AIROSMITH DEVELOPMENT
We do it right the first time.

September 20th, 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 315 Spencer Plains Road, WESTBROOK, CONNECTICUT – CT54XC758 (lat. 41° 17' 32.75" N, long. -72° 25' 49.36" W)

Dear Ms. Bachman:

Sprint Spectrum, LP ("Sprint") currently maintains wireless telecommunications antennas at the (137-foot level) on an existing (180-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 six (6) antennas, add nine (9) new RRHs, and relocate three (3) RRHS from the ground 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 Noel Bishop, First Selectman and Eric Knapp, Zoning Enforcement Officer of the Town of Westbrook. 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.

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

AIROSMITH DEVELOPMENT
We do it right the first time.

3. The proposed modifications will include the addition of ground base equipment as 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: Noel Bishop (First Selectman / Westbrook, CT)
BRIAN BENITO (Manager, CT State Police Towers)
Eric Knapp (Zoning Enforcement Officer / Westbrook, CT)
STATE OF CONNECTICUT (Land Owner)

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at www.usps.com®.

WESTBROOK, CT 06498

OFFICIAL USE

Certified Mail Fee $3.45
Extra Services & Fees (check box, add fee as appropriate)
- Return Receipt (hardcopy) $0.00
- Return Receipt (electronic) $0.00
- Certified Mail Restricted Delivery $0.00
- Adult Signature Required $0.00
- Adult Signature Restricted Delivery $

Postage $0.50
Total Postage and Fees $6.70

Sent To Eric Knopp CT54xc758
Street and Apt. No., or PO Box No. Boston Post Rd
City, State, ZIP+4® Westbrook

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

0867 17
SARATOGA FINANCE
SEP 20 2018 Postmark Here
SARATOGA SPRINGS, NY 12866
09/20/2018

7018 0680 0002 1201 3889

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at www.usps.com®.

WESTBROOK, CT 06498

OFFICIAL USE

Certified Mail Fee $3.45
Extra Services & Fees (check box, add fee as appropriate)
- Return Receipt (hardcopy) $0.00
- Return Receipt (electronic) $0.00
- Certified Mail Restricted Delivery $0.00
- Adult Signature Required $0.00
- Adult Signature Restricted Delivery $

Postage $0.50
Total Postage and Fees $6.70

Sent To Neel Bakshi CT54xc758
Street and Apt. No., or PO Box No. 846 Boston Post Rd
City, State, ZIP+4® Westbrook CT 06498

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

0867 17
SARATOGA FINANCE
SEP 20 2018 Postmark Here
SARATOGA SPRINGS, NY 12866
09/20/2018

7018 0680 0002 1201 3872

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at www.usps.com®.

MIDDLETOWN, CT 06457

OFFICIAL USE

Certified Mail Fee $3.45
Extra Services & Fees (check box, add fee as appropriate)
- Return Receipt (hardcopy) $0.00
- Return Receipt (electronic) $0.00
- Certified Mail Restricted Delivery $0.00
- Adult Signature Required $0.00
- Adult Signature Restricted Delivery $

Postage $0.50
Total Postage and Fees $6.70

Sent To Brian Bonito CT54xc758
Street and Apt. No., or PO Box No. 111 Cady Court
City, State, ZIP+4® Middletown CT 06457

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

0867 17
SARATOGA FINANCE
SEP 20 2018 Postmark Here
SARATOGA SPRINGS, NY 12866
09/20/2018

7018 0680 0002 1201 3926

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at www.usps.com®.

MIDDLETOWN, CT 06457

OFFICIAL USE

Certified Mail Fee $3.45
Extra Services & Fees (check box, add fee as appropriate)
- Return Receipt (hardcopy) $0.00
- Return Receipt (electronic) $0.00
- Certified Mail Restricted Delivery $0.00
- Adult Signature Required $0.00
- Adult Signature Restricted Delivery $

Postage $0.50
Total Postage and Fees $6.70

Sent To Daniel Malay CT 54xc758
Street and Apt. No., or PO Box No. Capitol Ave
City, State, ZIP+4® Hartford

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

0867 17
SARATOGA FINANCE
SEP 20 2018 Postmark Here
SARATOGA SPRINGS, NY 12866
09/20/2018

7018 0680 0002 1201 3919

315 SPENCER PLAINS RD

Location	315 SPENCER PLAINS RD	**Mblu**	165/ / 015/ /
Acct#	165/015	**Owner**	CONNECTICUT STATE OF
Assessment	$925,500	**Appraisal**	$1,322,140
PID	3667	**Building Count**	2

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$988,230	$333,910	$1,322,140

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$691,760	$233,740	$925,500

Owner of Record

Owner	CONNECTICUT STATE OF
Co-Owner	
Address	315 SPENCER PLAINS RD WESTBROOK, CT 06498

Sale Price	$0
Certificate	
Book & Page	46/ 350
Sale Date	01/01/1901
Instrument	25

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
CONNECTICUT STATE OF	$0		46/ 350	25	01/01/1901

Building Information

Building 1 : Section 1

Year Built:	1958
Living Area:	8,282
Replacement Cost:	$1,272,938
Building Percent Good:	62
Replacement Cost Less Depreciation:	$789,220

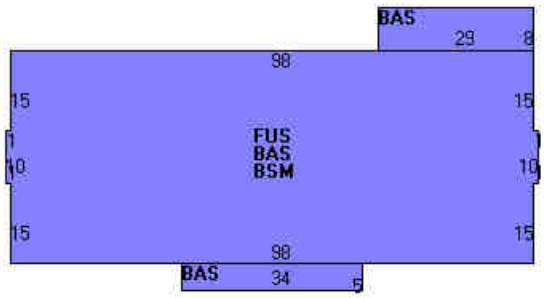
Building Attributes	
Field	**Description**

STYLE	Other State
MODEL	Comm/Ind
Grade	A
Stories:	1.0
Occupancy	1
Exterior Wall 1	Brick
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	Tar & Gravel
Interior Wall 1	Drywall
Interior Wall 2	
Interior Floor 1	Linoleum
Interior Floor 2	Carpet
Heating Fuel	Oil
Heating Type	Hot Water
AC Percent	100
Foundation	Poured Conc
Bldg Use	Exempt Comm
Total Rooms	0
Total Bedrms	0
Total Fixtures	4
% Sprinklers	0
1st Floor Use:	
Heat/AC	NONE
Frame Type	MASONRY
Baths/Plumbing	AVERAGE
Ceiling/Wall	CEIL & WALLS
Rooms/Prtns	AVERAGE
Wall Height	9
% Comn Wall	

Building Photo

(http://images.vgsi.com/photos2/WestbrookCTPhotos//\00\00\07

Building Layout



(http://images.vgsi.com/photos2/WestbrookCTPhotos//Sketches/

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	4,342	4,342
FUS	Finished Upper Story	3,940	3,940
BSM	Basement	3,940	0
		12,222	8,282

Building 2 : Section 1

Year Built: 1958
Living Area: 5,832
Replacement Cost: $290,737
Building Percent Good: 62
Replacement Cost Less Depreciation: $180,260

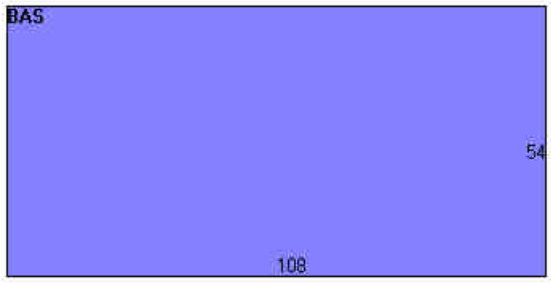
Building Attributes : Bldg 2 of 2	
Field	**Description**
STYLE	Comm Garage

MODEL	Svc Sta/Garage
Grade	C+
Stories:	1.0
Occupancy	0
Exterior Wall 1	Concr/Cinder
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	Tar & Gravel
Interior Wall 1	Minimum
Interior Wall 2	
Interior Floor 1	Concrete
Interior Floor 2	
Heating Fuel	Oil
Heating Type	Forced Hot Air
AC Percent	0
Foundation	Slab
Bldg Use	Exempt Ind
Total Rooms	0
Total Bedrms	0
Total Fixtures	4
% Sprinklers	0
1st Floor Use:	
Heat/AC	NONE
Frame Type	REINF. CONCR
Baths/Plumbing	AVERAGE
Ceiling/Wall	CEIL & WALLS
Rooms/Prtns	AVERAGE
Wall Height	20
% Comn Wall	

Building Photo

(http://images.vgsi.com/photos2/WestbrookCTPhotos//\00\00\0(

Building Layout



(http://images.vgsi.com/photos2/WestbrookCTPhotos//Sketches/

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	5,832	5,832
		5,832	5,832

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code 920
Description Exempt Comm

Land Line Valuation

Size (Acres) 3.2
Depth

Zone	LDR	**Assessed Value**	$233,740
Neighborhood	COM	**Appraised Value**	$333,910
Alt Land Appr Category	No		

Outbuildings

Outbuildings							Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**	**Comment**
PAV1	Paving			25000 S.F.	$18,750	1	

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$988,230	$333,910	$1,322,140
2015	$991,320	$318,010	$1,309,330
2014	$991,320	$318,010	$1,309,330

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$691,760	$233,740	$925,500
2015	$693,930	$222,610	$916,540
2014	$693,930	$222,610	$916,540

EBI Consulting
environmental | engineering | due diligence

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

SPRINT Existing Facility

Site ID: CT54XC758

Police Tower/ Troop F
315 Spencer Plains Road
Westbrook, CT 06498

September 4, 2018

EBI Project Number: 6218005667

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	13.04 %

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

EBI Consulting
environmental | engineering | due diligence

September 4, 2018

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

Emissions Analysis for Site: **CT54XC758 – Police Tower/ Troop F**

EBI Consulting was directed to analyze the proposed SPRINT facility located at **315 Spencer Plains Road, Westbrook, 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 **315 Spencer Plains Road, Westbrook, 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 RFS APXVTM14-ALU-I20** 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 **137 feet** above ground level (AGL) for **Sector A**, **137 feet** above ground level (AGL) for **Sector B** and **137 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):	**137 feet**	Height (AGL):	**137 feet**	Height (AGL):	**137 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%	**1.91 %**	Antenna B1 MPE%	**1.91 %**	Antenna C1 MPE%	**1.91 %**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	RFS APXVTM14-ALU-I20	Make / Model:	RFS APXVTM14-ALU-I20	Make / Model:	RFS APXVTM14-ALU-I20
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	**137 feet**	Height (AGL):	**137 feet**	Height (AGL):	**137 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):	6,224.72	ERP (W):	6,224.72	ERP (W):	6,224.72
Antenna A2 MPE%	**1.30 %**	Antenna B2 MPE%	**1.30 %**	Antenna C2 MPE%	**1.30 %**

Site Composite MPE%	
Carrier	**MPE%**
SPRINT – Max per sector	**3.21 %**
AT&T	2.09 %
T-Mobile	3.09 %
Fire dispatch yagi	0.28 %
LB Aux Yagi	0.37 %
Dispatch 1 Yagi	0.24 %
Dispatch 2 Yagi	0.40 %
scan corner reflector	0.57 %
hotline 2-dipole array	0.55 %
hear 4-dipole array	0.55 %
Med Base whip	0.07 %
F 800MHz whip w/ref	0.24 %
Sprint	0.64 %
MW-Lyme	0.05 %
MW-Goose Dish	0.03 %
MW-Killingworth Dish	0.03 %
MW-St Ranch Radome	0.26 %
MW-Goose Radome	0.28 %
CL&P	0.10 %
Site Total MPE %:*	**13.04 %**

SPRINT Sector A Total:	3.21 %
SPRINT Sector B Total:	3.21 %
SPRINT Sector C Total:	3.21 %
Site Total:	13.04 %

Sprint Maximum MPE Power Values (Per Sector)

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	137	0.79	850 MHz	567	0.13%
Sprint 850 MHz LTE	2	941.82	137	3.95	850 MHz	567	0.70%
Sprint 1900 MHz (PCS) CDMA	5	511.82	137	5.36	1900 MHz (PCS)	1000	0.54%
Sprint 1900 MHz (PCS) LTE	2	1,279.56	137	5.36	1900 MHz (PCS)	1000	0.54%
Sprint 2500 MHz (BRS) LTE	8	778.09	137	13.04	2500 MHz (BRS)	1000	1.30%
						Total*:	**3.21%**

*NOTE: Totals may vary by 0.01% due to summing of remainders

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:	3.21 %
Sector B:	3.21 %
Sector C:	3.21 %
SPRINT Maximum MPE % (per sector):	3.21 %
Site Total:	13.04 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **13.04 %** 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.

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless

1033 WATERVLIET SHAKER RD, ALBANY, NY 12205

Mount Analysis Report

May 25, 2018

Site Number	CT54XC758
Site Name	Police Tower/Troop F
Client	Airosmith
Carrier	Sprint
Infinigy Job Number	526-104
Site Location	315 Spencer Plains Road Westbrook, CT 06498 41° 17' 32.75" N NAD83 72° 25' 49.36" W NAD83
Mount Centerline EL.	137.0 ft
Mount Classification	Sector Frame
Mount Usage	**71.5%**
Overall Result	**Contingent Pass-See required modification below**
Note	**Mount must be modified prior to installation of proposed appurtenances. Install (1) SitePro1 STK-U Stiff Arm Kit at mid height of the un-braced end of each sector frame, (3) total.**

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

Jessica Kipp
Structural Engineer Intern

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

Construction Drawings	Infinigy Engineering Job #526-104, dated May 3, 2018
RFDS	Sprint RFDS ID #111305, dated August 15, 2017

Analysis Code Requirements

Wind Speed	105 mph (3-Second Gust, V_{ASD}) / 135 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/ 2016 Connecticut State Building Code
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 proposed mount meets the specified TIA code requirements. The proposed mounts 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:

Jessica Kipp
Structural Engineer Intern | Infinigy
1033 Watervliet Shaker Road, Albany, NY 12205
(O) (518) 690-0790
ocalc1@infinigy.com | www.infinigy.com

Final Configuration Loading

Mount CL (ft)	Rad. HT (ft)	Horiz. O/S (ft)*	Qty	Appurtenance	Carrier
137.0	137.0	0.0	3	RFS APXVTM14-ALU-120	Sprint
		13.5	3	Commscope NNVV-65B-R4	
		4.0	3	Alcatel Lucent TD-RRH8x20-25	
		9.5	6	Alcatel Lucent RRH-2x50-800	
		4.0	3	Alcatel Lucent RRH-4x45-1900	

***Horizontal Offset is defined as the distance from the left most edge of the mount face horizontal when viewed facing the tower**

Structure Usages

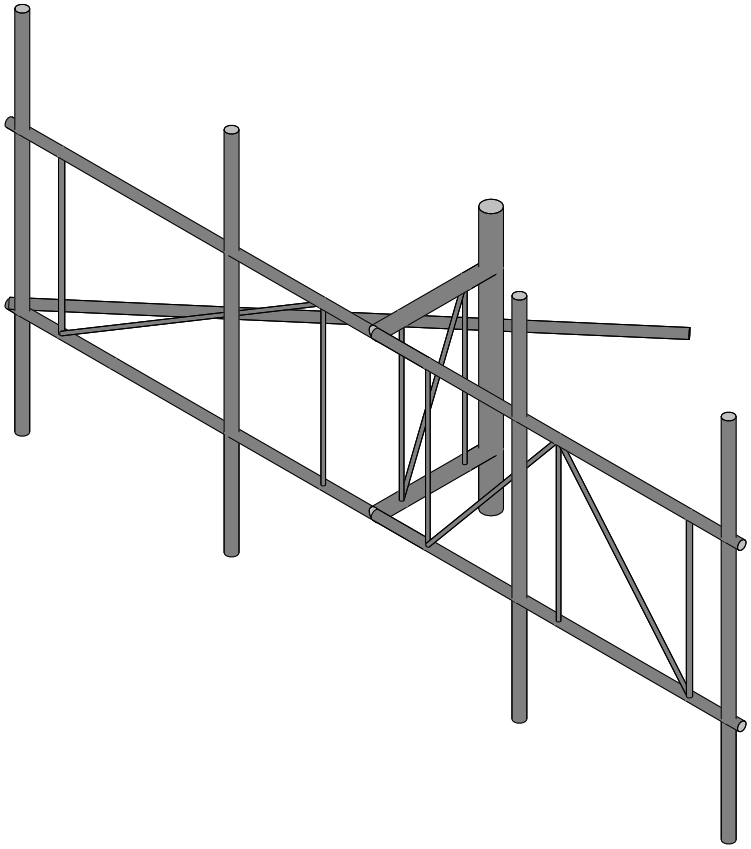
Mount Pipe	53.4%	Pass
Standing	62.7%	Pass
Horizontal	71.5%	Pass
RATING =	**71.5%**	**Pass**

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.

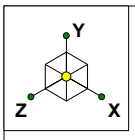
Our evaluation is completed using standard TIA, AISC, ACI, and ASCE methods and procedures. Our structural results are proprietary and should not be used by others as their own. Infinigy Engineering is not responsible for decisions made by others that are or are not based on our supplied assumptions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

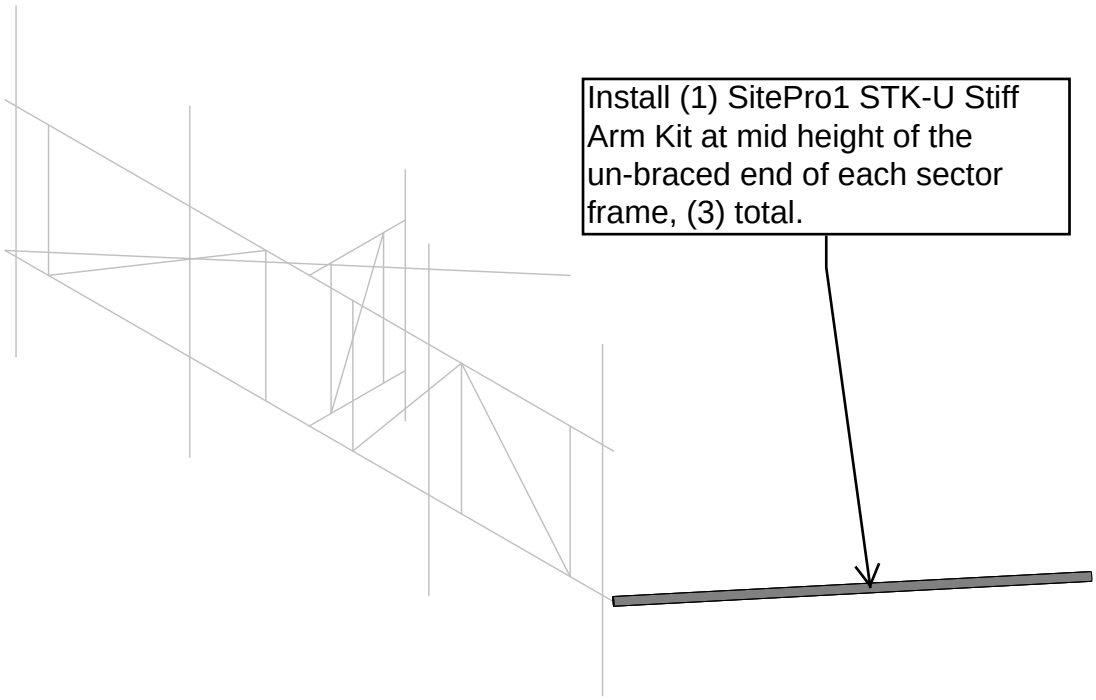
This report is an evaluation of the proposed carriers mount structure only and does not reflect adequacy of the existing tower, other mounts, or coax mounting attachments. These elements are assumed to be adequate for the purposes of this analysis and are assumed to have been installed per their manufacturer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



Envelope Only Solution

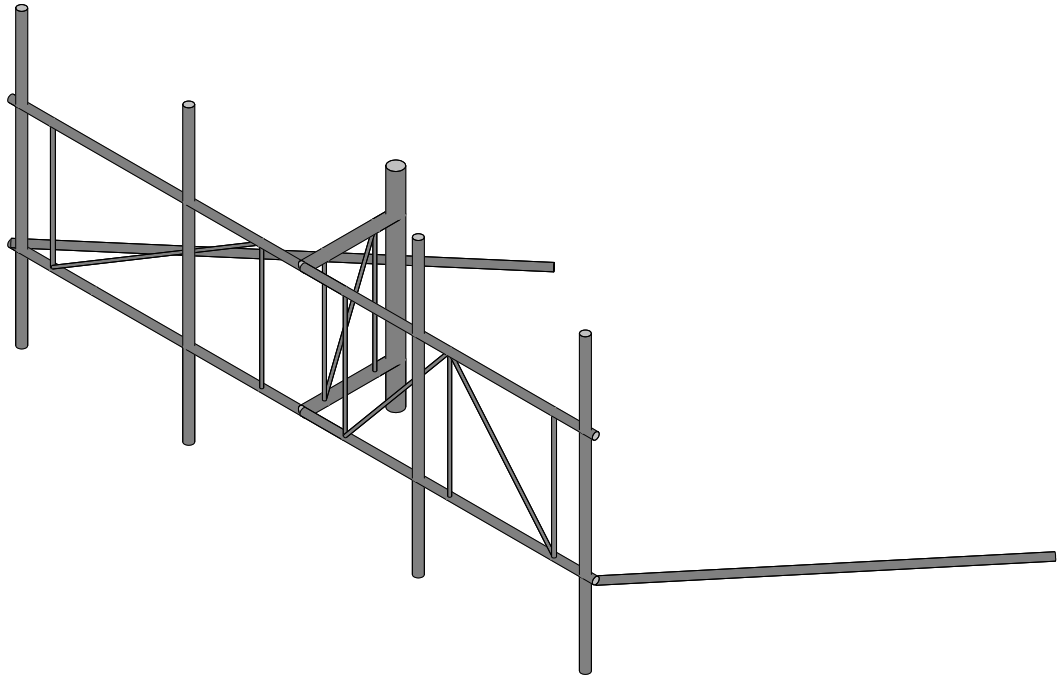
Infinigy Engineering PLLC	CT54XC758	Existing Configuration
JNK		May 25, 2018 at 9:46 AM
526-104		CT54XC758 proposed.r3d





Envelope Only Solution

Infinigy Engineering PLLC	CT54XC758	Proposed Modification
JNK		May 25, 2018 at 9:48 AM
526-104		CT54XC758 proposed.r3d



Envelope Only Solution

Infinigy Engineering PLLC	CT54XC758	Proposed Configuration
JNK		May 25, 2018 at 9:43 AM
526-104		CT54XC758 proposed.r3d

Site Name:	CT54XC758
Client:	Airosmith
Carrier:	Sprint
Engineer:	JNK
Date:	5/25/2018

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless

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:	105	mph (nominal 3-second gust)
Wind Centerline 1 (z_1):	137.0	ft
Side Face Angle (θ):	60	degrees
Exposure Category:	B	
Topographic Category:	1	

Wind with No Ice		
q_z (psf)	Gh	F_{ST} (psf)
28.99	1.00	**34.79**

Wind with Ice		
q_z (psf)	Gh	F_{ST} (psf)
6.57	1.00	**23.24**

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)
RFS APXVTM14-ALU-120	137.0	3	1.00	Flat	Flat	28.99	5.99	173.76	98.59	117.39	154.97
Commscope NNVV-65B-R4	137.0	3	1.00	Flat	Flat	28.99	12.27	355.75	166.70	213.96	308.49
Alcatel Lucent TD-RRH8x20-25	137.0	3	1.00	Flat	Flat	28.99	4.03	116.83	44.24	62.39	98.68
Alcatel Lucent RRH-4x45-1900	137.0	3	1.00	Flat	Flat	28.99	2.50	72.48	72.48	72.48	72.48
Alcatel Lucent RRH-2x50-800	137.0	3	1.00	Flat	Flat	28.99	1.73	50.25	38.65	41.55	47.35
Alcatel Lucent RRH-2x50-800	137.0	3	1.00	Flat	Flat	28.99	1.73	50.25	38.65	41.55	47.35

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N1	N18			Horizontal	Beam	Pipe	A53 Gr. B	Typical
2	M2	N3	N17			Horizontal	Beam	Pipe	A53 Gr. B	Typical
3	M15	N18	N20			Standoff	Beam	Tube	A500 Gr.46	Typical
4	M16	N17	N19			Standoff	Beam	Tube	A500 Gr.46	Typical
5	M17	N22	N21			Standoff Pipe	Beam	Pipe	A53 Gr. B	Typical
6	M18	N25	N26			3/4" SR	Beam	Pipe	A53 Gr. B	Typical
7	M19	N26	N23			3/4" SR	Beam	Pipe	A53 Gr. B	Typical
8	M20	N23	N24			3/4" SR	Beam	Pipe	A53 Gr. B	Typical
9	M23	N18	N2			Horizontal	Beam	Pipe	A53 Gr. B	Typical
10	M24	N17	N4			Horizontal	Beam	Pipe	A53 Gr. B	Typical
11	M25A	N8	N7			3/4" SR	Beam	Pipe	A53 Gr. B	Typical
12	M23B	N10	N9			3/4" SR	Beam	Pipe	A53 Gr. B	Typical
13	M22	N41	N44A			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
14	M23C	N44	N47			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
15	M24G	N43	N46			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
16	M25	N42	N45			Mount Pipe	Beam	Pipe	A53 Gr. B	Typical
17	M17A	N46A	N47B			1" SR	Beam	Pipe	A53 Gr. B	Typical
18	M18A	N45C	N44D			1" SR	Beam	Pipe	A53 Gr. B	Typical
19	M19A	N46B	N45D			3/4" SR	Beam	Pipe	A53 Gr. B	Typical
20	M20A	N46A	N8			3/4" SR	Beam	Pipe	A53 Gr. B	Typical
21	M21	N9	N46B			3/4" SR	Beam	Pipe	A53 Gr. B	Typical
22	M22A	N46B	N45C			3/4" SR	Beam	Pipe	A53 Gr. B	Typical
23	M23A	N3	N48			Horizontal	Beam	Pipe	A53 Gr. B	Typical
24	M24A	N4	N50			Horizontal	Beam	Pipe	A53 Gr. B	Typical

Material Takeoff

	Material	Size	Pieces	Length[in]	Weight[K]
1	Hot Rolled Steel				
2	A500 Gr.46	PIPE_2.5	2	53	0
3	A53 Gr. B	1" Solid	2	72	0
4	A53 Gr. B	3/4" Solid	9	382.5	0
5	A53 Gr. B	PIPE_1.5	6	540.4	.1
6	A53 Gr. B	PIPE_2.0	4	336	0
7	A53 Gr. B	PIPE_3.5	1	60	0
8	Total HR Steel		24	1443.9	.3

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(...
1	Self Weight	DL		-1			8			
2	Wind Load AZI 000	WLZ					8		1	
3	Wind Load AZI 090	WLX					8		1	
4	Ice Weight	OL1					8	24		
5	Wind + Ice Load AZI 000	OL2					8		1	
6	Wind + Ice Load AZI 090	OL3					8		1	
7	Service Live 1	LL				2				
8	BLC 2 Transient Area Loads	None						22		
9	BLC 3 Transient Area Loads	None						20		
10	BLC 5 Transient Area Loads	None						22		
11	BLC 6 Transient Area Loads	None						20		

Load Combinations

	Description	S	P	S	B	F	B	F	B	F	B	F	B	F	B	F	B	F	B	F	B	F	B	F	B	F	B	F
1	1.4D	Y	Y		DL	1.4																						
2	1.2D + 1.6W AZI 000	Y	Y		DL	1.2	...	1.6																				
3	1.2D + 1.6W AZI 030	Y	Y		DL	1.2	...	1	...	.8																		
4	1.2D + 1.6W AZI 060	Y	Y		DL	1.2	...	.8	...	1																		
5	1.2D + 1.6W AZI 090	Y	Y		DL	1.2			...	1.6																		
6	1.2D + 1.6W AZI 120	Y	Y		DL	1.2	...	-.8	...	1																		
7	1.2D + 1.6W AZI 150	Y	Y		DL	1.2	...	-1	...	.8																		
8	1.2D + 1.6W AZI 180	Y	Y		DL	1.2	...	-1.6																				
9	1.2D + 1.6W AZI 210	Y	Y		DL	1.2	...	-1	...	-.8																		
10	1.2D + 1.6W AZI 240	Y	Y		DL	1.2	...	-.8	...	-1																		
11	1.2D + 1.6W AZI 270	Y	Y		DL	1.2			...	-1.6																		
12	1.2D + 1.6W AZI 300	Y	Y		DL	1.2	...	.8	...	-1																		
13	1.2D + 1.6W AZI 330	Y	Y		DL	1.2	...	1	...	-.8																		
14	0.9D + 1.6W AZI 000	Y	Y		DL	.9	...	1.6																				
15	0.9D + 1.6W AZI 030	Y	Y		DL	.9	...	1	...	.8																		
16	0.9D + 1.6W AZI 060	Y	Y		DL	.9	...	.8	...	1																		
17	0.9D + 1.6W AZI 090	Y	Y		DL	.9			...	1.6																		
18	0.9D + 1.6W AZI 120	Y	Y		DL	.9	...	-.8	...	1																		
19	0.9D + 1.6W AZI 150	Y	Y		DL	.9	...	-1	...	.8																		
20	0.9D + 1.6W AZI 180	Y	Y		DL	.9	...	-1.6																				
21	0.9D + 1.6W AZI 210	Y	Y		DL	.9	...	-1	...	-.8																		
22	0.9D + 1.6W AZI 240	Y	Y		DL	.9	...	-.8	...	-1																		
23	0.9D + 1.6W AZI 270	Y	Y		DL	.9			...	-1.6																		
24	0.9D + 1.6W AZI 300	Y	Y		DL	.9	...	.8	...	-1																		
25	0.9D + 1.6W AZI 330	Y	Y		DL	.9	...	1	...	-.8																		
26	1.2D + 1.0Di	Y	Y		DL	1.2	...	1																				
27	1.2D + 1.0Di + 1.0Wi AZI 000	Y	Y		DL	1.2	...	1	...	1																		
28	1.2D + 1.0Di + 1.0Wi AZI 030	Y	Y		DL	1.2	...	1	...	.8	...	.5																
29	1.2D + 1.0Di + 1.0Wi AZI 060	Y	Y		DL	1.2	...	1	...	.5	...	.8																
30	1.2D + 1.0Di + 1.0Wi AZI 090	Y	Y		DL	1.2	...	1			...	1																
31	1.2D + 1.0Di + 1.0Wi AZI 120	Y	Y		DL	1.2	...	1	...	-.5	...	.8																
32	1.2D + 1.0Di + 1.0Wi AZI 150	Y	Y		DL	1.2	...	1	...	-	...	.5																
33	1.2D + 1.0Di + 1.0Wi AZI 180	Y	Y		DL	1.2	...	1	...	-1																		
34	1.2D + 1.0Di + 1.0Wi AZI 210	Y	Y		DL	1.2	...	1	...	-	...	-.5																
35	1.2D + 1.0Di + 1.0Wi AZI 240	Y	Y		DL	1.2	...	1	...	-.5	...	-																
36	1.2D + 1.0Di + 1.0Wi AZI 270	Y	Y		DL	1.2	...	1			...	-1																
37	1.2D + 1.0Di + 1.0Wi AZI 300	Y	Y		DL	1.2	...	1	...	.5	...	-																
38	1.2D + 1.0Di + 1.0Wi AZI 330	Y	Y		DL	1.2	...	1	...	.8	...	-.5																
39	1.2D + 1.5L + 1.0WL (30 mph) AZI 000	Y	Y		DL	1.2	LL	1.5	...	.0																		
40	1.2D + 1.5L + 1.0WL (30 mph) AZI 030	Y	Y		DL	1.2	LL	1.5	...	.0	...	.0																
41	1.2D + 1.5L + 1.0WL (30 mph) AZI 060	Y	Y		DL	1.2	LL	1.5	...	.0	...	.0																
42	1.2D + 1.5L + 1.0WL (30 mph) AZI 090	Y	Y		DL	1.2	LL	1.5			...	.0																
43	1.2D + 1.5L + 1.0WL (30 mph) AZI 120	Y	Y		DL	1.2	LL	1.5	...	-	...	.0																
44	1.2D + 1.5L + 1.0WL (30 mph) AZI 150	Y	Y		DL	1.2	LL	1.5	...	-	...	.0																
45	1.2D + 1.5L + 1.0WL (30 mph) AZI 180	Y	Y		DL	1.2	LL	1.5	...	-																		
46	1.2D + 1.5L + 1.0WL (30 mph) AZI 210	Y	Y		DL	1.2	LL	1.5	...	-	...	-																
47	1.2D + 1.5L + 1.0WL (30 mph) AZI 240	Y	Y		DL	1.2	LL	1.5	...	-	...	-																
48	1.2D + 1.5L + 1.0WL (30 mph) AZI 270	Y	Y		DL	1.2	LL	1.5			...	-																
49	1.2D + 1.5L + 1.0WL (30 mph) AZI 300	Y	Y		DL	1.2	LL	1.5	...	.0	...	-																
50	1.2D + 1.5L + 1.0WL (30 mph) AZI 330	Y	Y		DL	1.2	LL	1.5	...	.0	...	-																

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	N22	max	1393.334	3	1006.216	27	1286.61	28	.685	27	2.159	3	.909	21
2		min	-1281.502	21	180.846	20	248.96	25	.147	25	-2.028	21	-.965	3
3	N21	max	659.366	16	1623.844	33	418.237	14	.615	8	1.274	16	.601	16
4		min	-748.928	10	273.547	14	-1485.356	33	-.333	14	-1.37	10	-.648	10
5	N48	max	800.468	20	44.166	27	716.826	14	0	1	0	1	0	1
6		min	-805.873	14	-5.955	20	-721.37	20	0	1	0	1	0	1
7	N50	max	635.112	8	69.261	27	794.606	14	0	1	0	1	0	1
8		min	-644.542	14	-39.45	20	-791.671	8	0	1	0	1	0	1
9	Totals:	max	1399.18	17	2658.757	33	2181.239	14						
10		min	-1399.18	23	690.691	14	-2181.239	20						

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

	Member	Shape	Code C...	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-...	phi*Mn z-...	Cb	Eqn
1	M23	PIPE_1.5	.715	0	8	.378	72.625		8	23153.146	23593.5	1.105	1.105	2....	H1-1b
2	M20	3/4" Solid	.627	36	33	.054	0		2	2707.384	13916.274	.174	.174	2....	H1-1a
3	M24	PIPE_1.5	.591	0	28	.401	84		2	23153.146	23593.5	1.105	1.105	1....	H1-1b
4	M21	3/4" Solid	.572	46.861	33	.052	46.861		9	3260.817	13916.274	.174	.174	1....	H1-1a
5	M1	PIPE_1.5	.560	84	8	.254	11.375		2	23153.146	23593.5	1.105	1.105	1....	H1-1b
6	M25	PIPE_2.0	.534	59.5	8	.229	59.5		2	17855.085	32130	1.872	1.872	3....	H1-1b
7	M16	PIPE_2.5	.532	26.5	3	.118	26.5		3	63248.007	66654	4.727	4.727	3....	H1-1b
8	M2	PIPE_1.5	.454	84	34	.221	0		8	23153.146	23593.5	1.105	1.105	2....	H1-1b
9	M24A	PIPE_1.5	.415	0	2	.010	93.723		27	7535.553	23593.5	1.105	1.105	1....	H1-1b
10	M18	3/4" Solid	.397	0	27	.031	0		2	2707.384	13916.274	.174	.174	2....	H1-1a
11	M19	3/4" Solid	.294	38.81	33	.050	0		3	2329.473	13916.274	.174	.174	2....	H1-1a
12	M15	PIPE_2.5	.275	26.5	10	.117	26.5		38	63248.007	66654	4.727	4.727	1....	H1-1b
13	M22	PIPE_2.0	.273	59.5	8	.177	59.5		2	17855.085	32130	1.872	1.872	2....	H1-1b
14	M17	PIPE_3.5	.252	0	3	.364	0		3	78429.633	78750	7.954	7.954	2....	H3-6
15	M25A	3/4" Solid	.249	36	37	.035	0		8	2707.384	13916.274	.174	.174	2....	H1-1b
16	M23A	PIPE_1.5	.225	0	14	.009	0		33	5407.868	23593.5	1.105	1.105	1....	H1-1b
17	M20A	3/4" Solid	.203	0	36	.020	69.971		13	716.66	13916.274	.174	.174	2....	H1-1b
18	M18A	1" Solid	.188	0	8	.124	0		2	8556.602	24740.037	.412	.412	2....	H1-1b
19	M23B	3/4" Solid	.126	0	33	.083	0		2	2707.384	13916.274	.174	.174	2....	H1-1b
20	M17A	1" Solid	.111	0	2	.105	0		2	8556.602	24740.037	.412	.412	2....	H1-1b
21	M22A	3/4" Solid	.108	46.861	30	.053	46.861		14	1597.8	13916.274	.174	.174	3....	H1-1b
22	M23C	PIPE_2.0	.084	24.5	8	.176	24.5		2	17855.085	32130	1.872	1.872	4....	H1-1b
23	M24G	PIPE_2.0	.074	24.5	8	.211	24.5		8	17855.085	32130	1.872	1.872	4....	H1-1b
24	M19A	3/4" Solid	.057	0	8	.094	0		8	2707.384	13916.274	.174	.174	2....	H1-1b

AECOM

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

Submitted by
AECOM
500 Enterprise Drive,
Suite 3B
Rocky Hill, CT 06067
September 17, 2018

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

Sprint

AIROSMITH DEVELOPMENT

Sprint Site Name: CT54XC758
Site Address: 315 Spencer Plains Road
Westbrook, Connecticut

60577720
ASM-009 Revision 1

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY

This report summarizes the structural analysis and modification of the 180' self-supporting lattice tower located at 315 Spencer Plains Road in Westbrook, 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 antennas, transmission lines and ancillary items as outlined in the Introduction Section of this report.

The proposed antenna modifications are listed below:

Antenna and Other Appurtenances	Carrier	Antenna Center Elevation
Remove: **(3) Dapa 79010 Panel Antennas (1 per Sector)**	**Sprint (existing)**	**@ 137'**
Install: **(3) RFS APXVTM14-ALU-120 Panel Antennas** **(3) Commscope NNVV-65B-R4 Panel Antennas** **(3) ALU TD-RRH-8x20-25 RRH Units** **(6) ALU RRH-2x50 800 MHz RRH Units** **(4) Hybrid Cables (1-1/4" Outside Diameter Hybriflex Cables)** **(3) SitePro1 Mount Stiff Arm STK-U (1 per Sector)**	**Sprint (Proposed)**	**@ 137'**

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 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 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 0.6334 degrees and the modified tower's twist (rotation) is 0.1056 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.

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)*

This analysis is based on:

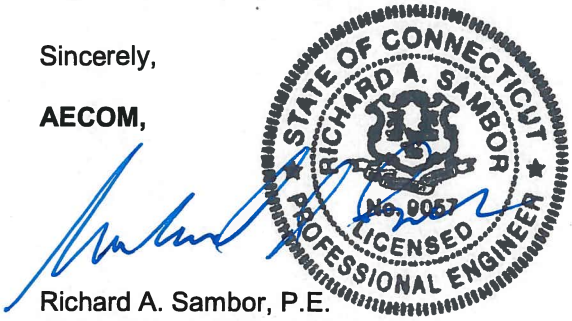
1) The tower structure's theoretical capacity not including any assessment of the condition of the tower.
2) Tower geometry, member sizes and foundation taken from manufacturers original design documents prepared by Stainless, Inc. project number 358811 signed and sealed June 14, 1994.
3) Previous structural analysis and tower reinforcement performed by URS Corporation on behalf of T-Mobile, Northeast Utilities and AT&T, project number SAI-063 / 36924430, signed and sealed June 16, 2011.
4) Geotechnical Study for Evaluation of tower site report performed by Dr. Clarence Welti, P.E., P.C., signed on March 24, 2015.
5) Previous structural analysis and reinforcement performed by AECOM on behalf of T-Mobile, project number NSS-015 Rev. 2 / 36931360, signed and sealed May 22, 2015.
6) Tower Mapping and Inventory by D&K Nationwide Communications, Inc. performed on March 19, 2016.
7) Removal of Existing Antennas owned by Connecticut State Police confirmed via e-mail dated August 30, 2016.
8) Previous structural analysis and modification performed by AECOM on behalf of AT&T, project number SAI-092 / 60508377, signed and sealed September 9, 2017.
9) Removal of three future Connecticut State Police microwave dishes at elevation 180' per e-mail received August 18, 2017.
10) Proposed antenna configuration by Sprint from Construction Drawings, dated December 22, 1027 obtained via e-mail.
11) Previous structural analysis and evaluation performed by AECOM on behalf of Sprint, project number ASM-003 / 60559245, signed and sealed on February 27, 2018.
12) Coax cable orientation as specified in section 6 of this report.
13) Antenna inventory as specified in Sections 2 and 6 of this report

This report is only valid as per the information and data provided by others for antenna inventory, mounts, tower structure, existing foundation and associated cables. The user of this report shall field verify the antenna, cabling and mount configuration used, as well as the physical condition of the 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 call.

Sincerely,

AECOM,



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

2. INTRODUCTION

The subject tower is located at 315 Spencer Plains Road in Westbrook, Connecticut. The structure is a self-supporting three-legged 180' steel tapered lattice tower manufactured by Stainless Incorporated

The structural analysis was conducted in accordance with the following:

- TIA-222-G Standard for Standard for a wind velocity of range of 100 mph to 120 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 112 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 95 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 Sprint antenna arrangement is summarized in the table below:

Antenna Type	***Carrier***	***Mount***	***Centerline Elevation***	***Cable***
(1) 8' Omni Antenna	D&K-58 (existing)	Pipe Mounted to Leg	182'	(1) 7/8" Coax Cable
(1) 16' Omni Antenna	D&K-57 (existing)	(2) 6' Side Arm Mounts	182.5'	(1) 7/8" Coax Cable
(1) 16' Lightning Rod	D&K-56 (existing)	Mounted to Tower	181'	----------
(1) 4-Bay 20' Dipole Antenna	D&K-55 (existing)	Pipe Mounted to Leg	181'	(1) 7/8" Coax Cable
(1) 4-Bay 10' Dipole Antenna	D&K-54 (existing)	Pipe Mounted to Leg	181'	(1) 7/8" Coax Cable
(1) 12' Whip Antenna	D&K-53 (existing)	(2) 6' Side-Arm Mount (Shared with D&K 40, 41, 47, 48, 49, 50, 53)	181'	(1) 1-5/8" Coax Cables
(1) 12' Omni Antenna	D&K-52 (existing)	Pipe Mounted on Leg (Shared with D&K 51)	181'	(1) 7/8" Coax Cables
(1) 1-Bay Dipole Antenna	D&K-51 CSP-12 (existing)	Pipe Mounted on Leg (Shared with D&K 52)	180'	(1) 7/8" Coax Cables
(1) TTA Unit	D&K-50 (existing)	(2) 6' Side-Arm Mount (Shared with D&K 40, 41, 47, 48, 49, 50, 53)	180'	(2) 5/8" Coax Cables (2) 1-5/8" Coax Cables
(1) 12' Whip Antenna	D&K-49 (existing)	(2) 6' Side-Arm Mount (Shared with D&K 40, 41, 47, 48, 49, 50, 53)	180'	(2) 1/2" Coax Cables
(1) 12' Whip Antenna	D&K-48 (existing)	(2) 6' Side-Arm Mount (Shared with D&K 40, 41, 47, 48, 49, 50, 53)	180'	(2) 1/2" Coax Cables
(1) 16' Omni Antenna	D&K-59 (existing)	4' Stand-off Mount (Shared with D&K 38, 39)	179'	(1) 1-5/8" Coax Cable

Antenna Type	*Carrier*	*Mount*	*Centerline Elevation*	*Cable*
(1) TTA Control Box	D&K-47 (existing)	Pipe Mount to Face	178’	(2) 7/8” Coax Cables (1) 1/2” Coax Cable
-----	D&K-46 (existing)	1’ Side Arm Mount	172’	------
(1) 6’ Dish with Radome	D&K-45 (existing)	Pipe Mounted to Leg	176’	(1) 2” Elliptical Cable
(1) 6’ Dish with Radome	D&K-44 (existing)	Pipe Mounted to Leg	171’	(1) 2” Elliptical Cable
(1) 6’ Dish with Radome	D&K-43 (existing)	Pipe Mounted to Leg	169’	(1) 2” Elliptical Cable
(1) (Inverted) 4-Bay Dipole Antenna	D&K-41 (existing)	(2) 6’ Side-Arm Mount (Shared with D&K 40, 41, 47, 48, 49, 50, 53)	166’	(1) 7/8” Coax Cable
(1) (Inverted) 4-Bay Dipole Antenna	D&K-40 (existing)	(2) 6’ Side-Arm Mount (Shared with D&K 40, 41, 47, 48, 49, 50, 53)	166’	(1) 7/8” Coax Cable
(1) (Inverted) 12’ Whip Antenna	D&K-42 (existing)	6’ Arm Mount	164’	(1) 1-5/8” Coax Cable
(1) (Inverted) 16’ Whip Antenna	D&K-39 (existing)	4’ Stand-off Mount (Shared with D&K 38, 59)	160’	(1) 1-5/8” Coax Cable
(1) (Inverted) 16’ Whip Antenna	D&K-38 (existing)	4’ Stand-off Mount (Shared with D&K 39, 59)	160’	(1) 1-5/8” Coax Cable
(1) Parabolic Grid Dish	D&K-37 (existing)	Pipe Mounted to Leg	157’	(1) 7/8” Coax Cable
(1) 10’x4’ Dipole Antenna	D&K-36 (existing)	2’ Standoff Mount	157’	(1) 7/8” Coax Cable
(1) 8’ Whip Antenna	D&K-35 (existing)	2’ Standoff Mount	157’	(1) 7/8 Coax Cable
(1) 16’ Whip Antenna	D&K-33 (existing)	Shared with Mount @ D&K-32	153’	(1) 1-5//8” Coax Cable
(1) 1-Bay Dipole Antenna	D&K-34 (existing)	1’ Stand-off Mount	151’	(1) 1/2” Coax Cable
(6) Powerwave 7770 (3) KMW AM-X-CD-14-65 (6) TMA (3) Ericsson RRUS-11 RRH (3) Ericsson RRUS-12 RRH (1) Raycap Surge Supressor	AT&T (existing)	(3) T-frames	145’	(12) 1 1/4” coax cables (1) Fiber Cable (10mm) (2) DC Cables (0.645”)
(1) (Inverted) 10’ Whip Antenna	D&K-32 (existing)	3’ Side-arm Mount	143’	(1) 7/8” Coax Cable

Antenna Type	*Carrier*	*Mount*	*Centerline Elevation*	*Cable*
(3) RFS APXVTM14-ALU-120 Panels (3) Commscope NNVV-65B-R4 Panels (3) ALU TD-RRH-8x20-25 RRH Units (6) ALU RRH-2x50 800 MHz RRH Units	**Sprint (Proposed)**	**(3) SitePro1 Stiff Arm Kits STK-U attached to below Mount**	**137'**	**(4) Hybrid Cables (1-1/4" Outside Diameter)**
(3) 1900 MHz (4x45W) RRH Units	Sprint (existing)	(3) 13' Lightweight T-Frames (existing)	137'	(6) 1-5/8 coax cables
(3) Commscope DBXNH-6565B-A2M Panel Antennas (3) Bias-T Units (6) TMA Units (6) Combiner/Filter units	T-Mobile (Existing)	(3) Antenna Mounts	130'	(12) 7/8" Coaxial Cables
(1) 14"x14" Panel Antenna	D&K-10 (existing)	1' Side Arm Mount	119'	(1) 7/8" Coax Cable
(1) 12' Dipole Antenna	D&K-9 (existing)	1' Side Arm Mount	119'	(1) 7/8" Coax Cable
(1) Parabolic Grid Dish	D&K-8 VSC-31 (existing)	Pipe Mounted to Leg	109'	(1) 7/8" Coax Cable
(1) 22' Dipole Antenna	D&K-7 (existing)	Shared with Below	76'	(1) 7/8" Coax Cable
(1) 3' Yagi Antenna	D&K-6 (existing)	1' Side Arm Mount	76'	(1) 7/8" Coax Cable
(1) GPS Antenna	D&K-5 Sprint (existing)	Pipe Mounted to Leg	75'	(1) 1/2" Coax Cable
(1) (Inverted) DB803M-XC Omni Whip antenna	D&K-4 CSP-45 (existing)	Shared with Below	27'	(1) 1/2" Coax Cable
(1) DB803M-XC Omni Whip antenna	D&K-3 CSP-46 (existing)	(1) 5' Sidearm Mount	27'	(1) 1/2" Coax Cable
(1) 4' Whip Antenna	D&K-2 (existing)	Shared with Below	27'	(1) 5/8" Coax Cable
(1) 2' Yagi Antenna	D&K-1 (existing)	(1) 2' Stand-off Mount	15'	(1) 5/8" Coax Cable

NOTE: Antenna ID Numbering and elevations obtained from Tower Mapping and Existing inventory via tower climb performed by D&K Nationwide Communications, Inc. on March 19, 2016.

This structural analysis of the communications tower was performed by AECOM, for 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 7.0.8.5 and used the following conditions for this tower review (following the TIA-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 1 – (No Abrupt elevation changes to location of structure)
- 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:
  - Middlesex County (Wind Speed Range): V = 100 mph - 120 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 = 112 mph** (3-Second Gust) Wind Design Parameter for the Town of Westbrook, Connecticut for Risk Category four (IV) for essential communications (Connecticut State Police).

LOAD CONDITION 1 = 112 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 load condition below 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/EIA-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/EIA-222-F design Standard.

3. ANALYSIS METHODOLOGY AND LOADING CONDITIONS (cont.)

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

Seismic event consideration factors/values for design:

- S.s = 0.167 (2016 CT State Building Code – Location Specific Value)
- S.1 = 0.059 (2016 CT State Building Code – Location Specific Value)
- Site Classification = "D"
- Seismic Design Category = "A" – (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 0.6334 degrees and tower twist (rotation) is 0.1056 degrees. These figures combined are within the Connecticut State Police required maximum 0.75 degrees for combined twist and sway when applying the TIA/EIA-222-F design conditions.

Tower Base Reactions (Factored):

Description	Current (TIA-222-G)
Pier Compression (kips)	504
Pier Uplift (kips)	440
Overall Overturning (kip-ft)	10460
Overall Shear (kips)	106
Shear per Leg (kips)	60

Proposed Tower Component Stress vs. Capacity Summary

Component / (Section No.)	Controlling Component/ Elevation	Stress (% capacity)	Pass/Fail
Leg (T14)	Stainless P6.8750 O.D. x 0.5" / 0' – 12.5' / Compression	93.6	**Pass**
Diagonal (T11)	(2) L3-1/2x3x5/16 (SLBB) / 25' – 37.5' / Compression	93.9	**Pass**
Horizontal (T11)	L4x4x1/4 / 37.5' – 50' / Compression	98.1	**Pass**
Top Grit (T4)	L2-1/2x2-1/2x3/16 / 150'-158.33' / Compression	49.7	**Pass**
Redundant Horizontal Bracing (T14)	L2-1/2x2-1/2x3/16 / 0' – 12.5' / Compression	75.0	**Pass**
Redundant Diagonal Bracing (T12)	L2-1/2x2-1/2x3/16 / 25' – 37.5' / Compression	82.0	**Pass**
Inner Bracing (T12)	L2-1/2x2-1/2x3/16 / 25' – 37.5' / Compression	13.6	**Pass**
Bolt Checks (T9)	(1) ¾" A325X Bolt / 83.3' / Diagonal Member Bearing on Bolt	92.2	**Pass**

Foundation Summary

Component	Required	Computed	% Capacity	Pass/Fail
Tower Anchor Rod Capacity (TIA-222-G – 4.9.9)	Ratio < 1.0	0.80	80.0	Pass
Ultimate Soil Bearing Pressure	12ksf * 0.60 Reduction = 7.20 ksf	3.34 ksf	46.4	Pass
Ultimate Punching Shear (ACI Eq. 11-33)	702.05 kip	687.57 kip	98.0	Pass
Ultimate Beam Shear (ACI Eq. 11-2)	320.42 Kip	247.54 kip	77.3	Pass
Foundation Pad Bending Capacity	1354.22 kip*ft	888.78 kip*ft	64.8	Pass
Foundation Uplift Resistance	629.36 kips (Applying 0.750 Reduction Factor – TIA-222-G 9.4.1)	440 kips	70.0	Pass

4. FINDINGS AND EVALUATION (cont.)

Maximum Deformations – Proposed Condition

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	0.1161	0.24125	4.0	5.4

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

Description	Current	Total	Allowable
Tower Twist (degrees)	0.1056	0.7390	0.750
Tower Sway (degrees)	0.6334		

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 require 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 0.6334 degrees and the modified tower's twist (rotation) is 0.1056 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 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, SUPPLEMENTS AND AMENDMENTS AND LIFE SAFETY CODES.
2. CONTRACTOR IS TO REVIEW ALL DRAWINGS AND NOTES 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 NOTES 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.
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 AND ELECTRICAL SUB–CONTRACTORS SHALL PAY FOR THEIR PERMITS.
6. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS 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 OPERATING TELECOMMUNICATION SYSTEMS. THE CONTRACTOR SHALL PROVIDE AND COORDINATE THE METHODS OF PROTECTION WITH THE CONNECTICUT STATE POLICE AND THE VARIOUS TELECOMMUNICATION OPERATORS. THERE SHALL BE NO INTERRUPTION OF OPERATION WITHOUT TIMELY COORDINATION WITH AND APPROVAL BY THE VARIOUS COMMUNICATIONS OPERATORS.
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. SHOP DRAWINGS SHALL REFLECT FIELD VERIFIED DIMENSIONS.
12. EXISTING DIMENSIONS OF STRUCTURE SHOWN ON THESE DOCUMENTS ARE BASED ON ORIGINAL TOWER CONSTRUCTION DRAWINGS BY STAINLESS INC., DATED JUNE 1994, 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. SHOP DRAWINGS SHALL CONTAIN FIELD VERIFIED DIMENSIONS.
13. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURE AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY.
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.

STRUCTURAL NOTES

STRUCTURAL STEEL MATERIAL:

EXISTING STRUCTURAL STEEL A36
REPLACEMENT STRUCTURAL ANGLES..... A572–Gr. 50
EXISTING TOWER LEG ..... A 572–Gr. 50 & Gr. 60

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

UNLESS OTHERWISE NOTED, ALL STEEL WILL 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.

MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACES TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.

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 3/4" & 1" DIA. A325X 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.

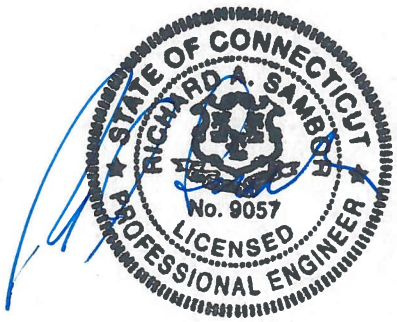
THE CONTRACTOR IS RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE DURING CONSTRUCTION. NO MEMBER OF THE TOWER SHALL BE LEFT DISCONNECTED FOR THE NEXT WORKING DAY. THE CONTRACTOR SHALL BE AWARE OF WEATHER AND WIND CONDITIONS AND NOT PERFORM MEMBER REPLACEMENT IN A WIND GUSTING MORE THAN 10 MPH.

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. 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.



PROJECT NO. 60577720
Designed by: MCD
Drawn by: GAT
Checked by: ICA
Approved by: RAS

AECOM
500 ENTERPRISE DRIVE
ROCKY HILL, CONNECTICUT
(860)-529-8882

Sprint

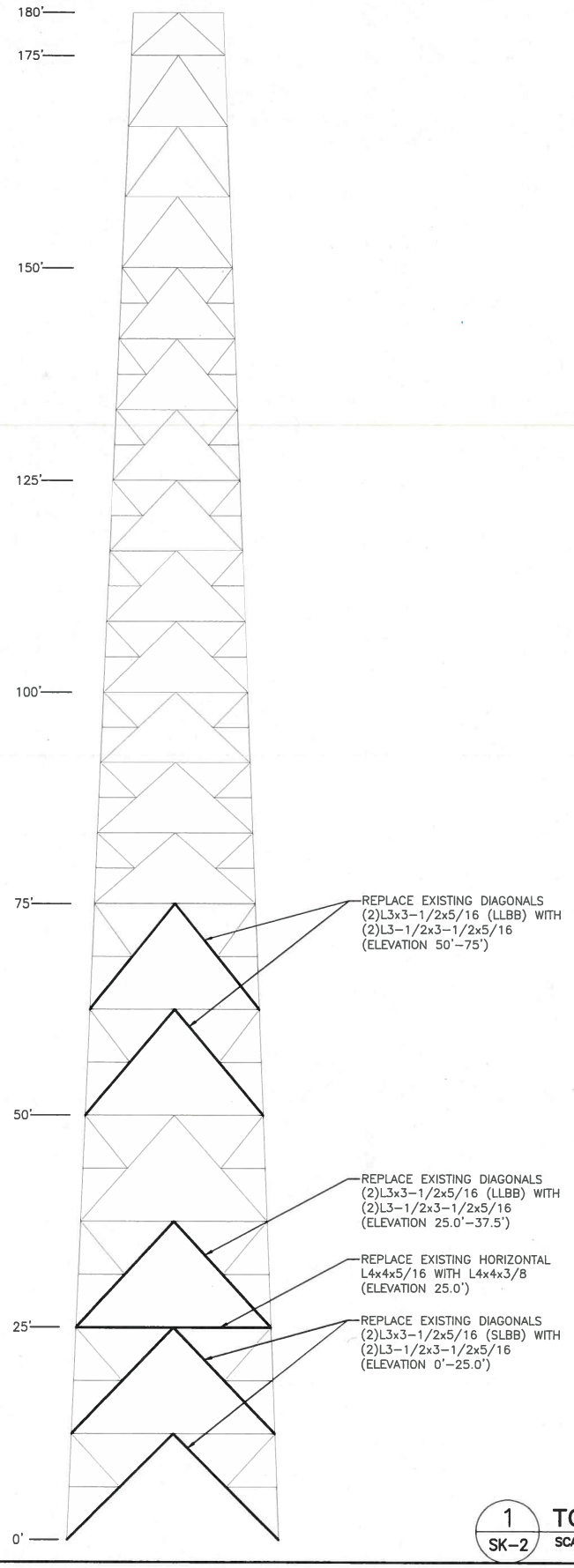
SITE ADDRESS: CT 54XC758
CSP #36, 315 SPENCER PLAINS ROAD
WESTBROOK, CONNECTICUT 06498

REV.	DATE:	DESCRIPTION
1	09/17/18	RE–ISSUE – NO CHANGE

Scale: AS NOTED | Date: 06/20/18
Job No. ASM–009 | File No.

Dwg. No. SK–1

NOTES:
1. SEE SK–1 FOR STRUCTURAL NOTES.
2. REFER TO STRUCTURAL NOTES ON SK–1 FOR STEEL GRADE REQUIREMENTS FOR REPLACEMENT STRUCTURAL STEEL.
3. REINFORCEMENT OF TOWER IS REQUIRED FOR ALL 3 SIDES OF EXISTING TOWER STRUCTURE.
4. CONNECTION BOLTS THAT ARE REMOVED DURING MEMBER REPLACEMENT SHALL BE REPLACED IN KIND, UNLESS NOTIFIED OTHERWISE. EXISTING BOLTS SHALL NOT BE RE–USED FOR CONNECTING REPLACEMENT MEMBERS.



KEY:
SLBB = SHORT LEG BACK–TO–BACK
LLBB = LONG LEG BACK–TO–BACK

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

1 / SK–2 TOWER ELEVATION
SCALE: 1" = 20'–0"

PROJECT NO.	60577720
Designed by:	MCD
Drawn by:	GAT
Checked by:	ICA
Approved by:	RAS

AECOM
500 ENTERPRISE DRIVE
ROCKY HILL, CONNECTICUT
(860)-529-8882

Sprint

CT 54XC758
SITE ADDRESS: CSP #36, 315 SPENCER PLAINS ROAD
WESTBROOK, CONNECTICUT 06498

REV.	DATE:	DESCRIPTION
1	09/17/18	RE–ISSUE – NO CHANGE

Scale: AS NOTED | Date: 06/20/18
Job No. ASM–009 | File No.

Dwg. No. SK–2

Dwg. 2 of 2

SEISMIC BASE SHEAR ANALYSIS

AECOM

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

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

Location: Westbrook, CT -Site Class "D"

$S_{DS} = \frac{2}{3} F_A S_S$, where $S_S = 0.167$ and $F_A = 1.6$ $S_{DS} = \frac{2}{3} F_A S_S = \frac{2}{3} * 1.6 * 0.167 = 0.178$

$S_{D1} = \frac{2}{3} F_V S_1$, where $S_1 = 0.059$ and $F_V = 2.4$ $S_{D1} = \frac{2}{3} F_V S_1 = \frac{2}{3} * 2.4 * 0.059 = 0.0944$

TIA-222-G SECTION 2.7 EARTHQUATE 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	= 39.450	Kips
W=Antennas/Mounts	= 7.623	Kips
W=Cables	= 5.469	Kips
	52.542 Kip	= WT Total = "W"

$$V_s = \frac{S_{DS} * W * I}{R} = \frac{0.178 * 52.542 kips * 1.5}{3.0} = 4.6762 \ kips,$$ where R = 3.0 for Lattice Tower

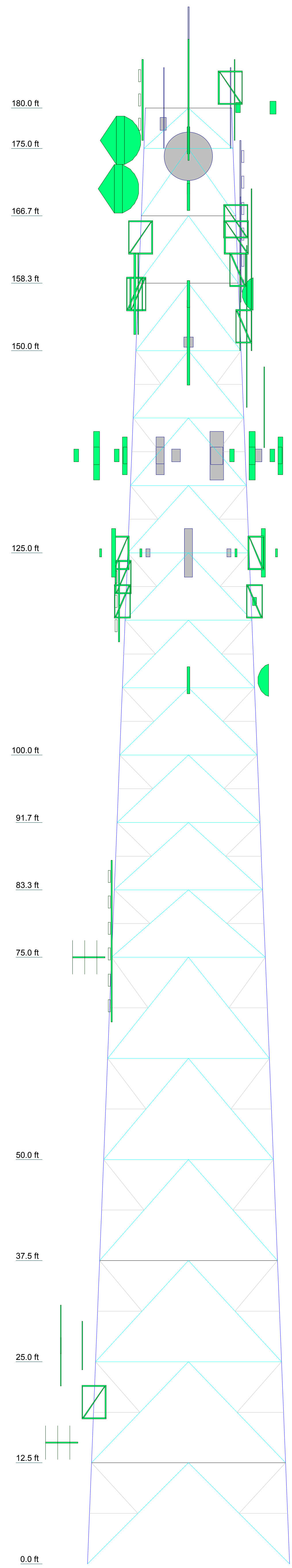
$$V_{S.min} = \frac{0.5 * S_{D1} * W * I}{R} = \frac{0.5 * 0.0944 * 52.542 kips * 1.5}{3.0} = 1.3057 \quad kips$$

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

$1.2 * DL + 1.0\ E < 1.2\ DL + 1.6\ W,$ (61.0 Kips), therefore seismic effect on structure Does NOT control Design.

TNX TOWER INPUT / OUPUT SUMMARY

Section	Legs	Leg Grade	Diagonals	Diagonal Grade	Top Girts	Horizontals	Red. Horizontals	Red. Diagonals	Inner Bracing	Face Width (ft)	# Panels @ (ft)	Weight (lb)
T1	Stainless P5x0.250	A513-50	2L2 1/2x2x3/16	A36	L3x3x1/4	N.A.	N.A.	N.A.	N.A.	10.599	1 @ 5	592.3
T2					N.A.	B				11	12 @ 8.33333	755.5
T3					L2 1/2x2 1/2x3/16	N.A.				11.6667		768.1
T4										12.3333		780.9
T5	Stainless P5x0.300		2L2 1/2x2x5/16		N.A.	L3x2 1/2x1/4	L2x2x3/16	L2x2x3/16	L2 1/2x2x3/16	13		3994.8
T6	Stainless P5x0.400		2L3x2 1/2x1/4			L3x3x5/16				15		4822.1
T7	A					2L3x3x1/4				17		1971.3
T8	1/3 Pipe w/ 5"x0.5 Stainless	A500-42								17.6667		2177.7
T9										18.3333		2217.6
T10	Stainless P6.875x0.400	A572-60	2L3 1/2x3 1/2x5/16	A529-50		L4x4x1/4	L2 1/2x2 1/2x3/16	L2 1/2x2 1/2x3/16	L2 1/2x2 1/2x3/16	19	6 @ 12.5	6256.5
T11	Stainless P6.875x0.500		2L3 1/2x3x5/16	A36						21		3351.7
T12			2L3 1/2x3 1/2x5/16	A529-50	2L4x4x1/4	N.A.				22		3953.2
T13					N.A.	L4x4x3/8		L3x3x1/4	L3x3x1/4	23		3949.4
T14					2L4x4x5/16	N.A.				24		4500.6
										25		40091.7



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
3" Dia 20' Omni (DNK-57)	182.5	13' Sector Mount (1) ((DNK 19-32)/ATT)	143
6' Side-Arm(1) (DNK-57)	182.5	(2) 7770 w mount pipe ((DNK 19-32)/ATT)	143
6' Side-Arm(1) (DNK-57)	182.5	(2) 7770 w mount pipe ((DNK 19-32)/ATT)	143
1" Dia 8' Omni (DNK-58)	182	13' Sector Mount (1) ((DNK 19-32)/ATT)	143
2" Dia 10' Omni (DNK-52)	181	13' Sector Mount (1) ((DNK 19-32)/ATT)	143
2" Dia 10' Omni (DNK-53)	181	RRUS-11 ((DNK 19-32)/ATT)	143
10' - 2 Bay Dipole (DNK-54)	181	Pirod 12' PCS T-Frame (1) 104569 ((DNK 14-19)/Sprint)	137
20' 4-Bay Dipole (DNK-55)	181		
Lightning Rod 2"x15' (DNK-56)	181	Pirod 12' PCS T-Frame (1) 104569 ((DNK 14-19)/Sprint)	137
3" Dia 12' Omni (DNK-48)	180		
3" Dia 12' Omni (DNK-49)	180	Pirod 12' PCS T-Frame (1) 104569 ((DNK 14-19)/Sprint)	137
432E-83I-01T TTA Unit (DNK-50)	180		
1 Bay Dipole ANT400D (DNK-51)	180	APXVTM14-C-120 Panel Antenna ((DNK 14-19)/Sprint)	137
432E-83I-01T TTA Unit (DNK-47)	178		
3'4"x4" Pipe Mount (DNK-45)	176	APXVTM14-C-120 Panel Antenna ((DNK 14-19)/Sprint)	137
6' w/Radome (DNK-45)	176		
6' w/Radome (DNK-44)	174	APXVTM14-C-120 Panel Antenna ((DNK 14-19)/Sprint)	137
3'4"x4" Pipe Mount (DNK-44)	171	NNVV-65B-R4 Panel Antenna (Sprint)	137
Andrew 6' w/Radome (DNK-43)	170	NNVV-65B-R4 Panel Antenna (Sprint)	137
3'4"x4" Pipe Mount (DNK-43)	169	NNVV-65B-R4 Panel Antenna (Sprint)	137
6' Side-Arm(1) (DNK-40,41)	166	ALU TD-RRH-8x20-25 (Sprint)	137
6' Side-Arm(1) (DNK-40,41)	166	ALU TD-RRH-8x20-25 (Sprint)	137
(inverted) 10' 8 Bay Di-Pole (DNK-40,41)	166	ALU TD-RRH-8x20-25 (Sprint)	137
(inverted) 2" Dia 10' Omni (DNK-42)	164	(2) ALU 800MHz 2x50W (Sprint)	137
6' Side-Arm(1) (DNK-42)	164	(2) ALU 800MHz 2x50W (Sprint)	137
6' Side-Arm(1) (DNK-42)	164	(2) ALU 800MHz 2x50W (Sprint)	137
(Inverted) 3" Dia 20' Omni (DNK-38)	160	ALU 4x45-1900 MHz RRH Unit (Sprint)	137
2' Sidearm (DNK-38,39)	160	ALU 4x45-1900 MHz RRH Unit (Sprint)	137
(Inverted) 3" Dia 20' Omni (DNK-39)	160	ALU 4x45-1900 MHz RRH Unit (Sprint)	137
2" Dia 10' Omni (DNK-35)	157	DBXNH-6565B-A2M (DNK-11,12,13/T-Mobile)	125
2' Sidearm (DNK-35)	157	(2) Ericsson TMA Unit (DNK-11,12,13/T-Mobile)	125
10'x6" Dipole Antenna (DNK-36)	157	DBXNH-6565B-A2M (DNK-11,12,13/T-Mobile)	125
1' Side Arm (DNK-36)	157	(2) Ericsson TMA Unit (DNK-11,12,13/T-Mobile)	125
3'4"x4" Pipe Mount (DNK-37)	157	2' Sidearm (DNK-11,12,13/T-Mobile)	125
4' Paraflector (DNK-37)	157	2' Sidearm (DNK-11,12,13/T-Mobile)	125
3" Dia 20' Omni (DNK-33)	153	2' Sidearm (DNK-11,12,13/T-Mobile)	125
1' Side Arm (DNK-33)	153	(2) Ericsson TMA Unit (DNK-11,12,13/T-Mobile)	125
1.5" Dia 16' Omni (DNK-33)	153	DBXNH-6565B-A2M (DNK-11,12,13/T-Mobile)	125
1 Bay Dipole ANT400D (DNK-34)	151	1' Side Arm (DNK-6,7)	122
10'6"x4" Pipe Mount (DNK-34)	151	12' Dipole (DNK-9)	119
RRUS-12 ((DNK 19-32)/ATT)	143	1' Side Arm (DNK-9)	119
RRUS-12 ((DNK 19-32)/ATT)	143	1' Side Arm (DNK-10)	119
RRUS-12 ((DNK 19-32)/ATT)	143	1'x1' Panel Antenna (DNK-10)	119
2" Dia 10' Omni (DNK-32)	143	3'4"x4" Pipe Mount (DNK-8)	109.25
Pirod 4' Side Mount Standoff (1) (DNK-32)	143	4' Paraflector (DNK-8)	109.25
RRUS-11 ((DNK 19-32)/ATT)	143	3' Yagi (DNK-6)	76
AM-X-CD-14-65-00T-RET ((DNK 19-32)/ATT)	143	20' 4-Bay Dipole (DNK-7)	76
AM-X-CD-14-65-00T-RET ((DNK 19-32)/ATT)	143	GPS (DNK-5)	75
Raycap Surge Suppressor ((DNK 19-32)/ATT)	143	(Inverted) 1" Dia Omni (DNK-3)	27
AM-X-CD-14-65-00T-RET ((DNK 19-32)/ATT)	143	2" Dia 8' Omni (DNK-2)	27
(2) 7770 w mount pipe ((DNK 19-32)/ATT)	143	1" Dia Omni (DNK-4)	27
(2) TMA (shielded) ((DNK 19-32)/ATT)	143	Rohn 6' Side-Arm(1) (DNK-3,4)	26
(2) TMA (shielded) ((DNK 19-32)/ATT)	143	2' Standoff T-Arm (5' face width) (DNK 1,2)	20
(2) TMA (shielded) ((DNK 19-32)/ATT)	143	2' Yagi (DNK-1)	15
RRUS-11 ((DNK 19-32)/ATT)	143		

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	Stainless P5x0.500	B	L2 1/2x2 1/2x3/16

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A513-50	50 ksi	66 ksi	A572-60	60 ksi	75 ksi
A36	36 ksi	58 ksi	A529-50	50 ksi	65 ksi
A500-42	42 ksi	58 ksi			

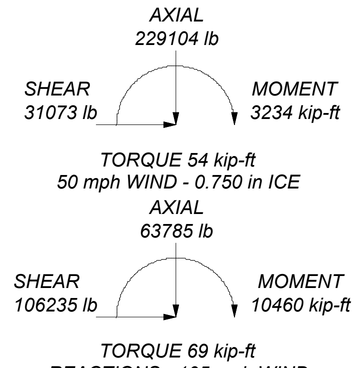
TOWER DESIGN NOTES

1. Tower designed for Exposure C to the TIA-222-G Standard.
2. Tower designed for a 105 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 1 with Crest Height of 0.000 ft
7. P-Delta for analysis does not apply for this case - TIA-222-G Section 3.5.
8. Wind speed posted is from CT Building Code 2016 as 105 mph with a 1.15 importance factor applied (112 mph - w/o importance factor speed applied)
9. TOWER RATING: 98.1%

ALL REACTIONS ARE FACTORED

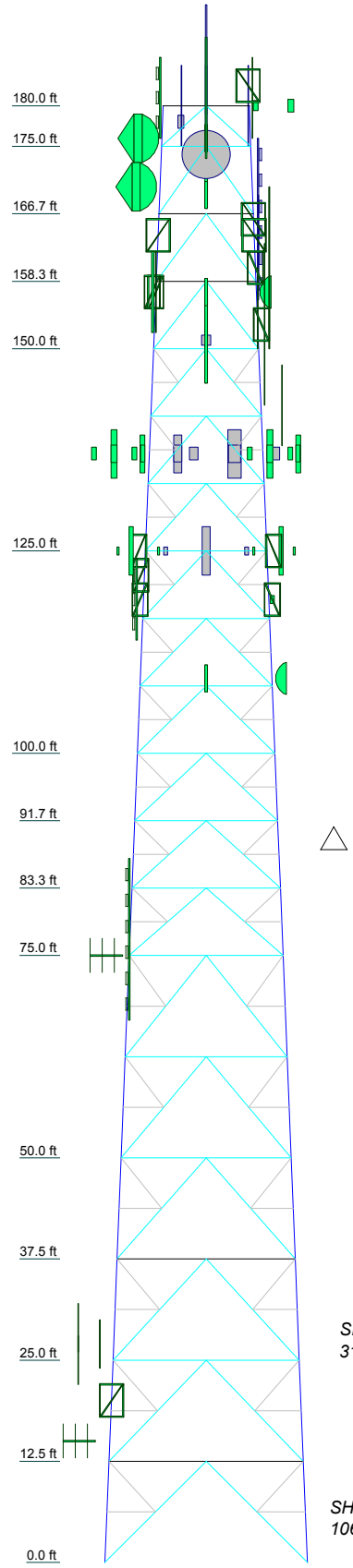
MAX. CORNER REACTIONS AT BASE:
DOWN: 504384 lb
SHEAR: 60234 lb

UPLIFT: -440095 lb
SHEAR: 53687 lb



AECOM 500 Enterprise Drive, Suite 3B Rocky Hill, CT Phone: 860-529-8882 FAX: 860-529-3991	Job: ***Analysis - 180' Lattice Tower (CSP #36)*** Project: ***Westbrook, Connecticut*** Client: Airosmith Development / Sprint / ASM-009 — Drawn by: MCD — App'd: Code: TIA-222-G — Date: 09/17/18 — Scale: NTS Path: — Dwg No. E-1

Section	T14	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	Stainless P6.875x0.500				Stainless P6.875x0.400				Stainless P5x0.400	Stainless P5x0.300		Stainless P5x0.250		
Leg Grade	A572-60						A500-42	A		A513-50				
Diagonals	2L3 1/2x3 1/2x5/16			2L3 1/2x3x5/16	2L3 1/2x3 1/2x5/16				2L3x2 1/2x1/4	2L2 1/2x2x5/16		2L2 1/2x2x3/16		
Diagonal Grade	A529-50			A36	A529-50				A36					
Top Girts	2L4x4x5/16	N.A.	2L4x4x1/4					N.A.			L2 1/2x2 1/2x3/16	N.A.	N.A.	C
Horizontals	N.A.	L4x4x3/8	N.A.		L4x4x1/4		2L3x3x1/4		L3x3x5/16	L3x2 1/2x1/4	N.A.	11.6667	D	N.A.
Red. Horizontals				L2 1/2x2 1/2x3/16					L2x2x3/16			N.A.		
Red. Diagonals	L3x3x1/4			L2 1/2x2 1/2x3/16					L2x2x3/16			N.A.		
Inner Bracing	L3x3x1/4			L2 1/2x2 1/2x3/16					L2 1/2x2x3/16			N.A.		
Face Width (ft) 25	24	23	22	21	19	18.3333	17.6667	17	15	13	12.3333	11.6667	11	10.599
# Panels @ (ft)	6 @ 12.5					12 @ 8.33333								1 @ 5
Weight (lb) 40091.7	4500.6	3949.4	3953.2	3351.7	6256.5	2217.6	2177.7	1971.3	4822.1	3994.8	780.9	768.1	755.5	592.3



SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	Stainless P5x0.500	C	L3x3x1/4
B	1/3 Pipe w/ 5"x0.5 Stainless	D	L2 1/2x2 1/2x3/16

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A513-50	50 ksi	66 ksi	A572-60	60 ksi	75 ksi
A36	36 ksi	58 ksi	A529-50	50 ksi	65 ksi
A500-42	42 ksi	58 ksi			

TOWER DESIGN NOTES

1. Tower designed for Exposure C to the TIA-222-G Standard.
2. Tower designed for a 105 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 1 with Crest Height of 0.000 ft
7. P-Delta for analysis does not apply for this case - TIA-222-G Section 3.5.
8. Wind speed posted is from CT Building Code 2016 as 105 mph with a 1.15 importance factor applied (112 mph - w/o importance factor speed applied)
9. TOWER RATING: 98.1%

ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 504384 lb
SHEAR: 60234 lb

UPLIFT: -440095 lb
SHEAR: 53687 lb

AXIAL 229104 lb
SHEAR 31073 lb *MOMENT 3234 kip-ft*
TORQUE 54 kip-ft
50 mph WIND - 0.750 in ICE

AXIAL 63785 lb
SHEAR 106235 lb *MOMENT 10460 kip-ft*
TORQUE 69 kip-ft
REACTIONS - 105 mph WIND

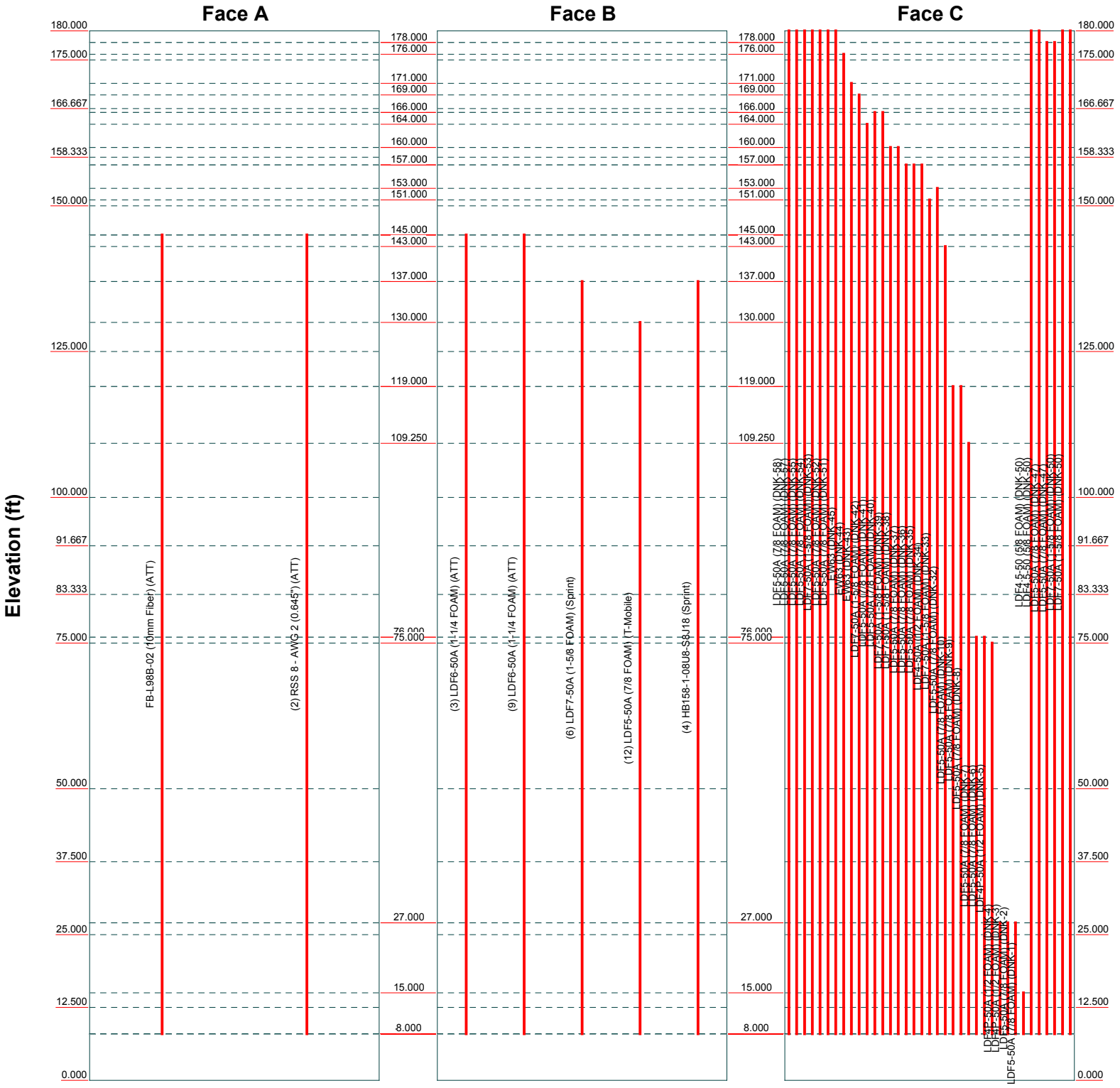
AECOM
500 Enterprise Drive, Suite 3B
Rocky Hill, CT
Phone: 860-529-8882
FAX: 860-529-3991

Job: ***Analysis - 180' Lattice Tower (CSP #36)***			
Project: ***Westbrook, Connecticut***			
Client: Airosmith Development / Sprint / ASM-009	Drawn by: MCD	App'd:	
Code: TIA-222-G	Date: 09/17/18	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



AECOM 500 Enterprise Drive, Suite 3B Rocky Hill, CT Phone: 860-529-8882 FAX: 860-529-3991	Job: ***Analysis - 180' Lattice Tower (CSP #36)***		
	Project: ***Westbrook, Connecticut***		
	Client: Airosmith Development / Sprint / ASM-009	Drawn by: MCD	App'd:
	Code: TIA-222-G	Date: 09/17/18	Scale: NTS
	Path:		Dwg No. E-7

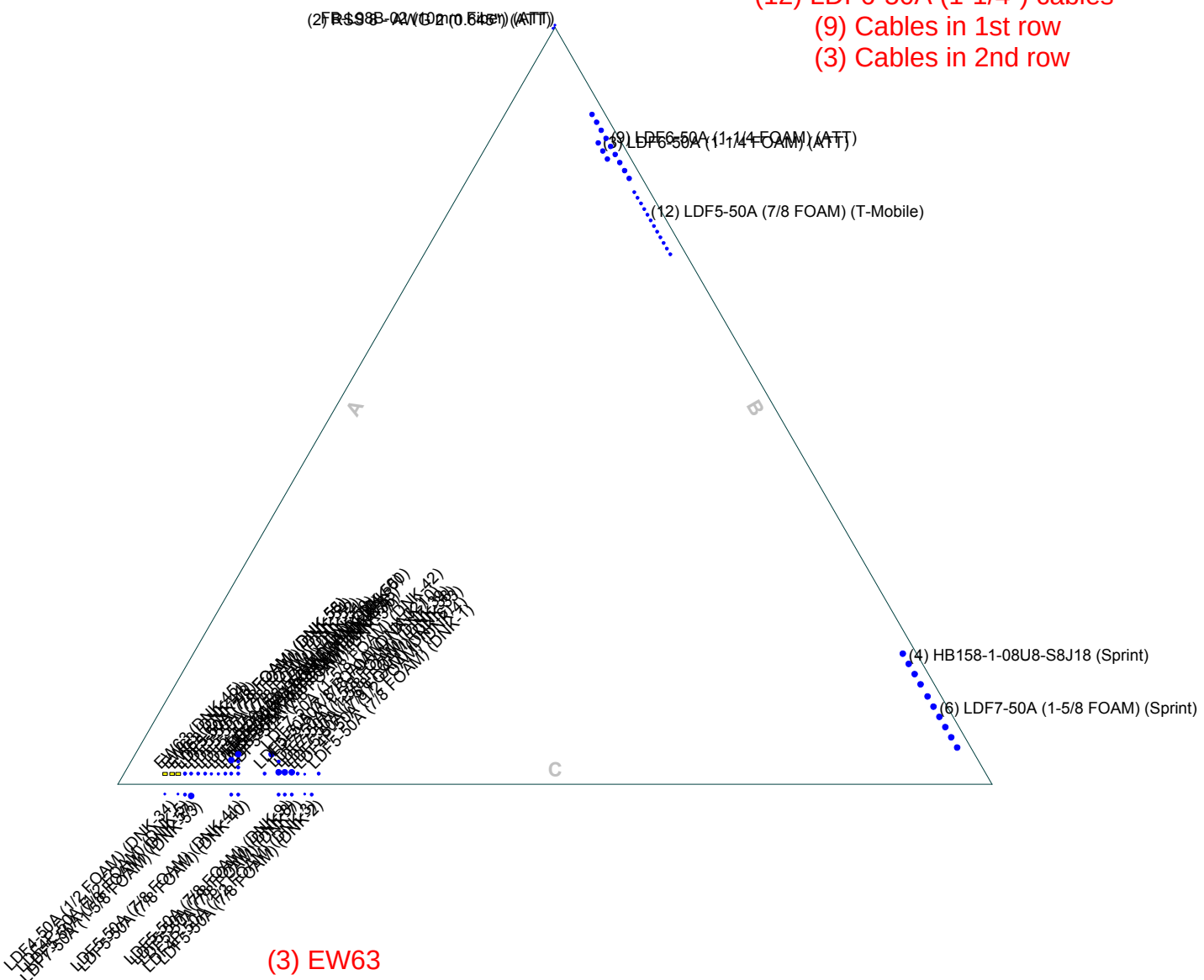
TNX TOWER FEEDLINE PLAN

Feed Line Plan

Round Flat App In Face App Out Face

(1) 10 mm Fiber Optic Cable
(2) AWG-2 Cables

(12) LDF6-50A (1-1/4") cables
(9) Cables in 1st row
(3) Cables in 2nd row



(3) EW63
(7) 1-5/8 Coax Cables
(21) 7/8" Coax Cables
(2) 5/8" Coax Cables
(4) 1/2" Coax Cables

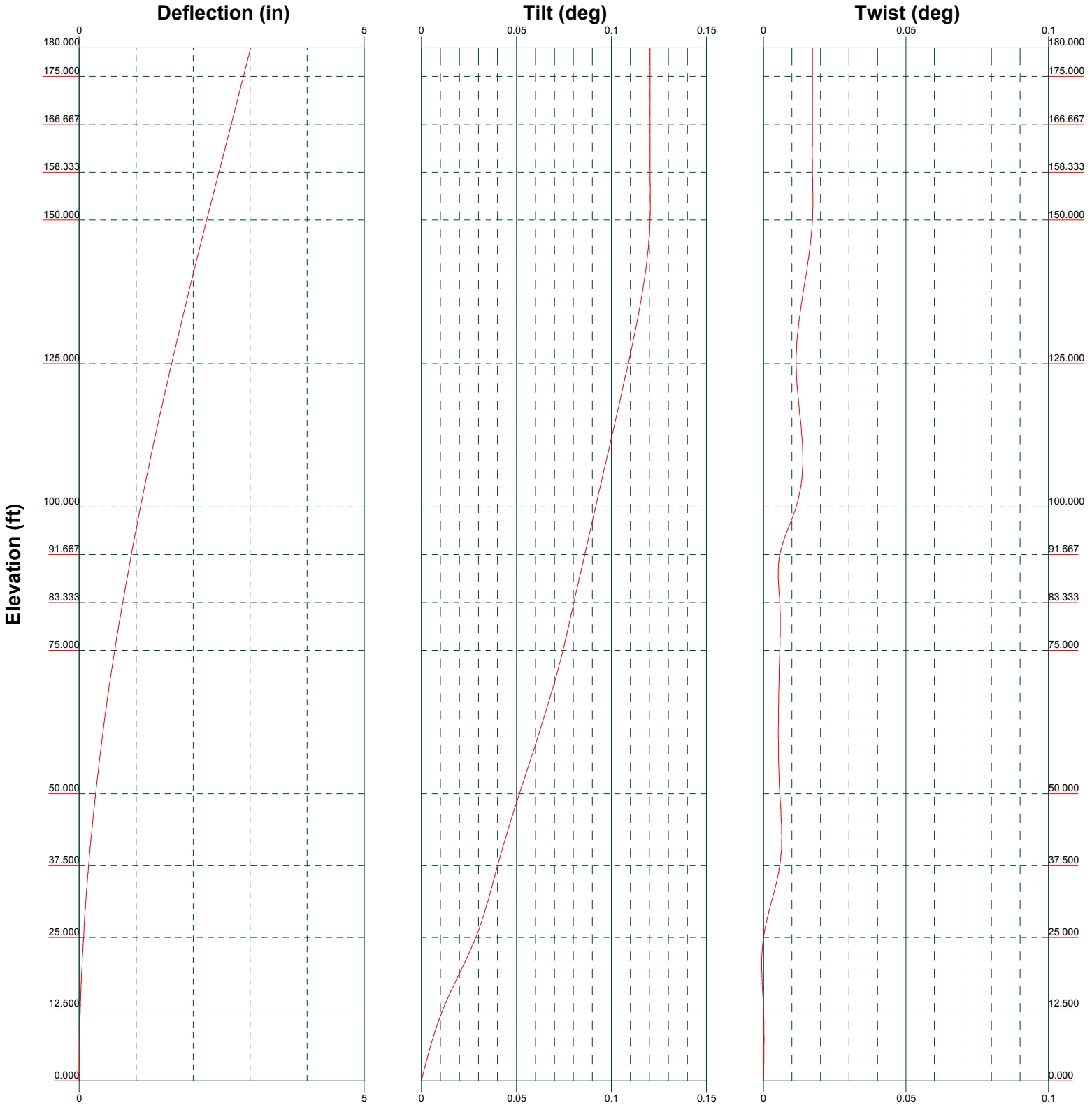
AECOM
500 Enterprise Drive, Suite 3B
Rocky Hill, CT
Phone: 860-529-8882
FAX: 860-529-3991

Job:	***Analysis - 180' Lattice Tower (CSP #36)***		
Project:	***Westbrook, Connecticut***		
Client:	Airosmith Development / Sprint / ASM-009	Drawn by: MCD	App'd:
Code:	TIA-222-G	Date: 09/17/18	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: ***Analysis - 180' Lattice Tower (CSP #36)***			
Project: ***Westbrook, Connecticut***			
Client: Airosmith Development / Sprint / ASM-009	Drawn by: MCD	App'd:	
Code: TIA-222-G	Date: 09/17/18	Scale: NTS	
Path:		Dwg No. E-5	

TNX TOWER DETAILED OUTPUT

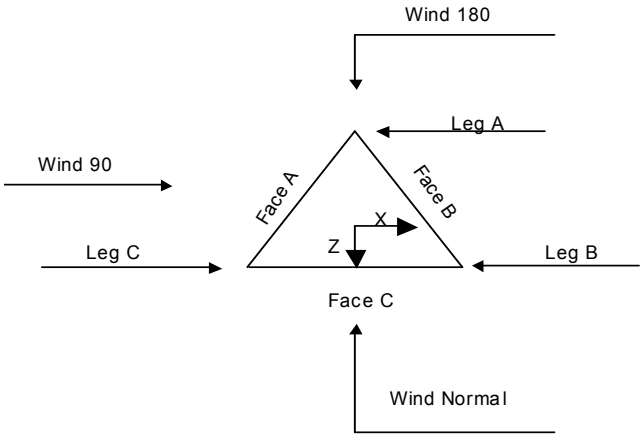
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 180.000 ft above the ground line.
The base of the tower is set at an elevation of 0.000 ft above the ground line.
The face width of the tower is 10.599 ft at the top and 25.000 ft at the base.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Basic wind speed of 105 mph.
Structure Class III.
Exposure Category C.
Topographic Category 1.
Crest Height 0.000 ft.
Nominal ice thickness of 0.750 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.
Deflections calculated using a wind speed of 60 mph.
P-Delta for analysis does not apply for this case - TIA-222-G Section 3.5..
Wind speed posted is from CT Building Code 2016 as 105 mph with a 1.15 importance factor applied (112 mph - w/o importance factor speed applied).
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		



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	180.000-175.000			10.599	1	5.000
T2	175.000-166.667			11.000	1	8.333
T3	166.667-158.333			11.667	1	8.333
T4	158.333-150.000			12.333	1	8.333
T5	150.000-125.000			13.000	1	25.000
T6	125.000-100.000			15.000	1	25.000
T7	100.000-91.667			17.000	1	8.333
T8	91.667-83.333			17.667	1	8.333
T9	83.333-75.000			18.333	1	8.333
T10	75.000-50.000			19.000	1	25.000
T11	50.000-37.500			21.000	1	12.500
T12	37.500-25.000			22.000	1	12.500
T13	25.000-12.500			23.000	1	12.500
T14	12.500-0.000			24.000	1	12.500

Tower Section Geometry *(cont'd)*

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	180.000-175.000	5.000	K Brace Down	No	Yes	0.000	0.000

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
T2	175.000-166.667	8.333	K Brace Down	No	Yes	0.000	0.000
T3	166.667-158.333	8.333	K Brace Down	No	Yes	0.000	0.000
T4	158.333-150.000	8.333	K Brace Down	No	Yes	0.000	0.000
T5	150.000-125.000	8.333	K1 Down	No	Yes	0.000	0.000
T6	125.000-100.000	8.333	K1 Down	No	Yes	0.000	0.000
T7	100.000-91.667	8.333	K1 Down	No	Yes	0.000	0.000
T8	91.667-83.333	8.333	K1 Down	No	Yes	0.000	0.000
T9	83.333-75.000	8.333	K1 Down	No	Yes	0.000	0.000
T10	75.000-50.000	12.500	K1 Down	No	Yes	0.000	0.000
T11	50.000-37.500	12.500	K1 Down	No	Yes	0.000	0.000
T12	37.500-25.000	12.500	K1 Down	No	Yes	0.000	0.000
T13	25.000-12.500	12.500	K1 Down	No	Yes	0.000	0.000
T14	12.500-0.000	12.500	K1 Down	No	Yes	0.000	0.000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 180.000-175.000	Pipe	Stainless P5x0.250	A513-50 (50 ksi)	Double Angle	2L2 1/2x2x3/16	A36 (36 ksi)
T2 175.000-166.667	Pipe	Stainless P5x0.250	A513-50 (50 ksi)	Double Angle	2L2 1/2x2x3/16	A36 (36 ksi)
T3 166.667-158.333	Pipe	Stainless P5x0.250	A513-50 (50 ksi)	Double Angle	2L2 1/2x2x3/16	A36 (36 ksi)
T4 158.333-150.000	Pipe	Stainless P5x0.250	A513-50 (50 ksi)	Double Angle	2L2 1/2x2x3/16	A36 (36 ksi)
T5 150.000-125.000	Pipe	Stainless P5x0.300	A513-50 (50 ksi)	Double Angle	2L2 1/2x2x5/16	A36 (36 ksi)
T6 125.000-100.000	Pipe	Stainless P5x0.400	A513-50 (50 ksi)	Double Angle	2L3x2 1/2x1/4	A36 (36 ksi)
T7 100.000-91.667	Pipe	Stainless P5x0.500	A513-50 (50 ksi)	Double Angle	2L3x2 1/2x1/4	A36 (36 ksi)
T8 91.667-83.333	Arbitrary Shape	1/3 Pipe w/ 5"x0.5 Stainless	A500-42 (42 ksi)	Double Angle	2L3x2 1/2x1/4	A36 (36 ksi)
T9 83.333-75.000	Arbitrary Shape	1/3 Pipe w/ 5"x0.5 Stainless	A500-42 (42 ksi)	Double Angle	2L3x2 1/2x1/4	A36 (36 ksi)
T10 75.000-50.000	Pipe	Stainless P6.875x0.400	A572-60 (60 ksi)	Double Equal Angle	2L3 1/2x3 1/2x5/16	A529-50 (50 ksi)
T11 50.000-37.500	Pipe	Stainless P6.875x0.500	A572-60 (60 ksi)	Double Angle	2L3 1/2x3x5/16	A36 (36 ksi)
T12 37.500-25.000	Pipe	Stainless P6.875x0.500	A572-60 (60 ksi)	Double Angle	2L3 1/2x3 1/2x5/16	A529-50 (50 ksi)
T13 25.000-12.500	Pipe	Stainless P6.875x0.500	A572-60 (60 ksi)	Double Angle	2L3 1/2x3 1/2x5/16	A529-50 (50 ksi)
T14 12.500-0.000	Pipe	Stainless P6.875x0.500	A572-60 (60 ksi)	Double Angle	2L3 1/2x3 1/2x5/16	A529-50 (50 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 180.000-175.000	Single Angle	L3x3x1/4	A36 (36 ksi)	Pipe		A36 (36 ksi)
T3 166.667-158.333	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)	Pipe		A36 (36 ksi)
T4 158.333-150.000	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)	Pipe		A36 (36 ksi)
T12 37.500-25.000	Double Equal Angle	2L4x4x1/4	A36 (36 ksi)	Pipe		A36 (36 ksi)
T14 12.500-0.000	Double Equal Angle	2L4x4x5/16	A36 (36 ksi)	Pipe		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 180.000-175.000	None	Pipe		A36 (36 ksi)	Single Angle	L1x1x1/8	A36 (36 ksi)
T2 175.000-166.667	None	Pipe		A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T3 166.667-158.333	None	Pipe		A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T4 158.333-150.000	None	Pipe		A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T5 150.000-125.000	None	Pipe		A36 (36 ksi)	Single Angle	L3x2 1/2x1/4	A36 (36 ksi)
T6 125.000-100.000	None	Pipe		A36 (36 ksi)	Single Angle	L3x3x5/16	A36 (36 ksi)
T7 100.000-91.667	None	Pipe		A36 (36 ksi)	Double Equal Angle	2L3x3x1/4	A36 (36 ksi)
T8 91.667-83.333	None	Pipe		A36 (36 ksi)	Double Angle	2L3x3x1/4	A36 (36 ksi)
T9 83.333-75.000	None	Pipe		A36 (36 ksi)	Double Angle	2L3x3x1/4	A36 (36 ksi)
T10 75.000-50.000	None	Pipe		A36 (36 ksi)	Single Angle	L4x4x1/4	A36 (36 ksi)
T11 50.000-37.500	None	Pipe		A36 (36 ksi)	Single Angle	L4x4x1/4	A36 (36 ksi)
T12 37.500-25.000	None	Pipe		A36 (36 ksi)	Single Angle	L4x4x1/4	A36 (36 ksi)
T13 25.000-12.500	None	Pipe		A36 (36 ksi)	Single Angle	L4x4x3/8	A529-50 (50 ksi)
T14 12.500-0.000	None	Pipe		A36 (36 ksi)	Single Angle	L4x4x5/16	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
T5 150.000-125.000	Solid Round		A36 (36 ksi)	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)
T6 125.000-100.000	Solid Round		A36 (36 ksi)	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)
T7 100.000-91.667	Solid Round		A36 (36 ksi)	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)
T8 91.667-83.333	Solid Round		A36 (36 ksi)	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)
T9 83.333-75.000	Solid Round		A36 (36 ksi)	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)
T10 75.000-50.000	Solid Round		A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T11 50.000-37.500	Solid Round		A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T12 37.500-25.000	Solid Round		A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T13 25.000-12.500	Solid Round		A36 (36 ksi)	Single Angle	L3x3x1/4	A36 (36 ksi)
T14 12.500-0.000	Solid Round		A36 (36 ksi)	Single Angle	L3x3x1/4	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Redundant Bracing Grade		Redundant Type	Redundant Size	K Factor
T5 150.000-125.000	A36 (36 ksi)	Horizontal (1)	Single Angle	L2x2x3/16	1
		Diagonal (1)	Single Angle	L2x2x3/16	1
T6 125.000-100.000	A36 (36 ksi)	Horizontal (1)	Single Angle	L2x2x3/16	1
		Diagonal (1)	Single Angle	L2x2x3/16	1
T7 100.000-91.667	A36 (36 ksi)	Horizontal (1)	Single Angle	L2x2x3/16	1
		Diagonal (1)	Single Angle	L2x2x3/16	1
T8 91.667-83.333	A36 (36 ksi)	Horizontal (1)	Single Angle	L2x2x3/16	1
		Diagonal (1)	Single Angle	L2x2x3/16	1
T9 83.333-75.000	A36 (36 ksi)	Horizontal (1)	Single Angle	L2x2x3/16	1
		Diagonal (1)	Single Angle	L2x2x3/16	1
T10 75.000-50.000	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
T11 50.000-37.500	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
T12 37.500-25.000	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
T13 25.000-12.500	A36 (36 ksi)	Horizontal (1)	Single Angle	L2 1/2x2 1/2x3/16	1
		Diagonal (1)	Single Angle	L3x3x1/4	1
T14 12.500-0.000	A36 (36 ksi)	Horizontal (1)	Single Angle	L2 1/2x2 1/2x3/16	1
		Diagonal (1)	Single Angle	L3x3x1/4	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 180.000-175.000	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
T2 175.000-166.667	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
T3 166.667-158.333	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
T4 158.333-150.000	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
T5 150.000-125.000	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
T6 125.000-100.000	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
T7 100.000-91.667	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
T8 91.667-83.333	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
T9 83.333-75.000	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
T10 75.000-50.000	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
T11 50.000-37.500	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
T12 37.500-25.000	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
T13 25.000-12.500	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000
T14 12.500-0.000	0.000	0.000	A36 (36 ksi)	1	1	1	36.000	36.000	36.000

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 180.000-175.000	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T2 175.000-166.667	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T3 166.667-158.333	Yes	No	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T4 158.333-150.0	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 Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
00										
T5	Yes	No	1	1	1	1	1	1	1	1
150.000-125.000				1	1	1	1	1	1	1
T6	Yes	No	1	1	1	1	1	1	1	1
125.000-100.000				1	1	1	1	1	1	1
T7	Yes	No	1	1	1	1	1	1	1	1
100.000-91.667				1	1	1	1	1	1	1
T8	Yes	No	1	1	1	1	1	1	1	1
91.667-83.333				1	1	1	1	1	1	1
T9	Yes	No	1	1	1	1	1	1	1	1
83.333-75.000				1	1	1	1	1	1	1
T10	Yes	No	1	1	1	1	1	1	1	1
75.000-50.000				1	1	1	1	1	1	1
T11	Yes	No	1	1	1	1	1	1	1	1
50.000-37.500				1	1	1	1	1	1	1
T12	Yes	No	1	1	1	1	1	1	1	1
37.500-25.000				1	1	1	1	1	1	1
T13	Yes	No	1	1	1	1	1	1	1	1
25.000-12.500				1	1	1	1	1	1	1
T14	Yes	No	1	1	1	1	1	1	1	1
12.500-0.000				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	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
180.000-175.000														
T2	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
175.000-166.667														
T3	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
166.667-158.333														
T4	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
158.333-150.000														
T5	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
150.000-125.000														
T6	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
125.000-100.000														

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
T7 100.000-91.667	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T8 91.667-83.333	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T9 83.333-75.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T10 75.000-50.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T11 50.000-37.500	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T12 37.500-25.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T13 25.000-12.500	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75
T14 12.500-0.000	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75	0.000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 180.000-175.000	Flange	0.750 A325X	0	0.750 A325X	1	0.625 A325X	2	0.625 A325N	0	0.625 A325N	0	0.625 A325X	0	0.625 A325N	0
T2 175.000-166.667	Flange	0.750 A325X	6	0.750 A325X	1	0.625 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325X	2	0.625 A325N	0
T3 166.667-158.333	Flange	0.750 A325X	0	0.750 A325X	1	0.625 A325X	2	0.000 A325N	0	0.625 A325N	0	0.625 A325X	2	0.625 A325N	0
T4 158.333-150.000	Flange	0.750 A325X	0	0.750 A325X	1	0.625 A325X	2	0.625 A325N	0	0.625 A325N	0	0.625 A325X	2	0.625 A325N	0
T5 150.000-125.000	Flange	0.750 A325X	6	0.750 A325X	1	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325X	2	0.625 A325N	0
T6 125.000-100.000	Flange	0.750 A325X	6	0.750 A325X	1	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325X	2	0.625 A325N	0
T7 100.000-91.667	Flange	1.000 A325X	6	0.750 A325X	1	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325X	2	0.625 A325N	0
T8 91.667-83.333	Flange	0.750 A325X	0	0.750 A325X	1	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325X	2	0.625 A325N	0
T9 83.333-75.000	Flange	0.750 A325X	0	0.750 A325X	1	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325X	2	0.625 A325N	0
T10 75.000-50.000	Flange	1.000 A325X	8	0.750 A325X	1	0.625 A325N	0	0.625 A325N	0	0.625 A325N	0	0.625 A325X	2	0.625 A325N	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.
T11 50.000-37.500	Flange	1.000 A325X	8	1.000 A325X	1	0.625 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325X	2	0.625 A325N	0
T12 37.500-25.000	Flange	1.000 A325X	0	1.000 A325X	1	0.625 A325X	2	0.625 A325N	0	0.625 A325N	0	0.625 A325X	2	0.625 A325N	0
T13 25.000-12.500	Flange	1.000 A325X	8	1.000 A325X	1	0.625 A325N	0	0.000 A325N	0	0.625 A325N	0	0.625 A325X	2	0.625 A325N	0
T14 12.500-0.000	Flange	1.000 A325X	0	1.000 A325X	1	0.625 A325X	2	0.625 A325N	0	0.625 A325N	0	0.625 A325X	2	0.625 A325N	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
FB-L98B-02 (10mm Fiber) (ATT)	A	No	Ar (CaAa)	145.000 - 8.000	0.000	0.5	1	1	0.394	0.394		0.300
RSS 8 - AWG 2 (0.645") (ATT)	A	No	Ar (CaAa)	145.000 - 8.000	0.000	0.5	2	2	0.645	0.645		0.300
LDF6-50A (1-1/4 FOAM) (ATT)	B	No	Ar (CaAa)	145.000 - 8.000	-6.000	-0.35	3	3	1.550	1.550		0.660
LDF6-50A (1-1/4 FOAM) (ATT)	B	No	Ar (CaAa)	145.000 - 8.000	-3.000	-0.35	9	9	1.550	1.550		0.660
LDF7-50A (1-5/8 FOAM) (Sprint)	B	No	Ar (CaAa)	137.000 - 8.000	-3.000	0.41	6	6	1.980	1.980		0.820
LDF5-50A (7/8 FOAM) (T-Mobile)	B	No	Ar (CaAa)	130.000 - 8.000	-4.000	-0.25	12	12	1.090	1.090		0.330
LDF5-50A (7/8 FOAM) (DNK-58)	C	No	Ar (CaAa)	180.000 - 8.000	-3.000	0.423	1	1	1.090	1.090		0.330
LDF5-50A (7/8 FOAM) (DNK-57)	C	No	Ar (CaAa)	180.000 - 8.000	3.000	0.423	1	1	1.090	1.090		0.330
LDF5-50A (7/8 FOAM) (DNK-55)	C	No	Ar (CaAa)	180.000 - 8.000	-3.000	0.423	1	1	1.090	1.090		0.330
LDF5-50A (7/8 FOAM) (DNK-54)	C	No	Ar (CaAa)	180.000 - 8.000	-3.000	0.416	1	1	1.090	1.090		0.330
LDF7-50A (1-5/8 FOAM) (DNK-53)	C	No	Ar (CaAa)	180.000 - 8.000	3.000	0.416	1	1	1.980	1.980		0.820
LDF5-50A (7/8 FOAM) (DNK-52)	C	No	Ar (CaAa)	180.000 - 8.000	-3.000	0.408	1	1	1.090	1.090		0.330
LDF5-50A (7/8 FOAM) (DNK-51)	C	No	Ar (CaAa)	180.000 - 8.000	-3.000	0.4	1	1	1.090	1.090		0.330
EW63	C	No	Af (CaAa)	176.000 - 8.000	-3.000	0.446	1	1	1.574	1.574		0.510

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
(DNK-45)												
EW63	C	No	Af (CaAa)	171.000 - 8.000	-3.000	0.438	1	1	1.574	1.574		0.510
(DNK-44)												
EW63	C	No	Af (CaAa)	169.000 - 8.000	-3.000	0.431	1	1	1.574	1.574		0.510
(DNK-43)												
LDF7-50A (1-5/8 FOAM)	C	No	Ar (CaAa)	164.000 - 8.000	-9.000	0.324	1	1	1.980	1.980		0.820
(DNK-42)												
LDF5-50A (7/8 FOAM)	C	No	Ar (CaAa)	166.000 - 8.000	3.000	0.37	1	1	1.090	1.090		0.330
(DNK-41)												
LDF5-50A (7/8 FOAM)	C	No	Ar (CaAa)	166.000 - 8.000	3.000	0.362	1	1	1.090	1.090		0.330
(DNK-40)												
LDF7-50A (1-5/8 FOAM)	C	No	Ar (CaAa)	160.000 - 8.000	-3.000	0.316	1	1	1.980	1.980		0.820
(DNK-39)												
LDF7-50A (1-5/8 FOAM)	C	No	Ar (CaAa)	160.000 - 8.000	-3.000	0.309	1	1	1.980	1.980		0.820
(DNK-38)												
LDF5-50A (7/8 FOAM)	C	No	Ar (CaAa)	157.000 - 8.000	-3.000	0.362	1	1	1.090	1.090		0.330
(DNK-37)												
LDF5-50A (7/8 FOAM)	C	No	Ar (CaAa)	157.000 - 8.000	-5.000	0.362	1	1	1.090	1.090		0.330
(DNK-36)												
LDF5-50A (7/8 FOAM)	C	No	Ar (CaAa)	157.000 - 8.000	-7.000	0.362	1	1	1.090	1.090		0.330
(DNK-35)												
LDF4-50A (1/2 FOAM)	C	No	Ar (CaAa)	151.000 - 8.000	3.000	0.446	1	1	0.630	0.630		0.150
(DNK-34)												
LDF7-50A (1-5/8 FOAM)	C	No	Ar (CaAa)	153.000 - 8.000	-3.000	0.301	1	1	1.980	1.980		0.820
(DNK-33)												
LDF5-50A (7/8 FOAM)	C	No	Ar (CaAa)	143.000 - 8.000	-3.000	0.332	1	1	1.090	1.090		0.330
(DNK-32)												
LDF5-50A (7/8 FOAM)	C	No	Ar (CaAa)	119.000 - 8.000	-7.000	0.316	1	1	1.090	1.090		0.330
(DNK-10)												
LDF5-50A (7/8 FOAM)	C	No	Ar (CaAa)	119.000 - 8.000	3.000	0.316	1	1	1.090	1.090		0.330
(DNK-9)												
LDF5-50A (7/8 FOAM)	C	No	Ar (CaAa)	109.250 - 8.000	3.000	0.309	1	1	1.090	1.090		0.330
(DNK-8)												
LDF5-50A (7/8 FOAM)	C	No	Ar (CaAa)	76.000 - 8.000	3.000	0.301	1	1	1.090	1.090		0.330
(DNK-7)												
LDF5-50A (7/8 FOAM)	C	No	Ar (CaAa)	76.000 - 8.000	-3.000	0.294	1	1	1.090	1.090		0.330
(DNK-6)												
LDF4P-50A (1/2 FOAM)	C	No	Ar (CaAa)	75.000 - 8.000	3.000	0.431	1	1	0.630	0.630		0.150
(DNK-5)												
LDF4P-50A (1/2 FOAM)	C	No	Ar (CaAa)	27.000 - 8.000	-3.000	0.286	1	1	0.630	0.630		0.150
(DNK-4)												
LDF4P-50A (1/2 FOAM)	C	No	Ar (CaAa)	27.000 - 8.000	3.000	0.286	1	1	0.630	0.630		0.150

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
(DNK-3) LDF5-50A (7/8 FOAM)	C	No	Ar (CaAa)	27.000 - 8.000	3.000	0.278	1	1	1.090	1.090		0.330
(DNK-2) LDF5-50A (7/8 FOAM)	C	No	Ar (CaAa)	15.000 - 8.000	-3.000	0.27	1	1	1.090	1.090		0.330
(DNK-1) LDF4.5-50 (5/8 FOAM)	C	No	Ar (CaAa)	180.000 - 8.000	-3.000	0.393	1	1	0.870	0.870		0.150
(DNK-50) LDF4.5-50 (5/8 FOAM)	C	No	Ar (CaAa)	180.000 - 8.000	-3.000	0.385	1	1	0.870	0.870		0.150
(DNK-50) LDF5-50A (7/8 FOAM)	C	No	Ar (CaAa)	178.000 - 8.000	-3.000	0.377	1	1	1.090	1.090		0.330
(DNK-47) LDF5-50A (7/8 FOAM)	C	No	Ar (CaAa)	178.000 - 8.000	-3.000	0.37	1	1	1.090	1.090		0.330
(DNK-47) LDF7-50A (1-5/8 FOAM)	C	No	Ar (CaAa)	180.000 - 8.000	-7.000	0.37	1	1	1.980	1.980		0.820
(DNK-50) LDF7-50A (1-5/8 FOAM)	C	No	Ar (CaAa)	180.000 - 8.000	-9.000	0.362	1	1	1.980	1.980		0.820
(DNK-50) * Airosmith ASM-003 Proposed HB158-1-08U 8-S8J18 (Sprint)	B	No	Ar (CaAa)	137.000 - 8.000	-3.000	0.34	4	4	1.980	1.980		1.300

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 lb
T1	180.000-175.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	8.026	0.000	26.190
T2	175.000-166.667	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	17.602	0.000	52.650
T3	166.667-158.333	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	23.679	0.000	70.190
T4	158.333-150.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	29.939	0.000	93.290
T5	150.000-125.000	A	0.000	0.000	3.367	0.000	18.000
		B	0.000	0.000	67.500	0.000	299.640
		C	0.000	0.000	97.640	0.000	306.190
T6	125.000-100.000	A	0.000	0.000	4.209	0.000	22.500
		B	0.000	0.000	128.700	0.000	550.000
		C	0.000	0.000	103.553	0.000	324.092
T7	100.000-91.667	A	0.000	0.000	1.403	0.000	7.500
		B	0.000	0.000	42.900	0.000	183.333

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 lb
		C	0.000	0.000	35.526	0.000	111.083
T8	91.667-83.333	A	0.000	0.000	1.403	0.000	7.500
		B	0.000	0.000	42.900	0.000	183.333
		C	0.000	0.000	35.526	0.000	111.083
T9	83.333-75.000	A	0.000	0.000	1.403	0.000	7.500
		B	0.000	0.000	42.900	0.000	183.333
		C	0.000	0.000	35.744	0.000	111.743
T10	75.000-50.000	A	0.000	0.000	4.209	0.000	22.500
		B	0.000	0.000	128.700	0.000	550.000
		C	0.000	0.000	113.603	0.000	353.500
T11	50.000-37.500	A	0.000	0.000	2.105	0.000	11.250
		B	0.000	0.000	64.350	0.000	275.000
		C	0.000	0.000	56.801	0.000	176.750
T12	37.500-25.000	A	0.000	0.000	2.105	0.000	11.250
		B	0.000	0.000	64.350	0.000	275.000
		C	0.000	0.000	57.271	0.000	178.010
T13	25.000-12.500	A	0.000	0.000	2.105	0.000	11.250
		B	0.000	0.000	64.350	0.000	275.000
		C	0.000	0.000	60.011	0.000	185.450
T14	12.500-0.000	A	0.000	0.000	0.758	0.000	4.050
		B	0.000	0.000	23.166	0.000	99.000
		C	0.000	0.000	21.996	0.000	67.950

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 lb
T1	180.000-175.000	A	2.219	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	35.536	0.000	615.061
T2	175.000-166.667	A	2.210	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	72.117	0.000	1241.318
T3	166.667-158.333	A	2.199	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	93.023	0.000	1600.244
T4	158.333-150.000	A	2.188	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	117.439	0.000	2025.059
T5	150.000-125.000	A	2.163	0.000	0.000	29.421	0.000	348.772
		B		0.000	0.000	199.490	0.000	3317.250
		C		0.000	0.000	386.566	0.000	6590.381
T6	125.000-100.000	A	2.120	0.000	0.000	36.185	0.000	422.285
		B		0.000	0.000	375.395	0.000	6143.908
		C		0.000	0.000	409.737	0.000	6858.319
T7	100.000-91.667	A	2.086	0.000	0.000	11.907	0.000	137.236
		B		0.000	0.000	124.700	0.000	2019.016
		C		0.000	0.000	139.823	0.000	2308.254
T8	91.667-83.333	A	2.067	0.000	0.000	11.820	0.000	135.281
		B		0.000	0.000	124.459	0.000	2002.844
		C		0.000	0.000	138.878	0.000	2276.186
T9	83.333-75.000	A	2.046	0.000	0.000	11.725	0.000	133.167
		B		0.000	0.000	124.196	0.000	1985.264
		C		0.000	0.000	138.886	0.000	2257.839
T10	75.000-50.000	A	1.999	0.000	0.000	34.518	0.000	384.971
		B		0.000	0.000	370.759	0.000	5833.796
		C		0.000	0.000	443.381	0.000	7043.640

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 lb
T11	50.000-37.500	A	1.929	0.000	0.000	16.777	0.000	182.096
		B		0.000	0.000	184.042	0.000	2828.178
		C		0.000	0.000	215.913	0.000	3335.278
T12	37.500-25.000	A	1.865	0.000	0.000	16.337	0.000	172.890
		B		0.000	0.000	182.827	0.000	2747.987
		C		0.000	0.000	213.356	0.000	3207.141
T13	25.000-12.500	A	1.772	0.000	0.000	15.698	0.000	159.937
		B		0.000	0.000	181.062	0.000	2632.397
		C		0.000	0.000	220.241	0.000	3167.789
T14	12.500-0.000	A	1.588	0.000	0.000	5.195	0.000	48.882
		B		0.000	0.000	63.928	0.000	866.460
		C		0.000	0.000	74.701	0.000	989.347

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	180.000-175.000	-9.991	6.575	-20.317	13.380
T2	175.000-166.667	-15.683	10.178	-28.943	18.796
T3	166.667-158.333	-19.631	13.066	-34.696	23.113
T4	158.333-150.000	-22.781	15.653	-38.002	25.983
T5	150.000-125.000	-11.357	4.790	-24.725	13.791
T6	125.000-100.000	-5.188	1.563	-18.967	10.445
T7	100.000-91.667	-5.750	2.029	-20.445	11.615
T8	91.667-83.333	-5.215	1.858	-20.117	11.448
T9	83.333-75.000	-5.386	1.985	-20.638	11.827
T10	75.000-50.000	-7.297	3.251	-24.325	14.601
T11	50.000-37.500	-7.602	3.429	-25.136	15.073
T12	37.500-25.000	-7.921	3.683	-25.676	15.504
T13	25.000-12.500	-8.719	4.545	-26.811	16.904
T14	12.500-0.000	-4.659	2.517	-15.878	9.977

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	7	LDF5-50A (7/8 FOAM)	175.00 - 180.00	0.6000	0.6000
T1	8	LDF5-50A (7/8 FOAM)	175.00 - 180.00	0.6000	0.6000
T1	9	LDF5-50A (7/8 FOAM)	175.00 - 180.00	0.6000	0.6000
T1	10	LDF5-50A (7/8 FOAM)	175.00 - 180.00	0.6000	0.6000
T1	11	LDF7-50A (1-5/8 FOAM)	175.00 - 180.00	0.6000	0.6000
T1	12	LDF5-50A (7/8 FOAM)	175.00 - 180.00	0.6000	0.6000
T1	13	LDF5-50A (7/8 FOAM)	175.00 - 180.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	17	EW63	175.00 - 176.00	0.6000	0.6000
T1	41	LDF4.5-50 (5/8 FOAM)	175.00 - 180.00	0.6000	0.6000
T1	42	LDF4.5-50 (5/8 FOAM)	175.00 - 180.00	0.6000	0.6000
T1	43	LDF5-50A (7/8 FOAM)	175.00 - 178.00	0.6000	0.6000
T1	44	LDF5-50A (7/8 FOAM)	175.00 - 178.00	0.6000	0.6000
T1	45	LDF7-50A (1-5/8 FOAM)	175.00 - 180.00	0.6000	0.6000
T1	46	LDF7-50A (1-5/8 FOAM)	175.00 - 180.00	0.6000	0.6000
T2	7	LDF5-50A (7/8 FOAM)	166.67 - 175.00	0.6000	0.6000
T2	8	LDF5-50A (7/8 FOAM)	166.67 - 175.00	0.6000	0.6000
T2	9	LDF5-50A (7/8 FOAM)	166.67 - 175.00	0.6000	0.6000
T2	10	LDF5-50A (7/8 FOAM)	166.67 - 175.00	0.6000	0.6000
T2	11	LDF7-50A (1-5/8 FOAM)	166.67 - 175.00	0.6000	0.6000
T2	12	LDF5-50A (7/8 FOAM)	166.67 - 175.00	0.6000	0.6000
T2	13	LDF5-50A (7/8 FOAM)	166.67 - 175.00	0.6000	0.6000
T2	17	EW63	166.67 - 175.00	0.6000	0.6000
T2	18	EW63	166.67 - 171.00	0.6000	0.6000
T2	19	EW63	166.67 - 169.00	0.6000	0.6000
T2	41	LDF4.5-50 (5/8 FOAM)	166.67 - 175.00	0.6000	0.6000
T2	42	LDF4.5-50 (5/8 FOAM)	166.67 - 175.00	0.6000	0.6000
T2	43	LDF5-50A (7/8 FOAM)	166.67 - 175.00	0.6000	0.6000
T2	44	LDF5-50A (7/8 FOAM)	166.67 - 175.00	0.6000	0.6000
T2	45	LDF7-50A (1-5/8 FOAM)	166.67 - 175.00	0.6000	0.6000
T2	46	LDF7-50A (1-5/8 FOAM)	166.67 - 175.00	0.6000	0.6000
T3	7	LDF5-50A (7/8 FOAM)	158.33 - 166.67	0.6000	0.6000
T3	8	LDF5-50A (7/8 FOAM)	158.33 - 166.67	0.6000	0.6000
T3	9	LDF5-50A (7/8 FOAM)	158.33 - 166.67	0.6000	0.6000
T3	10	LDF5-50A (7/8 FOAM)	158.33 - 166.67	0.6000	0.6000
T3	11	LDF7-50A (1-5/8 FOAM)	158.33 - 166.67	0.6000	0.6000
T3	12	LDF5-50A (7/8 FOAM)	158.33 - 166.67	0.6000	0.6000
T3	13	LDF5-50A (7/8 FOAM)	158.33 - 166.67	0.6000	0.6000
T3	17	EW63	158.33 - 166.67	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T3	18	EW63	158.33 - 166.67	0.6000	0.6000
T3	19	EW63	158.33 - 166.67	0.6000	0.6000
T3	20	LDF7-50A (1-5/8 FOAM)	158.33 - 164.00	0.6000	0.6000
T3	21	LDF5-50A (7/8 FOAM)	158.33 - 166.00	0.6000	0.6000
T3	22	LDF5-50A (7/8 FOAM)	158.33 - 166.00	0.6000	0.6000
T3	23	LDF7-50A (1-5/8 FOAM)	158.33 - 160.00	0.6000	0.6000
T3	24	LDF7-50A (1-5/8 FOAM)	158.33 - 160.00	0.6000	0.6000
T3	41	LDF4.5-50 (5/8 FOAM)	158.33 - 166.67	0.6000	0.6000
T3	42	LDF4.5-50 (5/8 FOAM)	158.33 - 166.67	0.6000	0.6000
T3	43	LDF5-50A (7/8 FOAM)	158.33 - 166.67	0.6000	0.6000
T3	44	LDF5-50A (7/8 FOAM)	158.33 - 166.67	0.6000	0.6000
T3	45	LDF7-50A (1-5/8 FOAM)	158.33 - 166.67	0.6000	0.6000
T3	46	LDF7-50A (1-5/8 FOAM)	158.33 - 166.67	0.6000	0.6000
T4	7	LDF5-50A (7/8 FOAM)	150.00 - 158.33	0.6000	0.6000
T4	8	LDF5-50A (7/8 FOAM)	150.00 - 158.33	0.6000	0.6000
T4	9	LDF5-50A (7/8 FOAM)	150.00 - 158.33	0.6000	0.6000
T4	10	LDF5-50A (7/8 FOAM)	150.00 - 158.33	0.6000	0.6000
T4	11	LDF7-50A (1-5/8 FOAM)	150.00 - 158.33	0.6000	0.6000
T4	12	LDF5-50A (7/8 FOAM)	150.00 - 158.33	0.6000	0.6000
T4	13	LDF5-50A (7/8 FOAM)	150.00 - 158.33	0.6000	0.6000
T4	17	EW63	150.00 - 158.33	0.6000	0.6000
T4	18	EW63	150.00 - 158.33	0.6000	0.6000
T4	19	EW63	150.00 - 158.33	0.6000	0.6000
T4	20	LDF7-50A (1-5/8 FOAM)	150.00 - 158.33	0.6000	0.6000
T4	21	LDF5-50A (7/8 FOAM)	150.00 - 158.33	0.6000	0.6000
T4	22	LDF5-50A (7/8 FOAM)	150.00 - 158.33	0.6000	0.6000
T4	23	LDF7-50A (1-5/8 FOAM)	150.00 - 158.33	0.6000	0.6000
T4	24	LDF7-50A (1-5/8 FOAM)	150.00 - 158.33	0.6000	0.6000
T4	25	LDF5-50A (7/8 FOAM)	150.00 - 157.00	0.6000	0.6000
T4	26	LDF5-50A (7/8 FOAM)	150.00 - 157.00	0.6000	0.6000
T4	27	LDF5-50A (7/8 FOAM)	150.00 - 157.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T4	28	LDF4-50A (1/2 FOAM)	150.00 - 151.00	0.6000	0.6000
T4	29	LDF7-50A (1-5/8 FOAM)	150.00 - 153.00	0.6000	0.6000
T4	41	LDF4.5-50 (5/8 FOAM)	150.00 - 158.33	0.6000	0.6000
T4	42	LDF4.5-50 (5/8 FOAM)	150.00 - 158.33	0.6000	0.6000
T4	43	LDF5-50A (7/8 FOAM)	150.00 - 158.33	0.6000	0.6000
T4	44	LDF5-50A (7/8 FOAM)	150.00 - 158.33	0.6000	0.6000
T4	45	LDF7-50A (1-5/8 FOAM)	150.00 - 158.33	0.6000	0.6000
T4	46	LDF7-50A (1-5/8 FOAM)	150.00 - 158.33	0.6000	0.6000
T5	1	FB-L98B-02 (10mm Fiber)	125.00 - 145.00	0.6000	0.6000
T5	2	RSS 8 - AWG 2 (0.645")	125.00 - 145.00	0.6000	0.6000
T5	3	LDF6-50A (1-1/4 FOAM)	125.00 - 145.00	0.6000	0.6000
T5	4	LDF6-50A (1-1/4 FOAM)	125.00 - 145.00	0.6000	0.6000
T5	5	LDF7-50A (1-5/8 FOAM)	125.00 - 137.00	0.6000	0.6000
T5	6	LDF5-50A (7/8 FOAM)	125.00 - 130.00	0.6000	0.6000
T5	7	LDF5-50A (7/8 FOAM)	125.00 - 150.00	0.6000	0.6000
T5	8	LDF5-50A (7/8 FOAM)	125.00 - 150.00	0.6000	0.6000
T5	9	LDF5-50A (7/8 FOAM)	125.00 - 150.00	0.6000	0.6000
T5	10	LDF5-50A (7/8 FOAM)	125.00 - 150.00	0.6000	0.6000
T5	11	LDF7-50A (1-5/8 FOAM)	125.00 - 150.00	0.6000	0.6000
T5	12	LDF5-50A (7/8 FOAM)	125.00 - 150.00	0.6000	0.6000
T5	13	LDF5-50A (7/8 FOAM)	125.00 - 150.00	0.6000	0.6000
T5	17	EW63	125.00 - 150.00	0.6000	0.6000
T5	18	EW63	125.00 - 150.00	0.6000	0.6000
T5	19	EW63	125.00 - 150.00	0.6000	0.6000
T5	20	LDF7-50A (1-5/8 FOAM)	125.00 - 150.00	0.6000	0.6000
T5	21	LDF5-50A (7/8 FOAM)	125.00 - 150.00	0.6000	0.6000
T5	22	LDF5-50A (7/8 FOAM)	125.00 - 150.00	0.6000	0.6000
T5	23	LDF7-50A (1-5/8 FOAM)	125.00 - 150.00	0.6000	0.6000
T5	24	LDF7-50A (1-5/8 FOAM)	125.00 - 150.00	0.6000	0.6000
T5	25	LDF5-50A (7/8 FOAM)	125.00 - 150.00	0.6000	0.6000
T5	26	LDF5-50A (7/8 FOAM)	125.00 - 150.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T5	27	LDF5-50A (7/8 FOAM)	125.00 - 150.00	0.6000	0.6000
T5	28	LDF4-50A (1/2 FOAM)	125.00 - 150.00	0.6000	0.6000
T5	29	LDF7-50A (1-5/8 FOAM)	125.00 - 150.00	0.6000	0.6000
T5	30	LDF5-50A (7/8 FOAM)	125.00 - 143.00	0.6000	0.6000
T5	41	LDF4.5-50 (5/8 FOAM)	125.00 - 150.00	0.6000	0.6000
T5	42	LDF4.5-50 (5/8 FOAM)	125.00 - 150.00	0.6000	0.6000
T5	43	LDF5-50A (7/8 FOAM)	125.00 - 150.00	0.6000	0.6000
T5	44	LDF5-50A (7/8 FOAM)	125.00 - 150.00	0.6000	0.6000
T5	45	LDF7-50A (1-5/8 FOAM)	125.00 - 150.00	0.6000	0.6000
T5	46	LDF7-50A (1-5/8 FOAM)	125.00 - 150.00	0.6000	0.6000
T5	48	HB158-1-08U8-S8J18	125.00 - 137.00	0.6000	0.6000
T6	1	FB-L98B-02 (10mm Fiber)	100.00 - 125.00	0.6000	0.6000
T6	2	RSS 8 - AWG 2 (0.645")	100.00 - 125.00	0.6000	0.6000
T6	3	LDF6-50A (1-1/4 FOAM)	100.00 - 125.00	0.6000	0.6000
T6	4	LDF6-50A (1-1/4 FOAM)	100.00 - 125.00	0.6000	0.6000
T6	5	LDF7-50A (1-5/8 FOAM)	100.00 - 125.00	0.6000	0.6000
T6	6	LDF5-50A (7/8 FOAM)	100.00 - 125.00	0.6000	0.6000
T6	7	LDF5-50A (7/8 FOAM)	100.00 - 125.00	0.6000	0.6000
T6	8	LDF5-50A (7/8 FOAM)	100.00 - 125.00	0.6000	0.6000
T6	9	LDF5-50A (7/8 FOAM)	100.00 - 125.00	0.6000	0.6000
T6	10	LDF5-50A (7/8 FOAM)	100.00 - 125.00	0.6000	0.6000
T6	11	LDF7-50A (1-5/8 FOAM)	100.00 - 125.00	0.6000	0.6000
T6	12	LDF5-50A (7/8 FOAM)	100.00 - 125.00	0.6000	0.6000
T6	13	LDF5-50A (7/8 FOAM)	100.00 - 125.00	0.6000	0.6000
T6	17	EW63	100.00 - 125.00	0.6000	0.6000
T6	18	EW63	100.00 - 125.00	0.6000	0.6000
T6	19	EW63	100.00 - 125.00	0.6000	0.6000
T6	20	LDF7-50A (1-5/8 FOAM)	100.00 - 125.00	0.6000	0.6000
T6	21	LDF5-50A (7/8 FOAM)	100.00 - 125.00	0.6000	0.6000
T6	22	LDF5-50A (7/8 FOAM)	100.00 - 125.00	0.6000	0.6000
T6	23	LDF7-50A (1-5/8 FOAM)	100.00 - 125.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T6	24	LDF7-50A (1-5/8 FOAM)	100.00 - 125.00	0.6000	0.6000
T6	25	LDF5-50A (7/8 FOAM)	100.00 - 125.00	0.6000	0.6000
T6	26	LDF5-50A (7/8 FOAM)	100.00 - 125.00	0.6000	0.6000
T6	27	LDF5-50A (7/8 FOAM)	100.00 - 125.00	0.6000	0.6000
T6	28	LDF4-50A (1/2 FOAM)	100.00 - 125.00	0.6000	0.6000
T6	29	LDF7-50A (1-5/8 FOAM)	100.00 - 125.00	0.6000	0.6000
T6	30	LDF5-50A (7/8 FOAM)	100.00 - 125.00	0.6000	0.6000
T6	31	LDF5-50A (7/8 FOAM)	100.00 - 119.00	0.6000	0.6000
T6	32	LDF5-50A (7/8 FOAM)	100.00 - 119.00	0.6000	0.6000
T6	33	LDF5-50A (7/8 FOAM)	100.00 - 109.25	0.6000	0.6000
T6	41	LDF4.5-50 (5/8 FOAM)	100.00 - 125.00	0.6000	0.6000
T6	42	LDF4.5-50 (5/8 FOAM)	100.00 - 125.00	0.6000	0.6000
T6	43	LDF5-50A (7/8 FOAM)	100.00 - 125.00	0.6000	0.6000
T6	44	LDF5-50A (7/8 FOAM)	100.00 - 125.00	0.6000	0.6000
T6	45	LDF7-50A (1-5/8 FOAM)	100.00 - 125.00	0.6000	0.6000
T6	46	LDF7-50A (1-5/8 FOAM)	100.00 - 125.00	0.6000	0.6000
T6	48	HB158-1-08U8-S8J18	100.00 - 125.00	0.6000	0.6000
T7	1	FB-L98B-02 (10mm Fiber)	91.67 - 100.00	0.6000	0.6000
T7	2	RSS 8 - AWG 2 (0.645")	91.67 - 100.00	0.6000	0.6000
T7	3	LDF6-50A (1-1/4 FOAM)	91.67 - 100.00	0.6000	0.6000
T7	4	LDF6-50A (1-1/4 FOAM)	91.67 - 100.00	0.6000	0.6000
T7	5	LDF7-50A (1-5/8 FOAM)	91.67 - 100.00	0.6000	0.6000
T7	6	LDF5-50A (7/8 FOAM)	91.67 - 100.00	0.6000	0.6000
T7	7	LDF5-50A (7/8 FOAM)	91.67 - 100.00	0.6000	0.6000
T7	8	LDF5-50A (7/8 FOAM)	91.67 - 100.00	0.6000	0.6000
T7	9	LDF5-50A (7/8 FOAM)	91.67 - 100.00	0.6000	0.6000
T7	10	LDF5-50A (7/8 FOAM)	91.67 - 100.00	0.6000	0.6000
T7	11	LDF7-50A (1-5/8 FOAM)	91.67 - 100.00	0.6000	0.6000
T7	12	LDF5-50A (7/8 FOAM)	91.67 - 100.00	0.6000	0.6000
T7	13	LDF5-50A (7/8 FOAM)	91.67 - 100.00	0.6000	0.6000
T7	17	EW63	91.67 - 100.00	0.6000	0.6000
T7	18	EW63	91.67 - 100.00	0.6000	0.6000
T7	19	EW63	91.67 - 100.00	0.6000	0.6000
T7	20	LDF7-50A (1-5/8 FOAM)	91.67 - 100.00	0.6000	0.6000
T7	21	LDF5-50A (7/8 FOAM)	91.67 - 100.00	0.6000	0.6000
T7	22	LDF5-50A (7/8 FOAM)	91.67 - 100.00	0.6000	0.6000
T7	23	LDF7-50A (1-5/8 FOAM)	91.67 - 100.00	0.6000	0.6000
T7	24	LDF7-50A (1-5/8 FOAM)	91.67 - 100.00	0.6000	0.6000
T7	25	LDF5-50A (7/8 FOAM)	91.67 - 100.00	0.6000	0.6000
T7	26	LDF5-50A (7/8 FOAM)	91.67 - 100.00	0.6000	0.6000
T7	27	LDF5-50A (7/8 FOAM)	91.67 - 100.00	0.6000	0.6000
T7	28	LDF4-50A (1/2 FOAM)	91.67 - 100.00	0.6000	0.6000
T7	29	LDF7-50A (1-5/8 FOAM)	91.67 - 100.00	0.6000	0.6000
T7	30	LDF5-50A (7/8 FOAM)	91.67 - 100.00	0.6000	0.6000
T7	31	LDF5-50A (7/8 FOAM)	91.67 - 100.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T7	32	LDF5-50A (7/8 FOAM)	91.67 - 100.00	0.6000	0.6000
T7	33	LDF5-50A (7/8 FOAM)	91.67 - 100.00	0.6000	0.6000
T7	41	LDF4.5-50 (5/8 FOAM)	91.67 - 100.00	0.6000	0.6000
T7	42	LDF4.5-50 (5/8 FOAM)	91.67 - 100.00	0.6000	0.6000
T7	43	LDF5-50A (7/8 FOAM)	91.67 - 100.00	0.6000	0.6000
T7	44	LDF5-50A (7/8 FOAM)	91.67 - 100.00	0.6000	0.6000
T7	45	LDF7-50A (1-5/8 FOAM)	91.67 - 100.00	0.6000	0.6000
T7	46	LDF7-50A (1-5/8 FOAM)	91.67 - 100.00	0.6000	0.6000
T7	48	HB158-1-08U8-S8J18	91.67 - 100.00	0.6000	0.6000
T8	1	FB-L98B-02 (10mm Fiber)	83.33 - 91.67	0.6000	0.6000
T8	2	RSS 8 - AWG 2 (0.645")	83.33 - 91.67	0.6000	0.6000
T8	3	LDF6-50A (1-1/4 FOAM)	83.33 - 91.67	0.6000	0.6000
T8	4	LDF6-50A (1-1/4 FOAM)	83.33 - 91.67	0.6000	0.6000
T8	5	LDF7-50A (1-5/8 FOAM)	83.33 - 91.67	0.6000	0.6000
T8	6	LDF5-50A (7/8 FOAM)	83.33 - 91.67	0.6000	0.6000
T8	7	LDF5-50A (7/8 FOAM)	83.33 - 91.67	0.6000	0.6000
T8	8	LDF5-50A (7/8 FOAM)	83.33 - 91.67	0.6000	0.6000
T8	9	LDF5-50A (7/8 FOAM)	83.33 - 91.67	0.6000	0.6000
T8	10	LDF5-50A (7/8 FOAM)	83.33 - 91.67	0.6000	0.6000
T8	11	LDF7-50A (1-5/8 FOAM)	83.33 - 91.67	0.6000	0.6000
T8	12	LDF5-50A (7/8 FOAM)	83.33 - 91.67	0.6000	0.6000
T8	13	LDF5-50A (7/8 FOAM)	83.33 - 91.67	0.6000	0.6000
T8	17	EW63	83.33 - 91.67	0.6000	0.6000
T8	18	EW63	83.33 - 91.67	0.6000	0.6000
T8	19	EW63	83.33 - 91.67	0.6000	0.6000
T8	20	LDF7-50A (1-5/8 FOAM)	83.33 - 91.67	0.6000	0.6000
T8	21	LDF5-50A (7/8 FOAM)	83.33 - 91.67	0.6000	0.6000
T8	22	LDF5-50A (7/8 FOAM)	83.33 - 91.67	0.6000	0.6000
T8	23	LDF7-50A (1-5/8 FOAM)	83.33 - 91.67	0.6000	0.6000
T8	24	LDF7-50A (1-5/8 FOAM)	83.33 - 91.67	0.6000	0.6000
T8	25	LDF5-50A (7/8 FOAM)	83.33 - 91.67	0.6000	0.6000
T8	26	LDF5-50A (7/8 FOAM)	83.33 - 91.67	0.6000	0.6000
T8	27	LDF5-50A (7/8 FOAM)	83.33 - 91.67	0.6000	0.6000
T8	28	LDF4-50A (1/2 FOAM)	83.33 - 91.67	0.6000	0.6000
T8	29	LDF7-50A (1-5/8 FOAM)	83.33 - 91.67	0.6000	0.6000
T8	30	LDF5-50A (7/8 FOAM)	83.33 - 91.67	0.6000	0.6000
T8	31	LDF5-50A (7/8 FOAM)	83.33 - 91.67	0.6000	0.6000
T8	32	LDF5-50A (7/8 FOAM)	83.33 - 91.67	0.6000	0.6000
T8	33	LDF5-50A (7/8 FOAM)	83.33 - 91.67	0.6000	0.6000
T8	41	LDF4.5-50 (5/8 FOAM)	83.33 - 91.67	0.6000	0.6000
T8	42	LDF4.5-50 (5/8 FOAM)	83.33 - 91.67	0.6000	0.6000
T8	43	LDF5-50A (7/8 FOAM)	83.33 - 91.67	0.6000	0.6000
T8	44	LDF5-50A (7/8 FOAM)	83.33 - 91.67	0.6000	0.6000
T8	45	LDF7-50A (1-5/8 FOAM)	83.33 - 91.67	0.6000	0.6000
T8	46	LDF7-50A (1-5/8 FOAM)	83.33 - 91.67	0.6000	0.6000
T8	48	HB158-1-08U8-S8J18	83.33 - 91.67	0.6000	0.6000
T9	1	FB-L98B-02 (10mm Fiber)	75.00 - 83.33	0.6000	0.6000
T9	2	RSS 8 - AWG 2 (0.645")	75.00 - 83.33	0.6000	0.6000
T9	3	LDF6-50A (1-1/4 FOAM)	75.00 - 83.33	0.6000	0.6000
T9	4	LDF6-50A (1-1/4 FOAM)	75.00 - 83.33	0.6000	0.6000
T9	5	LDF7-50A (1-5/8 FOAM)	75.00 - 83.33	0.6000	0.6000
T9	6	LDF5-50A (7/8 FOAM)	75.00 - 83.33	0.6000	0.6000
T9	7	LDF5-50A (7/8 FOAM)	75.00 - 83.33	0.6000	0.6000
T9	8	LDF5-50A (7/8 FOAM)	75.00 - 83.33	0.6000	0.6000
T9	9	LDF5-50A (7/8 FOAM)	75.00 - 83.33	0.6000	0.6000
T9	10	LDF5-50A (7/8 FOAM)	75.00 - 83.33	0.6000	0.6000
T9	11	LDF7-50A (1-5/8 FOAM)	75.00 - 83.33	0.6000	0.6000
T9	12	LDF5-50A (7/8 FOAM)	75.00 - 83.33	0.6000	0.6000
T9	13	LDF5-50A (7/8 FOAM)	75.00 - 83.33	0.6000	0.6000
T9	17	EW63	75.00 - 83.33	0.6000	0.6000
T9	18	EW63	75.00 - 83.33	0.6000	0.6000
T9	19	EW63	75.00 - 83.33	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T9	20	LDF7-50A (1-5/8 FOAM)	75.00 - 83.33	0.6000	0.6000
T9	21	LDF5-50A (7/8 FOAM)	75.00 - 83.33	0.6000	0.6000
T9	22	LDF5-50A (7/8 FOAM)	75.00 - 83.33	0.6000	0.6000
T9	23	LDF7-50A (1-5/8 FOAM)	75.00 - 83.33	0.6000	0.6000
T9	24	LDF7-50A (1-5/8 FOAM)	75.00 - 83.33	0.6000	0.6000
T9	25	LDF5-50A (7/8 FOAM)	75.00 - 83.33	0.6000	0.6000
T9	26	LDF5-50A (7/8 FOAM)	75.00 - 83.33	0.6000	0.6000
T9	27	LDF5-50A (7/8 FOAM)	75.00 - 83.33	0.6000	0.6000
T9	28	LDF4-50A (1/2 FOAM)	75.00 - 83.33	0.6000	0.6000
T9	29	LDF7-50A (1-5/8 FOAM)	75.00 - 83.33	0.6000	0.6000
T9	30	LDF5-50A (7/8 FOAM)	75.00 - 83.33	0.6000	0.6000
T9	31	LDF5-50A (7/8 FOAM)	75.00 - 83.33	0.6000	0.6000
T9	32	LDF5-50A (7/8 FOAM)	75.00 - 83.33	0.6000	0.6000
T9	33	LDF5-50A (7/8 FOAM)	75.00 - 83.33	0.6000	0.6000
T9	34	LDF5-50A (7/8 FOAM)	75.00 - 76.00	0.6000	0.6000
T9	35	LDF5-50A (7/8 FOAM)	75.00 - 76.00	0.6000	0.6000
T9	41	LDF4.5-50 (5/8 FOAM)	75.00 - 83.33	0.6000	0.6000
T9	42	LDF4.5-50 (5/8 FOAM)	75.00 - 83.33	0.6000	0.6000
T9	43	LDF5-50A (7/8 FOAM)	75.00 - 83.33	0.6000	0.6000
T9	44	LDF5-50A (7/8 FOAM)	75.00 - 83.33	0.6000	0.6000
T9	45	LDF7-50A (1-5/8 FOAM)	75.00 - 83.33	0.6000	0.6000
T9	46	LDF7-50A (1-5/8 FOAM)	75.00 - 83.33	0.6000	0.6000
T9	48	HB158-1-08U8-S8J18	75.00 - 83.33	0.6000	0.6000
T10	1	FB-L98B-02 (10mm Fiber)	50.00 - 75.00	0.6000	0.6000
T10	2	RSS 8 - AWG 2 (0.645")	50.00 - 75.00	0.6000	0.6000
T10	3	LDF6-50A (1-1/4 FOAM)	50.00 - 75.00	0.6000	0.6000
T10	4	LDF6-50A (1-1/4 FOAM)	50.00 - 75.00	0.6000	0.6000
T10	5	LDF7-50A (1-5/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T10	6	LDF5-50A (7/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T10	7	LDF5-50A (7/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T10	8	LDF5-50A (7/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T10	9	LDF5-50A (7/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T10	10	LDF5-50A (7/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T10	11	LDF7-50A (1-5/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T10	12	LDF5-50A (7/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T10	13	LDF5-50A (7/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T10	17	EW63	50.00 - 75.00	0.6000	0.6000
T10	18	EW63	50.00 - 75.00	0.6000	0.6000
T10	19	EW63	50.00 - 75.00	0.6000	0.6000
T10	20	LDF7-50A (1-5/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T10	21	LDF5-50A (7/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T10	22	LDF5-50A (7/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T10	23	LDF7-50A (1-5/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T10	24	LDF7-50A (1-5/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T10	25	LDF5-50A (7/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T10	26	LDF5-50A (7/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T10	27	LDF5-50A (7/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T10	28	LDF4-50A (1/2 FOAM)	50.00 - 75.00	0.6000	0.6000
T10	29	LDF7-50A (1-5/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T10	30	LDF5-50A (7/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T10	31	LDF5-50A (7/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T10	32	LDF5-50A (7/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T10	33	LDF5-50A (7/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T10	34	LDF5-50A (7/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T10	35	LDF5-50A (7/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T10	36	LDF4P-50A (1/2 FOAM)	50.00 - 75.00	0.6000	0.6000
T10	41	LDF4.5-50 (5/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T10	42	LDF4.5-50 (5/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T10	43	LDF5-50A (7/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T10	44	LDF5-50A (7/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T10	45	LDF7-50A (1-5/8 FOAM)	50.00 - 75.00	0.6000	0.6000
T10	46	LDF7-50A (1-5/8 FOAM)	50.00 - 75.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T10	48	HB158-1-08U8-S8J18	50.00 - 75.00	0.6000	0.6000
T11	1	FB-L98B-02 (10mm Fiber)	37.50 - 50.00	0.6000	0.6000
T11	2	RSS 8 - AWG 2 (0.645")	37.50 - 50.00	0.6000	0.6000
T11	3	LDF6-50A (1-1/4 FOAM)	37.50 - 50.00	0.6000	0.6000
T11	4	LDF6-50A (1-1/4 FOAM)	37.50 - 50.00	0.6000	0.6000
T11	5	LDF7-50A (1-5/8 FOAM)	37.50 - 50.00	0.6000	0.6000
T11	6	LDF5-50A (7/8 FOAM)	37.50 - 50.00	0.6000	0.6000
T11	7	LDF5-50A (7/8 FOAM)	37.50 - 50.00	0.6000	0.6000
T11	8	LDF5-50A (7/8 FOAM)	37.50 - 50.00	0.6000	0.6000
T11	9	LDF5-50A (7/8 FOAM)	37.50 - 50.00	0.6000	0.6000
T11	10	LDF5-50A (7/8 FOAM)	37.50 - 50.00	0.6000	0.6000
T11	11	LDF7-50A (1-5/8 FOAM)	37.50 - 50.00	0.6000	0.6000
T11	12	LDF5-50A (7/8 FOAM)	37.50 - 50.00	0.6000	0.6000
T11	13	LDF5-50A (7/8 FOAM)	37.50 - 50.00	0.6000	0.6000
T11	17	EW63	37.50 - 50.00	0.6000	0.6000
T11	18	EW63	37.50 - 50.00	0.6000	0.6000
T11	19	EW63	37.50 - 50.00	0.6000	0.6000
T11	20	LDF7-50A (1-5/8 FOAM)	37.50 - 50.00	0.6000	0.6000
T11	21	LDF5-50A (7/8 FOAM)	37.50 - 50.00	0.6000	0.6000
T11	22	LDF5-50A (7/8 FOAM)	37.50 - 50.00	0.6000	0.6000
T11	23	LDF7-50A (1-5/8 FOAM)	37.50 - 50.00	0.6000	0.6000
T11	24	LDF7-50A (1-5/8 FOAM)	37.50 - 50.00	0.6000	0.6000
T11	25	LDF5-50A (7/8 FOAM)	37.50 - 50.00	0.6000	0.6000
T11	26	LDF5-50A (7/8 FOAM)	37.50 - 50.00	0.6000	0.6000
T11	27	LDF5-50A (7/8 FOAM)	37.50 - 50.00	0.6000	0.6000
T11	28	LDF4-50A (1/2 FOAM)	37.50 - 50.00	0.6000	0.6000
T11	29	LDF7-50A (1-5/8 FOAM)	37.50 - 50.00	0.6000	0.6000
T11	30	LDF5-50A (7/8 FOAM)	37.50 - 50.00	0.6000	0.6000
T11	31	LDF5-50A (7/8 FOAM)	37.50 - 50.00	0.6000	0.6000
T11	32	LDF5-50A (7/8 FOAM)	37.50 - 50.00	0.6000	0.6000
T11	33	LDF5-50A (7/8 FOAM)	37.50 - 50.00	0.6000	0.6000
T11	34	LDF5-50A (7/8 FOAM)	37.50 - 50.00	0.6000	0.6000
T11	35	LDF5-50A (7/8 FOAM)	37.50 - 50.00	0.6000	0.6000
T11	36	LDF4P-50A (1/2 FOAM)	37.50 - 50.00	0.6000	0.6000
T11	41	LDF4.5-50 (5/8 FOAM)	37.50 - 50.00	0.6000	0.6000
T11	42	LDF4.5-50 (5/8 FOAM)	37.50 - 50.00	0.6000	0.6000
T11	43	LDF5-50A (7/8 FOAM)	37.50 - 50.00	0.6000	0.6000
T11	44	LDF5-50A (7/8 FOAM)	37.50 - 50.00	0.6000	0.6000
T11	45	LDF7-50A (1-5/8 FOAM)	37.50 - 50.00	0.6000	0.6000
T11	46	LDF7-50A (1-5/8 FOAM)	37.50 - 50.00	0.6000	0.6000
T11	48	HB158-1-08U8-S8J18	37.50 - 50.00	0.6000	0.6000
T12	1	FB-L98B-02 (10mm Fiber)	25.00 - 37.50	0.6000	0.6000
T12	2	RSS 8 - AWG 2 (0.645")	25.00 - 37.50	0.6000	0.6000
T12	3	LDF6-50A (1-1/4 FOAM)	25.00 - 37.50	0.6000	0.6000
T12	4	LDF6-50A (1-1/4 FOAM)	25.00 - 37.50	0.6000	0.6000
T12	5	LDF7-50A (1-5/8 FOAM)	25.00 - 37.50	0.6000	0.6000
T12	6	LDF5-50A (7/8 FOAM)	25.00 - 37.50	0.6000	0.6000
T12	7	LDF5-50A (7/8 FOAM)	25.00 - 37.50	0.6000	0.6000
T12	8	LDF5-50A (7/8 FOAM)	25.00 - 37.50	0.6000	0.6000
T12	9	LDF5-50A (7/8 FOAM)	25.00 - 37.50	0.6000	0.6000
T12	10	LDF5-50A (7/8 FOAM)	25.00 - 37.50	0.6000	0.6000
T12	11	LDF7-50A (1-5/8 FOAM)	25.00 - 37.50	0.6000	0.6000
T12	12	LDF5-50A (7/8 FOAM)	25.00 - 37.50	0.6000	0.6000
T12	13	LDF5-50A (7/8 FOAM)	25.00 - 37.50	0.6000	0.6000
T12	17	EW63	25.00 - 37.50	0.6000	0.6000
T12	18	EW63	25.00 - 37.50	0.6000	0.6000
T12	19	EW63	25.00 - 37.50	0.6000	0.6000
T12	20	LDF7-50A (1-5/8 FOAM)	25.00 - 37.50	0.6000	0.6000
T12	21	LDF5-50A (7/8 FOAM)	25.00 - 37.50	0.6000	0.6000
T12	22	LDF5-50A (7/8 FOAM)	25.00 - 37.50	0.6000	0.6000
T12	23	LDF7-50A (1-5/8 FOAM)	25.00 - 37.50	0.6000	0.6000
T12	24	LDF7-50A (1-5/8 FOAM)	25.00 - 37.50	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T12	25	LDF5-50A (7/8 FOAM)	25.00 - 37.50	0.6000	0.6000
T12	26	LDF5-50A (7/8 FOAM)	25.00 - 37.50	0.6000	0.6000
T12	27	LDF5-50A (7/8 FOAM)	25.00 - 37.50	0.6000	0.6000
T12	28	LDF4-50A (1/2 FOAM)	25.00 - 37.50	0.6000	0.6000
T12	29	LDF7-50A (1-5/8 FOAM)	25.00 - 37.50	0.6000	0.6000
T12	30	LDF5-50A (7/8 FOAM)	25.00 - 37.50	0.6000	0.6000
T12	31	LDF5-50A (7/8 FOAM)	25.00 - 37.50	0.6000	0.6000
T12	32	LDF5-50A (7/8 FOAM)	25.00 - 37.50	0.6000	0.6000
T12	33	LDF5-50A (7/8 FOAM)	25.00 - 37.50	0.6000	0.6000
T12	34	LDF5-50A (7/8 FOAM)	25.00 - 37.50	0.6000	0.6000
T12	35	LDF5-50A (7/8 FOAM)	25.00 - 37.50	0.6000	0.6000
T12	36	LDF4P-50A (1/2 FOAM)	25.00 - 37.50	0.6000	0.6000
T12	37	LDF4P-50A (1/2 FOAM)	25.00 - 27.00	0.6000	0.6000
T12	38	LDF4P-50A (1/2 FOAM)	25.00 - 27.00	0.6000	0.6000
T12	39	LDF5-50A (7/8 FOAM)	25.00 - 27.00	0.6000	0.6000
T12	41	LDF4.5-50 (5/8 FOAM)	25.00 - 37.50	0.6000	0.6000
T12	42	LDF4.5-50 (5/8 FOAM)	25.00 - 37.50	0.6000	0.6000
T12	43	LDF5-50A (7/8 FOAM)	25.00 - 37.50	0.6000	0.6000
T12	44	LDF5-50A (7/8 FOAM)	25.00 - 37.50	0.6000	0.6000
T12	45	LDF7-50A (1-5/8 FOAM)	25.00 - 37.50	0.6000	0.6000
T12	46	LDF7-50A (1-5/8 FOAM)	25.00 - 37.50	0.6000	0.6000
T12	48	HB158-1-08U8-S8J18	25.00 - 37.50	0.6000	0.6000
T13	1	FB-L98B-02 (10mm Fiber)	12.50 - 25.00	0.6000	0.6000
T13	2	RSS 8 - AWG 2 (0.645")	12.50 - 25.00	0.6000	0.6000
T13	3	LDF6-50A (1-1/4 FOAM)	12.50 - 25.00	0.6000	0.6000
T13	4	LDF6-50A (1-1/4 FOAM)	12.50 - 25.00	0.6000	0.6000
T13	5	LDF7-50A (1-5/8 FOAM)	12.50 - 25.00	0.6000	0.6000
T13	6	LDF5-50A (7/8 FOAM)	12.50 - 25.00	0.6000	0.6000
T13	7	LDF5-50A (7/8 FOAM)	12.50 - 25.00	0.6000	0.6000
T13	8	LDF5-50A (7/8 FOAM)	12.50 - 25.00	0.6000	0.6000
T13	9	LDF5-50A (7/8 FOAM)	12.50 - 25.00	0.6000	0.6000
T13	10	LDF5-50A (7/8 FOAM)	12.50 - 25.00	0.6000	0.6000
T13	11	LDF7-50A (1-5/8 FOAM)	12.50 - 25.00	0.6000	0.6000
T13	12	LDF5-50A (7/8 FOAM)	12.50 - 25.00	0.6000	0.6000
T13	13	LDF5-50A (7/8 FOAM)	12.50 - 25.00	0.6000	0.6000
T13	17	EW63	12.50 - 25.00	0.6000	0.6000
T13	18	EW63	12.50 - 25.00	0.6000	0.6000
T13	19	EW63	12.50 - 25.00	0.6000	0.6000
T13	20	LDF7-50A (1-5/8 FOAM)	12.50 - 25.00	0.6000	0.6000
T13	21	LDF5-50A (7/8 FOAM)	12.50 - 25.00	0.6000	0.6000
T13	22	LDF5-50A (7/8 FOAM)	12.50 - 25.00	0.6000	0.6000
T13	23	LDF7-50A (1-5/8 FOAM)	12.50 - 25.00	0.6000	0.6000
T13	24	LDF7-50A (1-5/8 FOAM)	12.50 - 25.00	0.6000	0.6000
T13	25	LDF5-50A (7/8 FOAM)	12.50 - 25.00	0.6000	0.6000
T13	26	LDF5-50A (7/8 FOAM)	12.50 - 25.00	0.6000	0.6000
T13	27	LDF5-50A (7/8 FOAM)	12.50 - 25.00	0.6000	0.6000
T13	28	LDF4-50A (1/2 FOAM)	12.50 - 25.00	0.6000	0.6000
T13	29	LDF7-50A (1-5/8 FOAM)	12.50 - 25.00	0.6000	0.6000
T13	30	LDF5-50A (7/8 FOAM)	12.50 - 25.00	0.6000	0.6000
T13	31	LDF5-50A (7/8 FOAM)	12.50 - 25.00	0.6000	0.6000
T13	32	LDF5-50A (7/8 FOAM)	12.50 - 25.00	0.6000	0.6000
T13	33	LDF5-50A (7/8 FOAM)	12.50 - 25.00	0.6000	0.6000
T13	34	LDF5-50A (7/8 FOAM)	12.50 - 25.00	0.6000	0.6000
T13	35	LDF5-50A (7/8 FOAM)	12.50 - 25.00	0.6000	0.6000
T13	36	LDF4P-50A (1/2 FOAM)	12.50 - 25.00	0.6000	0.6000
T13	37	LDF4P-50A (1/2 FOAM)	12.50 - 25.00	0.6000	0.6000
T13	38	LDF4P-50A (1/2 FOAM)	12.50 - 25.00	0.6000	0.6000
T13	39	LDF5-50A (7/8 FOAM)	12.50 - 25.00	0.6000	0.6000
T13	40	LDF5-50A (7/8 FOAM)	12.50 - 15.00	0.6000	0.6000
T13	41	LDF4.5-50 (5/8 FOAM)	12.50 - 25.00	0.6000	0.6000
T13	42	LDF4.5-50 (5/8 FOAM)	12.50 - 25.00	0.6000	0.6000
T13	43	LDF5-50A (7/8 FOAM)	12.50 - 25.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T13	44	LDF5-50A (7/8 FOAM)	12.50 - 25.00	0.6000	0.6000
T13	45	LDF7-50A (1-5/8 FOAM)	12.50 - 25.00	0.6000	0.6000
T13	46	LDF7-50A (1-5/8 FOAM)	12.50 - 25.00	0.6000	0.6000
T13	48	HB158-1-08U8-S8J18	12.50 - 25.00	0.6000	0.6000
T14	1	FB-L98B-02 (10mm Fiber)	8.00 - 12.50	0.6000	0.6000
T14	2	RSS 8 - AWG 2 (0.645")	8.00 - 12.50	0.6000	0.6000
T14	3	LDF6-50A (1-1/4 FOAM)	8.00 - 12.50	0.6000	0.6000
T14	4	LDF6-50A (1-1/4 FOAM)	8.00 - 12.50	0.6000	0.6000
T14	5	LDF7-50A (1-5/8 FOAM)	8.00 - 12.50	0.6000	0.6000
T14	6	LDF5-50A (7/8 FOAM)	8.00 - 12.50	0.6000	0.6000
T14	7	LDF5-50A (7/8 FOAM)	8.00 - 12.50	0.6000	0.6000
T14	8	LDF5-50A (7/8 FOAM)	8.00 - 12.50	0.6000	0.6000
T14	9	LDF5-50A (7/8 FOAM)	8.00 - 12.50	0.6000	0.6000
T14	10	LDF5-50A (7/8 FOAM)	8.00 - 12.50	0.6000	0.6000
T14	11	LDF7-50A (1-5/8 FOAM)	8.00 - 12.50	0.6000	0.6000
T14	12	LDF5-50A (7/8 FOAM)	8.00 - 12.50	0.6000	0.6000
T14	13	LDF5-50A (7/8 FOAM)	8.00 - 12.50	0.6000	0.6000
T14	17	EW63	8.00 - 12.50	0.6000	0.6000
T14	18	EW63	8.00 - 12.50	0.6000	0.6000
T14	19	EW63	8.00 - 12.50	0.6000	0.6000
T14	20	LDF7-50A (1-5/8 FOAM)	8.00 - 12.50	0.6000	0.6000
T14	21	LDF5-50A (7/8 FOAM)	8.00 - 12.50	0.6000	0.6000
T14	22	LDF5-50A (7/8 FOAM)	8.00 - 12.50	0.6000	0.6000
T14	23	LDF7-50A (1-5/8 FOAM)	8.00 - 12.50	0.6000	0.6000
T14	24	LDF7-50A (1-5/8 FOAM)	8.00 - 12.50	0.6000	0.6000
T14	25	LDF5-50A (7/8 FOAM)	8.00 - 12.50	0.6000	0.6000
T14	26	LDF5-50A (7/8 FOAM)	8.00 - 12.50	0.6000	0.6000
T14	27	LDF5-50A (7/8 FOAM)	8.00 - 12.50	0.6000	0.6000
T14	28	LDF4-50A (1/2 FOAM)	8.00 - 12.50	0.6000	0.6000
T14	29	LDF7-50A (1-5/8 FOAM)	8.00 - 12.50	0.6000	0.6000
T14	30	LDF5-50A (7/8 FOAM)	8.00 - 12.50	0.6000	0.6000
T14	31	LDF5-50A (7/8 FOAM)	8.00 - 12.50	0.6000	0.6000
T14	32	LDF5-50A (7/8 FOAM)	8.00 - 12.50	0.6000	0.6000
T14	33	LDF5-50A (7/8 FOAM)	8.00 - 12.50	0.6000	0.6000
T14	34	LDF5-50A (7/8 FOAM)	8.00 - 12.50	0.6000	0.6000
T14	35	LDF5-50A (7/8 FOAM)	8.00 - 12.50	0.6000	0.6000
T14	36	LDF4P-50A (1/2 FOAM)	8.00 - 12.50	0.6000	0.6000
T14	37	LDF4P-50A (1/2 FOAM)	8.00 - 12.50	0.6000	0.6000
T14	38	LDF4P-50A (1/2 FOAM)	8.00 - 12.50	0.6000	0.6000
T14	39	LDF5-50A (7/8 FOAM)	8.00 - 12.50	0.6000	0.6000
T14	40	LDF5-50A (7/8 FOAM)	8.00 - 12.50	0.6000	0.6000
T14	41	LDF4.5-50 (5/8 FOAM)	8.00 - 12.50	0.6000	0.6000
T14	42	LDF4.5-50 (5/8 FOAM)	8.00 - 12.50	0.6000	0.6000
T14	43	LDF5-50A (7/8 FOAM)	8.00 - 12.50	0.6000	0.6000
T14	44	LDF5-50A (7/8 FOAM)	8.00 - 12.50	0.6000	0.6000
T14	45	LDF7-50A (1-5/8 FOAM)	8.00 - 12.50	0.6000	0.6000
T14	46	LDF7-50A (1-5/8 FOAM)	8.00 - 12.50	0.6000	0.6000
T14	48	HB158-1-08U8-S8J18	8.00 - 12.50	0.6000	0.6000

Discrete Tower Loads

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 lb
* D&K Inventory Climb Antennas									
2' Yagi	C	From Leg	2.000	0.0000	15.000	No Ice	2.083	2.083	30.950
(DNK-1)			0.000			1/2" Ice	3.787	3.787	52.866
			0.000			1" Ice	5.517	5.517	85.272
2" Dia 8' Omni	C	From Leg	2.000	0.0000	27.000	No Ice	2.000	2.000	5.000
(DNK-2)			0.000			1/2" Ice	3.030	3.030	18.000
			0.000			1" Ice	4.060	4.060	31.000
2' Standoff T-Arm (5' face width)	C	From Leg	0.000	0.0000	20.000	No Ice	3.500	3.500	91.000
			0.000			1/2" Ice	4.200	4.200	120.000
(DNK 1,2)			0.000			1" Ice	4.900	4.900	149.000
(Inverted) 1" Dia Omni	C	From Leg	5.000	0.0000	27.000	No Ice	2.000	2.000	5.000
(DNK-3)			0.000			1/2" Ice	3.030	3.030	18.000
			-2.000			1" Ice	4.060	4.060	31.000
1" Dia Omni	C	From Leg	5.000	0.0000	27.000	No Ice	2.000	2.000	5.000
(DNK-4)			0.000			1/2" Ice	3.030	3.030	18.000
			2.000			1" Ice	4.060	4.060	31.000
Rohn 6' Side-Arm(1)	C	None		0.0000	26.000	No Ice	10.600	10.600	140.000
(DNK-3,4)						1/2" Ice	15.400	15.400	212.000
						1" Ice	20.200	20.200	284.000
GPS	A	From Leg	0.500	0.0000	75.000	No Ice	1.000	1.000	10.000
(DNK-5)			0.000			1/2" Ice	1.500	1.500	15.000
			0.000			1" Ice	2.000	2.000	20.000
3' Yagi	C	From Leg	1.000	0.0000	76.000	No Ice	2.083	2.083	30.950
(DNK-6)			0.000			1/2" Ice	3.787	3.787	52.866
			-1.000			1" Ice	5.517	5.517	85.272
20' 4-Bay Dipole	C	From Leg	0.000	0.0000	76.000	No Ice	4.000	4.000	55.000
(DNK-7)			0.000			1/2" Ice	6.000	6.000	100.000
			1.000			1" Ice	8.000	8.000	145.000
1' Side Arm	C	From Leg	0.500	0.0000	122.000	No Ice	2.500	2.500	55.000
(DNK-6,7)			0.000			1/2" Ice	3.363	3.363	73.000
			0.000			1" Ice	4.226	4.226	91.000
3'4"x4" Pipe Mount	B	None		0.0000	109.250	No Ice	0.862	0.862	36.000
(DNK-8)						1/2" Ice	1.269	1.269	46.951
						1" Ice	1.494	1.494	60.549
12' Dipole	C	From Leg	1.000	0.0000	119.000	No Ice	3.169	3.169	40.000
(DNK-9)			0.000			1/2" Ice	3.389	3.389	78.897
			0.000			1" Ice	3.617	3.617	121.780
1' Side Arm	C	From Leg	0.500	0.0000	119.000	No Ice	2.500	2.500	55.000
(DNK-9)			0.000			1/2" Ice	3.363	3.363	73.000
			0.000			1" Ice	4.226	4.226	91.000
1'x1' Panel Antenna	B	From Leg	0.500	0.0000	119.000	No Ice	1.200	0.131	10.000
(DNK-10)			0.000			1/2" Ice	1.337	0.208	16.287
			0.000			1" Ice	1.481	0.290	24.389
1' Side Arm	B	From Leg	0.500	0.0000	119.000	No Ice	2.500	2.500	55.000
(DNK-10)			0.000			1/2" Ice	3.363	3.363	73.000
			0.000			1" Ice	4.226	4.226	91.000
* T-Mobile Carrier Antennas @ 125'									
2' Sidearm	A	From Leg	1.000	0.0000	125.000	No Ice	3.900	3.900	87.000
(DNK-11,12,13/T-Mobile)			0.000			1/2" Ice	4.400	4.400	97.000
			0.000			1" Ice	4.900	4.900	107.000
2' Sidearm	B	From Leg	1.000	0.0000	125.000	No Ice	3.900	3.900	87.000
(DNK-11,12,13/T-Mobile)			0.000			1/2" Ice	4.400	4.400	97.000
			0.000			1" Ice	4.900	4.900	107.000
2' Sidearm	C	From Leg	1.000	0.0000	125.000	No Ice	3.900	3.900	87.000
(DNK-11,12,13/T-Mobile)			0.000			1/2" Ice	4.400	4.400	97.000

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 lb
			0.000			1" Ice	4.900	4.900	107.000
(2) Ericsson TMA Unit (DNK-11,12,13/T-Mobile)	A	From Leg	1.000 0.000 0.000	0.0000	125.000	No Ice 1/2" Ice 1" Ice	0.591 0.698 0.813	0.591 0.761 0.948	19.473 28.287 39.619
(2) Ericsson TMA Unit (DNK-11,12,13/T-Mobile)	B	From Leg	1.000 0.000 0.000	0.0000	125.000	No Ice 1/2" Ice 1" Ice	0.591 0.698 0.813	0.591 0.761 0.948	19.473 28.287 39.619
(2) Ericsson TMA Unit (DNK-11,12,13/T-Mobile)	C	From Leg	1.000 0.000 0.000	0.0000	125.000	No Ice 1/2" Ice 1" Ice	0.591 0.698 0.813	0.591 0.761 0.948	19.473 28.287 39.619
DBXNH-6565B-A2M (DNK-11,12,13/T-Mobile)	A	From Leg	2.000 0.000 0.000	0.0000	125.000	No Ice 1/2" Ice 1" Ice	8.173 8.633 9.100	5.405 5.863 6.327	46.300 96.807 153.451
DBXNH-6565B-A2M (DNK-11,12,13/T-Mobile)	B	From Leg	2.000 0.000 0.000	0.0000	125.000	No Ice 1/2" Ice 1" Ice	8.173 8.633 9.100	5.405 5.863 6.327	46.300 96.807 153.451
DBXNH-6565B-A2M (DNK-11,12,13/T-Mobile)	C	From Leg	2.000 0.000 0.000	0.0000	125.000	No Ice 1/2" Ice 1" Ice	8.173 8.633 9.100	5.405 5.863 6.327	46.300 96.807 153.451
* T-Mobile Carrier Antennas @ 125' * Sprint Carrier Antennas @ 135' * Sprint Carrier Antennas @ 135' * AT&T Carrier Antennas @ 143'									
13' Sector Mount (1) ((DNK 19-32)/ATT)	A	From Leg	4.000 0.000 0.000	0.0000	143.000	No Ice 1/2" Ice 1" Ice	12.000 16.100 20.200	12.000 16.100 20.200	220.000 420.000 620.000
13' Sector Mount (1) ((DNK 19-32)/ATT)	B	From Leg	4.000 0.000 0.000	0.0000	143.000	No Ice 1/2" Ice 1" Ice	12.000 16.100 20.200	12.000 16.100 20.200	220.000 420.000 620.000
13' Sector Mount (1) ((DNK 19-32)/ATT)	C	From Leg	4.000 0.000 0.000	0.0000	143.000	No Ice 1/2" Ice 1" Ice	12.000 16.100 20.200	12.000 16.100 20.200	220.000 420.000 620.000
(2) 7770 w mount pipe ((DNK 19-32)/ATT)	A	From Leg	4.000 -6.000 0.000	0.0000	143.000	No Ice 1/2" Ice 1" Ice	5.882 6.314 6.755	3.980 4.603 5.243	52.000 94.698 146.494
(2) 7770 w mount pipe ((DNK 19-32)/ATT)	B	From Leg	4.000 -6.000 0.000	0.0000	143.000	No Ice 1/2" Ice 1" Ice	5.882 6.314 6.755	3.980 4.603 5.243	52.000 94.698 146.494
(2) 7770 w mount pipe ((DNK 19-32)/ATT)	C	From Leg	4.000 -6.000 0.000	0.0000	143.000	No Ice 1/2" Ice 1" Ice	5.882 6.314 6.755	3.980 4.603 5.243	52.000 94.698 146.494
(2) TMA (shielded) ((DNK 19-32)/ATT)	A	From Leg	4.000 0.000 0.000	0.0000	143.000	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.000 0.000 0.000	7.300 11.643 17.456
(2) TMA (shielded) ((DNK 19-32)/ATT)	B	From Leg	4.000 0.000 0.000	0.0000	143.000	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.000 0.000 0.000	7.300 11.643 17.456
(2) TMA (shielded) ((DNK 19-32)/ATT)	C	From Leg	4.000 0.000 0.000	0.0000	143.000	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.000 0.000 0.000	7.300 11.643 17.456
RRUS-11 ((DNK 19-32)/ATT)	A	None		0.0000	143.000	No Ice 1/2" Ice 1" Ice	2.566 2.765 2.971	1.068 1.211 1.361	50.000 69.573 92.082

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 lb
RRUS-11	B	None		0.0000	143.000	No Ice	2.566	1.068	50.000
((DNK 19-32)/ATT)						1/2" Ice	2.765	1.211	69.573
						1" Ice	2.971	1.361	92.082
RRUS-11	C	None		0.0000	143.000	No Ice	2.566	1.068	50.000
((DNK 19-32)/ATT)						1/2" Ice	2.765	1.211	69.573
						1" Ice	2.971	1.361	92.082
AM-X-CD-14-65-00T-RET	A	From Leg	4.000	0.0000	143.000	No Ice	5.507	2.828	4.000
((DNK 19-32)/ATT)			-2.000			1/2" Ice	5.899	3.137	35.591
			0.000			1" Ice	6.299	3.469	71.995
AM-X-CD-14-65-00T-RET	B	From Leg	4.000	0.0000	143.000	No Ice	5.507	2.828	4.000
((DNK 19-32)/ATT)			-2.000			1/2" Ice	5.899	3.137	35.591
			0.000			1" Ice	6.299	3.469	71.995
AM-X-CD-14-65-00T-RET	C	From Leg	4.000	0.0000	143.000	No Ice	5.507	2.828	4.000
((DNK 19-32)/ATT)			-2.000			1/2" Ice	5.899	3.137	35.591
			0.000			1" Ice	6.299	3.469	71.995
Raycap Surge Suppressor	A	From Leg	0.000	0.0000	143.000	No Ice	1.266	1.266	20.000
((DNK 19-32)/ATT)			0.000			1/2" Ice	1.456	1.456	35.116
			0.000			1" Ice	1.658	1.658	52.569
RRUS-12	A	None		0.0000	143.000	No Ice	3.145	1.285	58.000
((DNK 19-32)/ATT)						1/2" Ice	3.365	1.438	81.222
						1" Ice	3.592	1.600	107.645
RRUS-12	B	None		0.0000	143.000	No Ice	3.145	1.285	58.000
((DNK 19-32)/ATT)						1/2" Ice	3.365	1.438	81.222
						1" Ice	3.592	1.600	107.645
RRUS-12	C	None		0.0000	143.000	No Ice	3.145	1.285	58.000
((DNK 19-32)/ATT)						1/2" Ice	3.365	1.438	81.222
						1" Ice	3.592	1.600	107.645
* AT&T Carrier Antennas @ 143'									
2" Dia 10' Omni	B	From Leg	3.000	0.0000	143.000	No Ice	2.000	2.000	10.000
(DNK-32)			0.000			1/2" Ice	3.030	3.030	25.000
			0.000			1" Ice	4.060	4.060	40.000
Pirod 4' Side Mount Standoff	B	None		0.0000	143.000	No Ice	2.720	2.720	50.000
(1)						1/2" Ice	4.910	4.910	89.000
(DNK-32)						1" Ice	7.100	7.100	128.000
3" Dia 20' Omni	B	From Leg	1.000	0.0000	153.000	No Ice	4.000	4.000	55.000
(DNK-33)			0.000			1/2" Ice	6.000	6.000	100.000
			0.000			1" Ice	8.000	8.000	145.000
1' Side Arm	B	From Leg	0.500	0.0000	153.000	No Ice	2.500	2.500	55.000
(DNK-33)			0.000			1/2" Ice	3.363	3.363	73.000
			0.000			1" Ice	4.226	4.226	91.000
1 Bay Dipole ANT400D	A	From Leg	0.000	0.0000	151.000	No Ice	1.879	0.518	13.300
(DNK-34)			0.000			1/2" Ice	2.093	0.742	27.514
			0.000			1" Ice	2.317	0.984	44.738
10'6"x4" Pipe Mount	B	None		0.0000	151.000	No Ice	3.048	3.048	114.000
(DNK-34)						1/2" Ice	5.615	5.615	146.840
						1" Ice	6.252	6.252	186.706
1.5" Dia 16' Omni	B	From Leg	0.000	0.0000	153.000	No Ice	4.000	4.000	55.000
(DNK-33)			0.000			1/2" Ice	6.000	6.000	100.000
			2.000			1" Ice	8.000	8.000	145.000
2" Dia 10' Omni	C	From Leg	0.000	0.0000	157.000	No Ice	2.000	2.000	10.000
(DNK-35)			0.000			1/2" Ice	3.030	3.030	25.000
			0.000			1" Ice	4.060	4.060	40.000
2' Sidearm	C	From Leg	0.000	0.0000	157.000	No Ice	3.900	3.900	87.000
(DNK-35)			0.000			1/2" Ice	4.400	4.400	97.000
			0.000			1" Ice	4.900	4.900	107.000
10'x6" Dipole Antenna	C	From Leg	0.500	0.0000	157.000	No Ice	9.167	1.667	46.000

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 lb
(DNK-36)			0.000			1/2" Ice	9.888	2.793	77.565
			0.000			1" Ice	10.617	3.932	117.556
1' Side Arm	C	From Leg	0.500	0.0000	157.000	No Ice	2.500	2.500	55.000
(DNK-36)			0.000			1/2" Ice	3.363	3.363	73.000
			0.000			1" Ice	4.226	4.226	91.000
3'4"x4" Pipe Mount	B	None		0.0000	157.000	No Ice	0.846	0.846	36.000
(DNK-37)						1/2" Ice	1.269	1.269	46.951
						1" Ice	1.494	1.494	60.549
(Inverted) 3" Dia 20' Omni	B	From Leg	2.000	0.0000	160.000	No Ice	4.000	4.000	55.000
(DNK-38)			0.000			1/2" Ice	6.000	6.000	100.000
			0.000			1" Ice	8.000	8.000	145.000
2' Sidearm	B	From Leg	0.000	0.0000	160.000	No Ice	3.900	3.900	87.000
(DNK-38,39)			0.000			1/2" Ice	4.400	4.400	97.000
			0.000			1" Ice	4.900	4.900	107.000
(Inverted) 3" Dia 20' Omni	B	From Leg	2.000	0.0000	160.000	No Ice	4.000	4.000	55.000
(DNK-39)			0.000			1/2" Ice	6.000	6.000	100.000
			0.000			1" Ice	8.000	8.000	145.000
6' Side-Arm(1)	A	From Leg	0.000	-45.0000	166.000	No Ice	10.600	10.600	140.000
(DNK-40,41)			0.000			1/2" Ice	15.400	15.400	212.000
			0.000			1" Ice	20.200	20.200	284.000
6' Side-Arm(1)	B	From Leg	0.000	45.0000	166.000	No Ice	10.600	10.600	140.000
(DNK-40,41)			0.000			1/2" Ice	15.400	15.400	212.000
			0.000			1" Ice	20.200	20.200	284.000
(inverted) 10' 8 Bay Di-Pole	B	From Face	4.000	-45.0000	166.000	No Ice	4.000	4.000	55.000
(DNK-40,41)			0.000			1/2" Ice	6.000	6.000	100.000
			0.000			1" Ice	8.000	8.000	145.000
(inverted) 2" Dia 10' Omni	B	From Face	4.000	0.0000	164.000	No Ice	2.000	2.000	10.000
(DNK-42)			0.000			1/2" Ice	3.030	3.030	25.000
			0.000			1" Ice	4.060	4.060	40.000
6' Side-Arm(1)	B	From Leg	0.000	-45.0000	164.000	No Ice	10.600	10.600	140.000
(DNK-42)			0.000			1/2" Ice	15.400	15.400	212.000
			0.000			1" Ice	20.200	20.200	284.000
6' Side-Arm(1)	C	From Leg	0.000	45.0000	164.000	No Ice	10.600	10.600	140.000
(DNK-42)			0.000			1/2" Ice	15.400	15.400	212.000
			0.000			1" Ice	20.200	20.200	284.000
3'4"x4" Pipe Mount	C	None		0.0000	169.000	No Ice	0.843	0.843	36.000
(DNK-43)						1/2" Ice	1.269	1.269	46.951
						1" Ice	1.494	1.494	60.549
3'4"x4" Pipe Mount	A	None		0.0000	171.000	No Ice	0.842	0.842	36.000
(DNK-44)						1/2" Ice	1.269	1.269	46.951
						1" Ice	1.494	1.494	60.549
3'4"x4" Pipe Mount	C	None		0.0000	176.000	No Ice	0.841	0.841	36.000
(DNK-45)						1/2" Ice	1.269	1.269	46.951
						1" Ice	1.494	1.494	60.549
432E-83I-01T TTA Unit	A	From Face	0.500	0.0000	178.000	No Ice	2.850	0.973	25.000
(DNK-47)			0.000			1/2" Ice	3.059	1.111	44.704
			0.000			1" Ice	3.276	1.255	67.389
3" Dia 12' Omni	A	From Face	0.500	0.0000	180.000	No Ice	2.000	2.000	10.000
(DNK-48)			0.000			1/2" Ice	3.030	3.030	25.000
			0.000			1" Ice	4.060	4.060	40.000
3" Dia 12' Omni	B	From Face	3.000	0.0000	180.000	No Ice	2.000	2.000	10.000
(DNK-49)			0.000			1/2" Ice	3.030	3.030	25.000
			0.000			1" Ice	4.060	4.060	40.000
432E-83I-01T TTA Unit	B	From Leg	6.000	0.0000	180.000	No Ice	2.850	0.973	25.000
(DNK-50)			0.000			1/2" Ice	3.059	1.111	44.704
			0.000			1" Ice	3.276	1.255	67.389
1 Bay Dipole ANT400D	B	From Leg	1.000	0.0000	180.000	No Ice	1.879	0.518	13.300

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 lb
(DNK-51)			0.000			1/2" Ice	2.093	0.742	27.514
			0.000			1" Ice	2.317	0.984	44.738
2" Dia 10' Omni	B	From Leg	0.500	0.0000	181.000	No Ice	2.000	2.000	10.000
(DNK-52)			0.000			1/2" Ice	3.030	3.030	25.000
			0.000			1" Ice	4.060	4.060	40.000
2" Dia 10' Omni	C	From Leg	0.500	0.0000	181.000	No Ice	2.000	2.000	10.000
(DNK-53)			0.000			1/2" Ice	3.030	3.030	25.000
			0.000			1" Ice	4.060	4.060	40.000
10' - 2 Bay Dipole	C	From Leg	0.500	0.0000	181.000	No Ice	1.408	1.408	10.000
(DNK-54)			0.000			1/2" Ice	1.556	1.556	27.727
			0.000			1" Ice	1.712	1.712	48.176
20' 4-Bay Dipole	A	From Leg	0.500	0.0000	181.000	No Ice	4.000	4.000	55.000
(DNK-55)			0.000			1/2" Ice	6.000	6.000	100.000
			0.000			1" Ice	8.000	8.000	145.000
Lightning Rod 2"x15'	C	None		0.0000	181.000	No Ice	3.000	3.000	80.000
(DNK-56)						1/2" Ice	4.525	4.525	103.137
						1" Ice	6.067	6.067	135.792
3" Dia 20' Omni	A	From Leg	6.000	0.0000	182.500	No Ice	4.000	4.000	55.000
(DNK-57)			0.000			1/2" Ice	6.000	6.000	100.000
			0.000			1" Ice	8.000	8.000	145.000
1" Dia 8' Omni	A	From Leg	2.000	0.0000	182.000	No Ice	2.000	2.000	5.000
(DNK-58)			0.000			1/2" Ice	3.030	3.030	18.000
			0.000			1" Ice	4.060	4.060	31.000
6' Side-Arm(1)	A	From Leg	0.000	-45.0000	182.500	No Ice	10.600	10.600	140.000
(DNK-57)			0.000			1/2" Ice	15.400	15.400	212.000
			0.000			1" Ice	20.200	20.200	284.000
6' Side-Arm(1)	B	From Leg	0.000	45.0000	182.500	No Ice	10.600	10.600	140.000
(DNK-57)			0.000			1/2" Ice	15.400	15.400	212.000
			0.000			1" Ice	20.200	20.200	284.000
* Proposed Antenna Install ASM-003									
* 02/05/2018 ASM-003 Removal (Not Shown)									
* 02/05/2018 ASM-003 Removal (Not Shown)									
* 02/05/2018 ASM 003 Proposed									
* 02/05/2018 ASM 003 Proposed									
* IQ-ASM-003 Update									
Pirod 12' PCS T-Frame (1)	A	None		0.0000	137.000	No Ice	9.800	9.800	260.000
104569						1/2" Ice	14.800	14.800	360.000
((DNK 14-19)/Sprint)						1" Ice	19.800	19.800	460.000
Pirod 12' PCS T-Frame (1)	B	None		0.0000	137.000	No Ice	9.800	9.800	260.000
104569						1/2" Ice	14.800	14.800	360.000
((DNK 14-19)/Sprint)						1" Ice	19.800	19.800	460.000
Pirod 12' PCS T-Frame (1)	C	None		0.0000	137.000	No Ice	9.800	9.800	260.000
104569						1/2" Ice	14.800	14.800	360.000
((DNK 14-19)/Sprint)						1" Ice	19.800	19.800	460.000
APXVTM14-C-120 Panel	A	From Leg	3.000	0.0000	137.000	No Ice	6.342	3.607	72.000
Antenna			-3.500			1/2" Ice	6.716	3.967	111.526
((DNK 14-19)/Sprint)			0.000			1" Ice	7.097	4.333	156.120
APXVTM14-C-120 Panel	B	From Leg	3.000	0.0000	137.000	No Ice	6.342	3.607	72.000
Antenna			-3.500			1/2" Ice	6.716	3.967	111.526
((DNK 14-19)/Sprint)			0.000			1" Ice	7.097	4.333	156.120
APXVTM14-C-120 Panel	C	From Leg	3.000	0.0000	137.000	No Ice	6.342	3.607	72.000
Antenna			-3.500			1/2" Ice	6.716	3.967	111.526

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 lb
((DNK 14-19)/Sprint)			0.000			1" Ice	7.097	4.333	156.120
NNVV-65B-R4 Panel	A	From Leg	3.000	0.0000	137.000	No Ice	12.271	5.750	85.000
Antenna			3.500			1/2" Ice	12.766	6.207	157.141
(Sprint)			0.000			1" Ice	13.268	6.671	235.920
NNVV-65B-R4 Panel	B	From Leg	3.000	0.0000	137.000	No Ice	12.271	5.750	85.000
Antenna			3.500			1/2" Ice	12.766	6.207	157.141
(Sprint)			0.000			1" Ice	13.268	6.671	235.920
NNVV-65B-R4 Panel	C	From Leg	3.000	0.0000	137.000	No Ice	12.271	5.750	85.000
Antenna			3.500			1/2" Ice	12.766	6.207	157.141
(Sprint)			0.000			1" Ice	13.268	6.671	235.920
ALU TD-RRH-8x20-25	A	From Leg	3.000	0.0000	137.000	No Ice	4.030	1.526	76.200
(Sprint)			3.500			1/2" Ice	4.281	1.705	103.251
			0.000			1" Ice	4.540	1.891	133.822
ALU TD-RRH-8x20-25	B	From Leg	3.000	0.0000	137.000	No Ice	4.030	1.526	76.200
(Sprint)			3.500			1/2" Ice	4.281	1.705	103.251
			0.000			1" Ice	4.540	1.891	133.822
ALU TD-RRH-8x20-25	C	From Leg	3.000	0.0000	137.000	No Ice	4.030	1.526	76.200
(Sprint)			3.500			1/2" Ice	4.281	1.705	103.251
			0.000			1" Ice	4.540	1.891	133.822
(2) ALU 800MHz 2x50W	A	From Leg	3.000	0.0000	137.000	No Ice	2.058	1.932	64.000
(Sprint)			3.500			1/2" Ice	2.240	2.109	86.121
			0.000			1" Ice	2.429	2.293	111.302
(2) ALU 800MHz 2x50W	B	From Leg	3.000	0.0000	137.000	No Ice	2.058	1.932	64.000
(Sprint)			3.500			1/2" Ice	2.240	2.109	86.121
			0.000			1" Ice	2.429	2.293	111.302
(2) ALU 800MHz 2x50W	C	From Leg	3.000	0.0000	137.000	No Ice	2.058	1.932	64.000
(Sprint)			3.500			1/2" Ice	2.240	2.109	86.121
			0.000			1" Ice	2.429	2.293	111.302
ALU 4x45-1900 MHz RRH	A	From Leg	3.000	0.0000	137.000	No Ice	2.500	2.500	69.500
Unit			-3.500			1/2" Ice	2.709	2.709	95.231
(Sprint)			0.000			1" Ice	2.926	2.926	124.333
ALU 4x45-1900 MHz RRH	B	From Leg	3.000	0.0000	137.000	No Ice	2.500	2.500	69.500
Unit			-3.500			1/2" Ice	2.709	2.709	95.231
(Sprint)			0.000			1" Ice	2.926	2.926	124.333
ALU 4x45-1900 MHz RRH	C	From Leg	3.000	0.0000	137.000	No Ice	2.500	2.500	69.500
Unit			-3.500			1/2" Ice	2.709	2.709	95.231
(Sprint)			0.000			1" Ice	2.926	2.926	124.333

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight lb
6' w/Radome	C	Paraboloid	From	0.500	Worst		176.000	6.000	No Ice	28.274	380.000
(DNK-45)		w/Radome	Leg	0.000					1/2" Ice	29.065	450.000
				0.000					1" Ice	29.856	520.000
6' w/Radome	A	Paraboloid	From	0.500	Worst		174.000	6.000	No Ice	28.274	380.000
(DNK-44)		w/Radome	Leg	0.000					1/2" Ice	29.065	450.000
				0.000					1" Ice	29.856	520.000

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft²	Weight lb
Andrew 6' w/Radome (DNK-43)	C	Paraboloid w/Radome	From Leg	0.500 0.000 0.000	Worst		170.000	6.000	No Ice 1/2" Ice 1" Ice	28.274 29.065 29.856	380.000 450.000 520.000
4' Paraflector (DNK-8)	B	Grid	From Leg	0.500 0.000 0.000	Worst		109.250	4.000	No Ice 1/2" Ice 1" Ice	16.000 16.674 17.347	34.000 48.000 62.000
4' Paraflector (DNK-37)	B	Grid	From Leg	0.500 0.000 0.000	Worst		157.000	4.000	No Ice 1/2" Ice 1" Ice	16.000 16.674 17.347	34.000 48.000 62.000

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	1
f	1

222-G Section Verification ArRr By Element

Section Elevation ft	Elem. Num.	Size	C	C w/Ice	Face	e	e w/Ice	A_r ft²	A_r w/Ice ft²	A_rR_r ft²	A_rR_r w/Ice ft²
T1 180.000-175.000	1	Stainless P5x0.250	56.067	46.991	C	0.173	0.388	2.086	3.936	0.970	2.484
	1	Stainless P5x0.250	56.067	46.991	A	0.173	0.388	2.086	3.936	0.970	2.484
	2	Stainless P5x0.250	56.067	46.991	C	0.173	0.388	2.086	3.936	0.970	2.484
	2	Stainless P5x0.250	56.067	46.991	B	0.173	0.388	2.086	3.936	0.970	2.484
	3	Stainless P5x0.250	56.067	46.991	B	0.173	0.388	2.086	3.936	0.970	2.484
	3	Stainless P5x0.250	56.067	46.991	A	0.173	0.388	2.086	3.936	0.970	2.484
					A		Sum:	4.171	7.873	1.941	4.967
					B			4.171	7.873	1.941	4.967
					C			4.171	7.873	1.941	4.967
T2 175.000-166.667	13	Stainless P5x0.250	55.842	46.717	C	0.135	0.302	3.476	6.549	1.567	3.927
	13	Stainless P5x0.250	55.842	46.717	A	0.135	0.302	3.476	6.549	1.567	3.927
	14	Stainless P5x0.250	55.842	46.717	C	0.135	0.302	3.476	6.549	1.567	3.927
	14	Stainless P5x0.250	55.842	46.717	B	0.135	0.302	3.476	6.549	1.567	3.927
	15	Stainless P5x0.250	55.842	46.717	B	0.135	0.302	3.476	6.549	1.567	3.927
	15	Stainless P5x0.250	55.842	46.717	A	0.135	0.302	3.476	6.549	1.567	3.927
					A		Sum:	6.952	13.097	3.134	7.853
					B			6.952	13.097	3.134	7.853
					C			6.952	13.097	3.134	7.853
T3	25	Stainless P5x0.250	55.549	46.363	C	0.13	0.291	3.476	6.533	1.565	3.896

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
166.667-158.333											
	25	Stainless P5x0.250	55.549	46.363	A	0.13	0.291	3.476	6.533	1.565	3.896
	26	Stainless P5x0.250	55.549	46.363	C	0.13	0.291	3.476	6.533	1.565	3.896
	26	Stainless P5x0.250	55.549	46.363	B	0.13	0.291	3.476	6.533	1.565	3.896
	27	Stainless P5x0.250	55.549	46.363	B	0.13	0.291	3.476	6.533	1.565	3.896
	27	Stainless P5x0.250	55.549	46.363	A	0.13	0.291	3.476	6.533	1.565	3.896
					A		Sum:	6.952	13.067	3.131	7.792
					B			6.952	13.067	3.131	7.792
					C			6.952	13.067	3.131	7.792
T4	37	Stainless P5x0.250	55.242	45.994	C	0.126	0.282	3.476	6.517	1.565	3.868
158.333-150.000											
	37	Stainless P5x0.250	55.242	45.994	A	0.126	0.282	3.476	6.517	1.565	3.868
	38	Stainless P5x0.250	55.242	45.994	C	0.126	0.282	3.476	6.517	1.565	3.868
	38	Stainless P5x0.250	55.242	45.994	B	0.126	0.282	3.476	6.517	1.565	3.868
	39	Stainless P5x0.250	55.242	45.994	B	0.126	0.282	3.476	6.517	1.565	3.868
	39	Stainless P5x0.250	55.242	45.994	A	0.126	0.282	3.476	6.517	1.565	3.868
					A		Sum:	6.952	13.035	3.130	7.736
					B			6.952	13.035	3.130	7.736
					C			6.952	13.035	3.130	7.736
T5	49	Stainless P5x0.300	54.58	45.202	C	0.145	0.339	10.428	19.448	4.803	11.905
150.000-125.000											
	49	Stainless P5x0.300	54.58	45.202	A	0.145	0.339	10.428	19.448	4.803	11.905
	50	Stainless P5x0.300	54.58	45.202	C	0.145	0.339	10.428	19.448	4.803	11.905
	50	Stainless P5x0.300	54.58	45.202	B	0.145	0.339	10.428	19.448	4.803	11.905
	51	Stainless P5x0.300	54.58	45.202	B	0.145	0.339	10.428	19.448	4.803	11.905
	51	Stainless P5x0.300	54.58	45.202	A	0.145	0.339	10.428	19.448	4.803	11.905
					A		Sum:	20.856	38.897	9.606	23.811
					B			20.856	38.897	9.606	23.811
					C			20.856	38.897	9.606	23.811
T6	124	Stainless P5x0.400	53.44	43.849	C	0.142	0.323	10.428	19.269	4.848	11.685
125.000-100.000											
	124	Stainless P5x0.400	53.44	43.849	A	0.142	0.323	10.428	19.269	4.848	11.685
	125	Stainless P5x0.400	53.44	43.849	C	0.142	0.323	10.428	19.269	4.848	11.685
	125	Stainless P5x0.400	53.44	43.849	B	0.142	0.323	10.428	19.269	4.848	11.685
	126	Stainless P5x0.400	53.44	43.849	B	0.142	0.323	10.428	19.269	4.848	11.685
	126	Stainless P5x0.400	53.44	43.849	A	0.142	0.323	10.428	19.269	4.848	11.685
					A		Sum:	20.856	38.538	9.697	23.369
					B			20.856	38.538	9.697	23.369
					C			20.856	38.538	9.697	23.369
T7	199	Stainless P5x0.500	52.545	42.801	C	0.137	0.31	3.476	6.376	1.624	3.838
100.000-91.667											
	199	Stainless P5x0.500	52.545	42.801	A	0.137	0.31	3.476	6.376	1.624	3.838
	200	Stainless P5x0.500	52.545	42.801	C	0.137	0.31	3.476	6.376	1.624	3.838
	200	Stainless P5x0.500	52.545	42.801	B	0.137	0.31	3.476	6.376	1.624	3.838
	201	Stainless P5x0.500	52.545	42.801	B	0.137	0.31	3.476	6.376	1.624	3.838
	201	Stainless P5x0.500	52.545	42.801	A	0.137	0.31	3.476	6.376	1.624	3.838
					A		Sum:	6.952	12.752	3.248	7.676
					B			6.952	12.752	3.248	7.676
					C			6.952	12.752	3.248	7.676
T8					A		Sum:	0.000	0.000	0.000	0.000
91.667-83.333					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
T9					A		Sum:	0.000	0.000	0.000	0.000
83.333-75.000					B			0.000	0.000	0.000	0.000
					C			0.000	0.000	0.000	0.000
T10	280	Stainless	69.071	48.504	C	0.135	0.26	14.338	22.675	5.899	13.321

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
75.000-50.000		P6.875x0.400									
	280	Stainless	69.071	48.504	A	0.135	0.26	14.338	22.675	5.899	13.321
		P6.875x0.400									
	281	Stainless	69.071	48.504	C	0.135	0.26	14.338	22.675	5.899	13.321
		P6.875x0.400									
	281	Stainless	69.071	48.504	B	0.135	0.26	14.338	22.675	5.899	13.321
		P6.875x0.400									
	282	Stainless	69.071	48.504	B	0.135	0.26	14.338	22.675	5.899	13.321
		P6.875x0.400									
	282	Stainless	69.071	48.504	A	0.135	0.26	14.338	22.675	5.899	13.321
		P6.875x0.400									
					A		Sum:	28.676	45.350	11.798	26.643
					B			28.676	45.350	11.798	26.643
					C			28.676	45.350	11.798	26.643
T11	331	Stainless	66.526	46.115	C	0.13	0.246	7.169	11.191	2.930	6.536
50.000-37.500		P6.875x0.500									
	331	Stainless	66.526	46.115	A	0.13	0.246	7.169	11.191	2.930	6.536
		P6.875x0.500									
	332	Stainless	66.526	46.115	C	0.13	0.246	7.169	11.191	2.930	6.536
		P6.875x0.500									
	332	Stainless	66.526	46.115	B	0.13	0.246	7.169	11.191	2.930	6.536
		P6.875x0.500									
	333	Stainless	66.526	46.115	B	0.13	0.246	7.169	11.191	2.930	6.536
		P6.875x0.500									
	333	Stainless	66.526	46.115	A	0.13	0.246	7.169	11.191	2.930	6.536
		P6.875x0.500									
					A		Sum:	14.338	22.383	5.860	13.073
					B			14.338	22.383	5.860	13.073
					C			14.338	22.383	5.860	13.073
T12	358	Stainless	64.211	43.981	C	0.127	0.237	7.169	11.058	2.919	6.435
37.500-25.000		P6.875x0.500									
	358	Stainless	64.211	43.981	A	0.127	0.237	7.169	11.058	2.919	6.435
		P6.875x0.500									
	359	Stainless	64.211	43.981	C	0.127	0.237	7.169	11.058	2.919	6.435
		P6.875x0.500									
	359	Stainless	64.211	43.981	B	0.127	0.237	7.169	11.058	2.919	6.435
		P6.875x0.500									
	360	Stainless	64.211	43.981	B	0.127	0.237	7.169	11.058	2.919	6.435
		P6.875x0.500									
	360	Stainless	64.211	43.981	A	0.127	0.237	7.169	11.058	2.919	6.435
		P6.875x0.500									
					A		Sum:	14.338	22.117	5.839	12.871
					B			14.338	22.117	5.839	12.871
					C			14.338	22.117	5.839	12.871
T13	385	Stainless	60.849	40.948	C	0.126	0.229	7.169	10.865	3.029	6.304
25.000-12.500		P6.875x0.500									
	385	Stainless	60.849	40.948	A	0.126	0.229	7.169	10.865	3.029	6.304
		P6.875x0.500									
	386	Stainless	60.849	40.948	C	0.126	0.229	7.169	10.865	3.029	6.304
		P6.875x0.500									
	386	Stainless	60.849	40.948	B	0.126	0.229	7.169	10.865	3.029	6.304
		P6.875x0.500									
	387	Stainless	60.849	40.948	B	0.126	0.229	7.169	10.865	3.029	6.304
		P6.875x0.500									
	387	Stainless	60.849	40.948	A	0.126	0.229	7.169	10.865	3.029	6.304
		P6.875x0.500									
					A		Sum:	14.338	21.729	6.058	12.607
					B			14.338	21.729	6.058	12.607
					C			14.338	21.729	6.058	12.607
T14	412	Stainless	59.476	38.608	C	0.123	0.214	7.169	10.480	3.070	6.049

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
12.500-0.000	412	P6.875x0.500 Stainless	59.476	38.608	A	0.123	0.214	7.169	10.480	3.070	6.049
	413	P6.875x0.500 Stainless	59.476	38.608	C	0.123	0.214	7.169	10.480	3.070	6.049
	413	P6.875x0.500 Stainless	59.476	38.608	B	0.123	0.214	7.169	10.480	3.070	6.049
	414	P6.875x0.500 Stainless	59.476	38.608	B	0.123	0.214	7.169	10.480	3.070	6.049
	414	P6.875x0.500 Stainless	59.476	38.608	A	0.123	0.214	7.169	10.480	3.070	6.049
		P6.875x0.500			A		Sum:	14.338	20.960	6.140	12.097
					B			14.338	20.960	6.140	12.097
					C			14.338	20.960	6.140	12.097

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 ksf	Face	e	A_rR_r ft^2
T1 180.000-175.000	177.500		1.428	1	1		0.039	A	0.173	1.941
								B	0.173	1.941
								C	0.173	1.941
T2 175.000-166.667	170.833		1.417	1	1		0.039	A	0.135	3.134
								B	0.135	3.134
								C	0.135	3.134
T3 166.667-158.333	162.500		1.402	1	1		0.039	A	0.13	3.131
								B	0.13	3.131
								C	0.13	3.131
T4 158.333-150.000	154.167		1.386	1	1		0.038	A	0.126	3.130
								B	0.126	3.130
								C	0.126	3.130
T5 150.000-125.000	137.500		1.353	1	1		0.037	A	0.145	9.606
								B	0.145	9.606
								C	0.145	9.606
T6 125.000-100.000	112.500		1.297	1	1		0.036	A	0.142	9.697
								B	0.142	9.697
								C	0.142	9.697
T7 100.000-91.667	95.833		1.254	1	1		0.035	A	0.137	3.248
								B	0.137	3.248
								C	0.137	3.248
T8 91.667-83.333	87.500		1.231	1	1		0.034	A	0.137	0.000
								B	0.137	0.000
								C	0.137	0.000
T9 83.333-75.000	79.167		1.205	1	1		0.033	A	0.135	0.000
								B	0.135	0.000
								C	0.135	0.000
T10 75.000-50.000	62.500		1.146	1	1		0.032	A	0.135	11.798
								B	0.135	11.798
								C	0.135	11.798
T11 50.000-37.500	43.750		1.063	1	1		0.029	A	0.13	5.860
								B	0.13	5.860

Section Elevation ft	z_{wind} ft	z_{ice} ft	K_z	K_h	K_{zt}	t_z in	q_z ksf	Face	e	A_rR_r ft²
								C	0.13	5.860
T12 37.500-25.000	31.250		0.991	1	1		0.027	A	0.127	5.839
								B	0.127	5.839
								C	0.127	5.839
T13 25.000-12.500	18.750		0.89	1	1		0.025	A	0.126	6.058
								B	0.126	6.058
								C	0.126	6.058
T14 12.500-0.000	6.250		0.85	1	1		0.023	A	0.123	6.140
								B	0.123	6.140
								C	0.123	6.140

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 ksf	Face	e	A_rR_r ft²
T1 180.000-175.000	177.500	177.500	1.428	1	1	2.219	0.008	A	0.388	10.680
								B	0.388	10.680
								C	0.388	10.680
T2 175.000-166.667	170.833	170.833	1.417	1	1	2.210	0.008	A	0.302	14.524
								B	0.302	14.524
								C	0.302	14.524
T3 166.667-158.333	162.500	162.500	1.402	1	1	2.199	0.008	A	0.291	14.630
								B	0.291	14.630
								C	0.291	14.630
T4 158.333-150.000	154.167	154.167	1.386	1	1	2.188	0.008	A	0.282	14.742
								B	0.282	14.742
								C	0.282	14.742
T5 150.000-125.000	137.500	137.500	1.353	1	1	2.163	0.007	A	0.339	57.511
								B	0.339	57.511
								C	0.339	57.511
T6 125.000-100.000	112.500	112.500	1.297	1	1	2.120	0.007	A	0.323	59.362
								B	0.323	59.362
								C	0.323	59.362
T7 100.000-91.667	95.833	95.833	1.254	1	1	2.086	0.007	A	0.31	20.120
								B	0.31	20.120
								C	0.31	20.120
T8 91.667-83.333	87.500	87.500	1.231	1	1	2.067	0.007	A	0.293	12.585
								B	0.293	12.585
								C	0.293	12.585
T9 83.333-75.000	79.167	79.167	1.205	1	1	2.046	0.007	A	0.288	12.782
								B	0.288	12.782
								C	0.288	12.782
T10 75.000-50.000	62.500	62.500	1.146	1	1	1.999	0.006	A	0.26	55.739
								B	0.26	55.739
								C	0.26	55.739
T11 50.000-37.500	43.750	43.750	1.063	1	1	1.929	0.006	A	0.246	27.695
								B	0.246	27.695
								C	0.246	27.695
T12 37.500-25.000	31.250	31.250	0.991	1	1	1.865	0.005	A	0.237	27.417
								B	0.237	27.417
								C	0.237	27.417
T13 25.000-12.500	18.750	18.750	0.89	1	1	1.772	0.005	A	0.229	26.824
								B	0.229	26.824
								C	0.229	26.824
T14 12.500-0.000	6.250	6.250	0.85	1	1	1.588	0.005	A	0.214	25.161

Section Elevation ft	z_{wind} ft	z_{ice} ft	K_z	K_h	K_{zt}	t_z in	q_z ksf	Face	e	A_rR_r ft²
								B	0.214	25.161
								C	0.214	25.161

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 ksf	Face	e	A_rR_r ft²
T1 180.000-175.000	177.500		1.428	1	1		0.011	A	0.173	1.941
								B	0.173	1.941
								C	0.173	1.941
T2 175.000-166.667	170.833		1.417	1	1		0.011	A	0.135	3.134
								B	0.135	3.134
								C	0.135	3.134
T3 166.667-158.333	162.500		1.402	1	1		0.011	A	0.13	3.131
								B	0.13	3.131
								C	0.13	3.131
T4 158.333-150.000	154.167		1.386	1	1		0.011	A	0.126	3.130
								B	0.126	3.130
								C	0.126	3.130
T5 150.000-125.000	137.500		1.353	1	1		0.011	A	0.145	9.606
								B	0.145	9.606
								C	0.145	9.606
T6 125.000-100.000	112.500		1.297	1	1		0.010	A	0.142	9.697
								B	0.142	9.697
								C	0.142	9.697
T7 100.000-91.667	95.833		1.254	1	1		0.010	A	0.137	3.248
								B	0.137	3.248
								C	0.137	3.248
T8 91.667-83.333	87.500		1.231	1	1		0.010	A	0.137	0.000
								B	0.137	0.000
								C	0.137	0.000
T9 83.333-75.000	79.167		1.205	1	1		0.009	A	0.135	0.000
								B	0.135	0.000
								C	0.135	0.000
T10 75.000-50.000	62.500		1.146	1	1		0.009	A	0.135	11.798
								B	0.135	11.798
								C	0.135	11.798
T11 50.000-37.500	43.750		1.063	1	1		0.008	A	0.13	5.860
								B	0.13	5.860
								C	0.13	5.860
T12 37.500-25.000	31.250		0.991	1	1		0.008	A	0.127	5.839
								B	0.127	5.839
								C	0.127	5.839
T13 25.000-12.500	18.750		0.89	1	1		0.007	A	0.126	6.058
								B	0.126	6.058
								C	0.126	6.058
T14 12.500-0.000	6.250		0.85	1	1		0.007	A	0.123	6.140
								B	0.123	6.140
								C	0.123	6.140

Tower Pressures - No Ice

$G_H = 0.850$

Section Elevation ft	z ft	K_Z	q_z ksf	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	177.500	1.428	0.039	56.082	A	5.526	4.171	4.171	43.02	0.000	0.000
180.000-175.0					B	5.526	4.171		43.02	0.000	0.000
00					C	5.526	4.171		43.02	8.026	0.000
T2	170.833	1.417	0.039	97.919	A	6.293	6.952	6.952	52.49	0.000	0.000
175.000-166.6					B	6.293	6.952		52.49	0.000	0.000
67					C	6.293	6.952		52.49	17.602	0.000
T3	162.500	1.402	0.039	103.475	A	6.518	6.952	6.952	51.61	0.000	0.000
166.667-158.3					B	6.518	6.952		51.61	0.000	0.000
33					C	6.518	6.952		51.61	23.679	0.000
T4	154.167	1.386	0.038	109.031	A	6.746	6.952	6.952	50.75	0.000	0.000
158.333-150.0					B	6.746	6.952		50.75	0.000	0.000
00					C	6.746	6.952		50.75	29.939	0.000
T5	137.500	1.353	0.037	360.425	A	31.437	20.856	20.856	39.88	3.367	0.000
150.000-125.0					B	31.437	20.856		39.88	67.500	0.000
00					C	31.437	20.856		39.88	97.640	0.000
T6	112.500	1.297	0.036	410.425	A	37.501	20.856	20.856	35.74	4.209	0.000
125.000-100.0					B	37.501	20.856		35.74	128.700	0.000
00					C	37.501	20.856		35.74	103.553	0.000
T7	95.833	1.254	0.035	147.919	A	13.268	6.952	6.952	34.38	1.403	0.000
100.000-91.66					B	13.268	6.952		34.38	42.900	0.000
7					C	13.268	6.952		34.38	35.526	0.000
T8	87.500	1.231	0.034	154.157	A	21.130	0.000	7.473	35.37	1.403	0.000
91.667-83.333					B	21.130	0.000		35.37	42.900	0.000
					C	21.130	0.000		35.37	35.526	0.000
T9	79.167	1.205	0.033	159.712	A	21.520	0.000	7.473	34.73	1.403	0.000
83.333-75.000					B	21.520	0.000		34.73	42.900	0.000
					C	21.520	0.000		34.73	35.744	0.000
T10	62.500	1.146	0.032	514.334	A	40.966	28.676	28.676	41.18	4.209	0.000
75.000-50.000					B	40.966	28.676		41.18	128.700	0.000
					C	40.966	28.676		41.18	113.603	0.000
T11	43.750	1.063	0.029	275.917	A	21.483	14.338	14.338	40.03	2.105	0.000
50.000-37.500					B	21.483	14.338		40.03	64.350	0.000
					C	21.483	14.338		40.03	56.801	0.000
T12	31.250	0.991	0.027	288.417	A	22.193	14.338	14.338	39.25	2.105	0.000
37.500-25.000					B	22.193	14.338		39.25	64.350	0.000
					C	22.193	14.338		39.25	57.271	0.000
T13	18.750	0.89	0.025	300.917	A	23.567	14.338	14.338	37.83	2.105	0.000
25.000-12.500					B	23.567	14.338		37.83	64.350	0.000
					C	23.567	14.338		37.83	60.011	0.000
T14	6.250	0.85	0.023	313.417	A	24.302	14.338	14.338	37.11	0.758	0.000
12.500-0.000					B	24.302	14.338		37.11	23.166	0.000
					C	24.302	14.338		37.11	21.996	0.000

Tower Pressure - With Ice

$G_H = 0.850$

Section Elevation ft	z ft	K_Z	q_z ksf	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	177.500	1.428	0.008	2.219	57.933	A	5.526	16.927	7.873	35.06	0.000	0.000
180.000-175.000						B	5.526	16.927		35.06	0.000	0.000
						C	5.526	16.927		35.06	35.536	0.000

Section Elevation ft	z ft	K_Z	q_z ksf	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
T2	170.833	1.417	0.008	2.210	100.991	A	6.293	24.223	13.097	42.92	0.000	0.000
175.000-166.667						B	6.293	24.223		42.92	0.000	0.000
						C	6.293	24.223		42.92	72.117	0.000
T3	162.500	1.402	0.008	2.199	106.532	A	6.518	24.534	13.067	42.08	0.000	0.000
166.667-158.333						B	6.518	24.534		42.08	0.000	0.000
						C	6.518	24.534		42.08	93.023	0.000
T4	154.167	1.386	0.008	2.188	112.071	A	6.746	24.840	13.035	41.27	0.000	0.000
158.333-150.000						B	6.746	24.840		41.27	0.000	0.000
						C	6.746	24.840		41.27	117.439	0.000
T5	137.500	1.353	0.007	2.163	369.443	A	31.437	93.947	38.897	31.02	29.421	0.000
150.000-125.000						B	31.437	93.947		31.02	199.490	0.000
						C	31.437	93.947		31.02	386.566	0.000
T6	112.500	1.297	0.007	2.120	419.264	A	37.501	97.893	38.538	28.46	36.185	0.000
125.000-100.000						B	37.501	97.893		28.46	375.395	0.000
						C	37.501	97.893		28.46	409.737	0.000
T7	95.833	1.254	0.007	2.086	150.819	A	13.268	33.424	12.752	27.31	11.907	0.000
100.000-91.667						B	13.268	33.424		27.31	124.700	0.000
						C	13.268	33.424		27.31	139.823	0.000
T8	87.500	1.231	0.007	2.067	157.030	A	24.962	21.086	11.305	24.55	11.820	0.000
91.667-83.333						B	24.962	21.086		24.55	124.459	0.000
						C	24.962	21.086		24.55	138.878	0.000
T9	79.167	1.205	0.007	2.046	162.557	A	25.314	21.475	11.267	24.08	11.725	0.000
83.333-75.000						B	25.314	21.475		24.08	124.196	0.000
						C	25.314	21.475		24.08	138.886	0.000
T10	62.500	1.146	0.006	1.999	522.669	A	40.966	94.877	45.350	33.38	34.518	0.000
75.000-50.000						B	40.966	94.877		33.38	370.759	0.000
						C	40.966	94.877		33.38	443.381	0.000
T11	43.750	1.063	0.006	1.929	279.938	A	21.483	47.419	22.383	32.48	16.777	0.000
50.000-37.500						B	21.483	47.419		32.48	184.042	0.000
						C	21.483	47.419		32.48	215.913	0.000
T12	31.250	0.991	0.005	1.865	292.305	A	22.193	47.111	22.117	31.91	16.337	0.000
37.500-25.000						B	22.193	47.111		31.91	182.827	0.000
						C	22.193	47.111		31.91	213.356	0.000
T13	18.750	0.89	0.005	1.772	304.612	A	23.567	46.233	21.729	31.13	15.698	0.000
25.000-12.500						B	23.567	46.233		31.13	181.062	0.000
						C	23.567	46.233		31.13	220.241	0.000
T14	6.250	0.85	0.005	1.588	316.727	A	24.302	43.595	20.960	30.87	5.195	0.000
12.500-0.000						B	24.302	43.595		30.87	63.928	0.000
						C	24.302	43.595		30.87	74.701	0.000

Tower Pressure - Service

$G_H = 0.850$

Section Elevation ft	z ft	K_Z	q_z ksf	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	177.500	1.428	0.011	56.082	A	5.526	4.171	4.171	43.02	0.000	0.000
180.000-175.0					B	5.526	4.171		43.02	0.000	0.000
00					C	5.526	4.171		43.02	8.026	0.000
T2	170.833	1.417	0.011	97.919	A	6.293	6.952	6.952	52.49	0.000	0.000
175.000-166.6					B	6.293	6.952		52.49	0.000	0.000
67					C	6.293	6.952		52.49	17.602	0.000
T3	162.500	1.402	0.011	103.475	A	6.518	6.952	6.952	51.61	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z ksf	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
166.667-158.3					B	6.518	6.952		51.61	0.000	0.000
33					C	6.518	6.952		51.61	23.679	0.000
T4	154.167	1.386	0.011	109.031	A	6.746	6.952	6.952	50.75	0.000	0.000
158.333-150.0					B	6.746	6.952		50.75	0.000	0.000
00					C	6.746	6.952		50.75	29.939	0.000
T5	137.500	1.353	0.011	360.425	A	31.437	20.856	20.856	39.88	3.367	0.000
150.000-125.0					B	31.437	20.856		39.88	67.500	0.000
00					C	31.437	20.856		39.88	97.640	0.000
T6	112.500	1.297	0.010	410.425	A	37.501	20.856	20.856	35.74	4.209	0.000
125.000-100.0					B	37.501	20.856		35.74	128.700	0.000
00					C	37.501	20.856		35.74	103.553	0.000
T7	95.833	1.254	0.010	147.919	A	13.268	6.952	6.952	34.38	1.403	0.000
100.000-91.66					B	13.268	6.952		34.38	42.900	0.000
7					C	13.268	6.952		34.38	35.526	0.000
T8	87.500	1.231	0.010	154.157	A	21.130	0.000	7.473	35.37	1.403	0.000
91.667-83.333					B	21.130	0.000		35.37	42.900	0.000
					C	21.130	0.000		35.37	35.526	0.000
T9	79.167	1.205	0.009	159.712	A	21.520	0.000	7.473	34.73	1.403	0.000
83.333-75.000					B	21.520	0.000		34.73	42.900	0.000
					C	21.520	0.000		34.73	35.744	0.000
T10	62.500	1.146	0.009	514.334	A	40.966	28.676	28.676	41.18	4.209	0.000
75.000-50.000					B	40.966	28.676		41.18	128.700	0.000
					C	40.966	28.676		41.18	113.603	0.000
T11	43.750	1.063	0.008	275.917	A	21.483	14.338	14.338	40.03	2.105	0.000
50.000-37.500					B	21.483	14.338		40.03	64.350	0.000
					C	21.483	14.338		40.03	56.801	0.000
T12	31.250	0.991	0.008	288.417	A	22.193	14.338	14.338	39.25	2.105	0.000
37.500-25.000					B	22.193	14.338		39.25	64.350	0.000
					C	22.193	14.338		39.25	57.271	0.000
T13	18.750	0.89	0.007	300.917	A	23.567	14.338	14.338	37.83	2.105	0.000
25.000-12.500					B	23.567	14.338		37.83	64.350	0.000
					C	23.567	14.338		37.83	60.011	0.000
T14	6.250	0.85	0.007	313.417	A	24.302	14.338	14.338	37.11	0.758	0.000
12.500-0.000					B	24.302	14.338		37.11	23.166	0.000
					C	24.302	14.338		37.11	21.996	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	26.190	592.305	A	0.173	2.689	0.039	1	1	7.467	833.688	166.738	C
180.000-175.0			B	0.173	2.689		1	1	7.467			
00			C	0.173	2.689		1	1	7.467			
T2	52.650	755.494	A	0.135	2.826	0.039	1	1	9.427	1236.042	148.325	C
175.000-166.6			B	0.135	2.826		1	1	9.427			
67			C	0.135	2.826		1	1	9.427			
T3	70.190	768.073	A	0.13	2.846	0.039	1	1	9.649	1369.713	164.366	C
166.667-158.3			B	0.13	2.846		1	1	9.649			
33			C	0.13	2.846		1	1	9.649			
T4	93.290	780.881	A	0.126	2.863	0.038	1	1	9.875	1503.271	180.393	C
158.333-150.0			B	0.126	2.863		1	1	9.875			
00			C	0.126	2.863		1	1	9.875			
T5	623.830	3994.805	A	0.145	2.79	0.037	1	1	41.043	6842.655	273.706	C
150.000-125.0			B	0.145	2.79		1	1	41.043			
00			C	0.145	2.79		1	1	41.043			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T6	896.592	4822.083	A	0.142	2.8	0.036	1	1	47.198	8337.989	333.520	C
125.000-100.0			B	0.142	2.8		1	1	47.198			
00			C	0.142	2.8		1	1	47.198			
T7	301.917	1971.333	A	0.137	2.821	0.035	1	1	16.517	2779.460	333.535	C
100.000-91.66			B	0.137	2.821		1	1	16.517			
7			C	0.137	2.821		1	1	16.517			
T8	301.917	2177.704	A	0.137	2.82	0.034	1	1	21.130	3101.412	372.169	C
91.667-83.333			B	0.137	2.82		1	1	21.130			
			C	0.137	2.82		1	1	21.130			
T9	302.577	2217.593	A	0.135	2.828	0.033	1	1	21.520	3076.892	369.227	C
83.333-75.000			B	0.135	2.828		1	1	21.520			
			C	0.135	2.828		1	1	21.520			
T10	926.000	6256.473	A	0.135	2.826	0.032	1	1	52.764	7984.776	319.391	C
75.000-50.000			B	0.135	2.826		1	1	52.764			
			C	0.135	2.826		1	1	52.764			
T11	463.000	3351.672	A	0.13	2.847	0.029	1	1	27.344	3785.795	302.864	C
50.000-37.500			B	0.13	2.847		1	1	27.344			
			C	0.13	2.847		1	1	27.344			
T12	464.260	3953.241	A	0.127	2.859	0.027	1	1	28.032	3586.888	286.951	C
37.500-25.000			B	0.127	2.859		1	1	28.032			
			C	0.127	2.859		1	1	28.032			
T13	471.700	3949.414	A	0.126	2.862	0.025	1	1	29.625	3352.125	268.170	C
25.000-12.500			B	0.126	2.862		1	1	29.625			
			C	0.126	2.862		1	1	29.625			
T14	171.000	4500.639	A	0.123	2.872	0.023	1	1	30.442	2292.058	183.365	C
12.500-0.000			B	0.123	2.872		1	1	30.442			
			C	0.123	2.872		1	1	30.442			
Sum Weight:	5165.113	40091.710						OTM	4327.629 kip-ft	50082.763		

Tower Forces - No Ice - Wind 45 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	26.190	592.305	A	0.173	2.689	0.039	0.825	1	6.500	746.604	149.321	C
180.000-175.0			B	0.173	2.689		0.825	1	6.500			
00			C	0.173	2.689		0.825	1	6.500			
T2	52.650	755.494	A	0.135	2.826	0.039	0.825	1	8.326	1132.637	135.916	C
175.000-166.6			B	0.135	2.826		0.825	1	8.326			
67			C	0.135	2.826		0.825	1	8.326			
T3	70.190	768.073	A	0.13	2.846	0.039	0.825	1	8.508	1263.001	151.560	C
166.667-158.3			B	0.13	2.846		0.825	1	8.508			
33			C	0.13	2.846		0.825	1	8.508			
T4	93.290	780.881	A	0.126	2.863	0.038	0.825	1	8.695	1393.381	167.206	C
158.333-150.0			B	0.126	2.863		0.825	1	8.695			
00			C	0.126	2.863		0.825	1	8.695			
T5	623.830	3994.805	A	0.145	2.79	0.037	0.825	1	35.542	6355.574	254.223	C
150.000-125.0			B	0.145	2.79		0.825	1	35.542			
00			C	0.145	2.79		0.825	1	35.542			
T6	896.592	4822.083	A	0.142	2.8	0.036	0.825	1	40.635	7778.821	311.153	C
125.000-100.0			B	0.142	2.8		0.825	1	40.635			
00			C	0.142	2.8		0.825	1	40.635			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T7	301.917	1971.333	A	0.137	2.821	0.035	0.825	1	14.195	2586.784	310.414	C
100.000-91.66			B	0.137	2.821		0.825	1	14.195			
7			C	0.137	2.821		0.825	1	14.195			
T8	301.917	2177.704	A	0.137	2.82	0.034	0.825	1	17.432	2800.544	336.065	C
91.667-83.333			B	0.137	2.82		0.825	1	17.432			
			C	0.137	2.82		0.825	1	17.432			
T9	302.577	2217.593	A	0.135	2.828	0.033	0.825	1	17.754	2775.918	333.110	C
83.333-75.000			B	0.135	2.828		0.825	1	17.754			
			C	0.135	2.828		0.825	1	17.754			
T10	926.000	6256.473	A	0.135	2.826	0.032	0.825	1	45.595	7440.140	297.606	C
75.000-50.000			B	0.135	2.826		0.825	1	45.595			
			C	0.135	2.826		0.825	1	45.595			
T11	463.000	3351.672	A	0.13	2.847	0.029	0.825	1	23.584	3518.853	281.508	C
50.000-37.500			B	0.13	2.847		0.825	1	23.584			
			C	0.13	2.847		0.825	1	23.584			
T12	464.260	3953.241	A	0.127	2.859	0.027	0.825	1	24.148	3328.886	266.311	C
37.500-25.000			B	0.127	2.859		0.825	1	24.148			
			C	0.127	2.859		0.825	1	24.148			
T13	471.700	3949.414	A	0.126	2.862	0.025	0.825	1	25.500	3105.862	248.469	C
25.000-12.500			B	0.126	2.862		0.825	1	25.500			
			C	0.126	2.862		0.825	1	25.500			
T14	171.000	4500.639	A	0.123	2.872	0.023	0.825	1	26.189	2048.571	163.886	C
12.500-0.000			B	0.123	2.872		0.825	1	26.189			
			C	0.123	2.872		0.825	1	26.189			
Sum Weight:	5165.113	40091.710						OTM	4001.806 kip-ft	46275.575		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	26.190	592.305	A	0.173	2.689	0.039	0.8	1	6.361	734.163	146.833	C
180.000-175.0			B	0.173	2.689		0.8	1	6.361			
00			C	0.173	2.689		0.8	1	6.361			
T2	52.650	755.494	A	0.135	2.826	0.039	0.8	1	8.168	1117.865	134.144	C
175.000-166.6			B	0.135	2.826		0.8	1	8.168			
67			C	0.135	2.826		0.8	1	8.168			
T3	70.190	768.073	A	0.13	2.846	0.039	0.8	1	8.345	1247.757	149.731	C
166.667-158.3			B	0.13	2.846		0.8	1	8.345			
33			C	0.13	2.846		0.8	1	8.345			
T4	93.290	780.881	A	0.126	2.863	0.038	0.8	1	8.526	1377.682	165.322	C
158.333-150.0			B	0.126	2.863		0.8	1	8.526			
00			C	0.126	2.863		0.8	1	8.526			
T5	623.830	3994.805	A	0.145	2.79	0.037	0.8	1	34.756	6285.990	251.440	C
150.000-125.0			B	0.145	2.79		0.8	1	34.756			
00			C	0.145	2.79		0.8	1	34.756			
T6	896.592	4822.083	A	0.142	2.8	0.036	0.8	1	39.698	7698.940	307.958	C
125.000-100.0			B	0.142	2.8		0.8	1	39.698			
00			C	0.142	2.8		0.8	1	39.698			
T7	301.917	1971.333	A	0.137	2.821	0.035	0.8	1	13.863	2559.258	307.111	C
100.000-91.66			B	0.137	2.821		0.8	1	13.863			
7			C	0.137	2.821		0.8	1	13.863			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T8	301.917	2177.704	A	0.137	2.82	0.034	0.8	1	16.904	2757.563	330.908	C
91.667-83.333			B	0.137	2.82		0.8	1	16.904			
			C	0.137	2.82		0.8	1	16.904			
T9	302.577	2217.593	A	0.135	2.828	0.033	0.8	1	17.216	2732.922	327.951	C
83.333-75.000			B	0.135	2.828		0.8	1	17.216			
			C	0.135	2.828		0.8	1	17.216			
T10	926.000	6256.473	A	0.135	2.826	0.032	0.8	1	44.571	7362.335	294.493	C
75.000-50.000			B	0.135	2.826		0.8	1	44.571			
			C	0.135	2.826		0.8	1	44.571			
T11	463.000	3351.672	A	0.13	2.847	0.029	0.8	1	23.047	3480.718	278.457	C
50.000-37.500			B	0.13	2.847		0.8	1	23.047			
			C	0.13	2.847		0.8	1	23.047			
T12	464.260	3953.241	A	0.127	2.859	0.027	0.8	1	23.593	3292.029	263.362	C
37.500-25.000			B	0.127	2.859		0.8	1	23.593			
			C	0.127	2.859		0.8	1	23.593			
T13	471.700	3949.414	A	0.126	2.862	0.025	0.8	1	24.911	3070.682	245.655	C
25.000-12.500			B	0.126	2.862		0.8	1	24.911			
			C	0.126	2.862		0.8	1	24.911			
T14	171.000	4500.639	A	0.123	2.872	0.023	0.8	1	25.581	2013.787	161.103	C
12.500-0.000			B	0.123	2.872		0.8	1	25.581			
			C	0.123	2.872		0.8	1	25.581			
Sum Weight:	5165.113	40091.710						OTM	3955.260 kip-ft	45731.691		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	26.190	592.305	A	0.173	2.689	0.039	0.85	1	6.638	759.044	151.809	C
180.000-175.0			B	0.173	2.689		0.85	1	6.638			
00			C	0.173	2.689		0.85	1	6.638			
T2	52.650	755.494	A	0.135	2.826	0.039	0.85	1	8.483	1147.409	137.689	C
175.000-166.6			B	0.135	2.826		0.85	1	8.483			
67			C	0.135	2.826		0.85	1	8.483			
T3	70.190	768.073	A	0.13	2.846	0.039	0.85	1	8.671	1278.246	153.390	C
166.667-158.3			B	0.13	2.846		0.85	1	8.671			
33			C	0.13	2.846		0.85	1	8.671			
T4	93.290	780.881	A	0.126	2.863	0.038	0.85	1	8.864	1409.079	169.090	C
158.333-150.0			B	0.126	2.863		0.85	1	8.864			
00			C	0.126	2.863		0.85	1	8.864			
T5	623.830	3994.805	A	0.145	2.79	0.037	0.85	1	36.328	6425.157	257.006	C
150.000-125.0			B	0.145	2.79		0.85	1	36.328			
00			C	0.145	2.79		0.85	1	36.328			
T6	896.592	4822.083	A	0.142	2.8	0.036	0.85	1	41.573	7858.702	314.348	C
125.000-100.0			B	0.142	2.8		0.85	1	41.573			
00			C	0.142	2.8		0.85	1	41.573			
T7	301.917	1971.333	A	0.137	2.821	0.035	0.85	1	14.526	2614.309	313.717	C
100.000-91.66			B	0.137	2.821		0.85	1	14.526			
7			C	0.137	2.821		0.85	1	14.526			
T8	301.917	2177.704	A	0.137	2.82	0.034	0.85	1	17.960	2843.525	341.223	C
91.667-83.333			B	0.137	2.82		0.85	1	17.960			
			C	0.137	2.82		0.85	1	17.960			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T9	302.577	2217.593	A	0.135	2.828	0.033	0.85	1	18.292	2818.914	338.270	C
83.333-75.000			B	0.135	2.828		0.85	1	18.292			
			C	0.135	2.828		0.85	1	18.292			
T10	926.000	6256.473	A	0.135	2.826	0.032	0.85	1	46.619	7517.945	300.718	C
75.000-50.000			B	0.135	2.826		0.85	1	46.619			
			C	0.135	2.826		0.85	1	46.619			
T11	463.000	3351.672	A	0.13	2.847	0.029	0.85	1	24.121	3556.987	284.559	C
50.000-37.500			B	0.13	2.847		0.85	1	24.121			
			C	0.13	2.847		0.85	1	24.121			
T12	464.260	3953.241	A	0.127	2.859	0.027	0.85	1	24.703	3365.744	269.259	C
37.500-25.000			B	0.127	2.859		0.85	1	24.703			
			C	0.127	2.859		0.85	1	24.703			
T13	471.700	3949.414	A	0.126	2.862	0.025	0.85	1	26.090	3141.042	251.283	C
25.000-12.500			B	0.126	2.862		0.85	1	26.090			
			C	0.126	2.862		0.85	1	26.090			
T14	171.000	4500.639	A	0.123	2.872	0.023	0.85	1	26.796	2083.355	166.668	C
12.500-0.000			B	0.123	2.872		0.85	1	26.796			
			C	0.123	2.872		0.85	1	26.796			
Sum Weight:	5165.113	40091.710						OTM	4048.352 kip-ft	46819.459		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	615.061	2315.661	A	0.388	2.089	0.008	1	1	16.206	364.376	72.875	C
180.000-175.0			B	0.388	2.089		1	1	16.206			
00			C	0.388	2.089		1	1	16.206			
T2	1241.318	2943.071	A	0.302	2.29	0.008	1	1	20.817	595.758	71.491	C
175.000-166.6			B	0.302	2.29		1	1	20.817			
67			C	0.302	2.29		1	1	20.817			
T3	1600.244	2994.621	A	0.291	2.319	0.008	1	1	21.148	679.666	81.560	C
166.667-158.3			B	0.291	2.319		1	1	21.148			
33			C	0.291	2.319		1	1	21.148			
T4	2025.059	3045.796	A	0.282	2.345	0.008	1	1	21.488	774.794	92.975	C
158.333-150.0			B	0.282	2.345		1	1	21.488			
00			C	0.282	2.345		1	1	21.488			
T5	10256.403	14070.293	A	0.339	2.197	0.007	1	1	88.948	3533.655	141.346	C
150.000-125.0			B	0.339	2.197		1	1	88.948			
00			C	0.339	2.197		1	1	88.948			
T6	13424.513	16115.041	A	0.323	2.237	0.007	1	1	96.863	4256.110	170.244	C
125.000-100.0			B	0.323	2.237		1	1	96.863			
00			C	0.323	2.237		1	1	96.863			
T7	4464.506	6077.276	A	0.31	2.271	0.007	1	1	33.388	1401.723	168.207	C
100.000-91.66			B	0.31	2.271		1	1	33.388			
7			C	0.31	2.271		1	1	33.388			
T8	4414.312	6490.849	A	0.293	2.314	0.007	1	1	37.546	1433.777	172.053	C
91.667-83.333			B	0.293	2.314		1	1	37.546			
			C	0.293	2.314		1	1	37.546			
T9	4376.270	6581.005	A	0.288	2.329	0.007	1	1	38.096	1412.931	169.552	C
83.333-75.000			B	0.288	2.329		1	1	38.096			
			C	0.288	2.329		1	1	38.096			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T10	13262.408	17176.016	A	0.26	2.408	0.006	1	1	96.705	3933.640	157.346	C
75.000-50.000			B	0.26	2.408		1	1	96.705			
			C	0.26	2.408		1	1	96.705			
T11	6345.552	8788.065	A	0.246	2.449	0.006	1	1	49.179	1821.830	145.746	C
50.000-37.500			B	0.246	2.449		1	1	49.179			
			C	0.246	2.449		1	1	49.179			
T12	6128.018	9657.349	A	0.237	2.477	0.005	1	1	49.610	1696.783	135.743	C
37.500-25.000			B	0.237	2.477		1	1	49.610			
			C	0.237	2.477		1	1	49.610			
T13	5960.123	9232.499	A	0.229	2.502	0.005	1	1	50.391	1547.930	123.834	C
25.000-12.500			B	0.229	2.502		1	1	50.391			
			C	0.229	2.502		1	1	50.391			
T14	1904.689	9563.808	A	0.214	2.549	0.005	1	1	49.463	834.663	66.773	C
12.500-0.000			B	0.214	2.549		1	1	49.463			
			C	0.214	2.549		1	1	49.463			
Sum Weight:	76018.474	115051.351						OTM	2145.502 kip-ft	24287.638		

Tower Forces - With Ice - Wind 45 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	615.061	2315.661	A	0.388	2.089	0.008	0.825	1	15.239	351.036	70.207	C
180.000-175.000			B	0.388	2.089		0.825	1	15.239			
			C	0.388	2.089		0.825	1	15.239			
T2	1241.318	2943.071	A	0.302	2.29	0.008	0.825	1	19.716	579.237	69.508	C
175.000-166.667			B	0.302	2.29		0.825	1	19.716			
			C	0.302	2.29		0.825	1	19.716			
T3	1600.244	2994.621	A	0.291	2.319	0.008	0.825	1	20.007	662.520	79.502	C
166.667-158.333			B	0.291	2.319		0.825	1	20.007			
			C	0.291	2.319		0.825	1	20.007			
T4	2025.059	3045.796	A	0.282	2.345	0.008	0.825	1	20.307	757.044	90.845	C
158.333-150.000			B	0.282	2.345		0.825	1	20.307			
			C	0.282	2.345		0.825	1	20.307			
T5	10256.403	14070.293	A	0.339	2.197	0.007	0.825	1	83.446	3458.033	138.321	C
150.000-125.000			B	0.339	2.197		0.825	1	83.446			
			C	0.339	2.197		0.825	1	83.446			
T6	13424.513	16115.041	A	0.323	2.237	0.007	0.825	1	90.301	4168.046	166.722	C
125.000-100.000			B	0.323	2.237		0.825	1	90.301			
			C	0.323	2.237		0.825	1	90.301			
T7	4464.506	6077.276	A	0.31	2.271	0.007	0.825	1	31.066	1371.142	164.537	C
100.000-91.667			B	0.31	2.271		0.825	1	31.066			
			C	0.31	2.271		0.825	1	31.066			
T8	4414.312	6490.849	A	0.293	2.314	0.007	0.825	1	33.178	1376.258	165.151	C
91.667-83.333			B	0.293	2.314		0.825	1	33.178			
			C	0.293	2.314		0.825	1	33.178			
T9	4376.270	6581.005	A	0.288	2.329	0.007	0.825	1	33.667	1355.453	162.654	C
83.333-75.000			B	0.288	2.329		0.825	1	33.667			
			C	0.288	2.329		0.825	1	33.667			
T10	13262.408	17176.016	A	0.26	2.408	0.006	0.825	1	89.536	3842.127	153.685	C
75.000-50.000			B	0.26	2.408		0.825	1	89.536			
			C	0.26	2.408		0.825	1	89.536			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T11	6345.552	8788.065	A	0.246	2.449	0.006	0.825	1	45.419	1776.552	142.124	C
50.000-37.500			B	0.246	2.449		0.825	1	45.419			
			C	0.246	2.449		0.825	1	45.419			
T12	6128.018	9657.349	A	0.237	2.477	0.005	0.825	1	45.726	1652.715	132.217	C
37.500-25.000			B	0.237	2.477		0.825	1	45.726			
			C	0.237	2.477		0.825	1	45.726			
T13	5960.123	9232.499	A	0.229	2.502	0.005	0.825	1	46.267	1505.486	120.439	C
25.000-12.500			B	0.229	2.502		0.825	1	46.267			
			C	0.229	2.502		0.825	1	46.267			
T14	1904.689	9563.808	A	0.214	2.549	0.005	0.825	1	45.210	792.060	63.365	C
12.500-0.000			B	0.214	2.549		0.825	1	45.210			
			C	0.214	2.549		0.825	1	45.210			
Sum Weight:	76018.474	115051.351						OTM	2091.830 kip-ft	23647.709		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	615.061	2315.661	A	0.388	2.089	0.008	0.8	1	15.101	349.130	69.826	C
180.000-175.000			B	0.388	2.089		0.8	1	15.101			
			C	0.388	2.089		0.8	1	15.101			
T2	1241.318	2943.071	A	0.302	2.29	0.008	0.8	1	19.558	576.876	69.225	C
175.000-166.667			B	0.302	2.29		0.8	1	19.558			
			C	0.302	2.29		0.8	1	19.558			
T3	1600.244	2994.621	A	0.291	2.319	0.008	0.8	1	19.844	660.071	79.209	C
166.667-158.333			B	0.291	2.319		0.8	1	19.844			
			C	0.291	2.319		0.8	1	19.844			
T4	2025.059	3045.796	A	0.282	2.345	0.008	0.8	1	20.139	754.509	90.541	C
158.333-150.000			B	0.282	2.345		0.8	1	20.139			
			C	0.282	2.345		0.8	1	20.139			
T5	10256.403	14070.293	A	0.339	2.197	0.007	0.8	1	82.660	3447.230	137.889	C
150.000-125.000			B	0.339	2.197		0.8	1	82.660			
			C	0.339	2.197		0.8	1	82.660			
T6	13424.513	16115.041	A	0.323	2.237	0.007	0.8	1	89.363	4155.465	166.219	C
125.000-100.000			B	0.323	2.237		0.8	1	89.363			
			C	0.323	2.237		0.8	1	89.363			
T7	4464.506	6077.276	A	0.31	2.271	0.007	0.8	1	30.734	1366.773	164.013	C
100.000-91.667			B	0.31	2.271		0.8	1	30.734			
			C	0.31	2.271		0.8	1	30.734			
T8	4414.312	6490.849	A	0.293	2.314	0.007	0.8	1	32.554	1368.041	164.165	C
91.667-83.333			B	0.293	2.314		0.8	1	32.554			
			C	0.293	2.314		0.8	1	32.554			
T9	4376.270	6581.005	A	0.288	2.329	0.007	0.8	1	33.034	1347.242	161.669	C
83.333-75.000			B	0.288	2.329		0.8	1	33.034			
			C	0.288	2.329		0.8	1	33.034			
T10	13262.408	17176.016	A	0.26	2.408	0.006	0.8	1	88.512	3829.053	153.162	C
75.000-50.000			B	0.26	2.408		0.8	1	88.512			
			C	0.26	2.408		0.8	1	88.512			
T11	6345.552	8788.065	A	0.246	2.449	0.006	0.8	1	44.882	1770.083	141.607	C
50.000-37.500			B	0.246	2.449		0.8	1	44.882			
			C	0.246	2.449		0.8	1	44.882			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T12	6128.018	9657.349	A	0.237	2.477	0.005	0.8	1	45.171	1646.420	131.714	C
37.500-25.000			B	0.237	2.477		0.8	1	45.171			
			C	0.237	2.477		0.8	1	45.171			
T13	5960.123	9232.499	A	0.229	2.502	0.005	0.8	1	45.677	1499.423	119.954	C
25.000-12.500			B	0.229	2.502		0.8	1	45.677			
			C	0.229	2.502		0.8	1	45.677			
T14	1904.689	9563.808	A	0.214	2.549	0.005	0.8	1	44.603	785.974	62.878	C
12.500-0.000			B	0.214	2.549		0.8	1	44.603			
			C	0.214	2.549		0.8	1	44.603			
Sum Weight:	76018.474	115051.351						OTM	2084.163 kip-ft	23556.290		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	615.061	2315.661	A	0.388	2.089	0.008	0.85	1	15.377	352.942	70.588	C
180.000-175.000			B	0.388	2.089		0.85	1	15.377			
			C	0.388	2.089		0.85	1	15.377			
T2	1241.318	2943.071	A	0.302	2.29	0.008	0.85	1	19.873	581.597	69.792	C
175.000-166.667			B	0.302	2.29		0.85	1	19.873			
			C	0.302	2.29		0.85	1	19.873			
T3	1600.244	2994.621	A	0.291	2.319	0.008	0.85	1	20.170	664.970	79.796	C
166.667-158.333			B	0.291	2.319		0.85	1	20.170			
			C	0.291	2.319		0.85	1	20.170			
T4	2025.059	3045.796	A	0.282	2.345	0.008	0.85	1	20.476	759.580	91.150	C
158.333-150.000			B	0.282	2.345		0.85	1	20.476			
			C	0.282	2.345		0.85	1	20.476			
T5	10256.403	14070.293	A	0.339	2.197	0.007	0.85	1	84.232	3468.836	138.753	C
150.000-125.000			B	0.339	2.197		0.85	1	84.232			
			C	0.339	2.197		0.85	1	84.232			
T6	13424.513	16115.041	A	0.323	2.237	0.007	0.85	1	91.238	4180.627	167.225	C
125.000-100.000			B	0.323	2.237		0.85	1	91.238			
			C	0.323	2.237		0.85	1	91.238			
T7	4464.506	6077.276	A	0.31	2.271	0.007	0.85	1	31.398	1375.511	165.061	C
100.000-91.667			B	0.31	2.271		0.85	1	31.398			
			C	0.31	2.271		0.85	1	31.398			
T8	4414.312	6490.849	A	0.293	2.314	0.007	0.85	1	33.802	1384.475	166.137	C
91.667-83.333			B	0.293	2.314		0.85	1	33.802			
			C	0.293	2.314		0.85	1	33.802			
T9	4376.270	6581.005	A	0.288	2.329	0.007	0.85	1	34.299	1363.664	163.640	C
83.333-75.000			B	0.288	2.329		0.85	1	34.299			
			C	0.288	2.329		0.85	1	34.299			
T10	13262.408	17176.016	A	0.26	2.408	0.006	0.85	1	90.560	3855.200	154.208	C
75.000-50.000			B	0.26	2.408		0.85	1	90.560			
			C	0.26	2.408		0.85	1	90.560			
T11	6345.552	8788.065	A	0.246	2.449	0.006	0.85	1	45.956	1783.020	142.642	C
50.000-37.500			B	0.246	2.449		0.85	1	45.956			
			C	0.246	2.449		0.85	1	45.956			
T12	6128.018	9657.349	A	0.237	2.477	0.005	0.85	1	46.281	1659.011	132.721	C
37.500-25.000			B	0.237	2.477		0.85	1	46.281			
			C	0.237	2.477		0.85	1	46.281			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T13	5960.123	9232.499	A	0.229	2.502	0.005	0.85	1	46.856	1511.550	120.924	C
25.000-12.500			B	0.229	2.502		0.85	1	46.856			
			C	0.229	2.502		0.85	1	46.856			
T14	1904.689	9563.808	A	0.214	2.549	0.005	0.85	1	45.818	798.146	63.852	C
12.500-0.000			B	0.214	2.549		0.85	1	45.818			
			C	0.214	2.549		0.85	1	45.818			
Sum Weight:	76018.474	115051.351						OTM	2099.497 kip-ft	23739.127		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	26.190	592.305	A	0.173	2.689	0.011	1	1	7.467	236.717	47.343	C
180.000-175.0			B	0.173	2.689		1	1	7.467			
00			C	0.173	2.689		1	1	7.467			
T2	52.650	755.494	A	0.135	2.826	0.011	1	1	9.427	350.961	42.115	C
175.000-166.6			B	0.135	2.826		1	1	9.427			
67			C	0.135	2.826		1	1	9.427			
T3	70.190	768.073	A	0.13	2.846	0.011	1	1	9.649	388.916	46.670	C
166.667-158.3			B	0.13	2.846		1	1	9.649			
33			C	0.13	2.846		1	1	9.649			
T4	93.290	780.881	A	0.126	2.863	0.011	1	1	9.875	426.838	51.221	C
158.333-150.0			B	0.126	2.863		1	1	9.875			
00			C	0.126	2.863		1	1	9.875			
T5	623.830	3994.805	A	0.145	2.79	0.011	1	1	41.043	1942.901	77.716	C
150.000-125.0			B	0.145	2.79		1	1	41.043			
00			C	0.145	2.79		1	1	41.043			
T6	896.592	4822.083	A	0.142	2.8	0.010	1	1	47.198	2367.486	94.699	C
125.000-100.0			B	0.142	2.8		1	1	47.198			
00			C	0.142	2.8		1	1	47.198			
T7	301.917	1971.333	A	0.137	2.821	0.010	1	1	16.517	789.199	94.704	C
100.000-91.66			B	0.137	2.821		1	1	16.517			
7			C	0.137	2.821		1	1	16.517			
T8	301.917	2177.704	A	0.137	2.82	0.010	1	1	21.130	880.614	105.674	C
91.667-83.333			B	0.137	2.82		1	1	21.130			
			C	0.137	2.82		1	1	21.130			
T9	302.577	2217.593	A	0.135	2.828	0.009	1	1	21.520	873.652	104.838	C
83.333-75.000			B	0.135	2.828		1	1	21.520			
			C	0.135	2.828		1	1	21.520			
T10	926.000	6256.473	A	0.135	2.826	0.009	1	1	52.764	2267.195	90.688	C
75.000-50.000			B	0.135	2.826		1	1	52.764			
			C	0.135	2.826		1	1	52.764			
T11	463.000	3351.672	A	0.13	2.847	0.008	1	1	27.344	1074.937	85.995	C
50.000-37.500			B	0.13	2.847		1	1	27.344			
			C	0.13	2.847		1	1	27.344			
T12	464.260	3953.241	A	0.127	2.859	0.008	1	1	28.032	1018.460	81.477	C
37.500-25.000			B	0.127	2.859		1	1	28.032			
			C	0.127	2.859		1	1	28.032			
T13	471.700	3949.414	A	0.126	2.862	0.007	1	1	29.625	951.801	76.144	C
25.000-12.500			B	0.126	2.862		1	1	29.625			
			C	0.126	2.862		1	1	29.625			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft^2	F lb	w plf	Ctrl. Face
T14	171.000	4500.639	A	0.123	2.872	0.007	1	1	30.442	650.806	52.064	C
12.500-0.000			B	0.123	2.872		1	1	30.442			
			C	0.123	2.872		1	1	30.442			
Sum Weight:	5165.113	40091.710						OTM	1228.786 kip-ft	14220.483		

Tower Forces - Service - Wind 45 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft^2	F lb	w plf	Ctrl. Face
T1	26.190	592.305	A	0.173	2.689	0.011	0.825	1	6.500	211.990	42.398	C
180.000-175.0			B	0.173	2.689		0.825	1	6.500			
00			C	0.173	2.689		0.825	1	6.500			
T2	52.650	755.494	A	0.135	2.826	0.011	0.825	1	8.326	321.601	38.592	C
175.000-166.6			B	0.135	2.826		0.825	1	8.326			
67			C	0.135	2.826		0.825	1	8.326			
T3	70.190	768.073	A	0.13	2.846	0.011	0.825	1	8.508	358.616	43.034	C
166.667-158.3			B	0.13	2.846		0.825	1	8.508			
33			C	0.13	2.846		0.825	1	8.508			
T4	93.290	780.881	A	0.126	2.863	0.011	0.825	1	8.695	395.636	47.476	C
158.333-150.0			B	0.126	2.863		0.825	1	8.695			
00			C	0.126	2.863		0.825	1	8.695			
T5	623.830	3994.805	A	0.145	2.79	0.011	0.825	1	35.542	1804.599	72.184	C
150.000-125.0			B	0.145	2.79		0.825	1	35.542			
00			C	0.145	2.79		0.825	1	35.542			
T6	896.592	4822.083	A	0.142	2.8	0.010	0.825	1	40.635	2208.716	88.349	C
125.000-100.0			B	0.142	2.8		0.825	1	40.635			
00			C	0.142	2.8		0.825	1	40.635			
T7	301.917	1971.333	A	0.137	2.821	0.010	0.825	1	14.195	734.490	88.139	C
100.000-91.66			B	0.137	2.821		0.825	1	14.195			
7			C	0.137	2.821		0.825	1	14.195			
T8	301.917	2177.704	A	0.137	2.82	0.010	0.825	1	17.432	795.185	95.422	C
91.667-83.333			B	0.137	2.82		0.825	1	17.432			
			C	0.137	2.82		0.825	1	17.432			
T9	302.577	2217.593	A	0.135	2.828	0.009	0.825	1	17.754	788.193	94.583	C
83.333-75.000			B	0.135	2.828		0.825	1	17.754			
			C	0.135	2.828		0.825	1	17.754			
T10	926.000	6256.473	A	0.135	2.826	0.009	0.825	1	45.595	2112.551	84.502	C
75.000-50.000			B	0.135	2.826		0.825	1	45.595			
			C	0.135	2.826		0.825	1	45.595			
T11	463.000	3351.672	A	0.13	2.847	0.008	0.825	1	23.584	999.142	79.931	C
50.000-37.500			B	0.13	2.847		0.825	1	23.584			
			C	0.13	2.847		0.825	1	23.584			
T12	464.260	3953.241	A	0.127	2.859	0.008	0.825	1	24.148	945.203	75.616	C
37.500-25.000			B	0.127	2.859		0.825	1	24.148			
			C	0.127	2.859		0.825	1	24.148			
T13	471.700	3949.414	A	0.126	2.862	0.007	0.825	1	25.500	881.877	70.550	C
25.000-12.500			B	0.126	2.862		0.825	1	25.500			
			C	0.126	2.862		0.825	1	25.500			
T14	171.000	4500.639	A	0.123	2.872	0.007	0.825	1	26.189	581.671	46.534	C
12.500-0.000			B	0.123	2.872		0.825	1	26.189			
			C	0.123	2.872		0.825	1	26.189			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
Sum Weight:	5165.113	40091.710						OTM	1136.272 kip-ft	13139.471		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	26.190	592.305	A	0.173	2.689	0.011	0.8	1	6.361	208.458	41.692	C
180.000-175.0			B	0.173	2.689		0.8	1	6.361			
00			C	0.173	2.689		0.8	1	6.361			
T2	52.650	755.494	A	0.135	2.826	0.011	0.8	1	8.168	317.406	38.089	C
175.000-166.6			B	0.135	2.826		0.8	1	8.168			
67			C	0.135	2.826		0.8	1	8.168			
T3	70.190	768.073	A	0.13	2.846	0.011	0.8	1	8.345	354.288	42.515	C
166.667-158.3			B	0.13	2.846		0.8	1	8.345			
33			C	0.13	2.846		0.8	1	8.345			
T4	93.290	780.881	A	0.126	2.863	0.011	0.8	1	8.526	391.179	46.941	C
158.333-150.0			B	0.126	2.863		0.8	1	8.526			
00			C	0.126	2.863		0.8	1	8.526			
T5	623.830	3994.805	A	0.145	2.79	0.011	0.8	1	34.756	1784.842	71.394	C
150.000-125.0			B	0.145	2.79		0.8	1	34.756			
00			C	0.145	2.79		0.8	1	34.756			
T6	896.592	4822.083	A	0.142	2.8	0.010	0.8	1	39.698	2186.034	87.441	C
125.000-100.0			B	0.142	2.8		0.8	1	39.698			
00			C	0.142	2.8		0.8	1	39.698			
T7	301.917	1971.333	A	0.137	2.821	0.010	0.8	1	13.863	726.675	87.201	C
100.000-91.66			B	0.137	2.821		0.8	1	13.863			
7			C	0.137	2.821		0.8	1	13.863			
T8	301.917	2177.704	A	0.137	2.82	0.010	0.8	1	16.904	782.981	93.958	C
91.667-83.333			B	0.137	2.82		0.8	1	16.904			
			C	0.137	2.82		0.8	1	16.904			
T9	302.577	2217.593	A	0.135	2.828	0.009	0.8	1	17.216	775.985	93.118	C
83.333-75.000			B	0.135	2.828		0.8	1	17.216			
			C	0.135	2.828		0.8	1	17.216			
T10	926.000	6256.473	A	0.135	2.826	0.009	0.8	1	44.571	2090.459	83.618	C
75.000-50.000			B	0.135	2.826		0.8	1	44.571			
			C	0.135	2.826		0.8	1	44.571			
T11	463.000	3351.672	A	0.13	2.847	0.008	0.8	1	23.047	988.314	79.065	C
50.000-37.500			B	0.13	2.847		0.8	1	23.047			
			C	0.13	2.847		0.8	1	23.047			
T12	464.260	3953.241	A	0.127	2.859	0.008	0.8	1	23.593	934.738	74.779	C
37.500-25.000			B	0.127	2.859		0.8	1	23.593			
			C	0.127	2.859		0.8	1	23.593			
T13	471.700	3949.414	A	0.126	2.862	0.007	0.8	1	24.911	871.888	69.751	C
25.000-12.500			B	0.126	2.862		0.8	1	24.911			
			C	0.126	2.862		0.8	1	24.911			
T14	171.000	4500.639	A	0.123	2.872	0.007	0.8	1	25.581	571.794	45.744	C
12.500-0.000			B	0.123	2.872		0.8	1	25.581			
			C	0.123	2.872		0.8	1	25.581			
Sum Weight:	5165.113	40091.710						OTM	1123.055 kip-ft	12985.041		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z ksf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	26.190	592.305	A	0.173	2.689	0.011	0.85	1	6.638	215.523	43.105	C
180.000-175.0			B	0.173	2.689		0.85	1	6.638			
00			C	0.173	2.689		0.85	1	6.638			
T2	52.650	755.494	A	0.135	2.826	0.011	0.85	1	8.483	325.795	39.095	C
175.000-166.6			B	0.135	2.826		0.85	1	8.483			
67			C	0.135	2.826		0.85	1	8.483			
T3	70.190	768.073	A	0.13	2.846	0.011	0.85	1	8.671	362.945	43.553	C
166.667-158.3			B	0.13	2.846		0.85	1	8.671			
33			C	0.13	2.846		0.85	1	8.671			
T4	93.290	780.881	A	0.126	2.863	0.011	0.85	1	8.864	400.094	48.011	C
158.333-150.0			B	0.126	2.863		0.85	1	8.864			
00			C	0.126	2.863		0.85	1	8.864			
T5	623.830	3994.805	A	0.145	2.79	0.011	0.85	1	36.328	1824.357	72.974	C
150.000-125.0			B	0.145	2.79		0.85	1	36.328			
00			C	0.145	2.79		0.85	1	36.328			
T6	896.592	4822.083	A	0.142	2.8	0.010	0.85	1	41.573	2231.397	89.256	C
125.000-100.0			B	0.142	2.8		0.85	1	41.573			
00			C	0.142	2.8		0.85	1	41.573			
T7	301.917	1971.333	A	0.137	2.821	0.010	0.85	1	14.526	742.306	89.077	C
100.000-91.66			B	0.137	2.821		0.85	1	14.526			
7			C	0.137	2.821		0.85	1	14.526			
T8	301.917	2177.704	A	0.137	2.82	0.010	0.85	1	17.960	807.389	96.887	C
91.667-83.333			B	0.137	2.82		0.85	1	17.960			
			C	0.137	2.82		0.85	1	17.960			
T9	302.577	2217.593	A	0.135	2.828	0.009	0.85	1	18.292	800.402	96.048	C
83.333-75.000			B	0.135	2.828		0.85	1	18.292			
			C	0.135	2.828		0.85	1	18.292			
T10	926.000	6256.473	A	0.135	2.826	0.009	0.85	1	46.619	2134.643	85.386	C
75.000-50.000			B	0.135	2.826		0.85	1	46.619			
			C	0.135	2.826		0.85	1	46.619			
T11	463.000	3351.672	A	0.13	2.847	0.008	0.85	1	24.121	1009.970	80.798	C
50.000-37.500			B	0.13	2.847		0.85	1	24.121			
			C	0.13	2.847		0.85	1	24.121			
T12	464.260	3953.241	A	0.127	2.859	0.008	0.85	1	24.703	955.668	76.453	C
37.500-25.000			B	0.127	2.859		0.85	1	24.703			
			C	0.127	2.859		0.85	1	24.703			
T13	471.700	3949.414	A	0.126	2.862	0.007	0.85	1	26.090	891.867	71.349	C
25.000-12.500			B	0.126	2.862		0.85	1	26.090			
			C	0.126	2.862		0.85	1	26.090			
T14	171.000	4500.639	A	0.123	2.872	0.007	0.85	1	26.796	591.547	47.324	C
12.500-0.000			B	0.123	2.872		0.85	1	26.796			
			C	0.123	2.872		0.85	1	26.796			
Sum Weight:	5165.113	40091.710						OTM	1149.488 kip-ft	13293.901		

Force Totals

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Leg Weight	13087.082					
Bracing Weight	27004.628					
Total Member Self-Weight	40091.710			5.454	5.454	
Total Weight	53153.961			5.454	5.454	
Wind 0 deg - No Ice		17.409	-66246.281	-6700.092	3.834	-37.194
Wind 30 deg - No Ice		31596.866	-54553.563	-5560.668	-3224.035	-18.775
Wind 45 deg - No Ice		44291.121	-44163.416	-4506.837	-4527.982	-8.313
Wind 60 deg - No Ice		53767.934	-30962.681	-3162.538	-5505.946	2.514
Wind 90 deg - No Ice		63163.579	-17.409	3.834	-6450.719	23.018
Wind 120 deg - No Ice		57518.663	33108.064	3356.823	-5826.806	39.451
Wind 135 deg - No Ice		46497.088	46369.384	4706.349	-4716.587	42.862
Wind 150 deg - No Ice		31566.713	54536.154	5569.956	-3221.230	41.793
Wind 180 deg - No Ice		-17.409	61895.210	6338.630	7.074	34.227
Wind 210 deg - No Ice		-31596.866	54553.563	5571.576	3234.943	18.775
Wind 225 deg - No Ice		-44291.121	44163.416	4517.744	4538.890	8.313
Wind 240 deg - No Ice		-57536.072	33138.217	3359.629	5839.334	-2.257
Wind 270 deg - No Ice		-63163.579	17.409	7.074	6461.627	-23.018
Wind 300 deg - No Ice		-53750.525	-30932.528	-3159.732	5515.234	-36.742
Wind 315 deg - No Ice		-46497.088	-46369.384	-4695.442	4727.495	-42.862
Wind 330 deg - No Ice		-31566.713	-54536.154	-5559.048	3232.138	-41.793
Member Ice	74959.641					
Total Weight Ice	218473.477			105.490	171.658	
Wind 0 deg - Ice		-3.663	-31044.883	-3030.008	172.460	-44.923
Wind 30 deg - Ice		15261.629	-26408.802	-2569.689	-1375.158	-22.092
Wind 45 deg - Ice		21520.456	-21496.959	-2073.123	-2010.864	-8.487
Wind 60 deg - Ice		26279.238	-15153.596	-1430.894	-2495.028	5.593
Wind 90 deg - Ice		30529.602	3.663	106.293	-2923.364	31.790
Wind 120 deg - Ice		26916.266	15525.613	1673.934	-2548.952	50.540
Wind 135 deg - Ice		21900.563	21877.066	2316.683	-2043.445	54.452
Wind 150 deg - Ice		15267.973	26412.464	2781.471	-1376.548	53.882
Wind 180 deg - Ice		3.663	30313.535	3179.649	170.855	43.510
Wind 210 deg - Ice		-15261.629	26408.802	2780.669	1718.474	22.092
Wind 225 deg - Ice		-21520.456	21496.959	2284.103	2354.180	8.487
Wind 240 deg - Ice		-26912.604	15519.270	1672.544	2891.466	-5.616
Wind 270 deg - Ice		-30529.602	-3.663	104.687	3266.680	-31.790
Wind 300 deg - Ice		-26282.901	-15159.940	-1432.284	2839.147	-49.103
Wind 315 deg - Ice		-21900.563	-21877.066	-2105.703	2386.761	-54.452
Wind 330 deg - Ice		-15267.973	-26412.464	-2570.491	1719.864	-53.882
Total Weight	53153.961			5.454	5.454	
Wind 0 deg - Service		4.943	-18809.947	-1900.337	3.304	-10.561
Wind 30 deg - Service		8971.603	-15489.920	-1576.809	-913.216	-5.331
Wind 45 deg - Service		12576.006	-12539.746	-1277.585	-1283.458	-2.360
Wind 60 deg - Service		15266.849	-8791.533	-895.885	-1561.141	0.714
Wind 90 deg - Service		17934.645	-4.943	3.174	-1829.400	6.536
Wind 120 deg - Service		16331.830	9400.693	955.220	-1652.246	11.202
Wind 135 deg - Service		13202.368	13166.107	1338.404	-1337.011	12.170
Wind 150 deg - Service		8963.042	15484.977	1583.616	-912.420	11.867
Wind 180 deg - Service		-4.943	17574.505	1801.874	4.224	9.718
Wind 210 deg - Service		-8971.603	15489.920	1584.076	920.744	5.331
Wind 225 deg - Service		-12576.006	12539.746	1284.852	1290.986	2.360
Wind 240 deg - Service		-16336.773	9409.254	956.017	1660.234	-0.641
Wind 270 deg - Service		-17934.645	4.943	4.094	1836.927	-6.536
Wind 300 deg - Service		-15261.906	-8782.972	-895.088	1568.209	-10.432
Wind 315 deg - Service		-13202.368	-13166.107	-1331.137	1344.539	-12.170
Wind 330 deg - Service		-8963.042	-15484.977	-1576.349	919.947	-11.867

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
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
35	1.2 Dead+1.0 Wind 0 deg+1.0 Ice
36	1.2 Dead+1.0 Wind 30 deg+1.0 Ice
37	1.2 Dead+1.0 Wind 45 deg+1.0 Ice
38	1.2 Dead+1.0 Wind 60 deg+1.0 Ice
39	1.2 Dead+1.0 Wind 90 deg+1.0 Ice
40	1.2 Dead+1.0 Wind 120 deg+1.0 Ice
41	1.2 Dead+1.0 Wind 135 deg+1.0 Ice
42	1.2 Dead+1.0 Wind 150 deg+1.0 Ice
43	1.2 Dead+1.0 Wind 180 deg+1.0 Ice
44	1.2 Dead+1.0 Wind 210 deg+1.0 Ice
45	1.2 Dead+1.0 Wind 225 deg+1.0 Ice
46	1.2 Dead+1.0 Wind 240 deg+1.0 Ice
47	1.2 Dead+1.0 Wind 270 deg+1.0 Ice
48	1.2 Dead+1.0 Wind 300 deg+1.0 Ice
49	1.2 Dead+1.0 Wind 315 deg+1.0 Ice
50	1.2 Dead+1.0 Wind 330 deg+1.0 Ice
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

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

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	180 - 175	Leg	Max Tension	29	225.029	-0.596	0.239
			Max. Compression	46	-1802.307	0.004	-0.026
			Max. Mx	8	-160.199	-0.614	0.179
			Max. My	32	-651.761	-0.020	0.954
			Max. Vy	28	-925.703	0.000	0.000
			Max. Vx	10	1183.799	0.000	0.000
		Diagonal	Max Tension	15	1565.940	0.000	0.000
			Max. Compression	14	-1685.868	0.000	0.000
			Max. Mx	34	-201.946	0.134	0.000
			Max. My	34	-204.230	0.000	-0.004
			Max. Vy	34	-71.978	0.000	0.000
			Max. Vx	34	2.253	0.000	0.000
		Top Girt	Max Tension	29	1377.331	0.000	0.000
			Max. Compression	12	-1404.699	0.023	0.005
			Max. Mx	38	-305.279	0.082	0.020
			Max. My	48	-365.393	0.082	0.020
			Max. Vy	38	77.467	0.082	0.020
			Max. Vx	43	5.123	0.000	0.000
T2	175 - 166.667	Leg	Max Tension	29	1509.180	-0.596	0.239
			Max. Compression	46	-4939.742	0.149	0.041
			Max. Mx	28	1314.468	-0.881	0.282
			Max. My	16	-1427.566	-0.023	1.198
			Max. Vy	18	-662.527	-0.599	-0.418
			Max. Vx	24	-948.010	-0.312	-0.687
		Diagonal	Max Tension	21	5056.573	0.000	0.000
			Max. Compression	20	-5162.896	0.000	0.000
			Max. Mx	34	-129.017	0.193	0.000
			Max. My	34	-101.070	0.000	-0.008
			Max. Vy	34	76.055	0.000	0.000
			Max. Vx	34	3.063	0.000	0.000
		Horizontal	Max Tension	6	3054.118	0.014	0.006
			Max. Compression	23	-3011.781	0.000	0.000
			Max. Mx	48	31.200	0.075	0.024
			Max. My	48	31.200	0.075	0.024
			Max. Vy	48	66.449	0.075	0.024
			Max. Vx	46	-5.502	0.000	0.000
T3	166.667 - 158.333	Leg	Max Tension	29	7079.411	-0.876	0.282
			Max. Compression	24	-9673.936	0.782	0.335
			Max. Mx	28	6865.764	-0.881	0.282
			Max. My	32	-1816.676	-0.024	1.187
			Max. Vy	28	-870.706	-0.881	0.282
			Max. Vx	4	-1025.793	-0.023	-0.800
		Diagonal	Max Tension	5	7510.616	0.000	0.000
			Max. Compression	4	-7622.696	0.000	0.000
			Max. Mx	34	-159.913	0.207	0.000

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	34	-100.626	0.000	-0.008
			Max. Vy	34	-80.011	0.000	0.000
			Max. Vx	34	3.107	0.000	0.000
		Top Girt	Max Tension	6	4528.509	0.016	0.006
			Max. Compression	3	-4602.303	0.015	0.005
			Max. Mx	48	-189.230	0.086	0.026
			Max. My	46	455.139	0.082	0.026
			Max. Vy	48	-70.351	0.086	0.026
			Max. Vx	46	5.678	0.000	0.000
T4	158.333 - 150	Leg	Max Tension	29	15566.435	-0.730	0.189
			Max. Compression	12	-19759.582	0.319	-0.228
			Max. Mx	25	-18633.432	0.782	0.335
			Max. My	22	2552.300	-0.223	0.958
			Max. Vy	25	644.687	0.782	0.335
			Max. Vx	24	738.004	-0.406	0.927
		Diagonal	Max Tension	11	9004.642	0.000	0.000
			Max. Compression	10	-9123.365	0.000	0.000
			Max. Mx	34	-141.559	0.222	0.000
			Max. My	34	-103.023	0.000	-0.008
			Max. Vy	34	-83.905	0.000	0.000
			Max. Vx	34	3.151	0.000	0.000
		Top Girt	Max Tension	10	5604.384	0.000	0.000
			Max. Compression	27	-5559.336	0.014	0.005
			Max. Mx	43	-75.461	0.097	0.028
			Max. My	48	-383.756	0.096	0.028
			Max. Vy	43	74.178	0.097	0.028
			Max. Vx	46	-5.854	0.000	0.000
T5	150 - 125	Leg	Max Tension	29	55210.870	0.121	0.107
			Max. Compression	24	-66554.683	-0.864	0.016
			Max. Mx	24	-31252.229	-1.264	-0.038
			Max. My	16	-3346.561	-0.131	-1.476
			Max. Vy	24	1791.528	0.792	-0.020
			Max. Vx	16	1665.297	-0.131	-1.476
		Diagonal	Max Tension	11	17107.088	0.000	0.000
			Max. Compression	10	-17353.460	0.000	0.000
			Max. Mx	12	-670.711	-0.072	0.005
			Max. My	46	-629.245	-0.065	-0.015
			Max. Vy	46	67.139	-0.065	-0.015
			Max. Vx	48	-4.670	0.000	0.000
		Horizontal	Max Tension	10	11491.417	0.000	0.000
			Max. Compression	11	-11456.678	0.000	0.000
			Max. Mx	43	-645.072	0.162	0.002
			Max. My	24	1395.705	0.010	-0.021
			Max. Vy	43	99.223	0.162	0.002
			Max. Vx	24	-3.461	0.012	-0.021
		Redund Horz 1 Bracing	Max Tension	20	1342.348	0.000	0.000
			Max. Compression	4	-1342.348	0.000	0.000
			Max. Mx	34	306.072	-0.026	0.000
			Max. My	34	423.711	0.000	0.001
			Max. Vy	34	28.850	0.000	0.000
			Max. Vx	34	0.666	0.000	0.000
		Redund Diag 1 Bracing	Max Tension	4	1029.727	0.000	0.000
			Max. Compression	20	-1029.727	0.000	0.000
			Max. Mx	34	230.163	-0.037	0.000
			Max. My	34	318.625	0.000	-0.001
			Max. Vy	34	27.508	0.000	0.000
			Max. Vx	34	1.002	0.000	0.000
		Inner Bracing	Max Tension	25	4.782	0.000	0.000
			Max. Compression	38	-11.498	0.000	0.000

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	34	-9.622	-0.112	0.000
			Max. Vy	34	62.624	0.000	0.000
T6	125 - 100	Leg	Max Tension	29	118909.871	0.955	0.116
			Max. Compression	24	-137564.292	-1.467	0.028
			Max. Mx	24	-137461.277	2.058	-0.031
			Max. My	16	-7719.510	-0.197	-1.660
			Max. Vy	24	906.698	2.058	-0.031
			Max. Vx	16	-1170.730	-0.172	-1.202
		Diagonal	Max Tension	11	20924.489	-0.038	-0.004
			Max. Compression	10	-21363.391	0.000	0.000
			Max. Mx	12	-1561.523	-0.118	0.005
			Max. My	46	-704.793	-0.088	-0.018
			Max. Vy	47	82.743	-0.091	-0.018
			Max. Vx	46	-5.256	0.000	0.000
		Horizontal	Max Tension	10	15004.913	0.000	0.000
			Max. Compression	11	-14914.707	0.000	0.000
			Max. Mx	43	-692.829	0.230	0.005
			Max. My	24	1197.827	0.021	-0.034
			Max. Vy	43	-125.045	0.230	0.005
			Max. Vx	24	-4.993	0.021	-0.033
		Redund Horz 1 Bracing	Max Tension	24	2385.758	0.000	0.000
			Max. Compression	24	-2385.758	0.000	0.000
			Max. Mx	34	491.784	-0.033	0.000
			Max. My	34	631.304	0.000	0.001
			Max. Vy	34	32.114	0.000	0.000
			Max. Vx	34	0.742	0.000	0.000
		Redund Diag 1 Bracing	Max Tension	24	1748.418	0.000	0.000
			Max. Compression	24	-1748.418	0.000	0.000
			Max. Mx	34	334.280	-0.044	0.000
			Max. My	34	442.118	0.000	-0.001
			Max. Vy	34	30.803	0.000	0.000
			Max. Vx	34	1.039	0.000	0.000
		Inner Bracing	Max Tension	25	7.378	0.000	0.000
			Max. Compression	38	-13.950	0.000	0.000
			Max. Mx	34	-11.155	-0.142	0.000
			Max. Vy	34	69.758	0.000	0.000
T7	100 - 91.6667	Leg	Max Tension	29	142101.280	1.087	0.136
			Max. Compression	24	-163398.626	-1.513	0.024
			Max. Mx	24	-163273.103	2.114	-0.026
			Max. My	16	-8521.686	-0.193	-1.678
			Max. Vy	24	929.410	2.114	-0.026
			Max. Vx	16	725.330	-0.193	-1.678
		Diagonal	Max Tension	11	21654.759	-0.050	-0.004
			Max. Compression	10	-22164.174	0.000	0.000
			Max. Mx	26	9168.171	-0.113	-0.006
			Max. My	43	-1425.063	-0.056	0.019
			Max. Vy	47	-85.512	-0.099	-0.019
			Max. Vx	46	5.294	0.000	0.000
		Horizontal	Max Tension	10	15842.127	0.000	0.000
			Max. Compression	11	-15744.492	0.000	0.000
			Max. Mx	43	-715.711	-0.336	-0.010
			Max. My	24	684.306	-0.047	0.063
			Max. Vy	43	-177.095	-0.336	-0.010
			Max. Vx	24	8.620	-0.047	0.063
		Redund Horz 1	Max Tension	24	2833.638	0.000	0.000

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
		Bracing					
			Max. Compression	24	-2833.638	0.000	0.000
			Max. Mx	34	537.321	-0.035	0.000
			Max. My	34	699.469	0.000	0.001
			Max. Vy	34	32.809	0.000	0.000
			Max. Vx	34	-0.758	0.000	0.000
		Redund Diag 1 Bracing	Max Tension	24	1945.117	0.000	0.000
			Max. Compression	24	-1945.117	0.000	0.000
			Max. Mx	34	368.838	-0.046	0.000
			Max. My	34	480.142	0.000	-0.002
			Max. Vy	34	31.522	0.000	0.000
			Max. Vx	34	1.040	0.000	0.000
		Inner Bracing	Max Tension	25	13.555	0.000	0.000
			Max. Compression	8	-19.706	0.000	0.000
			Max. Mx	34	-12.607	-0.152	0.000
			Max. Vy	34	71.308	0.000	0.000
T8	91.6667 - 83.3333	Leg	Max Tension	29	165726.929	1.139	0.133
			Max. Compression	24	-189979.769	-1.412	0.023
			Max. Mx	24	-189890.286	2.002	-0.026
			Max. My	16	-9458.302	-0.196	-1.962
			Max. Vy	24	-920.018	2.002	-0.026
			Max. Vx	16	840.371	-0.196	-1.962
		Diagonal	Max Tension	11	22345.203	0.000	0.000
			Max. Compression	10	-22858.725	0.000	0.000
			Max. Mx	47	1928.189	-0.104	-0.019
			Max. My	46	-381.336	-0.102	0.019
			Max. Vy	47	88.124	-0.104	-0.019
			Max. Vx	48	-5.365	0.000	0.000
		Horizontal	Max Tension	10	16688.931	0.000	0.000
			Max. Compression	11	-16541.269	0.000	0.000
			Max. Mx	43	-699.734	-0.349	-0.010
			Max. My	24	718.315	-0.065	0.065
			Max. Vy	43	181.344	-0.349	-0.010
			Max. Vx	24	-8.537	-0.065	0.065
		Redund Horz 1 Bracing	Max Tension	24	3294.354	0.000	0.000
			Max. Compression	24	-3294.354	0.000	0.000
			Max. Mx	34	612.075	-0.037	0.000
			Max. My	34	771.550	0.000	0.001
			Max. Vy	34	33.740	0.000	0.000
			Max. Vx	34	0.779	0.000	0.000
		Redund Diag 1 Bracing	Max Tension	24	2219.979	0.000	0.000
			Max. Compression	24	-2219.979	0.000	0.000
			Max. Mx	34	404.625	-0.048	0.000
			Max. My	34	519.928	0.000	-0.002
			Max. Vy	34	32.467	0.000	0.000
			Max. Vx	34	-1.050	0.000	0.000
		Inner Bracing	Max Tension	25	13.180	0.000	0.000
			Max. Compression	8	-19.469	0.000	0.000
			Max. Mx	34	-12.841	-0.162	0.000
			Max. Vy	34	73.355	0.000	0.000
T9	83.3333 - 75	Leg	Max Tension	29	189436.423	1.041	0.145
			Max. Compression	24	-216864.931	-2.703	0.030
			Max. Mx	24	-216864.931	-2.703	0.030

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	16	-10488.554	-0.340	-3.410
			Max. Vy	24	1323.628	2.415	-0.024
			Max. Vx	16	1356.373	-0.340	-3.410
		Diagonal	Max Tension	11	23252.771	0.000	0.000
			Max. Compression	10	-23804.550	0.000	0.000
			Max. Mx	47	2048.283	-0.111	-0.020
			Max. My	43	-1595.357	-0.076	0.020
			Max. Vy	47	-90.784	-0.111	-0.020
			Max. Vx	46	5.432	0.000	0.000
		Horizontal	Max Tension	10	17657.542	0.000	0.000
			Max. Compression	11	-17482.480	0.000	0.000
			Max. Mx	43	-664.551	-0.371	-0.010
			Max. My	24	1035.205	-0.069	0.066
			Max. Vy	43	186.587	-0.371	-0.010
			Max. Vx	24	-8.449	-0.069	0.066
		Redund Horz 1 Bracing	Max Tension	24	3760.590	0.000	0.000
			Max. Compression	24	-3760.590	0.000	0.000
			Max. Mx	34	673.390	-0.040	0.000
			Max. My	34	849.386	0.000	0.001
			Max. Vy	34	34.613	0.000	0.000
			Max. Vx	34	-0.799	0.000	0.000
		Redund Diag 1 Bracing	Max Tension	24	2491.289	0.000	0.000
			Max. Compression	24	-2491.289	0.000	0.000
			Max. Mx	34	439.050	-0.051	0.000
			Max. My	34	446.102	0.000	0.002
			Max. Vy	34	-33.354	0.000	0.000
			Max. Vx	34	-1.059	0.000	0.000
		Inner Bracing	Max Tension	25	12.778	0.000	0.000
			Max. Compression	8	-19.179	0.000	0.000
			Max. Mx	34	-13.096	-0.173	0.000
			Max. Vy	34	-75.280	0.000	0.000
T10	75 - 50	Leg	Max Tension	29	248932.730	5.038	0.206
			Max. Compression	24	-284556.901	-6.999	0.018
			Max. Mx	24	-284552.799	8.592	-0.021
			Max. My	16	-11551.045	-0.528	-3.801
			Max. Vy	24	2596.833	8.592	-0.021
			Max. Vx	16	-1053.487	-0.528	-3.801
		Diagonal	Max Tension	11	31788.834	-0.268	-0.012
			Max. Compression	10	-32561.587	0.000	0.000
			Max. Mx	6	20310.502	-0.384	-0.015
			Max. My	46	-421.697	-0.192	0.040
			Max. Vy	48	-129.742	-0.223	-0.040
			Max. Vx	48	-8.636	0.000	0.000
		Horizontal	Max Tension	10	19910.043	0.000	0.000
			Max. Compression	11	-19823.512	0.000	0.000
			Max. Mx	43	-1216.769	0.417	0.011
			Max. My	24	1437.097	-0.021	-0.069
			Max. Vy	43	174.770	0.417	0.011
			Max. Vx	24	-8.069	-0.024	-0.068
		Redund Horz 1 Bracing	Max Tension	24	4936.210	0.000	0.000
			Max. Compression	24	-4936.210	0.000	0.000
			Max. Mx	34	820.670	-0.054	0.000
			Max. My	34	1025.674	0.000	0.001
			Max. Vy	34	42.980	0.000	0.000
			Max. Vx	34	0.993	0.000	0.000
		Redund Diag 1	Max Tension	24	4002.390	0.000	0.000

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
		Bracing					
			Max. Compression	24	-4002.390	0.000	0.000
			Max. Mx	34	637.531	-0.080	0.000
			Max. My	34	805.306	0.000	-0.003
			Max. Vy	34	40.831	0.000	0.000
			Max. Vx	34	1.559	0.000	0.000
		Inner Bracing	Max Tension	25	11.854	0.000	0.000
			Max. Compression	38	-21.392	0.000	0.000
			Max. Mx	34	-16.722	-0.215	0.000
			Max. Vy	34	-85.983	0.000	0.000
T11	50 - 37.5	Leg	Max Tension	29	286659.823	5.751	0.205
			Max. Compression	24	-327593.307	-6.375	0.024
			Max. Mx	24	-327326.589	8.551	-0.021
			Max. My	16	-14390.031	-0.562	-4.844
			Max. Vy	24	-2582.830	8.551	-0.021
			Max. Vx	16	1256.828	-0.562	-4.844
		Diagonal	Max Tension	11	32310.859	-0.196	-0.011
			Max. Compression	10	-33078.441	0.000	0.000
			Max. Mx	26	16199.830	-0.312	-0.015
			Max. My	48	-3672.576	-0.104	-0.040
			Max. Vy	47	127.569	-0.219	-0.040
			Max. Vx	40	-8.349	0.000	0.000
		Horizontal	Max Tension	10	20904.124	0.000	0.000
			Max. Compression	11	-20785.648	0.000	0.000
			Max. Mx	43	-1188.593	0.425	0.010
			Max. My	24	1085.912	0.008	-0.069
			Max. Vy	43	175.839	0.425	0.010
			Max. Vx	24	7.577	0.008	-0.069
		Redund Horz 1 Bracing	Max Tension	24	5682.226	0.000	0.000
			Max. Compression	24	-5682.226	0.000	0.000
			Max. Mx	34	910.860	-0.057	0.000
			Max. My	34	1128.514	0.000	0.001
			Max. Vy	34	-43.454	0.000	0.000
			Max. Vx	34	1.004	0.000	0.000
		Redund Diag 1 Bracing	Max Tension	24	4332.133	0.000	0.000
			Max. Compression	24	-4332.133	0.000	0.000
			Max. Mx	34	688.138	-0.083	0.000
			Max. My	34	860.379	0.000	-0.003
			Max. Vy	34	41.384	0.000	0.000
			Max. Vx	34	-1.530	0.000	0.000
		Inner Bracing	Max Tension	25	10.407	0.000	0.000
			Max. Compression	38	-20.926	0.000	0.000
			Max. Mx	34	-16.461	-0.228	0.000
			Max. Vy	34	86.930	0.000	0.000
T12	37.5 - 25	Leg	Max Tension	29	324057.596	5.141	0.281
			Max. Compression	24	-370597.426	-7.778	0.016
			Max. Mx	24	-370477.323	9.389	-0.017
			Max. My	16	-15433.773	-0.562	-4.844
			Max. Vy	24	2877.605	9.389	-0.017
			Max. Vx	16	1408.061	-0.607	-4.478
		Diagonal	Max Tension	11	33276.654	-0.291	-0.013
			Max. Compression	10	-34231.047	0.000	0.000
			Max. Mx	28	26517.266	-0.391	-0.017
			Max. My	48	-3943.465	-0.106	-0.042
			Max. Vy	48	136.643	-0.251	-0.042

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	40	-8.569	0.000	0.000
		Top Girt	Max Tension	10	22057.556	0.000	0.000
			Max. Compression	11	-21950.561	0.000	0.000
			Max. Mx	43	-1262.319	-0.720	-0.017
			Max. My	24	1320.403	-0.029	0.120
			Max. Vy	43	-276.136	-0.720	-0.017
			Max. Vx	24	12.887	-0.029	0.120
		Redund Horz 1 Bracing	Max Tension	24	6427.847	0.000	0.000
			Max. Compression	24	-6427.847	0.000	0.000
			Max. Mx	34	1001.797	-0.060	0.000
			Max. My	34	1235.396	0.000	0.001
			Max. Vy	34	43.952	0.000	0.000
			Max. Vx	34	1.015	0.000	0.000
		Redund Diag 1 Bracing	Max Tension	24	4770.450	0.000	0.000
			Max. Compression	24	-4770.450	0.000	0.000
			Max. Mx	34	737.601	-0.086	0.000
			Max. My	34	916.854	0.000	-0.003
			Max. Vy	34	41.954	0.000	0.000
			Max. Vx	34	1.507	0.000	0.000
		Inner Bracing	Max Tension	27	375.140	0.000	0.000
			Max. Compression	26	-388.615	0.000	0.000
			Max. Mx	34	-7.101	-0.242	0.000
			Max. Vy	34	87.927	0.000	0.000
T13	25 - 12.5	Leg	Max Tension	29	361703.074	6.365	0.263
			Max. Compression	24	-414308.836	-7.873	0.020
			Max. Mx	24	-413999.578	10.332	-0.016
			Max. My	16	-17911.280	-0.617	-5.220
			Max. Vy	24	-3005.135	10.332	-0.016
			Max. Vx	16	1373.645	-0.617	-5.220
		Diagonal	Max Tension	11	34136.560	-0.292	-0.014
			Max. Compression	10	-35101.947	0.000	0.000
			Max. Mx	6	24205.451	-0.411	-0.018
			Max. My	46	-546.173	-0.227	0.043
			Max. Vy	48	-138.095	-0.260	-0.043
			Max. Vx	49	-8.626	0.000	0.000
		Horizontal	Max Tension	10	23153.439	0.000	0.000
			Max. Compression	11	-22949.112	0.000	0.000
			Max. Mx	43	-1232.287	0.561	0.007
			Max. My	24	1291.932	0.039	-0.069
			Max. Vy	43	208.395	0.561	0.007
			Max. Vx	24	7.514	0.039	-0.069
		Redund Horz 1 Bracing	Max Tension	24	7186.116	0.000	0.000
			Max. Compression	24	-7186.116	0.000	0.000
			Max. Mx	34	1095.253	-0.063	0.000
			Max. My	34	1344.845	0.000	0.001
			Max. Vy	34	-43.611	0.000	0.000
			Max. Vx	34	-1.007	0.000	0.000
		Redund Diag 1 Bracing	Max Tension	24	5203.163	0.000	0.000
			Max. Compression	24	-5203.163	0.000	0.000
			Max. Mx	34	787.367	-0.108	0.000
			Max. My	34	973.745	0.000	-0.004
			Max. Vy	34	-51.963	0.000	0.000
			Max. Vx	34	1.817	0.000	0.000
		Inner Bracing	Max Tension	25	7.188	0.000	0.000
			Max. Compression	38	-22.110	0.000	0.000

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	34	-18.192	-0.312	0.000
			Max. Vy	34	108.678	0.000	0.000
T14	12.5 - 0	Leg	Max Tension	29	400474.514	6.436	0.279
			Max. Compression	24	-459433.200	0.000	-0.000
			Max. Mx	24	-459347.278	9.198	-0.013
			Max. My	16	-19282.707	-0.617	-5.220
			Max. Vy	24	-2808.644	9.198	-0.013
			Max. Vx	16	-1233.800	-0.617	-5.220
		Diagonal	Max Tension	11	34205.927	-0.349	-0.014
			Max. Compression	10	-35251.527	0.000	0.000
			Max. Mx	28	26695.621	-0.465	-0.019
			Max. My	38	-679.557	-0.082	-0.042
			Max. Vy	48	135.779	-0.269	-0.042
			Max. Vx	35	8.198	0.000	0.000
		Top Girt	Max Tension	10	23883.928	0.000	0.000
			Max. Compression	11	-23727.075	0.000	0.000
			Max. Mx	43	-1508.306	-0.864	-0.013
			Max. My	12	3141.314	-0.087	0.122
			Max. Vy	43	-301.113	-0.864	-0.013
			Max. Vx	12	12.895	-0.087	0.122
		Redund Horz 1 Bracing	Max Tension	24	7967.125	0.000	0.000
			Max. Compression	24	-7967.125	0.000	0.000
			Max. Mx	34	1193.914	-0.061	0.000
			Max. My	34	1442.032	0.000	0.001
			Max. Vy	34	40.849	0.000	0.000
			Max. Vx	34	-0.943	0.000	0.000
		Redund Diag 1 Bracing	Max Tension	24	5639.311	0.000	0.000
			Max. Compression	24	-5639.311	0.000	0.000
			Max. Mx	34	839.054	-0.105	0.000
			Max. My	34	1020.703	0.000	-0.004
			Max. Vy	34	49.403	0.000	0.000
			Max. Vx	34	1.685	0.000	0.000
		Inner Bracing	Max Tension	27	404.952	0.000	0.000
			Max. Compression	26	-421.459	0.000	0.000
			Max. Mx	34	-7.697	-0.309	0.000
			Max. Vy	34	-103.130	0.000	0.000

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Leg C	Max. Vert	24	504384.110	52209.987	-30037.139
	Max. H_x	24	504384.110	52209.987	-30037.139
	Max. H_z	5	-384093.640	-37585.435	29135.354
	Min. Vert	9	-439909.907	-46547.964	26759.935
	Min. H_x	9	-439909.907	-46547.964	26759.935
	Min. H_z	20	422024.032	40001.216	-30527.352
Leg B	Max. Vert	12	503653.178	-52871.818	-28824.324
	Max. H_x	29	-440095.239	47161.580	25653.471
	Max. H_z	31	-427500.584	44554.939	27293.629
	Min. Vert	29	-440095.239	47161.580	25653.471
	Min. H_x	12	503653.178	-52871.818	-28824.324

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Leg A	Min. H_z	12	503653.178	-52871.818	-28824.324
	Max. Vert	2	501907.763	-1381.244	60082.411
	Max. H_x	27	15599.770	10666.376	1172.821
	Max. H_z	2	501907.763	-1381.244	60082.411
	Min. Vert	19	-438685.154	1265.035	-53555.903
	Min. H_x	10	21079.028	-10672.970	1599.756
	Min. H_z	19	-438685.154	1265.035	-53555.903

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	53153.961	-0.000	0.000	5.454	5.454	0.000
1.2 Dead+1.6 Wind 0 deg - No Ice	63784.753	27.854	-105994.055	-10406.295	3.953	-59.510
0.9 Dead+1.6 Wind 0 deg - No Ice	47838.564	27.854	-105994.055	-10407.931	2.317	-59.510
1.2 Dead+1.6 Wind 30 deg - No Ice	63784.753	50554.989	-87285.705	-8639.263	-5010.534	-30.040
0.9 Dead+1.6 Wind 30 deg - No Ice	47838.564	50554.989	-87285.705	-8640.899	-5012.170	-30.040
1.2 Dead+1.6 Wind 45 deg - No Ice	63784.753	70865.798	-70661.470	-7002.706	-7036.539	-13.301
0.9 Dead+1.6 Wind 45 deg - No Ice	47838.564	70865.798	-70661.470	-7004.342	-7038.175	-13.301
1.2 Dead+1.6 Wind 60 deg - No Ice	63784.753	86028.700	-49540.292	-4914.775	-8556.275	4.023
0.9 Dead+1.6 Wind 60 deg - No Ice	47838.564	86028.700	-49540.292	-4916.411	-8557.911	4.023
1.2 Dead+1.6 Wind 90 deg - No Ice	63784.753	101061.734	-27.854	3.952	-10023.124	36.829
0.9 Dead+1.6 Wind 90 deg - No Ice	47838.565	101061.734	-27.854	2.316	-10024.760	36.829
1.2 Dead+1.6 Wind 120 deg - No Ice	63784.753	92029.868	52972.905	5210.719	-9051.380	63.121
0.9 Dead+1.6 Wind 120 deg - No Ice	47838.565	92029.868	52972.905	5209.083	-9053.016	63.121
1.2 Dead+1.6 Wind 135 deg - No Ice	63784.753	70826.407	70622.078	7012.129	-7032.873	68.580
0.9 Dead+1.6 Wind 135 deg - No Ice	47838.565	70826.407	70622.078	7010.493	-7034.510	68.580
1.2 Dead+1.6 Wind 150 deg - No Ice	63784.753	50506.745	87257.851	8649.760	-5006.045	66.869
0.9 Dead+1.6 Wind 150 deg - No Ice	47838.565	50506.745	87257.851	8648.123	-5007.681	66.869
1.2 Dead+1.6 Wind 180 deg - No Ice	63784.753	-27.854	99032.341	9844.693	9.137	54.764
0.9 Dead+1.6 Wind 180 deg - No Ice	47838.565	-27.854	99032.341	9843.057	7.500	54.764
1.2 Dead+1.6 Wind 210 deg - No Ice	63784.753	-50554.989	87285.705	8652.351	5023.624	30.040
0.9 Dead+1.6 Wind 210 deg - No Ice	47838.565	-50554.989	87285.705	8650.715	5021.988	30.040
1.2 Dead+1.6 Wind 225 deg - No Ice	63784.753	-70865.798	70661.470	7015.795	7049.628	13.301
0.9 Dead+1.6 Wind 225 deg -	47838.565	-70865.798	70661.470	7014.159	7047.992	13.301

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
No Ice						
1.2 Dead+1.6 Wind 240 deg - No Ice	63784.753	-92057.722	53021.150	5215.209	9067.061	-3.611
0.9 Dead+1.6 Wind 240 deg - No Ice	47838.565	-92057.722	53021.150	5213.573	9065.425	-3.611
1.2 Dead+1.6 Wind 270 deg - No Ice	63784.753	-101061.734	27.854	9.136	10036.214	-36.829
0.9 Dead+1.6 Wind 270 deg - No Ice	47838.565	-101061.734	27.854	7.500	10034.577	-36.829
1.2 Dead+1.6 Wind 300 deg - No Ice	63784.753	-86000.846	-49492.048	-4910.286	8566.773	-58.787
0.9 Dead+1.6 Wind 300 deg - No Ice	47838.564	-86000.846	-49492.048	-4911.922	8565.136	-58.787
1.2 Dead+1.6 Wind 315 deg - No Ice	63784.753	-70826.407	-70622.078	-6999.041	7045.963	-68.580
0.9 Dead+1.6 Wind 315 deg - No Ice	47838.564	-70826.407	-70622.078	-7000.677	7044.327	-68.580
1.2 Dead+1.6 Wind 330 deg - No Ice	63784.753	-50506.745	-87257.851	-8636.671	5019.134	-66.869
0.9 Dead+1.6 Wind 330 deg - No Ice	47838.564	-50506.745	-87257.851	-8638.307	5017.498	-66.869
1.2 Dead+1.0 Ice	229104.269	-0.000	0.000	106.581	172.749	-0.000
1.2 Dead+1.0 Wind 0 deg+1.0 Ice	229104.269	-3.663	-31044.885	-2921.194	173.551	-44.924
1.2 Dead+1.0 Wind 30 deg+1.0 Ice	229104.269	15261.630	-26408.803	-2476.946	-1321.152	-22.092
1.2 Dead+1.0 Wind 45 deg+1.0 Ice	229104.269	21520.458	-21496.960	-1997.421	-1935.162	-8.487
1.2 Dead+1.0 Wind 60 deg+1.0 Ice	229104.269	26279.240	-15153.597	-1377.204	-2402.831	5.593
1.2 Dead+1.0 Wind 90 deg+1.0 Ice	229104.269	30529.604	3.663	107.383	-2816.443	31.790
1.2 Dead+1.0 Wind 120 deg+1.0 Ice	229104.269	26916.268	15525.614	1621.163	-2454.571	50.540
1.2 Dead+1.0 Wind 135 deg+1.0 Ice	229104.269	21525.637	21502.140	2211.717	-1936.297	54.452
1.2 Dead+1.0 Wind 150 deg+1.0 Ice	229104.269	15267.974	26412.466	2690.909	-1322.542	53.882
1.2 Dead+1.0 Wind 180 deg+1.0 Ice	229104.269	3.662	30313.537	3075.539	171.946	43.511
1.2 Dead+1.0 Wind 210 deg+1.0 Ice	229104.269	-15261.630	26408.803	2690.107	1666.649	22.092
1.2 Dead+1.0 Wind 225 deg+1.0 Ice	229104.269	-21520.458	21496.960	2210.582	2280.660	8.487
1.2 Dead+1.0 Wind 240 deg+1.0 Ice	229104.269	-26912.606	15519.270	1619.773	2799.266	-5.616
1.2 Dead+1.0 Wind 270 deg+1.0 Ice	229104.269	-30529.604	-3.663	105.778	3161.940	-31.790
1.2 Dead+1.0 Wind 300 deg+1.0 Ice	229104.269	-26282.903	-15159.940	-1378.594	2749.131	-49.103
1.2 Dead+1.0 Wind 315 deg+1.0 Ice	229104.269	-21525.637	-21502.140	-1998.556	2281.795	-54.452
1.2 Dead+1.0 Wind 330 deg+1.0 Ice	229104.269	-15267.974	-26412.466	-2477.748	1668.039	-53.882
Dead+Wind 0 deg - Service	53153.961	4.943	-18809.948	-1842.433	4.994	-10.561
Dead+Wind 30 deg - Service	53153.961	8971.604	-15489.921	-1528.851	-884.888	-5.331
Dead+Wind 45 deg - Service	53153.961	12576.007	-12539.746	-1238.424	-1244.428	-2.360
Dead+Wind 60 deg - Service	53153.961	15266.850	-8791.534	-867.895	-1514.124	0.714
Dead+Wind 90 deg - Service	53153.961	17934.647	-4.943	4.994	-1774.434	6.536
Dead+Wind 120 deg - Service	53153.961	16331.831	9400.693	928.998	-1601.986	11.202
Dead+Wind 135 deg - Service	53153.961	12569.016	12532.756	1248.681	-1243.777	12.170

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	kip-ft	kip-ft	kip-ft
Dead+Wind 150 deg - Service	53153.961	8963.043	15484.978	1539.298	-884.092	11.867
Dead+Wind 180 deg - Service	53153.961	-4.943	17574.506	1751.354	5.914	9.718
Dead+Wind 210 deg - Service	53153.961	-8971.604	15489.921	1539.758	895.796	5.331
Dead+Wind 225 deg - Service	53153.961	-12576.007	12539.746	1249.331	1255.336	2.360
Dead+Wind 240 deg - Service	53153.961	-16336.774	9409.255	929.795	1613.354	-0.641
Dead+Wind 270 deg - Service	53153.961	-17934.647	4.943	5.914	1785.342	-6.536
Dead+Wind 300 deg - Service	53153.961	-15261.907	-8782.972	-867.098	1524.572	-10.432
Dead+Wind 315 deg - Service	53153.961	-12569.016	-12532.756	-1237.774	1254.685	-12.170
Dead+Wind 330 deg - Service	53153.961	-8963.043	-15484.978	-1528.391	895.000	-11.867

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
1	0.000	-53153.961	0.000	0.000	53153.961	-0.000	0.000%
2	27.854	-63784.753	-105994.050	-27.854	63784.753	105994.055	0.000%
3	27.854	-47838.564	-105994.050	-27.854	47838.564	105994.055	0.000%
4	50554.985	-63784.753	-87285.701	-50554.989	63784.753	87285.705	0.000%
5	50554.985	-47838.564	-87285.701	-50554.989	47838.564	87285.705	0.000%
6	70865.793	-63784.753	-70661.466	-70865.798	63784.753	70661.470	0.000%
7	70865.793	-47838.564	-70661.466	-70865.798	47838.564	70661.470	0.000%
8	86028.694	-63784.753	-49540.290	-86028.700	63784.753	49540.292	0.000%
9	86028.694	-47838.564	-49540.290	-86028.700	47838.564	49540.292	0.000%
10	101061.726	-63784.753	-27.854	-101061.734	63784.753	27.854	0.000%
11	101061.726	-47838.564	-27.854	-101061.734	47838.565	27.854	0.000%
12	92029.861	-63784.753	52972.903	-92029.868	63784.753	-52972.905	0.000%
13	92029.861	-47838.564	52972.903	-92029.868	47838.565	-52972.905	0.000%
14	70826.402	-63784.753	70622.075	-70826.407	63784.753	-70622.078	0.000%
15	70826.402	-47838.564	70622.075	-70826.407	47838.565	-70622.078	0.000%
16	50506.741	-63784.753	87257.847	-50506.745	63784.753	-87257.851	0.000%
17	50506.741	-47838.564	87257.847	-50506.745	47838.565	-87257.851	0.000%
18	-27.854	-63784.753	99032.335	27.854	63784.753	-99032.341	0.000%
19	-27.854	-47838.564	99032.335	27.854	47838.565	-99032.341	0.000%
20	-50554.985	-63784.753	87285.701	50554.989	63784.753	-87285.705	0.000%
21	-50554.985	-47838.564	87285.701	50554.989	47838.565	-87285.705	0.000%
22	-70865.793	-63784.753	70661.466	70865.798	63784.753	-70661.470	0.000%
23	-70865.793	-47838.564	70661.466	70865.798	47838.565	-70661.470	0.000%
24	-92057.715	-63784.753	53021.147	92057.722	63784.753	-53021.150	0.000%
25	-92057.715	-47838.564	53021.147	92057.722	47838.565	-53021.150	0.000%
26	-101061.726	-63784.753	27.854	101061.734	63784.753	-27.854	0.000%
27	-101061.726	-47838.564	27.854	101061.734	47838.565	-27.854	0.000%
28	-86000.840	-63784.753	-49492.046	86000.846	63784.753	49492.048	0.000%
29	-86000.840	-47838.564	-49492.046	86000.846	47838.564	49492.048	0.000%
30	-70826.402	-63784.753	-70622.075	70826.407	63784.753	70622.078	0.000%
31	-70826.402	-47838.564	-70622.075	70826.407	47838.564	70622.078	0.000%
32	-50506.741	-63784.753	-87257.847	50506.745	63784.753	87257.851	0.000%
33	-50506.741	-47838.564	-87257.847	50506.745	47838.564	87257.851	0.000%
34	0.000	-229104.268	0.000	0.000	229104.269	-0.000	0.000%
35	-3.663	-229104.268	-31044.883	3.663	229104.269	31044.885	0.000%
36	15261.629	-229104.268	-26408.802	-15261.630	229104.269	26408.803	0.000%
37	21520.456	-229104.268	-21496.959	-21520.458	229104.269	21496.960	0.000%
38	26279.238	-229104.268	-15153.596	-26279.240	229104.269	15153.597	0.000%
39	30529.602	-229104.268	3.663	-30529.604	229104.269	-3.663	0.000%
40	26916.266	-229104.268	15525.613	-26916.268	229104.269	-15525.614	0.000%
41	21525.636	-229104.268	21502.139	-21525.637	229104.269	-21502.140	0.000%
42	15267.973	-229104.268	26412.464	-15267.974	229104.269	-26412.466	0.000%
43	3.663	-229104.268	30313.535	-3.662	229104.269	-30313.537	0.000%

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
44	-15261.629	-229104.268	26408.802	15261.630	229104.269	-26408.803	0.000%
45	-21520.456	-229104.268	21496.959	21520.458	229104.269	-21496.960	0.000%
46	-26912.604	-229104.268	15519.270	26912.606	229104.269	-15519.270	0.000%
47	-30529.602	-229104.268	-3.663	30529.604	229104.269	3.663	0.000%
48	-26282.901	-229104.268	-15159.940	26282.903	229104.269	15159.940	0.000%
49	-21525.636	-229104.268	-21502.139	21525.637	229104.269	21502.140	0.000%
50	-15267.973	-229104.268	-26412.464	15267.974	229104.269	26412.466	0.000%
51	4.943	-53153.961	-18809.947	-4.943	53153.961	18809.948	0.000%
52	8971.603	-53153.961	-15489.920	-8971.604	53153.961	15489.921	0.000%
53	12576.006	-53153.961	-12539.746	-12576.007	53153.961	12539.746	0.000%
54	15266.849	-53153.961	-8791.533	-15266.850	53153.961	8791.534	0.000%
55	17934.645	-53153.961	-4.943	-17934.647	53153.961	4.943	0.000%
56	16331.830	-53153.961	9400.693	-16331.831	53153.961	-9400.693	0.000%
57	12569.015	-53153.961	12532.755	-12569.016	53153.961	-12532.756	0.000%
58	8963.042	-53153.961	15484.977	-8963.043	53153.961	-15484.978	0.000%
59	-4.943	-53153.961	17574.505	4.943	53153.961	-17574.506	0.000%
60	-8971.603	-53153.961	15489.920	8971.604	53153.961	-15489.921	0.000%
61	-12576.006	-53153.961	12539.746	12576.007	53153.961	-12539.746	0.000%
62	-16336.773	-53153.961	9409.254	16336.774	53153.961	-9409.255	0.000%
63	-17934.645	-53153.961	4.943	17934.647	53153.961	-4.943	0.000%
64	-15261.906	-53153.961	-8782.972	15261.907	53153.961	8782.972	0.000%
65	-12569.015	-53153.961	-12532.755	12569.016	53153.961	12532.756	0.000%
66	-8963.042	-53153.961	-15484.977	8963.043	53153.961	15484.978	0.000%

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 175	3.009	62	0.1204	0.0183
T2	175 - 166.667	2.882	62	0.1204	0.0188
T3	166.667 - 158.333	2.668	62	0.1202	0.0184
T4	158.333 - 150	2.453	62	0.1194	0.0174
T5	150 - 125	2.238	62	0.1177	0.0160
T6	125 - 100	1.624	62	0.1074	0.0126
T7	100 - 91.6667	1.076	62	0.0904	0.0093
T8	91.6667 - 83.3333	0.916	62	0.0841	0.0083
T9	83.3333 - 75	0.765	62	0.0787	0.0074
T10	75 - 50	0.623	62	0.0726	0.0065
T11	50 - 37.5	0.290	62	0.0493	0.0041
T12	37.5 - 25	0.166	62	0.0383	0.0029
T13	25 - 12.5	0.077	62	0.0264	0.0020
T14	12.5 - 0	0.020	56	0.0136	0.0009

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
182.500	3" Dia 20' Omni	62	3.009	0.1204	0.0183	177523
182.000	1" Dia 8' Omni	62	3.009	0.1204	0.0183	177523
181.000	2" Dia 10' Omni	62	3.009	0.1204	0.0183	177523

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
180.000	3" Dia 12' Omni	62	3.009	0.1204	0.0183	177523
178.000	432E-83I-01T TTA Unit	62	2.959	0.1204	0.0185	177523
176.000	6' w/Radome	62	2.908	0.1204	0.0187	177523
174.000	6' w/Radome	62	2.857	0.1204	0.0188	171070
171.000	3'4"x4" Pipe Mount	62	2.780	0.1204	0.0187	209653
170.000	Andrew 6' w/Radome	62	2.754	0.1203	0.0186	241735
169.000	3'4"x4" Pipe Mount	62	2.729	0.1203	0.0186	284421
166.000	6' Side-Arm(1)	62	2.651	0.1202	0.0183	507696
164.000	(inverted) 2" Dia 10' Omni	62	2.599	0.1201	0.0181	732024
160.000	(Inverted) 3" Dia 20' Omni	62	2.496	0.1197	0.0176	Inf
157.000	4' Paraflector	62	2.418	0.1192	0.0172	648796
153.000	3" Dia 20' Omni	62	2.315	0.1184	0.0165	254669
151.000	1 Bay Dipole ANT400D	62	2.263	0.1179	0.0162	196130
143.000	13' Sector Mount (1)	62	2.061	0.1155	0.0149	151652
137.000	Pirod 12' PCS T-Frame (1) 104569	62	1.912	0.1132	0.0141	141982
125.000	2' Sidearm	62	1.624	0.1074	0.0126	122845
122.000	1' Side Arm	62	1.554	0.1057	0.0123	112422
119.000	12' Dipole	62	1.485	0.1038	0.0118	101798
109.250	4' Paraflector	62	1.268	0.0973	0.0105	77630
76.000	3' Yagi	62	0.639	0.0734	0.0066	49846
75.000	GPS	62	0.623	0.0726	0.0065	48081
27.000	2" Dia 8' Omni	62	0.090	0.0284	0.0021	70500
26.000	Rohn 6' Side-Arm(1)	62	0.083	0.0274	0.0020	72302
20.000	2' Standoff T-Arm (5' face width)	62	0.050	0.0214	0.0015	55038
15.000	2' Yagi	56	0.028	0.0163	0.0011	41819

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 175	16.861	24	0.6713	0.1034
T2	175 - 166.667	16.155	24	0.6713	0.1057
T3	166.667 - 158.333	14.960	24	0.6708	0.1035
T4	158.333 - 150	13.755	24	0.6669	0.0980
T5	150 - 125	12.554	24	0.6577	0.0901
T6	125 - 100	9.115	24	0.6013	0.0713
T7	100 - 91.6667	6.046	24	0.5070	0.0521
T8	91.6667 - 83.3333	5.146	24	0.4719	0.0469
T9	83.3333 - 75	4.296	24	0.4413	0.0418
T10	75 - 50	3.500	24	0.4075	0.0367
T11	50 - 37.5	1.632	24	0.2766	0.0231
T12	37.5 - 25	0.933	24	0.2153	0.0163
T13	25 - 12.5	0.436	24	0.1483	0.0111
T14	12.5 - 0	0.112	25	0.0766	0.0051

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
182.500	3" Dia 20' Omni	24	16.861	0.6713	0.1034	34804

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
182.000	1" Dia 8' Omni	24	16.861	0.6713	0.1034	34804
181.000	2" Dia 10' Omni	24	16.861	0.6713	0.1034	34804
180.000	3" Dia 12' Omni	24	16.861	0.6713	0.1034	34804
178.000	432E-83I-01T TTA Unit	24	16.579	0.6713	0.1045	34804
176.000	6' w/Radome	24	16.297	0.6713	0.1054	34804
174.000	6' w/Radome	24	16.013	0.6713	0.1058	33569
171.000	3'4"x4" Pipe Mount	24	15.584	0.6713	0.1054	41371
170.000	Andrew 6' w/Radome	24	15.440	0.6712	0.1050	47867
169.000	3'4"x4" Pipe Mount	24	15.296	0.6712	0.1046	56575
166.000	6' Side-Arm(1)	24	14.864	0.6707	0.1031	102418
164.000	(inverted) 2" Dia 10' Omni	24	14.575	0.6701	0.1020	153703
160.000	(Inverted) 3" Dia 20' Omni	24	13.997	0.6681	0.0993	206459
157.000	4' Paraflector	24	13.562	0.6658	0.0968	121390
153.000	3" Dia 20' Omni	24	12.985	0.6617	0.0930	46470
151.000	1 Bay Dipole ANT400D	24	12.697	0.6591	0.0910	36050
143.000	13' Sector Mount (1)	24	11.562	0.6462	0.0841	27662
137.000	Pirod 12' PCS T-Frame (1) 104569	24	10.729	0.6337	0.0796	25862
125.000	2' Sidearm	24	9.115	0.6013	0.0713	22305
122.000	1' Side Arm	24	8.722	0.5917	0.0690	20359
119.000	12' Dipole	24	8.335	0.5816	0.0667	18384
109.250	4' Paraflector	24	7.122	0.5453	0.0590	13932
76.000	3' Yagi	24	3.591	0.4120	0.0373	8896
75.000	GPS	24	3.500	0.4075	0.0367	8580
27.000	2" Dia 8' Omni	24	0.504	0.1594	0.0119	12571
26.000	Rohn 6' Side-Arm(1)	24	0.470	0.1538	0.0115	12895
20.000	2' Standoff T-Arm (5' face width)	24	0.282	0.1201	0.0087	9809
15.000	2' Yagi	25	0.159	0.0913	0.0063	7447

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	180	Diagonal	A325X	0.750	1	1565.940	17943.801	0.087 ✔	1	Member Block Shear
		Top Girt	A325X	0.625	2	688.665	10263.300	0.067 ✔	1	Member Block Shear
T2	175	Leg	A325X	0.750	6	274.430	29820.600	0.009 ✔	1	Bolt Tension
		Diagonal	A325X	0.750	1	5056.570	17943.801	0.282 ✔	1	Member Block Shear
		Horizontal	A325X	0.625	2	1527.060	7187.700	0.212 ✔	1	Member Block Shear
T3	166.667	Diagonal	A325X	0.750	1	7510.620	17943.801	0.419 ✔	1	Member Block Shear
		Top Girt	A325X	0.625	2	2264.250	7187.700	0.315 ✔	1	Member Block Shear
T4	158.333	Diagonal	A325X	0.750	1	9004.640	17943.801	0.502 ✔	1	Member Block Shear
		Top Girt	A325X	0.625	2	2802.190	7187.700	0.390 ✔	1	Member Block Shear
T5	150	Leg	A325X	0.750	6	4306.840	29820.600	0.144 ✔	1	Bolt Tension
		Diagonal	A325X	0.750	1	17107.100	29906.301	0.572 ✔	1	Member Block Shear
		Horizontal	A325X	0.625	2	5745.710	10263.300	0.560 ✔	1	Member Block

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load / Allowable	Allowable Ratio	Criteria
T6	125	Leg	A325X	0.750	6	12516.600	29820.600	0.420 ✔	1	Shear Bolt Tension
		Diagonal	A325X	0.750	1	20924.500	25230.000	0.829 ✔	1	Member Bearing
		Horizontal	A325X	0.625	2	7502.460	12829.100	0.585 ✔	1	Member Block Shear
T7	100	Leg	A325X	1.000	6	23683.500	53014.398	0.447 ✔	1	Bolt Tension
		Diagonal	A325X	0.750	1	21654.801	25230.000	0.858 ✔	1	Member Bearing
		Horizontal	A325X	0.625	2	7921.060	20526.600	0.386 ✔	1	Member Block Shear
T8	91.6667	Diagonal	A325X	0.750	1	22345.199	25230.000	0.886 ✔	1	Member Bearing
		Horizontal	A325X	0.625	2	8344.470	20526.600	0.407 ✔	1	Member Block Shear
T9	83.3333	Diagonal	A325X	0.750	1	23252.801	25230.000	0.922 ✔	1	Member Bearing
		Horizontal	A325X	0.625	2	8828.770	20526.600	0.430 ✔	1	Member Block Shear
T10	75	Leg	A325X	1.000	8	26529.400	53014.398	0.500 ✔	1	Bolt Tension
		Diagonal	A325X	0.750	1	31788.801	35343.801	0.899 ✔	1	Member Bearing
		Horizontal	A325X	0.625	2	9955.020	11622.700	0.857 ✔	1	Member Block Shear
T11	50	Leg	A325X	1.000	8	35832.500	53014.398	0.676 ✔	1	Bolt Tension
		Diagonal	A325X	1.000	1	32310.900	40675.801	0.794 ✔	1	Member Block Shear
		Horizontal	A325X	0.625	2	10452.100	11622.700	0.899 ✔	1	Member Block Shear
T12	37.5	Diagonal	A325X	1.000	1	33276.699	45703.102	0.728 ✔	1	Member Block Shear
		Top Girt	A325X	0.625	2	11028.800	23245.301	0.474 ✔	1	Member Block Shear
T13	25	Leg	A325X	1.000	8	45212.898	53014.398	0.853 ✔	1	Bolt Tension
		Diagonal	A325X	1.000	1	34136.602	45703.102	0.747 ✔	1	Member Block Shear
		Horizontal	A325X	0.625	2	11576.700	15186.400	0.762 ✔	1	Bolt Shear
T14	12.5	Diagonal	A325X	1.000	1	34205.898	45703.102	0.748 ✔	1	Member Block Shear
		Top Girt	A325X	0.625	2	11942.000	29056.600	0.411 ✔	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 lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 175	Stainless P5x0.250	5.005	5.005	35.7 K=1.00	3.731	-1802.310	152928.000	0.012 [1] ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T2	175 - 166.667	Stainless P5x0.250	8.342	8.342	59.5 K=1.00	3.731	-4939.740	129561.000	0.038 [1] ✔
T3	166.667 - 158.333	Stainless P5x0.250	8.342	8.342	59.5 K=1.00	3.731	-9673.940	129561.000	0.075 [1] ✔
T4	158.333 - 150	Stainless P5x0.250	8.342	8.342	59.5 K=1.00	3.731	-19759.600	129561.000	0.153 [1] ✔
T5	150 - 125	Stainless P5x0.300	25.027	4.171	30.1 K=1.00	4.430	-66554.703	186589.000	0.357 [1] ✔
T6	125 - 100	Stainless P5x0.400	25.027	4.171	30.7 K=1.00	5.781	-137564.000	242845.000	0.566 [1] ✔
T7	100 - 91.6667	Stainless P5x0.500	8.342	4.171	31.3 K=1.00	7.069	-163399.000	296141.000	0.552 [1] ✔
T8	91.6667 - 83.3333	1/3 Pipe w/ 5"x0.5 Stainless	8.342	4.171	32.1 K=1.00	9.027	-189980.000	320254.000	0.593 [1] ✔
T9	83.3333 - 75	1/3 Pipe w/ 5"x0.5 Stainless	8.342	4.171	32.1 K=1.00	9.027	-216865.000	320254.000	0.677 [1] ✔
T10	75 - 50	Stainless P6.875x0.400	25.027	6.257	32.7 K=1.00	8.137	-284557.000	399956.000	0.711 [1] ✔
T11	50 - 37.5	Stainless P6.875x0.500	12.513	6.257	33.2 K=1.00	10.014	-327593.000	490874.000	0.667 [1] ✔
T12	37.5 - 25	Stainless P6.875x0.500	12.513	6.257	33.2 K=1.00	10.014	-370597.000	490874.000	0.755 [1] ✔
T13	25 - 12.5	Stainless P6.875x0.500	12.513	6.257	33.2 K=1.00	10.014	-414309.000	490874.000	0.844 [1] ✔
T14	12.5 - 0	Stainless P6.875x0.500	12.513	6.257	33.2 K=1.00	10.014	-459433.000	490874.000	0.936 [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 lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 175	2L2 1/2x2x3/16	7.434	6.882	104.5 K=1.00	1.620	-1685.870	29528.699	0.057 [1] ✔
T2	175 - 166.667	2L2 1/2x2x3/16	10.174	9.540	144.9 K=1.00	1.620	-5162.900	17428.199	0.296 [1] ✔
T3	166.667 - 158.333	2L2 1/2x2x3/16	10.369	9.748	148.1 K=1.00	1.620	-7622.700	16693.301	0.457 [1] ✔
T4	158.333 - 150	2L2 1/2x2x3/16	10.570	9.961	151.3 K=1.00	1.620	-9123.370	15986.600	0.571 [1] ✔
T5	150 - 125	2L2 1/2x2x5/16	11.213	10.631	157.7 K=1.00	2.620	-17353.500	23803.699	0.729 [1] ✔
T6	125 - 100	2L3x2 1/2x1/4	11.905	11.343	136.1 K=1.00	2.630	-21363.400	32070.900	0.666 [1] ✔
T7	100 - 91.6667	2L3x2 1/2x1/4	12.145	11.588	139.1 K=1.00	2.630	-22164.199	30726.000	0.721 [1] ✔
T8	91.6667 - 83.3333	2L3x2 1/2x1/4	12.390	11.838	142.1 K=1.00	2.630	-22858.699	29445.000	0.776 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T9	83.3333 - 75	2L3x2 1/2x1/4	12.639	12.091	145.1 K=1.00	2.630	-23804.600	28225.400	0.843 [1]
T10	75 - 50	2L3 1/2x3 1/2x5/16	16.327	15.611	127.4 K=1.00	4.180	-32561.600	58144.898	0.560 [1]
T11	50 - 37.5	2L3 1/2x3x5/16	16.653	15.887	157.6 K=1.00	3.870	-33078.398	35221.199	0.939 [1]
T12	37.5 - 25	2L3 1/2x3 1/2x5/16	16.988	16.231	132.5 K=1.00	4.180	-34231.000	53787.000	0.636 [1]
T13	25 - 12.5	2L3 1/2x3 1/2x5/16	17.330	16.583	135.4 K=1.00	4.180	-35101.898	51528.898	0.681 [1]
T14	12.5 - 0	2L3 1/2x3 1/2x5/16	17.680	16.942	138.3 K=1.00	4.180	-35251.500	49371.699	0.714 [1]

[1] $P_u / \phi P_n$ controls

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T2	175 - 166.667	L2 1/2x2 1/2x3/16	11.000	5.094	122.7 K=0.99	0.902	-3011.780	13230.200	0.228 [1]
T5	150 - 125	L3x2 1/2x1/4	14.333	6.760	145.7 K=0.95	1.310	-11456.700	13945.100	0.822 [1]
T6	125 - 100	L3x3x5/16	16.333	7.760	149.1 K=0.94	1.780	-14914.700	18094.000	0.824 [1]
T7	100 - 91.6667	2L3x3x1/4	17.000	8.094	104.4 K=1.00	2.880	-15744.500	52550.199	0.300 [1]
T8	91.6667 - 83.3333	2L3x3x1/4	17.667	8.427	108.7 K=1.00	2.880	-16541.301	50073.898	0.330 [1]
T9	83.3333 - 75	2L3x3x1/4	18.333	8.760	113.0 K=1.00	2.880	-17482.500	47621.500	0.367 [1]
T10	75 - 50	L4x4x1/4	20.000	9.516	138.0 K=0.96	1.940	-19823.500	22997.699	0.862 [1]
T11	50 - 37.5	L4x4x1/4	21.000	10.016	143.8 K=0.95	1.940	-20785.600	21194.900	0.981 [1]
T13	25 - 12.5	L4x4x3/8	23.000	11.016	156.4 K=0.93	2.860	-22949.100	26405.100	0.869 [1]

[1] $P_u / \phi P_n$ controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 175	L3x3x1/4	10.599	4.893	109.6 K=1.10	1.440	-1404.700	24791.500	0.057 [1]
T3	166.667 - 158.333	L2 1/2x2 1/2x3/16	11.667	5.427	128.9 K=0.98	0.902	-4602.300	12194.200	0.377 [1]
T4	158.333 - 150	L2 1/2x2 1/2x3/16	12.333	5.760	135.0 K=0.97	0.902	-5559.340	11179.200	0.497 [1]
T12	37.5 - 25	2L4x4x1/4	22.000	10.516	100.9 K=1.00	3.880	-21950.600	72328.898	0.303 [1]
T14	12.5 - 0	2L4x4x5/16	24.000	11.516	111.4 K=1.00	4.800	-23727.100	80880.398	0.293 [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 lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T5	150 - 125	L2x2x3/16	3.417	3.208	108.9 K=1.11	0.715	-1342.350	12414.300	0.108 [1]
T6	125 - 100	L2x2x3/16	4.083	3.875	119.0 K=1.01	0.715	-2385.760	10990.800	0.217 [1]
T7	100 - 91.6667	L2x2x3/16	4.250	4.042	123.1 K=1.00	0.715	-2833.640	10433.000	0.272 [1]
T8	91.6667 - 83.3333	L2x2x3/16	4.417	4.208	128.2 K=1.00	0.715	-3294.350	9755.500	0.338 [1]
T9	83.3333 - 75	L2x2x3/16	4.583	4.375	133.2 K=1.00	0.715	-3760.590	9097.250	0.413 [1]
T10	75 - 50	L2 1/2x2 1/2x3/16	5.000	4.714	117.1 K=1.03	0.902	-4936.210	14192.600	0.348 [1]
T11	50 - 37.5	L2 1/2x2 1/2x3/16	5.250	4.964	120.3 K=1.00	0.902	-5682.230	13637.000	0.417 [1]
T12	37.5 - 25	L2 1/2x2 1/2x3/16	5.500	5.214	126.4 K=1.00	0.902	-6427.850	12604.700	0.510 [1]
T13	25 - 12.5	L2 1/2x2 1/2x3/16	5.750	5.464	132.4 K=1.00	0.902	-7186.120	11605.500	0.619 [1]
T14	12.5 - 0	L2 1/2x2 1/2x3/16	6.000	5.714	138.5 K=1.00	0.902	-7967.130	10621.400	0.750 [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 lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T5	150 - 125	L2x2x3/16	5.285	4.957	151.0	0.715	-1029.730	7087.540	0.145 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T6	125 - 100	L2x2x3/16	5.719	5.415	164.9 K=1.00	0.715	-1670.810	5938.100	0.281 [1] ✔
T7	100 - 91.6667	L2x2x3/16	5.835	5.537	168.6 K=1.00	0.715	-1945.120	5679.480	0.342 [1] ✔
T8	91.6667 - 83.3333	L2x2x3/16	5.953	5.661	172.4 K=1.00	0.715	-2219.980	5433.940	0.409 [1] ✔
T9	83.3333 - 75	L2x2x3/16	6.073	5.786	176.2 K=1.00	0.715	-2491.290	5200.860	0.479 [1] ✔
T10	75 - 50	L2 1/2x2 1/2x3/16	7.851	7.378	178.9 K=1.00	0.902	-3875.660	6369.320	0.608 [1] ✔
T11	50 - 37.5	L2 1/2x2 1/2x3/16	8.005	7.547	183.0 K=1.00	0.902	-4332.130	6087.970	0.712 [1] ✔
T12	37.5 - 25	L2 1/2x2 1/2x3/16	8.164	7.718	187.1 K=1.00	0.902	-4770.450	5820.200	0.820 [1] ✔
T13	25 - 12.5	L3x3x1/4	8.327	7.893	160.0 K=1.00	1.440	-5203.160	12708.200	0.409 [1] ✔
T14	12.5 - 0	L3x3x1/4	8.494	8.071	163.6 K=1.00	1.440	-5639.310	12154.700	0.464 [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 lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T5	150 - 125	L2 1/2x2x3/16	7.167	7.167	201.4 K=1.00	0.809	-11.498	4505.540	0.003 [1] ✔
T6	125 - 100	L2 1/2x2x3/16	8.167	8.167	229.5 K=1.00	0.809	-13.950	3469.700	0.004 [1] ✔
T7	100 - 91.6667	L2 1/2x2x3/16	8.500	8.500	238.9 K=1.00	0.809	-19.706	3202.900	0.006 [1] ✔
T8	91.6667 - 83.3333	L2 1/2x2x3/16	8.833	8.833	248.2 K=1.00	0.809	-19.469	2965.740	0.007 [1] ✔
T9	83.3333 - 75	L2 1/2x2x3/16	9.167	9.167	257.6 K=1.00	0.809	-19.179	2753.970	0.007 [1] ✔
T10	75 - 50	KL/R > 250 (C) - 279 L2 1/2x2 1/2x3/16	10.000	10.000	242.4 K=1.00	0.902	-21.392	3467.320	0.006 [1] ✔
T11	50 - 37.5	L2 1/2x2 1/2x3/16	10.500	10.500	254.5 K=1.00	0.902	-20.926	3144.960	0.007 [1] ✔
T12	37.5 - 25	KL/R > 250 (C) - 357 L2 1/2x2 1/2x3/16	11.000	11.000	266.7 K=1.00	0.902	-388.615	2865.560	0.136 [1] ✔
T13	25 - 12.5	KL/R > 250 (C) - 384 L3x3x1/4	11.500	11.500	233.1 K=1.00	1.440	-22.110	5986.700	0.004 [1] ✔
T14	12.5 - 0	L3x3x1/4	12.000	12.000	243.2 K=1.00	1.440	-421.459	5498.200	0.077 [1] ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$

[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 lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 175	Stainless P5x0.250	5.005	5.005	35.7	3.731	225.029	167879.000	0.001 [1] ✔
T2	175 - 166.667	Stainless P5x0.250	8.342	8.342	59.5	3.731	1509.180	167879.000	0.009 [1] ✔
T3	166.667 - 158.333	Stainless P5x0.250	8.342	8.342	59.5	3.731	7079.410	167879.000	0.042 [1] ✔
T4	158.333 - 150	Stainless P5x0.250	8.342	8.342	59.5	3.731	15566.400	167879.000	0.093 [1] ✔
T5	150 - 125	Stainless P5x0.300	25.027	4.171	30.1	4.430	55210.898	199334.000	0.277 [1] ✔
T6	125 - 100	Stainless P5x0.400	25.027	4.171	30.7	5.781	118910.000	260124.000	0.457 [1] ✔
T7	100 - 91.6667	Stainless P5x0.500	8.342	4.171	31.3	7.069	142101.000	318086.000	0.447 [1] ✔
T8	91.6667 - 83.3333	1/3 Pipe w/ 5"x0.5 Stainless	8.342	4.171	32.1	9.027	165727.000	341202.000	0.486 [1] ✔
T9	83.3333 - 75	1/3 Pipe w/ 5"x0.5 Stainless	8.342	4.171	32.1	9.027	189436.000	341202.000	0.555 [1] ✔
T10	75 - 50	Stainless P6.875x0.400	25.027	6.257	32.7	8.137	248933.000	439383.000	0.567 [1] ✔
T11	50 - 37.5	Stainless P6.875x0.500	12.513	6.257	33.2	10.014	286660.000	540747.000	0.530 [1] ✔
T12	37.5 - 25	Stainless P6.875x0.500	12.513	6.257	33.2	10.014	324058.000	540747.000	0.599 [1] ✔
T13	25 - 12.5	Stainless P6.875x0.500	12.513	6.257	33.2	10.014	361703.000	540747.000	0.669 [1] ✔
T14	12.5 - 0	Stainless P6.875x0.500	12.513	6.257	33.2	10.014	400475.000	540747.000	0.741 [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 lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 175	2L2 1/2x2x3/16	7.434	6.882	108.6	0.969	1565.940	42147.398	0.037 [1] ✔
T2	175 - 166.667	2L2 1/2x2x3/16	10.174	9.540	149.0	0.969	5056.570	42147.398	0.120 [1] ✔
T3	166.667 - 158.333	2L2 1/2x2x3/16	10.369	9.748	152.2	0.969	7510.620	42147.398	0.178 [1] ✔
T4	158.333 - 150	2L2 1/2x2x3/16	10.570	9.961	155.4	0.969	9004.640	42147.398	0.214 [1] ✔
T5	150 - 125	2L2 1/2x2x5/16	11.213	10.631	161.7	1.555	17107.100	67635.703	0.253 [1] ✔
T6	125 - 100	2L3x2 1/2x1/4	11.905	11.343	139.4	1.644	20924.500	71530.297	0.293 [1] ✔
T7	100 - 91.6667	2L3x2 1/2x1/4	12.145	11.588	142.3	1.644	21654.801	71530.297	0.303 [1] ✔
T8	91.6667 - 83.3333	2L3x2 1/2x1/4	12.390	11.838	145.3	1.644	22345.199	71530.297	0.312 [1] ✔
T9	83.3333 - 75	2L3x2 1/2x1/4	12.639	12.091	148.3	1.644	23252.801	71530.297	0.325 [1] ✔
T10	75 - 50	2L3 1/2x3 1/2x5/16	16.327	15.611	129.6	2.725	31788.801	132836.000	0.239 [1] ✔
T11	50 - 37.5	2L3 1/2x3x5/16	16.653	15.887	160.9	2.375	32310.900	103319.000	0.313 [1] ✔
T12	37.5 - 25	2L3 1/2x3 1/2x5/16	16.988	16.231	135.2	2.608	33276.699	127123.000	0.262 [1] ✔
T13	25 - 12.5	2L3 1/2x3 1/2x5/16	17.330	16.583	138.1	2.608	34136.602	127123.000	0.269 [1] ✔
T14	12.5 - 0	2L3 1/2x3 1/2x5/16	17.680	16.942	141.0	2.608	34205.898	127123.000	0.269 [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 lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T2	175 - 166.667	L2 1/2x2 1/2x3/16	11.000	5.094	122.4	0.571	3054.120	24839.900	0.123 [1] ✔
T5	150 - 125	L3x2 1/2x1/4	14.333	6.760	111.1	0.842	11491.400	36621.602	0.314 [1] ✔
T6	125 - 100	L3x3x5/16	16.333	7.760	103.6	1.159	15004.900	50426.000	0.298 [1] ✔
T7	100 - 91.6667	2L3x3x1/4	17.000	8.094	107.0	1.879	15842.100	81725.602	0.194 [1] ✔
T8	91.6667 - 83.3333	2L3x3x1/4	17.667	8.427	111.3	1.879	16688.900	81725.602	0.204 [1] ✔
T9	83.3333 - 75	2L3x3x1/4	18.333	8.760	115.6	1.879	17657.500	81725.602	0.216 [1] ✔
T10	75 - 50	L4x4x1/4	20.000	9.516	93.3	1.314	19910.000	57175.301	0.348 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T11	50 - 37.5	L4x4x1/4	21.000	10.016	98.1	1.314	20904.100	57175.301	0.366 [1]
T13	25 - 12.5	L4x4x3/8	23.000	11.016	109.4	1.934	23153.400	94285.500	0.246 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 175	L3x3x1/4	10.599	4.893	98.5	0.939	1377.330	40862.801	0.034 [1]
T3	166.667 - 158.333	L2 1/2x2 1/2x3/16	11.667	5.427	130.1	0.571	4528.510	24839.900	0.182 [1]
T4	158.333 - 150	L2 1/2x2 1/2x3/16	12.333	5.760	137.9	0.571	5604.380	24839.900	0.226 [1]
T12	37.5 - 25	2L4x4x1/4	22.000	10.516	102.8	2.629	22057.600	114351.000	0.193 [1]
T14	12.5 - 0	2L4x4x5/16	24.000	11.516	113.4	3.248	23883.900	141307.000	0.169 [1]

[1] P_u / ϕP_n controls

Redundant Horizontal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T5	150 - 125	L2x2x3/16	3.417	3.208	62.4	0.715	1342.350	23166.000	0.058 [1]
T6	125 - 100	L2x2x3/16	4.083	3.875	75.4	0.715	2385.760	23166.000	0.103 [1]
T7	100 - 91.6667	L2x2x3/16	4.250	4.042	78.6	0.715	2833.640	23166.000	0.122 [1]
T8	91.6667 - 83.3333	L2x2x3/16	4.417	4.208	81.8	0.715	3294.350	23166.000	0.142 [1]
T9	83.3333 - 75	L2x2x3/16	4.583	4.375	85.1	0.715	3760.590	23166.000	0.162 [1]
T10	75 - 50	L2 1/2x2 1/2x3/16	5.000	4.714	72.7	0.902	4936.210	29224.801	0.169 [1]
T11	50 - 37.5	L2 1/2x2 1/2x3/16	5.250	4.964	76.6	0.902	5682.230	29224.801	0.194 [1]
T12	37.5 - 25	L2 1/2x2 1/2x3/16	5.500	5.214	80.4	0.902	6427.850	29224.801	0.220 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T13	25 - 12.5	L2 1/2x2 1/2x3/16	5.750	5.464	84.3	0.902	7186.120	29224.801	0.246 [1]
T14	12.5 - 0	L2 1/2x2 1/2x3/16	6.000	5.714	88.1	0.902	7967.130	29224.801	0.273 [1]

[1] P_u / ϕP_n controls

Redundant Diagonal (1) Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T5	150 - 125	L2x2x3/16	5.285	4.957	96.4	0.715	1029.730	23166.000	0.044 [1]
T6	125 - 100	L2x2x3/16	5.496	5.192	101.0	0.715	1748.420	23166.000	0.075 [1]
T7	100 - 91.6667	L2x2x3/16	5.835	5.537	107.7	0.715	1945.120	23166.000	0.084 [1]
T8	91.6667 - 83.3333	L2x2x3/16	5.953	5.661	110.1	0.715	2219.980	23166.000	0.096 [1]
T9	83.3333 - 75	L2x2x3/16	6.073	5.786	112.5	0.715	2491.290	23166.000	0.108 [1]
T10	75 - 50	L2 1/2x2 1/2x3/16	7.703	7.230	111.5	0.902	4002.390	29224.801	0.137 [1]
T11	50 - 37.5	L2 1/2x2 1/2x3/16	8.005	7.547	116.4	0.902	4332.130	29224.801	0.148 [1]
T12	37.5 - 25	L2 1/2x2 1/2x3/16	8.164	7.718	119.1	0.902	4770.450	29224.801	0.163 [1]
T13	25 - 12.5	L3x3x1/4	8.327	7.893	101.8	1.440	5203.160	46656.000	0.112 [1]
T14	12.5 - 0	L3x3x1/4	8.494	8.071	104.1	1.440	5639.310	46656.000	0.121 [1]

[1] P_u / ϕP_n controls

Inner Bracing Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T5	150 - 125	L2 1/2x2x3/16	6.833	6.833	136.7	0.809	4.782	26211.600	0.000 [1]
T6	125 - 100	L2 1/2x2x3/16	7.500	7.500	150.1	0.809	7.378	26211.600	0.000 [1]
T7	100 - 91.6667	L2 1/2x2x3/16	8.500	8.500	170.1	0.809	13.555	26211.600	0.001 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T8	91.6667 - 83.3333	L2 1/2x2x3/16	8.833	8.833	176.7	0.809	13.180	26211.600	0.001 [1]
T9	83.3333 - 75	L2 1/2x2x3/16	9.167	9.167	183.4	0.809	12.778	26211.600	0.000 [1]
T10	75 - 50	L2 1/2x2 1/2x3/16	9.500	9.500	146.5	0.902	11.854	29224.801	0.000 [1]
T11	50 - 37.5	L2 1/2x2 1/2x3/16	10.500	10.500	162.0	0.902	10.407	29224.801	0.000 [1]
T12	37.5 - 25	L2 1/2x2 1/2x3/16	11.000	11.000	169.7	0.902	375.140	29224.801	0.013 [1]
T13	25 - 12.5	L3x3x1/4	11.500	11.500	148.4	1.440	7.188	46656.000	0.000 [1]
T14	12.5 - 0	L3x3x1/4	12.000	12.000	154.8	1.440	404.952	46656.000	0.009 [1]

[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T1	180 - 175	Leg	Stainless P5x0.250	1	-1802.310	152928.000	1.2	Pass
		Leg	Stainless P5x0.250	2	-1274.000	152928.000	1.3	Pass
		Leg	Stainless P5x0.250	3	-1769.470	152928.000	1.5	Pass
T2	175 - 166.667	Leg	Stainless P5x0.250	13	-4939.740	129561.000	3.8	Pass
		Leg	Stainless P5x0.250	14	-2633.480	129561.000	2.0	Pass
		Leg	Stainless P5x0.250	15	-3792.850	129561.000	2.9	Pass
T3	166.667 - 158.333	Leg	Stainless P5x0.250	25	-9673.940	129561.000	7.5	Pass
		Leg	Stainless P5x0.250	26	-9574.750	129561.000	7.4	Pass
		Leg	Stainless P5x0.250	27	-9462.450	129561.000	7.3	Pass
T4	158.333 - 150	Leg	Stainless P5x0.250	37	-19740.500	129561.000	15.2	Pass
		Leg	Stainless P5x0.250	38	-19759.600	129561.000	15.3	Pass
		Leg	Stainless P5x0.250	39	-19228.301	129561.000	14.8	Pass
T5	150 - 125	Leg	Stainless P5x0.300	49	-66554.703	186589.000	35.7	Pass
		Leg	Stainless P5x0.300	50	-66316.703	186589.000	35.5	Pass
		Leg	Stainless P5x0.300	51	-65556.203	186589.000	35.1	Pass
T6	125 - 100	Leg	Stainless P5x0.400	124	-137564.000	242845.000	56.6	Pass
		Leg	Stainless P5x0.400	125	-137187.000	242845.000	56.5	Pass
		Leg	Stainless P5x0.400	126	-136088.000	242845.000	56.0	Pass
T7	100 - 91.6667	Leg	Stainless P5x0.500	199	-163399.000	296141.000	55.2	Pass
		Leg	Stainless P5x0.500	200	-163013.000	296141.000	55.0	Pass
		Leg	Stainless P5x0.500	201	-161842.000	296141.000	54.7	Pass
T8	91.6667 - 83.3333	Leg	1/3 Pipe w/ 5"x0.5 Stainless	226	-189980.000	320254.000	59.3	Pass
		Leg	1/3 Pipe w/ 5"x0.5 Stainless	227	-189587.000	320254.000	59.2	Pass
		Leg	1/3 Pipe w/ 5"x0.5 Stainless	228	-188348.000	320254.000	58.8	Pass
T9	83.3333 - 75	Leg	1/3 Pipe w/ 5"x0.5 Stainless	253	-216865.000	320254.000	67.7	Pass
		Leg	1/3 Pipe w/ 5"x0.5 Stainless	254	-216359.000	320254.000	67.6	Pass
		Leg	1/3 Pipe w/ 5"x0.5 Stainless	255	-215060.000	320254.000	67.2	Pass
T10	75 - 50	Leg	Stainless P6.875x0.400	280	-284557.000	399956.000	71.1	Pass
		Leg	Stainless P6.875x0.400	281	-284036.000	399956.000	71.0	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
		Leg	Stainless P6.875x0.400	282	-282615.000	399956.000	70.7	Pass
T11	50 - 37.5	Leg	Stainless P6.875x0.500	331	-327593.000	490874.000	66.7 67.5 (b)	Pass
		Leg	Stainless P6.875x0.500	332	-327064.000	490874.000	66.6 67.6 (b)	Pass
		Leg	Stainless P6.875x0.500	333	-325566.000	490874.000	66.3 67.3 (b)	Pass
T12	37.5 - 25	Leg	Stainless P6.875x0.500	358	-370597.000	490874.000	75.5	Pass
		Leg	Stainless P6.875x0.500	359	-370038.000	490874.000	75.4	Pass
		Leg	Stainless P6.875x0.500	360	-368469.000	490874.000	75.1	Pass
T13	25 - 12.5	Leg	Stainless P6.875x0.500	385	-414309.000	490874.000	84.4 85.3 (b)	Pass
		Leg	Stainless P6.875x0.500	386	-413584.000	490874.000	84.3 85.3 (b)	Pass
		Leg	Stainless P6.875x0.500	387	-411948.000	490874.000	83.9 85.0 (b)	Pass
T14	12.5 - 0	Leg	Stainless P6.875x0.500	412	-459433.000	490874.000	93.6	Pass
		Leg	Stainless P6.875x0.500	413	-458705.000	490874.000	93.4	Pass
		Leg	Stainless P6.875x0.500	414	-457011.000	490874.000	93.1	Pass
T1	180 - 175	Diagonal	2L2 1/2x2x3/16	7	-962.071	29528.699	3.3 4.7 (b)	Pass
		Diagonal	2L2 1/2x2x3/16	8	-954.947	29528.699	3.2 4.7 (b)	Pass
		Diagonal	2L2 1/2x2x3/16	9	-1685.870	29528.699	5.7 8.7 (b)	Pass
		Diagonal	2L2 1/2x2x3/16	10	-1681.160	29528.699	5.7 8.7 (b)	Pass
		Diagonal	2L2 1/2x2x3/16	11	-1280.140	29528.699	4.3 6.5 (b)	Pass
		Diagonal	2L2 1/2x2x3/16	12	-1291.980	29528.699	4.4 6.5 (b)	Pass
T2	175 - 166.667	Diagonal	2L2 1/2x2x3/16	17	-3575.920	17428.199	20.5	Pass
		Diagonal	2L2 1/2x2x3/16	18	-3722.460	17428.199	21.4	Pass
		Diagonal	2L2 1/2x2x3/16	20	-3811.490	17428.199	21.9	Pass
		Diagonal	2L2 1/2x2x3/16	21	-3783.190	17428.199	21.7	Pass
		Diagonal	2L2 1/2x2x3/16	23	-5160.910	17428.199	29.6	Pass
		Diagonal	2L2 1/2x2x3/16	24	-5162.900	17428.199	29.6	Pass
T3	166.667 - 158.333	Diagonal	2L2 1/2x2x3/16	31	-6500.750	16693.301	38.9	Pass
		Diagonal	2L2 1/2x2x3/16	32	-6528.130	16693.301	39.1	Pass
		Diagonal	2L2 1/2x2x3/16	33	-5915.000	16693.301	35.4	Pass
		Diagonal	2L2 1/2x2x3/16	34	-5895.070	16693.301	35.3	Pass
		Diagonal	2L2 1/2x2x3/16	35	-7622.700	16693.301	45.7	Pass
		Diagonal	2L2 1/2x2x3/16	36	-7615.250	16693.301	45.6	Pass
T4	158.333 - 150	Diagonal	2L2 1/2x2x3/16	43	-9105.280	15986.600	57.0	Pass
		Diagonal	2L2 1/2x2x3/16	44	-9123.370	15986.600	57.1	Pass
		Diagonal	2L2 1/2x2x3/16	45	-7489.250	15986.600	46.8	Pass
		Diagonal	2L2 1/2x2x3/16	46	-7490.130	15986.600	46.9	Pass
		Diagonal	2L2 1/2x2x3/16	47	-8780.650	15986.600	54.9	Pass
		Diagonal	2L2 1/2x2x3/16	48	-8761.690	15986.600	54.8	Pass
T5	150 - 125	Diagonal	2L2 1/2x2x5/16	53	-17339.400	23803.699	72.8	Pass
		Diagonal	2L2 1/2x2x5/16	56	-17353.500	23803.699	72.9	Pass
		Diagonal	2L2 1/2x2x5/16	60	-15142.900	23803.699	63.6	Pass
		Diagonal	2L2 1/2x2x5/16	63	-15137.900	23803.699	63.6	Pass
		Diagonal	2L2 1/2x2x5/16	67	-16924.199	23803.699	71.1	Pass
		Diagonal	2L2 1/2x2x5/16	70	-16915.199	23803.699	71.1	Pass
		Diagonal	2L2 1/2x2x5/16	77	-16158.600	24821.100	65.1	Pass
		Diagonal	2L2 1/2x2x5/16	80	-16173.000	24821.100	65.2	Pass
		Diagonal	2L2 1/2x2x5/16	84	-14092.300	24821.100	56.8	Pass
		Diagonal	2L2 1/2x2x5/16	87	-14088.000	24821.100	56.8	Pass
		Diagonal	2L2 1/2x2x5/16	91	-15662.200	24821.100	63.1	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
		Diagonal	2L2 1/2x2x5/16	94	-15651.900	24821.100	63.1	Pass
		Diagonal	2L2 1/2x2x5/16	101	-10997.700	25875.699	42.5	Pass
		Diagonal	2L2 1/2x2x5/16	104	-11007.000	25875.699	42.5	Pass
		Diagonal	2L2 1/2x2x5/16	108	-9061.690	25875.699	35.0	Pass
		Diagonal	2L2 1/2x2x5/16	111	-9060.790	25875.699	35.0	Pass
		Diagonal	2L2 1/2x2x5/16	115	-10465.600	25875.699	40.4	Pass
		Diagonal	2L2 1/2x2x5/16	118	-10457.200	25875.699	40.4	Pass
T6	125 - 100	Diagonal	2L3x2 1/2x1/4	128	-21350.801	32070.900	66.6 82.9 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	131	-21363.400	32070.900	66.6 82.9 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	135	-18899.500	32070.900	58.9 73.2 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	138	-18898.301	32070.900	58.9 73.2 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	142	-20695.000	32070.900	64.5 80.2 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	145	-20683.699	32070.900	64.5 80.3 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	152	-20239.699	33446.602	60.5 78.6 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	155	-20255.301	33446.602	60.6 78.6 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	159	-17747.301	33446.602	53.1 68.7 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	162	-17744.500	33446.602	53.1 68.7 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	166	-19782.801	33446.602	59.1 76.7 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	169	-19770.000	33446.602	59.1 76.8 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	176	-19091.199	34758.102	54.9 74.2 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	179	-19104.400	34758.102	55.0 74.1 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	183	-16667.600	34758.102	48.0 64.5 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	186	-16667.699	34758.102	48.0 64.5 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	190	-18686.400	34758.102	53.8 72.4 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	193	-18673.199	34758.102	53.7 72.5 (b)	Pass
T7	100 - 91.6667	Diagonal	2L3x2 1/2x1/4	203	-22152.301	30726.000	72.1 85.8 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	206	-22164.199	30726.000	72.1 85.8 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	210	-19721.900	30726.000	64.2 76.2 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	213	-19721.000	30726.000	64.2 76.2 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	217	-21563.199	30726.000	70.2 83.4 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	220	-21552.301	30726.000	70.1 83.5 (b)	Pass
T8	91.6667 - 83.3333	Diagonal	2L3x2 1/2x1/4	230	-22847.500	29445.000	77.6 88.6 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	233	-22858.699	29445.000	77.6 88.5 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	237	-20448.900	29445.000	69.4 79.0 (b)	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
		Diagonal	2L3x2 1/2x1/4	240	-20448.500	29445.000	69.4 79.0 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	244	-22320.801	29445.000	75.8 86.3 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	247	-22310.000	29445.000	75.8 86.4 (b)	Pass
T9	83.3333 - 75	Diagonal	2L3x2 1/2x1/4	257	-23793.801	28225.400	84.3 92.2 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	260	-23804.600	28225.400	84.3 92.1 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	264	-21400.199	28225.400	75.8 82.6 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	267	-21398.199	28225.400	75.8 82.5 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	271	-23321.801	28225.400	82.6 90.1 (b)	Pass
		Diagonal	2L3x2 1/2x1/4	274	-23313.100	28225.400	82.6 90.2 (b)	Pass
T10	75 - 50	Diagonal	2L3 1/2x3 1/2x5/16	284	-32548.600	58144.898	56.0 89.9 (b)	Pass
		Diagonal	2L3 1/2x3 1/2x5/16	287	-32561.600	58144.898	56.0 89.9 (b)	Pass
		Diagonal	2L3 1/2x3 1/2x5/16	291	-29338.000	58144.898	50.5 80.9 (b)	Pass
		Diagonal	2L3 1/2x3 1/2x5/16	294	-29332.600	58144.898	50.4 80.8 (b)	Pass
		Diagonal	2L3 1/2x3 1/2x5/16	298	-32121.900	58144.898	55.2 88.7 (b)	Pass
		Diagonal	2L3 1/2x3 1/2x5/16	301	-32114.199	58144.898	55.2 88.7 (b)	Pass
		Diagonal	2L3 1/2x3 1/2x5/16	308	-31368.301	60579.898	51.8 86.8 (b)	Pass
		Diagonal	2L3 1/2x3 1/2x5/16	311	-31382.801	60579.898	51.8 86.7 (b)	Pass
		Diagonal	2L3 1/2x3 1/2x5/16	315	-28159.801	60579.898	46.5 77.7 (b)	Pass
		Diagonal	2L3 1/2x3 1/2x5/16	318	-28155.199	60579.898	46.5 77.7 (b)	Pass
		Diagonal	2L3 1/2x3 1/2x5/16	322	-30875.199	60579.898	51.0 85.3 (b)	Pass
		Diagonal	2L3 1/2x3 1/2x5/16	325	-30865.400	60579.898	50.9 85.4 (b)	Pass
T11	50 - 37.5	Diagonal	2L3 1/2x3x5/16	335	-33066.301	35221.199	93.9	Pass
		Diagonal	2L3 1/2x3x5/16	338	-33078.398	35221.199	93.9	Pass
		Diagonal	2L3 1/2x3x5/16	342	-29911.000	35221.199	84.9	Pass
		Diagonal	2L3 1/2x3x5/16	345	-29906.500	35221.199	84.9	Pass
		Diagonal	2L3 1/2x3x5/16	349	-32703.199	35221.199	92.9	Pass
		Diagonal	2L3 1/2x3x5/16	352	-32695.699	35221.199	92.8	Pass
T12	37.5 - 25	Diagonal	2L3 1/2x3 1/2x5/16	364	-34219.699	53787.000	63.6 72.8 (b)	Pass
		Diagonal	2L3 1/2x3 1/2x5/16	367	-34231.000	53787.000	63.6 72.8 (b)	Pass
		Diagonal	2L3 1/2x3 1/2x5/16	370	-30988.699	53787.000	57.6 65.7 (b)	Pass
		Diagonal	2L3 1/2x3 1/2x5/16	373	-30984.400	53787.000	57.6 65.7 (b)	Pass
		Diagonal	2L3 1/2x3 1/2x5/16	376	-33900.699	53787.000	63.0 72.1 (b)	Pass
		Diagonal	2L3 1/2x3 1/2x5/16	379	-33893.602	53787.000	63.0 72.1 (b)	Pass
T13	25 - 12.5	Diagonal	2L3 1/2x3 1/2x5/16	389	-35086.102	51528.898	68.1	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
							74.7 (b)	
		Diagonal	2L3 1/2x3 1/2x5/16	392	-35101.898	51528.898	68.1	Pass
							74.7 (b)	
		Diagonal	2L3 1/2x3 1/2x5/16	396	-31632.100	51528.898	61.4	Pass
							67.1 (b)	
		Diagonal	2L3 1/2x3 1/2x5/16	399	-31628.000	51528.898	61.4	Pass
							67.1 (b)	
		Diagonal	2L3 1/2x3 1/2x5/16	403	-34808.398	51528.898	67.6	Pass
							74.0 (b)	
		Diagonal	2L3 1/2x3 1/2x5/16	406	-34796.602	51528.898	67.5	Pass
							74.1 (b)	
T14	12.5 - 0	Diagonal	2L3 1/2x3 1/2x5/16	418	-35233.898	49371.699	71.4	Pass
							74.8 (b)	
		Diagonal	2L3 1/2x3 1/2x5/16	421	-35251.500	49371.699	71.4	Pass
							74.8 (b)	
		Diagonal	2L3 1/2x3 1/2x5/16	424	-31743.199	49371.699	64.3	Pass
							67.2 (b)	
		Diagonal	2L3 1/2x3 1/2x5/16	427	-31743.600	49371.699	64.3	Pass
							67.2 (b)	
		Diagonal	2L3 1/2x3 1/2x5/16	430	-34978.801	49371.699	70.8	Pass
							74.2 (b)	
		Diagonal	2L3 1/2x3 1/2x5/16	433	-34960.898	49371.699	70.8	Pass
							74.3 (b)	
T2	175 - 166.667	Horizontal	L2 1/2x2 1/2x3/16	16	-2495.120	13230.200	18.9	Pass
		Horizontal	L2 1/2x2 1/2x3/16	19	-2534.420	13230.200	19.2	Pass
		Horizontal	L2 1/2x2 1/2x3/16	22	-3011.780	13230.200	22.8	Pass
T5	150 - 125	Horizontal	L3x2 1/2x1/4	52	-11456.700	13945.100	82.2	Pass
		Horizontal	L3x2 1/2x1/4	59	-9949.460	13945.100	71.3	Pass
		Horizontal	L3x2 1/2x1/4	66	-11155.600	13945.100	80.0	Pass
		Horizontal	L3x2 1/2x1/4	76	-10017.100	15119.700	66.3	Pass
		Horizontal	L3x2 1/2x1/4	83	-8535.080	15119.700	56.5	Pass
		Horizontal	L3x2 1/2x1/4	90	-9793.200	15119.700	64.8	Pass
		Horizontal	L3x2 1/2x1/4	100	-6671.770	16449.100	40.6	Pass
		Horizontal	L3x2 1/2x1/4	107	-5389.210	16449.100	32.8	Pass
		Horizontal	L3x2 1/2x1/4	114	-6320.590	16449.100	38.4	Pass
T6	125 - 100	Horizontal	L3x3x5/16	127	-14914.700	18094.000	82.4	Pass
		Horizontal	L3x3x5/16	134	-13089.000	18094.000	72.3	Pass
		Horizontal	L3x3x5/16	141	-14408.400	18094.000	79.6	Pass
		Horizontal	L3x3x5/16	151	-13863.500	19418.801	71.4	Pass
		Horizontal	L3x3x5/16	158	-12032.000	19418.801	62.0	Pass
		Horizontal	L3x3x5/16	165	-13536.300	19418.801	69.7	Pass
		Horizontal	L3x3x5/16	175	-12767.300	20894.600	61.1	Pass
		Horizontal	L3x3x5/16	182	-11095.000	20894.600	53.1	Pass
		Horizontal	L3x3x5/16	189	-12487.900	20894.600	59.8	Pass
T7	100 - 91.6667	Horizontal	2L3x3x1/4	202	-15744.500	52550.199	30.0	Pass
							38.6 (b)	
		Horizontal	2L3x3x1/4	209	-13894.800	52550.199	26.4	Pass
							34.1 (b)	
		Horizontal	2L3x3x1/4	216	-15286.800	52550.199	29.1	Pass
							37.5 (b)	
T8	91.6667 - 83.3333	Horizontal	2L3x3x1/4	229	-16541.301	50073.898	33.0	Pass
							40.7 (b)	
		Horizontal	2L3x3x1/4	236	-14673.700	50073.898	29.3	Pass
							36.1 (b)	
		Horizontal	2L3x3x1/4	243	-16123.400	50073.898	32.2	Pass
							39.6 (b)	
T9	83.3333 - 75	Horizontal	2L3x3x1/4	256	-17482.500	47621.500	36.7	Pass
							43.0 (b)	
		Horizontal	2L3x3x1/4	263	-15590.400	47621.500	32.7	Pass
							38.4 (b)	
		Horizontal	2L3x3x1/4	270	-17101.400	47621.500	35.9	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
							42.1 (b)	
T10	75 - 50	Horizontal	L4x4x1/4	283	-19823.500	22997.699	86.2	Pass
		Horizontal	L4x4x1/4	290	-17696.801	22997.699	77.0	Pass
		Horizontal	L4x4x1/4	297	-19534.301	22997.699	84.9	Pass
		Horizontal	L4x4x1/4	307	-18762.100	24933.100	75.2	Pass
							81.3 (b)	
		Horizontal	L4x4x1/4	314	-16690.301	24933.100	66.9	Pass
							72.4 (b)	
		Horizontal	L4x4x1/4	321	-18434.400	24933.100	73.9	Pass
							79.9 (b)	
T11	50 - 37.5	Horizontal	L4x4x1/4	334	-20785.600	21194.900	98.1	Pass
		Horizontal	L4x4x1/4	341	-18616.199	21194.900	87.8	Pass
		Horizontal	L4x4x1/4	348	-20531.699	21194.900	96.9	Pass
T13	25 - 12.5	Horizontal	L4x4x3/8	388	-22949.100	26405.100	86.9	Pass
		Horizontal	L4x4x3/8	395	-20490.900	26405.100	77.6	Pass
		Horizontal	L4x4x3/8	402	-22744.801	26405.100	86.1	Pass
T1	180 - 175	Top Girt	L3x3x1/4	4	-911.515	24791.500	3.7	Pass
							4.4 (b)	
		Top Girt	L3x3x1/4	5	-1404.700	24791.500	5.7	Pass
							6.7 (b)	
		Top Girt	L3x3x1/4	6	-1175.680	24791.500	4.7	Pass
							5.6 (b)	
T3	166.667 - 158.333	Top Girt	L2 1/2x2 1/2x3/16	28	-4266.360	12194.200	35.0	Pass
		Top Girt	L2 1/2x2 1/2x3/16	29	-3795.050	12194.200	31.1	Pass
		Top Girt	L2 1/2x2 1/2x3/16	30	-4602.300	12194.200	37.7	Pass
T4	158.333 - 150	Top Girt	L2 1/2x2 1/2x3/16	40	-5559.340	11179.200	49.7	Pass
		Top Girt	L2 1/2x2 1/2x3/16	41	-4533.230	11179.200	40.6	Pass
		Top Girt	L2 1/2x2 1/2x3/16	42	-5375.550	11179.200	48.1	Pass
T12	37.5 - 25	Top Girt	2L4x4x1/4	361	-21950.600	72328.898	30.3	Pass
							47.4 (b)	
		Top Girt	2L4x4x1/4	362	-19697.000	72328.898	27.2	Pass
							42.6 (b)	
		Top Girt	2L4x4x1/4	363	-21722.801	72328.898	30.0	Pass
							47.0 (b)	
T14	12.5 - 0	Top Girt	2L4x4x5/16	415	-23727.100	80880.398	29.3	Pass
							41.1 (b)	
		Top Girt	2L4x4x5/16	416	-21175.699	80880.398	26.2	Pass
							36.7 (b)	
		Top Girt	2L4x4x5/16	417	-23532.900	80880.398	29.1	Pass
							40.8 (b)	
T5	150 - 125	Redund Horz 1 Bracing	L2x2x3/16	54	-1154.220	12054.300	9.6	Pass
		Redund Horz 1 Bracing	L2x2x3/16	57	-1150.100	12054.300	9.5	Pass
		Redund Horz 1 Bracing	L2x2x3/16	61	-1150.100	12054.300	9.5	Pass
		Redund Horz 1 Bracing	L2x2x3/16	64	-1136.910	12054.300	9.4	Pass
		Redund Horz 1 Bracing	L2x2x3/16	68	-1136.910	12054.300	9.4	Pass
		Redund Horz 1 Bracing	L2x2x3/16	71	-1154.220	12054.300	9.6	Pass
		Redund Horz 1 Bracing	L2x2x3/16	78	-1298.160	12414.300	10.5	Pass
		Redund Horz 1 Bracing	L2x2x3/16	81	-1293.120	12414.300	10.4	Pass
		Redund Horz 1 Bracing	L2x2x3/16	85	-1336.890	12414.300	10.8	Pass
		Redund Horz 1 Bracing	L2x2x3/16	88	-1326.810	12414.300	10.7	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
		Redund Horz 1 Bracing	L2x2x3/16	92	-1327.230	12414.300	10.7	Pass
		Redund Horz 1 Bracing	L2x2x3/16	95	-1342.350	12414.300	10.8	Pass
		Redund Horz 1 Bracing	L2x2x3/16	102	-1154.220	12776.400	9.0	Pass
		Redund Horz 1 Bracing	L2x2x3/16	105	-1150.100	12776.400	9.0	Pass
		Redund Horz 1 Bracing	L2x2x3/16	109	-1150.100	12776.400	9.0	Pass
		Redund Horz 1 Bracing	L2x2x3/16	112	-1136.910	12776.400	8.9	Pass
		Redund Horz 1 Bracing	L2x2x3/16	116	-1136.910	12776.400	8.9	Pass
		Redund Horz 1 Bracing	L2x2x3/16	119	-1154.220	12776.400	9.0	Pass
T6	125 - 100	Redund Horz 1 Bracing	L2x2x3/16	129	-2385.760	10990.800	21.7	Pass
		Redund Horz 1 Bracing	L2x2x3/16	132	-2379.230	10990.800	21.6	Pass
		Redund Horz 1 Bracing	L2x2x3/16	136	-2379.230	10990.800	21.6	Pass
		Redund Horz 1 Bracing	L2x2x3/16	139	-2360.150	10990.800	21.5	Pass
		Redund Horz 1 Bracing	L2x2x3/16	143	-2360.150	10990.800	21.5	Pass
		Redund Horz 1 Bracing	L2x2x3/16	146	-2385.760	10990.800	21.7	Pass
		Redund Horz 1 Bracing	L2x2x3/16	153	-2385.760	11342.100	21.0	Pass
		Redund Horz 1 Bracing	L2x2x3/16	156	-2379.230	11342.100	21.0	Pass
		Redund Horz 1 Bracing	L2x2x3/16	160	-2379.230	11342.100	21.0	Pass
		Redund Horz 1 Bracing	L2x2x3/16	163	-2360.150	11342.100	20.8	Pass
		Redund Horz 1 Bracing	L2x2x3/16	167	-2360.150	11342.100	20.8	Pass
		Redund Horz 1 Bracing	L2x2x3/16	170	-2385.760	11342.100	21.0	Pass
		Redund Horz 1 Bracing	L2x2x3/16	177	-2385.760	11696.700	20.4	Pass
		Redund Horz 1 Bracing	L2x2x3/16	180	-2379.230	11696.700	20.3	Pass
		Redund Horz 1 Bracing	L2x2x3/16	184	-2379.230	11696.700	20.3	Pass
		Redund Horz 1 Bracing	L2x2x3/16	187	-2360.150	11696.700	20.2	Pass
		Redund Horz 1 Bracing	L2x2x3/16	191	-2360.150	11696.700	20.2	Pass
		Redund Horz 1 Bracing	L2x2x3/16	194	-2385.760	11696.700	20.4	Pass
T7	100 - 91.6667	Redund Horz 1 Bracing	L2x2x3/16	204	-2833.640	10433.000	27.2	Pass
		Redund Horz 1 Bracing	L2x2x3/16	207	-2826.960	10433.000	27.1	Pass
		Redund Horz 1 Bracing	L2x2x3/16	211	-2826.960	10433.000	27.1	Pass
		Redund Horz 1 Bracing	L2x2x3/16	214	-2806.640	10433.000	26.9	Pass
		Redund Horz 1	L2x2x3/16	218	-2806.640	10433.000	26.9	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
		Bracing						
		Redund Horz 1	L2x2x3/16	221	-2833.640	10433.000	27.2	Pass
		Bracing						
T8	91.6667 - 83.3333	Redund Horz 1	L2x2x3/16	231	-3294.350	9755.500	33.8	Pass
		Bracing						
		Redund Horz 1	L2x2x3/16	234	-3287.540	9755.500	33.7	Pass
		Bracing						
		Redund Horz 1	L2x2x3/16	238	-3287.540	9755.500	33.7	Pass
		Bracing						
		Redund Horz 1	L2x2x3/16	241	-3266.060	9755.500	33.5	Pass
		Bracing						
		Redund Horz 1	L2x2x3/16	245	-3266.060	9755.500	33.5	Pass
		Bracing						
		Redund Horz 1	L2x2x3/16	248	-3294.350	9755.500	33.8	Pass
		Bracing						
T9	83.3333 - 75	Redund Horz 1	L2x2x3/16	258	-3760.590	9097.250	41.3	Pass
		Bracing						
		Redund Horz 1	L2x2x3/16	261	-3751.810	9097.250	41.2	Pass
		Bracing						
		Redund Horz 1	L2x2x3/16	265	-3751.810	9097.250	41.2	Pass
		Bracing						
		Redund Horz 1	L2x2x3/16	268	-3729.290	9097.250	41.0	Pass
		Bracing						
		Redund Horz 1	L2x2x3/16	272	-3729.290	9097.250	41.0	Pass
		Bracing						
		Redund Horz 1	L2x2x3/16	275	-3760.590	9097.250	41.3	Pass
		Bracing						
T10	75 - 50	Redund Horz 1	L2 1/2x2 1/2x3/16	285	-4936.210	14192.600	34.8	Pass
		Bracing						
		Redund Horz 1	L2 1/2x2 1/2x3/16	288	-4927.180	14192.600	34.7	Pass
		Bracing						
		Redund Horz 1	L2 1/2x2 1/2x3/16	292	-4927.180	14192.600	34.7	Pass
		Bracing						
		Redund Horz 1	L2 1/2x2 1/2x3/16	295	-4902.530	14192.600	34.5	Pass
		Bracing						
		Redund Horz 1	L2 1/2x2 1/2x3/16	299	-4902.530	14192.600	34.5	Pass
		Bracing						
		Redund Horz 1	L2 1/2x2 1/2x3/16	302	-4936.210	14192.600	34.8	Pass
		Bracing						
		Redund Horz 1	L2 1/2x2 1/2x3/16	309	-4936.210	14725.900	33.5	Pass
		Bracing						
		Redund Horz 1	L2 1/2x2 1/2x3/16	312	-4927.180	14725.900	33.5	Pass
		Bracing						
		Redund Horz 1	L2 1/2x2 1/2x3/16	316	-4927.180	14725.900	33.5	Pass
		Bracing						
		Redund Horz 1	L2 1/2x2 1/2x3/16	319	-4902.530	14725.900	33.3	Pass
		Bracing						
		Redund Horz 1	L2 1/2x2 1/2x3/16	323	-4902.530	14725.900	33.3	Pass
		Bracing						
		Redund Horz 1	L2 1/2x2 1/2x3/16	326	-4936.210	14725.900	33.5	Pass
		Bracing						
T11	50 - 37.5	Redund Horz 1	L2 1/2x2 1/2x3/16	336	-5682.230	13637.000	41.7	Pass
		Bracing						
		Redund Horz 1	L2 1/2x2 1/2x3/16	339	-5673.060	13637.000	41.6	Pass
		Bracing						
		Redund Horz 1	L2 1/2x2 1/2x3/16	343	-5673.060	13637.000	41.6	Pass
		Bracing						
		Redund Horz 1	L2 1/2x2 1/2x3/16	346	-5647.060	13637.000	41.4	Pass
		Bracing						
		Redund Horz 1	L2 1/2x2 1/2x3/16	350	-5647.060	13637.000	41.4	Pass
		Bracing						

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
		Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	353	-5682.230	13637.000	41.7	Pass
T12	37.5 - 25	Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	365	-6427.850	12604.700	51.0	Pass
		Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	368	-6418.140	12604.700	50.9	Pass
		Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	371	-6418.140	12604.700	50.9	Pass
		Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	374	-6390.940	12604.700	50.7	Pass
		Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	377	-6390.940	12604.700	50.7	Pass
		Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	380	-6427.850	12604.700	51.0	Pass
T13	25 - 12.5	Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	390	-7186.120	11605.500	61.9	Pass
		Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	393	-7173.540	11605.500	61.8	Pass
		Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	397	-7173.540	11605.500	61.8	Pass
		Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	400	-7145.180	11605.500	61.6	Pass
		Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	404	-7145.180	11605.500	61.6	Pass
		Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	407	-7186.120	11605.500	61.9	Pass
T14	12.5 - 0	Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	419	-7967.130	10621.400	75.0	Pass
		Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	422	-7954.500	10621.400	74.9	Pass
		Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	425	-7954.500	10621.400	74.9	Pass
		Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	428	-7925.120	10621.400	74.6	Pass
		Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	431	-7925.120	10621.400	74.6	Pass
		Redund Horz 1 Bracing	L2 1/2x2 1/2x3/16	434	-7967.130	10621.400	75.0	Pass
T5	150 - 125	Redund Diag 1 Bracing	L2x2x3/16	55	-867.959	6798.980	12.8	Pass
		Redund Diag 1 Bracing	L2x2x3/16	58	-864.862	6798.980	12.7	Pass
		Redund Diag 1 Bracing	L2x2x3/16	62	-864.862	6798.980	12.7	Pass
		Redund Diag 1 Bracing	L2x2x3/16	65	-854.940	6798.980	12.6	Pass
		Redund Diag 1 Bracing	L2x2x3/16	69	-854.940	6798.980	12.6	Pass
		Redund Diag 1 Bracing	L2x2x3/16	72	-867.959	6798.980	12.8	Pass
		Redund Diag 1 Bracing	L2x2x3/16	79	-994.914	7087.540	14.0	Pass
		Redund Diag 1 Bracing	L2x2x3/16	82	-991.107	7087.540	14.0	Pass
		Redund Diag 1 Bracing	L2x2x3/16	86	-1028.510	7087.540	14.5	Pass
		Redund Diag 1 Bracing	L2x2x3/16	89	-1020.520	7087.540	14.4	Pass
		Redund Diag 1 Bracing	L2x2x3/16	93	-1017.940	7087.540	14.4	Pass
		Redund Diag 1	L2x2x3/16	96	-1029.730	7087.540	14.5	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
		Bracing Redund Diag 1	L2x2x3/16	103	-920.594	7384.910	12.5	Pass
		Bracing Redund Diag 1	L2x2x3/16	106	-917.309	7384.910	12.4	Pass
		Bracing Redund Diag 1	L2x2x3/16	110	-917.309	7384.910	12.4	Pass
		Bracing Redund Diag 1	L2x2x3/16	113	-906.785	7384.910	12.3	Pass
		Bracing Redund Diag 1	L2x2x3/16	117	-906.785	7384.910	12.3	Pass
		Bracing Redund Diag 1	L2x2x3/16	120	-920.594	7384.910	12.5	Pass
T6	125 - 100	Bracing Redund Diag 1	L2x2x3/16	130	-1670.810	5938.100	28.1	Pass
		Bracing Redund Diag 1	L2x2x3/16	133	-1666.230	5938.100	28.1	Pass
		Bracing Redund Diag 1	L2x2x3/16	137	-1666.230	5938.100	28.1	Pass
		Bracing Redund Diag 1	L2x2x3/16	140	-1652.880	5938.100	27.8	Pass
		Bracing Redund Diag 1	L2x2x3/16	144	-1652.880	5938.100	27.8	Pass
		Bracing Redund Diag 1	L2x2x3/16	147	-1670.810	5938.100	28.1	Pass
		Bracing Redund Diag 1	L2x2x3/16	154	-1707.540	6193.480	27.6	Pass
		Bracing Redund Diag 1	L2x2x3/16	157	-1702.870	6193.480	27.5	Pass
		Bracing Redund Diag 1	L2x2x3/16	161	-1702.870	6193.480	27.5	Pass
		Bracing Redund Diag 1	L2x2x3/16	164	-1689.220	6193.480	27.3	Pass
		Bracing Redund Diag 1	L2x2x3/16	168	-1689.220	6193.480	27.3	Pass
		Bracing Redund Diag 1	L2x2x3/16	171	-1707.540	6193.480	27.6	Pass
		Bracing Redund Diag 1	L2x2x3/16	178	-1748.420	6458.880	27.1	Pass
		Bracing Redund Diag 1	L2x2x3/16	181	-1743.630	6458.880	27.0	Pass
		Bracing Redund Diag 1	L2x2x3/16	185	-1743.630	6458.880	27.0	Pass
		Bracing Redund Diag 1	L2x2x3/16	188	-1729.650	6458.880	26.8	Pass
		Bracing Redund Diag 1	L2x2x3/16	192	-1729.650	6458.880	26.8	Pass
		Bracing Redund Diag 1	L2x2x3/16	195	-1748.420	6458.880	27.1	Pass
T7	100 - 91.6667	Bracing Redund Diag 1	L2x2x3/16	205	-1945.120	5679.480	34.2	Pass
		Bracing Redund Diag 1	L2x2x3/16	208	-1940.530	5679.480	34.2	Pass
		Bracing Redund Diag 1	L2x2x3/16	212	-1940.530	5679.480	34.2	Pass
		Bracing Redund Diag 1	L2x2x3/16	215	-1926.580	5679.480	33.9	Pass
		Bracing Redund Diag 1	L2x2x3/16	219	-1926.580	5679.480	33.9	Pass
		Bracing Redund Diag 1	L2x2x3/16	222	-1945.120	5679.480	34.2	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T8	91.6667 - 83.3333	Redund Diag 1 Bracing	L2x2x3/16	232	-2219.980	5433.940	40.9	Pass
		Redund Diag 1 Bracing	L2x2x3/16	235	-2215.390	5433.940	40.8	Pass
		Redund Diag 1 Bracing	L2x2x3/16	239	-2215.390	5433.940	40.8	Pass
		Redund Diag 1 Bracing	L2x2x3/16	242	-2200.910	5433.940	40.5	Pass
		Redund Diag 1 Bracing	L2x2x3/16	246	-2200.910	5433.940	40.5	Pass
		Redund Diag 1 Bracing	L2x2x3/16	249	-2219.980	5433.940	40.9	Pass
T9	83.3333 - 75	Redund Diag 1 Bracing	L2x2x3/16	259	-2491.290	5200.860	47.9	Pass
		Redund Diag 1 Bracing	L2x2x3/16	262	-2485.470	5200.860	47.8	Pass
		Redund Diag 1 Bracing	L2x2x3/16	266	-2485.470	5200.860	47.8	Pass
		Redund Diag 1 Bracing	L2x2x3/16	269	-2470.550	5200.860	47.5	Pass
		Redund Diag 1 Bracing	L2x2x3/16	273	-2470.550	5200.860	47.5	Pass
		Redund Diag 1 Bracing	L2x2x3/16	276	-2491.290	5200.860	47.9	Pass
T10	75 - 50	Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	286	-3875.660	6369.320	60.8	Pass
		Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	289	-3868.570	6369.320	60.7	Pass
		Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	293	-3868.570	6369.320	60.7	Pass
		Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	296	-3849.220	6369.320	60.4	Pass
		Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	300	-3849.220	6369.320	60.4	Pass
		Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	303	-3875.660	6369.320	60.8	Pass
		Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	310	-4002.390	6633.980	60.3	Pass
		Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	313	-3995.070	6633.980	60.2	Pass
		Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	317	-3995.070	6633.980	60.2	Pass
		Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	320	-3975.080	6633.980	59.9	Pass
		Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	324	-3975.080	6633.980	59.9	Pass
		Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	327	-4002.390	6633.980	60.3	Pass
T11	50 - 37.5	Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	337	-4332.130	6087.970	71.2	Pass
		Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	340	-4325.140	6087.970	71.0	Pass
		Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	344	-4325.140	6087.970	71.0	Pass
		Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	347	-4305.320	6087.970	70.7	Pass
		Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	351	-4305.320	6087.970	70.7	Pass
		Redund Diag 1 Bracing	L2 1/2x2 1/2x3/16	354	-4332.130	6087.970	71.2	Pass
T12	37.5 - 25	Redund Diag 1	L2 1/2x2 1/2x3/16	366	-4770.450	5820.200	82.0	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
		Bracing Redund Diag 1	L2 1/2x2 1/2x3/16	369	-4763.250	5820.200	81.8	Pass
		Bracing Redund Diag 1	L2 1/2x2 1/2x3/16	372	-4763.250	5820.200	81.8	Pass
		Bracing Redund Diag 1	L2 1/2x2 1/2x3/16	375	-4743.060	5820.200	81.5	Pass
		Bracing Redund Diag 1	L2 1/2x2 1/2x3/16	378	-4743.060	5820.200	81.5	Pass
		Bracing Redund Diag 1	L2 1/2x2 1/2x3/16	381	-4770.450	5820.200	82.0	Pass
T13	25 - 12.5	Bracing Redund Diag 1	L3x3x1/4	391	-5203.160	12708.200	40.9	Pass
		Bracing Redund Diag 1	L3x3x1/4	394	-5194.060	12708.200	40.9	Pass
		Bracing Redund Diag 1	L3x3x1/4	398	-5194.060	12708.200	40.9	Pass
		Bracing Redund Diag 1	L3x3x1/4	401	-5173.520	12708.200	40.7	Pass
		Bracing Redund Diag 1	L3x3x1/4	405	-5173.520	12708.200	40.7	Pass
		Bracing Redund Diag 1	L3x3x1/4	408	-5203.160	12708.200	40.9	Pass
T14	12.5 - 0	Bracing Redund Diag 1	L3x3x1/4	420	-5639.310	12154.700	46.4	Pass
		Bracing Redund Diag 1	L3x3x1/4	423	-5630.370	12154.700	46.3	Pass
		Bracing Redund Diag 1	L3x3x1/4	426	-5630.370	12154.700	46.3	Pass
		Bracing Redund Diag 1	L3x3x1/4	429	-5609.580	12154.700	46.2	Pass
		Bracing Redund Diag 1	L3x3x1/4	432	-5609.580	12154.700	46.2	Pass
		Bracing Redund Diag 1	L3x3x1/4	435	-5639.310	12154.700	46.4	Pass
T5	150 - 125	Inner Bracing	L2 1/2x2x3/16	73	-11.428	4505.540	0.9	Pass
		Inner Bracing	L2 1/2x2x3/16	74	-11.413	4505.540	0.9	Pass
		Inner Bracing	L2 1/2x2x3/16	75	-11.498	4505.540	0.9	Pass
		Inner Bracing	L2 1/2x2x3/16	97	-11.171	4955.830	0.8	Pass
		Inner Bracing	L2 1/2x2x3/16	98	-11.152	4955.830	0.8	Pass
		Inner Bracing	L2 1/2x2x3/16	99	-11.231	4955.830	0.8	Pass
		Inner Bracing	L2 1/2x2x3/16	121	-10.277	5477.150	0.8	Pass
		Inner Bracing	L2 1/2x2x3/16	122	-10.258	5477.150	0.8	Pass
		Inner Bracing	L2 1/2x2x3/16	123	-10.332	5477.150	0.8	Pass
T6	125 - 100	Inner Bracing	L2 1/2x2x3/16	148	-13.832	3469.700	1.0	Pass
		Inner Bracing	L2 1/2x2x3/16	149	-13.816	3469.700	1.0	Pass
		Inner Bracing	L2 1/2x2x3/16	150	-13.950	3469.700	1.0	Pass
		Inner Bracing	L2 1/2x2x3/16	172	-13.497	3771.280	0.9	Pass
		Inner Bracing	L2 1/2x2x3/16	173	-13.479	3771.280	0.9	Pass
		Inner Bracing	L2 1/2x2x3/16	174	-13.614	3771.280	0.9	Pass
		Inner Bracing	L2 1/2x2x3/16	196	-13.154	4113.950	0.9	Pass
		Inner Bracing	L2 1/2x2x3/16	197	-13.135	4113.950	0.9	Pass
		Inner Bracing	L2 1/2x2x3/16	198	-13.270	4113.950	0.9	Pass
T7	100 - 91.6667	Inner Bracing	L2 1/2x2x3/16	223	-19.677	3202.900	1.0	Pass
		Inner Bracing	L2 1/2x2x3/16	224	-19.632	3202.900	1.0	Pass
		Inner Bracing	L2 1/2x2x3/16	225	-19.706	3202.900	1.0	Pass
T8	91.6667 - 83.3333	Inner Bracing	L2 1/2x2x3/16	250	-19.443	2965.740	1.0	Pass
		Inner Bracing	L2 1/2x2x3/16	251	-19.403	2965.740	1.0	Pass
		Inner Bracing	L2 1/2x2x3/16	252	-19.469	2965.740	1.0	Pass
T9	83.3333 - 75	Inner Bracing	L2 1/2x2x3/16	277	-19.156	2753.970	1.0	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
		Inner Bracing	L2 1/2x2x3/16	278	-19.121	2753.970	1.0	Pass
		Inner Bracing	L2 1/2x2x3/16	279	-19.179	2753.970	1.0	Pass
T10	75 - 50	Inner Bracing	L2 1/2x2 1/2x3/16	304	-21.185	3467.320	0.9	Pass
		Inner Bracing	L2 1/2x2 1/2x3/16	305	-21.172	3467.320	0.9	Pass
		Inner Bracing	L2 1/2x2 1/2x3/16	306	-21.392	3467.320	0.9	Pass
		Inner Bracing	L2 1/2x2 1/2x3/16	328	-20.750	3841.910	0.9	Pass
		Inner Bracing	L2 1/2x2 1/2x3/16	329	-20.733	3841.910	0.9	Pass
		Inner Bracing	L2 1/2x2 1/2x3/16	330	-20.958	3841.910	0.9	Pass
T11	50 - 37.5	Inner Bracing	L2 1/2x2 1/2x3/16	355	-20.726	3144.960	1.0	Pass
		Inner Bracing	L2 1/2x2 1/2x3/16	356	-20.715	3144.960	1.0	Pass
		Inner Bracing	L2 1/2x2 1/2x3/16	357	-20.926	3144.960	1.0	Pass
T12	37.5 - 25	Inner Bracing	L2 1/2x2 1/2x3/16	382	-388.603	2865.560	13.6	Pass
		Inner Bracing	L2 1/2x2 1/2x3/16	383	-384.620	2865.560	13.4	Pass
		Inner Bracing	L2 1/2x2 1/2x3/16	384	-388.615	2865.560	13.6	Pass
T13	25 - 12.5	Inner Bracing	L3x3x1/4	409	-21.920	5986.700	0.7	Pass
		Inner Bracing	L3x3x1/4	410	-21.912	5986.700	0.7	Pass
		Inner Bracing	L3x3x1/4	411	-22.110	5986.700	0.7	Pass
T14	12.5 - 0	Inner Bracing	L3x3x1/4	436	-421.446	5498.200	7.7	Pass
		Inner Bracing	L3x3x1/4	437	-418.076	5498.200	7.6	Pass
		Inner Bracing	L3x3x1/4	438	-421.459	5498.200	7.7	Pass
							Summary	
						Leg (T14)	93.6	Pass
						Diagonal (T11)	93.9	Pass
						Horizontal (T11)	98.1	Pass
						Top Girt (T4)	49.7	Pass
						Redund Horz 1 Bracing (T14)	75.0	Pass
						Redund Diag 1 Bracing (T12)	82.0	Pass
						Inner Bracing (T12)	13.6	Pass
						Bolt Checks	92.2	Pass
						RATING =	**98.1**	**Pass**

ANCHOR BOLT EVALUATION

ANCHOR BOLT ANALYSIS

Input Data

Tower Reactions:

Uplift: $Uplift := 440.095kips$ *user input*

Shear: $Shear := 60.234kips$ *user input*

Compression: $Compression := 504.384kips$ *user input*

Anchor Bolt Data:

Use ASTM A36 (actual material strength unknown therefore assume min design values)

Number of Anchor Bolts = N $N := 6$ *user input*

Bolt Ultimate Strength: $F_u := 58 \cdot ksi$ *user input*

Bolt Yield Strength: $Fy := 36 \cdot ksi$ *user input*

Bolt Modulus: $E := 29000 ksi$ *user input*

Thickness of Anchor Bolts $D := 1.75in$ *user input*

Threads per Inch: $n := 5$ *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: $L_{ar} := 0in$ *user input*

Bolt Modulus: $E := 29000 \cdot ksi$ *user input*

Previously MODified Anchorage - Steel Bolts (Ref. SAI-063 Rev.1)

Number of Anchor Bolts = N $N_{M1} := 0$ *user input*

Bolt Ultimate Strength: $F_{u.M1} := 72.5 \cdot ksi$ *user input*

Bolt Yield Strength: $Fy_{M1} := 58 \cdot ksi$ *user input*

Bolt Modulus: $E_{M1} := 29000 ksi$ *user input*

Thickness of Anchor Bolts $D_{M1} := 1.25in$ *user input*

Threads per Inch: $n_{M1} := 7$ *user input*

Previously MODified Anchorage - Steel Bolts (Ref. NSS-015 Rev.2)

Number of Anchor Bolts = N $N_{M2} := 0$ *user input*

Bolt Ultimate Strength: $F_{u.M2} := 72.5 \cdot ksi$ *user input*

Bolt Yield Strength: $Fy_{M2} := 58 \cdot ksi$ *user input*

Bolt Modulus: $E_{M2} := 29000 \cdot ksi$ *user input*

Thickness of Anchor Bolts $D_{M2} := 1.25in$ *user input*

Threads per Inch: $n_{M2} := 7$ *user input*

Anchor Bolt Section Properties:

Gross Area of Bolt:

$A_{ge} := 6\frac{\pi}{4}\cdot D^2$ $A_{ge} = 14.43\cdot in^2$ $A_{g.pm} := 0\frac{\pi}{4}\cdot D_{M1}{}^2 + 0\frac{\pi}{4}\cdot D_{M2}{}^2$ $A_{g.pm} = 0\cdot in^2$

Net Area of Bolt:

$A_{ne} := 6\cdot\left[\frac{\pi}{4}\cdot\left(D - \frac{0.9743\cdot in}{n}\right)^2\right]$ $A_{n.pm} := 0\cdot\left[\frac{\pi}{4}\cdot\left(D_{M1} - \frac{0.9743\cdot in}{n_{M1}}\right)^2\right] + 0\cdot\left[\frac{\pi}{4}\cdot\left(D_{M2} - \frac{0.9743\cdot in}{n_{M2}}\right)^2\right]$

$A_{ne} = 11.4\cdot in^2$ $A_{n.pm} = 0\cdot in^2$

Net Diameter:

$D_{ne} := 6\left(D - \frac{0.9743in}{n}\right)$ $D_{ne} = 9.33\cdot in$ $D_{n.pm} := 0\cdot\left(D_{M1} - \frac{0.9743\cdot in}{n_{M1}}\right) + 0\cdot\left(D_{M2} - \frac{0.9743\cdot in}{n_{M2}}\right)$ $D_{n.pm} = 0\cdot in$

Radius of Gyration of Bolt:

$r_e := 6\cdot\frac{\left(D - \frac{0.9743in}{n}\right)}{4}$ $r_e = 2.33\cdot in$ $r_{pm} := 0\cdot\frac{\left(D_{M1} - \frac{0.9743\cdot in}{n_{M1}}\right)}{4} + 0\cdot\frac{\left(D_{M2} - \frac{0.9743\cdot in}{n_{M2}}\right)}{4}$ $r_{pm} = 0\cdot in$

Plastic Section Modulus of Bolt:

$Z_{xe} := 6\frac{\left(D - \frac{0.9743in}{n}\right)^3}{6}$ $Z_{xe} = 3.76\cdot in^3$ $Z_{x.pm} := 0\frac{\left(D_{M1} - \frac{0.9743\cdot in}{n_{M1}}\right)^3}{6} + 0\frac{\left(D_{M2} - \frac{0.9743\cdot in}{n_{M2}}\right)^3}{6}$ $Z_{x.pm} = 0\cdot in^3$

Forces:

Tension Force:

$T_u := \frac{Uplift}{1}$

$T_u = 440.1\cdot kip$ $T_{ub} := T_u$

Shear Force:

$V_u := \frac{Shear}{1}$

$V_u = 60.23\cdot kip$ $V_{ub} := V_u$

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):

$\phi_t := 0.75$ $\phi_{t.pm} := 0.65$

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

$\phi_v := 0.75$ $\phi_{v.pm} := 0.60$

ANSI/TIA-222-G 4.7.1 Flexural Members:

Nominal Flexure Strength, Mn:

$M_n := Fy \cdot Z_{xe} + Fy \cdot Z_{x.pm}$

$M_n = 11.28 \cdot ft \cdot kip$

$\phi_f \cdot M_n = 10.15 \cdot ft \cdot kip$

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

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

$M_u = 0 \cdot ft \cdot kip$

Flexure Check:

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

FlexureCheck = "OK"

$\frac{M_u}{\phi_f \cdot M_n} = 0 \cdot \%$

ANSI/TIA-222-G 4.9.6.1 Tensile Strength:

Design Tensile Strength, Rnt:

$R_{nt} := F_u \cdot A_{ne}$ $\quad R_{nt.pm} := F_u \cdot A_{n.pm}$

$R_{nt} = 661.01 \cdot ft \cdot kip$ $\quad R_{nt.pm} = 0 \cdot ft \cdot kip$

$\phi_t \cdot R_{nt} = 495.76 \cdot ft \cdot kip$ $\quad \phi_{t.pm} \cdot R_{nt.pm} = 0 \cdot ft \cdot kip$

Tension Check:

$TensionCheck := if\left[T_u \le \left(\phi_t \cdot R_{nt} + \phi_{t.pm} \cdot R_{nt.pm}\right), "OK", "NO\ GOOD"\right]$

TensionCheck = "OK"

$\frac{T_u}{\phi_t \cdot R_{nt} + \phi_{t.pm} \cdot R_{nt.pm}} = 88.77 \cdot \%$

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

Design Shear Strength, Rnv:

$R_{nv} := 0.45 \cdot F_u \cdot A_{ge}$ $\quad R_{nv.pm} := 0.45 \cdot F_u \cdot A_{g.pm}$

$R_{nv} = 376.67 \cdot ft \cdot kip$ $\quad R_{nv.pm} = 0 \cdot ft \cdot kip$

$\phi_v \cdot R_{nv} = 282.5 \cdot ft \cdot kip$ $\quad \phi_{v.pm} \cdot R_{nv.pm} = 0 \cdot ft \cdot kip$

Shear Check:

$ShearCheck := if\left[V_u \le \left(\phi_v \cdot R_{nv} + \phi_{v.pm} \cdot R_{nv.pm}\right), "OK", "NO\ GOOD"\right]$

ShearCheck = "OK"

$\frac{V_u}{\phi_v \cdot R_{nv} + \phi_{v.pm} \cdot R_{nv.pm}} = 21.32 \cdot \%$

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

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

$$\left[\frac{V_{ub}}{(\phi_v \cdot R_{nv} + \phi_{v.pm} \cdot R_{nv.pm})}\right]^2 + \left[\frac{T_{ub}}{(\phi_t \cdot R_{nt} + \phi_{t.pm} \cdot R_{nt.pm})}\right]^2 = 0.83$$

Combined Shear and Tension Check:

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

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*

$$\frac{\left[T_u + \left(\frac{V_u}{\eta}\right)\right]}{(\phi_b \cdot F_u \cdot A_{ne}) + (\phi_t \cdot F_u \cdot A_{g.pm})} = 1.04$$

Capacity Check:

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

CapacityCheck = "NO GOOD"

NOTE: Concrete Anchors have been previously modified per project SAI-0634 Revision 1 and project NSS-015 Revision 2. The following calculations shall check the strength of the additional anchors and the strength of the previously applied weld.

$$T_u + \left(\frac{V_u}{\eta}\right) = 549.61 \cdot \text{kip}$$

$\phi_b \cdot F_{up} \cdot A_{ne} = \blacksquare \cdot \text{kip}$

$$(\phi_b \cdot F_u \cdot A_{ne}) + (\phi_t \cdot F_u \cdot A_{g.pm}) = 528.81 \cdot \text{kip}$$

$530.92\text{kip} - 528.81\text{kip} = 2110.00 \cdot \text{lbf}$

Above force required for additional anchorage required for uplift resistance for Strength Design (LRFD) - see prevously instlled anchors for Strength design check. (Disregard above note if value is negative)

ANCHOR BOLT ANALYSIS

Input Data

Tower Reactions:

Uplift: Uplift := 440.095kips *user input*

Uplift = 440.1·kip

Shear: Shear := 60.234kips *user input*

Shear = 60.2·kip

Compression: Compression := 504.384kips *user input*

Compression = 504.4·kip

Anchor Bolt Data:

Use ASTM A36 (actual material strength unknown therefore assume min design values)

Number of Anchor Bolts = N $N := 6$ *user input*

Bolt Ultimate Strength: $F_u := 58 \cdot ksi$ *user input*

Bolt Yield Strength: $Fy := 36 \cdot ksi$ *user input*

Bolt Modulus: $E := 29000\,ksi$ *user input*

Thickness of Anchor Bolts $D := 1.75in$ *user input*

Threads per Inch: $n := 5$ *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: $L_{ar} := 2in$ *user input*

Bolt Modulus: $E := 29000 \cdot ksi$ *user input*

Previously MODified Anchorage - Steel Bolts (Ref. SAI-063 Rev.1)

Number of Anchor Bolts = N $N_{M1} := 1$ *user input*

Bolt Ultimate Strength: $F_{u.M1} := 72.5 \cdot ksi$ *user input*

Bolt Yield Strength: $Fy_{M1} := 58 \cdot ksi$ *user input*

Bolt Modulus: $E_{M1} := 29000\,ksi$ *user input*

Thickness of Anchor Bolts $D_{M1} := 1.25in$ *user input*

Threads per Inch: $n_{M1} := 7$ *user input*

Previously MODified Anchorage - Steel Bolts (Ref. NSS-015 Rev.2)

Number of Anchor Bolts = N $N_{M2} := 2$ *user input*

Bolt Ultimate Strength: $F_{u.M2} := 72.5 \cdot ksi$ *user input*

Bolt Yield Strength: $Fy_{M2} := 58 \cdot ksi$ *user input*

Bolt Modulus: $E_{M2} := 29000 \cdot ksi$ *user input*

Thickness of Anchor Bolts $D_{M2} := 1.25in$ *user input*

Threads per Inch: $n_{M2} := 7$ *user input*

Anchor Bolt Section Properties:

Gross Area of Bolt:

$A_{ge} := 6\frac{\pi}{4}\cdot D^2$ $A_{ge} = 14.43\cdot in^2$ $A_{g.pm} := 1\frac{\pi}{4}\cdot D_{M1}^{\ 2} + 2\frac{\pi}{4}\cdot D_{M2}^{\ 2}$ $A_{g.pm} = 3.68\cdot in^2$

Net Area of Bolt:

$A_{ne} := 6\cdot\left[\frac{\pi}{4}\cdot\left(D - \frac{0.9743\cdot in}{n}\right)^2\right]$ $A_{n.pm} := 1\cdot\left[\frac{\pi}{4}\cdot\left(D_{M1} - \frac{0.9743\cdot in}{n_{M1}}\right)^2\right] + 2\cdot\left[\frac{\pi}{4}\cdot\left(D_{M2} - \frac{0.9743\cdot in}{n_{M2}}\right)^2\right]$

$A_{ne} = 11.4\cdot in^2$ $A_{n.pm} = 2.91\cdot in^2$

Net Diameter:

$D_{ne} := 6\left(D - \frac{0.9743in}{n}\right)$ $D_{ne} = 9.33\cdot in$ $D_{n.pm} := 1\cdot\left(D_{M1} - \frac{0.9743\cdot in}{n_{M1}}\right) + 2\cdot\left(D_{M2} - \frac{0.9743\cdot in}{n_{M2}}\right)$ $D_{n.pm} = 3.33\cdot in$

Radius of Gyration of Bolt:

$r_e := 6\cdot\frac{\left(D - \frac{0.9743in}{n}\right)}{4}$ $r_e = 2.33\cdot in$ $r_{pm} := 1\cdot\frac{\left(D_{M1} - \frac{0.9743\cdot in}{n_{M1}}\right)}{4} + 2\cdot\frac{\left(D_{M2} - \frac{0.9743\cdot in}{n_{M2}}\right)}{4}$ $r_{pm} = 0.83\cdot in$

Plastic Section Modulus of Bolt:

$Z_{xe} := 6\frac{\left(D - \frac{0.9743in}{n}\right)^3}{6}$ $Z_{xe} = 3.76\cdot in^3$ $Z_{x.pm} := 1\frac{\left(D_{M1} - \frac{0.9743\cdot in}{n_{M1}}\right)^3}{6} + 2\frac{\left(D_{M2} - \frac{0.9743\cdot in}{n_{M2}}\right)^3}{6}$ $Z_{x.pm} = 0.69\cdot in^3$

Forces:

Tension Force:

$T_u := \frac{Uplift}{1}$

$T_u = 440.1\cdot kip$ $T_{ub} := T_u$

Shear Force:

$V_u := \frac{Shear}{1}$

$V_u = 60.23\cdot kip$ $V_{ub} := V_u$

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):

$\phi_t := 0.75$ $\phi_{t.pm} := 0.65$

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

$\phi_v := 0.75$ $\phi_{v.pm} := 0.60$

ANSI/TIA-222-G 4.7.1 Flexural Members:

Nominal Flexure Strength, Mn:

$M_n := Fy \cdot Z_{xe} + Fy \cdot Z_{x.pm}$

$M_n = 13.34 \cdot ft \cdot kip$

$\phi_f \cdot M_n = 12.01 \cdot ft \cdot kip$

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

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

$M_u = 10.04 \cdot ft \cdot kip$

Flexure Check:

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

FlexureCheck = "OK"

$$\frac{M_u}{\phi_f \cdot M_n} = 83.62 \cdot \%$$

ANSI/TIA-222-G 4.9.6.1 Tensile Strength:

Design Tensile Strength, Rnt:

$R_{nt} := F_u \cdot A_{ne}$ $\quad R_{nt.pm} := F_u \cdot A_{n.pm}$

$R_{nt} = 661.01 \cdot ft \cdot kip$ $\quad R_{nt.pm} = 168.63 \cdot ft \cdot kip$

$\phi_t \cdot R_{nt} = 495.76 \cdot ft \cdot kip$ $\quad \phi_{t.pm} \cdot R_{nt.pm} = 109.61 \cdot ft \cdot kip$

Tension Check:

$TensionCheck := if\left[T_u \le \left(\phi_t \cdot R_{nt} + \phi_{t.pm} \cdot R_{nt.pm}\right), "OK", "NO\ GOOD"\right]$

TensionCheck = "OK"

$$\frac{T_u}{\phi_t \cdot R_{nt} + \phi_{t.pm} \cdot R_{nt.pm}} = 72.7 \cdot \%$$

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

Design Shear Strength, Rnv:

$R_{nv} := 0.45 \cdot F_u \cdot A_{ge}$ $\quad R_{nv.pm} := 0.45 \cdot F_u \cdot A_{g.pm}$

$R_{nv} = 376.67 \cdot ft \cdot kip$ $\quad R_{nv.pm} = 96.09 \cdot ft \cdot kip$

$\phi_v \cdot R_{nv} = 282.5 \cdot ft \cdot kip$ $\quad \phi_{v.pm} \cdot R_{nv.pm} = 57.65 \cdot ft \cdot kip$

Shear Check:

$ShearCheck := if\left[V_u \le \left(\phi_v \cdot R_{nv} + \phi_{v.pm} \cdot R_{nv.pm}\right), "OK", "NO\ GOOD"\right]$

ShearCheck = "OK"

$$\frac{V_u}{\phi_v \cdot R_{nv} + \phi_{v.pm} \cdot R_{nv.pm}} = 17.71 \cdot \%$$

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

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

$$\left[\frac{V_{ub}}{(\phi_v \cdot R_{nv} + \phi_{v.pm} \cdot R_{nv.pm})}\right]^2 + \left[\frac{T_{ub}}{(\phi_t \cdot R_{nt} + \phi_{t.pm} \cdot R_{nt.pm})}\right]^2 = 0.56$$

Combined Shear and Tension Check:

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

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*

$$\frac{\left[T_u + \left(\frac{V_u}{\eta}\right)\right]}{(\phi_b \cdot F_u \cdot A_{ne}) + (\phi_t \cdot F_u \cdot A_{g.pm})} = 0.80$$

Capacity Check:

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

CapacityCheck = "OK"

NOTE: Because the reinforcement of additional bolts are within capacity, the anchor bolts are considered to be OK for the design loads. Apply the previously calculated force that is not contained by the existing anchorage (prior to the additional anchorage modifications) with the previously installed anchorage to verify the capacity of the existing anchorage system.

$$T_u + \left(\frac{V_u}{\eta}\right) = 549.61 \cdot \text{kip}$$

$$T_u + \left(\frac{V_u}{\eta}\right) - \left[(\phi_b \cdot F_u \cdot A_{ne}) + (\phi_t \cdot F_u \cdot A_{g.pm})\right] = -139.34 \cdot \text{kip}$$

$\phi_b \cdot F_{up} \cdot A_{ne} = \blacksquare \cdot \text{kip}$

$(\phi_b \cdot F_u \cdot A_{ne}) + (\phi_t \cdot F_u \cdot A_{g.pm}) = 688.96 \cdot \text{kip}$

WELDED BEAM TO LEG ANCHOR ANALYSIS

NOTE: Welded beams were designed from a previous MODification analysis. The following calculation sheets are checking the capacity of the welded connection and adhesive anchorage for the Westbrook (CSP), CT Tower.

* From the Mathcad analysis for anchor bolts, the force required to be contained (by the additional 3 anchors) -->

$$Des_{Uplift} := \frac{\left[T_u + \left(\frac{V_u}{\eta}\right) - 528.81kip\right]}{3} = 6933.79 \cdot lbf$$

NOTE: **"528.81 kip"** comes from the "PRE_Group_G_Lattice_Anchor_Bolts" (non-modified bolted anchors)

"d" arm --> $d := 1ft + 2in$

* Identify Existing Conditions (Materials and Weld Length)

Yield Steel (f.y) --> $F_y := 50ksi$

Modulus Steel (E) --> $E := 29000ksi$

WT 8x25 --> $t_{w.WT8x25} := 0.380in$

$d_{WT8x25} := 8.13in$

Weld Length: $l_{weld} := 18in$

Area (WT 8x25 Stem) --> $A_{stem} := t_{w.WT8x25} \cdot l_{weld} = 6.84 \cdot in^2$

Section Modulus (x-axis) (Stem) --> $S_{stem} := \frac{t_{w.WT8x25} \cdot l_{weld}^2}{6} = 20.52 \cdot in^3$

$$\sigma_{force.M} := \frac{Des_{Uplift} \cdot d}{S_{stem}} = 4730.65 \cdot psi$$

$$\sigma_{force.P} := \frac{Des_{Uplift}}{A_{stem}} = 1013.71 \cdot psi$$

* CHECK - Flexure in WT (AISC - LRFD Method):

* Apply AISC Chapter F - Flexure, Section F9, Equation F9-10 (governs design): $\theta_f := 0.90$

$$F_{cr} := \left(2.55 - 1.84 \cdot \frac{d_{WT8x25}}{t_{w.WT8x25}} \cdot \sqrt{\frac{F_y}{E}}\right) \cdot F_y = 45.77 \cdot ksi$$

$$M_{capacity.beam} := F_{cr} \cdot \frac{t_{w.WT8x25} \cdot d_{WT8x25}^2}{6} \cdot \theta_f = 172.44 \cdot kip \cdot in$$

* CHECK - Flexure in WT (AISC - LRFD Method):

$$CHECK_1 := if\left(\frac{Des_{Uplift} \cdot d}{M_{capacity.beam}} < 1.0, "OK", "No\ Good"\right) \qquad \frac{Des_{Uplift} \cdot d}{M_{capacity.beam}} = 0.56$$

$CHECK_1 = "OK"$

* CHECK - Axial Stress in WT (AISC - LRFD Method):

$$CHECK_2 := if\left(\frac{\sigma_{force.M} + \sigma_{force.P}}{F_{cr} \cdot \theta_f} < 1.0, "OK", "No\ Good"\right) \qquad \frac{\sigma_{force.M} + \sigma_{force.P}}{F_{cr} \cdot \theta_f} = 0.14$$

$CHECK_2 = "OK"$

* CHECK - Shear in WT (AISC - LRFD Method):

* Apply AISC Chapter G - Shear, Section G2, Equation G2-1:

$\theta_v := 0.90$

$V_{cap} := 0.6 \cdot F_y \cdot A_w \cdot C_v$ ----> $C_v := 1.0$ $A_w := t_{w.WT8x25} \cdot \left(d_{WT8x25} - 0.630in\right) = 2.85 \cdot in^2$ $F_y = 50 \cdot ksi$

$V_{cap} := \theta_v \cdot 0.6 \cdot F_y \cdot A_w \cdot C_v = 76.95 \cdot kip$

* CHECK - Shear in WT (AISC - LRFD Method):

$CHECK_3 := if\left(\frac{Des_{Uplift}}{V_{cap}} < 1.0, "OK", "No\ Good"\right)$ $\frac{Des_{Uplift}}{V_{cap}} = 0.09$ $CHECK_3 = "OK"$

* CHECK - Shear Stress in WT (AISC - LRFD Method):

$CHECK_4 := if\left(\frac{\sigma_{force.P}}{F_y \cdot \theta_v \cdot 0.6} < 1.0, "OK", "No\ Good"\right)$ $\frac{\sigma_{force.P}}{F_y \cdot \theta_v \cdot 0.6} = 0.04$ $CHECK_4 = "OK"$

* CHECK - Combined Flexure - Shear Stress in WT (AISC - LRFD Method):

$CHECK_5 := if\left[\frac{\sigma_{force.M} + \sigma_{force.P}}{F_{cr} \cdot \theta_f} + \frac{\sigma_{force.P}}{\left(F_y \cdot \theta_v \cdot 0.6\right)} < 1.0, "OK", "No\ Good"\right]$ $\frac{\sigma_{force.M} + \sigma_{force.P}}{F_{cr} \cdot \theta_f} + \frac{\sigma_{force.P}}{\left(F_y \cdot \theta_v \cdot 0.6\right)} = 0.18$

$CHECK_5 = "OK"$

* CHECK - Combined Flexure - Shear Force in WT (AISC - LRFD Method):

$CHECK_6 := if\left(\frac{Des_{Uplift} \cdot d}{M_{capacity.beam}} + \frac{Des_{Uplift}}{V_{cap}} < 1.0, "OK", "No\ Good"\right)$ $\frac{Des_{Uplift} \cdot d}{M_{capacity.beam}} + \frac{Des_{Uplift}}{V_{cap}} = 0.65$

$CHECK_6 = "OK"$

* CHECK - Weld in WT (AISC - LRFD Method):

$t_{weld} := \frac{5}{16}in$ $\quad Fy_{Electrode} := 70ksi$ $\quad \theta_{weld} := 0.75$

$$S_{x.weld} := \frac{t_{weld}\cdot\left(l_{weld} - \frac{9}{16}in\right)^2}{6} = 15.84\cdot in^3$$

* Moment Induced into Weld (AISC - LRFD Method):

$$M_{applied} := Des_{Uplift}\cdot d = 97.07\cdot kip\cdot in$$

* Stress Caused by Moment on Weld (AISC - LRFD Method):

$$\sigma_{applied.M} := \frac{M_{applied}}{S_{x.weld}} = 6.13\cdot ksi$$

* Stress Capacity in Weld (AISC - LRFD Method):

$$\sigma_{weld} := Fy_{Electrode}\cdot 0.6\cdot \theta_{weld} = 31.5\cdot ksi$$

* CHECK - Stress in Weld on WT - Moment Induced (AISC - LRFD Method):

$$CHECK_7 := if\left(\frac{\sigma_{applied.M}}{\sigma_{weld}} < 1.0, "OK", "No\ Good"\right) \qquad \frac{\sigma_{applied.M}}{\sigma_{weld}} = 0.19$$

$CHECK_7 = "OK"$

* CHECK - Stress in Weld on WT - Shear Induced (AISC - LRFD Method):

$$CHECK_8 := if\left(\frac{\frac{Des_{Uplift}}{A_w}}{\sigma_{weld}} < 1.0, "OK", "No\ Good"\right) \qquad \frac{\frac{Des_{Uplift}}{A_w}}{\sigma_{weld}} = 0.08$$

$CHECK_8 = "OK"$

* CHECK - Combined Flexure - Shear Stress Force in Weld on WT (AISC - LRFD Method):

$$CHECK_9 := if\left(\frac{\frac{Des_{Uplift}}{A_w}}{\sigma_{weld}} + \frac{\sigma_{applied.M}}{\sigma_{weld}} < 1.0, "OK", "No\ Good"\right) \qquad \frac{\frac{Des_{Uplift}}{A_w}}{\sigma_{weld}} + \frac{\sigma_{applied.M}}{\sigma_{weld}} = 0.27$$

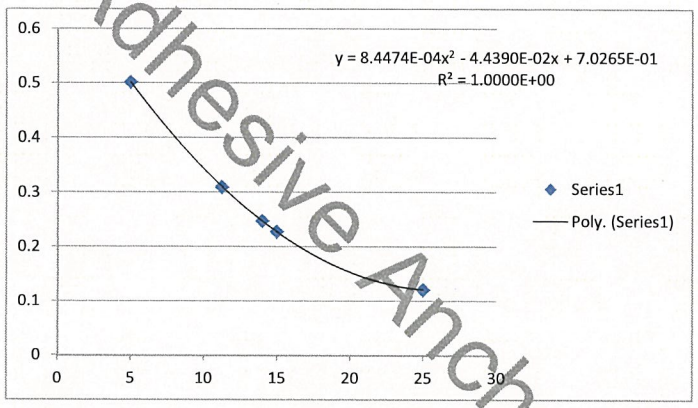
$CHECK_9 = "OK"$

The following calculation pages address the chemical / adhesive anchors previously installed into the tower leg foundation. Data from tables were obtained by NON-LINEAR interpolation (HILTI 2016 Catalog).

"Uncracked" Concrete Adhesive Capacity - HILTI HIT-RE500 V3 Epoxy Adhesive Anchor

Hef	Factor
5	0.501907
11.25	0.309821
14	0.246763
15	0.227169
25	0.120826

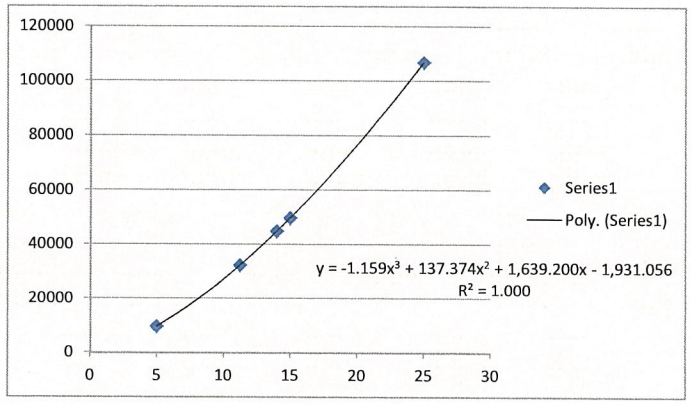
Reference:
Hilti HIT-RE 500 VE pg. 160
(Anchor Fastening Guide 2016)



"Uncracked" Concrete Adhesive Capacity - HILTI HIT-RE500 V3 Epoxy Adhesive Anchor

Hef	Strength
5	9555
11.25	32240
14	44785.75
15	49640
25	106805

Reference:
Hilti HIT-RE 500 VE pg. 151
(Anchor Fastening Guide 2016)

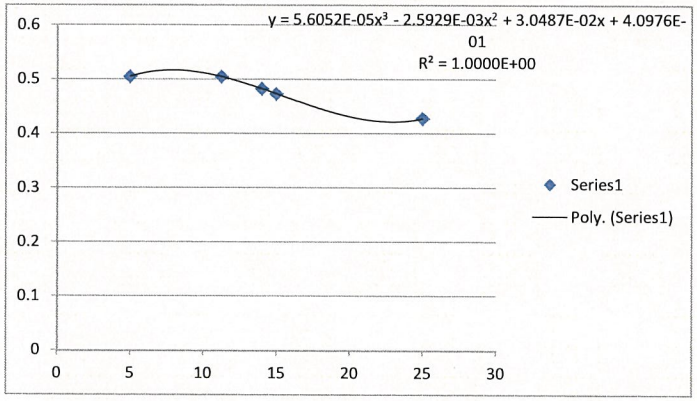


"X"	Factor	Strength	Factored Strength Adjustment	Remaining Uplift to Contain	# Anchors Proposed		
14	0.246763	44785.75 lbf	11051.46 lbf	24890	3	8296.667 lbf =	75%
			Capacity Load	(lbf)	(EA)	Design Load	

"Cracked" Concrete Adhesive Capacity - HILTI HIT-RE500 V3 Epoxy Adhesive Anchor

Hef	Factor
5	0.504381
11.25	0.504381
14	0.482179
15	0.472831
25	0.42717

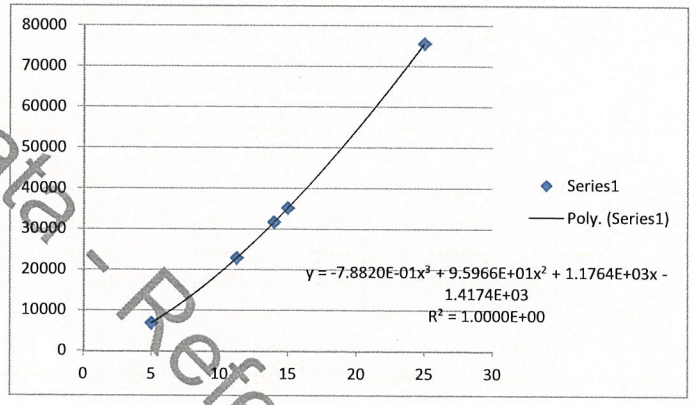
Reference:
Hilti HIT-RE 500 VE pg. 160
(Anchor Fastening Guide 2016)



"Cracked" Concrete Adhesive Capacity - HILTI HIT-RE500 V3 Epoxy Adhesive Anchor

Hef	Strength
5	6765
11.25	22840
14	31698.54
15	35160
25	75655

Reference:
Hilti HIT-RE 500 VE pg. 151
(Anchor Fastening Guide 2016)



"X"	Factor	Strength	Factored Strength Adjustment	Remaining Uplift to Contain	# Anchors Proposed		
14	0.482179	31698.537 lbf	15284.36 lbf	24890	3	8296.667 lbf =	54%
			Capacity Load	(lbf)	(EA)	Design Load	

HIT-RE 500 V3 Epoxy Adhesive Anchoring System 3.2.4

Table 25 - Hilti HIT-RE 500 V3 adhesive design strength with concrete / bond failure for threaded rod in uncracked concrete[1,2,3,4,5,6,7,8,9,11]

Nominal anchor diameter in.	Effective embedment in. (mm)	Tension — ΦN_n				Shear — ΦV_n			
		f'_c = 2,500 psi (17.2 MPa) lb (kN)	f'_c = 3,000 psi (20.7 MPa) lb (kN)	f'_c = 4,000 psi (27.6 MPa) lb (kN)	f'_c = 6,000 psi (41.4 MPa) lb (kN)	f'_c = 2,500 psi (17.2 MPa) lb (kN)	f'_c = 3,000 psi (20.7 MPa) lb (kN)	f'_c = 4,000 psi (27.6 MPa) lb (kN)	f'_c = 6,000 psi (41.4 MPa) lb (kN)
3/8	2-3/8 (60)	2,855 (12.7)	3,125 (13.9)	3,610 (16.1)	4,425 (19.7)	3,075 (13.7)	3,370 (15.0)	3,890 (17.3)	4,765 (21.2)
	3-3/8 (86)	4,835 (21.5)	5,300 (23.6)	6,115 (27.2)	7,490 (33.3)	10,415 (46.3)	11,410 (50.8)	13,175 (58.6)	16,135 (71.8)
	4-1/2 (114)	7,445 (33.1)	8,155 (36.3)	9,225 (41.0)	10,210 (45.4)	16,035 (71.3)	17,570 (78.2)	19,865 (88.4)	21,985 (97.8)
	7-1/2 (191)	13,670 (60.8)	14,305 (63.6)	15,375 (68.4)	17,015 (75.7)	29,440 (131.0)	30,815 (137.1)	33,110 (147.3)	36,645 (163.0)
1/2	2-3/4 (70)	3,555 (15.8)	3,895 (17.3)	4,500 (20.0)	5,510 (24.5)	7,660 (34.1)	8,395 (37.3)	9,690 (43.1)	11,870 (52.8)
	4-1/2 (114)	7,445 (33.1)	8,155 (36.3)	9,420 (41.9)	11,535 (51.3)	16,035 (71.3)	17,570 (78.2)	20,285 (90.2)	24,845 (110.5)
	6 (152)	11,465 (51.0)	12,560 (55.9)	14,500 (64.5)	17,535 (78.0)	24,690 (109.8)	27,045 (120.3)	31,230 (138.9)	37,775 (168.0)
	10 (254)	23,485 (104.5)	24,580 (109.3)	26,410 (117.5)	29,230 (130.0)	50,580 (225.0)	52,940 (235.5)	56,885 (253.0)	62,955 (280.0)
5/8	3-1/8 (79)	4,310 (19.2)	4,720 (21.0)	5,450 (24.2)	6,675 (29.7)	9,280 (41.3)	10,165 (45.2)	11,740 (52.2)	14,380 (64.0)
	5-5/8 (143)	10,405 (46.3)	11,400 (50.7)	13,165 (58.6)	16,120 (71.7)	22,415 (99.7)	24,550 (109.2)	28,350 (126.1)	34,720 (154.4)
	7-1/2 (191)	16,020 (71.3)	17,550 (78.1)	20,265 (90.1)	24,820 (110.4)	34,505 (153.5)	37,800 (168.1)	43,650 (194.2)	53,455 (237.8)
	12-1/2 (318)	34,470 (153.3)	36,900 (164.1)	39,655 (176.4)	43,885 (195.2)	74,245 (330.3)	79,480 (353.5)	85,405 (379.9)	94,520 (420.4)
3/4[10]	3-1/2 (89)	5,105 (22.7)	5,595 (24.9)	6,460 (28.7)	7,910 (35.2)	11,000 (48.9)	12,050 (53.6)	13,915 (61.9)	17,040 (75.8)
	6-3/4 (171)	13,680 (60.9)	14,985 (66.7)	17,305 (77.0)	21,190 (94.3)	29,460 (131.0)	32,275 (143.6)	37,265 (165.8)	45,645 (203.0)
	9 (229)	21,060 (93.7)	23,070 (102.6)	26,640 (118.5)	32,625 (145.1)	45,360 (201.8)	49,690 (221.0)	57,375 (255.2)	70,270 (312.6)
	15 (381)	45,315 (201.6)	49,640 (220.8)	55,035 (244.8)	60,905 (270.9)	97,600 (434.1)	106,915 (475.6)	118,535 (527.3)	131,180 (583.5)
7/8[10]	3-1/2 (89)	5,105 (22.7)	5,595 (24.9)	6,460 (28.7)	7,910 (35.2)	11,000 (48.9)	12,050 (53.6)	13,915 (61.9)	17,040 (75.8)
	7-7/8 (200)	17,235 (76.7)	18,885 (84.0)	21,805 (97.0)	26,705 (118.8)	37,125 (165.1)	40,670 (180.9)	46,960 (208.9)	57,515 (255.8)
	10-1/2 (267)	26,540 (118.1)	29,070 (129.3)	33,570 (149.3)	41,115 (182.9)	57,160 (254.3)	62,615 (278.5)	72,300 (321.6)	88,550 (393.9)
	17-1/2 (445)	57,100 (254.0)	62,550 (278.2)	71,740 (319.1)	79,395 (353.2)	122,990 (547.1)	134,730 (599.3)	154,520 (687.3)	171,005 (760.7)
1	4 (102)	6,240 (27.8)	6,835 (30.4)	7,895 (35.1)	9,665 (43.0)	13,440 (59.8)	14,725 (65.5)	17,000 (75.6)	20,820 (92.6)
	9 (229)	21,060 (93.7)	23,070 (102.6)	26,640 (118.5)	32,625 (145.1)	45,360 (201.8)	49,690 (221.0)	57,375 (255.2)	70,270 (312.6)
	12 (305)	32,425 (144.2)	35,520 (158.0)	41,015 (182.4)	50,230 (223.4)	69,835 (310.6)	76,500 (340.3)	88,335 (392.9)	108,190 (481.3)
	20 (508)	69,765 (310.3)	76,425 (339.9)	88,245 (392.5)	99,635 (443.2)	150,265 (668.4)	164,605 (732.2)	190,070 (845.5)	214,595 (954.6)
1-1/4[10]	5 (127)	8,720 (38.8)	9,555 (42.5)	11,030 (49.1)	13,510 (60.1)	18,785 (83.6)	20,575 (91.5)	23,760 (105.7)	29,100 (129.4)
	11-1/4 (286)	29,430 (130.9)	32,240 (143.4)	37,230 (165.6)	45,595 (202.8)	63,395 (282.0)	69,445 (308.9)	80,185 (356.7)	98,205 (436.8)
	15 (381)	45,315 (201.6)	49,640 (220.8)	57,320 (255.0)	70,200 (312.3)	97,600 (434.1)	106,915 (475.6)	123,455 (549.2)	151,200 (672.6)
	25 (635)	97,500 (433.7)	106,805 (475.1)	123,330 (548.6)	142,175 (632.4)	210,000 (934.1)	230,045 (1023.3)	265,630 (1181.6)	306,220 (1362.1)

1 See Section 3.1.8 for explanation on development of load values.
2 See Section 3.1.8.6 to convert design strength (factored resistance) value to ASD value.
3 Linear interpolation between embedment depths and concrete compressive strengths is not permitted.
4 Apply spacing, edge distance, and concrete thickness factors in Tables 30-41 as necessary to the above values. Compare to the steel values in Table 29. The lesser of the values is to be used for the design.
5 Data is for temperature range A: Max. short term temperature = 130°F (55°C), max. long term temperature = 110°F (43°C).
For temperature range B: Max. short term temperature = 176°F (80°C), max. long term temperature = 110°F (43°C) multiply above values by 0.69.
Short term elevated concrete temperatures are those that occur over brief intervals, e.g., as a result of diurnal cycling. Long term concrete temperatures are roughly constant over significant periods of time.
6 Tabular values are for dry concrete conditions.
For water-filled drilled holes multiply design strength by 0.51.
For submerged (under water) applications multiply design strength by 0.45.
7 Tabular values are for short term loads only. For sustained loads including overhead use, see Section 3.1.8.8.
8 Tabular values are for normal-weight concrete only. For lightweight concrete multiply design strength (factored resistance) by λ_a as follows:
For sand-lightweight, λ_a = 0.51. For all-lightweight, λ_a = 0.45.
9 Tabular values are for holes drilled in concrete with carbide tipped hammer drill bit. For diamond core drilling, except as indicated in note 10, multiply above values by 0.55.
Diamond core drilling is not permitted for water-filled or underwater (submerged) applications.
10 Diamond core drilling with Hilti TE-YRT roughening tool is permitted for 3/4", 7/8", and 1 1/4" diameter anchors for dry and water-saturated concrete conditions. See Table 27.
11 Tabular values are for static loads only. Seismic design is not permitted for uncracked concrete.

3.2.4 HIT-RE 500 V3 Epoxy Adhesive Anchoring System

Table 26 - Hilti HIT-RE 500 V3 adhesive design strength with concrete / bond failure for threaded rod in cracked concrete[1,2,3,4,5,6,7,8,9,11]

Nominal anchor diameter in.	Effective embedment in. (mm)	Tension — ΦN_n				Shear — ΦV_n			
		f'_c = 2,500 psi (17.2 MPa) lb (kN)	f'_c = 3,000 psi (20.7 MPa) lb (kN)	f'_c = 4,000 psi (27.6 MPa) lb (kN)	f'_c = 6,000 psi (41.4 MPa) lb (kN)	f'_c = 2,500 psi (17.2 MPa) lb (kN)	f'_c = 3,000 psi (20.7 MPa) lb (kN)	f'_c = 4,000 psi (27.6 MPa) lb (kN)	f'_c = 6,000 psi (41.4 MPa) lb (kN)
3/8	2-3/8 (60)	2,020 (9.0)	2,215 (9.9)	2,500 (11.1)	2,655 (11.8)	2,180 (9.7)	2,385 (10.6)	2,690 (12.0)	2,860 (12.7)
	3-3/8 (86)	3,310 (14.7)	3,400 (15.1)	3,550 (15.8)	3,770 (16.8)	7,125 (31.7)	7,325 (32.6)	7,645 (34.0)	8,125 (36.1)
	4-1/2 (114)	4,410 (19.6)	4,535 (20.2)	4,735 (21.1)	5,030 (22.4)	9,500 (42.3)	9,765 (43.4)	10,195 (45.3)	10,835 (48.2)
	7-1/2 (191)	7,350 (32.7)	7,555 (33.6)	7,890 (35.1)	8,385 (37.3)	15,835 (70.4)	16,275 (72.4)	16,990 (75.6)	18,055 (80.3)
1/2	2-3/4 (70)	2,520 (11.2)	2,760 (12.3)	3,185 (14.2)	3,905 (17.4)	5,425 (24.1)	5,945 (26.4)	6,865 (30.5)	8,405 (37.4)
	4-1/2 (114)	5,275 (23.5)	5,780 (25.7)	6,260 (27.8)	6,655 (29.6)	11,360 (50.5)	12,445 (55.4)	13,485 (60.0)	14,330 (63.7)
	6 (152)	7,780 (34.6)	7,995 (35.6)	8,350 (37.1)	8,870 (39.5)	16,755 (74.5)	17,220 (76.6)	17,980 (80.0)	19,110 (85.0)
	10 (254)	12,965 (57.7)	13,325 (59.3)	13,915 (61.9)	14,785 (65.8)	27,930 (124.2)	28,705 (127.7)	29,970 (133.3)	31,850 (141.7)
5/8	3-1/8 (79)	3,050 (13.6)	3,345 (14.9)	3,860 (17.2)	4,730 (21.0)	6,575 (29.2)	7,200 (32.0)	8,315 (37.0)	10,185 (45.3)
	5-5/8 (143)	7,370 (32.8)	8,075 (35.9)	9,325 (41.5)	10,315 (45.9)	15,875 (70.6)	17,390 (77.4)	20,080 (89.3)	22,215 (98.8)
	7-1/2 (191)	11,350 (50.5)	12,395 (55.1)	12,940 (57.6)	13,755 (61.2)	24,440 (108.7)	26,695 (118.7)	27,875 (124.0)	29,620 (131.8)
	12-1/2 (318)	20,100 (89.4)	20,660 (91.9)	21,570 (95.9)	22,920 (102.0)	43,295 (192.6)	44,495 (197.9)	46,460 (206.7)	49,370 (219.6)
3/4[10]	3-1/2 (89)	3,620 (16.1)	3,965 (17.6)	4,575 (20.4)	5,605 (24.9)	7,790 (34.7)	8,535 (38.0)	9,855 (43.8)	12,070 (53.7)
	6-3/4 (171)	9,690 (43.1)	10,615 (47.2)	12,255 (54.5)	14,735 (65.5)	20,870 (92.8)	22,860 (101.7)	26,395 (117.4)	31,740 (141.2)
	9 (229)	14,920 (66.4)	16,340 (72.7)	18,490 (82.2)	19,650 (87.4)	32,130 (142.9)	35,195 (156.6)	39,820 (177.1)	42,320 (188.2)
	15 (381)	28,715 (127.7)	29,510 (131.3)	30,815 (137.1)	32,745 (145.7)	61,850 (275.1)	63,565 (282.7)	66,370 (295.2)	70,530 (313.7)
7/8[10]	3-1/2 (89)	3,620 (16.1)	3,965 (17.6)	4,575 (20.4)	5,605 (24.9)	7,790 (34.7)	8,535 (38.0)	9,855 (43.8)	12,070 (53.7)
	7-7/8 (200)	12,210 (54.3)	13,375 (59.5)	15,445 (68.7)	18,915 (84.1)	26,300 (117.0)	28,810 (128.2)	33,265 (148.0)	40,740 (181.2)
	10-1/2 (267)	18,800 (83.6)	20,590 (91.6)	23,780 (105.8)	26,530 (118.0)	40,490 (180.1)	44,355 (197.3)	51,215 (227.8)	57,140 (254.2)
	17-1/2 (445)	38,775 (172.5)	39,850 (177.3)	41,605 (185.1)	44,215 (196.7)	83,510 (371.5)	85,825 (381.8)	89,610 (398.6)	95,230 (423.6)
1	4 (102)	4,420 (19.7)	4,840 (21.5)	5,590 (24.9)	6,845 (30.4)	9,520 (42.3)	10,430 (46.4)	12,040 (53.6)	14,750 (65.6)
	9 (229)	14,920 (66.4)	16,340 (72.7)	18,870 (83.9)	23,110 (102.8)	32,130 (142.9)	35,195 (156.6)	40,640 (180.8)	49,775 (221.4)
	12 (305)	22,965 (102.2)	25,160 (111.9)	29,050 (129.2)	34,650 (154.1)	49,465 (220.0)	54,190 (241.0)	62,570 (278.3)	74,630 (332.0)
	20 (508)	49,415 (219.8)	52,045 (231.5)	54,340 (241.7)	57,750 (256.9)	106,435 (473.4)	112,100 (498.6)	117,045 (520.6)	124,385 (553.2)
1-1/4[10]	5 (127)	6,175 (27.5)	6,765 (30.1)	7,815 (34.8)	9,570 (42.6)	13,305 (59.2)	14,575 (64.8)	16,830 (74.9)	20,610 (91.7)
	11-1/4 (286)	20,850 (92.7)	22,840 (101.6)	26,370 (117.3)	32,295 (143.7)	44,905 (199.7)	49,190 (218.8)	56,800 (252.7)	69,565 (309.4)
	15 (381)	32,095 (142.8)	35,160 (156.4)	40,600 (180.6)	49,725 (221.2)	69,135 (307.5)	75,730 (336.9)	87,445 (389.0)	107,100 (476.4)
	25 (635)	69,060 (307.2)	75,655 (336.5)	80,800 (359.4)	85,865 (381.9)	148,750 (661.7)	162,945 (724.8)	174,030 (774.1)	184,945 (822.7)

1 See Section 3.1.8.8 for explanation on development of load values.
2 See Section 3.1.8.9 to convert design strength value to ASD value.
3 Linear interpolation between embedment depths and concrete compressive strengths is not permitted.
4 Apply spacing, edge distance, and concrete thickness factors in tables 30-41 as necessary to the above values. Compare to the steel values in table 29. The lesser of the values is to be used for the design.
5 Data is for temperature range A: Max. short term temperature = 130°F (55°C), max. long term temperature = 110°F (43°C).
For temperature range B: Max. short term temperature = 176°F (80°C), max. long term temperature = 110°F (43°C) multiply above values by 0.69.
Short term elevated concrete temperatures are those that occur over brief intervals, e.g., as a result of diurnal cycling. Long term concrete temperatures are roughly constant over significant periods of time.
6 Tabular values are for dry or water saturated concrete conditions.
For water-filled drilled holes multiply design strength by 0.51.
For submerged (under water) applications multiply design strength by 0.44.
7 Tabular values are for short term loads only. For sustained loads including overhead use, see Section 3.1.8.8.
8 Tabular values are for normal-weight concrete only. For lightweight concrete multiply design strength by λ_a as follows:
For sand-lightweight, λ_a = 0.51. For all-lightweight, λ_a = 0.45.
9 Tabular values are for holes drilled in concrete with carbide tipped hammer drill bit. Diamond core drilling is not permitted in cracked concrete conditions except as indicated in note 10.
10 Diamond core drilling with Hilti TE-YRT roughening tool is permitted for 3/4", 7/8", and 1 1/4" diameter anchors for dry and water-saturated concrete conditions. See Table 28
11 Tabular values are for static loads only. For seismic loads, multiply cracked concrete tabular values in tension and shear by α_{seis} indicated below.
See section 3.1.8.7 for additional information on seismic applications.
3/8-in. diameter - α_{seis} = 0.69
1/2-in. diameter - α_{seis} = 0.70
5/8-in. diameter - α_{seis} = 0.71
3/4-in. diameter and larger - α_{seis} = 0.75

NOTE: VALUES OBTAINED WERE THROUGH DOUBLE POLYNOMIAL INTERPOLATION (SEE ATTACHED)

HIT-RE 500 V3 Epoxy Adhesive Anchoring System 3.2.4

Table 42 - Load adjustment factors for 1-1/4-in. diameter threaded rods in uncracked concrete[1,2,3]

1-1/4-in. uncracked concrete		Spacing factor in tension f_{AN}				Edge distance factor in tension f_{RN}				Spacing factor in shear[4] f_{AV}				Edge distance in shear: ⊥ Toward edge f_{RV}				Edge distance in shear: ∥ To and away from edge f_{RV}				Concrete thickness factor in shear[5] f_{HV}			
Embedment h_{ef}	in. (mm)	5 (127)	11-1/4 (286)	15 (381)	25 (635)	5 (127)	11-1/4 (286)	15 (381)	25 (635)	5 (127)	11-1/4 (286)	15 (381)	25 (635)	5 (127)	11-1/4 (286)	15 (381)	25 (635)	5 (127)	11-1/4 (286)	15 (381)	25 (635)	5 (127)	11-1/4 (286)	15 (381)	25 (635)
Spacing (s) / Edge Distance (c_a) / Concrete Thickness (h), - in. (mm)	1-3/4 (44)	n/a	n/a	n/a	n/a	0.37	0.24	0.17	0.09	n/a	n/a	n/a	n/a	0.05	0.02	0.01	0.00	0.11	0.03	0.02	0.01	n/a	n/a	n/a	n/a
	6-1/4 (159)	0.59	0.59	0.57	0.54	0.54	0.33	0.24	0.13	0.59	0.54	0.53	0.52	0.37	0.11	0.07	0.03	0.67	0.22	0.14	0.07	n/a	n/a	n/a	n/a
	7 (178)	0.60	0.60	0.58	0.55	0.57	0.35	0.25	0.13	0.60	0.54	0.53	0.52	0.43	0.13	0.08	0.04	0.73	0.26	0.17	0.08	n/a	n/a	n/a	n/a
	8 (203)	0.61	0.61	0.59	0.55	0.61	0.37	0.26	0.14	0.61	0.55	0.54	0.52	0.53	0.16	0.10	0.05	0.82	0.31	0.20	0.10	0.66	n/a	n/a	n/a
	9 (229)	0.63	0.63	0.60	0.56	0.64	0.39	0.28	0.15	0.62	0.55	0.54	0.52	0.63	0.19	0.12	0.06	0.93	0.38	0.24	0.11	0.70	n/a	n/a	n/a
	10 (254)	0.64	0.64	0.61	0.57	0.68	0.41	0.29	0.16	0.64	0.56	0.55	0.53	0.74	0.22	0.14	0.07	1.00	0.41	0.29	0.13	0.74	n/a	n/a	n/a
	11 (279)	0.65	0.65	0.62	0.57	0.72	0.44	0.31	0.17	0.65	0.57	0.55	0.53	0.86	0.25	0.16	0.08		0.44	0.33	0.15	0.78	n/a	n/a	n/a
	12 (305)	0.67	0.67	0.63	0.58	0.76	0.46	0.33	0.18	0.66	0.57	0.55	0.53	0.98	0.29	0.19	0.09		0.46	0.36	0.17	0.81	n/a	n/a	n/a
	13 (330)	0.68	0.68	0.64	0.59	0.80	0.49	0.35	0.19	0.68	0.58	0.56	0.54	1.00	0.33	0.21	0.10		0.49	0.38	0.20	0.84	n/a	n/a	n/a
	14 (356)	0.70	0.70	0.66	0.59	0.84	0.52	0.36	0.20	0.69	0.59	0.56	0.54		0.36	0.24	0.11		0.52	0.40	0.22	0.87	0.58	n/a	n/a
	14-1/4 (362)	0.70	0.70	0.66	0.60	0.85	0.52	0.37	0.20	0.69	0.59	0.56	0.54		0.37	0.24	0.11		0.52	0.40	0.23	0.88	0.59	n/a	n/a
	15 (381)	0.71	0.71	0.67	0.60	0.88	0.54	0.38	0.21	0.70	0.59	0.57	0.54		0.40	0.26	0.12		0.54	0.41	0.24	0.91	0.60	n/a	n/a
	16 (406)	0.72	0.72	0.68	0.61	0.92	0.57	0.40	0.22	0.72	0.60	0.57	0.54		0.45	0.29	0.13		0.57	0.43	0.27	0.94	0.62	n/a	n/a
	17 (432)	0.74	0.74	0.69	0.61	0.96	0.60	0.42	0.23	0.73	0.60	0.58	0.55		0.49	0.32	0.15		0.60	0.45	0.29	0.96	0.64	n/a	n/a
	18 (457)	0.75	0.75	0.70	0.62	1.00	0.63	0.44	0.24	0.75	0.61	0.58	0.55		0.53	0.35	0.16		0.63	0.47	0.31	0.99	0.66	0.57	n/a
	20 (508)	0.78	0.78	0.72	0.63		0.70	0.49	0.27	0.77	0.62	0.59	0.55		0.62	0.40	0.19		0.70	0.50	0.33	1.00	0.70	0.60	n/a
	22 (559)	0.81	0.81	0.74	0.65		0.77	0.54	0.29	0.80	0.63	0.60	0.56		0.72	0.47	0.22		0.77	0.54	0.35		0.73	0.63	n/a
	24 (610)	0.84	0.84	0.77	0.66		0.84	0.59	0.32	0.83	0.65	0.61	0.57		0.82	0.53	0.25		0.84	0.59	0.36		0.76	0.66	n/a
	26 (660)	0.87	0.87	0.79	0.67		0.91	0.64	0.34	0.86	0.66	0.62	0.57		0.92	0.60	0.28		0.91	0.64	0.38		0.79	0.69	n/a
	28 (711)	0.89	0.89	0.81	0.69		0.98	0.68	0.37	0.88	0.67	0.63	0.58		1.00	0.67	0.31		0.98	0.68	0.40		0.82	0.71	0.55
	30 (762)	0.92	0.92	0.83	0.70		1.00	0.73	0.40	0.91	0.68	0.64	0.58			0.74	0.35		1.00	0.73	0.42		0.85	0.74	0.57
	36 (914)	1.00	1.00	0.90	0.74			0.88	0.48	0.99	0.72	0.66	0.60			0.98	0.45			0.88	0.48		0.94	0.81	0.63
	> 48 (1219)			1.00	0.82			1.00	0.64	1.00	0.79	0.72	0.63			1.00	0.70			1.00	0.64		1.00	0.94	0.72

3.2.4

Table 43 - Load adjustment factors for 1-1/4-in. diameter threaded rods in cracked concrete[1,2,3]

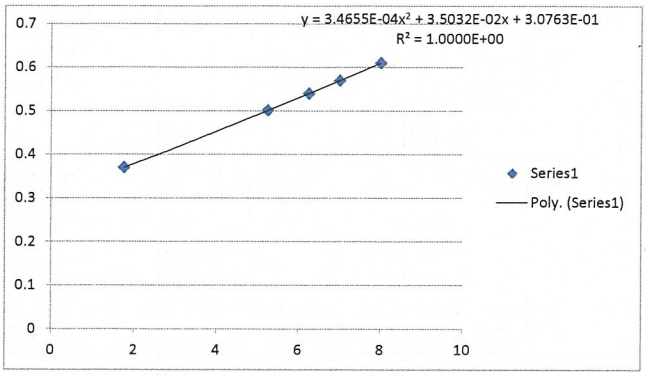
1-1/4-in. cracked concrete		Spacing factor in tension f_{AN}				Edge distance factor in tension f_{RN}				Spacing factor in shear[4] f_{AV}				Edge distance in shear: ⊥ Toward edge f_{RV}				Edge distance in shear: ∥ To and away from edge f_{RV}				Concrete thickness factor in shear[5] f_{HV}			
Embedment h_{ef}	in. (mm)	5 (127)	11-1/4 (286)	15 (381)	25 (635)	5 (127)	11-1/4 (286)	15 (381)	25 (635)	5 (127)	11-1/4 (286)	15 (381)	25 (635)	5 (127)	11-1/4 (286)	15 (381)	25 (635)	5 (127)	11-1/4 (286)	15 (381)	25 (635)	5 (127)	11-1/4 (286)	15 (381)	25 (635)
Spacing (s) / Edge Distance (c_a) / Concrete Thickness (h), - in. (mm)	1-3/4 (44)	n/a	n/a	n/a	n/a	0.40	0.40	0.39	0.37	n/a	n/a	n/a	n/a	0.05	0.02	0.01	0.00	0.11	0.03	0.02	0.01	n/a	n/a	n/a	n/a
	6-1/4 (159)	0.59	0.59	0.57	0.54	0.54	0.54	0.50	0.44	0.59	0.54	0.53	0.52	0.37	0.11	0.07	0.03	0.74	0.22	0.14	0.07	n/a	n/a	n/a	n/a
	7 (178)	0.60	0.60	0.58	0.55	0.57	0.57	0.52	0.45	0.60	0.54	0.53	0.52	0.44	0.13	0.08	0.04	0.88	0.26	0.17	0.08	n/a	n/a	n/a	n/a
	8 (203)	0.61	0.61	0.59	0.55	0.61	0.61	0.55	0.46	0.61	0.55	0.54	0.52	0.54	0.16	0.10	0.05	1.00	0.32	0.21	0.10	0.66	n/a	n/a	n/a
	9 (229)	0.63	0.63	0.60	0.56	0.64	0.64	0.57	0.48	0.62	0.55	0.54	0.52	0.64	0.19	0.12	0.06		0.38	0.25	0.11	0.70	n/a	n/a	n/a
	10 (254)	0.64	0.64	0.61	0.57	0.68	0.68	0.60	0.49	0.64	0.56	0.55	0.53	0.75	0.22	0.14	0.07		0.44	0.29	0.13	0.74	n/a	n/a	n/a
	11 (279)	0.65	0.65	0.62	0.57	0.72	0.72	0.63	0.51	0.65	0.57	0.55	0.53	0.86	0.26	0.17	0.08		0.51	0.33	0.15	0.78	n/a	n/a	n/a
	12 (305)	0.67	0.67	0.63	0.58	0.76	0.76	0.66	0.53	0.66	0.57	0.55	0.53	0.98	0.29	0.19	0.09		0.58	0.38	0.18	0.81	n/a	n/a	n/a
	13 (330)	0.68	0.68	0.64	0.59	0.80	0.80	0.69	0.54	0.68	0.58	0.56	0.54	1.00	0.33	0.21	0.10		0.66	0.43	0.20	0.85	n/a	n/a	n/a
	14 (356)	0.70	0.70	0.66	0.59	0.84	0.84	0.72	0.56	0.69	0.59	0.56	0.54		0.37	0.24	0.11		0.73	0.48	0.22	0.88	0.58	n/a	n/a
	14-1/4 (362)	0.70	0.70	0.66	0.60	0.85	0.85	0.73	0.56	0.70	0.59	0.57	0.54		0.38	0.25	0.11		0.75	0.49	0.23	0.89	0.59	n/a	n/a
	15 (381)	0.71	0.71	0.67	0.60	0.88	0.88	0.75	0.57	0.71	0.59	0.57	0.54		0.41	0.26	0.12		0.82	0.53	0.25	0.91	0.61	n/a	n/a
	16 (406)	0.72	0.72	0.68	0.61	0.92	0.92	0.78	0.59	0.72	0.60	0.57	0.54		0.45	0.29	0.14		0.90	0.58	0.27	0.94	0.63	n/a	n/a
	17 (432)	0.74	0.74	0.69	0.61	0.96	0.96	0.81	0.61	0.73	0.60	0.58	0.55		0.49	0.32	0.15		0.98	0.64	0.30	0.97	0.64	n/a	n/a
	18 (457)	0.75	0.75	0.70	0.62	1.00	1.00	0.85	0.62	0.75	0.61	0.58	0.55		0.54	0.35	0.16		1.00	0.70	0.32	0.99	0.66	0.57	n/a
	20 (508)	0.78	0.78	0.72	0.63			0.91	0.66	0.77	0.62	0.59	0.55		0.63	0.41	0.19			0.82	0.38	1.00	0.70	0.61	n/a
	22 (559)	0.81	0.81	0.74	0.65			0.98	0.69	0.80	0.63	0.60	0.56		0.72	0.47	0.22			0.94	0.44		0.73	0.63	n/a
	24 (610)	0.84	0.84	0.77	0.66			1.00	0.73	0.83	0.65	0.61	0.57		0.82	0.54	0.25			1.00	0.50		0.77	0.66	n/a
	26 (660)	0.87	0.87	0.79	0.67				0.77	0.86	0.66	0.62	0.57		0.93	0.60	0.28				0.56		0.80	0.69	n/a
	28 (711)	0.89	0.89	0.81	0.69				0.81	0.88	0.67	0.63	0.58		1.00	0.68	0.31				0.63		0.83	0.72	0.55
	30 (762)	0.92	0.92	0.83	0.70				0.85	0.91	0.68	0.64	0.58			0.75	0.35				0.70		0.86	0.74	0.57
	36 (914)	1.00	1.00	0.90	0.74				0.97	0.99	0.72	0.66	0.60			0.98	0.46				0.91		0.94	0.81	0.63
	> 48 (1219)			1.00	0.82				1.00	1.00	0.79	0.72	0.63			1.00	0.70				1.00		1.00	0.94	0.73

1 Linear interpolation not permitted.
2 Shaded area with reduced edge distance is permitted provided the installation torque is reduced to 0.30 T_{max} for 5d ≤ s ≤ 16-in. and to 0.5 T_{max} for s > 16-in.
3 When combining multiple load adjustment factors (e.g. for a 4 anchor pattern in a corner with a thin concrete member) the design can become very conservative. To optimize the design, use Hilti PROFIS Anchor Design software or perform anchor calculation using the design equations from ACI 318 Chapter 17.
4 Spacing factor reduction in shear, f_{AV}, assumes an influence of a nearby edge. If no edge exists, then $f_{AV} = f_{AN}$.
5 Concrete thickness reduction factor in shear, f_{HV}, assumes an influence of a nearby edge. If no edge exists, then $f_{HV} = 1.0$.

"Uncracked" Concrete Adhesive Capacity - HILTI HIT-RE500 V3 Epoxy Adhesive Anchor

Hef	Factor
1.75	0.37
5.25	0.501097
6.25	0.54
7	0.57
8	0.61

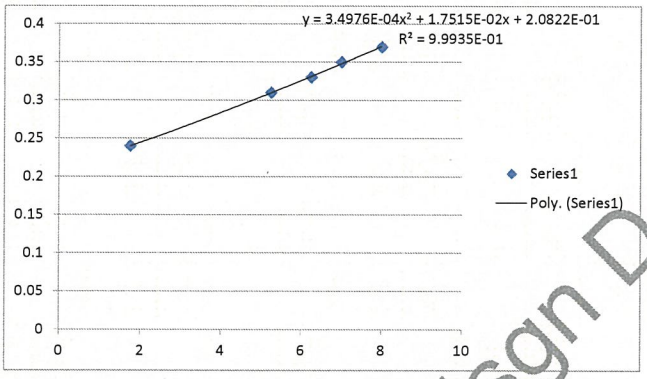
Reference:
Hilti HIT-RE 500 VE pg. 160
(Anchor Fastening Guide 2016)



"Uncracked" Concrete Adhesive Capacity - HILTI HIT-RE500 V3 Epoxy Adhesive Anchor

Hef	Factor
1.75	0.24
5.25	0.309821
6.25	0.33
7	0.35
8	0.37

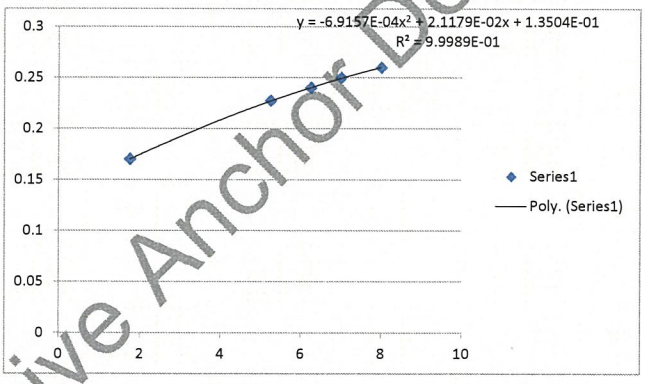
Reference:
Hilti HIT-RE 500 VE pg. 160
(Anchor Fastening Guide 2016)



"Uncracked" Concrete Adhesive Capacity - HILTI HIT-RE500 V3 Epoxy Adhesive Anchor

Hef	Factor
1.75	0.17
5.25	0.227169
6.25	0.24
7	0.25
8	0.26

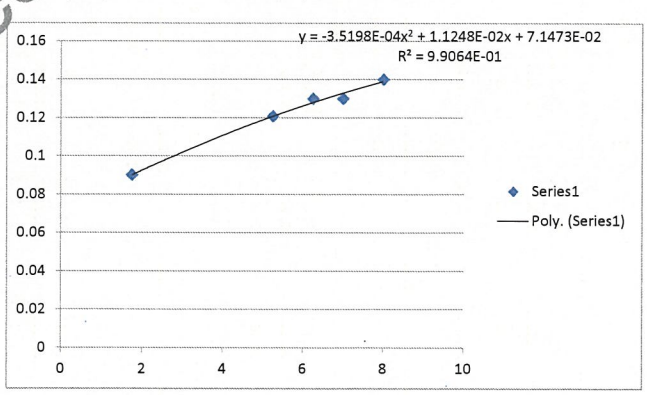
Reference:
Hilti HIT-RE 500 VE pg. 160
(Anchor Fastening Guide 2016)



"Uncracked" Concrete Adhesive Capacity - HILTI HIT-RE500 V3 Epoxy Adhesive Anchor

Hef	Factor
1.75	0.09
5.25	0.120826
6.25	0.13
7	0.13
8	0.14

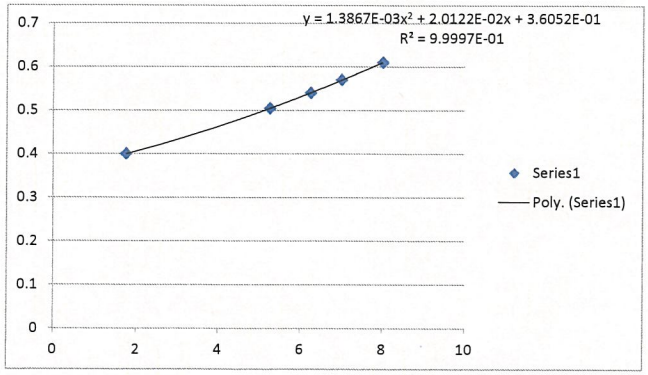
Reference:
Hilti HIT-RE 500 VE pg. 160
(Anchor Fastening Guide 2016)



"Cracked" Concrete Adhesive Capacity - HILTI HIT-RE500 V3 Epoxy Adhesive Anchor

Hef	Factor
1.75	0.4
5.25	0.504381
6.25	0.54
7	0.57
8	0.61

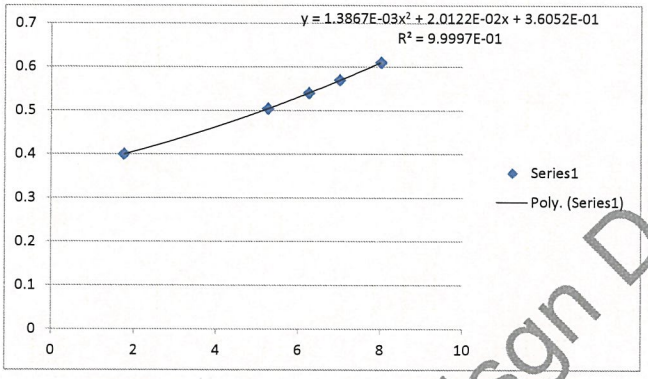
Reference:
Hilti HIT-RE 500 VE pg. 160
(Anchor Fastening Guide 2016)



"Cracked" Concrete Adhesive Capacity - HILTI HIT-RE500 V3 Epoxy Adhesive Anchor

Hef	Factor
1.75	0.4
5.25	0.504381
6.25	0.54
7	0.57
8	0.61

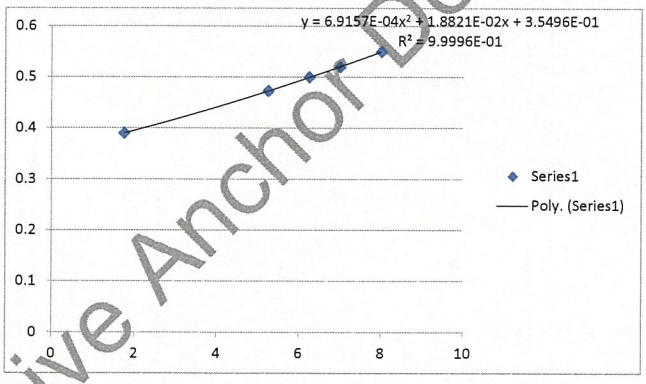
Reference:
Hilti HIT-RE 500 VE pg. 160
(Anchor Fastening Guide 2016)



"Cracked" Concrete Adhesive Capacity - HILTI HIT-RE500 V3 Epoxy Adhesive Anchor

Hef	Factor
1.75	0.39
5.25	0.472831
6.25	0.5
7	0.52
8	0.55

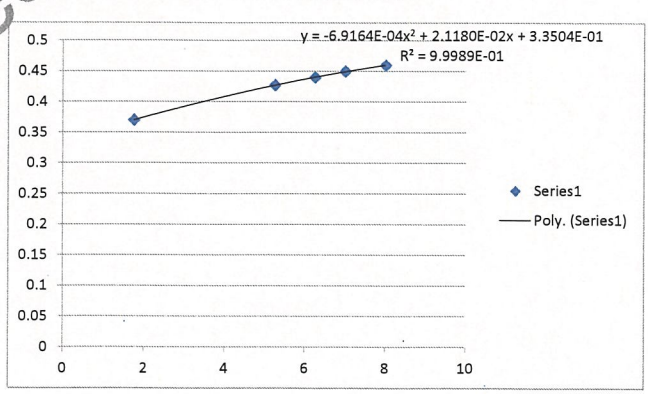
Reference:
Hilti HIT-RE 500 VE pg. 160
(Anchor Fastening Guide 2016)

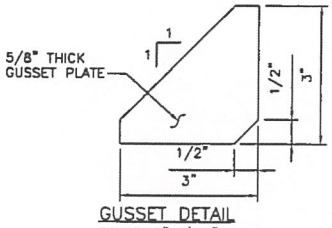


"Cracked" Concrete Adhesive Capacity - HILTI HIT-RE500 V3 Epoxy Adhesive Anchor

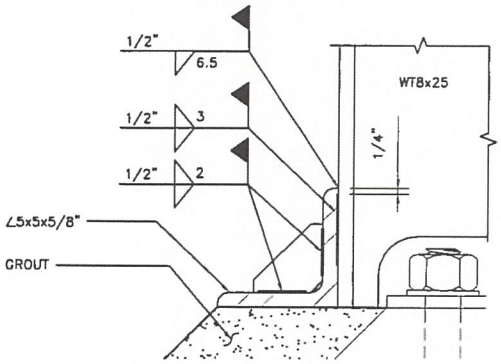
Hef	Factor
1.75	0.37
5.25	0.42717
6.25	0.44
7	0.45
8	0.46

Reference:
Hilti HIT-RE 500 VE pg. 160
(Anchor Fastening Guide 2016)



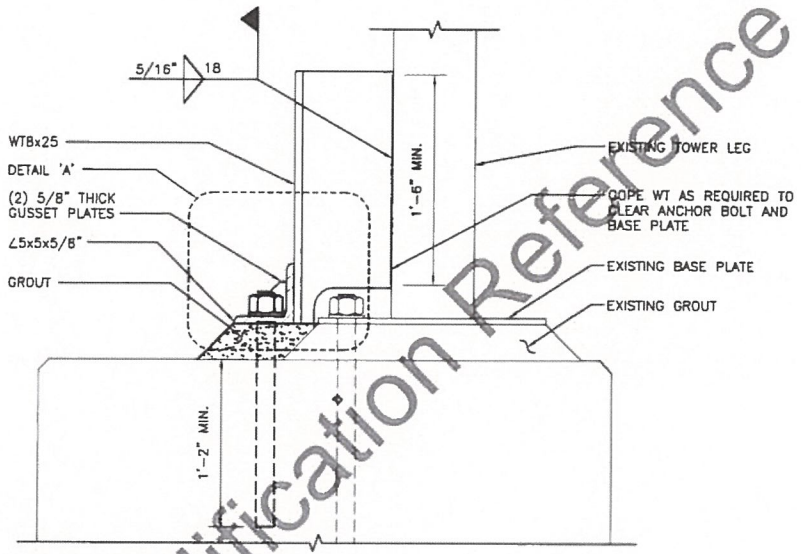


GUSSET DETAIL
SCALE: 3"=1'-0"

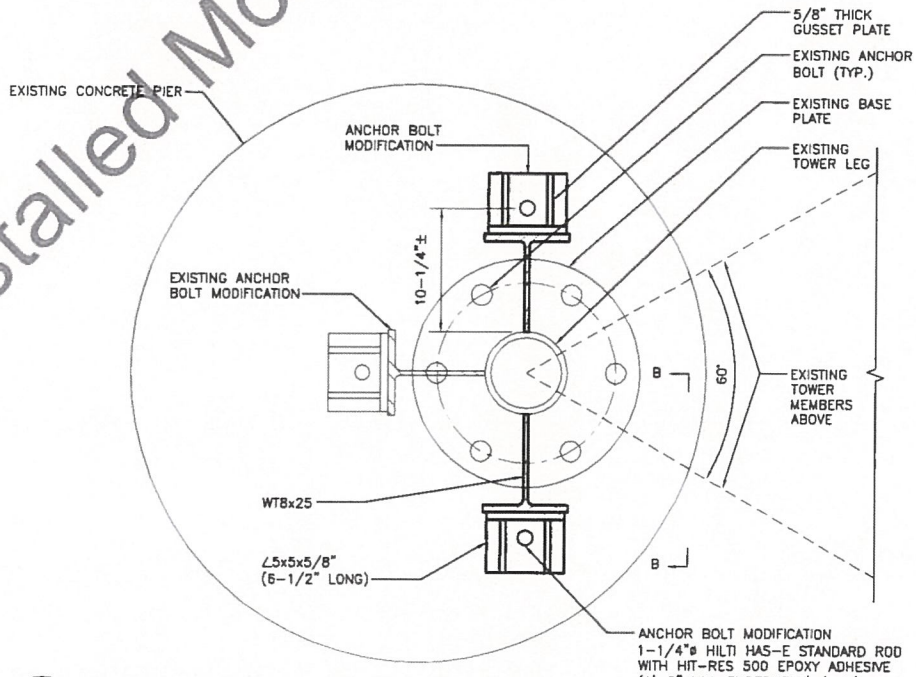


DETAIL 'A'
SCALE: 1 1/2"=1'-0"

NOTE:
ANCHOR BOLT NOT SHOWN FOR CLARITY



2 / SK-4 SECTION B-B
SCALE: 3/4" = 1'-0"



1 / SK-4 ANCHOR BOLT MODIFICATION PLAN
SCALE: 3/4" = 1'-0"

PROJECT NO.	36931389
Designed by:	MCD
Drawn by:	KAP
Checked by:	KAB
Approved by:	RAS

AECOM
500 ENTERPRISE DRIVE
ROCKY HILL, CONNECTICUT
(860)-529-8882

T-Mobile

SITE ADDRESS: T-MOBILE SITE: CT11033E
CSP #36, 315 SPENCER PLAINS ROAD
WESTBROOK, CONNECTICUT 06498

REV.	DATE:	DESCRIPTION

Scale: AS NOTED | Date: 04/08/15
Job No. NSS-015 | File No.

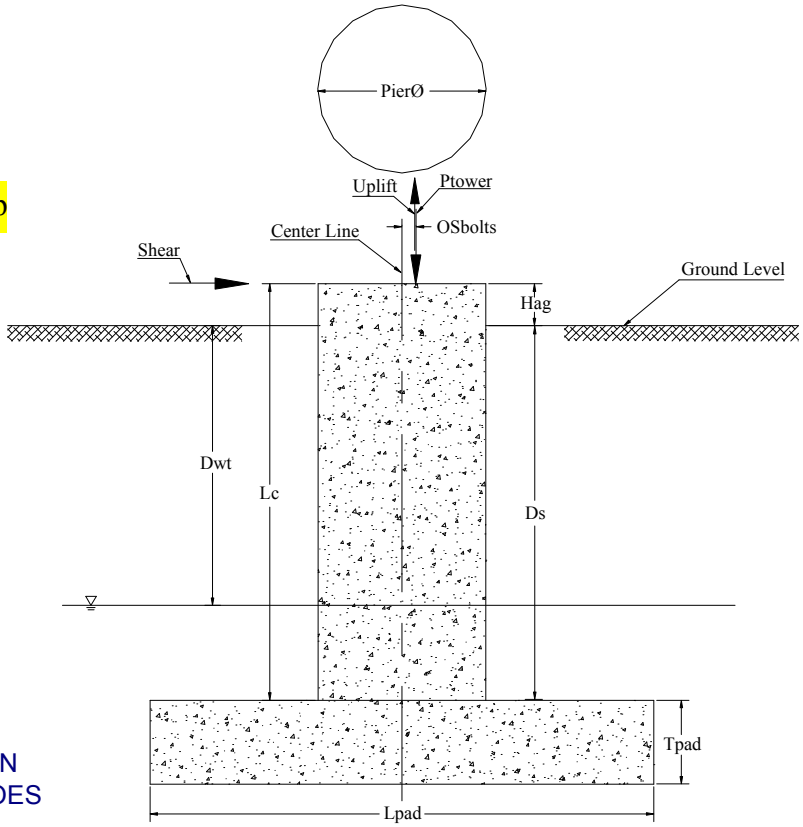
Dwg. No. SK-4

FOUNDATION ANALYSIS

AECOM

Job	180' Stainless Lattice Tower - Westbrook, CT	Project No.	ASM-009	Page / Sheet	1 of 4
Description	Pier and Square Mat Foundation Analysis	Computed by	MCD	Date	09/17/18
	TIA-222-G	Checked by		Date	

DEFINE VARIABLES



Max Compressive Force of Tower: $f'_c := 3\cdot ksi$

$f_y := 60\cdot ksi$

$P_{Tower} := 504.4\cdot kip$

Max Uplift Force of Tower: $Uplift := 440.1\cdot kip$

Max Shear at Base of Tower: $Shear := 60.2\cdot kip$

Diameter of Pier: $Pier\phi := 4\cdot ft$

Length of Pier: $L_c := 11\cdot ft$

Height of Pier Above Grade: $H_{ag} := 1.0\cdot ft$

Length of Pad: $L_{Pad} := 16.25\cdot ft$

Thickness of Pad: $T_{Pad} := 2.0\cdot ft$

Distance to Water Table: $D_{wt} := 999\cdot ft$

NOTE: SET Dwt TO A VALUE GREATER THAN TOTAL DEPTH OF PAD IF WATER TABLE DOES NOT AFFECT FOOTING

Eccentricity of Anchor Bolts from Center Line of Pier: $OS_{bolts} := 9\cdot in$

Diameter of Reinforcing Bars in Pad: $d_{bar} := 1.00\cdot in$

Soil Internal Friction Angle: $\phi := 34\cdot deg$

Ultimate Soil Pressure: $q_u := 6.0\cdot ksf$

$\gamma_s := 110\cdot \frac{lb}{ft^3}$ $\gamma_c := 150\cdot \frac{lb}{ft^3}$ $\gamma_w := 62.4\cdot \frac{lb}{ft^3}$

Active Pressure of Soil Acting along Length of Pier: $K_a := \frac{1-\sin(\phi)}{1+\sin(\phi)}$ $P_{Active} := \frac{1}{2}\cdot\left(L_c + T_{Pad}\right)^2\cdot Pier\phi\cdot\gamma_s\cdot K_a$ $P_{Active} = 10.51\cdot kip$

Passive Pressure of Soil Acting along Length of Pier: $K_p := \frac{1+\sin(\phi)}{1-\sin(\phi)}$ $P_{Passive} := \frac{1}{2}\cdot\left(L_c + T_{Pad}\right)^2\cdot Pier\phi\cdot\gamma_s\cdot K_p$ $P_{Passive} = 131.51\cdot kip$

Distance from Grade to Bottom of Pier: $D_s := L_c - H_{ag}$ $D_s = 10\,ft$

Area and Volume of Pier: $A_c := \frac{\pi\cdot Pier\phi^2}{4}$ $V_c := A_c\cdot L_c$ $V_c = 138.23\,ft^3$

Area and Volume of Pad: $A_p := L_{Pad}^2$ $V_p := T_{Pad}\cdot A_p$ $V_p = 528.13\,ft^3$

ULTIMATE SOIL PRESSURE

Assume water table is below bottom of footing

$D_{wtp} := if\left[\left(D_s + T_{Pad}\right) > D_{wt}, T_{Pad}, 0 \cdot ft\right]$ $D_{wtp} = 0\,ft$

$W_p := \left(V_p \cdot \gamma_c\right) - D_{wtp} \cdot A_p \cdot \gamma_w$ $W_p = 79.22 \cdot kip$

$D_{wtc} := if\left[D_s < D_{wt}, 0 \cdot ft, \left(D_s - D_{wt}\right)\right]$ $D_{wtc} = 0\,ft$

$W_c := \left(V_c \cdot \gamma_c\right) - D_{wtc} \cdot A_c \cdot \gamma_w$ $W_c = 20.73 \cdot kip$

$W_s := \left[\left(D_s\right) \cdot \left(A_p - A_c\right) \cdot \gamma_s\right]$ $W_s = 276.65 \cdot kip$

$P_{Total} := W_p + W_c + W_s + P_{Tower}$ $P_{Total} = 881 \cdot kip$

$q_{gr} := \frac{P_{Total}}{A_p}$ $q_{gr} = 3.34 \cdot ksf$

$q_n := q_{gr} - \left(D_s + T_{Pad}\right) \cdot \gamma_s$ $q_n = 2.02 \cdot ksf$

$SoilPressure := if\left(q_n < q_u \cdot 0.60, \text{"Okay"}, \text{"No Good"}\right)$

ANSI/TIA-222-G Reduction Factor
(Section 9.4.1(c)) (0.60 - Bearing)

$SoilPressure = \text{"Okay"}$

PUNCHING SHEAR

Critical section is located at a distance d/2 from the face of Pier

$$p_u := \left(\frac{P_{Tower} + V_c \cdot \gamma_c}{L_{Pad}^{\,2}}\right) + \left[\frac{Shear \cdot \left(L_c + T_{Pad}\right) + P_{Tower} \cdot OS_{bolts} + \left(P_{Active} - P_{Passive}\right) \cdot \frac{L_c + T_{Pad}}{3}}{\frac{1}{6} \cdot L_{Pad}^{\,3}}\right]$$

$p_u = 2.88 \cdot ksf$

$d := T_{Pad} - \left(3 \cdot in + d_{bar}\right)$ $d = 1.67\,ft$

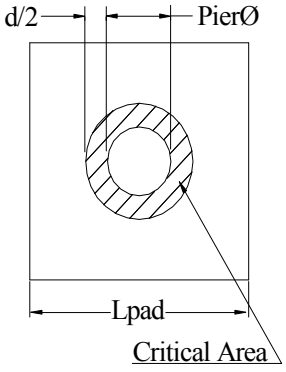
$b_o := (Pier\phi + d) \cdot \pi$ $b_o = 17.8\,ft$

$$Aout_{bo} := L_{Pad}^{\,2} - \frac{\pi \cdot (Pier\phi + d)^2}{4}$$

$Aout_{bo} = 238.84\,ft^2$

$V_u := Aout_{bo} \cdot p_u$ $V_u = 687.57 \cdot kip$

$$\phi V_c := 0.75 \cdot 4 \cdot \sqrt{f'_c \cdot \frac{lb}{in^2}} \cdot b_o \cdot d \quad \phi V_c = 702.05 \cdot kip$$



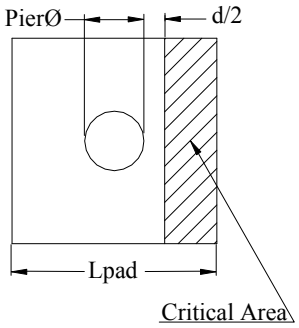
$PunchingShear := if\left(V_u < \phi V_c, \text{"Okay"}, \text{"No Good "}\right)$ $PunchingShear = \text{"Okay"}$

BEAM SHEAR

Critical section is located at a distance d/2 from the face of the Pier

$$V_u := p_u \cdot L_{Pad} \cdot \left(\frac{L_{Pad} - Pier\phi}{2} - \frac{d}{2} \right) \qquad V_u = 247.54 \cdot kip$$

$$\phi V_c := 0.75 \cdot 2 \cdot \sqrt{f'_c \cdot \frac{lb}{in^2}} \cdot L_{Pad} \cdot d \qquad \phi V_c = 320.42 \cdot kip$$



$$BeamShear := if\left(V_u < \phi V_c, "Okay", "No\ Good"\right)$$

$$BeamShear = "Okay"$$

ACI 2011 Reduction Factor (0.75) for Beam Shear and Punching Shear - Permissible by TIA-222-G Standard Section 9.4.2.

BENDING

Critical section extends across width of footing at the face of Pier

$$A_{bar} := 0.79 \cdot in^2 \qquad NoOfBar := 20$$

$$As_{provided} := NoOfBar \cdot A_{bar} \qquad As_{provided} = 15.8 \cdot in^2$$

$$M_{Req} := p_u \cdot L_{Pad} \cdot \left(\frac{L_{Pad} - Pier\phi}{2} \right)^2 \cdot \frac{1}{2}$$

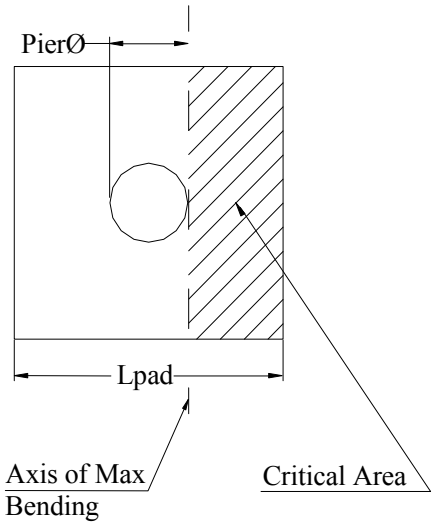
$$M_{Req} = 877.49 \cdot kip \cdot ft$$

$$a := \frac{As_{provided} \cdot f_y}{0.85 \cdot f'_c \cdot L_{Pad}}$$

$$a = 1.91 \cdot in$$

$$M_{Avail} := 0.9 \cdot As_{provided} \cdot f_y \cdot \left(d - \frac{a}{2} \right)$$

$$M_{Avail} = 1354.22 \cdot kip \cdot ft$$



$$Bending := if\left(M_{Avail} > M_{Req}, "Okay", "No\ Good"\right)$$

$$Bending = "Okay"$$

ACI 2011 Reduction Factor (0.75) for Concrete Bending Moment) - Permissible by TIA-222-G Standard Section 9.4.2.

UPLIFT

$$Soil_1 := \left[\left(D_s\right)\cdot\left(L_{Pad}{}^2 - A_c\right)\cdot\gamma_s\right]$$

$$Soil_2 := 4\cdot\left[\left(D_s + T_{Pad}\right)^2\cdot L_{Pad}\cdot\frac{\tan(\phi)}{2}\right]\cdot\gamma_s$$

$$Soil_3 := 4\cdot\left[\left(D_s + T_{Pad}\right)^3\cdot\frac{\tan(\phi)^2}{3}\right]\cdot\gamma_s$$

$$WT_{soil} := Soil_1 + Soil_2 + Soil_3 \qquad WT_{soil} = 739.19\cdot kip$$

$$WT_{conc} := W_p + W_c \qquad WT_{conc} = 99.95\cdot kip$$

$$Uplift_{Res} := \left(WT_{soil} + WT_{conc}\right)\cdot 0.75 \qquad Uplift_{Res} = 629.36\cdot kip$$

ANSI/TIA-222-G Reduction Factor (0.75) (Section 9.4.1(c))

$$UpLiftCapacity_{Ult} := \frac{Uplift}{Uplift_{Res}} \qquad UpLiftCapacity_{Ult} = 0.699$$

$$UpliftCheck := if\left(Uplift < Uplift_{Res}, "Okay", "No\ Good"\right)$$

$UpliftCheck = "Okay"$

CHECK OVERTURNING MOMENT - FACTORED LOAD CONDITIONS

$$OTM := Shear\cdot\left(L_c + T_{Pad}\right) + Uplift\cdot\left(\frac{L_{Pad}}{2} - OS_{bolts}\right) + P_{Active}\cdot\frac{L_c + T_{Pad}}{3} \qquad OTM = 4.07\times 10^3\cdot kip\cdot f$$

$$RM := P_{Tower}\cdot\left(\frac{L_{Pad}}{2} - OS_{bolts}\right) + \left(WT_{conc} + Soil_1\right)\cdot\frac{L_{Pad}}{2} + P_{Passive}\cdot\frac{L_c + T_{Pad}}{3} \qquad RM = 7.35\times 10^3\cdot kip\cdot ft$$

$$Foundation_{OT} := \frac{OTM}{RM\cdot 0.75}$$

ANSI/TIA-222-G Reduction Factor (0.75) (Section 9.4.1(c))

$Foundation_{OT} = 0.74$

$$OTMCheck := if\left(Foundation_{OT} < 1.0, "Okay", "No\ Good"\right)$$

$OTMCheck = "Okay"$

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:	POLICE TOWER/ TROOP F
SITE CASCADE:	CT54XC758
SITE ADDRESS:	315 SPENCER PLAINS ROAD WESTBROOK, CT 06498
SITE TYPE:	SELF-SUPPORT TOWER
MARKET:	NORTHERN CONNECTICUT

SITE INFORMATION

TOWER OWNER:
AMERICAN TOWER CORPORATION
10 PRESIDENTIAL WAY
WOBURN, MA 01801

LATITUDE (NAD83):
41° 17' 32.75" N
41.292444

LONGITUDE (NAD83):
72° 25' 49.36" W
-72.430389

COUNTY:
MIDDLESEX

ZONING JURISDICTION:
TBD

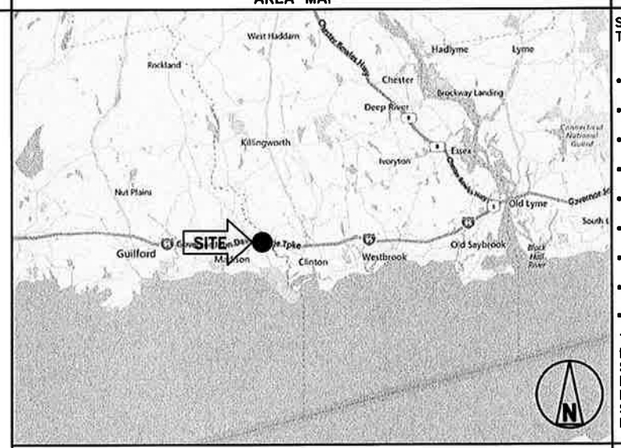
ZONING DISTRICT:
TBD

POWER COMPANY:
CL&P
PHONE: (800) 286-2000

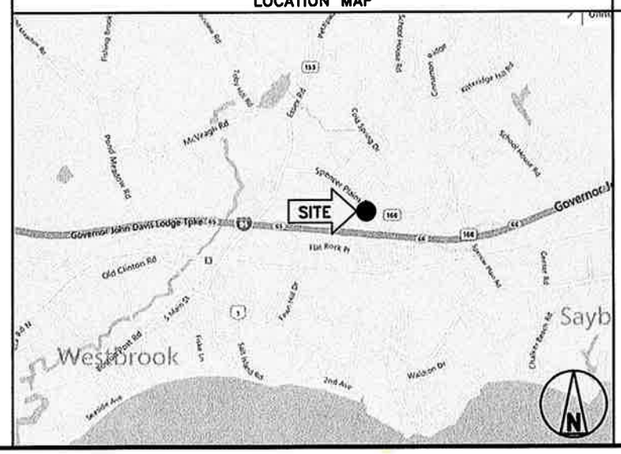
AAV PROVIDER:
AT&T
PHONE: (800) 288-2020

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) ANTENNAS
- REMOVE (6) EXISTING PANEL ANTENNAS
- RELOCATE (3) 1900 MHz RRH'S BEHIND ANTENNAS
- INSTALL (3) 800 MHz RRH'S BEHIND ANTENNAS
- INSTALL (3) 800 MHz RRH'S ON EXISTING PIPE MOUNT
- INSTALL (3) 2.5 GHz RRH'S BEHIND ANTENNAS
- INSTALL (48) JUMPER CABLES
- INSTALL (4) HYBRID CABLES
- 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	1
SP-1	SPRINT SPECIFICATIONS	1
SP-2	SPRINT SPECIFICATIONS	1
SP-3	SPRINT SPECIFICATIONS	1
A-1	SITE PLAN	1
A-2	TOWER ELEVATION	1
A-3	ANTENNA LAYOUT & MOUNTING DETAILS	1
A-4	EQUIPMENT & MOUNTING DETAILS	1
A-5	CIVIL DETAILS	1
A-6	PLUMBING DIAGRAM	1
E-1	ELECTRICAL & GROUNDING PLAN	1
E-2	ELECTRICAL & GROUNDING DETAILS	1
SK-1	ELECTRICAL & GROUNDING PLAN	–
SK-2	ELECTRICAL & GROUNDING DETAILS	–

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. 24779
LICENSED PROFESSIONAL ENGINEER
JUL 12 2018

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
REVISED / ISSUED FOR PERMIT	07/03/18	MAP	1
ISSUED FOR PERMIT	05/03/18	ETC	0

SITE NAME:
POLICE TOWER/
TROOP F

SITE NUMBER:
CT54XC758

SITE ADDRESS:
315 SPENCER
PLAINS ROAD
WESTBROOK, CT 06498

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
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:

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
REVISED / ISSUED FOR PERMIT	07/03/18	MAP	1
ISSUED FOR PERMIT	05/03/18	ETC	0

SITE NAME:

POLICE TOWER/
TROOP F

SITE NUMBER:

CT54XC758

SITE ADDRESS:

315 SPENCER
PLAINS ROAD
WESTBROOK, CT 06498

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:

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
JUL 12 2018

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
REVISED / ISSUED FOR PERMIT	07/03/18	MAP	1
ISSUED FOR PERMIT	05/03/18	ETC	0

SITE NAME:

POLICE TOWER/ TROOP F

SITE NUMBER:

CT54XC758

SITE ADDRESS:

315 SPENCER PLAINS ROAD
WESTBROOK, CT 06498

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.

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
JULY 12, 2018
PROFESSIONAL ENGINEER

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
REVISED / ISSUED FOR PERMIT	07/03/18	MAP	1
ISSUED FOR PERMIT	05/03/18	ETC	0

SITE NAME:

POLICE TOWER/
TROOP F

SITE NUMBER:

CT54XC758

SITE ADDRESS:

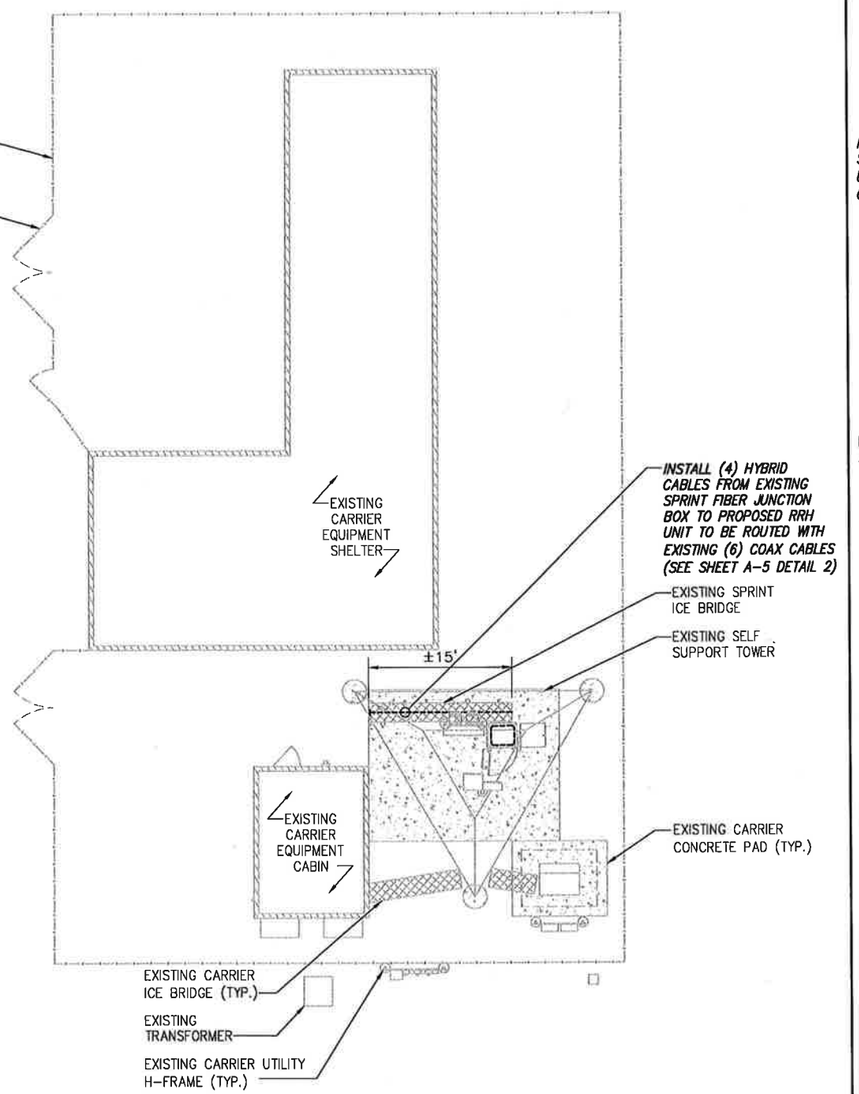
315 SPENCER
PLAINS ROAD
WESTBROOK, CT 06498

SHEET DESCRIPTION:

SPRINT SPECIFICATIONS

SHEET NUMBER:

SP-3



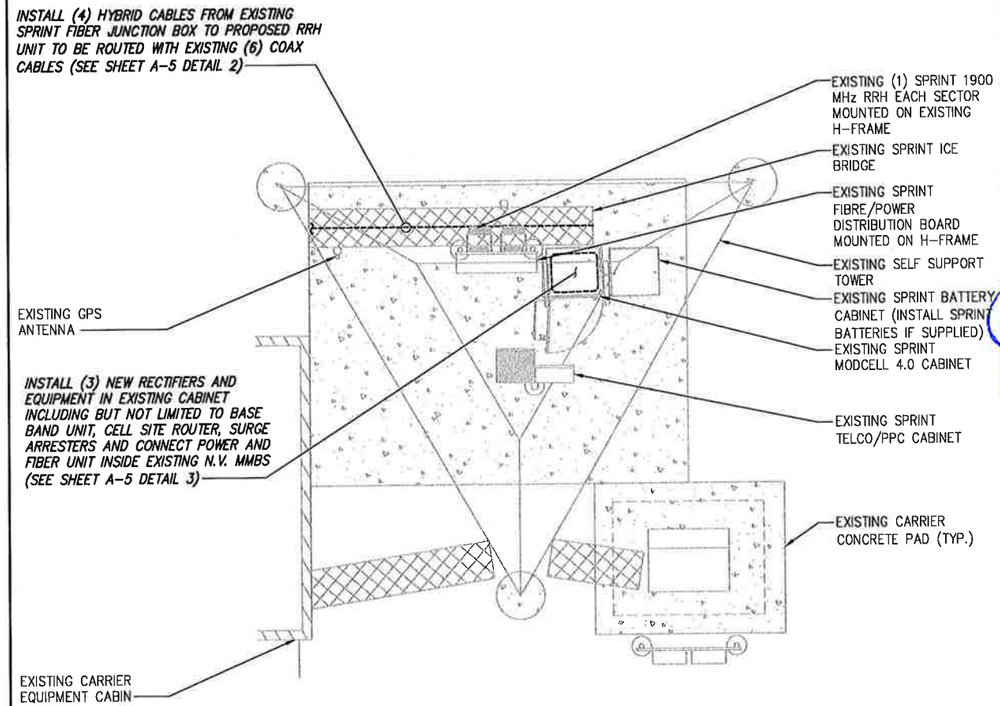
INFORMATION CONTAINED WITHIN DRAWINGS ARE BASED ON PROVIDED INFORMATION AND ARE NOT THE RESULT OF A FIELD SURVEY.

GRAPHIC SCALE:

15' 7.5' 0 7.5' 15'

SCALE (11x17): 1" = 15'-0"
SCALE (22x34): 1" = 7'-6"

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

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) 308-3740

ENGINEERING LICENSE:

STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
LICENSED PROFESSIONAL ENGINEER
JUL 12 2018

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
REVISED / ISSUED FOR PERMIT	07/03/18	MAP	1
ISSUED FOR PERMIT	05/03/18	ETC	0

SITE NAME:

POLICE TOWER/ TROOP F

SITE NUMBER:

CT54XC758

SITE ADDRESS:

315 SPENCER PLAINS ROAD
WESTBROOK, CT 06498

SHEET DESCRIPTION:

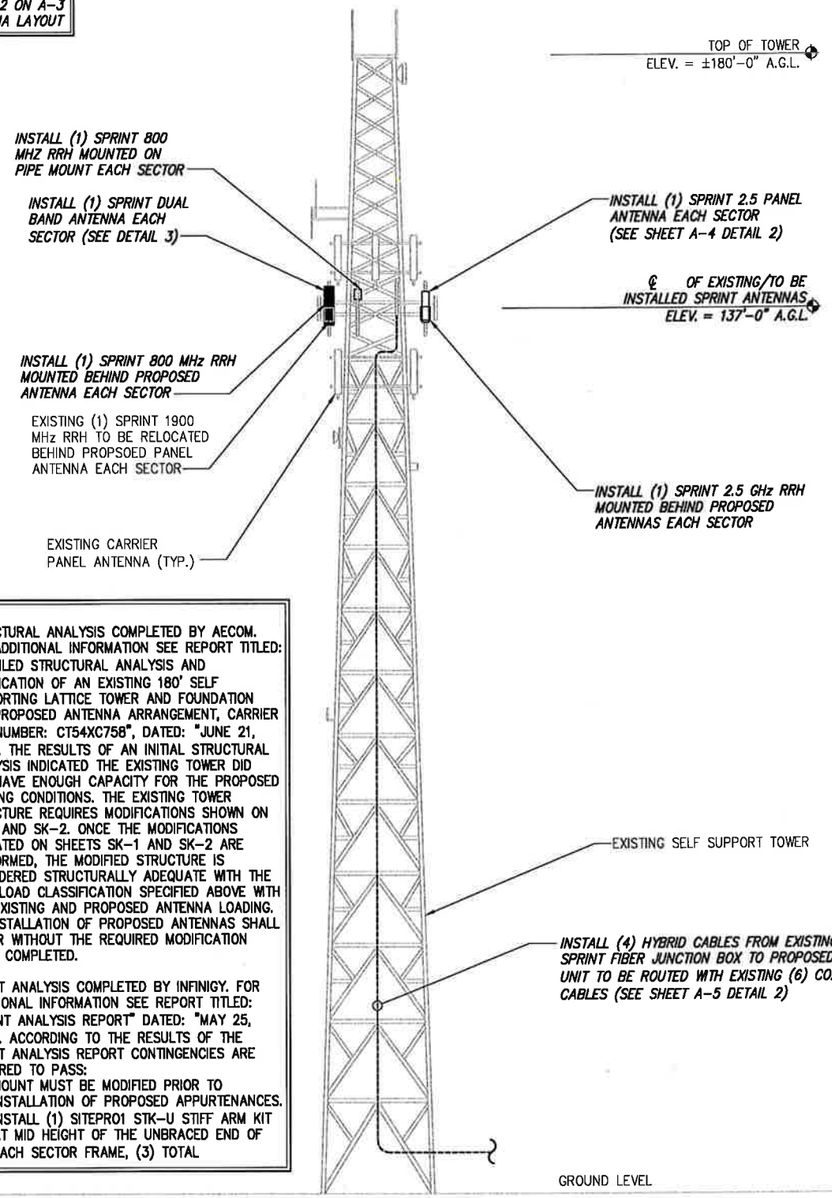
SITE PLAN

SHEET NUMBER:

A-1

NOTE:
INFINIGY ENGINEERING HAS NOT EVALUATED THE EXISTING STRUCTURE FOR THIS SITE, AND ASSUMES NO RESPONSIBILITY FOR ITS STRUCTURAL INTEGRITY. REFER TO STRUCTURAL ANALYSIS BY OTHERS PRIOR TO ANY CONSTRUCTION.

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



NOTE:
- STRUCTURAL ANALYSIS COMPLETED BY AECOM. 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, CARRIER SITE NUMBER: CT54XC758", DATED: "JUNE 21, 2018". 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 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 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.
- MOUNT ANALYSIS COMPLETED BY INFINIGY. FOR ADDITIONAL INFORMATION SEE REPORT TITLED: "MOUNT ANALYSIS REPORT" DATED: "MAY 25, 2018". ACCORDING TO THE RESULTS OF THE MOUNT ANALYSIS REPORT CONTINGENCIES ARE REQUIRED TO PASS:
  - ** MOUNT MUST BE MODIFIED PRIOR TO INSTALLATION OF PROPOSED APPURTENANCES. INSTALL (1) SITEPRO1 STK-U STIFF ARM KIT AT MID HEIGHT OF THE UNBRACED END OF EACH SECTOR FRAME, (3) TOTAL

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	APXVTM14-ALU-120	RFS	0°	1	-	(2) 800 MHZ 2X50W RRH W/ FILTER	SEE SHEET A-5 DETAIL 1	±172'*	±137' AGL
	PROPOSED	NNVV-65B-R4	COMMSCOPE	0°	1	-	(1) TD-RRH8X20-25 W/ SOLAR SHIELD	EXISTING COAX		
	EXISTING	79010	DAPA	0°	2	REMOVE	(1) 1900 MHz 4X45 RRH	EXISTING COAX		
BETA	PROPOSED	APXVTM14-ALU-120	RFS	80°	1	-	(2) 800 MHZ 2X50W RRH W/ FILTER	SEE SHEET A-5 DETAIL 1		±137' AGL
	PROPOSED	NNVV-65B-R4	COMMSCOPE	80°	1	-	(1) TD-RRH8X20-25 W/ SOLAR SHIELD	EXISTING COAX		
	EXISTING	79010	DAPA	80°	2	REMOVE	(1) 1900 MHz 4X45 RRH	EXISTING COAX		
GAMMA	PROPOSED	APXVTM14-ALU-120	RFS	180°	1	-	(2) 800 MHZ 2X50W RRH W/ FILTER	SEE SHEET A-5 DETAIL 1		±137' AGL
	PROPOSED	NNVV-65B-R4	COMMSCOPE	180°	1	-	(1) TD-RRH8X20-25 W/ SOLAR SHIELD	EXISTING COAX		
	EXISTING	79010	DAPA	180°	2	REMOVE	(1) 1900 MHz 4X45 RRH	EXISTING COAX		

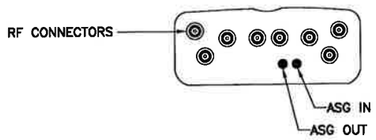
PROJECT SCOPE:
REMOVE: (6) PANEL ANTENNAS INSTALL: (6) PANEL ANTENNAS AND (9) RRH'S RELOCATE: (3) EXISTING RRH'S

* 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

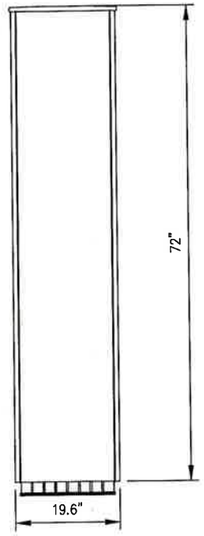
ANTENNA COMMSCOPE NNVV-65B-R4

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 | 3

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
PROFESSIONAL ENGINEER
JUL 12 2018

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
REVISED / ISSUED FOR PERMIT	07/03/18	MAP	1
ISSUED FOR PERMIT	05/03/18	ETC	0

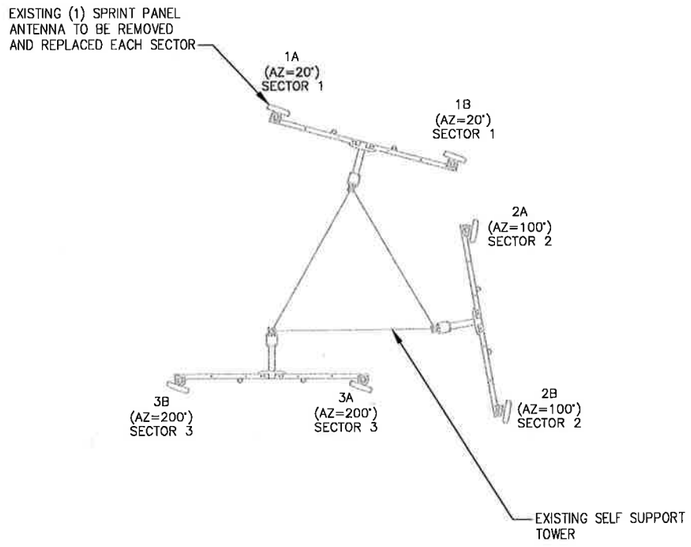
SITE NAME:
POLICE TOWER/ TROOP F

SITE NUMBER:
CT54XC758

SITE ADDRESS:
315 SPENCER PLAINS ROAD
WESTBROOK, CT 06498

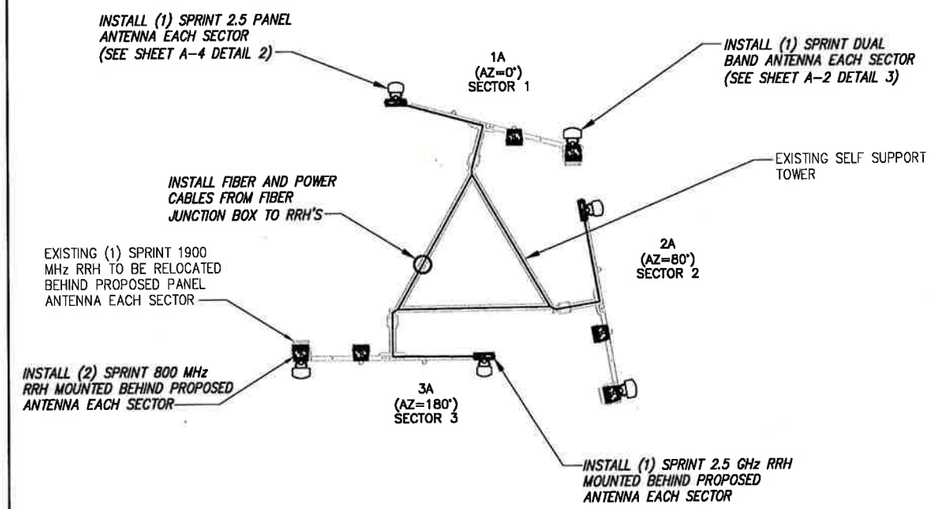
SHEET DESCRIPTION:
TOWER ELEVATION

SHEET NUMBER:
A-2



EXISTING ANTENNA 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.

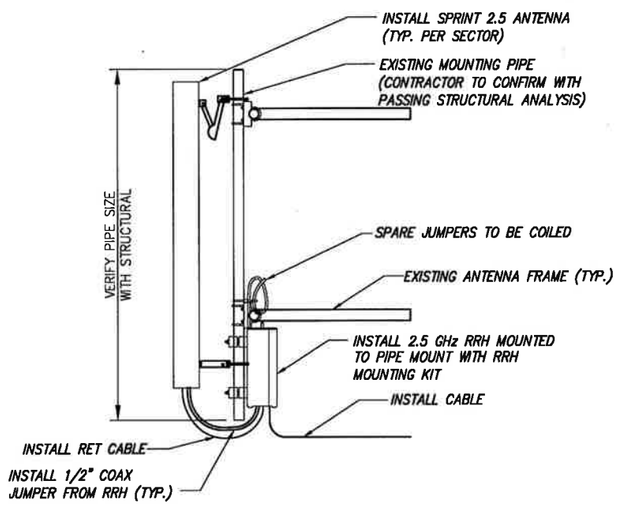


NOTE:
JUMPERS FROM 2.5 RRH TO THE 2.5 ANTENNA CANNOT EXCEED 15 FEET

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.

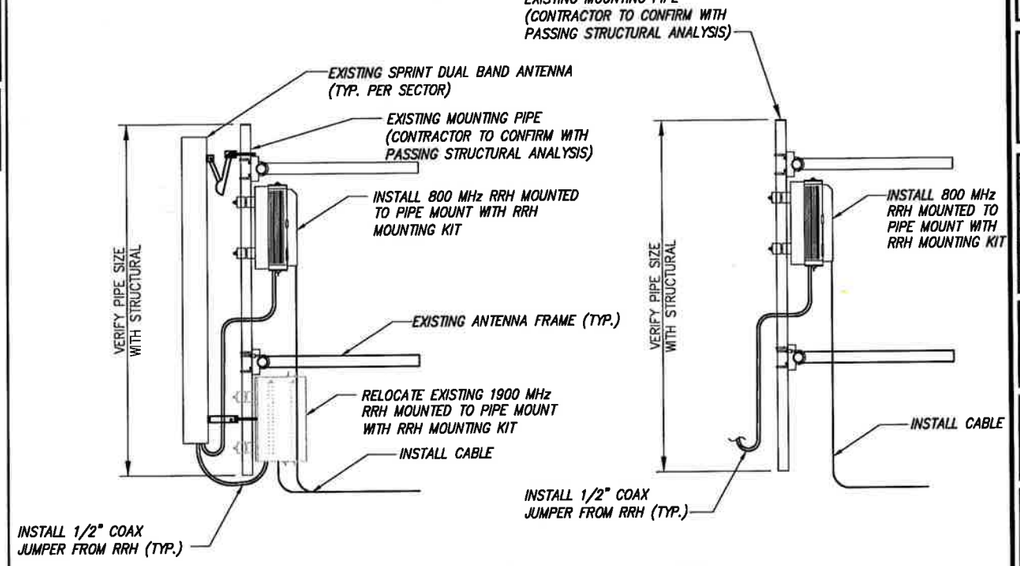
NOTE:
THE DIAGRAM IS FOR CONCEPTUAL PURPOSES ONLY. CONTRACTOR IS TO REFER TO PASSING STRUCTURAL ANALYSIS FOR ANTENNA AND RRH MOUNTING DETAILS



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 & RRH 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

PLANS PREPARED FOR:

Sprint

INSTALL (1) SPRINT PANEL ANTENNA EACH SECTOR (SEE SHEET A-4 DETAIL 2)

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
PROFESSIONAL ENGINEER
JULY 12, 2018

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
REVISED / ISSUED FOR PERMIT	07/03/18	MAP	1
ISSUED FOR PERMIT	05/03/18	ETC	0

SITE NAME:

POLICE TOWER/ TROOP F

SITE NUMBER:

CT54XC758

SITE ADDRESS:

315 SPENCER PLAINS ROAD
WESTBROOK, CT 06498

SHEET DESCRIPTION:

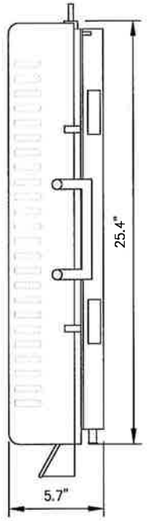
ANTENNA LAYOUT & MOUNTING DETAILS

SHEET NUMBER:

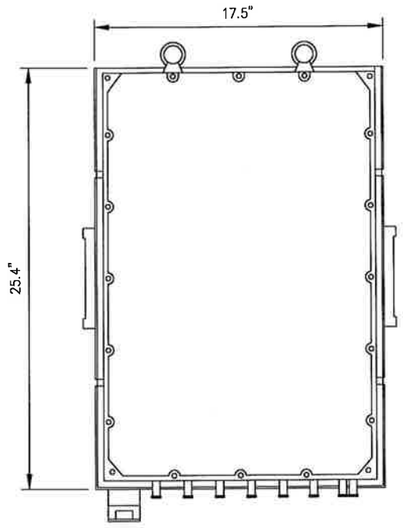
A-3

RRH: ALCATEL LUCENT TD-RRH8X20

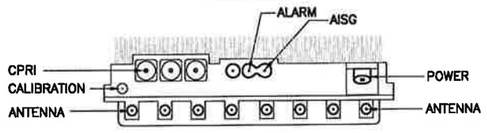
COLOR: LIGHT GREY
WEIGHT: 70 LBS.



SIDE VIEW



FRONT VIEW



PLAN VIEW

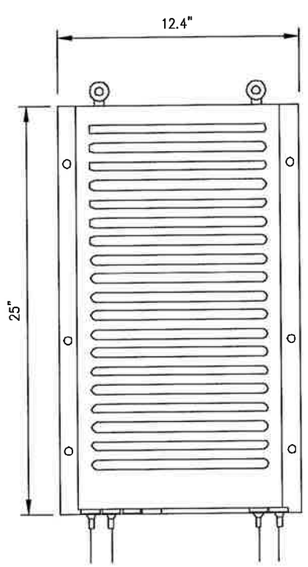
NOTES

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.

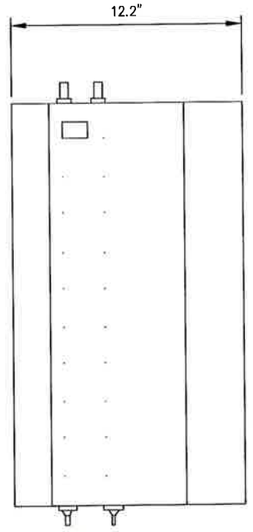
2.5 RRH'S | NO SCALE | 1

RRH: ALCATEL LUCENT 1900 MHz

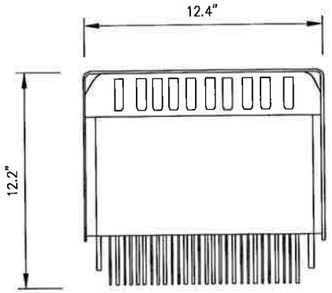
COLOR: LIGHT GREY
WEIGHT: 70 LBS.
(INCLUDING OPTIONAL SOLAR SHIELD)



FRONT VIEW



SIDE VIEW

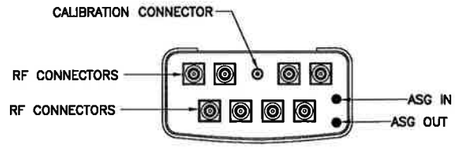


TOP VIEW

1900 MHz RRH | NO SCALE | 2

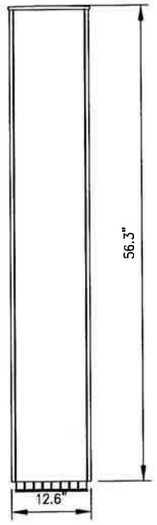
ANTENNA RFS APXVTM14-ALU-I20

RADOME MATERIAL:	ASA
RADOME COLOR:	LIGHT GREY
DIMENSIONS, HxWxD.In(mlm):	56.3"x12.6"x6.3" (1549x439x300mm)
WEIGHT:	56.2 lbs
CONNECTORS:	(8) 4.1/9.5 DIN FEMALE (1) NF – CALIBRATION CONNECTOR



PLAN VIEW

SIDE VIEW



FRONT VIEW

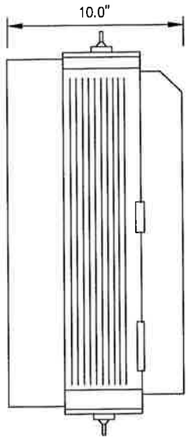
2.5 ANTENNA DETAIL | NO SCALE | 3

RRH: ALCATEL LUCENT RRH 800 MHz 2x50W

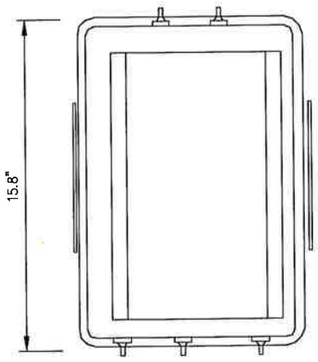
COLOR: LIGHT GREY
WEIGHT: 53 LBS.

NOTES

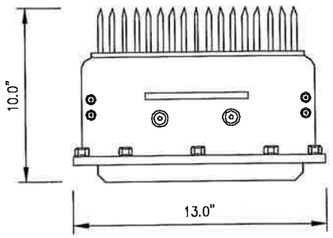
COMPLY WITH MANUFACTURERS INSTRUCTIONS TO ENSURE THAT ALL RRH'S RECEIVE ELECTRICAL POWER WITHIN 24 HOURS OF BEING REMOVED FROM THE MANUFACTURER'S PACKAGING. DO NOT OPEN RRH PACKAGES IN THE RAIN.



SIDE VIEW



FRONT VIEW



PLAN VIEW

800 MHz RRH | NO SCALE | 4

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
PROFESSIONAL ENGINEER
12 2018

REVISIONS:

DESCRIPTION	DATE	BY	REV.
REVISED / ISSUED FOR PERMIT	07/03/18	MAP	1
ISSUED FOR PERMIT	05/03/18	ETC	0

SITE NAME:
POLICE TOWER/
TROOP F

SITE NUMBER:
CT54XC758

SITE ADDRESS:
315 SPENCER
PLAINS ROAD
WESTBROOK, CT 06498

SHEET DESCRIPTION:
EQUIPMENT &
MOUNTING DETAILS

SHEET NUMBER:
A-4

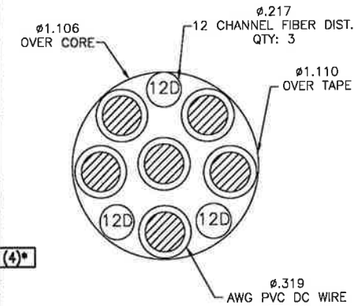
RFS HYBRIFLEX RISER CABLE SCHEDULE

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 (4)*
	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

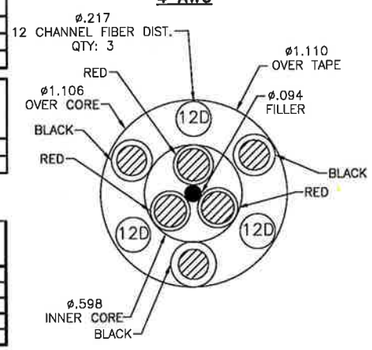
RFS HYBRIFLEX JUMPER CABLE SCHEDULE

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

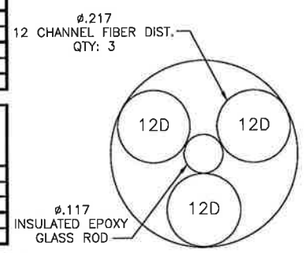
NOTE:
SPRINT CM TO CONFIRM HYBRID OR FIBER RISER CABLE AND HYBRID OR FIBER JUMPER CABLE MODEL NUMBERS IF HYBRID CABLES ARE REQUIRED BEFORE PREPARING BOM.



4 AWG

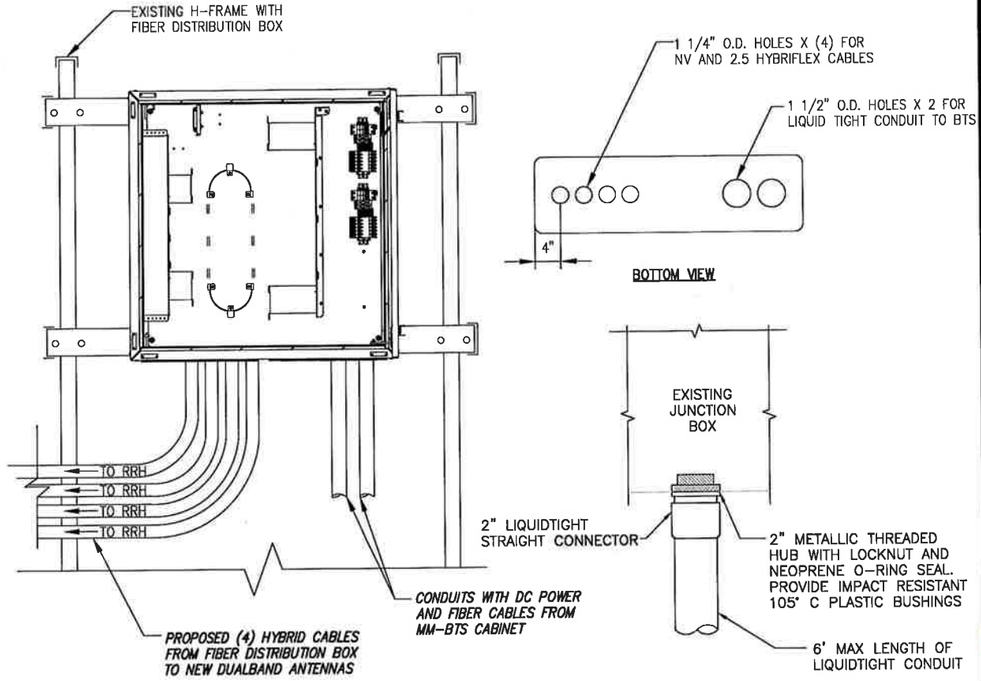


8 & 6 AWG



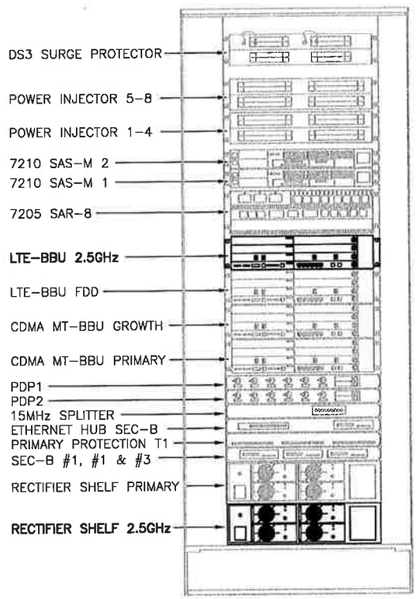
FIBER ONLY

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



FRONT VIEW

FIBER JUNCTION BOX & PENETRATION | NO SCALE | 2



FRONT VIEW

NEW EQUIPMENT IN EXISTING CABINET | NO SCALE | 3

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
1.2.2018

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
REVISED / ISSUED FOR PERMIT	07/03/18	MAP	1
ISSUED FOR PERMIT	05/03/18	ETC	0

SITE NAME:
POLICE TOWER/ TROOP F

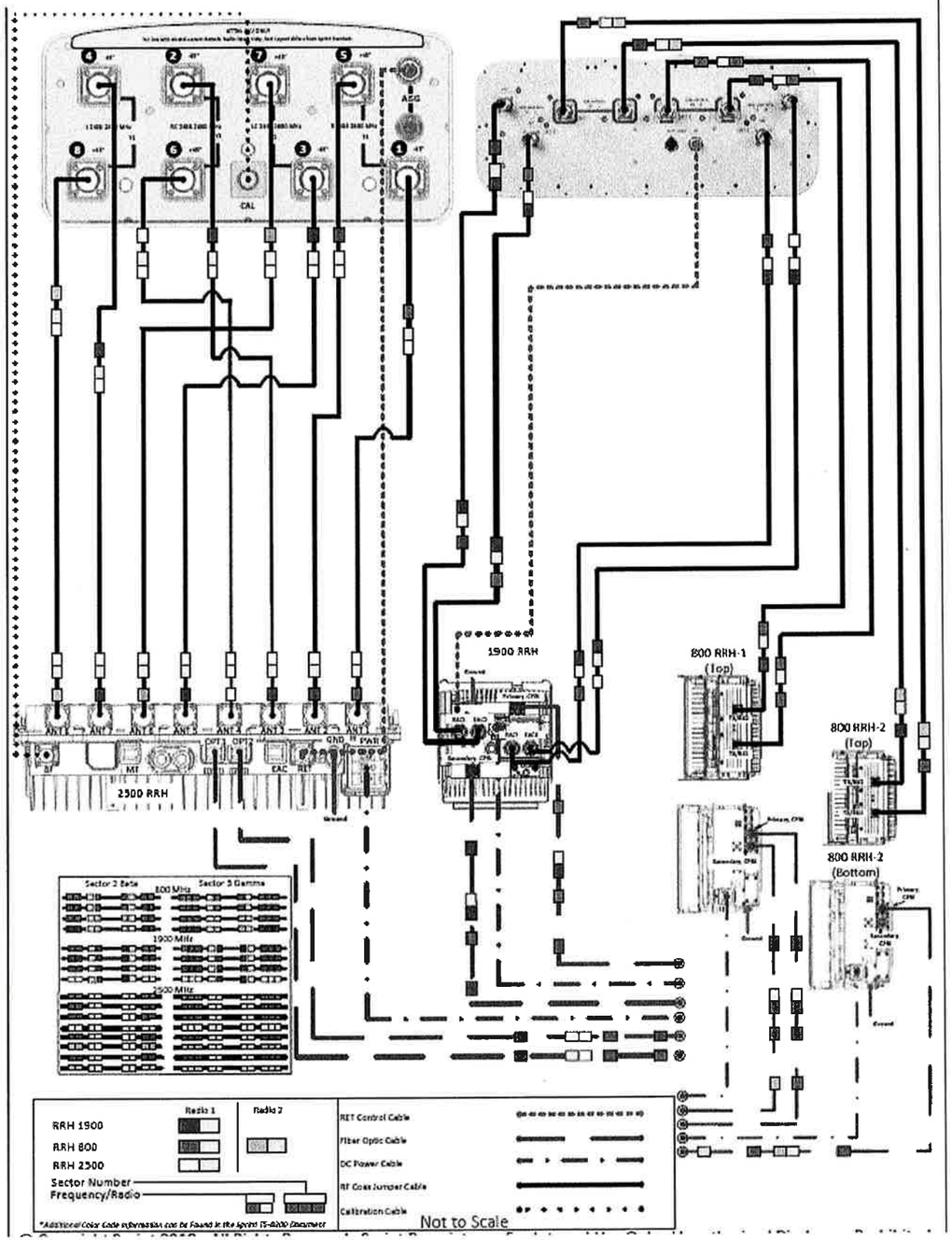
SITE NUMBER:
CT54XC758

SITE ADDRESS:
315 SPENCER PLAINS ROAD
WESTBROOK, CT 06498

SHEET DESCRIPTION:
EQUIPMENT & MOUNTING DETAILS

SHEET NUMBER:
A-5

ALU-NSN 211 APXVTM14-ALU-I20 & NNVV-65B-R4 wo Filters



PLUMBING DIAGRAM | NO SCALE | 1

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) 308-3740

ENGINEERING LICENSE:

STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24765
LICENSED
PROFESSIONAL ENGINEER
JUL 12 2018

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
REVISED / ISSUED FOR PERMIT	07/03/18	MAP	1
ISSUED FOR PERMIT	05/03/18	ETC	0

SITE NAME:

POLICE TOWER/
TROOP F

SITE NUMBER:

CT54XC758

SITE ADDRESS:

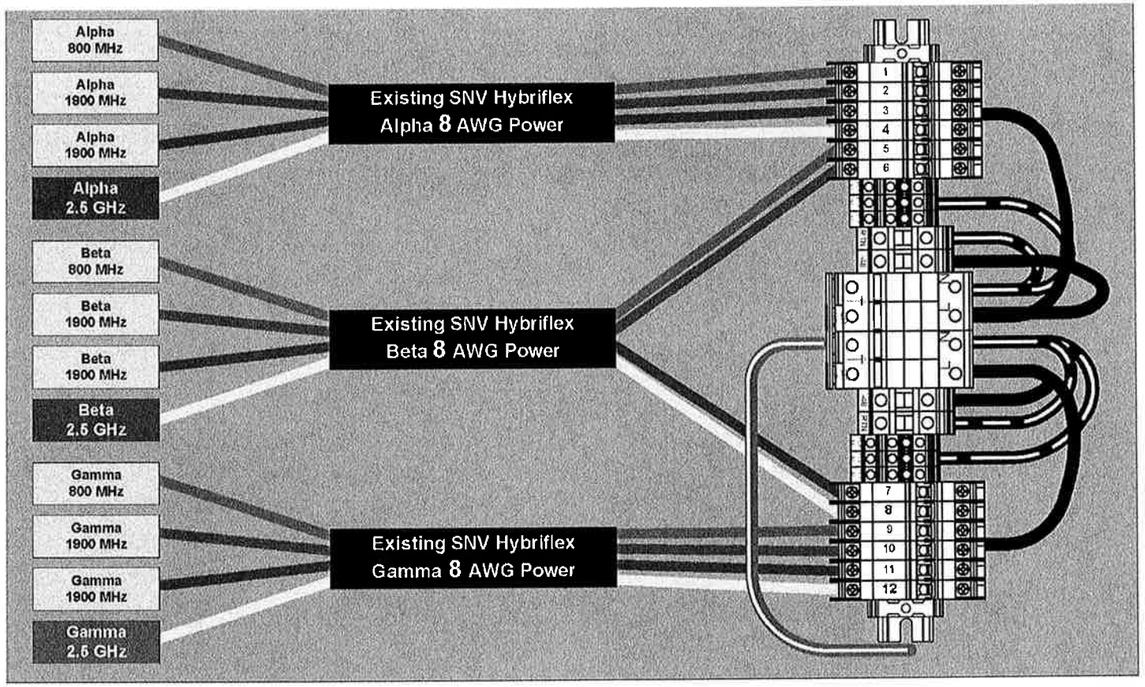
315 SPENCER
PLAINS ROAD
WESTBROOK, CT 06498

SHEET DESCRIPTION:

PLUMBING DIAGRAM

SHEET NUMBER:

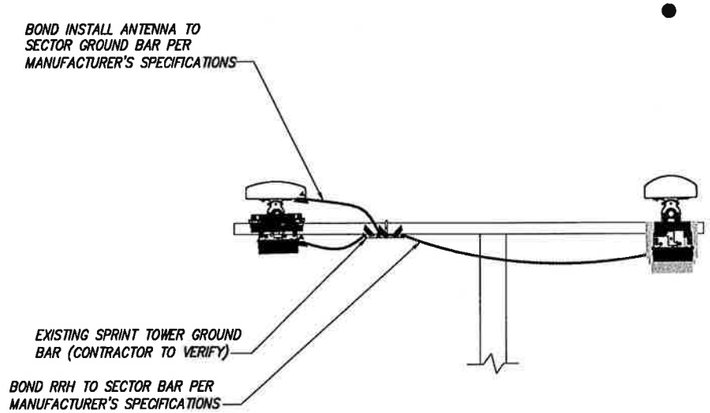
A-6



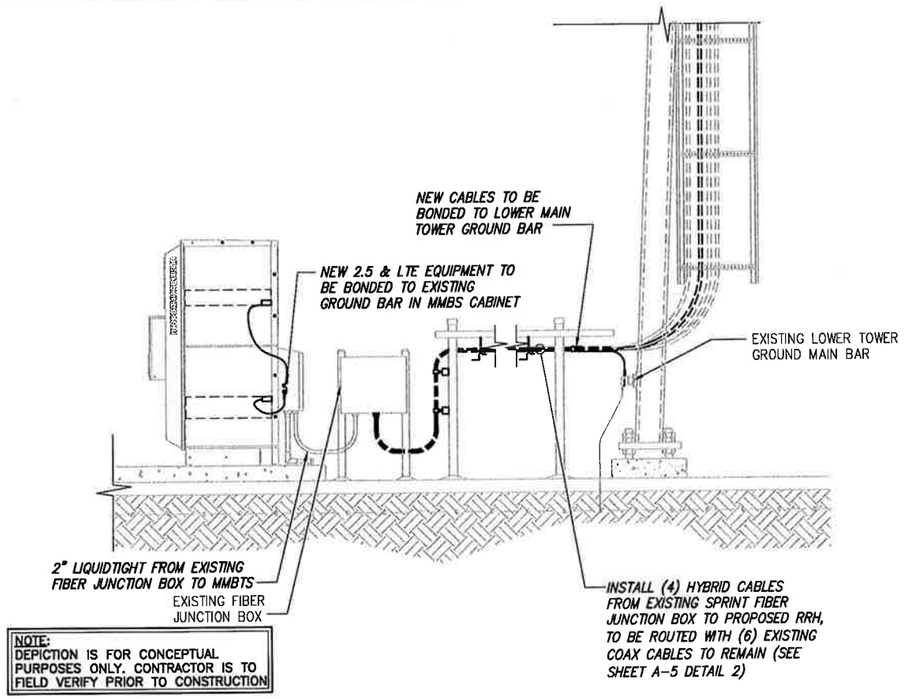
RRH TO DISTRIBUTION BOX POWER CONNECTIVITY | NO SCALE | 1

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

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#. (516) 306-3740

ENGINEERING LICENSE:
STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
LICENSED PROFESSIONAL ENGINEER
11/2/2018

REVISIONS:

DESCRIPTION	DATE	BY	REV.
REVISED / ISSUED FOR PERMIT	07/03/18	MAP	1
ISSUED FOR PERMIT	05/03/18	ETC	0

SITE NAME:
POLICE TOWER/ TROOP F

SITE NUMBER:
CT54XC758

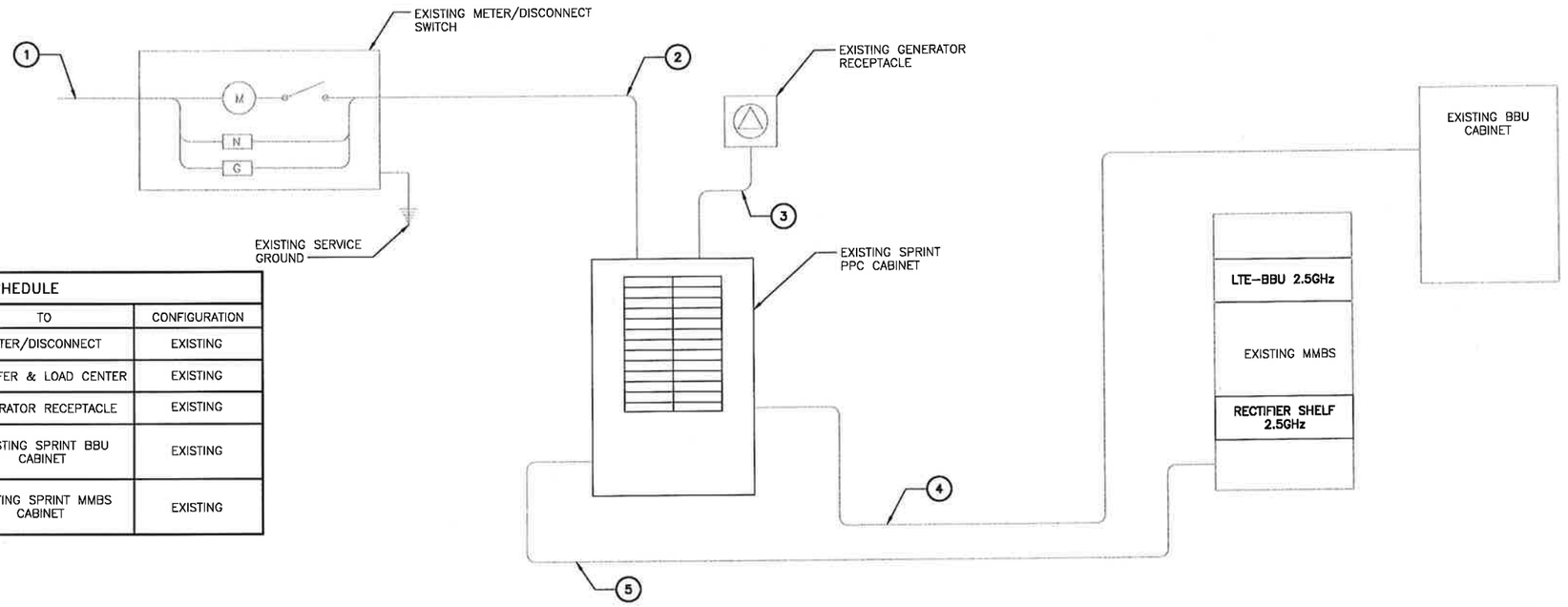
SITE ADDRESS:
315 SPENCER PLAINS ROAD
WESTBROOK, CT 06498

SHEET DESCRIPTION:
ELECTRICAL & GROUNDING PLAN

SHEET NUMBER:
E-1

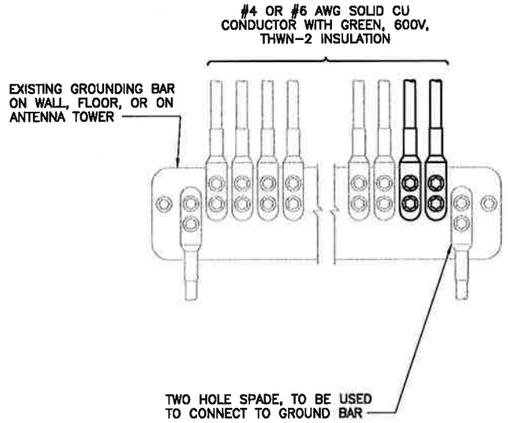
NOTES

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

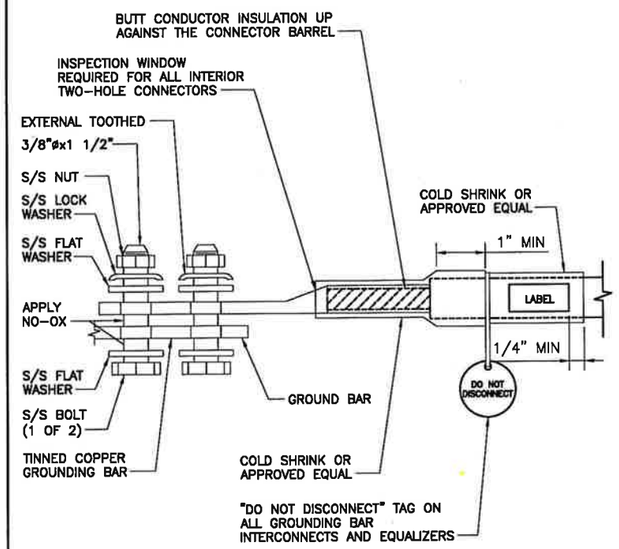
ELECTRICAL ONE–LINE DIAGRAM — NO SCALE — 1



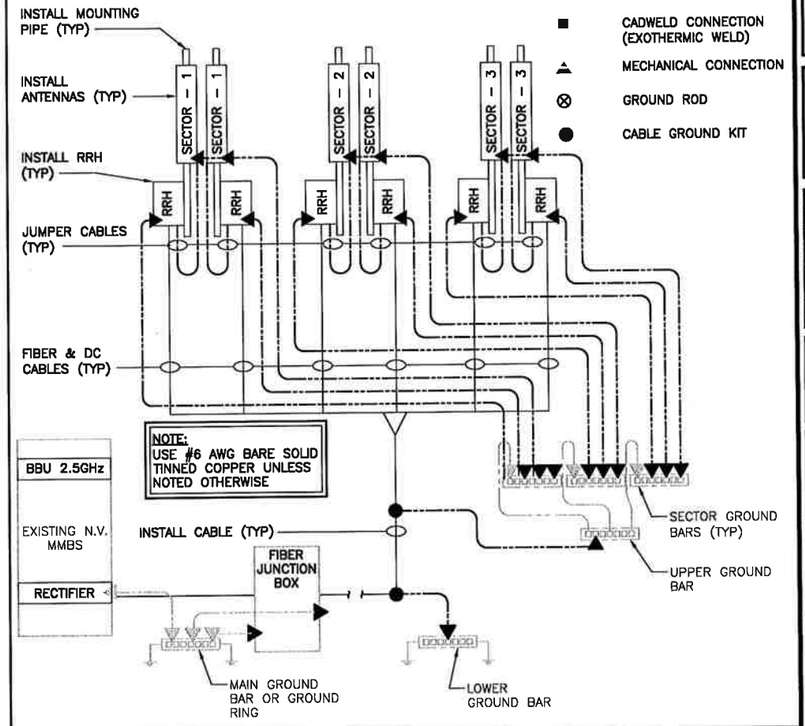
NOTES

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

PLANS PREPARED FOR:

Sprint

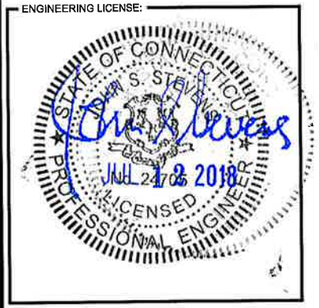
PLANS PREPARED BY:

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:



REVISIONS:

DESCRIPTION	DATE	BY	REV.
REVISED / ISSUED FOR PERMIT	07/03/18	MAP	1
ISSUED FOR PERMIT	05/03/18	ETC	0

SITE NAME:

POLICE TOWER/ TROOP F

SITE NUMBER:

CT54XC758

SITE ADDRESS:

315 SPENCER PLAINS ROAD
WESTBROOK, CT 06498

SHEET DESCRIPTION:

ELECTRICAL & GROUNDING PLAN

SHEET NUMBER:

E-2

GENERAL CONSTRUCTION NOTES

1. ALL WORK SHALL COMPLY WITH THE CONNECTICUT STATE BUILDING, SUPPLEMENTS AND AMENDMENTS AND LIFE SAFETY CODES.
2. CONTRACTOR IS TO REVIEW ALL DRAWINGS AND NOTES 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 NOTES 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.
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 AND ELECTRICAL SUB-CONTRACTORS SHALL PAY FOR THEIR PERMITS.
6. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS 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 OPERATING TELECOMMUNICATION SYSTEMS. THE CONTRACTOR SHALL PROVIDE AND COORDINATE THE METHODS OF PROTECTION WITH THE CONNECTICUT STATE POLICE AND THE VARIOUS TELECOMMUNICATION OPERATORS. THERE SHALL BE NO INTERRUPTION OF OPERATION WITHOUT TIMELY COORDINATION WITH AND APPROVAL BY THE VARIOUS COMMUNICATIONS OPERATORS.
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. SHOP DRAWINGS SHALL REFLECT FIELD VERIFIED DIMENSIONS.
12. EXISTING DIMENSIONS OF STRUCTURE SHOWN ON THESE DOCUMENTS ARE BASED ON ORIGINAL TOWER CONSTRUCTION DRAWINGS BY STAINLESS INC., DATED JUNE 1994, 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. SHOP DRAWINGS SHALL CONTAIN FIELD VERIFIED DIMENSIONS.
13. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURE AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY.
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.

STRUCTURAL NOTES

STRUCTURAL STEEL MATERIAL:

EXISTING STRUCTURAL STEEL	A36
REPLACEMENT STRUCTURAL ANGLES	A572-Gr. 50
EXISTING TOWER LEG	A 572-Gr. 50 & Gr. 60

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

UNLESS OTHERWISE NOTED, ALL STEEL WILL 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.

MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACES TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.

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 3/4" & 1" DIA. A325X 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.

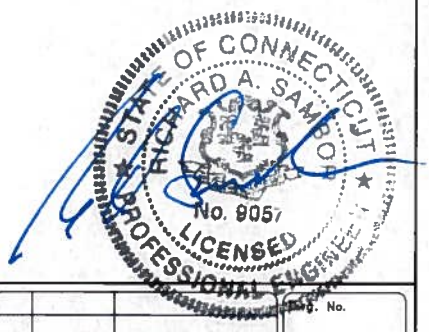
THE CONTRACTOR IS RESPONSIBLE FOR THE STABILITY OF THE STRUCTURE DURING CONSTRUCTION. NO MEMBER OF THE TOWER SHALL BE LEFT DISCONNECTED FOR THE NEXT WORKING DAY. THE CONTRACTOR SHALL BE AWARE OF WEATHER AND WIND CONDITIONS AND NOT PERFORM MEMBER REPLACEMENT IN A WIND GUSTING MORE THAN 10 MPH.

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. 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.



PROJECT NO. 60577720
Designed by: MCD
Drawn by: GAT
Checked by: ICA
Approved by: RAS

AECOM
500 ENTERPRISE DRIVE
ROCKY HILL, CONNECTICUT
(860)-529-8882

Sprint

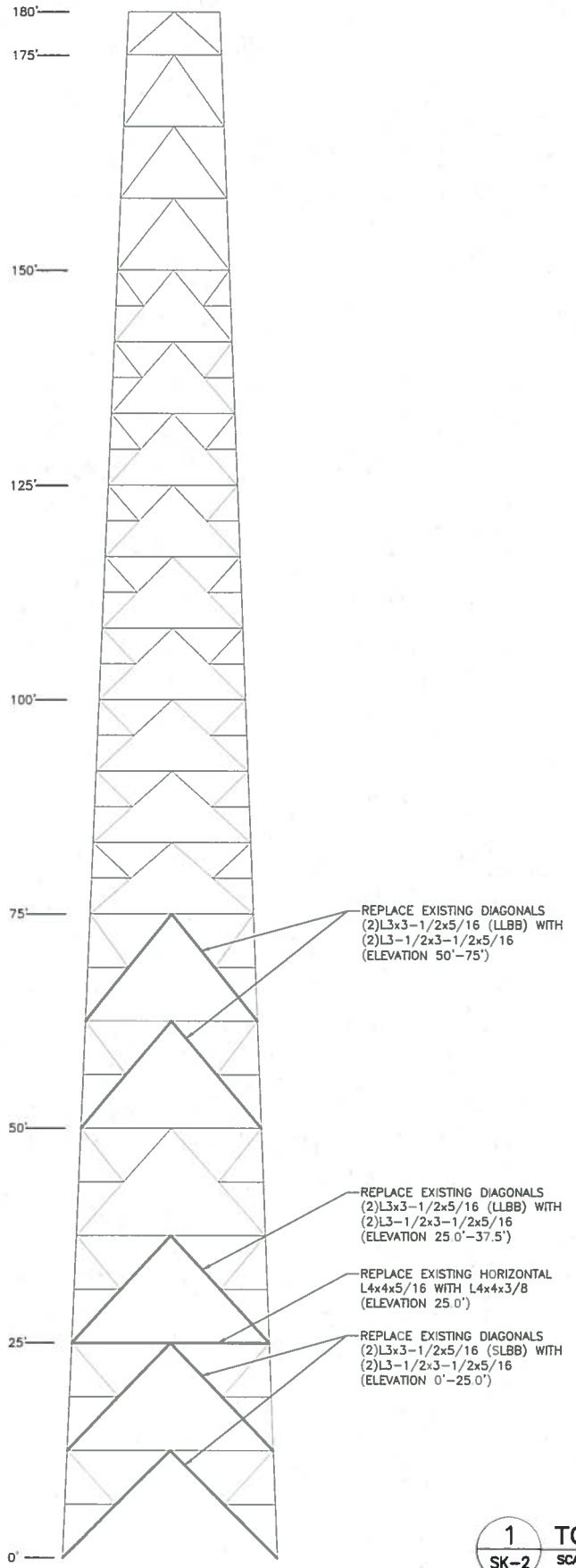
CT 54XC758
SITE ADDRESS: CSP #36, 315 SPENCER PLAINS ROAD
WESTBROOK, CONNECTICUT 06498

REV.	DATE:	DESCRIPTION

Dwg. No. SK-1

Scale: AS NOTED | Date: 06/20/18
Job No. ASM-009 | File No. | Dwg. 1 of 2

NOTES:
1. SEE SK-1 FOR STRUCTURAL NOTES.
2. REFER TO STRUCTURAL NOTES ON SK-1 FOR STEEL GRADE REQUIREMENTS FOR REPLACEMENT STRUCTURAL STEEL.
3. REINFORCEMENT OF TOWER IS REQUIRED FOR ALL 3 SIDES OF EXISTING TOWER STRUCTURE.
4. CONNECTION BOLTS THAT ARE REMOVED DURING MEMBER REPLACEMENT SHALL BE REPLACED IN KIND, UNLESS NOTIFIED OTHERWISE. EXISTING BOLTS SHALL NOT BE RE-USED FOR CONNECTING REPLACEMENT MEMBERS.



KEY:
SLBB = SHORT LEG BACK-TO-BACK
LLBB = LONG LEG BACK-TO-BACK

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

1 / SK-2 TOWER ELEVATION
SCALE: 1" = 20'-0"

PROJECT NO.	60577720
Designed by:	MCD
Drawn by:	GAT
Checked by:	ICA
Approved by:	RAS

AECOM
500 ENTERPRISE DRIVE
ROCKY HILL, CONNECTICUT
(860)-529-8882

Sprint

CT 54XC758
SITE ADDRESS: CSP #36, 315 SPENCER PLAINS ROAD
WESTBROOK, CONNECTICUT 06498

REV.	DATE:	DESCRIPTION

Scale: AS NOTED | Date: 06/20/18
Job No. ASM-009 | File No.

Dwg. No. SK-2
Dwg. 2 of 2