60	0.02
(A16 / D&K-31)			0.00			1/2" Ice	2.88	2.88	0.02
			0.00			1" Ice	4.16	4.16	0.03
4' Side Mount Standoff	A	None		0.0000	136.50	No Ice	2.72	2.72	0.05
(A16 / D&K-31)						1/2" Ice	4.91	4.91	0.09
						1" Ice	7.10	7.10	0.13
Yagi ASP-816	A	From Leg	6.00	0.0000	139.00	No Ice	0.79	0.02	0.01
(A17 / D&K-32)			0.00			1/2" Ice	1.04	0.04	0.01
			0.00			1" Ice	1.29	0.07	0.02
6' Side-Arm Mount	A	None		0.0000	139.00	No Ice	10.60	10.60	0.14
(A17 / D&K-32)						1/2" Ice	15.40	15.40	0.21
						1" Ice	20.20	20.20	0.28
6' Side-Arm Mount	D	None		0.0000	139.00	No Ice	10.60	10.60	0.14
(A18 / D&K-33)						1/2" Ice	15.40	15.40	0.21
						1" Ice	20.20	20.20	0.28
*** Following Are D&K NOT Inventoried Appurtenances									
DB408-B	D	From Leg	6.00	0.0000	161.00	No Ice	1.65	1.65	0.02
(A19)			0.00			1/2" Ice	2.61	2.61	0.03
			0.00			1" Ice	3.60	3.60	0.05
(2) 6' Side Mount Standoff	D	None		0.0000	161.00	No Ice	1.40	0.13	0.01
(A19)						1/2" Ice	1.56	0.21	0.02
						1" Ice	1.73	0.30	0.02
BA1010-2	C	From Leg	2.50	0.0000	169.00	No Ice	1.39	1.39	0.02
(A20)			0.00			1/2" Ice	1.74	1.74	0.03
			0.00			1" Ice	2.12	2.12	0.05
15' T-Frame Sector Mount (1)	C	None		0.0000	169.00	No Ice	15.00	15.00	0.50
(A20)						1/2" Ice	20.60	20.60	0.65
						1" Ice	26.20	26.20	0.80
DB586-Y	C	From Leg	3.00	0.0000	170.00	No Ice	1.01	1.01	0.01
(A21)			0.00			1/2" Ice	1.28	1.28	0.02
			0.00			1" Ice	1.56	1.56	0.03
10'6"x4" Pipe Mount	A	From Leg	0.50	0.0000	170.00	No Ice	3.39	3.39	0.11
(A22)			0.00			1/2" Ice	5.62	5.62	0.15
			0.00			1" Ice	6.25	6.25	0.19

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
SC479-HF1LDF	D	From Leg	2.00	0.0000	168.00 - 180.00	No Ice	5.06	5.06	0.03
(D00I-E5764)			0.00			1/2" Ice	6.54	6.54	0.07
(A23)			0.00			1" Ice	8.04	8.04	0.11
15' T-Frame Sector Mount (1)	D	From Face	2.00	0.0000	180.00	No Ice	15.00	15.00	0.50
(A23,24,30,31)			0.00			1/2" Ice	20.60	20.60	0.65
			0.00			1" Ice	26.20	26.20	0.80
SC479-HF1LDF	D	From Face	2.00	0.0000	168.00 - 180.00	No Ice	5.06	5.06	0.03
(D00I-E5764)			0.00			1/2" Ice	6.54	6.54	0.07
(A24)			0.00			1" Ice	8.04	8.04	0.11
10'6"x4" Pipe Mount	C	From Leg	0.50	0.0000	173.00	No Ice	3.38	3.38	0.11
(A25)			0.00			1/2" Ice	5.62	5.62	0.15
			0.00			1" Ice	6.25	6.25	0.19
SC479-HF1LDF	A	From Leg	3.00	0.0000	168.00 - 180.00	No Ice	5.06	5.06	0.03
(D00I-E5764)			0.00			1/2" Ice	6.54	6.54	0.07
(A26)			0.00			1" Ice	8.04	8.04	0.11
15' T-Frame Sector Mount (1)	B	From Face	2.00	0.0000	180.00	No Ice	15.00	15.00	0.50
(A26,27,28,29)			0.00			1/2" Ice	20.60	20.60	0.65
			0.00			1" Ice	26.20	26.20	0.80
TMA 432-83H-01T - Future	A	From Leg	2.00	0.0000	181.00	No Ice	1.63	0.95	0.03
Decom.			0.00			1/2" Ice	1.81	1.09	0.04
(A27)			0.00			1" Ice	1.99	1.24	0.05
SC479-HF1LDF	A	From Leg	3.00	0.0000	183.00	No Ice	5.06	5.06	0.03
(D00-E5764)			0.00			1/2" Ice	6.54	6.54	0.07
(A28)			0.00			1" Ice	8.04	8.04	0.11
ANT150D	A	From Leg	1.00	0.0000	183.00	No Ice	6.56	2.02	0.08
(A29a)			0.00			1/2" Ice	6.95	2.90	0.12
			0.00			1" Ice	7.34	3.79	0.17
DB222	A	From Leg	1.50	0.0000	183.00	No Ice	1.60	1.60	0.02
(A29b)			0.00			1/2" Ice	2.88	2.88	0.02
			0.00			1" Ice	4.16	4.16	0.03
SC479-HF1LDF	D	From Leg	2.00	0.0000	183.00	No Ice	5.06	5.06	0.03
(D00-E5764)			0.00			1/2" Ice	6.54	6.54	0.07
(A30)			0.00			1" Ice	8.04	8.04	0.11
ALR8-0	C	From Leg	1.00	0.0000	183.00	No Ice	3.99	3.99	0.05
(A31)			0.00			1/2" Ice	8.21	8.21	0.11
			0.00			1" Ice	8.94	8.94	0.17
Lightning Rod 2"x15'	C	None		0.0000	185.00	No Ice	3.00	3.00	0.08
(A32)						1/2" Ice	4.53	4.53	0.10
						1" Ice	6.07	6.07	0.14
10'6"x4" Pipe Mount	A	From Leg	0.50	0.0000	175.00	No Ice	3.38	3.38	0.11
(A33)			0.00			1/2" Ice	5.62	5.62	0.15
			0.00			1" Ice	6.25	6.25	0.19
*** Empire EMP-004 Proposed Inventory									
T-Frame	A	From Leg	0.50	0.0000	163.00	No Ice	10.20	10.20	0.40
(AT&T)			0.00			1/2" Ice	16.20	16.20	0.60
			0.00			1" Ice	22.20	22.20	0.80
T-Frame	B	From Leg	0.50	0.0000	163.00	No Ice	10.20	10.20	0.40
(AT&T)			0.00			1/2" Ice	16.20	16.20	0.60
			0.00			1" Ice	22.20	22.20	0.80
T-Frame	C	From Leg	0.50	0.0000	163.00	No Ice	10.20	10.20	0.40
(AT&T)			0.00			1/2" Ice	16.20	16.20	0.60
			0.00			1" Ice	22.20	22.20	0.80
7770.00	A	From Leg	2.00	0.0000	163.00	No Ice	5.53	4.01	0.05
(AT&T)			4.00			1/2" Ice	5.89	4.64	0.10
			0.00			1" Ice	6.26	5.28	0.15
(2) LGP 21901 Diplexer Unit	A	From Leg	2.00	0.0000	163.00	No Ice	0.23	0.12	0.01

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(AT&T)			4.00			1/2" Ice	0.30	0.17	0.01
			0.00			1" Ice	0.38	0.22	0.01
Kathrein 800-10965 Panel	A	From Leg	2.00	0.0000	163.00	No Ice	13.81	5.83	0.11
Antenna			-4.00			1/2" Ice	14.35	6.32	0.19
(AT&T)			0.00			1" Ice	14.89	6.82	0.27
QS66512-3 Quintel Panel	A	From Leg	2.00	0.0000	163.00	No Ice	8.13	8.22	0.13
(AT&T)			0.00			1/2" Ice	8.59	9.19	0.20
			0.00			1" Ice	9.05	10.02	0.28
RRUS-11	A	From Leg	2.00	0.0000	163.00	No Ice	2.57	1.07	0.05
(AT&T)			0.00			1/2" Ice	2.76	1.21	0.07
			0.00			1" Ice	2.97	1.36	0.09
Raycap DC6-48-60-18-8F	A	From Leg	2.00	0.0000	163.00	No Ice	1.27	1.27	0.05
DC Power Surge Protection			0.00			1/2" Ice	1.46	1.46	0.07
(AT&T)			0.00			1" Ice	1.66	1.66	0.08
7770.00	B	From Leg	2.00	0.0000	163.00	No Ice	5.53	4.01	0.05
(AT&T)			4.00			1/2" Ice	5.89	4.64	0.10
			0.00			1" Ice	6.26	5.28	0.15
(2) LGP 21901 Diplexer Unit	B	From Leg	2.00	0.0000	163.00	No Ice	0.23	0.12	0.01
(AT&T)			4.00			1/2" Ice	0.30	0.17	0.01
			0.00			1" Ice	0.38	0.22	0.01
Kathrein 800-10965 Panel	B	From Leg	2.00	0.0000	163.00	No Ice	13.81	5.83	0.11
Antenna			-4.00			1/2" Ice	14.35	6.32	0.19
(AT&T)			0.00			1" Ice	14.89	6.82	0.27
QS66512-3 Quintel Panel	B	From Leg	2.00	0.0000	163.00	No Ice	8.13	8.22	0.13
(AT&T)			0.00			1/2" Ice	8.59	9.19	0.20
			0.00			1" Ice	9.05	10.02	0.28
RRUS-11	B	From Leg	2.00	0.0000	163.00	No Ice	2.57	1.07	0.05
(AT&T)			0.00			1/2" Ice	2.76	1.21	0.07
			0.00			1" Ice	2.97	1.36	0.09
7770.00	C	From Leg	2.00	0.0000	163.00	No Ice	5.53	4.01	0.05
(AT&T)			4.00			1/2" Ice	5.89	4.64	0.10
			0.00			1" Ice	6.26	5.28	0.15
(2) LGP 21901 Diplexer Unit	C	From Leg	2.00	0.0000	163.00	No Ice	0.23	0.12	0.01
(AT&T)			4.00			1/2" Ice	0.30	0.17	0.01
			0.00			1" Ice	0.38	0.22	0.01
Kathrein 800-10965 Panel	C	From Leg	2.00	0.0000	163.00	No Ice	13.81	5.83	0.11
Antenna			-4.00			1/2" Ice	14.35	6.32	0.19
(AT&T)			0.00			1" Ice	14.89	6.82	0.27
QS66512-3 Quintel Panel	C	From Leg	2.00	0.0000	163.00	No Ice	8.13	8.22	0.13
(AT&T)			0.00			1/2" Ice	8.59	9.19	0.20
			0.00			1" Ice	9.05	10.02	0.28
RRUS-11	C	From Leg	2.00	0.0000	163.00	No Ice	2.57	1.07	0.05
(AT&T)			0.00			1/2" Ice	2.76	1.21	0.07
			0.00			1" Ice	2.97	1.36	0.09
4478 Radio Unit (4x40W)	A	From Leg	2.00	0.0000	163.00	No Ice	1.08	1.08	0.06
(AT&T)			0.00			1/2" Ice	1.21	1.21	0.07
			0.00			1" Ice	1.35	1.35	0.09
4478 Radio Unit (4x40W)	B	From Leg	2.00	0.0000	163.00	No Ice	1.08	1.08	0.06
(AT&T)			0.00			1/2" Ice	1.21	1.21	0.07
			0.00			1" Ice	1.35	1.35	0.09
4478 Radio Unit (4x40W)	C	From Leg	2.00	0.0000	163.00	No Ice	1.08	1.08	0.06
(AT&T)			0.00			1/2" Ice	1.21	1.21	0.07
			0.00			1" Ice	1.35	1.35	0.09
RRUS-32 B66	A	From Leg	2.00	0.0000	163.00	No Ice	3.88	2.76	0.08
(AT&T)			0.00			1/2" Ice	4.14	2.98	0.11
			0.00			1" Ice	4.41	3.22	0.15
RRUS-32 B66	B	From Leg	2.00	0.0000	163.00	No Ice	3.88	2.76	0.08

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(AT&T)			0.00			1/2" Ice	4.14	2.98	0.11
			0.00			1" Ice	4.41	3.22	0.15
RRUS-32 B66	C	From Leg	2.00	0.0000	163.00	No Ice	3.88	2.76	0.08
(AT&T)			0.00			1/2" Ice	4.14	2.98	0.11
			0.00			1" Ice	4.41	3.22	0.15
RRUS-32 B2	A	From Leg	2.00	0.0000	163.00	No Ice	3.88	2.76	0.08
(AT&T)			0.00			1/2" Ice	4.14	2.98	0.11
			0.00			1" Ice	4.41	3.22	0.15
RRUS-32 B2	B	From Leg	2.00	0.0000	163.00	No Ice	3.88	2.76	0.08
(AT&T)			0.00			1/2" Ice	4.14	2.98	0.11
			0.00			1" Ice	4.41	3.22	0.15
RRUS-32 B2	C	From Leg	2.00	0.0000	163.00	No Ice	3.88	2.76	0.08
(AT&T)			0.00			1/2" Ice	4.14	2.98	0.11
			0.00			1" Ice	4.41	3.22	0.15
RRUS-32	A	From Leg	2.00	0.0000	163.00	No Ice	3.33	2.36	0.08
(AT&T)			0.00			1/2" Ice	3.55	2.56	0.11
			0.00			1" Ice	3.78	2.76	0.15
RRUS-32	B	From Leg	2.00	0.0000	163.00	No Ice	3.33	2.36	0.08
(AT&T)			0.00			1/2" Ice	3.55	2.56	0.11
			0.00			1" Ice	3.78	2.76	0.15
RRUS-32	C	From Leg	2.00	0.0000	163.00	No Ice	3.33	2.36	0.08
(AT&T)			0.00			1/2" Ice	3.55	2.56	0.11
			0.00			1" Ice	3.78	2.76	0.15
DC6-48-60-18-8C Squid /	B	From Leg	2.00	0.0000	163.00	No Ice	1.14	1.14	0.03
Surge Arrestor			0.00			1/2" Ice	1.79	1.79	0.05
(AT&T)			0.00			1" Ice	2.00	2.00	0.07
DC6-48-60-18-8C Squid /	C	From Leg	2.00	0.0000	163.00	No Ice	1.14	1.14	0.03
Surge Arrestor			0.00			1/2" Ice	1.79	1.79	0.05
(AT&T)			0.00			1" Ice	2.00	2.00	0.07
(2) LPG21401 TMA	A	From Face	2.00	0.0000	163.00	No Ice	0.95	0.37	0.02
(AT&T)			4.00			1/2" Ice	1.09	0.48	0.02
			0.00			1" Ice	1.24	0.60	0.03
(2) LPG21401 TMA	B	From Face	2.00	0.0000	163.00	No Ice	0.95	0.37	0.02
(AT&T)			4.00			1/2" Ice	1.09	0.48	0.02
			0.00			1" Ice	1.24	0.60	0.03
(2) LPG21401 TMA	C	From Face	2.00	0.0000	163.00	No Ice	0.95	0.37	0.02
(AT&T)			4.00			1/2" Ice	1.09	0.48	0.02
			0.00			1" Ice	1.24	0.60	0.03
*** Empire EMP-004 Proposed Inventory									
** Existing Sprint Equipment									
12' Wireless Frame	A	From Leg	1.00	0.0000	105.00	No Ice	11.07	11.07	0.24
(Sprint / D&K 5-10)			0.00			1/2" Ice	15.53	15.53	0.35
			0.00			1" Ice	19.99	19.99	0.45
12' Wireless Frame	B	From Leg	1.00	0.0000	105.00	No Ice	11.07	11.07	0.24
(Sprint / D&K 5-10)			0.00			1/2" Ice	15.53	15.53	0.35
			0.00			1" Ice	19.99	19.99	0.45
12' Wireless Frame	C	From Leg	1.00	0.0000	105.00	No Ice	11.07	11.07	0.24
(Sprint / D&K 5-10)			0.00			1/2" Ice	15.53	15.53	0.35
			0.00			1" Ice	19.99	19.99	0.45
APXVSPP18-C-A20 w/	A	From Leg	1.50	0.0000	105.00	No Ice	8.02	5.81	0.09
Mount Pipe			-5.00			1/2" Ice	8.48	6.27	0.14
(Sprint / D&K 5-10)			0.00			1" Ice	8.94	6.73	0.20
APXVSPP18-C-A20 w/	B	From Leg	1.50	0.0000	105.00	No Ice	8.02	5.81	0.09
Mount Pipe			-5.00			1/2" Ice	8.48	6.27	0.14
(Sprint / D&K 5-10)			0.00			1" Ice	8.94	6.73	0.20
APXVSPP18-C-A20 w/	C	From Leg	1.50	0.0000	105.00	No Ice	8.02	5.81	0.09

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Mount Pipe			-5.00			1/2" Ice	8.48	6.27	0.14
(Sprint / D&K 5-10)			0.00			1" Ice	8.94	6.73	0.20
ALU 800MHz 2x50W	A	From Leg	1.50	0.0000	105.00	No Ice	2.06	1.93	0.06
(Sprint / D&K 5-10)			0.00			1/2" Ice	2.24	2.11	0.09
			2.50			1" Ice	2.43	2.29	0.11
ALU 800MHz 2x50W	B	From Leg	1.50	0.0000	105.00	No Ice	2.06	1.93	0.06
(Sprint / D&K 5-10)			0.00			1/2" Ice	2.24	2.11	0.09
			2.50			1" Ice	2.43	2.29	0.11
ALU 800MHz 2x50W	C	From Leg	1.50	0.0000	105.00	No Ice	2.06	1.93	0.06
(Sprint / D&K 5-10)			0.00			1/2" Ice	2.24	2.11	0.09
			2.50			1" Ice	2.43	2.29	0.11
ALU 4x45W (1900 MHz)	A	From Leg	1.50	0.0000	105.00	No Ice	2.54	1.61	0.06
(Sprint / D&K 5-10)			0.00			1/2" Ice	2.75	1.79	0.08
			-2.50			1" Ice	2.97	1.98	0.10
ALU 4x45W (1900 MHz)	B	From Leg	1.50	0.0000	105.00	No Ice	2.54	1.61	0.06
(Sprint / D&K 5-10)			0.00			1/2" Ice	2.75	1.79	0.08
			-2.50			1" Ice	2.97	1.98	0.10
ALU 4x45W (1900 MHz)	C	From Leg	1.50	0.0000	105.00	No Ice	2.54	1.61	0.06
(Sprint / D&K 5-10)			0.00			1/2" Ice	2.75	1.79	0.08
			-2.50			1" Ice	2.97	1.98	0.10
** Existing Sprint Equipment									
** Proposed Sprint Equipment ASM-008									
AAHC Panel Antenna	A	From Leg	1.50	0.0000	105.00	No Ice	4.20	2.07	0.10
(Sprint)			0.00			1/2" Ice	4.46	2.26	0.14
			0.00			1" Ice	4.72	2.46	0.17
AAHC Panel Antenna	B	From Leg	1.50	0.0000	105.00	No Ice	4.20	2.07	0.10
(Sprint)			0.00			1/2" Ice	4.46	2.26	0.14
			0.00			1" Ice	4.72	2.46	0.17
AAHC Panel Antenna	C	From Leg	1.50	0.0000	105.00	No Ice	4.20	2.07	0.10
(Sprint)			0.00			1/2" Ice	4.46	2.26	0.14
			0.00			1" Ice	4.72	2.46	0.17
NNVV-65B-R4 Panel	A	From Leg	1.50	0.0000	105.00	No Ice	12.27	5.75	0.09
Antenna			5.00			1/2" Ice	12.77	6.21	0.16
(Sprint)			0.00			1" Ice	13.27	6.67	0.24
NNVV-65B-R4 Panel	B	From Leg	1.50	0.0000	105.00	No Ice	12.27	5.75	0.09
Antenna			5.00			1/2" Ice	12.77	6.21	0.16
(Sprint)			0.00			1" Ice	13.27	6.67	0.24
NNVV-65B-R4 Panel	C	From Leg	1.50	0.0000	105.00	No Ice	12.27	5.75	0.09
Antenna			5.00			1/2" Ice	12.77	6.21	0.16
(Sprint)			0.00			1" Ice	13.27	6.67	0.24
TD-RRH8x20-25	A	From Leg	1.50	0.0000	105.00	No Ice	4.05	1.53	0.07
(Sprint)			0.00			1/2" Ice	4.30	1.71	0.10
			2.50			1" Ice	4.56	1.90	0.13
TD-RRH8x20-25	B	From Leg	1.50	0.0000	105.00	No Ice	4.05	1.53	0.07
(Sprint)			0.00			1/2" Ice	4.30	1.71	0.10
			2.50			1" Ice	4.56	1.90	0.13
TD-RRH8x20-25	C	From Leg	1.50	0.0000	105.00	No Ice	4.05	1.53	0.07
(Sprint)			0.00			1/2" Ice	4.30	1.71	0.10
			2.50			1" Ice	4.56	1.90	0.13
** Proposed Sprint Equipment ASM-008									

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
4' Grid Dish	C	Grid	From	1.00		Worst		106.00	4.00	No Ice	12.57	0.06
(A6 / D&K 12 /			Leg	0.00						1/2" Ice	13.10	0.11
CSP-11)				0.00						1" Ice	13.62	0.17
6' PAD w/ Radome	A	Paraboloid	From	0.50		Worst		125.00	6.00	No Ice	28.27	0.24
(A10 / D&K-25)		w/Radome	Leg	0.00						1/2" Ice	29.07	0.29
				0.00						1" Ice	29.87	0.34
6' PAD w/ Radome	B	Paraboloid	From	1.00		Worst		175.00	6.00	No Ice	28.27	0.24
(A33)		w/Radome	Leg	0.00						1/2" Ice	29.07	0.29
				0.00						1" Ice	29.87	0.34
6' PAD w/ Radome	A	Paraboloid	From	0.50		Worst		170.00	6.00	No Ice	28.27	0.24
(A22 /)		w/Radome	Leg	0.00						1/2" Ice	29.07	0.29
				0.00						1" Ice	29.87	0.34
6' PAD w/ Radome	C	Paraboloid	From	0.50		Worst		173.00	6.00	No Ice	28.27	0.24
(A25 /)		w/Radome	Leg	0.00						1/2" Ice	29.07	0.29
				0.00						1" Ice	29.87	0.34

222-G Verification Constants

Constant	Value
Wind Importance Factor Without Ice	1.15
Wind Importance Factor With Ice Factor	1
Ice Importance Factor	1.25
K_d	0.85
Z_g	900
α	9.5
K_{zmin}	0.85
K_e	1
K_t	0.53
f	2

222-G Section Verification ArRr By Element

Section Elevation ft	Elem. Num.	Size	C	C w/Ice	Face	e	e w/Ice	A_r ft^2	A_r w/Ice ft^2	A_rR_r ft^2	A_rR_r w/Ice ft^2
T1					A		Sum:	0.000	0.000	0.000	0.000
180.00-170.00					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000
T2					A		Sum:	0.000	0.000	0.000	0.000
170.00-163.57					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000
T3					A		Sum:	0.000	0.000	0.000	0.000
163.57-159.05					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000

Section Elevation ft	Elem. Num.	Size	C	C w/Ice	Face	e	e w/Ice	A_r ft^2	A_r w/Ice ft^2	A_rR_r ft^2	A_rR_r w/Ice ft^2
T4					A		Sum:	0.000	0.000	0.000	0.000
159.05-154.52					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000
T5					A		Sum:	0.000	0.000	0.000	0.000
154.52-150.00					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000
T6					A		Sum:	0.000	0.000	0.000	0.000
150.00-140.00					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000
T7					A		Sum:	0.000	0.000	0.000	0.000
140.00-130.00					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000
T8					A		Sum:	0.000	0.000	0.000	0.000
130.00-120.00					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000
T9					A		Sum:	0.000	0.000	0.000	0.000
120.00-110.00					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000
T10					A		Sum:	0.000	0.000	0.000	0.000
110.00-100.00					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000
T11					A		Sum:	0.000	0.000	0.000	0.000
100.00-90.00					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000
T12 90.00-80.00					A		Sum:	0.000	0.000	0.000	0.000
					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000
T13 80.00-60.00	220	L8x8x1 w/ 1/2x7 Plates	81.252	54.203	D	0.167	0.311	14.185	21.219	6.062	12.785
	220	L8x8x1 w/ 1/2x7 Plates	81.252	54.203	A	0.167	0.311	14.185	21.219	6.062	12.785
	221	L8x8x1 w/ 1/2x7 Plates	81.252	54.203	D	0.167	0.311	14.185	21.219	6.062	12.785
	221	L8x8x1 w/ 1/2x7 Plates	81.252	54.203	C	0.167	0.311	14.185	21.219	6.062	12.785
	222	L8x8x1 w/ 1/2x7 Plates	81.252	54.203	C	0.167	0.311	14.185	21.219	6.062	12.785
	222	L8x8x1 w/ 1/2x7 Plates	81.252	54.203	B	0.167	0.311	14.185	21.219	6.062	12.785
	223	L8x8x1 w/ 1/2x7 Plates	81.252	54.203	B	0.167	0.311	14.185	21.219	6.062	12.785
	223	L8x8x1 w/ 1/2x7 Plates	81.252	54.203	A	0.167	0.311	14.185	21.219	6.062	12.785
					A		Sum:	28.370	42.439	12.125	25.569
					B			28.370	42.439	12.125	25.569
					C			28.370	42.439	12.125	25.569
					D			28.370	42.439	12.125	25.569
T14 60.00-50.00	249	L8x8x1-1/8 w/ 1/2x7 Plates	81.907	54.631	D	0.163	0.318	7.092	10.607	3.018	6.414
	249	L8x8x1-1/8 w/ 1/2x7 Plates	81.907	54.631	A	0.163	0.318	7.092	10.607	3.018	6.414

Section Elevation ft	Elem. Num.	Size	C	C w/Ice	Face	e	e w/Ice	A_r ft^2	A_r w/Ice ft^2	A_rR_r ft^2	A_rR_r w/Ice ft^2
	250	L8x8x1-1/8 w/ 1/2x7 Plates	81.907	54.631	D	0.163	0.318	7.092	10.607	3.018	6.414
	250	L8x8x1-1/8 w/ 1/2x7 Plates	81.907	54.631	C	0.163	0.318	7.092	10.607	3.018	6.414
	251	L8x8x1-1/8 w/ 1/2x7 Plates	81.907	54.631	C	0.163	0.318	7.092	10.607	3.018	6.414
	251	L8x8x1-1/8 w/ 1/2x7 Plates	81.907	54.631	B	0.163	0.318	7.092	10.607	3.018	6.414
	252	L8x8x1-1/8 w/ 1/2x7 Plates	81.907	54.631	B	0.163	0.318	7.092	10.607	3.018	6.414
	252	L8x8x1-1/8 w/ 1/2x7 Plates	81.907	54.631	A	0.163	0.318	7.092	10.607	3.018	6.414
					A		Sum:	14.185	21.214	6.035	12.829
					B			14.185	21.214	6.035	12.829
					C			14.185	21.214	6.035	12.829
					D			14.185	21.214	6.035	12.829
T15 50.00-40.00	270	L8x8x1-1/8 w/ 1/2x7 Plates	82.764	55.229	D	0.17	0.322	7.092	10.614	3.042	6.435
	270	L8x8x1-1/8 w/ 1/2x7 Plates	82.764	55.229	A	0.17	0.322	7.092	10.614	3.042	6.435
	271	L8x8x1-1/8 w/ 1/2x7 Plates	82.764	55.229	D	0.17	0.322	7.092	10.614	3.042	6.435
	271	L8x8x1-1/8 w/ 1/2x7 Plates	82.764	55.229	C	0.17	0.322	7.092	10.614	3.042	6.435
	272	L8x8x1-1/8 w/ 1/2x7 Plates	82.764	55.229	C	0.17	0.322	7.092	10.614	3.042	6.435
	272	L8x8x1-1/8 w/ 1/2x7 Plates	82.764	55.229	B	0.17	0.322	7.092	10.614	3.042	6.435
	273	L8x8x1-1/8 w/ 1/2x7 Plates	82.764	55.229	B	0.17	0.322	7.092	10.614	3.042	6.435
	273	L8x8x1-1/8 w/ 1/2x7 Plates	82.764	55.229	A	0.17	0.322	7.092	10.614	3.042	6.435
					A		Sum:	14.185	21.228	6.084	12.869
					B			14.185	21.228	6.084	12.869
					C			14.185	21.228	6.084	12.869
					D			14.185	21.228	6.084	12.869
T16 40.00-30.00					A		Sum:	0.000	0.000	0.000	0.000
					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000
T17 30.00-20.00					A		Sum:	0.000	0.000	0.000	0.000
					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000
T18 20.00-10.00					A		Sum:	0.000	0.000	0.000	0.000
					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000
T19 10.00-0.00					A		Sum:	0.000	0.000	0.000	0.000
					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
					D			0.000	0.000	0.000	0.000

222-G Section Verification Tables - No Ice

Section Elevation ft	z_{wind} ft	z_{ice} ft	K_z	K_h	K_{zt}	t_z in	q_z psf	Face	e	A_rR_r ft^2
T1 180.00-170.00	175.00		1.424	218.026	1.005		31	A	0.203	0.000
								B	0.203	0.000
								C	0.203	0.000
								D	0.203	0.000
T2 170.00-163.57	166.79		1.41	169.337	1.006		31	A	0.246	0.000
								B	0.246	0.000
								C	0.246	0.000
								D	0.246	0.000
T3 163.57-159.05	161.31		1.4	143.081	1.007		31	A	0.246	0.000
								B	0.246	0.000
								C	0.246	0.000
								D	0.246	0.000
T4 159.05-154.52	156.79		1.391	124.487	1.009		30	A	0.227	0.000
								B	0.227	0.000
								C	0.227	0.000
								D	0.227	0.000
T5 154.52-150.00	152.26		1.383	108.309	1.01		30	A	0.22	0.000
								B	0.22	0.000
								C	0.22	0.000
								D	0.22	0.000
T6 150.00-140.00	145.00		1.369	86.621	1.012		30	A	0.222	0.000
								B	0.222	0.000
								C	0.222	0.000
								D	0.222	0.000
T7 140.00-130.00	135.00		1.348	63.678	1.017		30	A	0.229	0.000
								B	0.229	0.000
								C	0.229	0.000
								D	0.229	0.000
T8 130.00-120.00	125.00		1.326	46.813	1.023		29	A	0.198	0.000
								B	0.198	0.000
								C	0.198	0.000
								D	0.198	0.000
T9 120.00-110.00	115.00		1.303	34.414	1.031		29	A	0.205	0.000
								B	0.205	0.000
								C	0.205	0.000
								D	0.205	0.000
T10 110.00-100.00	105.00		1.279	25.299	1.042		29	A	0.188	0.000
								B	0.188	0.000
								C	0.188	0.000
								D	0.188	0.000
T11 100.00-90.00	95.00		1.252	18.598	1.058		29	A	0.211	0.000
								B	0.211	0.000
								C	0.211	0.000
								D	0.211	0.000
T12 90.00-80.00	85.00		1.223	13.672	1.079		29	A	0.203	0.000
								B	0.203	0.000
								C	0.203	0.000
								D	0.203	0.000
T13 80.00-60.00	70.00		1.174	8.618	1.127		29	A	0.167	12.125
								B	0.167	12.125
								C	0.167	12.125
								D	0.167	12.125
T14 60.00-50.00	55.00		1.116	5.432	1.205		29	A	0.163	6.035
								B	0.163	6.035
								C	0.163	6.035
								D	0.163	6.035
T15 50.00-40.00	45.00		1.07	3.993	1.283		30	A	0.17	6.084
								B	0.17	6.084
								C	0.17	6.084

Section Elevation ft	z_{wind} ft	z_{ice} ft	K_z	K_h	K_{zt}	t_z in	q_z psf	Face	e	A_rR_r ft²
								D	0.17	6.084
T16 40.00-30.00	35.00		1.015	2.936	1.394		31	A	0.175	0.000
								B	0.175	0.000
								C	0.175	0.000
								D	0.175	0.000
T17 30.00-20.00	25.00		0.945	2.158	1.551		32	A	0.156	0.000
								B	0.156	0.000
								C	0.156	0.000
								D	0.156	0.000
T18 20.00-10.00	15.00		0.85	1.587	1.78		33	A	0.167	0.000
								B	0.167	0.000
								C	0.167	0.000
								D	0.167	0.000
T19 10.00-0.00	5.00		0.85	1.166	2.115		39	A	0.16	0.000
								B	0.16	0.000
								C	0.16	0.000
								D	0.16	0.000

222-G Section Verification Tables - Ice

Section Elevation ft	z_{wind} ft	z_{ice} ft	K_z	K_h	K_{zt}	t_z in	q_z psf	Face	e	A_rR_r ft²
T1 180.00-170.00	175.00	175.00	1.424	218.026	1.005	2.2192	8	A	0.498	13.721
								B	0.498	13.721
								C	0.498	13.721
								D	0.498	13.721
T2 170.00-163.57	166.79	166.79	1.41	169.337	1.006	2.2096	8	A	0.54	9.244
								B	0.54	9.244
								C	0.54	9.244
								D	0.54	9.244
T3 163.57-159.05	161.31	161.31	1.4	143.081	1.007	2.2031	8	A	0.583	7.845
								B	0.583	7.845
								C	0.583	7.845
								D	0.583	7.845
T4 159.05-154.52	156.79	156.79	1.391	124.487	1.009	2.1977	8	A	0.491	5.996
								B	0.491	5.996
								C	0.491	5.996
								D	0.491	5.996
T5 154.52-150.00	152.26	152.26	1.383	108.309	1.01	2.1923	8	A	0.478	6.049
								B	0.478	6.049
								C	0.478	6.049
								D	0.478	6.049
T6 150.00-140.00	145.00	145.00	1.369	86.621	1.012	2.1834	8	A	0.489	14.941
								B	0.489	14.941
								C	0.489	14.941
								D	0.489	14.941
T7 140.00-130.00	135.00	135.00	1.348	63.678	1.017	2.1712	7	A	0.469	14.491
								B	0.469	14.491
								C	0.469	14.491
								D	0.469	14.491
T8 130.00-120.00	125.00	125.00	1.326	46.813	1.023	2.1591	7	A	0.398	12.396
								B	0.398	12.396
								C	0.398	12.396
								D	0.398	12.396
T9 120.00-110.00	115.00	115.00	1.303	34.414	1.031	2.1472	7	A	0.425	14.951

Section Elevation ft	z_{wind} ft	z_{ice} ft	K_z	K_h	K_{zt}	t_z in	q_z psf	Face	e	A_rR_r ft²
								B	0.425	14.951
								C	0.425	14.951
								D	0.425	14.951
T10 110.00-100.00	105.00	105.00	1.279	25.299	1.042	2.1359	7	A	0.371	12.795
								B	0.371	12.795
								C	0.371	12.795
								D	0.371	12.795
T11 100.00-90.00	95.00	95.00	1.252	18.598	1.058	2.1255	7	A	0.384	13.152
								B	0.384	13.152
								C	0.384	13.152
								D	0.384	13.152
T12 90.00-80.00	85.00	85.00	1.223	13.672	1.079	2.1167	7	A	0.371	13.413
								B	0.371	13.413
								C	0.371	13.413
								D	0.371	13.413
T13 80.00-60.00	70.00	70.00	1.174	8.618	1.127	2.1077	7	A	0.311	41.332
								B	0.311	41.332
								C	0.311	41.332
								D	0.311	41.332
T14 60.00-50.00	55.00	55.00	1.116	5.432	1.205	2.1061	7	A	0.318	22.589
								B	0.318	22.589
								C	0.318	22.589
								D	0.318	22.589
T15 50.00-40.00	45.00	45.00	1.07	3.993	1.283	2.1104	7	A	0.322	23.148
								B	0.322	23.148
								C	0.322	23.148
								D	0.322	23.148
T16 40.00-30.00	35.00	35.00	1.015	2.936	1.394	2.1184	8	A	0.358	18.428
								B	0.358	18.428
								C	0.358	18.428
								D	0.358	18.428
T17 30.00-20.00	25.00	25.00	0.945	2.158	1.551	2.1267	8	A	0.306	15.347
								B	0.306	15.347
								C	0.306	15.347
								D	0.306	15.347
T18 20.00-10.00	15.00	15.00	0.85	1.587	1.78	2.1202	8	A	0.346	19.465
								B	0.346	19.465
								C	0.346	19.465
								D	0.346	19.465
T19 10.00-0.00	5.00	5.00	0.85	1.166	2.115	2.0180	10	A	0.325	19.744
								B	0.325	19.744
								C	0.325	19.744
								D	0.325	19.744

222-G Section Verification Tables - Service

Section Elevation ft	z_{wind} ft	z_{ice} ft	K_z	K_h	K_{zt}	t_z in	q_z psf	Face	e	A_rR_r ft²
T1 180.00-170.00	175.00		1.424	218.026	1.005		11	A	0.203	0.000
								B	0.203	0.000
								C	0.203	0.000
								D	0.203	0.000
T2 170.00-163.57	166.79		1.41	169.337	1.006		11	A	0.246	0.000
								B	0.246	0.000
								C	0.246	0.000

Section Elevation	z_{wind}	z_{ice}	K_z	K_h	K_{zt}	t_z	q_z	Face	e	A_rR_r
ft	ft	ft				in	psf			ft^2
								D	0.246	0.000
T3 163.57-159.05	161.31		1.4	143.081	1.007		11	A	0.246	0.000
								B	0.246	0.000
								C	0.246	0.000
								D	0.246	0.000
T4 159.05-154.52	156.79		1.391	124.487	1.009		11	A	0.227	0.000
								B	0.227	0.000
								C	0.227	0.000
								D	0.227	0.000
T5 154.52-150.00	152.26		1.383	108.309	1.01		11	A	0.22	0.000
								B	0.22	0.000
								C	0.22	0.000
								D	0.22	0.000
T6 150.00-140.00	145.00		1.369	86.621	1.012		11	A	0.222	0.000
								B	0.222	0.000
								C	0.222	0.000
								D	0.222	0.000
T7 140.00-130.00	135.00		1.348	63.678	1.017		11	A	0.229	0.000
								B	0.229	0.000
								C	0.229	0.000
								D	0.229	0.000
T8 130.00-120.00	125.00		1.326	46.813	1.023		11	A	0.198	0.000
								B	0.198	0.000
								C	0.198	0.000
								D	0.198	0.000
T9 120.00-110.00	115.00		1.303	34.414	1.031		11	A	0.205	0.000
								B	0.205	0.000
								C	0.205	0.000
								D	0.205	0.000
T10 110.00-100.00	105.00		1.279	25.299	1.042		10	A	0.188	0.000
								B	0.188	0.000
								C	0.188	0.000
								D	0.188	0.000
T11 100.00-90.00	95.00		1.252	18.598	1.058		10	A	0.211	0.000
								B	0.211	0.000
								C	0.211	0.000
								D	0.211	0.000
T12 90.00-80.00	85.00		1.223	13.672	1.079		10	A	0.203	0.000
								B	0.203	0.000
								C	0.203	0.000
								D	0.203	0.000
T13 80.00-60.00	70.00		1.174	8.618	1.127		10	A	0.167	12.125
								B	0.167	12.125
								C	0.167	12.125
								D	0.167	12.125
T14 60.00-50.00	55.00		1.116	5.432	1.205		11	A	0.163	6.035
								B	0.163	6.035
								C	0.163	6.035
								D	0.163	6.035
T15 50.00-40.00	45.00		1.07	3.993	1.283		11	A	0.17	6.084
								B	0.17	6.084
								C	0.17	6.084
								D	0.17	6.084
T16 40.00-30.00	35.00		1.015	2.936	1.394		11	A	0.175	0.000
								B	0.175	0.000
								C	0.175	0.000
								D	0.175	0.000
T17 30.00-20.00	25.00		0.945	2.158	1.551		11	A	0.156	0.000
								B	0.156	0.000
								C	0.156	0.000

Section Elevation ft	z_{wind} ft	z_{ice} ft	K_z	K_h	K_{zt}	t_z in	q_z psf	Face	e	A_rR_r ft²
								D	0.156	0.000
T18 20.00-10.00	15.00		0.85	1.587	1.78		12	A	0.167	0.000
								B	0.167	0.000
								C	0.167	0.000
								D	0.167	0.000
T19 10.00-0.00	5.00		0.85	1.166	2.115		14	A	0.16	0.000
								B	0.16	0.000
								C	0.16	0.000
								D	0.16	0.000

Tower Pressures - No Ice

$G_H = 0.850$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	175.00	1.424	31	61.674	A	12.491	0.000	5.833	46.70	0.000	0.000
180.00-170.00					B	12.491	0.000		46.70	0.000	0.000
					C	12.491	0.000		46.70	0.000	0.000
					D	12.491	0.000		46.70	19.833	0.000
T2	166.79	1.41	31	40.022	A	9.832	0.000	5.356	54.47	0.000	0.000
170.00-163.57					B	9.832	0.000		54.47	0.000	0.000
					C	9.832	0.000		54.47	0.000	0.000
					D	9.832	0.000		54.47	21.503	0.000
T3	161.31	1.4	31	28.908	A	7.122	0.000	3.775	53.00	0.000	0.000
163.57-159.05					B	7.122	0.000		53.00	0.000	0.000
					C	7.122	0.000		53.00	12.273	0.000
					D	7.122	0.000		53.00	15.193	0.000
T4	156.79	1.391	30	30.376	A	6.903	0.000	3.775	54.69	0.000	0.000
159.05-154.52					B	6.903	0.000		54.69	0.000	0.000
					C	6.903	0.000		54.69	14.053	0.000
					D	6.903	0.000		54.69	15.400	0.000
T5	152.26	1.383	30	31.844	A	7.011	0.000	3.775	53.84	0.000	0.000
154.52-150.00					B	7.011	0.000		53.84	0.000	0.000
					C	7.011	0.000		53.84	14.053	0.000
					D	7.011	0.000		53.84	15.400	0.000
T6	145.00	1.369	30	75.634	A	16.767	0.000	8.344	49.76	0.000	0.000
150.00-140.00					B	16.767	0.000		49.76	0.000	0.000
					C	16.767	0.000		49.76	31.060	0.000
					D	16.767	0.000		49.76	34.038	0.000
T7	135.00	1.348	30	83.296	A	19.051	0.000	10.013	52.56	0.000	0.000
140.00-130.00					B	19.051	0.000		52.56	0.000	0.000
					C	19.051	0.000		52.56	31.060	0.000
					D	19.051	0.000		52.56	36.258	0.000
T8	125.00	1.326	29	90.466	A	17.878	0.000	10.013	56.01	13.110	0.000
130.00-120.00					B	17.878	0.000		56.01	0.000	0.000
					C	17.878	0.000		56.01	31.060	0.000
					D	17.878	0.000		56.01	37.578	0.000
T9	115.00	1.303	29	97.774	A	20.028	0.000	10.013	49.99	21.850	0.000
120.00-110.00					B	20.028	0.000		49.99	0.000	0.000
					C	20.028	0.000		49.99	31.060	0.000
					D	20.028	0.000		49.99	40.229	0.000
T10	105.00	1.279	29	104.945	A	19.757	0.000	10.013	50.68	25.839	0.000
110.00-100.00					B	19.757	0.000		50.68	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
					C	19.757	0.000		50.68	31.060	0.000
					D	19.757	0.000		50.68	43.835	0.000
T11	95.00	1.252	29	112.984	A	23.872	0.000	13.350	55.93	28.498	0.000
100.00-90.00					B	23.872	0.000		55.93	0.000	0.000
					C	23.872	0.000		55.93	31.060	0.000
					D	23.872	0.000		55.93	45.317	0.000
T12	85.00	1.223	29	120.155	A	24.365	0.000	13.350	54.79	28.498	0.000
90.00-80.00					B	24.365	0.000		54.79	0.000	0.000
					C	24.365	0.000		54.79	31.060	0.000
					D	24.365	0.000		54.79	45.872	0.000
T13	70.00	1.174	29	263.233	A	15.516	28.370	28.370	64.64	56.996	0.000
80.00-60.00					B	15.516	28.370		64.64	0.000	0.000
					C	15.516	28.370		64.64	62.120	0.000
					D	15.516	28.370		64.64	93.724	0.000
T14	55.00	1.116	29	142.444	A	9.050	14.185	14.185	61.05	28.498	0.000
60.00-50.00					B	9.050	14.185		61.05	0.000	0.000
					C	9.050	14.185		61.05	31.060	0.000
					D	9.050	14.185		61.05	47.355	0.000
T15	45.00	1.07	30	149.614	A	11.192	14.185	14.185	55.90	28.498	0.000
50.00-40.00					B	11.192	14.185		55.90	0.000	0.000
					C	11.192	14.185		55.90	31.060	0.000
					D	11.192	14.185		55.90	47.993	0.000
T16	35.00	1.015	31	156.196	A	27.367	0.000	13.350	48.78	28.498	0.000
40.00-30.00					B	27.367	0.000		48.78	0.000	0.000
					C	27.367	0.000		48.78	31.060	0.000
					D	27.367	0.000		48.78	48.167	0.000
T17	25.00	0.945	32	163.366	A	25.467	0.000	13.350	52.42	28.498	0.000
30.00-20.00					B	25.467	0.000		52.42	0.000	0.000
					C	25.467	0.000		52.42	31.060	0.000
					D	25.467	0.000		52.42	48.167	0.000
T18	15.00	0.85	33	170.539	A	28.533	0.000	13.350	46.79	28.498	0.000
20.00-10.00					B	28.533	0.000		46.79	0.000	0.000
					C	28.533	0.000		46.79	31.060	0.000
					D	28.533	0.000		46.79	48.167	0.000
T19 10.00-0.00	5.00	0.85	39	177.715	A	28.435	0.000	13.350	46.95	11.399	0.000
					B	28.435	0.000		46.95	0.000	0.000
					C	28.435	0.000		46.95	12.405	0.000
					D	28.435	0.000		46.95	19.267	0.000

Tower Pressure - With Ice

$G_H = 0.850$

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	175.00	1.424	8	2.2192	65.373	A	12.491	20.062	13.231	40.64	0.000	0.000
180.00-170.00						B	12.491	20.062		40.64	0.000	0.000
						C	12.491	20.062		40.64	0.000	0.000
						D	12.491	20.062		40.64	63.103	0.000
T2	166.79	1.41	8	2.2096	42.389	A	9.832	13.066	10.090	44.06	0.000	0.000
170.00-163.57						B	9.832	13.066		44.06	0.000	0.000
						C	9.832	13.066		44.06	0.000	0.000
						D	9.832	13.066		44.06	66.524	0.000
T3	161.31	1.4	8	2.2031	30.571	A	7.122	10.701	7.102	39.85	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
163.57-159.05						B	7.122	10.701		39.85	0.000	0.000
						C	7.122	10.701		39.85	27.175	0.000
						D	7.122	10.701		39.85	47.239	0.000
T4	156.79	1.391	8	2.1977	32.034	A	6.903	8.817	7.094	45.13	0.000	0.000
159.05-154.52						B	6.903	8.817		45.13	0.000	0.000
						C	6.903	8.817		45.13	31.081	0.000
						D	6.903	8.817		45.13	48.961	0.000
T5	152.26	1.383	8	2.1923	33.498	A	7.011	8.986	7.086	44.29	0.000	0.000
154.52-150.00						B	7.011	8.986		44.29	0.000	0.000
						C	7.011	8.986		44.29	31.045	0.000
						D	7.011	8.986		44.29	48.901	0.000
T6	145.00	1.369	8	2.1834	79.275	A	16.767	22.001	15.632	40.32	0.000	0.000
150.00-140.00						B	16.767	22.001		40.32	0.000	0.000
						C	16.767	22.001		40.32	68.493	0.000
						D	16.767	22.001		40.32	107.869	0.000
T7	135.00	1.348	7	2.1712	86.917	A	19.051	21.676	17.260	42.38	0.000	0.000
140.00-130.00						B	19.051	21.676		42.38	0.000	0.000
						C	19.051	21.676		42.38	68.318	0.000
						D	19.051	21.676		42.38	119.337	0.000
T8	125.00	1.326	7	2.1591	94.067	A	17.878	19.516	17.219	46.05	25.590	0.000
130.00-120.00						B	17.878	19.516		46.05	0.000	0.000
						C	17.878	19.516		46.05	68.145	0.000
						D	17.878	19.516		46.05	122.477	0.000
T9	115.00	1.303	7	2.1472	101.355	A	20.028	23.087	17.179	39.85	42.571	0.000
120.00-110.00						B	20.028	23.087		39.85	0.000	0.000
						C	20.028	23.087		39.85	67.975	0.000
						D	20.028	23.087		39.85	132.611	0.000
T10	105.00	1.279	7	2.1359	108.507	A	19.757	20.499	17.142	42.58	59.131	0.000
110.00-100.00						B	19.757	20.499		42.58	0.000	0.000
						C	19.757	20.499		42.58	67.814	0.000
						D	19.757	20.499		42.58	148.268	0.000
T11	95.00	1.252	7	2.1255	116.529	A	23.872	20.891	20.445	45.67	70.081	0.000
100.00-90.00						B	23.872	20.891		45.67	0.000	0.000
						C	23.872	20.891		45.67	67.666	0.000
						D	23.872	20.891		45.67	154.400	0.000
T12 90.00-80.00	85.00	1.223	7	2.1167	123.685	A	24.365	21.492	20.415	44.52	69.961	0.000
						B	24.365	21.492		44.52	0.000	0.000
						C	24.365	21.492		44.52	67.540	0.000
						D	24.365	21.492		44.52	156.728	0.000
T13 80.00-60.00	70.00	1.174	7	2.1077	270.263	A	15.516	68.601	42.439	50.45	139.677	0.000
						B	15.516	68.601		50.45	0.000	0.000
						C	15.516	68.601		50.45	134.823	0.000
						D	15.516	68.601		50.45	325.259	0.000
T14 60.00-50.00	55.00	1.116	7	2.1061	145.956	A	9.050	37.355	21.214	45.72	69.818	0.000
						B	9.050	37.355		45.72	0.000	0.000
						C	9.050	37.355		45.72	67.390	0.000
						D	9.050	37.355		45.72	166.638	0.000
T15 50.00-40.00	45.00	1.07	7	2.1104	153.134	A	11.192	38.184	21.228	42.99	69.875	0.000
						B	11.192	38.184		42.99	0.000	0.000
						C	11.192	38.184		42.99	67.450	0.000
						D	11.192	38.184		42.99	172.105	0.000
T16 40.00-30.00	35.00	1.015	8	2.1184	159.729	A	27.367	29.771	20.421	35.74	69.984	0.000
						B	27.367	29.771		35.74	0.000	0.000
						C	27.367	29.771		35.74	67.565	0.000
						D	27.367	29.771		35.74	173.922	0.000
T17 30.00-20.00	25.00	0.945	8	2.1267	166.913	A	25.467	25.548	20.449	40.08	70.097	0.000
						B	25.467	25.548		40.08	0.000	0.000
						C	25.467	25.548		40.08	67.683	0.000
						D	25.467	25.548		40.08	174.309	0.000
T18 20.00-10.00	15.00	0.85	8	2.1202	174.075	A	28.533	31.675	20.427	33.93	70.009	0.000

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
						B	28.533	31.675		33.93	0.000	0.000
						C	28.533	31.675		33.93	67.591	0.000
						D	28.533	31.675		33.93	174.006	0.000
T19 10.00-0.00	5.00	0.85	10	2.0180	181.080	A	28.435	30.492	20.086	34.09	27.449	0.000
						B	28.435	30.492		34.09	0.000	0.000
						C	28.435	30.492		34.09	26.453	0.000
						D	28.435	30.492		34.09	67.691	0.000

Tower Pressure - Service

$G_H = 0.850$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	175.00	1.424	11	61.674	A	12.491	0.000	5.833	46.70	0.000	0.000
180.00-170.00					B	12.491	0.000		46.70	0.000	0.000
					C	12.491	0.000		46.70	0.000	0.000
					D	12.491	0.000		46.70	19.833	0.000
T2	166.79	1.41	11	40.022	A	9.832	0.000	5.356	54.47	0.000	0.000
170.00-163.57					B	9.832	0.000		54.47	0.000	0.000
					C	9.832	0.000		54.47	0.000	0.000
					D	9.832	0.000		54.47	21.503	0.000
T3	161.31	1.4	11	28.908	A	7.122	0.000	3.775	53.00	0.000	0.000
163.57-159.05					B	7.122	0.000		53.00	0.000	0.000
					C	7.122	0.000		53.00	12.273	0.000
					D	7.122	0.000		53.00	15.193	0.000
T4	156.79	1.391	11	30.376	A	6.903	0.000	3.775	54.69	0.000	0.000
159.05-154.52					B	6.903	0.000		54.69	0.000	0.000
					C	6.903	0.000		54.69	14.053	0.000
					D	6.903	0.000		54.69	15.400	0.000
T5	152.26	1.383	11	31.844	A	7.011	0.000	3.775	53.84	0.000	0.000
154.52-150.00					B	7.011	0.000		53.84	0.000	0.000
					C	7.011	0.000		53.84	14.053	0.000
					D	7.011	0.000		53.84	15.400	0.000
T6	145.00	1.369	11	75.634	A	16.767	0.000	8.344	49.76	0.000	0.000
150.00-140.00					B	16.767	0.000		49.76	0.000	0.000
					C	16.767	0.000		49.76	31.060	0.000
					D	16.767	0.000		49.76	34.038	0.000
T7	135.00	1.348	11	83.296	A	19.051	0.000	10.013	52.56	0.000	0.000
140.00-130.00					B	19.051	0.000		52.56	0.000	0.000
					C	19.051	0.000		52.56	31.060	0.000
					D	19.051	0.000		52.56	36.258	0.000
T8	125.00	1.326	11	90.466	A	17.878	0.000	10.013	56.01	13.110	0.000
130.00-120.00					B	17.878	0.000		56.01	0.000	0.000
					C	17.878	0.000		56.01	31.060	0.000
					D	17.878	0.000		56.01	37.578	0.000
T9	115.00	1.303	11	97.774	A	20.028	0.000	10.013	49.99	21.850	0.000
120.00-110.00					B	20.028	0.000		49.99	0.000	0.000
					C	20.028	0.000		49.99	31.060	0.000
					D	20.028	0.000		49.99	40.229	0.000
T10	105.00	1.279	10	104.945	A	19.757	0.000	10.013	50.68	25.839	0.000
110.00-100.00					B	19.757	0.000		50.68	0.000	0.000
					C	19.757	0.000		50.68	31.060	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
					D	19.757	0.000		50.68	43.835	0.000
T11	95.00	1.252	10	112.984	A	23.872	0.000	13.350	55.93	28.498	0.000
100.00-90.00					B	23.872	0.000		55.93	0.000	0.000
					C	23.872	0.000		55.93	31.060	0.000
					D	23.872	0.000		55.93	45.317	0.000
T12	85.00	1.223	10	120.155	A	24.365	0.000	13.350	54.79	28.498	0.000
90.00-80.00					B	24.365	0.000		54.79	0.000	0.000
					C	24.365	0.000		54.79	31.060	0.000
					D	24.365	0.000		54.79	45.872	0.000
T13	70.00	1.174	10	263.233	A	15.516	28.370	28.370	64.64	56.996	0.000
80.00-60.00					B	15.516	28.370		64.64	0.000	0.000
					C	15.516	28.370		64.64	62.120	0.000
					D	15.516	28.370		64.64	93.724	0.000
T14	55.00	1.116	11	142.444	A	9.050	14.185	14.185	61.05	28.498	0.000
60.00-50.00					B	9.050	14.185		61.05	0.000	0.000
					C	9.050	14.185		61.05	31.060	0.000
					D	9.050	14.185		61.05	47.355	0.000
T15	45.00	1.07	11	149.614	A	11.192	14.185	14.185	55.90	28.498	0.000
50.00-40.00					B	11.192	14.185		55.90	0.000	0.000
					C	11.192	14.185		55.90	31.060	0.000
					D	11.192	14.185		55.90	47.993	0.000
T16	35.00	1.015	11	156.196	A	27.367	0.000	13.350	48.78	28.498	0.000
40.00-30.00					B	27.367	0.000		48.78	0.000	0.000
					C	27.367	0.000		48.78	31.060	0.000
					D	27.367	0.000		48.78	48.167	0.000
T17	25.00	0.945	11	163.366	A	25.467	0.000	13.350	52.42	28.498	0.000
30.00-20.00					B	25.467	0.000		52.42	0.000	0.000
					C	25.467	0.000		52.42	31.060	0.000
					D	25.467	0.000		52.42	48.167	0.000
T18	15.00	0.85	12	170.539	A	28.533	0.000	13.350	46.79	28.498	0.000
20.00-10.00					B	28.533	0.000		46.79	0.000	0.000
					C	28.533	0.000		46.79	31.060	0.000
					D	28.533	0.000		46.79	48.167	0.000
T19 10.00-0.00	5.00	0.85	14	177.715	A	28.435	0.000	13.350	46.95	11.399	0.000
					B	28.435	0.000		46.95	0.000	0.000
					C	28.435	0.000		46.95	12.405	0.000
					D	28.435	0.000		46.95	19.267	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.09	0.75	A	0.203	2.969	31	1	1	12.491	1.30	129.56	D
180.00-170.00			B	0.203	2.969		1	1	12.491			
			C	0.203	2.969		1	1	12.491			
			D	0.203	2.969		1	1	12.491			
T2	0.09	0.54	A	0.246	2.792	31	1	1	9.832	1.06	164.43	D
170.00-163.57			B	0.246	2.792		1	1	9.832			
			C	0.246	2.792		1	1	9.832			
			D	0.246	2.792		1	1	9.832			
T3	0.14	0.39	A	0.246	2.789	31	1	1	7.122	0.95	209.11	D
163.57-159.05			B	0.246	2.789		1	1	7.122			
			C	0.246	2.789		1	1	7.122			
			D	0.246	2.789		1	1	7.122			
T4	0.15	0.36	A	0.227	2.866	30	1	1	6.903	0.97	214.89	D

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
159.05-154.52			B	0.227	2.866		1	1	6.903			
			C	0.227	2.866		1	1	6.903			
			D	0.227	2.866		1	1	6.903			
T5	0.15	0.37	A	0.22	2.895	30	1	1	7.011	0.98	216.76	D
154.52-150.00			B	0.22	2.895		1	1	7.011			
			C	0.22	2.895		1	1	7.011			
			D	0.22	2.895		1	1	7.011			
T6	0.33	0.97	A	0.222	2.889	30	1	1	16.767	2.24	224.17	D
150.00-140.00			B	0.222	2.889		1	1	16.767			
			C	0.222	2.889		1	1	16.767			
			D	0.222	2.889		1	1	16.767			
T7	0.34	1.53	A	0.229	2.86	30	1	1	19.051	2.40	240.41	D
140.00-130.00			B	0.229	2.86		1	1	19.051			
			C	0.229	2.86		1	1	19.051			
			D	0.229	2.86		1	1	19.051			
T8	0.39	1.43	A	0.198	2.99	29	1	1	17.878	2.57	257.00	D
130.00-120.00			B	0.198	2.99		1	1	17.878			
			C	0.198	2.99		1	1	17.878			
			D	0.198	2.99		1	1	17.878			
T9	0.43	2.05	A	0.205	2.959	29	1	1	20.028	2.86	285.84	D
120.00-110.00			B	0.205	2.959		1	1	20.028			
			C	0.205	2.959		1	1	20.028			
			D	0.205	2.959		1	1	20.028			
T10	0.48	1.91	A	0.188	3.031	29	1	1	19.757	2.96	296.17	D
110.00-100.00			B	0.188	3.031		1	1	19.757			
			C	0.188	3.031		1	1	19.757			
			D	0.188	3.031		1	1	19.757			
T11	0.51	2.50	A	0.211	2.932	29	1	1	23.872	3.25	324.98	D
100.00-90.00			B	0.211	2.932		1	1	23.872			
			C	0.211	2.932		1	1	23.872			
			D	0.211	2.932		1	1	23.872			
T12	0.52	2.43	A	0.203	2.968	29	1	1	24.365	3.30	330.28	D
90.00-80.00			B	0.203	2.968		1	1	24.365			
			C	0.203	2.968		1	1	24.365			
			D	0.203	2.968		1	1	24.365			
T13	1.04	7.96	A	0.167	3.128	29	1	1	27.641	5.23	261.72	D
80.00-60.00			B	0.167	3.128		1	1	27.641			
			C	0.167	3.128		1	1	27.641			
			D	0.167	3.128		1	1	27.641			
T14	0.52	4.57	A	0.163	3.144	29	1	1	15.085	2.77	277.09	D
60.00-50.00			B	0.163	3.144		1	1	15.085			
			C	0.163	3.144		1	1	15.085			
			D	0.163	3.144		1	1	15.085			
T15	0.53	5.12	A	0.17	3.114	30	1	1	17.276	3.00	299.98	D
50.00-40.00			B	0.17	3.114		1	1	17.276			
			C	0.17	3.114		1	1	17.276			
			D	0.17	3.114		1	1	17.276			
T16	0.53	4.78	A	0.175	3.089	31	1	1	27.367	3.89	389.28	D
40.00-30.00			B	0.175	3.089		1	1	27.367			
			C	0.175	3.089		1	1	27.367			
			D	0.175	3.089		1	1	27.367			
T17	0.53	4.27	A	0.156	3.177	32	1	1	25.467	3.94	393.96	D
30.00-20.00			B	0.156	3.177		1	1	25.467			
			C	0.156	3.177		1	1	25.467			
			D	0.156	3.177		1	1	25.467			
T18	0.53	5.02	A	0.167	3.125	33	1	1	28.533	4.29	429.31	D
20.00-10.00			B	0.167	3.125		1	1	28.533			
			C	0.167	3.125		1	1	28.533			
			D	0.167	3.125		1	1	28.533			
T19	0.21	4.90	A	0.16	3.158	39	1	1	28.435	3.85	384.73	D

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
10.00-0.00			B	0.16	3.158		1	1	28.435			
			C	0.16	3.158		1	1	28.435			
			D	0.16	3.158		1	1	28.435			
Sum Weight:	7.50	51.85						OTM	4029.55 kip-ft	51.82		

Tower Forces - No Ice - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T1	0.09	0.75	A	0.203	2.969	31	1.152	1.152	14.389	1.44	144.39	D
180.00-170.00			B	0.203	2.969		1.152	1.152	14.389			
			C	0.203	2.969		1.152	1.152	14.389			
			D	0.203	2.969		1.152	1.152	14.389			
T2	0.09	0.54	A	0.246	2.792	31	1.184	1.184	11.643	1.19	184.97	D
170.00-163.57			B	0.246	2.792		1.184	1.184	11.643			
			C	0.246	2.792		1.184	1.184	11.643			
			D	0.246	2.792		1.184	1.184	11.643			
T3	0.14	0.39	A	0.246	2.789	31	1.185	1.185	8.438	1.04	230.16	D
163.57-159.05			B	0.246	2.789		1.185	1.185	8.438			
			C	0.246	2.789		1.185	1.185	8.438			
			D	0.246	2.789		1.185	1.185	8.438			
T4	0.15	0.36	A	0.227	2.866	30	1.17	1.17	8.079	1.06	234.12	D
159.05-154.52			B	0.227	2.866		1.17	1.17	8.079			
			C	0.227	2.866		1.17	1.17	8.079			
			D	0.227	2.866		1.17	1.17	8.079			
T5	0.15	0.37	A	0.22	2.895	30	1.165	1.165	8.169	1.07	235.79	D
154.52-150.00			B	0.22	2.895		1.165	1.165	8.169			
			C	0.22	2.895		1.165	1.165	8.169			
			D	0.22	2.895		1.165	1.165	8.169			
T6	0.33	0.97	A	0.222	2.889	30	1.166	1.166	19.555	2.45	244.70	D
150.00-140.00			B	0.222	2.889		1.166	1.166	19.555			
			C	0.222	2.889		1.166	1.166	19.555			
			D	0.222	2.889		1.166	1.166	19.555			
T7	0.34	1.53	A	0.229	2.86	30	1.172	1.172	22.319	2.64	263.97	D
140.00-130.00			B	0.229	2.86		1.172	1.172	22.319			
			C	0.229	2.86		1.172	1.172	22.319			
			D	0.229	2.86		1.172	1.172	22.319			
T8	0.39	1.43	A	0.198	2.99	29	1.148	1.148	20.527	2.77	276.78	D
130.00-120.00			B	0.198	2.99		1.148	1.148	20.527			
			C	0.198	2.99		1.148	1.148	20.527			
			D	0.198	2.99		1.148	1.148	20.527			
T9	0.43	2.05	A	0.205	2.959	29	1.154	1.154	23.105	3.08	308.35	D
120.00-110.00			B	0.205	2.959		1.154	1.154	23.105			
			C	0.205	2.959		1.154	1.154	23.105			
			D	0.205	2.959		1.154	1.154	23.105			
T10	0.48	1.91	A	0.188	3.031	29	1.141	1.141	22.546	3.17	316.90	D
110.00-100.00			B	0.188	3.031		1.141	1.141	22.546			
			C	0.188	3.031		1.141	1.141	22.546			
			D	0.188	3.031		1.141	1.141	22.546			
T11	0.51	2.50	A	0.211	2.932	29	1.158	1.158	27.655	3.52	352.00	D
100.00-90.00			B	0.211	2.932		1.158	1.158	27.655			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
			C	0.211	2.932		1.158	1.158	27.655			
			D	0.211	2.932		1.158	1.158	27.655			
T12	0.52	2.43	A	0.203	2.968	29	1.152	1.152	28.071	3.57	356.99	D
90.00-80.00			B	0.203	2.968		1.152	1.152	28.071			
			C	0.203	2.968		1.152	1.152	28.071			
			D	0.203	2.968		1.152	1.152	28.071			
T13	1.04	7.96	A	0.167	3.128	29	1.125	1.125	31.097	5.50	274.88	D
80.00-60.00			B	0.167	3.128		1.125	1.125	31.097			
			C	0.167	3.128		1.125	1.125	31.097			
			D	0.167	3.128		1.125	1.125	31.097			
T14	0.52	4.57	A	0.163	3.144	29	1.122	1.122	16.931	2.91	291.44	D
60.00-50.00			B	0.163	3.144		1.122	1.122	16.931			
			C	0.163	3.144		1.122	1.122	16.931			
			D	0.163	3.144		1.122	1.122	16.931			
T15	0.53	5.12	A	0.17	3.114	30	1.127	1.127	19.474	3.17	317.26	D
50.00-40.00			B	0.17	3.114		1.127	1.127	19.474			
			C	0.17	3.114		1.127	1.127	19.474			
			D	0.17	3.114		1.127	1.127	19.474			
T16	0.53	4.78	A	0.175	3.089	31	1.131	1.131	30.964	4.18	418.18	D
40.00-30.00			B	0.175	3.089		1.131	1.131	30.964			
			C	0.175	3.089		1.131	1.131	30.964			
			D	0.175	3.089		1.131	1.131	30.964			
T17	0.53	4.27	A	0.156	3.177	32	1.117	1.117	28.444	4.19	419.48	D
30.00-20.00			B	0.156	3.177		1.117	1.117	28.444			
			C	0.156	3.177		1.117	1.117	28.444			
			D	0.156	3.177		1.117	1.117	28.444			
T18	0.53	5.02	A	0.167	3.125	33	1.125	1.125	32.114	4.60	460.45	D
20.00-10.00			B	0.167	3.125		1.125	1.125	32.114			
			C	0.167	3.125		1.125	1.125	32.114			
			D	0.167	3.125		1.125	1.125	32.114			
T19	0.21	4.90	A	0.16	3.158	39	1.12	1.12	31.847	4.20	420.38	D
10.00-0.00			B	0.16	3.158		1.12	1.12	31.847			
			C	0.16	3.158		1.12	1.12	31.847			
			D	0.16	3.158		1.12	1.12	31.847			
Sum Weight:	7.50	51.85						OTM	4358.98 kip-ft	55.77		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	1.07	3.61	A	0.498	2.054	8	1	1	26.212	0.58	58.23	D
180.00-170.00			B	0.498	2.054		1	1	26.212			
			C	0.498	2.054		1	1	26.212			
			D	0.498	2.054		1	1	26.212			
T2	1.14	2.56	A	0.54	1.98	8	1	1	19.076	0.46	71.53	D
170.00-163.57			B	0.54	1.98		1	1	19.076			
			C	0.54	1.98		1	1	19.076			
			D	0.54	1.98		1	1	19.076			
T3	1.40	1.96	A	0.583	1.92	8	1	1	14.967	0.40	88.42	D
163.57-159.05			B	0.583	1.92		1	1	14.967			
			C	0.583	1.92		1	1	14.967			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
			D	0.583	1.92		1	1	14.967			
T4	1.51	1.68	A	0.491	2.068	8	1	1	12.898	0.44*	96.47	D
159.05-154.52			B	0.491	2.068		1	1	12.898			
			C	0.491	2.068		1	1	12.898			
			D	0.491	2.068		1	1	12.898			
T5	1.50	1.71	A	0.478	2.095	8	1	1	13.060	0.45*	100.39	D
154.52-150.00			B	0.478	2.095		1	1	13.060			
			C	0.478	2.095		1	1	13.060			
			D	0.478	2.095		1	1	13.060			
T6	3.31	4.33	A	0.489	2.071	8	1	1	31.709	1.03	102.90	D
150.00-140.00			B	0.489	2.071		1	1	31.709			
			C	0.489	2.071		1	1	31.709			
			D	0.489	2.071		1	1	31.709			
T7	3.43	5.56	A	0.469	2.114	7	1	1	33.542	1.11	111.06	D
140.00-130.00			B	0.469	2.114		1	1	33.542			
			C	0.469	2.114		1	1	33.542			
			D	0.469	2.114		1	1	33.542			
T8	3.99	4.77	A	0.398	2.287	7	1	1	30.273	1.24*	123.92	D
130.00-120.00			B	0.398	2.287		1	1	30.273			
			C	0.398	2.287		1	1	30.273			
			D	0.398	2.287		1	1	30.273			
T9	4.46	6.50	A	0.425	2.214	7	1	1	34.979	1.32*	132.26	D
120.00-110.00			B	0.425	2.214		1	1	34.979			
			C	0.425	2.214		1	1	34.979			
			D	0.425	2.214		1	1	34.979			
T10	4.90	5.51	A	0.371	2.362	7	1	1	32.552	1.40*	140.43	D
110.00-100.00			B	0.371	2.362		1	1	32.552			
			C	0.371	2.362		1	1	32.552			
			D	0.371	2.362		1	1	32.552			
T11	5.12	7.10	A	0.384	2.324	7	1	1	37.023	1.50*	149.86	D
100.00-90.00			B	0.384	2.324		1	1	37.023			
			C	0.384	2.324		1	1	37.023			
			D	0.384	2.324		1	1	37.023			
T12	5.14	6.58	A	0.371	2.362	7	1	1	37.778	1.59*	158.50	D
90.00-80.00			B	0.371	2.362		1	1	37.778			
			C	0.371	2.362		1	1	37.778			
			D	0.371	2.362		1	1	37.778			
T13	10.44	16.24	A	0.311	2.551	7	1	1	56.848	3.14	156.77	D
80.00-60.00			B	0.311	2.551		1	1	56.848			
			C	0.311	2.551		1	1	56.848			
			D	0.311	2.551		1	1	56.848			
T14	5.28	9.77	A	0.318	2.529	7	1	1	31.639	1.65	165.44	D
60.00-50.00			B	0.318	2.529		1	1	31.639			
			C	0.318	2.529		1	1	31.639			
			D	0.318	2.529		1	1	31.639			
T15	5.37	9.81	A	0.322	2.513	7	1	1	34.339	1.75	175.05	D
50.00-40.00			B	0.322	2.513		1	1	34.339			
			C	0.322	2.513		1	1	34.339			
			D	0.322	2.513		1	1	34.339			
T16	5.41	11.75	A	0.358	2.401	8	1	1	45.795	1.97	196.62	D
40.00-30.00			B	0.358	2.401		1	1	45.795			
			C	0.358	2.401		1	1	45.795			
			D	0.358	2.401		1	1	45.795			
T17	5.43	9.57	A	0.306	2.57	8	1	1	40.814	2.01	200.75	D
30.00-20.00			B	0.306	2.57		1	1	40.814			
			C	0.306	2.57		1	1	40.814			
			D	0.306	2.57		1	1	40.814			
T18	5.42	12.46	A	0.346	2.438	8	1	1	47.999	2.15	215.33	D
20.00-10.00			B	0.346	2.438		1	1	47.999			
			C	0.346	2.438		1	1	47.999			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
			D	0.346	2.438		1	1	47.999			
T19	2.06	12.26	A	0.325	2.504	10	1	1	48.179	1.62	162.17	D
10.00-0.00			B	0.325	2.504		1	1	48.179			
			C	0.325	2.504		1	1	48.179			
			D	0.325	2.504		1	1	48.179			
Sum Weight:	76.37	133.73			*2.1A_g limit			OTM	1960.06 kip-ft	25.81		

Tower Forces - With Ice - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	1.07	3.61	A	0.498	2.054	8	1.2	1.2	31.454	0.65	65.35	D
180.00-170.00			B	0.498	2.054		1.2	1.2	31.454			
			C	0.498	2.054		1.2	1.2	31.454			
			D	0.498	2.054		1.2	1.2	31.454			
T2	1.14	2.56	A	0.54	1.98	8	1.2	1.2	22.892	0.51	79.24	D
170.00-163.57			B	0.54	1.98		1.2	1.2	22.892			
			C	0.54	1.98		1.2	1.2	22.892			
			D	0.54	1.98		1.2	1.2	22.892			
T3	1.40	1.96	A	0.583	1.92	8	1.2	1.2	17.961	0.42*	92.52	D
163.57-159.05			B	0.583	1.92		1.2	1.2	17.961			
			C	0.583	1.92		1.2	1.2	17.961			
			D	0.583	1.92		1.2	1.2	17.961			
T4	1.51	1.68	A	0.491	2.068	8	1.2	1.2	15.478	0.44*	96.47	D
159.05-154.52			B	0.491	2.068		1.2	1.2	15.478			
			C	0.491	2.068		1.2	1.2	15.478			
			D	0.491	2.068		1.2	1.2	15.478			
T5	1.50	1.71	A	0.478	2.095	8	1.2	1.2	15.672	0.45*	100.39	D
154.52-150.00			B	0.478	2.095		1.2	1.2	15.672			
			C	0.478	2.095		1.2	1.2	15.672			
			D	0.478	2.095		1.2	1.2	15.672			
T6	3.31	4.33	A	0.489	2.071	8	1.2	1.2	38.050	1.07*	106.65	D
150.00-140.00			B	0.489	2.071		1.2	1.2	38.050			
			C	0.489	2.071		1.2	1.2	38.050			
			D	0.489	2.071		1.2	1.2	38.050			
T7	3.43	5.56	A	0.469	2.114	7	1.2	1.2	40.251	1.16*	115.69	D
140.00-130.00			B	0.469	2.114		1.2	1.2	40.251			
			C	0.469	2.114		1.2	1.2	40.251			
			D	0.469	2.114		1.2	1.2	40.251			
T8	3.99	4.77	A	0.398	2.287	7	1.2	1.2	36.328	1.24*	123.92	D
130.00-120.00			B	0.398	2.287		1.2	1.2	36.328			
			C	0.398	2.287		1.2	1.2	36.328			
			D	0.398	2.287		1.2	1.2	36.328			
T9	4.46	6.50	A	0.425	2.214	7	1.2	1.2	41.975	1.32*	132.26	D
120.00-110.00			B	0.425	2.214		1.2	1.2	41.975			
			C	0.425	2.214		1.2	1.2	41.975			
			D	0.425	2.214		1.2	1.2	41.975			
T10	4.90	5.51	A	0.371	2.362	7	1.2	1.2	39.062	1.40*	140.43	D
110.00-100.00			B	0.371	2.362		1.2	1.2	39.062			
			C	0.371	2.362		1.2	1.2	39.062			
			D	0.371	2.362		1.2	1.2	39.062			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T11	5.12	7.10	A	0.384	2.324	7	1.2	1.2	44.428	1.50*	149.86	D
100.00-90.00			B	0.384	2.324		1.2	1.2	44.428			
			C	0.384	2.324		1.2	1.2	44.428			
			D	0.384	2.324		1.2	1.2	44.428			
T12	5.14	6.58	A	0.371	2.362	7	1.2	1.2	45.334	1.59*	158.50	D
90.00-80.00			B	0.371	2.362		1.2	1.2	45.334			
			C	0.371	2.362		1.2	1.2	45.334			
			D	0.371	2.362		1.2	1.2	45.334			
T13	10.44	16.24	A	0.311	2.551	7	1.2	1.2	68.218	3.31	165.64	D
80.00-60.00			B	0.311	2.551		1.2	1.2	68.218			
			C	0.311	2.551		1.2	1.2	68.218			
			D	0.311	2.551		1.2	1.2	68.218			
T14	5.28	9.77	A	0.318	2.529	7	1.2	1.2	37.967	1.75	175.38	D
60.00-50.00			B	0.318	2.529		1.2	1.2	37.967			
			C	0.318	2.529		1.2	1.2	37.967			
			D	0.318	2.529		1.2	1.2	37.967			
T15	5.37	9.81	A	0.322	2.513	7	1.2	1.2	41.207	1.86	186.01	D
50.00-40.00			B	0.322	2.513		1.2	1.2	41.207			
			C	0.322	2.513		1.2	1.2	41.207			
			D	0.322	2.513		1.2	1.2	41.207			
T16	5.41	11.75	A	0.358	2.401	8	1.2	1.2	54.954	2.11	211.00	D
40.00-30.00			B	0.358	2.401		1.2	1.2	54.954			
			C	0.358	2.401		1.2	1.2	54.954			
			D	0.358	2.401		1.2	1.2	54.954			
T17	5.43	9.57	A	0.306	2.57	8	1.2	1.2	48.976	2.15	214.98	D
30.00-20.00			B	0.306	2.57		1.2	1.2	48.976			
			C	0.306	2.57		1.2	1.2	48.976			
			D	0.306	2.57		1.2	1.2	48.976			
T18	5.42	12.46	A	0.346	2.438	8	1.2	1.2	57.598	2.32	231.70	D
20.00-10.00			B	0.346	2.438		1.2	1.2	57.598			
			C	0.346	2.438		1.2	1.2	57.598			
			D	0.346	2.438		1.2	1.2	57.598			
T19	2.06	12.26	A	0.325	2.504	10	1.2	1.2	57.815	1.82	182.23	D
10.00-0.00			B	0.325	2.504		1.2	1.2	57.815			
			C	0.325	2.504		1.2	1.2	57.815			
			D	0.325	2.504		1.2	1.2	57.815			
Sum Weight:	76.37	133.73			*2.1A_g limit			OTM	2030.31 kip-ft	27.07		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.09	0.75	A	0.203	2.969	11	1	1	12.491	0.47	46.89	D
180.00-170.00			B	0.203	2.969		1	1	12.491			
			C	0.203	2.969		1	1	12.491			
			D	0.203	2.969		1	1	12.491			
T2	0.09	0.54	A	0.246	2.792	11	1	1	9.832	0.38	59.52	D
170.00-163.57			B	0.246	2.792		1	1	9.832			
			C	0.246	2.792		1	1	9.832			
			D	0.246	2.792		1	1	9.832			
T3	0.14	0.39	A	0.246	2.789	11	1	1	7.122	0.34	75.69	D

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
163.57-159.05			B	0.246	2.789		1	1	7.122			
			C	0.246	2.789		1	1	7.122			
			D	0.246	2.789		1	1	7.122			
T4	0.15	0.36	A	0.227	2.866	11	1	1	6.903	0.35	77.78	D
159.05-154.52			B	0.227	2.866		1	1	6.903			
			C	0.227	2.866		1	1	6.903			
			D	0.227	2.866		1	1	6.903			
T5	0.15	0.37	A	0.22	2.895	11	1	1	7.011	0.35	78.46	D
154.52-150.00			B	0.22	2.895		1	1	7.011			
			C	0.22	2.895		1	1	7.011			
			D	0.22	2.895		1	1	7.011			
T6	0.33	0.97	A	0.222	2.889	11	1	1	16.767	0.81	81.14	D
150.00-140.00			B	0.222	2.889		1	1	16.767			
			C	0.222	2.889		1	1	16.767			
			D	0.222	2.889		1	1	16.767			
T7	0.34	1.53	A	0.229	2.86	11	1	1	19.051	0.87	87.01	D
140.00-130.00			B	0.229	2.86		1	1	19.051			
			C	0.229	2.86		1	1	19.051			
			D	0.229	2.86		1	1	19.051			
T8	0.39	1.43	A	0.198	2.99	11	1	1	17.878	0.93	93.02	D
130.00-120.00			B	0.198	2.99		1	1	17.878			
			C	0.198	2.99		1	1	17.878			
			D	0.198	2.99		1	1	17.878			
T9	0.43	2.05	A	0.205	2.959	11	1	1	20.028	1.03	103.46	D
120.00-110.00			B	0.205	2.959		1	1	20.028			
			C	0.205	2.959		1	1	20.028			
			D	0.205	2.959		1	1	20.028			
T10	0.48	1.91	A	0.188	3.031	10	1	1	19.757	1.07	107.20	D
110.00-100.00			B	0.188	3.031		1	1	19.757			
			C	0.188	3.031		1	1	19.757			
			D	0.188	3.031		1	1	19.757			
T11	0.51	2.50	A	0.211	2.932	10	1	1	23.872	1.18	117.62	D
100.00-90.00			B	0.211	2.932		1	1	23.872			
			C	0.211	2.932		1	1	23.872			
			D	0.211	2.932		1	1	23.872			
T12	0.52	2.43	A	0.203	2.968	10	1	1	24.365	1.20	119.54	D
90.00-80.00			B	0.203	2.968		1	1	24.365			
			C	0.203	2.968		1	1	24.365			
			D	0.203	2.968		1	1	24.365			
T13	1.04	7.96	A	0.167	3.128	10	1	1	27.641	1.89	94.73	D
80.00-60.00			B	0.167	3.128		1	1	27.641			
			C	0.167	3.128		1	1	27.641			
			D	0.167	3.128		1	1	27.641			
T14	0.52	4.57	A	0.163	3.144	11	1	1	15.085	1.00	100.29	D
60.00-50.00			B	0.163	3.144		1	1	15.085			
			C	0.163	3.144		1	1	15.085			
			D	0.163	3.144		1	1	15.085			
T15	0.53	5.12	A	0.17	3.114	11	1	1	17.276	1.09	108.58	D
50.00-40.00			B	0.17	3.114		1	1	17.276			
			C	0.17	3.114		1	1	17.276			
			D	0.17	3.114		1	1	17.276			
T16	0.53	4.78	A	0.175	3.089	11	1	1	27.367	1.41	140.90	D
40.00-30.00			B	0.175	3.089		1	1	27.367			
			C	0.175	3.089		1	1	27.367			
			D	0.175	3.089		1	1	27.367			
T17	0.53	4.27	A	0.156	3.177	11	1	1	25.467	1.43	142.59	D
30.00-20.00			B	0.156	3.177		1	1	25.467			
			C	0.156	3.177		1	1	25.467			
			D	0.156	3.177		1	1	25.467			
T18	0.53	5.02	A	0.167	3.125	12	1	1	28.533	1.55	155.39	D

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
20.00-10.00			B	0.167	3.125		1	1	28.533			
			C	0.167	3.125		1	1	28.533			
			D	0.167	3.125		1	1	28.533			
T19	0.21	4.90	A	0.16	3.158	14	1	1	28.435	1.39	139.25	D
10.00-0.00			B	0.16	3.158		1	1	28.435			
			C	0.16	3.158		1	1	28.435			
			D	0.16	3.158		1	1	28.435			
Sum Weight:	7.50	51.85						OTM	1458.46 kip-ft	18.76		

Tower Forces - Service - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1	0.09	0.75	A	0.203	2.969	11	1.152	1.152	14.389	0.52	52.26	D
180.00-170.00			B	0.203	2.969		1.152	1.152	14.389			
			C	0.203	2.969		1.152	1.152	14.389			
			D	0.203	2.969		1.152	1.152	14.389			
T2	0.09	0.54	A	0.246	2.792	11	1.184	1.184	11.643	0.43	66.95	D
170.00-163.57			B	0.246	2.792		1.184	1.184	11.643			
			C	0.246	2.792		1.184	1.184	11.643			
			D	0.246	2.792		1.184	1.184	11.643			
T3	0.14	0.39	A	0.246	2.789	11	1.185	1.185	8.438	0.38	83.30	D
163.57-159.05			B	0.246	2.789		1.185	1.185	8.438			
			C	0.246	2.789		1.185	1.185	8.438			
			D	0.246	2.789		1.185	1.185	8.438			
T4	0.15	0.36	A	0.227	2.866	11	1.17	1.17	8.079	0.38	84.74	D
159.05-154.52			B	0.227	2.866		1.17	1.17	8.079			
			C	0.227	2.866		1.17	1.17	8.079			
			D	0.227	2.866		1.17	1.17	8.079			
T5	0.15	0.37	A	0.22	2.895	11	1.165	1.165	8.169	0.39	85.34	D
154.52-150.00			B	0.22	2.895		1.165	1.165	8.169			
			C	0.22	2.895		1.165	1.165	8.169			
			D	0.22	2.895		1.165	1.165	8.169			
T6	0.33	0.97	A	0.222	2.889	11	1.166	1.166	19.555	0.89	88.57	D
150.00-140.00			B	0.222	2.889		1.166	1.166	19.555			
			C	0.222	2.889		1.166	1.166	19.555			
			D	0.222	2.889		1.166	1.166	19.555			
T7	0.34	1.53	A	0.229	2.86	11	1.172	1.172	22.319	0.96	95.54	D
140.00-130.00			B	0.229	2.86		1.172	1.172	22.319			
			C	0.229	2.86		1.172	1.172	22.319			
			D	0.229	2.86		1.172	1.172	22.319			
T8	0.39	1.43	A	0.198	2.99	11	1.148	1.148	20.527	1.00	100.18	D
130.00-120.00			B	0.198	2.99		1.148	1.148	20.527			
			C	0.198	2.99		1.148	1.148	20.527			
			D	0.198	2.99		1.148	1.148	20.527			
T9	0.43	2.05	A	0.205	2.959	11	1.154	1.154	23.105	1.12	111.60	D
120.00-110.00			B	0.205	2.959		1.154	1.154	23.105			
			C	0.205	2.959		1.154	1.154	23.105			
			D	0.205	2.959		1.154	1.154	23.105			
T10	0.48	1.91	A	0.188	3.031	10	1.141	1.141	22.546	1.15	114.70	D
110.00-100.00			B	0.188	3.031		1.141	1.141	22.546			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
			C	0.188	3.031		1.141	1.141	22.546			
			D	0.188	3.031		1.141	1.141	22.546			
T11	0.51	2.50	A	0.211	2.932	10	1.158	1.158	27.655	1.27	127.40	D
100.00-90.00			B	0.211	2.932		1.158	1.158	27.655			
			C	0.211	2.932		1.158	1.158	27.655			
			D	0.211	2.932		1.158	1.158	27.655			
T12	0.52	2.43	A	0.203	2.968	10	1.152	1.152	28.071	1.29	129.21	D
90.00-80.00			B	0.203	2.968		1.152	1.152	28.071			
			C	0.203	2.968		1.152	1.152	28.071			
			D	0.203	2.968		1.152	1.152	28.071			
T13	1.04	7.96	A	0.167	3.128	10	1.125	1.125	31.097	1.99	99.49	D
80.00-60.00			B	0.167	3.128		1.125	1.125	31.097			
			C	0.167	3.128		1.125	1.125	31.097			
			D	0.167	3.128		1.125	1.125	31.097			
T14	0.52	4.57	A	0.163	3.144	11	1.122	1.122	16.931	1.05	105.48	D
60.00-50.00			B	0.163	3.144		1.122	1.122	16.931			
			C	0.163	3.144		1.122	1.122	16.931			
			D	0.163	3.144		1.122	1.122	16.931			
T15	0.53	5.12	A	0.17	3.114	11	1.127	1.127	19.474	1.15	114.83	D
50.00-40.00			B	0.17	3.114		1.127	1.127	19.474			
			C	0.17	3.114		1.127	1.127	19.474			
			D	0.17	3.114		1.127	1.127	19.474			
T16	0.53	4.78	A	0.175	3.089	11	1.131	1.131	30.964	1.51	151.36	D
40.00-30.00			B	0.175	3.089		1.131	1.131	30.964			
			C	0.175	3.089		1.131	1.131	30.964			
			D	0.175	3.089		1.131	1.131	30.964			
T17	0.53	4.27	A	0.156	3.177	11	1.117	1.117	28.444	1.52	151.83	D
30.00-20.00			B	0.156	3.177		1.117	1.117	28.444			
			C	0.156	3.177		1.117	1.117	28.444			
			D	0.156	3.177		1.117	1.117	28.444			
T18	0.53	5.02	A	0.167	3.125	12	1.125	1.125	32.114	1.67	166.65	D
20.00-10.00			B	0.167	3.125		1.125	1.125	32.114			
			C	0.167	3.125		1.125	1.125	32.114			
			D	0.167	3.125		1.125	1.125	32.114			
T19	0.21	4.90	A	0.16	3.158	14	1.12	1.12	31.847	1.52	152.15	D
10.00-0.00			B	0.16	3.158		1.12	1.12	31.847			
			C	0.16	3.158		1.12	1.12	31.847			
			D	0.16	3.158		1.12	1.12	31.847			
Sum Weight:	7.50	51.85						OTM	1577.70 kip-ft	20.18		

Force Totals

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Leg Weight	30.80					
Bracing Weight	21.04					
Total Member Self-Weight	51.85			-19.59	6.26	
Total Weight	73.56			-19.59	6.26	
Wind 0 deg - No Ice		-0.35	-69.58	-6546.27	58.33	-37.90
Wind 30 deg - No Ice		36.47	-63.50	-5931.12	-3379.18	-40.63
Wind 45 deg - No Ice		51.76	-51.74	-4830.77	-4808.42	-36.47

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Wind 60 deg - No Ice		63.53	-36.46	-3402.55	-5909.56	-29.82
Wind 90 deg - No Ice		69.61	0.35	32.48	-6525.37	-11.38
Wind 120 deg - No Ice		63.88	37.07	3453.56	-5961.63	10.73
Wind 135 deg - No Ice		52.26	52.24	4865.23	-4882.06	20.88
Wind 150 deg - No Ice		37.08	63.85	5944.01	-3469.36	29.60
Wind 180 deg - No Ice		0.35	69.58	6507.09	-45.81	37.90
Wind 210 deg - No Ice		-36.47	63.50	5891.94	3391.70	40.63
Wind 225 deg - No Ice		-51.76	51.74	4791.59	4820.95	36.47
Wind 240 deg - No Ice		-63.53	36.46	3363.37	5922.09	29.82
Wind 270 deg - No Ice		-69.61	-0.35	-71.66	6537.90	11.38
Wind 300 deg - No Ice		-63.88	-37.07	-3492.74	5974.16	-10.73
Wind 315 deg - No Ice		-52.26	-52.24	-4904.41	4894.59	-20.88
Wind 330 deg - No Ice		-37.08	-63.85	-5983.19	3481.89	-29.60
Member Ice	81.88					
Total Weight Ice	254.03			-2.27	127.12	
Wind 0 deg - Ice		-0.06	-34.88	-3226.44	136.26	-26.97
Wind 30 deg - Ice		18.02	-31.27	-2850.76	-1512.93	-17.90
Wind 45 deg - Ice		25.52	-25.51	-2325.32	-2196.99	-10.58
Wind 60 deg - Ice		31.28	-18.02	-1641.57	-2722.67	-2.55
Wind 90 deg - Ice		34.89	0.06	6.87	-3098.56	12.47
Wind 120 deg - Ice		31.34	18.12	1652.86	-2731.82	25.90
Wind 135 deg - Ice		25.61	25.60	2333.71	-2209.92	29.65
Wind 150 deg - Ice		18.13	31.33	2855.36	-1528.77	31.38
Wind 180 deg - Ice		0.06	34.88	3221.90	117.98	26.97
Wind 210 deg - Ice		-18.02	31.27	2846.22	1767.17	17.90
Wind 225 deg - Ice		-25.52	25.51	2320.78	2451.23	10.58
Wind 240 deg - Ice		-31.28	18.02	1637.03	2976.91	2.55
Wind 270 deg - Ice		-34.89	-0.06	-11.41	3352.80	-12.47
Wind 300 deg - Ice		-31.34	-18.12	-1657.40	2986.06	-25.90
Wind 315 deg - Ice		-25.61	-25.60	-2338.25	2464.16	-29.65
Wind 330 deg - Ice		-18.13	-31.33	-2859.90	1783.01	-31.38
Total Weight	73.56			-19.59	6.26	
Wind 0 deg - Service		-0.13	-25.18	-2378.84	17.91	-13.72
Wind 30 deg - Service		13.20	-22.98	-2156.20	-1226.27	-14.71
Wind 45 deg - Service		18.74	-18.73	-1757.94	-1743.58	-13.20
Wind 60 deg - Service		22.99	-13.20	-1241.00	-2142.12	-10.79
Wind 90 deg - Service		25.19	0.13	2.28	-2365.01	-4.12
Wind 120 deg - Service		23.12	13.42	1240.51	-2160.97	3.88
Wind 135 deg - Service		18.91	18.91	1751.45	-1770.23	7.56
Wind 150 deg - Service		13.42	23.11	2141.91	-1258.91	10.71
Wind 180 deg - Service		0.13	25.18	2345.71	-19.78	13.72
Wind 210 deg - Service		-13.20	22.98	2123.06	1224.39	14.71
Wind 225 deg - Service		-18.74	18.73	1724.80	1741.70	13.20
Wind 240 deg - Service		-22.99	13.20	1207.87	2140.24	10.79
Wind 270 deg - Service		-25.19	-0.13	-35.41	2363.13	4.12
Wind 300 deg - Service		-23.12	-13.42	-1273.64	2159.09	-3.88
Wind 315 deg - Service		-18.91	-18.91	-1784.59	1768.35	-7.56
Wind 330 deg - Service		-13.42	-23.11	-2175.04	1257.04	-10.71

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice

Comb. No.	Description
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 45 deg - No Ice
7	0.9 Dead+1.6 Wind 45 deg - No Ice
8	1.2 Dead+1.6 Wind 60 deg - No Ice
9	0.9 Dead+1.6 Wind 60 deg - No Ice
10	1.2 Dead+1.6 Wind 90 deg - No Ice
11	0.9 Dead+1.6 Wind 90 deg - No Ice
12	1.2 Dead+1.6 Wind 120 deg - No Ice
13	0.9 Dead+1.6 Wind 120 deg - No Ice
14	1.2 Dead+1.6 Wind 135 deg - No Ice
15	0.9 Dead+1.6 Wind 135 deg - No Ice
16	1.2 Dead+1.6 Wind 150 deg - No Ice
17	0.9 Dead+1.6 Wind 150 deg - No Ice
18	1.2 Dead+1.6 Wind 180 deg - No Ice
19	0.9 Dead+1.6 Wind 180 deg - No Ice
20	1.2 Dead+1.6 Wind 210 deg - No Ice
21	0.9 Dead+1.6 Wind 210 deg - No Ice
22	1.2 Dead+1.6 Wind 225 deg - No Ice
23	0.9 Dead+1.6 Wind 225 deg - No Ice
24	1.2 Dead+1.6 Wind 240 deg - No Ice
25	0.9 Dead+1.6 Wind 240 deg - No Ice
26	1.2 Dead+1.6 Wind 270 deg - No Ice
27	0.9 Dead+1.6 Wind 270 deg - No Ice
28	1.2 Dead+1.6 Wind 300 deg - No Ice
29	0.9 Dead+1.6 Wind 300 deg - No Ice
30	1.2 Dead+1.6 Wind 315 deg - No Ice
31	0.9 Dead+1.6 Wind 315 deg - No Ice
32	1.2 Dead+1.6 Wind 330 deg - No Ice
33	0.9 Dead+1.6 Wind 330 deg - No Ice
34	1.2 Dead+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 45 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
39	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
40	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
41	1.2 Dead+1.0 Wind 135 deg+1.0 Ice+1.0 Temp
42	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
43	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
44	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
45	1.2 Dead+1.0 Wind 225 deg+1.0 Ice+1.0 Temp
46	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
47	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
48	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
49	1.2 Dead+1.0 Wind 315 deg+1.0 Ice+1.0 Temp
50	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
51	Dead+Wind 0 deg - Service
52	Dead+Wind 30 deg - Service
53	Dead+Wind 45 deg - Service
54	Dead+Wind 60 deg - Service
55	Dead+Wind 90 deg - Service
56	Dead+Wind 120 deg - Service
57	Dead+Wind 135 deg - Service
58	Dead+Wind 150 deg - Service
59	Dead+Wind 180 deg - Service
60	Dead+Wind 210 deg - Service
61	Dead+Wind 225 deg - Service
62	Dead+Wind 240 deg - Service
63	Dead+Wind 270 deg - Service
64	Dead+Wind 300 deg - Service
65	Dead+Wind 315 deg - Service

Comb. No.	Description
66	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	180 - 170	Leg	Max Tension	31	1.83	0.19	0.08
			Max. Compression	45	-3.02	-0.09	-0.12
			Max. Mx	8	-1.23	-0.67	0.47
			Max. My	26	-1.88	0.17	-0.67
			Max. Vy	18	-0.68	0.37	-0.13
			Max. Vx	2	-0.68	-0.11	0.36
		Diagonal	Max Tension	3	2.88	-0.01	-0.00
			Max. Compression	26	-3.05	0.00	0.00
			Max. Mx	47	0.21	0.04	0.00
			Max. My	8	-0.72	-0.00	0.00
			Max. Vy	47	-0.03	0.04	0.00
			Max. Vx	8	-0.00	0.00	0.00
		Secondary Horizontal	Max Tension	3	0.79	0.00	0.00
			Max. Compression	18	-0.80	0.04	0.00
			Max. Mx	2	-0.49	0.04	-0.00
			Max. My	21	-0.43	0.02	0.00
			Max. Vy	35	-0.04	0.03	-0.00
			Max. Vx	21	-0.00	0.02	0.00
		Top Girt	Max Tension	47	0.26	0.00	0.00
			Max. Compression	3	-0.11	0.00	0.00
			Max. Mx	34	0.17	-0.07	0.00
			Max. My	10	0.04	0.00	0.00
			Max. Vy	34	0.05	0.00	0.00
			Max. Vx	10	-0.00	0.00	0.00
T2	170 - 163.573	Leg	Max Tension	15	8.61	-0.56	-0.48
			Max. Compression	30	-10.42	-0.76	-0.83
			Max. Mx	12	-9.80	-0.91	-0.63
			Max. My	32	-10.10	-0.61	-0.93
			Max. Vy	2	0.49	-0.76	0.09
			Max. Vx	4	-0.49	-0.45	0.75
		Diagonal	Max Tension	17	3.57	0.00	0.00
			Max. Compression	32	-3.76	0.00	0.00
			Max. Mx	46	0.18	0.03	0.00
			Max. My	6	-3.03	-0.00	0.00
			Max. Vy	46	-0.03	0.03	0.00
			Max. Vx	35	-0.00	0.00	0.00
		Top Girt	Max Tension	47	0.85	0.00	0.00
			Max. Compression	3	-0.47	0.00	0.00
			Max. Mx	34	0.59	-0.07	0.00
			Max. My	10	0.10	0.00	0.00
			Max. Vy	34	-0.05	0.00	0.00
			Max. Vx	10	-0.00	0.00	0.00
T3	163.573 - 159.049	Leg	Max Tension	31	16.82	-0.25	-0.29
			Max. Compression	6	-20.40	-0.73	-0.79
			Max. Mx	10	9.67	-1.32	-0.06
			Max. My	26	8.53	-0.11	-1.35
			Max. Vy	10	1.34	-0.55	0.20
			Max. Vx	26	1.37	0.21	-0.56
		Diagonal	Max Tension	27	4.80	0.00	0.00
			Max. Compression	26	-4.95	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	50	0.79	0.02	-0.00
			Max. My	49	-1.26	0.02	-0.01
			Max. Vy	36	0.03	0.02	0.00
			Max. Vx	48	0.00	0.00	0.00
		Top Girt	Max Tension	26	0.54	0.00	0.00
			Max. Compression	27	-0.47	0.00	0.00
			Max. Mx	43	0.16	-0.07	0.00
			Max. My	43	0.28	0.00	0.00
			Max. Vy	43	-0.05	0.00	0.00
			Max. Vx	43	-0.00	0.00	0.00
T4	159.049 - 154.524	Leg	Max Tension	31	25.21	-0.35	-0.36
			Max. Compression	30	-29.88	-0.51	-0.44
			Max. Mx	16	3.23	1.02	-0.77
			Max. My	28	3.27	-0.79	1.04
			Max. Vy	26	0.36	-0.95	0.31
			Max. Vx	10	0.36	0.35	-0.96
		Diagonal	Max Tension	26	5.42	0.00	0.00
			Max. Compression	27	-5.32	0.00	0.00
			Max. Mx	37	1.47	0.04	-0.00
			Max. My	49	-0.83	0.03	-0.01
			Max. Vy	38	-0.04	0.04	-0.00
			Max. Vx	49	0.00	0.00	0.00
T5	154.524 - 150	Leg	Max Tension	31	33.32	-0.48	-0.58
			Max. Compression	30	-38.04	-0.82	-0.71
			Max. Mx	28	-36.85	-0.90	-0.58
			Max. My	16	-36.51	-0.59	-0.89
			Max. Vy	28	0.40	-0.90	-0.58
			Max. Vx	16	0.41	-0.59	-0.89
		Diagonal	Max Tension	27	5.38	0.00	0.00
			Max. Compression	26	-5.51	0.00	0.00
			Max. Mx	36	0.36	0.05	-0.01
			Max. My	38	1.06	0.04	0.01
			Max. Vy	36	-0.04	0.05	-0.01
			Max. Vx	38	-0.00	0.00	0.00
T6	150 - 140	Leg	Max Tension	31	52.17	-0.57	-0.64
			Max. Compression	30	-57.60	-0.98	-0.85
			Max. Mx	33	-13.92	-1.29	1.01
			Max. My	28	7.48	-0.99	1.29
			Max. Vy	18	-0.60	1.28	-0.08
			Max. Vx	2	-0.60	-0.05	1.27
		Diagonal	Max Tension	26	5.84	0.00	0.00
			Max. Compression	26	-5.89	0.00	0.00
			Max. Mx	36	0.70	0.06	-0.01
			Max. My	10	-5.61	-0.01	0.01
			Max. Vy	36	-0.04	0.06	-0.01
			Max. Vx	50	0.00	0.00	0.00
		Top Girt	Max Tension	2	0.61	0.00	0.00
			Max. Compression	3	-0.55	0.00	0.00
			Max. Mx	34	0.21	-0.12	0.00
			Max. My	50	0.16	0.00	0.00
			Max. Vy	34	0.07	0.00	0.00
			Max. Vx	50	-0.00	0.00	0.00
T7	140 - 130	Leg	Max Tension	31	66.58	-0.86	-0.98
			Max. Compression	30	-73.01	-0.45	-0.34
			Max. Mx	14	-4.64	3.86	-3.70
			Max. My	30	-4.51	-3.72	3.88
			Max. Vy	14	-0.98	3.86	-3.70
			Max. Vx	30	-0.99	-3.72	3.88
		Diagonal	Max Tension	19	9.02	0.03	0.02
			Max. Compression	18	-9.20	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	32	4.91	0.09	0.01
			Max. My	16	-8.78	-0.04	0.04
			Max. Vy	38	0.05	0.07	-0.01
			Max. Vx	16	0.01	0.00	0.00
		Secondary Horizontal	Max Tension	30	1.10	0.00	0.00
			Max. Compression	30	-1.10	-0.03	-0.01
			Max. Mx	32	-0.50	0.05	0.03
			Max. My	32	-0.50	0.05	0.03
			Max. Vy	36	-0.04	0.04	0.01
			Max. Vx	32	0.01	0.00	0.00
		Top Girt	Max Tension	10	0.46	0.00	0.00
			Max. Compression	10	-0.52	-0.06	0.00
			Max. Mx	35	-0.04	-0.43	0.01
			Max. My	35	-0.05	-0.43	0.02
			Max. Vy	35	-0.15	0.00	0.00
			Max. Vx	35	-0.01	0.00	0.00
		Inner Bracing	Max Tension	22	0.07	0.00	0.00
			Max. Compression	22	-0.07	0.00	0.00
			Max. Mx	34	0.00	-0.12	0.00
			Max. My	47	0.00	0.00	0.00
			Max. Vy	34	0.06	0.00	0.00
			Max. Vx	47	-0.00	0.00	0.00
T8	130 - 120	Leg	Max Tension	31	86.72	-1.97	-2.07
			Max. Compression	30	-95.89	-1.19	-1.12
			Max. Mx	32	-90.84	2.44	1.81
			Max. My	12	-90.84	1.81	2.45
			Max. Vy	8	-1.26	2.35	-1.64
			Max. Vx	20	-1.26	-1.63	2.34
		Diagonal	Max Tension	11	10.89	0.04	-0.01
			Max. Compression	26	-11.12	0.00	0.00
			Max. Mx	32	4.19	0.14	0.03
			Max. My	11	-9.25	-0.04	0.05
			Max. Vy	36	-0.07	0.14	-0.03
			Max. Vx	10	-0.01	-0.04	0.05
		Secondary Horizontal	Max Tension	30	1.44	0.00	0.00
			Max. Compression	30	-1.44	0.00	-0.02
			Max. Mx	48	0.19	0.06	0.01
			Max. My	13	-1.35	-0.01	-0.02
			Max. Vy	48	0.05	0.06	0.01
			Max. Vx	32	-0.01	-0.00	-0.02
T9	120 - 110	Leg	Max Tension	31	111.22	-1.83	-1.94
			Max. Compression	30	-121.88	-0.50	-0.49
			Max. Mx	6	-6.73	4.63	-4.42
			Max. My	28	22.40	-4.12	4.65
			Max. Vy	30	-1.12	4.58	-4.40
			Max. Vx	14	-1.12	-4.39	4.56
		Diagonal	Max Tension	10	11.83	0.00	0.00
			Max. Compression	26	-11.94	0.00	0.00
			Max. Mx	28	7.02	0.09	-0.01
			Max. My	26	-11.91	-0.01	-0.05
			Max. Vy	48	0.07	0.09	0.01
			Max. Vx	26	-0.01	0.00	0.00
		Horizontal	Max Tension	27	0.78	0.00	0.00
			Max. Compression	27	-0.93	-0.08	0.00
			Max. Mx	43	-0.26	-0.65	0.02
			Max. My	35	-0.25	-0.65	0.02
			Max. Vy	43	-0.19	0.00	0.00
			Max. Vx	35	-0.01	0.00	0.00
		Secondary	Max Tension	30	1.83	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
		Horizontal					
			Max. Compression	30	-1.83	-0.01	-0.01
			Max. Mx	36	0.02	0.05	0.01
			Max. My	32	-0.60	0.03	0.02
			Max. Vy	36	-0.05	0.05	0.01
			Max. Vx	32	0.00	0.00	0.00
		Inner Bracing	Max Tension	14	0.08	0.00	0.00
			Max. Compression	14	-0.08	0.00	0.00
			Max. Mx	34	0.00	-0.18	0.00
			Max. My	47	0.00	0.00	0.00
			Max. Vy	34	0.08	0.00	0.00
			Max. Vx	47	-0.00	0.00	0.00
T10	110 - 100	Leg	Max Tension	31	135.97	-2.42	-2.44
			Max. Compression	30	-148.67	-1.80	-1.66
			Max. Mx	24	-138.20	2.98	2.11
			Max. My	4	-139.26	2.13	2.98
			Max. Vy	14	1.04	-1.14	-0.99
			Max. Vx	30	1.04	-0.99	-1.15
		Diagonal	Max Tension	11	14.62	0.06	-0.01
			Max. Compression	26	-14.89	0.00	0.00
			Max. Mx	50	1.06	0.18	0.03
			Max. My	11	-11.82	-0.05	0.04
			Max. Vy	50	-0.08	0.18	0.03
			Max. Vx	35	-0.01	0.00	0.00
		Secondary Horizontal	Max Tension	30	2.23	0.00	0.00
			Max. Compression	30	-2.23	0.01	-0.02
			Max. Mx	48	0.25	0.07	0.01
			Max. My	5	-2.08	-0.00	-0.02
			Max. Vy	48	0.06	0.07	0.01
			Max. Vx	49	0.00	0.00	0.00
T11	100 - 90	Leg	Max Tension	31	164.83	-2.01	-2.07
			Max. Compression	30	-179.85	-1.28	-1.35
			Max. Mx	8	34.82	6.45	-5.46
			Max. My	28	33.63	-5.45	6.44
			Max. Vy	8	-1.34	6.45	-5.46
			Max. Vx	20	-1.35	-5.39	6.39
		Diagonal	Max Tension	10	14.21	0.00	0.00
			Max. Compression	26	-14.32	0.00	0.00
			Max. Mx	28	8.14	0.13	0.00
			Max. My	10	-14.25	-0.02	0.05
			Max. Vy	48	0.08	0.12	0.02
			Max. Vx	10	-0.01	0.00	0.00
		Horizontal	Max Tension	2	1.51	0.00	0.00
			Max. Compression	3	-1.61	-0.15	0.01
			Max. Mx	35	-0.15	-0.86	0.03
			Max. My	35	-0.15	-0.86	0.03
			Max. Vy	35	-0.22	0.00	0.00
			Max. Vx	35	-0.01	0.00	0.00
		Inner Bracing	Max Tension	30	0.09	0.00	0.00
			Max. Compression	30	-0.09	0.00	0.00
			Max. Mx	34	0.00	-0.24	0.00
			Max. My	47	0.00	0.00	0.00
			Max. Vy	34	-0.09	0.00	0.00
			Max. Vx	47	0.00	0.00	0.00
T12	90 - 80	Leg	Max Tension	31	192.98	-1.96	-2.10
			Max. Compression	30	-209.56	-1.15	-1.07
			Max. Mx	26	-139.90	3.29	-0.15
			Max. My	10	-143.18	-0.09	3.29
			Max. Vy	24	1.09	-1.96	-1.77
			Max. Vx	4	1.09	-1.82	-1.95

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
		Diagonal	Max Tension	11	15.83	0.06	-0.00
			Max. Compression	26	-16.17	0.00	0.00
			Max. Mx	50	1.40	0.20	0.03
			Max. My	27	-14.61	-0.04	-0.04
			Max. Vy	50	-0.09	0.20	0.03
			Max. Vx	48	-0.01	0.00	0.00
		Secondary Horizontal	Max Tension	30	3.15	0.00	0.00
			Max. Compression	30	-3.15	0.02	-0.02
			Max. Mx	48	0.27	0.11	0.02
			Max. My	5	-2.94	0.00	-0.02
			Max. Vy	48	0.08	0.11	0.02
			Max. Vx	42	-0.01	0.00	0.00
T13	80 - 60	Leg	Max Tension	31	250.91	1.84	0.16
			Max. Compression	30	-271.69	6.60	-0.08
			Max. Mx	49	-118.05	7.67	-0.87
			Max. My	6	-11.88	-0.71	6.37
			Max. Vy	37	-1.28	7.66	1.00
			Max. Vx	6	-1.19	-0.71	6.37
		Diagonal	Max Tension	19	15.84	0.00	0.00
			Max. Compression	10	-16.33	0.00	0.00
			Max. Mx	48	2.54	-0.19	0.04
			Max. My	42	0.72	-0.17	0.04
			Max. Vy	48	-0.10	-0.19	0.04
			Max. Vx	42	0.01	0.00	0.00
		Top Girt	Max Tension	35	1.53	0.00	0.00
			Max. Compression	27	-0.95	-0.20	0.01
			Max. Mx	35	1.07	-1.18	0.04
			Max. My	35	1.07	-1.18	0.04
			Max. Vy	35	-0.25	0.00	0.00
			Max. Vx	35	-0.01	0.00	0.00
		Inner Bracing	Max Tension	30	0.13	0.00	0.00
			Max. Compression	30	-0.13	0.00	0.00
			Max. Mx	34	0.00	0.39	0.00
			Max. My	47	0.00	0.00	-0.00
			Max. Vy	34	0.13	0.00	0.00
			Max. Vx	47	-0.00	0.00	0.00
T14	60 - 50	Leg	Max Tension	31	276.87	-0.21	-0.13
			Max. Compression	30	-300.92	0.60	0.30
			Max. Mx	41	36.70	-8.19	0.89
			Max. My	7	-10.93	-0.90	8.82
			Max. Vy	41	1.48	-8.19	0.89
			Max. Vx	7	-1.50	-0.90	8.82
		Diagonal	Max Tension	18	15.92	0.00	0.00
			Max. Compression	18	-16.02	0.00	0.00
			Max. Mx	49	2.93	-0.17	-0.03
			Max. My	48	-5.05	-0.15	-0.04
			Max. Vy	49	-0.11	-0.17	-0.03
			Max. Vx	48	-0.01	0.00	0.00
		Horizontal	Max Tension	35	3.90	0.00	0.00
			Max. Compression	27	-1.65	0.32	-0.02
			Max. Mx	35	3.21	1.12	-0.05
			Max. My	35	3.21	1.12	-0.05
			Max. Vy	35	-0.24	0.00	0.00
			Max. Vx	35	-0.01	0.00	0.00
		Inner Bracing	Max Tension	30	0.15	0.00	0.00
			Max. Compression	31	-0.15	0.00	0.00
			Max. Mx	34	0.00	0.49	0.00
			Max. My	49	0.01	0.00	0.00
			Max. Vy	34	-0.15	0.00	0.00
			Max. Vx	49	-0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T15	50 - 40	Leg	Max Tension	31	303.50	1.98	0.25
			Max. Compression	30	-329.17	2.15	-0.16
			Max. Mx	49	-140.42	-7.97	1.03
			Max. My	20	65.39	0.54	-4.79
			Max. Vy	30	-2.21	6.29	0.02
			Max. Vx	20	1.22	0.54	-4.79
		Diagonal	Max Tension	19	16.73	-0.09	-0.01
			Max. Compression	18	-17.92	0.00	0.00
			Max. Mx	50	0.48	-0.30	0.03
			Max. My	48	1.86	-0.29	-0.03
			Max. Vy	50	-0.15	-0.30	0.03
			Max. Vx	48	0.01	0.00	0.00
		Secondary Horizontal	Max Tension	30	4.94	0.00	0.00
			Max. Compression	30	-4.94	0.05	0.00
			Max. Mx	40	0.74	0.23	0.05
			Max. My	36	-0.13	0.23	0.06
			Max. Vy	40	0.12	0.23	0.05
			Max. Vx	50	-0.01	0.00	0.00
T16	40 - 30	Leg	Max Tension	31	328.03	-2.71	-2.21
			Max. Compression	30	-357.84	1.58	1.11
			Max. Mx	4	-105.60	7.44	-5.90
			Max. My	16	-102.57	-5.95	7.44
			Max. Vy	4	-1.73	7.44	-5.90
			Max. Vx	16	-1.72	-5.95	7.44
		Diagonal	Max Tension	5	17.36	-0.13	-0.01
			Max. Compression	20	-17.76	0.00	0.00
			Max. Mx	48	1.42	-0.24	-0.03
			Max. My	40	-7.88	-0.19	0.04
			Max. Vy	48	-0.14	-0.24	-0.03
			Max. Vx	40	0.01	0.00	0.00
		Secondary Horizontal	Max Tension	30	5.37	0.00	0.00
			Max. Compression	30	-5.37	0.01	0.00
			Max. Mx	42	-0.38	0.14	0.06
			Max. My	49	-0.72	0.12	0.06
			Max. Vy	42	0.11	0.14	0.06
			Max. Vx	49	-0.01	0.00	0.00
		Top Girt	Max Tension	35	5.20	0.00	0.00
			Max. Compression	27	-1.73	0.43	-0.03
			Max. Mx	35	4.52	1.10	-0.05
			Max. My	35	4.52	1.10	-0.05
			Max. Vy	35	-0.23	0.00	0.00
			Max. Vx	35	-0.01	0.00	0.00
		Inner Bracing	Max Tension	31	0.20	0.00	0.00
			Max. Compression	31	-0.20	0.00	0.00
			Max. Mx	34	0.00	0.60	0.00
			Max. My	49	0.02	0.00	0.00
			Max. Vy	34	-0.16	0.00	0.00
			Max. Vx	49	-0.00	0.00	0.00
T17	30 - 20	Leg	Max Tension	31	357.00	-3.67	-4.07
			Max. Compression	30	-389.00	0.03	0.18
			Max. Mx	18	-265.94	6.12	1.10
			Max. My	2	-262.98	0.97	6.20
			Max. Vy	16	2.02	-3.45	-3.14
			Max. Vx	4	2.02	-3.09	-3.42
		Diagonal	Max Tension	19	18.30	-0.12	-0.00
			Max. Compression	18	-18.91	0.00	0.00
			Max. Mx	49	3.92	-0.35	-0.04
			Max. My	49	3.92	-0.35	-0.04
			Max. Vy	49	-0.16	-0.34	0.03

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	48	0.01	0.00	0.00
		Secondary Horizontal	Max Tension	30	5.84	0.00	0.00
			Max. Compression	30	-5.84	0.07	-0.01
			Max. Mx	40	0.92	0.27	0.05
			Max. My	50	-0.23	0.26	0.05
			Max. Vy	40	0.13	0.27	0.05
			Max. Vx	50	-0.01	0.00	0.00
T18	20 - 10	Leg	Max Tension	31	381.80	-3.97	-3.37
			Max. Compression	30	-413.71	1.00	0.81
			Max. Mx	32	364.62	-4.46	-3.05
			Max. My	20	357.12	-2.96	-4.46
			Max. Vy	30	-1.58	2.92	2.70
			Max. Vx	22	-1.57	2.65	2.87
		Diagonal	Max Tension	5	19.97	-0.13	0.00
			Max. Compression	8	-22.64	0.00	0.00
			Max. Mx	49	-1.73	-0.30	-0.05
			Max. My	35	-9.24	-0.28	-0.07
			Max. Vy	49	-0.16	-0.30	-0.05
			Max. Vx	35	0.01	0.00	0.00
		Horizontal	Max Tension	50	7.95	0.00	0.00
			Max. Compression	27	-1.71	0.61	-0.04
			Max. Mx	35	6.72	0.96	-0.04
			Max. My	18	-0.19	0.77	-0.05
			Max. Vy	35	-0.21	0.00	0.00
			Max. Vx	35	-0.01	0.00	0.00
		Secondary Horizontal	Max Tension	30	6.21	0.00	0.00
			Max. Compression	30	-6.21	0.04	0.01
			Max. Mx	50	-0.41	0.20	0.09
			Max. My	42	1.33	0.19	0.09
			Max. Vy	50	-0.13	0.20	0.09
			Max. Vx	42	0.02	0.00	0.00
		Inner Bracing	Max Tension	21	0.06	0.00	0.00
			Max. Compression	21	-0.04	0.00	0.00
			Max. Mx	34	0.00	0.75	0.00
			Max. My	49	0.01	0.00	0.00
			Max. Vy	34	-0.18	0.00	0.00
			Max. Vx	49	-0.00	0.00	0.00
T19	10 - 0	Leg	Max Tension	31	388.59	-2.64	-2.78
			Max. Compression	30	-424.86	0.00	-0.00
			Max. Mx	18	-290.88	4.32	0.59
			Max. My	2	-287.76	0.50	4.37
			Max. Vy	32	1.48	-2.97	-2.72
			Max. Vx	20	1.46	-2.59	-2.97
		Diagonal	Max Tension	5	29.04	-0.06	-0.04
			Max. Compression	20	-30.11	0.00	0.00
			Max. Mx	48	3.02	-0.09	-0.03
			Max. My	50	-8.38	-0.07	-0.06
			Max. Vy	48	-0.08	-0.09	-0.03
			Max. Vx	50	-0.01	0.00	0.00
		Horizontal	Max Tension	8	21.55	-0.12	-0.02
			Max. Compression	5	-19.27	-0.04	0.02
			Max. Mx	47	6.28	-0.25	-0.02
			Max. My	10	-4.33	-0.15	-0.04
			Max. Vy	47	0.15	-0.25	-0.02
			Max. Vx	10	-0.01	0.00	0.00
		Redund Horz 1 Bracing	Max Tension	30	6.38	0.00	0.00
			Max. Compression	30	-6.38	0.00	0.00
			Max. Mx	40	2.73	-0.04	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	50	1.45	0.00	0.00
			Max. Vy	40	-0.04	0.00	0.00
			Max. Vx	50	-0.00	0.00	0.00
		Redund Diag 1 Bracing	Max Tension	3	7.90	0.00	0.00
			Max. Compression	26	-8.37	0.00	0.00
			Max. Mx	50	2.16	-0.06	0.00
			Max. My	42	4.94	0.00	0.00
			Max. Vy	50	-0.04	0.00	0.00
			Max. Vx	42	-0.00	0.00	0.00
		Redund Hip 1 Bracing	Max Tension	1	0.00	0.00	0.00
			Max. Compression	30	-0.04	0.00	0.00
			Max. Mx	34	-0.00	-0.08	0.00
			Max. Vy	34	-0.05	0.00	0.00
		Redund Sub Horz Bracing	Max Tension	3	8.90	0.00	0.00
			Max. Compression	26	-9.73	0.00	0.00
			Max. Mx	34	3.79	-0.22	0.00
			Max. My	34	3.79	0.00	0.01
			Max. Vy	34	0.10	0.00	0.00
			Max. Vx	34	-0.00	0.00	0.00
		Inner Bracing	Max Tension	30	0.18	0.00	0.00
			Max. Compression	30	-0.18	0.00	0.00
			Max. Mx	34	-0.01	0.78	0.00
			Max. My	47	-0.01	0.00	-0.00
			Max. Vy	34	0.18	0.00	0.00
			Max. Vx	47	-0.00	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg D	Max. Vert	22	455.83	32.24	-33.93
	Max. H_x	24	441.12	33.68	-30.36
	Max. H_z	5	-403.51	-27.07	33.75
	Min. Vert	7	-418.40	-30.73	32.34
	Min. H_x	9	-403.60	-32.20	28.62
	Min. H_z	20	441.03	28.73	-35.30
Leg C	Max. Vert	14	462.06	-33.89	-32.99
	Max. H_x	29	-410.36	33.50	28.10
	Max. H_z	33	-410.27	29.05	32.53
	Min. Vert	31	-425.39	32.42	31.43
	Min. H_x	12	447.12	-34.93	-29.79
	Min. H_z	16	447.04	-30.66	-34.07
Leg B	Max. Vert	6	456.74	-33.95	32.27
	Max. H_x	25	-402.91	33.51	-27.28
	Max. H_z	4	441.94	-30.62	33.47
	Min. Vert	23	-417.72	32.34	-30.69
	Min. H_x	8	442.03	-35.08	28.99
	Min. H_z	21	-402.83	28.86	-31.91
Leg A	Max. Vert	30	463.81	33.04	33.95
	Max. H_x	28	448.87	34.53	30.29
	Max. H_z	32	448.79	29.41	35.40
	Min. Vert	15	-424.07	-31.42	-32.37
	Min. H_x	13	-409.04	-32.95	-28.56

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Min. H_z	17	-408.96	-27.65	-33.87

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	73.56	0.00	0.00	-19.59	6.26	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	88.27	-0.56	-111.32	-10472.31	91.17	-60.63
0.9 Dead+1.6 Wind 0 deg - No Ice	66.20	-0.56	-111.32	-10459.94	89.23	-60.63
1.2 Dead+1.6 Wind 30 deg - No Ice	88.27	58.36	-101.60	-9486.97	-5411.75	-65.08
0.9 Dead+1.6 Wind 30 deg - No Ice	66.20	58.36	-101.60	-9475.21	-5410.29	-65.06
1.2 Dead+1.6 Wind 45 deg - No Ice	88.27	82.82	-82.79	-7725.48	-7699.80	-58.47
0.9 Dead+1.6 Wind 45 deg - No Ice	66.20	82.82	-82.79	-7714.82	-7696.93	-58.44
1.2 Dead+1.6 Wind 60 deg - No Ice	88.27	101.64	-58.33	-5439.11	-9462.62	-47.86
0.9 Dead+1.6 Wind 60 deg - No Ice	66.20	101.64	-58.33	-5429.86	-9458.66	-47.82
1.2 Dead+1.6 Wind 90 deg - No Ice	88.27	111.37	0.56	59.88	-10449.16	-18.36
0.9 Dead+1.6 Wind 90 deg - No Ice	66.20	111.37	0.56	65.74	-10444.57	-18.31
1.2 Dead+1.6 Wind 120 deg - No Ice	88.27	102.20	59.31	5536.52	-9546.24	17.03
0.9 Dead+1.6 Wind 120 deg - No Ice	66.20	102.20	59.31	5539.00	-9542.22	17.07
1.2 Dead+1.6 Wind 135 deg - No Ice	88.27	83.62	83.58	7796.37	-7818.05	33.29
0.9 Dead+1.6 Wind 135 deg - No Ice	66.20	83.62	83.58	7797.45	-7815.09	33.32
1.2 Dead+1.6 Wind 150 deg - No Ice	88.27	59.33	102.16	9523.28	-5556.53	47.28
0.9 Dead+1.6 Wind 150 deg - No Ice	66.20	59.33	102.16	9523.30	-5554.97	47.30
1.2 Dead+1.6 Wind 180 deg - No Ice	88.27	0.56	111.32	10425.12	-75.94	60.63
0.9 Dead+1.6 Wind 180 deg - No Ice	66.20	0.56	111.32	10424.58	-77.76	60.63
1.2 Dead+1.6 Wind 210 deg - No Ice	88.27	-58.36	101.60	9439.64	5427.03	65.09
0.9 Dead+1.6 Wind 210 deg - No Ice	66.20	-58.36	101.60	9439.72	5421.81	65.07
1.2 Dead+1.6 Wind 225 deg - No Ice	88.27	-82.82	82.79	7678.10	7715.03	58.46
0.9 Dead+1.6 Wind 225 deg - No Ice	66.20	-82.82	82.79	7679.27	7708.40	58.43
1.2 Dead+1.6 Wind 240 deg - No Ice	88.27	-101.64	58.33	5391.69	9477.78	47.85
0.9 Dead+1.6 Wind 240 deg - No Ice	66.20	-101.64	58.33	5394.27	9470.06	47.82
1.2 Dead+1.6 Wind 270 deg -	88.27	-111.37	-0.56	-107.24	10464.20	18.36

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
No Ice 0.9 Dead+1.6 Wind 270 deg -	66.20	-111.37	-0.56	-101.26	10455.85	18.32
No Ice 1.2 Dead+1.6 Wind 300 deg -	88.27	-102.20	-59.31	-5583.75	9561.26	-17.01
No Ice 0.9 Dead+1.6 Wind 300 deg -	66.20	-102.20	-59.31	-5574.39	9553.48	-17.05
No Ice 1.2 Dead+1.6 Wind 315 deg -	88.27	-83.62	-83.58	-7843.53	7833.11	-33.28
No Ice 0.9 Dead+1.6 Wind 315 deg -	66.20	-83.62	-83.58	-7832.78	7826.39	-33.32
No Ice 1.2 Dead+1.6 Wind 330 deg -	88.27	-59.33	-102.16	-9570.43	5571.67	-47.29
No Ice 0.9 Dead+1.6 Wind 330 deg -	66.20	-59.33	-102.16	-9558.61	5566.35	-47.31
No Ice 1.2 Dead+1.0 Ice+1.0 Temp	268.74	-0.00	-0.00	-6.52	129.11	0.01
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	268.74	-0.06	-34.88	-3250.32	138.35	-27.06
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	268.74	18.02	-31.27	-2871.83	-1520.60	-18.00
1.2 Dead+1.0 Wind 45 deg+1.0 Ice+1.0 Temp	268.74	25.52	-25.51	-2343.27	-2208.72	-10.68
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	268.74	31.28	-18.02	-1655.47	-2737.51	-2.63
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	268.74	34.89	0.06	2.73	-3116.21	12.43
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	268.74	31.34	18.12	1658.45	-2746.73	25.92
1.2 Dead+1.0 Wind 135 deg+1.0 Ice+1.0 Temp	268.74	25.61	25.60	2343.32	-2221.77	29.70
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	268.74	18.13	31.33	2868.04	-1536.58	31.46
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	268.74	0.06	34.88	3237.29	119.89	27.09
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	268.74	-18.02	31.27	2858.79	1778.83	18.03
1.2 Dead+1.0 Wind 225 deg+1.0 Ice+1.0 Temp	268.74	-25.52	25.51	2330.24	2466.94	10.71
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	268.74	-31.28	18.02	1642.43	2995.73	2.66
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	268.74	-34.89	-0.06	-15.75	3374.43	-12.40
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	268.74	-31.34	-18.12	-1671.46	3004.97	-25.90
1.2 Dead+1.0 Wind 315 deg+1.0 Ice+1.0 Temp	268.74	-25.61	-25.60	-2356.33	2480.00	-29.68
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	268.74	-18.13	-31.33	-2881.06	1794.83	-31.43
Dead+Wind 0 deg - Service	73.56	-0.13	-25.18	-2382.35	25.16	-13.72
Dead+Wind 30 deg - Service	73.56	13.20	-22.98	-2159.50	-1219.16	-14.72
Dead+Wind 45 deg - Service	73.56	18.74	-18.73	-1761.19	-1736.52	-13.22
Dead+Wind 60 deg - Service	73.56	22.99	-13.20	-1244.21	-2135.16	-10.82
Dead+Wind 90 deg - Service	73.56	25.19	0.13	-0.76	-2358.23	-4.15
Dead+Wind 120 deg - Service	73.56	23.12	13.42	1237.61	-2154.01	3.85
Dead+Wind 135 deg - Service	73.56	18.91	18.91	1748.59	-1763.24	7.54
Dead+Wind 150 deg - Service	73.56	13.42	23.11	2139.08	-1251.88	10.70
Dead+Wind 180 deg - Service	73.56	0.13	25.18	2343.05	-12.62	13.72
Dead+Wind 210 deg - Service	73.56	-13.20	22.98	2120.22	1231.72	14.72
Dead+Wind 225 deg - Service	73.56	-18.74	18.73	1721.86	1749.07	13.22
Dead+Wind 240 deg - Service	73.56	-22.99	13.20	1204.87	2147.66	10.82
Dead+Wind 270 deg - Service	73.56	-25.19	-0.13	-38.55	2370.77	4.15

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 300 deg - Service	73.56	-23.12	-13.42	-1276.91	2166.55	-3.86
Dead+Wind 315 deg - Service	73.56	-18.91	-18.91	-1787.89	1775.78	-7.53
Dead+Wind 330 deg - Service	73.56	-13.42	-23.11	-2178.37	1264.43	-10.70

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-73.56	0.00	-0.00	73.56	-0.00	0.000%
2	-0.56	-88.27	-111.32	0.56	88.27	111.32	0.000%
3	-0.56	-66.20	-111.32	0.56	66.20	111.32	0.000%
4	58.36	-88.27	-101.60	-58.36	88.27	101.60	0.000%
5	58.36	-66.20	-101.60	-58.36	66.20	101.60	0.000%
6	82.82	-88.27	-82.79	-82.82	88.27	82.79	0.000%
7	82.82	-66.20	-82.79	-82.82	66.20	82.79	0.000%
8	101.64	-88.27	-58.33	-101.64	88.27	58.33	0.000%
9	101.64	-66.20	-58.33	-101.64	66.20	58.33	0.000%
10	111.37	-88.27	0.56	-111.37	88.27	-0.56	0.000%
11	111.37	-66.20	0.56	-111.37	66.20	-0.56	0.000%
12	102.20	-88.27	59.31	-102.20	88.27	-59.31	0.000%
13	102.20	-66.20	59.31	-102.20	66.20	-59.31	0.000%
14	83.62	-88.27	83.58	-83.62	88.27	-83.58	0.000%
15	83.62	-66.20	83.58	-83.62	66.20	-83.58	0.001%
16	59.33	-88.27	102.16	-59.33	88.27	-102.16	0.000%
17	59.33	-66.20	102.16	-59.33	66.20	-102.16	0.000%
18	0.56	-88.27	111.32	-0.56	88.27	-111.32	0.000%
19	0.56	-66.20	111.32	-0.56	66.20	-111.32	0.000%
20	-58.36	-88.27	101.60	58.36	88.27	-101.60	0.000%
21	-58.36	-66.20	101.60	58.36	66.20	-101.60	0.000%
22	-82.82	-88.27	82.79	82.82	88.27	-82.79	0.000%
23	-82.82	-66.20	82.79	82.82	66.20	-82.79	0.000%
24	-101.64	-88.27	58.33	101.64	88.27	-58.33	0.000%
25	-101.64	-66.20	58.33	101.64	66.20	-58.33	0.000%
26	-111.37	-88.27	-0.56	111.37	88.27	0.56	0.000%
27	-111.37	-66.20	-0.56	111.37	66.20	0.56	0.000%
28	-102.20	-88.27	-59.31	102.20	88.27	59.31	0.000%
29	-102.20	-66.20	-59.31	102.20	66.20	59.31	0.000%
30	-83.62	-88.27	-83.58	83.62	88.27	83.58	0.000%
31	-83.62	-66.20	-83.58	83.62	66.20	83.58	0.001%
32	-59.33	-88.27	-102.16	59.33	88.27	102.16	0.000%
33	-59.33	-66.20	-102.16	59.33	66.20	102.16	0.000%
34	0.00	-268.74	0.00	0.00	268.74	0.00	0.000%
35	-0.06	-268.74	-34.88	0.06	268.74	34.88	0.000%
36	18.02	-268.74	-31.27	-18.02	268.74	31.27	0.000%
37	25.52	-268.74	-25.51	-25.52	268.74	25.51	0.000%
38	31.28	-268.74	-18.02	-31.28	268.74	18.02	0.000%
39	34.89	-268.74	0.06	-34.89	268.74	-0.06	0.000%
40	31.34	-268.74	18.12	-31.34	268.74	-18.12	0.000%
41	25.61	-268.74	25.60	-25.61	268.74	-25.60	0.000%
42	18.13	-268.74	31.33	-18.13	268.74	-31.33	0.000%
43	0.06	-268.74	34.88	-0.06	268.74	-34.88	0.000%
44	-18.02	-268.74	31.27	18.02	268.74	-31.27	0.000%
45	-25.52	-268.74	25.51	25.52	268.74	-25.51	0.000%
46	-31.28	-268.74	18.02	31.28	268.74	-18.02	0.000%
47	-34.89	-268.74	-0.06	34.89	268.74	0.06	0.000%
48	-31.34	-268.74	-18.12	31.34	268.74	18.12	0.000%
49	-25.61	-268.74	-25.60	25.61	268.74	25.60	0.000%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
50	-18.13	-268.74	-31.33	18.13	268.74	31.33	0.000%
51	-0.13	-73.56	-25.18	0.13	73.56	25.18	0.000%
52	13.20	-73.56	-22.98	-13.20	73.56	22.98	0.000%
53	18.74	-73.56	-18.73	-18.74	73.56	18.73	0.000%
54	22.99	-73.56	-13.20	-22.99	73.56	13.20	0.000%
55	25.19	-73.56	0.13	-25.19	73.56	-0.13	0.000%
56	23.12	-73.56	13.42	-23.12	73.56	-13.42	0.000%
57	18.91	-73.56	18.91	-18.91	73.56	-18.91	0.000%
58	13.42	-73.56	23.11	-13.42	73.56	-23.11	0.000%
59	0.13	-73.56	25.18	-0.13	73.56	-25.18	0.000%
60	-13.20	-73.56	22.98	13.20	73.56	-22.98	0.000%
61	-18.74	-73.56	18.73	18.74	73.56	-18.73	0.000%
62	-22.99	-73.56	13.20	22.99	73.56	-13.20	0.000%
63	-25.19	-73.56	-0.13	25.19	73.56	0.13	0.000%
64	-23.12	-73.56	-13.42	23.12	73.56	13.42	0.000%
65	-18.91	-73.56	-18.91	18.91	73.56	18.91	0.000%
66	-13.42	-73.56	-23.11	13.42	73.56	23.11	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00074973
2	Yes	9	0.00078856	0.00024553
3	Yes	11	0.00081450	0.00018862
4	Yes	7	0.00071191	0.00025397
5	Yes	8	0.00072626	0.00019763
6	Yes	6	0.00059633	0.00024199
7	Yes	6	0.00066649	0.00021587
8	Yes	7	0.00096125	0.00025510
9	Yes	8	0.00081293	0.00016188
10	Yes	10	0.00094686	0.00021631
11	Yes	12	0.00086178	0.00014455
12	Yes	8	0.00072228	0.00019084
13	Yes	8	0.00085320	0.00016834
14	Yes	6	0.00062435	0.00024930
15	Yes	6	0.00069975	0.00022310
16	Yes	7	0.00071816	0.00025560
17	Yes	8	0.00074037	0.00020065
18	Yes	8	0.00099420	0.00031753
19	Yes	10	0.00097652	0.00023023
20	Yes	6	0.00099125	0.00036634
21	Yes	7	0.00098527	0.00026644
22	Yes	6	0.00059629	0.00024089
23	Yes	6	0.00066399	0.00021446
24	Yes	7	0.00097477	0.00025760
25	Yes	8	0.00082277	0.00016333
26	Yes	10	0.00095837	0.00021834
27	Yes	12	0.00087150	0.00014587
28	Yes	8	0.00072633	0.00019161
29	Yes	8	0.00085686	0.00016888
30	Yes	6	0.00063121	0.00025177
31	Yes	6	0.00070744	0.00022529
32	Yes	7	0.00073596	0.00026033
33	Yes	8	0.00075752	0.00020434
34	Yes	7	0.00000001	0.00056093

35	Yes	7	0.00034854	0.00043223
36	Yes	6	0.00078820	0.00099943
37	Yes	6	0.00076380	0.00097983
38	Yes	6	0.00074422	0.00096137
39	Yes	6	0.00073549	0.00095197
40	Yes	6	0.00074956	0.00096435
41	Yes	6	0.00077315	0.00098573
42	Yes	7	0.00033730	0.00042109
43	Yes	7	0.00035548	0.00043658
44	Yes	6	0.00079044	0.00099063
45	Yes	6	0.00076038	0.00096279
46	Yes	6	0.00073540	0.00093732
47	Yes	6	0.00071968	0.00091994
48	Yes	6	0.00072584	0.00093011
49	Yes	6	0.00074691	0.00095279
50	Yes	6	0.00077418	0.00097889
51	Yes	4	0.00000001	0.00040225
52	Yes	4	0.00000001	0.00036896
53	Yes	4	0.00000001	0.00033804
54	Yes	4	0.00000001	0.00031301
55	Yes	4	0.00000001	0.00029746
56	Yes	4	0.00000001	0.00031228
57	Yes	4	0.00000001	0.00033681
58	Yes	4	0.00000001	0.00036776
59	Yes	4	0.00000001	0.00040402
60	Yes	4	0.00000001	0.00036883
61	Yes	4	0.00000001	0.00033724
62	Yes	4	0.00000001	0.00031207
63	Yes	4	0.00000001	0.00029692
64	Yes	4	0.00000001	0.00031209
65	Yes	4	0.00000001	0.00033645
66	Yes	4	0.00000001	0.00036693

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 170	3.006	66	0.1322	0.0081
T2	170 - 163.573	2.700	66	0.1313	0.0078
T3	163.573 - 159.049	2.504	66	0.1291	0.0075
T4	159.049 - 154.524	2.366	66	0.1270	0.0071
T5	154.524 - 150	2.232	66	0.1236	0.0067
T6	150 - 140	2.101	66	0.1194	0.0064
T7	140 - 130	1.831	66	0.1088	0.0060
T8	130 - 120	1.584	66	0.1000	0.0061
T9	120 - 110	1.359	66	0.0899	0.0060
T10	110 - 100	1.155	65	0.0812	0.0053
T11	100 - 90	0.970	65	0.0717	0.0049
T12	90 - 80	0.804	65	0.0634	0.0045
T13	80 - 60	0.656	65	0.0547	0.0040
T14	60 - 50	0.401	65	0.0447	0.0028
T15	50 - 40	0.290	65	0.0396	0.0022
T16	40 - 30	0.199	65	0.0342	0.0018
T17	30 - 20	0.123	65	0.0258	0.0014
T18	20 - 10	0.064	65	0.0173	0.0011
T19	10 - 0	0.024	57	0.0085	0.0007

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
185.00	Lightning Rod 2"x15'	66	3.006	0.1322	0.0081	665838
183.00	SC479-HF1LDF (D00-E5764)	66	3.006	0.1322	0.0081	665838
181.00	TMA 432-83H-01T - Future Decom.	66	3.006	0.1322	0.0081	665838
180.00	SC479-HF1LDF (D00I-E5764)	66	3.006	0.1322	0.0081	665838
175.00	6' PAD w/ Radome	66	2.853	0.1320	0.0079	665838
174.00	SC479-HF1LDF (D00I-E5764)	66	2.822	0.1319	0.0079	557628
173.00	6' PAD w/ Radome	66	2.791	0.1318	0.0079	492298
170.00	6' PAD w/ Radome	66	2.700	0.1313	0.0078	518502
169.00	BA1010-2	66	2.669	0.1310	0.0078	671650
168.00	SC479-HF1LDF (D00I-E5764)	66	2.639	0.1307	0.0077	Inf
163.00	T-Frame	66	2.486	0.1289	0.0075	274788
161.00	DB408-B	66	2.425	0.1280	0.0073	110842
152.00	12' Omni Antenna	66	2.158	0.1214	0.0065	54624
146.25	12' Omni Antenna	66	1.997	0.1154	0.0062	50205
140.50	12' Omni Antenna	66	1.844	0.1093	0.0060	49264
139.00	Yagi ASP-816	66	1.805	0.1078	0.0060	49553
137.00	BA1010	66	1.754	0.1060	0.0060	50439
136.50	DB222-A	66	1.742	0.1056	0.0060	50725
134.50	BA1010	66	1.692	0.1039	0.0061	52000
132.00	BA1010	66	1.631	0.1018	0.0061	53658
130.00	Dish Ice Shield	66	1.584	0.1000	0.0061	54882
129.50	BA1010	66	1.572	0.0995	0.0061	55157
128.00	PD128-1	66	1.537	0.0980	0.0061	55908
127.00	3" Dia 20' Omni	66	1.514	0.0970	0.0061	56362
125.00	6' PAD w/ Radome	66	1.469	0.0950	0.0061	57215
124.50	PD128-1	66	1.458	0.0944	0.0061	57427
122.00	3" Dia 20' Omni	66	1.402	0.0919	0.0060	58480
121.00	PD128-1	66	1.381	0.0909	0.0060	58880
117.00	3" Dia 20' Omni	66	1.296	0.0872	0.0058	60227
116.00	12' Omni Antenna	66	1.275	0.0863	0.0057	60516
112.00	3" Dia 20' Omni	65	1.194	0.0829	0.0055	61563
111.00	12' Omni Antenna	65	1.174	0.0821	0.0054	61713
107.00	3" Dia 20' Omni	65	1.097	0.0784	0.0052	61360
106.00	4' Grid Dish	65	1.078	0.0774	0.0051	61103
105.00	12' Wireless Frame	65	1.060	0.0764	0.0051	60825
101.00	DB264-A	65	0.987	0.0726	0.0049	60346
96.00	DB264-A	65	0.901	0.0684	0.0047	64507
91.00	SC479-HF1LDF	65	0.820	0.0643	0.0045	71360
86.00	DB264-A	65	0.743	0.0598	0.0043	73296
85.00	SC479-HF1LDF	65	0.728	0.0589	0.0042	73164
79.00	SC479-HF1LDF	65	0.642	0.0540	0.0039	75814
75.00	Dish Ice Shield	65	0.587	0.0515	0.0037	85495
71.00	2'6"x4" Pipe Mount	65	0.535	0.0495	0.0035	99882
61.00	GPS	65	0.413	0.0452	0.0028	150048
50.00	DB803M-Y	65	0.290	0.0396	0.0022	52393

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 170	13.169	30	0.5754	0.0358

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T2	170 - 163.573	11.834	30	0.5715	0.0344
T3	163.573 - 159.049	10.980	30	0.5623	0.0333
T4	159.049 - 154.524	10.379	30	0.5539	0.0313
T5	154.524 - 150	9.792	30	0.5398	0.0296
T6	150 - 140	9.223	30	0.5217	0.0282
T7	140 - 130	8.038	30	0.4756	0.0267
T8	130 - 120	6.958	30	0.4372	0.0270
T9	120 - 110	5.974	30	0.3932	0.0264
T10	110 - 100	5.077	30	0.3554	0.0236
T11	100 - 90	4.266	30	0.3144	0.0216
T12	90 - 80	3.539	30	0.2782	0.0199
T13	80 - 60	2.885	30	0.2402	0.0176
T14	60 - 50	1.766	30	0.1965	0.0123
T15	50 - 40	1.278	30	0.1741	0.0095
T16	40 - 30	0.878	30	0.1502	0.0080
T17	30 - 20	0.543	30	0.1135	0.0064
T18	20 - 10	0.283	30	0.0760	0.0047
T19	10 - 0	0.104	14	0.0375	0.0030

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
185.00	Lightning Rod 2"x15'	30	13.169	0.5754	0.0358	160553
183.00	SC479-HF1LDF (D00-E5764)	30	13.169	0.5754	0.0358	160553
181.00	TMA 432-83H-01T - Future Decom.	30	13.169	0.5754	0.0358	160553
180.00	SC479-HF1LDF (D00I-E5764)	30	13.169	0.5754	0.0358	160553
175.00	6' PAD w/ Radome	30	12.500	0.5747	0.0351	160553
174.00	SC479-HF1LDF (D00I-E5764)	30	12.367	0.5743	0.0349	134488
173.00	6' PAD w/ Radome	30	12.233	0.5738	0.0348	118886
170.00	6' PAD w/ Radome	30	11.834	0.5715	0.0344	130933
169.00	BA1010-2	30	11.701	0.5703	0.0343	181355
168.00	SC479-HF1LDF (D00I-E5764)	30	11.568	0.5691	0.0342	235535
163.00	T-Frame	30	10.903	0.5614	0.0331	90775
161.00	DB408-B	30	10.637	0.5580	0.0322	29307
152.00	12' Omni Antenna	30	9.472	0.5301	0.0288	12965
146.25	12' Omni Antenna	30	8.767	0.5045	0.0274	11641
140.50	12' Omni Antenna	30	8.095	0.4778	0.0267	11277
139.00	Yagi ASP-816	30	7.926	0.4715	0.0266	11332
137.00	BA1010	30	7.703	0.4637	0.0267	11529
136.50	DB222-A	30	7.649	0.4618	0.0267	11594
134.50	BA1010	30	7.432	0.4544	0.0268	11888
132.00	BA1010	30	7.166	0.4451	0.0270	12272
130.00	Dish Ice Shield	30	6.958	0.4372	0.0270	12563
129.50	BA1010	30	6.907	0.4351	0.0270	12630
128.00	PD128-1	30	6.754	0.4287	0.0271	12818
127.00	3" Dia 20' Omni	30	6.653	0.4243	0.0271	12935
125.00	6' PAD w/ Radome	30	6.454	0.4153	0.0270	13160
124.50	PD128-1	30	6.405	0.4130	0.0270	13216
122.00	3" Dia 20' Omni	30	6.163	0.4018	0.0267	13495
121.00	PD128-1	30	6.068	0.3974	0.0266	13598
117.00	3" Dia 20' Omni	30	5.696	0.3814	0.0257	13915
116.00	12' Omni Antenna	30	5.605	0.3777	0.0254	13976
112.00	3" Dia 20' Omni	30	5.250	0.3630	0.0242	14189
111.00	12' Omni Antenna	30	5.163	0.3593	0.0239	14217
107.00	3" Dia 20' Omni	30	4.825	0.3432	0.0229	14123

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
106.00	4' Grid Dish	30	4.742	0.3390	0.0227	14062
105.00	12' Wireless Frame	30	4.661	0.3348	0.0225	13997
101.00	DB264-A	30	4.343	0.3183	0.0217	13881
96.00	DB264-A	30	3.965	0.2997	0.0209	14826
91.00	SC479-HF1LDF	30	3.608	0.2819	0.0201	16380
86.00	DB264-A	30	3.269	0.2625	0.0190	16794
85.00	SC479-HF1LDF	30	3.203	0.2585	0.0188	16758
79.00	SC479-HF1LDF	30	2.824	0.2370	0.0174	17338
75.00	Dish Ice Shield	30	2.585	0.2260	0.0164	19557
71.00	2'6"x4" Pipe Mount	30	2.356	0.2172	0.0154	22864
61.00	GPS	30	1.818	0.1985	0.0126	34387
50.00	DB803M-Y	30	1.278	0.1741	0.0095	11872

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	180	Diagonal	A325X	0.6250	2	1.44	7.19	0.200 ✔	1	Member Block Shear
		Secondary Horizontal	A325X	0.6250	2	0.40	6.17	0.064 ✔	1	Member Block Shear
		Top Girt	A325X	0.6250	2	0.13	6.17	0.021 ✔	1	Member Block Shear
T2	170	Diagonal	A325X	0.6250	2	1.78	7.19	0.248 ✔	1	Member Block Shear
		Top Girt	A325X	0.6250	2	0.42	6.17	0.069 ✔	1	Member Block Shear
T3	163.573	Diagonal	A325X	0.6250	2	2.40	6.17	0.389 ✔	1	Member Block Shear
		Top Girt	A325X	0.6250	2	0.27	6.17	0.044 ✔	1	Member Block Shear
T4	159.049	Diagonal	A325X	0.6250	2	2.71	7.19	0.377 ✔	1	Member Block Shear
T5	154.524	Diagonal	A325X	0.6250	2	2.69	7.19	0.374 ✔	1	Member Block Shear
T6	150	Diagonal	A325X	0.6250	2	2.92	7.19	0.406 ✔	1	Member Block Shear
		Top Girt	A325X	0.6250	2	0.31	7.19	0.043 ✔	1	Member Block Shear
T7	140	Diagonal	A325X	0.6250	2	4.51	10.26	0.439 ✔	1	Member Block Shear
		Top Girt	A325X	0.6250	2	0.23	7.19	0.032 ✔	1	Member Block Shear
T8	130	Diagonal	A325X	0.6250	2	5.45	10.26	0.531 ✔	1	Member Block Shear
		Secondary Horizontal	A325X	0.6250	2	0.72	8.22	0.087 ✔	1	Member Block Shear
T9	120	Diagonal	A325X	0.6250	2	5.92	10.26	0.576 ✔	1	Member Block Shear
		Horizontal	A325X	0.6250	2	0.39	9.58	0.041 ✔	1	Member Block Shear
		Secondary Horizontal	A325X	0.6250	2	0.91	6.17	0.148 ✔	1	Member Block Shear
T10	110	Diagonal	A325X	0.6250	2	7.31	11.62	0.629 ✔	1	Member Block

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load / Allowable	Allowable Ratio	Criteria
		Secondary Horizontal	A325X	0.6250	2	1.12	8.22	0.136 ✔	1	Shear Member Block Shear
T11	100	Diagonal	A325X	0.6250	2	7.11	11.62	0.611 ✔	1	Member Block Shear
		Horizontal	A325X	0.6250	2	0.76	9.58	0.079 ✔	1	Member Block Shear
T12	90	Diagonal	A325X	0.6250	2	7.92	11.62	0.681 ✔	1	Member Block Shear
		Secondary Horizontal	A325X	0.6250	2	1.57	9.58	0.164 ✔	1	Member Block Shear
T13	80	Diagonal	A325X	0.6250	2	7.92	14.38	0.551 ✔	1	Member Block Shear
		Top Girt	A325X	0.6250	2	0.76	9.58	0.080 ✔	1	Member Block Shear
T14	60	Diagonal	A325X	0.6250	2	7.96	14.38	0.554 ✔	1	Member Block Shear
		Horizontal	A325X	0.6250	2	1.95	12.34	0.158 ✔	1	Member Block Shear
T15	50	Diagonal	A325X	0.6250	2	8.96	30.37	0.295 ✔	1	Bolt Shear
		Secondary Horizontal	A325X	0.6250	2	2.47	11.62	0.213 ✔	1	Member Block Shear
T16	40	Diagonal	A325X	0.6250	2	8.68	28.75	0.302 ✔	1	Member Block Shear
		Secondary Horizontal	A325X	0.6250	2	2.69	11.62	0.231 ✔	1	Member Block Shear
		Top Girt	A325X	0.6250	2	2.60	12.34	0.211 ✔	1	Member Block Shear
T17	30	Diagonal	A325X	0.6250	2	9.15	28.75	0.318 ✔	1	Member Block Shear
		Secondary Horizontal	A325X	0.6250	2	2.92	11.62	0.251 ✔	1	Member Block Shear
T18	20	Diagonal	A325X	0.6250	2	11.32	30.37	0.373 ✔	1	Bolt Shear
		Horizontal	A325X	0.6250	2	3.98	12.34	0.322 ✔	1	Member Block Shear
		Secondary Horizontal	A325X	0.6250	2	3.10	11.62	0.267 ✔	1	Member Block Shear
T19	10	Diagonal	A325X	0.6250	2	14.52	23.96	0.606 ✔	1	Member Block Shear
		Horizontal	A325X	0.6250	2	10.77	19.17	0.562 ✔	1	Member Block Shear

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 170	L3 1/2x3 1/2x3/8	10.00	5.00	87.3 K=1.00	2.4800	-3.02	53.78	0.056 [1] ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T2	170 - 163.573	L5x5x5/16	6.43	6.43	77.6 K=1.00	3.0300	-10.42	69.83	0.149 [1]
T3	163.573 - 159.049	L5x5x5/16	4.53	4.53	54.7 K=1.00	3.0300	-20.40	81.46	0.250 [1]
T4	159.049 - 154.524	L5x5x5/16	4.53	4.53	54.7 K=1.00	3.0300	-29.88	81.46	0.367 [1]
T5	154.524 - 150	L5x5x5/16	4.53	4.53	54.7 K=1.00	3.0300	-38.04	81.46	0.467 [1]
T6	150 - 140	L5x5x3/8	10.01	5.01	60.7 K=1.00	3.6100	-57.60	96.35	0.598 [1]
T7	140 - 130	L6x6x1/2	10.01	5.23	53.2 K=1.00	5.7500	-73.01	160.53	0.455 [1]
T8	130 - 120	L6x6x1/2	10.01	5.21	53.0 K=1.00	5.7500	-95.89	160.69	0.597 [1]
T9	120 - 110	L6x6x3/4	10.01	5.20	53.3 K=1.00	8.4400	-121.88	235.48	0.518 [1]
T10	110 - 100	L6x6x3/4	10.01	5.18	53.2 K=1.00	8.4400	-148.67	235.66	0.631 [1]
T11	100 - 90	L8x8x3/4	10.01	10.01	76.0 K=1.00	11.4000	-179.85	272.41	0.660 [1]
T12	90 - 80	L8x8x3/4	10.01	5.16	39.2 K=1.00	11.4000	-209.56	340.66	0.615 [1]
T13	80 - 60	L8x8x1 w/ 1/2x7 Plates	20.03	10.01	48.3 K=1.00	22.0000	-271.69	630.40	0.431 [1]
T14	60 - 50	L8x8x1-1/8 w/ 1/2x7 Plates	10.01	10.01	48.6 K=1.00	23.7340	-300.92	679.24	0.443 [1]
T15	50 - 40	L8x8x1-1/8 w/ 1/2x7 Plates	10.01	5.13	24.9 K=1.00	23.7340	-329.17	744.33	0.442 [1]
T16	40 - 30	L8x8x1 1/8	10.01	5.12	39.4 K=1.00	16.7000	-357.84	498.58	0.718 [1]
T17	30 - 20	L8x8x1 1/8	10.01	5.12	39.4 K=1.00	16.7000	-389.00	498.67	0.780 [1]
T18	20 - 10	L8x8x1 1/8	10.01	5.11	39.3 K=1.00	16.7000	-413.71	498.74	0.830 [1]
T19	10 - 0	L8x8x1 1/8	10.01	5.01	38.5 K=1.00	16.7000	-424.87	500.44	0.849 [1]

[1] P_u / ϕP_n controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 170	L2 1/2x2 1/2x3/16	11.41	5.51	130.4 K=0.98	0.9020	-3.05	11.95	0.255 [1]
T2	170 - 163.573	L2 1/2x2 1/2x3/16	8.46	4.03	103.3 K=1.06	0.9020	-3.76	16.66	0.225 [1]
T3	163.573 - 159.049	L2x2x3/16	7.25	3.52	110.5 K=1.03	0.7150	-4.95	12.19	0.406 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T4	159.049 - 154.524	L2 1/2x2x3/16	7.51	3.65	106.9 K=1.04	0.8090	-5.32	14.36	0.370 [1]
T5	154.524 - 150	L2 1/2x2x3/16	7.77	3.78	109.6 K=1.03	0.8090	-5.51	13.92	0.396 [1]
T6	150 - 140	L2 1/2x2x3/16	8.61	4.21	118.8 K=1.00	0.8090	-5.89	12.47	0.472 [1]
T7	140 - 130	L3x2 1/2x1/4	12.53	6.35	138.5 K=0.96	1.3100	-9.20	15.42	0.597 [1]
T8	130 - 120	L3x3x1/4	12.98	6.56	129.9 K=0.98	1.4400	-11.12	19.20	0.579 [1]
T9	120 - 110	L3x3x1/4	13.45	6.78	133.3 K=0.97	1.4400	-11.94	18.30	0.652 [1]
T10	110 - 100	L3 1/2x3x1/4	13.94	7.02	130.3 K=0.98	1.5600	-14.89	20.69	0.720 [1]
T11	100 - 90	L3 1/2x3x1/4	14.44	7.26	133.8 K=0.97	1.5600	-14.32	19.68	0.728 [1]
T12	90 - 80	L3 1/2x3x1/4	14.97	7.52	137.5 K=0.96	1.5600	-16.17	18.63	0.868 [1]
T13	80 - 60	2L2 1/2x2x3/16	16.07	8.06	122.4 K=1.00	1.6200	-16.33	23.87	0.684 [1]
T14	60 - 50	2L2 1/2x2x3/16	16.63	8.33	126.6 K=1.00	1.6200	-16.02	22.57	0.710 [1]
T15	50 - 40	2L2 1/2x2x3/8	17.21	8.62	131.2 K=0.97	3.0900	-17.92	40.44	0.443 [1]
T16	40 - 30	2L2 1/2x2x3/8	17.80	8.91	134.7 K=0.97	3.0900	-17.76	38.48	0.462 [1]
T17	30 - 20	2L2 1/2x2x3/8	18.40	9.21	138.2 K=0.96	3.0900	-18.91	36.54	0.518 [1]
T18	20 - 10	2L2 1/2x2x3/8	19.00	9.51	141.8 K=0.95	3.0900	-22.64	34.72	0.652 [1]
T19	10 - 0	2L2 1/2x2 1/2x5/16	13.37	12.47	141.2 K=1.00	2.9300	-30.11	33.21	0.906 [1]

[1] P_u / ϕP_n controls

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T9	120 - 110	L2 1/2x2 1/2x1/4	9.12	4.11	110.3 K=1.10	1.1900	-0.93	20.33	0.046 [1]
T11	100 - 90	L2 1/2x2 1/2x1/4	10.56	4.83	119.0 K=1.01	1.1900	-1.61	18.29	0.088 [1]
T14	60 - 50	2L2x2x3/16	13.43	6.16	119.8 K=1.00	1.4300	-1.65	21.76	0.076 [1]
T18	20 - 10	2L2x2x3/16	16.29	7.62	141.5 K=0.96	1.4300	-1.71	16.14	0.106 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T19	10 - 0	2L2 1/2x2 1/2x1/4	17.01	7.97	123.4 K=0.99	2.3800	-19.27	34.58	0.557 [1] ✔

[1] P_u / ϕP_n controls

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 170	L2x2x3/16	6.00	5.31	111.7 K=1.08	0.7150	-0.80	12.02	0.067 [1] ✔
T7	140 - 130	L2x2x1/4	8.03	7.53	137.5 K=0.93	0.9380	-1.10	11.21	0.098 [1] ✔
T8	130 - 120	L2x2x1/4	8.75	7.86	141.4 K=0.91	0.9380	-1.44	10.60	0.136 [1] ✔
T9	120 - 110	L2x2x3/16	9.47	8.57	148.7 K=0.89	0.7150	-1.83	7.30	0.251 [1] ✔
T10	110 - 100	L2x2x1/4	10.19	9.29	158.8 K=0.87	0.9380	-2.23	8.40	0.266 [1] ✔
T12	90 - 80	L2 1/2x2 1/2x1/4	11.62	10.56	147.5 K=0.90	1.1900	-3.15	12.35	0.255 [1] ✔
T15	50 - 40	L3 1/2x3 1/2x1/4	14.49	13.39	136.9 K=0.93	1.6900	-4.94	20.39	0.242 [1] ✔
T16	40 - 30	L3 1/2x3 1/2x1/4	15.21	14.15	142.0 K=0.91	1.6900	-5.37	18.94	0.284 [1] ✔
T17	30 - 20	L3 1/2x3 1/2x1/4	15.93	14.87	146.9 K=0.90	1.6900	-5.84	17.70	0.330 [1] ✔
T18	20 - 10	L3 1/2x3 1/2x1/4	16.65	15.58	151.7 K=0.88	1.6900	-6.21	16.59	0.374 [1] ✔

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 170	L2x2x3/16	6.00	5.31	145.7 K=0.90	0.7150	-0.11	7.61	0.014 [1] ✔
T2	170 - 163.573	L2x2x3/16	6.00	5.31	145.7 K=0.90	0.7150	-0.47	7.61	0.062 [1] ✔
T3	163.573 - 159.049	L2x2x3/16	6.00	5.19	143.4 K=0.91	0.7150	-0.47	7.86	0.059 [1] ✔
T6	150 - 140	L2 1/2x2 1/2x3/16	6.97	6.16	138.1 K=0.92	0.9020	-0.55	10.69	0.051 [1] ✔
T7	140 - 130	L2 1/2x2 1/2x3/16	7.69	3.44	101.7	0.9020	-0.52	16.96	0.030 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T13	80 - 60	L2 1/2x2 1/2x1/4	11.99	5.47	K=1.22 130.4 K=0.98	1.1900	-0.95	15.76	✔ 0.060 [1] ✔
T16	40 - 30	2L2x2x3/16	14.86	6.88	130.5 K=0.98	1.4300	-1.73	18.89	0.092 [1] ✔

[1] P_u / ϕP_n controls

Redundant Horizontal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T19	10 - 0	L2 1/2x2 1/2x3/16	4.25	3.92	107.5 K=1.13	0.9020	-6.38	15.90	0.401 [1] ✔

[1] P_u / ϕP_n controls

Redundant Diagonal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T19	10 - 0	L2 1/2x2 1/2x3/16	6.45	5.92	143.6 K=1.00	0.9020	-8.37	9.88	0.848 [1] ✔

[1] P_u / ϕP_n controls

Redundant Hip (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T19	10 - 0	L2 1/2x2 1/2x3/16	6.01	6.01	145.8 K=1.00	0.9020	-0.04	9.58	0.004 [1] ✔

[1] P_u / ϕP_n controls

Redundant Sub-Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T19	10 - 0	L3x3x5/16	8.86	8.86	180.6 K=1.00	1.7800	-9.73	12.33	0.789 [1] ✔

[1] P_u / ϕP_n controls

Inner Bracing Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T7	140 - 130	L2x2x3/16	5.44	5.44	165.6 K=1.00	0.7150	-0.07	5.89	0.011 [1] ✔
T9	120 - 110	L2 1/2x2x3/16	6.45	6.45	181.3 K=1.00	0.8090	-0.08	5.56	0.014 [1] ✔
T11	100 - 90	L2 1/2x2x3/16	7.47	7.47	209.8 K=1.00	0.8090	-0.09	4.15	0.023 [1] ✔
T13	80 - 60	2L2x2x3/16	8.48	8.48	164.9 K=1.00	1.4300	-0.13	11.88	0.011 [1] ✔
T14	60 - 50	2L2x2x3/16	9.49	9.49	184.6 K=1.00	1.4300	-0.15	9.47	0.015 [1] ✔
T16	40 - 30	2L2x2x3/16	10.51	10.51	204.4 K=1.00	1.4300	-0.20	7.73	0.025 [1] ✔
T18	20 - 10	2L2x2 1/2x3/16	11.52	11.52	230.4 K=1.00	1.6200	-0.04	6.89	0.005 [1] ✔
T19	10 - 0	2L2x2 1/2x3/16	12.03	12.03	240.6 K=1.00	1.6200	-0.18	6.32	0.029 [1] ✔

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 170	L3 1/2x3 1/2x3/8	10.00	5.00	56.1	2.4800	1.82	80.35	0.023 [1] ✔
T2	170 - 163.573	L5x5x5/16	6.43	6.43	49.1	3.0300	8.61	98.17	0.088 [1] ✔
T3	163.573 - 159.049	L5x5x5/16	4.53	4.53	34.6	3.0300	16.82	98.17	0.171 [1] ✔
T4	159.049 - 154.524	L5x5x5/16	4.53	4.53	34.6	3.0300	25.21	98.17	0.257 [1] ✔
T5	154.524 - 150	L5x5x5/16	4.53	4.53	34.6	3.0300	33.32	98.17	0.339 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T6	150 - 140	L5x5x3/8	10.01	5.01	38.5	3.6100	52.17	116.96	0.446 [1]
T7	140 - 130	L6x6x1/2	10.01	5.23	33.7	5.7500	66.58	186.30	0.357 [1]
T8	130 - 120	L6x6x1/2	10.01	5.21	33.6	5.7500	86.72	186.30	0.465 [1]
T9	120 - 110	L6x6x3/4	10.01	5.20	34.1	8.4400	111.22	273.46	0.407 [1]
T10	110 - 100	L6x6x3/4	10.01	5.18	34.0	8.4400	135.97	273.46	0.497 [1]
T11	100 - 90	L8x8x3/4	10.01	10.01	48.6	11.4000	164.83	369.36	0.446 [1]
T12	90 - 80	L8x8x3/4	10.01	5.16	25.1	11.4000	192.98	369.36	0.522 [1]
T13	80 - 60	L8x8x1 w/ 1/2x7 Plates	20.03	10.01	48.3	22.0000	250.91	712.80	0.352 [1]
T14	60 - 50	L8x8x1-1/8 w/ 1/2x7 Plates	10.01	10.01	48.6	23.7340	276.87	768.98	0.360 [1]
T15	50 - 40	L8x8x1-1/8 w/ 1/2x7 Plates	10.01	5.13	24.9	23.7340	303.50	768.98	0.395 [1]
T16	40 - 30	L8x8x1 1/8	10.01	5.12	25.4	16.7000	328.03	541.08	0.606 [1]
T17	30 - 20	L8x8x1 1/8	10.01	5.12	25.4	16.7000	357.00	541.08	0.660 [1]
T18	20 - 10	L8x8x1 1/8	10.01	5.11	25.4	16.7000	381.80	541.08	0.706 [1]
T19	10 - 0	L8x8x1 1/8	10.01	5.01	24.8	16.7000	388.58	541.08	0.718 [1]

[1] P_u / ϕP_n controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 170	L2 1/2x2 1/2x3/16	11.41	5.51	88.0	0.5710	2.88	24.84	0.116 [1]
T2	170 - 163.573	L2 1/2x2 1/2x3/16	8.46	4.03	65.2	0.5710	3.57	24.84	0.144 [1]
T3	163.573 - 159.049	L2x2x3/16	7.25	3.52	72.4	0.4308	4.80	18.74	0.256 [1]
T4	159.049 - 154.524	L2 1/2x2x3/16	7.51	3.65	77.0	0.5013	5.42	21.81	0.248 [1]
T5	154.524 - 150	L2 1/2x2x3/16	7.77	3.78	79.6	0.5013	5.38	21.81	0.247 [1]
T6	150 - 140	L2 1/2x2x3/16	8.61	4.21	88.2	0.5013	5.84	21.81	0.268 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T7	140 - 130	L3x2 1/2x1/4	12.53	6.35	104.5	0.8419	9.02	36.62	0.246 [1] ✔
T8	130 - 120	L3x3x1/4	12.98	6.56	87.2	0.9394	10.89	40.86	0.267 [1] ✔
T9	120 - 110	L3x3x1/4	13.45	6.78	90.0	0.9394	11.83	40.86	0.290 [1] ✔
T10	110 - 100	L3 1/2x3x1/4	13.94	7.02	94.8	1.0294	14.62	44.78	0.326 [1] ✔
T11	100 - 90	L3 1/2x3x1/4	14.44	7.26	98.1	1.0294	14.21	44.78	0.317 [1] ✔
T12	90 - 80	L3 1/2x3x1/4	14.97	7.52	101.4	1.0294	15.83	44.78	0.354 [1] ✔
T13	80 - 60	2L2 1/2x2x3/16	16.07	8.06	125.4	1.0041	15.84	43.68	0.363 [1] ✔
T14	60 - 50	2L2 1/2x2x3/16	16.63	8.33	129.6	1.0041	15.92	43.68	0.365 [1] ✔
T15	50 - 40	2L2 1/2x2x3/8	17.21	8.62	137.8	1.8956	16.73	82.46	0.203 [1] ✔
T16	40 - 30	2L2 1/2x2x3/8	17.80	8.91	142.3	1.8956	17.36	82.46	0.211 [1] ✔
T17	30 - 20	2L2 1/2x2x3/8	18.40	9.21	147.0	1.8956	18.31	82.46	0.222 [1] ✔
T18	20 - 10	2L2 1/2x2x3/8	19.00	9.51	151.6	1.8956	19.97	82.46	0.242 [1] ✔
T19	10 - 0	2L2 1/2x2 1/2x5/16	13.37	12.47	145.7	1.8459	29.04	80.30	0.362 [1] ✔

[1] P_u / ϕP_n controls

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T9	120 - 110	L2 1/2x2 1/2x1/4	9.12	4.11	67.3	0.7519	0.78	32.71	0.024 [1] ✔
T11	100 - 90	L2 1/2x2 1/2x1/4	10.56	4.83	78.5	0.7519	1.51	32.71	0.046 [1] ✔
T14	60 - 50	2L2x2x3/16	13.43	6.16	123.7	0.8616	3.90	37.48	0.104 [1] ✔
T18	20 - 10	2L2x2x3/16	16.29	7.62	152.0	0.8616	7.95	37.48	0.212 [1] ✔
T19	10 - 0	2L2 1/2x2 1/2x1/4	17.01	7.97	127.5	1.5037	21.55	65.41	0.329 [1] ✔

[1] P_u / ϕP_n controls

Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 170	L2x2x3/16	6.00	5.31	111.0	0.4308	0.79	18.74	0.042 [1] ✔
T7	140 - 130	L2x2x1/4	8.03	7.53	148.4	0.9380	1.10	30.39	0.036 [1] ✔
T8	130 - 120	L2x2x1/4	8.75	7.86	162.6	0.5629	1.44	24.49	0.059 [1] ✔
T9	120 - 110	L2x2x3/16	9.47	8.57	174.4	0.4308	1.83	18.74	0.098 [1] ✔
T10	110 - 100	L2x2x1/4	10.19	9.29	190.9	0.5629	2.23	24.49	0.091 [1] ✔
T12	90 - 80	L2 1/2x2 1/2x1/4	11.62	10.56	171.0	0.7519	3.15	32.71	0.096 [1] ✔
T15	50 - 40	L3 1/2x3 1/2x1/4	14.49	13.39	151.8	1.1269	4.94	49.02	0.101 [1] ✔
T16	40 - 30	L3 1/2x3 1/2x1/4	15.21	14.15	160.1	1.1269	5.37	49.02	0.110 [1] ✔
T17	30 - 20	L3 1/2x3 1/2x1/4	15.93	14.87	168.0	1.1269	5.84	49.02	0.119 [1] ✔
T18	20 - 10	L3 1/2x3 1/2x1/4	16.65	15.58	175.9	1.1269	6.21	49.02	0.127 [1] ✔

[1] $P_u / \phi P_n$ controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 170	L2x2x3/16	6.00	5.31	111.0	0.4308	0.26	18.74	0.014 [1] ✔
T2	170 - 163.573	L2x2x3/16	6.00	5.31	111.0	0.4308	0.85	18.74	0.045 [1] ✔
T3	163.573 - 159.049	L2x2x3/16	6.00	5.19	108.6	0.4308	0.54	18.74	0.029 [1] ✔
T6	150 - 140	L2 1/2x2 1/2x3/16	6.97	6.16	101.1	0.5710	0.61	24.84	0.025 [1] ✔
T7	140 - 130	L2 1/2x2 1/2x3/16	7.69	3.44	56.1	0.5710	0.46	24.84	0.018 [1] ✔
T13	80 - 60	L2 1/2x2 1/2x1/4	11.99	5.47	88.4	0.7519	1.53	32.71	0.047 [1] ✔
T16	40 - 30	2L2x2x3/16	14.86	6.88	137.6	0.8616	5.20	37.48	0.139 [1] ✔

[1] $P_u / \phi P_n$ controls

Redundant Horizontal (1) Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T19	10 - 0	L2 1/2x2 1/2x3/16	4.25	3.92	60.5	0.9020	6.38	29.22	0.218 [1] ✔

[1] P_u / ϕP_n controls

Redundant Diagonal (1) Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T19	10 - 0	L2 1/2x2 1/2x3/16	6.45	5.92	91.4	0.9020	7.90	29.22	0.270 [1] ✔

[1] P_u / ϕP_n controls

Redundant Sub-Horizontal Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T19	10 - 0	L3x3x5/16	8.86	8.86	115.4	1.7800	8.90	57.67	0.154 [1] ✔

[1] P_u / ϕP_n controls

Inner Bracing Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
T7	140 - 130	L2x2x3/16	5.44	5.44	105.8	0.7150	0.07	23.17	0.003 [1] ✔
T9	120 - 110	L2 1/2x2x3/16	6.45	6.45	129.1	0.8090	0.08	26.21	0.003 [1] ✔
T11	100 - 90	L2 1/2x2x3/16	7.47	7.47	149.4	0.8090	0.09	26.21	0.004 [1] ✔
T13	80 - 60	2L2x2x3/16	8.48	8.48	164.9	1.4300	0.13	46.33	0.003 [1] ✔
T14	60 - 50	2L2x2x3/16	9.49	9.49	184.6	1.4300	0.15	46.33	0.003 [1] ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T16	40 - 30	2L2x2x3/16	10.51	10.51	204.4	1.4300	0.20	46.33	0.004 [1] ✔
T18	20 - 10	2L2x2 1/2x3/16	11.52	11.52	230.4	1.6200	0.06	52.49	0.001 [1] ✔
T19	10 - 0	2L2x2 1/2x3/16	12.03	12.03	240.6	1.6200	0.18	52.49	0.003 [1] ✔

[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	180 - 170	Leg	L3 1/2x3 1/2x3/8	1	-3.02	53.78	5.6	Pass
		Leg	L3 1/2x3 1/2x3/8	2	-2.77	53.78	5.2	Pass
		Leg	L3 1/2x3 1/2x3/8	3	-2.61	53.78	4.9	Pass
		Leg	L3 1/2x3 1/2x3/8	4	-2.71	53.78	5.0	Pass
T2	170 - 163.573	Leg	L5x5x5/16	21	-9.85	69.83	14.1	Pass
		Leg	L5x5x5/16	22	-10.11	69.83	14.5	Pass
		Leg	L5x5x5/16	23	-9.90	69.83	14.2	Pass
		Leg	L5x5x5/16	24	-10.42	69.83	14.9	Pass
T3	163.573 - 159.049	Leg	L5x5x5/16	37	-18.64	81.46	22.9	Pass
		Leg	L5x5x5/16	38	-19.98	81.46	24.5	Pass
		Leg	L5x5x5/16	39	-20.40	81.46	25.0	Pass
		Leg	L5x5x5/16	40	-20.38	81.46	25.0	Pass
T4	159.049 - 154.524	Leg	L5x5x5/16	53	-27.77	81.46	34.1	Pass
		Leg	L5x5x5/16	54	-29.50	81.46	36.2	Pass
		Leg	L5x5x5/16	55	-29.54	81.46	36.3	Pass
		Leg	L5x5x5/16	56	-29.88	81.46	36.7	Pass
T5	154.524 - 150	Leg	L5x5x5/16	65	-35.68	81.46	43.8	Pass
		Leg	L5x5x5/16	66	-37.71	81.46	46.3	Pass
		Leg	L5x5x5/16	67	-37.36	81.46	45.9	Pass
		Leg	L5x5x5/16	68	-38.04	81.46	46.7	Pass
T6	150 - 140	Leg	L5x5x3/8	77	-54.72	96.35	56.8	Pass
		Leg	L5x5x3/8	78	-57.42	96.35	59.6	Pass
		Leg	L5x5x3/8	79	-56.34	96.35	58.5	Pass
		Leg	L5x5x3/8	80	-57.60	96.35	59.8	Pass
T7	140 - 130	Leg	L6x6x1/2	101	-69.83	160.53	43.5	Pass
		Leg	L6x6x1/2	102	-72.92	160.53	45.4	Pass
		Leg	L6x6x1/2	103	-71.35	160.53	44.4	Pass
		Leg	L6x6x1/2	104	-73.01	160.53	45.5	Pass
T8	130 - 120	Leg	L6x6x1/2	126	-91.51	160.69	56.9	Pass
		Leg	L6x6x1/2	127	-94.36	160.69	58.7	Pass
		Leg	L6x6x1/2	128	-92.93	160.69	57.8	Pass
		Leg	L6x6x1/2	129	-95.89	160.69	59.7	Pass
T9	120 - 110	Leg	L6x6x3/4	142	-117.37	235.48	49.8	Pass
		Leg	L6x6x3/4	143	-120.41	235.48	51.1	Pass
		Leg	L6x6x3/4	144	-118.57	235.48	50.4	Pass
		Leg	L6x6x3/4	145	-121.88	235.48	51.8	Pass
T10	110 - 100	Leg	L6x6x3/4	167	-143.56	235.66	60.9	Pass
		Leg	L6x6x3/4	168	-147.27	235.66	62.5	Pass
		Leg	L6x6x3/4	169	-145.62	235.66	61.8	Pass
		Leg	L6x6x3/4	170	-148.67	235.66	63.1	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T11	100 - 90	Leg	L8x8x3/4	183	-174.32	272.41	64.0	Pass
		Leg	L8x8x3/4	184	-178.43	272.41	65.5	Pass
		Leg	L8x8x3/4	185	-176.22	272.41	64.7	Pass
		Leg	L8x8x3/4	186	-179.85	272.41	66.0	Pass
T12	90 - 80	Leg	L8x8x3/4	204	-203.60	340.66	59.8	Pass
		Leg	L8x8x3/4	205	-208.05	340.66	61.1	Pass
		Leg	L8x8x3/4	206	-205.37	340.66	60.3	Pass
		Leg	L8x8x3/4	207	-209.56	340.66	61.5	Pass
T13	80 - 60	Leg	L8x8x1 w/ 1/2x7 Plates	220	-264.95	630.40	42.0	Pass
		Leg	L8x8x1 w/ 1/2x7 Plates	221	-269.90	630.40	42.8	Pass
		Leg	L8x8x1 w/ 1/2x7 Plates	222	-266.47	630.40	42.3	Pass
		Leg	L8x8x1 w/ 1/2x7 Plates	223	-271.69	630.40	43.1	Pass
T14	60 - 50	Leg	L8x8x1-1/8 w/ 1/2x7 Plates	249	-293.95	679.24	43.3	Pass
		Leg	L8x8x1-1/8 w/ 1/2x7 Plates	250	-299.13	679.24	44.0	Pass
		Leg	L8x8x1-1/8 w/ 1/2x7 Plates	251	-295.35	679.24	43.5	Pass
		Leg	L8x8x1-1/8 w/ 1/2x7 Plates	252	-300.92	679.24	44.3	Pass
T15	50 - 40	Leg	L8x8x1-1/8 w/ 1/2x7 Plates	270	-321.98	744.33	43.3	Pass
		Leg	L8x8x1-1/8 w/ 1/2x7 Plates	271	-327.38	744.33	44.0	Pass
		Leg	L8x8x1-1/8 w/ 1/2x7 Plates	272	-323.26	744.33	43.4	Pass
		Leg	L8x8x1-1/8 w/ 1/2x7 Plates	273	-329.17	744.33	44.2	Pass
T16	40 - 30	Leg	L8x8x1 1/8	286	-350.46	498.58	70.3	Pass
		Leg	L8x8x1 1/8	287	-356.04	498.58	71.4	Pass
		Leg	L8x8x1 1/8	288	-351.63	498.58	70.5	Pass
		Leg	L8x8x1 1/8	289	-357.84	498.58	71.8	Pass
T17	30 - 20	Leg	L8x8x1 1/8	311	-381.38	498.67	76.5	Pass
		Leg	L8x8x1 1/8	312	-387.18	498.67	77.6	Pass
		Leg	L8x8x1 1/8	313	-382.46	498.67	76.7	Pass
		Leg	L8x8x1 1/8	314	-389.00	498.67	78.0	Pass
T18	20 - 10	Leg	L8x8x1 1/8	327	-406.01	498.74	81.4	Pass
		Leg	L8x8x1 1/8	328	-411.90	498.74	82.6	Pass
		Leg	L8x8x1 1/8	329	-406.99	498.74	81.6	Pass
		Leg	L8x8x1 1/8	330	-413.71	498.74	83.0	Pass
T19	10 - 0	Leg	L8x8x1 1/8	352	-417.19	500.44	83.4	Pass
		Leg	L8x8x1 1/8	353	-423.08	500.44	84.5	Pass
		Leg	L8x8x1 1/8	354	-418.11	500.44	83.5	Pass
		Leg	L8x8x1 1/8	355	-424.87	500.44	84.9	Pass
T1	180 - 170	Diagonal	L2 1/2x2 1/2x3/16	9	-2.84	11.95	23.8	Pass
		Diagonal	L2 1/2x2 1/2x3/16	10	-2.87	11.95	24.0	Pass
		Diagonal	L2 1/2x2 1/2x3/16	11	-3.04	11.95	25.4	Pass
		Diagonal	L2 1/2x2 1/2x3/16	12	-3.01	11.95	25.2	Pass
		Diagonal	L2 1/2x2 1/2x3/16	13	-3.02	11.95	25.3	Pass
		Diagonal	L2 1/2x2 1/2x3/16	14	-3.05	11.95	25.5	Pass
		Diagonal	L2 1/2x2 1/2x3/16	15	-2.88	11.95	24.1	Pass
		Diagonal	L2 1/2x2 1/2x3/16	16	-2.85	11.95	23.8	Pass
T2	170 - 163.573	Diagonal	L2 1/2x2 1/2x3/16	29	-3.50	16.66	21.0 23.3 (b)	Pass
		Diagonal	L2 1/2x2 1/2x3/16	30	-3.66	16.66	22.0 24.4 (b)	Pass
		Diagonal	L2 1/2x2 1/2x3/16	31	-3.56	16.66	21.4 23.6 (b)	Pass
		Diagonal	L2 1/2x2 1/2x3/16	32	-3.45	16.66	20.7 22.9 (b)	Pass
		Diagonal	L2 1/2x2 1/2x3/16	33	-3.73	16.66	22.4 24.5 (b)	Pass
		Diagonal	L2 1/2x2 1/2x3/16	34	-3.70	16.66	22.2 24.4 (b)	Pass
		Diagonal	L2 1/2x2 1/2x3/16	35	-3.76	16.66	22.5 24.8 (b)	Pass
		Diagonal	L2 1/2x2 1/2x3/16	36	-3.75	16.66	22.5 24.8 (b)	Pass
T3	163.573 -	Diagonal	L2x2x3/16	45	-4.19	12.19	34.4	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
	159.049							
		Diagonal	L2x2x3/16	46	-4.18	12.19	34.3	Pass
		Diagonal	L2x2x3/16	47	-4.69	12.19	38.5	Pass
		Diagonal	L2x2x3/16	48	-4.62	12.19	37.9	Pass
		Diagonal	L2x2x3/16	49	-4.91	12.19	40.3	Pass
		Diagonal	L2x2x3/16	50	-4.95	12.19	40.6	Pass
		Diagonal	L2x2x3/16	51	-4.42	12.19	36.3	Pass
		Diagonal	L2x2x3/16	52	-4.45	12.19	36.5	Pass
T4	159.049 - 154.524	Diagonal	L2 1/2x2x3/16	57	-4.59	14.36	31.9 32.0 (b)	Pass
		Diagonal	L2 1/2x2x3/16	58	-4.55	14.36	31.7 32.1 (b)	Pass
		Diagonal	L2 1/2x2x3/16	59	-5.07	14.36	35.3 35.6 (b)	Pass
		Diagonal	L2 1/2x2x3/16	60	-5.05	14.36	35.2 35.9 (b)	Pass
		Diagonal	L2 1/2x2x3/16	61	-5.31	14.36	37.0 37.7 (b)	Pass
		Diagonal	L2 1/2x2x3/16	62	-5.32	14.36	37.0 37.4 (b)	Pass
		Diagonal	L2 1/2x2x3/16	63	-4.77	14.36	33.2 33.7 (b)	Pass
		Diagonal	L2 1/2x2x3/16	64	-4.82	14.36	33.5	Pass
T5	154.524 - 150	Diagonal	L2 1/2x2x3/16	69	-4.80	13.92	34.5	Pass
		Diagonal	L2 1/2x2x3/16	70	-4.79	13.92	34.4	Pass
		Diagonal	L2 1/2x2x3/16	71	-5.30	13.92	38.1	Pass
		Diagonal	L2 1/2x2x3/16	72	-5.25	13.92	37.7	Pass
		Diagonal	L2 1/2x2x3/16	73	-5.47	13.92	39.3	Pass
		Diagonal	L2 1/2x2x3/16	74	-5.51	13.92	39.6	Pass
		Diagonal	L2 1/2x2x3/16	75	-4.98	13.92	35.8	Pass
		Diagonal	L2 1/2x2x3/16	76	-5.00	13.92	35.9	Pass
T6	150 - 140	Diagonal	L2 1/2x2x3/16	85	-5.43	12.47	43.5	Pass
		Diagonal	L2 1/2x2x3/16	86	-5.41	12.47	43.4	Pass
		Diagonal	L2 1/2x2x3/16	87	-5.85	12.47	46.9	Pass
		Diagonal	L2 1/2x2x3/16	88	-5.81	12.47	46.6	Pass
		Diagonal	L2 1/2x2x3/16	89	-5.86	12.47	47.0	Pass
		Diagonal	L2 1/2x2x3/16	90	-5.89	12.47	47.2	Pass
		Diagonal	L2 1/2x2x3/16	91	-5.42	12.47	43.5	Pass
		Diagonal	L2 1/2x2x3/16	92	-5.45	12.47	43.7	Pass
		Diagonal	L2 1/2x2x3/16	93	-5.08	12.95	39.3	Pass
		Diagonal	L2 1/2x2x3/16	94	-5.05	12.95	39.0	Pass
		Diagonal	L2 1/2x2x3/16	95	-5.55	12.95	42.9	Pass
		Diagonal	L2 1/2x2x3/16	96	-5.51	12.95	42.5	Pass
		Diagonal	L2 1/2x2x3/16	97	-5.65	12.95	43.6	Pass
		Diagonal	L2 1/2x2x3/16	98	-5.68	12.95	43.9	Pass
		Diagonal	L2 1/2x2x3/16	99	-5.16	12.95	39.9	Pass
		Diagonal	L2 1/2x2x3/16	100	-5.20	12.95	40.2	Pass
T7	140 - 130	Diagonal	L3x2 1/2x1/4	114	-8.64	15.42	56.0	Pass
		Diagonal	L3x2 1/2x1/4	115	-8.63	15.42	56.0	Pass
		Diagonal	L3x2 1/2x1/4	116	-9.20	15.42	59.7	Pass
		Diagonal	L3x2 1/2x1/4	117	-9.13	15.42	59.2	Pass
		Diagonal	L3x2 1/2x1/4	118	-9.08	15.42	58.9	Pass
		Diagonal	L3x2 1/2x1/4	119	-9.14	15.42	59.3	Pass
		Diagonal	L3x2 1/2x1/4	120	-8.54	15.42	55.4	Pass
		Diagonal	L3x2 1/2x1/4	121	-8.56	15.42	55.5	Pass
T8	130 - 120	Diagonal	L3x3x1/4	130	-10.25	19.20	53.4	Pass
		Diagonal	L3x3x1/4	131	-10.27	19.20	53.5	Pass
		Diagonal	L3x3x1/4	132	-10.72	19.20	55.8	Pass
		Diagonal	L3x3x1/4	133	-10.62	19.20	55.3	Pass
		Diagonal	L3x3x1/4	134	-11.07	19.20	57.7	Pass
		Diagonal	L3x3x1/4	135	-11.12	19.20	57.9	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
		Diagonal	L3x3x1/4	136	-10.65	19.20	55.5	Pass
		Diagonal	L3x3x1/4	137	-10.67	19.20	55.6	Pass
T9	120 - 110	Diagonal	L3x3x1/4	155	-10.97	18.30	59.9	Pass
		Diagonal	L3x3x1/4	156	-11.02	18.30	60.2	Pass
		Diagonal	L3x3x1/4	157	-11.27	18.30	61.6	Pass
		Diagonal	L3x3x1/4	158	-11.16	18.30	61.0	Pass
		Diagonal	L3x3x1/4	159	-11.91	18.30	65.0	Pass
		Diagonal	L3x3x1/4	160	-11.94	18.30	65.2	Pass
		Diagonal	L3x3x1/4	161	-11.67	18.30	63.8	Pass
		Diagonal	L3x3x1/4	162	-11.70	18.30	63.9	Pass
T10	110 - 100	Diagonal	L3 1/2x3x1/4	171	-13.85	20.69	66.9	Pass
		Diagonal	L3 1/2x3x1/4	172	-13.85	20.69	67.0	Pass
		Diagonal	L3 1/2x3x1/4	173	-14.32	20.69	69.2	Pass
		Diagonal	L3 1/2x3x1/4	174	-14.21	20.69	68.7	Pass
		Diagonal	L3 1/2x3x1/4	175	-14.85	20.69	71.8	Pass
		Diagonal	L3 1/2x3x1/4	176	-14.89	20.69	72.0	Pass
		Diagonal	L3 1/2x3x1/4	177	-14.39	20.69	69.6	Pass
		Diagonal	L3 1/2x3x1/4	178	-14.45	20.69	69.8	Pass
T11	100 - 90	Diagonal	L3 1/2x3x1/4	196	-13.29	19.68	67.6	Pass
		Diagonal	L3 1/2x3x1/4	197	-13.30	19.68	67.6	Pass
		Diagonal	L3 1/2x3x1/4	198	-13.73	19.68	69.8	Pass
		Diagonal	L3 1/2x3x1/4	199	-13.63	19.68	69.3	Pass
		Diagonal	L3 1/2x3x1/4	200	-14.28	19.68	72.6	Pass
		Diagonal	L3 1/2x3x1/4	201	-14.32	19.68	72.8	Pass
		Diagonal	L3 1/2x3x1/4	202	-13.91	19.68	70.7	Pass
		Diagonal	L3 1/2x3x1/4	203	-13.97	19.68	71.0	Pass
T12	90 - 80	Diagonal	L3 1/2x3x1/4	208	-15.13	18.63	81.2	Pass
		Diagonal	L3 1/2x3x1/4	209	-15.14	18.63	81.3	Pass
		Diagonal	L3 1/2x3x1/4	210	-15.34	18.63	82.4	Pass
		Diagonal	L3 1/2x3x1/4	211	-15.25	18.63	81.9	Pass
		Diagonal	L3 1/2x3x1/4	212	-16.14	18.63	86.7	Pass
		Diagonal	L3 1/2x3x1/4	213	-16.17	18.63	86.8	Pass
		Diagonal	L3 1/2x3x1/4	214	-15.89	18.63	85.3	Pass
		Diagonal	L3 1/2x3x1/4	215	-15.94	18.63	85.6	Pass
T13	80 - 60	Diagonal	2L2 1/2x2x3/16	233	-15.35	23.87	64.3	Pass
		Diagonal	2L2 1/2x2x3/16	234	-15.35	23.87	64.3	Pass
		Diagonal	2L2 1/2x2x3/16	235	-15.22	23.87	63.8	Pass
		Diagonal	2L2 1/2x2x3/16	236	-15.15	23.87	63.5	Pass
		Diagonal	2L2 1/2x2x3/16	237	-16.33	23.87	68.4	Pass
		Diagonal	2L2 1/2x2x3/16	238	-16.32	23.87	68.4	Pass
		Diagonal	2L2 1/2x2x3/16	239	-16.20	23.87	67.9	Pass
		Diagonal	2L2 1/2x2x3/16	240	-16.26	23.87	68.1	Pass
		Diagonal	2L2 1/2x2x3/16	241	-14.35	25.15	57.0	Pass
		Diagonal	2L2 1/2x2x3/16	242	-14.36	25.15	57.1	Pass
		Diagonal	2L2 1/2x2x3/16	243	-14.51	25.15	57.7	Pass
		Diagonal	2L2 1/2x2x3/16	244	-14.42	25.15	57.3	Pass
		Diagonal	2L2 1/2x2x3/16	245	-15.37	25.15	61.1	Pass
		Diagonal	2L2 1/2x2x3/16	246	-15.39	25.15	61.2	Pass
		Diagonal	2L2 1/2x2x3/16	247	-15.28	25.15	60.8	Pass
		Diagonal	2L2 1/2x2x3/16	248	-15.34	25.15	61.0	Pass
T14	60 - 50	Diagonal	2L2 1/2x2x3/16	262	-14.96	22.57	66.3	Pass
		Diagonal	2L2 1/2x2x3/16	263	-14.99	22.57	66.4	Pass
		Diagonal	2L2 1/2x2x3/16	264	-14.88	22.57	65.9	Pass
		Diagonal	2L2 1/2x2x3/16	265	-14.79	22.57	65.5	Pass
		Diagonal	2L2 1/2x2x3/16	266	-15.87	22.57	70.3	Pass
		Diagonal	2L2 1/2x2x3/16	267	-15.88	22.57	70.4	Pass
		Diagonal	2L2 1/2x2x3/16	268	-15.98	22.57	70.8	Pass
		Diagonal	2L2 1/2x2x3/16	269	-16.02	22.57	71.0	Pass
T15	50 - 40	Diagonal	2L2 1/2x2x3/8	274	-16.92	40.44	41.8	Pass
		Diagonal	2L2 1/2x2x3/8	275	-16.95	40.44	41.9	Pass
		Diagonal	2L2 1/2x2x3/8	276	-16.55	40.44	40.9	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
		Diagonal	2L2 1/2x2x3/8	277	-16.47	40.44	40.7	Pass
		Diagonal	2L2 1/2x2x3/8	278	-17.78	40.44	44.0	Pass
		Diagonal	2L2 1/2x2x3/8	279	-17.79	40.44	44.0	Pass
		Diagonal	2L2 1/2x2x3/8	280	-17.88	40.44	44.2	Pass
		Diagonal	2L2 1/2x2x3/8	281	-17.92	40.44	44.3	Pass
T16	40 - 30	Diagonal	2L2 1/2x2x3/8	299	-16.55	38.48	43.0	Pass
		Diagonal	2L2 1/2x2x3/8	300	-17.10	38.48	44.4	Pass
		Diagonal	2L2 1/2x2x3/8	301	-16.43	38.48	42.7	Pass
		Diagonal	2L2 1/2x2x3/8	302	-16.06	38.48	41.7	Pass
		Diagonal	2L2 1/2x2x3/8	303	-17.65	38.48	45.9	Pass
		Diagonal	2L2 1/2x2x3/8	304	-17.39	38.48	45.2	Pass
		Diagonal	2L2 1/2x2x3/8	305	-17.65	38.48	45.9	Pass
		Diagonal	2L2 1/2x2x3/8	306	-17.76	38.48	46.2	Pass
T17	30 - 20	Diagonal	2L2 1/2x2x3/8	315	-17.80	36.54	48.7	Pass
		Diagonal	2L2 1/2x2x3/8	316	-17.82	36.54	48.8	Pass
		Diagonal	2L2 1/2x2x3/8	317	-17.22	36.54	47.1	Pass
		Diagonal	2L2 1/2x2x3/8	318	-17.17	36.54	47.0	Pass
		Diagonal	2L2 1/2x2x3/8	319	-18.52	36.54	50.7	Pass
		Diagonal	2L2 1/2x2x3/8	320	-18.51	36.54	50.7	Pass
		Diagonal	2L2 1/2x2x3/8	321	-18.87	36.54	51.6	Pass
		Diagonal	2L2 1/2x2x3/8	322	-18.91	36.54	51.8	Pass
T18	20 - 10	Diagonal	2L2 1/2x2x3/8	340	-21.03	34.72	60.6	Pass
		Diagonal	2L2 1/2x2x3/8	341	-22.19	34.72	63.9	Pass
		Diagonal	2L2 1/2x2x3/8	342	-20.95	34.72	60.3	Pass
		Diagonal	2L2 1/2x2x3/8	343	-20.42	34.72	58.8	Pass
		Diagonal	2L2 1/2x2x3/8	344	-22.64	34.72	65.2	Pass
		Diagonal	2L2 1/2x2x3/8	345	-21.74	34.72	62.6	Pass
		Diagonal	2L2 1/2x2x3/8	346	-22.34	34.72	64.3	Pass
		Diagonal	2L2 1/2x2x3/8	347	-22.54	34.72	64.9	Pass
T19	10 - 0	Diagonal	2L2 1/2x2 1/2x5/16	357	-27.66	33.21	83.3	Pass
		Diagonal	2L2 1/2x2 1/2x5/16	360	-29.25	33.21	88.1	Pass
		Diagonal	2L2 1/2x2 1/2x5/16	365	-27.95	33.21	84.1	Pass
		Diagonal	2L2 1/2x2 1/2x5/16	368	-27.29	33.21	82.2	Pass
		Diagonal	2L2 1/2x2 1/2x5/16	374	-29.74	33.21	89.5	Pass
		Diagonal	2L2 1/2x2 1/2x5/16	377	-28.57	33.21	86.0	Pass
		Diagonal	2L2 1/2x2 1/2x5/16	383	-29.86	33.21	89.9	Pass
		Diagonal	2L2 1/2x2 1/2x5/16	386	-30.11	33.21	90.6	Pass
T9	120 - 110	Horizontal	L2 1/2x2 1/2x1/4	146	-0.93	20.33	4.6	Pass
		Horizontal	L2 1/2x2 1/2x1/4	147	-0.93	20.33	4.6	Pass
		Horizontal	L2 1/2x2 1/2x1/4	148	-0.92	20.33	4.5	Pass
		Horizontal	L2 1/2x2 1/2x1/4	149	-0.92	20.33	4.5	Pass
T11	100 - 90	Horizontal	L2 1/2x2 1/2x1/4	187	-1.61	18.29	8.8	Pass
		Horizontal	L2 1/2x2 1/2x1/4	188	-1.60	18.29	8.8	Pass
		Horizontal	L2 1/2x2 1/2x1/4	189	-1.59	18.29	8.7	Pass
		Horizontal	L2 1/2x2 1/2x1/4	190	-1.60	18.29	8.8	Pass
T14	60 - 50	Horizontal	2L2x2x3/16	253	3.89	37.48	10.4 15.7 (b)	Pass
		Horizontal	2L2x2x3/16	254	-1.65	21.76	7.6 11.3 (b)	Pass
		Horizontal	2L2x2x3/16	255	3.90	37.48	10.4 15.8 (b)	Pass
		Horizontal	2L2x2x3/16	256	-1.65	21.76	7.6 11.4 (b)	Pass
T18	20 - 10	Horizontal	2L2x2x3/16	331	7.94	37.48	21.2 32.2 (b)	Pass
		Horizontal	2L2x2x3/16	332	6.10	37.48	16.3 24.7 (b)	Pass
		Horizontal	2L2x2x3/16	333	7.95	37.48	21.2 32.2 (b)	Pass
		Horizontal	2L2x2x3/16	334	6.16	37.48	16.4 25.0 (b)	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T19	10 - 0	Horizontal	2L2 1/2x2 1/2x1/4	356	-18.49	34.58	53.5 55.3 (b)	Pass
		Horizontal	2L2 1/2x2 1/2x1/4	364	-17.87	34.58	51.7 52.4 (b)	Pass
		Horizontal	2L2 1/2x2 1/2x1/4	373	-18.73	34.58	54.2 56.2 (b)	Pass
		Horizontal	2L2 1/2x2 1/2x1/4	382	-19.27	34.58	55.7 56.2 (b)	Pass
T1	180 - 170	Secondary Horizontal	L2x2x3/16	17	-0.63	12.02	5.2	Pass
		Secondary Horizontal	L2x2x3/16	18	-0.80	12.02	6.7	Pass
		Secondary Horizontal	L2x2x3/16	19	-0.68	12.02	5.7	Pass
		Secondary Horizontal	L2x2x3/16	20	-0.49	12.02	4.1	Pass
T7	140 - 130	Secondary Horizontal	L2x2x1/4	122	-1.09	11.21	9.8	Pass
		Secondary Horizontal	L2x2x1/4	123	-1.09	11.21	9.8	Pass
		Secondary Horizontal	L2x2x1/4	124	-1.10	11.21	9.8	Pass
		Secondary Horizontal	L2x2x1/4	125	-1.10	11.21	9.8	Pass
T8	130 - 120	Secondary Horizontal	L2x2x1/4	138	-1.42	10.60	13.4	Pass
		Secondary Horizontal	L2x2x1/4	139	-1.42	10.60	13.4	Pass
		Secondary Horizontal	L2x2x1/4	140	-1.44	10.60	13.6	Pass
		Secondary Horizontal	L2x2x1/4	141	-1.44	10.60	13.6	Pass
T9	120 - 110	Secondary Horizontal	L2x2x3/16	163	-1.81	7.30	24.8	Pass
		Secondary Horizontal	L2x2x3/16	164	-1.81	7.30	24.8	Pass
		Secondary Horizontal	L2x2x3/16	165	-1.83	7.30	25.1	Pass
		Secondary Horizontal	L2x2x3/16	166	-1.83	7.30	25.1	Pass
T10	110 - 100	Secondary Horizontal	L2x2x1/4	179	-2.21	8.40	26.3	Pass
		Secondary Horizontal	L2x2x1/4	180	-2.21	8.40	26.3	Pass
		Secondary Horizontal	L2x2x1/4	181	-2.23	8.40	26.6	Pass
		Secondary Horizontal	L2x2x1/4	182	-2.23	8.40	26.6	Pass
T12	90 - 80	Secondary Horizontal	L2 1/2x2 1/2x1/4	216	-3.12	12.35	25.3	Pass
		Secondary Horizontal	L2 1/2x2 1/2x1/4	217	-3.12	12.35	25.3	Pass
		Secondary Horizontal	L2 1/2x2 1/2x1/4	218	-3.15	12.35	25.5	Pass
		Secondary Horizontal	L2 1/2x2 1/2x1/4	219	-3.15	12.35	25.5	Pass
T15	50 - 40	Secondary Horizontal	L3 1/2x3 1/2x1/4	282	-4.91	20.39	24.1	Pass
		Secondary Horizontal	L3 1/2x3 1/2x1/4	283	-4.91	20.39	24.1	Pass
		Secondary Horizontal	L3 1/2x3 1/2x1/4	284	-4.94	20.39	24.2	Pass
		Secondary Horizontal	L3 1/2x3 1/2x1/4	285	-4.94	20.39	24.2	Pass
T16	40 - 30	Secondary Horizontal	L3 1/2x3 1/2x1/4	307	-5.34	18.94	28.2	Pass
		Secondary Horizontal	L3 1/2x3 1/2x1/4	308	-5.34	18.94	28.2	Pass
		Secondary Horizontal	L3 1/2x3 1/2x1/4	309	-5.37	18.94	28.4	Pass
		Secondary Horizontal	L3 1/2x3 1/2x1/4	310	-5.37	18.94	28.4	Pass
T17	30 - 20	Secondary Horizontal	L3 1/2x3 1/2x1/4	323	-5.81	17.70	32.8	Pass
		Secondary Horizontal	L3 1/2x3 1/2x1/4	324	-5.81	17.70	32.8	Pass
		Secondary Horizontal	L3 1/2x3 1/2x1/4	325	-5.84	17.70	33.0	Pass
		Secondary Horizontal	L3 1/2x3 1/2x1/4	326	-5.84	17.70	33.0	Pass
T18	20 - 10	Secondary Horizontal	L3 1/2x3 1/2x1/4	348	-6.18	16.59	37.3	Pass
		Secondary Horizontal	L3 1/2x3 1/2x1/4	349	-6.18	16.59	37.3	Pass
		Secondary Horizontal	L3 1/2x3 1/2x1/4	350	-6.21	16.59	37.4	Pass
		Secondary Horizontal	L3 1/2x3 1/2x1/4	351	-6.21	16.59	37.4	Pass
T1	180 - 170	Top Girt	L2x2x3/16	5	-0.11	7.61	1.4 1.8 (b)	Pass
		Top Girt	L2x2x3/16	6	-0.11	7.61	1.4 1.5 (b)	Pass
		Top Girt	L2x2x3/16	7	-0.10	7.61	1.3 1.8 (b)	Pass
		Top Girt	L2x2x3/16	8	0.26	18.74	1.4 2.1 (b)	Pass
T2	170 - 163.573	Top Girt	L2x2x3/16	25	-0.47	7.61	6.2 6.3 (b)	Pass
		Top Girt	L2x2x3/16	26	-0.46	7.61	6.1	Pass
		Top Girt	L2x2x3/16	27	-0.45	7.61	5.9 6.2 (b)	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
		Top Girt	L2x2x3/16	28	-0.46	7.61	6.0 6.9 (b)	Pass
T3	163.573 - 159.049	Top Girt	L2x2x3/16	41	-0.46	7.86	5.9	Pass
		Top Girt	L2x2x3/16	42	-0.47	7.86	5.9	Pass
		Top Girt	L2x2x3/16	43	-0.46	7.86	5.9	Pass
		Top Girt	L2x2x3/16	44	-0.46	7.86	5.8	Pass
T6	150 - 140	Top Girt	L2 1/2x2 1/2x3/16	81	-0.55	10.69	5.1	Pass
		Top Girt	L2 1/2x2 1/2x3/16	82	-0.53	10.69	5.0	Pass
		Top Girt	L2 1/2x2 1/2x3/16	83	-0.53	10.69	4.9	Pass
		Top Girt	L2 1/2x2 1/2x3/16	84	-0.54	10.69	5.1	Pass
T7	140 - 130	Top Girt	L2 1/2x2 1/2x3/16	105	-0.51	16.96	3.0 3.0 (b)	Pass
		Top Girt	L2 1/2x2 1/2x3/16	106	-0.50	16.96	2.9 3.2 (b)	Pass
		Top Girt	L2 1/2x2 1/2x3/16	107	-0.50	16.96	2.9 3.1 (b)	Pass
		Top Girt	L2 1/2x2 1/2x3/16	108	-0.52	16.96	3.0	Pass
T13	80 - 60	Top Girt	L2 1/2x2 1/2x1/4	224	-0.92	15.76	5.8 7.9 (b)	Pass
		Top Girt	L2 1/2x2 1/2x1/4	225	-0.95	15.76	6.0	Pass
		Top Girt	L2 1/2x2 1/2x1/4	226	-0.91	15.76	5.8 8.0 (b)	Pass
		Top Girt	L2 1/2x2 1/2x1/4	227	-0.95	15.76	6.0	Pass
T16	40 - 30	Top Girt	2L2x2x3/16	290	5.19	37.48	13.9 21.0 (b)	Pass
		Top Girt	2L2x2x3/16	291	3.66	37.48	9.8 14.8 (b)	Pass
		Top Girt	2L2x2x3/16	292	5.20	37.48	13.9 21.1 (b)	Pass
		Top Girt	2L2x2x3/16	293	3.68	37.48	9.8 14.9 (b)	Pass
T19	10 - 0	Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	358	-6.26	15.90	39.4	Pass
		Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	361	-6.35	15.90	39.9	Pass
		Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	366	-6.35	15.90	39.9	Pass
		Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	369	-6.28	15.90	39.5	Pass
		Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	375	-6.28	15.90	39.5	Pass
		Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	378	-6.38	15.90	40.1	Pass
		Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	384	-6.38	15.90	40.1	Pass
		Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	387	-6.26	15.90	39.4	Pass
T19	10 - 0	Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	359	-8.32	9.88	84.2	Pass
		Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	362	-8.26	9.88	83.6	Pass
		Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	367	-8.32	9.88	84.3	Pass
		Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	370	-8.35	9.88	84.5	Pass
		Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	376	-8.27	9.88	83.7	Pass
		Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	379	-8.36	9.88	84.7	Pass
		Redund Diag 1	L2 1/2x2 1/2x3/16	385	-8.37	9.88	84.8	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
		Bracing						
		Redund Diag 1	L2 1/2x2 1/2x3/16	388	-8.32	9.88	84.2	Pass
		Bracing						
T19	10 - 0	Redund Hip 1	L2 1/2x2 1/2x3/16	372	-0.04	9.58	0.6	Pass
		Bracing						
		Redund Hip 1	L2 1/2x2 1/2x3/16	381	-0.04	9.58	0.6	Pass
		Bracing						
		Redund Hip 1	L2 1/2x2 1/2x3/16	390	-0.04	9.58	0.6	Pass
		Bracing						
		Redund Hip 1	L2 1/2x2 1/2x3/16	391	-0.04	9.58	0.6	Pass
		Bracing						
T19	10 - 0	Redund Sub Horz	L3x3x5/16	363	-9.62	12.33	78.0	Pass
		Bracing						
		Redund Sub Horz	L3x3x5/16	371	-9.71	12.33	78.8	Pass
		Bracing						
		Redund Sub Horz	L3x3x5/16	380	-9.65	12.33	78.3	Pass
		Bracing						
		Redund Sub Horz	L3x3x5/16	389	-9.73	12.33	78.9	Pass
		Bracing						
T7	140 - 130	Inner Bracing	L2x2x3/16	109	-0.07	5.89	1.1	Pass
		Inner Bracing	L2x2x3/16	110	-0.07	5.89	1.1	Pass
		Inner Bracing	L2x2x3/16	111	-0.07	5.89	1.1	Pass
		Inner Bracing	L2x2x3/16	112	-0.07	5.89	1.1	Pass
		Inner Bracing	L2x2x3/16	113	-0.01	2.94	0.9	Pass
T9	120 - 110	Inner Bracing	L2 1/2x2x3/16	150	-0.08	5.56	1.4	Pass
		Inner Bracing	L2 1/2x2x3/16	151	-0.08	5.56	1.4	Pass
		Inner Bracing	L2 1/2x2x3/16	152	-0.08	5.56	1.4	Pass
		Inner Bracing	L2 1/2x2x3/16	153	-0.08	5.56	1.4	Pass
		Inner Bracing	L2 1/2x2x3/16	154	-0.00	2.78	1.1	Pass
T11	100 - 90	Inner Bracing	L2 1/2x2x3/16	191	-0.09	4.15	2.2	Pass
		Inner Bracing	L2 1/2x2x3/16	192	-0.09	4.15	2.3	Pass
		Inner Bracing	L2 1/2x2x3/16	193	-0.09	4.15	2.2	Pass
		Inner Bracing	L2 1/2x2x3/16	194	-0.09	4.15	2.3	Pass
		Inner Bracing	L2 1/2x2x3/16	195	-0.00	2.08	1.2	Pass
T13	80 - 60	Inner Bracing	2L2x2x3/16	228	-0.12	11.88	1.0	Pass
		Inner Bracing	2L2x2x3/16	229	-0.13	11.88	1.1	Pass
		Inner Bracing	2L2x2x3/16	230	-0.12	11.88	1.0	Pass
		Inner Bracing	2L2x2x3/16	231	-0.13	11.88	1.1	Pass
		Inner Bracing	2L2x2x3/16	232	-0.01	5.94	0.9	Pass
T14	60 - 50	Inner Bracing	2L2x2x3/16	257	-0.14	9.47	1.5	Pass
		Inner Bracing	2L2x2x3/16	258	-0.15	9.47	1.5	Pass
		Inner Bracing	2L2x2x3/16	259	-0.14	9.47	1.5	Pass
		Inner Bracing	2L2x2x3/16	260	-0.15	9.47	1.5	Pass
		Inner Bracing	2L2x2x3/16	261	0.00	46.33	1.0	Pass
T16	40 - 30	Inner Bracing	2L2x2x3/16	294	-0.19	7.73	2.4	Pass
		Inner Bracing	2L2x2x3/16	295	-0.20	7.73	2.5	Pass
		Inner Bracing	2L2x2x3/16	296	-0.19	7.73	2.4	Pass
		Inner Bracing	2L2x2x3/16	297	-0.19	7.73	2.5	Pass
		Inner Bracing	2L2x2x3/16	298	-0.02	3.87	1.1	Pass
T18	20 - 10	Inner Bracing	2L2x2 1/2x3/16	335	-0.03	6.89	0.7	Pass
		Inner Bracing	2L2x2 1/2x3/16	336	-0.04	6.89	0.7	Pass
		Inner Bracing	2L2x2 1/2x3/16	337	-0.04	6.89	0.7	Pass
		Inner Bracing	2L2x2 1/2x3/16	338	-0.04	6.89	0.7	Pass
		Inner Bracing	2L2x2 1/2x3/16	339	0.01	52.49	1.0	Pass
T19	10 - 0	Inner Bracing	2L2x2 1/2x3/16	392	-0.17	6.32	2.7	Pass
		Inner Bracing	2L2x2 1/2x3/16	393	-0.18	6.32	2.9	Pass
		Inner Bracing	2L2x2 1/2x3/16	394	-0.18	6.32	2.8	Pass
		Inner Bracing	2L2x2 1/2x3/16	395	-0.18	6.32	2.9	Pass
		Inner Bracing	2L2x2 1/2x3/16	396	-0.01	3.16	1.0	Pass
							Summary	
						Leg (T19)	84.9	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
						Diagonal (T19)	90.6	Pass
						Horizontal (T19)	56.2	Pass
						Secondary Horizontal (T18)	37.4	Pass
						Top Girt (T16)	21.1	Pass
						Redund Horz 1 Bracing (T19)	40.1	Pass
						Redund Diag 1 Bracing (T19)	84.8	Pass
						Redund Hip 1 Bracing (T19)	0.6	Pass
						Redund Sub Horz Bracing (T19)	78.9	Pass
						Inner Bracing (T19)	2.9	Pass
						Bolt Checks	68.1	Pass
						RATING =	**90.6**	**Pass**

ANCHOR BOLT EVALUATION

ANCHOR BOLT ANALYSIS

Input Data

Tower Reactions:

Uplift:	Uplift := 425·kips	*user input*
Shear:	Shear := 47·kips	*user input*
Compression:	Compression := 464·kips	*user input*

Anchor Bolt Data:

Use ASTM A36	Use ASTM A36 per page 4.1 of structural analysis dated November 23, 1993		
Number of Anchor Bolts = N	N := 4	*user input*	
Bolt Ultimate Strength:	$F_u := 58 \cdot ksi$	*user input*	
Bolt Yield Strength:	Fy := 36·ksi	*user input*	
Bolt Modulus:	E := 29000·ksi	*user input*	
Thickness of Anchor Bolts	D := 2.5in	*user input*	
Threads per Inch:	n := 4	*user input*	
Coefficient of Friction:	$\mu := 0.55$	*user input*	(for baseplate with grout ASCE 10-15)
Length from top of pier to bottom of leveling nut:	$L_{ar} := 2.5in$	*user input*	(assumed single level nut to plate pt.)
Bolt Modulus:	E := 29000·ksi	*user input*	

Anchor Bolt Section Properties:

Gross Area of Bolt:

$$A_g := \frac{\pi}{4}\cdot D^2 \qquad A_g = 4.91\cdot in^2$$

Net Area of Bolt:

$$A_n := \frac{\pi}{4}\cdot\left(D - \frac{0.9743\cdot in}{n}\right)^2 \qquad A_n = 4\cdot in^2$$

Net Diameter:

$$D_n := D - \frac{0.9743 in}{n} \qquad D_n = 2.26\cdot in$$

Radius of Gyration of Bolt:

$$r := \frac{D_n}{4} \qquad r = 0.56\cdot in$$

Plastic Section Modulus of Bolt:

$$Z_x := \frac{D_n^3}{6} \qquad Z_x = 1.91\cdot in^3$$

Forces:

Tension Force:

$$T_u := \frac{Uplift}{N}$$

$T_u = 106.25\cdot kip$ $\qquad T_{ub} := T_u$

Shear Force:

$$V_u := \frac{Shear}{N}$$

$V_u = 11.75\cdot kip$ $\qquad V_{ub} := V_u$

Resistance Factor for Flexure (ANSI/TIA-222-G 4.7):

$\phi_f := 0.9$

Resistance Factor for Anchor Bolt (ANSI/TIA-222-G 4.5.4.2):

$\phi_b := 0.80$

Resistance Factor for Tension (ANSI/TIA-222-G 4.9.6.1):

$\phi_t := 0.75$

Resistance Factor for Shear (ANSI/TIA-222-G 4.9.6.3):

$\phi_v := 0.75$

ANSI/TIA-222-G 4.7.1 Flexural Members:

Nominal Flexure Strength, Mn:

$M_n := Fy \cdot Z_x$

$M_n = 5.74 \cdot ft \cdot kip$

$\phi_f \cdot M_n = 5.17 \cdot ft \cdot kip$

Applied Moment due to Shear (worst case lever arm), Mu:

$M_u := L_{ar} \cdot V_u$

$M_u = 2.45 \cdot ft \cdot kip$

Flexure Check:

$FlexureCheck := if(M_u \le \phi_f \cdot M_n, "OK", "NO GOOD")$

FlexureCheck = "OK"

$$\frac{M_u}{\phi_f \cdot M_n} = 47.35 \cdot \%$$

ANSI/TIA-222-G 4.9.6.1 Tensile Strength:

Design Tensile Strength, Rnt:

$R_{nt} := F_u \cdot A_n$

$R_{nt} = 231.93 \cdot ft \cdot kip$

$\phi_t \cdot R_{nt} = 173.95 \cdot ft \cdot kip$

Tension Check:

$TensionCheck := if(T_u \le \phi_t \cdot R_{nt}, "OK", "NO GOOD")$

TensionCheck = "OK"

$$\frac{T_u}{\phi_t \cdot R_{nt}} = 61.08 \cdot \%$$

ANSI/TIA-222-G 4.9.6.3 Design Shear Strength:

Design Shear Strength, Rnv:

$R_{nv} := 0.45 \cdot F_u \cdot A_g$

$R_{nv} = 128.12 \cdot ft \cdot kip$

$\phi_v \cdot R_{nv} = 96.09 \cdot ft \cdot kip$

Shear Check:

$ShearCheck := if(V_u \le \phi_v \cdot R_{nv}, "OK", "NO GOOD")$

ShearCheck = "OK"

$$\frac{V_u}{\phi_v \cdot R_{nv}} = 12.23 \cdot \%$$

ANSI/TIA-222-G 4.9.6.4 Combined Shear and Tension:

$$\left[\frac{V_{ub}}{(\phi_v \cdot R_{nv})}\right]^2 + \left[\frac{T_{ub}}{(\phi_t \cdot R_{nt})}\right]^2 \le 1$$

$$\left[\frac{V_{ub}}{(\phi_v \cdot R_{nv})}\right]^2 + \left[\frac{T_{ub}}{(\phi_t \cdot R_{nt})}\right]^2 = 0.39$$

Combined Shear and Tension Check:

$$\text{ShearAndTensionCheck} := \text{if}\left[\left[\frac{V_{ub}}{(\phi_v \cdot R_{nv})}\right]^2 + \left[\frac{T_{ub}}{(\phi_t \cdot R_{nt})}\right]^2 \le 1, \text{"OK"}, \text{"NO GOOD"}\right]$$

ShearAndTensionCheck = "OK"

ANSI/TIA-222-G 4.9.9 Anchor Rods (Capacity):

$$\frac{\left[T_u + \left(\frac{V_u}{\eta}\right)\right]}{\phi_b \cdot P_n} \le 1$$

$\eta := 0.55$ *user input from ANSI/TIA-222-G 4.9.9*

$$\frac{\left[T_u + \left(\frac{V_u}{\eta}\right)\right]}{\phi_b \cdot F_u \cdot A_n} = 0.688$$

Capacity Check:

$$\text{CapacityCheck} := \text{if}\left[\frac{\left[T_u + \left(\frac{V_u}{\eta}\right)\right]}{\phi_b \cdot F_u \cdot A_n} \le 1, \text{"OK"}, \text{"NO GOOD"}\right]$$

CapacityCheck = "OK"

FOUNDATION ANALYSIS

AECOM

				Page	of
Job	180' Self-Supporting Lattice Tower - Wilton, CT	Project No.	EMP-007 / ASM-007	Sheet 1	of 10
Description	Foundation Analysis	Computed by	MCD	Date	07/05/18
	MODification Report	Checked by		Date	

FOOTING WITH FOUR CONCRETE PIERS

INPUT DATA

TOWER FORCES:

Moment Caused by Tower	$M_t := 11085\,kip\cdot ft$
Shear at Base of Tower	$S_t := 118\,kip$
Max Compressive Force	$C_t := 464\,kip$
Max Uplift	$U_t := 425\,kip$
Max Pier Shear	$S_p := 47\,kip$
Height of Tower	$H_t := 180\,ft$
Width of Tower at Base	$W_t := 17.729\,ft$
Weight of Tower	$WT_t := 1\,kip$

NOTE: Weight of Tower is incorporated into the other loads listed above and is therefore set equal to one for programming.

FOOTING DIMENSIONS:

Width of Footing	$W_f := 37\,ft + 0ft$
Overall Depth of Footing	$D_f := 9.5ft$
Length of Pier	$L_p := 6.5\,ft - 0ft$
Extension of Pier Above Grade	$L_{pag} := 1.0\,ft$
Square Dimension of Pier	$d_p := 4.0\,ft$
Thickness of Footing	$T_f := 3.0\,ft + 0ft$
Reinforement Cover:	$Cvr := 3in$
Ftg. Edge To Pier CL:	$X_t := 8.635ft$

MATERIAL PROPERTIES:

Compressive Strength of Concrete	$f'c := 3000\,psi$	Unit Weight of Soil	$\gamma_s := 100\,pcf$
Yield Strength of Steel Reinforcement	$fy := 60000\,psi$	Unit Weight of Concrete	$\gamma_c := 150\,pcf$
Internal Friction Angle of Soil	$\phi_s := 30\,deg$	Depth to Neglect	$n := 1.5\,ft$
Allowable Bearing Capacity	$q_s := 3400\,psf$	Cohesion of Clay Type Soil	$c := 0\,ksf$
Ultimate Bearing Capacity	$R_s := 2\cdot q_s$	Note: Use 0 for Sandy Soil	

Coefficient of Lateral Soil Pressure $K_p := \frac{1 + \sin(\phi_s)}{1 - \sin(\phi_s)}$ $K_p = 3$

What is Position of Center of Tower with respect to Center of Pad? 1=Offset 2=Not Offset $Pos_{tower} := 2$

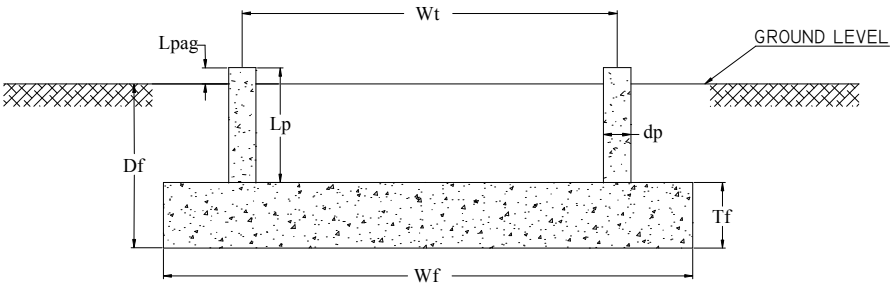
PIER REINFORCEMENT:

Bar Size	$BSpier := 9$	Bar Diameter	$d_{bpier} := 1.128\,in$
Number of Bars	$NBpier := 24$	Bar Area	$A_{bpier} := 1.00\,in^2$

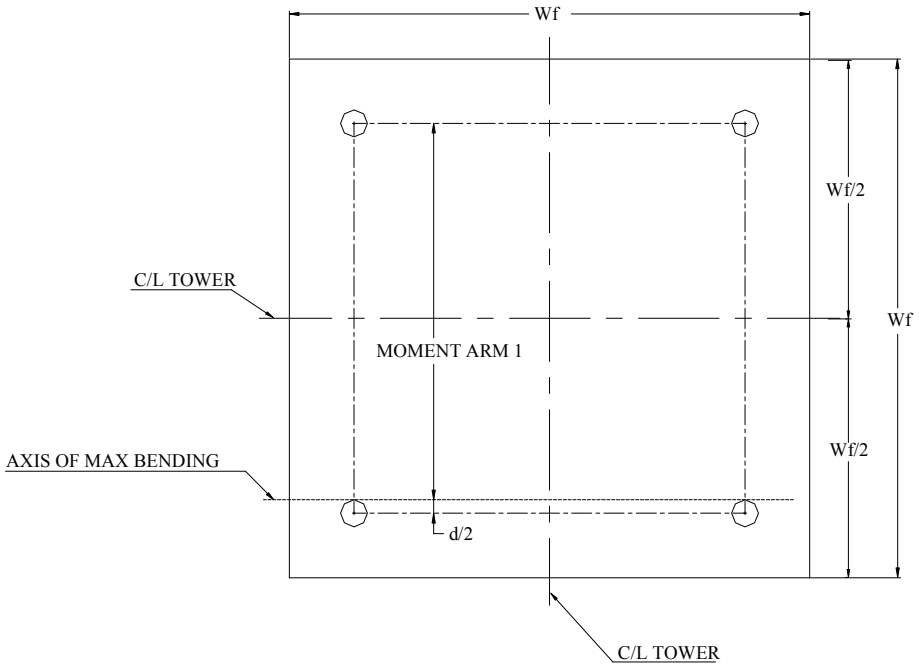
PAD REINFORCEMENT:

Bar Size	$BS_{pad} := 9$	Bar Diameter	$d_{bpad} := 1.128\,in$
Number of Bars	$NB_{pad} := 42$	Bar Area	$A_{bpad} := 1.00\,in^2$

Typical Footing Plan and Elevation:



ELEVATION



PLAN

STABILITY OF FOOTING

NOTE: Reduction factor is implemented as 0.75 for pull-out/uplift of foundation. Reduction factor shall be applied to Overturning Moment in this case

Passive Pressure:

Pressure at Neglect: $P_{pn} := K_p \cdot \gamma_s \cdot n + c \cdot 2 \cdot \sqrt{K_p}$ $P_{pn} = 0.45 \cdot ksf$

Pressure at Footing Top: $P_{pt} := K_p \cdot \gamma_s \cdot (D_f - T_f) + c \cdot 2 \cdot \sqrt{K_p}$ $P_{pt} = 1.95 \cdot ksf$

Pressure at Top: $P_{top} := if[n < (D_f - T_f), P_{pt}, P_{pn}]$ $P_{top} = 1.95 \cdot ksf$

Pressure at Bottom: $P_{bot} := K_p \cdot \gamma_s \cdot D_f + c \cdot 2 \cdot \sqrt{K_p}$ $P_{bot} = 2.85 \cdot ksf$

Average Pressure: $P_{ave} := \frac{P_{top} + P_{bot}}{2}$ $P_{ave} = 2.4 \cdot ksf$

Soil Shear:

Effective Soil Depth: $T_{pp} := if[n < (D_f - T_f), T_f, (D_f - n)]$ $T_{pp} = 3 \cdot ft$

Area of Resistance: $A_{pp} := W_f \cdot T_{pp}$ $A_{pp} = 111 \cdot ft^2$

Shear Resistance: $S_u := P_{ave} \cdot A_{pp}$ $S_u = 266.4 \cdot kip$

Stabilizing Dead Load:

Weight of Concrete Pad: $WT_c := (W_f^2 \cdot T_f) \cdot \gamma_c$ $WT_c = 616.05 \cdot kip$

Weight of Soil: above Footing:

$$Depth := \begin{cases} D_f - n - T_f & \text{if } n < (D_f - T_f) \\ 0 & \text{otherwise} \end{cases}$$

$Depth = 5 \cdot ft$

$WT_{s1} := W_f^2 \cdot Depth \cdot \gamma_s$ $WT_{s1} = 684.5 \cdot kip$

Weight of Soil Wedge at Back Face: $WT_{s2} := \left[\frac{(D_f - n)^2 \cdot \tan(\phi_s)}{2} \cdot W_f \right] \cdot \gamma_s$ $WT_{s2} = 68.3583 \cdot kip$

Distance to center of Tower Leg from Edge of Footing: $X_{t1} := \frac{W_f}{2} - \frac{W_t}{2}$ $X_{t2} := \frac{W_f}{2} - \frac{W_t}{2}$ $X_t := if(Pos_{tower} = 1, X_{t1}, X_{t2})$

Additional Offset of Footing: $X_{off1} := \frac{W_f}{2} - \left(\frac{W_t \cdot \cos(30 \cdot deg)}{3} + X_t \right)$ $X_{off1} = 3.7466 \cdot ft$ $X_{off2} := X_{off1}$

$X_{off} := if(Pos_{tower} = 1, X_{off1}, X_{off2})$ $X_{off} = 3.7466 \cdot ft$

Stability Analysis:

Resisting Moment:

$$M_r := \left(WT_c \cdot 0.9 + WT_{s1} \cdot 0.9\right) \cdot \frac{W_f}{2} + WT_t \cdot \left(\frac{W_f}{2} - X_{off}\right) \ldots + 0.9 \left(S_u \cdot \frac{T_{pp}}{3}\right) + 0.9 \cdot WT_{s2} \cdot \left(W_f + \frac{T_{pp} \cdot \tan(\phi_s)}{3}\right)$$

$M_r = 24220.5214 \cdot kip \cdot ft$

$\phi_{OT} := 0.75$ ***ANSI/TIA-222-G REDUCTION FACTOR***

(Factored) Overturning Moment: $M_{ot} := M_t + S_t \cdot (L_p + T_f) + WT_t \cdot X_{off}$ $M_{ot} = 12209.7466 \cdot kip \cdot ft$

$StabilityCheck := if(M_r \cdot \phi_{OT} > M_{ot}, "Okay", "No Good")$

Overturn Ratio (%): $Ratio_{Stability} := \frac{M_{ot}}{M_r \cdot \phi_{OT}}$ $Ratio_{Stability} = 67.21 \cdot \%$

$StabilityCheck = "Okay"$

BEARING PRESSURES

Loading Eccentricity:

Total Axial Load: $LOAD_{tot} := \left(WT_c + WT_{s1} + WT_t\right) \cdot 1.2$ $\quad LOAD_{tot} = 1561.86 \cdot kip$

Total Moment: $M_{ot} := M_t + S_t \cdot \left(L_p + T_f\right) + WT_t$ $\quad M_{ot} = 12207 \cdot kip \cdot ft$

Eccentricity: $e := \dfrac{M_{ot}}{LOAD_{tot}}$ $\quad e = 7.8157 \cdot ft$

Dist. From Ftg. CL to Kern Edge: $X_k := \dfrac{W_f}{6}$ $\quad X_k = 6.1667 \cdot ft$

Calculate Soil Pressures:

Maximum Contact Pressure:

$$P_{max} := \begin{cases} \dfrac{LOAD_{tot}}{W_f^{\,2}} \cdot \left(1 + \dfrac{6 \cdot e}{W_f}\right) & \text{if } e \le X_k \\ \dfrac{2 \cdot LOAD_{tot}}{3 \cdot W_f \cdot \left(\dfrac{W_f}{2} - e\right)} & \text{otherwise} \end{cases}$$

$P_{max} = 2.6339 \cdot ksf$

Minimum Contact Pressure:

$$P_{min} := \begin{cases} \dfrac{LOAD_{tot}}{W_f^{\,2}} \cdot \left(1 - \dfrac{6 \cdot e}{W_f}\right) & \text{if } e \le X_k \\ 0ksf & \text{otherwise} \end{cases}$$

$P_{min} = 0 \cdot ksf$

Length of Applied Pressure:

$$X_p := \begin{cases} W_f & \text{if } e \le X_k \\ 3 \cdot \left(\dfrac{W_f}{2} - e\right) & \text{otherwise} \end{cases}$$

$X_p = 32.053 \cdot ft$

Pressure Slope:

$$m_p := \frac{P_{max} - P_{min}}{X_p}$$

$m_p = 0.0822 \cdot ksf$

Revised Maximum: $q_{max} := P_{max}$ $\quad q_{max} = 2.6339 \cdot ksf$

$PressureCheck := \text{if}\left(q_{max} < 0.75 \cdot R_s, \text{"Okay"}, \text{"No Good"}\right)$ $\quad PressureCheck = \text{"Okay"}$

$\dfrac{q_{max}}{0.75 \cdot R_s} = 0.5165$

Concrete Bearing Capacity (ACI 10.14):

(ACI 9.3.2.2) $\phi_c := 0.65$

$$P_b := \phi_c \cdot 0.85 \cdot f'c \cdot \frac{d_p^2 \cdot \pi}{4} \qquad P_b = 2999.3413 \cdot kip$$

$$BearingCheck := if\left(P_b > C_t, "Okay", "No Good"\right) \qquad BearingCheck = "Okay"$$

SHEAR STRENGTH OF CONCRETE

Beam (One-Way) Shear Action (ACI 11.2.1.1):

"d" Distance: $d := T_f - Cvr - .5 \cdot in$ $\qquad d = 32.5 \cdot in$

Factored Pressure at "d" Distance: $P_d := \left[P_{max} - \left(X_t - \frac{d_p}{2} - d\right) \cdot m_p\right]$ $\qquad P_d = 2.229 \cdot ksf$

Factored Pressure at Edge: $P_{edge} := P_{max}$ $\qquad P_{edge} = 2.6339 \cdot ksf$

Average Pressure: $P_{ave} := \frac{P_d + P_{edge}}{2}$ $\qquad P_{ave} = 2.4315 \cdot ksf$

Capacity Reduction Factor: (ACI 9.3.2.3) $\phi_c := 0.75$

Applied Shear Force: $V_{req} := \frac{P_{ave} \cdot \left(X_t - 0.5 \cdot d_p - d\right) \cdot W_f}{\phi_c}$ $\qquad V_{req} = 591.0275 \cdot kip$

Available Shear: (ACI 11.3.1.1) $V_{Avail} := 2 \cdot \sqrt{f'c \cdot psi} \cdot W_f \cdot d$ $\qquad V_{Avail} = 1580.7273 \cdot kip$

Check Capacity: $BeamShearCheck := if\left(V_{req} < V_{Avail}, "Okay", "No Good"\right)$

$BeamShearCheck = "Okay"$

Punching (Two-Way) Shear Action (ACI 11.11.1.2):

Critical Perimeter: $b_o := 4(d_p + d)$ → $b_o = 26.8333 \cdot ft$

Capacity Reduction Factor: (ACI 9.3.2.3) $\phi_c := .85$ $C_t = 464 \cdot kip$

Factored Maximum Punching Shear Force $FL := \frac{C_t}{\phi_c}$ → $FL = 545.8824 \cdot kip$

Available Shear: $V_{Avail} := 4 \cdot \sqrt{f'c \cdot psi} \cdot b_o \cdot d$ → $V_{Avail} = 2292.7666 \cdot kip$

Check Capacity: $PunchingShearCheck := if(V_{req} < V_{Avail}, "Okay", "No Good")$

$PunchingShearCheck = "Okay"$

BENDING

Maximim Bending Moment:

Distance From Edge of FTG To Face of Pier: $X_b := \frac{W_f}{2} - e - \frac{d_p}{2}$ → $X_b = 8.6843 \cdot ft$

Moment Due To Overturning:

Factored Pressure at "d" Distance: $P_{face} := 1 \cdot (P_{max} - X_b \cdot m_p)$ → $P_{face} = 1.9203 \cdot ksf$

Factored Pressure at Edge: $P_{edge} := 1 \cdot P_{max}$ → $P_{edge} = 2.6339 \cdot ksf$

Moment Due To Rectangular Loading: $M_1 := (P_{face} \cdot X_b \cdot W_f) \cdot \left(\frac{1}{2} \cdot X_b\right)$ → $M_1 = 2679.2351 \cdot kip \cdot ft$

Moment Due to Triangular Loading: $M_2 := \left[\frac{1}{2} \cdot X_b \cdot (P_{edge} - P_{face})\right] \cdot \left(\frac{2}{3} \cdot X_b\right)$ → $M_2 = 17.9399 \cdot kip \cdot ft$

Sum Moments: $M_{ot} := M_1 + M_2$ → $M_{ot} = 2697.175 \cdot kip \cdot ft$

Moment Due To Uplift:

Pier Forces:

$$M_{nT} := 1\cdot\left[U_t\cdot\left(W_f - 2\cdot X_b - \frac{d}{2} - d\right) + S_t\cdot\left(D_f + L_{pag}\right)\right] \qquad M_{nT} = 7855.7666\cdot kip\cdot ft$$

Concrete Resistance:

$$M_{nS} := \left[\frac{1}{2}\cdot\left(W_f - X_b - d_p\right)^2\cdot\left(T_f\cdot W_f\right)\cdot\gamma_s\right]\cdot 0.9 \qquad M_{nS} = 2953.3055\cdot kip\cdot ft$$

Soil Resistance:

$$M_{nC} := \left[\frac{1}{2}\cdot\left(W_f - X_b - d_p\right)^2\cdot\left(T_f\cdot W_f\right)\cdot\gamma_c\right]\cdot 0.9 \qquad M_{nC} = 4429.9583\cdot kip\cdot ft$$

Sum Moments

$$M_{uplift} := M_{nT} - M_{nS} - M_{nC} \qquad M_{uplift} = 472.5028\cdot kips\cdot ft$$

Select Controlling Moment:

$$M_u := \begin{cases} M_{ot} & \text{if } M_{ot} \geq M_{uplift} \\ M_{uplift} & \text{otherwise} \end{cases} \qquad M_u = 2697.175\cdot kips\cdot ft$$

Strength Reduction Factor: (ACI 9.3.2.2)

$$\phi_m := .90$$

Design Moment:

$$M_n := \frac{M_u}{\phi_m} \qquad M_n = 2996.8611\cdot kips\cdot ft$$

Size Reinforcing Steel:

Effective Width:

$$b_{eff} := W_f \qquad b_{eff} = 444\cdot in$$

Stress Block:

$$a := d\cdot\left(1 - \sqrt{1 - 2.3529\cdot\frac{M_n}{f'c\cdot b_{eff}\cdot d^2}}\right) \qquad a = 0.9925\cdot in$$

Steel Req'd For Bending:

$$A_s := \frac{M_n}{fy\cdot\left(d - \frac{a}{2}\right)} \qquad A_s = 18.7282\cdot in^2$$

Reinforcement Ratio:

$$\rho := \frac{A_s}{b_{eff}\cdot d} \qquad \rho = 0.0013$$

Steel Req'd For Temperature and Shrinkage: (ACI 7.12.2.1b)

$$\rho_{sh} := \text{if}\left(fy \geq 60000\cdot psi, 0.0018, 0.0020\right) \qquad \rho_{sh} = 0.0018$$

$$As := \text{if}\left(\rho \geq \rho_{sh}, A_s, \rho_{sh}\cdot b_{eff}\cdot d\right) \qquad As = 25.974\cdot in^2$$

$$As_{prov} := A_{bpad}\cdot NB_{pad} \qquad As_{prov} = 42\cdot in^2$$

Check Provided Steel:

$$PadReinforcement := \text{if}\left(As_{prov} > As, \text{"Okay"}, \text{"No Good"}\right)$$

$$PadReinforcement = \text{"Okay"}$$

DEVELOPMENT LENGTH OF PAD REINFORCEMENT

TENSION (ACI 12.2.3)

Bar Spacing:

$$B_{sPad} := \frac{W_f - 2\cdot Cvr - NB_{pad}\cdot d_{bpad}}{NB_{pad} - 1}$$

$B_{sPad} = 9.5274\cdot in$

Development Length Factors:

Reinforcement Location Factor	$\alpha := 1.0$
Coating Factor	$\beta := 1.0$
Concrete strength Factor	$\lambda := 1.0$
Reinforcement Size Factor	$\gamma := 1.0$

Spacing or Cover Dimension:

$$c := if\left(Cvr < \frac{B_{sPad}}{2}, Cvr, \frac{B_{sPad}}{2}\right)$$

$c = 3\cdot in$

Transverse Reinforcement Index: As allowed by ACI 12.2.4

$k_{tr} := 0$

$$L_{dbt} := \frac{3}{40}\cdot\frac{fy}{\sqrt{f'c\cdot psi}}\cdot\frac{\alpha\cdot\beta\cdot\gamma\cdot\lambda}{\frac{c+k_{tr}}{d_{bpad}}}\cdot d_{bpad}$$

$L_{dbt} = 34.8457\cdot in$

$L_{dbmin} := 12\cdot in$

Minimum Development Length: (ACI 12.2.1)

$L_{dbtCheck} := if\left(L_{dbt} \geq L_{dbmin}, "Use\ L.dbt", "Use\ L.dbmin"\right)$ $L_{dbtCheck} = "Use\ L.dbt"$

Available Length in Pad:

$$L_{Pad} := \frac{W_f}{2} - \frac{W_t}{2} - Cvr$$

$L_{Pad} = 112.626\cdot in$

$LpadTension := if\left(L_{Pad} > L_{dbt}, "Okay", "No\ Good"\right)$ $LpadTension = "Okay"$

REINFORCEMENT IN PIER

Pier Area:

(ACI 10.8.4 and 10.9.1)

$$A_p := \frac{\pi\cdot d_p^{\,2}}{4}$$

$A_p = 1809.5574\cdot in^2$

$A_{smin} := 0.01\cdot 0.5\cdot A_p$

$A_{smin} = 9.0478\cdot in^2$

$A_{sprov} := NBpier\cdot A_{bpier}$

$A_{sprov} = 24\cdot in^2$

$SteelAreaCheck := if\left(A_{sprov} > A_{smin}, "Okay", "No\ Good"\right)$ $SteelAreaCheck = "Okay"$

NOTE: Anchor Bolts are not accounted for in reinforcement calculation and will provide additional reinforcement to satisfy minimum requirement of steel.

Bar Spacing In Pier:

$$B_{sPier} := \frac{d_p \cdot \pi}{NBpier} - d_{bpier} \qquad B_{sPier} = 5.1552 \cdot in$$

Diameter of Reinforcement Cage:

$$Diam_{cage} := d_p - 2 \cdot Cvr \qquad Diam_{cage} = 42 \cdot in$$

Maximum Moment in Pier:

$$M_p := (S_p \cdot L_p) \cdot 1 \qquad M_p = 3666 \cdot kips \cdot in$$

Pier Check evaluated from outside program and results are listed below;

(defined variables)

$$(f'_c \;\; f_y \;\; cl \;\; Spiral) = (3 \;\; 60 \;\; 4 \;\; 0)$$

The required input is column diameter in inches, number of reinforcing bars, bar size number, factored axial load in kips and moment in kip inches:

$$(D \;\; N \;\; n \;\; P_u \;\; M_{xu}) := (48 \;\; 24 \;\; 9 \;\; 556.8 \;\; 11045)$$

Clears any previous output:

$$(\phi P_n \;\; \phi M_{xn} \;\; f_{sp} \;\; \rho) := (0 \;\; 0 \;\; 0 \;\; 0)$$

$$(\phi P_n \;\; \phi M_{xn} \;\; f_{sp} \;\; \rho) := \phi P'_n(D, N, n, P_u, M_{xu})^T$$

The Output is given as useable axial load in kips, moment capacity in kip inches, splicing stress in ksi, and reinforcement ratio:

$$(\phi P_n \;\; \phi M_{xn} \;\; f_{sp} \;\; \rho) = (1359.0534 \;\; 26958.952 \;\; -60 \;\; 0.0133)$$

Column size and reinforcement may be changed to match capacity to the applied load.

$$AxialLoadCheck := if(\phi P_n \geq P_u, "Okay", "No Good") \qquad AxialLoadCheck = "Okay"$$

$$BendingCheck := if(\phi M_{xn} \geq M_{xu}, "Okay", "No Good") \qquad BendingCheck = "Okay"$$

DEVELOPMENT LENGTH OF PIER REINFORCEMENT

TENSION (ACI 12.2.3)

Spacing and Cover: $Cvr = 3\cdot in$ $B_{sPier} = 5.1552\cdot in$

Factors for development:

Reinforcement Location Factor	$\alpha := 1.0$
Coating Factor	$\beta := 1.0$
Concrete strength Factor	$\lambda := 1.0$
Reinforcement Size Factor	$\gamma := 1.0$

Spacing or Cover Dimension: $c := if\left(Cvr < \frac{B_{sPier}}{2}, Cvr, \frac{B_{sPier}}{2}\right)$ $c = 2.5776\cdot in$

Transverse Reinforcement: As allowed by ACI 12.2.4 $k_{tr} := 0$

$$L_{dbt} := \frac{3}{40}\cdot\frac{fy}{\sqrt{f'c\cdot psi}}\cdot\frac{\alpha\cdot\beta\cdot\gamma\cdot\lambda}{\frac{c+k_{tr}}{d_{bpier}}}\cdot d_{bpier} \qquad L_{dbt} = 40.5561\cdot in$$

Minimum Development Length: (ACI 12.2.1) $L_{dbmin} := 12\cdot in$

$L_{dbtCheck} := if\left(L_{dbt} \geq L_{dbmin}, "Use\ L.dbt", "Use\ L.dbmin"\right)$ $L_{dbtCheck} = "Use\ L.dbt"$

COMPRESSION: (ACI 12.3.2)

$$L_{dbc1} := \frac{.02\cdot d_{bpier}\cdot fy}{\sqrt{f'c\cdot psi}} \qquad L_{dbc1} = 24.7132\cdot in$$

$L_{dbmin} := 0.0003\cdot\frac{in^2}{lb}\cdot\left(d_{bpier}\cdot fy\right)$ $L_{dbmin} = 20.304\cdot in$

$L_{dbc} := if\left(L_{dbc1} \geq L_{dbmin}, L_{dbc1}, L_{dbmin}\right)$ $L_{dbc} = 24.7132\cdot in$

Available Length in Pier: $L_{pier} := L_p - 3\cdot in$ $L_{pier} = 75\cdot in$

Available Length in Pad: $L_{pad} := T_f - 3\cdot in$ $L_{pad} = 33\cdot in$

Available Length: $L_{total} := L_{pad} + L_{pier}$ $L_{total} = 108\cdot in$

$L_{tension} := if\left(L_{total} > L_{dbt}, "Okay", "No\ Good"\right)$ $L_{tension} = "Okay"$

$L_{compression} := if\left(L_{total} > L_{dbc}, "Okay", "No\ Good"\right)$ $L_{compression} = "Okay"$

GEOTECHNICAL STUDY

WELTI GEOTECHNICAL, P.C.
Formerly Dr. Clarence Welti, PE. PC.

227 Williams Street · P.O. Box 397
Glastonbury, CT 06033-0397

(860) 633-4623 / FAX (860) 657-2514

February 26, 2018

Mr. Ignacio C. Artaiz
AECOM
500 Enterprise Drive, Suite 3B
Rocky Hill, CT 06067

Ref: Geotechnical Study for Evaluation of Existing State Police Communications Tower at 48 Fenwood Lane, Wilton, CT

Dear Naish:

1.0 Herewith are the data from the test boring taken at the above referenced site. One boring was taken about 10 feet from the existing tower. The boring was drilled to auger refusal at 22 feet below the existing grade. The boring location is shown on the attached plan.

2.0 The boring was taken to provide soil properties and foundation design parameters to provide an evaluation of the adequacy of existing lattice tower foundation with an increase in loading on the structure and to design foundation modifications, if necessary. The foundation plans and notes by Bayar and Associates dated 6/6/1990 show the tower foundation design includes a lattice tower with four corner legs, spaced at 17.7 feet apart on a 35 feet square concrete mat. The foundation notes indicate the design was based on a presumed allowable bearing pressure of 3.4 ksf.

3.0 The **Soils Cross Section** from the boring is generally as follows:

Trap Rock to 6"

FILL; fine to medium SAND, some Silt, little Gravel, trace Roots to 5 feet, loose to medium compact
Note: This is adjacent to excavation for the existing mat foundation

Moraine; fine to medium SAND, some Silt, little Gravel to auger refusal at 22 feet below the existing grades, medium compact to very dense

3.1 The **Ground Water Table** was evident at 6.3 feet below the existing grade at the completion of the boring.

4.0 In general the criteria for tower support is that the foundation capacity would exceed the loads, which might collapse the tower. In the subject case the issues relate to (1) the structural capacity of the tower and (2) possible excessive shear in the mat and (3) possible irregular settlement of the mat with the proposed soil bearing pressures.

5.0 Regarding the criteria in section 4.0 the first two criteria are structural items. The third item pertains to soil bearing capacity and soil stiffness modulus, which would define potential settlement under a given loading on the soil.

5.1 Based on sample blow counts the allowable bearing pressure on the soil, assuming a maximum differential settlement over distance of 40 feet at ½", would be 3 Tons/sf (6 Ksf).The estimated stiffness modulus of the soil below 6 feet is at least 600 Tons/sf.

6.0 The soils at the subject site are generally in OSHA class C which would require excavations that are in excess of 5 feet to have slopes which are less than 34° (i.e., 1.5H to1.0V).

7.0 This report has been prepared for specific a application to the subject project in accordance with generally accepted soil and foundation engineering practices. No other warranty, express or implied, is made. In the event that any changes in the nature, design and location of structures are planned, the conclusions and recommendations contained in this report should not be considered valid unless the changes are reviewed and conclusions of this report modified or verified in writing.

The analyses and recommendations submitted in this report are based in part upon data obtained from referenced explorations. The extent of variations between explorations may not become evident until construction. If variations then appear evident, it will be necessary to re-evaluate the recommendations of this report.

Welti Geotechnical, P.C., should perform a general review of the final design and specifications in order that geotechnical design recommendations may be properly interpreted and implemented as they were intended.

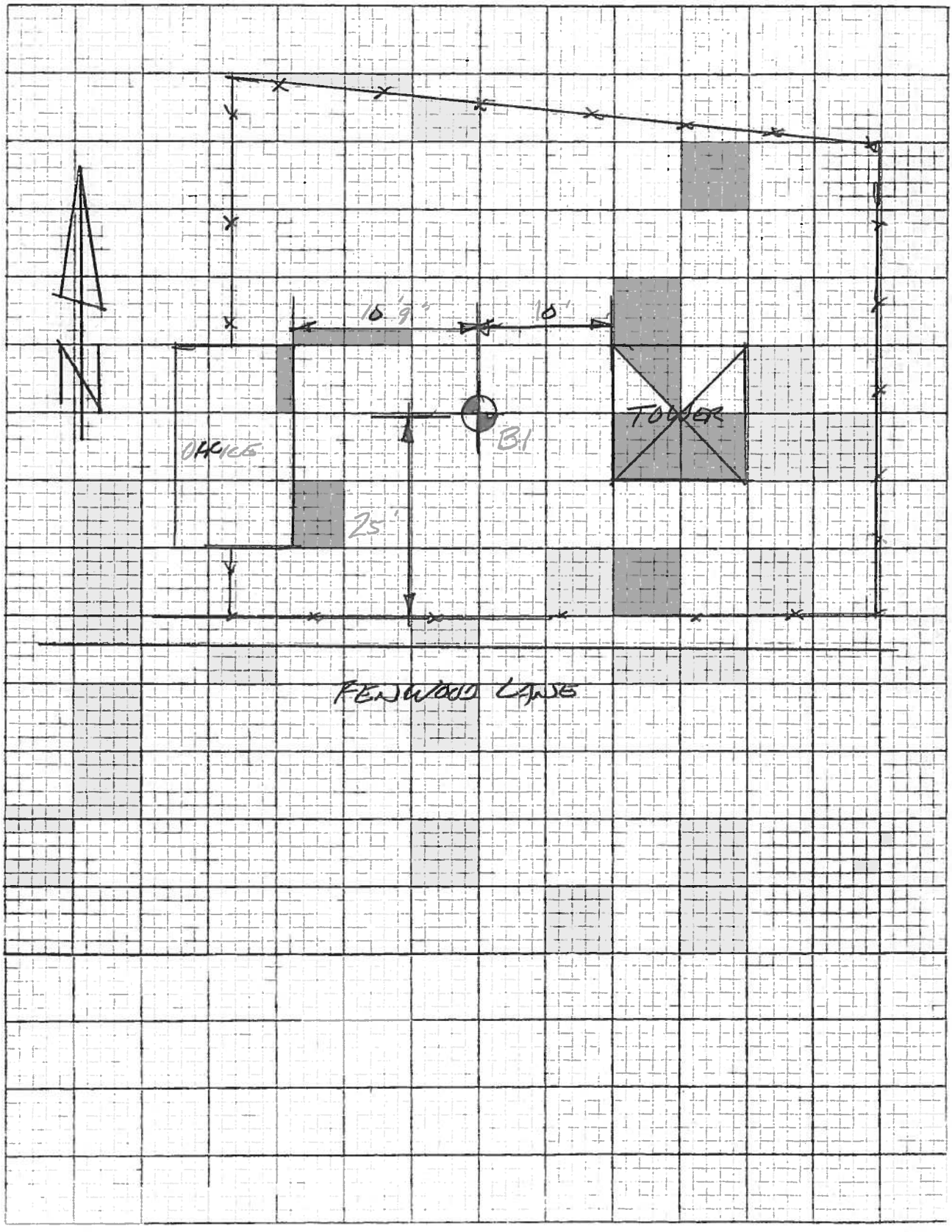
If you have any questions please call me.

Very truly yours,

Max Welti, P. E.

DR. CLARENCE WELTI, PE, PC
P.O. BOX 397
GLASTONBURY, CONNECTICUT 06033 • (860) 633-4623

CLIENT AECOM
PROJECT CT SP TOWER, 48 FENWOOD LN, WILTON, CT
SUBJECT TEST BORING LOCATION
BY MW DATE 2/12/08 SHEET NO.



CLARENCE WELTI ASSOC., INC. P.O. BOX 397 GLASTONBURY, CONN 06033	CLIENT AECOM	PROJECT NAME CTSP TOWER #31 LOCATION 46 FENWOOD LANE, WILTON, CT

	AUGER	CASING	SAMPLER	CORE BAR
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.375"	
HAMMER WT.			140lbs	
HAMMER FALL			30"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV.
HOLE NO. **B-1**

GROUND WATER OBSERVATIONS
AT 6.3 FT AFTER 0 HOURS
AT FT AFTER HOURS

START DATE 2/12/18
FINISH DATE 2/12/18

DEPTH	SAMPLE NO.	BLOWS/6"	DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0	1	6-3-4	0.5'-2.0'		TRAPROCK 0.50 GREY/BR.FINE-MED.SAND, SOME SILT, LITTLE GRAVEL, TRACE ROOTS - FILL	
	2	3-4-4-5	2.0'-4.0'			
	3	3-3-4-4	4.0'-6.0'			
5					GREY FINE-MED.SAND, SOME SILT, TRACE GRAVEL 5.0	
10	4	3-7-9	10.0'-11.5'			
					GREY FINE-CRS.SAND, SOME SILT, LITTLE GRAVEL 14.0	
15	5	12-21-50	15.0'-16.5'			
20	6	17-24-26	20.0'-21.5'			
					BOTTOM OF BORING @ 22.0' (AUGER REFUSAL) 22.0	
25						
30						
35						

LEGEND: COL. A:
SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON
PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: J. BREWER
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **B-1**

About AECOM

AECOM (NYSE: ACM) is a global provider of professional technical and management support services to a broad range of markets, including transportation, facilities, environmental, energy, water and government. With approximately 45,000 employees around the world, AECOM is a leader in all of the key markets that it serves. AECOM provides a blend of global reach, local knowledge, innovation, and collaborative technical excellence in delivering solutions that enhance and sustain the world's built, natural, and social environments. A Fortune 500 company, AECOM serves clients in more than 100 countries and has annual revenue in excess of $6 billion.

More information on AECOM and its services can be found at www.aecom.com.

500 Enterprise Drive, Suite 3B
Rocky Hill, CT 06067
860-529-8882
Fax: 860-529-3991

Sprint

PROJECT:	DO MACRO UPGRADE
SITE NAME:	CTS
SITE CASCADE:	CT03XC360
SITE ADDRESS:	46 FERNWOOD LANE WILTON, CT 06897
SITE TYPE:	SELF SUPPORT TOWER
MARKET:	SOUTHERN CONNECTICUT

SITE INFORMATION

TOWER OWNER:
STATE OF CONNECTICUT
DEPARTMENT OF PUBLIC SAFETY
DIVISION OF STATE POLICE
1111 COUNTRY CLUB ROAD
MIDDLETON, CT 06457

LATITUDE (NAD83):
41° 10' 21.04" N
41.17251111°

LONGITUDE (NAD83):
-73° 26' 2.09" W
-73.43391388°

COUNTY:
FAIRFIELD

ZONING JURISDICTION:
CONNECTICUT SITING COUNCIL

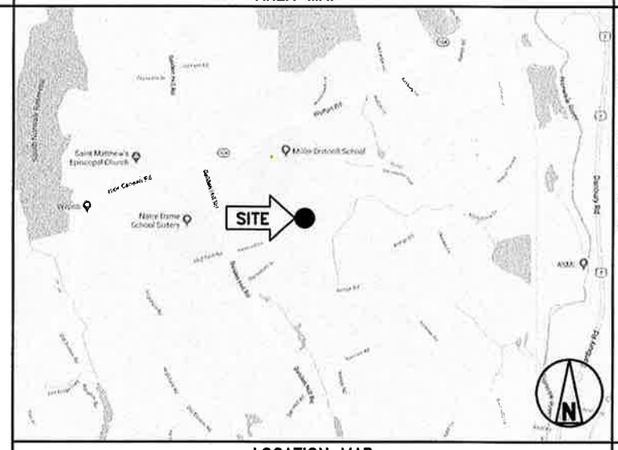
ZONING DISTRICT:
TBD

POWER COMPANY:
TBD

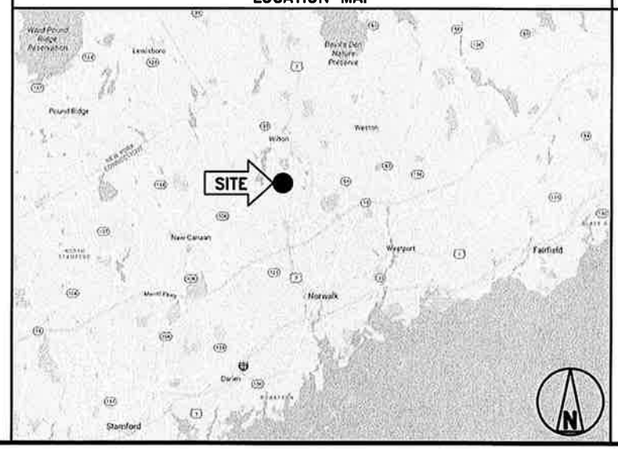
AAV PROVIDER:
TBD

PROJECT MANAGER:
AIROSMITH DEVELOPMENT
TERRI BURKHOLDER
(315) 719-2928
TBURKHOLDER@AIROSMITHDEVELOPMENT.COM

AREA MAP



LOCATION MAP



PROJECT DESCRIPTION

SPRINT PROPOSES TO MODIFY AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY.

- INSTALL (6) PANEL ANTENNAS
- REMOVE (3) PANEL ANTENNAS
- INSTALL (3) 800 MHz RRH'S BEHIND ANTENNAS
- INSTALL (30) JUMPER CABLES
- INSTALL (2) HYBRID CABLE
- INSTALL 2.5 EQUIPMENT INSIDE EXISTING N.V. MMBS CABINET

THESE PLANS HAVE BEEN DEVELOPED FOR THE MODIFICATION OF AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY OWNED OR LEASED BY SPRINT IN ACCORDANCE WITH THE SCOPE OF WORK PROVIDED BY SPRINT. INFINIGY HAS INCORPORATED THIS SCOPE OF WORK IN THE PLANS. THESE PLANS ARE NOT FOR CONSTRUCTION UNLESS ACCOMPANIED BY A PASSING STRUCTURAL STABILITY ANALYSIS PREPARED BY A LICENSED STRUCTURAL ENGINEER. STRUCTURAL ANALYSIS MUST INCLUDE BOTH TOWER AND MOUNT.

APPLICABLE CODES

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALL IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES.

1. INTERNATIONAL BUILDING CODE (2015 IBC)
2. TIA-222-G OR LATEST EDITION
3. NFPA 780 – LIGHTNING PROTECTION CODE
4. 2011 NATIONAL ELECTRIC CODE OR LATEST EDITION
5. ANY OTHER NATIONAL OR LOCAL APPLICABLE CODES, MOST RECENT EDITIONS
6. CT BUILDING CODE
7. LOCAL BUILDING CODE
8. CITY/COUNTY ORDINANCES

811 Know what's below. Call before you dig. www.call811.com

DRAWING INDEX

SHEET NO.	SHEET TITLE	REV.
T-1	TITLE SHEET & PROJECT DATA	0
SP-1	SPRINT SPECIFICATIONS	0
SP-2	SPRINT SPECIFICATIONS	0
SP-3	SPRINT SPECIFICATIONS	0
A-1	SITE PLAN	0
A-2	TOWER ELEVATION	0
A-3	ANTENNA LAYOUT & MOUNTING DETAILS	0
A-4	EQUIPMENT & MOUNTING DETAILS	0
A-5	CIVIL DETAILS	0
A-6	PLUMBING DIAGRAM	0
E-1	ELECTRICAL & GROUNDING PLAN	0
E-2	ELECTRICAL & GROUNDING DETAILS	0

PLANS PREPARED FOR:
Sprint

PLANS PREPARED BY:
INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless
1033 Watervliet Shaker Rd | Albany, NY 12205
Phone: 518-690-0790 | Fax: 518-690-0793
www.infinigy.com
JOB NUMBER 526-104

PROJECT MANAGER:
AIROSMITH DEVELOPMENT
32 CLINTON ST.
SARATOGA SPRINGS, NY 12866
OFFICE#. (518) 306-3740

ENGINEERING LICENSE:
STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
LICENSED
PROFESSIONAL ENGINEER
AUG. 22 2018

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR REVIEW	06/06/18	ETC	A

SITE NAME: CTS

SITE NUMBER: CT03XC360

SITE ADDRESS: 46 FERNWOOD LANE
WILTON, CT 06897

SHEET DESCRIPTION: TITLE SHEET & PROJECT DATA

SHEET NUMBER: T-1

THESE OUTLINE SPECIFICATIONS IN CONJUNCTION WITH THE SPRINT STANDARD CONSTRUCTION SPECIFICATIONS, INCLUDING CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

SECTION 01 100 – SCOPE OF WORK

PART 1 – GENERAL

1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE SPRINT CONSTRUCTION STANDARDS FOR WIRELESS SITES, CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

1.2 RELATED DOCUMENTS:

A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.

B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

1.3 PRECEDENCE: SHOULD CONFLICTS OCCUR BETWEEN THE STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES INCLUDING THE STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES AND THE CONSTRUCTION DRAWINGS, INFORMATION ON THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE. NOTIFY SPRINT CONSTRUCTION MANAGER IF THIS OCCURS.

1.4 NATIONALLY RECOGNIZED CODES AND STANDARDS:

A. THE WORK SHALL COMPLY WITH APPLICABLE NATIONAL AND LOCAL CODES AND STANDARDS, LATEST EDITION, AND PORTIONS THEREOF, INCLUDED BUT NOT LIMITED TO THE FOLLOWING:

1. GR-63-CORE NEBS REQUIREMENTS: PHYSICAL PROTECTION
5. GR-78-CORE GENERIC REQUIREMENTS FOR THE PHYSICAL DESIGN AND MANUFACTURE OF TELECOMMUNICATIONS EQUIPMENT.
3. GR-1089 CORE, ELECTROMAGNETIC COMPATIBILITY AND ELECTRICAL SAFETY –GENERIC CRITERIA FOR NETWORK TELECOMMUNICATIONS EQUIPMENT.
4. NATIONAL FIRE PROTECTION ASSOCIATION CODES AND STANDARDS (NFPA) INCLUDING NFPA 70 (NATIONAL ELECTRICAL CODE – "NEC") AND NFPA 101 (LIFE SAFETY CODE).
5. AMERICAN SOCIETY FOR TESTING OF MATERIALS (ASTM)
6. INSTITUTE OF ELECTRONIC AND ELECTRICAL ENGINEERS (IEEE)
7. AMERICAN CONCRETE INSTITUTE (ACI)
8. AMERICAN WIRE PRODUCERS ASSOCIATION (AWPA)
9. CONCRETE REINFORCING STEEL INSTITUTE (CRSI)
10. AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)
11. PORTLAND CEMENT ASSOCIATION (PCA)
12. NATIONAL CONCRETE MASONRY ASSOCIATION (NCMA)
13. BRICK INDUSTRY ASSOCIATION (BIA)
14. AMERICAN WELDING SOCIETY (AWS)
15. NATIONAL ROOFING CONTRACTORS ASSOCIATION (NRCA)
16. SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA)
17. DOOR AND HARDWARE INSTITUTE (DHI)
18. OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA)
19. APPLICABLE BUILDING CODES INCLUDING UNIFORM BUILDING CODE, SOUTHERN BUILDING CODE, BOCA, AND THE INTERNATIONAL BUILDING CODE.

1.5 DEFINITIONS:

A. WORK: THE SUM OF TASKS AND RESPONSIBILITIES IDENTIFIED IN THE CONTRACT DOCUMENTS.

B. COMPANY: SPRINT CORPORATION

C. ENGINEER: SYNONYMOUS WITH ARCHITECT & ENGINEER AND "A&E". THE DESIGN PROFESSIONAL HAVING PROFESSIONAL RESPONSIBILITY FOR DESIGN OF THE PROJECT.

D. CONTRACTOR: CONSTRUCTION CONTRACTOR; CONSTRUCTION VENDOR; INDIVIDUAL OR ENTITY WHO AFTER EXECUTION OF A CONTRACT IS BOUND TO ACCOMPLISH THE WORK.

E. THIRD PARTY VENDOR OR AGENCY: A VENDOR OR AGENCY ENGAGED SEPARATELY BY THE COMPANY, A&E, OR CONTRACTOR TO PROVIDE MATERIALS OR TO ACCOMPLISH SPECIFIC TASKS RELATED TO BUT NOT INCLUDED IN THE WORK.

F. OFCI: OWNER FURNISHED, CONTRACTOR INSTALLED EQUIPMENT.

G. CONSTRUCTION MANAGER – ALL PROJECTS RELATED COMMUNICATION TO FLOW THROUGH SPRINT REPRESENTATIVE IN CHARGE OF PROJECT...

1.6 SITE FAMILIARITY: CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE SPRINT CONSTRUCTION MANAGER PRIOR TO THE COMMENCEMENT OF WORK. NO COMPENSATION WILL BE AWARDED BASED ON CLAIM OF LACK OF KNOWLEDGE OR FIELD CONDITIONS.

1.7 POINT OF CONTACT: COMMUNICATION BETWEEN SPRINT AND THE CONTRACTOR SHALL FLOW THROUGH THE SINGLE SPRINT CONSTRUCTION MANAGER APPOINTED TO MANAGE THE PROJECT FOR SPRINT.

1.8 ON-SITE SUPERVISION: THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL EMPLOY A COMPETENT SUPERINTENDENT WHO SHALL BE IN ATTENDANCE AT THE SITE AT ALL TIMES DURING PERFORMANCE OF THE WORK.

1.9 DRAWINGS, SPECIFICATIONS AND DETAILS REQUIRED AT JOBSITE: THE CONSTRUCTION CONTRACTOR SHALL MAINTAIN A FULL SET OF THE CONSTRUCTION DRAWINGS, STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES AND THE STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES AT THE JOBSITE FROM MOBILIZATION THROUGH CONSTRUCTION COMPLETION.

A. THE JOBSITE DRAWINGS, SPECIFICATIONS AND DETAILS SHALL BE CLEARLY MARKED DAILY IN RED PENCIL WITH ANY CHANGES IN CONSTRUCTION OVER WHAT IS DEPICTED IN THE DOCUMENTS. AT CONSTRUCTION COMPLETION, THIS JOBSITE MARKUP SET SHALL BE DELIVERED TO THE COMPANY OR COMPANY'S DESIGNATED REPRESENTATIVE TO BE FORWARDED TO THE COMPANY'S A&E VENDOR FOR PRODUCTION OF "AS-BUILT" DRAWINGS.

B. DETAILS ARE INTENDED TO SHOW DESIGN INTENT. MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE WORK. CONTRACTOR SHALL NOTIFY SPRINT CONSTRUCTION MANAGER OF ANY VARIATIONS PRIOR TO PROCEEDING WITH THE WORK.

C. DIMENSIONS SHOWN ARE TO FINISH SURFACES UNLESS NOTED OTHERWISE. SPACING BETWEEN EQUIPMENT IS THE REQUIRED CLEARANCE. SHOULD THERE BE ANY QUESTIONS REGARDING THE CONTRACT DOCUMENTS, EXISTING CONDITIONS AND/OR DESIGN INTENT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A CLARIFICATION FROM THE SPRINT CONSTRUCTION MANAGER PRIOR TO PROCEEDING WITH THE WORK.

1.10 USE OF JOB SITE: THE CONTRACTOR SHALL CONFINE ALL CONSTRUCTION AND RELATED OPERATIONS INCLUDING STAGING AND STORAGE OF MATERIALS AND EQUIPMENT, PARKING, TEMPORARY FACILITIES, AND WASTE STORAGE TO THE LEASE PARCEL UNLESS OTHERWISE PERMITTED BY THE CONTRACT DOCUMENTS.

1.11 UTILITIES SERVICES: WHERE NECESSARY TO CUT EXISTING PIPES, ELECTRICAL WIRES, CONDUITS, CABLES, ETC., OF UTILITY SERVICES, OR OF FIRE PROTECTION OR COMMUNICATIONS SYSTEMS, THEY SHALL BE CUT AND CAPPED AT SUITABLE PLACES OR WHERE SHOWN. ALL SUCH ACTIONS SHALL BE COORDINATED WITH THE UTILITY COMPANY INVOLVED:

1.12 PERMITS / FEES: WHEN REQUIRED THAT A PERMIT OR CONNECTION FEE BE PAID TO A PUBLIC UTILITY PROVIDER FOR NEW SERVICE TO THE CONSTRUCTION PROJECT, PAYMENT OF SUCH FEE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

1.13 CONTRACTOR SHALL TAKE ALL MEASURES AND PROVIDE ALL MATERIAL NECESSARY FOR PROTECTING EXISTING EQUIPMENT AND PROPERTY.

1.14 METHODS OF PROCEDURE (MOPS) FOR CONSTRUCTION: CONTRACTOR SHALL PERFORM WORK AS DESCRIBED IN THE FOLLOWING INSTALLATION AND COMMISSIONING MOPS.

NOTE: IN SHORT-FORM SPECIFICATIONS ON THE DRAWINGS, A/E TO INSERT LIST OF APPLICABLE MOPS INCLUDING EN-2012-001, EN-2013-002, EL-0568, AND TS-0193

1.15 USE OF ELECTRONIC PROJECT MANAGEMENT SYSTEMS:

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 TEMPORARY UTILITIES AND FACILITIES: THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY UTILITIES AND FACILITIES NECESSARY EXCEPT AS OTHERWISE INDICATED IN THE CONSTRUCTION DOCUMENTS. TEMPORARY UTILITIES AND FACILITIES INCLUDE POTABLE WATER, HEAT, HVAC, ELECTRICITY, SANITARY FACILITIES, WASTE DISPOSAL FACILITIES, AND TELEPHONE/COMMUNICATION SERVICES. PROVIDE TEMPORARY UTILITIES AND FACILITIES IN ACCORDANCE WITH OSHA AND THE AUTHORITY HAVING JURISDICTION. CONTRACTOR MAY UTILIZE THE COMPANY ELECTRICAL SERVICE IN THE COMPLETION OF THE WORK WHEN IT BECOMES AVAILABLE. USE OF THE LESSORS OR SITE OWNER'S UTILITIES OR FACILITIES IS EXPRESSLY FORBIDDEN EXCEPT AS OTHERWISE ALLOWED IN THE CONTRACT DOCUMENTS.

3.2 ACCESS TO WORK: THE CONTRACTOR SHALL PROVIDE ACCESS TO THE JOB SITE FOR AUTHORIZED COMPANY PERSONNEL AND AUTHORIZED REPRESENTATIVES OF THE ARCHITECT/ENGINEER DURING ALL PHASES OF THE WORK.

3.3 TESTING: REQUIREMENTS FOR TESTING BY THIS CONTRACTOR SHALL BE AS INDICATED HEREWITH, ON THE CONSTRUCTION DRAWINGS, AND IN THE INDIVIDUAL SECTIONS OF THESE SPECIFICATIONS. SHOULD COMPANY CHOOSE TO ENGAGE ANY THIRD-PARTY TO CONDUCT ADDITIONAL TESTING, THE CONTRACTOR SHALL COOPERATE WITH AND PROVIDE A WORK AREA FOR COMPANY'S TEST AGENCY.

3.4 DIMENSIONS: VERIFY DIMENSIONS INDICATED ON DRAWINGS WITH FIELD DIMENSIONS BEFORE FABRICATION OR ORDERING OF MATERIALS. DO NOT SCALE DRAWINGS.

3.5 EXISTING CONDITIONS: NOTIFY THE SPRINT CONSTRUCTION MANAGER OF EXISTING CONDITIONS DIFFERING FROM THOSE INDICATED ON THE DRAWINGS. DO NOT REMOVE OR ALTER STRUCTURAL COMPONENTS WITHOUT PRIOR WRITTEN APPROVAL FROM THE ARCHITECT AND ENGINEER.

SECTION 01 200 – COMPANY FURNISHED MATERIAL AND EQUIPMENT

PART 1 – GENERAL

1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

1.2 RELATED DOCUMENTS:

A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.

B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 RECEIPT OF MATERIAL AND EQUIPMENT:

A. A COMPANY FURNISHED MATERIAL AND EQUIPMENT IS IDENTIFIED ON THE RF DATA SHEET IN THE CONSTRUCTION DOCUMENTS.

B. THE CONTRACTOR IS RESPONSIBLE FOR SPRINT PROVIDED MATERIAL AND EQUIPMENT AND UPON RECEIPT SHALL:

1 ACCEPT DELIVERIES AS SHIPPED AND TAKE RECEIPT.

2. VERIFY COMPLETENESS AND CONDITION OF ALL DELIVERIES.

3. TAKE RESPONSIBILITY FOR EQUIPMENT AND PROVIDE INSURANCE PROTECTION AS REQUIRED IN AGREEMENT.

4. RECORD ANY DEFECTS OR DAMAGES AND WITHIN TWENTY-FOUR HOURS AFTER RECEIPT, REPORT TO SPRINT OR ITS DESIGNATED PROJECT REPRESENTATIVE OF SUCH.

5. PROVIDE SECURE AND NECESSARY WEATHER PROTECTED WAREHOUSING.

6. COORDINATE SAFE AND SECURE TRANSPORTATION OF MATERIAL AND EQUIPMENT, DELIVERING AND OFF-LOADING FROM CONTRACTOR'S WAREHOUSE TO SITE.

3.2 DELIVERABLES:

A. COMPLETE SHIPPING AND RECEIPT DOCUMENTATION IN ACCORDANCE WITH COMPANY PRACTICE.

B. IF APPLICABLE, COMPLETE LOST/STOLEN/DAMAGED DOCUMENTATION REPORT AS NECESSARY IN ACCORDANCE WITH COMPANY PRACTICE, AND AS DIRECTED BY COMPANY.

C. UPLOAD DOCUMENTATION INTO SPRINT SITE MANAGEMENT SYSTEM (SMS) AND/OR PROVIDE HARD COPY DOCUMENTATION AS REQUESTED.

SECTION 01 300 – CELL SITE CONSTRUCTION CO.

PART 1 – GENERAL

1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

1.2 RELATED DOCUMENTS:

A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.

B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

1.3 NOTICE TO PROCEED

A. NO WORK SHALL COMMENCE PRIOR TO COMPANY'S WRITTEN NOTICE TO PROCEED AND THE ISSUANCE OF THE WORK ORDER.

B. UPON RECEIVING NOTICE TO PROCEED, CONTRACTOR SHALL FULLY PERFORM ALL WORK NECESSARY TO PROVIDE SPRINT WITH AN OPERATIONAL WIRELESS FACILITY.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 FUNCTIONAL REQUIREMENTS:

A. THE ACTIVITIES DESCRIBED IN THIS PARAGRAPH REPRESENT MINIMUM ACTIONS AND PROCESSES REQUIRED TO SUCCESSFULLY COMPLETE THE WORK. THE ACTIVITIES DESCRIBED ARE NOT EXHAUSTIVE, AND CONTRACTOR SHALL TAKE ANY AND ALL ACTIONS AS NECESSARY TO SUCCESSFULLY COMPLETE THE CONSTRUCTION OF A FULLY FUNCTIONING WIRELESS FACILITY AT THE SITE IN ACCORDANCE WITH COMPANY PROCESSES.

B. SUBMIT SPECIFIC DOCUMENTATION AS INDICATED HEREIN, AND OBTAIN REQUIRED APPROVALS WHILE THE WORK IS BEING PERFORMED.

C. MANAGE AND CONDUCT ALL FIELD CONSTRUCTION SERVICE RELATED ACTIVITIES

D. PROVIDE CONSTRUCTION ACTIVITIES TO THE EXTENT REQUIRED BY THE CONTRACT DOCUMENTS, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

PLANS PREPARED FOR:

Sprint

PLANS PREPARED BY:

INFINIGY
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the solutions are endless
1033 Watervliet Shaker Rd | Albany, NY 12205
Phone: 518-690-0790 | Fax: 518-690-0793
www.infinigy.com
JOB NUMBER 526-104

PROJECT MANAGER:

AIROSMITH DEVELOPMENT
32 CLINTON ST.
SARATOGA SPRINGS, NY 12866
OFFICE#, (518) 306-3740

ENGINEERING LICENSE:

STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
LICENSED PROFESSIONAL ENGINEER
AUG 22 2018

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR REVIEW	06/06/18	ETC	A

SITE NAME:

CTS

SITE NUMBER:

CT03XC360

SITE ADDRESS:

46 FERNWOOD LANE
WILTON, CT 06897

SHEET DESCRIPTION:

SPRINT SPECIFICATIONS

SHEET NUMBER:

SP-1

CONTINUE FROM SP-1

1. PERFORM ANY REQUIRED SITE ENVIRONMENTAL MITIGATION.
2. PREPARE GROUND SITES; PROVIDE DE-GRUBBING; AND ROUGH AND FINAL GRADING, AND COMPOUND SURFACE TREATMENTS.
3. MANAGE AND CONDUCT ALL ACTIVITIES FOR INSTALLATION OF UTILITIES INCLUDING ELECTRICAL AND TELCO BACKHAUL.
4. INSTALL UNDERGROUND FACILITIES INCLUDING UNDERGROUND POWER AND COMMUNICATIONS CONDUITS, AND UNDERGROUND GROUNDING SYSTEM.
5. INSTALL ABOVE GROUND GROUNDING SYSTEMS.
6. PROVIDE NEW HVAC INSTALLATIONS AND MODIFICATIONS.
7. INSTALL "H-FRAMES", CABINETS AND SHELTERS AS INDICATED.
8. INSTALL ROADS, ACCESS WAYS, CURBS AND DRAINS AS INDICATED.
9. ACCOMPLISH REQUIRED MODIFICATION OF EXISTING FACILITIES.
10. PROVIDE ANTENNA SUPPORT STRUCTURE FOUNDATIONS.
11. PROVIDE SLABS AND EQUIPMENT PLATFORMS.
12. INSTALL COMPOUND FENCING, SIGHT SHIELDING, LANDSCAPING AND ACCESS BARRIERS.
13. PERFORM INSPECTION AND MATERIAL TESTING AS REQUIRED HEREINAFTER.
14. CONDUCT SITE RESISTANCE TO EARTH TESTING AS REQUIRED HEREINAFTER
15. INSTALL FIXED GENERATOR SETS AND OTHER STANDBY POWER SOLUTIONS.
16. INSTALL TOWERS, ANTENNA SUPPORT STRUCTURES AND PLATFORMS ON EXISTING TOWERS AS REQUIRED.
17. INSTALL CELL SITE RADIOS, MICROWAVE, GPS, COAXIAL MAINLINE, ANTENNAS, CROSS BAND COUPLERS, TOWER TOP AMPLIFIERS, LOW NOISE AMPLIFIERS AND RELATED EQUIPMENT.
18. PERFORM, DOCUMENT, AND CLOSE OUT ANY CONSTRUCTION CONTROL DOCUMENTS THAT MAY BE REQUIRED BY GOVERNMENT AGENCIES AND LANDLORDS.
19. PERFORM ANTENNAL AND COAX SWEEP TESTING AND MAKE ANY AND ALL NECESSARY CORRECTIONS.
20. REMAIN ON SITE MOBILIZED THROUGHOUT HAND-OFF AND INTEGRATION TO ASSIST AS NEEDED UNTIL SITE IS DEEMED SUBSTANTIALLY COMPLETE AND PLACED "ON AIR."

3.2 GENERAL REQUIREMENTS FOR CIVIL CONSTRUCTION:

A. CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH. AT THE COMPLETION OF THE WORK, CONTRACTOR SHALL REMOVE FROM THE SITE ALL REMAINING RUBBISH, IMPLEMENTS, TEMPORARY FACILITIES, AND SURPLUS MATERIALS.

B. EQUIPMENT ROOMS SHALL AT ALL TIMES BE MAINTAINED "BROOM CLEAN" AND CLEAR OF DEBRIS.

C. CONTRACTOR SHALL TAKE ALL REASONABLE PRECAUTIONS TO DISCOVER AND LOCATE ANY HAZARDOUS CONDITION.

1. IN THE EVENT CONTRACTOR ENCOUNTERS ANY HAZARDOUS CONDITION WHICH HAS NOT BEEN ABATED OR OTHERWISE MITIGATED, CONTRACTOR AND ALL OTHER PERSONS SHALL IMMEDIATELY STOP WORK IN THE AFFECTED AREA AND NOTIFY COMPANY IN WRITING. THE WORK IN THE AFFECTED AREA SHALL NOT BE RESUMED EXCEPT BY WRITTEN NOTIFICATION BY COMPANY.
2. CONTRACTOR AGREES TO USE CARE WHILE ON THE SITE AND SHALL NOT TAKE ANY ACTION THAT WILL OR MAY RESULT IN OR CAUSE THE HAZARDOUS CONDITION TO BE FURTHER RELEASED IN THE ENVIRONMENT, OR TO FURTHER EXPOSE INDIVIDUALS TO THE HAZARD.

D. CONTRACTOR'S ACTIVITIES SHALL BE RESTRICTED TO THE PROJECT LIMITS. SHOULD AREAS OUTSIDE THE PROJECT LIMITS BE AFFECTED BY CONTRACTOR'S ACTIVITIES, CONTRACTOR SHALL IMMEDIATELY RETURN THEM TO ORIGINAL CONDITION

E. CONDUCT TESTING AS REQUIRED HEREIN.

3.3 DELIVERABLES:

A. CONTRACTOR SHALL REVIEW, APPROVE, AND SUBMIT TO SPRINT SHOP DRAWINGS, PRODUCT DATA, SAMPLES, AND SIMILAR SUBMITTALS AS REQUIRED HEREINAFTER

B. PROVIDE DOCUMENTATION INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING. DOCUMENTATION SHALL BE FORWARDED IN ORIGINAL FORMAT AND/OR UPLOADED INTO SMS.

1. ALL CORRESPONDENCE AND PRELIMINARY CONSTRUCTION REPORTS.
2. PROJECT PROGRESS REPORTS.
3. CIVIL CONSTRUCTION START DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
4. ELECTRICAL SERVICE COMPLETION DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
5. LINES AND ANTENNA INSTALL DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
6. POWER INSTALL DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
7. TELCO READY DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
8. PPC (OR SHELTER) INSTALL DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
9. TOWER CONSTRUCTION START DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
10. TOWER CONSTRUCTION COMPLETE DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
11. BTS AND RADIO EQUIPMENT DELIVERED AT SITE DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
12. NETWORK OPERATIONS HANDOFF CHECKLIST (HOC WALK) COMPLETE (UPLOAD FORM IN SMS)
13. CIVIL CONSTRUCTION COMPLETE DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
14. SITE CONSTRUCTION PROGRESS PHOTOS UNLOADED INTO SMS.

SECTION 01 400 - SUBMITTALS & TESTS

PART 1 - GENERAL

1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

1.2 RELATED DOCUMENTS:

A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.

B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

1.3 SUBMITTALS:

A. THE WORK IN ALL ASPECTS SHALL COMPLY WITH THE CONSTRUCTION DRAWINGS AND THESE SPECIFICATIONS.

B. SUBMIT THE FOLLOWING TO COMPANY REPRESENTATIVE FOR APPROVAL.

1. CONCRETE MIX-DESIGNS FOR TOWER FOUNDATIONS, ANCHORS PIERS, AND CONCRETE PAVING.
2. CONCRETE BREAK TESTS AS SPECIFIED HEREIN.
3. SPECIAL FINISHES FOR INTERIOR SPACES, IF ANY.
4. ALL EQUIPMENT AND MATERIALS SO IDENTIFIED ON THE CONSTRUCTION DRAWINGS.
5. CHEMICAL GROUNDING DESIGN

D. ALTERNATES: AT THE COMPANY'S REQUEST, ANY ALTERNATIVES TO THE MATERIALS OR METHODS SPECIFIED SHALL BE SUBMITTED TO SPRINT'S CONSTRUCTION MANAGER FOR APPROVAL PRIOR TO BEING SHIPPED TO SITE. SPRINT WILL REVIEW AND APPROVE ONLY THOSE REQUESTS MADE IN WRITING. NO VERBAL APPROVALS WILL BE CONSIDERED. SUBMITTAL FOR APPROVAL SHALL INCLUDE A STATEMENT OF COST REDUCTION PROPOSED FOR USE OF ALTERNATE PRODUCT.

1.4 TESTS AND INSPECTIONS:

A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION TESTS, INSPECTIONS AND PROJECT DOCUMENTATION.

B. CONTRACTOR SHALL ACCOMPLISH TESTING INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

1. COAX SWEEPS AND FIBER TESTS PER TS-0200 REV 4 ANTENNA LINE ACCEPTANCE STANDARDS.
2. AGL, AZIMUTH AND DOWNTILT USING ELECTRONIC COMMERCIAL MADE-FOR-THE-PURPOSE ANTENNA ALIGNMENT TOOL.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CORRECTIONS TO ANY WORK IDENTIFIED AS UNACCEPTABLE IN SITE INSPECTION ACTIVITIES AND/OR AS A RESULT OF TESTING.

C. REQUIRED CLOSEOUT DOCUMENTATION INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING;

1. AZIMUTH, DOWNTILT, AGL - UPLOAD REPORT FROM ANTENNA ALIGNMENT TOOL TO SITERRA TASK 465. INSTALLED AZIMUTH, DOWNTILT, AND AGL MUST CONFORM TO THE RF DATA SHEETS. SWEEP AND FIBER TESTS
2. SCANABLE BARCODE PHOTOGRAPHS OF TOWER TOP AND INACCESSIBLE SERIALIZED EQUIPMENT
3. ALL AVAILABLE JURISDICTIONAL INFORMATION
4. PDF SCAN OF REDLINES PRODUCED IN FIELD
5. ELECTRONIC AS-BUILT DRAWINGS IN AUTOCAD AND PDF FORMATS. ANY FIELD CHANGE MUST BE REFLECTED BY MODIFYING THE PLANS, ELEVATIONS, AND DETAILS IN THE DRAWING SETS. GENERAL NOTES INDICATING MODIFICATIONS WILL NOT BE ACCEPTED. CHANGES SHALL BE HIGHLIGHTED AS "CLOUDS" IDENTIFIED AS THE "AS-BUILT" CONDITION.
6. LIEN WAIVERS
7. FINAL PAYMENT APPLICATION
8. REQUIRED FINAL CONSTRUCTION PHOTOS
9. CONSTRUCTION AND COMMISSIONING CHECKLIST COMPLETE WITH NO DEFICIENT ITEMS
10. ALL POST NTP TASKS INCLUDING DOCUMENT UPLOADS COMPLETED IN SITERRA (SPRINTS DOCUMENT REPOSITORY OF RECORD).

1.5 COMMISSIONING: PERFORM ALL COMMISSIONING AS REQUIRED BY APPLICABLE MOPs

1.6 INTEGRATION: PERFORM ALL INTEGRATION ACTIVITIES AS REQUIRED BY APPLICABLE MOPs

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 REQUIREMENTS FOR TESTING:

A. THIRD PARTY TESTING AGENCY:

1. WHEN THE USE OF A THIRD PARTY INDEPENDENT TESTING AGENCY IS REQUIRED, THE AGENCY THAT IS SELECTED MUST PERFORM SUCH WORK ON A REGULAR BASIS IN THE STATE WHERE THE PROJECT IS LOCATED AND HAVE A THOROUGH UNDERSTANDING OF LOCAL AVAILABLE MATERIALS, INCLUDING THE SOIL, ROCK, AND GROUNDWATER CONDITIONS.
2. THE THIRD PARTY TESTING AGENCY IS TO BE FAMILIAR WITH THE APPLICABLE REQUIREMENTS FOR THE TESTS TO BE DONE, EQUIPMENT TO BE USED, AND ASSOCIATED HEALTH AND SAFETY ISSUES.
3. EXPERIENCE IN SOILS, CONCRETE, MASONRY, AGGREGATE, AND ASPHALT TESTING USING ASTM, AASJTO, AND OTHER METHODS IS NEEDED.
4. EXPERIENCE IN SOILS, CONCRETE, MASONRY, AGGREGATE, AND ASPHALT TESTING USING ASTM, AASJTO, AND OTHER METHODS IS NEEDED.

3.2 REQUIRED TESTS:

A. CONTRACTOR SHALL ACCOMPLISH TESTING INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

1. CONCRETE CYLINDER BREAK TESTS FOR THE TOWER AND ANCHOR FOUNDATIONS AS SPECIFIED IN SECTION: PORTLAND CEMENT CONCRETE PAVING.
2. ASPHALT ROADWAY COMPACTED THICKNESS, SURFACE SMOOTHNESS, AND COMPACTED DENSITY TESTING AS SPECIFIED IN SECTION: HOT MIX ASPHALT PAVING.
3. FIELD QUALITY CONTROL TESTING AS SPECIFIED IN SECTION: PORTLAND CEMENT CONCRETE PAVING.
4. TESTING REQUIRED UNDER SECTION: AGGREGATE BASE FOR ACCESS ROADS, PADS AND ANCHOR LOCATIONS
5. STRUCTURAL BACKFILL COMPACTION TESTS FOR THE TOWER FOUNDATION.
6. SITE RESISTANCE TO EARTH TESTING PER EXHIBIT: CELL SITE GROUNDING SYSTEM DESIGN.
7. ANTENNA AND COAX SWEEP TESTS PER EXHIBIT: ANTENNA TRANSMISSION LINE ACCEPTANCE STANDARDS.
8. GROUNDING AT ANTENNA MASTS FOR GPS AND ANTENNAS
9. ALL OTHER TESTS REQUIRED BY COMPANY OR JURISDICTION.

3.3 REQUIRED INSPECTIONS

A. SCHEDULE INSPECTIONS WITH COMPANY REPRESENTATIVE.

B. CONDUCT INSPECTIONS INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

1. GROUNDING SYSTEM INSTALLATION PRIOR TO EARTH CONCEALMENT DOCUMENTED WITH DIGITAL PHOTOGRAPHS BY CONTRACTOR, APPROVED BY A&E OR SPRINT REPRESENTATIVE.
2. FORMING FOR CONCRETE AND REBAR PLACEMENT PRIOR TO POUR DOCUMENTED WITH DIGITAL PHOTOGRAPHS BY CONTRACTOR, APPROVED BY A&E OR SPRINT REPRESENTATIVE.
3. COMPACTION OF BACKFILL MATERIALS; AGGREGATE BASE FOR ROADS, PADS, AND ANCHORS; ASPHALT PAVING; AND SHAFT BACKFILL FOR CONCRETE AND WOOD POLES, BY INDEPENDENT THIRD PARTY AGENCY.
4. PRE- AND POST-CONSTRUCTION ROOFTOP AND STRUCTURAL INSPECTIONS ON EXISTING FACILITIES.
5. TOWER ERECTION SECTION STACKING AND PLATFORM ATTACHMENT DOCUMENTED BY DIGITAL PHOTOGRAPHS BY THIRD PARTY AGENCY.
6. ANTENNA AZIMUTH , DOWN TILT AND PER SUNLIGHT TOOL SUNSIGHT INSTRUMENTS - ANTENNALIGN ALIGNMENT TOOL (AAT)

PLANS PREPARED FOR:

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PLANS PREPARED BY:
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Phone: 518-690-0790 | Fax: 518-690-0793
www.infinigy.com
JOB NUMBER 526-104

PROJECT MANAGER:
AIROSMITH DEVELOPMENT
32 CLINTON ST.
SARATOGA SPRINGS, NY 12866
OFFICE#. (518) 306-3740

ENGINEERING LICENSE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR REVIEW	06/06/18	ETC	A

SITE NAME:
CTS

SITE NUMBER:
CT03XC360

SITE ADDRESS:
46 FERNWOOD LANE
WILTON, CT 06897

SHEET DESCRIPTION:
SPRINT SPECIFICATIONS

SHEET NUMBER:
SP-2

CONTINUE FROM SP-2

7. VERIFICATION DOCUMENTED WITH THE ANTENNA CHECKLIST REPORT, BY A&E, SITE DEVELOPMENT REP, OR RF REP.

8. FINAL INSPECTION CHECKLIST AND HANDOFF WALK (HOC.). SIGNED FORM SHOWING ACCEPTANCE BY FIELD OPS IS TO BE UPLOADED INTO SMS.

9. COAX SWEEP AND FIBER TESTING DOCUMENTS SUBMITTED VIA SMS FOR RF APPROVAL.

10. SCAN-ABLE BARCODE PHOTOGRAPHS OF TOWER TOP AND INACCESSIBLE SERIALIZED EQUIPMENT

11. ALL AVAILABLE JURISDICTIONAL INFORMATION

12. PDF SCAN OF REDLINES PRODUCED IN FIELD

C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CORRECTIONS TO ANY WORK IDENTIFIED AS UNACCEPTABLE IN SITE INSPECTION ACTIVITIES AND/OR AS A RESULT OF TESTING.

D. CONSTRUCTION INSPECTIONS AND CORRECTIVE MEASURES SHALL BE DOCUMENTED BY THE CONTRACTOR WITH WRITTEN REPORTS AND PHOTOGRAPHS. PHOTOGRAPHS MUST BE DIGITAL AND OF SUFFICIENT QUALITY TO CLEARLY SHOW THE SITE CONSTRUCTION. PHOTOGRAPHS MUST CLEARLY IDENTIFY THE PHOTOGRAPHED ITEM AND BE LABELED WITH THE SITE CASCADE NUMBER, SITE NAME, DESCRIPTION, AND DATE.

3.4 DELIVERABLES: TEST AND INSPECTION REPORTS AND CLOSEOUT DOCUMENTATION SHALL BE UPLOADED TO THE SMS AND/OR FORWARDED TO SPRINT FOR INCLUSION INTO THE PERMANENT SITE FILES.

A. THE FOLLOWING TEST AND INSPECTION REPORTS SHALL BE PROVIDED AS APPLICABLE.

1. CONCRETE MIX AND CYLINDER BREAK REPORTS.
2. STRUCTURAL BACKFILL COMPACTION REPORTS.
3. SITE RESISTANCE TO EARTH TEST.
4. ANTENNA AZIMUTH AND DOWN TILT VERIFICATION
5. TOWER ERECTION INSPECTIONS AND MEASUREMENTS DOCUMENTING TOWER INSTALLED PER SUPPLIER'S REQUIREMENTS AND THE APPLICABLE SECTIONS HEREIN.
6. COAX CABLE SWEEP TESTS PER COMPANY'S "ANTENNA LINE ACCEPTANCE STANDARDS".

B. REQUIRED CLOSEOUT DOCUMENTATION INCLUDES THE FOLLOWING;

1. TEST WELLS AND TRENCHES: PHOTOGRAPHS OF ALL TEST WELLS; PHOTOGRAPHS SHOWING ALL OPEN EXCAVATIONS AND TRENCHING PRIOR TO BACKFILLING SHOWING A TAPE MEASURE VISIBLE IN THE EXCAVATIONS INDICATING DEPTH.
2. CONDUITS, CONDUCTORS AND GROUNDING: PHOTOGRAPHS SHOWING TYPICAL INSTALLATION OF CONDUCTORS AND CONNECTORS; PHOTOGRAPHS SHOWING TYPICAL BEND RADIUS OF INSTALLED GROUND WIRES AND GROUND ROD SPACING;
3. CONCRETE FORMS AND REINFORCING: CONCRETE FORMING AT TOWER AND EQUIPMENT/SHELTER PAD/FOUNDATIONS – PHOTOGRAPHS SHOWING ALL REINFORCING STEEL, UTILITY AND CONDUIT STUB OUTS; PHOTOGRAPHS SHOWING CONCRETE POUR OF SHELTER SLAB/FOUNDATION, TOWER FOUNDATION AND GUY ANCHORS WITH VIBRATOR IN USE; PHOTOGRAPHS SHOWING EACH ANCHOR ON GUYED TOWERS, BEFORE CONCRETE POUR.
4. TOWER, ANTENNAS AND MAINLINE: INSPECTION AND PHOTOGRAPHS OF SECTION STACKING; INSPECTION AND PHOTOGRAPHS OF PLATFORM COMPONENT ATTACHMENT POINTS; PHOTOGRAPHS OF TOWER TOP GROUNDING; PHOTOS OF TOWER COAX LINE COLOR CODING AT THE TOP AND AT GROUND LEVEL; INSPECTION AND PHOTOGRAPHS OF OPERATIONAL OF TOWER LIGHTING, AND PLACEMENT OF FAA REGISTRATION SIGN; PHOTOGRAPHS SHOWING ADDITIONAL GROUNDING POINTS FOR TOWERS GREATER THAN 200 FEET.; PHOTOS OF ANTENNA GROUND BAR, EQUIPMENT GROUND BAR, AND MASTER GROUND BAR; PHOTOS OF GPS ANTENNA(S); PHOTOS OF EACH SECTOR OF ANTENNAS; ONE PHOTOGRAPH LOOKING AT THE SECTOR AND ONE FROM BEHIND SHOWING THE PROJECTED COVERAGE AREA; PHOTOS OF COAX WEATHERPROOFING – TOP AND BOTTOM; PHOTOS OF COAX GROUNDING--TOP AND BOTTOM; PHOTOS OF ANTENNA AND MAST GROUNDING; PHOTOS OF COAX CABLE ENTRY INTO SHELTER; PHOTOS OF PLATFORM MECHANICAL CONNECTIONS TO TOWER/MONOPOLE.
5. ROOF TOPS: PRE-CONSTRUCTION AND POST-CONSTRUCTION VISUAL INSPECTION AND PHOTOGRAPHS OF THE ROOF AND INTERIOR TO DETERMINE AND DOCUMENT CONDITIONS; ROOF TOP CONSTRUCTION INSPECTIONS AS REQUIRED BY THE JURISDICTION; PHOTOGRAPHS OF CABLE TRAY AND/OR ICE BRIDGE; PHOTOGRAPHS OF DOGHOUSE/CABLE EXIT FROM ROOF;
6. SITE LAYOUT – PHOTOGRAPHS OF THE OVERALL COMPOUND, INCLUDING EQUIPMENT PLATFORM FROM ALL FOUR CORNERS.
7. FINISHED UTILITIES: CLOSE-UP PHOTOGRAPHS OF THE PPC BREAKER PANEL; CLOSE-UP PHOTOGRAPH OF THE INSIDE OF THE TELCO PANEL AND NIU; CLOSE-UP PHOTOGRAPH OF THE POWER METER AND DISCONNECT; PHOTOS OF POWER AND TELCO ENTRANCE TO COMPANY ENCLOSURE; PHOTOGRAPHS AT METER BOX AND/OR FACILITY DISTRIBUTION PANEL.
8. REQUIRED MATERIALS CERTIFICATIONS: CONCRETE MIX DESIGNS; MILL CERTIFICATION FOR ALL REINFORCING AND STRUCTURAL STEEL; AND ASPHALT PAVING MIX DESIGN.
9. ANY AND ALL SUBMITTALS BY THE JURISDICTION OR COMPANY.

SECTION 01 400 – SUBMITTALS & TESTS

PART 1 – GENERAL

1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

1.2 RELATED DOCUMENTS:

A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.

B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 WEEKLY REPORTS:

A. CONTRACTOR SHALL PROVIDE SPRINT WITH WEEKLY REPORTS SHOWING PROJECT STATUS. THIS STATUS REPORT FORMAT WILL BE PROVIDED TO THE CONTRACTOR BY SPRINT. THE REPORT WILL CONTAIN SITE ID NUMBER, THE MILESTONES FOR EACH SITE, INCLUDING THE BASELINE DATE, ESTIMATED COMPLETION DATE AND ACTUAL COMPLETION DATE.

B. REPORT INFORMATION WILL BE TRANSMITTED TO SPRINT VIA ELECTRONIC MEANS AS REQUIRED. THIS INFORMATION WILL PROVIDE A BASIS FOR PROGRESS MONITORING AND PAYMENT.

3.2 PROJECT CONFERENCE CALLS:

A. SPRINT MAY HOLD WEEKLY PROJECT CONFERENCE CALLS. CONTRACTOR WILL BE REQUIRED TO COMMUNICATE SITE STATUS, MILESTONE COMPLETIONS AND UPCOMING MILESTONE PROJECTIONS, AND ANSWER ANY OTHER SITE STATUS QUESTIONS AS NECESSARY.

3.3 PROJECT TRACKING IN SMS:

A. CONTRACTOR SHALL PROVIDE SCHEDULE UPDATES AND PROJECTIONS IN THE SMS SYSTEM ON A WEEKLY BASIS.

3.4 ADDITIONAL REPORTING:

A. ADDITIONAL OR ALTERNATE REPORTING REQUIREMENTS MAY BE ADDED TO THE REPORT AS DETERMINED TO BE REASONABLY NECESSARY BY COMPANY.

3.5 PROJECT PHOTOGRAPHS:

A. FILE DIGITAL PHOTOGRAPHS OF COMPLETED SITE IN JPEG FORMAT IN THE SMS PHOTO LIBRARY FOR THE RESPECTIVE SITE. PHOTOGRAPHS SHALL BE CLEARLY LABELED WITH SITE NUMBER, NAME AND DESCRIPTION, AND SHALL INCLUDE AT A MINIMUM THE FOLLOWING AS APPLICABLE:

1. 1SHELTER AND TOWER OVERVIEW.
2. TOWER FOUNDATION(S) – FORMS AND STEEL BEFORE POUR (EACH ANCHOR ON GUYED TOWERS).
3. TOWER FOUNDATION(S) POUR WITH VIBRATOR IN USE (EACH ANCHOR ON GUYED TOWERS).
4. TOWER STEEL AS BEING INSTALLED INTO HOLE (SHOW ANCHOR STEEL ON GUYED TOWERS).
5. PHOTOS OF TOWER SECTION STACKING.
6. CONCRETE TESTING / SAMPLES.
7. PLACING OF ANCHOR BOLTS IN TOWER FOUNDATION.
8. BUILDING/WATER TANK FROM ROAD FOR TENANT IMPROVEMENTS OR COMMENTS.
9. SHELTER FOUNDATION--FORMS AND STEEL BEFORE POURING.
10. SHELTER FOUNDATION POUR WITH VIBRATOR IN USE.
11. COAX CABLE ENTRY INTO SHELTER.
12. PLATFORM MECHANICAL CONNECTIONS TO TOWER/MONOPOLE.
13. ROOFTOP PRE AND POST CONSTRUCTION PHOTOS TO INCLUDE PENETRATIONS AND INTERIOR CEILING.
14. PHOTOS OF TOWER TOP COAX LINE COLOR CODING AND COLOR CODING AT GROUND LEVEL.
15. PHOTOS OF ALL APPROPRIATE COMPANY OR REGULATORY SIGNAGE.
16. PHOTOS OF EQUIPMENT BOLT DOWN INSIDE SHELTER.
17. POWER AND TELCO ENTRANCE TO COMPANY ENCLOSURE AND POWER AND TELCO SUPPLY LOCATIONS INCLUDING METER/DISCONNECT.
18. ELECTRICAL TRENCH(S) WITH ELECTRICAL / CONDUIT BEFORE BACKFILL.
19. ELECTRICAL TRENCH(S) WITH FOIL-BACKED TAPE BEFORE FURTHER BACKFILL.
20. TELCO TRENCH WITH TELEPHONE / CONDUIT BEFORE BACKFILL.
21. TELCO TRENCH WITH FOIL-BACKED TAPE BEFORE FURTHER BACKFILL.
22. SHELTER GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADII).
23. TOWER GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADII).
24. FENCE GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADII).
25. ALL BTS GROUND CONNECTIONS.
26. ALL GROUND TEST WELLS.
27. ANTENNA GROUND BAR AND EQUIPMENT GROUND BAR.
28. ADDITIONAL GROUNDING POINTS ON TOWERS ABOVE 200'.
29. HVAC UNITS INCLUDING CONDENSERS ON SPLIT SYSTEMS.
30. GPS ANTENNAS.
31. CABLE TRAY AND/OR WAVEGUIDE BRIDGE.
32. DOGHOUSE/CABLE EXIT FROM ROOF.
33. EACH SECTOR OF ANTENNAS; ONE PHOTOGRAPH LOOKING AT THE SECTOR AND ONE FROM BEHIND SHOWING THE PROJECTED COVERAGE AREA.
34. MASTER BUS BAR.
35. TELCO BOARD AND NIU.
36. ELECTRICAL DISTRIBUTION WALL.
37. CABLE ENTRY WITH SURGE SUPPRESSION.
38. ENTRANCE TO EQUIPMENT ROOM.
39. COAX WEATHERPROOFING-TOP AND BOTTOM OF TOWER.
40. COAX GROUNDING -TOP AND BOTTOM OF TOWER.
41. ANTENNA AND MAST GROUNDING.
42. LANDSCAPING – WHERE APPLICABLE.

3.6 FINAL PROJECT ACCEPTANCE: COMPLETE ALL REQUIRED REPORTING TASKS PER CONTRACT, CONTRACT DOCUMENTS OR THE SPRINT INTEGRATED CONSTRUCTION STANDARDS FOR WIRELESS SITES AND UPLOAD INTO SITERRA.

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www.infinigy.com
JOB NUMBER 526-104

PROJECT MANAGER:
AIROSMITH DEVELOPMENT
32 CLINTON ST.
SARATOGA SPRINGS, NY 12866
OFFICE#. (518) 306-3740

ENGINEERING LICENSE:

STATE OF CONNECTICUT
JOHN S. STEVENS
NO. 24705
LICENSED PROFESSIONAL ENGINEER
6.6.2018

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR REVIEW	06/06/18	ETC	A

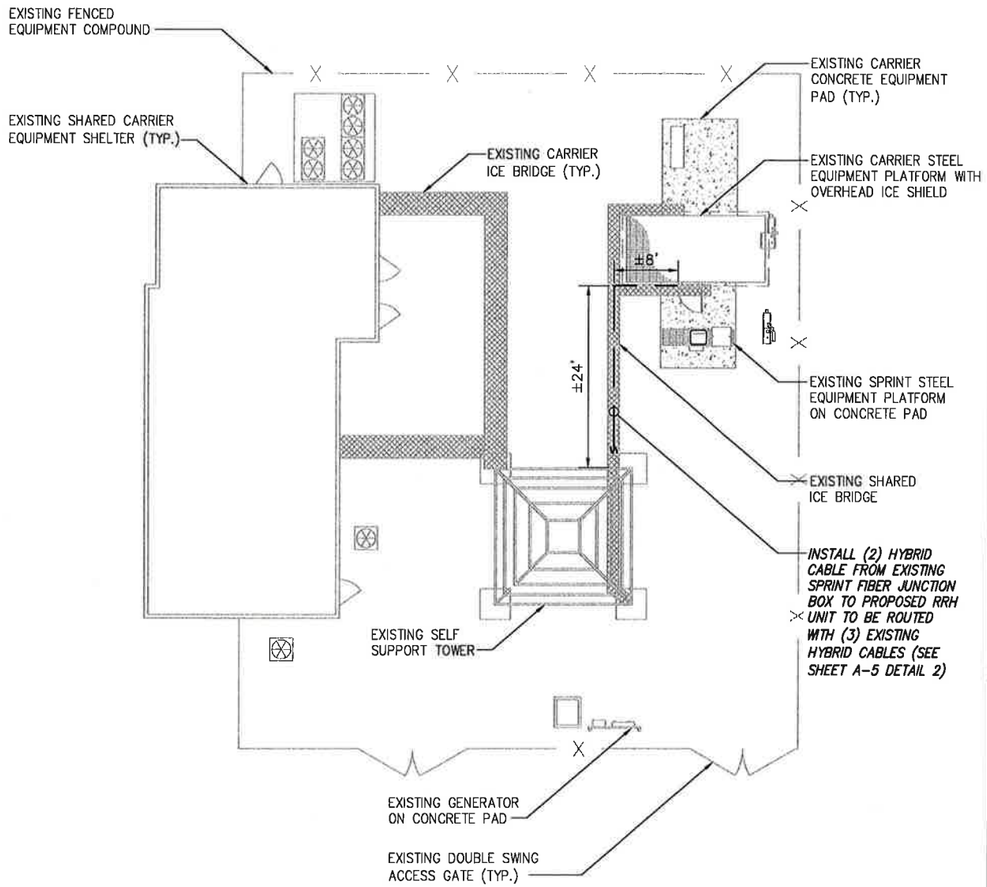
SITE NAME:
CTS

SITE NUMBER:
CT03XC360

SITE ADDRESS:
46 FERNWOOD LANE
WILTON, CT 06897

SHEET DESCRIPTION:
SPRINT SPECIFICATIONS

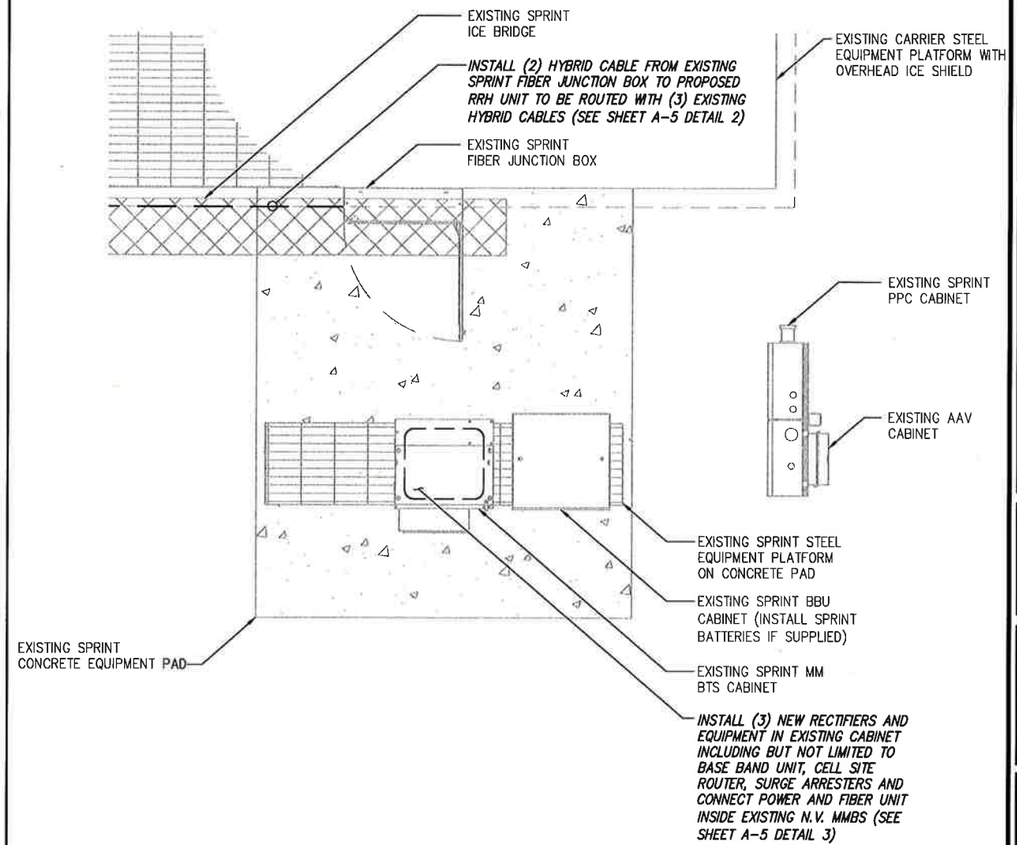
SHEET NUMBER:
SP-3



INFORMATION CONTAINED WITHIN DRAWINGS ARE BASED ON PROVIDED INFORMATION AND ARE NOT THE RESULT OF A FIELD SURVEY.

GRAPHIC SCALE:
20' 10' 0 10' 20'
SCALE (11x17): 1" = 20'-0"
SCALE (22x34): 1" = 10'-0"

OVERALL SITE PLAN | SCALE: AS NOTED | 1



GRAPHIC SCALE:
4' 2' 0 2' 4'
SCALE (11x17): 1" = 4'-0"
SCALE (22x34): 1" = 2'-0"

SPRINT EQUIPMENT PLAN | SCALE: AS NOTED | 2

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6/22/2018

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR REVIEW	06/06/18	ETC	A

SITE NAME:
CTS

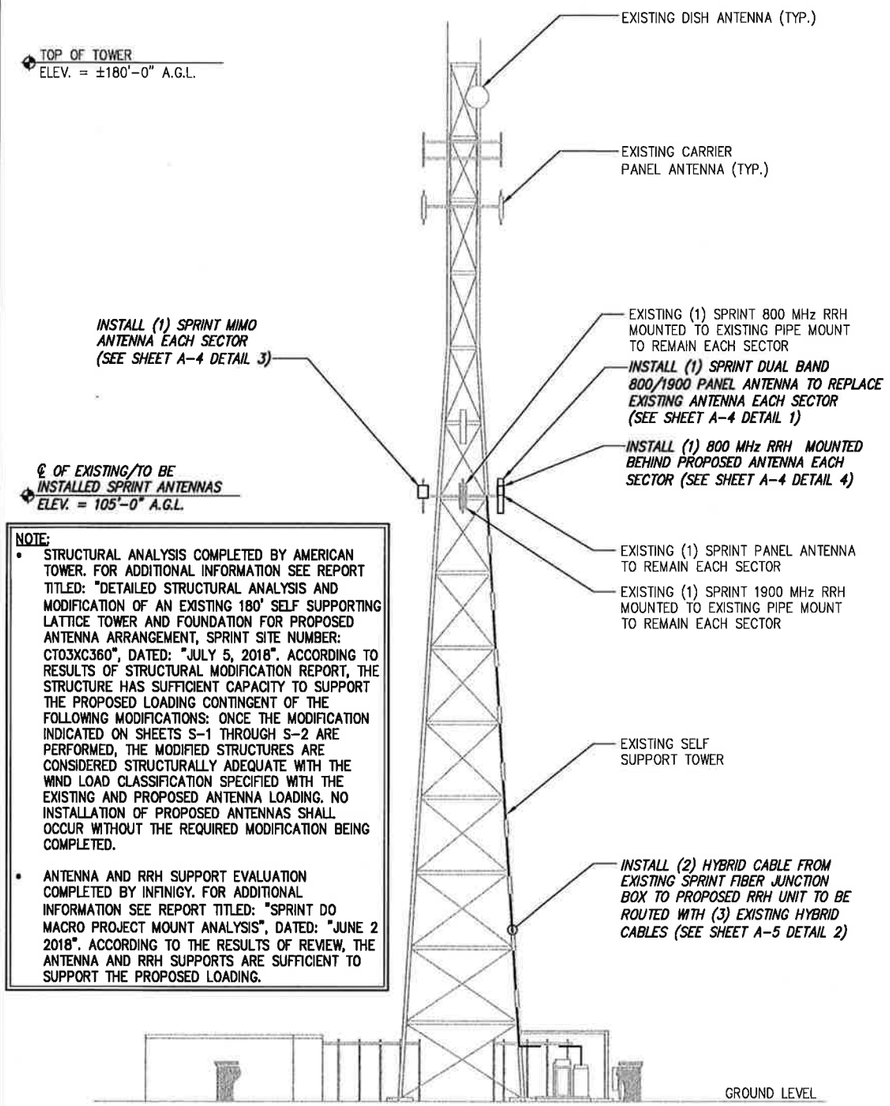
SITE NUMBER:
CT03XC360

SITE ADDRESS:
46 FERNWOOD LANE
WILTON, CT 06897

SHEET DESCRIPTION:
SITE PLAN

SHEET NUMBER:
A-1

NOTE:
SEE DETAIL 2 ON A-3
FOR ANTENNA LAYOUT



NOTE:

- STRUCTURAL ANALYSIS COMPLETED BY AMERICAN TOWER. FOR ADDITIONAL INFORMATION SEE REPORT TITLED: "DETAILED STRUCTURAL ANALYSIS AND MODIFICATION OF AN EXISTING 180' SELF SUPPORTING LATTICE TOWER AND FOUNDATION FOR PROPOSED ANTENNA ARRANGEMENT, SPRINT SITE NUMBER: CT03XC360", DATED: "JULY 5, 2018". ACCORDING TO RESULTS OF STRUCTURAL MODIFICATION REPORT, THE STRUCTURE HAS SUFFICIENT CAPACITY TO SUPPORT THE PROPOSED LOADING CONTINGENT OF THE FOLLOWING MODIFICATIONS: ONCE THE MODIFICATION INDICATED ON SHEETS S-1 THROUGH S-2 ARE PERFORMED, THE MODIFIED STRUCTURES ARE CONSIDERED STRUCTURALLY ADEQUATE WITH THE WIND LOAD CLASSIFICATION SPECIFIED WITH THE EXISTING AND PROPOSED ANTENNA LOADING. NO INSTALLATION OF PROPOSED ANTENNAS SHALL OCCUR WITHOUT THE REQUIRED MODIFICATION BEING COMPLETED.
- ANTENNA AND RRH SUPPORT EVALUATION COMPLETED BY INFINIGY. FOR ADDITIONAL INFORMATION SEE REPORT TITLED: "SPRINT DO MACRO PROJECT MOUNT ANALYSIS", DATED: "JUNE 2 2018". ACCORDING TO THE RESULTS OF REVIEW, THE ANTENNA AND RRH SUPPORTS ARE SUFFICIENT TO SUPPORT THE PROPOSED LOADING.

TOWER ELEVATION | NO SCALE | 1

SITE LOADING CHART

SECTOR	EXISTING/ PROPOSED	ANTENNA MODEL #	VENDOR	AZIMUTH	QTY.	REMAIN/ REMOVED	RRH (QTY/MODEL)	CABLE	CABLE LENGTH	RAD CENTER
ALPHA	PROPOSED	AAHC	NOKIA	20°	1	–	(2) 800 MHZ 2X50W RRH	SEE SHEET A-5 DETAIL 1	±158'*	±105' AGL
	PROPOSED	NNVV-65B-R4	COMMSCOPE	20°	1	–	(1) 1900 MHz 4X45 RRH	SEE SHEET A-5 DETAIL 1		
	EXISTING	APXVSPP18-C-A20	RFS	35°	1	REMOVE		EXISTING HYBRID		
BETA	PROPOSED	APXVTM14-ALU-120	RFS	100°	1	–	(2) 800 MHZ 2X50W RRH	SEE SHEET A-5 DETAIL 1		±105' AGL
	PROPOSED	NNVV-65B-R4	COMMSCOPE	100°	1	–	(1) 1900 MHz 4X45 RRH	SEE SHEET A-5 DETAIL 1		
	EXISTING	APXVSPP18-C-A20	RFS	100°	1	REMOVE		EXISTING HYBRID		
GAMMA	PROPOSED	APXVTM14-ALU-120	RFS	230°	1	–	(2) 800 MHZ 2X50W RRH	SEE SHEET A-5 DETAIL 1		±105' AGL
	PROPOSED	NNVV-65B-R4	COMMSCOPE	230°	1	–	(1) 1900 MHz 4X45 RRH	SEE SHEET A-5 DETAIL 1		
	EXISTING	APXVSPP18-C-A20	RFS	230°	1	REMOVE		EXISTING HYBRID		

PROJECT SCOPE:

INSTALL: (6) PANEL ANTENNAS AND (3) RRH'S REMOVE: (3) PANEL ANTENNAS

* PROPOSED CABLE LENGTH WAS DETERMINED USING THE SUM OF THE RAD CENTER OF ANTENNAS, AND DISTANCE FROM EXISTING EQUIPMENT AREA TO TOWER BASE WITH AN ADDITIONAL 20' BUFFER. LENGTH TO BE VERIFIED IN FIELD PRIOR TO ORDERING MATERIALS.

SITE LOADING CHART | NO SCALE | 2

DETAIL NOT USED | NO SCALE | 3

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PROJECT MANAGER:

AIROSMITH DEVELOPMENT
32 CLINTON ST.
SARATOGA SPRINGS, NY 12866
OFFICE#. (518) 308-3740

ENGINEERING LICENSE:

STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
LICENSED PROFESSIONAL ENGINEER
AUG 22 2018

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR REVIEW	06/06/18	ETC	A

SITE NAME:

CTS

SITE NUMBER:

CT03XC360

SITE ADDRESS:

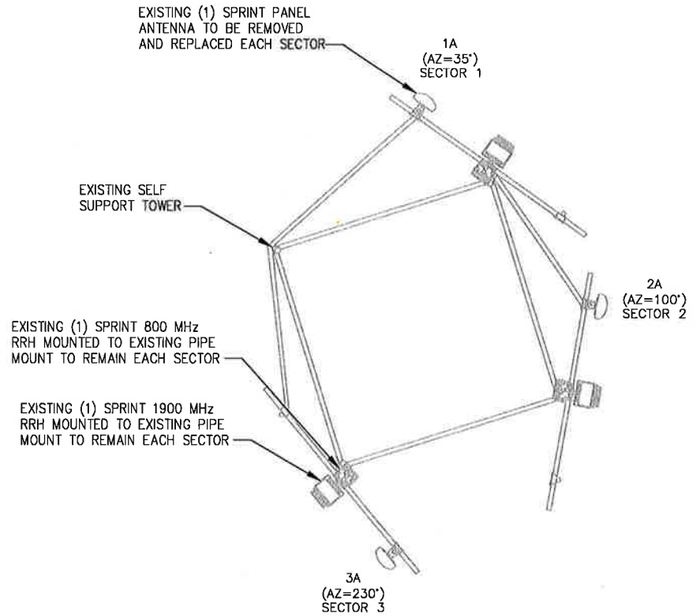
46 FERNWOOD LANE
WILTON, CT 06897

SHEET DESCRIPTION:

TOWER ELEVATION

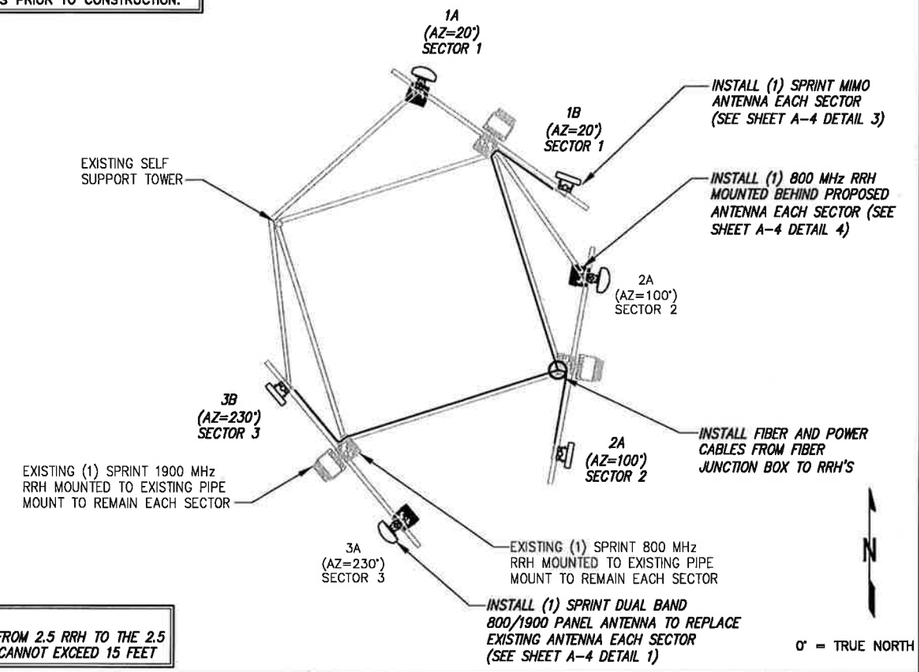
SHEET NUMBER:

A-2



EXISTING ANTENNA & RRH LAYOUT | NO SCALE | 1

THE CONFIGURATION PLANS ARE BASED ON PROVIDED INFORMATION AND ARE FOR CONCEPTUAL PURPOSES ONLY. CONTRACTOR TO VERIFY FIELD CONDITIONS PRIOR TO CONSTRUCTION.

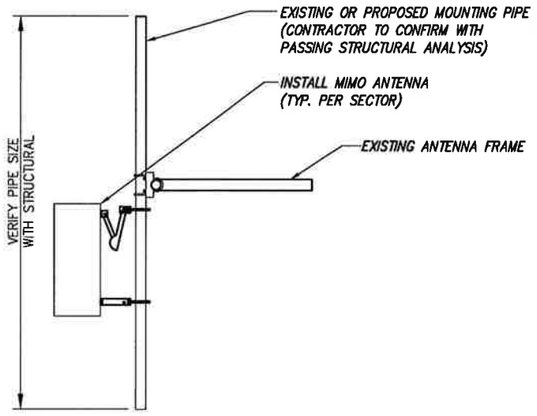


NOTE:
JUMPERS FROM 2.5 RRH TO THE 2.5 ANTENNA CANNOT EXCEED 15 FEET

FINAL ANTENNA & RRH LAYOUT | NO SCALE | 2

NOTE:
CONTRACTOR TO POSITION RRH ON MOUNT BEHIND ANTENNA SUCH THAT THE RRH DOES NOT INTERFERE WITH THE EXISTING PLATFORM/T-ARM MOUNTING HARDWARE.

NOTE:
THE DIAGRAM IS FOR CONCEPTUAL PURPOSES ONLY. CONTRACTOR IS TO REFER TO PASSING STRUCTURAL ANALYSIS FOR ANTENNA AND RRH MOUNTING DETAILS



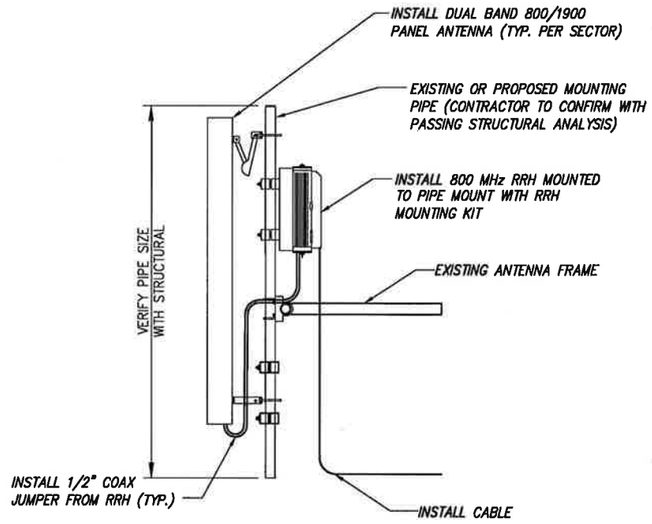
NOTES:

1. CUT DC CONDUCTORS TO LENGTH.
2. COIL FIBER CABLE AND SECURE AT SIDE OF RRH.
3. DO NO EXCEED BEND RADIUS.

TYPICAL 2.5 ANTENNA MOUNTING DETAILS | NO SCALE | 3

NOTE:
CONTRACTOR TO POSITION RRH ON MOUNT BEHIND ANTENNA SUCH THAT THE RRH DOES NOT INTERFERE WITH THE EXISTING PLATFORM/T-ARM MOUNTING HARDWARE.

NOTE:
THE DIAGRAM IS FOR CONCEPTUAL PURPOSES ONLY. CONTRACTOR IS TO REFER TO PASSING STRUCTURAL ANALYSIS FOR ANTENNA AND RRH MOUNTING DETAILS



NOTES:

1. CUT DC CONDUCTORS TO LENGTH.
2. COIL FIBER CABLE AND SECURE AT SIDE OF RRH.
3. DO NO EXCEED BEND RADIUS.

TYPICAL DUAL BAND ANTENNA & RRH MOUNTING DETAILS | NO SCALE | 4

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OFFICE#, (518) 306-3740

ENGINEERING LICENSE:
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JOHN S. STEVENS
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AUG. 22 2018

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR REVIEW	06/06/18	ETC	A

SITE NAME:
CTS

SITE NUMBER:
CT03XC360

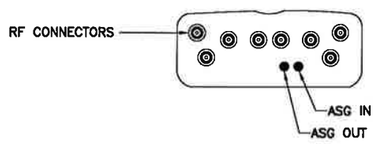
SITE ADDRESS:
46 FERNWOOD LANE
WILTON, CT 06897

SHEET DESCRIPTION:
ANTENNA LAYOUT & MOUNTING DETAILS

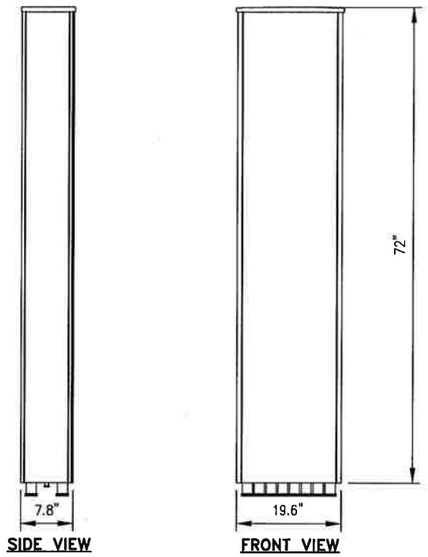
SHEET NUMBER:
A-3

ANTENNA COMMSCOPE NNVV-65B-R4

RADOME MATERIAL:	FIBERGLASS
RADOME COLOR:	LIGHT GREY
DIMENSIONS, HxWxD.in(mim):	72"x19.6"x7.8" (1829x498x198mm)
WEIGHT:	77.4 lbs
CONNECTORS:	(8) PIN DIN FEMALE
	(8) 8 PIN DIN MALE



PLAN VIEW

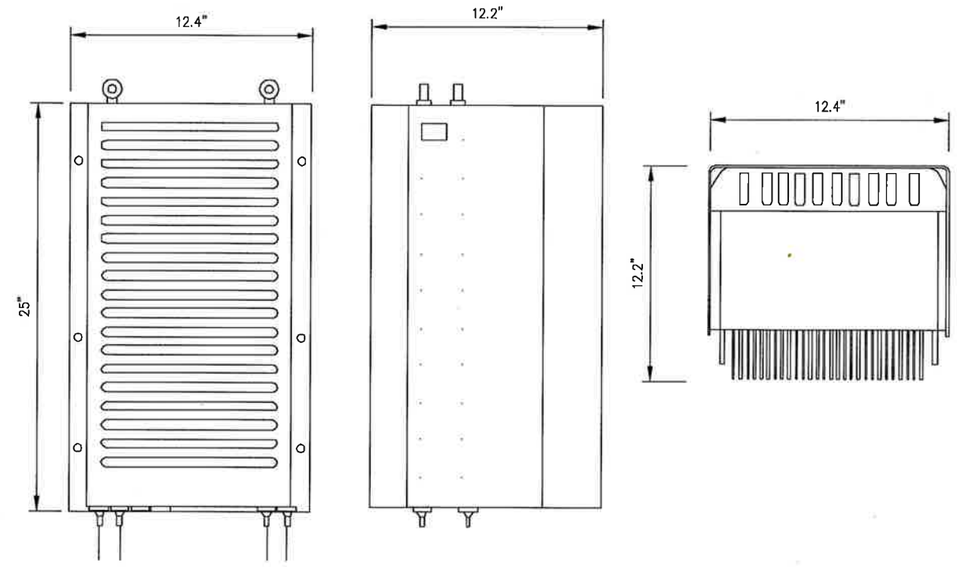


SIDE VIEW FRONT VIEW

DUAL BAND ANTENNA DETAIL | NO SCALE | 1

RRH: ALCATEL LUCENT 1900 MHz

COLOR: LIGHT GREY
WEIGHT: 70 LBS.
(INCLUDING OPTIONAL SOLAR SHIELD)

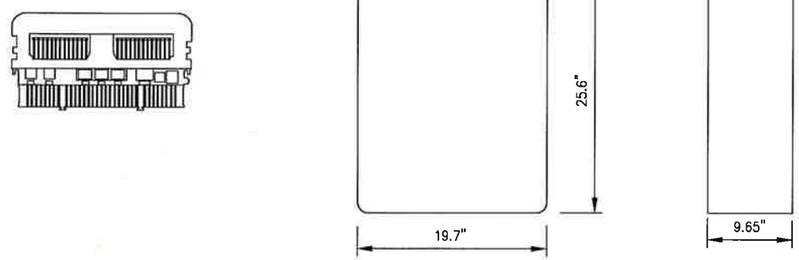


FRONT VIEW SIDE VIEW TOP VIEW

EXISTING 1900 MHz RRH | NO SCALE | 2

ANTENNA NOPIKA AAHC

RADOME MATERIAL:	FIBERGLASS
RADOME COLOR:	LIGHT GREY
DIMENSIONS, HxWxD.In(mim):	25.6"x19.7"x9.9" (651x501x245mm)
WEIGHT:	99.2 lbs
CONNECTORS:	(2) 7/16" DIN FEMALE
	(8) 4.1/9.5 DIN FEMALE



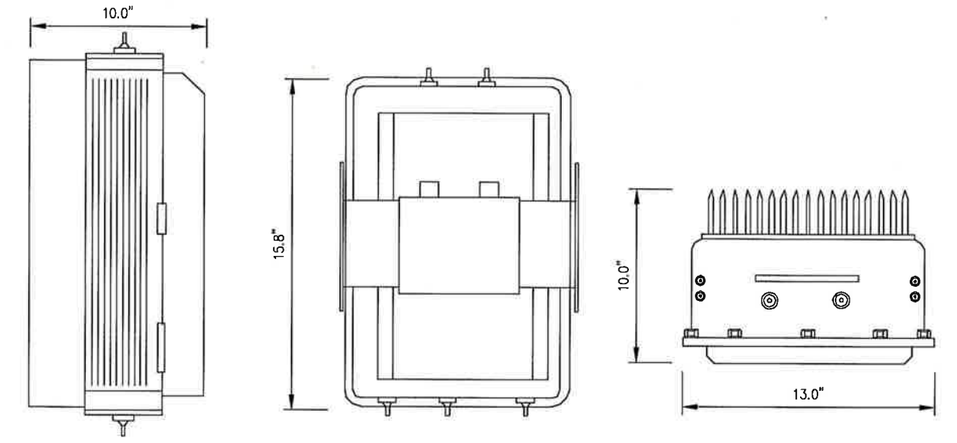
MIMO ANTENNA DETAIL | NO SCALE | 3

RRH: ALCATEL LUCENT RRH 800 MHz 2x50W

COLOR: LIGHT GREY
WEIGHT: 53 LBS.

NOTES

COMPLY WITH MANUFACTURERS INSTRUCTIONS TO ENSURE THAT ALL RRH'S RECEIVE ELECTRICAL POWER WITHIN 24 HOURS OF BEING REMOVED FROM THE MANUFACTURER'S PACKAGING. DO NOT OPEN RRH PACKAGES IN THE RAIN.



SIDE VIEW FRONT VIEW PLAN VIEW

800 MHz RRH | NO SCALE | 4

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AUG 2 2018

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR REVIEW	06/06/18	ETC	A

SITE NAME:
CTS

SITE NUMBER:
CT03XC360

SITE ADDRESS:
46 FERNWOOD LANE
WILTON, CT 06897

SHEET DESCRIPTION:
EQUIPMENT & MOUNTING DETAILS

SHEET NUMBER:
A-4

RFS HYBRIFLEX RISER CABLE SCHEDULE

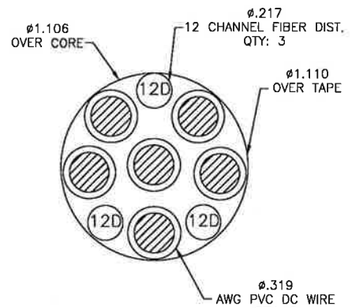
Fiber Only (Existing DC Power)	**Hybrid cable** MN: HB058-M12-050F 12x multi-mode fiber pairs, Top: Outdoor protected connectors, Bottom: LC Connectors, 5/8 cable, 50 ft	50 ft
	MN: HB058-M12-075F	75 ft
	MN: HB058-M12-100F	100 ft
	MN: HB058-M12-125F	125 ft
	MN: HB058-M12-150F	150 ft
	MN: HB058-M12-175F	175 ft
	MN: HB058-M12-200F	200 ft
8 AWG Power	**Hybrid cable** MN: HB114-08U3M12-050F 3x 8 AWG power pairs, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/4 cable, 50 ft	50 ft
	MN: HB114-08U3M12-075F	75 ft
	MN: HB114-08U3M12-100F	100 ft
	MN: HB114-08U3M12-125F	125 ft
	MN: HB114-08U3M12-150F	150 ft
	MN: HB114-08U3M12-175F	175 ft
	MN: HB114-08U3M12-200F	200 ft
6 AWG Power	**Hybrid cable** MN: HB114-13U3M12-225F 3x 6 AWG power pair, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/4 cable, 225 ft	225 ft
	MN: HB114-13U3M12-250F	250 ft
	MN: HB114-13U3M12-275F	275 ft
	MN: HB114-13U3M12-300F	300 ft
4 AWG Power	**Hybrid cable** MN: HB114-21U3M12-325F 3x 4 AWG power pair, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/4 cable, 325 ft	325 ft
	MN: HB114-21U3M12-350F	350 ft
	MN: HB114-21U3M12-375F	375 ft

RFS HYBRIFLEX JUMPER CABLE SCHEDULE

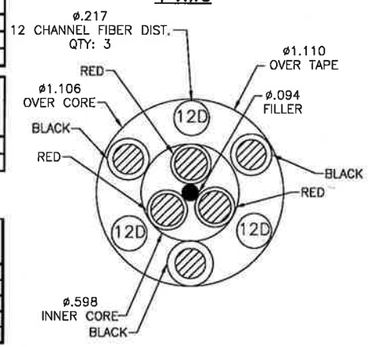
Fiber Only	**Hybrid Jumper cable** MN: HBF012-M3-5F1 5 ft, 3x multi-mode fiber pairs, Outdoor & LC connectors, 1/2 cable	5 ft
	MN: HBF012-M3-10F1	10 ft
	MN: HBF012-M3-15F1	15 ft
	MN: HBF012-M3-20F1	20 ft
	MN: HBF012-M3-25F1	25 ft
	MN: HBF012-M3-30F1	30 ft
8 AWG Power	**Hybrid Jumper cable** MN: HBF058-08U1M3-5F1 5 ft, 1x 8 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC Connectors, 5/8 cable	5 ft
	MN: HBF058-08U1M3-10F1	10 ft
	MN: HBF058-08U1M3-15F1	15 ft
	MN: HBF058-08U1M3-20F1	20 ft
	MN: HBF058-08U1M3-25F1	25 ft
	MN: HBF058-08U1M3-30F1	30 ft
6 AWG Power	**Hybrid Jumper cable** MN: HBF058-13U1M3-5F1 5 ft, 1x 6 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC Connectors, 5/8 cable	5 ft
	MN: HBF058-13U1M3-10F1	10 ft
	MN: HBF058-13U1M3-15F1	15 ft
	MN: HBF058-13U1M3-20F1	20 ft
	MN: HBF058-13U1M3-25F1	25 ft
	MN: HBF058-13U1M3-30F1	30 ft
4 AWG Power	**Hybrid Jumper cable** MN: HBF078-21U1M3-5F1 5 ft, 1x 4 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC Connectors, 7/8 cable	5 ft
	MN: HBF078-21U1M3-10F1	10 ft
	MN: HBF078-21U1M3-15F1	15 ft
	MN: HBF078-21U1M3-20F1	20 ft
	MN: HBF078-21U1M3-25F1	25 ft
	MN: HBF078-21U1M3-30F1	30 ft

NOTE:
SPRINT CM TO CONFIRM HYBRID OR FIBER RISER CABLE AND HYBRID OR FIBER JUMPER CABLE MODEL NUMBERS IF HYBRID CABLES ARE REQUIRED BEFORE PREPARING BOM.

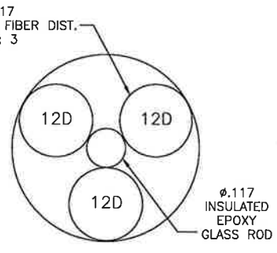
* PROPOSED CABLE LENGTH WAS DETERMINED USING THE SUM OF THE RAD CENTER OF ANTENNAS, AND DISTANCE FROM EXISTING EQUIPMENT AREA TO TOWER BASE WITH AN ADDITIONAL 20' BUFFER. LENGTH TO BE VERIFIED IN FIELD PRIOR TO ORDERING MATERIALS.



4 AWG

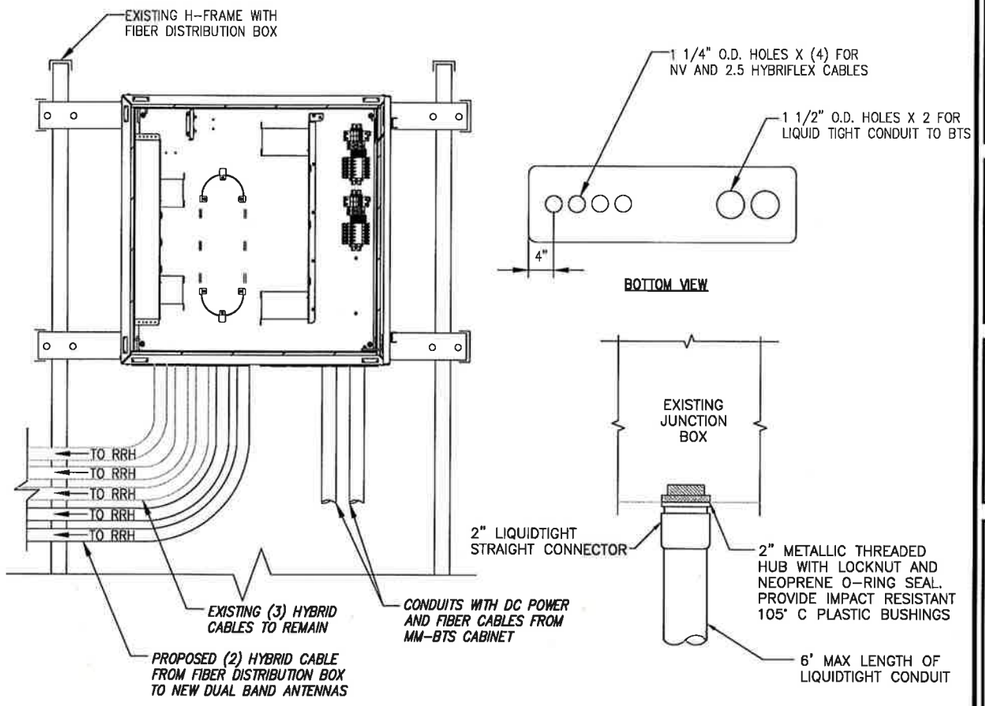


8 & 6 AWG

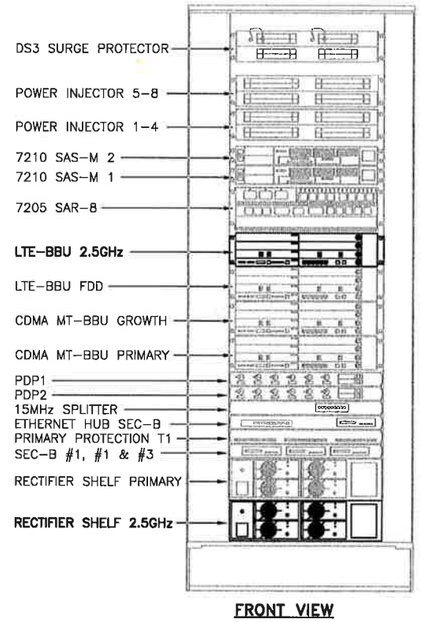


FIBER ONLY

800/1900/2500 CROSS SECTION DATA | NO SCALE | 1



FIBER JUNCTION BOX & PENETRATION | NO SCALE | 2



FRONT VIEW

NEW EQUIPMENT IN EXISTING CABINET | NO SCALE | 3

PLANS PREPARED FOR:
Sprint

PLANS PREPARED BY:

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Phone: 518-690-0790 | Fax: 518-690-0793
www.infinigy.com

JOB NUMBER 526-104

PROJECT MANAGER:

AIROSMITH DEVELOPMENT
32 CLINTON ST.
SARATOGA SPRINGS, NY 12866
OFFICE#. (518) 306-3740

ENGINEERING LICENSE:
STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
LICENSED PROFESSIONAL ENGINEER
AUG 22 2018

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR REVIEW	08/06/18	ETC	A

SITE NAME:
CTS

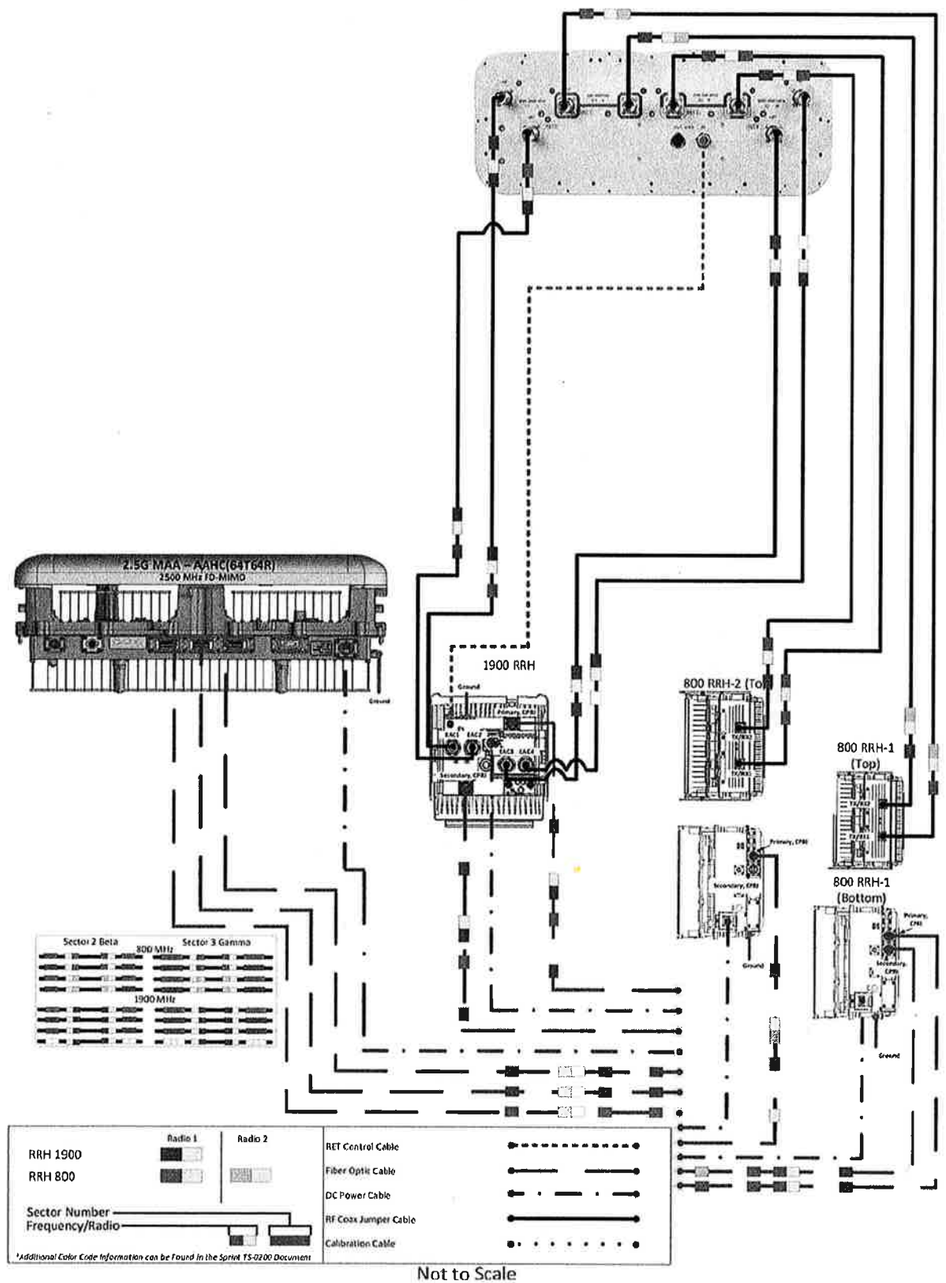
SITE NUMBER:
CT03XC360

SITE ADDRESS:
46 FERNWOOD LANE
WILTON, CT 06897

SHEET DESCRIPTION:
CIVIL DETAILS

SHEET NUMBER:
A-5

ALU 21-MIMO NNVV-65B-R4 wo Filters



Not to Scale

PLUMBING DIAGRAM	NO SCALE	1

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32 CLINTON ST.
SARATOGA SPRINGS, NY 12866
OFFICE#. (518) 306-3740

ENGINEERING LICENSE:

STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
LICENSED
PROFESSIONAL ENGINEER
06.22.2018

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR REVIEW	06/06/18	ETC	A

SITE NAME:

CTS

SITE NUMBER:

CT03XC360

SITE ADDRESS:

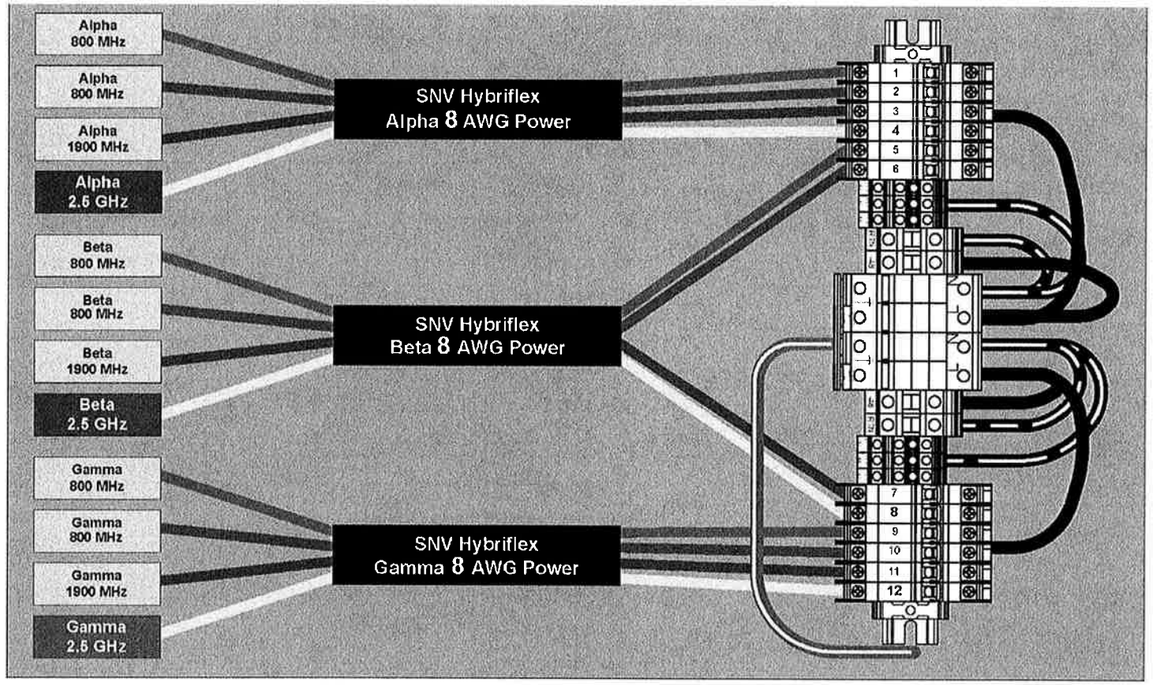
46 FERNWOOD LANE
WILTON, CT 06897

SHEET DESCRIPTION:

PLUMBING DIAGRAM

SHEET NUMBER:

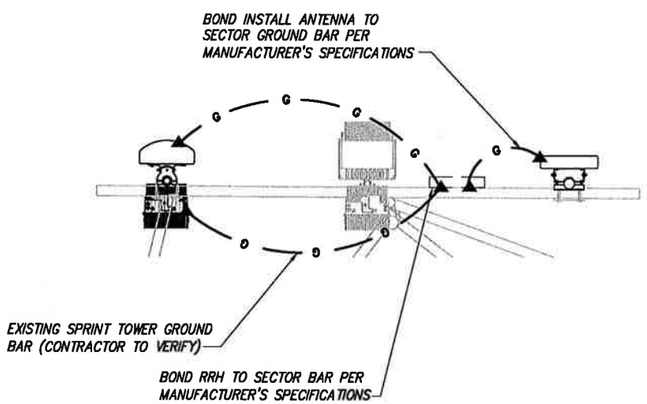
A-6



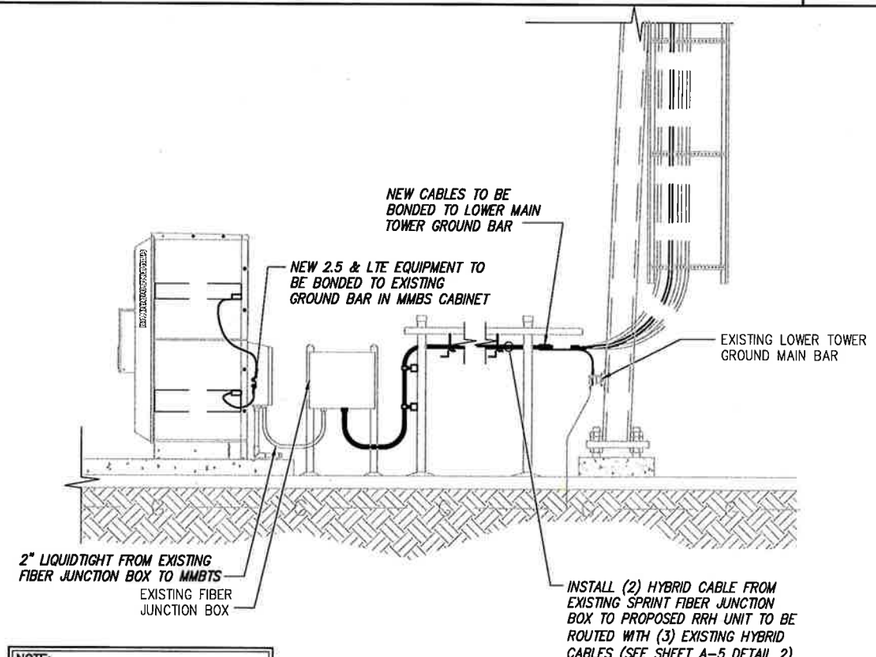
RRH TO DISTRIBUTION BOX POWER CONNECTIVITY | NO SCALE | 1

LEGEND:

- EXISTING GROUND RING
- ■ CADWELD CONNECTION (EXOTHERMIC WELD)
- ▲ MECHANICAL CONNECTION
- ⊗ GROUND ROD
- ● CABLE GROUND KIT



TYPICAL ANTENNA GROUNDING PLAN | NO SCALE | 2



NOTE:
DEPICTION IS FOR CONCEPTUAL PURPOSES ONLY. CONTRACTOR IS TO FIELD VERIFY PRIOR TO CONSTRUCTION

TYPICAL EQUIPMENT GROUNDING PLAN (ELEVATION) | NO SCALE | 3

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AIROSMITH DEVELOPMENT
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OFFICE#: (518) 306-3740

ENGINEERING LICENSE:
STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
LICENSED PROFESSIONAL ENGINEER
AUG 22 2018

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR REVIEW	06/06/18	ETC	A

SITE NAME:
CTS

SITE NUMBER:
CT03XC360

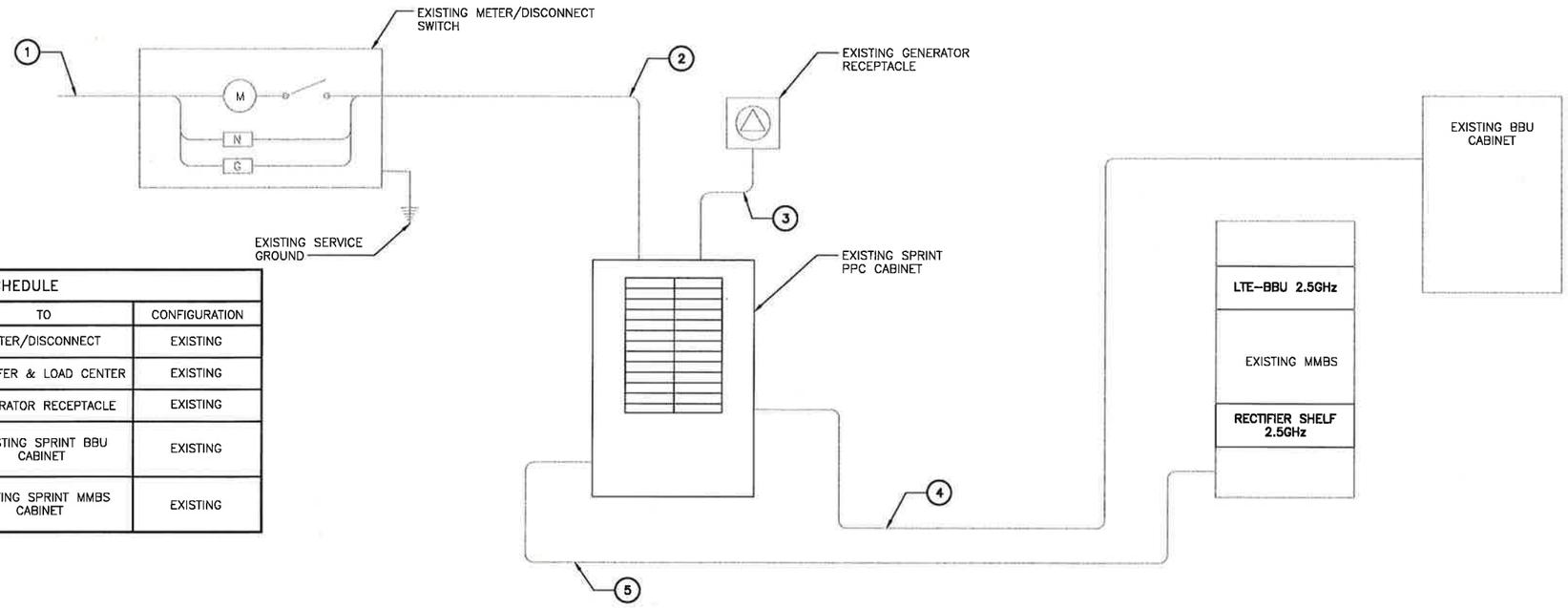
SITE ADDRESS:
46 FERNWOOD LANE
WILTON, CT 06897

SHEET DESCRIPTION:
ELECTRICAL & GROUNDING PLAN

SHEET NUMBER:
E-1

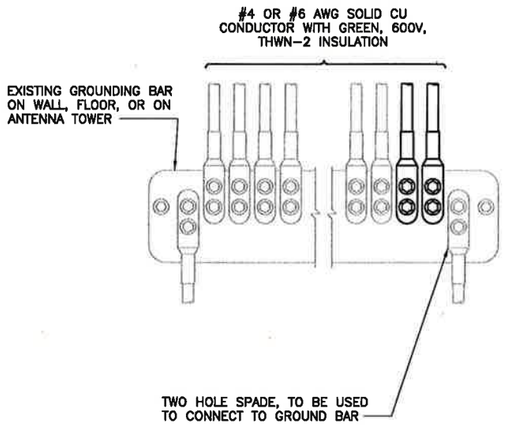
NOTES

CG SHALL REFERENCE ALL SPECS FOR "CONNECTING THE POWER SUPPLY" OF THE NEW INSTALLATION DOCUMENTS, FOR ALL CONNECTION SPECIFICATIONS.



CIRCUIT SCHEDULE			
NO	FROM	TO	CONFIGURATION
1	UTILITY SOURCE	METER/DISCONNECT	EXISTING
2	METER/DISCONNECT	TRANSFER & LOAD CENTER	EXISTING
3	TRANSFER & LOAD CENTER	GENERATOR RECEPTACLE	EXISTING
4	TRANSFER & LOAD CENTER	EXISTING SPRINT BBU CABINET	EXISTING
5	TRANSFER & LOAD CENTER	EXISTING SPRINT MMBS CABINET	EXISTING

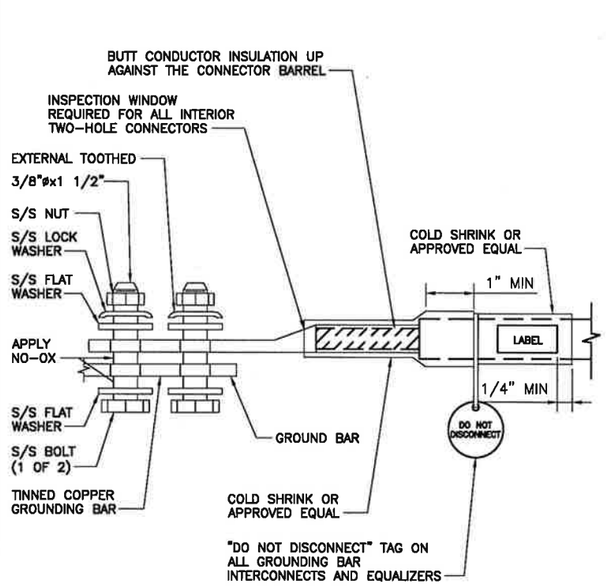
ELECTRICAL ONE–LINE DIAGRAM — NO SCALE — 1



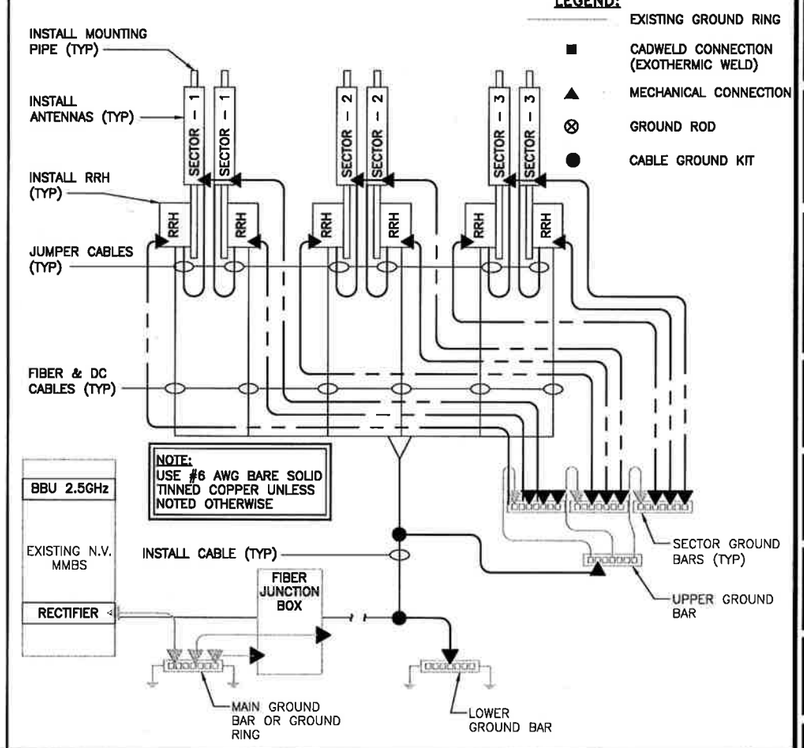
NOTES

1. APPLY NO–OX TO LUG AND BAR CONTACT SURFACE. DO NOT COAT INLINE LUG.
2. IF STOLEN GROUND BARS ARE ENCOUNTERED, CONTACT SPRINT CM FOR REPLACEMENT THREADED ROD KIT.

INSTALLATION OF GROUNDING CONDUCTOR TO GROUNDING BAR — NO SCALE — 2



TWO HOLE LUG — NO SCALE — 3



GROUNDING RISER DIAGRAM — NO SCALE — 4

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PROJECT MANAGER:

AIROSMITH DEVELOPMENT
32 CLINTON ST.
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OFFICE#. (518) 306-3740

ENGINEERING LICENSE:

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR REVIEW	06/06/18	ETC	A

SITE NAME: CTS

SITE NUMBER: CT03XC360

SITE ADDRESS: 46 FERNWOOD LANE WILTON, CT 06897

SHEET DESCRIPTION: ELECTRICAL & GROUNDING DETAILS

SHEET NUMBER: E-2

GENERAL CONSTRUCTION NOTES

1. ALL WORK SHALL COMPLY WITH THE CONNECTICUT STATE BUILDING AND LIFE SAFETY CODES, SUPPLEMENTS AND AMENDMENTS.
2. CONTRACTOR IS TO REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUB-CONTRACTORS AND ALL RELATED PARTIES. THE SUB-CONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
3. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON DRAWINGS OR WRITTEN IN SPECIFICATIONS.
4. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
5. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL AND HVAC. SUB-CONTRACTORS SHALL PAY FOR THEIR PERMITS.
6. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND ENSURE THE DISTRIBUTION OF NEW DRAWINGS TO SUB-CONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. CONTRACTOR SHALL FURNISH 'AS-BUILT' SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
7. INSTALLATION OF THIS WIRELESS COMMUNICATIONS EQUIPMENT SITE REQUIRES WORK IN THE IMMEDIATE VICINITY OF EXISTING TELECOMMUNICATION SYSTEMS. THE CONTRACTOR SHALL PROVIDE AND COORDINATE THE METHODS OF PROTECTION WITH THE CONNECTICUT STATE POLICE AND VARIOUS TELECOMMUNICATION CARRIERS.
8. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUB-CONTRACTORS FOR ANY CONDITION PER MFR'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR ARCHITECT.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
10. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ARCHITECT FOR REVIEW. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTAL TO THE ARCHITECT FOR REVIEW.
11. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA. SUBMIT TO THE ARCHITECT ANY DISCREPANCIES FROM THE DRAWINGS.
12. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, OBTAIN CONCURRENCE FROM THE CONNECTICUT STATE POLICE, AND TO ENSURE THE SAFETY OF THE EXISTING BUILDING AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY.
13. COORDINATE ALL CIVIL AND ELECTRICAL DRAWINGS FOR THE LOCATION OF ALL OPENINGS, RECESSES, BUILT-IN WORK, ETC.
14. CONTRACTOR TO CONTACT "CALL BEFORE YOU DIG" AT 1-800-922-4455 TO VERIFY AND IDENTIFY THE EXACT LOCATIONS OF ALL UNDERGROUND UTILITIES AND OBSTRUCTIONS IDENTIFIED PRIOR TO COMMENCING WORK IN THE CONTRACT AREA.
15. DIMENSIONS OF EXISTING TOWER AREA BASED ON MANUFACTURER'S DRAWINGS PREPARED BY BAYAR AND ASSOCIATES, DATED JUNE 1990, AND ARE NOT GUARANTEED. CONTRACTOR SHALL TAKE FIELD DIMENSIONS AS NECESSARY TO ASSURE PROPER FIT OF ALL FINISHED WORK AND SHALL ASSUME FULL RESPONSIBILITY FOR THEIR ACCURACY. WHEN SHOP DRAWINGS BASED ON FIELD MEASUREMENTS ARE SUBMITTED FOR REVIEW, DIMENSIONS ARE PROVIDED FOR THE ENGINEER'S REFERENCE ONLY.
16. CONTRACTOR SHALL VERIFY REQUIRED CLEARANCES INCLUDING BUT NOT LIMITED TO EXISTING BUILDINGS, EQUIPMENT PADS AND SHELTERS PRIOR TO COMMENCING WORK.
17. THE OMISSION OF ANY MATERIAL THAT WAS SHOWN ON THE CONTRACT DRAWINGS SHALL NOT RELIEVE THE CONTRACTOR OF PROVIDING THE SAME.
18. STRUCTURE IS DESIGNED TO BE LEVEL AND PLUMB, SELF-SUPPORTING AND STABLE AFTER WORK IS COMPLETED.
19. COMMENCEMENT OF TOWER STEEL WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.
20. THE CONTRACTOR IS RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE DURING CONSTRUCTION. THE CONTRACTOR SHALL BE AWARE OF WEATHER AND WIND CONDITIONS AND NOT PERFORM STEEL MEMBER REPLACEMENT IN A WIND.

STRUCTURAL NOTES

STRUCTURAL STEEL MATERIAL TO BE PROVIDED:

STRUCTURAL PLATES, STEEL BEAMS & ANGLES..... A36

STRUCTURAL STEEL SHALL CONFORM TO ALL THE REQUIREMENTS OF THE ASTM SPECIFICATION, AS REFERENCED IN THE CODE.

UNLESS OTHERWISE NOTED, ALL STEEL SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM 123 AFTER FABRICATION. TOUCH UP ALL DAMAGED GALVANIZED STEEL WITH APPROVED COLD ZINC, "GALVANOX", "DRY GALV", "ZINC-IT", OR APPROVED EQUIVALENT, IN ACCORDANCE WITH MANUFACTURERS GUIDELINES. TOUCH-UP DAMAGED NON GALVANIZED STEEL WITH SAME PAINT APPLIED IN SHOP OR FIELD.

SHOP AND ERECTION DRAWINGS SHALL BE SUBMITTED FOR ALL STRUCTURAL STEEL WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. SUBMIT 2 SETS OF PRINTS FOR THE ENGINEER REVIEW.

THE OMISSION OF ANY MATERIAL THAT WAS SHOWN ON THE CONTRACT DRAWINGS SHALL NOT RELIEVE THE CONTRACTOR OF PROVIDING THE SAME.

CONNECTIONS / FIELD ASSEMBLY:

BOLTED CONNECTIONS: UNLESS OTHERWISE NOTED, ALL JOINTS ARE SLIP CRITICAL TYPE, REQUIRING 5/8" DIA. A325-X BOLTS, A563 NUTS AND F436 WASHERS, ALL GALVANIZED. BEVELED WASHERS SHALL BE USED ON BEAM FLANGES HAVING A SLOPE GREATER THAN 1:20.

STRUCTURE IS DESIGNED TO BE LEVEL AND PLUMB, SELF-SUPPORTING AND STABLE AFTER WORK IS COMPLETED.

COMMENCEMENT OF WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.

INSPECTIONS:

SPECIAL INSPECTIONS ARE REQUIRED PER THE CODE FOR STRUCTURAL STEEL WORK.

OWNER WILL SUPPLY THE SERVICES OF A SPECIAL INSPECTOR AND TESTING AGENTS AS REQUIRED BY AUTHORITY HAVING JURISDICTION. CONTRACTOR SHALL COORDINATE INSPECTIONS OF FABRICATOR'S AND ERECTOR'S WORK AND MATERIALS TO MEET THE REQUIREMENTS OF THE STATEMENT OF SPECIAL INSPECTIONS FOR THIS PROJECT.

COPIES OF TESTING AND INSPECTION REPORTS WILL BE PROVIDED TO THE OWNER, BUILDING OFFICIAL, ENGINEER OF RECORD AND CONTRACTOR.

SITE ID NO:	60570721
Designed by:	MCD
Drawn by:	GAT
Checked by:	ICA
Approved by:	RAS

AECOM
500 ENTERPRISE DRIVE, SUITE 3B
ROCKY HILL, CONNECTICUT
860-529-8882

AT&T | Sprint

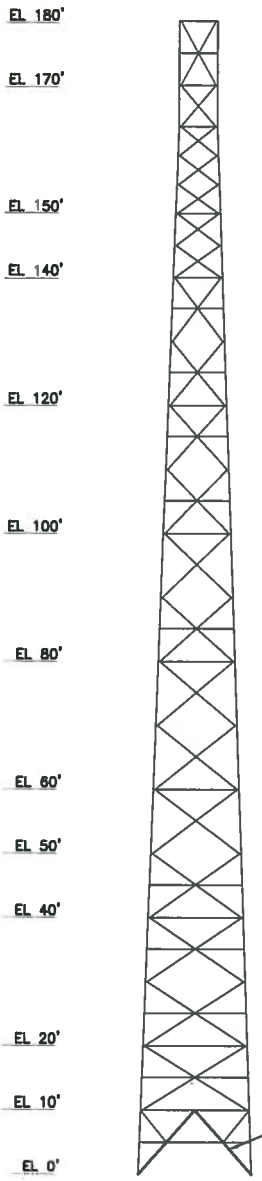
SITE ADDRESS: 180' State Police Tower #31
46 Fenwood Lane
WILTON, CONNECTICUT 06897

REV.	DATE:	DESCRIPTION

Scale: AS NOTED | Date: 07/05/18 | Job No. | File No. SK-1

Dwg. No. SK-1

NOTES:
1. REFER TO SK-1 FOR STRUCTURAL NOTES.
2. CONTRACTOR SHALL FIELD VERIFY EXISTING TOWER INFORMATION PRIOR TO ORDERING MATERIALS.
3. REINFORCEMENT OF TOWER IS REQUIRED FOR ALL 4 SIDES OF EXISTING TOWER STRUCTURE.
4. CONNECTION BOLTS FOR REPLACEMENT MEMBERS SHALL BE REPLACED IN KIND. EXISTING BOLTS SHALL NOT BE RE-USED FOR CONNECTING REPLACEMENT MEMBERS.



1 / SK-2 TOWER ELEVATION
SCALE: 1"=30'

STATE OF CONNECTICUT
RICHARD A. LAMBO
No. 9057
LICENSED PROFESSIONAL ENGINEER

SITE ID NO:	60570721
Designed by:	MCD
Drawn by:	GAT
Checked by:	ICA
Approved by:	RAS

AECOM
500 ENTERPRISE DRIVE, SUITE 3B
ROCKY HILL, CONNECTICUT
860-529-8882

AT&T Sprint

SITE ADDRESS: 180' State Police Tower #31
46 Fenwood Lane
WILTON, CONNECTICUT 06897

REV.	DATE:	DESCRIPTION

Scale: AS NOTED | Date: 07/05/18
Job No. | File No. SK-2 | Dwg. 2 of 2

Dwg. No. SK-2