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
169 Hampden Road, Stafford, 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 Stafford.

Sprint plans to modify the existing facility at 169 Hampden Road, Stafford Springs, owned by Cordless Data Transfer, Inc. (coordinates 41°59'58.42"N, -72°21'20.39"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 171.5' 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 4.388%; the combined site operations will result in a total power density of 21.928%.

Please feel free to contact me at jgaudet@hpcwireless.com or 860 798-7454 with any questions or concerns regarding this matter. Thank you for your consideration.

Respectfully submitted,

Jennifer Young Gaudet

Jennifer Young Gaudet

Attachments

cc: Mr. Richard Shuck, First Selectman, Town of Stafford
Michael and Shelly M. Angelo (underlying property owners)

DRAWN BY: TDN CHECKED BY: KAB

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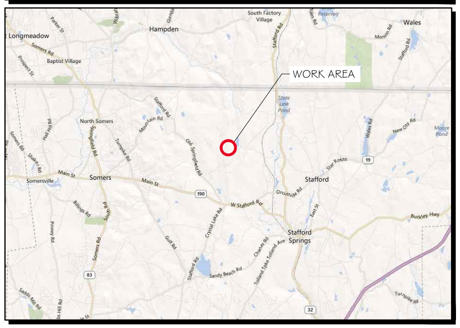
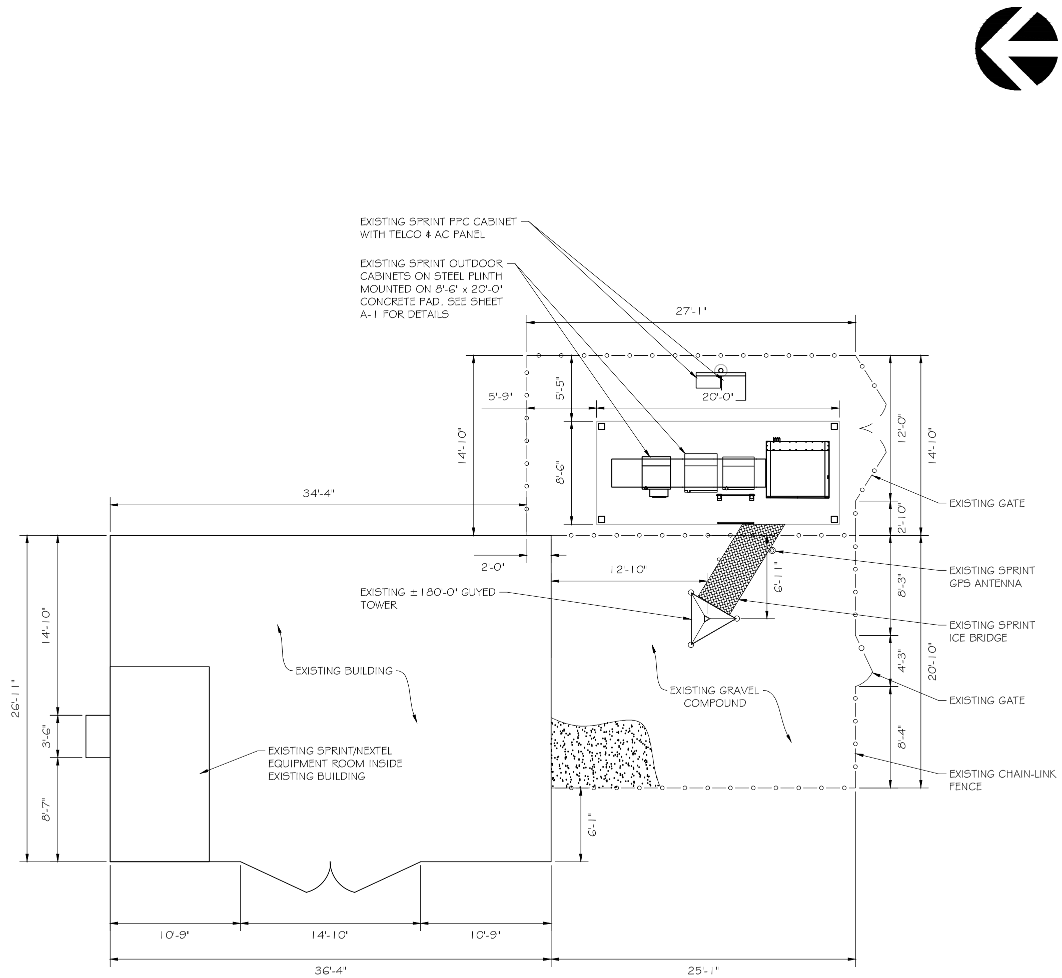
VICINITY MAP



GENERAL NOTES:

1. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE CODES ORDINANCES, LAWS, AND REGULATIONS OF ALL MUNICIPALITIES, UTILITIES COMPANY, OR OTHER PUBLIC AUTHORITIES.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS THAT MAY BE REQUIRED BY ANY FEDERAL, STATE, COUNTY, OR MUNICIPAL AUTHORITIES.
3. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER, IN WRITING, OF ANY CONFLICTS, ERRORS OR OMISSIONS PRIOR TO THE SUBMISSION OF BIDS OR PERFORMANCE OF WORK. MINOR OMISSIONS OR ERRORS IN THE BID DOCUMENTS SHALL NOT RELIEVE THE CONTRACTOR FROM RESPONSIBILITY FOR THE OVERALL INTENT OF THESE DRAWINGS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING SITE IMPROVEMENTS PRIOR TO COMMENCING CONSTRUCTION. THE CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED AS A RESULT OF CONSTRUCTION OF THE FACILITY.
5. THE SCOPE OF WORK FOR THIS PROJECT SHALL INCLUDE PROVIDING ALL MATERIALS, EQUIPMENT, AND LABOR REQUIRED TO COMPLETE THIS PROJECT. ALL EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.
6. THE CONTRACTOR SHALL VISIT THE PROJECT SITE PRIOR TO SUBMITTING A BID TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
7. CONTRACTOR SHALL VERIFY ANTENNA ELEVATION AND AZIMUTH WITH RF ENGINEERING PRIOR TO INSTALLATION.
8. TRANSMITTER EQUIPMENT AND ANTENNAS ARE DESIGNED TO MEET ANSI/EIA/TIA 222-G REQUIREMENTS.
9. ALL STRUCTURAL ELEMENTS SHALL BE HOT DIPPED GALVANIZED STEEL.
10. CONTRACTOR SHALL MAKE A UTILITY "ONE-CALL" TO LOCATE ALL UTILITIES PRIOR TO EXCAVATING.
11. IF ANY UNDERGROUND UTILITIES OR STRUCTURES EXIST BENEATH THE PROJECT AREA, CONTRACTOR MUST LOCATE IT AND CONTACT THE APPLICANT & THE OWNER'S REPRESENTATIVE.
12. OCCUPANCY IS LIMITED TO PERIODIC MAINTENANCE AND INSPECTION BY TECHNICIANS APPROXIMATELY 2 TIMES PER MONTH.
13. RAMAKER & ASSOCIATES HAS NOT PERFORMED A STRUCTURAL ANALYSIS FOR THIS PROJECT. PRIOR TO THE INSTALLATION OF THE PROPOSED EQUIPMENT OR MODIFICATION OF THE EXISTING STRUCTURE, A STRUCTURAL ANALYSIS SHALL BE PERFORMED BY SPRINT'S AGENT TO CERTIFY THAT THE EXISTING/PROPOSED COMMUNICATION STRUCTURE AND COMPONENTS ARE STRUCTURALLY ADEQUATE TO SUPPORT ALL EXISTING AND PROPOSED ANTENNAS, COAXIAL CABLES, AND OTHER APPURTENANCES.
14. PROPERTY LINE INFORMATION WAS PREPARED USING DEEDS, TAX MAPS, AND PLANS OF RECORD AND SHOULD NOT BE CONSTRUED AS AN ACCURATE BOUNDARY SURVEY.
15. THIS PLAN IS SUBJECT TO ALL EASEMENTS AND RESTRICTIONS OF RECORD.
16. THE PROPOSED FACILITY WILL CAUSE ONLY A "DE MINIMIS" INCREASE IN STORMWATER RUNOFF; THEREFORE, NO DRAINAGE STRUCTURES ARE PROPOSED.
17. NO SIGNIFICANT NOISE, SMOKE, DUST, OR ODOR WILL RESULT FROM THIS FACILITY.
18. THE FACILITY IS UNMANNED AND NOT INTENDED FOR HUMAN HABITATION (NO HANDICAP ACCESS REQUIRED).
19. POWER TO THE FACILITY WILL BE MONITORED BY A SEPARATE METER.



SITE PLAN
SCALE: 1" = 10'-0"
1

Sprint
6391 Sprint Parkway
Overland Park, KS 66251

Alcatel·Lucent

RAMAKER & ASSOCIATES, INC.
1120 Dallas Street, Sauk City, WI 53583
Phone: 608-643-4100 Fax: 608-643-7999
www.Ramaker.com

NETWORK VISION
MMBTS LAUNCH
NORTHERN CT MARKET

Certification & Seal:

MARK	DATE	DESCRIPTION
E	02/19/14	ADD AAV SHEETS
D	11/18/13	FINAL PRELIM. CD'S - MOVE RRH UNITS TO TOWER
C	11/07/12	FINAL PRELIM. CD'S - EASEMENT NOTE REMOVED
B	11/02/12	FINAL PRELIMINARY CD'S
A	9/20/12	90% CD REVIEW

ISSUE PHASE: FINAL PRELIMINARY DATE ISSUED: 11/18/13

PROJECT TITLE:
STAFFORD
SITE #: CT33XC553

PROJECT INFORMATION:
169 HAMPDEN ROAD
STAFFORD SPRINGS, CT 06076
TOLLAND COUNTY

SHEET TITLE:
OVERALL SITE PLAN

0 5' 10' 20'
11" x 17" - 1" = 10'
22" x 34" - 1" = 5'

PROJECT NUMBER: 22975
SHEET NUMBER: C-1

DRAWN BY: TDN CHECKED BY: KAB

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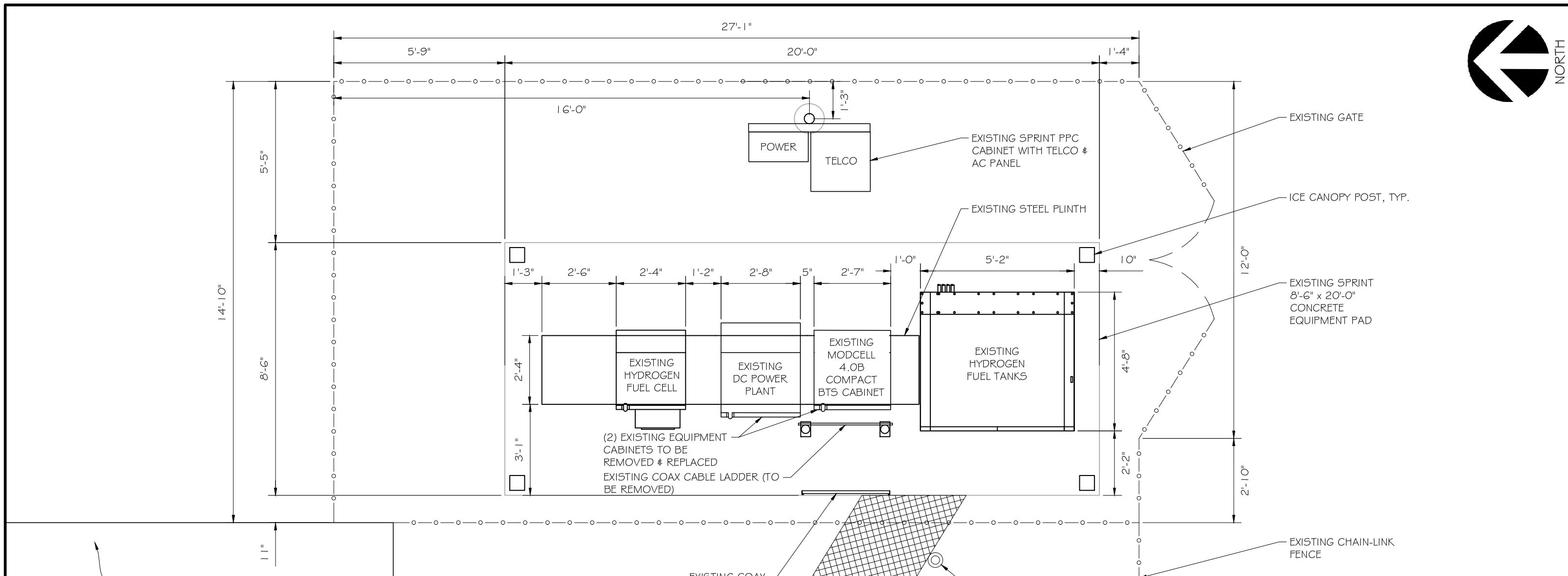
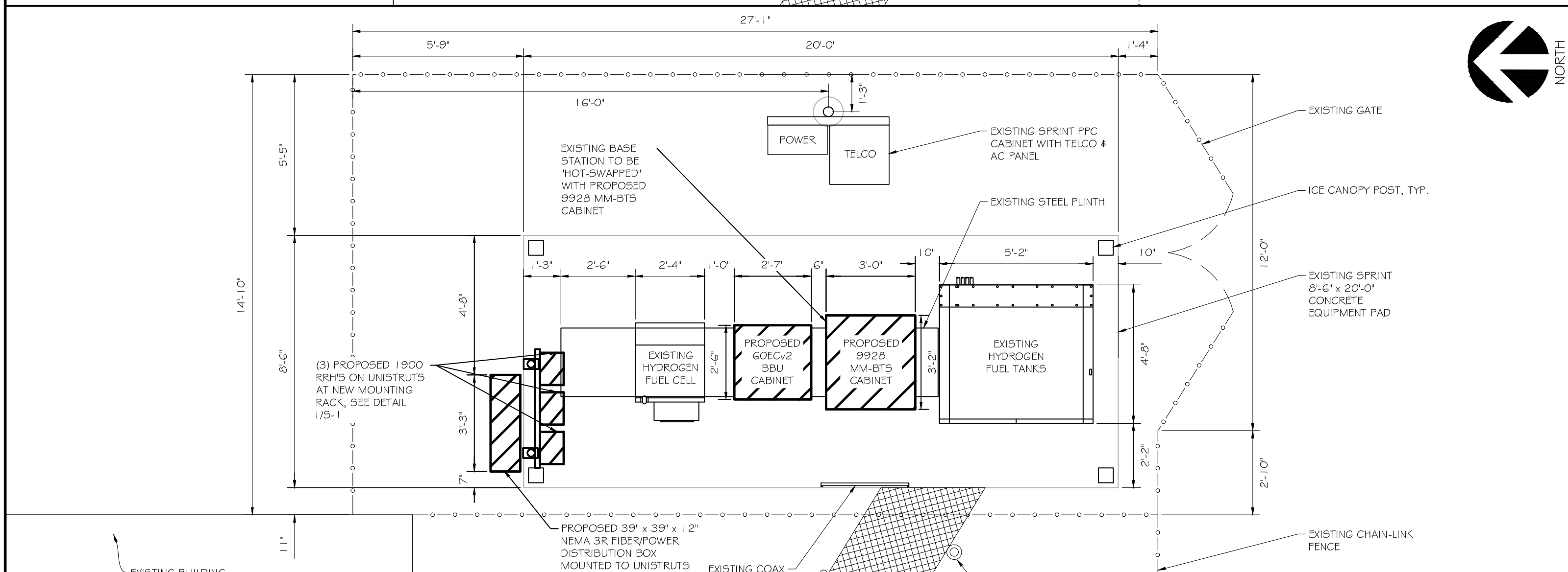


EXISTING EQUIPMENT PLAN (1)
SCALE: 1/4" = 1'-0"



PROPOSED EQUIPMENT PLAN (2)
SCALE: 1/4" = 1'-0"

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ISSUE PHASE: FINAL PRELIMINARY   DATE ISSUED: 11/18/13

PROJECT TITLE:
STAFFORD
SITE #: CT33XC553

PROJECT INFORMATION:
169 HAMPDEN ROAD
STAFFORD SPRINGS, CT 06076
TOLLAND COUNTY

SHEET TITLE:
EQUIPMENT PLAN

0 2' 4' 8'
11" x 17" - 1/4" = 1'
22" x 34" - 1/2" = 1'

PROJECT NUMBER: 22975
SHEET NUMBER: A-1

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DRAWN BY: TDN   CHECKED BY: KAB

NOTES:

I. SCOPE

A. THIS SECTION COVERS THE SPECIFICATIONS FOR ANTENNA AND COAXIAL CABLE INSTALLATION OF: ANTENNAS, COAXIAL, CONNECTIONS, AND ICE BRIDGE.

B. REFERENCE SPRINT STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES FOR GENERAL REQUIREMENTS.

II. ANTENNAS:

A. ANTENNAS SHALL BE PLUMB AND INSTALLED SO THAT THE ENTIRE WHIP EXTENDS ABOVE VERTICAL PIPE MOUNT. DIRECTIONAL ANTENNAS SHALL BE ORIENTED TO PROPER AZIMUTH, PROVIDED ON THE RF SPECIFICATION SHEET. NOTE: THE ANTENNA MAY BE ORIENTED USING THE REFLECTOR AS THE REFERENCE, ADJUSTING ITS AZIMUTH 180 DEGREES FROM MAXIMUM ANTENNA RADIATION.

B. MICROWAVE ANTENNAS (DISHES) SHALL BE ASSEMBLED PER MANUFACTURER'S DRAWINGS. STIFF ARMS AND RADOMES SHALL BE INSTALLED WITH POLARIZATION PROVIDED BY RF SPECIFICATION SHEET. IF PATH IS NOT READY TO ALIGN, DISH SHOULD BE POINTED TOWARD CALCULATED AZIMUTH, OR DIRECTION OF FIELD STAKE DENOTING OPPOSITE END. 2 STIFF ARMS SHALL BE PROVIDED FOR MICROWAVE DISHES 6'-0" IN DIAMETER OR GREATER.

C. A TRANSIT SHALL BE USED TO PROPERLY ALIGN CELLULAR AND MICROWAVE ANTENNAS.

III. COAXIAL CABLE:

A. COAXIAL CABLE SHALL BE SUPPORTED WITH SNAP-IN HANGERS. SNAP-IN HANGERS SHOULD BE USED EVERY 3 FEET THE ENTIRE HEIGHT OF THE TOWER. ANGLE ADAPTERS OR ROUND MEMBER ADAPTERS WITH BUTTERFLY CLAMPS SHALL BE USED ELSEWHERE, I.E. SIDEARMS, PLATFORMS, AND MICROWAVE MOUNTS.

B. COAXIAL CABLE SHALL ALSO BE SUPPORTED WITH HOISTING GRIPS, INSTALLED AT MAXIMUM INTERVALS OF 200 FEET. HOISTING GRIPS SHALL BE ATTACHED WITH SHACKLES, BOLTED IN THE 7/16" HOLE OF WAVEGUIDE LADDER.

C. ALL JUMPERS USED BETWEEN COAXIAL CABLE AND ANTENNA SHALL BE SUPPORTED WITHIN 18 INCHES OF ANTENNA, USING BUTTERFLY CLAMPS WITH ANGLE ADAPTERS OR ROUND MEMBER ADAPTERS AROUND PIPES. CELLULAR ANTENNAS TYPICALLY USE 6' JUMPERS; MICROWAVE DISHES USE 3' JUMPERS.

D. COAXIAL CABLE SHALL BE NEATLY BENT WHEN REQUIRED, USING A MINIMUM BENDING RADIUS OF 10 TIMES THE DIAMETER OF THE COAXIAL CABLE. DRIP LOOPS SHOULD BEGIN AT THE ICE BRIDGE. THE END IN THE COAXIAL CABLE SHOULD BE AT A LOWER HEIGHT THAN THE ENTRY PORT.

E. COAXIAL CABLE SHALL BE SUPPORTED WITH SNAP-IN HANGERS ON THE WAVEGUIDE LADDER UNDER ICE BRIDGE. COAXIAL CABLE SHOULD BE NEATLY CUT 16" INSIDE BUILDING AND TERMINATED AT THE QUARTER WAVE SHORTS.

F. CONNECTORS WILL NORMALLY BE PROVIDED FIRST OFF REEL FROM FACTORY. CONNECTORS TERMINATED IN BUILDING SHALL BE NEATLY INSTALLED PER MANUFACTURER'S SPECIFICATIONS.

G. COAXIAL CABLES SHOULD BE LABELED WITH TAGS INSIDE THE BUILDING.

H. USE 2" WIDE COLORED TAPE TO INDICATE SECTORS. CONTRACTOR TO USE SECTOR COLOR CODING AS INDICATED IN THESE DRAWINGS OR AS PROVIDED BY SPRINT.

I. ALL EXCEPTIONS NEED TO BE VERIFIED WITH THE PROJECT MANAGER.

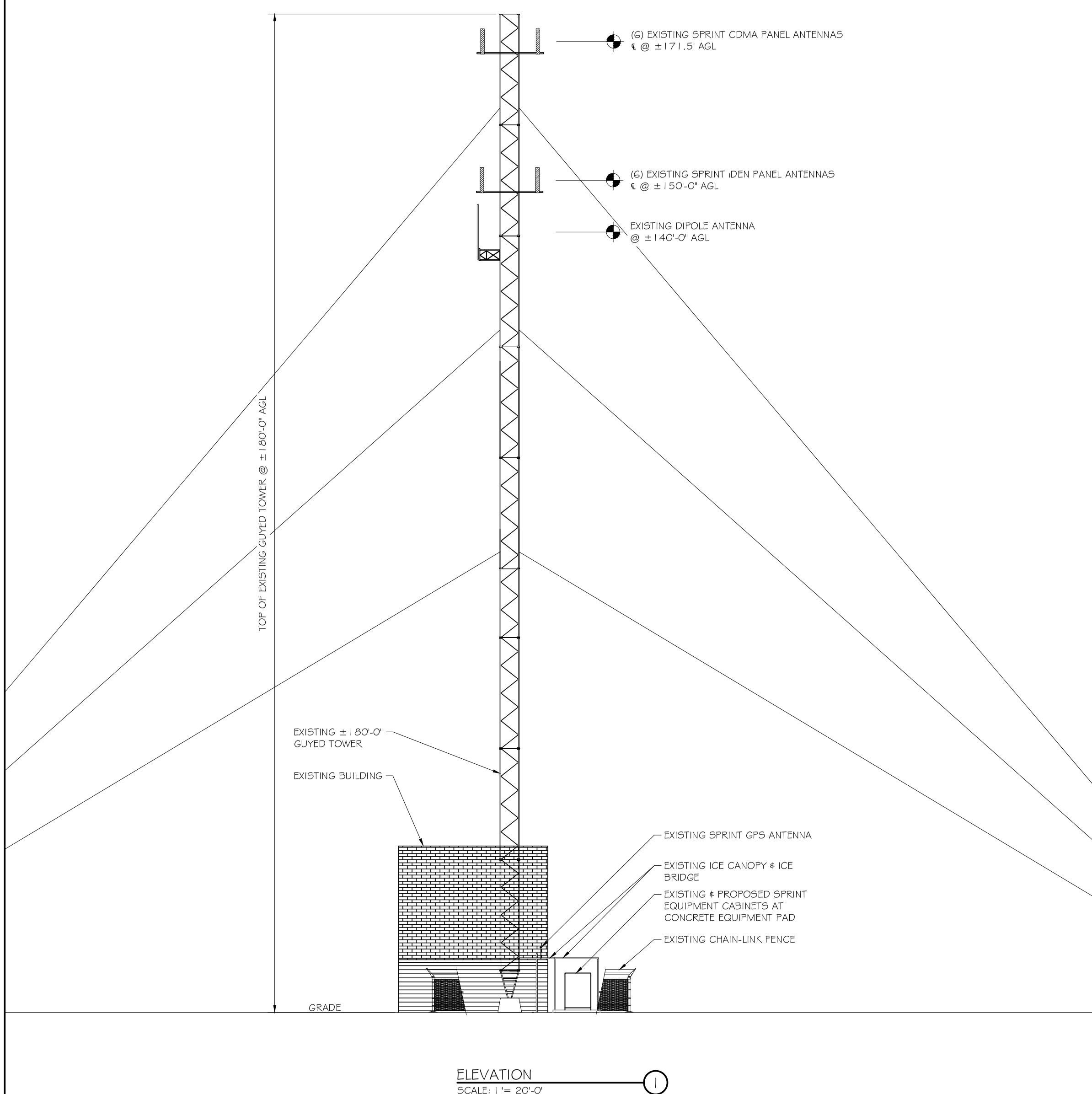
IV. CONNECTORS:

A. ALL CONNECTIONS AND GROUNDING KITS SHALL BE WEATHERPROOFED USING COLD SHRINK OR ANDREW APPROVED WEATHER STRIPPING. NOTE: NO PORTION OF CONNECTOR SHALL BE EXPOSED TO THE ELEMENTS.

B. COAXIAL CABLE SHALL BE GROUNDED USING GROUNDING KITS AT THE TOP (BELOW THE BEND), BOTTOM (ABOVE THE BEND ON TOWER GROUND BAR), AND ON BUILDING GROUND BAR BEFORE ENTRY INTO WAVEGUIDE PORTS. 4" CABLE BOOTS SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.

C. GROUNDING KITS SHALL BE NEATLY INSTALLED SO THAT THE JUMPER RUNS IN THE SAME DIRECTION AS THE COAXIAL AND GROUND BAR. JUMPER WIRE SHOULD RUN IN A DIRECT PATH TO THE GROUND BAR/ TOWER LADDER, BUT HAVE ADEQUATE SLACK FOR EXPANSION, CONTRACTION, AND REPAIR. NON-OXIDE GREASE SHOULD BE APPLIED BETWEEN LUG AND BAR/TOWER.

D. TOWER GROUND BAR SHALL BE INSTALLED ON THE ANGLE BEHIND THE FIRST DIAGONAL WAVEGUIDE LADDER RUNG, ABOVE 8'-6". GROUND BAR SHALL BE ISOLATED FROM ANGLE USING NEWTON BUSHINGS PROVIDED.



ELEVATION
SCALE: 1"= 20'-0"
1

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ISSUE PHASE: FINAL PRELIMINARY   DATE ISSUED: 11/18/13

PROJECT TITLE:
STAFFORD
SITE #: CT33XC553

PROJECT INFORMATION:
169 HAMPDEN ROAD
STAFFORD SPRINGS, CT 06076
TOLLAND COUNTY

SHEET TITLE:
SITE ELEVATION
& NOTES

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

PROJECT NUMBER: 22975
SHEET NUMBER: A-2

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
April 2, 2014

Fred A. Nudd Job Number: 114-13070

Location: 169 Hampden Road, Stafford Springs, CT 06076, Tolland County

Subject: Structural Analysis of a 180 ft Guyed Tower

Fred A. Nudd Corporation has completed a structural analysis of an existing 180 ft guyed tower. The tower was originally designed by Fred A. Nudd Corporation. The tower analysis was completed considering TIA-222-F design standards, which is the enforced design standard of the 2003 International Building Code, including 2005 Connecticut Building Code Amendments and the 2008 Connecticut Supplement. Additional standards used in this analysis include AISC Manual for Steel Construction, Allowable Stress Design, 9th Edition, and ACI318-05, Building Code Requirements for Structural Concrete and Commentary. Tower dimensions have been taken from drawings by Rohn Industries, File Number 32343PH, dated April 17, 1995. Design criteria per each analysis are noted on the following page. The tower is assumed to be in good, undamaged and equivalent to as new condition and has been maintained / inspected per criteria by TIA-222.

The purpose of this analysis is to determine the structure's ability to support new Sprint equipment installed at a rad center of 171.5 ft above ground level (AGL). The new equipment to be installed, which included antennas, coax, mounts 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 66%.

The tower base foundation and anchors could not be analyzed as no information regarding the onsite conditions or foundation dimensions were provided. However, assuming the base foundation and anchors were designed with resistance equivalent to the original structure's base design loading, the base foundation and anchors will have adequate capacity.

In conclusion, the tower superstructure can support the existing and proposed equipment noted above. The tower substructure is expected to be able to support this loading as well.

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 and To Remain on Tower

Height (ft)	Appurtenance	Mount	Coax (in)
180	(1) Station Master Antenna	Leg	(2) 7/8 (1) 1-1/4
179	(1) Decibel DB809	Side Arm	(1) 1-1/4
177	(1) Decibel DB809	Boom	(1) 7/8
163	(1) Celwave PD201	Pipe	(1) 7/8
150	--	Frame / Boom	--
127	(1) Decibel DB420	Side Arm	(1) 7/8
83	(1) Celwave PD201	Pipe	(1) 1/2

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

Appurtenance Loading – Final Equipment Configuration For Sprint

Height (ft)	Carrier	Appurtenance	Mount	Coax (in)
171.5	Sprint	(3) RFS APXV9ERR18-C-A20 (6) Alcatel Lucent 4x40W RRH (6) Alcatel Lucent 2x50W RRH	(3) 12 ft Pipe Boom / Frame	(3) 1-1/4 Hybriflex

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

Maximum Member Usage

Member	Percentage
Leg	64
Diagonal	66
Horizontal	63
Guys	66
Splice/Connection Bolts	66

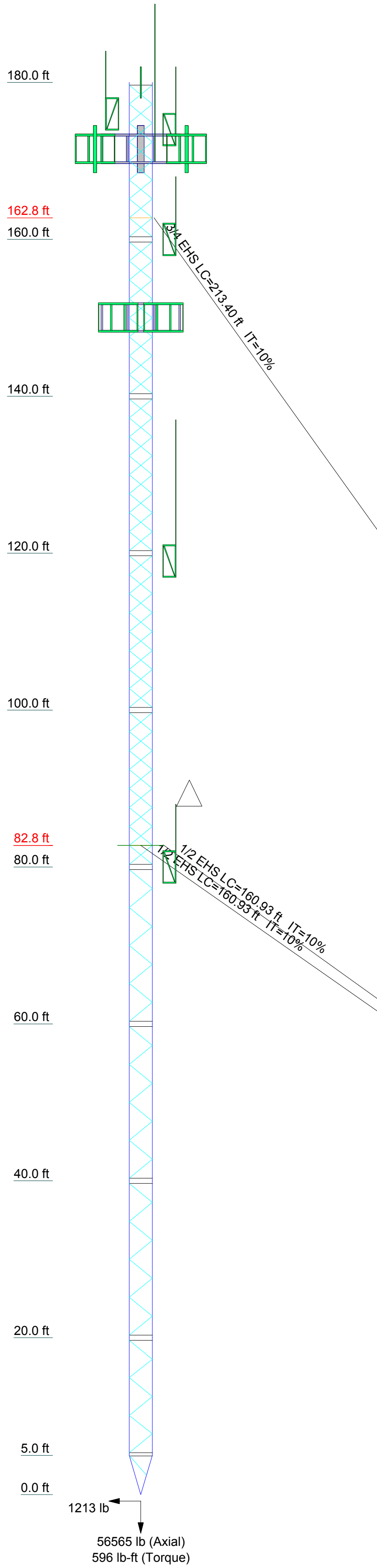
- *Percentage equal to or less than 100% denote member stress levels are satisfactory for loading.*
- *Percentage greater than 100% indicates member strengthening is required.*

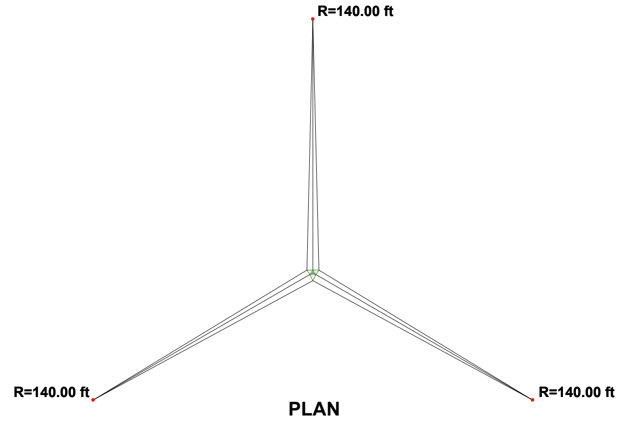
Foundation Usage

Design Load	Original Design (kips)	Analysis (kips)	Percentage
Base Axial	78.4	56.6	72
Anchor Uplift	26.8	22.1	82
Anchor Shear	32.4	26.3	81

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

Section	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	
Legs	P2x.218				P2.5x.276		P2.5x.203		P2.5x.276		
Leg Grade	A500-50										
Diagonals	ROHN TS1.5x16 ga										
Diagonal Grade	A36M-45										
Top Girts	ROHN TS1.5x16 ga										
Bottom Girts	ROHN TS1.5x16 ga									N.A.	
Top Guy Pull-Offs	3x1/2	N.A.			L1 1/2x1 1/2x3/16	N.A.					
Face Width (ft)	3.42										
# Panels @ (ft)	64 @ 2.41667								6 @ 2.38889	A	
Weight (lb)	552.0	499.7	499.7	499.7	997.5	568.3	456.1	456.1	430.6	142.2	5101.8





DESIGNED APPURTENANCE LOADING

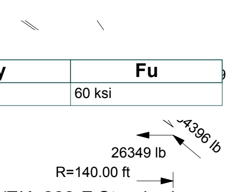
TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod 5/8x4'	180	(2) Alcatel Lucent 4X40W RRH (Sprint)	171.5
Station Master Antenna	180	(2) Alcatel Lucent 2X50W RRH (Sprint)	171.5
Decibel DB809	179	12 ft Boom / Frame (Sprint)	171.5
Side Arm	179	RFS APXV9ERR18-C-A20 (Sprint)	171.5
Decibel DB809	177	(2) Alcatel Lucent 4X40W RRH (Sprint)	171.5
Side Arm	177	Celwave PD201	163
(2) Alcatel Lucent 2X50W RRH (Sprint)	171.5	12 ft Boom / Frame	150
12 ft Boom / Frame (Sprint)	171.5	12 ft Boom / Frame	150
RFS APXV9ERR18-C-A20 (Sprint)	171.5	12 ft Boom / Frame	150
(2) Alcatel Lucent 4X40W RRH (Sprint)	171.5	Decibel DB420	127
(2) Alcatel Lucent 2X50W RRH (Sprint)	171.5	Side Arm	127
12 ft Boom / Frame (Sprint)	171.5	Celwave PD201	83
RFS APXV9ERR18-C-A20 (Sprint)	171.5		

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	2 @ 2.45833		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A500-50	50 ksi	62 ksi	A36M-45	45 ksi	60 ksi



TOWER DESIGN NOTES

1. Tower is located in Tolland County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 74 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 60 mph wind.
5. TOWER RATING: 65.8%

Phone: FAX:	Job: **114-13070**		
	Project: **180 ft Rohn #80 - Stafford Springs CT**		
	Client: CDT	Drawn by: FAN	App'd:
	Code: TIA/EIA-222-F	Date: 04/02/14	Scale: NTS
	Path:		Dwg No. E-1

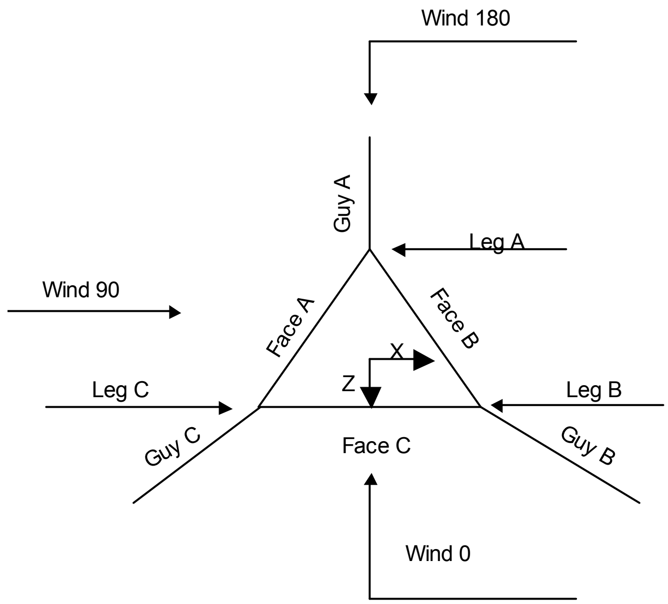
Tower Input Data

The main tower is a 3x guyed tower with an overall height of 180.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 3.42 ft at the top and tapered at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

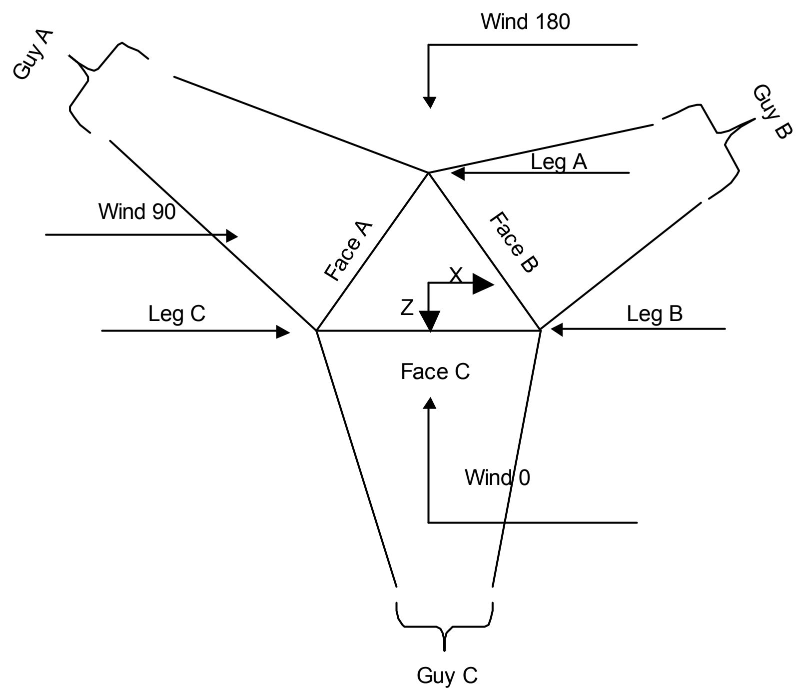
- Tower is located in Tolland County, Connecticut.
- Basic wind speed of 85 mph.
- Nominal ice thickness of 0.5000 in.
- Ice density of 56 pcf.
- A wind speed of 74 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 60 mph.
- Pressures are 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*	*Assembly Database*	*Description*	*Section Width*	*Number of Sections*	*Section Length*
	ft			*ft*		*ft*
T1	180.00-160.00			3.42	1	20.00
T2	160.00-140.00			3.42	1	20.00
T3	140.00-120.00			3.42	1	20.00
T4	120.00-100.00			3.42	1	20.00
T5	100.00-80.00			3.42	1	20.00
T6	80.00-60.00			3.42	1	20.00
T7	60.00-40.00			3.42	1	20.00
T8	40.00-20.00			3.42	1	20.00
T9	20.00-5.00			3.42	1	15.00
T10	5.00-0.00			3.42	1	5.00

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	180.00-160.00	2.42	CX Brace	No	Yes	4.0000	4.0000
T2	160.00-140.00	2.42	CX Brace	No	Yes	4.0000	4.0000
T3	140.00-120.00	2.42	CX Brace	No	Yes	4.0000	4.0000
T4	120.00-100.00	2.42	CX Brace	No	Yes	4.0000	4.0000
T5	100.00-80.00	2.42	CX Brace	No	Yes	4.0000	4.0000
T6	80.00-60.00	2.42	K Brace Left	No	Yes	4.0000	4.0000
T7	60.00-40.00	2.42	K Brace Left	No	Yes	4.0000	4.0000
T8	40.00-20.00	2.42	K Brace Left	No	Yes	4.0000	4.0000
T9	20.00-5.00	2.39	K Brace Left	No	Yes	4.0000	4.0000
T10	5.00-0.00	2.46	K Brace Left	No	Yes	1.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	*Leg Type*	*Leg Size*	*Leg Grade*	*Diagonal Type*	*Diagonal Size*	*Diagonal Grade*
T1 180.00-160.00	Pipe	P2x.218	A500-50 (50 ksi)	Pipe	ROHN TS1.5x16 ga	A36M-45 (45 ksi)
T2 160.00-140.00	Pipe	P2x.218	A500-50 (50 ksi)	Pipe	ROHN TS1.5x16 ga	A36M-45 (45 ksi)
T3 140.00-120.00	Pipe	P2x.218	A500-50 (50 ksi)	Pipe	ROHN TS1.5x16 ga	A36M-45 (45 ksi)
T4 120.00-100.00	Pipe	P2x.218	A500-50 (50 ksi)	Pipe	ROHN TS1.5x16 ga	A36M-45 (45 ksi)
T5 100.00-80.00	Pipe	P2.5x.276	A500-50 (50 ksi)	Pipe	ROHN TS1.5x16 ga	A36M-45 (45 ksi)
T6 80.00-60.00	Pipe	P2.5x.276	A500-50 (50 ksi)	Pipe	ROHN TS1.5x16 ga	A36M-45 (45 ksi)
T7 60.00-40.00	Pipe	P2.5x.203	A500-50 (50 ksi)	Pipe	ROHN TS1.5x16 ga	A36M-45 (45 ksi)
T8 40.00-20.00	Pipe	P2.5x.203	A500-50 (50 ksi)	Pipe	ROHN TS1.5x16 ga	A36M-45 (45 ksi)
T9 20.00-5.00	Pipe	P2.5x.276	A500-50 (50 ksi)	Pipe	ROHN TS1.5x16 ga	A36M-45 (45 ksi)
T10 5.00-0.00	Pipe	P2.5x.276	A500-50 (50 ksi)	Pipe	ROHN TS1.5x16 ga	A36M-45 (45 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	*Top Girt Type*	*Top Girt Size*	*Top Girt Grade*	*Bottom Girt Type*	*Bottom Girt Size*	*Bottom Girt Grade*
T1 180.00-160.00	Pipe	ROHN TS1.5x16 ga	A36M-45 (45 ksi)	Pipe	ROHN TS1.5x16 ga	A36M-45 (45 ksi)
T2 160.00-140.00	Pipe	ROHN TS1.5x16 ga	A36M-45 (45 ksi)	Pipe	ROHN TS1.5x16 ga	A36M-45 (45 ksi)
T3 140.00-120.00	Pipe	ROHN TS1.5x16 ga	A36M-45 (45 ksi)	Pipe	ROHN TS1.5x16 ga	A36M-45 (45 ksi)
T4 120.00-100.00	Pipe	ROHN TS1.5x16 ga	A36M-45 (45 ksi)	Pipe	ROHN TS1.5x16 ga	A36M-45 (45 ksi)
T5 100.00-80.00	Pipe	ROHN TS1.5x16 ga	A36M-45	Pipe	ROHN TS1.5x16 ga	A36M-45

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
			(45 ksi)			(45 ksi)
T6 80.00-60.00	Pipe	ROHN TS1.5x16 ga	A36M-45 (45 ksi)	Pipe	ROHN TS1.5x16 ga	A36M-45 (45 ksi)
T7 60.00-40.00	Pipe	ROHN TS1.5x16 ga	A36M-45 (45 ksi)	Pipe	ROHN TS1.5x16 ga	A36M-45 (45 ksi)
T8 40.00-20.00	Pipe	ROHN TS1.5x16 ga	A36M-45 (45 ksi)	Pipe	ROHN TS1.5x16 ga	A36M-45 (45 ksi)
T9 20.00-5.00	Pipe	ROHN TS1.5x16 ga	A36M-45 (45 ksi)	Pipe	ROHN TS1.5x16 ga	A36M-45 (45 ksi)
T10 5.00-0.00	Pipe	ROHN TS1.5x16 ga	A36M-45 (45 ksi)	Pipe	ROHN TS1.5x16 ga	A36M-45 (45 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft²	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 180.00-160.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T2 160.00-140.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T3 140.00-120.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T4 120.00-100.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T5 100.00-80.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T6 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T7 60.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T8 40.00-20.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T9 20.00-5.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T10 5.00-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000

Tower Section Geometry *(cont'd)*

			K Factors[1]							
Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1 180.00-160.00	No	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T2 160.00-140.00	No	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T3 140.00-120.00	No	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T4 120.00-100.00	No	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T5 100.00-80.00	No	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T6 80.00-60.00	No	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T7 60.00-40.00	No	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T8 40.00-20.00	No	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T9 20.00-5.00	No	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T10 5.00-0.00	No	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Net Width Deduct in	Leg U	Diagonal Net Width Deduct in	Diagonal U	Top Girt Net Width Deduct in	Top Girt U	Bottom Girt Net Width Deduct in	Bottom Girt U	Mid Girt Net Width Deduct in	Mid Girt U	Long Horizontal Net Width Deduct in	Long Horizontal U	Short Horizontal Net Width Deduct in	Short Horizontal U
T1 180.00-160.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T2 160.00-140.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T3 140.00-120.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T4 120.00-100.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T5 100.00-80.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T6 80.00-60.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T7 60.00-40.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T8 40.00-20.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T9 20.00-5.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75
T10 5.00-0.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	0.75	0.0000	1	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg Bolt Size in	Leg No.	Diagonal Bolt Size in	Diagonal No.	Top Girt Bolt Size in	Top Girt No.	Bottom Girt Bolt Size in	Bottom Girt No.	Mid Girt Bolt Size in	Mid Girt No.	Long Horizontal Bolt Size in	Long Horizontal No.	Short Horizontal Bolt Size in	Short Horizontal No.
T1 180.00-160.00	Flange	0.7500 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 160.00-140.00	Flange	0.7500 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 140.00-120.00	Flange	0.7500 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 120.00-100.00	Flange	0.7500 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 100.00-80.00	Flange	0.7500 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T6 80.00-60.00	Flange	0.7500 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T7 60.00-40.00	Flange	0.7500 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T8 40.00-20.00	Flange	0.7500 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T9 20.00-5.00	Flange	0.7500 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T10 5.00-0.00	Flange	0.7500 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.5000 A325N	1	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 %
82.75	EHS	A	1/2	2690.00	10%	21000	0.517	160.79	140.00	0.0000	0.00	100%
		B	1/2	2690.00	10%	21000	0.517	160.79	140.00	0.0000	0.00	100%
		C	1/2	2690.00	10%	21000	0.517	160.79	140.00	0.0000	0.00	100%
162.75	EHS	A	3/4	5830.00	10%	19000	1.155	213.21	140.00	0.0000	0.00	100%
		B	3/4	5830.00	10%	19000	1.155	213.21	140.00	0.0000	0.00	100%
		C	3/4	5830.00	10%	19000	1.155	213.21	140.00	0.0000	0.00	100%

Guy Data *(cont'd)*

Guy Elevation ft	Mount Type	Torque-Arm Spread ft	Torque-Arm Leg Angle °	Torque-Arm Style	Torque-Arm Grade	Torque-Arm Type	Torque-Arm Size
82.75	Torque Arm	7.00	0.0000	Channel	A36 (36 ksi)	Channel	C10x15.3
162.75	Strap						

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*
82.75	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Equal Angle	L1 1/2x1 1/2x3/16
162.75	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Flat Bar	3x1/2

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*
82.75	83.13	83.13	83.13		2.47 2.7 sec/pulse	2.47 2.7 sec/pulse	2.47 2.7 sec/pulse	
162.75	246.25	246.25	246.25		4.44 3.6 sec/pulse	4.44 3.6 sec/pulse	4.44 3.6 sec/pulse	

Guy Data *(cont'd)*

			Torque Arm		*Pull Off*		*Diagonal*	
Guy Elevation ft	*Calc K Single Angles*	*Calc K Solid Rounds*	K_x	K_y	K_x	K_y	K_x	K_y
82.75	No	No	1	1	1	1	1	1
162.75	No	No			1	1	1	1

Guy Data *(cont'd)*

	Torque-Arm				*Pull Off*				*Diagonal*			
Guy Elevation ft	*Bolt Size in*	*Number*	*Net Width Deduct in*	*U*	*Bolt Size in*	*Number*	*Net Width Deduct in*	*U*	*Bolt Size in*	*Number*	*Net Width Deduct in*	*U*
82.75	0.7500 A325N	2	0.0000	1	0.0000 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	1
162.75	0.6250 A325N	0	0.0000	0.75	0.0000 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	1

Guy Pressures

Guy Elevation ft	*Guy Location*	*z ft*	q_z *psf*	q_z *Ice psf*	*Ice Thickness in*
82.75	A	41.38	20	15	0.5000
	B	41.38	20	15	0.5000

Guy Elevation ft	Guy Location	z ft	q_z psf	q_z Ice psf	Ice Thickness in
	C	41.38	20	15	0.5000
162.75	A	81.38	24	18	0.5000
	B	81.38	24	18	0.5000
	C	81.38	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
82.75	A	30.9442	2732.74 2690.00	-58.96	1435.72	-2324.46	-2901.19	8254.77	-5025.01
	A	30.9442	2732.74 2690.00	58.96	1435.72	-2324.46	-2901.19	-8254.77	5025.01
	B	30.9442	2732.74 2690.00	2042.53	1435.72	1111.17	5802.38	8254.77	0.00
	B	30.9442	2732.74 2690.00	1983.56	1435.72	1213.30	-2901.19	-8254.77	-5025.01
	C	30.9442	2732.74 2690.00	-1983.56	1435.72	1213.30	-2901.19	8254.77	5025.01
	C	30.9442	2732.74 2690.00	-2042.53	1435.72	1111.17	5802.38	-8254.77	0.00
			Sum:	0.00	8614.30	0.00	-0.00	0.00	0.00
162.75	A	49.6993	6017.80 5830.00	0.00	4640.87	-3830.96	-9163.58	0.00	0.00
	B	49.6993	6017.80 5830.00	3317.71	4640.87	1915.48	4581.79	0.00	-7935.89
	C	49.6993	6017.80 5830.00	-3317.71	4640.87	1915.48	4581.79	-0.00	7935.89
			Sum:	0.00	13922.62	0.00	0.00	0.00	0.00

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
82.75	A	30.9442	3903.95 3810.71	-83.87	2073.99	-3306.42	-4190.97	11741.93	-7258.97
	A	30.9442	3903.95 3810.71	83.87	2073.99	-3306.42	-4190.97	-11741.93	7258.97
	B	30.9442	3903.95 3810.71	2905.38	2073.99	1580.57	8381.94	11741.93	0.00
	B	30.9442	3903.95 3810.71	2821.50	2073.99	1725.84	-4190.97	-11741.93	-7258.97
	C	30.9442	3903.95 3810.71	-2821.50	2073.99	1725.84	-4190.97	11741.93	7258.97
	C	30.9442	3903.95 3810.71	-2905.38	2073.99	1580.57	8381.94	-11741.93	0.00
			Sum:	0.00	12443.95	0.00	-0.00	0.00	0.00

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
162.75	A	49.6993	8249.75 7937.79	0.00	6377.04	-5233.71	-12591.71	0.00	0.00
	B	49.6993	8249.75 7937.79	4532.52	6377.04	2616.85	6295.85	0.00	-10904.74
	C	49.6993	8249.75 7937.79	-4532.52	6377.04	2616.85	6295.85	-0.00	10904.74
			Sum:	0.00	19131.12	0.00	0.00	0.00	0.00

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
82.75	A	30.9442	2732.74 2690.00	-58.96	1435.72	-2324.46	-2901.19	8254.77	-5025.01
	A	30.9442	2732.74 2690.00	58.96	1435.72	-2324.46	-2901.19	-8254.77	5025.01
	B	30.9442	2732.74 2690.00	2042.53	1435.72	1111.17	5802.38	8254.77	0.00
	B	30.9442	2732.74 2690.00	1983.56	1435.72	1213.30	-2901.19	-8254.77	-5025.01
	C	30.9442	2732.74 2690.00	-1983.56	1435.72	1213.30	-2901.19	8254.77	5025.01
	C	30.9442	2732.74 2690.00	-2042.53	1435.72	1111.17	5802.38	-8254.77	0.00
			Sum:	0.00	8614.30	0.00	-0.00	0.00	0.00
162.75	A	49.6993	6017.80 5830.00	0.00	4640.87	-3830.96	-9163.58	0.00	0.00
	B	49.6993	6017.80 5830.00	3317.71	4640.87	1915.48	4581.79	0.00	-7935.89
	C	49.6993	6017.80 5830.00	-3317.71	4640.87	1915.48	4581.79	-0.00	7935.89
			Sum:	0.00	13922.62	0.00	0.00	0.00	0.00

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
Feedline Ladder (Af)	C	No	Af (CfAe)	171.50 - 6.00	0.1000	0	1	1	3.0000	3.0000	12.0000	8.40
Safety Line 3/8	A	No	Ar (CaAa)	180.00 - 6.00	0.0000	0	1	1	0.3750	0.3750		0.22
1 1/4	C	No	Ar (CfAe)	171.50 - 6.00	0.1000	0	3	3	1.5500	1.5500		0.66
1 1/4	B	No	Ar (CfAe)	180.00 - 6.00	0.1000	0	1	1	1.5500	1.5500		0.66
7/8	B	No	Ar (CfAe)	180.00 - 6.00	0.1000	0	2	2	1.1100	1.1100		0.54
1 1/4	B	No	Ar (CfAe)	179.00 - 6.00	0.1000	0	1	1	1.5500	1.5500		0.66

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
7/8	B	No	Ar (CfAe)	177.00 - 6.00	0.1000	0	1	1	1.1100	1.1100		0.54
7/8	B	No	Ar (CfAe)	163.00 - 6.00	0.1000	0	1	1	1.1100	1.1100		0.54
7/8	B	No	Ar (CfAe)	127.00 - 6.00	0.1000	0	1	1	1.1100	1.1100		0.54
1/2	B	No	Ar (CfAe)	83.00 - 6.00	0.1000	0	1	1	0.5800	0.5800		0.25

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T1	180.00-160.00	A	0.000	0.000	0.750	0.000	4.40
		B	10.588	0.000	0.000	0.000	58.14
		C	4.456	2.875	0.000	0.000	119.37
T2	160.00-140.00	A	0.000	0.000	0.750	0.000	4.40
		B	12.567	0.000	0.000	0.000	69.60
		C	7.750	5.000	0.000	0.000	207.60
T3	140.00-120.00	A	0.000	0.000	0.750	0.000	4.40
		B	13.214	0.000	0.000	0.000	73.38
		C	7.750	5.000	0.000	0.000	207.60
T4	120.00-100.00	A	0.000	0.000	0.750	0.000	4.40
		B	14.417	0.000	0.000	0.000	80.40
		C	7.750	5.000	0.000	0.000	207.60
T5	100.00-80.00	A	0.000	0.000	0.750	0.000	4.40
		B	14.562	0.000	0.000	0.000	81.15
		C	7.750	5.000	0.000	0.000	207.60
T6	80.00-60.00	A	0.000	0.000	0.750	0.000	4.40
		B	15.383	0.000	0.000	0.000	85.40
		C	7.750	5.000	0.000	0.000	207.60
T7	60.00-40.00	A	0.000	0.000	0.750	0.000	4.40
		B	15.383	0.000	0.000	0.000	85.40
		C	7.750	5.000	0.000	0.000	207.60
T8	40.00-20.00	A	0.000	0.000	0.750	0.000	4.40
		B	15.383	0.000	0.000	0.000	85.40
		C	7.750	5.000	0.000	0.000	207.60
T9	20.00-5.00	A	0.000	0.000	0.525	0.000	3.08
		B	10.768	0.000	0.000	0.000	59.78
		C	5.425	3.500	0.000	0.000	145.32
T10	5.00-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T1	180.00-160.00	A	0.500	0.000	0.000	2.750	0.000	15.09
		B		18.837	0.000	0.000	0.000	165.99
		C		7.331	3.514	0.000	0.000	193.64
T2	160.00-140.00	A	0.500	0.000	0.000	2.750	0.000	15.09
		B		22.567	0.000	0.000	0.000	198.37
		C		12.750	6.111	0.000	0.000	336.76
T3	140.00-120.00	A	0.500	0.000	0.000	2.750	0.000	15.09
		B		23.797	0.000	0.000	0.000	209.03

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		12.750	6.111	0.000	0.000	336.76
T4	120.00-100.00	A	0.500	0.000	0.000	2.750	0.000	15.09
		B		26.083	0.000	0.000	0.000	228.84
		C		12.750	6.111	0.000	0.000	336.76
T5	100.00-80.00	A	0.500	0.000	0.000	2.750	0.000	15.09
		B		26.478	0.000	0.000	0.000	231.57
		C		12.750	6.111	0.000	0.000	336.76
T6	80.00-60.00	A	0.500	0.000	0.000	2.750	0.000	15.09
		B		28.717	0.000	0.000	0.000	247.03
		C		12.750	6.111	0.000	0.000	336.76
T7	60.00-40.00	A	0.500	0.000	0.000	2.750	0.000	15.09
		B		28.717	0.000	0.000	0.000	247.03
		C		12.750	6.111	0.000	0.000	336.76
T8	40.00-20.00	A	0.500	0.000	0.000	2.750	0.000	15.09
		B		28.717	0.000	0.000	0.000	247.03
		C		12.750	6.111	0.000	0.000	336.76
T9	20.00-5.00	A	0.500	0.000	0.000	1.925	0.000	10.56
		B		20.102	0.000	0.000	0.000	172.92
		C		8.925	4.278	0.000	0.000	235.73
T10	5.00-0.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	180.00-160.00	1.4729	0.3294	1.4601	0.0438
T2	160.00-140.00	1.6535	1.0517	1.6759	0.6620
T3	140.00-120.00	1.7289	0.9917	1.7619	0.5970
T4	120.00-100.00	1.8656	0.8828	1.9175	0.4795
T5	100.00-80.00	1.7533	0.8109	1.8540	0.4388
T6	80.00-60.00	2.1569	0.8751	2.3455	0.3953
T7	60.00-40.00	2.1569	0.8751	2.3455	0.3953
T8	40.00-20.00	2.1569	0.8751	2.3455	0.3953
T9	20.00-5.00	2.0498	0.8317	2.2383	0.3772
T10	5.00-0.00	0.0000	0.0000	0.0000	0.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
RFS APXV9ERR18-C-A20	A	From Leg	3.00	0.0000	171.50	No Ice	8.02	5.81	62.00
(Sprint)			0.00			1/2" Ice	8.48	6.27	114.00
			0.00						
(2) Alcatel Lucent 4X40W	A	From Leg	3.00	0.0000	171.50	No Ice	2.32	2.24	60.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
RRH			0.00			1/2" Ice	2.50	2.42	83.10
(Sprint)			0.00						
(2) Alcatel Lucent 2X50W	A	From Leg	3.00	0.0000	171.50	No Ice	2.13	1.41	64.00
RRH			0.00			1/2" Ice	2.30	1.55	82.80
(Sprint)			0.00						
12 ft Boom / Frame	A	From Leg	2.00	0.0000	171.50	No Ice	18.00	9.00	500.00
(Sprint)			0.00			1/2" Ice	22.00	11.00	650.00
			0.00						
RFS APXV9ERR18-C-A20	B	From Leg	3.00	0.0000	171.50	No Ice	8.02	5.81	62.00
(Sprint)			0.00			1/2" Ice	8.48	6.27	114.00
			0.00						
(2) Alcatel Lucent 4X40W	B	From Leg	3.00	0.0000	171.50	No Ice	2.32	2.24	60.00
RRH			0.00			1/2" Ice	2.50	2.42	83.10
(Sprint)			0.00						
(2) Alcatel Lucent 2X50W	B	From Leg	3.00	0.0000	171.50	No Ice	2.13	1.41	64.00
RRH			0.00			1/2" Ice	2.30	1.55	82.80
(Sprint)			0.00						
12 ft Boom / Frame	B	From Leg	2.00	0.0000	171.50	No Ice	18.00	9.00	500.00
(Sprint)			0.00			1/2" Ice	22.00	11.00	650.00
			0.00						
RFS APXV9ERR18-C-A20	C	From Leg	3.00	0.0000	171.50	No Ice	8.02	5.81	62.00
(Sprint)			0.00			1/2" Ice	8.48	6.27	114.00
			0.00						
(2) Alcatel Lucent 4X40W	C	From Leg	3.00	0.0000	171.50	No Ice	2.32	2.24	60.00
RRH			0.00			1/2" Ice	2.50	2.42	83.10
(Sprint)			0.00						
(2) Alcatel Lucent 2X50W	C	From Leg	3.00	0.0000	171.50	No Ice	2.13	1.41	64.00
RRH			0.00			1/2" Ice	2.30	1.55	82.80
(Sprint)			0.00						
12 ft Boom / Frame	C	From Leg	2.00	0.0000	171.50	No Ice	18.00	9.00	500.00
(Sprint)			0.00			1/2" Ice	22.00	11.00	650.00
			0.00						
Lightning Rod 5/8x4'	C	None		0.0000	180.00	No Ice	0.25	0.25	31.00
						1/2" Ice	0.66	0.66	33.82
12 ft Boom / Frame	A	From Leg	2.00	0.0000	150.00	No Ice	18.00	9.00	500.00
			0.00			1/2" Ice	22.00	11.00	650.00
			0.00						
12 ft Boom / Frame	B	From Leg	2.00	0.0000	150.00	No Ice	18.00	9.00	500.00
			0.00			1/2" Ice	22.00	11.00	650.00
			0.00						
12 ft Boom / Frame	C	From Leg	2.00	0.0000	150.00	No Ice	18.00	9.00	500.00
			0.00			1/2" Ice	22.00	11.00	650.00
			0.00						
Station Master Antenna	B	From Leg	0.50	0.0000	180.00	No Ice	3.64	3.64	10.20
			0.00			1/2" Ice	4.21	4.21	30.00
			0.00						
Decibel DB809	C	From Leg	3.00	0.0000	179.00	No Ice	3.68	3.68	27.00
			0.00			1/2" Ice	4.93	4.93	60.90
			0.00						
Side Arm	C	From Leg	2.00	0.0000	179.00	No Ice	4.97	4.97	70.00
			0.00			1/2" Ice	6.12	6.12	130.00
			0.00						
Decibel DB809	B	From Leg	3.00	0.0000	177.00	No Ice	3.68	3.68	27.00
			0.00			1/2" Ice	4.93	4.93	60.90
			0.00						
Side Arm	B	From Leg	2.00	0.0000	177.00	No Ice	4.97	4.97	70.00
			0.00			1/2" Ice	6.12	6.12	130.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00						
Celwave PD201	B	From Leg	3.00	0.0000	163.00	No Ice	1.18	1.18	4.00
			0.00			1/2" Ice	2.09	2.09	16.80
			0.00						
Celwave PD201	B	From Leg	3.00	0.0000	83.00	No Ice	1.18	1.18	4.00
			0.00			1/2" Ice	2.09	2.09	16.80
			0.00						
Decibel DB420	B	From Leg	3.00	0.0000	127.00	No Ice	5.19	5.19	35.00
			0.00			1/2" Ice	7.19	7.19	83.50
			0.00						
Side Arm	B	From Leg	2.00	0.0000	127.00	No Ice	4.97	4.97	70.00
			0.00			1/2" Ice	6.12	6.12	130.00
			0.00						

Tower Pressures - No Ice

$G_H = 1.121$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
T1 180.00-160.00	170.00	1.597	30	72.358	A	0.806	16.613	7.917	45.45	0.750	0.000
					B	0.806	27.200		28.27	0.000	0.000
					C	3.681	21.069		31.99	0.000	0.000
T2 160.00-140.00	150.00	1.541	29	72.358	A	0.000	16.613	7.917	47.65	0.750	0.000
					B	0.000	29.180		27.13	0.000	0.000
					C	5.000	24.363		26.96	0.000	0.000
T3 140.00-120.00	130.00	1.48	27	72.358	A	0.000	16.613	7.917	47.65	0.750	0.000
					B	0.000	29.827		26.54	0.000	0.000
					C	5.000	24.363		26.96	0.000	0.000
T4 120.00-100.00	110.00	1.411	26	72.358	A	0.000	16.613	7.917	47.65	0.750	0.000
					B	0.000	31.030		25.51	0.000	0.000
					C	5.000	24.363		26.96	0.000	0.000
T5 100.00-80.00	90.00	1.332	25	73.192	A	0.398	18.167	9.583	51.62	0.750	0.000
					B	0.398	32.729		28.93	0.000	0.000
					C	5.398	25.917		30.60	0.000	0.000
T6 80.00-60.00	70.00	1.24	23	73.192	A	0.000	14.273	9.583	67.14	0.750	0.000
					B	0.000	29.656		32.31	0.000	0.000
					C	5.000	22.023		35.46	0.000	0.000
T7 60.00-40.00	50.00	1.126	21	73.192	A	0.000	14.273	9.583	67.14	0.750	0.000
					B	0.000	29.656		32.31	0.000	0.000
					C	5.000	22.023		35.46	0.000	0.000
T8 40.00-20.00	30.00	1	18	73.192	A	0.000	14.273	9.583	67.14	0.750	0.000
					B	0.000	29.656		32.31	0.000	0.000
					C	5.000	22.023		35.46	0.000	0.000
T9 20.00-5.00	12.50	1	18	54.894	A	0.000	10.892	7.188	65.99	0.525	0.000
					B	0.000	21.661		33.18	0.000	0.000
					C	3.500	16.317		36.27	0.000	0.000
T10 5.00-0.00	2.50	1	18	9.816	A	0.000	3.369	2.576	76.45	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
					B	0.000	3.369		76.45	0.000	0.000
					C	0.000	3.369		76.45	0.000	0.000

Tower Pressure - With Ice

$G_H = 1.121$

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
T1 180.00-160.00	170.00	1.597	22	0.5000	74.025	A	0.806	26.012	11.250	41.95	2.750	0.000
						B	0.806	44.850		24.64	0.000	0.000
						C	4.319	33.343		29.87	0.000	0.000
T2 160.00-140.00	150.00	1.541	21	0.5000	74.025	A	0.000	25.744	11.250	43.70	2.750	0.000
						B	0.000	48.310		23.29	0.000	0.000
						C	6.111	38.494		25.22	0.000	0.000
T3 140.00-120.00	130.00	1.48	21	0.5000	74.025	A	0.000	25.744	11.250	43.70	2.750	0.000
						B	0.000	49.541		22.71	0.000	0.000
						C	6.111	38.494		25.22	0.000	0.000
T4 120.00-100.00	110.00	1.411	20	0.5000	74.025	A	0.000	25.744	11.250	43.70	2.750	0.000
						B	0.000	51.827		21.71	0.000	0.000
						C	6.111	38.494		25.22	0.000	0.000
T5 100.00-80.00	90.00	1.332	18	0.5000	74.858	A	0.398	27.488	12.917	46.32	2.750	0.000
						B	0.398	53.966		23.76	0.000	0.000
						C	6.509	40.238		27.63	0.000	0.000
T6 80.00-60.00	70.00	1.24	17	0.5000	74.858	A	0.000	20.732	12.917	62.30	2.750	0.000
						B	0.000	49.449		26.12	0.000	0.000
						C	6.111	33.482		32.62	0.000	0.000
T7 60.00-40.00	50.00	1.126	16	0.5000	74.858	A	0.000	20.732	12.917	62.30	2.750	0.000
						B	0.000	49.449		26.12	0.000	0.000
						C	6.111	33.482		32.62	0.000	0.000
T8 40.00-20.00	30.00	1	14	0.5000	74.858	A	0.000	20.732	12.917	62.30	2.750	0.000
						B	0.000	49.449		26.12	0.000	0.000
						C	6.111	33.482		32.62	0.000	0.000
T9 20.00-5.00	12.50	1	14	0.5000	56.144	A	0.000	15.862	9.688	61.07	1.925	0.000
						B	0.000	35.964		26.94	0.000	0.000
						C	4.278	24.787		33.33	0.000	0.000
T10 5.00-0.00	2.50	1	14	0.5000	10.256	A	0.000	4.794	3.472	72.42	0.000	0.000
						B	0.000	4.794		72.42	0.000	0.000
						C	0.000	4.794		72.42	0.000	0.000

Tower Pressure - Service

$G_H = 1.121$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
T1 180.00-160.00	170.00	1.597	15	72.358	A	0.806	16.613	7.917	45.45	0.750	0.000
					B	0.806	27.200		28.27	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
					C	3.681	21.069		31.99	0.000	0.000
T2 160.00-140.00	150.00	1.541	14	72.358	A	0.000	16.613	7.917	47.65	0.750	0.000
					B	0.000	29.180		27.13	0.000	0.000
					C	5.000	24.363		26.96	0.000	0.000
T3 140.00-120.00	130.00	1.48	14	72.358	A	0.000	16.613	7.917	47.65	0.750	0.000
					B	0.000	29.827		26.54	0.000	0.000
					C	5.000	24.363		26.96	0.000	0.000
T4 120.00-100.00	110.00	1.411	13	72.358	A	0.000	16.613	7.917	47.65	0.750	0.000
					B	0.000	31.030		25.51	0.000	0.000
					C	5.000	24.363		26.96	0.000	0.000
T5 100.00-80.00	90.00	1.332	12	73.192	A	0.398	18.167	9.583	51.62	0.750	0.000
					B	0.398	32.729		28.93	0.000	0.000
					C	5.398	25.917		30.60	0.000	0.000
T6 80.00-60.00	70.00	1.24	11	73.192	A	0.000	14.273	9.583	67.14	0.750	0.000
					B	0.000	29.656		32.31	0.000	0.000
					C	5.000	22.023		35.46	0.000	0.000
T7 60.00-40.00	50.00	1.126	10	73.192	A	0.000	14.273	9.583	67.14	0.750	0.000
					B	0.000	29.656		32.31	0.000	0.000
					C	5.000	22.023		35.46	0.000	0.000
T8 40.00-20.00	30.00	1	9	73.192	A	0.000	14.273	9.583	67.14	0.750	0.000
					B	0.000	29.656		32.31	0.000	0.000
					C	5.000	22.023		35.46	0.000	0.000
T9 20.00-5.00	12.50	1	9	54.894	A	0.000	10.892	7.188	65.99	0.525	0.000
					B	0.000	21.661		33.18	0.000	0.000
					C	3.500	16.317		36.27	0.000	0.000
T10 5.00-0.00	2.50	1	9	9.816	A	0.000	3.369	2.576	76.45	0.000	0.000
					B	0.000	3.369		76.45	0.000	0.000
					C	0.000	3.369		76.45	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 180.00-160.00	181.91	552.04	A	0.241	2.466	0.6	1	1	10.766	1297.65	64.88	B
			B	0.387	2.09	0.646	1	1	18.388			
			C	0.342	2.19	0.63	1	1	16.947			
T2 160.00-140.00	281.60	499.67	A	0.23	2.5	0.597	1	1	9.916	1396.91	69.85	C
			B	0.403	2.058	0.653	1	1	19.052			
			C	0.406	2.053	0.654	1	1	20.933			
T3 140.00-120.00	285.38	499.67	A	0.23	2.5	0.597	1	1	9.916	1340.95	67.05	C
			B	0.412	2.04	0.657	1	1	19.586			
			C	0.406	2.053	0.654	1	1	20.933			
T4 120.00-100.00	292.40	499.67	A	0.23	2.5	0.597	1	1	9.916	1278.45	63.92	C
			B	0.429	2.01	0.664	1	1	20.597			
			C	0.406	2.053	0.654	1	1	20.933			
T5 100.00-80.00	293.15	676.58 TA 320.88	A	0.254	2.427	0.603	1	1	11.349	1275.47	63.77	C
			B	0.453	1.969	0.674	1	1	22.472			
			C	0.428	2.012	0.663	1	1	22.590			
T6 80.00-60.00	297.40	568.31	A	0.195	2.613	0.589	1	1	8.412	1063.09	53.15	C
			B	0.405	2.054	0.654	1	1	19.387			
			C	0.369	2.128	0.64	1	1	19.084			
T7 60.00-40.00	297.40	456.12	A	0.195	2.613	0.589	1	1	8.412	965.65	48.28	C
			B	0.405	2.054	0.654	1	1	19.387			
			C	0.369	2.128	0.64	1	1	19.084			
T8	297.40	456.12	A	0.195	2.613	0.589	1	1	8.412	857.55	42.88	C

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
40.00-20.00			B	0.405	2.054	0.654	1	1	19.387			
			C	0.369	2.128	0.64	1	1	19.084			
T9 20.00-5.00	208.18	430.56	A	0.198	2.601	0.59	1	1	6.427	628.75	41.92	C
			B	0.395	2.075	0.649	1	1	14.067			
			C	0.361	2.146	0.636	1	1	13.885			
T10 5.00-0.00	0.00	142.23	A	0.343	2.187	0.63	1	1	2.123	96.27	19.25	C
			B	0.343	2.187	0.63	1	1	2.123			
			C	0.343	2.187	0.63	1	1	2.123			
Sum Weight:	2434.82	5101.84								10200.73		

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 180.00-160.00	181.91	552.04	A	0.241	2.466	0.6	0.8	1	10.605	1286.50	64.33	B
			B	0.387	2.09	0.646	0.8	1	18.227			
			C	0.342	2.19	0.63	0.8	1	16.211			
T2 160.00-140.00	281.60	499.67	A	0.23	2.5	0.597	0.8	1	9.916	1331.32	66.57	C
			B	0.403	2.058	0.653	0.8	1	19.052			
			C	0.406	2.053	0.654	0.8	1	19.933			
T3 140.00-120.00	285.38	499.67	A	0.23	2.5	0.597	0.8	1	9.916	1277.99	63.90	C
			B	0.412	2.04	0.657	0.8	1	19.586			
			C	0.406	2.053	0.654	0.8	1	19.933			
T4 120.00-100.00	292.40	499.67	A	0.23	2.5	0.597	0.8	1	9.916	1232.45	61.62	B
			B	0.429	2.01	0.664	0.8	1	20.597			
			C	0.406	2.053	0.654	0.8	1	19.933			
T5 100.00-80.00	293.15	676.58 TA 320.88	A	0.254	2.427	0.603	0.8	1	11.269	1238.40	61.92	B
			B	0.453	1.969	0.674	0.8	1	22.393			
			C	0.428	2.012	0.663	0.8	1	21.510			
T6 80.00-60.00	297.40	568.31	A	0.195	2.613	0.589	0.8	1	8.412	1042.61	52.13	B
			B	0.405	2.054	0.654	0.8	1	19.387			
			C	0.369	2.128	0.64	0.8	1	18.084			
T7 60.00-40.00	297.40	456.12	A	0.195	2.613	0.589	0.8	1	8.412	947.05	47.35	B
			B	0.405	2.054	0.654	0.8	1	19.387			
			C	0.369	2.128	0.64	0.8	1	18.084			
T8 40.00-20.00	297.40	456.12	A	0.195	2.613	0.589	0.8	1	8.412	841.03	42.05	B
			B	0.405	2.054	0.654	0.8	1	19.387			
			C	0.369	2.128	0.64	0.8	1	18.084			
T9 20.00-5.00	208.18	430.56	A	0.198	2.601	0.59	0.8	1	6.427	615.94	41.06	B
			B	0.395	2.075	0.649	0.8	1	14.067			
			C	0.361	2.146	0.636	0.8	1	13.185			
T10 5.00-0.00	0.00	142.23	A	0.343	2.187	0.63	0.8	1	2.123	96.27	19.25	C
			B	0.343	2.187	0.63	0.8	1	2.123			
			C	0.343	2.187	0.63	0.8	1	2.123			
Sum Weight:	2434.82	5101.84								9909.55		

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 ft^2	F lb	w plf	Ctrl. Face
T1 180.00-160.00	181.91	552.04	A	0.241	2.466	0.6	0.85	1	10.645	1289.29	64.46	B
			B	0.387	2.09	0.646	0.85	1	18.267			
			C	0.342	2.19	0.63	0.85	1	16.395			
T2 160.00-140.00	281.60	499.67	A	0.23	2.5	0.597	0.85	1	9.916	1347.72	67.39	C
			B	0.403	2.058	0.653	0.85	1	19.052			
			C	0.406	2.053	0.654	0.85	1	20.183			
T3 140.00-120.00	285.38	499.67	A	0.23	2.5	0.597	0.85	1	9.916	1293.73	64.69	C
			B	0.412	2.04	0.657	0.85	1	19.586			
			C	0.406	2.053	0.654	0.85	1	20.183			
T4 120.00-100.00	292.40	499.67	A	0.23	2.5	0.597	0.85	1	9.916	1233.43	61.67	C
			B	0.429	2.01	0.664	0.85	1	20.597			
			C	0.406	2.053	0.654	0.85	1	20.183			
T5 100.00-80.00	293.15	676.58 TA 320.88	A	0.254	2.427	0.603	0.85	1	11.289	1239.48	61.97	B
			B	0.453	1.969	0.674	0.85	1	22.412			
			C	0.428	2.012	0.663	0.85	1	21.780			
T6 80.00-60.00	297.40	568.31	A	0.195	2.613	0.589	0.85	1	8.412	1042.61	52.13	B
			B	0.405	2.054	0.654	0.85	1	19.387			
			C	0.369	2.128	0.64	0.85	1	18.334			
T7 60.00-40.00	297.40	456.12	A	0.195	2.613	0.589	0.85	1	8.412	947.05	47.35	B
			B	0.405	2.054	0.654	0.85	1	19.387			
			C	0.369	2.128	0.64	0.85	1	18.334			
T8 40.00-20.00	297.40	456.12	A	0.195	2.613	0.589	0.85	1	8.412	841.03	42.05	B
			B	0.405	2.054	0.654	0.85	1	19.387			
			C	0.369	2.128	0.64	0.85	1	18.334			
T9 20.00-5.00	208.18	430.56	A	0.198	2.601	0.59	0.85	1	6.427	615.94	41.06	B
			B	0.395	2.075	0.649	0.85	1	14.067			
			C	0.361	2.146	0.636	0.85	1	13.360			
T10 5.00-0.00	0.00	142.23	A	0.343	2.187	0.63	0.85	1	2.123	96.27	19.25	C
			B	0.343	2.187	0.63	0.85	1	2.123			
			C	0.343	2.187	0.63	0.85	1	2.123			
Sum Weight:	2434.82	5101.84								9946.54		

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 ft^2	F lb	w plf	Ctrl. Face
T1 180.00-160.00	374.72	945.16	A	0.362	2.144	0.637	1	1	17.374	1631.47	81.57	B
			B	0.617	1.795	0.764	1	1	35.071			
			C	0.509	1.889	0.702	1	1	27.727			
T2 160.00-140.00	550.22	875.70	A	0.348	2.177	0.632	1	1	16.262	1688.91	84.45	B
			B	0.653	1.781	0.787	1	1	38.031			
			C	0.603	1.802	0.755	1	1	35.180			
T3 140.00-120.00	560.89	875.70	A	0.348	2.177	0.632	1	1	16.262	1680.58	84.03	B
			B	0.669	1.777	0.798	1	1	39.555			
			C	0.603	1.802	0.755	1	1	35.180			
T4 120.00-100.00	580.69	875.70	A	0.348	2.177	0.632	1	1	16.262	1715.70	85.78	B
			B	0.7	1.776	0.82	1	1	42.498			
			C	0.603	1.802	0.755	1	1	35.180			
T5 100.00-80.00	583.42	1086.81 TA 454.64	A	0.373	2.121	0.641	1	1	18.011	1740.61	87.03	B
			B	0.726	1.78	0.839	1	1	45.674			
			C	0.624	1.791	0.769	1	1	37.447			
T6 80.00-60.00	598.89	839.86	A	0.277	2.359	0.609	1	1	12.628	1396.82	69.84	B
			B	0.661	1.779	0.793	1	1	39.190			
			C	0.529	1.865	0.713	1	1	29.973			

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
T7	598.89	727.68	A	0.277	2.359	0.609	1	1	12.628	1268.79	63.44	B
60.00-40.00			B	0.661	1.779	0.793	1	1	39.190			
			C	0.529	1.865	0.713	1	1	29.973			
T8	598.89	727.68	A	0.277	2.359	0.609	1	1	12.628	1126.76	56.34	B
40.00-20.00			B	0.661	1.779	0.793	1	1	39.190			
			C	0.529	1.865	0.713	1	1	29.973			
T9 20.00-5.00	419.22	640.14	A	0.283	2.344	0.611	1	1	9.687	807.51	53.83	B
			B	0.641	1.784	0.779	1	1	28.025			
			C	0.518	1.878	0.707	1	1	21.794			
T10 5.00-0.00	0.00	200.83	A	0.467	1.946	0.681	1	1	3.267	98.85	19.77	C
			B	0.467	1.946	0.681	1	1	3.267			
			C	0.467	1.946	0.681	1	1	3.267			
Sum Weight:	4865.84	8249.90								13156.01		

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 ft^2	F lb	w plf	Ctrl. Face
T1	374.72	945.16	A	0.362	2.144	0.637	0.8	1	17.212	1624.29	81.21	B
180.00-160.00			B	0.617	1.795	0.764	0.8	1	34.909			
			C	0.509	1.889	0.702	0.8	1	26.863			
T2	550.22	875.70	A	0.348	2.177	0.632	0.8	1	16.262	1688.91	84.45	B
160.00-140.00			B	0.653	1.781	0.787	0.8	1	38.031			
			C	0.603	1.802	0.755	0.8	1	33.958			
T3	560.89	875.70	A	0.348	2.177	0.632	0.8	1	16.262	1680.58	84.03	B
140.00-120.00			B	0.669	1.777	0.798	0.8	1	39.555			
			C	0.603	1.802	0.755	0.8	1	33.958			
T4	580.69	875.70	A	0.348	2.177	0.632	0.8	1	16.262	1715.70	85.78	B
120.00-100.00			B	0.7	1.776	0.82	0.8	1	42.498			
			C	0.603	1.802	0.755	0.8	1	33.958			
T5	583.42	1086.81	A	0.373	2.121	0.641	0.8	1	17.931	1737.68	86.88	B
100.00-80.00		TA 454.64	B	0.726	1.78	0.839	0.8	1	45.594			
			C	0.624	1.791	0.769	0.8	1	36.145			
T6	598.89	839.86	A	0.277	2.359	0.609	0.8	1	12.628	1396.82	69.84	B
80.00-60.00			B	0.661	1.779	0.793	0.8	1	39.190			
			C	0.529	1.865	0.713	0.8	1	28.751			
T7	598.89	727.68	A	0.277	2.359	0.609	0.8	1	12.628	1268.79	63.44	B
60.00-40.00			B	0.661	1.779	0.793	0.8	1	39.190			
			C	0.529	1.865	0.713	0.8	1	28.751			
T8	598.89	727.68	A	0.277	2.359	0.609	0.8	1	12.628	1126.76	56.34	B
40.00-20.00			B	0.661	1.779	0.793	0.8	1	39.190			
			C	0.529	1.865	0.713	0.8	1	28.751			
T9 20.00-5.00	419.22	640.14	A	0.283	2.344	0.611	0.8	1	9.687	807.51	53.83	B
			B	0.641	1.784	0.779	0.8	1	28.025			
			C	0.518	1.878	0.707	0.8	1	20.939			
T10 5.00-0.00	0.00	200.83	A	0.467	1.946	0.681	0.8	1	3.267	98.85	19.77	C
			B	0.467	1.946	0.681	0.8	1	3.267			
			C	0.467	1.946	0.681	0.8	1	3.267			
Sum Weight:	4865.84	8249.90								13145.90		

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 ft^2	F lb	w plf	Ctrl. Face
T1 180.00-160.00	374.72	945.16	A	0.362	2.144	0.637	0.85	1	17.253	1626.09	81.30	B
			B	0.617	1.795	0.764	0.85	1	34.950			
			C	0.509	1.889	0.702	0.85	1	27.079			
T2 160.00-140.00	550.22	875.70	A	0.348	2.177	0.632	0.85	1	16.262	1688.91	84.45	B
			B	0.653	1.781	0.787	0.85	1	38.031			
			C	0.603	1.802	0.755	0.85	1	34.264			
T3 140.00-120.00	560.89	875.70	A	0.348	2.177	0.632	0.85	1	16.262	1680.58	84.03	B
			B	0.669	1.777	0.798	0.85	1	39.555			
			C	0.603	1.802	0.755	0.85	1	34.264			
T4 120.00-100.00	580.69	875.70	A	0.348	2.177	0.632	0.85	1	16.262	1715.70	85.78	B
			B	0.7	1.776	0.82	0.85	1	42.498			
			C	0.603	1.802	0.755	0.85	1	34.264			
T5 100.00-80.00	583.42	1086.81 TA 454.64	A	0.373	2.121	0.641	0.85	1	17.951	1738.41	86.92	B
			B	0.726	1.78	0.839	0.85	1	45.614			
			C	0.624	1.791	0.769	0.85	1	36.470			
T6 80.00-60.00	598.89	839.86	A	0.277	2.359	0.609	0.85	1	12.628	1396.82	69.84	B
			B	0.661	1.779	0.793	0.85	1	39.190			
			C	0.529	1.865	0.713	0.85	1	29.056			
T7 60.00-40.00	598.89	727.68	A	0.277	2.359	0.609	0.85	1	12.628	1268.79	63.44	B
			B	0.661	1.779	0.793	0.85	1	39.190			
			C	0.529	1.865	0.713	0.85	1	29.056			
T8 40.00-20.00	598.89	727.68	A	0.277	2.359	0.609	0.85	1	12.628	1126.76	56.34	B
			B	0.661	1.779	0.793	0.85	1	39.190			
			C	0.529	1.865	0.713	0.85	1	29.056			
T9 20.00-5.00	419.22	640.14	A	0.283	2.344	0.611	0.85	1	9.687	807.51	53.83	B
			B	0.641	1.784	0.779	0.85	1	28.025			
			C	0.518	1.878	0.707	0.85	1	21.153			
T10 5.00-0.00	0.00	200.83	A	0.467	1.946	0.681	0.85	1	3.267	98.85	19.77	C
			B	0.467	1.946	0.681	0.85	1	3.267			
			C	0.467	1.946	0.681	0.85	1	3.267			
Sum Weight:	4865.84	8249.90								13148.42		

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 ft^2	F lb	w plf	Ctrl. Face
T1 180.00-160.00	181.91	552.04	A	0.241	2.466	0.6	1	1	10.766	646.58	32.33	B
			B	0.387	2.09	0.646	1	1	18.388			
			C	0.342	2.19	0.63	1	1	16.947			
T2 160.00-140.00	281.60	499.67	A	0.23	2.5	0.597	1	1	9.916	696.04	34.80	C
			B	0.403	2.058	0.653	1	1	19.052			
			C	0.406	2.053	0.654	1	1	20.933			
T3 140.00-120.00	285.38	499.67	A	0.23	2.5	0.597	1	1	9.916	668.15	33.41	C
			B	0.412	2.04	0.657	1	1	19.586			
			C	0.406	2.053	0.654	1	1	20.933			
T4 120.00-100.00	292.40	499.67	A	0.23	2.5	0.597	1	1	9.916	637.01	31.85	C
			B	0.429	2.01	0.664	1	1	20.597			
			C	0.406	2.053	0.654	1	1	20.933			
T5 100.00-80.00	293.15	676.58 TA 320.88	A	0.254	2.427	0.603	1	1	11.349	635.53	31.78	C
			B	0.453	1.969	0.674	1	1	22.472			
			C	0.428	2.012	0.663	1	1	22.590			

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
T6 80.00-60.00	297.40	568.31	A	0.195	2.613	0.589	1	1	8.412	529.71	26.49	C
			B	0.405	2.054	0.654	1	1	19.387			
			C	0.369	2.128	0.64	1	1	19.084			
T7 60.00-40.00	297.40	456.12	A	0.195	2.613	0.589	1	1	8.412	481.15	24.06	C
			B	0.405	2.054	0.654	1	1	19.387			
			C	0.369	2.128	0.64	1	1	19.084			
T8 40.00-20.00	297.40	456.12	A	0.195	2.613	0.589	1	1	8.412	427.29	21.36	C
			B	0.405	2.054	0.654	1	1	19.387			
			C	0.369	2.128	0.64	1	1	19.084			
T9 20.00-5.00	208.18	430.56	A	0.198	2.601	0.59	1	1	6.427	313.29	20.89	C
			B	0.395	2.075	0.649	1	1	14.067			
			C	0.361	2.146	0.636	1	1	13.885			
T10 5.00-0.00	0.00	142.23	A	0.343	2.187	0.63	1	1	2.123	47.97	9.59	C
			B	0.343	2.187	0.63	1	1	2.123			
			C	0.343	2.187	0.63	1	1	2.123			
Sum Weight:	2434.82	5101.84								5082.72		

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 ft^2	F lb	w plf	Ctrl. Face
T1 180.00-160.00	181.91	552.04	A	0.241	2.466	0.6	0.8	1	10.605	641.03	32.05	B
			B	0.387	2.09	0.646	0.8	1	18.227			
			C	0.342	2.19	0.63	0.8	1	16.211			
T2 160.00-140.00	281.60	499.67	A	0.23	2.5	0.597	0.8	1	9.916	663.36	33.17	C
			B	0.403	2.058	0.653	0.8	1	19.052			
			C	0.406	2.053	0.654	0.8	1	19.933			
T3 140.00-120.00	285.38	499.67	A	0.23	2.5	0.597	0.8	1	9.916	636.78	31.84	C
			B	0.412	2.04	0.657	0.8	1	19.586			
			C	0.406	2.053	0.654	0.8	1	19.933			
T4 120.00-100.00	292.40	499.67	A	0.23	2.5	0.597	0.8	1	9.916	614.09	30.70	B
			B	0.429	2.01	0.664	0.8	1	20.597			
			C	0.406	2.053	0.654	0.8	1	19.933			
T5 100.00-80.00	293.15	676.58 TA 320.88	A	0.254	2.427	0.603	0.8	1	11.269	617.06	30.85	B
			B	0.453	1.969	0.674	0.8	1	22.393			
			C	0.428	2.012	0.663	0.8	1	21.510			
T6 80.00-60.00	297.40	568.31	A	0.195	2.613	0.589	0.8	1	8.412	519.50	25.98	B
			B	0.405	2.054	0.654	0.8	1	19.387			
			C	0.369	2.128	0.64	0.8	1	18.084			
T7 60.00-40.00	297.40	456.12	A	0.195	2.613	0.589	0.8	1	8.412	471.88	23.59	B
			B	0.405	2.054	0.654	0.8	1	19.387			
			C	0.369	2.128	0.64	0.8	1	18.084			
T8 40.00-20.00	297.40	456.12	A	0.195	2.613	0.589	0.8	1	8.412	419.06	20.95	B
			B	0.405	2.054	0.654	0.8	1	19.387			
			C	0.369	2.128	0.64	0.8	1	18.084			
T9 20.00-5.00	208.18	430.56	A	0.198	2.601	0.59	0.8	1	6.427	306.91	20.46	B
			B	0.395	2.075	0.649	0.8	1	14.067			
			C	0.361	2.146	0.636	0.8	1	13.185			
T10 5.00-0.00	0.00	142.23	A	0.343	2.187	0.63	0.8	1	2.123	47.97	9.59	C
			B	0.343	2.187	0.63	0.8	1	2.123			
			C	0.343	2.187	0.63	0.8	1	2.123			
Sum Weight:	2434.82	5101.84								4937.63		

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 ft^2	F lb	w plf	Ctrl. Face
T1 180.00-160.00	181.91	552.04	A	0.241	2.466	0.6	0.85	1	10.645	642.41	32.12	B
			B	0.387	2.09	0.646	0.85	1	18.267			
			C	0.342	2.19	0.63	0.85	1	16.395			
T2 160.00-140.00	281.60	499.67	A	0.23	2.5	0.597	0.85	1	9.916	671.53	33.58	C
			B	0.403	2.058	0.653	0.85	1	19.052			
			C	0.406	2.053	0.654	0.85	1	20.183			
T3 140.00-120.00	285.38	499.67	A	0.23	2.5	0.597	0.85	1	9.916	644.62	32.23	C
			B	0.412	2.04	0.657	0.85	1	19.586			
			C	0.406	2.053	0.654	0.85	1	20.183			
T4 120.00-100.00	292.40	499.67	A	0.23	2.5	0.597	0.85	1	9.916	614.58	30.73	C
			B	0.429	2.01	0.664	0.85	1	20.597			
			C	0.406	2.053	0.654	0.85	1	20.183			
T5 100.00-80.00	293.15	676.58 TA 320.88	A	0.254	2.427	0.603	0.85	1	11.289	617.59	30.88	B
			B	0.453	1.969	0.674	0.85	1	22.412			
			C	0.428	2.012	0.663	0.85	1	21.780			
T6 80.00-60.00	297.40	568.31	A	0.195	2.613	0.589	0.85	1	8.412	519.50	25.98	B
			B	0.405	2.054	0.654	0.85	1	19.387			
			C	0.369	2.128	0.64	0.85	1	18.334			
T7 60.00-40.00	297.40	456.12	A	0.195	2.613	0.589	0.85	1	8.412	471.88	23.59	B
			B	0.405	2.054	0.654	0.85	1	19.387			
			C	0.369	2.128	0.64	0.85	1	18.334			
T8 40.00-20.00	297.40	456.12	A	0.195	2.613	0.589	0.85	1	8.412	419.06	20.95	B
			B	0.405	2.054	0.654	0.85	1	19.387			
			C	0.369	2.128	0.64	0.85	1	18.334			
T9 20.00-5.00	208.18	430.56	A	0.198	2.601	0.59	0.85	1	6.427	306.91	20.46	B
			B	0.395	2.075	0.649	0.85	1	14.067			
			C	0.361	2.146	0.636	0.85	1	13.360			
T10 5.00-0.00	0.00	142.23	A	0.343	2.187	0.63	0.85	1	2.123	47.97	9.59	C
			B	0.343	2.187	0.63	0.85	1	2.123			
			C	0.343	2.187	0.63	0.85	1	2.123			
Sum Weight:	2434.82	5101.84								4956.06		

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	3291.20			
Bracing Weight	1810.64			
Total Member Self-Weight	5101.84			
Guy Weight	1237.54			
Total Weight	13052.40			
Wind 0 deg - No Ice		0.00	-15875.87	3321.28
Wind 30 deg - No Ice		7810.84	-13528.77	4333.59
Wind 60 deg - No Ice		13496.74	-7792.34	4218.62
Wind 90 deg - No Ice		15621.67	0.00	2982.20
Wind 120 deg - No Ice		13748.90	7937.93	938.59
Wind 150 deg - No Ice		7810.84	13528.77	-1351.39
Wind 180 deg - No Ice		0.00	15584.69	-3277.05

Load Case	*Vertical Forces lb*	*Sum of Forces X lb*	*Sum of Forces Z lb*	*Sum of Torques lb-ft*
Wind 210 deg - No Ice		-7810.84	13528.77	-4333.59
Wind 240 deg - No Ice		-13748.90	7937.93	-4259.87
Wind 270 deg - No Ice		-15621.67	0.00	-2982.20
Wind 300 deg - No Ice		-13496.74	-7792.34	-941.58
Wind 330 deg - No Ice		-7810.84	-13528.77	1351.39
Member Ice	3148.06			
Guy Ice	1077.74			
Total Weight Ice	21361.14			
Wind 0 deg - Ice		0.00	-18217.39	3932.84
Wind 30 deg - Ice		9104.90	-15770.15	4777.74
Wind 60 deg - Ice		15767.96	-9103.64	4343.26
Wind 90 deg - Ice		18209.80	0.00	2745.34
Wind 120 deg - Ice		15776.72	9108.69	411.20
Wind 150 deg - Ice		9104.90	15770.15	-2032.41
Wind 180 deg - Ice		0.00	18207.28	-3931.51
Wind 210 deg - Ice		-9104.90	15770.15	-4777.74
Wind 240 deg - Ice		-15776.72	9108.69	-4344.04
Wind 270 deg - Ice		-18209.80	0.00	-2745.34
Wind 300 deg - Ice		-15767.96	-9103.64	-411.75
Wind 330 deg - Ice		-9104.90	-15770.15	2032.41
Total Weight	13052.40			
Wind 0 deg - Service		0.00	-7910.47	1654.89
Wind 30 deg - Service		3891.90	-6740.98	2159.30
Wind 60 deg - Service		6725.02	-3882.69	2102.01
Wind 90 deg - Service		7783.81	0.00	1485.94
Wind 120 deg - Service		6850.67	3955.23	467.67
Wind 150 deg - Service		3891.90	6740.98	-673.36
Wind 180 deg - Service		0.00	7765.38	-1632.85
Wind 210 deg - Service		-3891.90	6740.98	-2159.30
Wind 240 deg - Service		-6850.67	3955.23	-2122.56
Wind 270 deg - Service		-7783.81	0.00	-1485.94
Wind 300 deg - Service		-6725.02	-3882.69	-469.16
Wind 330 deg - Service		-3891.90	-6740.98	673.36

Load Combinations

Comb. No.	*Description*
1	Dead Only
2	Dead+Wind 0 deg - No Ice+Guy
3	Dead+Wind 30 deg - No Ice+Guy
4	Dead+Wind 60 deg - No Ice+Guy
5	Dead+Wind 90 deg - No Ice+Guy
6	Dead+Wind 120 deg - No Ice+Guy
7	Dead+Wind 150 deg - No Ice+Guy
8	Dead+Wind 180 deg - No Ice+Guy
9	Dead+Wind 210 deg - No Ice+Guy
10	Dead+Wind 240 deg - No Ice+Guy
11	Dead+Wind 270 deg - No Ice+Guy
12	Dead+Wind 300 deg - No Ice+Guy
13	Dead+Wind 330 deg - No Ice+Guy
14	Dead+Ice+Temp+Guy
15	Dead+Wind 0 deg+Ice+Temp+Guy
16	Dead+Wind 30 deg+Ice+Temp+Guy

Comb. No.	Description
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
Mast	Max. Vert	19	56564.52	-878.41	-503.87
	Max. H_x	24	56440.73	1111.39	97.18
	Max. H_z	15	56470.65	13.37	1041.39
	Max. M_x	1	0.00	2.86	7.71
	Max. M_z	1	0.00	2.86	7.71
	Max. Torsion	22	589.38	491.73	-985.35
	Min. Vert	1	34330.14	2.86	7.71
	Min. H_x	18	56495.81	-1089.00	97.99
	Min. H_z	21	55567.62	15.20	-1190.18
	Min. M_x	1	0.00	2.86	7.71
	Min. M_z	1	0.00	2.86	7.71
	Min. Torsion	16	-595.65	-611.00	925.69
Guy C @ 140 ft Elev 0 ft Azimuth 240 deg	Max. Vert	10	-540.13	-549.97	319.08
	Max. H_x	10	-540.13	-549.97	319.08
	Max. H_z	17	-22093.27	-22823.31	13159.04
	Min. Vert	17	-22093.27	-22823.31	13159.04
	Min. H_x	17	-22093.27	-22823.31	13159.04
	Min. H_z	10	-540.13	-549.97	319.08
Guy B @ 140 ft Elev 0 ft Azimuth 120 deg	Max. Vert	6	-536.25	545.56	315.33
	Max. H_x	25	-22059.00	22796.20	13158.93
	Max. H_z	25	-22059.00	22796.20	13158.93
	Min. Vert	25	-22059.00	22796.20	13158.93
	Min. H_x	6	-536.25	545.56	315.33
	Min. H_z	6	-536.25	545.56	315.33
Guy A @ 140 ft Elev 0 ft Azimuth 0 deg	Max. Vert	2	-538.44	1.03	-632.24

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
	Max. H_x	24	-11708.74	814.93	-13960.02
	Max. H_z	2	-538.44	1.03	-632.24
	Min. Vert	21	-22108.90	-13.51	-26348.66
	Min. H_x	18	-11726.97	-815.20	-13973.29
	Min. H_z	21	-22108.90	-13.51	-26348.66

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	34330.14	-2.86	-7.71	0.00	0.00	-4.40
Dead+Wind 0 deg - No Ice+Guy	43085.77	-7.02	-732.03	0.00	0.00	400.32
Dead+Wind 30 deg - No Ice+Guy	41713.32	458.17	-648.28	0.00	0.00	484.26
Dead+Wind 60 deg - No Ice+Guy	39682.47	770.11	-459.16	0.00	0.00	418.50
Dead+Wind 90 deg - No Ice+Guy	41761.69	780.27	-94.74	0.00	0.00	245.13
Dead+Wind 120 deg - No Ice+Guy	43139.39	621.09	352.15	0.00	0.00	34.90
Dead+Wind 150 deg - No Ice+Guy	41752.08	313.54	713.95	0.00	0.00	-184.61
Dead+Wind 180 deg - No Ice+Guy	39682.70	-6.67	887.58	0.00	0.00	-381.25
Dead+Wind 210 deg - No Ice+Guy	41746.22	-326.35	711.27	0.00	0.00	-478.51
Dead+Wind 240 deg - No Ice+Guy	43125.84	-631.77	349.16	0.00	0.00	-426.60
Dead+Wind 270 deg - No Ice+Guy	41737.34	-788.27	-94.66	0.00	0.00	-239.84
Dead+Wind 300 deg - No Ice+Guy	39652.59	-778.24	-457.00	0.00	0.00	-29.38
Dead+Wind 330 deg - No Ice+Guy	41695.82	-469.33	-646.19	0.00	0.00	190.31
Dead+Ice+Temp+Guy	46786.82	-8.24	-9.66	0.00	0.00	-5.90
Dead+Wind 0 deg+Ice+Temp+Guy	56470.65	-13.37	-1041.39	0.00	0.00	522.24
Dead+Wind 30 deg+Ice+Temp+Guy	56412.57	611.00	-925.69	0.00	0.00	595.65
Dead+Wind 60 deg+Ice+Temp+Guy	55560.08	1025.99	-614.38	0.00	0.00	455.27
Dead+Wind 90 deg+Ice+Temp+Guy	56495.81	1089.00	-97.99	0.00	0.00	191.28
Dead+Wind 120 deg+Ice+Temp+Guy	56564.52	878.41	503.87	0.00	0.00	-62.85
Dead+Wind 150 deg+Ice+Temp+Guy	56490.68	462.76	987.20	0.00	0.00	-298.63
Dead+Wind 180 deg+Ice+Temp+Guy	55567.62	-15.20	1190.18	0.00	0.00	-513.98
Dead+Wind 210 deg+Ice+Temp+Guy	56449.49	-491.73	985.35	0.00	0.00	-589.38
Dead+Wind 240 deg+Ice+Temp+Guy	56515.40	-903.86	501.66	0.00	0.00	-450.90
Dead+Wind 270 deg+Ice+Temp+Guy	56440.73	-1111.39	-97.18	0.00	0.00	-185.66

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+Wind 300 deg+Ice+Temp+Guy	55524.09	-1048.22	-610.89	0.00	0.00	67.72
Dead+Wind 330 deg+Ice+Temp+Guy	56399.87	-635.45	-922.27	0.00	0.00	304.69
Dead+Wind 0 deg - Service+Guy	34698.58	-3.39	-494.00	0.00	0.00	177.24
Dead+Wind 30 deg - Service+Guy	34968.20	231.21	-414.01	0.00	0.00	212.34
Dead+Wind 60 deg - Service+Guy	35151.97	402.08	-242.24	0.00	0.00	186.13
Dead+Wind 90 deg - Service+Guy	34971.35	465.22	-7.96	0.00	0.00	108.78
Dead+Wind 120 deg - Service+Guy	34698.12	417.49	235.48	0.00	0.00	12.70
Dead+Wind 150 deg - Service+Guy	34970.62	230.52	398.45	0.00	0.00	-85.63
Dead+Wind 180 deg - Service+Guy	35152.84	-3.89	460.68	0.00	0.00	-170.36
Dead+Wind 210 deg - Service+Guy	34972.48	-238.06	398.43	0.00	0.00	-207.43
Dead+Wind 240 deg - Service+Guy	34701.62	-424.64	235.18	0.00	0.00	-182.75
Dead+Wind 270 deg - Service+Guy	34968.24	-472.21	-8.18	0.00	0.00	-103.95
Dead+Wind 300 deg - Service+Guy	35146.17	-408.99	-242.21	0.00	0.00	-7.93
Dead+Wind 330 deg - Service+Guy	34963.26	-237.94	-413.84	0.00	0.00	90.41

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	-13052.31	0.00	2.62	13038.16	4.84	0.116%
2	-0.00	-13152.01	-17365.76	-0.00	13151.79	17356.98	0.040%
3	8553.74	-13052.31	-14815.50	-8554.46	13052.10	14806.59	0.042%
4	14787.02	-12952.60	-8537.29	-14779.33	12952.47	8533.49	0.040%
5	17107.47	-13052.31	-0.00	-17099.99	13052.10	5.13	0.042%
6	15039.19	-13152.01	8682.88	-15031.50	13151.79	-8678.44	0.041%
7	8553.74	-13052.31	14815.50	-8545.51	13052.10	-14811.58	0.042%
8	0.00	-12952.60	17074.58	0.21	12952.47	-17066.02	0.040%
9	-8553.74	-13052.31	14815.50	8545.62	13052.10	-14811.65	0.042%
10	-15039.19	-13152.01	8682.88	15031.63	13151.79	-8678.52	0.040%
11	-17107.47	-13052.31	-0.00	17100.02	13052.10	5.12	0.042%
12	-14787.02	-12952.60	-8537.29	14778.35	12952.45	8532.69	0.046%
13	-8553.74	-13052.31	-14815.50	8554.45	13052.10	14806.50	0.042%
14	0.00	-21360.96	0.00	6.11	21355.94	3.67	0.041%
15	0.00	-21565.87	-21111.02	-0.01	21565.66	21102.31	0.029%
16	10547.25	-21360.96	-18268.36	-10548.50	21360.79	18259.78	0.029%
17	18273.92	-21156.06	-10550.45	-18261.80	21155.84	10544.83	0.045%
18	21094.49	-21360.96	-0.00	-21087.53	21360.79	5.45	0.029%
19	18282.68	-21565.87	10555.51	-18275.04	21565.66	-10551.10	0.029%
20	10547.25	-21360.96	18268.36	-10539.02	21360.79	-18265.06	0.030%
21	0.00	-21156.06	21100.91	0.74	21155.84	-21087.59	0.045%
22	-10547.25	-21360.96	18268.36	10539.14	21360.79	-18265.14	0.029%
23	-18282.68	-21565.87	10555.51	18275.16	21565.66	-10551.18	0.029%
24	-21094.49	-21360.96	-0.00	21087.61	21360.79	5.40	0.029%

Load Comb.	Sum of Applied Forces PX lb	PY lb	PZ lb	Sum of Reactions PX lb	PY lb	PZ lb	% Error
25	-18273.92	-21156.06	-10550.45	18262.22	21155.84	10544.19	0.044%
26	-10547.25	-21360.96	-18268.36	10548.49	21360.79	18259.72	0.029%
27	-0.00	-13101.98	-8652.84	-0.00	13101.96	8644.33	0.054%
28	4262.07	-13052.31	-7382.12	-4259.69	13052.26	7375.11	0.047%
29	7367.93	-13002.63	-4253.87	-7361.78	13002.59	4250.35	0.046%
30	8524.14	-13052.31	0.00	-8516.78	13052.26	1.49	0.048%
31	7493.58	-13101.98	4326.42	-7486.15	13101.96	-4322.14	0.055%
32	4262.07	-13052.31	7382.12	-4257.10	13052.26	-7376.50	0.048%
33	-0.00	-13002.63	8507.75	0.01	13002.59	-8500.66	0.046%
34	-4262.07	-13052.31	7382.12	4257.13	13052.26	-7376.52	0.048%
35	-7493.58	-13101.98	4326.42	7486.17	13101.96	-4322.14	0.054%
36	-8524.14	-13052.31	-0.00	8516.84	13052.26	1.46	0.048%
37	-7367.93	-13002.63	-4253.87	7361.80	13002.59	4250.36	0.045%
38	-4262.07	-13052.31	-7382.12	4259.68	13052.27	7375.14	0.047%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	74	0.00000001	0.00000000
2	Yes	223	0.00000001	0.00005974
3	Yes	216	0.00000001	0.00007042
4	Yes	186	0.00000001	0.00008836
5	Yes	216	0.00000001	0.00007105
6	Yes	223	0.00000001	0.00006015
7	Yes	216	0.00000001	0.00007126
8	Yes	186	0.00000001	0.00008834
9	Yes	216	0.00000001	0.00007090
10	Yes	223	0.00000001	0.00005966
11	Yes	216	0.00000001	0.00007069
12	Yes	185	0.00000001	0.00009975
13	Yes	216	0.00000001	0.00007045
14	Yes	78	0.00000001	0.00000000
15	Yes	224	0.00000001	0.00004843
16	Yes	219	0.00000001	0.00004928
17	Yes	186	0.00000001	0.00009827
18	Yes	219	0.00000001	0.00005016
19	Yes	224	0.00000001	0.00004906
20	Yes	219	0.00000001	0.00005036
21	Yes	186	0.00000001	0.00009815
22	Yes	219	0.00000001	0.00004976
23	Yes	224	0.00000001	0.00004855
24	Yes	219	0.00000001	0.00004948
25	Yes	186	0.00000001	0.00009757
26	Yes	219	0.00000001	0.00004923
27	Yes	176	0.00000001	0.00009800
28	Yes	178	0.00000001	0.00008977
29	Yes	177	0.00000001	0.00009073
30	Yes	178	0.00000001	0.00009113
31	Yes	176	0.00000001	0.00009900
32	Yes	178	0.00000001	0.00009112
33	Yes	177	0.00000001	0.00009091
34	Yes	178	0.00000001	0.00009055
35	Yes	176	0.00000001	0.00009855
36	Yes	178	0.00000001	0.00009043
37	Yes	177	0.00000001	0.00009053

38	Yes	178	0.00000001	0.00008970

Maximum Tower Deflections - Service Wind

Section No.	*Elevation* *ft*	*Horz. Deflection* *in*	*Gov. Load Comb.*	*Tilt* *°*	*Twist* *°*
T1	180 - 160	3.269	33	0.1064	0.4768
T2	160 - 140	2.849	33	0.0700	0.4327
T3	140 - 120	2.585	29	0.0870	0.3809
T4	120 - 100	2.115	37	0.1371	0.3096
T5	100 - 80	1.478	37	0.1430	0.2016
T6	80 - 60	0.956	37	0.0822	0.1102
T7	60 - 40	0.780	37	0.0415	0.1199
T8	40 - 20	0.638	37	0.0484	0.1155
T9	20 - 5	0.378	37	0.0780	0.0988
T10	5 - 0	0.097	37	0.0900	0.0809

Critical Deflections and Radius of Curvature - Service Wind

Elevation *ft*	*Appurtenance*	*Gov. Load Comb.*	*Deflection* *in*	*Tilt* *°*	*Twist* *°*	*Radius of Curvature* *ft*
180.00	Lightning Rod 5/8x4'	33	3.269	0.1064	0.4768	60689
179.00	Decibel DB809	33	3.246	0.1040	0.4747	60689
177.00	Decibel DB809	33	3.198	0.0993	0.4704	60689
171.50	RFS APXV9ERR18-C-A20	33	3.072	0.0870	0.4584	35699
163.00	Celwave PD201	33	2.900	0.0728	0.4395	18025
162.75	Guy	33	2.895	0.0725	0.4390	17834
150.00	12 ft Boom / Frame	33	2.718	0.0713	0.4086	113839
127.00	Decibel DB420	29	2.309	0.1206	0.3381	17620
83.00	Celwave PD201	37	1.012	0.0920	0.1173	10811
82.75	Guy	37	1.007	0.0912	0.1166	10709

Maximum Tower Deflections - Design Wind

Section No.	*Elevation* *ft*	*Horz. Deflection* *in*	*Gov. Load Comb.*	*Tilt* *°*	*Twist* *°*
T1	180 - 160	11.189	19	0.4465	0.9740
T2	160 - 140	9.692	19	0.3758	0.9167
T3	140 - 120	8.439	19	0.4031	0.8487
T4	120 - 100	6.644	15	0.4834	0.7233
T5	100 - 80	4.612	16	0.4716	0.5158
T6	80 - 60	3.168	25	0.2806	0.3363
T7	60 - 40	2.640	25	0.1453	0.3543
T8	40 - 20	2.133	25	0.1681	0.3346
T9	20 - 5	1.243	25	0.2603	0.2819
T10	5 - 0	0.317	25	0.2956	0.2200

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
180.00	Lightning Rod 5/8x4'	19	11.189	0.4465	0.9740	30817
179.00	Decibel DB809	19	11.110	0.4419	0.9711	30817
177.00	Decibel DB809	19	10.951	0.4328	0.9654	30817
171.50	RFS APXV9ERR18-C-A20	19	10.520	0.4090	0.9497	18128
163.00	Celwave PD201	19	9.894	0.3814	0.9253	9153
162.75	Guy	19	9.877	0.3808	0.9246	9056
150.00	12 ft Boom / Frame	19	9.083	0.3767	0.8865	23070
127.00	Decibel DB420	19	7.341	0.4572	0.7767	6437
83.00	Celwave PD201	25	3.322	0.3112	0.3504	3642
82.75	Guy	25	3.308	0.3085	0.3490	3612

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load / Allowable		Allowable Ratio	Criteria
T1	180	Leg	A325N	0.7500	4	0.03	19438.60	0.000	✔	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	2243.59	3480.00	0.645	✔	1.333	Member Bearing
		Top Girt	A325N	0.5000	1	6.06	4123.34	0.001	✔	1.333	Bolt Shear
		Bottom Girt	A325N	0.5000	1	434.81	3045.00	0.143	✔	1.333	Member Bearing
T2	160	Leg	A325N	0.7500	4	0.00	19422.20	0.000	✔	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	1781.21	3480.00	0.512	✔	1.333	Member Bearing
		Top Girt	A325N	0.5000	1	637.94	3480.00	0.183	✔	1.333	Member Bearing
		Bottom Girt	A325N	0.5000	1	244.49	3045.00	0.080	✔	1.333	Member Bearing
T3	140	Leg	A325N	0.7500	4	0.00	19437.40	0.000	✔	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	1329.23	4123.34	0.322	✔	1.333	Bolt Shear
		Top Girt	A325N	0.5000	1	128.00	3480.00	0.037	✔	1.333	Member Bearing
		Bottom Girt	A325N	0.5000	1	181.93	3045.00	0.060	✔	1.333	Member Bearing
T4	120	Leg	A325N	0.7500	4	0.00	19433.40	0.000	✔	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	1757.00	3480.00	0.505	✔	1.333	Member Bearing
		Top Girt	A325N	0.5000	1	341.39	3480.00	0.098	✔	1.333	Member Bearing
		Bottom Girt	A325N	0.5000	1	399.14	3045.00	0.131	✔	1.333	Member Bearing
T5	100	Leg	A325N	0.7500	4	0.00	19422.50	0.000	✔	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	2301.26	3480.00	0.661	✔	1.333	Member Bearing
		Top Girt	A325N	0.5000	1	345.16	3480.00	0.099	✔	1.333	Member Bearing
		Bottom Girt	A325N	0.5000	1	665.48	3045.00	0.219	✔	1.333	Member Bearing
		Torque Arm Top@82.75	A325N	0.7500	2	3432.99	9277.52	0.370	✔	1.333	Bolt Shear
T6	80	Leg	A325N	0.7500	4	1266.61	19426.30	0.065	✔	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	3036.82	3480.00	0.873	✔	1.333	Member Bearing

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
		Top Girt	A325N	0.5000	1	1229.79	3480.00	0.353 ✔	1.333	Member Bearing
		Bottom Girt	A325N	0.5000	1	623.78	3045.00	0.205 ✔	1.333	Member Bearing
T7	60	Leg	A325N	0.7500	4	0.00	19431.00	0.000 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	1800.65	3480.00	0.517 ✔	1.333	Member Bearing
		Top Girt	A325N	0.5000	1	634.77	3480.00	0.182 ✔	1.333	Member Bearing
		Bottom Girt	A325N	0.5000	1	321.46	3045.00	0.106 ✔	1.333	Member Bearing
T8	40	Leg	A325N	0.7500	4	0.00	19437.40	0.000 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	830.82	4123.34	0.201 ✔	1.333	Bolt Shear
		Top Girt	A325N	0.5000	1	293.92	3480.00	0.084 ✔	1.333	Member Bearing
		Bottom Girt	A325N	0.5000	1	198.28	3045.00	0.065 ✔	1.333	Member Bearing
T9	20	Leg	A325N	0.7500	4	0.00	19438.00	0.000 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	1185.91	3480.00	0.341 ✔	1.333	Member Bearing
		Top Girt	A325N	0.5000	1	278.75	3480.00	0.080 ✔	1.333	Member Bearing
		Bottom Girt	A325N	0.5000	1	2064.12	3045.00	0.678 ✔	1.333	Member Bearing
T10	5	Leg	A325N	0.7500	4	0.00	19284.30	0.000 ✔	1.333	Bolt Tension
		Diagonal	A325N	0.5000	1	309.07	3480.00	0.089 ✔	1.333	Member Bearing
		Top Girt	A325N	0.5000	1	2941.54	3480.00	0.845 ✔	1.333	Member Bearing

Guy Design Data

Section No.	Elevation ft	Size	Initial Tension lb	Breaking Load lb	Actual T lb	Allowable T_a lb	Required S.F.	Actual S.F.
T1	162.75 (A) (441)	3/4 EHS	5830.00	58299.92	19186.20	29150.00	2.000	3.039 ✔
	162.75 (B) (440)	3/4 EHS	5830.00	58299.92	19095.10	29150.00	2.000	3.053 ✔
	162.75 (C) (439)	3/4 EHS	5830.00	58299.92	19149.80	29150.00	2.000	3.044 ✔
T5	82.75 (A) (432)	1/2 EHS	2690.00	26900.04	8322.06	13450.00	2.000	3.232 ✔
	82.75 (A) (433)	1/2 EHS	2690.00	26900.04	7838.93	13450.00	2.000	3.432 ✔
	82.75 (B) (428)	1/2 EHS	2690.00	26900.04	8125.90	13450.00	2.000	3.310 ✔
	82.75 (B) (429)	1/2 EHS	2690.00	26900.04	8072.59	13450.00	2.000	3.332 ✔
	82.75 (C) (421)	1/2 EHS	2690.00	26900.04	7825.06	13450.00	2.000	3.438 ✔
	82.75 (C) (422)	1/2 EHS	2690.00	26900.04	8359.34	13450.00	2.000	3.218 ✔

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	180 - 160	P2x.218	20.00	2.42	37.8 K=1.00	1.00	26.132	1.4773	-15390.90	38603.90	0.399 ✔
T2	160 - 140	P2x.218	20.00	2.42	37.8 K=1.00	0.95	24.797	1.4773	-21495.20	36631.00	0.587 ✔
T3	140 - 120	P2x.218	20.00	2.42	37.8 K=1.00	0.95	24.839	1.4773	-22861.00	36693.90	0.623 ✔
T4	120 - 100	P2x.218	20.00	2.42	37.8 K=1.00	0.94	24.660	1.4773	-21687.50	36430.00	0.595 ✔
T5	100 - 80	P2.5x.276	20.00	2.42	31.4 K=1.00	0.95	25.604	2.2535	-43664.60	57699.40	0.757 ✔
T6	80 - 60	P2.5x.276	20.00	2.42	62.8 K=2.00	1.00	22.240	2.2535	-42464.00	50117.80	0.847 ✔
T7	60 - 40	P2.5x.203	20.00	2.42	61.2 K=2.00	1.00	22.508	1.7040	-24572.50	38355.30	0.641 ✔
T8	40 - 20	P2.5x.203	20.00	2.42	61.2 K=2.00	1.00	22.508	1.7040	-26186.50	38355.30	0.683 ✔
T9	20 - 5	P2.5x.276	15.00	2.39	62.0 K=2.00	1.00	22.365	2.2535	-25508.90	50401.00	0.506 ✔
T10	5 - 0	P2.5x.276	5.38	2.64	68.6 K=2.00	1.00	21.187	2.2535	-22627.10	47745.60	0.474 ✔

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 $\frac{P}{P_a}$
T1	180 - 160	ROHN TS1.5x16 ga	4.19	3.95	92.8 K=1.00	15.623	0.2627	-2144.89	4105.05	0.522 ✔
T2	160 - 140	ROHN TS1.5x16 ga	4.19	3.95	92.8 K=1.00	15.623	0.2627	-1972.30	4105.05	0.480 ✔
T3	140 - 120	ROHN TS1.5x16 ga	4.19	3.95	92.8 K=1.00	15.623	0.2627	-1329.23	4105.05	0.324 ✔
T4	120 - 100	ROHN TS1.5x16 ga	4.19	3.95	92.8 K=1.00	15.623	0.2627	-2068.82	4105.05	0.504 ✔
T5	100 - 80	ROHN TS1.5x16 ga	4.19	3.89	91.6 K=1.00	15.840	0.2627	-2425.25	4161.90	0.583 ✔
T6	80 - 60	ROHN TS1.5x16 ga	4.19	3.89	91.6 K=1.00	15.840	0.2627	-3158.28	4161.90	0.759 ✔
T7	60 - 40	ROHN TS1.5x16 ga	4.19	3.89	91.6 K=1.00	15.840	0.2627	-1971.98	4161.90	0.474 ✔
T8	40 - 20	ROHN TS1.5x16 ga	4.19	3.89	91.6 K=1.00	15.840	0.2627	-830.82	4161.90	0.200 ✔
T9	20 - 5	ROHN TS1.5x16 ga	4.17	3.88	91.2 K=1.00	15.902	0.2627	-1280.42	4178.36	0.306 ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T10	5 - 0	ROHN TS1.5x16 ga	3.56	3.22	75.8 K=1.00	18.520	0.2627	-177.25	4866.21	0.036 ✔

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	180 - 160	ROHN TS1.5x16 ga	3.42	3.22	75.8 K=1.00	18.527	0.2627	-6.06	4867.87	0.001 ✔
T2	160 - 140	ROHN TS1.5x16 ga	3.42	3.22	75.8 K=1.00	18.527	0.2627	-375.07	4867.87	0.077 ✔
T4	120 - 100	ROHN TS1.5x16 ga	3.42	3.22	75.8 K=1.00	18.527	0.2627	-121.00	4867.87	0.025 ✔
T5	100 - 80	ROHN TS1.5x16 ga	3.42	3.18	74.8 K=1.00	18.683	0.2627	-145.44	4909.04	0.030 ✔
T6	80 - 60	ROHN TS1.5x16 ga	3.42	3.18	74.8 K=1.00	18.683	0.2627	-859.66	4909.04	0.175 ✔
T7	60 - 40	ROHN TS1.5x16 ga	3.42	3.18	74.8 K=1.00	18.683	0.2627	-475.60	4909.04	0.097 ✔
T8	40 - 20	ROHN TS1.5x16 ga	3.42	3.18	74.8 K=1.00	18.683	0.2627	-184.71	4909.04	0.038 ✔
T9	20 - 5	ROHN TS1.5x16 ga	3.42	3.18	74.8 K=1.00	18.683	0.2627	-117.13	4909.04	0.024 ✔

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	180 - 160	ROHN TS1.5x16 ga	3.42	3.22	75.8 K=1.00	18.527	0.2627	-79.30	4867.87	0.016 ✔
T2	160 - 140	ROHN TS1.5x16 ga	3.42	3.22	75.8 K=1.00	18.527	0.2627	-71.31	4867.87	0.015 ✔
T3	140 - 120	ROHN TS1.5x16 ga	3.42	3.22	75.8 K=1.00	18.527	0.2627	-22.98	4867.87	0.005 ✔
T4	120 - 100	ROHN TS1.5x16 ga	3.42	3.22	75.8 K=1.00	18.527	0.2627	-220.06	4867.87	0.045 ✔
T5	100 - 80	ROHN TS1.5x16 ga	3.42	3.18	74.8 K=1.00	18.683	0.2627	-236.73	4909.04	0.048 ✔
T6	80 - 60	ROHN TS1.5x16 ga	3.42	3.18	74.8 K=1.00	18.683	0.2627	-584.54	4909.04	0.119 ✔
T7	60 - 40	ROHN TS1.5x16 ga	3.42	3.18	74.8 K=1.00	18.683	0.2627	-237.34	4909.04	0.048 ✔
T8	40 - 20	ROHN TS1.5x16 ga	3.42	3.18	74.8 K=1.00	18.683	0.2627	-112.19	4909.04	0.023 ✔

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 $\frac{P}{P_a}$
T1	180 - 160	3x1/2	3.42	3.22	267.9 K=1.00	21.600	1.5000	0.00	3121.51	0.000*
T5	100 - 80	L1 1/2x1 1/2x3/16	3.42	3.18	130.1 K=1.00	8.823	0.5273	-3798.71	4652.53	0.816

* DL controls

Top Guy Pull-Off Bending Design Data

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T1	180 - 160	3x1/2	9.90	-0.158	27.000	0.006	0.00	0.000	27.000	0.000
T5	100 - 80	L1 1/2x1 1/2x3/16	0.00	0.000	23.760	0.000	0.00	0.000	23.760	0.000

Top Guy Pull-Off Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	180 - 160	3x1/2	0.000	0.006	0.000	0.006* ✔	1.000	H1-3 ✔
T5	100 - 80	L1 1/2x1 1/2x3/16	0.816	0.000	0.000	0.816 ✔	1.333	H1-3 ✔

* DL controls

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 $\frac{P}{P_a}$
T5	100 - 80 (423)	C10x15.3	3.50	3.38	99.6 K=1.00	13.033	4.4900	-1264.25	58518.00	0.022
T5	100 - 80 (424)	C10x15.3	3.50	3.38	99.6 K=1.00	13.033	4.4900	-1279.26	58518.00	0.022
T5	100 - 80 (430)	C10x15.3	3.50	3.38	99.6 K=1.00	13.033	4.4900	-1585.27	58518.00	0.027
T5	100 - 80 (431)	C10x15.3	3.50	3.38	99.6 K=1.00	13.033	4.4900	-1838.46	58518.00	0.031
T5	100 - 80 (434)	C10x15.3	3.50	3.38	99.6 K=1.00	13.033	4.4900	-1534.80	58518.00	0.026

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	100 - 80 (435)	C10x15.3	3.50	3.38	99.6 K=1.00	13.033	4.4900	-1806.40	58518.00	0.031

Torque-Arm Top Bending Design Data

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T5	100 - 80 (423)	C10x15.3	-14287.8 3	-12.700	21.600	0.588	0.00	-0.000	21.600	0.000
T5	100 - 80 (424)	C10x15.3	-14216.0 8	-12.637	21.600	0.585	-0.00	-0.000	21.600	0.000
T5	100 - 80 (430)	C10x15.3	-14226.7 5	-12.646	21.600	0.585	-0.00	0.000	21.600	0.000
T5	100 - 80 (431)	C10x15.3	-14134.5 8	-12.564	21.600	0.582	0.00	-0.000	21.600	0.000
T5	100 - 80 (434)	C10x15.3	-14216.2 5	-12.637	21.600	0.585	-0.00	-0.000	21.600	0.000
T5	100 - 80 (435)	C10x15.3	-14170.3 3	-12.596	21.600	0.583	-0.00	-0.000	21.600	0.000

Torque-Arm Top Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T5	100 - 80 (423)	C10x15.3	0.022	0.588	0.000	0.610 ✔	1.333	H1-3 ✔
T5	100 - 80 (424)	C10x15.3	0.022	0.585	0.000	0.607 ✔	1.333	H1-3 ✔
T5	100 - 80 (430)	C10x15.3	0.027	0.585	0.000	0.613 ✔	1.333	H1-3 ✔
T5	100 - 80 (431)	C10x15.3	0.031	0.582	0.000	0.613 ✔	1.333	H1-3 ✔
T5	100 - 80 (434)	C10x15.3	0.026	0.585	0.000	0.611 ✔	1.333	H1-3 ✔
T5	100 - 80 (435)	C10x15.3	0.031	0.583	0.000	0.614 ✔	1.333	H1-3 ✔

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	180 - 160	P2x.218	20.00	2.42	37.8	30.000	1.4773	12412.40	44317.80	0.280 ✔
T5	100 - 80	P2.5x.276	20.00	2.42	31.4	30.000	2.2535	14040.10	67606.20	0.208 ✔
T6	80 - 60	P2.5x.276	20.00	2.42	31.4	30.000	2.2535	5066.45	67606.20	0.075 ✔

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	180 - 160	ROHN TS1.5x16 ga	4.19	3.95	92.8	27.000	0.2627	2243.59	7094.26	0.316 ✔
T2	160 - 140	ROHN TS1.5x16 ga	4.19	3.95	92.8	27.000	0.2627	1781.21	7094.26	0.251 ✔
T3	140 - 120	ROHN TS1.5x16 ga	4.19	3.95	92.8	27.000	0.2627	1120.11	7094.26	0.158 ✔
T4	120 - 100	ROHN TS1.5x16 ga	4.19	3.95	92.8	27.000	0.2627	1757.00	7094.26	0.248 ✔
T5	100 - 80	ROHN TS1.5x16 ga	4.19	3.89	91.6	27.000	0.2627	2301.26	7094.26	0.324 ✔
T6	80 - 60	ROHN TS1.5x16 ga	4.19	3.89	91.6	27.000	0.2627	3036.82	7094.26	0.428 ✔
T7	60 - 40	ROHN TS1.5x16 ga	4.19	3.89	91.6	27.000	0.2627	1800.65	7094.26	0.254 ✔
T8	40 - 20	ROHN TS1.5x16 ga	4.19	3.89	91.6	27.000	0.2627	691.33	7094.26	0.097 ✔
T9	20 - 5	ROHN TS1.5x16 ga	4.17	3.88	91.2	27.000	0.2627	1185.91	7094.26	0.167 ✔
T10	5 - 0	ROHN TS1.5x16 ga	3.56	3.22	75.8	27.000	0.2627	309.07	7094.26	0.044 ✔

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 $\frac{P}{P_a}$
T1	180 - 160	ROHN TS1.5x16 ga	3.42	3.22	75.8	27.000	0.2627	1.71	7094.26	0.000 ✔
T2	160 - 140	ROHN TS1.5x16 ga	3.42	3.22	75.8	27.000	0.2627	637.94	7094.26	0.090 ✔
T3	140 - 120	ROHN TS1.5x16 ga	3.42	3.22	75.8	27.000	0.2627	128.00	7094.26	0.018 ✔
T4	120 - 100	ROHN TS1.5x16 ga	3.42	3.22	75.8	27.000	0.2627	341.39	7094.26	0.048 ✔
T5	100 - 80	ROHN TS1.5x16 ga	3.42	3.18	74.8	27.000	0.2627	345.16	7094.26	0.049

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T6	80 - 60	ROHN TS1.5x16 ga	3.42	3.18	74.8	27.000	0.2627	1229.79	7094.26	0.173 ✔
T7	60 - 40	ROHN TS1.5x16 ga	3.42	3.18	74.8	27.000	0.2627	634.77	7094.26	0.089 ✔
T8	40 - 20	ROHN TS1.5x16 ga	3.42	3.18	74.8	27.000	0.2627	293.92	7094.26	0.041 ✔
T9	20 - 5	ROHN TS1.5x16 ga	3.42	3.18	74.8	27.000	0.2627	278.75	7094.26	0.039 ✔
T10	5 - 0	ROHN TS1.5x16 ga	3.36	3.12	73.5	27.000	0.2627	2219.42	7094.26	0.313* ✔

* DL controls

Bottom Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	180 - 160	ROHN TS1.5x16 ga	3.42	3.22	75.8	27.000	0.2627	434.81	7094.26	0.061 ✔
T2	160 - 140	ROHN TS1.5x16 ga	3.42	3.22	75.8	27.000	0.2627	244.49	7094.26	0.034 ✔
T3	140 - 120	ROHN TS1.5x16 ga	3.42	3.22	75.8	27.000	0.2627	181.93	7094.26	0.026 ✔
T4	120 - 100	ROHN TS1.5x16 ga	3.42	3.22	75.8	27.000	0.2627	399.14	7094.26	0.056 ✔
T5	100 - 80	ROHN TS1.5x16 ga	3.42	3.18	74.8	27.000	0.2627	665.48	7094.26	0.094 ✔
T6	80 - 60	ROHN TS1.5x16 ga	3.42	3.18	74.8	27.000	0.2627	623.78	7094.26	0.088 ✔
T7	60 - 40	ROHN TS1.5x16 ga	3.42	3.18	74.8	27.000	0.2627	321.46	7094.26	0.045 ✔
T8	40 - 20	ROHN TS1.5x16 ga	3.42	3.18	74.8	27.000	0.2627	198.28	7094.26	0.028 ✔
T9	20 - 5	ROHN TS1.5x16 ga	3.42	3.18	74.8	27.000	0.2627	2064.12	7094.26	0.291 ✔

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 $\frac{P}{P_a}$
T1	180 - 160	3x1/2	3.42	3.22	267.9	21.600	1.5000	5504.55	32400.00	0.170
T5	100 - 80	L1 1/2x1 1/2x3/16	3.42	3.18	83.6	21.600	0.5273	4635.57	11390.60	0.407

Top Guy Pull-Off Bending Design Data

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T1	180 - 160	3x1/2	9.90	0.158	27.000	0.006	0.00	0.000	27.000	0.000
T5	100 - 80	L1 1/2x1 1/2x3/16	0.00	0.000	23.760	0.000	0.00	0.000	23.760	0.000

Top Guy Pull-Off Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T1	180 - 160	3x1/2	0.170	0.006	0.000	0.176 ✔	1.333	H2-1 ✔
T5	100 - 80	L1 1/2x1 1/2x3/16	0.407	0.000	0.000	0.407 ✔	1.333	H2-1 ✔

Torque-Arm Top Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T5	100 - 80 (423)	C10x15.3	3.50	3.38	56.9	21.600	4.4900	535.52	96984.00	0.006
T5	100 - 80 (424)	C10x15.3	3.50	3.38	56.9	21.600	4.4900	494.12	96984.00	0.005
T5	100 - 80 (430)	C10x15.3	3.50	3.38	56.9	21.600	4.4900	485.39	96984.00	0.005
T5	100 - 80 (431)	C10x15.3	3.50	3.38	56.9	21.600	4.4900	2314.79	96984.00	0.024
T5	100 - 80 (434)	C10x15.3	3.50	3.38	56.9	21.600	4.4900	533.42	96984.00	0.006
T5	100 - 80 (435)	C10x15.3	3.50	3.38	56.9	21.600	4.4900	2280.87	96984.00	0.024

Torque-Arm Top Bending Design Data

Section No.	Elevation ft	Size	Actual M_x lb-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y lb-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
T5	100 - 80 (423)	C10x15.3	-13690.17	12.169	21.600	0.563	-0.00	0.000	27.000	0.000
T5	100 - 80 (424)	C10x15.3	-13553.00	12.047	21.600	0.558	0.00	0.000	27.000	0.000
T5	100 - 80 (430)	C10x15.3	-13656.25	12.139	21.600	0.562	-0.00	0.000	27.000	0.000
T5	100 - 80 (431)	C10x15.3	-11043.58	9.817	21.600	0.454	-0.00	0.000	27.000	0.000
T5	100 - 80 (434)	C10x15.3	-13641.92	12.126	21.600	0.561	0.00	0.000	27.000	0.000
T5	100 - 80 (435)	C10x15.3	-11052.25	9.824	21.600	0.455	0.00	0.000	27.000	0.000

Torque-Arm Top Interaction Design Data

Section No.	Elevation ft	Size	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
T5	100 - 80 (423)	C10x15.3	0.006	0.563	0.000	0.569 ✔	1.333	H2-1 ✔
T5	100 - 80 (424)	C10x15.3	0.005	0.558	0.000	0.563 ✔	1.333	H2-1 ✔
T5	100 - 80 (430)	C10x15.3	0.005	0.562	0.000	0.567 ✔	1.333	H2-1 ✔
T5	100 - 80 (431)	C10x15.3	0.024	0.454	0.000	0.478 ✔	1.333	H2-1 ✔
T5	100 - 80 (434)	C10x15.3	0.006	0.561	0.000	0.567 ✔	1.333	H2-1 ✔
T5	100 - 80 (435)	C10x15.3	0.024	0.455	0.000	0.478 ✔	1.333	H2-1 ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
T1	180 - 160	Leg	P2x.218	2	-15390.90	51458.99	29.9	Pass
		Diagonal	ROHN TS1.5x16 ga	14	-2144.89	5472.03	39.2 48.4 (b)	Pass
		Top Girt	ROHN TS1.5x16 ga	5	-6.06	6488.87	0.1	Pass
		Bottom Girt	ROHN TS1.5x16 ga	7	434.81	9456.65	4.6 10.7 (b)	Pass
		Guy A@162.75	3/4	441	19186.20	29150.00	65.8	Pass
		Guy B@162.75	3/4	440	19095.10	29150.00	65.5	Pass
		Guy C@162.75	3/4	439	19149.80	29150.00	65.7	Pass
		Top Guy Pull-Off@162.75	3x1/2	438	5504.55	43189.20	13.2	Pass
T2	160 - 140	Leg	P2x.218	58	-21495.20	48829.12	44.0	Pass
		Diagonal	ROHN TS1.5x16 ga	113	-1972.30	5472.03	36.0 38.4 (b)	Pass
		Top Girt	ROHN TS1.5x16 ga	61	637.94	9456.65	6.7 13.8 (b)	Pass
		Bottom Girt	ROHN TS1.5x16 ga	66	244.49	9456.65	2.6 6.0 (b)	Pass
T3	140 - 120	Leg	P2x.218	115	-22861.00	48912.96	46.7	Pass
		Diagonal	ROHN TS1.5x16 ga	124	-1329.23	5472.03	24.3	Pass
		Top Girt	ROHN TS1.5x16 ga	118	128.00	9456.65	1.4 2.8 (b)	Pass
		Bottom Girt	ROHN TS1.5x16 ga	123	181.93	9456.65	1.9 4.5 (b)	Pass
T4	120 - 100	Leg	P2x.218	173	-21687.50	48561.19	44.7	Pass
		Diagonal	ROHN TS1.5x16 ga	181	-2068.82	5472.03	37.8 37.9 (b)	Pass
		Top Girt	ROHN TS1.5x16 ga	175	341.39	9456.65	3.6 7.4 (b)	Pass
		Bottom Girt	ROHN TS1.5x16 ga	180	399.14	9456.65	4.2 9.8 (b)	Pass
T5	100 - 80	Leg	P2.5x.276	230	-43664.60	76913.29	56.8	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF*P_{allow} lb	% Capacity	Pass Fail
		Diagonal	ROHN TS1.5x16 ga	240	-2425.25	5547.81	43.7 49.6 (b)	Pass
		Top Girt	ROHN TS1.5x16 ga	232	345.16	9456.65	3.6 7.4 (b)	Pass
		Bottom Girt	ROHN TS1.5x16 ga	236	665.48	9456.65	7.0 16.4 (b)	Pass
		Guy A@82.75	1/2	432	8322.06	13450.00	61.9	Pass
		Guy B@82.75	1/2	428	8125.90	13450.00	60.4	Pass
		Guy C@82.75	1/2	422	8359.34	13450.00	62.2	Pass
		Top Guy Pull-Off@82.75	L1 1/2x1 1/2x3/16	425	-3798.71	6201.82	61.3	Pass
		Torque Arm Top@82.75	C10x15.3	435	-1806.40	78004.49	46.1	Pass
T6	80 - 60	Leg	P2.5x.276	287	-42464.00	66807.03	63.6	Pass
		Diagonal	ROHN TS1.5x16 ga	317	-3158.28	5547.81	56.9 65.5 (b)	Pass
		Top Girt	ROHN TS1.5x16 ga	290	-859.66	6543.75	13.1 26.5 (b)	Pass
		Bottom Girt	ROHN TS1.5x16 ga	293	-584.54	6543.75	8.9 15.4 (b)	Pass
T7	60 - 40	Leg	P2.5x.203	321	-24572.50	51127.61	48.1	Pass
		Diagonal	ROHN TS1.5x16 ga	350	-1971.98	5547.81	35.5 38.8 (b)	Pass
		Top Girt	ROHN TS1.5x16 ga	323	-475.60	6543.75	7.3 13.7 (b)	Pass
		Bottom Girt	ROHN TS1.5x16 ga	327	-237.34	6543.75	3.6 7.9 (b)	Pass
T8	40 - 20	Leg	P2.5x.203	352	-26186.50	51127.61	51.2	Pass
		Diagonal	ROHN TS1.5x16 ga	384	-830.82	5547.81	15.0 15.1 (b)	Pass
		Top Girt	ROHN TS1.5x16 ga	357	293.92	9456.65	3.1 6.3 (b)	Pass
		Bottom Girt	ROHN TS1.5x16 ga	359	198.28	9456.65	2.1 4.9 (b)	Pass
T9	20 - 5	Leg	P2.5x.276	386	-25508.90	67184.53	38.0	Pass
		Diagonal	ROHN TS1.5x16 ga	395	-1280.42	5569.75	23.0 25.6 (b)	Pass
		Top Girt	ROHN TS1.5x16 ga	388	278.75	9456.65	2.9 6.0 (b)	Pass
		Bottom Girt	ROHN TS1.5x16 ga	392	2064.12	9456.65	21.8 50.9 (b)	Pass
T10	5 - 0	Leg	P2.5x.276	414	-22627.10	63644.88	35.6	Pass
		Diagonal	ROHN TS1.5x16 ga	419	309.07	9456.65	3.3 6.7 (b)	Pass
		Top Girt	ROHN TS1.5x16 ga	415	2219.42	7094.26	31.3 63.4 (b)	Pass
							Summary	
						Leg (T6)	63.6	Pass
						Diagonal (T6)	65.5	Pass
						Top Girt (T10)	63.4	Pass
						Bottom Girt (T9)	50.9	Pass
						Guy A (T1)	65.8	Pass
						Guy B (T1)	65.5	Pass
						Guy C (T1)	65.7	Pass
						Top Guy Pull-Off (T5)	61.3	Pass
						Torque Arm	46.1	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
						Top (T5)		
						Bolt Checks	65.5	Pass
						RATING =	**65.8**	**Pass**

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: CT33XC553

Stafford
169 Hampton Road
Stafford, CT 06075

October 30, 2012

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

EBI Consulting
environmental | engineering | due diligence

October 30, 2012

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

Re: Emissions Values for Site: **CT33XC553 – Stafford**

EBI Consulting was directed to analyze the proposed upgrades to the existing Sprint facility located at 169 Hampton Road, Stafford, 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.

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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 169 Hampton Road, Stafford, 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 **171.5 feet** above ground level (AGL)
6) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

All calculation were done with respect to uncontrolled / general public threshold limits

Site ID	CT33XC553 - Stafford
Site Addresss	169 Hampton Road, Stafford, CT, 06075
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	171.5	165.5	1/2 "	0.5	0	1114.4485	14.6275	1.46275%
													Sector total Power Density Value:		1.463%		

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	171.5	165.5	1/2 "	0.5	0	1114.4485	14.6275	1.46275%
													Sector total Power Density Value:		1.463%		

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	171.5	165.5	1/2 "	0.5	0	1114.4485	14.6275	1.46275%
													Sector total Power Density Value:		1.463%		

Site Composite MPE %	
Carrier	MPE %
Sprint	4.388%
AT&T	17.540%
Total Site MPE %	**21.928%**

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 **4.388% (1.463% 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 **21.928%** 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

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