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
3 Polly Lane, Bozrah, 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 3 Polly Lane, Bozrah, owned by Cordless Data Transfer, Inc. (coordinates 41°34'27.31"N, -72°12'1.53"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 150.5' 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/pwer 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 5.764%; the combined site operations will result in a total power density of 31.154%.

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

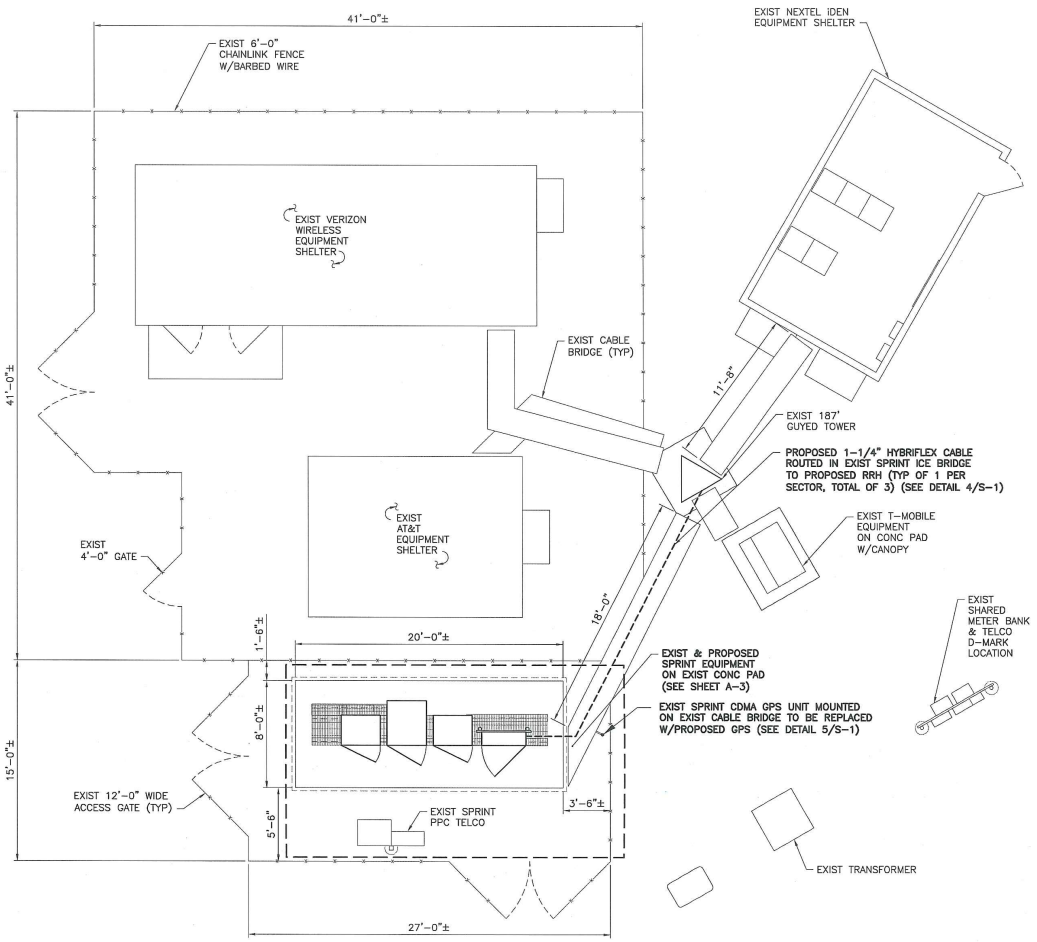
cc: Mr. William Ballinger, First Selectman, Town of Bozrah
(underlying property owner)

N — TRUE

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.

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/A-2

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

Sprint
NETWORK VISION MMBTS LAUNCH
1 INTERNATIONAL BLVD., SUITE 800
MAHWAH, NJ 07495
OFFICE:(201)684-4000
FAX:(201)648-4223

Alcatel·Lucent
1 ROBBINS ROAD
WESTFORD, MA 01886
TEL:(978) 952-1600

HPC WIRELESS SERVICES

TECTONIC · PLANNING · ENGINEERING · SURVEYING · CONSTRUCTION MANAGEMENT
TECTONIC Engineering & Surveying Consultants P.C.
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-4656
Fax: (845) 567-8703
www.tectonicengineering.com

SUBMITTALS

PROJECT NO: 6318.33-570

NO	DATE	DESCRIPTION	BY
0	10/1/12	FOR COMMENT	AHA
1	10/24/12	PER COMMENTS	DAC
3	10/28/13	REVISED RFDS	MP

DATE	ISSUED BY

SEAL

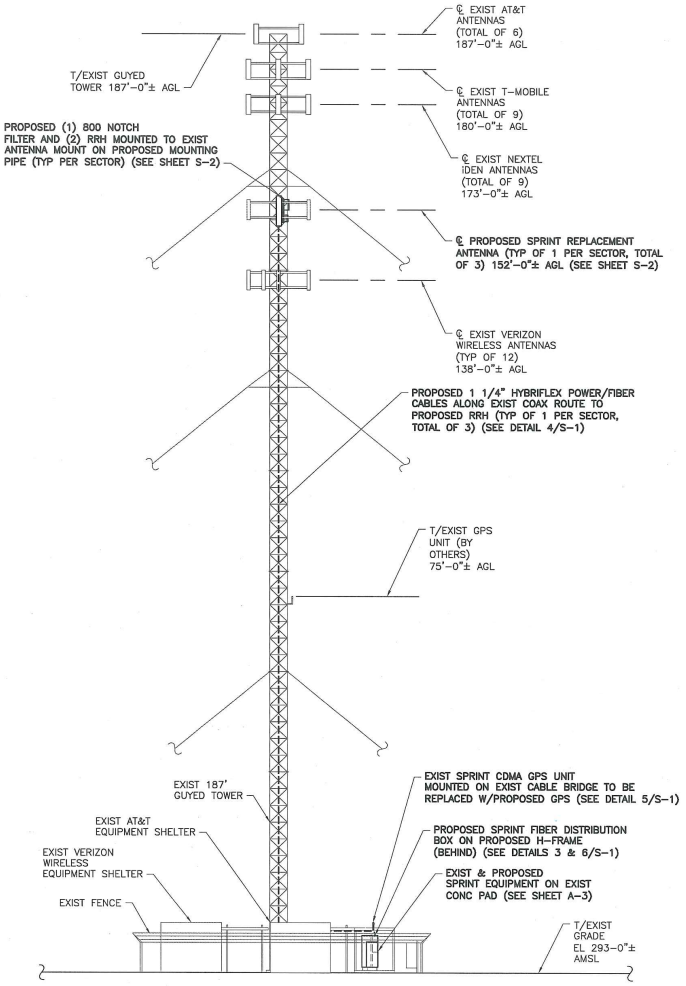
SITE NUMBER:
CT33XC570
SITE NAME:
BOZRAH
SITE ADDRESS:
12 POLLY LANE
BOZRAH, CT 06334

SHEET TITLE:
SITE PLAN

SHEET NO:
A-1

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 / A-2 ELEVATION

SCALE: 3/32" = 1'-0"

Sprint

NETWORK VISION MMBTS LAUNCH
1 INTERNATIONAL BLVD., SUITE 800
MAHWAH, NJ 07495
OFFICE:(201)684-4000
FAX:(201)648-4223

Alcatel·Lucent
1 ROBBINS ROAD
WESTFORD, MA 01886
TEL:(978) 952-1600

HPC WIRELESS SERVICES

TECTONIC • PLANNING • ENGINEERING • SURVEYING • CONSTRUCTION MANAGEMENT
TECTONIC Engineering & Surveying Consultants P.C.
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-0656
Fax: (845) 567-0703
www.tectonicengineering.com

SUBMITTALS

PROJECT NO: 6318.33-570

NO	DATE	DESCRIPTION	BY
0	10/1/12	FOR COMMENT	AHA
1	10/24/12	PER COMMENTS	DAC
3	10/28/13	REVISED RFDS	MP

DATE	ISSUED BY

SEAL

SITE NUMBER:
CT33XC570
SITE NAME:
BOZRAH
SITE ADDRESS:
12 POLLY LANE
BOZRAH, CT 06334

SHEET TITLE:
ELEVATION

SHEET NO:
A-2

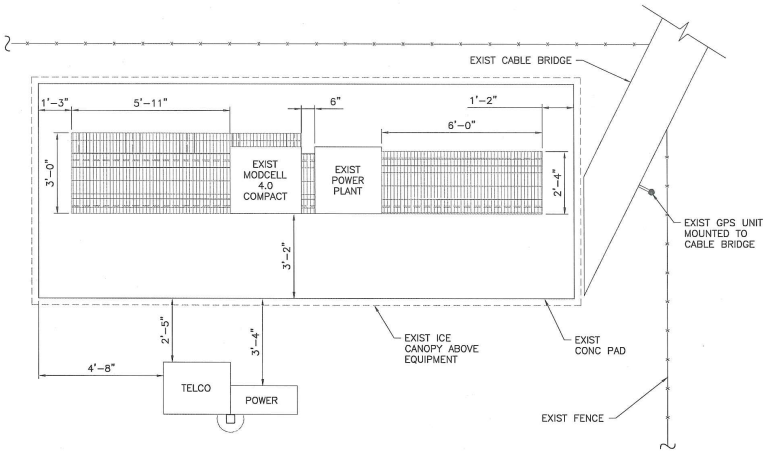
N — TRUE

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.

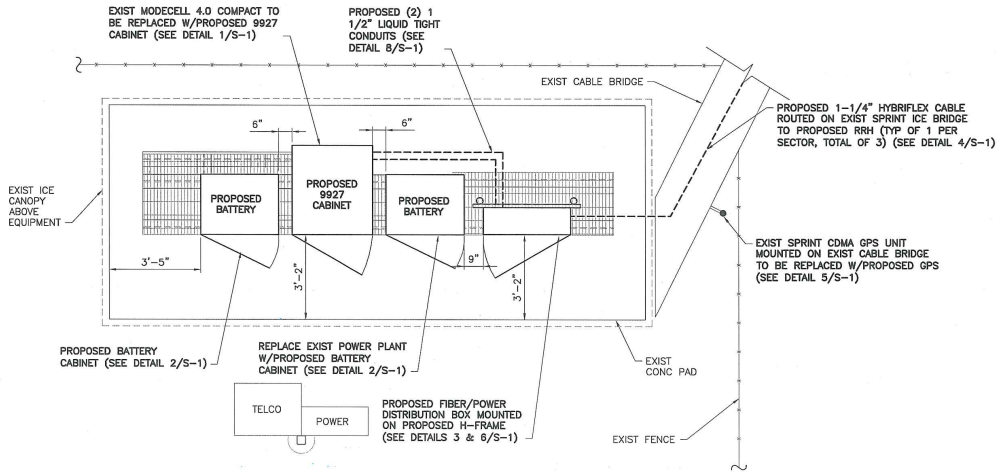
USE PLUMBING SCENARIO 124

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 / A-3 ENLARGED EQUIPMENT LAYOUT PLAN (EXIST)

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



2 / A-3 ENLARGED EQUIPMENT LAYOUT PLAN (FINAL)

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

Sprint

NETWORK VISION MMBTS LAUNCH
1 INTERNATIONAL BLVD., SUITE 800
MAHWAH, NJ 07495
OFFICE:(201)684-4000
FAX:(201)648-4223

Alcatel·Lucent
1 ROBBINS ROAD
WESTFORD, MA 01886
TEL:(978) 952-1600

HPC WIRELESS SERVICES

TECTONIC
TECTONIC Engineering & Surveying Consultants P.C.
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-0656
Fax: (845) 567-0703
www.tectonicengineering.com

SUBMITTALS

PROJECT NO: 6318.33-570

NO	DATE	DESCRIPTION	BY
0	10/1/12	FOR COMMENT	AHA
1	10/24/12	PER COMMENTS	DAC
3	10/28/13	REVISED RFDS	MP

DATE	ISSUED BY

SEAL

SITE NUMBER:
CT33XC570
SITE NAME:
BOZRAH
SITE ADDRESS:
12 POLLY LANE
BOZRAH, CT 06334

SHEET TITLE:
EQUIPMENT LAYOUT PLANS

SHEET NO:
A-3

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 29, 2014

Nudd Job Number: 113-13004

Site Location: 3 Polly Lane, Bozrah, CT 06334, New London County (Latitude and Longitude: 41-34-24, -72-12-12)

Subject: Structural Analysis of an existing 187 ft Guyed Tower

Fred A. Nudd Corporation has completed a three-dimensional, finite element model structural analysis of the above noted guyed tower. This tower was analyzed considered appurtenance loads noted in the appurtenance loading table on the following page. The design loading criteria and strength design are per the TIA/EIA-222-F standard, which is the recommended design standard per the 2003 International Building Code (Sec. 1609 & 3108), including 2005 and 2009 Connecticut Building Code Amendments. 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. The original tower and foundation dimensions have been taken from original design drawings by Fred A. Nudd Corporation (Drawing Number 02-8869-1 & 97-5463-2, dated March 27, 2002 & November 3, 1997). A 7 ft, 2 bay extension has been installed in this tower, raising the overall tower height to 187 ft (Project Number 209-13046, dated April 10, 2009) and this addition has been included in this analysis. Modifications to the tower, designed and installed by Fred A. Nudd Corporation (Project Number 113-13004, dated January 27, 2013) have been included in this analysis. Subsurface soil conditions were taken from a geotechnical report by Tower Engineering Professionals, Inc. (TEP Project Number 080004.46E, dated August 24, 2009). Additional tower information was taken from a post modification inspection report by Tower Engineering Professionals, Inc. (TEP Project Number 080004.46, dated July 24, 2009). The tower is assumed to be in good, undamaged and equivalent to as new condition and has been maintained / inspected per criteria by TIA-222.

The purpose of this analysis is to determine the structure's ability to support new Sprint equipment installed at a rad center of 150.4 ft above ground level (AGL). The new equipment to be installed, which includes antennas and associated hardware are listed on the following page in the appurtenance loading table.

Results of the analysis indicate the tower will be able to the support the design loads noted in the appurtenance loading table on the following pages when considering the existing and proposed loading. Specific section design loads, capacities and stress ratios are provided on the following pages. Maximum member usage was found to be 90%.

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 existing and proposed equipment, including after tower upgrades noted above.

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
Radial Ice = 0.5 inch
Ice Windspeed = 74 mph, fastest mile

Appurtenance Loading – Existing / Remaining

Height (ft)	Carrier	Appurtenance	Mount	Coax (in)
188	AT&T Mobility	(6) Powerwave 7770 (6) Powerwave FLG17201 (2) Powerwave P65-17-XLH-RR (1) Andrew SBNH-1D6565C (1) Raycap DC6-48-60-18-8F (6) Ericsson RRUs-11	(3) 10 ft Boom / Frame	(12) 1-5/8 (1) 1.34 Fiber (2) 0.65 DC
180	T-Mobile	(9) RFS APX199015-CT2 (3) TMA (3) Diplexers	(3) 12 ft Boom / Frame	(9) 1-1/4
173	Nextel	(9) Swedcom ALP-E-9011	(3) 12 ft Boom / Frame	(9) 1-1/4

- *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)
150.4	Sprint	(3) RFS APXV9ERR18-C-A20 (6) Alcatel Lucent 2x50W RRH, 800 MHz (6) Alcatel Lucent 4x45W 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	143.7	137.5	96
Anchor Uplift	61.7	57.7	94
Anchor Shear	58.9	53.5	91

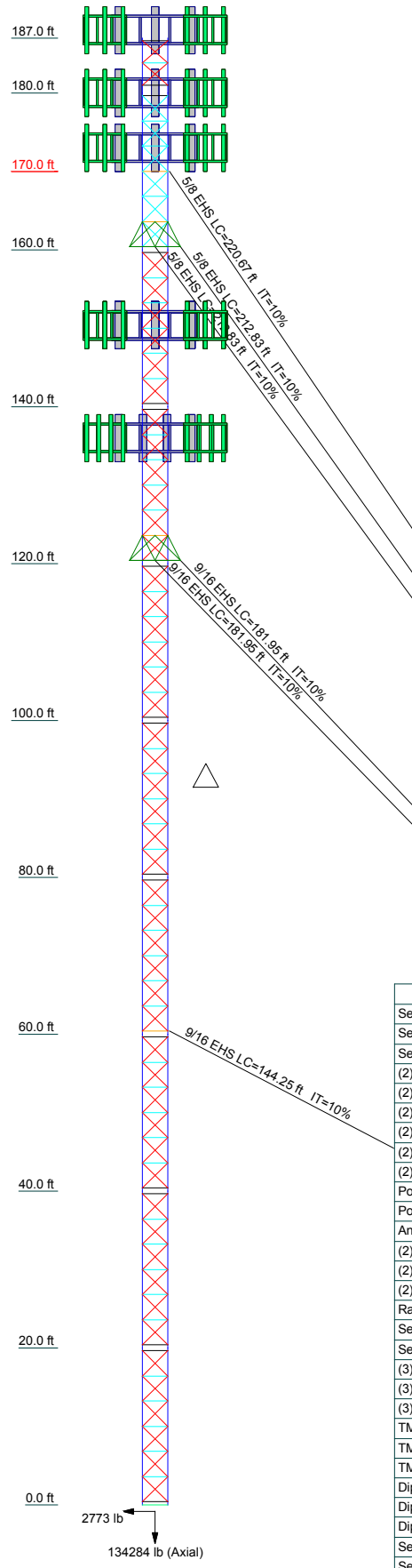
- *Percentage less than 100% denote foundation is satisfactory for loading*
- *Percentage greater than 100% indicates foundation analysis is required*

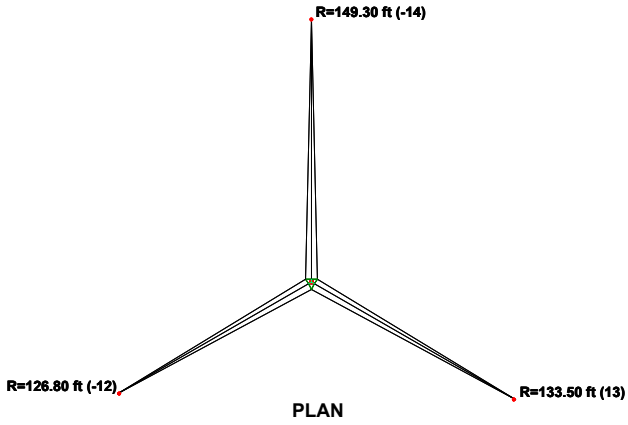
Maximum Member Usage

Member	Percentage
Leg	90
Diagonal	81
Horizontal	69
Bolts	56
Guys	76
Anchor Rod	85

- *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-60					
Diagonals	A	C3x4.1									
Diagonal Grade	SR 5/8	SR 5/8									
Top Girts						A36					
Bottom Girts			L1 1/2x1 1/2x3/16								
Horizontals			L1 1/2x1 1/2x3/16								
Top Guy Pull-Offs	N.A.	L2x2x5/16	N.A.	L2x2x5/16	N.A.	N.A.	L1 1/2x1 1/2x3/16				
Face Width (ft)						3.5					
# Panels @ (ft)	B					54 @ 3.20833					
Weight (lb)	234.8	1448.3	658.2	923.0	658.2	658.2	658.2	658.2	658.2	658.2	7213.8





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Sector Frame (ATI)	187	(3) Swedcom ALP-E-9011 (Nextel)	173
Sector Frame (ATI)	187	(3) Swedcom ALP-E-9011 (Nextel)	173
Sector Frame (ATI)	187	(3) Swedcom ALP-E-9011 (Nextel)	173
(2) Powerwave 7770.00 (ATI)	187	Sector Frame (Sprint)	150.4
(2) Powerwave 7770.00 (ATI)	187	Sector Frame (Sprint)	150.4
(2) Powerwave 7770.00 (ATI)	187	Sector Frame (Sprint)	150.4
(2) Powerwave LGP17201 (ATI)	187	RFS APXV9ERR18-C-A20 (Sprint)	150.4
(2) Powerwave LGP17201 (ATI)	187	Alcatel Lucent 4X45W RRH (Sprint)	150.4
(2) Powerwave LGP17201 (ATI)	187	Alcatel Lucent 2X50W RRH (Sprint)	150.4
Powerwave P65-17-XLH-RR (ATI)	187	RFS APXV9ERR18-C-A20 (Sprint)	150.4
Powerwave P65-17-XLH-RR (ATI)	187	Alcatel Lucent 4X45W RRH (Sprint)	150.4
Andrew SBNH-1D6565C (ATI)	187	Alcatel Lucent 2X50W RRH (Sprint)	150.4
(2) Ericsson RRUs11 (ATI)	187	RFS APXV9ERR18-C-A20 (Sprint)	150.4
(2) Ericsson RRUs11 (ATI)	187	Alcatel Lucent 4X45W RRH (Sprint)	150.4
(2) Ericsson RRUs11 (ATI)	187	Alcatel Lucent 2X50W RRH (Sprint)	150.4
Raycap DC6-48-60-18-8F (ATI)	187	Sector Frame (Verizon)	136
Sector Frame (T-Mobile)	180	Antel BXA-70063-6CF (Verizon)	136
Sector Frame (T-Mobile)	180	(2) Antel LPA-80080-4CF (Verizon)	136
(3) RFS APX199015-CT2 (T-Mobile)	180	Antel BXA-70063-6CF (Verizon)	136
(3) RFS APX199015-CT2 (T-Mobile)	180	Antel BXA-70063-6CF (Verizon)	136
(3) RFS APX199015-CT2 (T-Mobile)	180	Antel BXA-171085-8BF (Verizon)	136
TMA (T-Mobile)	180	Antel BXA-171085-8BF (Verizon)	136
TMA (T-Mobile)	180	Antel BXA-171085-8BF (Verizon)	136
TMA (T-Mobile)	180	(2) RFS FD0R6004/2C-3L (Verizon)	136
Diplexor (T-Mobile)	180	(2) RFS FD0R6004/2C-3L (Verizon)	136
Diplexor (T-Mobile)	180	(2) RFS FD0R6004/2C-3L (Verizon)	136
Diplexor (T-Mobile)	180	(2) Antel LPA-80080-4CF (Verizon)	136
Sector Frame (T-Mobile)	180	(2) Antel LPA-80080-4CF (Verizon)	136
Sector Frame (Nextel)	173	Sector Frame (Verizon)	136
Sector Frame (Nextel)	173	Sector Frame (Verizon)	136
Sector Frame (Nextel)	173		

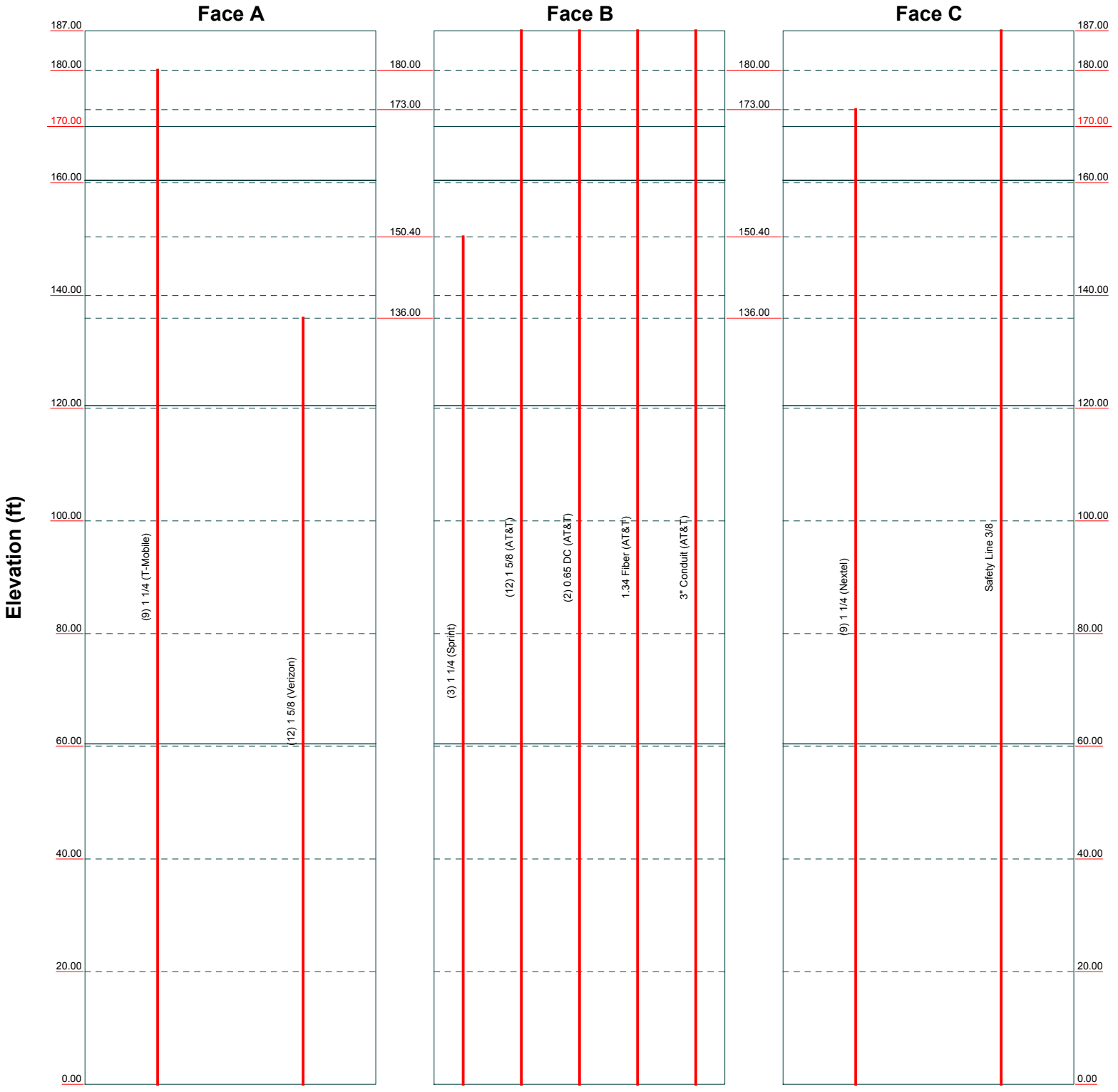
SYMBOL LIST

MARK	SIZE	MARK	SIZE

Phone: FAX:	Job: 114-13066		
	Project: 187' G42WPAR GT Bozrah, CT		
	Client: CDT	Drawn by: FAN	App'd:
	Code: TIA/EIA-222-F	Date: 03/29/14	Scale: NTS
	Path:		Dwg No. E-1

Feedline Distribution Chart
0' - 187'

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



Phone: FAX:	Job: ***114-13066***		
	Project: ***187' G42WPAR GT Bozrah, CT***		
	Client: CDT	Drawn by: FAN	App'd:
	Code: TIA/EIA-222-F	Date: 03/29/14	Scale: NTS
	Path:		Dwg No. E-7

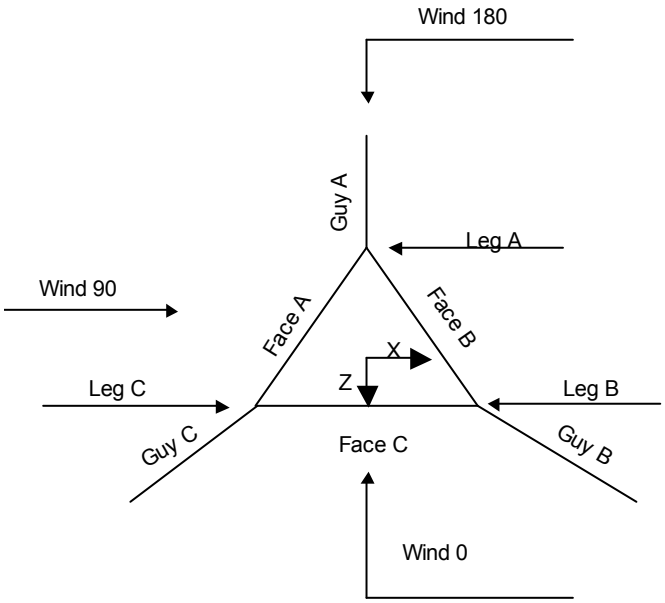
Tower Input Data

The main tower is a 3x guyed tower with an overall height of 187.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 3.50 ft at the top and 3.50 ft at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

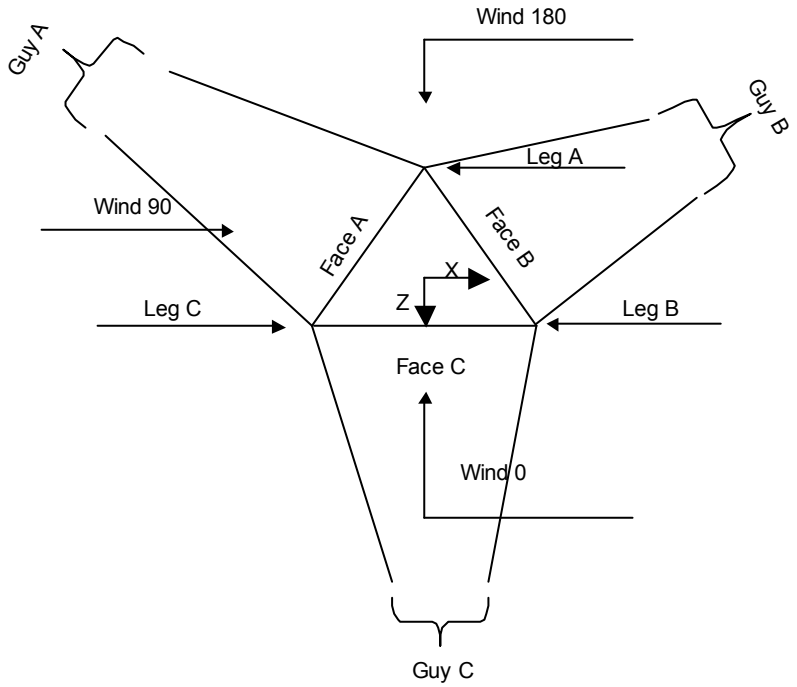
Tower is located in New London County, Connecticut.
Basic wind speed of 85 mph.
Nominal ice thickness of 0.5000 in.
Ice density of 56 pcf.
A wind speed of 74 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 50 mph.
Weld together tower sections 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

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



Corner & Starmount Guyed Tower



Face Guyed

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	187.00-180.00			3.50	1	7.00
T2	180.00-160.00			3.50	1	20.00
T3	160.00-140.00			3.50	1	20.00
T4	140.00-120.00			3.50	1	20.00
T5	120.00-100.00			3.50	1	20.00
T6	100.00-80.00			3.50	1	20.00
T7	80.00-60.00			3.50	1	20.00
T8	60.00-40.00			3.50	1	20.00
T9	40.00-20.00			3.50	1	20.00
T10	20.00-0.00			3.50	1	20.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	187.00-180.00	2.85	TX Brace	No	Yes	3.7500	11.8750
T2	180.00-160.00	3.21	X Brace	No	Yes	4.5000	4.5000
T3	160.00-140.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T4	140.00-120.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T5	120.00-100.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T6	100.00-80.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T7	80.00-60.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T8	60.00-40.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T9	40.00-20.00	3.21	TX Brace	No	Yes	4.5000	4.5000
T10	20.00-0.00	3.21	TX Brace	No	Yes	4.5000	4.5000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 187.00-180.00	Pipe	P2.5x.203	A500M-54 (54 ksi)	Solid Round	5/8	A36 (36 ksi)
T2 180.00-160.00	Pipe	P2.5x.203	A500M-60 (60 ksi)	Channel	C3x4.1	A36 (36 ksi)
T3 160.00-140.00	Pipe	P2.5x.203	A500M-60 (60 ksi)	Solid Round	5/8	A36 (36 ksi)
T4 140.00-120.00	Pipe	P2.5x.203	A500M-60 (60 ksi)	Solid Round	5/8	A36 (36 ksi)
T5 120.00-100.00	Pipe	P2.5x.203	A500M-60 (60 ksi)	Solid Round	5/8	A36 (36 ksi)
T6 100.00-80.00	Pipe	P2.5x.203	A500M-60 (60 ksi)	Solid Round	5/8	A36 (36 ksi)
T7 80.00-60.00	Pipe	P2.5x.203	A500M-60 (60 ksi)	Solid Round	5/8	A36 (36 ksi)
T8 60.00-40.00	Pipe	P2.5x.203	A500M-60 (60 ksi)	Solid Round	5/8	A36 (36 ksi)
T9 40.00-20.00	Pipe	P2.5x.203	A500M-60 (60 ksi)	Solid Round	5/8	A36 (36 ksi)
T10 20.00-0.00	Pipe	P2.5x.203	A500M-60 (60 ksi)	Solid Round	5/8	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 187.00-180.00	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T2 180.00-160.00	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T3 160.00-140.00	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T4 140.00-120.00	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A36 (36 ksi)
T5 120.00-100.00	Equal Angle	L1 1/2x1 1/2x3/16	A36	Equal Angle	L1 1/2x1 1/2x3/16	A36

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T6 100.00-80.00	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36 (36 ksi)
T7 80.00-60.00	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36 (36 ksi)
T8 60.00-40.00	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36 (36 ksi)
T9 40.00-20.00	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36 (36 ksi)
T10 20.00-0.00	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 187.00-180.00	None	Flat Bar		(36 ksi) A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36 (36 ksi)
T2 180.00-160.00	None	Flat Bar		(36 ksi) A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36 (36 ksi)
T3 160.00-140.00	None	Flat Bar		(36 ksi) A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36 (36 ksi)
T4 140.00-120.00	None	Flat Bar		(36 ksi) A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36 (36 ksi)
T5 120.00-100.00	None	Flat Bar		(36 ksi) A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36 (36 ksi)
T6 100.00-80.00	None	Flat Bar		(36 ksi) A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36 (36 ksi)
T7 80.00-60.00	None	Flat Bar		(36 ksi) A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36 (36 ksi)
T8 60.00-40.00	None	Flat Bar		(36 ksi) A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36 (36 ksi)
T9 40.00-20.00	None	Flat Bar		(36 ksi) A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36 (36 ksi)
T10 20.00-0.00	None	Flat Bar		(36 ksi) A36 (36 ksi)	Single Angle	L1 1/2x1 1/2x3/16	(36 ksi) A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
T1 187.00-180.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T2 180.00-160.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T3	0.00	0.0000	A36	1	1	1	36.0000	36.0000

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1	No	No	1	1	1	1	0.65	0.65	1	1
187.00-180.00				1	1	1	0.65	0.65	1	1
T2	No	No	1	2.84	1	2.84	0.65	0.65	1	1
180.00-160.00				2.84	1	2.84	0.65	0.65	1	1
T3	No	No	1	1	1	1	0.65	0.65	1	1
160.00-140.00				1	1	1	0.65	0.65	1	1
T4	No	No	1	1	1	1	0.65	0.65	1	1
140.00-120.00				1	1	1	0.65	0.65	1	1
T5	No	No	1	1	1	1	0.65	0.65	1	1
120.00-100.00				1	1	1	0.65	0.65	1	1
T6	No	No	1	1	1	1	0.65	0.65	1	1
100.00-80.00				1	1	1	0.65	0.65	1	1
T7	No	No	1	1	1	1	0.65	0.65	1	1
80.00-60.00				1	1	1	0.65	0.65	1	1
T8	No	No	1	1	1	1	0.65	0.65	1	1
60.00-40.00				1	1	1	0.65	0.65	1	1
T9	No	No	1	1	1	1	0.65	0.65	1	1
40.00-20.00				1	1	1	0.65	0.65	1	1
T10	No	No	1	1	1	1	0.65	0.65	1	1
20.00-0.00				1	1	1	0.65	0.65	1	1

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 187.00-180.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T2 180.00-160.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T3 160.00-140.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T4 140.00-120.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T5 120.00-100.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T6 100.00-80.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T7 80.00-60.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T8 60.00-40.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T9 40.00-20.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T10 20.00-0.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 187.00-180.00	Flange	0.7500 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 180.00-160.00	Flange	0.7500 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 160.00-140.00	Flange	0.7500 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 140.00-120.00	Flange	0.7500 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 120.00-100.00	Flange	0.7500 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T6 100.00-80.00	Flange	0.7500 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T7 80.00-60.00	Flange	0.7500 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T8 60.00-40.00	Flange	0.7500 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T9 40.00-20.00	Flange	0.7500 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T10 20.00-0.00	Flange	0.7500 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

Guy Data

Guy Elevation ft	Guy Grade		Guy Size	Initial Tension lb	%	Guy Modulus ksi	Guy Weight plf	L_u ft	Anchor Radius ft	Anchor Azimuth Adj. °	Anchor Elevation ft	End Fitting Efficiency %
160.375	EHS	A	5/8	4240.00	10%	21000	0.813	228.08	149.30	0.0000	-14.00	100%
		B	5/8	4240.00	10%	21000	0.813	197.36	133.50	0.0000	13.00	100%
		C	5/8	4240.00	10%	21000	0.813	212.65	126.80	0.0000	-12.00	100%
120.375	EHS	A	9/16	3500.00	10%	21000	0.671	199.23	149.30	0.0000	-14.00	100%
		B	9/16	3500.00	10%	21000	0.671	169.65	133.50	0.0000	13.00	100%
		C	9/16	3500.00	10%	21000	0.671	181.79	126.80	0.0000	-12.00	100%
60.375	EHS	A	9/16	3500.00	10%	21000	0.671	164.86	149.30	0.0000	-14.00	100%
		B	9/16	3500.00	10%	21000	0.671	139.64	133.50	0.0000	13.00	100%
		C	9/16	3500.00	10%	21000	0.671	144.13	126.80	0.0000	-12.00	100%
170	EHS	A	5/8	4240.00	10%	21000	0.813	235.49	149.30	0.0000	-14.00	100%
		B	5/8	4240.00	10%	21000	0.813	204.61	133.50	0.0000	13.00	100%
		C	5/8	4240.00	10%	21000	0.813	220.48	126.80	0.0000	-12.00	100%

Guy Data *(cont'd)*

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

Guy Data *(cont'd)*

Guy Elevation ft	Diagonal Grade	Diagonal Type	Upper Diagonal Size	Lower Diagonal Size	Is Strap.	Pull-Off Grade	Pull-Off Type	Pull-Off Size
160.38	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Equal Angle	L2x2x5/16
120.38	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Equal Angle	L2x2x5/16
60.38	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16
170.00	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16

Guy Data *(cont'd)*

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

Guy Elevation ft	Cable Weight A lb	Cable Weight B lb	Cable Weight C lb	Cable Weight D lb	Tower Intercept A ft	Tower Intercept B ft	Tower Intercept C ft	Tower Intercept D ft
160.375	185.43	160.46	172.88		4.91 3.8 sec/pulse	3.69 3.3 sec/pulse	4.27 3.6 sec/pulse	
120.375	133.69	113.83	121.98		3.76 3.3 sec/pulse	2.73 2.9 sec/pulse	3.13 3.1 sec/pulse	
60.375	110.62	93.70	96.71		2.59 2.8 sec/pulse	1.86 2.4 sec/pulse	1.98 2.4 sec/pulse	
170	191.45	166.35	179.25		5.23 3.9 sec/pulse	3.96 3.4 sec/pulse	4.58 3.7 sec/pulse	

Guy Data *(cont'd)*

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

Guy Data *(cont'd)*

Guy Elevation ft	Torque-Arm Bolt Size in	Torque-Arm Number	Torque-Arm Net Width Deduct in	Torque-Arm U	Pull Off Bolt Size in	Pull Off Number	Pull Off Net Width Deduct in	Pull Off U	Diagonal Bolt Size in	Diagonal Number	Diagonal Net Width Deduct in	Diagonal U
160.375	0.7500 A325N	2	0.0000	0.75	0.7500 A325N	2	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
120.375	0.7500 A325N	2	0.0000	0.75	0.7500 A325N	2	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
60.375	0.6250 A325N	0	0.0000	0.75	0.0000 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
170	0.6250 A325N	0	0.0000	0.75	0.0000 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75

Guy Pressures

Guy Elevation ft	Guy Location	z ft	q_z psf	q_z Ice psf	Ice Thickness in
160.375	A	73.19	23	17	0.5000
	B	86.69	24	18	0.5000
	C	74.19	23	17	0.5000
120.375	A	53.19	21	16	0.5000
	B	66.69	23	17	0.5000
	C	54.19	21	16	0.5000
60.375	A	23.19	18	14	0.5000
	B	36.69	19	14	0.5000

Guy Elevation ft	Guy Location	z ft	q_z psf	q_z Ice psf	Ice Thickness in
	C	24.19	18	14	0.5000
170	A	78.00	24	18	0.5000
	B	91.50	25	19	0.5000
	C	79.00	24	18	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	49.8072	4381.64 / 4240.00	-66.08	3385.51	-2780.78	-6841.19	9866.26	-11849.29
	A	49.8072	4381.64 / 4240.00	66.08	3385.51	-2780.78	-6841.19	-9866.26	11849.29
	B	48.2525	4359.71 / 4240.00	2516.34	3288.21	1364.85	13289.14	10169.67	0.00
	B	48.2525	4359.71 / 4240.00	2440.16	3288.21	1496.79	-6644.57	-10169.67	-11508.73
	C	54.0892	4380.02 / 4240.00	-2152.63	3577.15	1324.66	-7228.44	8986.18	12520.03
	C	54.0892	4380.02 / 4240.00	-2223.50	3577.15	1201.91	14456.88	-8986.18	0.00
			Sum:	**580.37**	20501.74	**-173.35**	**190.62**	-0.00	**1011.30**
120.375	A	42.3687	3590.09 / 3500.00	-62.22	2455.77	-2618.03	-4962.43	9288.82	-8595.18
	A	42.3687	3590.09 / 3500.00	62.22	2455.77	-2618.03	-4962.43	-9288.82	8595.18
	B	39.2275	3571.99 / 3500.00	2407.49	2293.02	1305.81	9267.15	9729.75	0.00
	B	39.2275	3571.99 / 3500.00	2334.61	2293.02	1432.04	-4633.57	-9729.75	-8025.58
	C	46.6806	3588.75 / 3500.00	-2070.72	2639.61	1274.25	-5333.93	8644.21	9238.63
	C	46.6806	3588.75 / 3500.00	-2138.89	2639.61	1156.17	10667.85	-8644.21	0.00
			Sum:	**532.49**	14776.80	**-67.79**	**42.64**	-0.00	**1213.05**
60.375	A	26.7935	3549.86 / 3500.00	0.00	1644.21	-3146.13	-3322.49	0.00	0.00
	B	19.8153	3531.76 / 3500.00	2864.32	1238.65	1653.71	1251.49	0.00	-2167.64
	C	30.1148	3548.52 / 3500.00	-2639.91	1816.55	1524.15	1835.37	-0.00	3178.96
			Sum:	**224.41**	4699.41	**31.74**	**-235.63**	0.00	**1011.32**
170	A	51.3251	4389.46 / 4240.00	0.00	3464.12	-2695.78	-7000.04	0.00	0.00
	B	50.0556	4367.53 / 4240.00	2392.65	3382.65	1381.40	3417.70	0.00	-5919.63
	C	55.5654	4387.84 / 4240.00	-2112.22	3647.53	1219.49	3685.33	-0.00	6383.18
			Sum:	**280.43**	10494.30	**-94.89**	**102.99**	0.00	**463.55**

Guy-Mast Forces (Excluding Wind) - 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	49.8072	6170.17 / 5908.80	-92.57	4784.25	-3895.30	-9667.66	13820.61	-16744.88
	A	49.8072	6170.17 / 5908.80	92.57	4784.25	-3895.30	-9667.66	-13820.61	16744.88
	B	48.2525	6115.37 / 5894.47	3513.81	4628.02	1905.87	18703.92	14200.89	0.00
	B	48.2525	6115.37 / 5894.47	3407.44	4628.02	2090.11	-9351.96	-14200.89	-16198.07
	C	54.0892	6135.90 / 5877.53	-2999.67	5024.34	1845.89	-10152.80	12522.15	17585.17
	C	54.0892	6135.90 / 5877.53	-3098.43	5024.34	1674.85	20305.61	-12522.15	0.00
			Sum:	**823.14**	28873.21	**-273.88**	**169.45**	-0.00	**1387.10**
120.375	A	42.3687	5086.23 / 4909.01	-87.70	3499.16	-3690.25	-7070.84	13093.09	-12247.05
	A	42.3687	5086.23 / 4909.01	87.70	3499.16	-3690.25	-7070.84	-13093.09	12247.05
	B	39.2275	5035.00 / 4893.39	3379.55	3251.13	1833.05	13139.28	13658.28	0.00
	B	39.2275	5035.00 / 4893.39	3277.24	3251.13	2010.25	-6569.64	-13658.28	-11378.95
	C	46.6806	5051.68 / 4877.10	-2900.00	3731.61	1784.56	-7540.56	12106.04	13060.63
	C	46.6806	5051.68 / 4877.10	-2995.47	3731.61	1619.19	15081.11	-12106.04	0.00
			Sum:	**761.32**	20963.79	**-133.46**	**-31.48**	-0.00	**1681.68**
60.375	A	26.7935	5027.79 / 4929.70	0.00	2352.96	-4443.22	-4754.69	0.00	0.00
	B	19.8153	4977.71 / 4915.23	4029.46	1768.87	2326.41	1787.20	0.00	-3095.53
	C	30.1148	4992.70 / 4897.25	-3703.81	2576.07	2138.39	2602.77	-0.00	4508.13
			Sum:	**325.65**	6697.91	**21.58**	**-364.72**	0.00	**1412.60**
170	A	51.3251	6180.71 / 5904.91	0.00	4894.02	-3774.87	-9889.48	0.00	0.00
	B	50.0556	6126.48 / 5891.16	3340.19	4760.04	1928.46	4809.36	0.00	-8330.06
	C	55.5654	6146.76 / 5873.97	-2942.46	5122.37	1698.83	5175.45	-0.00	8964.14
			Sum:	**397.74**	14776.43	**-147.58**	**95.33**	0.00	**634.08**

Guy-Mast Forces (Excluding Wind) - Service

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	49.8072	4381.64 / 4240.00	-66.08	3385.51	-2780.78	-6841.19	9866.26	-11849.29
	A	49.8072	4381.64	66.08	3385.51	-2780.78	-6841.19	-9866.26	11849.29

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
			4240.00						
	B	48.2525	4359.71	2516.34	3288.21	1364.85	13289.14	10169.67	0.00
			4240.00						
	B	48.2525	4359.71	2440.16	3288.21	1496.79	-6644.57	-10169.67	-11508.73
			4240.00						
	C	54.0892	4380.02	-2152.63	3577.15	1324.66	-7228.44	8986.18	12520.03
			4240.00						
	C	54.0892	4380.02	-2223.50	3577.15	1201.91	14456.88	-8986.18	0.00
			4240.00						
			Sum:	**580.37**	20501.74	**-173.35**	**190.62**	-0.00	**1011.30**
120.375	A	42.3687	3590.09	-62.22	2455.77	-2618.03	-4962.43	9288.82	-8595.18
			3500.00						
	A	42.3687	3590.09	62.22	2455.77	-2618.03	-4962.43	-9288.82	8595.18
			3500.00						
	B	39.2275	3571.99	2407.49	2293.02	1305.81	9267.15	9729.75	0.00
			3500.00						
	B	39.2275	3571.99	2334.61	2293.02	1432.04	-4633.57	-9729.75	-8025.58
			3500.00						
	C	46.6806	3588.75	-2070.72	2639.61	1274.25	-5333.93	8644.21	9238.63
			3500.00						
	C	46.6806	3588.75	-2138.89	2639.61	1156.17	10667.85	-8644.21	0.00
			3500.00						
			Sum:	**532.49**	14776.80	**-67.79**	**42.64**	-0.00	**1213.05**
60.375	A	26.7935	3549.86	0.00	1644.21	-3146.13	-3322.49	0.00	0.00
			3500.00						
	B	19.8153	3531.76	2864.32	1238.65	1653.71	1251.49	0.00	-2167.64
			3500.00						
	C	30.1148	3548.52	-2639.91	1816.55	1524.15	1835.37	-0.00	3178.96
			3500.00						
			Sum:	**224.41**	4699.41	**31.74**	**-235.63**	0.00	**1011.32**
170	A	51.3251	4389.46	0.00	3464.12	-2695.78	-7000.04	0.00	0.00
			4240.00						
	B	50.0556	4367.53	2392.65	3382.65	1381.40	3417.70	0.00	-5919.63
			4240.00						
	C	55.5654	4387.84	-2112.22	3647.53	1219.49	3685.33	-0.00	6383.18
			4240.00						
			Sum:	**280.43**	10494.30	**-94.89**	**102.99**	0.00	**463.55**

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
1 1/4 (T-Mobile)	A	Yes	Ar (CfAe)	180.00 - 0.00	0.0000	-0.25	9	9	1.2000	1.5500		0.66
1 1/4 (Sprint)	B	Yes	Ar (CfAe)	150.40 - 0.00	0.0000	0.25	3	3	1.5500	1.5500		0.66
1 1/4 (Nextel)	C	Yes	Ar (CfAe)	173.00 - 0.00	0.0000	0.25	9	6	1.2000	1.5500		0.66
1 5/8 (AT&T)	B	Yes	Ar (CfAe)	187.00 - 0.00	0.0000	-0.25	12	4	1.0000	1.9800		1.04
1 5/8 (Verizon)	A	Yes	Ar (CfAe)	136.00 - 0.00	0.0000	0.4	12	6	1.0000	1.9800		1.04
0.65 DC	B	Yes	Ar (CfAe)	187.00 - 0.00	0.0000	-0.25	2	2	0.5800	0.0000		0.25

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
(AT&T) 1.34 Fiber	B	Yes	Ar (CfAe)	187.00 - 0.00	0.0000	-0.25	1	1	0.5800	0.0000		0.25
(AT&T) 3" Conduit	B	Yes	Ar (CfAe)	187.00 - 0.00	0.0000	-0.25	1	1	1.0000	3.0000		2.80
(AT&T) Safety Line 3/8	C	No	Ar (CfAe)	187.00 - 0.00	0.0000	-0.25	1	1	0.3750	0.3750		0.22

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T1	187.00-180.00	A	0.000	0.000	0.000	0.000	0.00
		B	6.370	0.000	0.000	0.000	112.21
		C	0.219	0.000	0.000	0.000	1.54
T2	180.00-160.00	A	23.250	0.000	0.000	0.000	118.80
		B	18.200	0.000	0.000	0.000	320.60
		C	10.700	0.000	0.000	0.000	81.62
T3	160.00-140.00	A	23.250	0.000	0.000	0.000	118.80
		B	22.230	0.000	0.000	0.000	341.19
		C	16.125	0.000	0.000	0.000	123.20
T4	140.00-120.00	A	39.090	0.000	0.000	0.000	318.48
		B	25.950	0.000	0.000	0.000	360.20
		C	16.125	0.000	0.000	0.000	123.20
T5	120.00-100.00	A	43.050	0.000	0.000	0.000	368.40
		B	25.950	0.000	0.000	0.000	360.20
		C	16.125	0.000	0.000	0.000	123.20
T6	100.00-80.00	A	43.050	0.000	0.000	0.000	368.40
		B	25.950	0.000	0.000	0.000	360.20
		C	16.125	0.000	0.000	0.000	123.20
T7	80.00-60.00	A	43.050	0.000	0.000	0.000	368.40
		B	25.950	0.000	0.000	0.000	360.20
		C	16.125	0.000	0.000	0.000	123.20
T8	60.00-40.00	A	43.050	0.000	0.000	0.000	368.40
		B	25.950	0.000	0.000	0.000	360.20
		C	16.125	0.000	0.000	0.000	123.20
T9	40.00-20.00	A	43.050	0.000	0.000	0.000	368.40
		B	25.950	0.000	0.000	0.000	360.20
		C	16.125	0.000	0.000	0.000	123.20
T10	20.00-0.00	A	43.050	0.000	0.000	0.000	368.40
		B	25.950	0.000	0.000	0.000	360.20
		C	16.125	0.000	0.000	0.000	123.20

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T1	187.00-180.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		5.238	5.553	0.000	0.000	306.98
		C		0.802	0.000	0.000	0.000	5.28
T2	180.00-160.00	A	0.500	38.250	0.000	0.000	0.000	344.21
		B		14.967	15.867	0.000	0.000	877.08

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
		C		18.867	0.000	0.000	0.000	238.83
T3	160.00-140.00	A	0.500	38.250	0.000	0.000	0.000	344.21
		B		21.597	15.867	0.000	0.000	936.74
		C		27.792	0.000	0.000	0.000	359.30
T4	140.00-120.00	A	0.500	42.223	19.867	0.000	0.000	953.34
		B		27.717	15.867	0.000	0.000	991.81
		C		27.792	0.000	0.000	0.000	359.30
T5	120.00-100.00	A	0.500	43.217	24.833	0.000	0.000	1105.62
		B		27.717	15.867	0.000	0.000	991.81
		C		27.792	0.000	0.000	0.000	359.30
T6	100.00-80.00	A	0.500	43.217	24.833	0.000	0.000	1105.62
		B		27.717	15.867	0.000	0.000	991.81
		C		27.792	0.000	0.000	0.000	359.30
T7	80.00-60.00	A	0.500	43.217	24.833	0.000	0.000	1105.62
		B		27.717	15.867	0.000	0.000	991.81
		C		27.792	0.000	0.000	0.000	359.30
T8	60.00-40.00	A	0.500	43.217	24.833	0.000	0.000	1105.62
		B		27.717	15.867	0.000	0.000	991.81
		C		27.792	0.000	0.000	0.000	359.30
T9	40.00-20.00	A	0.500	43.217	24.833	0.000	0.000	1105.62
		B		27.717	15.867	0.000	0.000	991.81
		C		27.792	0.000	0.000	0.000	359.30
T10	20.00-0.00	A	0.500	43.217	24.833	0.000	0.000	1105.62
		B		27.717	15.867	0.000	0.000	991.81
		C		27.792	0.000	0.000	0.000	359.30

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	187.00-180.00	A	0.000	0.000	0.000	0.000
		B	0.244	1.462	0.341	0.578
		C	0.000	0.000	0.000	0.000
T2	180.00-160.00	A	0.000	3.710	5.797	9.536
		B	0.000	2.991	4.538	7.687
		C	0.000	1.608	2.512	4.132
T3	160.00-140.00	A	0.986	5.332	1.017	1.673
		B	0.942	5.222	0.973	1.639
		C	0.657	3.554	0.678	1.116
T4	140.00-120.00	A	1.657	8.655	1.792	2.846
		B	1.100	6.075	1.189	1.998
		C	0.657	3.554	0.710	1.169
T5	120.00-100.00	A	1.825	9.485	1.883	2.977
		B	1.100	6.075	1.135	1.907
		C	0.657	3.554	0.678	1.116
T6	100.00-80.00	A	1.825	9.485	1.883	2.977
		B	1.100	6.075	1.135	1.907
		C	0.657	3.554	0.678	1.116
T7	80.00-60.00	A	1.825	9.485	1.883	2.977
		B	1.100	6.075	1.135	1.907
		C	0.657	3.554	0.678	1.116
T8	60.00-40.00	A	1.825	9.485	1.883	2.977
		B	1.100	6.075	1.135	1.907
		C	0.657	3.554	0.678	1.116
T9	40.00-20.00	A	1.825	9.485	1.883	2.977
		B	1.100	6.075	1.135	1.907

Section	Elevation ft	Face	A_R ft^2	A_R Ice ft^2	A_F ft^2	A_F Ice ft^2
		C	0.657	3.554	0.678	1.116
T10	20.00-0.00	A	1.825	9.485	1.883	2.977
		B	1.100	6.075	1.135	1.907
		C	0.657	3.554	0.678	1.116

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	187.00-180.00	2.1981	-4.2256	1.6097	-2.6825
T2	180.00-160.00	-2.1295	-0.5799	-2.4036	0.1508
T3	160.00-140.00	-2.9020	-0.0358	-2.9810	0.7198
T4	140.00-120.00	-2.5055	-2.5839	-2.4882	-1.1379
T5	120.00-100.00	-2.5671	-3.1596	-2.5190	-1.5635
T6	100.00-80.00	-2.5671	-3.1596	-2.5190	-1.5635
T7	80.00-60.00	-2.5671	-3.1596	-2.5190	-1.5635
T8	60.00-40.00	-2.5671	-3.1596	-2.5190	-1.5635
T9	40.00-20.00	-2.5671	-3.1596	-2.5190	-1.5635
T10	20.00-0.00	-2.5671	-3.1596	-2.5190	-1.5635

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
(2) Antel LPA-80080-4CF	A	From Leg	3.00	0.0000	136.00	No Ice	2.62	5.40	12.00
(Verizon)			0.00			1/2" Ice	2.92	5.71	45.10
			0.00						
(2) Antel LPA-80080-4CF	B	From Leg	3.00	0.0000	136.00	No Ice	2.62	5.40	12.00
(Verizon)			0.00			1/2" Ice	2.92	5.71	45.10
			0.00						
(2) Antel LPA-80080-4CF	C	From Leg	3.00	0.0000	136.00	No Ice	2.62	5.40	12.00
(Verizon)			0.00			1/2" Ice	2.92	5.71	45.10
			0.00						
Sector Frame	A	From Leg	0.00	0.0000	136.00	No Ice	17.50	8.75	465.00
(Verizon)			0.00			1/2" Ice	22.50	11.00	600.00
			0.00						
Sector Frame	B	From Leg	0.00	0.0000	136.00	No Ice	17.50	8.75	465.00
(Verizon)			0.00			1/2" Ice	22.50	11.00	600.00
			0.00						
Sector Frame	C	From Leg	0.00	0.0000	136.00	No Ice	17.50	8.75	465.00
(Verizon)			0.00			1/2" Ice	22.50	11.00	600.00
			0.00						
Antel BXA-70063-6CF	A	From Leg	3.00	0.0000	136.00	No Ice	7.57	2.43	17.00
(Verizon)			0.00			1/2" Ice	8.02	2.91	59.50
			0.00						
Antel BXA-70063-6CF	B	From Leg	3.00	0.0000	136.00	No Ice	7.57	2.43	17.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
(Verizon)			0.00			1/2" Ice	8.02	2.91	59.50
			0.00						
Antel BXA-70063-6CF	C	From Leg	3.00	0.0000	136.00	No Ice	7.57	2.43	17.00
(Verizon)			0.00			1/2" Ice	8.02	2.91	59.50
			0.00						
Sector Frame	A	From Leg	0.00	0.0000	173.00	No Ice	17.50	8.75	465.00
(Nextel)			0.00			1/2" Ice	22.50	11.00	600.00
			0.00						
Sector Frame	B	From Leg	0.00	0.0000	173.00	No Ice	17.50	8.75	465.00
(Nextel)			0.00			1/2" Ice	22.50	11.00	600.00
			0.00						
Sector Frame	C	From Leg	0.00	0.0000	173.00	No Ice	17.50	8.75	465.00
(Nextel)			0.00			1/2" Ice	22.50	11.00	600.00
			0.00						
(3) Swedcom ALP-E-9011	A	From Leg	3.00	0.0000	173.00	No Ice	2.68	3.17	20.00
(Nextel)			0.00			1/2" Ice	2.96	3.44	49.80
			0.00						
(3) Swedcom ALP-E-9011	B	From Leg	3.00	0.0000	173.00	No Ice	2.68	3.17	20.00
(Nextel)			0.00			1/2" Ice	2.96	3.44	49.80
			0.00						
(3) Swedcom ALP-E-9011	C	From Leg	3.00	0.0000	173.00	No Ice	2.68	3.17	20.00
(Nextel)			0.00			1/2" Ice	2.96	3.44	49.80
			0.00						
Sector Frame	A	From Leg	0.00	0.0000	180.00	No Ice	17.50	8.75	465.00
(T-Mobile)			0.00			1/2" Ice	22.50	11.00	600.00
			0.00						
Sector Frame	B	From Leg	0.00	0.0000	180.00	No Ice	17.50	8.75	465.00
(T-Mobile)			0.00			1/2" Ice	22.50	11.00	600.00
			0.00						
Sector Frame	C	From Leg	0.00	0.0000	180.00	No Ice	17.50	8.75	465.00
(T-Mobile)			0.00			1/2" Ice	22.50	11.00	600.00
			0.00						
(3) RFS APX199015-CT2	A	From Leg	3.00	0.0000	180.00	No Ice	5.28	1.82	20.30
(T-Mobile)			0.00			1/2" Ice	5.75	2.38	47.20
			0.00						
(3) RFS APX199015-CT2	B	From Leg	3.00	0.0000	180.00	No Ice	5.28	1.82	20.30
(T-Mobile)			0.00			1/2" Ice	5.75	2.38	47.20
			0.00						
(3) RFS APX199015-CT2	C	From Leg	3.00	0.0000	180.00	No Ice	5.28	1.82	20.30
(T-Mobile)			0.00			1/2" Ice	5.75	2.38	47.20
			0.00						
Sector Frame	A	From Leg	0.00	0.0000	187.00	No Ice	14.40	7.00	251.00
(AT&T)			0.00			1/2" Ice	18.00	9.00	344.00
			0.00						
Sector Frame	B	From Leg	0.00	0.0000	187.00	No Ice	14.40	7.00	251.00
(AT&T)			0.00			1/2" Ice	18.00	9.00	344.00
			0.00						
Sector Frame	C	From Leg	0.00	0.0000	187.00	No Ice	14.40	7.00	251.00
(AT&T)			0.00			1/2" Ice	18.00	9.00	344.00
			0.00						
(2) Powerwave 7770.00	A	From Leg	3.00	0.0000	187.00	No Ice	5.88	2.93	35.00
(AT&T)			0.00			1/2" Ice	6.25	3.29	67.60
			1.00						
(2) Powerwave 7770.00	B	From Leg	3.00	0.0000	187.00	No Ice	5.88	2.93	35.00
(AT&T)			0.00			1/2" Ice	6.25	3.29	67.60
			1.00						
(2) Powerwave 7770.00	C	From Leg	3.00	0.0000	187.00	No Ice	5.88	2.93	35.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
(AT&T)			0.00 1.00			1/2" Ice	6.25	3.29	67.60
TMA	C	From Leg	3.00	0.0000	180.00	No Ice	1.40	0.60	20.00
(T-Mobile)			0.00 0.00			1/2" Ice	1.32	0.69	30.30
TMA	A	From Leg	3.00	0.0000	180.00	No Ice	1.40	0.60	20.00
(T-Mobile)			0.00 0.00			1/2" Ice	1.32	0.69	30.30
TMA	B	From Leg	3.00	0.0000	180.00	No Ice	1.40	0.60	20.00
(T-Mobile)			0.00 0.00			1/2" Ice	1.32	0.69	30.30
Diplexor	C	From Leg	3.00	0.0000	180.00	No Ice	1.40	0.60	20.00
(T-Mobile)			0.00 0.00			1/2" Ice	1.32	0.69	30.30
Diplexor	A	From Leg	3.00	0.0000	180.00	No Ice	1.40	0.60	20.00
(T-Mobile)			0.00 0.00			1/2" Ice	1.32	0.69	30.30
Diplexor	B	From Leg	3.00	0.0000	180.00	No Ice	1.40	0.60	20.00
(T-Mobile)			0.00 0.00			1/2" Ice	1.32	0.69	30.30
(2) Powerwave LGP17201	A	From Leg	3.00	0.0000	187.00	No Ice	1.95	0.50	31.00
(AT&T)			0.00 1.00			1/2" Ice	2.11	0.60	41.90
(2) Powerwave LGP17201	B	From Leg	3.00	0.0000	187.00	No Ice	1.95	0.50	31.00
(AT&T)			0.00 1.00			1/2" Ice	2.11	0.60	41.90
(2) Powerwave LGP17201	C	From Leg	3.00	0.0000	187.00	No Ice	1.95	0.50	31.00
(AT&T)			0.00 1.00			1/2" Ice	2.11	0.60	41.90
Antel BXA-171085-8BF	A	From Leg	3.00	0.0000	136.00	No Ice	2.94	2.16	10.50
(Verizon)			0.00 0.00			1/2" Ice	3.25	2.48	29.30
Antel BXA-171085-8BF	B	From Leg	3.00	0.0000	136.00	No Ice	2.94	2.16	10.50
(Verizon)			0.00 0.00			1/2" Ice	3.25	2.48	29.30
Antel BXA-171085-8BF	C	From Leg	3.00	0.0000	136.00	No Ice	2.94	2.16	10.50
(Verizon)			0.00 0.00			1/2" Ice	3.25	2.48	29.30
(2) RFS FD0R6004/2C-3L	A	From Leg	3.00	0.0000	136.00	No Ice	0.00	0.08	2.60
(Verizon)			0.00 0.00			1/2" Ice	0.00	0.12	4.90
(2) RFS FD0R6004/2C-3L	B	From Leg	3.00	0.0000	136.00	No Ice	0.00	0.08	2.60
(Verizon)			0.00 0.00			1/2" Ice	0.00	0.12	4.90
(2) RFS FD0R6004/2C-3L	A	From Leg	3.00	0.0000	136.00	No Ice	0.00	0.08	2.60
(Verizon)			0.00 0.00			1/2" Ice	0.00	0.12	4.90
Powerwave P65-17-XLH-RR	A	From Leg	3.00	0.0000	187.00	No Ice	11.47	4.00	62.00
(AT&T)			0.00 1.00			1/2" Ice	12.08	4.68	124.10
Powerwave P65-17-XLH-RR	B	From Leg	3.00	0.0000	187.00	No Ice	11.47	4.00	62.00
(AT&T)			0.00 1.00			1/2" Ice	12.08	4.68	124.10
Andrew SBNH-1D6565C	C	From Leg	3.00	0.0000	187.00	No Ice	11.41	7.70	60.90
(AT&T)			0.00 1.00			1/2" Ice	12.03	8.36	126.60
(2) Ericsson RRUs11	A	From Leg	3.00	0.0000	187.00	No Ice	2.99	0.36	50.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
(AT&T)			0.00 1.00			1/2" Ice	3.19	0.48	63.50
(2) Ericsson RRUs11	B	From Leg	3.00	0.0000	187.00	No Ice	2.99	0.36	50.00
(AT&T)			0.00 1.00			1/2" Ice	3.19	0.48	63.50
(2) Ericsson RRUs11	C	From Leg	3.00	0.0000	187.00	No Ice	2.99	0.36	50.00
(AT&T)			0.00 1.00			1/2" Ice	3.19	0.48	63.50
Raycap DC6-48-60-18-8F	A	From Leg	3.00	0.0000	187.00	No Ice	2.57	2.57	31.80
(AT&T)			0.00 1.00			1/2" Ice	2.77	2.77	54.40
Sector Frame	A	From Leg	0.00	0.0000	150.40	No Ice	17.50	8.75	465.00
(Sprint)			0.00 0.00			1/2" Ice	22.50	11.00	600.00
Sector Frame	B	From Leg	0.00	0.0000	150.40	No Ice	17.50	8.75	465.00
(Sprint)			0.00 0.00			1/2" Ice	22.50	11.00	600.00
Sector Frame	C	From Leg	0.00	0.0000	150.40	No Ice	17.50	8.75	465.00
(Sprint)			0.00 0.00			1/2" Ice	22.50	11.00	600.00
RFS APXV9ERR18-C-A20	A	From Leg	3.00	0.0000	150.40	No Ice	8.02	5.81	62.00
(Sprint)			0.00 0.00			1/2" Ice	8.48	6.27	114.00
Alcatel Lucent 4X45W RRH	A	From Leg	3.00	0.0000	150.40	No Ice	2.32	2.24	60.00
(Sprint)			0.00 0.00			1/2" Ice	2.53	2.44	83.10
Alcatel Lucent 2X50W RRH	A	From Leg	3.00	0.0000	150.40	No Ice	1.71	1.32	60.00
(Sprint)			0.00 0.00			1/2" Ice	1.88	1.47	77.30
RFS APXV9ERR18-C-A20	B	From Leg	3.00	0.0000	150.40	No Ice	8.02	5.81	62.00
(Sprint)			0.00 0.00			1/2" Ice	8.48	6.27	114.00
Alcatel Lucent 4X45W RRH	B	From Leg	3.00	0.0000	150.40	No Ice	2.32	2.24	60.00
(Sprint)			0.00 0.00			1/2" Ice	2.53	2.44	83.10
Alcatel Lucent 2X50W RRH	B	From Leg	3.00	0.0000	150.40	No Ice	1.71	1.32	60.00
(Sprint)			0.00 0.00			1/2" Ice	1.88	1.47	77.30
RFS APXV9ERR18-C-A20	C	From Leg	3.00	0.0000	150.40	No Ice	8.02	5.81	62.00
(Sprint)			0.00 0.00			1/2" Ice	8.48	6.27	114.00
Alcatel Lucent 4X45W RRH	C	From Leg	3.00	0.0000	150.40	No Ice	2.32	2.24	60.00
(Sprint)			0.00 0.00			1/2" Ice	2.53	2.44	83.10
Alcatel Lucent 2X50W RRH	C	From Leg	3.00	0.0000	150.40	No Ice	1.71	1.32	60.00
(Sprint)			0.00 0.00			1/2" Ice	1.88	1.47	77.30

Tower Pressures - No Ice

$G_H = 1.118$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	183.50	1.633	30	26.177	A	1.223	4.230	3.354	61.51	0.000	0.000
187.00-180.00					B	0.881	10.356		29.85	0.000	0.000
					C	1.223	4.449		59.14	0.000	0.000
T2	170.00	1.597	30	74.792	A	10.461	32.833	9.583	22.14	0.000	0.000
180.00-160.00					B	11.720	27.783		24.26	0.000	0.000
					C	13.746	20.283		28.16	0.000	0.000
T3	150.00	1.541	29	74.792	A	1.836	34.612	9.583	26.29	0.000	0.000
160.00-140.00					B	1.880	33.635		26.98	0.000	0.000
					C	2.175	27.816		31.95	0.000	0.000
T4	130.00	1.48	27	74.792	A	1.197	49.781	9.583	18.80	0.000	0.000
140.00-120.00					B	1.799	37.198		24.57	0.000	0.000
					C	2.278	27.816		31.84	0.000	0.000
T5	110.00	1.411	26	74.792	A	0.969	53.573	9.583	17.57	0.000	0.000
120.00-100.00					B	1.718	37.198		24.63	0.000	0.000
					C	2.175	27.816		31.95	0.000	0.000
T6	90.00	1.332	25	74.792	A	0.969	53.573	9.583	17.57	0.000	0.000
100.00-80.00					B	1.718	37.198		24.63	0.000	0.000
					C	2.175	27.816		31.95	0.000	0.000
T7 80.00-60.00	70.00	1.24	23	74.792	A	0.969	53.573	9.583	17.57	0.000	0.000
					B	1.718	37.198		24.63	0.000	0.000
					C	2.175	27.816		31.95	0.000	0.000
T8 60.00-40.00	50.00	1.126	21	74.792	A	0.969	53.573	9.583	17.57	0.000	0.000
					B	1.718	37.198		24.63	0.000	0.000
					C	2.175	27.816		31.95	0.000	0.000
T9 40.00-20.00	30.00	1	18	74.792	A	0.969	53.573	9.583	17.57	0.000	0.000
					B	1.718	37.198		24.63	0.000	0.000
					C	2.175	27.816		31.95	0.000	0.000
T10 20.00-0.00	10.00	1	18	74.792	A	0.969	53.573	9.583	17.57	0.000	0.000
					B	1.718	37.198		24.63	0.000	0.000
					C	2.175	27.816		31.95	0.000	0.000

Tower Pressure - With Ice

$G_H = 1.118$

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	183.50	1.633	23	0.5000	26.760	A	1.223	7.613	4.521	51.17	0.000	0.000
187.00-180.00						B	6.198	11.389		25.71	0.000	0.000
						C	1.223	8.415		46.91	0.000	0.000
T2	170.00	1.597	22	0.5000	76.458	A	6.721	53.781	12.917	21.35	0.000	0.000
180.00-160.00						B	24.437	31.218		23.21	0.000	0.000
						C	12.125	36.501		26.56	0.000	0.000
T3	150.00	1.541	21	0.5000	76.458	A	1.179	54.924	12.917	23.02	0.000	0.000
160.00-140.00						B	17.081	38.381		23.29	0.000	0.000
						C	1.737	46.243		26.92	0.000	0.000
T4	130.00	1.48	21	0.5000	76.458	A	20.010	55.575	12.917	17.09	0.000	0.000
140.00-120.00						B	16.858	43.648		21.35	0.000	0.000
						C	1.820	46.243		26.87	0.000	0.000
T5	110.00	1.411	20	0.5000	76.458	A	24.709	55.737	12.917	16.06	0.000	0.000
120.00-100.00						B	16.813	43.648		21.36	0.000	0.000
						C	1.737	46.243		26.92	0.000	0.000
T6 100.00-80.00	90.00	1.332	18	0.5000	76.458	A	24.709	55.737	12.917	16.06	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
						B	16.813	43.648		21.36	0.000	0.000
						C	1.737	46.243		26.92	0.000	0.000
T7 80.00-60.00	70.00	1.24	17	0.5000	76.458	A	24.709	55.737	12.917	16.06	0.000	0.000
						B	16.813	43.648		21.36	0.000	0.000
						C	1.737	46.243		26.92	0.000	0.000
T8 60.00-40.00	50.00	1.126	16	0.5000	76.458	A	24.709	55.737	12.917	16.06	0.000	0.000
						B	16.813	43.648		21.36	0.000	0.000
						C	1.737	46.243		26.92	0.000	0.000
T9 40.00-20.00	30.00	1	14	0.5000	76.458	A	24.709	55.737	12.917	16.06	0.000	0.000
						B	16.813	43.648		21.36	0.000	0.000
						C	1.737	46.243		26.92	0.000	0.000
T10 20.00-0.00	10.00	1	14	0.5000	76.458	A	24.709	55.737	12.917	16.06	0.000	0.000
						B	16.813	43.648		21.36	0.000	0.000
						C	1.737	46.243		26.92	0.000	0.000

Tower Pressure - Service

$G_H = 1.118$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1	183.50	1.633	10	26.177	A	1.223	4.230	3.354	61.51	0.000	0.000
187.00-180.00					B	0.881	10.356		29.85	0.000	0.000
					C	1.223	4.449		59.14	0.000	0.000
T2	170.00	1.597	10	74.792	A	10.461	32.833	9.583	22.14	0.000	0.000
180.00-160.00					B	11.720	27.783		24.26	0.000	0.000
					C	13.746	20.283		28.16	0.000	0.000
T3	150.00	1.541	10	74.792	A	1.836	34.612	9.583	26.29	0.000	0.000
160.00-140.00					B	1.880	33.635		26.98	0.000	0.000
					C	2.175	27.816		31.95	0.000	0.000
T4	130.00	1.48	9	74.792	A	1.197	49.781	9.583	18.80	0.000	0.000
140.00-120.00					B	1.799	37.198		24.57	0.000	0.000
					C	2.278	27.816		31.84	0.000	0.000
T5	110.00	1.411	9	74.792	A	0.969	53.573	9.583	17.57	0.000	0.000
120.00-100.00					B	1.718	37.198		24.63	0.000	0.000
					C	2.175	27.816		31.95	0.000	0.000
T6	90.00	1.332	9	74.792	A	0.969	53.573	9.583	17.57	0.000	0.000
100.00-80.00					B	1.718	37.198		24.63	0.000	0.000
					C	2.175	27.816		31.95	0.000	0.000
T7 80.00-60.00	70.00	1.24	8	74.792	A	0.969	53.573	9.583	17.57	0.000	0.000
					B	1.718	37.198		24.63	0.000	0.000
					C	2.175	27.816		31.95	0.000	0.000
T8 60.00-40.00	50.00	1.126	7	74.792	A	0.969	53.573	9.583	17.57	0.000	0.000
					B	1.718	37.198		24.63	0.000	0.000
					C	2.175	27.816		31.95	0.000	0.000
T9 40.00-20.00	30.00	1	6	74.792	A	0.969	53.573	9.583	17.57	0.000	0.000
					B	1.718	37.198		24.63	0.000	0.000
					C	2.175	27.816		31.95	0.000	0.000
T10 20.00-0.00	10.00	1	6	74.792	A	0.969	53.573	9.583	17.57	0.000	0.000
					B	1.718	37.198		24.63	0.000	0.000
					C	2.175	27.816		31.95	0.000	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F lb	w plf	Ctrl. Face
T1	113.75	234.83	A	0.208	2.569	0.592	1	1	3.727	526.27	75.18	B
187.00-180.00			B	0.429	2.009	0.664	1	1	7.757			
			C	0.217	2.541	0.594	1	1	3.865			
T2	521.02	1205.82	A	0.579	1.819	0.741	1	1	34.787	2090.30	104.52	A
180.00-160.00		TA 242.49	B	0.528	1.866	0.712	1	1	31.509			
			C	0.455	1.965	0.676	1	1	27.449			
T3	583.19	658.24	A	0.487	1.917	0.691	1	1	25.757	1574.12	78.71	A
160.00-140.00			B	0.475	1.935	0.685	1	1	24.921			
			C	0.401	2.062	0.652	1	1	20.311			
T4	801.88	680.49	A	0.682	1.776	0.807	1	1	41.367	2248.37	112.42	A
140.00-120.00		TA 242.49	B	0.521	1.874	0.709	1	1	28.159			
			C	0.402	2.059	0.653	1	1	20.430			
T5	851.80	658.24	A	0.729	1.781	0.841	1	1	46.036	2391.74	119.59	A
120.00-100.00			B	0.52	1.875	0.708	1	1	28.056			
			C	0.401	2.062	0.652	1	1	20.311			
T6	851.80	658.24	A	0.729	1.781	0.841	1	1	46.036	2258.47	112.92	A
100.00-80.00			B	0.52	1.875	0.708	1	1	28.056			
			C	0.401	2.062	0.652	1	1	20.311			
T7	851.80	658.24	A	0.729	1.781	0.841	1	1	46.036	2101.99	105.10	A
80.00-60.00			B	0.52	1.875	0.708	1	1	28.056			
			C	0.401	2.062	0.652	1	1	20.311			
T8	851.80	658.24	A	0.729	1.781	0.841	1	1	46.036	1909.32	95.47	A
60.00-40.00			B	0.52	1.875	0.708	1	1	28.056			
			C	0.401	2.062	0.652	1	1	20.311			
T9	851.80	658.24	A	0.729	1.781	0.841	1	1	46.036	1695.59	84.78	A
40.00-20.00			B	0.52	1.875	0.708	1	1	28.056			
			C	0.401	2.062	0.652	1	1	20.311			
T10	851.80	658.24	A	0.729	1.781	0.841	1	1	46.036	1695.59	84.78	A
20.00-0.00			B	0.52	1.875	0.708	1	1	28.056			
			C	0.401	2.062	0.652	1	1	20.311			
Sum Weight:	7130.64	7213.83								18491.75		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F lb	w plf	Ctrl. Face
T1	113.75	234.83	A	0.208	2.569	0.592	0.8	1	3.483	514.32	73.47	B
187.00-180.00			B	0.429	2.009	0.664	0.8	1	7.581			
			C	0.217	2.541	0.594	0.8	1	3.620			
T2	521.02	1205.82	A	0.579	1.819	0.741	0.8	1	32.695	1964.59	98.23	A
180.00-160.00		TA 242.49	B	0.528	1.866	0.712	0.8	1	29.165			
			C	0.455	1.965	0.676	0.8	1	24.700			
T3	583.19	658.24	A	0.487	1.917	0.691	0.8	1	25.390	1551.68	77.58	A
160.00-140.00			B	0.475	1.935	0.685	0.8	1	24.544			
			C	0.401	2.062	0.652	0.8	1	19.876			
T4	801.88	680.49	A	0.682	1.776	0.807	0.8	1	41.127	2235.35	111.77	A
140.00-120.00		TA 242.49	B	0.521	1.874	0.709	0.8	1	27.800			
			C	0.402	2.059	0.653	0.8	1	19.974			
T5	851.80	658.24	A	0.729	1.781	0.841	0.8	1	45.842	2381.67	119.08	A

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
120.00-100.00			B	0.52	1.875	0.708	0.8	1	27.713			
			C	0.401	2.062	0.652	0.8	1	19.876			
T6	851.80	658.24	A	0.729	1.781	0.841	0.8	1	45.842	2248.96	112.45	A
100.00-80.00			B	0.52	1.875	0.708	0.8	1	27.713			
			C	0.401	2.062	0.652	0.8	1	19.876			
T7	851.80	658.24	A	0.729	1.781	0.841	0.8	1	45.842	2093.13	104.66	A
80.00-60.00			B	0.52	1.875	0.708	0.8	1	27.713			
			C	0.401	2.062	0.652	0.8	1	19.876			
T8	851.80	658.24	A	0.729	1.781	0.841	0.8	1	45.842	1901.28	95.06	A
60.00-40.00			B	0.52	1.875	0.708	0.8	1	27.713			
			C	0.401	2.062	0.652	0.8	1	19.876			
T9	851.80	658.24	A	0.729	1.781	0.841	0.8	1	45.842	1688.45	84.42	A
40.00-20.00			B	0.52	1.875	0.708	0.8	1	27.713			
			C	0.401	2.062	0.652	0.8	1	19.876			
T10	851.80	658.24	A	0.729	1.781	0.841	0.8	1	45.842	1688.45	84.42	A
20.00-0.00			B	0.52	1.875	0.708	0.8	1	27.713			
			C	0.401	2.062	0.652	0.8	1	19.876			
Sum Weight:	7130.64	7213.83								18267.86		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	113.75	234.83	A	0.208	2.569	0.592	0.85	1	3.544	517.31	73.90	B
187.00-180.00			B	0.429	2.009	0.664	0.85	1	7.625			
			C	0.217	2.541	0.594	0.85	1	3.682			
T2	521.02	1205.82	A	0.579	1.819	0.741	0.85	1	33.218	1996.01	99.80	A
180.00-160.00		TA 242.49	B	0.528	1.866	0.712	0.85	1	29.751			
			C	0.455	1.965	0.676	0.85	1	25.387			
T3	583.19	658.24	A	0.487	1.917	0.691	0.85	1	25.481	1557.29	77.86	A
160.00-140.00			B	0.475	1.935	0.685	0.85	1	24.638			
			C	0.401	2.062	0.652	0.85	1	19.984			
T4	801.88	680.49	A	0.682	1.776	0.807	0.85	1	41.187	2238.61	111.93	A
140.00-120.00		TA 242.49	B	0.521	1.874	0.709	0.85	1	27.890			
			C	0.402	2.059	0.653	0.85	1	20.088			
T5	851.80	658.24	A	0.729	1.781	0.841	0.85	1	45.891	2384.19	119.21	A
120.00-100.00			B	0.52	1.875	0.708	0.85	1	27.798			
			C	0.401	2.062	0.652	0.85	1	19.984			
T6	851.80	658.24	A	0.729	1.781	0.841	0.85	1	45.891	2251.33	112.57	A
100.00-80.00			B	0.52	1.875	0.708	0.85	1	27.798			
			C	0.401	2.062	0.652	0.85	1	19.984			
T7	851.80	658.24	A	0.729	1.781	0.841	0.85	1	45.891	2095.35	104.77	A
80.00-60.00			B	0.52	1.875	0.708	0.85	1	27.798			
			C	0.401	2.062	0.652	0.85	1	19.984			
T8	851.80	658.24	A	0.729	1.781	0.841	0.85	1	45.891	1903.29	95.16	A
60.00-40.00			B	0.52	1.875	0.708	0.85	1	27.798			
			C	0.401	2.062	0.652	0.85	1	19.984			
T9	851.80	658.24	A	0.729	1.781	0.841	0.85	1	45.891	1690.23	84.51	A
40.00-20.00			B	0.52	1.875	0.708	0.85	1	27.798			
			C	0.401	2.062	0.652	0.85	1	19.984			
T10	851.80	658.24	A	0.729	1.781	0.841	0.85	1	45.891	1690.23	84.51	A
20.00-0.00			B	0.52	1.875	0.708	0.85	1	27.798			
			C	0.401	2.062	0.652	0.85	1	19.984			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
Sum Weight:	7130.64	7213.83								18323.83		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	312.26	364.12	A	0.33	2.219	0.626	1	1	5.985	685.07	97.87	B
187.00-180.00			B	0.657	1.78	0.79	1	1	15.199			
			C	0.36	2.148	0.636	1	1	6.576			
T2	1460.11	1912.59	A	0.791	1.81	0.889	1	1	54.552	2446.58	122.33	A
180.00-160.00		TA 376.86	B	0.728	1.78	0.84	1	1	50.667			
			C	0.636	1.786	0.776	1	1	40.460			
T3	1640.25	1013.22	A	0.734	1.782	0.845	1	1	47.569	2096.03	104.80	B
160.00-140.00			B	0.725	1.78	0.838	1	1	49.257			
			C	0.628	1.79	0.771	1	1	37.383			
T4	2304.45	1039.55	A	0.989	2.076	1	1	1	75.584	3509.77*	175.49	A
140.00-120.00		TA 376.86	B	0.791	1.81	0.889	1	1	55.677			
			C	0.629	1.789	0.772	1	1	37.498			
T5	2456.74	1013.22	A	1	2.1	1	1	1	80.446	3346.19*	167.31	A
120.00-100.00			B	0.791	1.809	0.889	1	1	55.611			
			C	0.628	1.79	0.771	1	1	37.383			
T6	2456.74	1013.22	A	1	2.1	1	1	1	80.446	3159.73*	157.99	A
100.00-80.00			B	0.791	1.809	0.889	1	1	55.611			
			C	0.628	1.79	0.771	1	1	37.383			
T7	2456.74	1013.22	A	1	2.1	1	1	1	80.446	2940.80*	147.04	A
80.00-60.00			B	0.791	1.809	0.889	1	1	55.611			
			C	0.628	1.79	0.771	1	1	37.383			
T8	2456.74	1013.22	A	1	2.1	1	1	1	80.446	2671.25*	133.56	A
60.00-40.00			B	0.791	1.809	0.889	1	1	55.611			
			C	0.628	1.79	0.771	1	1	37.383			
T9	2456.74	1013.22	A	1	2.1	1	1	1	80.446	2372.23*	118.61	A
40.00-20.00			B	0.791	1.809	0.889	1	1	55.611			
			C	0.628	1.79	0.771	1	1	37.383			
T10	2456.74	1013.22	A	1	2.1	1	1	1	80.446	2372.23*	118.61	A
20.00-0.00			B	0.791	1.809	0.889	1	1	55.611			
			C	0.628	1.79	0.771	1	1	37.383			
Sum Weight:	20457.49	11162.53			*2A_g limit					25599.89		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	312.26	364.12	A	0.33	2.219	0.626	0.8	1	5.741	629.19	89.88	B
187.00-180.00			B	0.657	1.78	0.79	0.8	1	13.959			
			C	0.36	2.148	0.636	0.8	1	6.331			
T2	1460.11	1912.59	A	0.791	1.81	0.889	0.8	1	53.208	2386.29	119.31	A

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
180.00-160.00		TA 376.86	B	0.728	1.78	0.84	0.8	1	45.779			
			C	0.636	1.786	0.776	0.8	1	38.035			
T3	1640.25	1013.22	A	0.734	1.782	0.845	0.8	1	47.333	2016.64	100.83	A
160.00-140.00			B	0.725	1.78	0.838	0.8	1	45.841			
			C	0.628	1.79	0.771	0.8	1	37.036			
T4	2304.45	1039.55	A	0.989	2.076	1	0.8	1	71.582	3411.53	170.58	A
140.00-120.00		TA 376.86	B	0.791	1.81	0.889	0.8	1	52.306			
			C	0.629	1.789	0.772	0.8	1	37.134			
T5	2456.74	1013.22	A	1	2.1	1	0.8	1	75.504	3346.19*	167.31	A
120.00-100.00			B	0.791	1.809	0.889	0.8	1	52.249			
			C	0.628	1.79	0.771	0.8	1	37.036			
T6	2456.74	1013.22	A	1	2.1	1	0.8	1	75.504	3159.73*	157.99	A
100.00-80.00			B	0.791	1.809	0.889	0.8	1	52.249			
			C	0.628	1.79	0.771	0.8	1	37.036			
T7	2456.74	1013.22	A	1	2.1	1	0.8	1	75.504	2940.80*	147.04	A
80.00-60.00			B	0.791	1.809	0.889	0.8	1	52.249			
			C	0.628	1.79	0.771	0.8	1	37.036			
T8	2456.74	1013.22	A	1	2.1	1	0.8	1	75.504	2671.25*	133.56	A
60.00-40.00			B	0.791	1.809	0.889	0.8	1	52.249			
			C	0.628	1.79	0.771	0.8	1	37.036			
T9	2456.74	1013.22	A	1	2.1	1	0.8	1	75.504	2372.23*	118.61	A
40.00-20.00			B	0.791	1.809	0.889	0.8	1	52.249			
			C	0.628	1.79	0.771	0.8	1	37.036			
T10	2456.74	1013.22	A	1	2.1	1	0.8	1	75.504	2372.23*	118.61	A
20.00-0.00			B	0.791	1.809	0.889	0.8	1	52.249			
			C	0.628	1.79	0.771	0.8	1	37.036			
Sum Weight:	20457.49	11162.53			*2A_g limit					25306.09		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	312.26	364.12	A	0.33	2.219	0.626	0.85	1	5.802	643.16	91.88	B
187.00-180.00			B	0.657	1.78	0.79	0.85	1	14.269			
			C	0.36	2.148	0.636	0.85	1	6.393			
T2	1460.11	1912.59	A	0.791	1.81	0.889	0.85	1	53.544	2401.36	120.07	A
180.00-160.00		TA 376.86	B	0.728	1.78	0.84	0.85	1	47.001			
			C	0.636	1.786	0.776	0.85	1	38.641			
T3	1640.25	1013.22	A	0.734	1.782	0.845	0.85	1	47.392	2019.15	100.96	A
160.00-140.00			B	0.725	1.78	0.838	0.85	1	46.695			
			C	0.628	1.79	0.771	0.85	1	37.123			
T4	2304.45	1039.55	A	0.989	2.076	1	0.85	1	72.583	3459.21	172.96	A
140.00-120.00		TA 376.86	B	0.791	1.81	0.889	0.85	1	53.148			
			C	0.629	1.789	0.772	0.85	1	37.225			
T5	2456.74	1013.22	A	1	2.1	1	0.85	1	76.740	3346.19*	167.31	A
120.00-100.00			B	0.791	1.809	0.889	0.85	1	53.089			
			C	0.628	1.79	0.771	0.85	1	37.123			
T6	2456.74	1013.22	A	1	2.1	1	0.85	1	76.740	3159.73*	157.99	A
100.00-80.00			B	0.791	1.809	0.889	0.85	1	53.089			
			C	0.628	1.79	0.771	0.85	1	37.123			
T7	2456.74	1013.22	A	1	2.1	1	0.85	1	76.740	2940.80*	147.04	A
80.00-60.00			B	0.791	1.809	0.889	0.85	1	53.089			
			C	0.628	1.79	0.771	0.85	1	37.123			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T8	2456.74	1013.22	A	1	2.1	1	0.85	1	76.740	2671.25*	133.56	A
60.00-40.00			B	0.791	1.809	0.889	0.85	1	53.089			
			C	0.628	1.79	0.771	0.85	1	37.123			
T9	2456.74	1013.22	A	1	2.1	1	0.85	1	76.740	2372.23*	118.61	A
40.00-20.00			B	0.791	1.809	0.889	0.85	1	53.089			
			C	0.628	1.79	0.771	0.85	1	37.123			
T10	2456.74	1013.22	A	1	2.1	1	0.85	1	76.740	2372.23*	118.61	A
20.00-0.00			B	0.791	1.809	0.889	0.85	1	53.089			
			C	0.628	1.79	0.771	0.85	1	37.123			
Sum Weight:	20457.49	11162.53			*2A_g limit					25385.32		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	113.75	234.83	A	0.208	2.569	0.592	1	1	3.727	182.10	26.01	B
187.00-180.00			B	0.429	2.009	0.664	1	1	7.757			
			C	0.217	2.541	0.594	1	1	3.865			
T2	521.02	1205.82	A	0.579	1.819	0.741	1	1	34.787	723.29	36.16	A
180.00-160.00		TA 242.49	B	0.528	1.866	0.712	1	1	31.509			
			C	0.455	1.965	0.676	1	1	27.449			
T3	583.19	658.24	A	0.487	1.917	0.691	1	1	25.757	544.68	27.23	A
160.00-140.00			B	0.475	1.935	0.685	1	1	24.921			
			C	0.401	2.062	0.652	1	1	20.311			
T4	801.88	680.49	A	0.682	1.776	0.807	1	1	41.367	777.98	38.90	A
140.00-120.00		TA 242.49	B	0.521	1.874	0.709	1	1	28.159			
			C	0.402	2.059	0.653	1	1	20.430			
T5	851.80	658.24	A	0.729	1.781	0.841	1	1	46.036	827.59	41.38	A
120.00-100.00			B	0.52	1.875	0.708	1	1	28.056			
			C	0.401	2.062	0.652	1	1	20.311			
T6	851.80	658.24	A	0.729	1.781	0.841	1	1	46.036	781.48	39.07	A
100.00-80.00			B	0.52	1.875	0.708	1	1	28.056			
			C	0.401	2.062	0.652	1	1	20.311			
T7	851.80	658.24	A	0.729	1.781	0.841	1	1	46.036	727.33	36.37	A
80.00-60.00			B	0.52	1.875	0.708	1	1	28.056			
			C	0.401	2.062	0.652	1	1	20.311			
T8	851.80	658.24	A	0.729	1.781	0.841	1	1	46.036	660.66	33.03	A
60.00-40.00			B	0.52	1.875	0.708	1	1	28.056			
			C	0.401	2.062	0.652	1	1	20.311			
T9	851.80	658.24	A	0.729	1.781	0.841	1	1	46.036	586.71	29.34	A
40.00-20.00			B	0.52	1.875	0.708	1	1	28.056			
			C	0.401	2.062	0.652	1	1	20.311			
T10	851.80	658.24	A	0.729	1.781	0.841	1	1	46.036	586.71	29.34	A
20.00-0.00			B	0.52	1.875	0.708	1	1	28.056			
			C	0.401	2.062	0.652	1	1	20.311			
Sum Weight:	7130.64	7213.83								6398.53		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	113.75	234.83	A	0.208	2.569	0.592	0.8	1	3.483	177.96	25.42	B
187.00-180.00			B	0.429	2.009	0.664	0.8	1	7.581			
			C	0.217	2.541	0.594	0.8	1	3.620			
T2	521.02	1205.82	A	0.579	1.819	0.741	0.8	1	32.695	679.79	33.99	A
180.00-160.00		TA 242.49	B	0.528	1.866	0.712	0.8	1	29.165			
			C	0.455	1.965	0.676	0.8	1	24.700			
T3	583.19	658.24	A	0.487	1.917	0.691	0.8	1	25.390	536.91	26.85	A
160.00-140.00			B	0.475	1.935	0.685	0.8	1	24.544			
			C	0.401	2.062	0.652	0.8	1	19.876			
T4	801.88	680.49	A	0.682	1.776	0.807	0.8	1	41.127	773.48	38.67	A
140.00-120.00		TA 242.49	B	0.521	1.874	0.709	0.8	1	27.800			
			C	0.402	2.059	0.653	0.8	1	19.974			
T5	851.80	658.24	A	0.729	1.781	0.841	0.8	1	45.842	824.11	41.21	A
120.00-100.00			B	0.52	1.875	0.708	0.8	1	27.713			
			C	0.401	2.062	0.652	0.8	1	19.876			
T6	851.80	658.24	A	0.729	1.781	0.841	0.8	1	45.842	778.19	38.91	A
100.00-80.00			B	0.52	1.875	0.708	0.8	1	27.713			
			C	0.401	2.062	0.652	0.8	1	19.876			
T7	851.80	658.24	A	0.729	1.781	0.841	0.8	1	45.842	724.27	36.21	A
80.00-60.00			B	0.52	1.875	0.708	0.8	1	27.713			
			C	0.401	2.062	0.652	0.8	1	19.876			
T8	851.80	658.24	A	0.729	1.781	0.841	0.8	1	45.842	657.88	32.89	A
60.00-40.00			B	0.52	1.875	0.708	0.8	1	27.713			
			C	0.401	2.062	0.652	0.8	1	19.876			
T9	851.80	658.24	A	0.729	1.781	0.841	0.8	1	45.842	584.24	29.21	A
40.00-20.00			B	0.52	1.875	0.708	0.8	1	27.713			
			C	0.401	2.062	0.652	0.8	1	19.876			
T10	851.80	658.24	A	0.729	1.781	0.841	0.8	1	45.842	584.24	29.21	A
20.00-0.00			B	0.52	1.875	0.708	0.8	1	27.713			
			C	0.401	2.062	0.652	0.8	1	19.876			
Sum Weight:	7130.64	7213.83								6321.06		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	113.75	234.83	A	0.208	2.569	0.592	0.85	1	3.544	179.00	25.57	B
187.00-180.00			B	0.429	2.009	0.664	0.85	1	7.625			
			C	0.217	2.541	0.594	0.85	1	3.682			
T2	521.02	1205.82	A	0.579	1.819	0.741	0.85	1	33.218	690.66	34.53	A
180.00-160.00		TA 242.49	B	0.528	1.866	0.712	0.85	1	29.751			
			C	0.455	1.965	0.676	0.85	1	25.387			
T3	583.19	658.24	A	0.487	1.917	0.691	0.85	1	25.481	538.85	26.94	A
160.00-140.00			B	0.475	1.935	0.685	0.85	1	24.638			
			C	0.401	2.062	0.652	0.85	1	19.984			
T4	801.88	680.49	A	0.682	1.776	0.807	0.85	1	41.187	774.60	38.73	A
140.00-120.00		TA 242.49	B	0.521	1.874	0.709	0.85	1	27.890			
			C	0.402	2.059	0.653	0.85	1	20.088			
T5	851.80	658.24	A	0.729	1.781	0.841	0.85	1	45.891	824.98	41.25	A
120.00-100.00			B	0.52	1.875	0.708	0.85	1	27.798			
			C	0.401	2.062	0.652	0.85	1	19.984			
T6	851.80	658.24	A	0.729	1.781	0.841	0.85	1	45.891	779.01	38.95	A
100.00-80.00			B	0.52	1.875	0.708	0.85	1	27.798			
			C	0.401	2.062	0.652	0.85	1	19.984			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T7	851.80	658.24	A	0.729	1.781	0.841	0.85	1	45.891	725.03	36.25	A
80.00-60.00			B	0.52	1.875	0.708	0.85	1	27.798			
			C	0.401	2.062	0.652	0.85	1	19.984			
T8	851.80	658.24	A	0.729	1.781	0.841	0.85	1	45.891	658.58	32.93	A
60.00-40.00			B	0.52	1.875	0.708	0.85	1	27.798			
			C	0.401	2.062	0.652	0.85	1	19.984			
T9	851.80	658.24	A	0.729	1.781	0.841	0.85	1	45.891	584.86	29.24	A
40.00-20.00			B	0.52	1.875	0.708	0.85	1	27.798			
			C	0.401	2.062	0.652	0.85	1	19.984			
T10	851.80	658.24	A	0.729	1.781	0.841	0.85	1	45.891	584.86	29.24	A
20.00-0.00			B	0.52	1.875	0.708	0.85	1	27.798			
			C	0.401	2.062	0.652	0.85	1	19.984			
Sum Weight:	7130.64	7213.83								6340.43		

Discrete Appurtenance Pressures - No Ice $G_H = 1.118$

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft²	C_AA_C Side ft²
Torque Arm Face C	180.0000	0.00	0.00	2.53	161.37	1.574	29	4.25	6.25
Torque Arm Face B	60.0000	0.00	2.19	-1.26	161.37	1.574	29	4.25	6.25
Torque Arm Face A	300.0000	0.00	-2.19	-1.26	161.37	1.574	29	4.25	6.25
Torque Arm Face C	180.0000	0.00	0.00	2.53	121.37	1.451	27	4.25	6.25
Torque Arm Face B	60.0000	0.00	2.19	-1.26	121.37	1.451	27	4.25	6.25
Torque Arm Face A	300.0000	0.00	-2.19	-1.26	121.37	1.451	27	4.25	6.25
Antel LPA-80080-4CF	0.0000	24.00	0.00	-5.02	136.00	1.499	28	5.24	10.80
Antel LPA-80080-4CF	120.0000	24.00	4.35	2.51	136.00	1.499	28	5.24	10.80
Antel LPA-80080-4CF	240.0000	24.00	-4.35	2.51	136.00	1.499	28	5.24	10.80
Sector Frame	0.0000	465.00	0.00	-2.02	136.00	1.499	28	17.50	8.75
Sector Frame	120.0000	465.00	1.75	1.01	136.00	1.499	28	17.50	8.75
Sector Frame	240.0000	465.00	-1.75	1.01	136.00	1.499	28	17.50	8.75
Antel BXA-70063-6CF	0.0000	17.00	0.00	-5.02	136.00	1.499	28	7.57	2.43
Antel BXA-70063-6CF	120.0000	17.00	4.35	2.51	136.00	1.499	28	7.57	2.43
Antel BXA-70063-6CF	240.0000	17.00	-4.35	2.51	136.00	1.499	28	7.57	2.43
Sector Frame	0.0000	465.00	0.00	-2.02	173.00	1.605	30	17.50	8.75
Sector Frame	120.0000	465.00	1.75	1.01	173.00	1.605	30	17.50	8.75
Sector Frame	240.0000	465.00	-1.75	1.01	173.00	1.605	30	17.50	8.75
Swedcom ALP-E-9011	0.0000	60.00	0.00	-5.02	173.00	1.605	30	8.04	9.51
Swedcom ALP-E-9011	120.0000	60.00	4.35	2.51	173.00	1.605	30	8.04	9.51
Swedcom ALP-E-9011	240.0000	60.00	-4.35	2.51	173.00	1.605	30	8.04	9.51
Sector Frame	0.0000	465.00	0.00	-2.02	180.00	1.624	30	17.50	8.75
Sector Frame	120.0000	465.00	1.75	1.01	180.00	1.624	30	17.50	8.75
Sector Frame	240.0000	465.00	-1.75	1.01	180.00	1.624	30	17.50	8.75
RFS APX199015-CT2	0.0000	60.90	0.00	-5.02	180.00	1.624	30	15.84	5.46
RFS APX199015-CT2	120.0000	60.90	4.35	2.51	180.00	1.624	30	15.84	5.46
RFS APX199015-CT2	240.0000	60.90	-4.35	2.51	180.00	1.624	30	15.84	5.46
Sector Frame	0.0000	251.00	0.00	-2.02	187.00	1.641	30	14.40	7.00
Sector Frame	120.0000	251.00	1.75	1.01	187.00	1.641	30	14.40	7.00
Sector Frame	240.0000	251.00	-1.75	1.01	187.00	1.641	30	14.40	7.00
Powerwave 7770.00	0.0000	70.00	0.00	-5.02	188.00	1.644	30	11.76	5.86
Powerwave 7770.00	120.0000	70.00	4.35	2.51	188.00	1.644	30	11.76	5.86
Powerwave 7770.00	240.0000	70.00	-4.35	2.51	188.00	1.644	30	11.76	5.86
TMA	240.0000	20.00	-4.35	2.51	180.00	1.624	30	1.40	0.60
TMA	0.0000	20.00	0.00	-5.02	180.00	1.624	30	1.40	0.60
TMA	120.0000	20.00	4.35	2.51	180.00	1.624	30	1.40	0.60
Diplexor	240.0000	20.00	-4.35	2.51	180.00	1.624	30	1.40	0.60

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2
Diplexor	0.0000	20.00	0.00	-5.02	180.00	1.624	30	1.40	0.60
Diplexor	120.0000	20.00	4.35	2.51	180.00	1.624	30	1.40	0.60
Powerwave LGP17201	0.0000	62.00	0.00	-5.02	188.00	1.644	30	3.90	1.00
Powerwave LGP17201	120.0000	62.00	4.35	2.51	188.00	1.644	30	3.90	1.00
Powerwave LGP17201	240.0000	62.00	-4.35	2.51	188.00	1.644	30	3.90	1.00
Antel BXA-171085-8BF	0.0000	10.50	0.00	-5.02	136.00	1.499	28	2.94	2.16
Antel BXA-171085-8BF	120.0000	10.50	4.35	2.51	136.00	1.499	28	2.94	2.16
Antel BXA-171085-8BF	240.0000	10.50	-4.35	2.51	136.00	1.499	28	2.94	2.16
RFS FD0R6004/2C-3L	0.0000	5.20	0.00	-5.02	136.00	1.499	28	0.00	0.16
RFS FD0R6004/2C-3L	120.0000	5.20	4.35	2.51	136.00	1.499	28	0.00	0.16
RFS FD0R6004/2C-3L	0.0000	5.20	0.00	-5.02	136.00	1.499	28	0.00	0.16
Powerwave P65-17-XLH-RR	0.0000	62.00	0.00	-5.02	188.00	1.644	30	11.47	4.00
Powerwave P65-17-XLH-RR	120.0000	62.00	4.35	2.51	188.00	1.644	30	11.47	4.00
Andrew SBNH-1D6565C	240.0000	60.90	-4.35	2.51	188.00	1.644	30	11.41	7.70
Ericsson RRUs11	0.0000	100.00	0.00	-5.02	188.00	1.644	30	5.98	0.72
Ericsson RRUs11	120.0000	100.00	4.35	2.51	188.00	1.644	30	5.98	0.72
Ericsson RRUs11	240.0000	100.00	-4.35	2.51	188.00	1.644	30	5.98	0.72
Raycap DC6-48-60-18-8F	0.0000	31.80	0.00	-5.02	188.00	1.644	30	2.57	2.57
Sector Frame	0.0000	465.00	0.00	-2.02	150.40	1.542	29	17.50	8.75
Sector Frame	120.0000	465.00	1.75	1.01	150.40	1.542	29	17.50	8.75
Sector Frame	240.0000	465.00	-1.75	1.01	150.40	1.542	29	17.50	8.75
RFS APXV9ERR18-C-A20	0.0000	62.00	0.00	-5.02	150.40	1.542	29	8.02	5.81
Alcatel Lucent 4X45W RRH	0.0000	60.00	0.00	-5.02	150.40	1.542	29	2.32	2.24
Alcatel Lucent 2X50W RRH	0.0000	60.00	0.00	-5.02	150.40	1.542	29	1.71	1.32
RFS APXV9ERR18-C-A20	120.0000	62.00	4.35	2.51	150.40	1.542	29	8.02	5.81
Alcatel Lucent 4X45W RRH	120.0000	60.00	4.35	2.51	150.40	1.542	29	2.32	2.24
Alcatel Lucent 2X50W RRH	120.0000	60.00	4.35	2.51	150.40	1.542	29	1.71	1.32
RFS APXV9ERR18-C-A20	240.0000	62.00	-4.35	2.51	150.40	1.542	29	8.02	5.81
Alcatel Lucent 4X45W RRH	240.0000	60.00	-4.35	2.51	150.40	1.542	29	2.32	2.24
Alcatel Lucent 2X50W RRH	240.0000	60.00	-4.35	2.51	150.40	1.542	29	1.71	1.32
	Sum Weight:	8444.50							

Discrete Appurtenance Pressures - With Ice $G_H = 1.118$

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2	t_z in
Torque Arm Face C	180.0000	0.00	0.00	2.53	161.37	1.574	22	4.99	7.22	0.5000
Torque Arm Face B	60.0000	0.00	2.19	-1.26	161.37	1.574	22	4.99	7.22	0.5000
Torque Arm Face A	300.0000	0.00	-2.19	-1.26	161.37	1.574	22	4.99	7.22	0.5000
Torque Arm Face C	180.0000	0.00	0.00	2.53	121.37	1.451	20	4.99	7.22	0.5000
Torque Arm Face B	60.0000	0.00	2.19	-1.26	121.37	1.451	20	4.99	7.22	0.5000
Torque Arm Face A	300.0000	0.00	-2.19	-1.26	121.37	1.451	20	4.99	7.22	0.5000
Antel LPA-80080-4CF	0.0000	90.20	0.00	-5.02	136.00	1.499	21	5.84	11.42	0.5000

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2	t_z in
Antel LPA-80080-4CF	120.0000	90.20	4.35	2.51	136.00	1.499	21	5.84	11.42	0.5000
Antel LPA-80080-4CF	240.0000	90.20	-4.35	2.51	136.00	1.499	21	5.84	11.42	0.5000
Sector Frame	0.0000	600.00	0.00	-2.02	136.00	1.499	21	22.50	11.00	0.5000
Sector Frame	120.0000	600.00	1.75	1.01	136.00	1.499	21	22.50	11.00	0.5000
Sector Frame	240.0000	600.00	-1.75	1.01	136.00	1.499	21	22.50	11.00	0.5000
Antel BXA-70063-6CF	0.0000	59.50	0.00	-5.02	136.00	1.499	21	8.02	2.91	0.5000
Antel BXA-70063-6CF	120.0000	59.50	4.35	2.51	136.00	1.499	21	8.02	2.91	0.5000
Antel BXA-70063-6CF	240.0000	59.50	-4.35	2.51	136.00	1.499	21	8.02	2.91	0.5000
Sector Frame	0.0000	600.00	0.00	-2.02	173.00	1.605	22	22.50	11.00	0.5000
Sector Frame	120.0000	600.00	1.75	1.01	173.00	1.605	22	22.50	11.00	0.5000
Sector Frame	240.0000	600.00	-1.75	1.01	173.00	1.605	22	22.50	11.00	0.5000
Swedcom ALP-E-9011	0.0000	149.40	0.00	-5.02	173.00	1.605	22	8.88	10.32	0.5000
Swedcom ALP-E-9011	120.0000	149.40	4.35	2.51	173.00	1.605	22	8.88	10.32	0.5000
Swedcom ALP-E-9011	240.0000	149.40	-4.35	2.51	173.00	1.605	22	8.88	10.32	0.5000
Sector Frame	0.0000	600.00	0.00	-2.02	180.00	1.624	23	22.50	11.00	0.5000
Sector Frame	120.0000	600.00	1.75	1.01	180.00	1.624	23	22.50	11.00	0.5000
Sector Frame	240.0000	600.00	-1.75	1.01	180.00	1.624	23	22.50	11.00	0.5000
RFS APX199015-CT2	0.0000	141.60	0.00	-5.02	180.00	1.624	23	17.25	7.14	0.5000
RFS APX199015-CT2	120.0000	141.60	4.35	2.51	180.00	1.624	23	17.25	7.14	0.5000
RFS APX199015-CT2	240.0000	141.60	-4.35	2.51	180.00	1.624	23	17.25	7.14	0.5000
Sector Frame	0.0000	344.00	0.00	-2.02	187.00	1.641	23	18.00	9.00	0.5000
Sector Frame	120.0000	344.00	1.75	1.01	187.00	1.641	23	18.00	9.00	0.5000
Sector Frame	240.0000	344.00	-1.75	1.01	187.00	1.641	23	18.00	9.00	0.5000
Powerwave 7770.00	0.0000	135.20	0.00	-5.02	188.00	1.644	23	12.50	6.58	0.5000
Powerwave 7770.00	120.0000	135.20	4.35	2.51	188.00	1.644	23	12.50	6.58	0.5000
Powerwave 7770.00	240.0000	135.20	-4.35	2.51	188.00	1.644	23	12.50	6.58	0.5000
TMA	240.0000	30.30	-4.35	2.51	180.00	1.624	23	1.32	0.69	0.5000
TMA	0.0000	30.30	0.00	-5.02	180.00	1.624	23	1.32	0.69	0.5000
TMA	120.0000	30.30	4.35	2.51	180.00	1.624	23	1.32	0.69	0.5000
Diplexor	240.0000	30.30	-4.35	2.51	180.00	1.624	23	1.32	0.69	0.5000
Diplexor	0.0000	30.30	0.00	-5.02	180.00	1.624	23	1.32	0.69	0.5000
Diplexor	120.0000	30.30	4.35	2.51	180.00	1.624	23	1.32	0.69	0.5000
Powerwave LGP17201	0.0000	83.80	0.00	-5.02	188.00	1.644	23	4.22	1.20	0.5000
Powerwave LGP17201	120.0000	83.80	4.35	2.51	188.00	1.644	23	4.22	1.20	0.5000
Powerwave LGP17201	240.0000	83.80	-4.35	2.51	188.00	1.644	23	4.22	1.20	0.5000
Antel BXA-171085-8BF	0.0000	29.30	0.00	-5.02	136.00	1.499	21	3.25	2.48	0.5000
Antel BXA-171085-8BF	120.0000	29.30	4.35	2.51	136.00	1.499	21	3.25	2.48	0.5000
Antel BXA-171085-8BF	240.0000	29.30	-4.35	2.51	136.00	1.499	21	3.25	2.48	0.5000
RFS FD0R6004/2C-3L	0.0000	9.80	0.00	-5.02	136.00	1.499	21	0.00	0.24	0.5000
RFS FD0R6004/2C-3L	120.0000	9.80	4.35	2.51	136.00	1.499	21	0.00	0.24	0.5000
RFS FD0R6004/2C-3L	0.0000	9.80	0.00	-5.02	136.00	1.499	21	0.00	0.24	0.5000
Powerwave P65-17-XLH-RR	0.0000	124.10	0.00	-5.02	188.00	1.644	23	12.08	4.68	0.5000
Powerwave P65-17-XLH-RR	120.0000	124.10	4.35	2.51	188.00	1.644	23	12.08	4.68	0.5000
Andrew SBNH-1D6565C	240.0000	126.60	-4.35	2.51	188.00	1.644	23	12.03	8.36	0.5000
Ericsson RRUs11	0.0000	127.00	0.00	-5.02	188.00	1.644	23	6.38	0.96	0.5000
Ericsson RRUs11	120.0000	127.00	4.35	2.51	188.00	1.644	23	6.38	0.96	0.5000
Ericsson RRUs11	240.0000	127.00	-4.35	2.51	188.00	1.644	23	6.38	0.96	0.5000
Raycap DC6-48-60-18-8F	0.0000	54.40	0.00	-5.02	188.00	1.644	23	2.77	2.77	0.5000
Sector Frame	0.0000	600.00	0.00	-2.02	150.40	1.542	21	22.50	11.00	0.5000
Sector Frame	120.0000	600.00	1.75	1.01	150.40	1.542	21	22.50	11.00	0.5000
Sector Frame	240.0000	600.00	-1.75	1.01	150.40	1.542	21	22.50	11.00	0.5000
RFS APXV9ERR18-C-A20	0.0000	114.00	0.00	-5.02	150.40	1.542	21	8.48	6.27	0.5000
Alcatel Lucent 4X45W RRH	0.0000	83.10	0.00	-5.02	150.40	1.542	21	2.53	2.44	0.5000
Alcatel Lucent 2X50W RRH	0.0000	77.30	0.00	-5.02	150.40	1.542	21	1.88	1.47	0.5000

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2	t_z in
RFS APXV9ERR18-C-A20	120.0000	114.00	4.35	2.51	150.40	1.542	21	8.48	6.27	0.5000
Alcatel Lucent 4X45W RRH	120.0000	83.10	4.35	2.51	150.40	1.542	21	2.53	2.44	0.5000
Alcatel Lucent 2X50W RRH	120.0000	77.30	4.35	2.51	150.40	1.542	21	1.88	1.47	0.5000
RFS APXV9ERR18-C-A20	240.0000	114.00	-4.35	2.51	150.40	1.542	21	8.48	6.27	0.5000
Alcatel Lucent 4X45W RRH	240.0000	83.10	-4.35	2.51	150.40	1.542	21	2.53	2.44	0.5000
Alcatel Lucent 2X50W RRH	240.0000	77.30	-4.35	2.51	150.40	1.542	21	1.88	1.47	0.5000
	Sum Weight:	12143.60								

Discrete Appurtenance Pressures - Service $G_H = 1.118$

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2
Torque Arm Face C	180.0000	0.00	0.00	2.53	161.37	1.574	10	4.25	6.25
Torque Arm Face B	60.0000	0.00	2.19	-1.26	161.37	1.574	10	4.25	6.25
Torque Arm Face A	300.0000	0.00	-2.19	-1.26	161.37	1.574	10	4.25	6.25
Torque Arm Face C	180.0000	0.00	0.00	2.53	121.37	1.451	9	4.25	6.25
Torque Arm Face B	60.0000	0.00	2.19	-1.26	121.37	1.451	9	4.25	6.25
Torque Arm Face A	300.0000	0.00	-2.19	-1.26	121.37	1.451	9	4.25	6.25
Antel LPA-80080-4CF	0.0000	24.00	0.00	-5.02	136.00	1.499	10	5.24	10.80
Antel LPA-80080-4CF	120.0000	24.00	4.35	2.51	136.00	1.499	10	5.24	10.80
Antel LPA-80080-4CF	240.0000	24.00	-4.35	2.51	136.00	1.499	10	5.24	10.80
Sector Frame	0.0000	465.00	0.00	-2.02	136.00	1.499	10	17.50	8.75
Sector Frame	120.0000	465.00	1.75	1.01	136.00	1.499	10	17.50	8.75
Sector Frame	240.0000	465.00	-1.75	1.01	136.00	1.499	10	17.50	8.75
Antel BXA-70063-6CF	0.0000	17.00	0.00	-5.02	136.00	1.499	10	7.57	2.43
Antel BXA-70063-6CF	120.0000	17.00	4.35	2.51	136.00	1.499	10	7.57	2.43
Antel BXA-70063-6CF	240.0000	17.00	-4.35	2.51	136.00	1.499	10	7.57	2.43
Sector Frame	0.0000	465.00	0.00	-2.02	173.00	1.605	10	17.50	8.75
Sector Frame	120.0000	465.00	1.75	1.01	173.00	1.605	10	17.50	8.75
Sector Frame	240.0000	465.00	-1.75	1.01	173.00	1.605	10	17.50	8.75
Swedcom ALP-E-9011	0.0000	60.00	0.00	-5.02	173.00	1.605	10	8.04	9.51
Swedcom ALP-E-9011	120.0000	60.00	4.35	2.51	173.00	1.605	10	8.04	9.51
Swedcom ALP-E-9011	240.0000	60.00	-4.35	2.51	173.00	1.605	10	8.04	9.51
Sector Frame	0.0000	465.00	0.00	-2.02	180.00	1.624	10	17.50	8.75
Sector Frame	120.0000	465.00	1.75	1.01	180.00	1.624	10	17.50	8.75
Sector Frame	240.0000	465.00	-1.75	1.01	180.00	1.624	10	17.50	8.75
RFS APX199015-CT2	0.0000	60.90	0.00	-5.02	180.00	1.624	10	15.84	5.46
RFS APX199015-CT2	120.0000	60.90	4.35	2.51	180.00	1.624	10	15.84	5.46
RFS APX199015-CT2	240.0000	60.90	-4.35	2.51	180.00	1.624	10	15.84	5.46
Sector Frame	0.0000	251.00	0.00	-2.02	187.00	1.641	11	14.40	7.00
Sector Frame	120.0000	251.00	1.75	1.01	187.00	1.641	11	14.40	7.00
Sector Frame	240.0000	251.00	-1.75	1.01	187.00	1.641	11	14.40	7.00
Powerwave 7770.00	0.0000	70.00	0.00	-5.02	188.00	1.644	11	11.76	5.86
Powerwave 7770.00	120.0000	70.00	4.35	2.51	188.00	1.644	11	11.76	5.86
Powerwave 7770.00	240.0000	70.00	-4.35	2.51	188.00	1.644	11	11.76	5.86
TMA	240.0000	20.00	-4.35	2.51	180.00	1.624	10	1.40	0.60
TMA	0.0000	20.00	0.00	-5.02	180.00	1.624	10	1.40	0.60
TMA	120.0000	20.00	4.35	2.51	180.00	1.624	10	1.40	0.60
Diplexor	240.0000	20.00	-4.35	2.51	180.00	1.624	10	1.40	0.60
Diplexor	0.0000	20.00	0.00	-5.02	180.00	1.624	10	1.40	0.60

Description	Aiming Azimuth °	Weight lb	$Offset_x$ ft	$Offset_z$ ft	z ft	K_z	q_z psf	C_AA_C Front ft^2	C_AA_C Side ft^2
Diplexor	120.0000	20.00	4.35	2.51	180.00	1.624	10	1.40	0.60
Powerwave LGP17201	0.0000	62.00	0.00	-5.02	188.00	1.644	11	3.90	1.00
Powerwave LGP17201	120.0000	62.00	4.35	2.51	188.00	1.644	11	3.90	1.00
Powerwave LGP17201	240.0000	62.00	-4.35	2.51	188.00	1.644	11	3.90	1.00
Antel BXA-171085-8BF	0.0000	10.50	0.00	-5.02	136.00	1.499	10	2.94	2.16
Antel BXA-171085-8BF	120.0000	10.50	4.35	2.51	136.00	1.499	10	2.94	2.16
Antel BXA-171085-8BF	240.0000	10.50	-4.35	2.51	136.00	1.499	10	2.94	2.16
RFS FD0R6004/2C-3L	0.0000	5.20	0.00	-5.02	136.00	1.499	10	0.00	0.16
RFS FD0R6004/2C-3L	120.0000	5.20	4.35	2.51	136.00	1.499	10	0.00	0.16
RFS FD0R6004/2C-3L	0.0000	5.20	0.00	-5.02	136.00	1.499	10	0.00	0.16
Powerwave P65-17-XLH-RR	0.0000	62.00	0.00	-5.02	188.00	1.644	11	11.47	4.00
Powerwave P65-17-XLH-RR	120.0000	62.00	4.35	2.51	188.00	1.644	11	11.47	4.00
Andrew SBNH-1D6565C	240.0000	60.90	-4.35	2.51	188.00	1.644	11	11.41	7.70
Ericsson RRUs11	0.0000	100.00	0.00	-5.02	188.00	1.644	11	5.98	0.72
Ericsson RRUs11	120.0000	100.00	4.35	2.51	188.00	1.644	11	5.98	0.72
Ericsson RRUs11	240.0000	100.00	-4.35	2.51	188.00	1.644	11	5.98	0.72
Raycap DC6-48-60-18-8F	0.0000	31.80	0.00	-5.02	188.00	1.644	11	2.57	2.57
Sector Frame	0.0000	465.00	0.00	-2.02	150.40	1.542	10	17.50	8.75
Sector Frame	120.0000	465.00	1.75	1.01	150.40	1.542	10	17.50	8.75
Sector Frame	240.0000	465.00	-1.75	1.01	150.40	1.542	10	17.50	8.75
RFS APXV9ERR18-C-A20	0.0000	62.00	0.00	-5.02	150.40	1.542	10	8.02	5.81
Alcatel Lucent 4X45W RRH	0.0000	60.00	0.00	-5.02	150.40	1.542	10	2.32	2.24
Alcatel Lucent 2X50W RRH	0.0000	60.00	0.00	-5.02	150.40	1.542	10	1.71	1.32
RFS APXV9ERR18-C-A20	120.0000	62.00	4.35	2.51	150.40	1.542	10	8.02	5.81
Alcatel Lucent 4X45W RRH	120.0000	60.00	4.35	2.51	150.40	1.542	10	2.32	2.24
Alcatel Lucent 2X50W RRH	120.0000	60.00	4.35	2.51	150.40	1.542	10	1.71	1.32
RFS APXV9ERR18-C-A20	240.0000	62.00	-4.35	2.51	150.40	1.542	10	8.02	5.81
Alcatel Lucent 4X45W RRH	240.0000	60.00	-4.35	2.51	150.40	1.542	10	2.32	2.24
Alcatel Lucent 2X50W RRH	240.0000	60.00	-4.35	2.51	150.40	1.542	10	1.71	1.32
	Sum Weight:	8444.50							

Force Totals (Does not include forces on guys)

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Torques lb-ft
Leg Weight	3252.97			
Bracing Weight	3960.86			
Total Member Self-Weight	7213.83			
Guy Weight	2614.62			
Total Weight	25403.60			
Wind 0 deg - No Ice		-53.22	-32760.09	-4228.51
Wind 30 deg - No Ice		16221.76	-28199.04	-5681.11

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Torques lb-ft
Wind 60 deg - No Ice		28101.65	-16222.02	-5630.17
Wind 90 deg - No Ice		32535.69	53.22	-4089.04
Wind 120 deg - No Ice		28348.76	16426.13	-1444.19
Wind 150 deg - No Ice		16313.93	28252.26	1592.06
Wind 180 deg - No Ice		53.22	32536.20	4189.39
Wind 210 deg - No Ice		-16221.76	28199.04	5681.11
Wind 240 deg - No Ice		-28295.54	16333.96	5672.69
Wind 270 deg - No Ice		-32535.69	-53.22	4089.04
Wind 300 deg - No Ice		-28154.87	-16314.19	1440.78
Wind 330 deg - No Ice		-16313.93	-28252.26	-1592.06
Member Ice	3948.69			
Guy Ice	2336.99			
Total Weight Ice	48715.23			
Wind 0 deg - Ice		-38.78	-38184.39	-5570.13
Wind 30 deg - Ice		18931.73	-32863.44	-6134.61
Wind 60 deg - Ice		32760.88	-18911.71	-5076.18
Wind 90 deg - Ice		37930.63	38.78	-2678.65
Wind 120 deg - Ice		33054.09	19125.77	457.51
Wind 150 deg - Ice		18998.89	32902.22	3455.96
Wind 180 deg - Ice		38.78	37890.59	5525.46
Wind 210 deg - Ice		-18931.73	32863.44	6134.61
Wind 240 deg - Ice		-33015.32	19058.61	5112.63
Wind 270 deg - Ice		-37930.63	-38.78	2678.65
Wind 300 deg - Ice		-32799.66	-18978.87	-449.28
Wind 330 deg - Ice		-18998.89	-32902.22	-3455.96
Total Weight	25403.60			
Wind 0 deg - Service		-18.41	-11335.67	-1463.15
Wind 30 deg - Service		5613.06	-9757.45	-1965.78
Wind 60 deg - Service		9723.75	-5613.15	-1948.15
Wind 90 deg - Service		11258.02	18.41	-1414.89
Wind 120 deg - Service		9809.26	5683.78	-499.72
Wind 150 deg - Service		5644.96	9775.87	550.89
Wind 180 deg - Service		18.41	11258.20	1449.61
Wind 210 deg - Service		-5613.06	9757.45	1965.78
Wind 240 deg - Service		-9790.85	5651.89	1962.87
Wind 270 deg - Service		-11258.02	-18.41	1414.89
Wind 300 deg - Service		-9742.17	-5645.05	498.54
Wind 330 deg - Service		-5644.96	-9775.87	-550.89

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

Comb. No.	Description
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 Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Guy C @ 126.8 ft Elev -12 ft Azimuth 240 deg	Max. Vert	10	-2361.86	-1448.65	834.19
	Max. H_x	10	-2361.86	-1448.65	834.19
	Max. H_z	17	-57371.62	-46295.10	26784.22
	Min. Vert	17	-57371.62	-46295.10	26784.22
	Min. H_x	17	-57371.62	-46295.10	26784.22
	Min. H_z	10	-2361.86	-1448.65	834.19
Guy B @ 133.5 ft Elev 13 ft Azimuth 120 deg	Max. Vert	6	-955.43	839.86	485.10
	Max. H_x	25	-46094.24	47343.31	27358.20
	Max. H_z	25	-46094.24	47343.31	27358.20
	Min. Vert	25	-46094.24	47343.31	27358.20
	Min. H_x	6	-955.43	839.86	485.10
	Min. H_z	6	-955.43	839.86	485.10
Guy A @ 149.3 ft Elev -14 ft Azimuth 0 deg	Max. Vert	2	-1524.69	-1.28	-1367.96
	Max. H_x	24	-27209.60	1944.73	-28794.18
	Max. H_z	2	-1524.69	-1.28	-1367.96
	Min. Vert	21	-48778.62	19.65	-52807.52
	Min. H_x	18	-25622.54	-1970.49	-27301.94
	Min. H_z	21	-48778.62	19.65	-52807.52
Mast	Max. Vert	16	134284.22	-1214.62	2033.93
	Max. H_x	24	127377.45	2643.76	-109.17

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
	Max. H_z	15	133229.00	72.74	2462.43
	Max. M_x	1	0.00	2.01	-46.84
	Max. M_z	1	0.00	2.01	-46.84
	Max. Torsion	1	0.00	2.01	-46.84
	Min. Vert	1	73246.56	2.01	-46.84
	Min. H_x	18	133378.22	-2520.35	-139.80
	Min. H_z	21	124738.25	17.49	-2772.83
	Min. M_x	1	0.00	2.01	-46.84
	Min. M_z	1	0.00	2.01	-46.84
	Min. Torsion	1	0.00	2.01	-46.84

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	73246.56	-2.01	46.84	0.00	0.00	0.00
Dead+Wind 0 deg - No Ice+Guy	96648.25	-41.85	-1993.78	0.00	0.00	0.00
Dead+Wind 30 deg - No Ice+Guy	95413.27	972.10	-1668.82	0.00	0.00	0.00
Dead+Wind 60 deg - No Ice+Guy	89618.01	1743.02	-959.12	0.00	0.00	0.00
Dead+Wind 90 deg - No Ice+Guy	94954.60	1985.74	44.40	0.00	0.00	0.00
Dead+Wind 120 deg - No Ice+Guy	97891.11	1735.07	1078.60	0.00	0.00	0.00
Dead+Wind 150 deg - No Ice+Guy	92168.69	1001.44	1837.23	0.00	0.00	0.00
Dead+Wind 180 deg - No Ice+Guy	84816.00	3.03	2136.38	0.00	0.00	0.00
Dead+Wind 210 deg - No Ice+Guy	89701.91	-1024.38	1821.13	0.00	0.00	0.00
Dead+Wind 240 deg - No Ice+Guy	92665.82	-1791.49	1063.56	0.00	0.00	0.00
Dead+Wind 270 deg - No Ice+Guy	89330.08	-2065.59	31.22	0.00	0.00	0.00
Dead+Wind 300 deg - No Ice+Guy	86462.67	-1802.16	-997.80	0.00	0.00	0.00
Dead+Wind 330 deg - No Ice+Guy	92153.92	-1053.25	-1722.78	0.00	0.00	0.00
Dead+Ice+Temp+Guy	103223.95	2.12	127.75	0.00	0.00	0.00
Dead+Wind 0 deg+Ice+Temp+Guy	133229.00	-72.74	-2462.43	0.00	0.00	0.00
Dead+Wind 30 deg+Ice+Temp+Guy	134284.22	1214.62	-2033.93	0.00	0.00	0.00
Dead+Wind 60 deg+Ice+Temp+Guy	131084.72	2185.07	-1119.55	0.00	0.00	0.00
Dead+Wind 90 deg+Ice+Temp+Guy	133378.22	2520.35	139.80	0.00	0.00	0.00
Dead+Wind 120 deg+Ice+Temp+Guy	134087.14	2201.82	1447.12	0.00	0.00	0.00
Dead+Wind 150 deg+Ice+Temp+Guy	129908.58	1266.84	2408.07	0.00	0.00	0.00
Dead+Wind 180 deg+Ice+Temp+Guy	124738.25	-17.49	2772.83	0.00	0.00	0.00
Dead+Wind 210	127752.47	-1295.50	2373.94	0.00	0.00	0.00

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
deg+Ice+Temp+Guy Dead+Wind 240	129382.33	-2272.46	1408.66	0.00	0.00	0.00
deg+Ice+Temp+Guy Dead+Wind 270	127377.45	-2643.76	109.17	0.00	0.00	0.00
deg+Ice+Temp+Guy Dead+Wind 300	126395.53	-2312.53	-1185.72	0.00	0.00	0.00
deg+Ice+Temp+Guy Dead+Wind 330	130309.25	-1360.47	-2117.14	0.00	0.00	0.00
deg+Ice+Temp+Guy Dead+Wind 0 deg - Service+Guy	74244.32	-6.58	-707.20	0.00	0.00	0.00
Dead+Wind 30 deg - Service+Guy	74315.12	359.95	-600.89	0.00	0.00	0.00
Dead+Wind 60 deg - Service+Guy	74334.20	630.71	-320.76	0.00	0.00	0.00
Dead+Wind 90 deg - Service+Guy	73900.77	736.98	55.74	0.00	0.00	0.00
Dead+Wind 120 deg - Service+Guy	73418.93	646.22	429.65	0.00	0.00	0.00
Dead+Wind 150 deg - Service+Guy	73296.72	373.74	696.98	0.00	0.00	0.00
Dead+Wind 180 deg - Service+Guy	73377.76	0.22	791.79	0.00	0.00	0.00
Dead+Wind 210 deg - Service+Guy	73370.44	-373.25	692.07	0.00	0.00	0.00
Dead+Wind 240 deg - Service+Guy	73529.00	-646.99	421.77	0.00	0.00	0.00
Dead+Wind 270 deg - Service+Guy	74036.56	-741.64	47.41	0.00	0.00	0.00
Dead+Wind 300 deg - Service+Guy	74424.96	-640.77	-326.92	0.00	0.00	0.00
Dead+Wind 330 deg - Service+Guy	74382.85	-372.69	-603.45	0.00	0.00	0.00

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
1	0.00	-25402.96	0.00	1.76	25403.13	6.40	0.026%
2	10.97	-25521.19	-36267.59	-9.06	25520.46	36258.80	0.020%
3	18073.49	-25369.64	-31295.06	-18070.93	25368.93	31286.66	0.020%
4	31280.79	-25231.21	-18044.68	-31276.36	25230.75	18035.07	0.024%
5	36174.92	-25448.10	13.98	-36167.43	25447.52	-10.37	0.019%
6	31458.28	-25658.71	18134.48	-31447.87	25657.99	-18129.08	0.026%
7	18056.27	-25481.43	31237.27	-18050.13	25480.96	-31233.99	0.016%
8	-10.97	-25284.74	36043.71	21.89	25284.62	-36041.10	0.026%
9	-18073.49	-25436.29	31295.06	18067.99	25435.78	-31290.42	0.016%
10	-31474.69	-25574.72	18156.62	31468.36	25574.14	-18151.67	0.018%
11	-36174.92	-25357.83	-13.98	36171.44	25357.47	16.44	0.010%
12	-31264.39	-25147.22	-18022.54	31267.44	25147.11	18015.04	0.018%
13	-18056.27	-25324.50	-31237.27	18056.96	25324.06	31232.41	0.011%
14	0.00	-48714.04	0.00	3.50	48714.02	-2.51	0.009%
15	90.37	-48953.41	-45184.03	-89.10	48952.22	45158.84	0.038%
16	22628.04	-48648.08	-39042.64	-22631.63	48647.07	39018.10	0.037%
17	39106.62	-48368.94	-22549.86	-39106.12	48368.74	22544.17	0.009%
18	45194.46	-48806.39	-39.64	-45171.33	48805.37	61.88	0.048%
19	39260.68	-49230.97	22534.45	-39225.98	49229.25	-22515.94	0.059%

Load Comb.	Sum of Applied Forces PX lb	PY lb	PZ lb	Sum of Reactions PX lb	PY lb	PZ lb	% Error
20	22475.72	-48872.35	38858.07	-22447.90	48871.44	-38851.55	0.043%
21	-90.37	-48474.66	44890.24	123.23	48474.71	-44891.81	0.050%
22	-22628.04	-48780.00	39042.64	22590.90	48778.88	-39033.42	0.058%
23	-39361.06	-49059.14	22696.76	39327.30	49057.61	-22678.83	0.057%
24	-45194.46	-48621.69	39.64	45175.30	48620.92	-20.91	0.040%
25	-39006.24	-48197.10	-22387.55	39012.19	48197.02	22376.34	0.019%
26	-22475.72	-48555.73	-38858.07	22480.22	48555.07	38841.95	0.025%
27	3.80	-25443.87	-12549.34	-2.50	25443.81	12540.15	0.033%
28	6253.80	-25391.43	-10828.74	-6250.75	25391.36	10820.10	0.032%
29	10823.80	-25343.53	-6243.83	-10820.41	25343.49	6240.91	0.016%
30	12517.27	-25418.58	4.84	-12509.64	25418.54	-3.80	0.027%
31	10885.22	-25491.46	6274.91	-10876.90	25491.43	-6270.50	0.033%
32	6247.84	-25430.11	10808.75	-6241.70	25430.10	-10804.40	0.027%
33	-3.80	-25362.06	12471.87	5.41	25362.05	-12467.04	0.018%
34	-6253.80	-25414.50	10828.74	6251.20	25414.49	-10824.93	0.016%
35	-10890.89	-25462.40	6282.57	10886.95	25462.39	-6279.62	0.017%
36	-12517.27	-25387.35	-4.84	12513.97	25387.33	6.06	0.012%
37	-10818.13	-25314.47	-6236.17	10816.93	25314.42	6232.38	0.014%
38	-6247.84	-25375.82	-10808.75	6248.84	25375.75	10800.92	0.028%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	13	0.00000001	0.00010573
2	Yes	26	0.00032607	0.00020529
3	Yes	25	0.00034554	0.00022188
4	Yes	18	0.00038120	0.00021467
5	Yes	27	0.00032378	0.00018221
6	Yes	28	0.00030037	0.00017586
7	Yes	27	0.00027789	0.00015158
8	Yes	18	0.00027984	0.00011713
9	Yes	24	0.00028958	0.00017335
10	Yes	25	0.00028067	0.00017146
11	Yes	24	0.00028702	0.00015350
12	Yes	18	0.00033807	0.00012645
13	Yes	25	0.00029601	0.00016470
14	Yes	13	0.00000001	0.00004626
15	Yes	26	0.00033209	0.00016365
16	Yes	25	0.00035996	0.00017761
17	Yes	20	0.00030200	0.00014156
18	Yes	27	0.00034856	0.00012595
19	Yes	28	0.00034052	0.00014707
20	Yes	27	0.00029692	0.00011094
21	Yes	19	0.00028288	0.00011227
22	Yes	24	0.00033068	0.00014244
23	Yes	25	0.00031442	0.00014268
24	Yes	24	0.00033234	0.00011087
25	Yes	20	0.00030542	0.00008398
26	Yes	25	0.00032652	0.00013469
27	Yes	13	0.00000001	0.00009776
28	Yes	13	0.00036914	0.00012398
29	Yes	14	0.00000001	0.00008699
30	Yes	13	0.00000001	0.00011167
31	Yes	13	0.00000001	0.00010782
32	Yes	13	0.00000001	0.00010052

33	Yes	13	0.00000001	0.00009598
34	Yes	13	0.00000001	0.00007303
35	Yes	13	0.00000001	0.00006252
36	Yes	13	0.00000001	0.00005824
37	Yes	13	0.00000001	0.00007918
38	Yes	13	0.00000001	0.00009715

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	187 - 180	3.451	29	0.2742	0.0637
T2	180 - 160	3.023	29	0.2668	0.0582
T3	160 - 140	2.075	29	0.1656	0.0559
T4	140 - 120	1.577	29	0.0985	0.0776
T5	120 - 100	1.256	29	0.0447	0.0923
T6	100 - 80	1.171	29	0.0212	0.1681
T7	80 - 60	1.056	29	0.0370	0.2274
T8	60 - 40	0.883	28	0.0336	0.2705
T9	40 - 20	0.757	28	0.0477	0.3035
T10	20 - 0	0.468	28	0.0923	0.3229

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
187.00	Sector Frame	29	3.451	0.2742	0.0637	16674
180.00	Sector Frame	29	3.023	0.2668	0.0582	12831
173.00	Sector Frame	29	2.637	0.2392	0.0543	9791
170.00	Guy	29	2.488	0.2228	0.0534	9112
160.38	Guy	29	2.088	0.1675	0.0556	7586
150.40	Sector Frame	29	1.798	0.1274	0.0666	13181
136.00	(2) Antel LPA-80080-4CF	29	1.500	0.0874	0.0792	45471
120.38	Guy	29	1.260	0.0455	0.0914	13968
60.38	Guy	28	0.885	0.0337	0.2698	38461

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	187 - 180	15.491	6	1.1481	0.3082
T2	180 - 160	13.728	6	1.1273	0.2958
T3	160 - 140	9.779	16	0.8181	0.2914
T4	140 - 120	8.048	16	0.5523	0.3482
T5	120 - 100	6.990	19	0.2950	0.3919
T6	100 - 80	7.016	19	0.1355	0.7312
T7	80 - 60	6.729	19	0.1987	0.8908
T8	60 - 40	5.893	19	0.2167	0.9945

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T9	40 - 20	4.908	19	0.3478	1.2087
T10	20 - 0	2.933	19	0.5933	1.2706

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
187.00	Sector Frame	6	15.491	1.1481	0.3082	6074
180.00	Sector Frame	6	13.728	1.1273	0.2958	4648
173.00	Sector Frame	6	12.086	1.0469	0.2862	3457
170.00	Guy	6	11.432	0.9978	0.2840	3185
160.38	Guy	16	9.822	0.8244	0.2906	2651
150.40	Sector Frame	16	8.841	0.6795	0.3217	4113
136.00	(2) Antel LPA-80080-4CF	16	7.763	0.5013	0.3528	7039
120.38	Guy	19	6.998	0.2994	0.3893	3125
60.38	Guy	19	5.909	0.2164	0.9911	7842

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	187	Leg	A325N	0.7500	4	74.97	19428.80	0.004 ✔	1.333	Bolt Tension
T2	180	Leg	A325N	0.7500	4	2187.54	19398.10	0.113 ✔	1.333	Bolt Tension
		Top Guy Pull-Off@160.375	A325N	0.7500	2	4670.92	9277.52	0.503 ✔	1.333	Bolt Shear
		Torque Arm Top@160.375	A325N	0.7500	2	6953.67	9277.52	0.750 ✔	1.333	Bolt Shear
		Torque Arm Bottom@160.375	A325N	0.7500	2	5794.04	9277.52	0.625 ✔	1.333	Bolt Shear
T3	160	Leg	A325N	0.7500	4	4712.32	19411.00	0.243 ✔	1.333	Bolt Tension
T4	140	Leg	A325N	0.7500	4	0.00	19435.70	0.000 ✔	1.333	Bolt Tension
		Top Guy Pull-Off@120.375	A325N	0.7500	2	3069.12	9277.52	0.331 ✔	1.333	Bolt Shear
		Torque Arm Top@120.375	A325N	0.7500	2	4827.74	9277.52	0.520 ✔	1.333	Bolt Shear
		Torque Arm Bottom@120.375	A325N	0.7500	2	4773.22	9277.52	0.514 ✔	1.333	Bolt Shear
T5	120	Leg	A325N	0.7500	4	0.00	19386.90	0.000 ✔	1.333	Bolt Tension
T6	100	Leg	A325N	0.7500	4	0.00	19428.20	0.000 ✔	1.333	Bolt Tension
T7	80	Leg	A325N	0.7500	4	0.00	19434.70	0.000 ✔	1.333	Bolt Tension
T8	60	Leg	A325N	0.7500	4	0.00	19394.40	0.000 ✔	1.333	Bolt Tension

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
T9	40	Leg	A325N	0.7500	4	0.00	19434.30	0.000 ✔	1.333	Bolt Tension
T10	20	Leg	A325N	0.7500	4	0.00	19435.50	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.
T2	160.38 (A) (577)	5/8 EHS	4240.00	42399.99	12960.00	21200.00	2.000	3.272 ✔
	160.38 (A) (578)	5/8 EHS	4240.00	42399.99	13383.50	21200.00	2.000	3.168 ✔
	160.38 (B) (571)	5/8 EHS	4240.00	42399.99	13241.10	21200.00	2.000	3.202 ✔
	160.38 (B) (572)	5/8 EHS	4240.00	42399.99	13182.60	21200.00	2.000	3.216 ✔
	160.38 (C) (565)	5/8 EHS	4240.00	42399.99	14626.40	21200.00	2.000	2.899 ✔
	160.38 (C) (566)	5/8 EHS	4240.00	42399.99	14229.10	21200.00	2.000	2.980 ✔
	170.00 (A) (606)	5/8 EHS	4240.00	42399.99	13867.00	21200.00	2.000	3.058 ✔
	170.00 (B) (605)	5/8 EHS	4240.00	42399.99	14084.70	21200.00	2.000	3.010 ✔
	170.00 (C) (604)	5/8 EHS	4240.00	42399.99	15050.70	21200.00	2.000	2.817 ✔
T4	120.38 (A) (595)	9/16 EHS	3500.00	35000.04	10320.70	17500.00	2.000	3.391 ✔
	120.38 (A) (596)	9/16 EHS	3500.00	35000.04	10928.60	17500.00	2.000	3.203 ✔
	120.38 (B) (589)	9/16 EHS	3500.00	35000.04	10423.70	17500.00	2.000	3.358 ✔
	120.38 (B) (590)	9/16 EHS	3500.00	35000.04	10421.40	17500.00	2.000	3.358 ✔
	120.38 (C) (583)	9/16 EHS	3500.00	35000.04	11985.90	17500.00	2.000	2.920 ✔
	120.38 (C) (584)	9/16 EHS	3500.00	35000.04	11328.80	17500.00	2.000	3.089 ✔
T7	60.38 (A) (603)	9/16 EHS	3500.00	35000.04	12426.80	17500.00	2.000	2.816 ✔
	60.38 (B) (602)	9/16 EHS	3500.00	35000.04	12340.00	17500.00	2.000	2.836 ✔
	60.38 (C) (601)	9/16 EHS	3500.00	35000.04	13319.80	17500.00	2.000	2.628 ✔

Compression Checks

Leg Design Data (Compression)

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 $\frac{P}{P_a}$
T1	187 - 180	P2.5x.203	7.00	2.85	36.1 K=1.00	1.00	28.272	1.7040	-11916.50	48176.80	0.247 ✔
T2	180 - 160	P2.5x.203	20.00	3.21	40.6 K=1.00	1.00	30.219	1.7040	-53606.60	51494.50	1.041 ✔
T3	160 - 140	P2.5x.203	20.00	3.21	40.6 K=1.00	1.00	30.219	1.7040	-53762.20	51494.50	1.044 ✔
T4	140 - 120	P2.5x.203	20.00	3.21	40.6 K=1.00	1.00	30.219	1.7040	-60336.70	51494.50	1.172 ✔
T5	120 - 100	P2.5x.203	20.00	3.21	40.6 K=1.00	0.99	29.992	1.7040	-58489.60	51107.40	1.144 ✔
T6	100 - 80	P2.5x.203	20.00	3.21	40.6 K=1.00	0.99	29.923	1.7040	-47498.50	50990.10	0.932 ✔
T7	80 - 60	P2.5x.203	20.00	3.21	40.6 K=1.00	0.99	29.910	1.7040	-46402.20	50967.90	0.910 ✔
T8	60 - 40	P2.5x.203	20.00	3.21	40.6 K=1.00	0.99	29.900	1.7040	-56631.20	50950.70	1.111 ✔
T9	40 - 20	P2.5x.203	20.00	3.21	40.6 K=1.00	0.99	29.919	1.7040	-60967.80	50983.70	1.196 ✔
T10	20 - 0	P2.5x.203	20.00	3.21	40.6 K=1.00	0.99	29.906	1.7040	-59363.10	50961.90	1.165 ✔

Diagonal 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 $\frac{P}{P_a}$
T2	180 - 160	C3x4.1	4.75	2.21	186.6 K=2.84	4.291	1.2100	-5248.81	5191.95	1.011 ✔

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 $\frac{P}{P_a}$
T1	187 - 180	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-5270.98	7695.87	0.685* ✔
T2	180 - 160	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-2104.18	7695.87	0.273 ✔
T3	160 - 140	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-3788.23	7695.87	0.492* ✔
T4	140 - 120	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-3612.07	7695.87	0.469* ✔
T5	120 - 100	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-4768.16	7695.87	0.620 ✔

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	100 - 80	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-3107.61	7695.87	0.404*
T7	80 - 60	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-3153.92	7695.87	0.410*
T8	60 - 40	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-2935.17	7695.87	0.381*
T9	40 - 20	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-2864.64	7695.87	0.372*
T10	20 - 0	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-2901.78	7695.87	0.377*

* DL controls

Top Girt 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 $\frac{P}{P_a}$
T1	187 - 180	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-2644.31	7695.87	0.344*
T2	180 - 160	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-461.02	7695.87	0.060
T3	160 - 140	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-3273.13	7695.87	0.425
T4	140 - 120	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-1927.78	7695.87	0.250*
T5	120 - 100	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-2899.63	7695.87	0.377
T6	100 - 80	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-1641.77	7695.87	0.213*
T7	80 - 60	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-1621.64	7695.87	0.211*
T8	60 - 40	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-1410.25	7695.87	0.183*
T9	40 - 20	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-1514.95	7695.87	0.197*
T10	20 - 0	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-1492.16	7695.87	0.194*

* DL controls

Bottom Girt 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 $\frac{P}{P_a}$
T1	187 - 180	L1 1/2x1 1/2x3/16	3.50	3.26	86.7	14.594	0.5273	-3544.32	7695.87	0.461

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 $\frac{P}{P_a}$
					K=0.65					✔
T2	180 - 160	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-1259.29	7695.87	0.164 ✔
T3	160 - 140	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-1918.92	7695.87	0.249* ✔
T4	140 - 120	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-3752.86	7695.87	0.488 ✔
T5	120 - 100	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-1641.70	7695.87	0.213* ✔
T6	100 - 80	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-1625.54	7695.87	0.211* ✔
T8	60 - 40	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-1510.76	7695.87	0.196* ✔
T9	40 - 20	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-1491.05	7695.87	0.194* ✔
T10	20 - 0	L1 1/2x1 1/2x3/16	3.50	3.26	86.7 K=0.65	14.594	0.5273	-321.03	7695.87	0.042* ✔

* DL controls

Top 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 $\frac{P}{P_a}$
T2	180 - 160	L2x2x5/16	3.50	3.26	100.3 K=1.00	12.937	1.1500	-3642.04	14877.70	0.245 ✔
T4	140 - 120	L2x2x5/16	3.50	3.26	100.3 K=1.00	12.937	1.1500	-6138.25	14877.70	0.413 ✔
T7	80 - 60	L1 1/2x1 1/2x3/16	3.50	3.26	133.4 K=1.00	8.395	0.5273	-1063.76	4427.01	0.240 ✔

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 $\frac{P}{P_a}$
T2	180 - 160 (569)	L3x3x1/4	3.50	3.38	68.5 K=1.00	16.584	1.4400	-11588.10	23880.20	0.485 ✔
T2	180 - 160 (570)	L3x3x1/4	3.50	3.38	68.5 K=1.00	16.584	1.4400	-10616.50	23880.20	0.445 ✔
T2	180 - 160 (575)	L3x3x1/4	3.50	3.38	68.5 K=1.00	16.584	1.4400	-11150.80	23880.20	0.467 ✔
T2	180 - 160 (576)	L3x3x1/4	3.50	3.38	68.5 K=1.00	16.584	1.4400	-10395.00	23880.20	0.435 ✔
T2	180 - 160 (581)	L3x3x1/4	3.50	3.38	68.5 K=1.00	16.584	1.4400	-10189.50	23880.20	0.427 ✔

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	180 - 160 (582)	L3x3x1/4	3.50	3.38	68.5 K=1.00	16.584	1.4400	-10122.00	23880.20	0.424 ✔
T4	140 - 120 (587)	L3x3x1/4	3.50	3.38	68.5 K=1.00	16.584	1.4400	-9546.44	23880.20	0.400 ✔
T4	140 - 120 (588)	L3x3x1/4	3.50	3.38	68.5 K=1.00	16.584	1.4400	-8496.23	23880.20	0.356 ✔
T4	140 - 120 (593)	L3x3x1/4	3.50	3.38	68.5 K=1.00	16.584	1.4400	-8758.41	23880.20	0.367 ✔
T4	140 - 120 (594)	L3x3x1/4	3.50	3.38	68.5 K=1.00	16.584	1.4400	-7254.21	23880.20	0.304 ✔
T4	140 - 120 (599)	L3x3x1/4	3.50	3.38	68.5 K=1.00	16.584	1.4400	-7259.89	23880.20	0.304 ✔
T4	140 - 120 (600)	L3x3x1/4	3.50	3.38	68.5 K=1.00	16.584	1.4400	-7760.23	23880.20	0.325 ✔

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 $\frac{P}{P_a}$
T1	187 - 180	P2.5x.203	7.00	2.85	36.1	32.400	1.7040	8755.71	55211.20	0.159 ✔
T2	180 - 160	P2.5x.203	20.00	3.21	40.6	36.000	1.7040	29517.80	61345.80	0.481 ✔
T3	160 - 140	P2.5x.203	20.00	3.21	40.6	36.000	1.7040	18849.30	61345.80	0.307 ✔

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 $\frac{P}{P_a}$
T1	187 - 180	5/8	4.51	4.20	322.9	21.600	0.3068	5746.56	6626.80	0.867 ✔
T2	180 - 160	C3x4.1	4.75	2.21	65.7	21.600	1.2100	5557.53	26136.00	0.213 ✔
T3	160 - 140	5/8	4.75	4.42	339.7	21.600	0.3068	5348.76	6626.80	0.807 ✔
T4	140 - 120	5/8	4.75	4.42	339.7	21.600	0.3068	3953.16	6626.80	0.597 ✔
T5	120 - 100	5/8	4.75	4.42	339.7	21.600	0.3068	7181.14	6626.80	1.084 ✔
T6	100 - 80	5/8	4.75	4.42	339.7	21.600	0.3068	3495.99	6626.80	0.528

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 $\frac{P}{P_a}$
T7	80 - 60	5/8	4.75	4.42	339.7	21.600	0.3068	3703.63	6626.80	0.559
T8	60 - 40	5/8	4.75	4.42	339.7	21.600	0.3068	5446.61	6626.80	0.822
T9	40 - 20	5/8	4.75	4.42	339.7	21.600	0.3068	2059.36	6626.80	0.311*
T10	20 - 0	5/8	4.75	4.42	339.7	21.600	0.3068	3602.76	6626.80	0.544

* 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 $\frac{P}{P_a}$
T1	187 - 180	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	21.600	0.5273	206.40	11390.60	0.018
T2	180 - 160	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	21.600	0.5273	3794.66	11390.60	0.333
T3	160 - 140	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	21.600	0.5273	931.19	11390.60	0.082
T4	140 - 120	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	21.600	0.5273	1045.06	11390.60	0.092
T5	120 - 100	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	21.600	0.5273	1013.07	11390.60	0.089
T6	100 - 80	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	21.600	0.5273	822.70	11390.60	0.072
T7	80 - 60	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	21.600	0.5273	803.71	11390.60	0.071
T8	60 - 40	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	21.600	0.5273	980.88	11390.60	0.086
T9	40 - 20	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	21.600	0.5273	1055.99	11390.60	0.093
T10	20 - 0	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	21.600	0.5273	1028.20	11390.60	0.090

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 $\frac{P}{P_a}$
T2	180 - 160	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	21.600	0.5273	607.57	11390.60	0.053
T3	160 - 140	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	21.600	0.5273	477.39	11390.60	0.042

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 $\frac{P}{P_a}$
T5	120 - 100	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	21.600	0.5273	390.28	11390.60	0.034 ✔
T10	20 - 0	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	21.600	0.5273	45.84	11390.60	0.004 ✔

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 $\frac{P}{P_a}$
T2	180 - 160	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	21.600	0.5273	5048.59	11390.60	0.443 ✔
T4	140 - 120	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	21.600	0.5273	1181.61	11390.60	0.104 ✔
T10	20 - 0	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	21.600	0.5273	549.34	11390.60	0.048 ✔

Top Guy Pull-Off 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 $\frac{P}{P_a}$
T2	180 - 160	L2x2x5/16	3.50	3.26	65.1	29.000	0.6574	9341.83	19065.20	0.490 ✔
T2	180 - 160	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	21.600	0.5273	4116.27	11390.60	0.361 ✔
T4	140 - 120	L2x2x5/16	3.50	3.26	65.1	29.000	0.6574	906.53	19065.20	0.048 ✔
T7	80 - 60	L1 1/2x1 1/2x3/16	3.50	3.26	85.7	21.600	0.5273	4157.66	11390.60	0.365 ✔

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 $\frac{P}{P_a}$
T2	180 - 160 (567)	L3x3x1/4	4.75	4.59	59.2	29.000	0.9159	13591.40	26562.20	0.512 ✔
T2	180 - 160 (568)	L3x3x1/4	4.75	4.59	59.2	29.000	0.9159	12935.80	26562.20	0.487 ✔
T2	180 - 160 (573)	L3x3x1/4	4.75	4.59	59.2	29.000	0.9159	12851.00	26562.20	0.484 ✔
T2	180 - 160 (574)	L3x3x1/4	4.75	4.59	59.2	29.000	0.9159	13907.30	26562.20	0.524 ✔

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	180 - 160 (579)	L3x3x1/4	4.75	4.59	59.2	29.000	0.9159	12336.50	26562.20	0.464 ✔
T2	180 - 160 (580)	L3x3x1/4	4.75	4.59	59.2	29.000	0.9159	12645.80	26562.20	0.476 ✔
T4	140 - 120 (585)	L3x3x1/4	4.75	4.59	59.2	29.000	0.9159	9655.48	26562.20	0.364 ✔
T4	140 - 120 (586)	L3x3x1/4	4.75	4.59	59.2	29.000	0.9159	8925.29	26562.20	0.336 ✔
T4	140 - 120 (591)	L3x3x1/4	4.75	4.59	59.2	29.000	0.9159	8393.79	26562.20	0.316 ✔
T4	140 - 120 (592)	L3x3x1/4	4.75	4.59	59.2	29.000	0.9159	9598.97	26562.20	0.361 ✔
T4	140 - 120 (597)	L3x3x1/4	4.75	4.59	59.2	29.000	0.9159	8246.31	26562.20	0.310 ✔
T4	140 - 120 (598)	L3x3x1/4	4.75	4.59	59.2	29.000	0.9159	8682.07	26562.20	0.327 ✔

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 $\frac{P}{P_a}$
T2	180 - 160 (569)	L3x3x1/4	3.50	3.38	43.6	29.000	0.9159	3722.51	26562.20	0.140 ✔
T2	180 - 160 (570)	L3x3x1/4	3.50	3.38	43.6	29.000	0.9159	3252.55	26562.20	0.122 ✔
T2	180 - 160 (575)	L3x3x1/4	3.50	3.38	43.6	29.000	0.9159	3797.25	26562.20	0.143 ✔
T2	180 - 160 (576)	L3x3x1/4	3.50	3.38	43.6	29.000	0.9159	3294.72	26562.20	0.124 ✔
T2	180 - 160 (581)	L3x3x1/4	3.50	3.38	43.6	29.000	0.9159	3951.35	26562.20	0.149 ✔
T2	180 - 160 (582)	L3x3x1/4	3.50	3.38	43.6	29.000	0.9159	4030.13	26562.20	0.152 ✔
T4	140 - 120 (587)	L3x3x1/4	3.50	3.38	43.6	29.000	0.9159	4148.81	26562.20	0.156 ✔
T4	140 - 120 (588)	L3x3x1/4	3.50	3.38	43.6	29.000	0.9159	4013.70	26562.20	0.151 ✔
T4	140 - 120 (593)	L3x3x1/4	3.50	3.38	43.6	29.000	0.9159	3814.14	26562.20	0.144 ✔
T4	140 - 120 (594)	L3x3x1/4	3.50	3.38	43.6	29.000	0.9159	3844.57	26562.20	0.145 ✔
T4	140 - 120 (599)	L3x3x1/4	3.50	3.38	43.6	29.000	0.9159	4126.03	26562.20	0.155 ✔
T4	140 - 120 (600)	L3x3x1/4	3.50	3.38	43.6	29.000	0.9159	4010.00	26562.20	0.151 ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF*P_{allow} lb	% Capacity	Pass Fail
T1	187 - 180	Leg	P2.5x.203	3	-11916.50	64219.67	18.6	Pass
		Diagonal	5/8	14	5746.56	8833.52	65.1	Pass
		Horizontal	L1 1/2x1 1/2x3/16	16	-5270.98	7695.87	68.5	Pass
		Top Girt	L1 1/2x1 1/2x3/16	4	-2644.31	7695.87	34.4	Pass
		Bottom Girt	L1 1/2x1 1/2x3/16	7	-3544.32	10258.59	34.5	Pass
T2	180 - 160	Leg	P2.5x.203	27	-53606.60	68642.17	78.1	Pass
		Diagonal	C3x4.1	39	-5248.81	6920.87	75.8	Pass
		Horizontal	L1 1/2x1 1/2x3/16	51	3794.66	15183.67	25.0	Pass
		Top Girt	L1 1/2x1 1/2x3/16	28	-461.02	10258.59	4.5	Pass
		Bottom Girt	L1 1/2x1 1/2x3/16	33	5048.59	15183.67	33.3	Pass
		Guy A@160.375	5/8	578	13383.50	21200.00	63.1	Pass
		Guy A@170	5/8	606	13867.00	21200.00	65.4	Pass
		Guy B@160.375	5/8	571	13241.10	21200.00	62.5	Pass
		Guy B@170	5/8	605	14084.70	21200.00	66.4	Pass
		Guy C@160.375	5/8	565	14626.40	21200.00	69.0	Pass
		Guy C@170	5/8	604	15050.70	21200.00	71.0	Pass
		Top Guy Pull-Off@160.375	L2x2x5/16	41	9341.83	25413.91	36.8 37.8 (b)	Pass
		Top Guy Pull-Off@170	L1 1/2x1 1/2x3/16	60	4116.27	15183.67	27.1	Pass
		Torque Arm Top@160.375	L3x3x1/4	574	13907.30	35407.41	39.3 56.2 (b)	Pass
		Torque Arm Bottom@160.375	L3x3x1/4	569	-11588.10	31832.30	36.4 46.9 (b)	Pass
T3	160 - 140	Leg	P2.5x.203	87	-53762.20	68642.17	78.3	Pass
		Diagonal	5/8	144	5348.76	8833.52	60.6	Pass
		Horizontal	L1 1/2x1 1/2x3/16	137	-3788.23	7695.87	49.2	Pass
		Top Girt	L1 1/2x1 1/2x3/16	89	-3273.13	10258.59	31.9	Pass
		Bottom Girt	L1 1/2x1 1/2x3/16	93	-1918.92	7695.87	24.9	Pass
T4	140 - 120	Leg	P2.5x.203	147	-60336.70	68642.17	87.9	Pass
		Diagonal	5/8	163	3953.16	8833.52	44.8	Pass
		Horizontal	L1 1/2x1 1/2x3/16	197	-3612.07	7695.87	46.9	Pass
		Top Girt	L1 1/2x1 1/2x3/16	149	-1927.78	7695.87	25.0	Pass
		Bottom Girt	L1 1/2x1 1/2x3/16	152	-3752.86	10258.59	36.6	Pass
		Guy A@120.375	9/16	596	10928.60	17500.00	62.4	Pass
		Guy B@120.375	9/16	589	10423.70	17500.00	59.6	Pass
		Guy C@120.375	9/16	583	11985.90	17500.00	68.5	Pass
		Top Guy Pull-Off@120.375	L2x2x5/16	162	-6138.25	19831.97	31.0	Pass
		Torque Arm Top@120.375	L3x3x1/4	585	9655.48	35407.41	27.3 39.0 (b)	Pass
		Torque Arm Bottom@120.375	L3x3x1/4	587	-9546.44	31832.30	30.0 38.6 (b)	Pass
T5	120 - 100	Leg	P2.5x.203	207	-58489.60	68126.16	85.9	Pass
		Diagonal	5/8	263	7181.14	8833.52	81.3	Pass
		Horizontal	L1 1/2x1 1/2x3/16	258	-4768.16	10258.59	46.5	Pass
		Top Girt	L1 1/2x1 1/2x3/16	209	-2899.63	10258.59	28.3	Pass
		Bottom Girt	L1 1/2x1 1/2x3/16	213	-1641.70	7695.87	21.3	Pass
T6	100 - 80	Leg	P2.5x.203	267	-47498.50	67969.80	69.9	Pass
		Diagonal	5/8	323	3495.99	8833.52	39.6	Pass
		Horizontal	L1 1/2x1 1/2x3/16	316	-3107.61	7695.87	40.4	Pass
		Top Girt	L1 1/2x1 1/2x3/16	268	-1641.77	7695.87	21.3	Pass
		Bottom Girt	L1 1/2x1 1/2x3/16	273	-1625.54	7695.87	21.1	Pass
T7	80 - 60	Leg	P2.5x.203	327	-46402.20	67940.21	68.3	Pass
		Diagonal	5/8	343	3703.63	8833.52	41.9	Pass
		Horizontal	L1 1/2x1 1/2x3/16	342	-3153.92	7695.87	41.0	Pass
		Top Girt	L1 1/2x1 1/2x3/16	328	-1621.64	7695.87	21.1	Pass
		Guy A@60.375	9/16	603	12426.80	17500.00	71.0	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF*P_{allow} lb	% Capacity	Pass Fail
		Guy B@60.375	9/16	602	12340.00	17500.00	70.5	Pass
		Guy C@60.375	9/16	601	13319.80	17500.00	76.1	Pass
		Top Guy Pull-Off@60.375	L1 1/2x1 1/2x3/16	331	4157.66	15183.67	27.4	Pass
T8	60 - 40	Leg	P2.5x.203	387	-56631.20	67917.28	83.4	Pass
		Diagonal	5/8	443	5446.61	8833.52	61.7	Pass
		Horizontal	L1 1/2x1 1/2x3/16	436	-2935.17	7695.87	38.1	Pass
		Top Girt	L1 1/2x1 1/2x3/16	388	-1410.25	7695.87	18.3	Pass
		Bottom Girt	L1 1/2x1 1/2x3/16	393	-1510.76	7695.87	19.6	Pass
T9	40 - 20	Leg	P2.5x.203	445	-60967.80	67961.27	89.7	Pass
		Diagonal	5/8	502	2059.36	6626.80	31.1	Pass
		Horizontal	L1 1/2x1 1/2x3/16	496	-2864.64	7695.87	37.2	Pass
		Top Girt	L1 1/2x1 1/2x3/16	448	-1514.95	7695.87	19.7	Pass
		Bottom Girt	L1 1/2x1 1/2x3/16	453	-1491.05	7695.87	19.4	Pass
T10	20 - 0	Leg	P2.5x.203	505	-59363.10	67932.21	87.4	Pass
		Diagonal	5/8	517	3602.76	8833.52	40.8	Pass
		Horizontal	L1 1/2x1 1/2x3/16	520	-2901.78	7695.87	37.7	Pass
		Top Girt	L1 1/2x1 1/2x3/16	508	-1492.16	7695.87	19.4	Pass
		Bottom Girt	L1 1/2x1 1/2x3/16	513	-321.03	7695.87	4.2	Pass
							Summary	
							Leg (T9) 89.7	Pass
							Diagonal (T5) 81.3	Pass
							Horizontal (T1) 68.5	Pass
							Top Girt (T1) 34.4	Pass
							Bottom Girt (T4) 36.6	Pass
							Guy A (T7) 71.0	Pass
							Guy B (T7) 70.5	Pass
							Guy C (T7) 76.1	Pass
							Top Guy Pull-Off (T2) 37.8	Pass
							Torque Arm Top (T2) 56.2	Pass
							Torque Arm Bottom (T2) 46.9	Pass
							Bolt Checks 56.2	Pass
							RATING = 89.7	**Pass**

Site Name:	**Bozrah**
Client:	**CDT**
Job Number:	**114-13066**
Date:	**3/29/2014**

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

Foundation Mapped:	N				
Moment (M):	0.0	k-ft	Concrete Compressive Strength (f'_c):	3000	psi
Shear/Leg (V):	2.8	k	Vertical Steel Rebar Size #:	5	
Compression/Leg (P):	134.3	k	Vertical Steel Rebar Area:	0.31	in^2
Uplift/Leg (U):	0.0	k	# of Vertical Steel Rebars:	8	
Tower Type (GT / SST):	SST		Vertical Steel Rebar Yield Strength (F_y):	60	ksi
Diameter of Prismatic Portion of Pier (d):	2.0	ft	Tie / Stirrup Size #:	4	
Depth to Base of Foundation:	4.5	ft	Tie / Stirrup Area:	0.20	in^2
Pier Height Above Ground (h):	1.00	ft	Tie / Stirrup Spacing:	10.0	in
Length / Width of Pad (w):	5.5	ft	Tie / Stirrup Steel Yield Strength (F_y):	40	ksi
Thickness of Pad (t):	1.5	ft	Rebar Cage Diameter:	16.0	in
Depth Below Ground Surface to Water Table (w):	20.0	ft	Bending/Tension Reduction Factor (ϕ_B):	0.90	
Unit Weight of Concrete:	150.0	pcf	Shear Reduction Factor (ϕ_V):	0.75	
Unit Weight of Water:	62.4	pcf	Compression Reduction Factor (ϕ_V):	0.65	
Unit Weight of Soil Above Water Table:	100.0	pcf	Wind Design Factor:	1.30	
Unit Weight of Soil Below Water Table:	50.0	pcf	Steel Elastic Modulus:	29000	ksi
Friction Angle of Uplift from Top of Pad:	30	Degrees	Pad Steel Rebar Size #:	5	
Friction Angle of Uplift from Base of Pad:	30	Degrees	Pad Steel Rebar Area:	0.31	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:	4750	psf	# of Rebar in Base of Pad:	10	
Capacity Increase (Due to Transient Loads):	1.00		Pad Clear Cover:	3	in

Axial Capacities and Design Moment

Weight of Concrete (Bouyancy Considered):	8.7	k	
Weight of Soil (Bouyancy Considered):	15.0	k	
Allowable Skin Friction Resistance:	0.0	k	
Controlling Failure Mode (Top / Base):	Top		
Allowable Uplift Capacity per Leg:	14.5	k	
Compressive Design Load:	137.5	k	
Allowable Compression Capacity per Leg:	143.7	k	
Uplift Design Load/Uplift Capacity:	0.00	Result: OK	
Compression Design Load/Compression Capacity:	0.96	Result: OK	

Depth (ft)		Ultimate Lateral	Increment	γ_{Soil}	Cohesion	ϕ
Top	Bottom	Bearing Pressure (psf)	(psf/ft)	(pcf)	(psf)	(degree)
0.0	2.0	0.0	115.0	115	0	0
2.0	3.0	885.9	443.0	115	0	36

Inflection Point (Below Ground Surface):	3.0	ft
Unfactored Design Moment At Inflection Point:	6.3	k-ft

Pad Strength Capacity

β:	0.85	ACI318-05 - 10.2.7.3
Lower Pad Flexural Reinforcement Ratio:	0.0033	OK - Minimum Reinforcement Ratio Met - ACI10.5.1
Upper Pad Flexural Reinforcement Ratio:	0.0000	OK - Minimum Reinforcement Ratio Met - ACI10.5.1
Lower Pad Flexural Reinforcement Spacing:	7	in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
Upper Pad Flexural Reinforcement Spacing:	0	in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
One Way Design Shear (V_u):	17.1	k
One Way Shear Capacity (ϕV_c):	81.2	k - ACI318-05 - 11.3.1.1
V_u / ϕV_c:	0.21	Result: OK
Punching Design Shear (V_u):	126.3	k
Nominal Punching Shear Capacity ($\phi_c V_n$):	293.3	k - ACI318-05 - 11.12.2.1
V_u / ϕV_c:	0.43	Result: OK
Flexural Loading Due to Soil Pressure (M_u):	49.8	k-ft
Lower Steel Pad Moment Capacity (ϕM_n):	197.2	k-ft - ACI318-05 - 10.3
M_u / ϕM_n:	0.25	Result: OK
Flexural Loading Due to Uplift (M_u):	0.0	k-ft
Upper Steel Pad Moment Capacity (ϕM_n):	0.0	k-ft - ACI318-05 - 10.3
M_u / ϕM_n:	0.00	Result: OK

Pier Strength Capacity

Design Moment (M_u):	8.1	k-ft
Nominal Moment Capacity ($\phi_B M_n$):	88.9	k-ft - ACI318-005 - 10.2
$M_u/\phi_B M_n$:	0.09	Result: OK
Design Shear (V_u):	3.6	k
Nominal Shear Capacity ($\phi_V V_n$):	67.9	k - ACI318-05 - 11.3.1.1 or 11.5.7.2
$V_u/\phi_V V_n$:	0.05	Result: OK
Design Tension (T_u):	0.0	k
Nominal Tension Capacity ($\phi_T T_n$):	133.9	k - ACI318-05 - 10.2
$T_u/\phi_T T_n$:	0.00	Result: OK
Design Compression (P_u):	174.6	k
Nominal Compression Capacity ($\phi_P P_n$):	701.9	k - ACI318-05 - 10.3.6.2
$P_u/\phi_P P_n$:	0.25	Result: OK
Pier Reinforcement Ratio:	0.005	Reinforcement Ratio is Satisfactory - ACI318-05 - 10.9.1 & 10.8.4
$M_u/\phi_B M_n + T_u/\phi_T T_n$:	0.09	Result: OK

Site Name:	**Bozrah**
Client:	**CDT**
Job Number:	**114-13066**
Date:	**3/29/2014**

Design Standard per TIA-222-F

Uplift (Unfactored):	57.7	k
Shear (Unfactored):	53.5	k
Berm Present:	N	
Design Anchor Rod:	Y	
Mapped Foundation:	N	
Anchor Base Depth (d):	8.0	ft
Width of Anchor (W):	5.5	ft
Length of Anchor (L):	11.5	ft
Thickness of Anchor (t):	2.0	ft
Depth Below Ground Surface to Water Table (w):	20.0	ft
Soil Uplift at Base / Top of Anchor (B/T):	T	
Unit Weight of Concrete:	150.0	pcf
Unit Weight of Soil Above Water Table:	115.0	pcf
Unit Weight of Water:	62.4	pcf
Submerged Soil Unit Weight:	50.0	pcf
Internal Angle of Friction:	36	Degrees
Cohesion:	500	psf
Allowable Skin Friction of Pad Sides to Soil:	500	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):	92.9	k
Uplift Resistance from Skin Friction:	22.5	k
Allowable Uplift Resistance (FS = 1.5 to 2):	61.7	k
Uplift Design Load/Allowable Uplift Resistance:	0.94	Result: OK

Shear

Ultimate Shear Friction Resistance Due to Normal Force - Uplift:	1.5	k
Passive Pressure:	5063	psf
Ultimate Passure Pressure Resistance:	116.5	k
Allowable Shear Resistance (FS = 1.5 to 2):	59.0	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:	48	ksi
Anchor Rod Ultimate Strength:	62	ksi
Allowable Stress Increase:	1.33	
Resultant Tensile Load:	78.7	k
Anchor Rod Tensile Resistance:	92.4	k
Resultant Tensile Load / Anchor Rod Tensile Resistance:	0.85	Result: OK

Strength Analysis of Reinforced Concrete

Concrete Compressive Srength (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):	19.1	k
Nominal One Way Shear Capacity for Shear Load ($\phi_c V_n$):	122.3	k
$V_u/\phi_v V_n$:	0.16	Result: OK
One Way Shear due to Uplift (V_u):	32.1	k
Nominal One Way Shear Capacity for Uplift ($\phi_c V_n$):	108.4	k
$V_u/\phi_v V_n$:	0.30	Result: OK
Pad Flexure due to Shear Load (M_u):	100.0	k-ft
Nominal Flexural Capacity for Shear Load ($\phi_b M_n$):	167.4	k-ft
Pad Flexure due to Uplift (M_u):	107.9	k-ft
Nominal Flexural Capacity for Uplift ($\phi_b M_n$):	161.9	k-ft
$M_u/\phi_b M_n$ (Max.):	0.67	Result: OK

EBI Consulting
environmental | engineering | due diligence

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

Sprint Existing Facility

Site ID: CT33XC570

Bozrah
12 Polly Lane
Bozrah, CT 06334

November 7, 2012

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

EBI Consulting
environmental | engineering | due diligence

November 7, 2012

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

Re: Emissions Values for Site: **CT33XC570 – Bozrah**

EBI Consulting was directed to analyze the proposed upgrades to the existing Sprint facility located at 12 Polly Lane, Bozrah, 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 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of μW/cm2 calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

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

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limit for the cellular band is approximately 567 $\mu W/cm^2$, and the general population exposure limit for the PCS band is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed upgrades to the existing Sprint Wireless antenna facility located at 12 Polly Lane, Bozrah, 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 **150.4 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	CT33XC570 - Bozrah
Site Addresss	12 Polly Lane, Bozrah, CT, 06334
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	150.4	144.4	1/2 "	0.5	0	1114.4485	19.21461	1.92146%
														Sector total Power Density Value:		1.921%	

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	150.4	144.4	1/2 "	0.5	0	1114.4485	19.21461	1.92146%
														Sector total Power Density Value:		1.921%	

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	150.4	144.4	1/2 "	0.5	0	1114.4485	19.21461	1.92146%
														Sector total Power Density Value:		1.921%	

Site Composite MPE %

Carrier	MPE %
Sprint	5.764%
AT&T	3.630%
Nextel	1.86%
T-Mobile	1.09%
Verizon Wireless	18.81%
Total Site MPE %	**31.154%**

EBI Consulting
environmental | engineering | due diligence

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 **5.764% (1.921% 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 **31.154%** 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
Burlington, MA 01803