1280 Route 46 West, Suite 9, Parsippany NJ, 07054

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

Re: Notice of Exempt Modification Application
20 Seles Road – Ashford, CT 06278

April 13, 2018

Dear Ms. Bachman:

Sprint Spectrum Realty Company, L.P. ("Sprint"), is submitting to the Connecticut Siting Council for a Notice of Exempt Modification for Proposed Modifications to an Existing Telecommunications Facility located at the above-referenced site. Sprint currently maintains 3 panel antennas and 6 Remote Radio at the 170' level of the Tower. Sprint proposes to add 3 new panel antennas (1 per sector) and 6 new Remote Radio Heads (2 per sector) further proposes to add 1 new hybrid cable.

The earliest CT Siting Council submission I could find was issued to Sprint on May 30, 2014. The original Building permit for the actual tower construction was issued by the Town was unavailable, however there was one issued on June 23, 2014.. The attached construction and structural documents enclosed reflect the current reality of all the installations on the Tower.

If you have any questions, please feel free to contact me.

Thank you,

By: *Paul F. Sagristano*

Paul F. Sagristano
Cherundolo Consulting
917.841.0247
psagristano@lrivassoc.com

4 Davis Road West, Suite 5 – Old Lyme, CT 06371

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

Re: Notice of Exempt Modification Application
20 Seles Road, Ashford, CT 06278

Lat: N 41.8633
Long: W72.1828

April 13, 2018

Dear Ms. Bachman:

Sprint currently maintains 3 panel antennas and 6 Remote Radio Heads at the 170' level of the above noted wireless tower. Sprint proposes to add 3 panel antennas (1 per sector) and add 6 remote radio heads (2 per sector) at the 170' tower level as well as 1 new hybrid cable. Sprint is performing a new high-performance upgrade for cellular mobile communications. It is designed to increase the capacity and speed of mobile telephone networks.

The earliest CT Siting Council application available was submitted on May 30, 2014. The earliest building permit for the Tower construction was not available, I have included one for June 23, 2014.
.
Attached is a summary of the planned modifications, including power density calculations reflecting the change in Sprint's operations at the site. Also included is documentation of the structural sufficiency of the tower with proposed modifications to accommodate the revised antenna configuration.

Existing Facility

The Ashford facility is located at 20 Seles Road, the Site coordinates are: N41.8633, W72.1828. The existing facility consists of a 190' Guyed Tower. Sprint currently operates wireless communications equipment on a platform on a concrete slab at the facility and has3 antennas and 6 remote radio heads at a centerline of 170' feet on the tower. Please accept this letter as notification to the Council, pursuant to R.C.S.A. Section 16-50j-73, forconstruction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2). In compliance with R.C.S.A. Section 16-50j-73, a copy of this letter is being sent to:

Michael J. Zambo – First Selectman, Town of Ashford – Via Fed Ex
Michael Gardner, ZEO, Ashford – Via Fed Ex
Cordless Data Transfer, Inc., the tower owner – Via Fed Ex
Ramond C. Baker – Land Owner – Via Fed Ex

Statutory Considerations

The planned modifications to the facility fall within the activities explicitly provided for in R.C.S.A. 16-50j-72(b)(2)

1. The height of the overall structure will be unaffected.

2. The proposed changes will not require an extension of the property boundaries.

3. The proposed additions will not increase the noise level at the existing facility by

six decibels or more, or to levels that exceed state and/or local criteria

4. The changes will not increase the calculated "worst case" power density for the combined operations at the site to a level at or above the Federal Communications Commission safety standard.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.

6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, Sprint respectfully submits that the proposed changes at the referenced site constitute exempt modifications under R.C.S.A Section §16-50j-72(b)(2).

Respectfully submitted,

Paul F. Sagristano

Paul F. Sagristano
Charles Cherundolo Consulting
917-841-0247
psagristano@lrivassoc.com

PFS/mtf

Additional Recipients:
Michael J. Zambo – First Selectman, Town of Ashford – Via Fed Ex
Michael Gardner, ZEO, Ashford – Via Fed Ex
Cordless Data Transfer, Inc., the tower owner – Via Fed Ex
Ramond C. Baker – Land Owner – Via Fed Ex

May 7,2018

Dear Customer:

The following is the proof-of-delivery for tracking number **772125423544**.

Delivery Information:

Status:	Delivered	**Delivered to:**	Receptionist/Front Desk
Signed for by:	C.GLEKOFF	**Delivery location:**	5 TOWN HALL RD 2 ASHFORD, CT 06278
Service type:	FedEx Express Saver	**Delivery date:**	May 4, 2018 13:25
Special Handling:	Deliver Weekday Direct Signature Required		

Shipping Information:

Tracking number:	772125423544	**Ship date:**	May 1, 2018
		Weight:	0.5 lbs/0.2 kg

Recipient:
Michael Zambo, First Selectman
Town of Ashford
5 Town Hall Road
ASHFORD, CT 06278 US

Shipper:
Paul Sagristano
CCC
4 Davis Road West
Suite 5
OLD LYME, CT 06371 US

Reference
CT33XC015 - CSC to 1st Select

Thank you for choosing FedEx.

May 7,2018

Dear Customer:

The following is the proof-of-delivery for tracking number 772125396580.

Delivery Information:

Status:	Delivered	**Delivered to:**	Receptionist/Front Desk
Signed for by:	B.FERENCE	**Delivery location:**	5 TOWN HALL RD ASHFORD, CT 06278
Service type:	FedEx Express Saver	**Delivery date:**	May 4, 2018 13:23
Special Handling:	Deliver Weekday Direct Signature Required		

Shipping Information:

Tracking number:	772125396580	**Ship date:**	May 1, 2018
		Weight:	0.5 lbs/0.2 kg

Recipient:
Michael Gardner, Zoning
Town of Ashford
5 Town Hall Road
ASHFORD, CT 06278 US

Shipper:
Paul Sagristano
CCC
4 Davis Road West
Suite 5
OLD LYME, CT 06371 US

Reference
CT33XC015 - CSC to ZEO

Thank you for choosing FedEx.

May 7,2018

Dear Customer:

The following is the proof-of-delivery for tracking number **772125244525**.

Delivery Information:

Status:	Delivered	**Delivered to:**	Residence
Signed for by:	L.LEGAULT	**Delivery location:**	600 OLD HARTFORD RD COLCHESTER, CT 06415
Service type:	FedEx Express Saver	**Delivery date:**	May 4, 2018 13:12
Special Handling:	Deliver Weekday Residential Delivery Direct Signature Required		

Shipping Information:

Tracking number:	772125244525	**Ship date:**	May 1, 2018
		Weight:	0.5 lbs/0.2 kg

Recipient:
Mark Legault
CDT, Inc
600 Old Hartford Road
COLCHESTER, CT 06415 US

Shipper:
Paul Sagristano
CCC
4 Davis Road West
Suite 5
OLD LYME, CT 06371 US

Reference
CT33XC015 CSC Sub

Thank you for choosing FedEx.

May 7,2018

Dear Customer:

The following is the proof-of-delivery for tracking number 772125552392.

Delivery Information:

Status:	Delivered	**Delivered to:**	Residence
Signed for by:	K.BAKER	**Delivery location:**	20 SELES RD ASHFORD, CT 06278
Service type:	FedEx Express Saver	**Delivery date:**	May 4, 2018 13:45
Special Handling:	Deliver Weekday Residential Delivery Direct Signature Required		

Shipping Information:

Tracking number:	772125552392	**Ship date:**	May 1, 2018
		Weight:	0.5 lbs/0.2 kg

Recipient:
Raymond Baker
20 Seles Road
ASHFORD, CT 06278 US

Shipper:
Paul Sagristano
CCC
4 Davis Road West
Suite 5
OLD LYME, CT 06371 US

Reference
CT33XC015 - CSC to LL

Thank you for choosing FedEx.

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: CT33XC015

Ashford
22 Seles Road
Ashford, CT 06278

February 12, 2018

EBI Project Number: 6218000955

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	6.33 %

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

EBI Consulting
environmental | engineering | due diligence

February 12, 2018

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

Emissions Analysis for Site: **CT33XC015 – Ashford**

EBI Consulting was directed to analyze the proposed SPRINT facility located at **22 Seles Road, Ashford, 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 **22 Seles Road, Ashford, 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, 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 20 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 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 **RFS APXV9ERR18-C-A20 and the Commscope DT465B-2XR** 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, 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 antennas are **180 feet** above ground level (AGL) for **Sector A**, **180 feet** above ground level (AGL) for **Sector B** and **180 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:	RFS APXV9ERR18-C-A20	Make / Model:	RFS APXV9ERR18-C-A20	Make / Model:	RFS APXV9ERR18-C-A20
Gain:	11.9 / 14.9 dBd	Gain:	11.9 / 14.9 dBd	Gain:	11.9 / 14.9 dBd
Height (AGL):	**180 feet**	Height (AGL):	**180 feet**	Height (AGL):	**180 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):	220 Watts	Total TX Power(W):	220 Watts	Total TX Power(W):	220 Watts
ERP (W):	5,873.76	ERP (W):	5,873.76	ERP (W):	5,873.76
Antenna A1 MPE%	**0.78 %**	Antenna B1 MPE%	**0.78 %**	Antenna C1 MPE%	**0.78 %**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Commscope DT465B-2XR	Make / Model:	Commscope DT465B-2XR	Make / Model:	Commscope DT465B-2XR
Gain:	15.05 dBd	Gain:	15.05 dBd	Gain:	15.05 dBd
Height (AGL):	**180 feet**	Height (AGL):	**180 feet**	Height (AGL):	**180 feet**
Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)
Channel Count	8	Channel Count	8	Channel Count	8
Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts
ERP (W):	5,118.23	ERP (W):	5,118.23	ERP (W):	5,118.23
Antenna A2 MPE%	**0.61 %**	Antenna B2 MPE%	**0.61 %**	Antenna C2 MPE%	**0.61 %**

Site Composite MPE%	
Carrier	**MPE%**
SPRINT – Max per sector	**1.39 %**
Nextel	0.18 %
Verizon Wireless	2.72 %
AT&T	2.04 %
Site Total MPE %:	**6.33 %**

SPRINT Sector A Total:	1.39 %
SPRINT Sector B Total:	1.39 %
SPRINT Sector C Total:	1.39 %
Site Total:	6.33 %

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	309.76	180	0.37	850 MHz	567	0.07%
Sprint 850 MHz LTE	2	309.76	180	0.74	850 MHz	567	0.13%
Sprint 1900 MHz (PCS) CDMA	5	494.45	180	2.94	1900 MHz (PCS)	1000	0.29%
Sprint 1900 MHz (PCS) LTE	2	1,236.12	180	2.94	1900 MHz (PCS)	1000	0.29%
Sprint 2500 MHz (BRS) LTE	8	639.78	180	6.08	2500 MHz (BRS)	1000	0.61%
						Total:	**1.39%**

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:	1.39 %
Sector B:	1.39 %
Sector C:	1.39 %
SPRINT Maximum Total (per sector):	1.39 %
Site Total:	6.33 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **6.33 %** 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.

FRED A. NUDD CORPORATION

1743 ROUTE 104, BOX 577
ONTARIO, NY 14519
(315) 524-2531 FAX (315) 524-4249

www.nuddtowers.com

Mark LeGault
Cordless Data Transfer, Inc.
600 Old Hartford Road
Colchester, CT 06415
January 15, 2018

Nudd Job Number: 117-23243.3

Site Location: 20 Seles Road, Ashford, CT 06258, Windham County (Lat. & Long. = 41-51-48, -72-10-57)

Subject: Structural Analysis of an existing 190 ft Guyed Tower

Fred A. Nudd Corporation has completed a three-dimensional, finite element model structural analysis of the above noted guyed tower. This tower was analyzed considered appurtenance loads noted in the appurtenance loading table on the following page. The design loading criteria and strength design are per the ANSI/TIA-222-G standard, which is the recommended design standard per the 2012 International Building Code (Sec. 1609 & 3108), , and the 2016 Connecticut Sate Building Code. Tower and foundation dimensions have been taken from drawings by Fred A. Nudd, project number 00-6111A-1 & 98-6111-2, dated July 28, 2000 & June 1998, respectively. Geotechnical information was taken from a subsurface exploration report by Tower Engineering Professionals, Inc., project number 090004.13, dated September 22, 2009. Design criteria per each analysis are noted on the following page. The tower is assumed to be in good, undamaged and equivalent to as new condition and has been maintained / inspected per criteria by TIA-222.

The purpose of this analysis is to determine the structure's ability to support new Sprint equipment installed at a rad center of 180 ft above ground level (AGL). The new equipment to be installed, which includes antennas, diplexers, and associated hardware are listed on the following page in the appurtenance loading table.

Results of the analysis indicate the tower will be able to the support the design loads noted in the appurtenance loading table on the following page. Specific section design loads, capacities and stress ratios are provided on the following pages. Maximum member usage was found to be 99%.

The tower base foundation and anchors were analyzed considering onsite soil information from the aforementioned geotechnical report. Based on this analysis, the foundation and anchors will be able support the proposed appurtenance loading, in addition to the existing wireless equipment and tower superstructure. Specific design loads, capacities and stress ratios are provided on the following pages.

In conclusion, the tower super and substructure can support the listed existing and proposed appurtenance loading.

We trust this report satisfies your needs. Please contact us with any questions or concerns regarding this report.

Best Regards,

Fred. A. Nudd Corporation

Code Design Criteria

TIA-222-G
Windspeed = 126 mph, 3-second gust, V_{ult} = 100 mph, 3-second gust, V_{asd}
Exposure = B
Radial Ice = 1.00 inch
Ice Windspeed = 50 mph, 3-second gust
Structure Class = II
Topographic Category = 1
S_s < 1.0, thus seismic loading effects can be ignored

Appurtenance Loading – Existing Equipment to Remain on Tower

Elevation (ft)	Carrier	Antenna	Mount	Coax (in)
190	Verizon	(2) Antel LPA-80080-4CF (4) Antel LPA-80063-4CF (6) Commscope JAHH-65B-R3B (3) Alcatel Lucent B66A RRH4x45 (AWS) (3) Alcatel Lucent B13 RRH4x30 (700) (3) Alcatel Lucent RRH 4T4R B5 (160) (2) RFS DB-C1-12C-24AB-0Z	(3) 12 ft Sector Frame	(6) 1-5/8 (2) 1-5/8 Fiber
178	--	-	(3) 12 ft Boom / Frame	-
150	--	-	(3) 12 ft Boom / Frame	-
138	AT&T	(6) Powerwave 7770 (6) TMA (6) Diplextors (3) KMW AM-X-CD-17-65-00T-RET (1) Raycap DC6-48-60-18-8F (6) Ericsson RRU11	(3) 12 ft Boom / Frame	(12) 1-5/8 (2) 3/4 DC Cables (1) 3/8 Fiberline

- *Note elevation is measured from grade to center of antenna.*

Appurtenance Loading – Proposed Equipment Configuration for Sprint

Height (ft)	Carrier	Appurtenance	Mount	Coax (in)
180	Sprint	(3) RFS APXV9ERR18-C-A20 (3) Alcatel Lucent 4x45W, 1900 MHz (3) Alcatel Lucent TD-RRH8x200-25 (6) Alcatel Lucent RRH 2x50, 800 MHz (3) Commscope DT465B-2XR	(3) 12 ft Boom / Frame	(4) 1-1/4 Hybrid

- *Height measurement taken as distance from top of base foundation to center of appurtenance.*
- *The additional coax can be installed on any face.*

Maximum Member Usage Results

Member	Usage (%)[1]
Leg	99
Diagonal	62
Horizontal	49
Guy Wires	54
Bolts	36
Anchor Rod	69

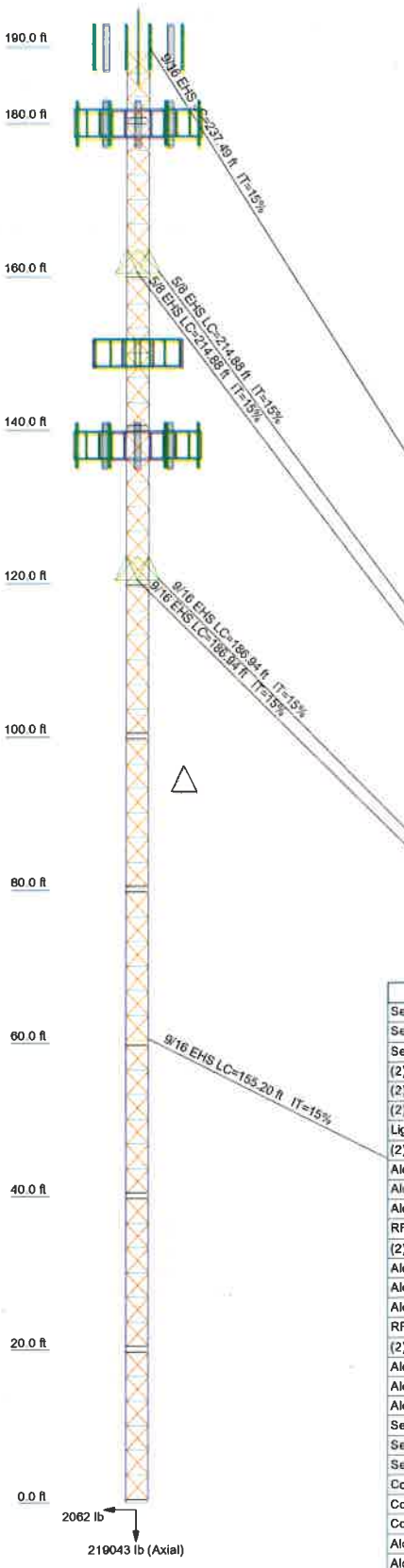
[1]*Usage above 100% indicates the applied design load exceeds the member strength capacity and requires strengthening.*

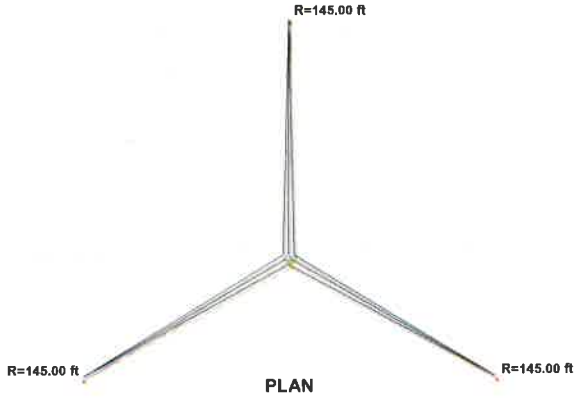
Foundation Usage Results

Base Reaction	Capacity (kips)	Analysis (kips)	Usage (%)[1]
Compression	254.1	219.0	87
Uplift	92.3	42.5	46
Shear	54.1	47.0	87

[1]*Usage above 100% indicates the applied design load exceeds the member strength capacity and requires strengthening.*

Section	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs					P2.5x.203					
Leg Grade					A500M-58					
Diagonals					SR 5/8					
Diagonal Grade					A36					
Top Girts					L1 1/2x1 1/2x3/16					N.A.
Bottom Girts		L1 1/2x1 1/2x3/16		N.A.	L1 1/2x1 1/2x3/16		N.A.	L1 1/2x1 1/2x3/16	N.A.	A
Horizontals					L1 1/2x1 1/2x3/16					
Top Guy Pull-Offs		N.A.		L1 1/2x1 1/2x3/16		N.A.	L1 1/2x1 1/2x3/16	N.A.	L1 1/2x1 1/2x3/16	
Bot Guy Pull-Offs			N.A.				L1 1/2x1 1/2x3/16	N.A.	L1 1/2x1 1/2x3/16	N.A.
Face Width (ft)					3.5					
# Panels @ (ft)					54 @ 3.20833					3 @ 3.08333
Weight (lb)	668.9	658.2	658.2	658.2	658.2	658.2	872.6	658.2	872.6	337.0





PLAN

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Sector Frame Mount	190	Alcatel Lucent 8x200-25 (Sprint)	180
Sector Frame Mount	190	RFS APXV9ERR18-C-A20 (Sprint)	180
Sector Frame Mount	190	RFS APXV9ERR18-C-A20 (Sprint)	180
(2) Antel LPA-80080-4CF (Verizon)	190	RFS APXV9ERR18-C-A20 (Sprint)	180
(2) Antel LPA-80063/4CF (Verizon)	190	(2) Alcatel Lucent 2x50 (Sprint)	180
(2) Antel LPA-80063/4CF (Verizon)	190	(2) Alcatel Lucent 2x50 (Sprint)	180
Lightning Rod	190	(2) Alcatel Lucent 2x50 (Sprint)	180
(2) Commscope JAHH-65B-R3B	190	Sector Frame Mount	178
Alcatel Lucent B66A RRH4x45	190	Sector Frame Mount	178
Alcatel Lucent B13 RRH4x30	190	Sector Frame Mount	178
Alcatel Lucent RRH 4T4R B5	190	Sector Frame Mount	150
RFS DB-C1-12C-24AB-0Z	190	Sector Frame Mount	150
(2) Commscope JAHH-65B-R3B	190	Sector Frame Mount	150
Alcatel Lucent B66A RRH4x45	190	(2) Powerwave LGP21901 (ATI)	138
Alcatel Lucent B13 RRH4x30	190	(2) Powerwave LGP21401 (ATI)	138
Alcatel Lucent RRH 4T4R B5	190	(2) Powerwave LGP21901 (ATI)	138
RFS DB-C1-12C-24AB-0Z	190	(2) Powerwave LGP21901 (ATI)	138
(2) Commscope JAHH-65B-R3B	190	KMW AM-X-CD-17-65-00T-RET (ATI)	138
Alcatel Lucent B66A RRH4x45	190	(2) Ericsson RRUS11 (ATI)	138
Alcatel Lucent B13 RRH4x30	190	(2) Ericsson RRUS11 (ATI)	138
Alcatel Lucent RRH 4T4R B5	190	(2) Ericsson RRUS11 (ATI)	138
Sector Frame Mount (Sprint)	180	Raycap DC6-48-60-18-8F (ATI)	138
Sector Frame Mount (Sprint)	180	(2) Allgon 7770.00 (ATI)	138
Sector Frame Mount (Sprint)	180	KMW AM-X-CD-17-65-00T-RET (ATI)	138
Commscope DT465B-2XR (Sprint)	180	KMW AM-X-CD-17-65-00T-RET (ATI)	138
Commscope DT465B-2XR (Sprint)	180	Sector Frame Mount	138
Commscope DT465B-2XR (Sprint)	180	Sector Frame Mount	138
Alcatel Lucent 4x45W (Sprint)	180	Sector Frame Mount	138
Alcatel Lucent 4x45W (Sprint)	180	(2) Powerwave LGP21401 (ATI)	138
Alcatel Lucent 4x45W (Sprint)	180	(2) Powerwave LGP21401 (ATI)	138
Alcatel Lucent 8x200-25 (Sprint)	180	(2) Allgon 7770.00 (ATI)	138
Alcatel Lucent 8x200-25 (Sprint)	180	(2) Allgon 7770.00 (ATI)	138

lb

SYMBOL LIST

Phone: FAX:	Job: 117-23243.3		
	Project: Ashford, CT		
	Client: CDT	Drawn by: FAN	App'd:
	Code: TIA-222-G	Date: 01/15/18	Scale: NTS
	Path:		Dwg No. E-1

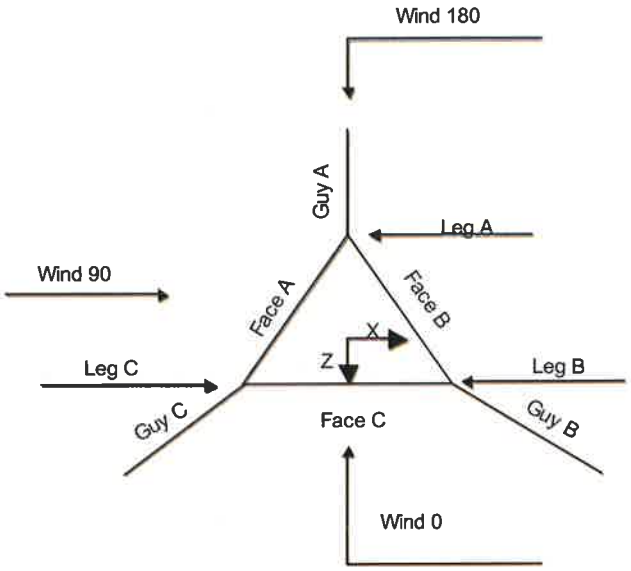
Tower Input Data

The main tower is a 3x guyed tower with an overall height of 190.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 3.50 ft at the top and 3.50 ft at the base.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

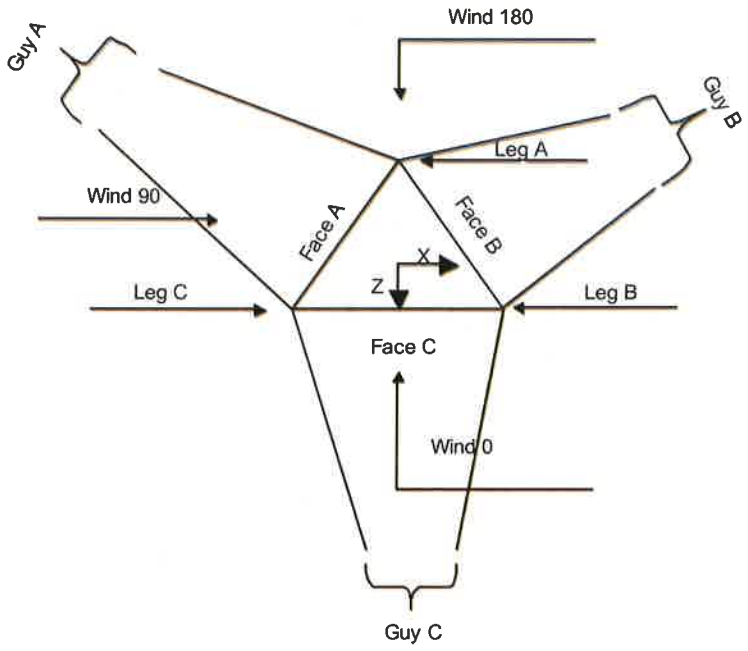
Tower is located in Windham County, Connecticut.
Basic wind speed of 100 mph.
Structure Class II.
Exposure Category B.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 1.0000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
Weld together tower sections have flange connections..
Tension only take-up is 0.0313 in.
Pressures are calculated at each section.
Safety factor used in guy design is 1.
Stress ratio used in tower member design is 1.
Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

Options

	Consider Moments - Legs		Distribute Leg Loads As Uniform		Treat Feedline Bundles As Cylinder
	Consider Moments - Horizontals		Assume Legs Pinned		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Diagonals	√	Assume Rigid Index Plate	√	Calculate Redundant Bracing Forces
	Use Moment Magnification	√	Use Clear Spans For Wind Area		Ignore Redundant Members in FEA
√	Use Code Stress Ratios	√	Use Clear Spans For KL/r		SR Leg Bolts Resist Compression
√	Use Code Safety Factors - Guys	√	Retension Guys To Initial Tension	√	All Leg Panels Have Same Allowable
	Escalate Ice		Bypass Mast Stability Checks		Offset Girt At Foundation
	Always Use Max Kz	√	Use Azimuth Dish Coefficients	√	Consider Feedline Torque
	Use Special Wind Profile	√	Project Wind Area of Appurt.		Include Angle Block Shear Check
√	Include Bolts In Member Capacity	√	Autocalc Torque Arm Areas		**Poles**
√	Leg Bolts Are At Top Of Section		SR Members Have Cut Ends		Include Shear-Torsion Interaction
√	Secondary Horizontal Braces Leg		Sort Capacity Reports By Component		Always Use Sub-Critical Flow
	Use Diamond Inner Bracing (4 Sided)	√	Triangulate Diamond Inner Bracing		Use Top Mounted Sockets
	Add IBC .6D+W Combination				



Corner & Starmount Guyed Tower



Face Guyed

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	190.00-180.00			3.50	1	10.00
T2	180.00-160.00			3.50	1	20.00
T3	160.00-140.00			3.50	1	20.00
T4	140.00-120.00			3.50	1	20.00
T5	120.00-100.00			3.50	1	20.00
T6	100.00-80.00			3.50	1	20.00
T7	80.00-60.00			3.50	1	20.00
T8	60.00-40.00			3.50	1	20.00
T9	40.00-20.00			3.50	1	20.00
T10	20.00-0.00			3.50	1	20.00

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	190.00-180.00	3.08	TX Brace	No	Yes	4.5000	4.5000
T2	180.00-160.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T3	160.00-140.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T4	140.00-120.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T5	120.00-100.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T6	100.00-80.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T7	80.00-60.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T8	60.00-40.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T9	40.00-20.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T10	20.00-0.00	3.21	TX Brace	No	Yes	4.5000	4.5000

Tower Section Geometry (cont'd)

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 190.00-180.00	Pipe	P2.5x.203	A500M-58 (58 ksi)	Solid Round	5/8	A36 (36 ksi)
T2 180.00-160.00	Pipe	P2.5x.203	A500M-58 (58 ksi)	Solid Round	5/8	A36 (36 ksi)
T3 160.00-140.00	Pipe	P2.5x.203	A500M-58 (58 ksi)	Solid Round	5/8	A36 (36 ksi)
T4 140.00-120.00	Pipe	P2.5x.203	A500M-58 (58 ksi)	Solid Round	5/8	A36 (36 ksi)
T5 120.00-100.00	Pipe	P2.5x.203	A500M-58 (58 ksi)	Solid Round	5/8	A36 (36 ksi)
T6 100.00-80.00	Pipe	P2.5x.203	A500M-58 (58 ksi)	Solid Round	5/8	A36 (36 ksi)
T7 80.00-60.00	Pipe	P2.5x.203	A500M-58 (58 ksi)	Solid Round	5/8	A36 (36 ksi)
T8 60.00-40.00	Pipe	P2.5x.203	A500M-58 (58 ksi)	Solid Round	5/8	A36 (36 ksi)
T9 40.00-20.00	Pipe	P2.5x.203	A500M-58 (58 ksi)	Solid Round	5/8	A36 (36 ksi)
T10 20.00-0.00	Pipe	P2.5x.203	A500M-58 (58 ksi)	Solid Round	5/8	A36 (36 ksi)

Tower Section Geometry (cont'd)

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 190.00-180.00	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T2 180.00-160.00	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T3 160.00-140.00	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T4 140.00-120.00	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T5 120.00-100.00	Equal Angle	L1 1/2x1 1/2x3/16	A36	Equal Angle	L1 1/2x1 1/2x3/16	A36

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T6 100.00-80.00	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36 (36 ksi)
T7 80.00-60.00	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T8 60.00-40.00	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T9 40.00-20.00	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T10 20.00-0.00	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	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 190.00-180.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T2 180.00-160.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T3 160.00-140.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T4 140.00-120.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T5 120.00-100.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T6 100.00-80.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T7 80.00-60.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T8 60.00-40.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T9 40.00-20.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T10 20.00-0.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)

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
T1 190.00-180.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T2 180.00-160.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T3	0.00	0.0000	A36	1	1	1	36.0000	36.0000

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
160.00-140.00 T4	0.00	0.0000	(36 ksi) A36 (36 ksi)	1	1	1	36.0000	36.0000
140.00-120.00 T5	0.00	0.0000	(36 ksi) A36 (36 ksi)	1	1	1	36.0000	36.0000
120.00-100.00 T6	0.00	0.0000	(36 ksi) A36 (36 ksi)	1	1	1	36.0000	36.0000
100.00-80.00 T7	80.00-60.00 0.00	0.0000	(36 ksi) A36 (36 ksi)	1	1	1	36.0000	36.0000
T8	60.00-40.00 0.00	0.0000	(36 ksi) A36 (36 ksi)	1	1	1	36.0000	36.0000
T9	40.00-20.00 0.00	0.0000	(36 ksi) A36 (36 ksi)	1	1	1	36.0000	36.0000
T10	20.00-0.00 0.00	0.0000	(36 ksi) A36 (36 ksi)	1	1	1	36.0000	36.0000

Tower Section Geometry (cont'd)

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X	X Brace Diags Y	K Brace Diags X	K Brace Diags Y	Single Diags X	Single Diags Y	Girts X	Girts Y	Horiz. X	Horiz. Y	Sec. Horiz. X	Sec. Horiz. Y	Inner Brace X	Inner Brace Y
T1	No	Yes	1	1		1		1		0.65		0.65		1		1	
190.00-180.00 T2	No	Yes	1	1		1		1		0.65		0.65		1		1	
180.00-160.00 T3	No	Yes	1	1		1		1		0.65		0.65		1		1	
160.00-140.00 T4	No	Yes	1	1		1		1		0.65		0.65		1		1	
140.00-120.00 T5	No	Yes	1	1		1		1		0.65		0.65		1		1	
120.00-100.00 T6	No	Yes	1	1		1		1		0.65		0.65		1		1	
100.00-80.00 T7	No	Yes	1	1		1		1		0.65		0.65		1		1	
80.00-60.00 T8	No	Yes	1	1		1		1		0.65		0.65		1		1	
60.00-40.00 T9	No	Yes	1	1		1		1		0.65		0.65		1		1	
40.00-20.00 T10	No	Yes	1	1		1		1		0.65		0.65		1		1	
20.00-0.00				1		1		1		0.65		0.65		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		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
T1 190.00-180.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T2 180.00-160.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T3 160.00-140.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T4 140.00-120.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T5 120.00-100.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T6 100.00-80.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T7 80.00-60.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T8 60.00-40.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T9 40.00-20.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T10 20.00-0.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 190.00-180.00	Flange	0.7500 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 180.00-160.00	Flange	0.7500 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 160.00-140.00	Flange	0.7500 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 140.00-120.00	Flange	0.7500 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 120.00-100.00	Flange	0.7500 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T6 100.00-80.00	Flange	0.7500 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T7 80.00-60.00	Flange	0.7500 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T8 60.00-40.00	Flange	0.7500 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T9 40.00-20.00	Flange	0.7500 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T10 20.00-0.00	Flange	0.7500 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

Guy Data

Guy Elevation ft	Guy Grade		Guy Size	Initial Tension lb	%	Guy Modulus ksi	Guy Weight plf	L_u ft	Anchor Radius ft	Anchor Azimuth Adj. °	Anchor Elevation ft	End Fitting Efficiency %
160.375	EHS	A	5/8	6360.00	15%	21000	0.813	214.61	145.00	0.0000	0.00	100%
		B	5/8	6360.00	15%	21000	0.813	214.61	145.00	0.0000	0.00	100%
		C	5/8	6360.00	15%	21000	0.813	214.61	145.00	0.0000	0.00	100%
120.375	EHS	A	9/16	5250.00	15%	21000	0.671	186.70	145.00	0.0000	0.00	100%
		B	9/16	5250.00	15%	21000	0.671	186.70	145.00	0.0000	0.00	100%
		C	9/16	5250.00	15%	21000	0.671	186.70	145.00	0.0000	0.00	100%
60.375	EHS	A	9/16	5250.00	15%	21000	0.671	155.01	145.00	0.0000	0.00	100%
		B	9/16	5250.00	15%	21000	0.671	155.01	145.00	0.0000	0.00	100%
		C	9/16	5250.00	15%	21000	0.671	155.01	145.00	0.0000	0.00	100%
189.625	EHS	A	9/16	5250.00	15%	21000	0.671	237.18	145.00	0.0000	0.00	100%
		B	9/16	5250.00	15%	21000	0.671	237.18	145.00	0.0000	0.00	100%
		C	9/16	5250.00	15%	21000	0.671	237.18	145.00	0.0000	0.00	100%

Guy Data(cont'd)

Guy Elevation ft	Mount Type	Torque-Arm Spread ft	Torque-Arm Leg Angle °	Torque-Arm Style	Torque-Arm Grade	Torque-Arm Type	Torque-Arm Size
160.375	Torque Arm	7.00	30.0000	Dog Ear	A36 (36 ksi)	Single Angle	L2x2x5/16 L3x3x1/4
120.375	Torque Arm	7.00	30.0000	Dog Ear	A36 (36 ksi)	Single Angle	L2x2x5/16 L3x3x1/4
60.375	Corner						
189.625	Corner						

Guy Data (cont'd)

Guy Elevation ft	Diagonal Grade	Diagonal Type	Upper Diagonal Size	Lower Diagonal Size	Is Strap.	Pull-Off Grade	Pull-Off Type	Pull-Off Size
160.38	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16
120.38	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16
60.38	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16
189.63	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16

Guy Data (cont'd)

Guy Elevation ft	Cable Weight A lb	Cable Weight B lb	Cable Weight C lb	Cable Weight D lb	Tower Intercept A ft	Tower Intercept B ft	Tower Intercept C ft	Tower Intercept D ft

Guy Elevation ft	Cable Weight A lb	Cable Weight B lb	Cable Weight C lb	Cable Weight D lb	Tower Intercept A ft	Tower Intercept B ft	Tower Intercept C ft	Tower Intercept D ft
160.375	174.48	174.48	174.48		2.92 2.9 sec/pulse	2.92 2.9 sec/pulse	2.92 2.9 sec/pulse	
120.375	125.27	125.27	125.27		2.21 2.6 sec/pulse	2.21 2.6 sec/pulse	2.21 2.6 sec/pulse	
60.375	104.01	104.01	104.01		1.53 2.1 sec/pulse	1.53 2.1 sec/pulse	1.53 2.1 sec/pulse	
189.625	159.15	159.15	159.15		3.56 3.3 sec/pulse	3.56 3.3 sec/pulse	3.56 3.3 sec/pulse	

Guy Data *(cont'd)*

Guy Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Torque Arm K_x	Torque Arm K_y	Pull Off K_x	Pull Off K_y	Diagonal K_x	Diagonal K_y
160.375	No	No	1	1	0.65	0.65	1	1
120.375	No	No	1	1	0.65	0.65	1	1
60.375	No	No			0.65	0.65	1	1
189.625	No	No			0.65	0.65	1	1

Guy Data *(cont'd)*

Guy Elevation ft	Torque-Arm Bolt Size in	Torque-Arm Number	Torque-Arm Net Width Deduct in	Torque-Arm U	Pull Off Bolt Size in	Pull Off Number	Pull Off Net Width Deduct in	Pull Off U	Diagonal Bolt Size in	Diagonal Number	Diagonal Net Width Deduct in	Diagonal U
160.375	0.7500 A325N	2	0.0000	1	0.0000 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	1
120.375	0.7500 A325N	2	0.0000	1	0.0000 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	1
60.375	0.6250 A325N	0	0.0000	0.75	0.0000 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	1
189.625	0.6250 A325N	0	0.0000	0.75	0.0000 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	1

Guy Pressures

Guy Elevation ft	Guy Location	z ft	q_z psf	q_z Ice psf	Ice Thickness in
160.375	A	80.19	20	5	2.1857
	B	80.19	20	5	2.1857
	C	80.19	20	5	2.1857
120.375	A	60.19	19	5	2.1239
	B	60.19	19	5	2.1239
	C	60.19	19	5	2.1239
60.375	A	30.19	15	4	1.9823
	B	30.19	15	4	1.9823

Guy Elevation ft	Guy Location	z ft	q_z psf	q_z Ice psf	Ice Thickness in
189.625	C	30.19	15	4	1.9823
	A	94.81	21	5	2.2226
	B	94.81	21	5	2.2226
	C	94.81	21	5	2.2226

Guy-Mast Forces (Excluding Wind) - No Ice

Guy Elevation ft	Guy Location	Chord Angle °	Guy Tension Top / Bottom lb	F_x lb	F_y lb	F_z lb	M_x lb-ft	M_y lb-ft	M_z lb-ft
160.375	A	48.2735	6490.22 / 6360.00	-104.64	4882.39	-4274.84	-9865.97	15173.38	-17088.36
	A	48.2735	6490.22 / 6360.00	104.64	4882.39	-4274.84	-9865.97	-15173.38	17088.36
	B	48.2735	6490.22 / 6360.00	3754.44	4882.39	2046.79	19731.94	15173.38	0.00
	B	48.2735	6490.22 / 6360.00	3649.79	4882.39	2228.04	-9865.97	-15173.38	-17088.36
	C	48.2735	6490.22 / 6360.00	-3649.79	4882.39	2228.04	-9865.97	15173.38	17088.36
	C	48.2735	6490.22 / 6360.00	-3754.44	4882.39	2046.79	19731.94	-15173.38	0.00
			Sum:	0.00	29294.33	0.00	-0.00	0.00	0.00
120.375	A	40.0857	5330.67 / 5250.00	-99.04	3469.21	-4046.08	-7010.33	14361.42	-12142.24
	A	40.0857	5330.67 / 5250.00	99.04	3469.21	-4046.08	-7010.33	-14361.42	12142.24
	B	40.0857	5330.67 / 5250.00	3553.53	3469.21	1937.27	14020.66	14361.42	0.00
	B	40.0857	5330.67 / 5250.00	3454.49	3469.21	2108.82	-7010.33	-14361.42	-12142.24
	C	40.0857	5330.67 / 5250.00	-3454.49	3469.21	2108.82	-7010.33	14361.42	12142.24
	C	40.0857	5330.67 / 5250.00	-3553.53	3469.21	1937.27	14020.66	-14361.42	0.00
			Sum:	0.00	20815.27	0.00	-0.00	0.00	0.00
60.375	A	22.8926	5290.46 / 5250.00	0.00	2102.12	-4854.90	-4247.81	0.00	0.00
	B	22.8926	5290.46 / 5250.00	4204.47	2102.12	2427.45	2123.90	0.00	-3678.71
	C	22.8926	5290.46 / 5250.00	-4204.47	2102.12	2427.45	2123.90	-0.00	3678.71
			Sum:	0.00	6306.36	0.00	0.00	0.00	0.00
189.625	A	52.9833	5377.07 / 5250.00	0.00	4322.16	-3198.73	-8733.90	0.00	0.00
	B	52.9833	5377.07 / 5250.00	2770.18	4322.16	1599.36	4366.95	0.00	-7563.78
	C	52.9833	5377.07 / 5250.00	-2770.18	4322.16	1599.36	4366.95	-0.00	7563.78
			Sum:	0.00	12966.47	0.00	0.00	0.00	0.00

Guy-Mast Forces (Excluding Wind) - Ice

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top Bottom	F_x	F_y	F_z	M_x	M_y	M_z
ft		°	lb	lb	lb	lb	lb-ft	lb-ft	lb-ft
160.375	A	48.2735	11257.75 9926.09	-172.02	8793.49	-7027.21	-17769.24	24942.86	-30777.22
	A	48.2735	11257.75 9926.09	172.02	8793.49	-7027.21	-17769.24	-24942.86	30777.22
	B	48.2735	11257.75 9926.09	6171.76	8793.49	3364.63	35538.47	24942.86	0.00
	B	48.2735	11257.75 9926.09	5999.74	8793.49	3662.58	-17769.24	-24942.86	-30777.22
	C	48.2735	11257.75 9926.09	-5999.74	8793.49	3662.58	-17769.24	24942.86	30777.22
	C	48.2735	11257.75 9926.09	-6171.76	8793.49	3364.63	35538.47	-24942.86	0.00
			Sum:	0.00	52760.95	0.00	-0.00	0.00	0.00
120.375	A	40.0857	9516.06 8597.94	-169.12	6541.87	-6908.74	-13219.33	24522.34	-22896.56
	A	40.0857	9516.06 8597.94	169.12	6541.87	-6908.74	-13219.33	-24522.34	22896.56
	B	40.0857	9516.06 8597.94	6067.71	6541.87	3307.91	26438.67	24522.34	0.00
	B	40.0857	9516.06 8597.94	5898.59	6541.87	3600.83	-13219.33	-24522.34	-22896.56
	C	40.0857	9516.06 8597.94	-5898.59	6541.87	3600.83	-13219.33	24522.34	22896.56
	C	40.0857	9516.06 8597.94	-6067.71	6541.87	3307.91	26438.67	-24522.34	0.00
			Sum:	0.00	39251.24	0.00	-0.00	0.00	0.00
60.375	A	22.8926	8905.54 8493.69	0.00	3912.05	-8000.28	-7905.18	0.00	0.00
	B	22.8926	8905.54 8493.69	6928.45	3912.05	4000.14	3952.59	0.00	-6846.09
	C	22.8926	8905.54 8493.69	-6928.45	3912.05	4000.14	3952.59	-0.00	6846.09
			Sum:	0.00	11736.15	-0.00	0.00	0.00	0.00
189.625	A	52.9833	10097.77 8539.50	0.00	8411.96	-5586.05	-16998.27	0.00	0.00
	B	52.9833	10097.77 8539.50	4837.66	8411.96	2793.02	8499.13	0.00	-14720.93
	C	52.9833	10097.77 8539.50	-4837.66	8411.96	2793.02	8499.13	-0.00	14720.93
			Sum:	0.00	25235.88	0.00	0.00	0.00	0.00

Guy-Mast Forces (Excluding Wind) - Service

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top Bottom	F_x	F_y	F_z	M_x	M_y	M_z
ft		°	lb	lb	lb	lb	lb-ft	lb-ft	lb-ft
160.375	A	48.2735	6490.22 6360.00	-104.64	4882.39	-4274.84	-9865.97	15173.38	-17088.36
	A	48.2735	6490.22	104.64	4882.39	-4274.84	-9865.97	-15173.38	17088.36

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top / Bottom	F_x	F_y	F_z	M_x	M_y	M_z
ft		°	lb	lb	lb	lb	lb-ft	lb-ft	lb-ft
			6360.00						
	B	48.2735	6490.22	3754.44	4882.39	2046.79	19731.94	15173.38	0.00
			6360.00						
	B	48.2735	6490.22	3649.79	4882.39	2228.04	-9865.97	-15173.38	-17088.36
			6360.00						
	C	48.2735	6490.22	-3649.79	4882.39	2228.04	-9865.97	15173.38	17088.36
			6360.00						
	C	48.2735	6490.22	-3754.44	4882.39	2046.79	19731.94	-15173.38	0.00
			6360.00						
			Sum:	0.00	29294.33	0.00	-0.00	0.00	0.00
120.375	A	40.0857	5330.67	-99.04	3469.21	-4046.08	-7010.33	14361.42	-12142.24
			5250.00						
	A	40.0857	5330.67	99.04	3469.21	-4046.08	-7010.33	-14361.42	12142.24
			5250.00						
	B	40.0857	5330.67	3553.53	3469.21	1937.27	14020.66	14361.42	0.00
			5250.00						
	B	40.0857	5330.67	3454.49	3469.21	2108.82	-7010.33	-14361.42	-12142.24
			5250.00						
	C	40.0857	5330.67	-3454.49	3469.21	2108.82	-7010.33	14361.42	12142.24
			5250.00						
	C	40.0857	5330.67	-3553.53	3469.21	1937.27	14020.66	-14361.42	0.00
			5250.00						
			Sum:	0.00	20815.27	0.00	-0.00	0.00	0.00
60.375	A	22.8926	5290.46	0.00	2102.12	-4854.90	-4247.81	0.00	0.00
			5250.00						
	B	22.8926	5290.46	4204.47	2102.12	2427.45	2123.90	0.00	-3678.71
			5250.00						
	C	22.8926	5290.46	-4204.47	2102.12	2427.45	2123.90	-0.00	3678.71
			5250.00						
			Sum:	0.00	6306.36	0.00	0.00	0.00	0.00
189.625	A	52.9833	5377.07	0.00	4322.16	-3198.73	-8733.90	0.00	0.00
			5250.00						
	B	52.9833	5377.07	2770.18	4322.16	1599.36	4366.95	0.00	-7563.78
			5250.00						
	C	52.9833	5377.07	-2770.18	4322.16	1599.36	4366.95	-0.00	7563.78
			5250.00						
			Sum:	0.00	12966.47	0.00	0.00	0.00	0.00

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
1 5/8 (Verizon)	C	No	Ar (CaAa)	190.00 - 0.00	0.0000	0.25	6	6	0.2500	1.9800		1.04
1 1/4 (Sprint)	A	No	Ar (CaAa)	170.50 - 0.00	0.0000	0.25	4	4	0.5000 1.0000	1.5500		0.66
1 5/8 (AT&T)	B	No	Ar (CaAa)	138.00 - 0.00	6.0000	0.5	12	6	0.2500	1.9800		1.04
Safety Line 3/8	A	No	Ar (CaAa)	190.00 - 0.00	0.0000	0	1	1	0.3750	0.3750		0.22
3/4 Cable	B	No	Ar (CaAa)	138.00 - 0.00	0.0000	0.1	2	1	0.6300	0.6300		0.19
3/8 Cable	B	No	Ar (CaAa)	138.00 - 0.00	0.0000	0.1	1	1	0.0000	0.3750		0.19
1-5/8 Fiber	C	No	Ar (CaAa)	190.00 - 0.00	0.0000	-0.25	2	2	1.9800	1.9800		0.75

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
(Verizon)												

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	190.00-180.00	A	0.000	0.000	0.375	0.000	2.20
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	15.840	0.000	77.40
T2	180.00-160.00	A	0.000	0.000	7.260	0.000	32.12
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	31.680	0.000	154.80
T3	160.00-140.00	A	0.000	0.000	13.150	0.000	57.20
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	31.680	0.000	154.80
T4	140.00-120.00	A	0.000	0.000	13.150	0.000	57.20
		B	0.000	0.000	45.711	0.000	234.90
		C	0.000	0.000	31.680	0.000	154.80
T5	120.00-100.00	A	0.000	0.000	13.150	0.000	57.20
		B	0.000	0.000	50.790	0.000	261.00
		C	0.000	0.000	31.680	0.000	154.80
T6	100.00-80.00	A	0.000	0.000	13.150	0.000	57.20
		B	0.000	0.000	50.790	0.000	261.00
		C	0.000	0.000	31.680	0.000	154.80
T7	80.00-60.00	A	0.000	0.000	13.150	0.000	57.20
		B	0.000	0.000	50.790	0.000	261.00
		C	0.000	0.000	31.680	0.000	154.80
T8	60.00-40.00	A	0.000	0.000	13.150	0.000	57.20
		B	0.000	0.000	50.790	0.000	261.00
		C	0.000	0.000	31.680	0.000	154.80
T9	40.00-20.00	A	0.000	0.000	13.150	0.000	57.20
		B	0.000	0.000	50.790	0.000	261.00
		C	0.000	0.000	31.680	0.000	154.80
T10	20.00-0.00	A	0.000	0.000	13.150	0.000	57.20
		B	0.000	0.000	50.790	0.000	261.00
		C	0.000	0.000	31.680	0.000	154.80

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	190.00-180.00	A	2.376	0.000	0.000	5.128	0.000	82.07
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	39.679	0.000	654.11
T2	180.00-160.00	A	2.356	0.000	0.000	28.423	0.000	441.60
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	79.092	0.000	1296.94
T3	160.00-140.00	A	2.327	0.000	0.000	44.618	0.000	683.99
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	78.701	0.000	1280.51
T4	140.00-120.00	A	2.294	0.000	0.000	44.264	0.000	671.81
		B		0.000	0.000	72.157	0.000	1432.23

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
		C		0.000	0.000	78.261	0.000	1262.08
T5	120.00-100.00	A	2.256	0.000	0.000	43.857	0.000	657.93
		B		0.000	0.000	79.501	0.000	1563.20
		C		0.000	0.000	77.755	0.000	1241.02
T6	100.00-80.00	A	2.211	0.000	0.000	43.378	0.000	641.75
		B		0.000	0.000	78.707	0.000	1530.34
		C		0.000	0.000	77.159	0.000	1216.36
T7	80.00-60.00	A	2.156	0.000	0.000	42.791	0.000	622.21
		B		0.000	0.000	77.734	0.000	1490.65
		C		0.000	0.000	76.430	0.000	1186.44
T8	60.00-40.00	A	2.085	0.000	0.000	42.029	0.000	597.24
		B		0.000	0.000	76.471	0.000	1439.93
		C		0.000	0.000	75.484	0.000	1147.99
T9	40.00-20.00	A	1.981	0.000	0.000	40.922	0.000	561.80
		B		0.000	0.000	74.634	0.000	1367.89
		C		0.000	0.000	74.109	0.000	1092.91
T10	20.00-0.00	A	1.775	0.000	0.000	38.729	0.000	494.55
		B		0.000	0.000	70.992	0.000	1231.12
		C		0.000	0.000	71.390	0.000	986.69

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	190.00-180.00	-0.8400	1.9798	-0.2739	0.3972
T2	180.00-160.00	-0.9185	1.3361	-0.3203	0.2853
T3	160.00-140.00	-0.9703	0.8543	-0.3479	0.1748
T4	140.00-120.00	2.5550	1.3137	1.4201	0.4957
T5	120.00-100.00	2.7587	1.3402	1.5342	0.5193
T6	100.00-80.00	2.7587	1.3402	1.5313	0.5228
T7	80.00-60.00	2.7587	1.3402	1.5278	0.5272
T8	60.00-40.00	2.7587	1.3402	1.5235	0.5334
T9	40.00-20.00	2.7587	1.3402	1.5177	0.5432
T10	20.00-0.00	2.7587	1.3402	1.5077	0.5656

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	1	1 5/8	180.00 - 190.00	0.6000	0.2458
T1	4	Safety Line 3/8	180.00 - 190.00	0.6000	0.2458
T1	7	1-5/8 Fiber	180.00 - 190.00	0.6000	0.2458
T2	1	1 5/8	160.00 - 180.00	0.6000	0.2654
T2	2	1 1/4	160.00 - 170.50	0.6000	0.2654
T2	4	Safety Line 3/8	160.00 -	0.6000	0.2654

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T2	7	1-5/8 Fiber	160.00 - 180.00	0.6000	0.2654
T3	1	1 5/8	140.00 - 160.00	0.6000	0.2713
T3	2	1 1/4	140.00 - 160.00	0.6000	0.2713
T3	4	Safety Line 3/8	140.00 - 160.00	0.6000	0.2713
T3	7	1-5/8 Fiber	140.00 - 160.00	0.6000	0.2713
T4	1	1 5/8	120.00 - 140.00	0.6000	0.2781
T4	2	1 1/4	120.00 - 140.00	0.6000	0.2781
T4	3	1 5/8	120.00 - 138.00	1.0000	1.0000
T4	4	Safety Line 3/8	120.00 - 140.00	0.6000	0.2781
T4	5	3/4 Cable	120.00 - 138.00	0.6000	0.2781
T4	6	3/8 Cable	120.00 - 138.00	0.6000	0.2781
T4	7	1-5/8 Fiber	120.00 - 140.00	0.6000	0.2781
T5	1	1 5/8	100.00 - 120.00	0.6000	0.2859
T5	2	1 1/4	100.00 - 120.00	0.6000	0.2859
T5	3	1 5/8	100.00 - 120.00	1.0000	1.0000
T5	4	Safety Line 3/8	100.00 - 120.00	0.6000	0.2859
T5	5	3/4 Cable	100.00 - 120.00	0.6000	0.2859
T5	6	3/8 Cable	100.00 - 120.00	0.6000	0.2859
T5	7	1-5/8 Fiber	100.00 - 120.00	0.6000	0.2859
T6	1	1 5/8	80.00 - 100.00	0.6000	0.2952
T6	2	1 1/4	80.00 - 100.00	0.6000	0.2952
T6	3	1 5/8	80.00 - 100.00	1.0000	1.0000
T6	4	Safety Line 3/8	80.00 - 100.00	0.6000	0.2952
T6	5	3/4 Cable	80.00 - 100.00	0.6000	0.2952
T6	6	3/8 Cable	80.00 - 100.00	0.6000	0.2952
T6	7	1-5/8 Fiber	80.00 - 100.00	0.6000	0.2952
T7	1	1 5/8	60.00 - 80.00	0.6000	0.3065
T7	2	1 1/4	60.00 - 80.00	0.6000	0.3065
T7	3	1 5/8	60.00 - 80.00	1.0000	1.0000
T7	4	Safety Line 3/8	60.00 - 80.00	0.6000	0.3065
T7	5	3/4 Cable	60.00 - 80.00	0.6000	0.3065
T7	6	3/8 Cable	60.00 - 80.00	0.6000	0.3065
T7	7	1-5/8 Fiber	60.00 - 80.00	0.6000	0.3065
T8	1	1 5/8	40.00 - 60.00	0.6000	0.3214
T8	2	1 1/4	40.00 - 60.00	0.6000	0.3214
T8	3	1 5/8	40.00 - 60.00	1.0000	1.0000
T8	4	Safety Line 3/8	40.00 - 60.00	0.6000	0.3214
T8	5	3/4 Cable	40.00 - 60.00	0.6000	0.3214
T8	6	3/8 Cable	40.00 - 60.00	0.6000	0.3214
T8	7	1-5/8 Fiber	40.00 - 60.00	0.6000	0.3214
T9	1	1 5/8	20.00 - 40.00	0.6000	0.3431
T9	2	1 1/4	20.00 - 40.00	0.6000	0.3431

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T9	3	1 5/8	20.00 - 40.00	1.0000	1.0000
T9	4	Safety Line 3/8	20.00 - 40.00	0.6000	0.3431
T9	5	3/4 Cable	20.00 - 40.00	0.6000	0.3431
T9	6	3/8 Cable	20.00 - 40.00	0.6000	0.3431
T9	7	1-5/8 Fiber	20.00 - 40.00	0.6000	0.3431
T10	1	1 5/8	0.00 - 20.00	0.6000	0.3869
T10	2	1 1/4	0.00 - 20.00	0.6000	0.3869
T10	3	1 5/8	0.00 - 20.00	1.0000	1.0000
T10	4	Safety Line 3/8	0.00 - 20.00	0.6000	0.3869
T10	5	3/4 Cable	0.00 - 20.00	0.6000	0.3869
T10	6	3/8 Cable	0.00 - 20.00	0.6000	0.3869
T10	7	1-5/8 Fiber	0.00 - 20.00	0.6000	0.3869

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
Sector Frame Mount	A	From Leg	1.50 0.00 0.00	0.0000	190.00	No Ice 1/2" Ice 1" Ice	13.60 18.40 23.20	13.60 18.40 23.20	465.00 600.00 735.00
Sector Frame Mount	B	From Leg	1.50 0.00 0.00	0.0000	190.00	No Ice 1/2" Ice 1" Ice	13.60 18.40 23.20	13.60 18.40 23.20	465.00 600.00 735.00
Sector Frame Mount	C	From Leg	1.50 0.00 0.00	0.0000	190.00	No Ice 1/2" Ice 1" Ice	13.60 18.40 23.20	13.60 18.40 23.20	465.00 600.00 735.00
(2) Antel LPA-80080-4CF (Verizon)	A	From Leg	3.00 0.00 0.00	0.0000	190.00	No Ice 1/2" Ice 1" Ice	1.51 1.81 2.53	6.79 7.14 7.50	12.00 45.10 50.65
(2) Antel LPA-80063/4CF (Verizon)	B	From Leg	3.00 0.00 0.00	0.0000	190.00	No Ice 1/2" Ice 1" Ice	7.00 7.36 2.53	3.48 3.82 3.99	20.00 72.60 50.65
(2) Antel LPA-80063/4CF (Verizon)	C	From Leg	3.00 0.00 0.00	0.0000	190.00	No Ice 1/2" Ice 1" Ice	7.00 7.36 2.53	3.48 3.82 3.99	20.00 72.60 50.65
Sector Frame Mount	A	From Leg	1.50 0.00 0.00	0.0000	178.00	No Ice 1/2" Ice 1" Ice	13.60 18.40 23.20	13.60 18.40 23.20	465.00 600.00 735.00
Sector Frame Mount	B	From Leg	1.50 0.00 0.00	0.0000	178.00	No Ice 1/2" Ice 1" Ice	13.60 18.40 23.20	13.60 18.40 23.20	465.00 600.00 735.00
Sector Frame Mount	C	From Leg	1.50 0.00 0.00	0.0000	178.00	No Ice 1/2" Ice 1" Ice	13.60 18.40 23.20	13.60 18.40 23.20	465.00 600.00 735.00
(2) Allgon 7770.00 (AT&T)	A	From Leg	3.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	5.88 6.25 6.64	2.93 3.29 3.67	35.00 67.60 85.58
(2) Allgon 7770.00 (AT&T)	B	From Leg	3.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	5.88 6.25 6.64	2.93 3.29 3.67	35.00 67.60 85.58

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
(2) Allgon 7770.00 (AT&T)	C	From Leg	3.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	5.88 6.25 6.64	2.93 3.29 3.67	35.00 67.60 85.58
(2) Powerwave LGP21401 (AT&T)	A	From Leg	3.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	1.95 2.11 2.28	0.53 0.63 0.75	31.00 30.30 203.29
(2) Powerwave LGP21401 (AT&T)	B	From Leg	3.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	1.95 2.11 2.28	0.53 0.63 0.75	31.00 30.30 203.29
(2) Powerwave LGP21401 (AT&T)	C	From Leg	3.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	1.95 2.11 2.28	0.53 0.63 0.75	31.00 30.30 203.29
(2) Powerwave LGP21901 (AT&T)	A	From Leg	3.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	0.27 0.33 0.41	0.13 0.18 0.23	25.00 30.30 203.29
(2) Powerwave LGP21901 (AT&T)	B	From Leg	3.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	0.27 0.33 0.41	0.13 0.18 0.23	25.00 30.30 203.29
(2) Powerwave LGP21901 (AT&T)	C	From Leg	3.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	0.27 0.33 0.41	0.13 0.18 0.23	25.00 30.30 203.29
Sector Frame Mount	A	From Leg	1.50 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	13.60 18.40 23.20	13.60 18.40 23.20	465.00 600.00 735.00
Sector Frame Mount	B	From Leg	1.50 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	13.60 18.40 23.20	13.60 18.40 23.20	465.00 600.00 735.00
Sector Frame Mount	C	From Leg	1.50 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	13.60 18.40 23.20	13.60 18.40 23.20	465.00 600.00 735.00
Lightning Rod	C	None		0.0000	190.00	No Ice 1/2" Ice 1" Ice	1.00 2.02 3.05	1.00 2.02 3.05	40.00 49.26 64.89
KMW AM-X-CD-17-65-00T-RET (AT&T)	A	From Leg	3.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	11.31 11.93 12.53	6.80 7.48 8.12	25.00 86.40 155.40
KMW AM-X-CD-17-65-00T-RET (AT&T)	B	From Leg	3.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	11.31 11.93 12.53	6.80 7.48 8.12	25.00 86.40 155.40
KMW AM-X-CD-17-65-00T-RET (AT&T)	C	From Leg	3.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	11.31 11.93 12.53	6.80 7.48 8.12	25.00 86.40 155.40
(2) Ericsson RRUS11 (AT&T)	A	From Leg	3.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	2.99 3.19 3.41	0.36 0.48 0.60	25.00 38.50 54.60
(2) Ericsson RRUS11 (AT&T)	B	From Leg	3.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	2.99 3.19 3.41	0.36 0.48 0.60	25.00 38.50 54.60
(2) Ericsson RRUS11 (AT&T)	C	From Leg	3.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	2.99 3.19 3.41	0.36 0.48 0.60	25.00 38.50 54.60
Raycap DC6-48-60-18-8F (AT&T)	A	From Leg	3.00 0.00 0.00	0.0000	138.00	No Ice 1/2" Ice 1" Ice	1.47 1.67 1.88	1.47 1.67 1.88	25.00 47.60 73.70
Sector Frame Mount (Sprint)	A	From Leg	1.50 0.00 0.00	0.0000	180.00	No Ice 1/2" Ice 1" Ice	13.60 18.40 23.20	13.60 18.40 23.20	465.00 600.00 735.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Sector Frame Mount (Sprint)	B	From Leg	1.50	0.00	0.0000	180.00	No Ice	13.60	13.60	465.00
				0.00			1/2" Ice	18.40	18.40	600.00
							1" Ice	23.20	23.20	735.00
Sector Frame Mount (Sprint)	C	From Leg	1.50	0.00	0.0000	180.00	No Ice	13.60	13.60	465.00
				0.00			1/2" Ice	18.40	18.40	600.00
							1" Ice	23.20	23.20	735.00
Sector Frame Mount	A	From Leg	1.50	0.00	0.0000	138.00	No Ice	13.60	13.60	465.00
				0.00			1/2" Ice	18.40	18.40	600.00
							1" Ice	23.20	23.20	735.00
Sector Frame Mount	B	From Leg	1.50	0.00	0.0000	138.00	No Ice	13.60	13.60	465.00
				0.00			1/2" Ice	18.40	18.40	600.00
							1" Ice	23.20	23.20	735.00
Sector Frame Mount	C	From Leg	1.50	0.00	0.0000	138.00	No Ice	13.60	13.60	465.00
				0.00			1/2" Ice	18.40	18.40	600.00
							1" Ice	23.20	23.20	735.00
(2) Commscope JAHH-65B-R3B	A	From Leg	3.00	0.00	0.0000	190.00	No Ice	9.11	3.44	63.30
				0.00			1/2" Ice	10.03	4.36	185.70
							1" Ice	10.96	5.27	334.10
Alcatel Lucent B66A RRH4x45	A	From Leg	3.00	0.00	0.0000	190.00	No Ice	2.54	1.61	51.00
				0.00			1/2" Ice	2.92	1.96	94.30
							1" Ice	3.35	2.33	150.90
Alcatel Lucent B13 RRH4x30	A	From Leg	3.00	0.00	0.0000	190.00	No Ice	2.16	1.62	57.20
				0.00			1/2" Ice	2.51	1.94	99.40
							1" Ice	2.89	2.29	154.20
Alcatel Lucent RRH 4T4R B5	A	From Leg	3.00	0.00	0.0000	190.00	No Ice	1.28	0.72	50.00
				0.00			1/2" Ice	1.54	0.93	74.70
							1" Ice	1.84	1.18	109.10
RFS DB-C1-12C-24AB-0Z	A	From Leg	3.00	0.00	0.0000	190.00	No Ice	2.80	1.17	44.00
				0.00			1/2" Ice	3.29	1.52	120.20
							1" Ice	3.81	1.91	213.00
(2) Commscope JAHH-65B-R3B	B	From Leg	3.00	0.00	0.0000	190.00	No Ice	9.11	3.44	63.30
				0.00			1/2" Ice	10.03	4.36	185.70
							1" Ice	10.96	5.27	334.10
Alcatel Lucent B66A RRH4x45	B	From Leg	3.00	0.00	0.0000	190.00	No Ice	2.54	1.61	51.00
				0.00			1/2" Ice	2.92	1.96	94.30
							1" Ice	3.35	2.33	150.90
Alcatel Lucent B13 RRH4x30	B	From Leg	3.00	0.00	0.0000	190.00	No Ice	2.16	1.62	57.20
				0.00			1/2" Ice	2.51	1.94	99.40
							1" Ice	2.89	2.29	154.20
Alcatel Lucent RRH 4T4R B5	B	From Leg	3.00	0.00	0.0000	190.00	No Ice	1.28	0.72	50.00
				0.00			1/2" Ice	1.54	0.93	74.70
							1" Ice	1.84	1.18	109.10
RFS DB-C1-12C-24AB-0Z	B	From Leg	3.00	0.00	0.0000	190.00	No Ice	2.80	1.17	44.00
				0.00			1/2" Ice	3.29	1.52	120.20
							1" Ice	3.81	1.91	213.00
(2) Commscope JAHH-65B-R3B	C	From Leg	3.00	0.00	0.0000	190.00	No Ice	9.11	3.44	63.30
				0.00			1/2" Ice	10.03	4.36	185.70
							1" Ice	10.96	5.27	334.10
Alcatel Lucent B66A RRH4x45	C	From Leg	3.00	0.00	0.0000	190.00	No Ice	2.54	1.61	51.00
				0.00			1/2" Ice	2.92	1.96	94.30
							1" Ice	3.35	2.33	150.90
Alcatel Lucent B13 RRH4x30	C	From Leg	3.00	0.00	0.0000	190.00	No Ice	2.16	1.62	57.20
				0.00			1/2" Ice	2.51	1.94	99.40
							1" Ice	2.89	2.29	154.20
Alcatel Lucent RRH 4T4R B5	C	From Leg	3.00	0.00	0.0000	190.00	No Ice	1.28	0.72	50.00
				0.00			1/2" Ice	1.54	0.93	74.70
							1" Ice	1.84	1.18	109.10

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
Commscope DT465B-2XR (Sprint)	A	From Leg	3.00	0.0000	180.00	No Ice	9.22	5.87	50.00
			0.00			1/2" Ice	9.68	6.33	108.00
			0.00			1" Ice	10.14	6.79	172.40
Commscope DT465B-2XR (Sprint)	A	From Leg	3.00	0.0000	180.00	No Ice	9.22	5.87	50.00
			0.00			1/2" Ice	9.68	6.33	108.00
			0.00			1" Ice	10.14	6.79	172.40
Commscope DT465B-2XR (Sprint)	B	From Leg	3.00	0.0000	180.00	No Ice	9.22	5.87	50.00
			0.00			1/2" Ice	9.68	6.33	108.00
			0.00			1" Ice	10.14	6.79	172.40
Alcatel Lucent 4x45W (Sprint)	A	From Leg	3.00	0.0000	180.00	No Ice	2.54	1.61	51.00
			0.00			1/2" Ice	2.72	1.78	71.10
			0.00			1" Ice	2.92	1.96	94.30
Alcatel Lucent 4x45W (Sprint)	B	From Leg	3.00	0.0000	180.00	No Ice	2.54	1.61	51.00
			0.00			1/2" Ice	2.72	1.78	71.10
			0.00			1" Ice	2.92	1.96	94.30
Alcatel Lucent 4x45W (Sprint)	C	From Leg	3.00	0.0000	180.00	No Ice	2.54	1.61	51.00
			0.00			1/2" Ice	2.72	1.78	71.10
			0.00			1" Ice	2.92	1.96	94.30
Alcatel Lucent 8x200-25 (Sprint)	A	From Leg	3.00	0.0000	180.00	No Ice	4.05	1.53	70.00
			0.00			1/2" Ice	4.27	1.70	97.10
			0.00			1" Ice	4.50	1.88	127.80
Alcatel Lucent 8x200-25 (Sprint)	B	From Leg	3.00	0.0000	180.00	No Ice	4.05	1.53	70.00
			0.00			1/2" Ice	4.27	1.70	97.10
			0.00			1" Ice	4.50	1.88	127.80
Alcatel Lucent 8x200-25 (Sprint)	C	From Leg	3.00	0.0000	180.00	No Ice	4.05	1.53	70.00
			0.00			1/2" Ice	4.27	1.70	97.10
			0.00			1" Ice	4.50	1.88	127.80
RFS APXV9ERR18-C-A20 (Sprint)	A	From Leg	3.00	0.0000	180.00	No Ice	8.02	5.81	62.00
			0.00			1/2" Ice	8.48	6.27	114.00
			0.00			1" Ice	8.93	6.73	172.10
RFS APXV9ERR18-C-A20 (Sprint)	B	From Leg	3.00	0.0000	180.00	No Ice	8.02	5.81	62.00
			0.00			1/2" Ice	8.48	6.27	114.00
			0.00			1" Ice	8.93	6.73	172.10
RFS APXV9ERR18-C-A20 (Sprint)	C	From Leg	3.00	0.0000	180.00	No Ice	8.02	5.81	62.00
			0.00			1/2" Ice	8.48	6.27	114.00
			0.00			1" Ice	8.93	6.73	172.10
(2) Alcatel Lucent 2x50 (Sprint)	A	From Leg	3.00	0.0000	180.00	No Ice	2.27	1.35	42.00
			0.00			1/2" Ice	2.45	1.51	59.30
			0.00			1" Ice	2.64	1.68	79.60
(2) Alcatel Lucent 2x50 (Sprint)	B	From Leg	3.00	0.0000	180.00	No Ice	2.27	1.35	42.00
			0.00			1/2" Ice	2.45	1.51	59.30
			0.00			1" Ice	2.64	1.68	79.60
(2) Alcatel Lucent 2x50 (Sprint)	C	From Leg	3.00	0.0000	180.00	No Ice	2.27	1.35	42.00
			0.00			1/2" Ice	2.45	1.51	59.30
			0.00			1" Ice	2.64	1.68	79.60

Tower Pressures - No Ice

$G_H = 0.850$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1 190.00-180.00	185.00	1.178	26	37.396	A	1.630	6.150	4.792	61.59	0.375	0.000
					B	1.630	6.150		61.59	0.000	0.000
					C	1.630	6.150		61.59	15.840	0.000
T2 180.00-160.00	170.00	1.15	25	74.792	A	2.853	12.348	9.583	63.05	7.260	0.000
					B	2.853	12.348		63.05	0.000	0.000
					C	2.853	12.348		63.05	31.680	0.000
T3 160.00-140.00	150.00	1.11	24	74.792	A	2.853	12.348	9.583	63.05	13.150	0.000
					B	2.853	12.348		63.05	0.000	0.000
					C	2.853	12.348		63.05	31.680	0.000
T4 140.00-120.00	130.00	1.065	23	74.792	A	2.853	12.348	9.583	63.05	13.150	0.000
					B	2.853	12.348		63.05	45.711	0.000
					C	2.853	12.348		63.05	31.680	0.000
T5 120.00-100.00	110.00	1.016	22	74.792	A	2.853	12.348	9.583	63.05	13.150	0.000
					B	2.853	12.348		63.05	50.790	0.000
					C	2.853	12.348		63.05	31.680	0.000
T6 100.00-80.00	90.00	0.959	21	74.792	A	2.853	12.348	9.583	63.05	13.150	0.000
					B	2.853	12.348		63.05	50.790	0.000
					C	2.853	12.348		63.05	31.680	0.000
T7 80.00-60.00	70.00	0.892	19	74.792	A	2.853	12.348	9.583	63.05	13.150	0.000
					B	2.853	12.348		63.05	50.790	0.000
					C	2.853	12.348		63.05	31.680	0.000
T8 60.00-40.00	50.00	0.811	18	74.792	A	2.853	12.348	9.583	63.05	13.150	0.000
					B	2.853	12.348		63.05	50.790	0.000
					C	2.853	12.348		63.05	31.680	0.000
T9 40.00-20.00	30.00	0.701	15	74.792	A	2.853	12.348	9.583	63.05	13.150	0.000
					B	2.853	12.348		63.05	50.790	0.000
					C	2.853	12.348		63.05	31.680	0.000
T10 20.00-0.00	10.00	0.7	15	74.792	A	2.853	12.348	9.583	63.05	13.150	0.000
					B	2.853	12.348		63.05	50.790	0.000
					C	2.853	12.348		63.05	31.680	0.000

Tower Pressure - With Ice

$G_H = 0.850$

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1 190.00-180.00	185.00	1.178	6	2.3763	41.356	A	1.630	29.561	12.713	40.76	5.128	0.000
						B	1.630	29.561		40.76	0.000	0.000
						C	1.630	29.561		40.76	39.679	0.000
T2 180.00-160.00	170.00	1.15	6	2.3563	82.646	A	2.853	57.862	25.292	41.66	28.423	0.000
						B	2.853	57.862		41.66	0.000	0.000
						C	2.853	57.862		41.66	79.092	0.000
T3 160.00-140.00	150.00	1.11	6	2.3270	82.548	A	2.853	57.296	25.096	41.72	44.618	0.000
						B	2.853	57.296		41.72	0.000	0.000
						C	2.853	57.296		41.72	78.701	0.000
T4 140.00-120.00	130.00	1.065	6	2.2939	82.438	A	2.853	56.658	24.876	41.80	44.264	0.000
						B	2.853	56.658		41.80	72.157	0.000
						C	2.853	56.658		41.80	78.261	0.000
T5 120.00-100.00	110.00	1.016	6	2.2559	82.311	A	2.853	55.923	24.623	41.89	43.857	0.000
						B	2.853	55.923		41.89	79.501	0.000
						C	2.853	55.923		41.89	77.755	0.000
T6 100.00-80.00	90.00	0.959	5	2.2111	82.162	A	2.853	55.058	24.324	42.00	43.378	0.000
						B	2.853	55.058		42.00	78.707	0.000

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
						C	2.853	55.058		42.00	77.159	0.000
T7 80.00-60.00	70.00	0.892	5	2.1562	81.979	A	2.853	53.998	23.958	42.14	42.791	0.000
						B	2.853	53.998		42.14	77.734	0.000
						C	2.853	53.998		42.14	76.430	0.000
T8 60.00-40.00	50.00	0.811	4	2.0849	81.741	A	2.853	52.620	23.482	42.33	42.029	0.000
						B	2.853	52.620		42.33	76.471	0.000
						C	2.853	52.620		42.33	75.484	0.000
T9 40.00-20.00	30.00	0.701	4	1.9810	81.395	A	2.853	50.614	22.790	42.62	40.922	0.000
						B	2.853	50.614		42.62	74.634	0.000
						C	2.853	50.614		42.62	74.109	0.000
T10 20.00-0.00	10.00	0.7	4	1.7749	80.708	A	2.853	46.633	21.416	43.28	38.729	0.000
						B	2.853	46.633		43.28	70.992	0.000
						C	2.853	46.633		43.28	71.390	0.000

Tower Pressure - Service

$G_H = 0.850$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	185.00	1.178	9	37.396	A	1.630	6.150	4.792	61.59	0.375	0.000
190.00-180.00					B	1.630	6.150		61.59	0.000	0.000
					C	1.630	6.150		61.59	15.840	0.000
T2	170.00	1.15	9	74.792	A	2.853	12.348	9.583	63.05	7.260	0.000
180.00-160.00					B	2.853	12.348		63.05	0.000	0.000
					C	2.853	12.348		63.05	31.680	0.000
T3	150.00	1.11	9	74.792	A	2.853	12.348	9.583	63.05	13.150	0.000
160.00-140.00					B	2.853	12.348		63.05	0.000	0.000
					C	2.853	12.348		63.05	31.680	0.000
T4	130.00	1.065	8	74.792	A	2.853	12.348	9.583	63.05	13.150	0.000
140.00-120.00					B	2.853	12.348		63.05	45.711	0.000
					C	2.853	12.348		63.05	31.680	0.000
T5	110.00	1.016	8	74.792	A	2.853	12.348	9.583	63.05	13.150	0.000
120.00-100.00					B	2.853	12.348		63.05	50.790	0.000
					C	2.853	12.348		63.05	31.680	0.000
T6	90.00	0.959	8	74.792	A	2.853	12.348	9.583	63.05	13.150	0.000
100.00-80.00					B	2.853	12.348		63.05	50.790	0.000
					C	2.853	12.348		63.05	31.680	0.000
T7 80.00-60.00	70.00	0.892	7	74.792	A	2.853	12.348	9.583	63.05	13.150	0.000
					B	2.853	12.348		63.05	50.790	0.000
					C	2.853	12.348		63.05	31.680	0.000
T8 60.00-40.00	50.00	0.811	6	74.792	A	2.853	12.348	9.583	63.05	13.150	0.000
					B	2.853	12.348		63.05	50.790	0.000
					C	2.853	12.348		63.05	31.680	0.000
T9 40.00-20.00	30.00	0.701	5	74.792	A	2.853	12.348	9.583	63.05	13.150	0.000
					B	2.853	12.348		63.05	50.790	0.000
					C	2.853	12.348		63.05	31.680	0.000
T10 20.00-0.00	10.00	0.7	5	74.792	A	2.853	12.348	9.583	63.05	13.150	0.000
					B	2.853	12.348		63.05	50.790	0.000
					C	2.853	12.348		63.05	31.680	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 psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	79.60	336.97	A	0.208	2.569	26	1	1	5.172	501.57	50.16	C
190.00-180.00			B	0.208	2.569		1	1	5.172			
			C	0.208	2.569		1	1	5.172			
T2	186.92	658.24	A	0.203	2.585	25	1	1	9.953	1044.30	52.21	C
180.00-160.00		TA 214.38	B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T3	212.00	658.24	A	0.203	2.585	24	1	1	9.953	1080.14	54.01	C
160.00-140.00			B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T4	446.90	658.24	A	0.203	2.585	23	1	1	9.953	1513.71	75.69	B
140.00-120.00		TA 214.38	B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T5	473.00	658.24	A	0.203	2.585	22	1	1	9.953	1508.50	75.42	B
120.00-100.00			B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T6	473.00	658.24	A	0.203	2.585	21	1	1	9.953	1424.44	71.22	B
100.00-80.00			B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T7	473.00	658.24	A	0.203	2.585	19	1	1	9.953	1325.74	66.29	B
80.00-60.00			B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T8	473.00	658.24	A	0.203	2.585	18	1	1	9.953	1204.23	60.21	B
60.00-40.00			B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T9	473.00	658.24	A	0.203	2.585	15	1	1	9.953	1040.70	52.03	B
40.00-20.00			B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T10	473.00	658.24	A	0.203	2.585	15	1	1	9.953	1039.82	51.99	B
20.00-0.00			B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
Sum Weight:	3763.42	6689.93								11683.14		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	79.60	336.97	A	0.208	2.569	26	0.8	1	4.846	483.32	48.33	B
190.00-180.00			B	0.208	2.569		0.8	1	4.846			
			C	0.208	2.569		0.8	1	4.846			
T2	186.92	658.24	A	0.203	2.585	25	0.8	1	9.383	1012.92	50.65	B
180.00-160.00		TA 214.38	B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T3	212.00	658.24	A	0.203	2.585	24	0.8	1	9.383	1049.87	52.49	B
160.00-140.00			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T4	446.90	658.24	A	0.203	2.585	23	0.8	1	9.383	1484.65	74.23	A
140.00-120.00		TA 214.38	B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T5	473.00	658.24	A	0.203	2.585	22	0.8	1	9.383	1480.79	74.04	A

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
120.00-100.00			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T6	473.00	658.24	A	0.203	2.585	21	0.8	1	9.383	1398.28	69.91	A
100.00-80.00			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T7	473.00	658.24	A	0.203	2.585	19	0.8	1	9.383	1301.40	65.07	A
80.00-60.00			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T8	473.00	658.24	A	0.203	2.585	18	0.8	1	9.383	1182.11	59.11	A
60.00-40.00			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T9	473.00	658.24	A	0.203	2.585	15	0.8	1	9.383	1021.58	51.08	A
40.00-20.00			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T10	473.00	658.24	A	0.203	2.585	15	0.8	1	9.383	1020.72	51.04	A
20.00-0.00			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
Sum Weight:	3763.42	6689.93								11435.63		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	79.60	336.97	A	0.208	2.569	26	0.85	1	4.927	487.88	48.79	B
190.00-180.00			B	0.208	2.569		0.85	1	4.927			
			C	0.208	2.569		0.85	1	4.927			
T2	186.92	658.24	A	0.203	2.585	25	0.85	1	9.526	1020.77	51.04	B
180.00-160.00		TA 214.38	B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
T3	212.00	658.24	A	0.203	2.585	24	0.85	1	9.526	1057.44	52.87	B
160.00-140.00			B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
T4	446.90	658.24	A	0.203	2.585	23	0.85	1	9.526	1533.03	76.65	A
140.00-120.00		TA 214.38	B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
T5	473.00	658.24	A	0.203	2.585	22	0.85	1	9.526	1516.45	75.82	A
120.00-100.00			B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
T6	473.00	658.24	A	0.203	2.585	21	0.85	1	9.526	1431.95	71.60	A
100.00-80.00			B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
T7	473.00	658.24	A	0.203	2.585	19	0.85	1	9.526	1332.73	66.64	A
80.00-60.00			B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
T8	473.00	658.24	A	0.203	2.585	18	0.85	1	9.526	1210.58	60.53	A
60.00-40.00			B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
T9	473.00	658.24	A	0.203	2.585	15	0.85	1	9.526	1046.18	52.31	A
40.00-20.00			B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
T10	473.00	658.24	A	0.203	2.585	15	0.85	1	9.526	1045.30	52.26	A
20.00-0.00			B	0.203	2.585		0.85	1	9.526			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
Sum Weight:	3763.42	6689.93	C	0.203	2.585		0.85	1	9.526	11682.31		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	736.18	2074.29	A	0.754	1.789	6	1	1	26.776	318.93	31.89	C
190.00-180.00			B	0.754	1.789		1	1	26.776			
			C	0.754	1.789		1	1	26.776			
T2	1738.54	3976.13	A	0.735	1.782	6	1	1	51.234	632.96	31.65	C
180.00-160.00		TA	B	0.735	1.782		1	1	51.234			
		1038.49	C	0.735	1.782		1	1	51.234			
T3	1964.50	3909.50	A	0.729	1.781	6	1	1	50.509	628.95	31.45	C
160.00-140.00			B	0.729	1.781		1	1	50.509			
			C	0.729	1.781		1	1	50.509			
T4	3366.11	3835.10	A	0.722	1.779	6	1	1	49.698	804.83	40.24	B
140.00-120.00		TA	B	0.722	1.779		1	1	49.698			
		1008.03	C	0.722	1.779		1	1	49.698			
T5	3462.15	3750.58	A	0.714	1.778	6	1	1	48.775	786.23	39.31	B
120.00-100.00			B	0.714	1.778		1	1	48.775			
			C	0.714	1.778		1	1	48.775			
T6	3388.46	3652.29	A	0.705	1.776	5	1	1	47.699	735.98	36.80	B
100.00-80.00			B	0.705	1.776		1	1	47.699			
			C	0.705	1.776		1	1	47.699			
T7	3299.31	3533.98	A	0.693	1.776	5	1	1	46.400	677.81	33.89	B
80.00-60.00			B	0.693	1.776		1	1	46.400			
			C	0.693	1.776		1	1	46.400			
T8	3185.16	3383.50	A	0.679	1.776	4	1	1	44.741	607.45	30.37	B
60.00-40.00			B	0.679	1.776		1	1	44.741			
			C	0.679	1.776		1	1	44.741			
T9	3022.59	3171.29	A	0.657	1.78	4	1	1	42.387	514.96	25.75	B
40.00-20.00			B	0.657	1.78		1	1	42.387			
			C	0.657	1.78		1	1	42.387			
T10	2712.36	2773.77	A	0.613	1.796	4	1	1	37.928	495.73	24.79	B
20.00-0.00			B	0.613	1.796		1	1	37.928			
			C	0.613	1.796		1	1	37.928			
Sum Weight:	26875.36	36106.94								6203.82		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	736.18	2074.29	A	0.754	1.789	6	0.8	1	26.450	315.76	31.58	B
190.00-180.00			B	0.754	1.789		0.8	1	26.450			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
			C	0.754	1.789		0.8	1	26.430			
T2	1738.54	3976.13	A	0.735	1.782	6	0.8	1	50.663	627.56	31.38	B
180.00-160.00		TA	B	0.735	1.782		0.8	1	50.663			
		1038.49	C	0.735	1.782		0.8	1	50.663			
T3	1964.50	3909.50	A	0.729	1.781	6	0.8	1	49.938	623.73	31.19	B
160.00-140.00			B	0.729	1.781		0.8	1	49.938			
			C	0.729	1.781		0.8	1	49.938			
T4	3366.11	3835.10	A	0.722	1.779	6	0.8	1	49.127	799.83	39.99	A
140.00-120.00		TA	B	0.722	1.779		0.8	1	49.127			
		1008.03	C	0.722	1.779		0.8	1	49.127			
T5	3462.15	3750.58	A	0.714	1.778	6	0.8	1	48.204	781.46	39.07	A
120.00-100.00			B	0.714	1.778		0.8	1	48.204			
			C	0.714	1.778		0.8	1	48.204			
T6	3388.46	3652.29	A	0.705	1.776	5	0.8	1	47.128	731.48	36.57	A
100.00-80.00			B	0.705	1.776		0.8	1	47.128			
			C	0.705	1.776		0.8	1	47.128			
T7	3299.31	3533.98	A	0.693	1.776	5	0.8	1	45.829	673.63	33.68	A
80.00-60.00			B	0.693	1.776		0.8	1	45.829			
			C	0.693	1.776		0.8	1	45.829			
T8	3185.16	3383.50	A	0.679	1.776	4	0.8	1	44.170	603.65	30.18	A
60.00-40.00			B	0.679	1.776		0.8	1	44.170			
			C	0.679	1.776		0.8	1	44.170			
T9	3022.59	3171.29	A	0.657	1.78	4	0.8	1	41.817	511.67	25.58	A
40.00-20.00			B	0.657	1.78		0.8	1	41.817			
			C	0.657	1.78		0.8	1	41.817			
T10	2712.36	2773.77	A	0.613	1.796	4	0.8	1	37.357	492.41	24.62	A
20.00-0.00			B	0.613	1.796		0.8	1	37.357			
			C	0.613	1.796		0.8	1	37.357			
Sum Weight:	26875.36	36106.94								6161.18		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	736.18	2074.29	A	0.754	1.789	6	0.85	1	26.531	311.89	31.19	B
190.00-180.00			B	0.754	1.789		0.85	1	26.531			
			C	0.754	1.789		0.85	1	26.531			
T2	1738.54	3976.13	A	0.735	1.782	6	0.85	1	50.806	619.07	30.95	B
180.00-160.00		TA	B	0.735	1.782		0.85	1	50.806			
		1038.49	C	0.735	1.782		0.85	1	50.806			
T3	1964.50	3909.50	A	0.729	1.781	6	0.85	1	50.081	615.33	30.77	B
160.00-140.00			B	0.729	1.781		0.85	1	50.081			
			C	0.729	1.781		0.85	1	50.081			
T4	3366.11	3835.10	A	0.722	1.779	6	0.85	1	49.270	795.46	39.77	A
140.00-120.00		TA	B	0.722	1.779		0.85	1	49.270			
		1008.03	C	0.722	1.779		0.85	1	49.270			
T5	3462.15	3750.58	A	0.714	1.778	6	0.85	1	48.347	775.19	38.76	A
120.00-100.00			B	0.714	1.778		0.85	1	48.347			
			C	0.714	1.778		0.85	1	48.347			
T6	3388.46	3652.29	A	0.705	1.776	5	0.85	1	47.271	726.13	36.31	A
100.00-80.00			B	0.705	1.776		0.85	1	47.271			
			C	0.705	1.776		0.85	1	47.271			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T7	3299.31	3533.98	A	0.693	1.776	5	0.85	1	45.972	669.30	33.46	A
80.00-60.00			B	0.693	1.776		0.85	1	45.972			
			C	0.693	1.776		0.85	1	45.972			
T8	3185.16	3383.50	A	0.679	1.776	4	0.85	1	44.313	600.49	30.02	A
60.00-40.00			B	0.679	1.776		0.85	1	44.313			
			C	0.679	1.776		0.85	1	44.313			
T9	3022.59	3171.29	A	0.657	1.78	4	0.85	1	41.959	509.92	25.50	A
40.00-20.00			B	0.657	1.78		0.85	1	41.959			
			C	0.657	1.78		0.85	1	41.959			
T10	2712.36	2773.77	A	0.613	1.796	4	0.85	1	37.500	492.65	24.63	A
20.00-0.00			B	0.613	1.796		0.85	1	37.500			
			C	0.613	1.796		0.85	1	37.500			
Sum Weight:	26875.36	36106.94								6115.42		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	79.60	336.97	A	0.208	2.569	9	1	1	5.172	180.57	18.06	C
190.00-180.00			B	0.208	2.569		1	1	5.172			
			C	0.208	2.569		1	1	5.172			
T2	186.92	658.24	A	0.203	2.585	9	1	1	9.953	375.95	18.80	C
180.00-160.00		TA 214.38	B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T3	212.00	658.24	A	0.203	2.585	9	1	1	9.953	388.85	19.44	C
160.00-140.00			B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T4	446.90	658.24	A	0.203	2.585	8	1	1	9.953	544.93	27.25	B
140.00-120.00		TA 214.38	B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T5	473.00	658.24	A	0.203	2.585	8	1	1	9.953	543.06	27.15	B
120.00-100.00			B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T6	473.00	658.24	A	0.203	2.585	8	1	1	9.953	512.80	25.64	B
100.00-80.00			B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T7	473.00	658.24	A	0.203	2.585	7	1	1	9.953	477.27	23.86	B
80.00-60.00			B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T8	473.00	658.24	A	0.203	2.585	6	1	1	9.953	433.52	21.68	B
60.00-40.00			B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T9	473.00	658.24	A	0.203	2.585	5	1	1	9.953	374.65	18.73	B
40.00-20.00			B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
T10	473.00	658.24	A	0.203	2.585	5	1	1	9.953	374.33	18.72	B
20.00-0.00			B	0.203	2.585		1	1	9.953			
			C	0.203	2.585		1	1	9.953			
Sum Weight:	3763.42	6689.93								4205.93		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	79.60	336.97	A	0.208	2.569	9	0.8	1	4.846	173.99	17.40	B
190.00-180.00			B	0.208	2.569		0.8	1	4.846			
			C	0.208	2.569		0.8	1	4.846			
T2	186.92	658.24	A	0.203	2.585	9	0.8	1	9.383	364.65	18.23	B
180.00-160.00		TA 214.38	B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T3	212.00	658.24	A	0.203	2.585	9	0.8	1	9.383	377.95	18.90	B
160.00-140.00			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T4	446.90	658.24	A	0.203	2.585	8	0.8	1	9.383	534.47	26.72	A
140.00-120.00		TA 214.38	B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T5	473.00	658.24	A	0.203	2.585	8	0.8	1	9.383	533.08	26.65	A
120.00-100.00			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T6	473.00	658.24	A	0.203	2.585	8	0.8	1	9.383	503.38	25.17	A
100.00-80.00			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T7	473.00	658.24	A	0.203	2.585	7	0.8	1	9.383	468.50	23.43	A
80.00-60.00			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T8	473.00	658.24	A	0.203	2.585	6	0.8	1	9.383	425.56	21.28	A
60.00-40.00			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T9	473.00	658.24	A	0.203	2.585	5	0.8	1	9.383	367.77	18.39	A
40.00-20.00			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
T10	473.00	658.24	A	0.203	2.585	5	0.8	1	9.383	367.46	18.37	A
20.00-0.00			B	0.203	2.585		0.8	1	9.383			
			C	0.203	2.585		0.8	1	9.383			
Sum Weight:	3763.42	6689.93								4116.83		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	79.60	336.97	A	0.208	2.569	9	0.85	1	4.927	175.64	17.56	B
190.00-180.00			B	0.208	2.569		0.85	1	4.927			
			C	0.208	2.569		0.85	1	4.927			
T2	186.92	658.24	A	0.203	2.585	9	0.85	1	9.526	367.48	18.37	B
180.00-160.00		TA 214.38	B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
T3	212.00	658.24	A	0.203	2.585	9	0.85	1	9.526	380.68	19.03	B
160.00-140.00			B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
T4	446.90	658.24	A	0.203	2.585	8	0.85	1	9.526	551.89	27.59	A
140.00-120.00		TA 214.38	B	0.203	2.585		0.85	1	9.526			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
			C	0.203	2.585		0.85	1	9.526			
T5	473.00	658.24	A	0.203	2.585	8	0.85	1	9.526	545.92	27.30	A
120.00-100.00			B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
T6	473.00	658.24	A	0.203	2.585	8	0.85	1	9.526	515.50	25.78	A
100.00-80.00			B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
T7	473.00	658.24	A	0.203	2.585	7	0.85	1	9.526	479.78	23.99	A
80.00-60.00			B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
T8	473.00	658.24	A	0.203	2.585	6	0.85	1	9.526	435.81	21.79	A
60.00-40.00			B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
T9	473.00	658.24	A	0.203	2.585	5	0.85	1	9.526	376.63	18.83	A
40.00-20.00			B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
T10	473.00	658.24	A	0.203	2.585	5	0.85	1	9.526	376.31	18.82	A
20.00-0.00			B	0.203	2.585		0.85	1	9.526			
			C	0.203	2.585		0.85	1	9.526			
Sum Weight:	3763.42	6689.93								4205.63		

Discrete Appurtenance Pressures - No Ice $G_H = 0.850$

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft²	C_AA_C Side ft²
Torque Arm Face C	180.0000	0.00	0.00	2.53	161.26	1.133	25	3.54	5.32
Torque Arm Face B	60.0000	0.00	2.19	-1.26	161.26	1.133	25	3.54	5.32
Torque Arm Face A	300.0000	0.00	-2.19	-1.26	161.26	1.133	25	3.54	5.32
Torque Arm Face C	180.0000	0.00	0.00	2.53	121.26	1.044	23	3.54	5.32
Torque Arm Face B	60.0000	0.00	2.19	-1.26	121.26	1.044	23	3.54	5.32
Torque Arm Face A	300.0000	0.00	-2.19	-1.26	121.26	1.044	23	3.54	5.32
Sector Frame Mount	0.0000	465.00	0.00	-3.52	190.00	1.187	26	13.60	13.60
Sector Frame Mount	120.0000	465.00	3.05	1.76	190.00	1.187	26	13.60	13.60
Sector Frame Mount	240.0000	465.00	-3.05	1.76	190.00	1.187	26	13.60	13.60
Antel LPA-80080-4CF	0.0000	24.00	0.00	-5.02	190.00	1.187	26	3.02	13.58
Antel LPA-80063/4CF	120.0000	40.00	4.35	2.51	190.00	1.187	26	14.00	6.96
Antel LPA-80063/4CF	240.0000	40.00	-4.35	2.51	190.00	1.187	26	14.00	6.96
Sector Frame Mount	0.0000	465.00	0.00	-3.52	178.00	1.165	25	13.60	13.60
Sector Frame Mount	120.0000	465.00	3.05	1.76	178.00	1.165	25	13.60	13.60
Sector Frame Mount	240.0000	465.00	-3.05	1.76	178.00	1.165	25	13.60	13.60
Allgon 7770.00	0.0000	70.00	0.00	-5.02	138.00	1.083	24	11.76	5.86
Allgon 7770.00	120.0000	70.00	4.35	2.51	138.00	1.083	24	11.76	5.86
Allgon 7770.00	240.0000	70.00	-4.35	2.51	138.00	1.083	24	11.76	5.86
Powerwave LGP21401	0.0000	62.00	0.00	-5.02	138.00	1.083	24	3.90	1.06
Powerwave LGP21401	120.0000	62.00	4.35	2.51	138.00	1.083	24	3.90	1.06
Powerwave LGP21401	240.0000	62.00	-4.35	2.51	138.00	1.083	24	3.90	1.06
Powerwave LGP21901	0.0000	50.00	0.00	-5.02	138.00	1.083	24	0.54	0.26
Powerwave LGP21901	120.0000	50.00	4.35	2.51	138.00	1.083	24	0.54	0.26
Powerwave LGP21901	240.0000	50.00	-4.35	2.51	138.00	1.083	24	0.54	0.26
Sector Frame Mount	0.0000	465.00	0.00	-3.52	150.00	1.110	24	13.60	13.60
Sector Frame Mount	120.0000	465.00	3.05	1.76	150.00	1.110	24	13.60	13.60
Sector Frame Mount	240.0000	465.00	-3.05	1.76	150.00	1.110	24	13.60	13.60
Lightning Rod	0.0000	40.00	0.00	0.00	190.00	1.187	26	1.00	1.00

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2
KMW AM-X-CD-17-65-00T-RET	0.0000	25.00	0.00	-5.02	138.00	1.083	24	11.31	6.80
KMW AM-X-CD-17-65-00T-RET	120.0000	25.00	4.35	2.51	138.00	1.083	24	11.31	6.80
KMW AM-X-CD-17-65-00T-RET	240.0000	25.00	-4.35	2.51	138.00	1.083	24	11.31	6.80
Ericsson RRUS11	0.0000	50.00	0.00	-5.02	138.00	1.083	24	5.98	0.72
Ericsson RRUS11	120.0000	50.00	4.35	2.51	138.00	1.083	24	5.98	0.72
Ericsson RRUS11	240.0000	50.00	-4.35	2.51	138.00	1.083	24	5.98	0.72
Raycap DC6-48-60-18-8F	0.0000	25.00	0.00	-5.02	138.00	1.083	24	1.47	1.47
Sector Frame Mount	0.0000	465.00	0.00	-3.52	180.00	1.169	25	13.60	13.60
Sector Frame Mount	120.0000	465.00	3.05	1.76	180.00	1.169	25	13.60	13.60
Sector Frame Mount	240.0000	465.00	-3.05	1.76	180.00	1.169	25	13.60	13.60
Sector Frame Mount	0.0000	465.00	0.00	-3.52	138.00	1.083	24	13.60	13.60
Sector Frame Mount	120.0000	465.00	3.05	1.76	138.00	1.083	24	13.60	13.60
Sector Frame Mount	240.0000	465.00	-3.05	1.76	138.00	1.083	24	13.60	13.60
Commscope JAHH-65B-R3B	0.0000	126.60	0.00	-5.02	190.00	1.187	26	18.22	6.88
Alcatel Lucent B66A RRH4x45	0.0000	51.00	0.00	-5.02	190.00	1.187	26	2.54	1.61
Alcatel Lucent B13 RRH4x30	0.0000	57.20	0.00	-5.02	190.00	1.187	26	2.16	1.62
Alcatel Lucent RRH 4T4R B5	0.0000	50.00	0.00	-5.02	190.00	1.187	26	1.28	0.72
RFS DB-C1-12C-24AB-0Z	0.0000	44.00	0.00	-5.02	190.00	1.187	26	2.80	1.17
Commscope JAHH-65B-R3B	120.0000	126.60	4.35	2.51	190.00	1.187	26	18.22	6.88
Alcatel Lucent B66A RRH4x45	120.0000	51.00	4.35	2.51	190.00	1.187	26	2.54	1.61
Alcatel Lucent B13 RRH4x30	120.0000	57.20	4.35	2.51	190.00	1.187	26	2.16	1.62
Alcatel Lucent RRH 4T4R B5	120.0000	50.00	4.35	2.51	190.00	1.187	26	1.28	0.72
RFS DB-C1-12C-24AB-0Z	120.0000	44.00	4.35	2.51	190.00	1.187	26	2.80	1.17
Commscope JAHH-65B-R3B	240.0000	126.60	-4.35	2.51	190.00	1.187	26	18.22	6.88
Alcatel Lucent B66A RRH4x45	240.0000	51.00	-4.35	2.51	190.00	1.187	26	2.54	1.61
Alcatel Lucent B13 RRH4x30	240.0000	57.20	-4.35	2.51	190.00	1.187	26	2.16	1.62
Alcatel Lucent RRH 4T4R B5	240.0000	50.00	-4.35	2.51	190.00	1.187	26	1.28	0.72
Commscope DT465B-2XR	0.0000	50.00	0.00	-5.02	180.00	1.169	25	9.22	5.87
Commscope DT465B-2XR	0.0000	50.00	0.00	-5.02	180.00	1.169	25	9.22	5.87
Commscope DT465B-2XR	120.0000	50.00	4.35	2.51	180.00	1.169	25	9.22	5.87
Alcatel Lucent 4x45W	0.0000	51.00	0.00	-5.02	180.00	1.169	25	2.54	1.61
Alcatel Lucent 4x45W	120.0000	51.00	4.35	2.51	180.00	1.169	25	2.54	1.61
Alcatel Lucent 4x45W	240.0000	51.00	-4.35	2.51	180.00	1.169	25	2.54	1.61
Alcatel Lucent 8x200-25	0.0000	70.00	0.00	-5.02	180.00	1.169	25	4.05	1.53
Alcatel Lucent 8x200-25	120.0000	70.00	4.35	2.51	180.00	1.169	25	4.05	1.53
Alcatel Lucent 8x200-25	240.0000	70.00	-4.35	2.51	180.00	1.169	25	4.05	1.53
RFS	0.0000	62.00	0.00	-5.02	180.00	1.169	25	8.02	5.81

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2
APXV9ERR18-C-A20 RFS	120.0000	62.00	4.35	2.51	180.00	1.169	25	8.02	5.81
APXV9ERR18-C-A20 RFS	240.0000	62.00	-4.35	2.51	180.00	1.169	25	8.02	5.81
APXV9ERR18-C-A20									
Alcatel Lucent 2x50	0.0000	84.00	0.00	-5.02	180.00	1.169	25	4.54	2.70
Alcatel Lucent 2x50	120.0000	84.00	4.35	2.51	180.00	1.169	25	4.54	2.70
Alcatel Lucent 2x50	240.0000	84.00	-4.35	2.51	180.00	1.169	25	4.54	2.70
	Sum Weight:	9808.40							

Discrete Appurtenance Pressures - With Ice $G_H = 0.850$

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2	t_z in
Torque Arm Face C	180.0000	0.00	0.00	2.53	161.26	1.133	6	6.77	9.91	2.3563
Torque Arm Face B	60.0000	0.00	2.19	-1.26	161.26	1.133	6	6.77	9.91	2.3563
Torque Arm Face A	300.0000	0.00	-2.19	-1.26	161.26	1.133	6	6.77	9.91	2.3563
Torque Arm Face C	180.0000	0.00	0.00	2.53	121.26	1.044	6	6.68	9.79	2.2939
Torque Arm Face B	60.0000	0.00	2.19	-1.26	121.26	1.044	6	6.68	9.79	2.2939
Torque Arm Face A	300.0000	0.00	-2.19	-1.26	121.26	1.044	6	6.68	9.79	2.2939
Sector Frame Mount	0.0000	1108.31	0.00	-3.52	190.00	1.187	6	36.47	36.47	2.3826
Sector Frame Mount	120.0000	1108.31	3.05	1.76	190.00	1.187	6	36.47	36.47	2.3826
Sector Frame Mount	240.0000	1108.31	-3.05	1.76	190.00	1.187	6	36.47	36.47	2.3826
Antel LPA-80080-4CF	0.0000	286.09	0.00	-5.02	190.00	1.187	6	6.88	10.15	2.3826
Antel LPA-80063/4CF	120.0000	286.09	4.35	2.51	190.00	1.187	6	6.88	10.15	2.3826
Antel LPA-80063/4CF	240.0000	286.09	-4.35	2.51	190.00	1.187	6	6.88	10.15	2.3826
Sector Frame Mount	0.0000	1104.12	0.00	-3.52	178.00	1.165	6	36.32	36.32	2.3671
Sector Frame Mount	120.0000	1104.12	3.05	1.76	178.00	1.165	6	36.32	36.32	2.3671
Sector Frame Mount	240.0000	1104.12	-3.05	1.76	178.00	1.165	6	36.32	36.32	2.3671
Allgon 7770.00	0.0000	418.14	0.00	-5.02	138.00	1.083	6	16.19	9.71	2.3076
Allgon 7770.00	120.0000	418.14	4.35	2.51	138.00	1.083	6	16.19	9.71	2.3076
Allgon 7770.00	240.0000	418.14	-4.35	2.51	138.00	1.083	6	16.19	9.71	2.3076
Powerwave LGP21401	0.0000	678.91	0.00	-5.02	138.00	1.083	6	15.18	15.18	2.3076
Powerwave LGP21401	120.0000	678.91	4.35	2.51	138.00	1.083	6	15.18	15.18	2.3076
Powerwave LGP21401	240.0000	678.91	-4.35	2.51	138.00	1.083	6	15.18	15.18	2.3076
Powerwave LGP21901	0.0000	678.91	0.00	-5.02	138.00	1.083	6	15.18	15.18	2.3076
Powerwave LGP21901	120.0000	678.91	4.35	2.51	138.00	1.083	6	15.18	15.18	2.3076
Powerwave LGP21901	240.0000	678.91	-4.35	2.51	138.00	1.083	6	15.18	15.18	2.3076
Sector Frame Mount	0.0000	1093.28	0.00	-3.52	150.00	1.110	6	35.94	35.94	2.3270
Sector Frame Mount	120.0000	1093.28	3.05	1.76	150.00	1.110	6	35.94	35.94	2.3270
Sector Frame Mount	240.0000	1093.28	-3.05	1.76	150.00	1.110	6	35.94	35.94	2.3270
Lightning Rod	0.0000	151.24	0.00	0.00	190.00	1.187	6	5.63	5.63	2.3826
KMW AM-X-CD-17-65-00T-RET	0.0000	209.07	0.00	-5.02	138.00	1.083	6	8.09	4.86	2.3076
KMW AM-X-CD-17-65-00T-RET	120.0000	209.07	4.35	2.51	138.00	1.083	6	8.09	4.86	2.3076
KMW AM-X-CD-17-65-00T-RET	240.0000	209.07	-4.35	2.51	138.00	1.083	6	8.09	4.86	2.3076
Ericsson RRUS11	0.0000	418.14	0.00	-5.02	138.00	1.083	6	16.19	9.71	2.3076
Ericsson RRUS11	120.0000	418.14	4.35	2.51	138.00	1.083	6	16.19	9.71	2.3076
Ericsson RRUS11	240.0000	418.14	-4.35	2.51	138.00	1.083	6	16.19	9.71	2.3076
Raycap DC6-48-60-18-8F	0.0000	209.07	0.00	-5.02	138.00	1.083	6	8.09	4.86	2.3076

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2	t_z in
Sector Frame Mount	0.0000	1104.84	0.00	-3.52	180.00	1.169	6	36.35	36.35	2.3698
Sector Frame Mount	120.0000	1104.84	3.03	1.76	180.00	1.169	6	36.35	36.35	2.3698
Sector Frame Mount	240.0000	1104.84	-3.03	1.76	180.00	1.169	6	36.35	36.35	2.3698
Sector Frame Mount	0.0000	1088.06	0.00	-3.52	138.00	1.083	6	35.75	35.75	2.3076
Sector Frame Mount	120.0000	1088.06	3.03	1.76	138.00	1.083	6	35.75	35.75	2.3076
Sector Frame Mount	240.0000	1088.06	-3.03	1.76	138.00	1.083	6	35.75	35.75	2.3076
Commscope JAHH-65B-R3B	0.0000	1293.13	0.00	-5.02	190.00	1.187	6	26.99	15.65	2.3826
Alcatel Lucent B66A RRH4x45	0.0000	257.33	0.00	-5.02	190.00	1.187	6	4.35	3.28	2.3826
Alcatel Lucent B13 RRH4x30	0.0000	258.29	0.00	-5.02	190.00	1.187	6	3.83	3.14	2.3826
Alcatel Lucent RRH 4T4R B5	0.0000	167.70	0.00	-5.02	190.00	1.187	6	1.60	1.72	2.3826
RFS DB-C1-12C-24AB-0Z	0.0000	407.11	0.00	-5.02	190.00	1.187	6	5.13	2.84	2.3826
Commscope JAHH-65B-R3B	120.0000	1293.13	4.35	2.51	190.00	1.187	6	26.99	15.65	2.3826
Alcatel Lucent B66A RRH4x45	120.0000	257.33	4.35	2.51	190.00	1.187	6	4.35	3.28	2.3826
Alcatel Lucent B13 RRH4x30	120.0000	258.29	4.35	2.51	190.00	1.187	6	3.83	3.14	2.3826
Alcatel Lucent RRH 4T4R B5	120.0000	167.70	4.35	2.51	190.00	1.187	6	1.60	1.72	2.3826
RFS DB-C1-12C-24AB-0Z	120.0000	407.11	4.35	2.51	190.00	1.187	6	5.13	2.84	2.3826
Commscope JAHH-65B-R3B	240.0000	1293.13	-4.35	2.51	190.00	1.187	6	26.99	15.65	2.3826
Alcatel Lucent B66A RRH4x45	240.0000	257.33	-4.35	2.51	190.00	1.187	6	4.35	3.28	2.3826
Alcatel Lucent B13 RRH4x30	240.0000	258.29	-4.35	2.51	190.00	1.187	6	3.83	3.14	2.3826
Alcatel Lucent RRH 4T4R B5	240.0000	167.70	-4.35	2.51	190.00	1.187	6	1.60	1.72	2.3826
Commscope DT465B-2XR	0.0000	391.07	0.00	-5.02	180.00	1.169	6	11.43	8.04	2.3698
Commscope DT465B-2XR	0.0000	391.07	0.00	-5.02	180.00	1.169	6	11.43	8.04	2.3698
Commscope DT465B-2XR	120.0000	391.07	4.35	2.51	180.00	1.169	6	11.43	8.04	2.3698
Alcatel Lucent 4x45W	0.0000	180.24	0.00	-5.02	180.00	1.169	6	3.53	2.49	2.3698
Alcatel Lucent 4x45W	120.0000	180.24	4.35	2.51	180.00	1.169	6	3.53	2.49	2.3698
Alcatel Lucent 4x45W	240.0000	180.24	-4.35	2.51	180.00	1.169	6	3.53	2.49	2.3698
Alcatel Lucent 8x200-25	0.0000	236.77	0.00	-5.02	180.00	1.169	6	5.19	2.42	2.3698
Alcatel Lucent 8x200-25	120.0000	236.77	4.35	2.51	180.00	1.169	6	5.19	2.42	2.3698
Alcatel Lucent 8x200-25	240.0000	236.77	-4.35	2.51	180.00	1.169	6	5.19	2.42	2.3698
RFS APXV9ERR18-C-A20	0.0000	372.88	0.00	-5.02	180.00	1.169	6	10.21	7.98	2.3698
RFS APXV9ERR18-C-A20	120.0000	372.88	4.35	2.51	180.00	1.169	6	10.21	7.98	2.3698
RFS APXV9ERR18-C-A20	240.0000	372.88	-4.35	2.51	180.00	1.169	6	10.21	7.98	2.3698
Alcatel Lucent 2x50	0.0000	312.26	0.00	-5.02	180.00	1.169	6	6.44	4.39	2.3698
Alcatel Lucent 2x50	120.0000	312.26	4.35	2.51	180.00	1.169	6	6.44	4.39	2.3698
Alcatel Lucent 2x50	240.0000	312.26	-4.35	2.51	180.00	1.169	6	6.44	4.39	2.3698
	Sum Weight:	36147.15								

Discrete Appurtenance Pressures - Service $G_H = 0.850$

Description	Aiming Azimuth °	Weight lb	Offset$_x$ ft	Offset$_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2
Torque Arm Face C	180.0000	0.00	0.00	2.53	161.26	1.133	9	3.54	5.32
Torque Arm Face B	60.0000	0.00	2.19	-1.26	161.26	1.133	9	3.54	5.32
Torque Arm Face A	300.0000	0.00	-2.19	-1.26	161.26	1.133	9	3.54	5.32
Torque Arm Face C	180.0000	0.00	0.00	2.53	121.26	1.044	8	3.54	5.32
Torque Arm Face B	60.0000	0.00	2.19	-1.26	121.26	1.044	8	3.54	5.32
Torque Arm Face A	300.0000	0.00	-2.19	-1.26	121.26	1.044	8	3.54	5.32
Sector Frame Mount	0.0000	465.00	0.00	-3.52	190.00	1.187	9	13.60	13.60
Sector Frame Mount	120.0000	465.00	3.05	1.76	190.00	1.187	9	13.60	13.60
Sector Frame Mount	240.0000	465.00	-3.05	1.76	190.00	1.187	9	13.60	13.60
Antel LPA-80080-4CF	0.0000	24.00	0.00	-5.02	190.00	1.187	9	3.02	13.58
Antel LPA-80063/4CF	120.0000	40.00	4.35	2.51	190.00	1.187	9	14.00	6.96
Antel LPA-80063/4CF	240.0000	40.00	-4.35	2.51	190.00	1.187	9	14.00	6.96
Sector Frame Mount	0.0000	465.00	0.00	-3.52	178.00	1.165	9	13.60	13.60
Sector Frame Mount	120.0000	465.00	3.05	1.76	178.00	1.165	9	13.60	13.60
Sector Frame Mount	240.0000	465.00	-3.05	1.76	178.00	1.165	9	13.60	13.60
Allgon 7770.00	0.0000	70.00	0.00	-5.02	138.00	1.083	8	11.76	5.86
Allgon 7770.00	120.0000	70.00	4.35	2.51	138.00	1.083	8	11.76	5.86
Allgon 7770.00	240.0000	70.00	-4.35	2.51	138.00	1.083	8	11.76	5.86
Powerwave LGP21401	0.0000	62.00	0.00	-5.02	138.00	1.083	8	3.90	1.06
Powerwave LGP21401	120.0000	62.00	4.35	2.51	138.00	1.083	8	3.90	1.06
Powerwave LGP21401	240.0000	62.00	-4.35	2.51	138.00	1.083	8	3.90	1.06
Powerwave LGP21901	0.0000	50.00	0.00	-5.02	138.00	1.083	8	0.54	0.26
Powerwave LGP21901	120.0000	50.00	4.35	2.51	138.00	1.083	8	0.54	0.26
Powerwave LGP21901	240.0000	50.00	-4.35	2.51	138.00	1.083	8	0.54	0.26
Sector Frame Mount	0.0000	465.00	0.00	-3.52	150.00	1.110	9	13.60	13.60
Sector Frame Mount	120.0000	465.00	3.05	1.76	150.00	1.110	9	13.60	13.60
Sector Frame Mount	240.0000	465.00	-3.05	1.76	150.00	1.110	9	13.60	13.60
Lightning Rod	0.0000	40.00	0.00	0.00	190.00	1.187	9	1.00	1.00
KMW AM-X-CD-17-65-00T-RET	0.0000	25.00	0.00	-5.02	138.00	1.083	8	11.31	6.80
KMW AM-X-CD-17-65-00T-RET	120.0000	25.00	4.35	2.51	138.00	1.083	8	11.31	6.80
KMW AM-X-CD-17-65-00T-RET	240.0000	25.00	-4.35	2.51	138.00	1.083	8	11.31	6.80
Ericsson RRUS11	0.0000	50.00	0.00	-5.02	138.00	1.083	8	5.98	0.72
Ericsson RRUS11	120.0000	50.00	4.35	2.51	138.00	1.083	8	5.98	0.72
Ericsson RRUS11	240.0000	50.00	-4.35	2.51	138.00	1.083	8	5.98	0.72
Raycap DC6-48-60-18-8F	0.0000	25.00	0.00	-5.02	138.00	1.083	8	1.47	1.47
Sector Frame Mount	0.0000	465.00	0.00	-3.52	180.00	1.169	9	13.60	13.60
Sector Frame Mount	120.0000	465.00	3.05	1.76	180.00	1.169	9	13.60	13.60
Sector Frame Mount	240.0000	465.00	-3.05	1.76	180.00	1.169	9	13.60	13.60
Sector Frame Mount	0.0000	465.00	0.00	-3.52	138.00	1.083	8	13.60	13.60
Sector Frame Mount	120.0000	465.00	3.05	1.76	138.00	1.083	8	13.60	13.60
Sector Frame Mount	240.0000	465.00	-3.05	1.76	138.00	1.083	8	13.60	13.60
Commscope JAHH-65B-R3B	0.0000	126.60	0.00	-5.02	190.00	1.187	9	18.22	6.88
Alcatel Lucent B66A RRH4x45	0.0000	51.00	0.00	-5.02	190.00	1.187	9	2.54	1.61
Alcatel Lucent B13 RRH4x30	0.0000	57.20	0.00	-5.02	190.00	1.187	9	2.16	1.62
Alcatel Lucent RRH 4T4R B5	0.0000	50.00	0.00	-5.02	190.00	1.187	9	1.28	0.72
RFS DB-C1-12C-24AB-0Z	0.0000	44.00	0.00	-5.02	190.00	1.187	9	2.80	1.17

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2
Commscope JAHH-65B-R3B	120.0000	126.60	4.35	2.51	190.00	1.187	9	18.22	6.88
Alcatel Lucent B66A RRH4x45	120.0000	51.00	4.35	2.51	190.00	1.187	9	2.54	1.61
Alcatel Lucent B13 RRH4x30	120.0000	57.20	4.35	2.51	190.00	1.187	9	2.16	1.62
Alcatel Lucent RRH 4T4R B5	120.0000	50.00	4.35	2.51	190.00	1.187	9	1.28	0.72
RFS DB-C1-12C-24AB-0Z	120.0000	44.00	4.35	2.51	190.00	1.187	9	2.80	1.17
Commscope JAHH-65B-R3B	240.0000	126.60	-4.35	2.51	190.00	1.187	9	18.22	6.88
Alcatel Lucent B66A RRH4x45	240.0000	51.00	-4.35	2.51	190.00	1.187	9	2.54	1.61
Alcatel Lucent B13 RRH4x30	240.0000	57.20	-4.35	2.51	190.00	1.187	9	2.16	1.62
Alcatel Lucent RRH 4T4R B5	240.0000	50.00	-4.35	2.51	190.00	1.187	9	1.28	0.72
Commscope DT465B-2XR	0.0000	50.00	0.00	-5.02	180.00	1.169	9	9.22	5.87
Commscope DT465B-2XR	0.0000	50.00	0.00	-5.02	180.00	1.169	9	9.22	5.87
Commscope DT465B-2XR	120.0000	50.00	4.35	2.51	180.00	1.169	9	9.22	5.87
Alcatel Lucent 4x45W	0.0000	51.00	0.00	-5.02	180.00	1.169	9	2.54	1.61
Alcatel Lucent 4x45W	120.0000	51.00	4.35	2.51	180.00	1.169	9	2.54	1.61
Alcatel Lucent 4x45W	240.0000	51.00	-4.35	2.51	180.00	1.169	9	2.54	1.61
Alcatel Lucent 8x200-25	0.0000	70.00	0.00	-5.02	180.00	1.169	9	4.05	1.53
Alcatel Lucent 8x200-25	120.0000	70.00	4.35	2.51	180.00	1.169	9	4.05	1.53
Alcatel Lucent 8x200-25	240.0000	70.00	-4.35	2.51	180.00	1.169	9	4.05	1.53
RFS APXV9ERR18-C-A20	0.0000	62.00	0.00	-5.02	180.00	1.169	9	8.02	5.81
RFS APXV9ERR18-C-A20	120.0000	62.00	4.35	2.51	180.00	1.169	9	8.02	5.81
RFS APXV9ERR18-C-A20	240.0000	62.00	-4.35	2.51	180.00	1.169	9	8.02	5.81
Alcatel Lucent 2x50	0.0000	84.00	0.00	-5.02	180.00	1.169	9	4.54	2.70
Alcatel Lucent 2x50	120.0000	84.00	4.35	2.51	180.00	1.169	9	4.54	2.70
Alcatel Lucent 2x50	240.0000	84.00	-4.35	2.51	180.00	1.169	9	4.54	2.70
	Sum Weight:	9808.40							

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice+1.0 Guy
3	1.2 Dead+1.6 Wind 30 deg - No Ice+1.0 Guy
4	1.2 Dead+1.6 Wind 60 deg - No Ice+1.0 Guy
5	1.2 Dead+1.6 Wind 90 deg - No Ice+1.0 Guy
6	1.2 Dead+1.6 Wind 120 deg - No Ice+1.0 Guy
7	1.2 Dead+1.6 Wind 150 deg - No Ice+1.0 Guy
8	1.2 Dead+1.6 Wind 180 deg - No Ice+1.0 Guy
9	1.2 Dead+1.6 Wind 210 deg - No Ice+1.0 Guy
10	1.2 Dead+1.6 Wind 240 deg - No Ice+1.0 Guy
11	1.2 Dead+1.6 Wind 270 deg - No Ice+1.0 Guy
12	1.2 Dead+1.6 Wind 300 deg - No Ice+1.0 Guy

Comb. No.	Description
13	1.2 Dead+1.6 Wind 330 deg - No Ice+1.0 Guy
14	1.2 Dead+1.0 Ice+1.0 Temp+Guy
15	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy
16	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy
17	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy
18	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy
19	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy
20	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy
21	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy
22	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp+1.0 Guy
23	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp+1.0 Guy
24	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp+1.0 Guy
25	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp+1.0 Guy
26	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp+1.0 Guy
27	Dead+Wind 0 deg - Service+Guy
28	Dead+Wind 30 deg - Service+Guy
29	Dead+Wind 60 deg - Service+Guy
30	Dead+Wind 90 deg - Service+Guy
31	Dead+Wind 120 deg - Service+Guy
32	Dead+Wind 150 deg - Service+Guy
33	Dead+Wind 180 deg - Service+Guy
34	Dead+Wind 210 deg - Service+Guy
35	Dead+Wind 240 deg - Service+Guy
36	Dead+Wind 270 deg - Service+Guy
37	Dead+Wind 300 deg - Service+Guy
38	Dead+Wind 330 deg - Service+Guy

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Guy C @ 145 ft Elev 0 ft Azimuth 240 deg	Max. Vert	10	-4870.95	-4440.72	2567.62
	Max. H_x	10	-4870.95	-4440.72	2567.62
	Max. H_z	4	-42484.05	-40692.45	23487.64
	Min. Vert	4	-42484.05	-40692.45	23487.64
	Min. H_x	4	-42484.05	-40692.45	23487.64
	Min. H_z	10	-4870.95	-4440.72	2567.62
Guy B @ 145 ft Elev 0 ft Azimuth 120 deg	Max. Vert	6	-4792.40	4383.80	2526.94
	Max. H_x	12	-42545.53	40719.61	23516.77
	Max. H_z	12	-42545.53	40719.61	23516.77
	Min. Vert	12	-42545.53	40719.61	23516.77
	Min. H_x	6	-4792.40	4383.80	2526.94
	Min. H_z	6	-4792.40	4383.80	2526.94
Guy A @ 145 ft Elev 0 ft Azimuth 0 deg	Max. Vert	2	-4972.72	6.19	-5201.36
	Max. H_x	24	-28971.36	1203.94	-36975.56
	Max. H_z	2	-4972.72	6.19	-5201.36
	Min. Vert	8	-42276.19	-10.51	-46836.25
	Min. H_x	18	-28998.11	-1204.99	-36996.69
	Min. H_z	8	-42276.19	-10.51	-46836.25
Mast	Max. Vert	19	219043.27	-209.41	-118.42
	Max. H_x	11	98522.18	2037.06	1.34
	Max. H_z	2	97352.96	29.02	2054.15

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
	Max. M_x	1	0.00	24.66	13.63
	Max. M_z	1	0.00	24.66	13.63
	Max. Torsion	1	0.00	24.66	13.63
	Min. Vert	1	89635.52	24.66	13.63
	Min. H_x	5	98579.08	-1977.77	-0.70
	Min. H_z	8	98670.63	26.26	-1920.18
	Min. M_x	1	0.00	24.66	13.63
	Min. M_z	1	0.00	24.66	13.63
	Min. Torsion	1	0.00	24.66	13.63

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	89635.52	-24.66	-13.63	0.00	0.00	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice+1.0 Guy	97352.96	-29.02	-2054.15	0.00	0.00	0.00
1.2 Dead+1.6 Wind 30 deg - No Ice+1.0 Guy	98289.00	966.41	-1748.14	0.00	0.00	0.00
1.2 Dead+1.6 Wind 60 deg - No Ice+1.0 Guy	98746.53	1654.22	-980.76	0.00	0.00	0.00
1.2 Dead+1.6 Wind 90 deg - No Ice+1.0 Guy	98579.08	1977.77	0.70	0.00	0.00	0.00
1.2 Dead+1.6 Wind 120 deg - No Ice+1.0 Guy	97687.62	1744.88	1004.79	0.00	0.00	0.00
1.2 Dead+1.6 Wind 150 deg - No Ice+1.0 Guy	98459.86	988.63	1708.24	0.00	0.00	0.00
1.2 Dead+1.6 Wind 180 deg - No Ice+1.0 Guy	98670.63	-26.26	1920.18	0.00	0.00	0.00
1.2 Dead+1.6 Wind 210 deg - No Ice+1.0 Guy	98357.45	-1037.74	1710.01	0.00	0.00	0.00
1.2 Dead+1.6 Wind 240 deg - No Ice+1.0 Guy	97566.43	-1801.40	1004.15	0.00	0.00	0.00
1.2 Dead+1.6 Wind 270 deg - No Ice+1.0 Guy	98522.18	-2037.06	-1.34	0.00	0.00	0.00
1.2 Dead+1.6 Wind 300 deg - No Ice+1.0 Guy	98767.80	-1713.05	-984.69	0.00	0.00	0.00
1.2 Dead+1.6 Wind 330 deg - No Ice+1.0 Guy	98319.87	-1024.00	-1752.18	0.00	0.00	0.00
1.2 Dead+1.0 Ice+1.0 Temp+Guy	217050.50	-112.22	-63.88	0.00	0.00	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp+1.0 Guy	219021.72	-108.35	-434.83	0.00	0.00	0.00
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp+1.0 Guy	218403.22	77.47	-393.76	0.00	0.00	0.00
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp+1.0 Guy	217849.77	221.32	-256.51	0.00	0.00	0.00
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp+1.0 Guy	218412.61	267.25	-62.67	0.00	0.00	0.00
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp+1.0 Guy	219043.27	209.41	118.42	0.00	0.00	0.00
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp+1.0 Guy	218413.57	81.94	260.92	0.00	0.00	0.00
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp+1.0 Guy	217850.79	-108.20	318.21	0.00	0.00	0.00
1.2 Dead+1.0 Wind 210	218402.23	-298.91	261.58	0.00	0.00	0.00

Load Combination	Vertical lb	Shear$_x$ lb	Shear$_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
deg+1.0 Ice+1.0 Temp+1.0 Guy						
1.2 Dead+1.0 Wind 240	219017.96	-427.16	120.02	0.00	0.00	0.00
deg+1.0 Ice+1.0 Temp+1.0 Guy						
1.2 Dead+1.0 Wind 270	218386.02	-488.13	-63.72	0.00	0.00	0.00
deg+1.0 Ice+1.0 Temp+1.0 Guy						
1.2 Dead+1.0 Wind 300	217826.25	-442.19	-238.95	0.00	0.00	0.00
deg+1.0 Ice+1.0 Temp+1.0 Guy						
1.2 Dead+1.0 Wind 330	218387.84	-296.95	-396.12	0.00	0.00	0.00
deg+1.0 Ice+1.0 Temp+1.0 Guy						
Dead+Wind 0 deg - Service+Guy	89803.19	-24.90	-467.21	0.00	0.00	0.00
Dead+Wind 30 deg - Service+Guy	89764.11	203.14	-408.27	0.00	0.00	0.00
Dead+Wind 60 deg - Service+Guy	89727.11	361.07	-235.69	0.00	0.00	0.00
Dead+Wind 90 deg - Service+Guy	89762.64	431.99	-13.12	0.00	0.00	0.00
Dead+Wind 120 deg - Service+Guy	89801.58	369.13	213.15	0.00	0.00	0.00
Dead+Wind 150 deg - Service+Guy	89762.93	204.15	380.58	0.00	0.00	0.00
Dead+Wind 180 deg - Service+Guy	89727.24	-24.56	430.59	0.00	0.00	0.00
Dead+Wind 210 deg - Service+Guy	89763.67	-253.34	380.46	0.00	0.00	0.00
Dead+Wind 240 deg - Service+Guy	89802.35	-418.52	212.91	0.00	0.00	0.00
Dead+Wind 270 deg - Service+Guy	89763.06	-481.57	-13.43	0.00	0.00	0.00
Dead+Wind 300 deg - Service+Guy	89726.99	-410.78	-236.02	0.00	0.00	0.00
Dead+Wind 330 deg - Service+Guy	89763.79	-252.91	-408.51	0.00	0.00	0.00

Solution Summary

Load Comb.	Sum of Applied Forces PX lb	PY lb	PZ lb	Sum of Reactions PX lb	PY lb	PZ lb	% Error
1	0.00	-22849.01	0.00	0.00	22849.01	-0.00	0.000%
2	-59.98	-27107.18	-34439.86	59.98	27105.82	34405.03	0.080%
3	17330.16	-26901.36	-29788.58	-17339.58	26899.73	29728.53	0.139%
4	29740.96	-26695.53	-16969.98	-29734.69	26695.43	16966.03	0.017%
5	34764.20	-26901.36	59.98	-34737.80	26900.22	-40.28	0.075%
6	30143.90	-27107.18	17271.88	-30112.90	27105.46	-17253.82	0.082%
7	17434.05	-26901.36	29848.56	-17404.36	26900.31	-29835.97	0.074%
8	59.98	-26695.53	34043.85	-60.40	26695.44	-34036.72	0.016%
9	-17330.16	-26901.36	29788.58	17273.34	26899.58	-29765.83	0.140%
10	-30083.92	-27107.18	17167.99	30053.46	27105.60	-17150.23	0.080%
11	-34764.20	-26901.36	-59.98	34738.38	26900.29	79.57	0.074%
12	-29800.94	-26695.53	-17073.87	29794.35	26695.42	17070.30	0.017%
13	-17434.05	-26901.36	-29848.56	17442.92	26899.68	29789.03	0.137%
14	0.00	-131481.86	0.00	0.83	131481.86	0.75	0.001%
15	-10.71	-131749.66	-15143.65	10.68	131749.16	15082.23	0.046%
16	7493.86	-131481.86	-13025.06	-7491.62	131481.55	12983.75	0.031%
17	13037.89	-131214.06	-7541.23	-13008.95	131213.74	7526.03	0.025%
18	15006.26	-131481.86	10.71	-14968.09	131481.54	9.28	0.033%
19	13085.52	-131749.66	7581.10	-13030.99	131749.15	-7549.41	0.048%

Load Comb.	Sum of Applied Forces PX lb	PY lb	PZ lb	Sum of Reactions PX lb	PY lb	PZ lb	% Error
20	7512.40	-131481.86	13035.77	-7476.68	131481.55	-13012.74	0.032%
21	10.71	-131214.06	15101.01	-10.79	131213.74	-15068.09	0.025%
22	-7493.86	-131481.86	13025.06	7457.70	131481.54	-13001.89	0.032%
23	-13074.82	-131749.66	7562.56	13019.81	131749.14	-7530.74	0.048%
24	-13006.26	-131481.86	-10.71	14968.00	131481.55	30.87	0.033%
25	-13048.59	-131214.06	-7559.78	13019.99	131213.75	7544.84	0.024%
26	-7512.40	-131481.86	-13035.77	7510.19	131481.36	12994.70	0.031%
27	-13.50	-22895.32	-7748.97	13.50	22895.31	7747.14	0.008%
28	3899.29	-22849.01	-6702.43	-3898.93	22849.01	6701.02	0.006%
29	6691.72	-22802.70	-3818.25	-6690.88	22802.70	3817.74	0.004%
30	7821.95	-22849.01	13.50	-7820.57	22849.01	-13.12	0.006%
31	6782.38	-22895.32	3886.17	-6780.83	22895.31	-3885.27	0.007%
32	3922.66	-22849.01	6715.93	-3921.65	22849.01	-6714.91	0.006%
33	13.50	-22802.70	7659.87	-13.51	22802.70	-7658.87	0.004%
34	-3899.29	-22849.01	6702.43	3898.26	22849.01	-6701.41	0.006%
35	-6768.88	-22895.32	3862.80	6767.32	22895.31	-3861.88	0.007%
36	-7821.95	-22849.01	-13.50	7820.57	22849.01	13.88	0.006%
37	-6705.21	-22802.70	-3841.62	6704.38	22802.70	3841.12	0.004%
38	-3922.66	-22849.01	-6715.93	3922.31	22849.01	6714.52	0.006%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	13	0.00000001	0.00000001
2	Yes	14	0.00102488	0.00045045
3	Yes	13	0.00136442	0.00048555
4	Yes	13	0.00025634	0.00012739
5	Yes	14	0.00098900	0.00037598
6	Yes	14	0.00131885	0.00057113
7	Yes	14	0.00092237	0.00034461
8	Yes	13	0.00024639	0.00012381
9	Yes	13	0.00147306	0.00053183
10	Yes	14	0.00121222	0.00052854
11	Yes	14	0.00094263	0.00035655
12	Yes	13	0.00024795	0.00011239
13	Yes	13	0.00140288	0.00050147
14	Yes	13	0.00000001	0.00001265
15	Yes	15	0.00142826	0.00017461
16	Yes	15	0.00102805	0.00012774
17	Yes	14	0.00114560	0.00012368
18	Yes	15	0.00107156	0.00013006
19	Yes	15	0.00147161	0.00017606
20	Yes	15	0.00106038	0.00012664
21	Yes	14	0.00115467	0.00012420
22	Yes	15	0.00106986	0.00013773
23	Yes	15	0.00148509	0.00018770
24	Yes	15	0.00108045	0.00013838
25	Yes	14	0.00114918	0.00012799
26	Yes	15	0.00102881	0.00012551
27	Yes	13	0.00000001	0.00002400
28	Yes	13	0.00000001	0.00002257
29	Yes	13	0.00000001	0.00001935
30	Yes	13	0.00000001	0.00002125
31	Yes	13	0.00000001	0.00002297
32	Yes	13	0.00000001	0.00002171

33	Yes	13	0.00000001	0.00001971
34	Yes	13	0.00000001	0.00002253
35	Yes	13	0.00000001	0.00002361
36	Yes	13	0.00000001	0.00002137
37	Yes	13	0.00000001	0.00001910
38	Yes	13	0.00000001	0.00002186

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	190 - 180	1.358	37	0.0697	0.0534
T2	180 - 160	1.205	37	0.0754	0.0462
T3	160 - 140	0.890	29	0.0541	0.0225
T4	140 - 120	0.742	33	0.0341	0.0244
T5	120 - 100	0.629	32	0.0127	0.0354
T6	100 - 80	0.637	32	0.0024	0.0730
T7	80 - 60	0.603	32	0.0169	0.1023
T8	60 - 40	0.512	34	0.0177	0.1235
T9	40 - 20	0.447	34	0.0263	0.1398
T10	20 - 0	0.281	28	0.0546	0.1494

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
190.00	Sector Frame Mount	37	1.358	0.0697	0.0534	81648
189.63	Guy	37	1.352	0.0700	0.0532	81648
180.00	Sector Frame Mount	37	1.205	0.0754	0.0462	52376
178.00	Sector Frame Mount	37	1.172	0.0750	0.0441	65523
160.38	Guy	37	0.895	0.0546	0.0228	18649
150.00	Sector Frame Mount	29	0.803	0.0433	0.0196	45815
138.00	(2) Allgon 7770.00	33	0.729	0.0321	0.0252	95337
120.38	Guy	32	0.630	0.0131	0.0349	23803
60.38	Guy	34	0.513	0.0177	0.1231	59621

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	190 - 180	7.443	6	0.4545	0.2566
T2	180 - 160	6.455	6	0.4751	0.2246
T3	160 - 140	4.618	5	0.3472	0.1197
T4	140 - 120	3.654	8	0.2185	0.1387
T5	120 - 100	3.014	8	0.0855	0.1873
T6	100 - 80	2.946	8	0.0247	0.3535
T7	80 - 60	2.739	8	0.0834	0.4827
T8	60 - 40	2.332	3	0.0838	0.5756

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T9	40 - 20	2.063	2	0.1198	0.6485
T10	20 - 0	1.300	2	0.2516	0.6911

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
190.00	Sector Frame Mount	6	7.443	0.4545	0.2566	19418
189.63	Guy	6	7.406	0.4559	0.2555	19418
180.00	Sector Frame Mount	6	6.455	0.4751	0.2246	12641
178.00	Sector Frame Mount	6	6.249	0.4712	0.2155	16367
160.38	Guy	5	4.645	0.3501	0.1211	3655
150.00	Sector Frame Mount	5	4.059	0.2793	0.1100	7495
138.00	(2) Allgon 7770.00	8	3.582	0.2055	0.1425	28356
120.38	Guy	8	3.020	0.0877	0.1853	4453
60.38	Guy	3	2.339	0.0839	0.5740	13424

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	190	Leg	A325N	0.7500	4	351.26	29820.60	0.012 ✔	1	Bolt Tension
T2	180	Leg	A325N	0.7500	4	1505.54	29820.60	0.050 ✔	1	Bolt Tension
		Torque Arm Top@160.375	A325N	0.7500	2	6422.50	17892.40	0.359 ✔	1	Bolt Shear
		Torque Arm Bottom@160.375	A325N	0.7500	2	4485.13	17892.40	0.251 ✔	1	Bolt Shear
T3	160	Leg	A325N	0.7500	4	3255.80	29820.60	0.109 ✔	1	Bolt Tension
T4	140	Leg	A325N	0.7500	4	3174.36	29820.60	0.106 ✔	1	Bolt Tension
		Torque Arm Top@120.375	A325N	0.7500	2	4897.77	17892.40	0.274 ✔	1	Bolt Shear
		Torque Arm Bottom@120.375	A325N	0.7500	2	3182.72	17892.40	0.178 ✔	1	Bolt Shear
T5	120	Leg	A325N	0.7500	4	5023.98	29820.60	0.168 ✔	1	Bolt Tension
T6	100	Leg	A325N	0.7500	4	4932.69	29820.60	0.165 ✔	1	Bolt Tension
T7	80	Leg	A325N	0.7500	4	5185.05	29820.60	0.174 ✔	1	Bolt Tension
T8	60	Leg	A325N	0.7500	4	5623.85	29820.60	0.189 ✔	1	Bolt Tension
T9	40	Leg	A325N	0.7500	4	6054.57	29820.60	0.203 ✔	1	Bolt Tension
T10	20	Leg	A325N	0.7500	4	6263.33	29820.60	0.210 ✔	1	Bolt Tension

Guy Design Data

Section No.	Elevation ft	Size	Initial Tension lb	Breaking Load lb	Actual T_u lb	Allowable ϕT_n lb	Required S.F.	Actual S.F.
T1	189.63 (A) (615)	9/16 EHS	5250.00	35000.04	11236.70	21000.00	1.000	1.869 ✔
	189.63 (B) (614)	9/16 EHS	5250.00	35000.04	11471.10	21000.00	1.000	1.831 ✔
	189.63 (C) (613)	9/16 EHS	5250.00	35000.04	11419.00	21000.00	1.000	1.839 ✔
T2	160.38 (A) (586)	5/8 EHS	6360.00	42399.99	12326.80	25440.00	1.000	2.064 ✔
	160.38 (A) (587)	5/8 EHS	6360.00	42399.99	12168.10	25440.00	1.000	2.091 ✔
	160.38 (B) (580)	5/8 EHS	6360.00	42399.99	12223.70	25440.00	1.000	2.081 ✔
	160.38 (B) (581)	5/8 EHS	6360.00	42399.99	12463.00	25440.00	1.000	2.041 ✔
	160.38 (C) (574)	5/8 EHS	6360.00	42399.99	12346.50	25440.00	1.000	2.060 ✔
	160.38 (C) (575)	5/8 EHS	6360.00	42399.99	12283.20	25440.00	1.000	2.071 ✔
T4	120.38 (A) (604)	9/16 EHS	5250.00	35000.04	10164.50	21000.00	1.000	2.066 ✔
	120.38 (A) (605)	9/16 EHS	5250.00	35000.04	10117.80	21000.00	1.000	2.076 ✔
	120.38 (B) (598)	9/16 EHS	5250.00	35000.04	10061.20	21000.00	1.000	2.087 ✔
	120.38 (B) (599)	9/16 EHS	5250.00	35000.04	10084.70	21000.00	1.000	2.082 ✔
	120.38 (C) (592)	9/16 EHS	5250.00	35000.04	10093.70	21000.00	1.000	2.081 ✔
	120.38 (C) (593)	9/16 EHS	5250.00	35000.04	10118.60	21000.00	1.000	2.075 ✔
T7	60.38 (A) (612)	9/16 EHS	5250.00	35000.04	10104.20	21000.00	1.000	2.078 ✔
	60.38 (B) (611)	9/16 EHS	5250.00	35000.04	10102.40	21000.00	1.000	2.079 ✔
	60.38 (C) (610)	9/16 EHS	5250.00	35000.04	10091.00	21000.00	1.000	2.081 ✔

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	Mast Stability Index	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	190 - 180	P2.5x.203	10.00	3.08	39.1 K=1.00	1.7040	1.00	-18997.10	78157.90	0.243 ✔
T2	180 - 160	P2.5x.203	20.00	3.21	40.6 K=1.00	1.7040	1.00	-42889.80	77325.90	0.555 ✔
T3	160 - 140	P2.5x.203	20.00	3.21	40.6	1.7040	1.00	-40975.70	77325.90	0.530

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	Mast Stability Index	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
					K=1.00					✓
T4	140 - 120	P2.5x.203	20.00	3.21	40.6 K=1.00	1.7040	1.00	-61176.00	77325.90	0.791 [1] ✓
T5	120 - 100	P2.5x.203	20.00	3.21	40.6 K=1.00	1.7040	0.98	-60867.10	76119.40	0.800 [1] ✓
T6	100 - 80	P2.5x.203	20.00	3.21	40.6 K=1.00	1.7040	0.98	-62993.10	76077.10	0.828 [1] ✓
T7	80 - 60	P2.5x.203	20.00	3.21	40.6 K=1.00	1.7040	0.98	-67462.70	76056.30	0.887 [1] ✓
T8	60 - 40	P2.5x.203	20.00	3.21	40.6 K=1.00	1.7040	0.98	-72632.30	75964.20	0.956 [1] ✓
T9	40 - 20	P2.5x.203	20.00	3.21	40.6 K=1.00	1.7040	0.98	-75428.90	75974.50	0.993 [1] ✓
T10	20 - 0	P2.5x.203	20.00	3.21	40.6 K=1.00	1.7040	0.98	-75481.70	75968.40	0.994 [1] ✓

[1] P_u / ϕP_n controls

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	190 - 180	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-5614.44	11503.00	0.488 [1] ✓
T2	180 - 160	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-5384.02	11503.00	0.468 [1] ✓
T3	160 - 140	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-4712.84	11503.00	0.410 [1] ✓
T4	140 - 120	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-4357.64	11503.00	0.379 [1] ✓
T5	120 - 100	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-3795.28	11503.00	0.330 [1] ✓
T6	100 - 80	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-3699.80	11503.00	0.322 [1] ✓
T7	80 - 60	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-3816.96	11503.00	0.332 [1] ✓
T8	60 - 40	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-3467.00	11503.00	0.301 [1] ✓
T9	40 - 20	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-3638.23	11503.00	0.316 [1] ✓
T10	20 - 0	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-3508.62	11503.00	0.305 [1] ✓

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T2	180 - 160	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-3334.11	11503.00	0.290 [1] ✓
T3	160 - 140	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-3367.55	11503.00	0.293 [1] ✓
T4	140 - 120	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-2205.79	11503.00	0.192 [1] ✓
T5	120 - 100	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-3054.50	11503.00	0.266 [1] ✓
T6	100 - 80	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-1990.36	11503.00	0.173 [1] ✓
T7	80 - 60	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-2024.72	11503.00	0.176 [1] ✓
T8	60 - 40	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-1805.90	11503.00	0.157 [1] ✓
T9	40 - 20	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-1723.63	11503.00	0.150 [1] ✓
T10	20 - 0	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-1989.27	11503.00	0.173 [1] ✓

[1] $P_u / \phi P_n$ controls

Bottom 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	190 - 180	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-3001.95	11503.00	0.261 [1] ✓
T3	160 - 140	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-2328.43	11503.00	0.202 [1] ✓
T5	120 - 100	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-2092.60	11503.00	0.182 [1] ✓
T6	100 - 80	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-1826.18	11503.00	0.159 [1] ✓
T8	60 - 40	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-2036.68	11503.00	0.177 [1] ✓
T9	40 - 20	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-1792.18	11503.00	0.156 [1] ✓
T10	20 - 0	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-332.98	11503.00	0.029 [1] ✓

[1] $P_u / \phi P_n$ controls

Top Guy Pull-Off 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	190 - 180	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-2695.80	11503.00	0.234 [1]
T2	180 - 160	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-7928.62	11503.00	0.689 [1]
T4	140 - 120	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-5992.64	11503.00	0.521 [1]
T7	80 - 60	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-664.50	11503.00	0.058 [1]

[1] P_u / ϕP_n controls

Bottom Guy Pull-Off 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	180 - 160	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-4001.57	11503.00	0.348 [1]
T4	140 - 120	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	0.5273	-3816.20	11503.00	0.332 [1]

[1] P_u / ϕP_n controls

Torque-Arm Bottom Design Data

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	180 - 160 (578)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-8665.33	36439.50	0.238 [1]
T2	180 - 160 (579)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-8643.99	36439.50	0.237 [1]
T2	180 - 160 (584)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-8970.27	36439.50	0.246 [1]
T2	180 - 160 (585)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-8958.27	36439.50	0.246 [1]
T2	180 - 160 (590)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-8795.08	36439.50	0.241 [1]
T2	180 - 160 (591)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-8791.14	36439.50	0.241 [1]
T4	140 - 120 (596)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-5923.70	36439.50	0.163 [1]
T4	140 - 120 (597)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-5931.47	36439.50	0.163 [1]
T4	140 - 120 (602)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-6340.62	36439.50	0.174 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T4	140 - 120 (603)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-6315.44	36439.50	0.173 [1] ✓
T4	140 - 120 (608)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-6329.69	36439.50	0.174 [1] ✓
T4	140 - 120 (609)	L3x3x1/4	3.50	3.38	68.5 K=1.00	1.4400	-6365.44	36439.50	0.175 [1] ✓

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	190 - 180	P2.5x.203	10.00	3.08	39.1	1.7040	0.04	88951.40	0.000 [1] ✓
T2	180 - 160	P2.5x.203	20.00	3.21	40.6	1.7040	5777.55	88951.40	0.065 [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	190 - 180	5/8	4.66	4.35	333.7	0.3068	4423.12	9940.20	0.445 [1] ✓
T2	180 - 160	5/8	4.75	4.42	339.7	0.3068	6110.81	9940.20	0.615 [1] ✓
T3	160 - 140	5/8	4.75	4.42	339.7	0.3068	5010.52	9940.20	0.504 [1] ✓
T4	140 - 120	5/8	4.75	4.42	339.7	0.3068	4443.22	9940.20	0.447 [1] ✓
T5	120 - 100	5/8	4.75	4.42	339.7	0.3068	4817.03	9940.20	0.485 [1] ✓
T6	100 - 80	5/8	4.75	4.42	339.7	0.3068	3657.56	9940.20	0.368 [1] ✓
T7	80 - 60	5/8	4.75	4.42	339.7	0.3068	4031.50	9940.20	0.406 [1] ✓
T8	60 - 40	5/8	4.75	4.42	339.7	0.3068	3998.84	9940.20	0.402 [1] ✓
T9	40 - 20	5/8	4.75	4.42	339.7	0.3068	3007.71	9940.20	0.303 [1] ✓

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T10	20 - 0	3/8	4.75	4.42	339.7	0.3068	3450.16	9940.20	0.347 [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 $\frac{P_u}{\phi P_n}$
T1	190 - 180	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	329.04	17085.90	0.019 [1]
T2	180 - 160	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	742.87	17085.90	0.043 [1]
T3	160 - 140	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	709.72	17085.90	0.042 [1]
T4	140 - 120	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	1059.60	17085.90	0.062 [1]
T5	120 - 100	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	1054.25	17085.90	0.062 [1]
T6	100 - 80	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	1091.07	17085.90	0.064 [1]
T7	80 - 60	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	1168.49	17085.90	0.068 [1]
T8	60 - 40	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	1258.03	17085.90	0.074 [1]
T9	40 - 20	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	1306.47	17085.90	0.076 [1]
T10	20 - 0	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	1307.38	17085.90	0.077 [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 $\frac{P_u}{\phi P_n}$
T8	60 - 40	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	220.29	17085.90	0.013 [1]
T10	20 - 0	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	59.82	17085.90	0.004 [1]

[1] P_u / ϕP_n controls

Bottom Girt Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	lb	lb	
T8	60 - 40	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	76.36	17085.90	0.004 [1] ✔
T10	20 - 0	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	1054.07	17085.90	0.062 [1] ✔

[1] P_u / ϕP_n controls

Top Guy Pull-Off Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	lb	lb	
T1	190 - 180	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	912.51	17085.90	0.053 [1] ✔
T7	80 - 60	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	3973.06	17085.90	0.233 [1] ✔

[1] P_u / ϕP_n controls

Bottom Guy Pull-Off Design Data (Tension)

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	lb	lb	
T4	140 - 120	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	0.5273	61.11	17085.90	0.004 [1] ✔

[1] P_u / ϕP_n controls

Torque-Arm Top Design Data

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	lb	lb	
T2	180 - 160 (576)	L2x2x5/16	4.75	4.59	91.6	1.1500	12845.00	37260.00	0.345 [1] ✔
T2	180 - 160 (577)	L2x2x5/16	4.75	4.59	91.6	1.1500	12797.80	37260.00	0.343 [1] ✔
T2	180 - 160 (582)	L2x2x5/16	4.75	4.59	91.6	1.1500	12781.40	37260.00	0.343 [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	180 - 160 (583)	L2x2x5/16	4.75	4.59	91.6	1.1500	12843.70	37260.00	0.345 [1]
T2	180 - 160 (588)	L2x2x5/16	4.75	4.59	91.6	1.1500	12782.10	37260.00	0.343 [1]
T2	180 - 160 (589)	L2x2x5/16	4.75	4.59	91.6	1.1500	12796.70	37260.00	0.343 [1]
T4	140 - 120 (594)	L2x2x5/16	4.75	4.59	91.6	1.1500	9792.63	37260.00	0.263 [1]
T4	140 - 120 (595)	L2x2x5/16	4.75	4.59	91.6	1.1500	9779.18	37260.00	0.262 [1]
T4	140 - 120 (600)	L2x2x5/16	4.75	4.59	91.6	1.1500	9721.71	37260.00	0.261 [1]
T4	140 - 120 (601)	L2x2x5/16	4.75	4.59	91.6	1.1500	9788.46	37260.00	0.263 [1]
T4	140 - 120 (606)	L2x2x5/16	4.75	4.59	91.6	1.1500	9741.20	37260.00	0.261 [1]
T4	140 - 120 (607)	L2x2x5/16	4.75	4.59	91.6	1.1500	9795.54	37260.00	0.263 [1]

[1] P_u / ϕP_n controls

Torque-Arm Bottom Design Data

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	180 - 160 (578)	L3x3x1/4	3.50	3.38	43.6	1.4400	2508.91	46656.00	0.054 [1]
T2	180 - 160 (579)	L3x3x1/4	3.50	3.38	43.6	1.4400	2514.70	46656.00	0.054 [1]
T2	180 - 160 (584)	L3x3x1/4	3.50	3.38	43.6	1.4400	2751.84	46656.00	0.059 [1]
T2	180 - 160 (585)	L3x3x1/4	3.50	3.38	43.6	1.4400	2773.77	46656.00	0.059 [1]
T2	180 - 160 (590)	L3x3x1/4	3.50	3.38	43.6	1.4400	2582.56	46656.00	0.055 [1]
T2	180 - 160 (591)	L3x3x1/4	3.50	3.38	43.6	1.4400	2558.64	46656.00	0.055 [1]
T4	140 - 120 (596)	L3x3x1/4	3.50	3.38	43.6	1.4400	2744.58	46656.00	0.059 [1]
T4	140 - 120 (597)	L3x3x1/4	3.50	3.38	43.6	1.4400	2740.00	46656.00	0.059 [1]
T4	140 - 120 (602)	L3x3x1/4	3.50	3.38	43.6	1.4400	3111.25	46656.00	0.067 [1]
T4	140 - 120 (603)	L3x3x1/4	3.50	3.38	43.6	1.4400	3136.95	46656.00	0.067 [1]
T4	140 - 120 (608)	L3x3x1/4	3.50	3.38	43.6	1.4400	3140.67	46656.00	0.067 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T4	140 - 120 (609)	L3x3x1/4	3.50	3.38	43.6	1.4400	3107.24	46656.00	0.067 [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	190 - 180	Leg	P2.5x.203	2	-18997.10	78157.90	24.3	Pass
		Diagonal	5/8	33	4423.12	9940.20	44.5	Pass
		Horizontal	L1 1/2x1 1/2x3/16	16	-5614.44	11503.00	48.8	Pass
		Bottom Girt	L1 1/2x1 1/2x3/16	7	-3001.95	11503.00	26.1	Pass
		Guy A@189.625	9/16	615	11236.70	21000.00	53.5	Pass
		Guy B@189.625	9/16	614	11471.10	21000.00	54.6	Pass
		Guy C@189.625	9/16	613	11419.00	21000.00	54.4	Pass
		Top Guy Pull-Off@189.625	L1 1/2x1 1/2x3/16	6	-2695.80	11503.00	23.4	Pass
T2	180 - 160	Leg	P2.5x.203	35	-42889.80	77325.90	55.5	Pass
		Diagonal	5/8	54	6110.81	9940.20	61.5	Pass
		Horizontal	L1 1/2x1 1/2x3/16	60	-5384.02	11503.00	46.8	Pass
		Top Girt	L1 1/2x1 1/2x3/16	39	-3334.11	11503.00	29.0	Pass
		Guy A@160.375	5/8	586	12326.80	25440.00	48.5	Pass
		Guy B@160.375	5/8	581	12463.00	25440.00	49.0	Pass
		Guy C@160.375	5/8	574	12346.50	25440.00	48.5	Pass
		Top Guy Pull-Off@160.375	L1 1/2x1 1/2x3/16	51	-7928.62	11503.00	68.9	Pass
		Bottom Guy Pull-Off@160.375	L1 1/2x1 1/2x3/16	42	-4001.57	11503.00	34.8	Pass
		Torque Arm Top@160.375	L2x2x5/16	576	12845.00	37260.00	34.5 35.9 (b)	Pass
		Torque Arm Bottom@160.375	L3x3x1/4	584	-8970.27	36439.50	24.6 25.1 (b)	Pass
T3	160 - 140	Leg	P2.5x.203	96	-40975.70	77325.90	53.0	Pass
		Diagonal	5/8	149	5010.52	9940.20	50.4	Pass
		Horizontal	L1 1/2x1 1/2x3/16	147	-4712.84	11503.00	41.0	Pass
		Top Girt	L1 1/2x1 1/2x3/16	99	-3367.55	11503.00	29.3	Pass
		Bottom Girt	L1 1/2x1 1/2x3/16	100	-2328.43	11503.00	20.2	Pass
T4	140 - 120	Leg	P2.5x.203	156	-61176.00	77325.90	79.1	Pass
		Diagonal	5/8	177	4443.22	9940.20	44.7	Pass
		Horizontal	L1 1/2x1 1/2x3/16	180	-4357.64	11503.00	37.9	Pass
		Top Girt	L1 1/2x1 1/2x3/16	159	-2205.79	11503.00	19.2	Pass
		Guy A@120.375	9/16	604	10164.50	21000.00	48.4	Pass
		Guy B@120.375	9/16	599	10084.70	21000.00	48.0	Pass
		Guy C@120.375	9/16	593	10118.60	21000.00	48.2	Pass
		Top Guy Pull-Off@120.375	L1 1/2x1 1/2x3/16	169	-5992.64	11503.00	52.1	Pass
		Bottom Guy Pull-Off@120.375	L1 1/2x1 1/2x3/16	162	-3816.20	11503.00	33.2	Pass
		Torque Arm Top@120.375	L2x2x5/16	607	9795.54	37260.00	26.3 27.4 (b)	Pass
		Torque Arm Bottom@120.375	L3x3x1/4	609	-6365.44	36439.50	17.5 17.8 (b)	Pass
T5	120 - 100	Leg	P2.5x.203	216	-60867.10	76119.40	80.0	Pass
		Diagonal	5/8	269	4817.03	9940.20	48.5	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
		Horizontal	L1 1/2x1 1/2x3/16	267	-3795.28	11503.00	33.0	Pass
		Top Girt	L1 1/2x1 1/2x3/16	219	-3054.50	11503.00	26.6	Pass
		Bottom Girt	L1 1/2x1 1/2x3/16	220	-2092.60	11503.00	18.2	Pass
T6	100 - 80	Leg	P2.5x.203	275	-62993.10	76077.10	82.8	Pass
		Diagonal	5/8	328	3657.56	9940.20	36.8	Pass
		Horizontal	L1 1/2x1 1/2x3/16	289	-3699.80	11503.00	32.2	Pass
		Top Girt	L1 1/2x1 1/2x3/16	279	-1990.36	11503.00	17.3	Pass
		Bottom Girt	L1 1/2x1 1/2x3/16	281	-1826.18	11503.00	15.9	Pass
T7	80 - 60	Leg	P2.5x.203	335	-67462.70	76056.30	88.7	Pass
		Diagonal	5/8	347	4031.50	9940.20	40.6	Pass
		Horizontal	L1 1/2x1 1/2x3/16	349	-3816.96	11503.00	33.2	Pass
		Top Girt	L1 1/2x1 1/2x3/16	337	-2024.72	11503.00	17.6	Pass
		Guy A@60.375	9/16	612	10104.20	21000.00	48.1	Pass
		Guy B@60.375	9/16	611	10102.40	21000.00	48.1	Pass
		Guy C@60.375	9/16	610	10091.00	21000.00	48.1	Pass
		Top Guy Pull-Off@60.375	L1 1/2x1 1/2x3/16	342	3973.06	17085.90	23.3	Pass
T8	60 - 40	Leg	P2.5x.203	395	-72632.30	75964.20	95.6	Pass
		Diagonal	5/8	450	3998.84	9940.20	40.2	Pass
		Horizontal	L1 1/2x1 1/2x3/16	411	-3467.00	11503.00	30.1	Pass
		Top Girt	L1 1/2x1 1/2x3/16	399	-1805.90	11503.00	15.7	Pass
		Bottom Girt	L1 1/2x1 1/2x3/16	400	-2036.68	11503.00	17.7	Pass
T9	40 - 20	Leg	P2.5x.203	455	-75428.90	75974.50	99.3	Pass
		Diagonal	5/8	508	3007.71	9940.20	30.3	Pass
		Horizontal	L1 1/2x1 1/2x3/16	471	-3638.23	11503.00	31.6	Pass
		Top Girt	L1 1/2x1 1/2x3/16	459	-1723.63	11503.00	15.0	Pass
		Bottom Girt	L1 1/2x1 1/2x3/16	460	-1792.18	11503.00	15.6	Pass
T10	20 - 0	Leg	P2.5x.203	515	-75481.70	75968.40	99.4	Pass
		Diagonal	5/8	525	3450.16	9940.20	34.7	Pass
		Horizontal	L1 1/2x1 1/2x3/16	565	-3508.62	11503.00	30.5	Pass
		Top Girt	L1 1/2x1 1/2x3/16	519	-1989.27	11503.00	17.3	Pass
		Bottom Girt	L1 1/2x1 1/2x3/16	522	1054.07	17085.90	6.2	Pass
							Summary	
						Leg (T10)	99.4	Pass
						Diagonal (T2)	61.5	Pass
						Horizontal (T1)	48.8	Pass
						Top Girt (T3)	29.3	Pass
						Bottom Girt (T1)	26.1	Pass
						Guy A (T1)	53.5	Pass
						Guy B (T1)	54.6	Pass
						Guy C (T1)	54.4	Pass
						Top Guy Pull-Off (T2)	68.9	Pass
						Bottom Guy Pull-Off (T2)	34.8	Pass
						Torque Arm Top (T2)	35.9	Pass
						Torque Arm Bottom (T2)	25.1	Pass
						Bolt Checks	35.9	Pass
						RATING =	99.4	Pass

Site Name:	Ashford, CT
Date:	1/15/2018

Design Base Loads (Factored) per TIA-222-G

Moment (M_u):	0.0	k-ft	Concrete Compressive Strength (f'_c):	3000	psi
Shear/Leg (V_u):	2.1	k	Vertical Steel Rebar Size #:	5	
Compression/Leg (P_u):	219.0	k	Vertical Steel Rebar Area:	0.31	in^2
Uplift/Leg (T_u):	0.0	k	# of Vertical Steel Rebars:	8	
Tower Type (GT / SST):	GT		Vertical Steel Rebar Yield Strength (F_y):	60	ksi
Diameter of Prismatic Portion of Pier (d):	2.0	ft	Tie / Stirrup Size #:	4	
Depth to Base of Foundation:	4.5	ft	Tie / Stirrup Area:	0.20	in^2
Pier Height Above Ground (h):	1.00	ft	Tie / Stirrup Spacing:	10.0	in
Length / Width of Pad (w):	5.5	ft	Tie / Stirrup Steel Yield Strength (F_y):	40	ksi
Thickness of Pad (t):	1.5	ft	Rebar Cage Diameter:	16.0	in
Depth Below Ground Surface to Water Table (w):	20.0	ft	Bending/Tension Reduction Factor (ϕ_B):	0.90	
Unit Weight of Concrete:	150.0	pcf	Shear Reduction Factor (ϕ_V):	0.75	
Unit Weight of Water:	62.4	pcf	Compression Reduction Factor (ϕ_V):	0.65	
Unit Weight of Soil Above Water Table:	115.0	pcf	Steel Elastic Modulus:	29000	ksi
Unit Weight of Soil Below Water Table:	50.0	pcf	Pad Steel Rebar Size #:	5	
Friction Angle of Uplift from Top of Pad:	33	Degrees	Pad Steel Rebar Area:	0.31	in^2
Friction Angle of Uplift from Base of Pad:	33	Degrees	Pad Steel Rebar Yield Strength (F_y):	60	ksi
Uplift Angle Started at Top or Base of Pad (T/B):	B		# of Rebar in Top of Pad:	0	
Ultimate Skin Friction:	0	psf	# of Rebar in Base of Pad:	5	
Ultimate Compressive Bearing Pressure:	14000	psf	Pad Clear Cover:	3	in
Bearing Strength Reduction Factor (ϕ_s):	0.60				
Uplift Strength Reduction Factor (ϕ_s):	0.75				

Axial Capacities and Design Moment

Nominal Uplift Capacity per Leg ($\phi_s T_n$):	30.4	k
Nominal Compressive Capacity per Leg ($\phi_s P_n$):	254.1	k
P_u:	221.9	k
$T_u/\phi_s T_n$:	0.00	Result: OK
$P_u/\phi_s P_n$:	0.87	Result: OK

Pad Strength Capacity

β:	0.85	ACI318-05 - 10.2.7.3
Lower Pad Flexural Reinforcement Ratio:	0.0016	OK - Minimum Reinforcement Ratio Met - /
Upper Pad Flexural Reinforcement Ratio:	0.0000	OK - Minimum Reinforcement Ratio Met - /
Lower Pad Flexural Reinforcement Spacing:	15	in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
Upper Pad Flexural Reinforcement Spacing:	0	in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
One Way Design Shear (V_u):	21.2	k
One Way Shear Capacity (ϕV_c):	81.2	k - ACI318-05 - 11.3.1.1
$V_u / \phi V_c$:	0.26	Result: OK
Punching Design Shear (V_u):	159.3	k
Nominal Punching Shear Capacity ($\phi_e V_n$):	293.3	k - ACI318-05 - 11.12.2.1
$V_u / \phi V_c$:	0.54	Result: OK
Flexural Loading Due to Soil Pressure (M_u):	61.6	k-ft
Lower Steel Pad Moment Capacity (ϕM_n):	100.5	k-ft - ACI318-05 - 10.3
$M_u / \phi M_n$:	0.61	Result: OK
Flexural Loading Due to Uplift (M_u):	0.0	k-ft
Upper Steel Pad Moment Capacity (ϕM_n):	0.0	k-ft - ACI318-05 - 10.3
$M_u / \phi M_n$:	0.00	Result: OK

Pier Strength Capacity

Design Moment (M_u):	4.4	k-ft
Nominal Moment Capacity ($\phi_B M_n$):	88.9	k-ft - ACI318-005 - 10.2
$M_u/\phi_B M_n$:	0.05	Result: OK
Design Shear (V_u):	2.1	k
Nominal Shear Capacity ($\phi_V V_n$):	67.9	k - ACI318-05 - 11.3.1.1 or 11.5.7.2
$V_u/\phi_V V_n$:	0.03	Result: OK
Design Tension (T_u):	0.0	k
Nominal Tension Capacity ($\phi_T T_n$):	133.9	k - ACI318-05 - 10.2
$T_u/\phi_T T_n$:	0.00	Result: OK
Design Compression (P_u):	219.0	k
Nominal Compression Capacity ($\phi_P P_n$):	701.9	k - ACI318-05 - 10.3.6.2
$P_u/\phi_P P_n$:	0.31	Result: OK
Pier Reinforcement Ratio:	0.005	Reinforcement Ratio is Satisfactory - ACI318-05 - 10.9.1 & 10.8.4
$M_u/\phi_B M_n + T_u/\phi_T T_n$:	0.05	Result: OK

Site Name:	Ashford, CT
Date:	1/15/2018

Design Standard per TIA-222-G

Uplift (Factored - P_u):	42.5	k
Shear (Factored - V_u):	47.0	k
Anchor Base Depth (d):	8.0	ft
Width of Anchor (W):	5.5	ft
Length of Anchor (L):	11.5	ft
Thickness of Anchor (t):	2.0	ft
Depth Below Ground Surface to Water Table (w):	20.0	ft
Soil Uplift at Base / Top of Anchor (B/T):	T	
Unit Weight of Concrete:	150.0	pcf
Unit Weight of Soil Above Water Table:	115.0	pcf
Unit Weight of Water:	62.4	pcf
Submerged Soil Unit Weight:	50.0	pcf
Internal Angle of Friction:	33	Degrees
Cohesion:	0	psf
Ultimate Skin Friction of Pad Sides to Soil:	450	psf
Ultimate Coefficient of Shear Friction:	0.30	
Maximum Top Conical Failure Angle:	33	Degrees
Maximum Base Conical Failure Angle:	33	Degrees
Allowable Capacity Increase:	1.00	(Due to Transient Loads)
Uplift Strength Reduction Factor (ϕ_u):	0.75	
Shear Strength Reduction Factor (ϕ_v):	0.75	
Concrete Uplift Strength Reduction Factor (ϕ_u):	0.90	

Uplift

Weight of Concrete (Buoyancy Effect Considered):	19.0	k
Weight of Soil (Buoyancy Effect Considered):	100.3	k
Ultimate Uplift Resistance from Skin Friction:	20.3	k
Nominal Factored Uplift Resistance ($\phi_u P_n$)::	92.3	k
P_u / $\phi_u P_n$:	0.46	Result: OK

Shear

Ultimate Shear Friction Resistance Due to Normal Force - Uplift:	9.2	k
Passive Pressure:	2731	psf
Ultimate Passure Pressure Resistance:	62.8	k
Nominal Shear Resistance ($\phi_v V_n$):	54.0	k
V_u / $\phi_v V_n$:	0.87	Result: OK

Anchor Rod Capacity

# of Anchor Rods:	1		Rod F_y:	48 ksi
Anchor Rod Gross Area:	2.41	in^2	Rod F_u:	62 ksi
Anchor Rod Net Area:	2.41	in^2	ϕ_y:	0.80
Resultant Tensile Load (T_u):	63.4	k	ϕ_t:	0.65
Anchor Rod Tensile Resistance (ϕT_n)::	92.5	k		
T_u / ϕT_n:	0.69	Result: OK		

Strength Analysis of Reinforced Concrete

Concrete Compressive Srength (f'_c):	3000	psi	
Longitudinal Rebar Yield Strength:	60000	psi	
# Longitudinal Rebar (Top):	6		
# Longitudinal Rebar (1 Side):	5		
Rebar Size:	4		
Strength Reduction Factor for Shear (ϕ_v):	0.75		
Strength Reduction Factor for Flexure (ϕ_b):	0.9		
Compression Zone Factor (β_1):	0.85		
Area of Single Rebar:	0.20	in^2	
One Way Shear due to Shear Load (V_u):	12.9	k	
Nominal One Way Shear Capacity for Shear Load ($\phi_v V_n$):	122.3	k	
$V_u/\phi_v V_n$:	0.11	Result:	OK
One Way Shear due to Uplift (V_u):	18.2	k	
Nominal One Way Shear Capacity for Uplift ($\phi_v V_n$):	108.4	k	
$V_u/\phi_v V_n$:	0.17	Result:	OK
Pad Flexure due to Shear Load (M_u):	67.6	k-ft	
Nominal Flexural Capacity for Shear Load ($\phi_b M_n$):	279.0	k-ft	
Pad Flexure due to Uplift (M_u):	61.2	k-ft	
Nominal Flexural Capacity for Uplift ($\phi_b M_n$):	107.9	k-ft	
$M_u/\phi_b M_n$ (Max.):	0.57	Result:	OK

DRAWN BY: CKF CHECKED BY: KAB

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PROJECT INFORMATION:

TOWER INFORMATION

LAT: 41.8633°

LONG: -72.1828°

SITE TYPE: 190' GUYED TOWER

COUNTY: WINDHAM

APPLICANT

SPRINT
1 INTERNATIONAL BLVD., SUITE 800
MAHWAH, NJ 07495
CONTACT: TBD
PHONE: TBD
EMAIL: TBD

LANDLORD

CORDLESS DATA TRANSFER, INC.
P.O. BOX 363
MARLBOROUGH, CT 06447

A&E FIRM

RAMAKER & ASSOCIATES, INC.
CONTACT: KEITH BOHNSACK
PROJECT MANAGER
PHONE: (608) 643-4100
EMAIL: kbohnsack@ramaker.com

SHEET INDEX:

CODE COMPLIANCE:

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED 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
2. ANSI/TIA-222 STRUCTURAL STANDARD FOR ANTENNA STRUCTURES
3. NFPA 780 - LIGHTNING PROTECTION CODE
4. NATIONAL ELECTRIC CODE

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DO MACRO UPGRADE

SITE CASCADE:

CT33XC015

Sprint

1 INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495

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100% EMPLOYEE-OWNED
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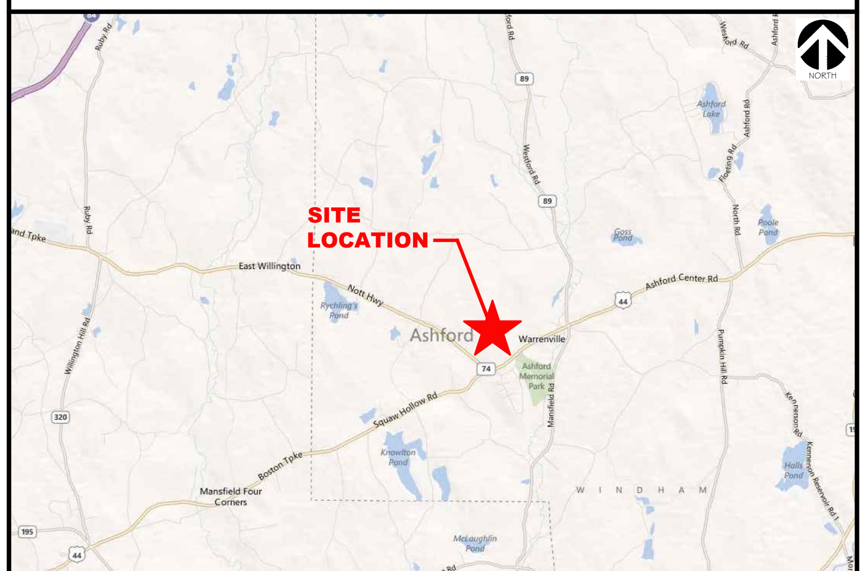
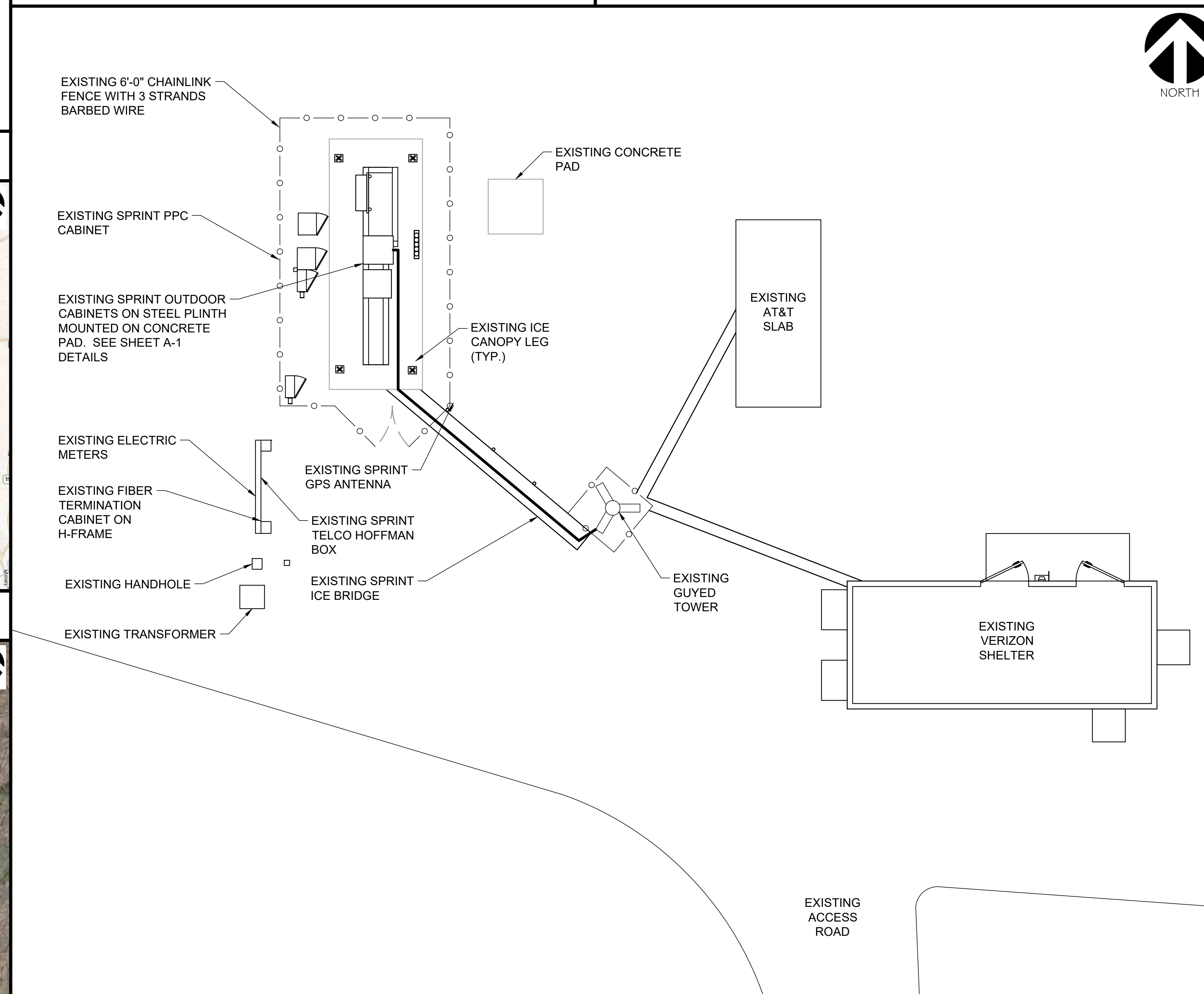
608-643-4100 www.Ramaker.com
Sauk City, WI • Willmar, MN
Woodcliff Lake, NJ • Bayamon, PR

VICINITY MAP:



AERIAL MAP:



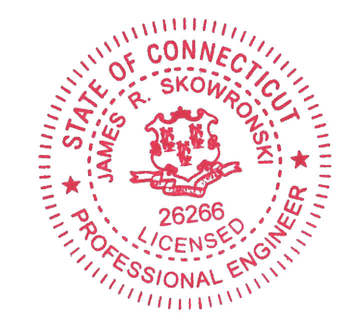
OVERALL SITE PLAN (1)

SCALE: 1" = 12.5'

Charles Cherundolo Consulting, Inc.

1280 RT. 46 WEST
PARSIPPANY, NJ 07054
Phone: 973-794-3633 Fax: 570-842-5592

Certification & Seal:
I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Connecticut.



Signature: 5/01/2018 Date:

MARK	DATE	DESCRIPTION
2	05/01/18	ADD ANTENNA MOUNT MOD/REPLACEMENT DETAILS
1	04/11/18	REVISE SITE ADDRESS

ISSUE PHASE: FINAL — DATE ISSUED: 10/17/17

PROJECT TITLE:

CT33XC015

PROJECT INFORMATION:
20 SELES ROAD
ASHFORD, CT 06278
WINDHAM COUNTY

SHEET TITLE:

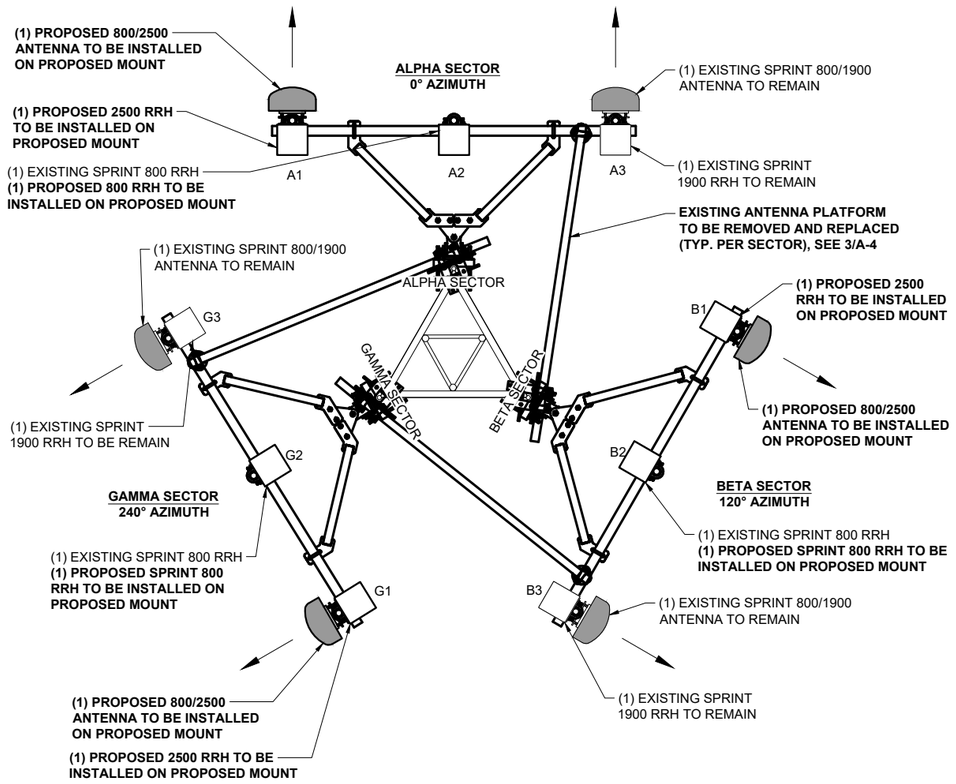
TITLE SHEET

0 6.25' 12.5' 25'

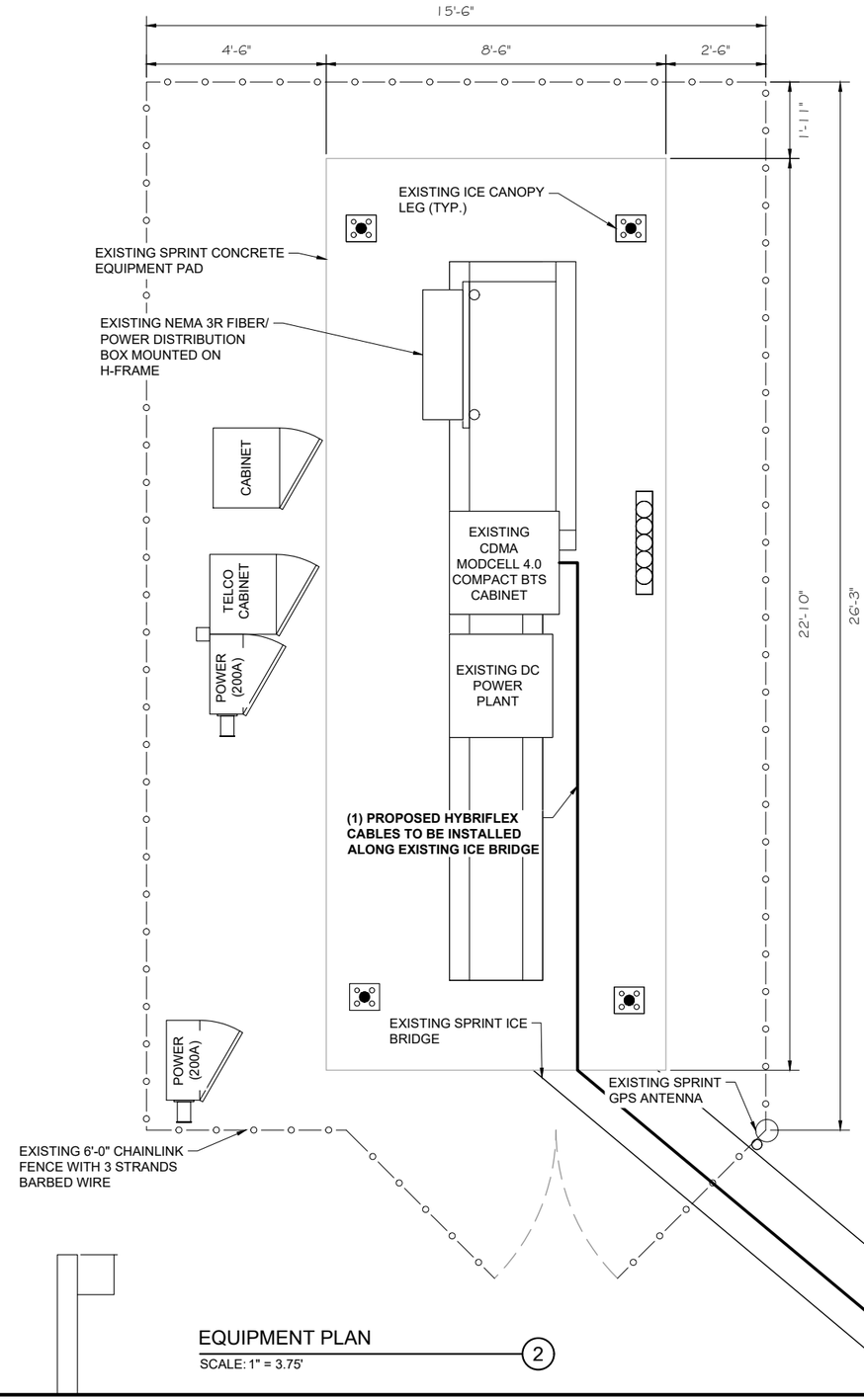
11" x 17" - 1" = 12.5'
22" x 34" - 1" = 6.25'

PROJECT NUMBER: 22973

SHEET NUMBER: T-1



ANTENNA PLAN
SCALE: 1" = 3.75' (1)



EQUIPMENT PLAN
SCALE: 1" = 3.75' (2)

NORTH

Sprint

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STATE OF CONNECTICUT · JAMES R. SKOWRONSKI · 26266 · LICENSED PROFESSIONAL ENGINEER

Signature: 5/01/2018 Date:

MARK	DATE	DESCRIPTION
2	05/01/18	ADD ANTENNA MOUNT MOD/REPLACEMENT DETAILS
1	04/11/18	REVISE SITE ADDRESS

ISSUE PHASE: FINAL
DATE ISSUED: 10/17/17

PROJECT TITLE:
CT33XC015

PROJECT INFORMATION:
20 SELES ROAD
ASHFORD, CT 06278
WINDHAM COUNTY

SHEET TITLE:
PROPOSED ANTENNA LAYOUT & EQUIPMENT LAYOUT

0 1.25' 2.5' 5'
11" x 17" - 1" = 2.5'
22" x 34" - 1" = 1.25'

PROJECT NUMBER: 22973
SHEET NUMBER: A-1

DRAWN BY: CKF CHECKED BY: KAB

Printed by: bwtmer on May 01, 2018 - 4:26pm

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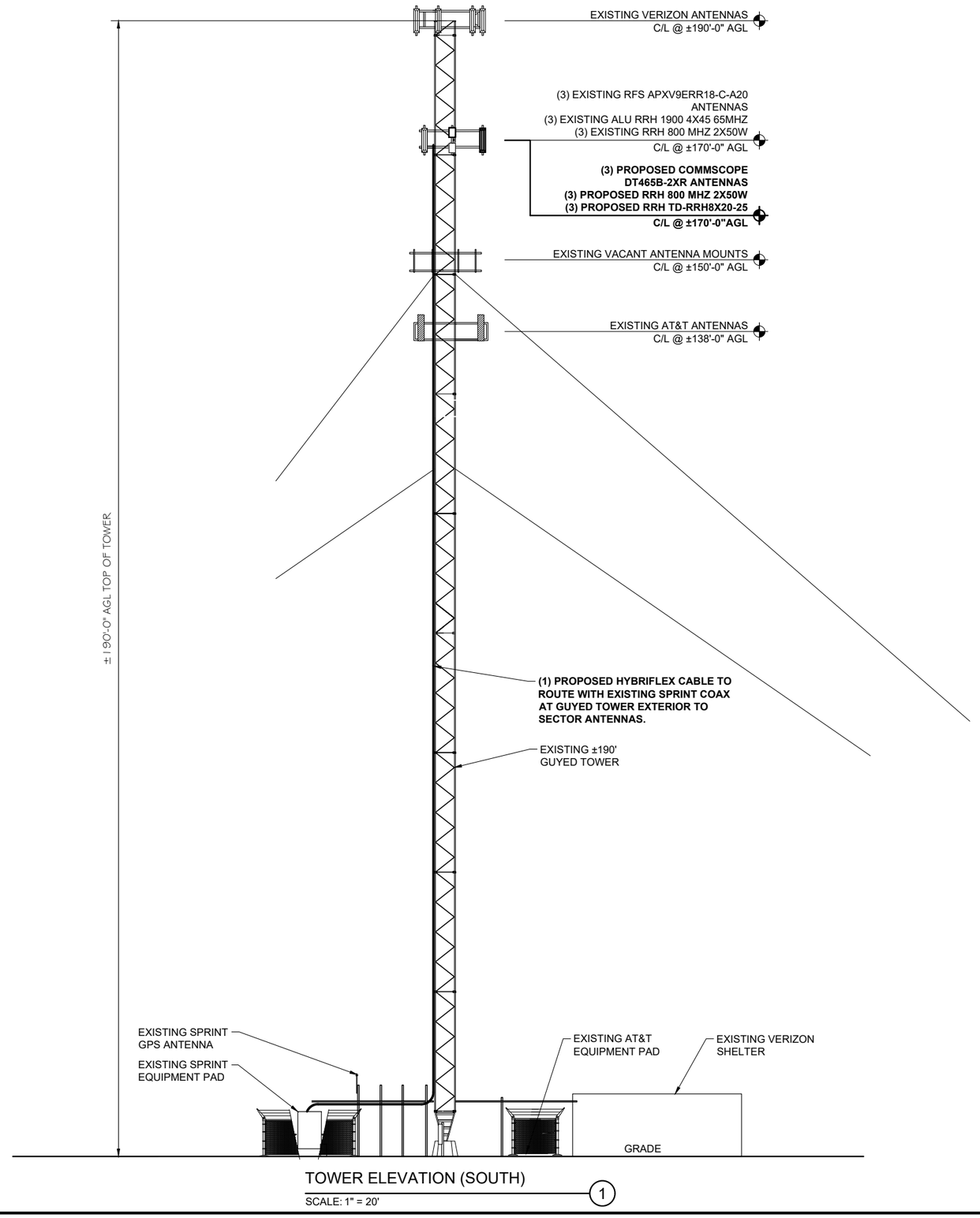

TOWER ELEVATION (SOUTH) 1

SCALE: 1" = 20'

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STATE OF CONNECTICUT · JAMES R. SKOWRONSKI · 26266 · LICENSED PROFESSIONAL ENGINEER

Signature: 5/01/2018 Date:

MARK	DATE	DESCRIPTION
2	05/01/18	ADD ANTENNA MOUNT MOD/REPLACEMENT DETAILS
1	04/11/18	REVISE SITE ADDRESS

ISSUE PHASE: FINAL
DATE ISSUED: 10/17/17

PROJECT TITLE:
CT33XC015

PROJECT INFORMATION:
20 SELES ROAD
ASHFORD, CT 06278
WINDHAM COUNTY

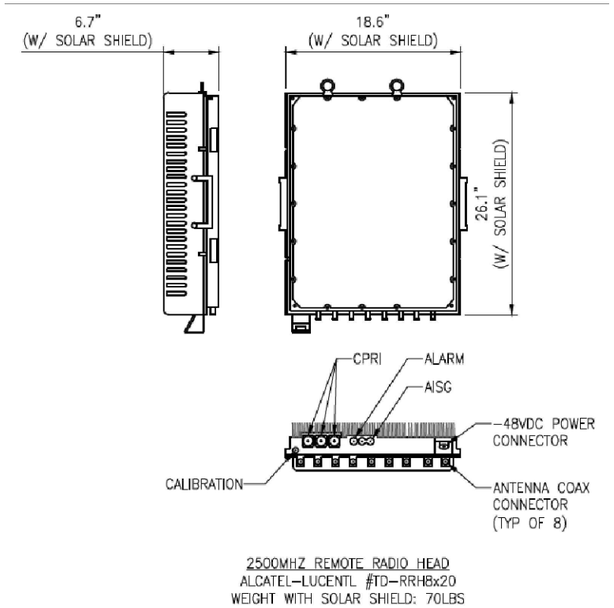
SHEET TITLE:
TOWER ELEVATION

0 10' 20' 40'
11" x 17" - 1" = 20'
22" x 34" - 1" = 10'

PROJECT NUMBER: 22973
SHEET NUMBER: A-2

MECHANICAL	
DIMENSION (HxWxD)	71.9" x 13.8" x 8.2"
WEIGHT	58 lbs

ANTENNA MODEL: COMMSCOPE #DT465B-2XR - ANTENNA SPECS



2500MHZ REMOTE RADIO HEAD
ALCATEL-LUCENTL #TD-RRH8x20
WEIGHT WITH SOLAR SHIELD: 70LBS

MECHANICAL	
DIMENSION (HxWxD)	26.1"x18.6"x6.7"
WEIGHT	70 lbs

RRH MODEL: ALU #TD-RRH8X20-25 - RADIO SPECS

800MHz 2X50W Remote Radio Head (RRH)

Simultaneous CDMA & LTE Multi technology RRH 862-869 MHz
- Any combination of CDMA and LTE carriers supported by 100W RF Power

2 CPRI-like Optical Connections for daisy chaining
Software Switchable External Filter for use before Public Safety is cleared

Dimensions:	w/o Filter	w/ Filter
Height:	480 mm (19")	480 mm (19")
Width:	330 mm (13")	330 mm (13")
Depth:	218 mm (8.6")	310 (12.2")
Weight:	24 kg (53 lbs)	29 kg (64 lbs)
	49 liters,	<29kg

Power Supply: -48 VDC
Power Consumption: <400W Typical
Operating Temp range -40° C to +55° C
Option to mount on Ground at tower base

Alcatel-Lucent's 800 RRH satisfies Sprint's requirements.

Front/Top View

Bottom View

MECHANICAL	
DIMENSION (HxWxD)	19" x 13" x 12.2"
WEIGHT	64 lbs

RRH MODEL: ALU #800 MHz 2x50W - RADIO SPECS

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STATE OF CONNECTICUT
JAMES R. SKOWRONSKI
26266
LICENSED PROFESSIONAL ENGINEER

Signature: 5/01/2018 Date:

MARK	DATE	DESCRIPTION
2	05/01/18	ADD ANTENNA MOUNT MOD/REPLACEMENT DETAILS
1	04/11/18	REVISE SITE ADDRESS

ISSUE PHASE: FINAL DATE ISSUED: 10/17/17

PROJECT TITLE:
CT33XC015

PROJECT INFORMATION:
20 SELES ROAD
ASHFORD, CT 06278
WINDHAM COUNTY

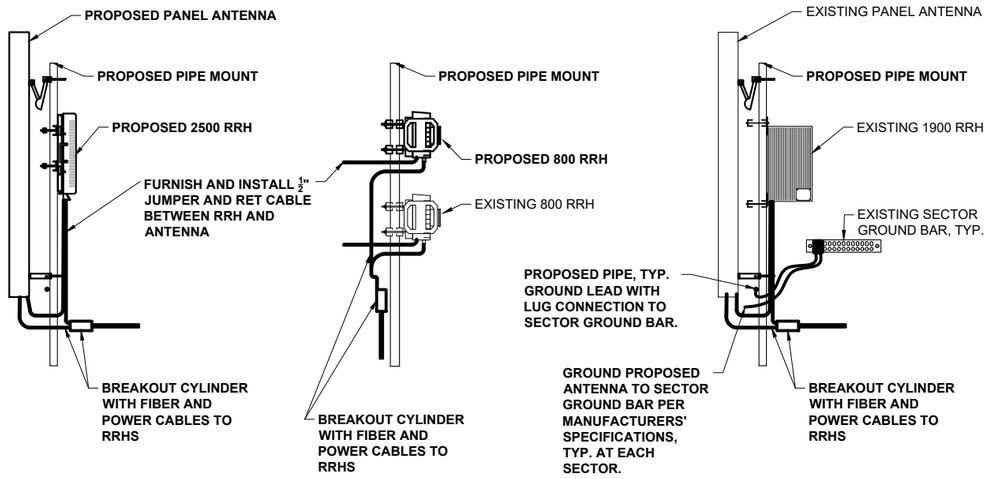
SHEET TITLE:
ANTENNA DETAILS

SCALE: NONE

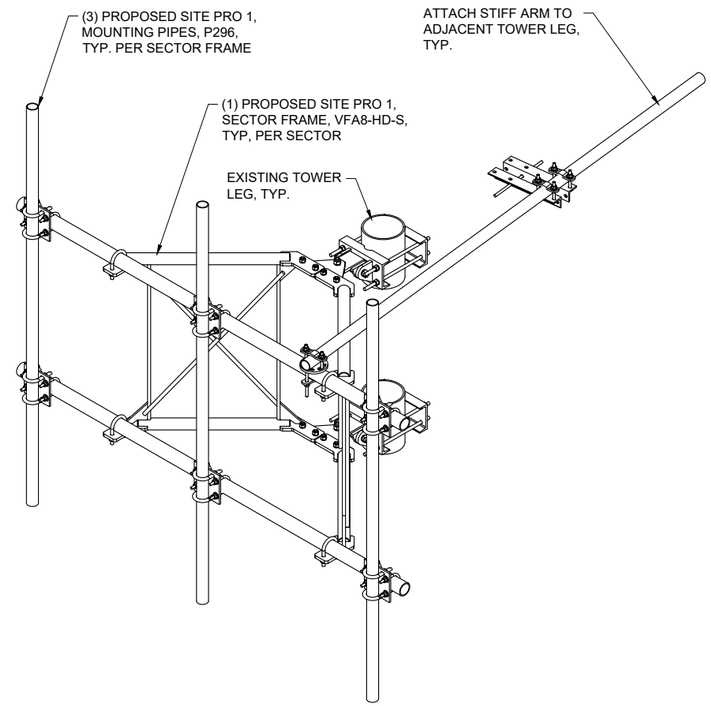
PROJECT NUMBER: 22973
SHEET NUMBER: A-3

800/1900/2500 EQUIPMENT SCHEDULE								
SECTOR	POSITION	ANTENNA MAKE/MODEL	AZIMUTH	CENTERLINE	RRH	CABLE TYPE	CABLE LENGTH	JUMPER TYPE
ALPHA	1	PROPOSED COMMSCOPE DT465B-2XR	0°	170'-0"	(1) PROPOSED 2500 (TD-RRH8x20-25)	(1) PROPOSED HYBRIFLEX	250'-0"	8' HYBRID
	2	-	-	170'-0"	(1) PROPOSED RRH 800 MHz 2x50W	EXISTING HYBRIFLEX	250'-0"	EXISTING
					(1) EXISTING RRH 800 MHz 2x50W			
	3	EXISTING RFS APXV9ERR18-C-A20	0°	170'-0"	(1) EXISTING RRH 1900 4X45 65 MHz			
BETA	1	PROPOSED COMMSCOPE DT465B-2XR	120°	170'-0"	(1) PROPOSED 2500 (TD-RRH8x20-25)	SHARED W/ ALPHA	250'-0"	8' HYBRID
	2	-	-	170'-0"	(1) PROPOSED RRH 800 MHz 2x50W	EXISTING HYBRIFLEX	250'-0"	EXISTING
					(1) EXISTING RRH 800 MHz 2x50W			
	3	EXISTING RFS APXV9ERR18-C-A20	120°	170'-0"	(1) EXISTING RRH 1900 4X45 65 MHz			
GAMMA	1	PROPOSED COMMSCOPE DT465B-2XR	240°	170'-0"	(1) PROPOSED 2500 (TD-RRH8x20-25)	SHARED W/ ALPHA	250'-0"	8' HYBRID
	2	-	-	170'-0"	(1) PROPOSED RRH 800 MHz 2x50W	EXISTING HYBRIFLEX	250'-0"	EXISTING
					(1) EXISTING RRH 800 MHz 2x50W			
	3	EXISTING RFS APXV9ERR18-C-A20	240°	170'-0"	(1) EXISTING RRH 1900 4X45 65 MHz			

EQUIPMENT & CABLE SCHEDULE (1)
SCALE: NTS



ANTENNA & RRH MOUNTING DETAIL (2)
SCALE: NTS



PROPOSED SECTOR FRAME DETAIL (3)
SCALE: NTS

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STATE OF CONNECTICUT
JAMES R. SKOWRONSKI
26266
LICENSED
PROFESSIONAL ENGINEER

Signature: Date: 5/01/2018

MARK	DATE	DESCRIPTION
2	05/01/18	ADD ANTENNA MOUNT MOD/REPLACEMENT DETAILS
1	04/11/18	REVISE SITE ADDRESS

ISSUE PHASE: FINAL
DATE ISSUED: 10/17/17

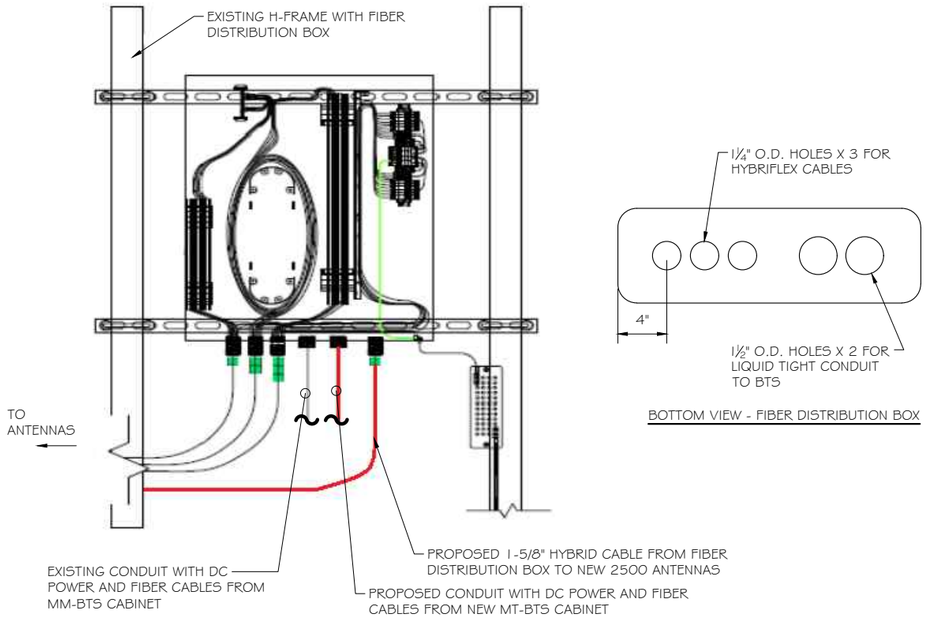
PROJECT TITLE:
CT33XC015

PROJECT INFORMATION:
20 SELES ROAD
ASHFORD, CT 06278
WINDHAM COUNTY

SHEET TITLE:
ANTENNA SCHEDULE & DETAIL

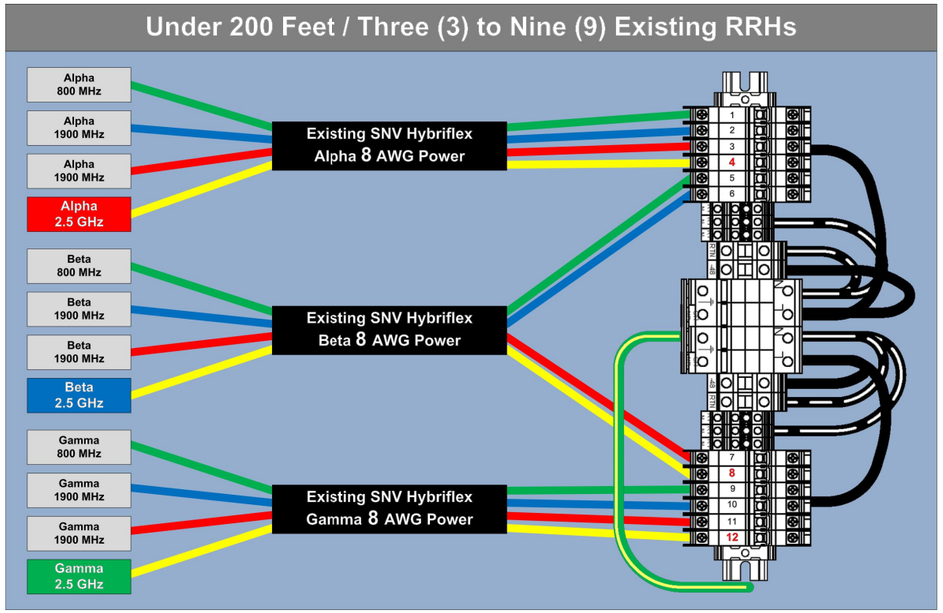
SCALE: NONE

PROJECT NUMBER: 22973
SHEET NUMBER: A-4

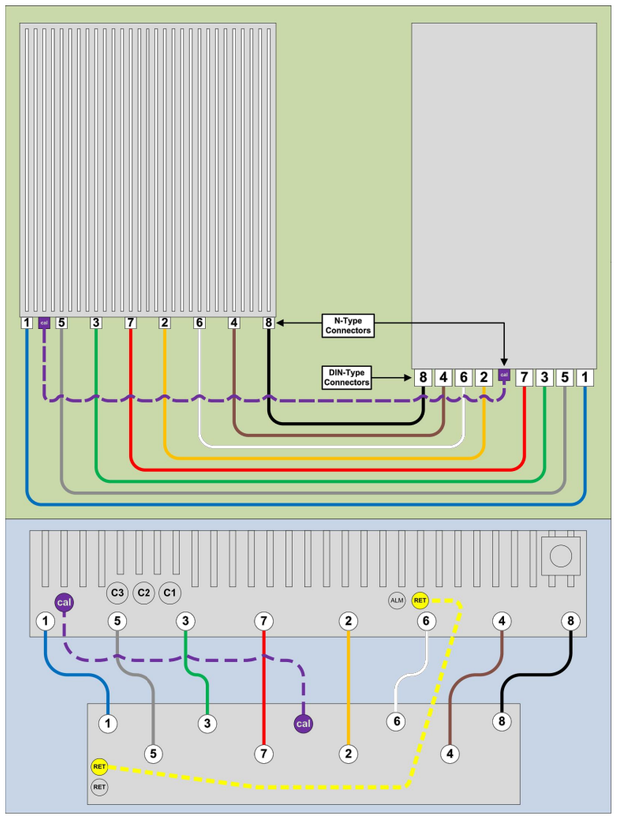


TYPICAL FIBER DISTRIBUTION BOX DETAIL (1)
SCALE: NTS

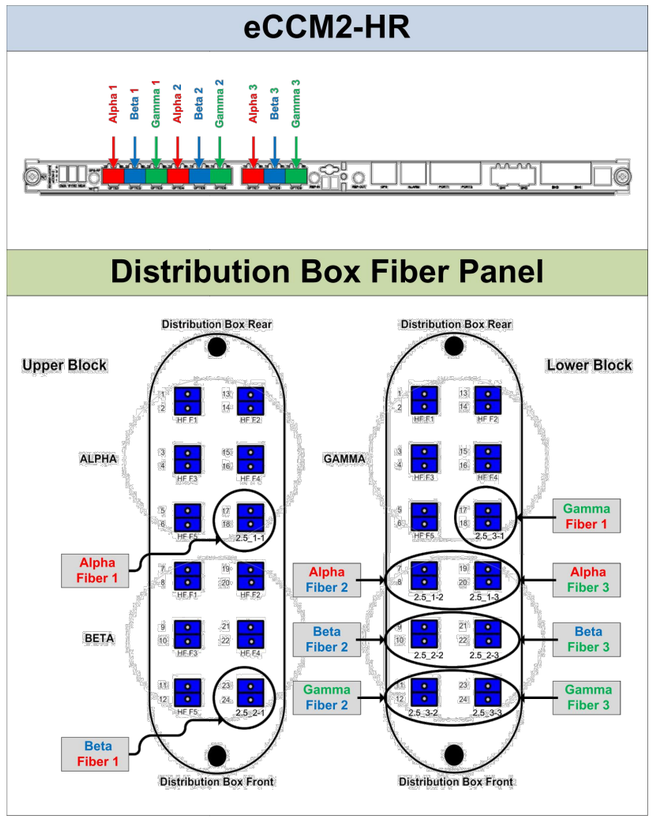
BOTTOM VIEW - FIBER DISTRIBUTION BOX



RRH TO DISTRIBUTION BOX POWER CONNECTIVITY DETAIL (2)
SCALE: NTS



8T8R DETAIL (3)
SCALE: NTS



BTS TO DISTRIBUTION BOX FIBER CONNECTIVITY DETAIL (4)
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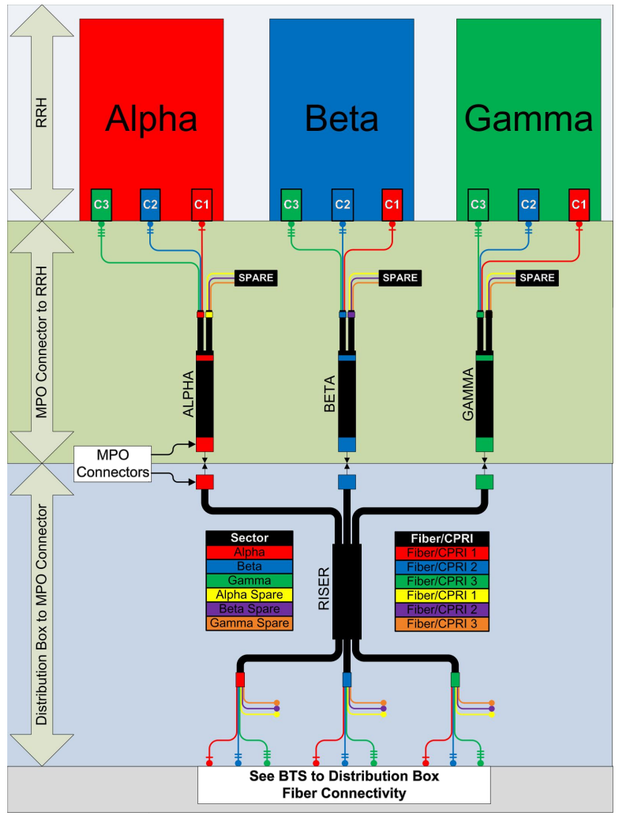

RRH TO DISTRIBUTION BOX FIBER CONNECTIVITY DETAIL (5)
SCALE: NTS

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2	05/01/18	ADD ANTENNA MOUNT MOD/REPLACEMENT DETAILS
1	04/11/18	REVISE SITE ADDRESS

ISSUE PHASE: FINAL
DATE ISSUED: 10/17/17

PROJECT TITLE:
CT33XC015

PROJECT INFORMATION:
20 SELES ROAD
ASHFORD, CT 06278
WINDHAM COUNTY

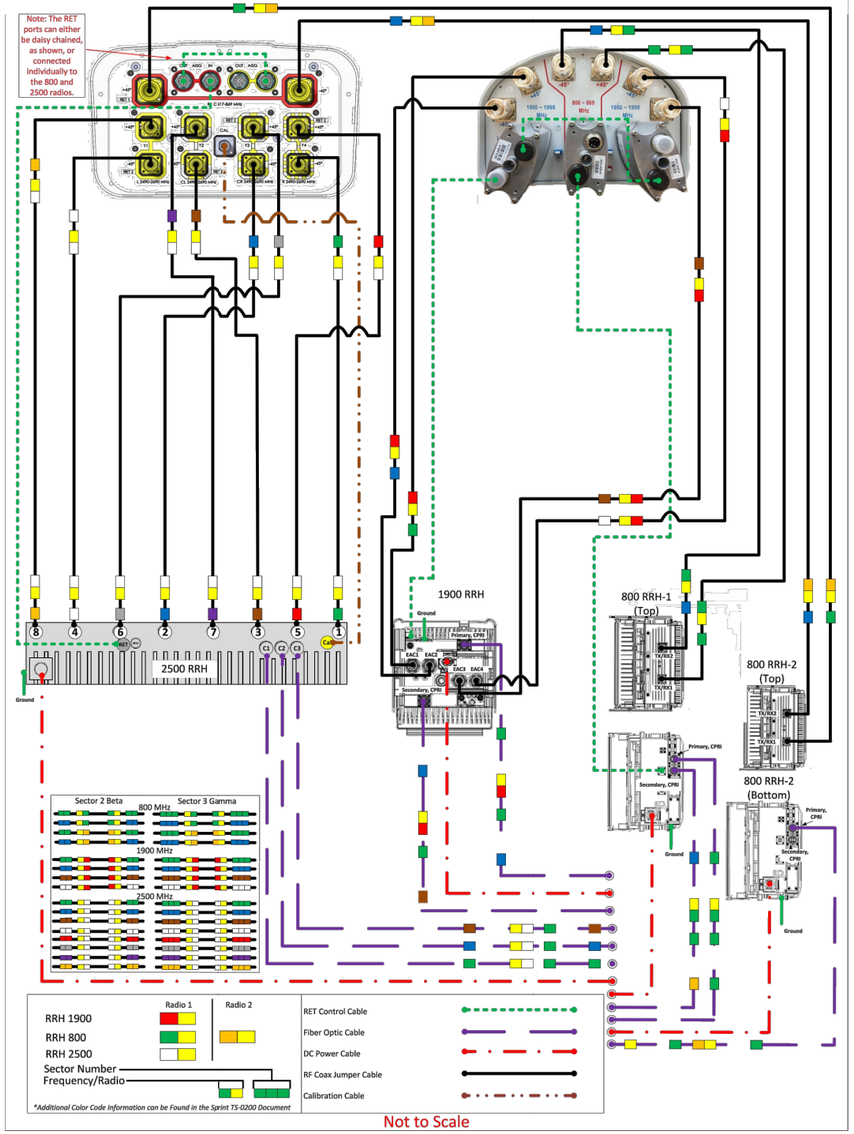
SHEET TITLE:
FIBER PLUMBING DIAGRAM

SCALE: NONE

PROJECT NUMBER: 22973
SHEET NUMBER: A-5

Prepared By: Mark Elliott	Revision Date: August 23, 2017	Revision Number: R4	Sprint
Approved By: RAN Hardware & Antenna Teams	Approval Date: DRAFT-Macro Generated		

ALU 211 DT465B-2XR & APXVSPP18-C-A20 wo Filters



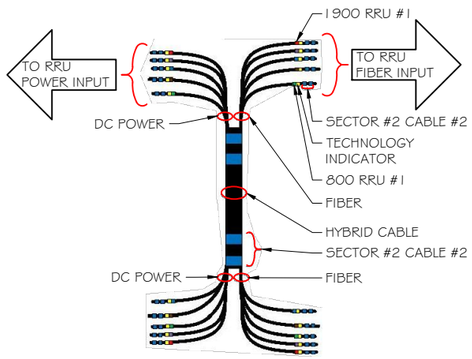
ANTENNA COLOR CODING CHART (1)

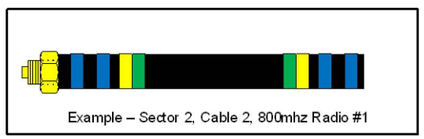
SCALE: NTS

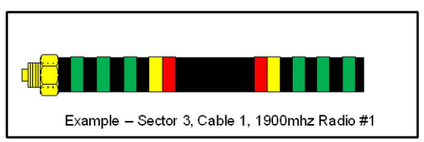
Sector	Cable	First Ring	Second Ring	Third Ring
1 Alpha	1	Green	No Tape	No Tape
1	2	Blue	No Tape	No Tape
1	3	Brown	No Tape	No Tape
1	4	White	No Tape	No Tape
1	5	Red	No Tape	No Tape
1	6	Grey	No Tape	No Tape
1	7	Purple	No Tape	No Tape
1	8	Orange	No Tape	No Tape
2 Beta	1	Green	Green	No Tape
2	2	Blue	Blue	No Tape
2	3	Brown	Brown	No Tape
2	4	White	White	No Tape
2	5	Red	Red	No Tape
2	6	Grey	Grey	No Tape
2	7	Purple	Purple	No Tape
2	8	Orange	Orange	No Tape
3 Gamma	1	Green	Green	Green
3	2	Blue	Blue	Blue
3	3	Brown	Brown	Brown
3	4	White	White	White
3	5	Red	Red	Red
3	6	Grey	Grey	Grey
3	7	Purple	Purple	Purple
3	8	Orange	Orange	Orange

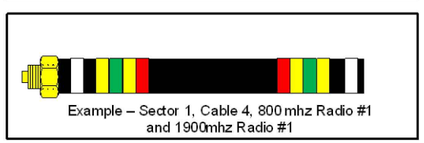
2.5 FREQUENCY	INDICATOR		ID
2500 -1	YEL	WHT	GRN
2500 -2	YEL	WHT	RED
2500 -3	YEL	WHT	BRN
2500 -4	YEL	WHT	BLU
2500 -5	YEL	WHT	SLT
2500 -6	YEL	WHT	ORG
2500 -7	YEL	WHT	WHT
2500 -8	YEL	WHT	PPL

NV FREQUENCY	INDICATOR	ID
800-1	YEL	GRN
1900-1	YEL	RED
1900-2	YEL	BRN
1900-3	YEL	BLU
1900-4	YEL	SLT
800-1	YEL	ORG
RESERVED	YEL	WHT
RESERVED	YEL	PPL




Example – Sector 2, Cable 2, 800mhz Radio #1


Example – Sector 3, Cable 1, 1900mhz Radio #1


Example – Sector 1, Cable 4, 800 mhz Radio #1 and 1900mhz Radio #1

COLOR CODING CHARTS (2)

SCALE: NTS

CABLE MARKING NOTES

1. ALL CABLES SHALL BE MARKED WITH 2" WIDE, UV STABILIZED, UL APPROVED TAPE.
2. THE FIRST RING SHALL BE CLOSEST TO THE END OF THE CABLE AND SPACED APPROXIMATELY 2" FROM THE END CONNECTOR, WEATHERPROOFING, OR BREAKOUT UNIT. THERE SHALL BE 1" SPACE BETWEEN EACH RING.
3. A 2" GAP SHALL SEPARATE THE CABLE COLOR CODE FROM THE FREQUENCY COLOR CODE. THE 2" COLOR RINGS FOR THE FREQUENCY CODE SHALL BE PLACED NEXT TO EACH OTHER WITH NO SPACES.
4. THE 2" COLORED TAPE(S) SHALL BE WRAPPED A MINIMUM OF 3 TIMES AROUND THE INDIVIDUAL CABLES, AND THE TAPE SHALL BE KEPT IN THE SAME LOCATION AS MUCH AS POSSIBLE.
5. SITES WITH MORE THAN FOUR (4) SECTORS WILL REQUIRE ADDITIONAL RINGS FOR EACH SECTOR, FOLLOWING THE PATTERN. HIGH CAPACITY SITES WILL USE THE SECOND CABLE IDENTIFIED BY BLUE BANDS OF TAPE
6. HYBRID FIBER CABLE SHALL BE SECTOR IDENTIFIED INSIDE THE CABINET ON FREQUENCY BUNDLES, ON THE SEALTITE, ON THE MAIN LINE UPON EXIT OF SEALTITE, AND BEFORE AND AFTER THE BREAKOUT UNIT (MEDUSA), AS WELL AS BEFORE AND AFTER ANY ENTRANCE OR EXIT.
7. HFC "MAIN TRUNK" WILL NOT BE MARKED WITH THE FREQUENCY CODES, AS IT CONTAINS ALL FREQUENCIES.
8. INDIVIDUAL POWER PAIRS AND FIBER BUNDLES SHALL BE LABELED WITH BOTH THE CABLE AND FREQUENCY.

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STATE OF CONNECTICUT · JAMES R. SKOWRONSKI · 26266 · LICENSED PROFESSIONAL ENGINEER

Signature: James R. Skowronski Date: 5/01/2018

MARK	DATE	DESCRIPTION
2	05/01/18	ADD ANTENNA MOUNT MOD/REPLACEMENT DETAILS
1	04/11/18	REVISE SITE ADDRESS

ISSUE PHASE: FINAL
DATE ISSUED: 10/17/17

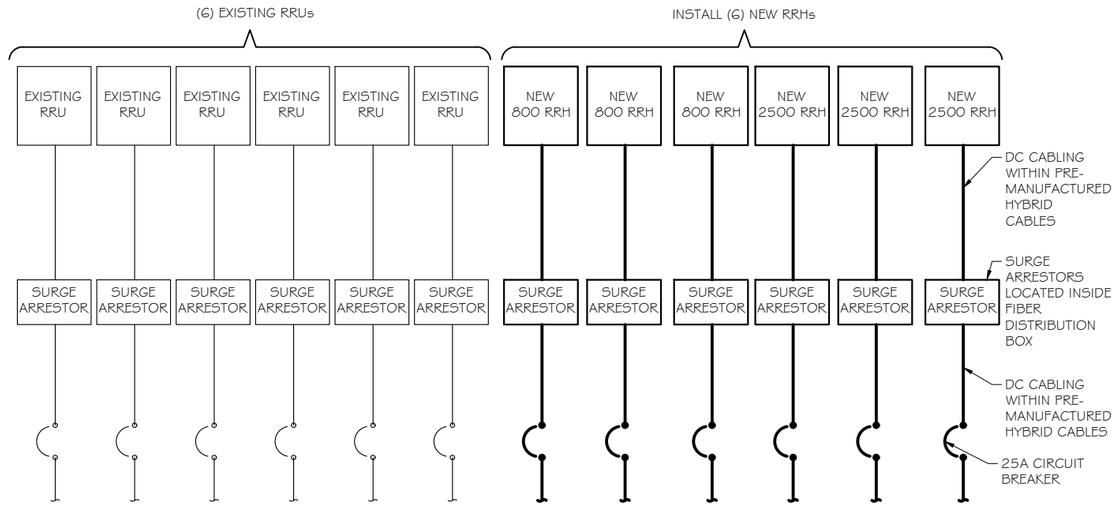
PROJECT TITLE:
CT33XC015

PROJECT INFORMATION:
20 SELES ROAD
ASHFORD, CT 06278
WINDHAM COUNTY

SHEET TITLE:
CABLE COLOR CODING

SCALE: NONE

PROJECT NUMBER: 22973
SHEET NUMBER: A-6

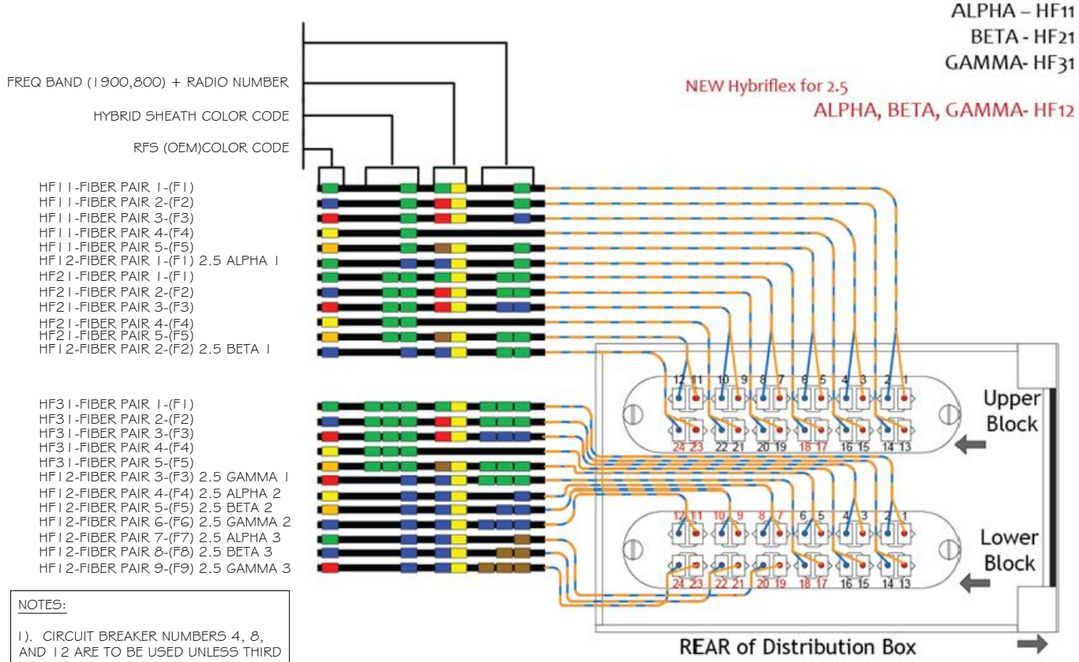


DC ONE-LINE DIAGRAM (1)
SCALE: NTS

Each sector has separate Hybriflex cable .
Hybriflex cable naming as follows:

ALPHA – HF11
BETA - HF21
GAMMA- HF31

NEW Hybriflex for 2.5
ALPHA, BETA, GAMMA- HF12



NOTES:

1). CIRCUIT BREAKER NUMBERS 4, 8, AND 12 ARE TO BE USED UNLESS THIRD DC RAIL IS REQUIRED FOR MICROWAVE.
2). USE DC POWER LOOP.
3). ALL UNUSED DC FEEDERS TO BE TERMINATED WITH WIRE NUTS AND TAPED.
4). REMOVE ALL DEBRIS FROM INTERIOR OF FIBER DISTRIBUTION BOX WHEN COMPLETE.

TYPICAL FIBER DISTRIBUTION (2)
SCALE: NTS

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1	04/11/18	REVISE SITE ADDRESS

ISSUE PHASE: FINAL DATE ISSUED: 10/17/17

PROJECT TITLE:
CT33XC015

PROJECT INFORMATION:
20 SELES ROAD
ASHFORD, CT 06278
WINDHAM COUNTY

SHEET TITLE:
DC POWER & FIBER DISTRIBUTION DETAIL

SCALE: NONE

PROJECT NUMBER: 22973
SHEET NUMBER: E-1