

May 9, 2014

VIA OVERNIGHT DELIVERY

Ms. Melanie A. Bachman
Acting Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: Sprint Spectrum, L.P. – Notice of Exempt Modification
600 Old Hartford Road (aka 589 Old Hartford Raod), Colchester, CT

Dear Ms. Bachman:

This letter and attachments are submitted on behalf of Sprint Spectrum, L.P. (“Sprint”). Sprint is undertaking modifications to certain existing sites in its Connecticut network in order to implement updated technology. In order to do so, Sprint will modify antenna and equipment configurations at a number of existing sites. Please accept this letter and attachments as notification, pursuant to R.C.S.A. Section 16-50j-73, of construction 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 and attachments is being sent to the First Selectman of the Town of Bozrah.

Sprint plans to modify the existing facility at 600 Old Hartford Road, Colchester, owned by Cordless Data Transfer, Inc. (coordinates 41°35’12”N, -72°22’40”W). Attached are drawings depicting the planned changes, and documentation of the structural sufficiency of the tower to accommodate the revised antenna configuration. Also included is a power density calculation reflecting the modification to Sprint’s operations at the site.

The changes to the facility do not constitute a modification as defined in Connecticut General Statutes (“C.G.S.”) Section 16-50i(d) because the general physical characteristics of the facility will not be significantly changed. Rather, the planned changes to the facility fall squarely within those activities explicitly provided for in R.C.S.A. Section 16-50j-72(b)(2).

1. Sprint will remove the six (6) existing antennas; add three (3) dual-band panel antennas to the existing frames on existing mounting pipes; and add six (6) RRHs (remote radio heads) all at a centerline height of approximately 180.5’ from the tower base. Sprint will also install three (3) hybriflex cables along the existing coaxial cable run, and remove the existing coaxial cables.

2. Sprint will replace the two (2) existing cabinets with three (3) new cabinets (including two (2) battery cabinets); the existing power plant will be replaced by a battery cabinet; and a fiber/power distribution box will be added to a new H-frame, all on the existing concrete pad. These changes will have no effect on the site boundaries, Sprint's lease area or the landlord's lease area.

3. The proposed changes will not increase the noise level at the existing facility by six decibels or more. The incremental effect of the proposed changes will be negligible.

4. The changes to the facility will not increase the calculated "worst case" power density for the combined operations at the site to a level at or above the applicable standard for uncontrolled environments as calculated for a mixed frequency site. As indicated in the attached power density calculations, Sprint's operations at the site will result in a power density of 3.947%; the combined site operations will result in a total power density of 8.578%.

Please feel free to call me with any questions or concerns regarding this matter. Thank you for your consideration.

Respectfully submitted,

Jennifer Young Gaudet

Jennifer Young Gaudet

Attachments

cc: Mr. Gregg Schuster, First Selectman, Town of Colchester
Alice M. Maynard (underlying property owner)

Sprint
 NETWORK SERVICES LAUNCH
 1 INTERNATIONAL BLVD., SUITE 800
 MARWAH, NJ 07485
 OFFICE (201)984-4000
 FAX (201)984-4223

Alcatel-Lucent
 1 HERRING ROAD
 TELFORD, NJ 07070

HPO
 WIRELESS SERVICES

TECTONIC
 600 ROUTE 108
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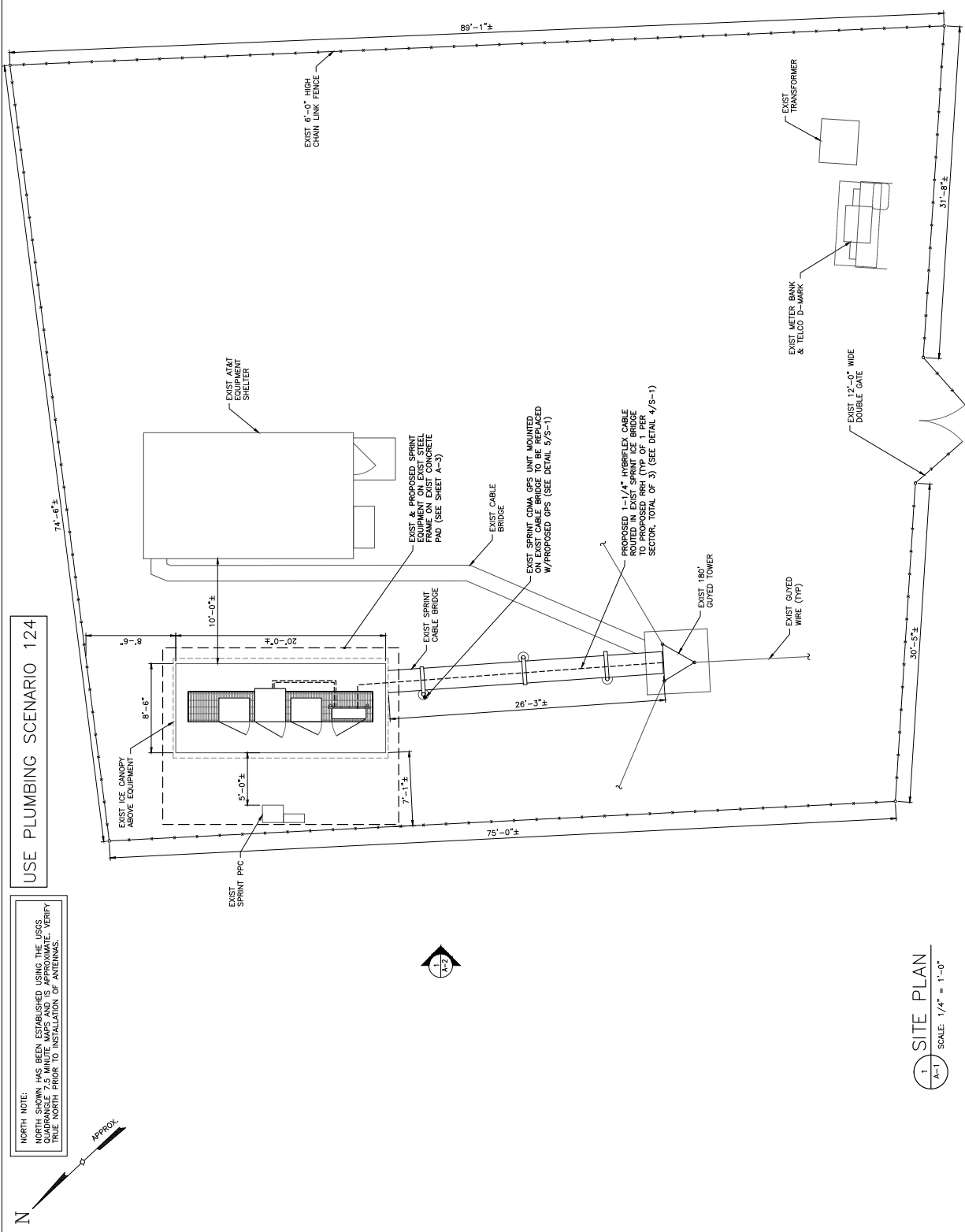
SUBMITTALS

NO.	DATE	DESCRIPTION	BY
0	10/05/12	FOR COMMENT	SL
1	10/26/12	PER COMMENTS	DAC
2	10/29/13	REVISED REFS	PPF
3	11/06/13	PER COMMENTS	PPF

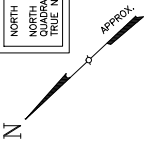
PROJECT NO: 6318_33-576

SITE NUMBER:
 CT333X576
 SITE NAME:
 N. COLCHESTER
 SITE ADDRESS:
 589 OLD HARTFORD RD
 COLCHESTER, CT 06415

SHEET TITLE:
 SITE PLAN
 SHEET NO:
 A-1



NORTH NOTE:
 NORTH SHOWN HAS BEEN ESTABLISHED USING THE USGS QUADRANGLE 7.5 MINUTE MAPS AND IS APPROXIMATE. VERIFY TRUE NORTH PRIOR TO INSTALLATION OF ANTENNAS.



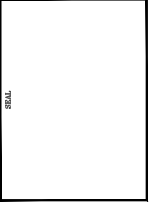
1 SITE PLAN
 A-1 SCALE: 1/4" = 1'-0"



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3	11/06/13	PER COMMENTS	TPF

PROJECT NO: 0318-33-576

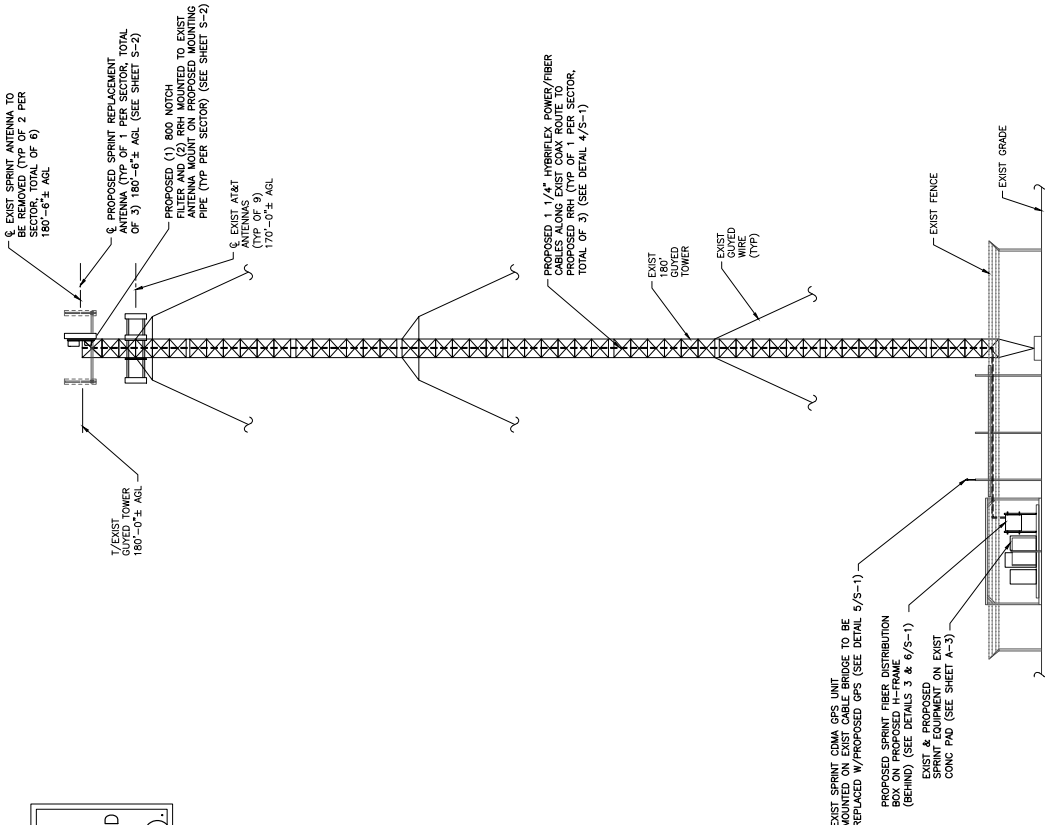


SITE NUMBER: CT33XC576
 SITE NAME: N. COLCHESTER
 SITE ADDRESS: 589 OLD HARTFORD RD COLCHESTER, CT 06415

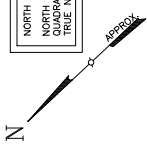
SHEET TITLE: ELEVATION
 SHEET NO.: A-2

USE PLUMBING SCENARIO 124

THE PROPOSED INSTALLATION, ANTENNA MOUNT & EXIST TOWER SHALL BE ANALYZED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF CONNECTICUT (TO BE COORDINATED BY OTHERS).



1 ELEVATION
 A-2 SCALE: 1" = 10'



NORTH NOTE:
 NORTH ARROW HAS BEEN ESTABLISHED USING THE USGS
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 TRUE NORTH PRIOR TO INSTALLATION OF ANTENNAS.

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NO.	DATE	DESCRIPTION	BY
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1	10/26/12	PER COMMENTS	DAC
2	10/29/13	REVISED REFS	YPT
3	11/06/13	PER COMMENTS	YPT

SUBMITTALS

PROJECT NO: 6388.33-576

DATE: 11/06/13

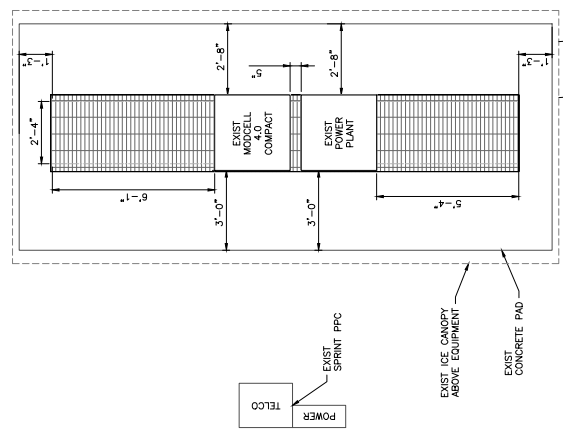
BY: YPT

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

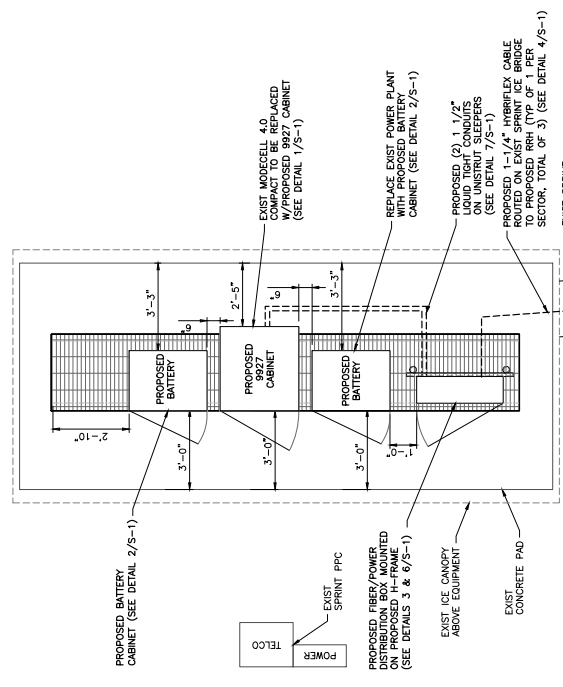
CT333X0576
 SITE NAME:
 N. COLCHESTER
 SITE ADDRESS:
 589 OLD HARTFORD RD
 COLCHESTER, CT 06415

SHEET TITLE:
 ENLARGED
 EQUIPMENT LAYOUT PLANS

SHEET NO:
 A-3



1. ENLARGED EQUIPMENT LAYOUT PLAN (EXIST)
 SCALE: 1/2" = 1'-0"



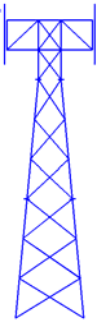
2. ENLARGED EQUIPMENT LAYOUT PLAN (FINAL)
 SCALE: 1/2" = 1'-0"



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
March 20, 2014

Nudd Job Number: 114-13064

Site Location: 600 Old Hartford Road, Colchester, CT 06415, New London County (Latitude and Longitude: 41-35-12, -72-22-40)

Subject: Structural Analysis of an existing 180 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 considering appurtenance loads noted in the appurtenance loading table on the following page. The design loading criteria and strength design are per the TIA/EIA-222-F standard, which is the recommended design standard per the 2003 International Building Code (Sec. 1609 & 3108), including 2005 Connecticut Building Code Amendments and the 2008 Connecticut Supplement. Additional standards used in this analysis include the AISC Manual for Steel Construction, Allowable Stress Design, 9th Ed. and ACI 318-05, Building Code Requirements for Structural Concrete and Commentary. Tower and foundation dimensions have been taken from original design drawings by Fred A. Nudd Corporation (Drawing Number 00-7265-1 & 00-7265-2, March 10, 2000). Onsite soil conditions were taken from a geotechnical report by Coneco Engineers (dated March 15, 2000).

The purpose of this analysis is to determine the structure's ability to support new Sprint equipment installed at a rad center of 180.5 ft above ground level (AGL). The new equipment to be installed, which includes antennas, duplexers, 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 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 73%.

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 superstructure 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/EIA-222-F

Windspeed = 85 mph, fastest mile

Exposure = C

Structure Class II

Radial Ice = 0.5 inch

Ice Windspeed = 74 mph, fastest mile

Topographic Category = II

Seismic = Site Class D, S_s & S_1 = 0.234 & 0.062, respectively (Doesn't control any aspect of analysis)

Appurtenance Loading – Existing / Remaining

Height (ft)	Carrier	Appurtenance	Mount	Coax (in)
170.0	AT&T Mobility	(6) Powerwave 7770.00 (6) Powerwave LGP21401 (6) Diplexors (1) Powerwave P65-17-XLH-RR (1) KMW AM-X-CD-16-65-00T-RET (1) Andrew SBNH-1D6565C (1) Raycap DC6-48-60-18-8F (6) Ericsson RRU-11	(3) 12 ft Boom / Frame	(12) 1-1/4 (1) 1.34 Fiber (2) 0.65 DC

- Height measurement taken as distance from top of base foundation to center of appurtenance.

Appurtenance Loading – Final Configuration for Sprint

Height (ft)	Carrier	Appurtenance	Mount	Coax (in)
180.5	Sprint	(3) RFS APXV9ERR18-C-A20 (3) Alcatel Lucent 2x50W RRH, 800 MHz (3) Alcatel Lucent 2x50W RRH, 1900 MHz	(3) 12 ft Boom / Frame	(3) 1-1/4 Hybriflex

- Height measurement taken as distance from top of base foundation to center of appurtenance.
- Sprint's proposed coax may be installed on any tower face.

Foundation Reaction Comparison

Design Load	Capacity (kips)	Analysis (kips)	Percentage
Base Axial	103.2	95.2	92
Anchor Uplift	57.4	37.5	65
Anchor Shear	50.3	45.8	91

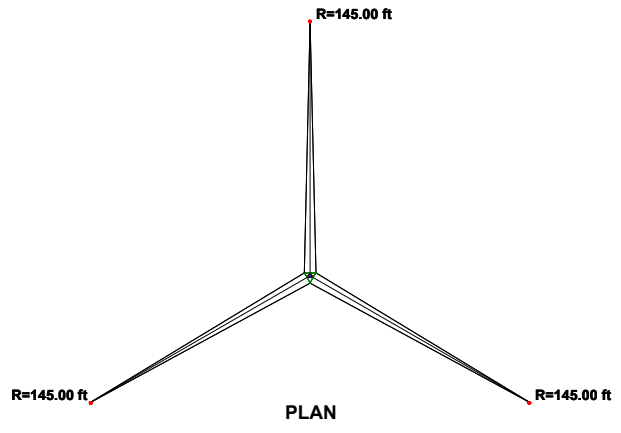
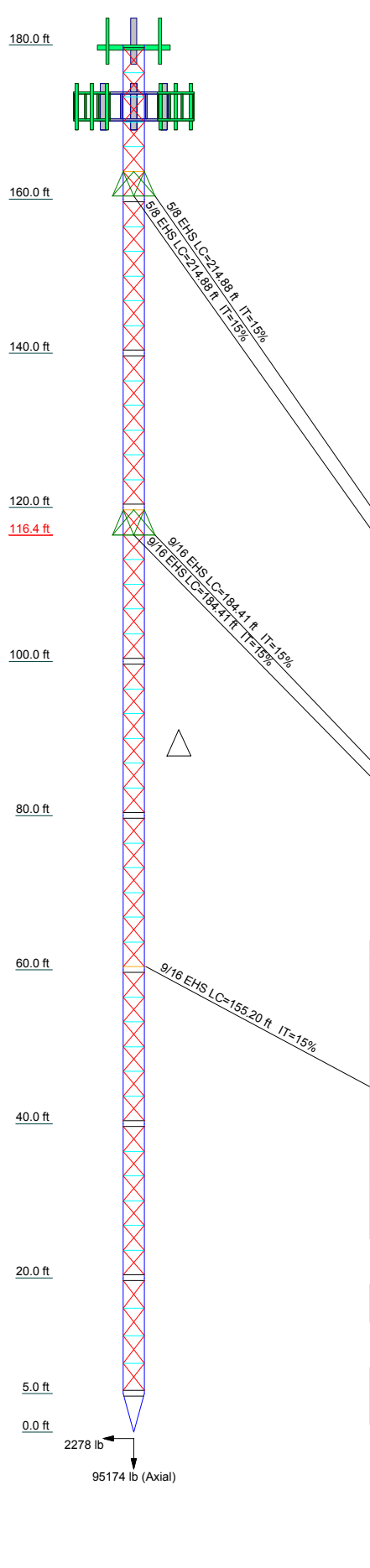
- Percentage less than 100% denote foundation is satisfactory for loading
- Percentage greater than 100% indicates foundation analysis is required

Maximum Member Usage

Member	Percentage
Leg	70
Diagonal	73
Horizontal	45
Bolts	52
Guys	69

- Percentage less than 100% denote member stress levels are satisfactory for loading
- Percentage greater than 100% indicates member strengthening is required

Section	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10
Legs					P2.5x.203					
Leg Grade		A500M-63	A500M-60	A500M-63	A500M-63	A500M-63	A500M-60	A500M-63	A500M-63	A500M-63
Diagonals					SR 5/8					
Diagonal Grade					A36					
Top Girts	L1 3/4x1 3/4x3/16									
Bottom Girts	N.A.									
Horizontal	L1 1/2x1 1/2x3/16									
Top Guy Pull-Offs	N.A.									
Bot Guy Pull-Offs	L1 1/2x1 1/2x3/16									
Face Width (ft)	N.A.									
# Panels @ (ft)	48 @ 3.20833									
Weight (lb)	6303.0									



TYPE	ELEVATION	TYPE	ELEVATION
RFS APXV9ERR18-C-A20 (Sprint)	180.5	(2) Ericsson RRUS11 (ATI)	172
Alcatel Lucent 1900 RRH (Sprint)	180.5	Raycap DC6-48-60-18-8F (ATI)	172
Alcatel Lucent 800 RRH (Sprint)	180.5	Andrew SBNH-1D6565C (ATI)	172
Filter (Sprint)	180.5	(2) Powerwave 7770.00 (ATI)	172
RFS APXV9ERR18-C-A20 (Sprint)	180.5	(2) Powerwave 7770.00 (ATI)	172
Alcatel Lucent 1900 RRH (Sprint)	180.5	(2) Powerwave 7770.00 (ATI)	172
Alcatel Lucent 800 RRH (Sprint)	180.5	(2) Powerwave LGP21401 (ATI)	172
Filter (Sprint)	180.5	(2) Powerwave LGP21401 (ATI)	172
RFS APXV9ERR18-C-A20 (Sprint)	180.5	(2) Powerwave LGP21401 (ATI)	172
Alcatel Lucent 1900 RRH (Sprint)	180.5	Powerwave P65-17-XLH-RR (ATI)	172
Alcatel Lucent 800 RRH (Sprint)	180.5	KMW AM-X-CD-16-65-00T-RET (ATI)	172
Filter (Sprint)	180.5	12 ft Boom / Sector Mount (ATI)	170
Low Profile Platform (Sprint)	180	12 ft Boom / Sector Mount (ATI)	170
(2) Ericsson RRUS11 (ATI)	172	12 ft Boom / Sector Mount (ATI)	170
(2) Ericsson RRUS11 (ATI)	172		

MARK	SIZE	MARK	SIZE
A	1 @ 4.625		

GRADE	Fy	Fu	GRADE	Fy	Fu
A500M-63	63 ksi	80 ksi	A500M-60	60 ksi	75 ksi
A36	36 ksi	58 ksi			

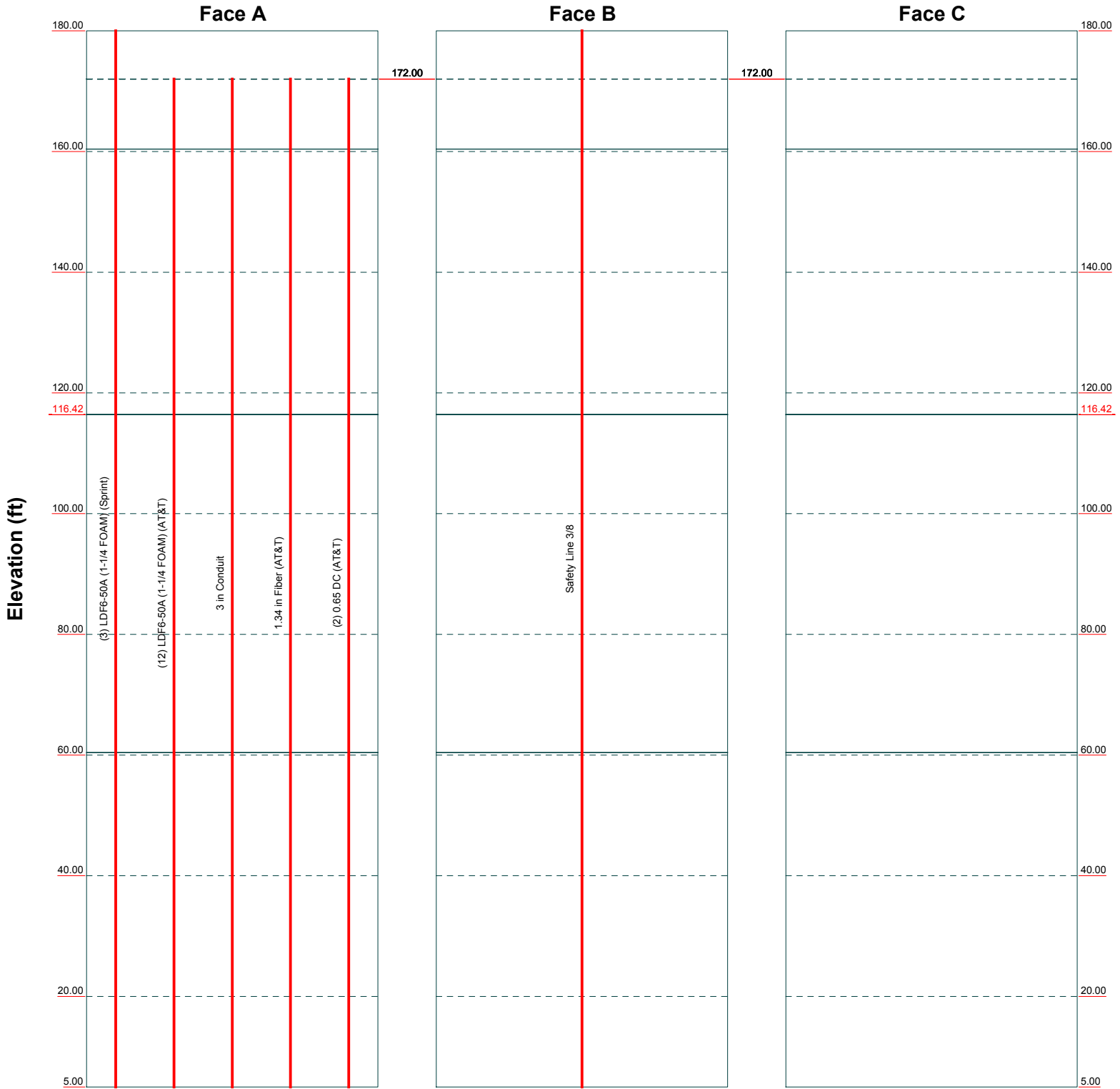
- ### TOWER DESIGN NOTES
1. Tower is located in New London County, Connecticut.
 2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
 3. Tower is also designed for a 74 mph basic wind with 0.50 in ice.
 4. Deflections are based upon a 50 mph wind.
 5. Weld together tower sections have flange connections.
 6. TOWER RATING: 79.3%

Phone: FAX:	Job: 114-13064	Drawn by: FAN	App'd:
	Project: Colchester, CT		
	Client: CDT	Date: 03/20/14	Scale: NTS
	Code: TIA/EIA-222-F	Path:	

Feedline Distribution Chart

5' - 180'

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



Phone: FAX:	Job: 114-13064		
	Project: Colchester, CT		
	Client: CDT	Drawn by: FAN	App'd:
	Code: TIA/EIA-222-F	Date: 03/20/14	Scale: NTS
	Path:		Dwg No. E-7

<i>RISATower</i> <i>Phone:</i> <i>FAX:</i>	Job	114-13064	Page	1 of 48
	Project	Colchester, CT	Date	23:07:32 03/20/14
	Client	CDT	Designed by	FAN

Tower Input Data

The main tower is a 3x guyed tower with an overall height of 180.00 ft above the ground line.

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

The face width of the tower is 3.50 ft at the top and tapered at the base.

This tower is designed using the TIA/EIA-222-F standard.

The following design criteria apply:

Tower is located in New London County, Connecticut.

Basic wind speed of 85 mph.

Nominal ice thickness of 0.5000 in.

Ice density of 56 pcf.

A wind speed of 74 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 50 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 2.

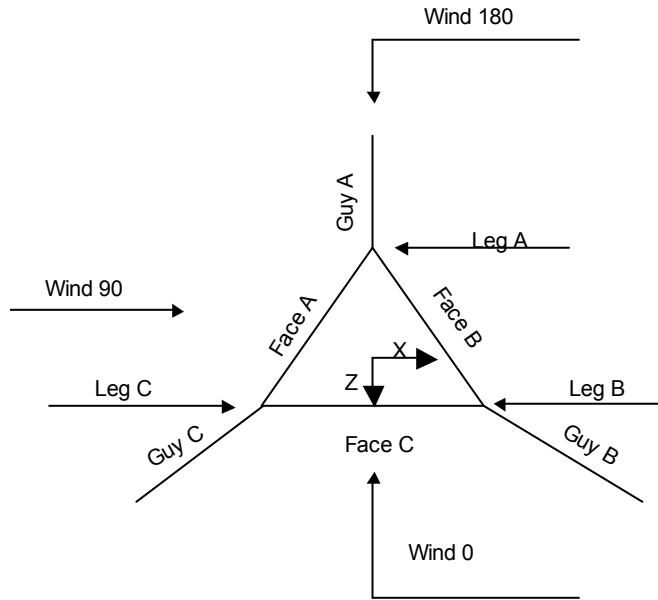
Stress ratio used in tower member design is 1.333.

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

Options

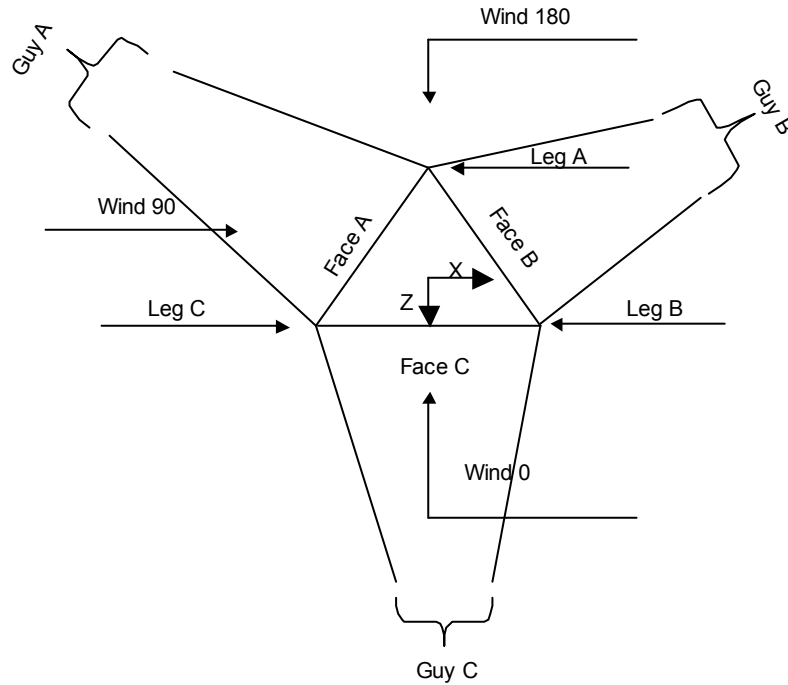
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|--|--|---|
| <ul style="list-style-type: none"> Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification √ Use Code Stress Ratios √ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile √ Include Bolts In Member Capacity √ Leg Bolts Are At Top Of Section √ Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) Add IBC .6D+W Combination | <ul style="list-style-type: none"> Distribute Leg Loads As Uniform Assume Legs Pinned √ Assume Rigid Index Plate √ Use Clear Spans For Wind Area √ Use Clear Spans For KL/r √ Retension Guys To Initial Tension Bypass Mast Stability Checks √ Use Azimuth Dish Coefficients √ Project Wind Area of Appurt. √ Autocalc Torque Arm Areas SR Members Have Cut Ends Sort Capacity Reports By Component √ Triangulate Diamond Inner Bracing | <ul style="list-style-type: none"> Treat Feedline Bundles As Cylinder Use ASCE 10 X-Brace Ly Rules √ Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression √ All Leg Panels Have Same Allowable Offset Girt At Foundation √ Consider Feedline Torque Include Angle Block Shear Check <li style="text-align: center;">Poles Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets |
|--|--|---|

Job	114-13064	Page	2 of 48
Project	Colchester, CT	Date	23:07:32 03/20/14
Client	CDT	Designed by	FAN



Corner & Starmount Guyed Tower

Job	114-13064	Page	3 of 48
Project	Colchester, CT	Date	23:07:32 03/20/14
Client	CDT	Designed by	FAN



Face Guyed

Tower Section Geometry

<i>Tower Section</i>	<i>Tower Elevation</i>	<i>Assembly Database</i>	<i>Description</i>	<i>Section Width</i>	<i>Number of Sections</i>	<i>Section Length</i>
	<i>ft</i>			<i>ft</i>		<i>ft</i>
T1	180.00-160.00			3.50	1	20.00
T2	160.00-140.00			3.50	1	20.00
T3	140.00-120.00			3.50	1	20.00
T4	120.00-100.00			3.50	1	20.00
T5	100.00-80.00			3.50	1	20.00
T6	80.00-60.00			3.50	1	20.00
T7	60.00-40.00			3.50	1	20.00
T8	40.00-20.00			3.50	1	20.00
T9	20.00-5.00			3.50	1	15.00
T10	5.00-0.00			3.50	1	5.00

Tower Section Geometry (cont'd)

<i>RISA</i>Tower Phone: FAX:	Job	114-13064	Page	4 of 48
	Project	Colchester, CT	Date	23:07:32 03/20/14
	Client	CDT	Designed by	FAN

<i>Tower Section</i>	<i>Tower Elevation</i>	<i>Diagonal Spacing</i>	<i>Bracing Type</i>	<i>Has K Brace End Panels</i>	<i>Has Horizontals</i>	<i>Top Girt Offset</i>	<i>Bottom Girt Offset</i>
	<i>ft</i>	<i>ft</i>				<i>in</i>	<i>in</i>
T1	180.00-160.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T2	160.00-140.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T3	140.00-120.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T4	120.00-100.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T5	100.00-80.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T6	80.00-60.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T7	60.00-40.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T8	40.00-20.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T9	20.00-5.00	3.56	TX Brace	No	Yes	4.5000	4.5000
T10	5.00-0.00	4.63	TX Brace	No	Yes	4.5000	0.0000

Tower Section Geometry (cont'd)

<i>Tower Elevation</i>	<i>Leg Type</i>	<i>Leg Size</i>	<i>Leg Grade</i>	<i>Diagonal Type</i>	<i>Diagonal Size</i>	<i>Diagonal Grade</i>
<i>ft</i>						
T1 180.00-160.00	Pipe	P2.5x.203	A500M-63 (63 ksi)	Solid Round	5/8	A36 (36 ksi)
T2 160.00-140.00	Pipe	P2.5x.203	A500M-63 (63 ksi)	Solid Round	5/8	A36 (36 ksi)
T3 140.00-120.00	Pipe	P2.5x.203	A500M-60 (60 ksi)	Solid Round	5/8	A36 (36 ksi)
T4 120.00-100.00	Pipe	P2.5x.203	A500M-60 (60 ksi)	Solid Round	5/8	A36 (36 ksi)
T5 100.00-80.00	Pipe	P2.5x.203	A500M-63 (63 ksi)	Solid Round	5/8	A36 (36 ksi)
T6 80.00-60.00	Pipe	P2.5x.203	A500M-63 (63 ksi)	Solid Round	5/8	A36 (36 ksi)
T7 60.00-40.00	Pipe	P2.5x.203	A500M-60 (60 ksi)	Solid Round	5/8	A36 (36 ksi)
T8 40.00-20.00	Pipe	P2.5x.203	A500M-63 (63 ksi)	Solid Round	5/8	A36 (36 ksi)
T9 20.00-5.00	Pipe	P2.5x.203	A500M-63 (63 ksi)	Solid Round	5/8	A36 (36 ksi)
T10 5.00-0.00	Pipe	P2.5x.203	A500M-63 (63 ksi)	Solid Round	5/8	A36 (36 ksi)

Tower Section Geometry (cont'd)

<i>Tower Elevation</i>	<i>Top Girt Type</i>	<i>Top Girt Size</i>	<i>Top Girt Grade</i>	<i>Bottom Girt Type</i>	<i>Bottom Girt Size</i>	<i>Bottom Girt Grade</i>
<i>ft</i>						
T1 180.00-160.00	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T2 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)
T3 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)
T4 120.00-100.00	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T5 100.00-80.00	Equal Angle	L1 1/2x1 1/2x3/16	A36	Equal Angle	L1 1/2x1 1/2x3/16	A36

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<i>Tower Elevation</i> <i>ft</i>	<i>Top Girt Type</i>	<i>Top Girt Size</i>	<i>Top Girt Grade</i>	<i>Bottom Girt Type</i>	<i>Bottom Girt Size</i>	<i>Bottom Girt Grade</i>
T6 80.00-60.00	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36
T7 60.00-40.00	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36
T8 40.00-20.00	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36
T9 20.00-5.00	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36
T10 5.00-0.00	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36

Tower Section Geometry (cont'd)

<i>Tower Elevation</i> <i>ft</i>	<i>No. of Mid Girts</i>	<i>Mid Girt Type</i>	<i>Mid Girt Size</i>	<i>Mid Girt Grade</i>	<i>Horizontal Type</i>	<i>Horizontal Size</i>	<i>Horizontal Grade</i>
T1 180.00-160.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T2 160.00-140.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T3 140.00-120.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T4 120.00-100.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T5 100.00-80.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T6 80.00-60.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T7 60.00-40.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T8 40.00-20.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T9 20.00-5.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T10 5.00-0.00	None	Flat Bar		A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)

Tower Section Geometry (cont'd)

<i>Tower Elevation</i> <i>ft</i>	<i>Gusset Area</i> <i>(per face)</i> <i>ft²</i>	<i>Gusset Thickness</i> <i>in</i>	<i>Gusset Grade</i>	<i>Adjust. Factor</i> <i>A_f</i>	<i>Adjust. Factor</i> <i>A_r</i>	<i>Weight Mult.</i>	<i>Double Angle</i> <i>Stitch Bolt</i> <i>Spacing</i> <i>Diagonals</i> <i>in</i>	<i>Double Angle</i> <i>Stitch Bolt</i> <i>Spacing</i> <i>Horizontals</i> <i>in</i>
T1 180.00-160.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T2 160.00-140.00	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

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Tower Elevation	Gusset Area (per face)	Gusset Thickness	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
ft	ft ²	in						
140.00-120.00			(36 ksi)					
T4	0.00	0.0000	A36	1	1	1	36.0000	36.0000
120.00-100.00			(36 ksi)					
T5	0.00	0.0000	A36	1	1	1	36.0000	36.0000
100.00-80.00			(36 ksi)					
T6 80.00-60.00	0.00	0.0000	A36	1	1	1	36.0000	36.0000
60.00-40.00	0.00	0.0000	(36 ksi)					
T7 60.00-40.00	0.00	0.0000	A36	1	1	1	36.0000	36.0000
40.00-20.00	0.00	0.0000	(36 ksi)					
T8 40.00-20.00	0.00	0.0000	A36	1	1	1	36.0000	36.0000
20.00-5.00	0.00	0.0000	(36 ksi)					
T9 20.00-5.00	0.00	0.0000	A36	1	1	1	36.0000	36.0000
5.00-0.00	0.00	0.0000	(36 ksi)					
T10 5.00-0.00	0.00	0.0000	A36	1	1	1	36.0000	36.0000

Tower Section Geometry (cont'd)

Tower Elevation	Calc K Single Angles	Calc K Solid Rounds	K Factors ¹									
			Legs	X Brace Diags		K Brace Diags		Single Diags	Girts	Horiz.	Sec. Horiz.	Inner Brace
				X	Y	X	Y					
T1	Yes	Yes	1	1	1	1	1	1	1	1	1	1
180.00-160.00												
T2	Yes	Yes	1	1	1	1	1	1	1	1	1	1
160.00-140.00												
T3	Yes	Yes	1	1	1	1	1	1	1	1	1	1
140.00-120.00												
T4	Yes	Yes	1	1	1	1	1	1	1	1	1	1
120.00-100.00												
T5	Yes	Yes	1	1	1	1	1	1	1	1	1	1
100.00-80.00												
T6	Yes	Yes	1	1	1	1	1	1	1	1	1	1
80.00-60.00												
T7	Yes	Yes	1	1	1	1	1	1	1	1	1	1
60.00-40.00												
T8	Yes	Yes	1	1	1	1	1	1	1	1	1	1
40.00-20.00												
T9 20.00-5.00	Yes	Yes	1	1	1	1	1	1	1	1	1	1
5.00-0.00												
T10 5.00-0.00	Yes	Yes	1	1	1	1	1	1	1	1	1	1

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

Tower Section Geometry (cont'd)

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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 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
T2 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
T3 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
T4 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
T5 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
T6 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
T7 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
T8 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
T9 20.00-5.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T10 5.00-0.00	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 180.00-160.00	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T2 160.00-140.00	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T3 140.00-120.00	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T4 120.00-100.00	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T5 100.00-80.00	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T6 80.00-60.00	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T7 60.00-40.00	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T8 40.00-20.00	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T9 20.00-5.00	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0
T10 5.00-0.00	Flange	0.7500	4	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0	0.6250	0

Guy Data

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Guy Elevation	Guy Grade	Guy Size	Initial Tension	%	Guy Modulus	Guy Weight	L_u	Anchor Radius	Anchor Azimuth Adj.	Anchor Elevation	End Fitting Efficiency	
ft			lb		ksi	plf	ft	ft	°	ft	%	
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%
116.417	EHS	A	9/16	5250.00	15%	21000	0.671	184.18	145.00	0.0000	0.00	100%
		B	9/16	5250.00	15%	21000	0.671	184.18	145.00	0.0000	0.00	100%
		C	9/16	5250.00	15%	21000	0.671	184.18	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%

Guy Data(cont'd)

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

Guy Data (cont'd)

Guy Elevation	Diagonal Grade	Diagonal Type	Upper Diagonal Size	Lower Diagonal Size	Is Strap.	Pull-Off Grade	Pull-Off Type	Pull-Off Size
ft								
160.38	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16
116.42	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

Guy Data (cont'd)

Guy Elevation	Cable Weight A	Cable Weight B	Cable Weight C	Cable Weight D	Tower Intercept A	Tower Intercept B	Tower Intercept C	Tower Intercept D
ft	lb	lb	lb	lb	ft	ft	ft	ft
160.375	174.48	174.48	174.48		2.92	2.92	2.92	
					2.9 sec/pulse	2.9 sec/pulse	2.9 sec/pulse	
116.417	123.58	123.58	123.58		2.15	2.15	2.15	
					2.5 sec/pulse	2.5 sec/pulse	2.5 sec/pulse	
60.375	104.01	104.01	104.01		1.53	1.53	1.53	
					2.1 sec/pulse	2.1 sec/pulse	2.1 sec/pulse	

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Guy Data (cont'd)

Guy Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Torque Arm		Pull Off		Diagonal	
			K _x	K _y	K _x	K _y	K _x	K _y
160.375	No	No	1	1	0.65	0.65	1	1
116.417	No	No	1	1	0.65	0.65	1	1
60.375	No	No			0.65	0.65	1	1

Guy Data (cont'd)

Guy Elevation ft	Torque-Arm				Pull Off				Diagonal			
	Bolt Size in	Number	Net Width Deduct in	U	Bolt Size in	Number	Net Width Deduct in	U	Bolt Size in	Number	Net Width Deduct in	U
160.375	0.7500 A325N	2	0.0000	1	0.6250 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	1
116.417	0.7500 A325N	2	0.0000	1	0.6250 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	1
60.375	0.6250 A325N	0	0.0000	0.75	0.6250 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	24	18	0.5000
	B	80.19	24	18	0.5000
	C	80.19	24	18	0.5000
116.417	A	58.21	22	16	0.5000
	B	58.21	22	16	0.5000
	C	58.21	22	16	0.5000
60.375	A	30.19	18	14	0.5000
	B	30.19	18	14	0.5000
	C	30.19	18	14	0.5000

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	104.64	4882.39	-4274.84	-9865.97	-15173.38	17088.36

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<i>Guy Elevation</i>	<i>Guy Location</i>	<i>Chord Angle</i>	<i>Guy Tension Top Bottom lb</i>	F_x	F_y	F_z	M_x	M_y	M_z	
<i>ft</i>		$^\circ$		<i>lb</i>	<i>lb</i>	<i>lb</i>	<i>lb-ft</i>	<i>lb-ft</i>	<i>lb-ft</i>	
116.417	B	48.2735	6360.00 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
	A	39.1448	5328.01 5250.00	-100.37	3400.60	-4100.44	-6871.68	14554.35	-11902.11	
	A	39.1448	5328.01 5250.00	100.37	3400.60	-4100.44	-6871.68	-14554.35	11902.11	
	B	39.1448	5328.01 5250.00	3601.27	3400.60	1963.29	13743.37	14554.35	0.00	
	B	39.1448	5328.01 5250.00	3500.89	3400.60	2137.14	-6871.68	-14554.35	-11902.11	
	C	39.1448	5328.01 5250.00	-3500.89	3400.60	2137.14	-6871.68	14554.35	11902.11	
60.375	C	39.1448	5328.01 5250.00	-3601.27	3400.60	1963.29	13743.37	-14554.35	0.00	
			Sum:	0.00	20403.61	0.00	-0.00	0.00	0.00	
	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	

Guy-Mast Forces (Excluding Wind) - Ice

<i>Guy Elevation</i>	<i>Guy Location</i>	<i>Chord Angle</i>	<i>Guy Tension Top Bottom lb</i>	F_x	F_y	F_z	M_x	M_y	M_z
<i>ft</i>		$^\circ$		<i>lb</i>	<i>lb</i>	<i>lb</i>	<i>lb-ft</i>	<i>lb-ft</i>	<i>lb-ft</i>
160.375	A	48.2735	8233.12 7992.84	-132.12	6215.76	-5397.33	-12560.35	19157.63	-21755.17
	A	48.2735	8233.12 7992.84	132.12	6215.76	-5397.33	-12560.35	-19157.63	21755.17
	B	48.2735	8233.12 7992.84	4740.29	6215.76	2584.24	25120.71	19157.63	0.00
	B	48.2735	8233.12 7992.84	4608.16	6215.76	2813.09	-12560.35	-19157.63	-21755.17
	C	48.2735	8233.12 7992.84	-4608.16	6215.76	2813.09	-12560.35	19157.63	21755.17
	C	48.2735	8233.12 7992.84	-4740.29	6215.76	2584.24	25120.71	-19157.63	0.00
			Sum:	0.00	37294.58	0.00	-0.00	0.00	0.00
116.417	A	39.1448	6773.04 6619.57	-127.07	4348.64	-5191.07	-8787.42	18425.51	-15220.26
	A	39.1448	6773.04	127.07	4348.64	-5191.07	-8787.42	-18425.51	15220.26

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	Client	CDT	Designed by	FAN

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top Bottom lb	F _x	F _y	F _z	M _x	M _y	M _z	
ft		°		lb	lb	lb	lb-ft	lb-ft	lb-ft	
60.375	B	39.1448	6619.57 6773.04	4559.13	4348.64	2485.49	17574.84	18425.51	0.00	
	B	39.1448	6619.57 6773.04	4432.06	4348.64	2705.58	-8787.42	-18425.51	-15220.26	
	C	39.1448	6619.57 6773.04	-4432.06	4348.64	2705.58	-8787.42	18425.51	15220.26	
	C	39.1448	6619.57 6773.04	-4559.13	4348.64	2485.49	17574.84	-18425.51	0.00	
				Sum:	0.00	26091.87	0.00	-0.00	0.00	0.00
	A	22.8926	6717.98 6638.39	0.00	2700.07	-6151.50	-5456.09	0.00	0.00	
	B	22.8926	6717.98 6638.39	5327.35	2700.07	3075.75	2728.05	0.00	-4725.12	
	C	22.8926	6717.98 6638.39	-5327.35	2700.07	3075.75	2728.05	-0.00	4725.12	
				Sum:	0.00	8100.20	0.00	0.00	0.00	0.00

Guy-Mast Forces (Excluding Wind) - Service

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top Bottom lb	F _x	F _y	F _z	M _x	M _y	M _z	
ft		°		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 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
	A	39.1448	5328.01 5250.00	-100.37	3400.60	-4100.44	-6871.68	14554.35	-11902.11	
	A	39.1448	5328.01 5250.00	100.37	3400.60	-4100.44	-6871.68	-14554.35	11902.11	
	B	39.1448	5328.01 5250.00	3601.27	3400.60	1963.29	13743.37	14554.35	0.00	
116.417	B	39.1448	5328.01 5250.00	3500.89	3400.60	2137.14	-6871.68	-14554.35	-11902.11	
	C	39.1448	5328.01 5250.00	-3500.89	3400.60	2137.14	-6871.68	14554.35	11902.11	
	C	39.1448	5328.01 5250.00	-3601.27	3400.60	1963.29	13743.37	-14554.35	0.00	
				Sum:	0.00	20403.61	0.00	-0.00	0.00	0.00
	A	22.8926	5290.46 5250.00	0.00	2102.12	-4854.90	-4247.81	0.00	0.00	
	B	22.8926	5290.46	4204.47	2102.12	2427.45	2123.90	0.00	-3678.71	

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Guy Elevation	Guy Location	Chord Angle	Guy Tension Top Bottom lb	F _x	F _y	F _z	M _x	M _y	M _z
ft		°		lb	lb	lb	lb-ft	lb-ft	lb-ft
	C	22.8926	5250.00 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

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
LDF6-50A (1-1/4 FOAM) (Sprint)	A	Yes	Ar (CfAe)	180.00 - 0.00	0.0000	0.25	3	3	1.5500	1.5500		0.66
Safety Line 3/8	B	Yes	Ar (CfAe)	180.00 - 0.00	0.0000	0.25	1	1	0.3750	0.3750		0.22
LDF6-50A (1-1/4 FOAM) (AT&T)	A	Yes	Ar (CfAe)	172.00 - 0.00	0.0000	-0.25	12	6	1.5500	1.5500		0.66
3 in Conduit	A	Yes	Ar (CfAe)	172.00 - 0.00	0.0000	-0.25	1	1	0.3750	3.0000		0.22
1.34 in Fiber (AT&T)	A	Yes	Ar (CfAe)	172.00 - 0.00	0.0000	-0.25	1	1	1.0900	0.0000		0.15
0.65 DC (AT&T)	A	Yes	Ar (CfAe)	172.00 - 0.00	0.0000	-0.25	2	2	1.0900	0.0000		0.10

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight lb
T1	180.00-160.00	A	20.050	0.000	0.000	0.000	141.48
		B	0.625	0.000	0.000	0.000	4.40
		C	0.000	0.000	0.000	0.000	0.00
T2	160.00-140.00	A	28.250	0.000	0.000	0.000	209.40
		B	0.625	0.000	0.000	0.000	4.40
		C	0.000	0.000	0.000	0.000	0.00
T3	140.00-120.00	A	28.250	0.000	0.000	0.000	209.40
		B	0.625	0.000	0.000	0.000	4.40
		C	0.000	0.000	0.000	0.000	0.00
T4	120.00-100.00	A	28.250	0.000	0.000	0.000	209.40
		B	0.625	0.000	0.000	0.000	4.40
		C	0.000	0.000	0.000	0.000	0.00
T5	100.00-80.00	A	28.250	0.000	0.000	0.000	209.40
		B	0.625	0.000	0.000	0.000	4.40
		C	0.000	0.000	0.000	0.000	0.00
T6	80.00-60.00	A	28.250	0.000	0.000	0.000	209.40
		B	0.625	0.000	0.000	0.000	4.40
		C	0.000	0.000	0.000	0.000	0.00
T7	60.00-40.00	A	28.250	0.000	0.000	0.000	209.40
		B	0.625	0.000	0.000	0.000	4.40
		C	0.000	0.000	0.000	0.000	0.00

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Tower Section	Tower Elevation ft	Face	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight lb
T8	40.00-20.00	A	28.250	0.000	0.000	0.000	209.40
		B	0.625	0.000	0.000	0.000	4.40
		C	0.000	0.000	0.000	0.000	0.00
T9	20.00-5.00	A	21.188	0.000	0.000	0.000	157.05
		B	0.469	0.000	0.000	0.000	3.30
		C	0.000	0.000	0.000	0.000	0.00
T10	5.00-0.00	A	7.063	0.000	0.000	0.000	52.35
		B	0.156	0.000	0.000	0.000	1.10
		C	0.000	0.000	0.000	0.000	0.00

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight lb
T1	180.00-160.00	A	0.500	35.050	0.000	0.000	0.000	433.60
		B		2.292	0.000	0.000	0.000	15.09
		C		0.000	0.000	0.000	0.000	0.00
T2	160.00-140.00	A	0.500	49.917	0.000	0.000	0.000	646.17
		B		2.292	0.000	0.000	0.000	15.09
		C		0.000	0.000	0.000	0.000	0.00
T3	140.00-120.00	A	0.500	49.917	0.000	0.000	0.000	646.17
		B		2.292	0.000	0.000	0.000	15.09
		C		0.000	0.000	0.000	0.000	0.00
T4	120.00-100.00	A	0.500	49.917	0.000	0.000	0.000	646.17
		B		2.292	0.000	0.000	0.000	15.09
		C		0.000	0.000	0.000	0.000	0.00
T5	100.00-80.00	A	0.500	49.917	0.000	0.000	0.000	646.17
		B		2.292	0.000	0.000	0.000	15.09
		C		0.000	0.000	0.000	0.000	0.00
T6	80.00-60.00	A	0.500	49.917	0.000	0.000	0.000	646.17
		B		2.292	0.000	0.000	0.000	15.09
		C		0.000	0.000	0.000	0.000	0.00
T7	60.00-40.00	A	0.500	49.917	0.000	0.000	0.000	646.17
		B		2.292	0.000	0.000	0.000	15.09
		C		0.000	0.000	0.000	0.000	0.00
T8	40.00-20.00	A	0.500	49.917	0.000	0.000	0.000	646.17
		B		2.292	0.000	0.000	0.000	15.09
		C		0.000	0.000	0.000	0.000	0.00
T9	20.00-5.00	A	0.500	37.438	0.000	0.000	0.000	484.63
		B		1.719	0.000	0.000	0.000	11.32
		C		0.000	0.000	0.000	0.000	0.00
T10	5.00-0.00	A	0.500	12.479	0.000	0.000	0.000	161.54
		B		0.573	0.000	0.000	0.000	3.77
		C		0.000	0.000	0.000	0.000	0.00

Feed Line Shielding

Section	Elevation ft	Face	A_R ft ²	A_R Ice ft ²	A_F ft ²	A_F Ice ft ²
T1	180.00-160.00	A	0.850	4.886	0.982	1.716
		B	0.026	0.319	0.031	0.112
		C	0.000	0.000	0.000	0.000

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Section	Elevation <i>ft</i>	Face	A_R	A_R	A_F	A_F
			ft^2	<i>Ice</i> ft^2	ft^2	<i>Ice</i> ft^2
T2	160.00-140.00	A	1.198	6.958	1.236	2.184
		B	0.026	0.319	0.027	0.100
		C	0.000	0.000	0.000	0.000
T3	140.00-120.00	A	1.198	6.958	1.236	2.184
		B	0.026	0.319	0.027	0.100
		C	0.000	0.000	0.000	0.000
T4	120.00-100.00	A	1.198	6.958	1.236	2.184
		B	0.026	0.319	0.027	0.100
		C	0.000	0.000	0.000	0.000
T5	100.00-80.00	A	1.198	6.958	1.236	2.184
		B	0.026	0.319	0.027	0.100
		C	0.000	0.000	0.000	0.000
T6	80.00-60.00	A	1.198	6.958	1.236	2.184
		B	0.026	0.319	0.027	0.100
		C	0.000	0.000	0.000	0.000
T7	60.00-40.00	A	1.198	6.958	1.236	2.184
		B	0.026	0.319	0.027	0.100
		C	0.000	0.000	0.000	0.000
T8	40.00-20.00	A	1.198	6.958	1.236	2.184
		B	0.026	0.319	0.027	0.100
		C	0.000	0.000	0.000	0.000
T9	20.00-5.00	A	0.840	4.898	0.883	1.560
		B	0.019	0.225	0.020	0.072
		C	0.000	0.000	0.000	0.000
T10	5.00-0.00	A	0.000	0.208	0.177	0.312
		B	0.000	0.010	0.004	0.014
		C	0.000	0.000	0.000	0.000

Feed Line Center of Pressure

Section	Elevation <i>ft</i>	CP_x	CP_z	CP_x	CP_z
		<i>in</i>	<i>in</i>	<i>Ice</i> <i>in</i>	<i>Ice</i> <i>in</i>
T1	180.00-160.00	-3.5049	-1.3114	-3.2669	-1.1085
T2	160.00-140.00	-5.0336	-0.9934	-4.7693	-0.7904
T3	140.00-120.00	-5.0336	-0.9934	-4.7693	-0.7904
T4	120.00-100.00	-5.0336	-0.9934	-4.7693	-0.7904
T5	100.00-80.00	-5.0336	-0.9934	-4.7693	-0.7904
T6	80.00-60.00	-5.0336	-0.9934	-4.7693	-0.7904
T7	60.00-40.00	-5.0336	-0.9934	-4.7693	-0.7904
T8	40.00-20.00	-5.0336	-0.9934	-4.7693	-0.7904
T9	20.00-5.00	-5.1176	-1.0100	-4.8951	-0.8113
T10	5.00-0.00	-5.5857	-2.1299	-6.0433	-2.2661

Discrete Tower Loads

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment °	Placement ft	C _A A		Weight lb	
			Horz Lateral ft	Vert ft			Front ft ²	Side ft ²		
Low Profile Platform (Sprint)	A	None			0.0000	180.00	No Ice 1/2" Ice	26.30 35.60	26.30 35.60	1950.00 2340.00
12 ft Boom / Sector Mount (AT&T)	A	From Leg	0.00 0.00 0.00		0.0000	170.00	No Ice 1/2" Ice	17.50 22.50	8.50 11.00	450.00 700.00
12 ft Boom / Sector Mount (AT&T)	B	From Leg	0.00 0.00 0.00		0.0000	170.00	No Ice 1/2" Ice	17.50 22.50	8.50 11.00	450.00 700.00
12 ft Boom / Sector Mount (AT&T)	C	From Leg	0.00 0.00 0.00		0.0000	170.00	No Ice 1/2" Ice	17.50 22.50	8.50 11.00	450.00 700.00
(2) Powerwave 7770.00 (AT&T)	A	From Leg	3.00 0.00 0.00		0.0000	172.00	No Ice 1/2" Ice	5.88 6.25	2.93 3.29	35.00 67.60
(2) Powerwave 7770.00 (AT&T)	B	From Leg	3.00 0.00 0.00		0.0000	172.00	No Ice 1/2" Ice	5.88 6.25	2.93 3.29	35.00 67.60
(2) Powerwave 7770.00 (AT&T)	C	From Leg	3.00 0.00 0.00		0.0000	172.00	No Ice 1/2" Ice	5.88 6.25	2.93 3.29	35.00 67.60
(2) Powerwave LGP21401 (AT&T)	A	From Leg	3.00 0.00 0.00		0.0000	172.00	No Ice 1/2" Ice	1.95 2.11	0.53 0.63	31.00 42.00
(2) Powerwave LGP21401 (AT&T)	B	From Leg	3.00 0.00 0.00		0.0000	172.00	No Ice 1/2" Ice	1.95 2.11	0.53 0.63	31.00 42.00
(2) Powerwave LGP21401 (AT&T)	C	From Leg	3.00 0.00 0.00		0.0000	172.00	No Ice 1/2" Ice	1.95 2.11	0.53 0.63	31.00 42.00
Powerwave P65-17-XLH-RR (AT&T)	A	From Leg	3.00 0.00 0.00		0.0000	172.00	No Ice 1/2" Ice	11.47 12.08	4.00 4.68	62.00 124.10
KMW AM-X-CD-16-65-00T-RET (AT&T)	B	From Leg	3.00 0.00 0.00		0.0000	172.00	No Ice 1/2" Ice	8.26 8.73	4.64 5.12	48.50 95.00
Andrew SBNH-1D6565C (AT&T)	C	From Leg	3.00 0.00 0.00		0.0000	172.00	No Ice 1/2" Ice	11.41 12.03	7.70 8.36	60.90 126.60
(2) Ericsson RRUS11 (AT&T)	A	From Leg	3.00 0.00 0.00		0.0000	172.00	No Ice 1/2" Ice	2.99 3.19	1.25 1.39	55.00 74.60
(2) Ericsson RRUS11 (AT&T)	B	From Leg	3.00 0.00 0.00		0.0000	172.00	No Ice 1/2" Ice	2.99 3.19	1.25 1.39	55.00 74.60
(2) Ericsson RRUS11 (AT&T)	C	From Leg	3.00 0.00 0.00		0.0000	172.00	No Ice 1/2" Ice	2.99 3.19	1.25 1.39	55.00 74.60
Raycap DC6-48-60-18-8F (AT&T)	A	From Leg	3.00 0.00 0.00		0.0000	172.00	No Ice 1/2" Ice	1.47 1.67	1.47 1.67	31.80 54.40
RFS APXV9ERR18-C-A20 (Sprint)	A	From Leg	3.00 0.00 0.00		0.0000	180.50	No Ice 1/2" Ice	8.02 8.93	5.81 6.73	62.00 172.10
Alcatel Lucent 1900 RRH (Sprint)	A	From Leg	3.00 0.00 0.00		0.0000	180.50	No Ice 1/2" Ice	2.58 2.97	2.54 2.92	60.00 116.40
Alcatel Lucent 800 RRH	A	From Leg	3.00		0.0000	180.50	No Ice	1.71	1.32	53.00

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight lb
(Sprint)			0.00		1/2" Ice	2.01	1.59	90.30
Filter (Sprint)	A	From Leg	3.00	0.0000	180.50	No Ice 0.68	0.30	11.00
			0.00		1/2" Ice	0.87	0.45	24.00
			0.00					
RFS APXV9ERR18-C-A20 (Sprint)	B	From Leg	3.00	0.0000	180.50	No Ice 8.02	5.81	62.00
			0.00		1/2" Ice	8.93	6.73	172.10
			0.00					
Alcatel Lucent 1900 RRH (Sprint)	B	From Leg	3.00	0.0000	180.50	No Ice 2.58	2.54	60.00
			0.00		1/2" Ice	2.97	2.92	116.40
			0.00					
Alcatel Lucent 800 RRH (Sprint)	B	From Leg	3.00	0.0000	180.50	No Ice 1.71	1.32	53.00
			0.00		1/2" Ice	2.01	1.59	90.30
			0.00					
Filter (Sprint)	B	From Leg	3.00	0.0000	180.50	No Ice 0.68	0.30	11.00
			0.00		1/2" Ice	0.87	0.45	24.00
			0.00					
RFS APXV9ERR18-C-A20 (Sprint)	C	From Leg	3.00	0.0000	180.50	No Ice 8.02	5.81	62.00
			0.00		1/2" Ice	8.93	6.73	172.10
			0.00					
Alcatel Lucent 1900 RRH (Sprint)	C	From Leg	3.00	0.0000	180.50	No Ice 2.58	2.54	60.00
			0.00		1/2" Ice	2.97	2.92	116.40
			0.00					
Alcatel Lucent 800 RRH (Sprint)	C	From Leg	3.00	0.0000	180.50	No Ice 1.71	1.32	53.00
			0.00		1/2" Ice	2.01	1.59	90.30
			0.00					
Filter (Sprint)	C	From Leg	3.00	0.0000	180.50	No Ice 0.68	0.30	11.00
			0.00		1/2" Ice	0.87	0.45	24.00
			0.00					

Tower Pressures - No Ice

$$G_H = 1.121$$

Section Elevation ft	z ft	K _Z	q _z psf	A _G ft ²	F _a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _{AA} In Face ft ²	C _{AA} Out Face ft ²
T1 180.00-160.00	170.00	1.597	30	74.792	A	2.211	31.548	9.583	28.39	0.000	0.000
					B	3.162	12.946		59.49	0.000	0.000
					C	3.192	12.348		61.67	0.000	0.000
T2 160.00-140.00	150.00	1.541	29	74.792	A	1.617	39.400	9.583	23.36	0.000	0.000
					B	2.826	12.946		60.76	0.000	0.000
					C	2.853	12.348		63.05	0.000	0.000
T3 140.00-120.00	130.00	1.48	27	74.792	A	1.617	39.400	9.583	23.36	0.000	0.000
					B	2.826	12.946		60.76	0.000	0.000
					C	2.853	12.348		63.05	0.000	0.000
T4 120.00-100.00	110.00	1.411	26	74.792	A	1.617	39.400	9.583	23.36	0.000	0.000
					B	2.826	12.946		60.76	0.000	0.000
					C	2.853	12.348		63.05	0.000	0.000

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Section Elevation <i>ft</i>	<i>z</i> <i>ft</i>	K_z	q_z <i>psf</i>	A_G <i>ft</i> ²	<i>F a c e</i> <i>ft</i> ²	A_F <i>ft</i> ²	A_R <i>ft</i> ²	A_{leg} <i>ft</i> ²	Leg %	C_{AA} In Face <i>ft</i> ²	C_{AA} Out Face <i>ft</i> ²
T5 100.00-80.00	90.00	1.332	25	74.792	A 1.617	1.617	39.400	9.583	23.36	0.000	0.000
					B 2.826	2.826	12.946		60.76	0.000	0.000
					C 2.853	2.853	12.348		63.05	0.000	0.000
T6 80.00-60.00	70.00	1.24	23	74.792	A 1.617	1.617	39.400	9.583	23.36	0.000	0.000
					B 2.826	2.826	12.946		60.76	0.000	0.000
					C 2.853	2.853	12.348		63.05	0.000	0.000
T7 60.00-40.00	50.00	1.126	21	74.792	A 1.617	1.617	39.400	9.583	23.36	0.000	0.000
					B 2.826	2.826	12.946		60.76	0.000	0.000
					C 2.853	2.853	12.348		63.05	0.000	0.000
T8 40.00-20.00	30.00	1	18	74.792	A 1.617	1.617	39.400	9.583	23.36	0.000	0.000
					B 2.826	2.826	12.946		60.76	0.000	0.000
					C 2.853	2.853	12.348		63.05	0.000	0.000
T9 20.00-5.00	12.50	1	18	56.094	A 1.155	1.155	29.474	7.188	23.47	0.000	0.000
					B 2.018	2.018	9.576		61.99	0.000	0.000
					C 2.038	2.038	9.126		64.38	0.000	0.000
T10 5.00-0.00	2.50	1	18	10.019	A 0.198	0.198	9.647	2.584	26.25	0.000	0.000
					B 0.371	0.371	2.740		83.06	0.000	0.000
					C 0.375	0.375	2.584		87.33	0.000	0.000

Tower Pressure - With Ice

$$G_H = 1.121$$

Section Elevation <i>ft</i>	<i>z</i> <i>ft</i>	K_z	q_z <i>psf</i>	t_z <i>in</i>	A_G <i>ft</i> ²	<i>F a c e</i> <i>ft</i> ²	A_F <i>ft</i> ²	A_R <i>ft</i> ²	A_{leg} <i>ft</i> ²	Leg %	C_{AA} In Face <i>ft</i> ²	C_{AA} Out Face <i>ft</i> ²
T1 180.00-160.00	170.00	1.597	22	0.5000	76.458	A 1.477	1.477	52.170	12.917	24.08	0.000	0.000
						B 3.080	3.080	23.978		47.74	0.000	0.000
						C 3.192	3.192	22.006		51.26	0.000	0.000
T2 160.00-140.00	150.00	1.541	21	0.5000	76.458	A 0.669	0.669	64.965	12.917	19.68	0.000	0.000
						B 2.753	2.753	23.978		48.32	0.000	0.000
						C 2.853	2.853	22.006		51.96	0.000	0.000
T3 140.00-120.00	130.00	1.48	21	0.5000	76.458	A 0.669	0.669	64.965	12.917	19.68	0.000	0.000
						B 2.753	2.753	23.978		48.32	0.000	0.000
						C 2.853	2.853	22.006		51.96	0.000	0.000
T4 120.00-100.00	110.00	1.411	20	0.5000	76.458	A 0.669	0.669	64.965	12.917	19.68	0.000	0.000
						B 2.753	2.753	23.978		48.32	0.000	0.000
						C 2.853	2.853	22.006		51.96	0.000	0.000
T5 100.00-80.00	90.00	1.332	18	0.5000	76.458	A 0.669	0.669	64.965	12.917	19.68	0.000	0.000
						B 2.753	2.753	23.978		48.32	0.000	0.000
						C 2.853	2.853	22.006		51.96	0.000	0.000
T6 80.00-60.00	70.00	1.24	17	0.5000	76.458	A 0.669	0.669	64.965	12.917	19.68	0.000	0.000
						B 2.753	2.753	23.978		48.32	0.000	0.000
						C 2.853	2.853	22.006		51.96	0.000	0.000
T7 60.00-40.00	50.00	1.126	16	0.5000	76.458	A 0.669	0.669	64.965	12.917	19.68	0.000	0.000
						B 2.753	2.753	23.978		48.32	0.000	0.000
						C 2.853	2.853	22.006		51.96	0.000	0.000
T8 40.00-20.00	30.00	1	14	0.5000	76.458	A 0.669	0.669	64.965	12.917	19.68	0.000	0.000
						B 2.753	2.753	23.978		48.32	0.000	0.000
						C 2.853	2.853	22.006		51.96	0.000	0.000
T9 20.00-5.00	12.50	1	14	0.5000	57.344	A 0.478	0.478	48.625	9.688	19.73	0.000	0.000
						B 1.966	1.966	17.580		49.56	0.000	0.000
						C 2.038	2.038	16.086		53.45	0.000	0.000
T10 5.00-0.00	2.50	1	14	0.5000	10.461	A 0.063	0.063	16.004	3.483	21.68	0.000	0.000
						B 0.360	0.360	4.296		74.80	0.000	0.000

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Section Elevation	z	K _Z	q _z	t _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face	C _A A _A Out Face
ft	ft		psf	in	ft ²	e	ft ²	ft ²	ft ²		ft ²	ft ²
						C	0.375	3.733		84.79	0.000	0.000

Tower Pressure - Service

$$G_H = 1.121$$

Section Elevation	z	K _Z	q _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face	C _A A _A Out Face
ft	ft		psf	ft ²	e	ft ²	ft ²	ft ²		ft ²	ft ²
T1 180.00-160.00	170.00	1.597	10	74.792	A	2.211	31.548	9.583	28.39	0.000	0.000
					B	3.162	12.946		59.49	0.000	0.000
					C	3.192	12.348		61.67	0.000	0.000
T2 160.00-140.00	150.00	1.541	10	74.792	A	1.617	39.400	9.583	23.36	0.000	0.000
					B	2.826	12.946		60.76	0.000	0.000
					C	2.853	12.348		63.05	0.000	0.000
T3 140.00-120.00	130.00	1.48	9	74.792	A	1.617	39.400	9.583	23.36	0.000	0.000
					B	2.826	12.946		60.76	0.000	0.000
					C	2.853	12.348		63.05	0.000	0.000
T4 120.00-100.00	110.00	1.411	9	74.792	A	1.617	39.400	9.583	23.36	0.000	0.000
					B	2.826	12.946		60.76	0.000	0.000
					C	2.853	12.348		63.05	0.000	0.000
T5 100.00-80.00	90.00	1.332	9	74.792	A	1.617	39.400	9.583	23.36	0.000	0.000
					B	2.826	12.946		60.76	0.000	0.000
					C	2.853	12.348		63.05	0.000	0.000
T6 80.00-60.00	70.00	1.24	8	74.792	A	1.617	39.400	9.583	23.36	0.000	0.000
					B	2.826	12.946		60.76	0.000	0.000
					C	2.853	12.348		63.05	0.000	0.000
T7 60.00-40.00	50.00	1.126	7	74.792	A	1.617	39.400	9.583	23.36	0.000	0.000
					B	2.826	12.946		60.76	0.000	0.000
					C	2.853	12.348		63.05	0.000	0.000
T8 40.00-20.00	30.00	1	6	74.792	A	1.617	39.400	9.583	23.36	0.000	0.000
					B	2.826	12.946		60.76	0.000	0.000
					C	2.853	12.348		63.05	0.000	0.000
T9 20.00-5.00	12.50	1	6	56.094	A	1.155	29.474	7.188	23.47	0.000	0.000
					B	2.018	9.576		61.99	0.000	0.000
					C	2.038	9.126		64.38	0.000	0.000
T10 5.00-0.00	2.50	1	6	10.019	A	0.198	9.647	2.584	26.25	0.000	0.000
					B	0.371	2.740		83.06	0.000	0.000
					C	0.375	2.584		87.33	0.000	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb	e						ft ²	lb	plf	
T1 180.00-160.00	145.88	674.99	A	0.451	1.971	0.674	1	1	23.471	1532.21	76.61	A
		TA 214.38	B	0.215	2.545	0.594	1	1	10.847			
			C	0.208	2.57	0.592	1	1	10.503			
T2 160.00-140.00	213.80	658.24	A	0.548	1.845	0.723	1	1	30.118	1775.61	88.78	A
			B	0.211	2.56	0.593	1	1	10.498			

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Section Elevation ft	Add Weight lb	Self Weight lb	F a c e	e	C _F	R _R	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
T3 140.00-120.00	213.80	658.24	C	0.203	2.585	0.591	1	1	10.151	1704.48	85.22	A
			A	0.548	1.845	0.723	1	1	30.118			
			B	0.211	2.56	0.593	1	1	10.498			
T4 120.00-100.00	213.80	658.24 TA 214.38	C	0.203	2.585	0.591	1	1	10.151	1625.04	81.25	A
			A	0.548	1.845	0.723	1	1	30.118			
			B	0.211	2.56	0.593	1	1	10.498			
T5 100.00-80.00	213.80	658.24	C	0.203	2.585	0.591	1	1	10.151	1534.49	76.72	A
			A	0.548	1.845	0.723	1	1	30.118			
			B	0.211	2.56	0.593	1	1	10.498			
T6 80.00-60.00	213.80	658.24	C	0.203	2.585	0.591	1	1	10.151	1428.17	71.41	A
			A	0.548	1.845	0.723	1	1	30.118			
			B	0.211	2.56	0.593	1	1	10.498			
T7 60.00-40.00	213.80	658.24	C	0.203	2.585	0.591	1	1	10.151	1297.26	64.86	A
			A	0.548	1.845	0.723	1	1	30.118			
			B	0.211	2.56	0.593	1	1	10.498			
T8 40.00-20.00	213.80	658.24	C	0.203	2.585	0.591	1	1	10.151	1152.04	57.60	A
			A	0.548	1.845	0.723	1	1	30.118			
			B	0.211	2.56	0.593	1	1	10.498			
T9 20.00-5.00	160.35	480.27	C	0.203	2.585	0.591	1	1	10.151	859.29	57.29	A
			A	0.546	1.847	0.722	1	1	22.437			
			B	0.207	2.574	0.592	1	1	7.685			
T10 5.00-0.00	53.45	111.24	C	0.199	2.599	0.59	1	1	7.424	415.43*	83.09	A
			A	0.983	2.064	1	1	1	9.845			
			B	0.311	2.268	0.619	1	1	2.068			
Sum Weight:	1856.28	6302.97	C	0.295	2.309	0.614	1	1	1.963	13324.02		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	F a c e	e	C _F	R _R	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
T1 180.00-160.00	145.88	674.99 TA 214.38	A	0.451	1.971	0.674	0.8	1	23.029	1503.35	75.17	A
			B	0.215	2.545	0.594	0.8	1	10.215			
			C	0.208	2.57	0.592	0.8	1	9.864			
T2 160.00-140.00	213.80	658.24	A	0.548	1.845	0.723	0.8	1	29.795	1756.55	87.83	A
			B	0.211	2.56	0.593	0.8	1	9.933			
			C	0.203	2.585	0.591	0.8	1	9.581			
T3 140.00-120.00	213.80	658.24	A	0.548	1.845	0.723	0.8	1	29.795	1686.18	84.31	A
			B	0.211	2.56	0.593	0.8	1	9.933			
			C	0.203	2.585	0.591	0.8	1	9.581			
T4 120.00-100.00	213.80	658.24 TA 214.38	A	0.548	1.845	0.723	0.8	1	29.795	1607.59	80.38	A
			B	0.211	2.56	0.593	0.8	1	9.933			
			C	0.203	2.585	0.591	0.8	1	9.581			
T5 100.00-80.00	213.80	658.24	A	0.548	1.845	0.723	0.8	1	29.795	1518.01	75.90	A
			B	0.211	2.56	0.593	0.8	1	9.933			
			C	0.203	2.585	0.591	0.8	1	9.581			
T6 80.00-60.00	213.80	658.24	A	0.548	1.845	0.723	0.8	1	29.795	1412.83	70.64	A
			B	0.211	2.56	0.593	0.8	1	9.933			
			C	0.203	2.585	0.591	0.8	1	9.581			
T7 60.00-40.00	213.80	658.24	A	0.548	1.845	0.723	0.8	1	29.795	1283.33	64.17	A
			B	0.211	2.56	0.593	0.8	1	9.933			
			C	0.203	2.585	0.591	0.8	1	9.581			
T8	213.80	658.24	A	0.548	1.845	0.723	0.8	1	29.795	1139.67	56.98	A

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Section Elevation <i>ft</i>	Add Weight <i>lb</i>	Self Weight <i>lb</i>	F a c e	<i>e</i>	C_F	R_R	D_F	D_R	A_E <i>ft²</i>	F <i>lb</i>	w <i>plf</i>	Ctrl. Face
40.00-20.00			B	0.211	2.56	0.593	0.8	1	9.933			
T9 20.00-5.00	160.35	480.27	C	0.203	2.585	0.591	0.8	1	9.581			
			A	0.546	1.847	0.722	0.8	1	22.206	850.45	56.70	A
			B	0.207	2.574	0.592	0.8	1	7.282			
T10 5.00-0.00	53.45	111.24	C	0.199	2.599	0.59	0.8	1	7.016			
			A	0.983	2.064	1	0.8	1	9.805	415.43*	83.09	A
			B	0.311	2.268	0.619	0.8	1	1.993			
Sum Weight:	1856.28	6302.97	C	0.295	2.309	0.614	0.8	1	1.888	13173.38		
					*2A _g limit							

Tower Forces - No Ice - Wind 90 To Face

Section Elevation <i>ft</i>	Add Weight <i>lb</i>	Self Weight <i>lb</i>	F a c e	<i>e</i>	C_F	R_R	D_F	D_R	A_E <i>ft²</i>	F <i>lb</i>	w <i>plf</i>	Ctrl. Face
T1 180.00-160.00	145.88	674.99 TA 214.38	A	0.451	1.971	0.674	0.85	1	23.139	1510.56	75.53	A
			B	0.215	2.545	0.594	0.85	1	10.373			
			C	0.208	2.57	0.592	0.85	1	10.024			
T2 160.00-140.00	213.80	658.24	A	0.548	1.845	0.723	0.85	1	29.876	1761.31	88.07	A
			B	0.211	2.56	0.593	0.85	1	10.075			
			C	0.203	2.585	0.591	0.85	1	9.723			
T3 140.00-120.00	213.80	658.24	A	0.548	1.845	0.723	0.85	1	29.876	1690.75	84.54	A
			B	0.211	2.56	0.593	0.85	1	10.075			
			C	0.203	2.585	0.591	0.85	1	9.723			
T4 120.00-100.00	213.80	658.24 TA 214.38	A	0.548	1.845	0.723	0.85	1	29.876	1611.95	80.60	A
			B	0.211	2.56	0.593	0.85	1	10.075			
			C	0.203	2.585	0.591	0.85	1	9.723			
T5 100.00-80.00	213.80	658.24	A	0.548	1.845	0.723	0.85	1	29.876	1522.13	76.11	A
			B	0.211	2.56	0.593	0.85	1	10.075			
			C	0.203	2.585	0.591	0.85	1	9.723			
T6 80.00-60.00	213.80	658.24	A	0.548	1.845	0.723	0.85	1	29.876	1416.67	70.83	A
			B	0.211	2.56	0.593	0.85	1	10.075			
			C	0.203	2.585	0.591	0.85	1	9.723			
T7 60.00-40.00	213.80	658.24	A	0.548	1.845	0.723	0.85	1	29.876	1286.82	64.34	A
			B	0.211	2.56	0.593	0.85	1	10.075			
			C	0.203	2.585	0.591	0.85	1	9.723			
T8 40.00-20.00	213.80	658.24	A	0.548	1.845	0.723	0.85	1	29.876	1142.77	57.14	A
			B	0.211	2.56	0.593	0.85	1	10.075			
			C	0.203	2.585	0.591	0.85	1	9.723			
T9 20.00-5.00	160.35	480.27	A	0.546	1.847	0.722	0.85	1	22.263	852.66	56.84	A
			B	0.207	2.574	0.592	0.85	1	7.383			
			C	0.199	2.599	0.59	0.85	1	7.118			
T10 5.00-0.00	53.45	111.24	A	0.983	2.064	1	0.85	1	9.815	415.43*	83.09	A
			B	0.311	2.268	0.619	0.85	1	2.012			
			C	0.295	2.309	0.614	0.85	1	1.906			
Sum Weight:	1856.28	6302.97			*2A _g limit				13211.04			

Tower Forces - With Ice - Wind Normal To Face

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Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T1 180.00-160.00	448.69	1040.18 TA 326.59	A	0.702	1.776	0.821	1	1	44.312	1954.79	97.74	A
			B	0.354	2.163	0.634	1	1	18.279			
			C	0.33	2.22	0.625	1	1	16.955			
T2 160.00-140.00	661.26	1013.22	A	0.858	1.871	0.946	1	1	62.114	2784.83	139.24	A
			B	0.35	2.172	0.632	1	1	17.915			
			C	0.325	2.231	0.624	1	1	16.583			
T3 140.00-120.00	661.26	1013.22	A	0.858	1.871	0.946	1	1	62.114	2673.27	133.66	A
			B	0.35	2.172	0.632	1	1	17.915			
			C	0.325	2.231	0.624	1	1	16.583			
T4 120.00-100.00	661.26	1013.22 TA 326.59	A	0.858	1.871	0.946	1	1	62.114	2548.67	127.43	A
			B	0.35	2.172	0.632	1	1	17.915			
			C	0.325	2.231	0.624	1	1	16.583			
T5 100.00-80.00	661.26	1013.22	A	0.858	1.871	0.946	1	1	62.114	2406.65	120.33	A
			B	0.35	2.172	0.632	1	1	17.915			
			C	0.325	2.231	0.624	1	1	16.583			
T6 80.00-60.00	661.26	1013.22	A	0.858	1.871	0.946	1	1	62.114	2239.90	112.00	A
			B	0.35	2.172	0.632	1	1	17.915			
			C	0.325	2.231	0.624	1	1	16.583			
T7 60.00-40.00	661.26	1013.22	A	0.858	1.871	0.946	1	1	62.114	2034.60	101.73	A
			B	0.35	2.172	0.632	1	1	17.915			
			C	0.325	2.231	0.624	1	1	16.583			
T8 40.00-20.00	661.26	1013.22	A	0.858	1.871	0.946	1	1	62.114	1806.84	90.34	A
			B	0.35	2.172	0.632	1	1	17.915			
			C	0.325	2.231	0.624	1	1	16.583			
T9 20.00-5.00	495.94	736.71	A	0.856	1.868	0.944	1	1	46.378	1347.37	89.82	A
			B	0.341	2.193	0.629	1	1	13.028			
			C	0.316	2.254	0.621	1	1	12.026			
T10 5.00-0.00	165.31	159.64	A	1	2.1	1	1	1	16.067	325.30*	65.06	A
			B	0.445	1.982	0.671	1	1	3.243			
			C	0.393	2.079	0.649	1	1	2.796			
Sum Weight:	5738.76	9682.25								20122.21		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T1 180.00-160.00	448.69	1040.18 TA 326.59	A	0.702	1.776	0.821	0.8	1	44.017	1941.76	97.09	A
			B	0.354	2.163	0.634	0.8	1	17.663			
			C	0.33	2.22	0.625	0.8	1	16.316			
T2 160.00-140.00	661.26	1013.22	A	0.858	1.871	0.946	0.8	1	61.980	2778.83	138.94	A
			B	0.35	2.172	0.632	0.8	1	17.364			
			C	0.325	2.231	0.624	0.8	1	16.012			
T3 140.00-120.00	661.26	1013.22	A	0.858	1.871	0.946	0.8	1	61.980	2667.51	133.38	A
			B	0.35	2.172	0.632	0.8	1	17.364			
			C	0.325	2.231	0.624	0.8	1	16.012			
T4 120.00-100.00	661.26	1013.22 TA 326.59	A	0.858	1.871	0.946	0.8	1	61.980	2543.18	127.16	A
			B	0.35	2.172	0.632	0.8	1	17.364			
			C	0.325	2.231	0.624	0.8	1	16.012			
T5 100.00-80.00	661.26	1013.22	A	0.858	1.871	0.946	0.8	1	61.980	2401.47	120.07	A
			B	0.35	2.172	0.632	0.8	1	17.364			
			C	0.325	2.231	0.624	0.8	1	16.012			
T6 80.00-60.00	661.26	1013.22	A	0.858	1.871	0.946	0.8	1	61.980	2235.08	111.75	A
			B	0.35	2.172	0.632	0.8	1	17.364			
			C	0.325	2.231	0.624	0.8	1	16.012			

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Section Elevation <i>ft</i>	Add Weight <i>lb</i>	Self Weight <i>lb</i>	F a c e	<i>e</i>	C_F	R_R	D_F	D_R	A_E <i>ft²</i>	F <i>lb</i>	w <i>plf</i>	Ctrl. Face
T7 60.00-40.00	661.26	1013.22	C	0.325	2.231	0.624	0.8	1	16.012	2030.21	101.51	A
			A	0.858	1.871	0.946	0.8	1	61.980			
			B	0.35	2.172	0.632	0.8	1	17.364			
T8 40.00-20.00	661.26	1013.22	C	0.325	2.231	0.624	0.8	1	16.012	1802.95	90.15	A
			A	0.858	1.871	0.946	0.8	1	61.980			
			B	0.35	2.172	0.632	0.8	1	17.364			
T9 20.00-5.00	495.94	736.71	C	0.325	2.231	0.624	0.8	1	16.012	1344.59	89.64	A
			A	0.856	1.868	0.944	0.8	1	46.283			
			B	0.341	2.193	0.629	0.8	1	12.635			
T10 5.00-0.00	165.31	159.64	C	0.316	2.254	0.621	0.8	1	11.619	325.30*	65.06	A
			A	1	2.1	1	0.8	1	16.054			
			B	0.445	1.982	0.671	0.8	1	3.171			
Sum Weight:	5738.76	9682.25	C	0.393	2.079	0.649	0.8	1	2.721	20070.87		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation <i>ft</i>	Add Weight <i>lb</i>	Self Weight <i>lb</i>	F a c e	<i>e</i>	C_F	R_R	D_F	D_R	A_E <i>ft²</i>	F <i>lb</i>	w <i>plf</i>	Ctrl. Face
T1 180.00-160.00	448.69	1040.18 TA 326.59	A	0.702	1.776	0.821	0.85	1	44.091	1945.02	97.25	A
			B	0.354	2.163	0.634	0.85	1	17.817			
			C	0.33	2.22	0.625	0.85	1	16.476			
T2 160.00-140.00	661.26	1013.22	A	0.858	1.871	0.946	0.85	1	62.013	2780.33	139.02	A
			B	0.35	2.172	0.632	0.85	1	17.502			
			C	0.325	2.231	0.624	0.85	1	16.155			
T3 140.00-120.00	661.26	1013.22	A	0.858	1.871	0.946	0.85	1	62.013	2668.95	133.45	A
			B	0.35	2.172	0.632	0.85	1	17.502			
			C	0.325	2.231	0.624	0.85	1	16.155			
T4 120.00-100.00	661.26	1013.22 TA 326.59	A	0.858	1.871	0.946	0.85	1	62.013	2544.55	127.23	A
			B	0.35	2.172	0.632	0.85	1	17.502			
			C	0.325	2.231	0.624	0.85	1	16.155			
T5 100.00-80.00	661.26	1013.22	A	0.858	1.871	0.946	0.85	1	62.013	2402.76	120.14	A
			B	0.35	2.172	0.632	0.85	1	17.502			
			C	0.325	2.231	0.624	0.85	1	16.155			
T6 80.00-60.00	661.26	1013.22	A	0.858	1.871	0.946	0.85	1	62.013	2236.28	111.81	A
			B	0.35	2.172	0.632	0.85	1	17.502			
			C	0.325	2.231	0.624	0.85	1	16.155			
T7 60.00-40.00	661.26	1013.22	A	0.858	1.871	0.946	0.85	1	62.013	2031.31	101.57	A
			B	0.35	2.172	0.632	0.85	1	17.502			
			C	0.325	2.231	0.624	0.85	1	16.155			
T8 40.00-20.00	661.26	1013.22	A	0.858	1.871	0.946	0.85	1	62.013	1803.92	90.20	A
			B	0.35	2.172	0.632	0.85	1	17.502			
			C	0.325	2.231	0.624	0.85	1	16.155			
T9 20.00-5.00	495.94	736.71	A	0.856	1.868	0.944	0.85	1	46.306	1345.29	89.69	A
			B	0.341	2.193	0.629	0.85	1	12.733			
			C	0.316	2.254	0.621	0.85	1	11.721			
T10 5.00-0.00	165.31	159.64	A	1	2.1	1	0.85	1	16.057	325.30*	65.06	A
			B	0.445	1.982	0.671	0.85	1	3.189			
			C	0.393	2.079	0.649	0.85	1	2.740			
Sum Weight:	5738.76	9682.25	C							20083.71		

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Tower Forces - Service - Wind Normal To Face

Section Elevation <i>ft</i>	Add Weight <i>lb</i>	Self Weight <i>lb</i>	<i>F a c e</i>	<i>e</i>	C_F	R_R	D_F	D_R	A_E <i>ft²</i>	F <i>lb</i>	w <i>plf</i>	Ctrl. Face
T1 180.00-160.00	145.88	674.99 TA 214.38	A	0.451	1.971	0.674	1	1	23.471	530.18	26.51	A
			B	0.215	2.545	0.594	1	1	10.847			
			C	0.208	2.57	0.592	1	1	10.503			
T2 160.00-140.00	213.80	658.24	A	0.548	1.845	0.723	1	1	30.118	614.40	30.72	A
			B	0.211	2.56	0.593	1	1	10.498			
			C	0.203	2.585	0.591	1	1	10.151			
T3 140.00-120.00	213.80	658.24	A	0.548	1.845	0.723	1	1	30.118	589.79	29.49	A
			B	0.211	2.56	0.593	1	1	10.498			
			C	0.203	2.585	0.591	1	1	10.151			
T4 120.00-100.00	213.80	658.24 TA 214.38	A	0.548	1.845	0.723	1	1	30.118	562.30	28.11	A
			B	0.211	2.56	0.593	1	1	10.498			
			C	0.203	2.585	0.591	1	1	10.151			
T5 100.00-80.00	213.80	658.24	A	0.548	1.845	0.723	1	1	30.118	530.96	26.55	A
			B	0.211	2.56	0.593	1	1	10.498			
			C	0.203	2.585	0.591	1	1	10.151			
T6 80.00-60.00	213.80	658.24	A	0.548	1.845	0.723	1	1	30.118	494.18	24.71	A
			B	0.211	2.56	0.593	1	1	10.498			
			C	0.203	2.585	0.591	1	1	10.151			
T7 60.00-40.00	213.80	658.24	A	0.548	1.845	0.723	1	1	30.118	448.88	22.44	A
			B	0.211	2.56	0.593	1	1	10.498			
			C	0.203	2.585	0.591	1	1	10.151			
T8 40.00-20.00	213.80	658.24	A	0.548	1.845	0.723	1	1	30.118	398.63	19.93	A
			B	0.211	2.56	0.593	1	1	10.498			
			C	0.203	2.585	0.591	1	1	10.151			
T9 20.00-5.00	160.35	480.27	A	0.546	1.847	0.722	1	1	22.437	297.33	19.82	A
			B	0.207	2.574	0.592	1	1	7.685			
			C	0.199	2.599	0.59	1	1	7.424			
T10 5.00-0.00	53.45	111.24	A	0.983	2.064	1	1	1	9.845	143.75*	28.75	A
			B	0.311	2.268	0.619	1	1	2.068			
			C	0.295	2.309	0.614	1	1	1.963			
Sum Weight:	1856.28	6302.97			² A _g limit					4610.39		

Tower Forces - Service - Wind 60 To Face

Section Elevation <i>ft</i>	Add Weight <i>lb</i>	Self Weight <i>lb</i>	<i>F a c e</i>	<i>e</i>	C_F	R_R	D_F	D_R	A_E <i>ft²</i>	F <i>lb</i>	w <i>plf</i>	Ctrl. Face
T1 180.00-160.00	145.88	674.99 TA 214.38	A	0.451	1.971	0.674	0.8	1	23.029	520.19	26.01	A
			B	0.215	2.545	0.594	0.8	1	10.215			
			C	0.208	2.57	0.592	0.8	1	9.864			
T2 160.00-140.00	213.80	658.24	A	0.548	1.845	0.723	0.8	1	29.795	607.80	30.39	A
			B	0.211	2.56	0.593	0.8	1	9.933			
			C	0.203	2.585	0.591	0.8	1	9.581			
T3 140.00-120.00	213.80	658.24	A	0.548	1.845	0.723	0.8	1	29.795	583.45	29.17	A
			B	0.211	2.56	0.593	0.8	1	9.933			
			C	0.203	2.585	0.591	0.8	1	9.581			
T4 120.00-100.00	213.80	658.24 TA 214.38	A	0.548	1.845	0.723	0.8	1	29.795	556.26	27.81	A
			B	0.211	2.56	0.593	0.8	1	9.933			

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Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T5 100.00-80.00	213.80	658.24	C	0.203	2.585	0.591	0.8	1	9.581	525.26	26.26	A
			A	0.548	1.845	0.723	0.8	1	29.795			
			B	0.211	2.56	0.593	0.8	1	9.933			
T6 80.00-60.00	213.80	658.24	C	0.203	2.585	0.591	0.8	1	9.581	488.87	24.44	A
			A	0.548	1.845	0.723	0.8	1	29.795			
			B	0.211	2.56	0.593	0.8	1	9.933			
T7 60.00-40.00	213.80	658.24	C	0.203	2.585	0.591	0.8	1	9.581	444.06	22.20	A
			A	0.548	1.845	0.723	0.8	1	29.795			
			B	0.211	2.56	0.593	0.8	1	9.933			
T8 40.00-20.00	213.80	658.24	C	0.203	2.585	0.591	0.8	1	9.581	394.35	19.72	A
			A	0.548	1.845	0.723	0.8	1	29.795			
			B	0.211	2.56	0.593	0.8	1	9.933			
T9 20.00-5.00	160.35	480.27	C	0.203	2.585	0.591	0.8	1	9.581	294.27	19.62	A
			A	0.546	1.847	0.722	0.8	1	22.206			
			B	0.207	2.574	0.592	0.8	1	7.282			
T10 5.00-0.00	53.45	111.24	C	0.199	2.599	0.59	0.8	1	7.016	143.75*	28.75	A
			A	0.983	2.064	1	0.8	1	9.805			
			B	0.311	2.268	0.619	0.8	1	1.993			
Sum Weight:	1856.28	6302.97	C	0.295	2.309	0.614	0.8	1	1.888	4558.26		

Tower Forces - Service - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T1 180.00-160.00	145.88	674.99 TA 214.38	A	0.451	1.971	0.674	0.85	1	23.139	522.69	26.13	A
			B	0.215	2.545	0.594	0.85	1	10.373			
			C	0.208	2.57	0.592	0.85	1	10.024			
T2 160.00-140.00	213.80	658.24	A	0.548	1.845	0.723	0.85	1	29.876	609.45	30.47	A
			B	0.211	2.56	0.593	0.85	1	10.075			
			C	0.203	2.585	0.591	0.85	1	9.723			
T3 140.00-120.00	213.80	658.24	A	0.548	1.845	0.723	0.85	1	29.876	585.04	29.25	A
			B	0.211	2.56	0.593	0.85	1	10.075			
			C	0.203	2.585	0.591	0.85	1	9.723			
T4 120.00-100.00	213.80	658.24 TA 214.38	A	0.548	1.845	0.723	0.85	1	29.876	557.77	27.89	A
			B	0.211	2.56	0.593	0.85	1	10.075			
			C	0.203	2.585	0.591	0.85	1	9.723			
T5 100.00-80.00	213.80	658.24	A	0.548	1.845	0.723	0.85	1	29.876	526.69	26.33	A
			B	0.211	2.56	0.593	0.85	1	10.075			
			C	0.203	2.585	0.591	0.85	1	9.723			
T6 80.00-60.00	213.80	658.24	A	0.548	1.845	0.723	0.85	1	29.876	490.20	24.51	A
			B	0.211	2.56	0.593	0.85	1	10.075			
			C	0.203	2.585	0.591	0.85	1	9.723			
T7 60.00-40.00	213.80	658.24	A	0.548	1.845	0.723	0.85	1	29.876	445.26	22.26	A
			B	0.211	2.56	0.593	0.85	1	10.075			
			C	0.203	2.585	0.591	0.85	1	9.723			
T8 40.00-20.00	213.80	658.24	A	0.548	1.845	0.723	0.85	1	29.876	395.42	19.77	A
			B	0.211	2.56	0.593	0.85	1	10.075			
			C	0.203	2.585	0.591	0.85	1	9.723			
T9 20.00-5.00	160.35	480.27	A	0.546	1.847	0.722	0.85	1	22.263	295.04	19.67	A
			B	0.207	2.574	0.592	0.85	1	7.383			
			C	0.199	2.599	0.59	0.85	1	7.118			
T10 5.00-0.00	53.45	111.24	A	0.983	2.064	1	0.85	1	9.815	143.75*	28.75	A

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Section Elevation <i>ft</i>	Add Weight <i>lb</i>	Self Weight <i>lb</i>	F a c e	e	C _F	R _R	D _F	D _R	A _E <i>ft²</i>	F <i>lb</i>	w <i>plf</i>	Ctrl. Face
Sum Weight:	1856.28	6302.97	B C	0.311 0.295	2.268 2.309 *2A _g limit	0.619 0.614	0.85 0.85	1 1	2.012 1.906	4571.29		

Force Totals (Does not include forces on guys)

Load Case	Vertical Forces <i>lb</i>	Sum of Forces X <i>lb</i>	Sum of Forces Z <i>lb</i>	Sum of Torques <i>lb-ft</i>
Leg Weight	3138.04			
Bracing Weight	3164.93			
Total Member Self-Weight	6302.97			
Guy Weight	2100.38			
Total Weight	15046.84			
Wind 0 deg - No Ice		1.29	-19939.36	-5861.02
Wind 30 deg - No Ice		9851.10	-17170.80	-5565.80
Wind 60 deg - No Ice		17028.70	-9895.48	-3813.60
Wind 90 deg - No Ice		19699.96	-1.29	-1057.41
Wind 120 deg - No Ice		17157.86	9968.56	2006.16
Wind 150 deg - No Ice		9848.86	17169.51	4508.39
Wind 180 deg - No Ice		-1.29	19788.73	5801.44
Wind 210 deg - No Ice		-9851.10	17170.80	5565.80
Wind 240 deg - No Ice		-17159.15	9970.80	3854.86
Wind 270 deg - No Ice		-19699.96	1.29	1057.41
Wind 300 deg - No Ice		-17027.40	-9893.24	-1987.84
Wind 330 deg - No Ice		-9848.86	-17169.51	-4508.39
Member Ice	3379.28			
Guy Ice	1903.96			
Total Weight Ice	26579.05			
Wind 0 deg - Ice		0.65	-26003.91	-8152.32
Wind 30 deg - Ice		12936.41	-22487.02	-7731.90
Wind 60 deg - Ice		22394.76	-12976.85	-5250.66
Wind 90 deg - Ice		25871.70	-0.65	-1367.99
Wind 120 deg - Ice		22438.57	13001.39	2889.03
Wind 150 deg - Ice		12935.29	22486.38	6363.92
Wind 180 deg - Ice		-0.65	25952.57	8133.52
Wind 210 deg - Ice		-12936.41	22487.02	7731.90
Wind 240 deg - Ice		-22439.22	13002.51	5263.30
Wind 270 deg - Ice		-25871.70	0.65	1367.99
Wind 300 deg - Ice		-22394.11	-12975.72	-2882.86
Wind 330 deg - Ice		-12935.29	-22486.38	-6363.92
Total Weight	15046.84			
Wind 0 deg - Service		0.45	-6899.43	-2028.03
Wind 30 deg - Service		3408.68	-5941.45	-1925.88
Wind 60 deg - Service		5892.28	-3424.04	-1319.58
Wind 90 deg - Service		6816.59	-0.45	-365.89
Wind 120 deg - Service		5936.97	3449.33	694.17
Wind 150 deg - Service		3407.91	5941.01	1560.00
Wind 180 deg - Service		-0.45	6847.31	2007.42
Wind 210 deg - Service		-3408.68	5941.45	1925.88
Wind 240 deg - Service		-5937.42	3450.10	1333.86
Wind 270 deg - Service		-6816.59	0.45	365.89
Wind 300 deg - Service		-5891.83	-3423.27	-687.84

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Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Torques lb-ft
Wind 330 deg - Service		-3407.91	-5941.01	-1560.00

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice+Guy
3	Dead+Wind 30 deg - No Ice+Guy
4	Dead+Wind 60 deg - No Ice+Guy
5	Dead+Wind 90 deg - No Ice+Guy
6	Dead+Wind 120 deg - No Ice+Guy
7	Dead+Wind 150 deg - No Ice+Guy
8	Dead+Wind 180 deg - No Ice+Guy
9	Dead+Wind 210 deg - No Ice+Guy
10	Dead+Wind 240 deg - No Ice+Guy
11	Dead+Wind 270 deg - No Ice+Guy
12	Dead+Wind 300 deg - No Ice+Guy
13	Dead+Wind 330 deg - No Ice+Guy
14	Dead+Ice+Temp+Guy
15	Dead+Wind 0 deg+Ice+Temp+Guy
16	Dead+Wind 30 deg+Ice+Temp+Guy
17	Dead+Wind 60 deg+Ice+Temp+Guy
18	Dead+Wind 90 deg+Ice+Temp+Guy
19	Dead+Wind 120 deg+Ice+Temp+Guy
20	Dead+Wind 150 deg+Ice+Temp+Guy
21	Dead+Wind 180 deg+Ice+Temp+Guy
22	Dead+Wind 210 deg+Ice+Temp+Guy
23	Dead+Wind 240 deg+Ice+Temp+Guy
24	Dead+Wind 270 deg+Ice+Temp+Guy
25	Dead+Wind 300 deg+Ice+Temp+Guy
26	Dead+Wind 330 deg+Ice+Temp+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 Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
T1	180 - 160	Leg	Max Tension	8	14356.83	3.05	-35.58

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Compression	15	-38505.75	-103.76	410.69
			Max. Mx	17	-26317.15	-465.57	205.90
			Max. My	21	-26360.60	-70.04	-551.54
			Max. Vy	17	-995.77	-465.57	205.90
			Max. Vx	21	-1184.91	-70.04	-551.54
		Diagonal	Max Tension	9	6457.99	0.00	0.00
		Horizontal	Max Tension	15	666.94	0.00	0.00
			Max. Compression	2	-5149.87	0.00	0.00
			Max. Mx	14	299.65	-5.91	0.00
			Max. My	26	625.47	0.00	0.00
			Max. Vy	14	6.75	0.00	0.00
			Max. Vx	26	-0.00	0.00	0.00
		Top Girt	Max Tension	1	0.00	0.00	0.00
			Max. Compression	8	-2956.43	0.00	0.00
			Max. Mx	14	-2518.26	-5.91	0.00
			Max. My	26	-2514.71	0.00	0.00
			Max. Vy	14	6.75	0.00	0.00
			Max. Vx	26	-0.00	0.00	0.00
		Guy A	Bottom Tension	21	14432.54		
			Top Tension	21	14671.52		
			Top Cable Vert	21	11129.45		
			Top Cable Norm	21	9559.75		
			Top Cable Tan	21	6.26		
			Bot Cable Vert	21	-10548.58		
			Bot Cable Norm	21	9850.16		
			Bot Cable Tan	21	6.50		
		Guy B	Bottom Tension	25	14280.04		
			Top Tension	25	14519.04		
			Top Cable Vert	25	11016.23		
			Top Cable Norm	25	9457.55		
			Top Cable Tan	25	5.62		
			Bot Cable Vert	25	-10435.36		
			Bot Cable Norm	25	9747.96		
			Bot Cable Tan	25	7.14		
		Guy C	Bottom Tension	17	14288.69		
			Top Tension	17	14527.68		
			Top Cable Vert	17	11022.58		
			Top Cable Norm	17	9463.42		
			Top Cable Tan	17	6.16		
			Bot Cable Vert	17	-10441.71		
			Bot Cable Norm	17	9753.83		
			Bot Cable Tan	17	6.60		
		Top Guy Pull-Off	Max Tension	1	0.00	0.00	0.00
			Max. Compression	2	-7741.70	0.00	0.00
			Max. Mx	14	-4104.62	-5.12	0.00
			Max. My	26	-4008.21	0.00	0.00
			Max. Vy	14	5.85	0.00	0.00
			Max. Vx	26	-0.00	0.00	0.00
		Bottom Guy Pull-Off	Max Tension	1	0.00	0.00	0.00
			Max. Compression	2	-3629.11	0.00	0.00
			Max. Mx	14	-1884.09	-5.12	0.00
			Max. My	26	-1930.71	0.00	0.00
			Max. Vy	14	5.85	0.00	0.00
			Max. Vx	26	-0.00	0.00	0.00
		Torque Arm Top	Max Tension	16	12857.34	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	26	12331.49	-12.24	0.00
			Max. My	21	11849.54	0.00	-0.10
			Max. Vy	26	10.31	0.00	0.00
			Max. Vx	21	0.09	0.00	0.00

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft		
T2	160 - 140	Torque Arm Bottom	Max. Tension	15	2360.62	0.00	0.00		
			Max. Compression	21	-10182.28	0.00	0.00		
			Max. Mx	17	-9767.24	-11.66	0.00		
			Max. My	26	-5294.92	0.00	0.00		
			Max. Vy	17	13.33	0.00	0.00		
			Max. Vx	26	-0.00	0.00	0.00		
		Leg	Max. Tension	8	10065.59	19.08	-152.79		
			Max. Compression	15	-37261.62	-18.68	140.59		
			Max. Mx	17	-26323.75	279.24	-127.06		
			Max. My	21	-26372.85	40.37	335.04		
			Max. Vy	17	-996.03	-93.31	39.23		
			Max. Vx	21	-1185.31	-15.19	-108.25		
			Diagonal Horizontal	Max. Tension	21	4261.01	0.00	0.00	
				Max. Tension	15	645.39	0.00	0.00	
				Max. Compression	2	-4474.88	0.00	0.00	
				Max. Mx	14	309.50	-5.12	0.00	
				Max. My	26	607.29	0.00	0.00	
				Max. Vy	14	5.85	0.00	0.00	
		Top Girt	Max. Vx	26	-0.00	0.00	0.00		
			Max. Tension	1	0.00	0.00	0.00		
			Max. Compression	2	-2885.65	0.00	0.00		
			Max. Mx	14	-1907.40	-5.12	0.00		
			Max. My	26	-1877.25	0.00	0.00		
			Max. Vy	14	5.85	0.00	0.00		
		Bottom Girt	Max. Vx	26	-0.00	0.00	0.00		
			Max. Tension	1	0.00	0.00	0.00		
			Max. Compression	2	-2229.99	0.00	0.00		
			Max. Mx	14	-1884.26	-5.12	0.00		
Max. My	26		-1784.50	0.00	0.00				
Max. Vy	14		5.85	0.00	0.00				
T3	140 - 120	Leg	Max. Vx	26	-0.00	0.00	0.00		
			Max. Tension	8	4126.31	-21.59	55.91		
			Max. Compression	15	-38905.83	49.24	-232.68		
			Max. Mx	18	-15524.29	256.94	3.65		
			Max. My	15	-5794.67	-31.82	-277.45		
			Max. Vy	18	919.36	-87.10	-21.70		
		Diagonal Horizontal	Max. Vx	15	-1001.02	-21.29	96.78		
			Max. Tension	21	3752.22	0.00	0.00		
			Max. Tension	15	673.87	0.00	0.00		
			Max. Compression	2	-4323.41	0.00	0.00		
			Max. Mx	14	317.61	-5.12	0.00		
			Max. My	26	634.21	0.00	0.00		
		Top Girt	Max. Vy	14	5.85	0.00	0.00		
			Max. Vx	26	-0.00	0.00	0.00		
			Max. Tension	1	0.00	0.00	0.00		
			Max. Compression	2	-2323.54	0.00	0.00		
			Max. Mx	14	-1890.82	-5.12	0.00		
			Max. My	26	-1825.77	0.00	0.00		
		Bottom Girt	Max. Vy	14	5.85	0.00	0.00		
			Max. Vx	26	-0.00	0.00	0.00		
			Max. Tension	1	0.00	0.00	0.00		
			Max. Compression	19	-2749.36	0.00	0.00		
			Max. Mx	14	-1838.85	-5.12	0.00		
			Max. My	26	-1714.83	0.00	0.00		
		T4	120 - 100	Leg	Max. Vy	14	5.85	0.00	0.00
					Max. Vx	26	-0.00	0.00	0.00
					Max. Tension	8	4123.94	0.68	-102.50
					Max. Compression	15	-46906.27	-92.10	96.52
Max. Mx	18				197.47	-452.78	10.43		
Max. My	15				-26102.47	85.41	477.34		
	Max. Vy			23	997.16	381.54	-179.21		

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Vx	15	1238.29	85.34	477.30
		Diagonal	Max Tension	22	5256.26	0.00	0.00
		Horizontal	Max Tension	15	812.44	0.00	0.00
			Max. Compression	22	-3779.14	0.00	0.00
			Max. Mx	14	453.92	-5.12	0.00
			Max. My	21	647.48	0.00	-0.00
			Max. Vy	14	5.85	0.00	0.00
			Max. Vx	21	0.00	0.00	0.00
		Bottom Girt	Max Tension	1	0.00	0.00	0.00
			Max. Compression	12	-1771.20	0.00	0.00
			Max. Mx	14	-1502.03	-5.12	0.00
			Max. My	15	-1563.36	0.00	-0.00
			Max. Vy	14	5.85	0.00	0.00
			Max. Vx	15	0.00	0.00	0.00
		Guy A	Bottom Tension	21	10499.14		
			Top Tension	21	10652.03		
			Top Cable Vert	21	6867.02		
			Top Cable Norm	21	8143.08		
			Top Cable Tan	21	4.25		
			Bot Cable Vert	21	-6461.32		
			Bot Cable Norm	21	8275.46		
			Bot Cable Tan	21	3.88		
		Guy B	Bottom Tension	25	10273.00		
			Top Tension	25	10425.92		
			Top Cable Vert	25	6724.89		
			Top Cable Norm	25	7967.16		
			Top Cable Tan	25	3.87		
			Bot Cable Vert	25	-6319.18		
			Bot Cable Norm	25	8099.54		
			Bot Cable Tan	25	4.26		
		Guy C	Bottom Tension	17	10373.46		
			Top Tension	17	10526.36		
			Top Cable Vert	17	6788.02		
			Top Cable Norm	17	8045.32		
			Top Cable Tan	17	4.04		
			Bot Cable Vert	17	-6382.31		
			Bot Cable Norm	17	8177.69		
			Bot Cable Tan	17	4.10		
		Top Guy Pull-Off	Max Tension	1	0.00	0.00	0.00
			Max. Compression	19	-2851.70	0.00	0.00
			Max. Mx	14	-1546.34	-5.12	0.00
			Max. My	26	-1416.94	0.00	0.00
			Max. Vy	14	5.85	0.00	0.00
			Max. Vx	26	-0.00	0.00	0.00
		Bottom Guy Pull-Off	Max Tension	1	0.00	0.00	0.00
			Max. Compression	15	-5447.70	0.00	0.00
			Max. Mx	14	-2900.38	-5.12	0.00
			Max. My	21	-3987.65	0.00	0.00
			Max. Vy	14	5.85	0.00	0.00
			Max. Vx	21	-0.00	0.00	0.00
		Torque Arm Top	Max Tension	15	7990.05	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	22	7814.54	-12.17	0.00
			Max. My	21	7353.28	0.00	-0.07
			Max. Vy	22	10.26	0.00	0.00
			Max. Vx	21	0.06	0.00	0.00
		Torque Arm Bottom	Max Tension	22	2605.34	0.00	0.00
			Max. Compression	22	-6324.64	0.00	0.00
			Max. Mx	20	1985.92	-11.66	0.00
			Max. My	21	-835.02	0.00	-0.00

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft	
T5	100 - 80	Leg	Max. Vy	20	13.33	0.00	0.00	
			Max. Vx	21	0.00	0.00	0.00	
			Max Tension	1	0.00	0.00	0.00	
			Max. Compression	17	-33652.03	109.31	68.92	
			Max. Mx	23	-27329.07	-363.14	138.42	
			Max. My	21	-27006.40	48.81	448.04	
			Max. Vy	23	992.92	8.41	-20.28	
			Max. Vx	15	1233.21	-12.52	13.95	
			Max Tension	15	3746.73	0.00	0.00	
			Max Tension	17	582.87	0.00	0.00	
			Max. Compression	29	-3191.39	0.00	0.00	
			Max. Mx	14	462.71	-5.12	0.00	
		Max. My	21	581.51	0.00	-0.00		
		Max. Vy	14	5.85	0.00	0.00		
		Max. Vx	21	0.00	0.00	0.00		
		Top Girt	Max Tension	1	0.00	0.00	0.00	
			Max. Compression	2	-1947.42	0.00	0.00	
			Max. Mx	14	-1509.15	-5.12	0.00	
			Max. My	15	-1282.46	0.00	-0.00	
			Max. Vy	14	5.85	0.00	0.00	
			Max. Vx	15	0.00	0.00	0.00	
		Bottom Girt	Max Tension	1	0.00	0.00	0.00	
			Max. Compression	37	-1681.00	0.00	0.00	
			Max. Mx	14	-1478.17	-5.12	0.00	
			Max. My	21	-1332.90	0.00	-0.00	
			Max. Vy	14	5.85	0.00	0.00	
			Max. Vx	21	0.00	0.00	0.00	
			T6	80 - 60	Leg	Max Tension	1	0.00
Max. Compression	17					-33308.66	46.41	5.20
Max. Mx	25					-26673.71	740.51	357.45
Max. My	21					-26654.54	190.40	-822.50
Max. Vy	25	1689.03				740.49	357.45	
Max. Vx	21	-1853.79				190.41	-822.29	
Diagonal Horizontal	Max Tension	21			3602.40	0.00	0.00	
	Max Tension	17			576.92	0.00	0.00	
	Max. Compression	10			-3395.01	0.00	0.00	
	Max. Mx	14			480.60	-5.12	0.00	
	Max. My	21			575.65	0.00	-0.00	
	Max. Vy	14			5.85	0.00	0.00	
Top Girt	Max. Vx	21	0.00	0.00	0.00			
	Max Tension	1	0.00	0.00	0.00			
	Max. Compression	29	-1678.45	0.00	0.00			
	Max. Mx	14	-1485.47	-5.12	0.00			
	Max. My	21	-1276.15	0.00	-0.00			
	Max. Vy	14	5.85	0.00	0.00			
Guy A	Max. Vx	21	0.00	0.00	0.00			
	Bottom Tension	21	11209.16					
	Top Tension	21	11288.53					
	Top Cable Vert	21	4495.39					
	Top Cable Norm	21	10354.83					
	Top Cable Tan	21	2.23					
	Bot Cable Vert	21	-4238.30					
	Bot Cable Norm	21	10376.99					
	Bot Cable Tan	21	2.23					
	Guy B	Bottom Tension	25	11202.93				
Top Tension		25	11282.31					
Top Cable Vert		25	4492.98					
Top Cable Norm		25	10349.09					
Top Cable Tan		25	0.78					
Bot Cable Vert		25	-4235.89					
Bot Cable Norm	25	10371.25						

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft	
T7	60 - 40	Guy C	Bot Cable Tan	25	0.78			
			Bottom Tension	17	11213.74			
			Top Tension	17	11293.12			
			Top Cable Vert	17	4497.17			
			Top Cable Norm	17	10359.06			
			Top Cable Tan	17	1.41			
			Bot Cable Vert	17	-4240.08			
			Bot Cable Norm	17	10381.22			
			Bot Cable Tan	17	1.41			
			Top Guy Pull-Off	15	3037.49	0.00	0.00	
			12	-57.95	0.00	0.00		
			14	1417.42	-5.12	0.00		
			21	2432.88	0.00	-0.00		
			14	5.85	0.00	0.00		
			21	0.00	0.00	0.00		
		Leg	Max Tension	1	0.00	0.00	0.00	
			Max. Compression	25	-43406.77	-73.79	-35.21	
			Max. Mx	25	-31230.28	-525.74	-244.84	
			Max. My	21	-31345.61	-140.91	568.52	
			Max. Vy	25	1690.26	107.63	56.62	
			Max. Vx	21	-1855.87	24.46	-127.21	
			Diagonal	Max Tension	22	4269.22	0.00	0.00
				Max Tension	25	751.83	0.00	0.00
			Horizontal	Max. Compression	4	-3142.83	0.00	0.00
				Max. Mx	14	522.27	-5.12	0.00
			Max. My	21	751.40	0.00	-0.00	
			Max. Vy	14	5.85	0.00	0.00	
			Max. Vx	21	0.00	0.00	0.00	
		Top Girt	Max Tension	1	0.00	0.00	0.00	
			Max. Compression	10	-1531.90	0.00	0.00	
			Max. Mx	14	-1113.87	-5.12	0.00	
			Max. My	21	-1285.97	0.00	-0.00	
			Max. Vy	14	5.85	0.00	0.00	
			Max. Vx	21	0.00	0.00	0.00	
		Bottom Girt	Max Tension	1	0.00	0.00	0.00	
			Max. Compression	12	-1783.76	0.00	0.00	
			Max. Mx	14	-1322.47	-5.12	0.00	
			Max. My	21	-991.99	0.00	-0.00	
			Max. Vy	14	5.85	0.00	0.00	
			Max. Vx	21	0.00	0.00	0.00	
T8	40 - 20	Leg	Max Tension	1	0.00	0.00	0.00	
			Max. Compression	17	-46467.77	42.52	-20.95	
			Max. Mx	24	-19841.95	-201.50	40.29	
			Max. My	21	-24693.44	1.44	256.90	
			Max. Vy	23	465.60	-26.91	4.40	
			Max. Vx	21	-591.47	-17.62	35.88	
		Diagonal	Max Tension	2	2703.76	0.00	0.00	
			Max Tension	17	804.85	0.00	0.00	
		Horizontal	Max. Compression	12	-3245.07	0.00	0.00	
			Max. Mx	14	531.18	-5.12	0.00	
	Max. My	22	764.85	0.00	-0.00			
	Max. Vy	14	5.85	0.00	0.00			
	Max. Vx	22	0.00	0.00	0.00			
Top Girt	Max Tension	1	0.00	0.00	0.00			
	Max. Compression	4	-1590.92	0.00	0.00			
	Max. Mx	14	-1328.68	-5.12	0.00			
	Max. My	21	-1142.07	0.00	-0.00			
	Max. Vy	14	5.85	0.00	0.00			
	Max. Vx	21	0.00	0.00	0.00			
Bottom Girt	Max Tension	1	0.00	0.00	0.00			
	Max. Compression	12	-1593.93	0.00	0.00			

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft	
T9	20 - 5	Leg	Max. Mx	14	-1283.73	-5.12	0.00	
			Max. My	22	-1198.54	0.00	-0.00	
			Max. Vy	14	5.85	0.00	0.00	
			Max. Vx	22	0.00	0.00	0.00	
			Max Tension	1	0.00	0.00	0.00	
			Max. Compression	17	-44479.07	62.46	-24.67	
			Max. Mx	25	-35933.95	2122.63	1221.64	
			Max. My	21	-35917.83	17.05	-2442.72	
			Max. Vy	17	6847.45	-2100.80	1228.75	
			Max. Vx	21	7882.64	17.05	-2442.72	
			Diagonal	Max Tension	20	2872.30	0.00	0.00
				Horizontal	Max Tension	17	770.40	0.00
		Max. Compression			4	-2811.06	0.00	0.00
		Top Girt		Max. Mx	14	541.02	-5.12	0.00
				Max. My	22	735.15	0.00	-0.00
				Max. Vy	14	5.85	0.00	0.00
			Max. Vx	22	0.00	0.00	0.00	
			Max Tension	1	0.00	0.00	0.00	
			Max. Compression	4	-1511.48	0.00	0.00	
		Bottom Girt	Max. Mx	14	-1027.06	-5.12	0.00	
			Max. My	22	-921.17	0.00	-0.00	
			Max. Vy	14	5.85	0.00	0.00	
			Max. Vx	22	0.00	0.00	0.00	
			Max Tension	22	2837.03	0.00	0.00	
Max. Compression	1		0.00	0.00	0.00			
T10	5 - 0	Leg	Max. Mx	14	2251.80	-5.12	0.00	
			Max. My	22	2593.21	0.00	-0.00	
			Max. Vy	14	5.85	0.00	0.00	
			Max. Vx	22	0.00	0.00	0.00	
			Max Tension	1	0.00	0.00	0.00	
			Max. Compression	17	-38947.17	-0.01	-5.72	
			Max. Mx	25	-36294.12	2449.05	-2.30	
			Max. My	18	-31281.22	-180.22	-141.08	
			Max. Vy	25	6209.14	2449.05	-2.30	
		Top Girt	Max. Vx	16	-412.70	2167.96	-33.54	
			Max Tension	18	4004.27	0.00	0.00	
			Max. Compression	1	0.00	0.00	0.00	
			Max. Mx	22	3193.25	-4.29	0.00	
			Max. My	22	3595.86	0.00	-0.87	
			Max. Vy	22	5.30	0.00	0.00	
			Max. Vx	22	1.07	0.00	0.00	

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Mast	Max. Vert	21	95174.22	-35.19	-2130.90
	Max. H _x	24	93728.80	2136.19	-35.54
	Max. H _z	15	91845.09	-34.47	2237.05
	Max. M _x	1	0.00	-12.77	-1.16
	Max. M _z	1	0.00	-12.77	-1.16
	Max. Torsion	1	0.00	-12.77	-1.16
	Min. Vert	1	68946.98	-12.77	-1.16
	Min. H _x	18	93685.84	-2215.74	-35.89
	Min. H _z	21	95174.22	-35.19	-2130.90
	Min. M _x	1	0.00	-12.77	-1.16

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Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Guy C @ 145 ft Elev 0 ft Azimuth 240 deg	Min. M _z	1	0.00	-12.77	-1.16
	Min. Torsion	1	0.00	-12.77	-1.16
	Max. Vert	23	-7085.31	-7413.56	4268.21
	Max. H _x	23	-7085.31	-7413.56	4268.21
	Max. H _z	17	-37404.74	-39573.88	22866.85
	Min. Vert	17	-37404.74	-39573.88	22866.85
	Min. H _x	17	-37404.74	-39573.88	22866.85
Guy B @ 145 ft Elev 0 ft Azimuth 120 deg	Min. H _z	23	-7085.31	-7413.56	4268.21
	Max. Vert	6	-7102.08	7930.88	4583.61
	Max. H _x	25	-37466.68	39628.33	22869.28
	Max. H _z	25	-37466.68	39628.33	22869.28
	Min. Vert	25	-37466.68	39628.33	22869.28
Guy A @ 145 ft Elev 0 ft Azimuth 0 deg	Min. H _x	19	-7125.44	7432.09	4297.61
	Min. H _z	19	-7125.44	7432.09	4297.61
	Max. Vert	2	-7027.38	-11.65	-9099.97
	Max. H _x	24	-22350.96	1460.64	-27148.29
	Max. H _z	15	-7066.33	-16.12	-8542.08
	Min. Vert	21	-37498.07	25.12	-45788.86
	Min. H _x	18	-22336.41	-1460.52	-27135.90
Min. H _z	21	-37498.07	25.12	-45788.86	

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	68946.98	12.77	1.16	0.00	0.00	0.00
Dead+Wind 0 deg - No Ice+Guy	71088.51	11.78	-1674.65	0.00	0.00	0.00
Dead+Wind 30 deg - No Ice+Guy	71768.29	829.50	-1435.29	0.00	0.00	0.00
Dead+Wind 60 deg - No Ice+Guy	72161.50	1429.08	-818.27	0.00	0.00	0.00
Dead+Wind 90 deg - No Ice+Guy	71718.42	1664.14	10.10	0.00	0.00	0.00
Dead+Wind 120 deg - No Ice+Guy	71019.38	1462.68	839.16	0.00	0.00	0.00
Dead+Wind 150 deg - No Ice+Guy	71760.93	845.57	1427.93	0.00	0.00	0.00
Dead+Wind 180 deg - No Ice+Guy	72192.13	11.35	1638.11	0.00	0.00	0.00
Dead+Wind 210 deg - No Ice+Guy	71755.56	-821.95	1427.07	0.00	0.00	0.00
Dead+Wind 240 deg - No Ice+Guy	71034.69	-1437.51	838.24	0.00	0.00	0.00
Dead+Wind 270 deg - No Ice+Guy	71729.16	-1638.45	10.04	0.00	0.00	0.00
Dead+Wind 300 deg - No Ice+Guy	72162.46	-1404.19	-817.04	0.00	0.00	0.00
Dead+Wind 330 deg - No Ice+Guy	71784.19	-805.60	-1433.92	0.00	0.00	0.00

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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+Ice+Temp+Guy	86526.48	39.58	3.27	0.00	0.00	0.00
Dead+Wind 0	91845.09	34.47	-2237.05	0.00	0.00	0.00
deg+Ice+Temp+Guy						
Dead+Wind 30	93758.03	1092.80	-1898.37	0.00	0.00	0.00
deg+Ice+Temp+Guy						
Dead+Wind 60	95123.55	1882.13	-1064.20	0.00	0.00	0.00
deg+Ice+Temp+Guy						
Dead+Wind 90	93685.84	2215.74	35.89	0.00	0.00	0.00
deg+Ice+Temp+Guy						
Dead+Wind 120	91759.78	1980.96	1125.58	0.00	0.00	0.00
deg+Ice+Temp+Guy						
Dead+Wind 150	93746.25	1153.21	1872.07	0.00	0.00	0.00
deg+Ice+Temp+Guy						
Dead+Wind 180	95174.22	35.19	2130.90	0.00	0.00	0.00
deg+Ice+Temp+Guy						
Dead+Wind 210	93760.78	-1080.23	1865.99	0.00	0.00	0.00
deg+Ice+Temp+Guy						
Dead+Wind 240	91806.82	-1902.59	1121.38	0.00	0.00	0.00
deg+Ice+Temp+Guy						
Dead+Wind 270	93728.80	-2136.19	35.54	0.00	0.00	0.00
deg+Ice+Temp+Guy						
Dead+Wind 300	95141.33	-1805.59	-1060.67	0.00	0.00	0.00
deg+Ice+Temp+Guy						
Dead+Wind 330	93785.59	-1021.86	-1895.62	0.00	0.00	0.00
deg+Ice+Temp+Guy						
Dead+Wind 0 deg - Service+Guy	69181.07	12.77	-576.54	0.00	0.00	0.00
Dead+Wind 30 deg - Service+Guy	69149.38	297.90	-495.82	0.00	0.00	0.00
Dead+Wind 60 deg - Service+Guy	69122.89	506.67	-284.26	0.00	0.00	0.00
Dead+Wind 90 deg - Service+Guy	69149.70	585.42	2.47	0.00	0.00	0.00
Dead+Wind 120 deg - Service+Guy	69181.67	512.76	289.99	0.00	0.00	0.00
Dead+Wind 150 deg - Service+Guy	69150.09	300.25	496.70	0.00	0.00	0.00
Dead+Wind 180 deg - Service+Guy	69123.49	12.74	571.80	0.00	0.00	0.00
Dead+Wind 210 deg - Service+Guy	69149.87	-274.70	496.65	0.00	0.00	0.00
Dead+Wind 240 deg - Service+Guy	69181.31	-487.11	289.92	0.00	0.00	0.00
Dead+Wind 270 deg - Service+Guy	69149.42	-559.74	2.46	0.00	0.00	0.00
Dead+Wind 300 deg - Service+Guy	69122.80	-481.04	-284.18	0.00	0.00	0.00
Dead+Wind 330 deg - Service+Guy	69149.32	-272.33	-495.73	0.00	0.00	0.00

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
1	0.00	-15046.39	0.00	-2.76	15046.39	-0.66	0.019%
2	1.29	-15220.14	-22620.56	-1.02	15218.71	22550.81	0.256%
3	11188.29	-15046.39	-19486.89	-11162.28	15044.79	19405.12	0.317%

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Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
4	19350.68	-14872.65	-11236.08	-19252.08	14871.25	11178.67	0.425%
5	22374.35	-15046.39	-1.29	-22293.25	15044.94	18.41	0.307%
6	19479.84	-15220.14	11309.16	-19405.65	15218.56	-11266.42	0.315%
7	11186.05	-15046.39	19485.60	-11129.05	15044.87	-19423.22	0.313%
8	-1.29	-14872.65	22469.93	2.38	14871.22	-22355.23	0.426%
9	-11188.29	-15046.39	19486.89	11131.79	15044.86	-19424.05	0.313%
10	-19481.14	-15220.14	11311.40	19406.25	15218.51	-11267.91	0.319%
11	-22374.35	-15046.39	1.29	22292.72	15044.91	16.17	0.310%
12	-19349.39	-14872.65	-11233.84	19251.28	14871.24	11175.49	0.425%
13	-11186.05	-15046.39	-19485.60	11160.74	15044.78	19403.01	0.320%
14	0.00	-26578.21	0.00	-7.45	26578.21	-1.07	0.028%
15	0.65	-26930.87	-31389.79	0.71	26928.71	31276.01	0.275%
16	15622.33	-26578.21	-27139.18	-15597.10	26575.85	27021.45	0.293%
17	27059.08	-26225.55	-15669.79	-26898.89	26222.39	15575.63	0.455%
18	31243.55	-26578.21	-0.65	-31134.59	26576.11	36.07	0.279%
19	27102.89	-26930.86	15694.33	-27008.74	26928.94	-15640.41	0.263%
20	15621.21	-26578.21	27138.53	-15534.08	26576.06	-27061.50	0.283%
21	-0.65	-26225.55	31338.46	-0.00	26222.29	-31150.50	0.460%
22	-15622.33	-26578.21	27139.18	15533.66	26575.88	-27058.72	0.292%
23	-27103.53	-26930.87	15695.46	27007.49	26928.81	-15639.17	0.270%
24	-31243.55	-26578.21	0.65	31133.02	26576.02	36.00	0.284%
25	-27058.43	-26225.56	-15668.67	26898.75	26222.40	15574.58	0.454%
26	-15621.21	-26578.21	-27138.53	15598.47	26575.94	27021.83	0.290%
27	0.45	-15106.51	-7827.18	-0.47	15106.50	7778.03	0.289%
28	3871.38	-15046.39	-6742.87	-3845.01	15046.35	6700.47	0.295%
29	6695.74	-14986.28	-3887.92	-6651.25	14986.19	3862.17	0.305%
30	7741.99	-15046.39	-0.45	-7692.18	15046.35	-1.24	0.295%
31	6740.43	-15106.51	3913.20	-6697.99	15106.50	-3888.60	0.289%
32	3870.61	-15046.39	6742.42	-3847.18	15046.35	-6698.28	0.295%
33	-0.45	-14986.28	7775.06	0.44	14986.19	-7723.51	0.305%
34	-3871.38	-15046.39	6742.87	3847.93	15046.35	-6698.72	0.295%
35	-6740.88	-15106.51	3913.98	6698.37	15106.50	-3889.36	0.289%
36	-7741.99	-15046.39	0.45	7692.10	15046.34	-2.13	0.295%
37	-6695.29	-14986.28	-3887.14	6650.75	14986.19	3861.37	0.305%
38	-3870.61	-15046.39	-6742.42	3844.19	15046.35	6699.98	0.295%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	50	0.00000001	0.00001463
2	Yes	72	0.00122985	0.00035557
3	Yes	71	0.00136734	0.00039233
4	Yes	69	0.00129571	0.00034983
5	Yes	71	0.00130256	0.00036677
6	Yes	71	0.00141707	0.00039531
7	Yes	71	0.00132945	0.00037896
8	Yes	69	0.00129871	0.00035392
9	Yes	71	0.00133325	0.00038129
10	Yes	71	0.00143737	0.00040318
11	Yes	71	0.00131501	0.00037160
12	Yes	69	0.00129649	0.00035032
13	Yes	71	0.00137530	0.00039466
14	Yes	50	0.00000001	0.00003577
15	Yes	73	0.00145998	0.00044590
16	Yes	73	0.00141207	0.00039106

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17	Yes	70	0.00143715	0.00042534
18	Yes	73	0.00132497	0.00035908
19	Yes	73	0.00137515	0.00041543
20	Yes	73	0.00133703	0.00036338
21	Yes	70	0.00144933	0.00043165
22	Yes	73	0.00139512	0.00038593
23	Yes	73	0.00142494	0.00043273
24	Yes	73	0.00135799	0.00037114
25	Yes	70	0.00143145	0.00042358
26	Yes	73	0.00138703	0.00038072
27	Yes	67	0.00128280	0.00014758
28	Yes	67	0.00130468	0.00014947
29	Yes	67	0.00133720	0.00015270
30	Yes	67	0.00130500	0.00014831
31	Yes	67	0.00128339	0.00014633
32	Yes	67	0.00130586	0.00014928
33	Yes	67	0.00133810	0.00015373
34	Yes	67	0.00130548	0.00014963
35	Yes	67	0.00128322	0.00014689
36	Yes	67	0.00130499	0.00014877
37	Yes	67	0.00133727	0.00015293
38	Yes	67	0.00130502	0.00014958

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 160	2.227	33	0.2113	0.0568
T2	160 - 140	1.370	33	0.1661	0.0512
T3	140 - 120	0.840	33	0.0987	0.0680
T4	120 - 100	0.537	33	0.0428	0.0685
T5	100 - 80	0.473	29	0.0041	0.1173
T6	80 - 60	0.472	29	0.0038	0.1670
T7	60 - 40	0.446	29	0.0045	0.2032
T8	40 - 20	0.423	31	0.0190	0.2328
T9	20 - 5	0.276	31	0.0517	0.2510
T10	5 - 0	0.076	31	0.0685	0.2584

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
180.50	RFS APXV9ERR18-C-A20	33	2.227	0.2113	0.0568	41534
180.00	Low Profile Platform	33	2.227	0.2113	0.0568	41534
172.00	(2) Powerwave 7770.00	33	1.859	0.1954	0.0518	25959
170.00	12 ft Boom / Sector Mount	33	1.770	0.1912	0.0509	20767
160.38	Guy	33	1.383	0.1672	0.0510	11212
116.42	Guy	33	0.510	0.0339	0.0737	18280
60.38	Guy	29	0.446	0.0045	0.2026	101432

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Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 160	7.789	21	0.6535	0.2756
T2	160 - 140	5.441	21	0.5234	0.2615
T3	140 - 120	3.953	21	0.3217	0.3371
T4	120 - 100	2.991	21	0.1469	0.3425
T5	100 - 80	2.817	21	0.0243	0.5661
T6	80 - 60	2.722	17	0.0506	0.7629
T7	60 - 40	2.433	17	0.0579	0.9023
T8	40 - 20	2.187	17	0.1187	1.0283
T9	20 - 5	1.386	17	0.2669	1.0992
T10	5 - 0	0.375	17	0.3421	1.1238

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
180.50	RFS APXV9ERR18-C-A20	21	7.789	0.6535	0.2756	14484
180.00	Low Profile Platform	21	7.789	0.6535	0.2756	14484
172.00	(2) Powerwave 7770.00	21	6.780	0.6084	0.2588	9052
170.00	12 ft Boom / Sector Mount	21	6.538	0.5962	0.2561	7242
160.38	Guy	21	5.478	0.5266	0.2606	3905
116.42	Guy	21	2.910	0.1186	0.3674	4586
60.38	Guy	17	2.437	0.0577	0.8998	17666

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load Allowable	Allowable Ratio	Criteria
T1	180	Leg	A325N	0.7500	4	0.03	19435.70	0.000	✓	1.333 Bolt Tension
		Torque Arm Top@160.375	A325N	0.7500	2	6428.67	9277.52	0.693	✓	1.333 Bolt Shear
		Torque Arm Bottom@160.375	A325N	0.7500	2	5091.14	9277.52	0.549	✓	1.333 Bolt Shear
T2	160	Leg	A325N	0.7500	4	2516.40	19435.50	0.129	✓	1.333 Bolt Tension
T3	140	Leg	A325N	0.7500	4	468.44	19438.40	0.024	✓	1.333 Bolt Tension
T4	120	Leg	A325N	0.7500	4	1030.98	19437.30	0.053	✓	1.333 Bolt Tension
		Torque Arm Top@116.417	A325N	0.7500	2	3995.03	9277.52	0.431	✓	1.333 Bolt Shear
		Torque Arm Bottom@116.417	A325N	0.7500	2	3162.32	9277.52	0.341	✓	1.333 Bolt Shear
T5	100	Leg	A325N	0.7500	4	0.00	19427.40	0.000	✓	1.333 Bolt Tension
T6	80	Leg	A325N	0.7500	4	0.00	19436.60	0.000	✓	1.333 Bolt Tension

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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
T7	60	Leg	A325N	0.7500	4	0.00	19412.90	0.000 ✓	1.333	Bolt Tension
T8	40	Leg	A325N	0.7500	4	0.00	19436.10	0.000 ✓	1.333	Bolt Tension
T9	20	Leg	A325N	0.7500	4	0.00	19437.20	0.000 ✓	1.333	Bolt Tension
T10	5	Leg	A325N	0.7500	4	0.00	19164.60	0.000 ✓	1.333	Bolt Tension

Guy Design Data

Section No.	Elevation ft	Size	Initial Tension lb	Breaking Load lb	Actual T lb	Allowable T _a lb	Required S.F.	Actual S.F.
T1	160.38 (A) (541)	5/8 EHS	6360.00	42399.99	14225.40	21200.00	2.000	2.981 ✓
	160.38 (A) (542)	5/8 EHS	6360.00	42399.99	14671.50	21200.00	2.000	2.890 ✓
	160.38 (B) (535)	5/8 EHS	6360.00	42399.99	14519.00	21200.00	2.000	2.920 ✓
	160.38 (B) (536)	5/8 EHS	6360.00	42399.99	14351.30	21200.00	2.000	2.954 ✓
	160.38 (C) (529)	5/8 EHS	6360.00	42399.99	14527.70	21200.00	2.000	2.919 ✓
	160.38 (C) (530)	5/8 EHS	6360.00	42399.99	14249.00	21200.00	2.000	2.976 ✓
T4	116.42 (A) (559)	9/16 EHS	5250.00	35000.04	9970.25	17500.00	2.000	3.510 ✓
	116.42 (A) (560)	9/16 EHS	5250.00	35000.04	10652.00	17500.00	2.000	3.286 ✓
	116.42 (B) (553)	9/16 EHS	5250.00	35000.04	10425.90	17500.00	2.000	3.357 ✓
	116.42 (B) (554)	9/16 EHS	5250.00	35000.04	10181.60	17500.00	2.000	3.438 ✓
	116.42 (C) (547)	9/16 EHS	5250.00	35000.04	10526.40	17500.00	2.000	3.325 ✓
	116.42 (C) (548)	9/16 EHS	5250.00	35000.04	10086.70	17500.00	2.000	3.470 ✓
T6	60.38 (A) (567)	9/16 EHS	5250.00	35000.04	11288.50	17500.00	2.000	3.100 ✓
	60.38 (B) (566)	9/16 EHS	5250.00	35000.04	11282.30	17500.00	2.000	3.102 ✓
	60.38 (C) (565)	9/16 EHS	5250.00	35000.04	11293.10	17500.00	2.000	3.099 ✓

Compression Checks

Leg Design Data (Compression)

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	Mast Stability Index	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio P/P _a
T1	180 - 160	P2.5x.203	20.00	3.21	40.6 K=1.00	1.00	31.525	1.7040	-38505.80	53719.30	0.717
T2	160 - 140	P2.5x.203	20.00	3.21	40.6 K=1.00	1.00	31.525	1.7040	-37261.60	53719.30	0.694
T3	140 - 120	P2.5x.203	20.00	3.21	40.6 K=1.00	1.00	30.219	1.7040	-38905.80	51494.50	0.756
T4	120 - 100	P2.5x.203	20.00	3.21	40.6 K=1.00	1.00	30.219	1.7040	-46906.30	51494.50	0.911
T5	100 - 80	P2.5x.203	20.00	3.21	40.6 K=1.00	1.00	31.525	1.7040	-26740.10	53719.30	0.498*
T6	80 - 60	P2.5x.203	20.00	3.21	40.6 K=1.00	1.00	31.525	1.7040	-27753.70	53719.30	0.517*
T7	60 - 40	P2.5x.203	20.00	3.21	40.6 K=1.00	0.99	29.855	1.7040	-43406.80	50874.40	0.853
T8	40 - 20	P2.5x.203	20.00	3.21	40.6 K=1.00	0.99	31.152	1.7040	-46467.80	53084.50	0.875
T9	20 - 5	P2.5x.203	15.00	3.56	45.1 K=1.00	1.00	30.554	1.7040	-44479.10	52065.10	0.854
T10	5 - 0	P2.5x.203	5.39	4.99	63.2 K=1.00	1.00	26.165	1.7040	-31187.60	44587.00	0.699*

* DL controls

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio P/P _a
T1	180 - 160	L1 3/4x1 3/4x3/16	3.50	3.26	117.0 K=1.03	10.714	0.6211	-4863.94	6654.50	0.731*
T2	160 - 140	L1 1/2x1 1/2x3/16	3.50	3.26	128.2 K=0.96	9.083	0.5273	-3796.33	4789.66	0.793*
T3	140 - 120	L1 1/2x1 1/2x3/16	3.50	3.26	128.2 K=0.96	9.083	0.5273	-3771.01	4789.66	0.787*
T4	120 - 100	L1 1/2x1 1/2x3/16	3.50	3.26	128.2 K=0.96	9.083	0.5273	-3184.89	4789.66	0.665*
T5	100 - 80	L1 1/2x1 1/2x3/16	3.50	3.26	128.2 K=0.96	9.083	0.5273	-3176.24	4789.66	0.663*
T6	80 - 60	L1 1/2x1 1/2x3/16	3.50	3.26	128.2 K=0.96	9.083	0.5273	-3303.98	4789.66	0.690*
T7	60 - 40	L1 1/2x1 1/2x3/16	3.50	3.26	128.2 K=0.96	9.083	0.5273	-3005.98	4789.66	0.628*
T8	40 - 20	L1 1/2x1 1/2x3/16	3.50	3.26	128.2 K=0.96	9.083	0.5273	-2940.02	4789.66	0.614*
T9	20 - 5	L1 1/2x1 1/2x3/16	3.50	3.26	128.2 K=0.96	9.083	0.5273	-2652.83	4789.66	0.554*

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* DL controls

Top Girt Design Data (Compression)

Section No.	Elevation <i>ft</i>	Size	<i>L</i> <i>ft</i>	<i>L_u</i> <i>ft</i>	<i>Kl/r</i>	<i>F_a</i> <i>ksi</i>	<i>A</i> <i>in²</i>	Actual <i>P</i> <i>lb</i>	Allow. <i>P_a</i> <i>lb</i>	Ratio $\frac{P}{P_a}$
T1	180 - 160	L1 3/4x1 3/4x3/16	3.50	3.26	117.0 K=1.03	10.714	0.6211	-2534.30	6654.50	0.381*
T2	160 - 140	L1 1/2x1 1/2x3/16	3.50	3.26	128.2 K=0.96	9.083	0.5273	-2885.65	4789.66	0.602 ✓
T3	140 - 120	L1 1/2x1 1/2x3/16	3.50	3.26	128.2 K=0.96	9.083	0.5273	-1987.50	4789.66	0.415* ✓
T5	100 - 80	L1 1/2x1 1/2x3/16	3.50	3.26	128.2 K=0.96	9.083	0.5273	-1675.16	4789.66	0.350* ✓
T6	80 - 60	L1 1/2x1 1/2x3/16	3.50	3.26	128.2 K=0.96	9.083	0.5273	-1663.00	4789.66	0.347* ✓
T7	60 - 40	L1 1/2x1 1/2x3/16	3.50	3.26	128.2 K=0.96	9.083	0.5273	-1366.47	4789.66	0.285* ✓
T8	40 - 20	L1 1/2x1 1/2x3/16	3.50	3.26	128.2 K=0.96	9.083	0.5273	-1550.21	4789.66	0.324* ✓
T9	20 - 5	L1 1/2x1 1/2x3/16	3.50	3.26	128.2 K=0.96	9.083	0.5273	-1277.20	4789.66	0.267* ✓

* DL controls

Bottom Girt Design Data (Compression)

Section No.	Elevation <i>ft</i>	Size	<i>L</i> <i>ft</i>	<i>L_u</i> <i>ft</i>	<i>Kl/r</i>	<i>F_a</i> <i>ksi</i>	<i>A</i> <i>in²</i>	Actual <i>P</i> <i>lb</i>	Allow. <i>P_a</i> <i>lb</i>	Ratio $\frac{P}{P_a}$
T2	160 - 140	L1 1/2x1 1/2x3/16	3.50	3.26	128.2 K=0.96	9.083	0.5273	-1988.53	4789.66	0.415* ✓
T3	140 - 120	L1 1/2x1 1/2x3/16	3.50	3.26	128.2 K=0.96	9.083	0.5273	-2749.36	4789.66	0.574 ✓
T4	120 - 100	L1 1/2x1 1/2x3/16	3.50	3.26	128.2 K=0.96	9.083	0.5273	-1676.85	4789.66	0.350* ✓
T5	100 - 80	L1 1/2x1 1/2x3/16	3.50	3.26	128.2 K=0.96	9.083	0.5273	-1664.76	4789.66	0.348* ✓
T7	60 - 40	L1 1/2x1 1/2x3/16	3.50	3.26	128.2 K=0.96	9.083	0.5273	-1552.27	4789.66	0.324* ✓
T8	40 - 20	L1 1/2x1 1/2x3/16	3.50	3.26	128.2 K=0.96	9.083	0.5273	-1525.98	4789.66	0.319* ✓

* DL controls

Top Guy Pull-Off Design Data (Compression)

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio P P _a
T1	180 - 160	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-7660.95	7695.87	0.995
T4	120 - 100	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-2851.70	7695.87	0.371
T6	80 - 60	L1 1/2x1 1/2x3/16	3.50	3.26	85.7 K=0.65	21.600	0.5273	0.00	7695.87	0.000*

* DL controls

Top Guy Pull-Off Bending Design Data

Section No.	Elevation ft	Size	Actual M _x lb-ft	Actual f _{bx} ksi	Allow. F _{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M _y lb-ft	Actual f _{by} ksi	Allow. F _{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T1	180 - 160	L1 1/2x1 1/2x3/16	-3.62	-0.247	23.760	0.010	-3.62	-0.474	23.760	0.020
T4	120 - 100	L1 1/2x1 1/2x3/16	-3.62	-0.247	23.760	0.010	-3.62	-0.474	23.760	0.020
T6	80 - 60	L1 1/2x1 1/2x3/16	-3.62	-0.247	23.760	0.010	-3.62	-0.474	23.760	0.020

Top Guy Pull-Off Interaction Design Data

Section No.	Elevation ft	Size	Ratio P P _a	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	180 - 160	L1 1/2x1 1/2x3/16	0.995	0.010	0.020	1.026	1.333	H1-3 ✓
T4	120 - 100	L1 1/2x1 1/2x3/16	0.371	0.010	0.020	0.401	1.333	H1-3 ✓
T6	80 - 60	L1 1/2x1 1/2x3/16	0.000	0.010	0.020	0.030*	1.000	H1-3 ✓

* DL controls

Bottom Guy Pull-Off Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio P P _a
T1	180 - 160	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-3629.11	7695.87	0.472
T4	120 - 100	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-5447.70	7695.87	0.708

Bottom Guy Pull-Off Bending Design Data

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Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T1	180 - 160	L1 1/2x1 1/2x3/16	-1.94	-0.133	23.760	0.006	-1.94	-0.254	23.760	0.011
T4	120 - 100	L1 1/2x1 1/2x3/16	-3.62	-0.247	23.760	0.010	-3.62	-0.474	23.760	0.020

Bottom Guy Pull-Off Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	180 - 160	L1 1/2x1 1/2x3/16	0.472	0.006	0.011	0.488	1.333	H1-3 ✓
T4	120 - 100	L1 1/2x1 1/2x3/16	0.708	0.010	0.020	0.738	1.333	H1-3 ✓

Torque-Arm Bottom Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	180 - 160 (533)	L3x3x1/4	3.50	3.38	68.5 K=1.00	16.584	1.4400	-10058.20	23880.20	0.421
T1	180 - 160 (534)	L3x3x1/4	3.50	3.38	68.5 K=1.00	16.584	1.4400	-10182.30	23880.20	0.426
T1	180 - 160 (539)	L3x3x1/4	3.50	3.38	68.5 K=1.00	16.584	1.4400	-9767.24	23880.20	0.409
T1	180 - 160 (540)	L3x3x1/4	3.50	3.38	68.5 K=1.00	16.584	1.4400	-10044.00	23880.20	0.421
T1	180 - 160 (545)	L3x3x1/4	3.50	3.38	68.5 K=1.00	16.584	1.4400	-9903.35	23880.20	0.415
T1	180 - 160 (546)	L3x3x1/4	3.50	3.38	68.5 K=1.00	16.584	1.4400	-9750.70	23880.20	0.408
T4	120 - 100 (551)	L3x3x1/4	3.50	3.38	68.5 K=1.00	16.584	1.4400	-6311.06	23880.20	0.264
T4	120 - 100 (552)	L3x3x1/4	3.50	3.38	68.5 K=1.00	16.584	1.4400	-6324.64	23880.20	0.265
T4	120 - 100 (557)	L3x3x1/4	3.50	3.38	68.5 K=1.00	16.584	1.4400	-5880.74	23880.20	0.246
T4	120 - 100 (558)	L3x3x1/4	3.50	3.38	68.5 K=1.00	16.584	1.4400	-5849.02	23880.20	0.245
T4	120 - 100 (563)	L3x3x1/4	3.50	3.38	68.5 K=1.00	16.584	1.4400	-5650.22	23880.20	0.237
T4	120 - 100 (564)	L3x3x1/4	3.50	3.38	68.5 K=1.00	16.584	1.4400	-5631.14	23880.20	0.236

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Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio P P _a
T1	180 - 160	P2.5x.203	20.00	3.21	40.6	37.800	1.7040	14356.80	64413.10	0.223
T2	160 - 140	P2.5x.203	20.00	3.21	40.6	37.800	1.7040	10065.60	64413.10	0.156
T3	140 - 120	P2.5x.203	20.00	3.21	40.6	36.000	1.7040	4126.31	61345.80	0.067
T4	120 - 100	P2.5x.203	20.00	3.21	40.6	36.000	1.7040	4123.94	61345.80	0.067

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio P P _a
T1	180 - 160	5/8	4.75	4.42	339.7	21.600	0.3068	6457.99	6626.80	0.975
T2	160 - 140	5/8	4.75	4.42	339.7	21.600	0.3068	4261.01	6626.80	0.643
T3	140 - 120	5/8	4.75	4.42	339.7	21.600	0.3068	3752.22	6626.80	0.566
T4	120 - 100	5/8	4.75	4.42	339.7	21.600	0.3068	5256.26	6626.80	0.793
T5	100 - 80	5/8	4.75	4.42	339.7	21.600	0.3068	3746.73	6626.80	0.565
T6	80 - 60	5/8	4.75	4.42	339.7	21.600	0.3068	3602.40	6626.80	0.544
T7	60 - 40	5/8	4.75	4.42	339.7	21.600	0.3068	4269.22	6626.80	0.644
T8	40 - 20	5/8	4.75	4.42	339.7	21.600	0.3068	2100.67	6626.80	0.317*
T9	20 - 5	5/8	4.99	4.65	357.3	21.600	0.3068	2872.30	6626.80	0.433

* DL controls

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio P P _a
T1	180 - 160	L1 3/4x1 3/4x3/16	3.50	3.26	72.9	21.600	0.6211	666.94	13415.60	0.050

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio $\frac{P}{P_a}$
T2	160 - 140	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	21.600	0.5273	645.39	11390.60	0.057
T3	140 - 120	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	21.600	0.5273	673.87	11390.60	0.059
T4	120 - 100	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	21.600	0.5273	812.44	11390.60	0.071
T5	100 - 80	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	21.600	0.5273	463.15	11390.60	0.041*
T6	80 - 60	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	21.600	0.5273	480.71	11390.60	0.042*
T7	60 - 40	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	21.600	0.5273	751.83	11390.60	0.066
T8	40 - 20	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	21.600	0.5273	804.84	11390.60	0.071
T9	20 - 5	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	21.600	0.5273	770.40	11390.60	0.068

* DL controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio $\frac{P}{P_a}$
T10	5 - 0	L1 1/2x1 1/2x3/16	3.24	3.00	78.8	21.600	0.5273	3325.80	11390.60	0.292*

* DL controls

Bottom Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio $\frac{P}{P_a}$
T9	20 - 5	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	21.600	0.5273	2251.80	11390.60	0.198*

* DL controls

Top Guy Pull-Off Design Data (Tension)

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio $\frac{P}{P_a}$
T6	80 - 60	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	21.600	0.5273	3037.49	11390.60	0.267

Top Guy Pull-Off Bending Design Data

Section No.	Elevation ft	Size	Actual M _x lb-ft	Actual f _{bx} ksi	Allow. F _{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M _y lb-ft	Actual f _{by} ksi	Allow. F _{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T6	80 - 60	L1 1/2x1 1/2x3/16	-3.62	0.247	23.760	0.010	-3.62	0.478	23.760	0.020

Top Guy Pull-Off Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T6	80 - 60	L1 1/2x1 1/2x3/16	0.267	0.010	0.020	0.297 ✓	1.333	H2-1 ✓

Torque-Arm Top Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio $\frac{P}{P_a}$
T1	180 - 160 (531)	L2x2x5/16	4.75	4.59	91.6	21.600	1.1500	12699.30	24840.00	0.511
T1	180 - 160 (532)	L2x2x5/16	4.75	4.59	91.6	21.600	1.1500	12663.50	24840.00	0.510
T1	180 - 160 (537)	L2x2x5/16	4.75	4.59	91.6	21.600	1.1500	12725.20	24840.00	0.512
T1	180 - 160 (538)	L2x2x5/16	4.75	4.59	91.6	21.600	1.1500	12857.30	24840.00	0.518
T1	180 - 160 (543)	L2x2x5/16	4.75	4.59	91.6	21.600	1.1500	12755.30	24840.00	0.513
T1	180 - 160 (544)	L2x2x5/16	4.75	4.59	91.6	21.600	1.1500	12849.20	24840.00	0.517
T4	120 - 100 (549)	L2x2x5/16	4.75	4.59	91.6	21.600	1.1500	7946.44	24840.00	0.320
T4	120 - 100 (550)	L2x2x5/16	4.75	4.59	91.6	21.600	1.1500	7962.59	24840.00	0.321
T4	120 - 100 (555)	L2x2x5/16	4.75	4.59	91.6	21.600	1.1500	7927.50	24840.00	0.319
T4	120 - 100 (556)	L2x2x5/16	4.75	4.59	91.6	21.600	1.1500	7990.05	24840.00	0.322
T4	120 - 100 (561)	L2x2x5/16	4.75	4.59	91.6	21.600	1.1500	7973.87	24840.00	0.321
T4	120 - 100 (562)	L2x2x5/16	4.75	4.59	91.6	21.600	1.1500	7938.95	24840.00	0.320

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio $\frac{P}{P_a}$
										✓

Torque-Arm Bottom Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio $\frac{P}{P_a}$
T1	180 - 160 (533)	L3x3x1/4	3.50	3.38	43.6	21.600	1.4400	2307.78	31104.00	0.074 ✓
T1	180 - 160 (534)	L3x3x1/4	3.50	3.38	43.6	21.600	1.4400	2360.62	31104.00	0.076 ✓
T1	180 - 160 (539)	L3x3x1/4	3.50	3.38	43.6	21.600	1.4400	2171.01	31104.00	0.070 ✓
T1	180 - 160 (540)	L3x3x1/4	3.50	3.38	43.6	21.600	1.4400	2231.03	31104.00	0.072 ✓
T1	180 - 160 (545)	L3x3x1/4	3.50	3.38	43.6	21.600	1.4400	2200.20	31104.00	0.071 ✓
T1	180 - 160 (546)	L3x3x1/4	3.50	3.38	43.6	21.600	1.4400	2201.34	31104.00	0.071 ✓
T4	120 - 100 (551)	L3x3x1/4	3.50	3.38	43.6	21.600	1.4400	2605.34	31104.00	0.084 ✓
T4	120 - 100 (552)	L3x3x1/4	3.50	3.38	43.6	21.600	1.4400	2593.67	31104.00	0.083 ✓
T4	120 - 100 (557)	L3x3x1/4	3.50	3.38	43.6	21.600	1.4400	2303.77	31104.00	0.074 ✓
T4	120 - 100 (558)	L3x3x1/4	3.50	3.38	43.6	21.600	1.4400	2214.71	31104.00	0.071 ✓
T4	120 - 100 (563)	L3x3x1/4	3.50	3.38	43.6	21.600	1.4400	2067.86	31104.00	0.066 ✓
T4	120 - 100 (564)	L3x3x1/4	3.50	3.38	43.6	21.600	1.4400	2007.77	31104.00	0.065 ✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF*P _{allow} lb	% Capacity	Pass Fail
T1	180 - 160	Leg	P2.5x.203	3	-38505.80	71607.82	53.8	Pass
		Diagonal	5/8	32	6457.99	8833.52	73.1	Pass
		Horizontal	L1 3/4x1 3/4x3/16	53	-4863.94	6654.50	73.1	Pass
		Top Girt	L1 3/4x1 3/4x3/16	4	-2534.30	6654.50	38.1	Pass
		Guy A@160.375	5/8	542	14671.50	21200.00	69.2	Pass
		Guy B@160.375	5/8	535	14519.00	21200.00	68.5	Pass
		Guy C@160.375	5/8	529	14527.70	21200.00	68.5	Pass
		Top Guy	L1 1/2x1 1/2x3/16	16	-7660.95	10258.59	77.0	Pass
		Pull-Off@160.375						
		Bottom Guy	L1 1/2x1 1/2x3/16	7	-3629.11	10258.59	36.6	Pass
		Pull-Off@160.375						
		Torque Arm	L2x2x5/16	538	12857.30	33111.72	38.8	Pass

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Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF*P _{allow} lb	% Capacity	Pass Fail
		Top@160.375					52.0 (b)	
		Torque Arm	L3x3x1/4	534	-10182.30	31832.30	32.0	Pass
		Bottom@160.375					41.2 (b)	
T2	160 - 140	Leg	P2.5x.203	63	-37261.60	71607.82	52.0	Pass
		Diagonal	5/8	120	4261.01	8833.52	48.2	Pass
		Horizontal	L1 1/2x1 1/2x3/16	112	-3796.33	4789.66	79.3	Pass
		Top Girt	L1 1/2x1 1/2x3/16	64	-2885.65	6384.62	45.2	Pass
		Bottom Girt	L1 1/2x1 1/2x3/16	69	-1988.53	4789.66	41.5	Pass
T3	140 - 120	Leg	P2.5x.203	123	-38905.80	68642.17	56.7	Pass
		Diagonal	5/8	134	3752.22	8833.52	42.5	Pass
		Horizontal	L1 1/2x1 1/2x3/16	172	-3771.01	4789.66	78.7	Pass
		Top Girt	L1 1/2x1 1/2x3/16	125	-1987.50	4789.66	41.5	Pass
		Bottom Girt	L1 1/2x1 1/2x3/16	129	-2749.36	6384.62	43.1	Pass
T4	120 - 100	Leg	P2.5x.203	183	-46906.30	68642.17	68.3	Pass
		Diagonal	5/8	231	5256.26	8833.52	59.5	Pass
		Horizontal	L1 1/2x1 1/2x3/16	197	-3184.89	4789.66	66.5	Pass
		Bottom Girt	L1 1/2x1 1/2x3/16	189	-1676.85	4789.66	35.0	Pass
		Guy A@116.417	9/16	560	10652.00	17500.00	60.9	Pass
		Guy B@116.417	9/16	553	10425.90	17500.00	59.6	Pass
		Guy C@116.417	9/16	547	10526.40	17500.00	60.2	Pass
		Top Guy	L1 1/2x1 1/2x3/16	186	-2851.70	10258.59	30.1	Pass
		Pull-Off@116.417						
		Bottom Guy	L1 1/2x1 1/2x3/16	232	-5447.70	10258.59	55.4	Pass
		Pull-Off@116.417						
		Torque Arm	L2x2x5/16	556	7990.05	33111.72	24.1	Pass
		Top@116.417					32.3 (b)	
		Torque Arm	L3x3x1/4	552	-6324.64	31832.30	19.9	Pass
		Bottom@116.417					25.6 (b)	
T5	100 - 80	Leg	P2.5x.203	241	-26740.10	53719.30	49.8	Pass
		Diagonal	5/8	299	3746.73	8833.52	42.4	Pass
		Horizontal	L1 1/2x1 1/2x3/16	292	-3176.24	4789.66	66.3	Pass
		Top Girt	L1 1/2x1 1/2x3/16	245	-1675.16	4789.66	35.0	Pass
		Bottom Girt	L1 1/2x1 1/2x3/16	249	-1664.76	4789.66	34.8	Pass
T6	80 - 60	Leg	P2.5x.203	301	-27753.70	53719.30	51.7	Pass
		Diagonal	5/8	313	3602.40	8833.52	40.8	Pass
		Horizontal	L1 1/2x1 1/2x3/16	317	-3303.98	4789.66	69.0	Pass
		Top Girt	L1 1/2x1 1/2x3/16	305	-1663.00	4789.66	34.7	Pass
		Guy A@60.375	9/16	567	11288.50	17500.00	64.5	Pass
		Guy B@60.375	9/16	566	11282.30	17500.00	64.5	Pass
		Guy C@60.375	9/16	565	11293.10	17500.00	64.5	Pass
		Top Guy	L1 1/2x1 1/2x3/16	307	3037.49	15183.67	22.3	Pass
		Pull-Off@60.375						
T7	60 - 40	Leg	P2.5x.203	362	-43406.80	67815.57	64.0	Pass
		Diagonal	5/8	420	4269.22	8833.52	48.3	Pass
		Horizontal	L1 1/2x1 1/2x3/16	414	-3005.98	4789.66	62.8	Pass
		Top Girt	L1 1/2x1 1/2x3/16	365	-1366.47	4789.66	28.5	Pass
		Bottom Girt	L1 1/2x1 1/2x3/16	369	-1552.27	4789.66	32.4	Pass
T8	40 - 20	Leg	P2.5x.203	421	-46467.80	70761.64	65.7	Pass
		Diagonal	5/8	475	2100.67	6626.80	31.7	Pass
		Horizontal	L1 1/2x1 1/2x3/16	474	-2940.02	4789.66	61.4	Pass
		Top Girt	L1 1/2x1 1/2x3/16	425	-1550.21	4789.66	32.4	Pass
		Bottom Girt	L1 1/2x1 1/2x3/16	429	-1525.98	4789.66	31.9	Pass
T9	20 - 5	Leg	P2.5x.203	481	-44479.10	69402.78	64.1	Pass
		Diagonal	5/8	493	2872.30	8833.52	32.5	Pass
		Horizontal	L1 1/2x1 1/2x3/16	497	-2652.83	4789.66	55.4	Pass
		Top Girt	L1 1/2x1 1/2x3/16	485	-1277.20	4789.66	26.7	Pass
		Bottom Girt	L1 1/2x1 1/2x3/16	488	2251.80	11390.60	19.8	Pass
T10	5 - 0	Leg	P2.5x.203	523	-31187.60	44587.00	69.9	Pass
		Top Girt	L1 1/2x1 1/2x3/16	528	3325.80	11390.60	29.2	Pass
							Summary	
						Leg (T10)	69.9	Pass

RISATower

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<i>Section No.</i>	<i>Elevation ft</i>	<i>Component Type</i>	<i>Size</i>	<i>Critical Element</i>	<i>P lb</i>	<i>SF*P_{allow} lb</i>	<i>% Capacity</i>	<i>Pass Fail</i>
						Diagonal (T1)	73.1	Pass
						Horizontal (T2)	79.3	Pass
						Top Girt (T2)	45.2	Pass
						Bottom Girt (T3)	43.1	Pass
						Guy A (T1)	69.2	Pass
						Guy B (T1)	68.5	Pass
						Guy C (T1)	68.5	Pass
						Top Guy Pull-Off (T1)	77.0	Pass
						Bottom Guy Pull-Off (T4)	55.4	Pass
						Torque Arm Top (T1)	52.0	Pass
						Torque Arm Bottom (T1)	41.2	Pass
						Bolt Checks	52.0	Pass
						RATING =	79.3	Pass

Site Name:	Colchester
Client:	CDT
Job Number:	114-13064
Date:	3/20/2014

Design Base Loads (Unfactored) per TIA-222-F

Foundation Mapped:	N		
Moment (M):	0.0	k-ft	
Shear/Leg (V):	2.3	k	
Compression/Leg (P):	95.2	k	
Uplift/Leg (U):	0.0	k	
Tower Type (GT / SST):	GT		
Diameter of Prismatic Portion of Pier (d):	1.0	ft	
Depth to Base of Foundation:	2.0	ft	
Pier Height Above Ground (h):	2.00	ft	
Length / Width of Pad (w):	6.0	ft	
Thickness of Pad (t):	4.0	ft	Concrete Compressive Strength (f'_c): 3000 psi
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:	120.0	pcf	Wind Design Factor: 1.30
Unit Weight of Soil Below Water Table:	65.0	pcf	Steel Elastic Modulus: 29000 ksi
Friction Angle of Uplift from Top of Pad:	30	Degrees	Pad Steel Rebar Size #: 4
Friction Angle of Uplift from Base of Pad:	30	Degrees	Pad Steel Rebar Area: 0.20 in ²
Uplift Angle Started at Top or Base of Pad (T/B):	T		Pad Steel Rebar Yield Strength (F_y): 60 ksi
Allowable Skin Friction:	0	psf	# of Rebar in Top of Pad:
Allowable Compressive Bearing Pressure:	3000	psf	# of Rebar in Base of Pad: 2
Capacity Increase (Due to Transient Loads):	1.00		Pad Clear Cover: 3 in

Axial Capacities and Design Moment

Weight of Concrete (Bouyancy Considered):	21.6	k
Weight of Soil (Bouyancy Considered):	0.0	k
Allowable Skin Friction Resistance:	0.0	k
Controlling Failure Mode (Top / Base):	Base	
Allowable Uplift Capacity per Leg:	11.3	k
Compressive Design Load:	99.7	k
Allowable Compression Capacity per Leg:	108.0	k
Uplift Design Load/Uplift Capacity:	0.00	Result: OK
Compression Design Load/Compression Capacity:	0.92	Result: OK

Pad Strength Capacity

β :	0.85	ACI318-05 - 10.2.7.3
One Way Design Shear (V_u):	0.0	k
One Way Shear Capacity (ϕV_c):	266.1	k - ACI318-05 - 11.3.1.1
$V_u / \phi V_c$:	0.00	Result: OK
Punching Design Shear (V_u):	60.5	k
Nominal Punching Shear Capacity ($\phi_c V_n$):	1311.0	k - ACI318-05 - 11.12.2.1
$V_u / \phi V_c$:	0.05	Result: OK
Flexural Loading Due to Soil Pressure (M_u):	67.5	k-ft
Lower Steel Pad Moment Capacity (ϕM_n):	80.4	k-ft - ACI318-05 - 10.3
$M_u / \phi M_n$:	0.84	Result: OK

Site Name:	Colchester
Client:	CDT
Job Number:	114-13064
Date:	3/20/2014

Design Standard per TIA-222-F

Anchor Radius:	145.0 ft
Uplift (Unfactored):	37.5 k
Shear (Unfactored):	45.8 k
Berm Present:	N
Design Anchor Rod:	Y
Mapped Foundation:	N
Anchor Base Depth (d):	7.5 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:	120.0 pcf
Unit Weight of Water:	62.4 pcf
Submerged Soil Unit Weight:	65.0 pcf
Internal Angle of Friction:	30 Degrees
Cohesion:	500 psf
Allowable Skin Friction of Pad Sides to Soil:	0 psf
Ultimate Coefficient of Shear Friction:	0.30
Maximum Top Conical Failure Angle:	30 Degrees
Maximum Base Conical Failure Angle:	30 Degrees
Allowable Capacity Increase:	1.00 (Due to Transient Loads)

Uplift

Weight of Concrete (Buoyancy Effect Considered):	19.0 k
Weight of Soil (Buoyancy Effect Considered):	84.3 k
Uplift Resistance from Skin Friction:	0.0 k
Allowable Uplift Resistance (FS = 1.5 to 2):	57.4 k
Uplift Design Load/Allowable Uplift Resistance:	0.65 Result: OK

Shear

Ultimate Shear Friction Resistance Due to Normal Force - Uplift:	7.0 k
Passive Pressure:	4072 psf
Ultimate Passive Pressure Resistance:	93.7 k
Allowable Shear Resistance (FS = 1.5 to 2):	50.3 k
Shear Design Load/Allowable Shear Resistance:	0.91 Result: OK

Anchor Rod Capacity

# of Anchor Rods:	1
Anchor Rod Gross Area:	2.41 in ²
Anchor Rod Net Area:	2.41 in ²
Anchor Rod Yield Strength:	47 ksi
Anchor Rod Ultimate Strength:	62 ksi
Allowable Stress Increase:	1.00
Resultant Tensile Load:	59.2 k
Anchor Rod Tensile Resistance:	67.8 k
Resultant Tensile Load / Anchor Rod Tensile Resistance:	0.87 Result: OK

Strength Analysis of Reinforced Concrete

Concrete Compressive Strength (f'_c):	3000 psi
Longitudinal Rebar Yield Strength:	60000 psi
# Longitudinal Rebar (Top):	9
# Longitudinal Rebar (1 Side):	3
Rebar Size:	4
Wind Load Factor:	1.3
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):	16.4 k
Nominal One Way Shear Capacity for Shear Load ($\phi_c V_n$):	122.3 k
$V_u/\phi_v V_n$:	0.13 Result: OK
One Way Shear due to Uplift (V_u):	20.8 k
Nominal One Way Shear Capacity for Uplift ($\phi_c V_n$):	108.4 k
$V_u/\phi_v V_n$:	0.19 Result: OK
Pad Flexure due to Shear Load (M_u):	85.6 k-ft
Nominal Flexural Capacity for Shear Load ($\phi_b M_n$):	167.4 k-ft
Pad Flexure due to Uplift (M_u):	70.1 k-ft
Nominal Flexural Capacity for Uplift ($\phi_b M_n$):	161.9 k-ft
$M_u/\phi_b M_n$ (Max.):	0.51 Result: OK

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

Sprint Existing Facility

Site ID: CT33XC576

North Colchester
589 Old Hartford Road
Colchester, CT 06415

October 30, 2012

October 30, 2012

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

Re: Emissions Values for Site: **CT33XC576 – North Colchester**

EBI Consulting was directed to analyze the proposed upgrades to the existing Sprint facility located at 589 Old Hartford Road, Colchester, CT, for the purpose of determining whether the emissions from the proposed Sprint equipment upgrades on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The number of $\mu\text{W}/\text{cm}^2$ 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 public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The general population exposure limit for the cellular band is approximately 567 $\mu\text{W}/\text{cm}^2$, and the general population exposure limit for the PCS band is 1000 $\mu\text{W}/\text{cm}^2$. 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 upgrades to the existing Sprint Wireless antenna facility located at 589 Old Hartford Road, Colchester, CT, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. All calculations were performed assuming the main lobe of the antenna was focused at the base of the tower to present a worst case scenario. Actual values seen from this site will be dramatically less than those shown in this report. 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 emissions were calculated using the following assumptions:

- 1) 2 CDMA Carriers (1900 MHz) were considered for each sector of the proposed installation.
- 2) 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.
- 3) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The actual gain in this direction was used per the manufactures supplied specifications.
- 4) The antenna used in this modeling is the DB980H90E-M. This is based on feedback from the carrier with regards to anticipated antenna selection. This antenna has a 14.95 dBd gain value at its main lobe at 1900 MHz. All calculations were performed assuming the main lobe of the antenna was focused at the base of the tower to present a worst case scenario.

- 5) The antenna mounting height centerline of the proposed antennas is **180.5 feet** above ground level (AGL)
- 6) 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 calculation were done with respect to uncontrolled / general public threshold limits

Site ID		CT33XC576 - North Colchester															
Site Address		589 Old Hartford Road, Colchester, CT, 06415															
Site Type		Guyed Tower															
Sector 1																	
Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBD)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
1a	Decibel	DB980H90E-M	RRH	1900 MHz	CDMA / LTE	20	2	40	14.95	180.5	174.5	1/2 "	0.5	0	1114.4485	13.15755	1.31576%
Sector total Power Density Value:																1.316%	
Sector 2																	
Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBD)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
2a	Decibel	DB980H90E-M	RRH	1900 MHz	CDMA / LTE	20	2	40	14.95	180.5	174.5	1/2 "	0.5	0	1114.4485	13.15755	1.31576%
Sector total Power Density Value:																1.316%	
Sector 3																	
Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBD)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
3a	Decibel	DB980H90E-M	RRH	1900 MHz	CDMA / LTE	20	2	40	14.95	180.5	174.5	1/2 "	0.5	0	1114.4485	13.15755	1.31576%
Sector total Power Density Value:																1.316%	

Site Composite MPE %	
Carrier	MPE %
Sprint	3.947%
AT&T	4.630%
Total Site MPE %	8.577%

Summary

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

The anticipated Maximum Composite contributions from the Sprint facility are **3.947% (1.316% from each sector)** of the allowable FCC established general public limit considering all three sectors simultaneously sampled at the ground level.

The anticipated composite MPE value for this site assuming all carriers present is **8.578%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions

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



Scott Heffernan
RF Engineering Director

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

Sprint Existing Facility

Site ID: CT33XC576

North Colchester
589 Old Hartford Road
Colchester, CT 06415

October 30, 2012

October 30, 2012

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

Re: Emissions Values for Site: **CT33XC576 – North Colchester**

EBI Consulting was directed to analyze the proposed upgrades to the existing Sprint facility located at 589 Old Hartford Road, Colchester, CT, for the purpose of determining whether the emissions from the proposed Sprint equipment upgrades on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The number of $\mu\text{W}/\text{cm}^2$ 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 public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The general population exposure limit for the cellular band is approximately $567 \mu\text{W}/\text{cm}^2$, and the general population exposure limit for the PCS band is $1000 \mu\text{W}/\text{cm}^2$. 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 upgrades to the existing Sprint Wireless antenna facility located at 589 Old Hartford Road, Colchester, CT, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. All calculations were performed assuming the main lobe of the antenna was focused at the base of the tower to present a worst case scenario. Actual values seen from this site will be dramatically less than those shown in this report. 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 emissions were calculated using the following assumptions:

- 1) 2 CDMA Carriers (1900 MHz) were considered for each sector of the proposed installation.
- 2) 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.
- 3) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The actual gain in this direction was used per the manufactures supplied specifications.
- 4) The antenna used in this modeling is the DB980H90E-M. This is based on feedback from the carrier with regards to anticipated antenna selection. This antenna has a 14.95 dBd gain value at its main lobe at 1900 MHz. All calculations were performed assuming the main lobe of the antenna was focused at the base of the tower to present a worst case scenario.

- 5) The antenna mounting height centerline of the proposed antennas is **180.5 feet** above ground level (AGL)
- 6) 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 calculation were done with respect to uncontrolled / general public threshold limits

Site ID		CT33XC576 - North Colchester															
Site Address		589 Old Hartford Road, Colchester, CT, 06415															
Site Type		Guyed Tower															
Sector 1																	
Antenna Number	Antenna Make	Antenna Model	Radio Type	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBD)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
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