STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

September 6, 2011

Kenneth C. Baldwin, Esq.
Robinson & Cole LLP
280 Trumbull Street
Hartford, CT 06103

RE: **EM-VER-115-110819** - Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 54 Waterbury Road, Prospect, Connecticut.

Dear Attorney Baldwin:

The Connecticut Siting Council (Council) hereby acknowledges your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies with the following conditions:

- The tower be modified in accordance with recommendations made in the Structural Analysis Report prepared by Centek Engineering dated August 10, 2011 and stamped by Carlo Centore; and
- Prior to antenna installation, a signed letter from a Professional Engineer duly licensed in the State of Connecticut shall be submitted to the Council to certify that the recommended modifications have been completed and the tower and foundation will not exceed 100 percent of the post-construction structural rating.
- Any deviation from the proposed modification as specified in this notice and supporting materials with Council shall render this acknowledgement invalid;
- Any material changes to this modification as proposed shall require the filing of a new notice with the Council;
- Not less than 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;
- The validity of this action shall expire one year from the date of this letter; and
- The applicant may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration;

The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated August 18, 2011. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility will require

explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Thank you for your attention and cooperation.

Very truly yours,

Linda Roberts
Executive Director

LR/CDM/laf

c: The Honorable Robert J. Chatfield, Mayor, Town of Prospect
William J. Donovan, Zoning Enforcement Officer, Town of Prospect
Charles Bradshaw

ROBINSON & COLE LLP

EM-VER-115-110819

KENNETH C. BALDWIN

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ORIGINAL

August 18, 2011

RECEIVED
AUG 19 2011
CONNECTICUT
SITING COUNCIL

Linda Roberts
Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: **Notice of Exempt Modification – Antenna Swap**
54 Waterbury Road, Prospect, Connecticut

Dear Ms. Roberts:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains wireless telecommunications antennas at the 135-foot level of the existing 160-foot tower at the above-referenced address. The tower is owned by the Charles E. Bradshaw. The Connecticut Siting Council ("Council") approved Cellco's use of the existing tower in 2006. Cellco now intends to modify this facility by replacing ten (10) of its twelve (12) existing antennas and install six (6) additional coax cables. The replacement antennas will include four (4) model SC-E 6014 rev 2 cellular antennas; three (3) model BXA-171063-12BF PCS antennas; two (2) model SLCP 2X 6014 LTE antennas; and one (1) model LPA-70063/4CF LTE antenna. All of the replacement antennas will be located at the same 135-foot level on the tower. Attached behind Tab 1 are the specifications for the proposed replacement antennas.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Robert J. Chatfield, Mayor of the Town of Prospect. A copy of this letter is also being sent to Charles E. and Averyll B. Bradshaw, the owners of the property on which the tower is located.

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

Law Offices
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1. The proposed modifications will not result in any increase in the overall height of the existing tower. Cellco's antennas will be located at the same 135-foot level of the 160-foot tower.

2. The proposed modifications will not involve any of Cellco's ground-mounted equipment and, therefore, will not require the extension of the site boundaries.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more.

4. The operation of the replacement antennas will not increase radio frequency (RF) power density levels at the facility to a level at or above the Federal Communications Commission (FCC) adopted safety standard. A Power Density table for the modified facility is included behind Tab 2.

Also attached is a Structural Analysis Report confirming that the tower, foundation and anchors, with certain modifications to the Nextel antenna mounting system, can support Cellco's proposed modifications. (See Tab 3).

For the foregoing reasons, Cellco respectfully submits that the proposed modifications to the above-referenced telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

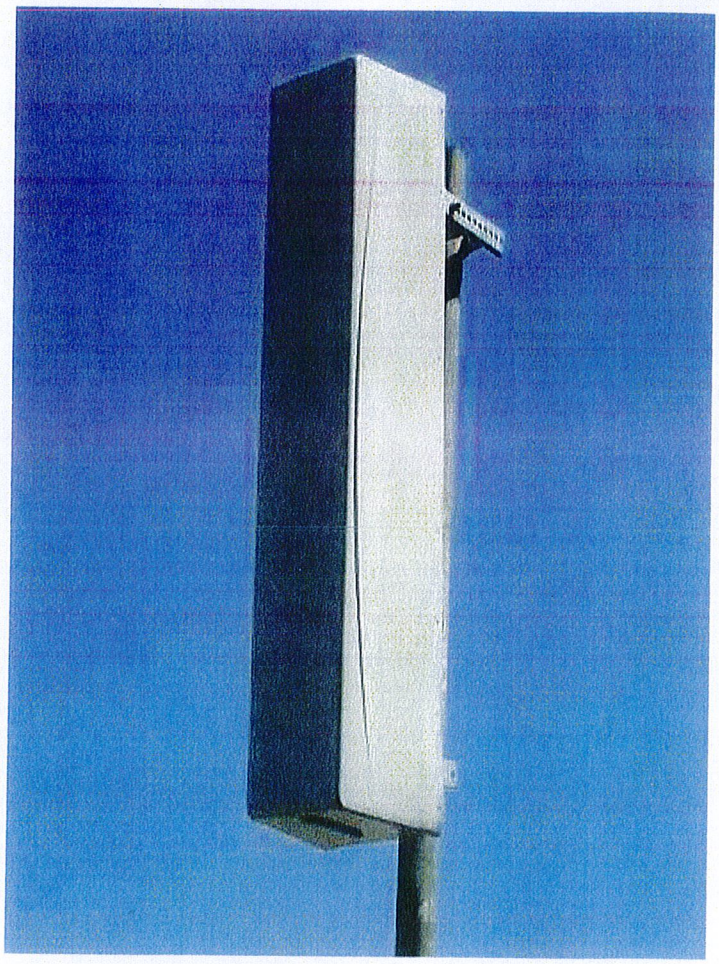
Kenneth C. Baldwin

Enclosures
Copy to:
Robert J. Chatfield, Prospect Mayor
Charles E. and Averyll B. Bradshaw
Sandy M. Carter

Swedcom

SC-E 6014 *rev2*

Enhanced 800 - 960 MHz log-periodic antenna



Features

- Small size
- Aesthetically pleasing
- Suitable for TDMA/CDMA/GSM/3G
- High return loss
- Low intermodulation
- High front-to-back ratio
- Outstanding performance over the entire band (800 - 960 MHz)
- Upper side-lobe suppression
- Rugged design
- Dramatically improved signal to interference performance

Electrical specifications

Frequency range:	**800-960 MHz**
Impedance:	**50 ohm**
Connector type:	**7/16 Din**
Return loss:	**20 dB**
Polarization:	**Vertical**
Gain:	**14 dBd**
Front-to-back ratio:	**> 30 dB**
Upper side-lobe suppression:	**18 dB**
Intermodulation (2x20W):	**IM5 160 dB** **IM7/9 170 dB**
Power rating:	**500 W**
H-plane (-3 dB point):	**54 - 60°**
V-plane (-3 dB point):	**16 - 18°**
Lightning protection:	**DC grounded**

Mechanical specifications

Overall height:	**43 in**	**[1092 mm]**
Width:	**8.5 in**	**[216 mm]**
Depth:	**8 in**	**[203 mm]**
Weight (excluding brackets):	**15 lbs**	**[6.8 Kg]**
Wind load measured up to:	**150 mph**	**[240 Km/h]**
Wind area (side of antenna):	**2.54 sq. ft.**	**[0.24 sq.m]**
Lateral thrust At 113 mph/ 180Km/h (worst case):	**122 lbs**	**[577 N]**

Materials

Radiating Elements:	**Aluminum**
Transformer (Power distribution)	**Ceramic PCB**
Chassis:	**Aluminum**
Radome:	**Grey Fiberglass/PVC**
Tilt-bracket:	**Hot dip galvanized steel**
Mounting bolts:	**Stainless steel**

The SC-E 6014 rev2 is made in the U.S.A.

Amphenol ANTENNA SOLUTIONS

BXA-171063-12BF-EDIN-X

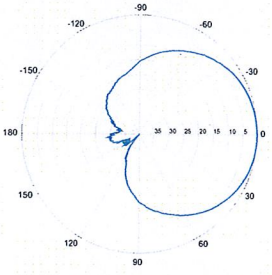
Replace "X" with desired electrical downtilt.

X-Pol | FET Panel | 63° | 19.0 dBi

Electrical Characteristics	1710-2170 MHz		
Frequency bands	1710-1880 MHz	1850-1990 MHz	1920-2170 MHz
Polarization	±45°	±45°	±45°
Horizontal beamwidth	68°	65°	60°
Vertical beamwidth	4.5°	4.5°	4.5°
Gain	16.1 dBd / 18.2 dBi	16.5 dBd / 18.6 dBi	16.9 dBd / 19.0 dBi
Electrical downtilt (X)	0, 2, 5		
Impedance	50Ω		
VSWR	≤1.5:1		
First upper sidelobe	< -17 dB		
Front-to-back ratio	> 30 dB		
In-band isolation	> 28 dB		
IM3 (20W carrier)	< -150 dBc		
Input power	300 W		
Lightning protection	Direct Ground		
Connector(s)	2 Ports / EDIN / Female / Bottom		
Operating temperature	-40° to +60° C / -40° to +140° F		
Mechanical Characteristics			
Dimensions Length x Width x Depth	1820 x 154 x 105 mm	71.7 x 6.1 x 4.1 in	
Depth with z-brackets	133 mm	5.2 in	
Weight without mounting brackets	6.8 kg	15 lbs	
Survival wind speed	> 201 km/hr	> 125 mph	
Wind area	Front: 0.28 m² Side: 0.19 m²	Front: 3.1 ft² Side: 2.1 ft²	
Wind load @ 161 km/hr (100 mph)	Front: 460 N Side: 304 N	Front: 103 lbf Side: 68 lbf	

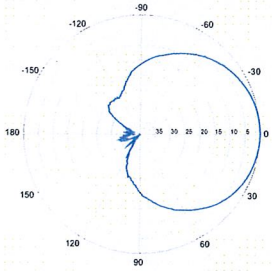
Mounting Options	Part Number	Fits Pipe Diameter	Weight
2-Point Mounting Bracket Kit	26799997	50-102 mm 2.0-4.0 in	2.3 kg 5 lbs
2-Point Mounting & Downtilt Bracket Kit	26799999	50-102 mm 2.0-4.0 in	3.6 kg 8 lbs
Concealment Configurations	For concealment configurations, order BXA-171063-12BF-EDIN-X-FP		

BXA-171063-12BF-EDIN-X



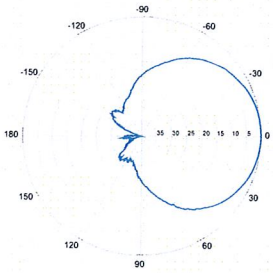
Horizontal | 1710-1880 MHz

BXA-171063-12BF-EDIN-X



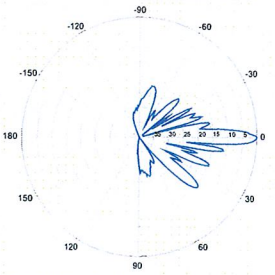
Horizontal | 1850-1990 MHz

BXA-171063-12BF-EDIN-X



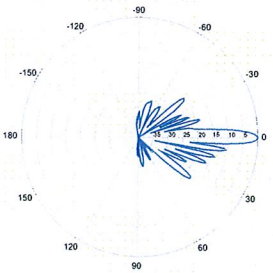
Horizontal | 1920-2170 MHz

BXA-171063-12BF-EDIN-0



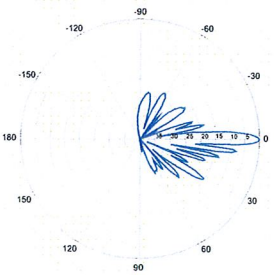
0° | Vertical | 1710-1880 MHz

BXA-171063-12BF-EDIN-0



0° | Vertical | 1850-1990 MHz

BXA-171063-12BF-EDIN-0



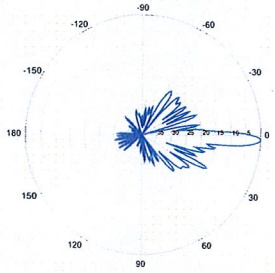
0° | Vertical | 1920-2170 MHz

Quoted performance parameters are provided to offer typical or range values only and may vary as a result of normal manufacturing and operational conditions. Extreme operational conditions and/or stress on structural supports is beyond our control. Such conditions may result in damage to this product. Improvements to product may be made without notice.

BXA-171063-12BF-EDIN-X

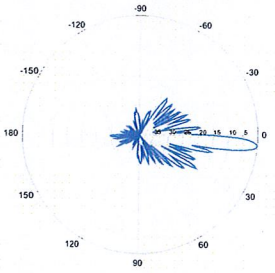
X-Pol | FET Panel | 63° | 19.0 dBi

BXA-171063-12BF-EDIN-2



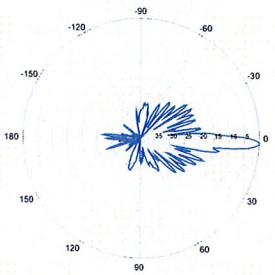
2° | Vertical | 1710-1880 MHz

BXA-171063-12BF-EDIN-5



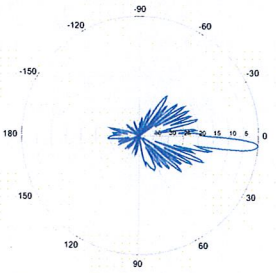
5° | Vertical | 1710-1880 MHz

BXA-171063-12BF-EDIN-2



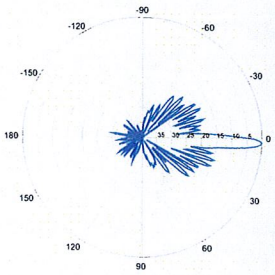
2° | Vertical | 1850-1990 MHz

BXA-171063-12BF-EDIN-5



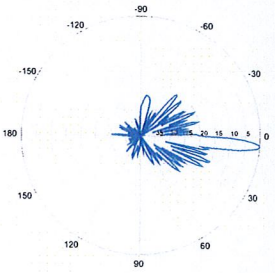
5° | Vertical | 1850-1990 MHz

BXA-171063-12BF-EDIN-2



2° | Vertical | 1920-2170 MHz

BXA-171063-12BF-EDIN-5



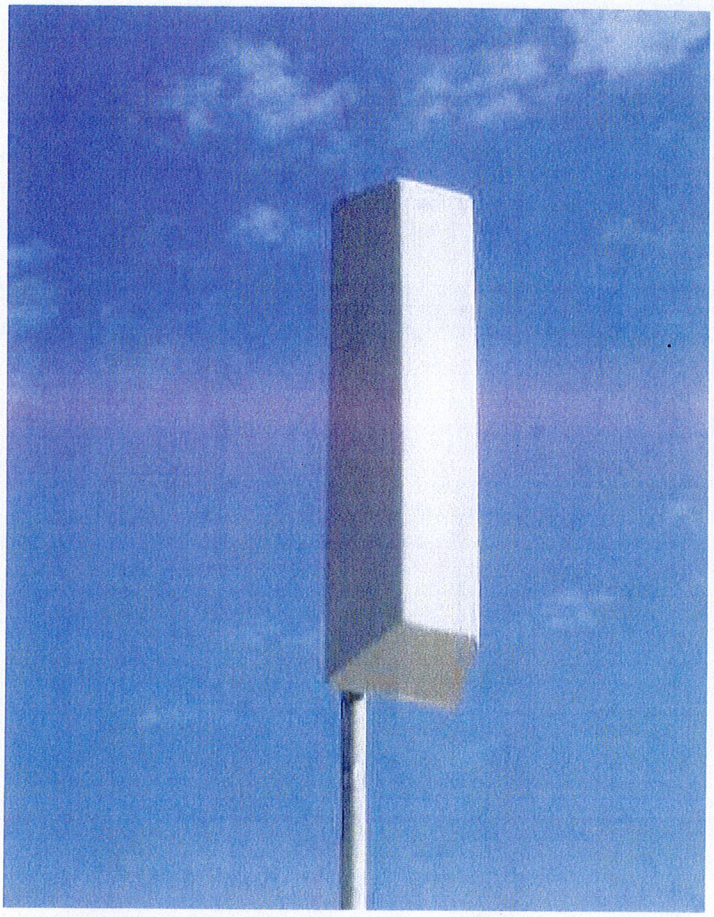
5° | Vertical | 1920-2170 MHz

Quoted performance parameters are provided to offer typical or range values only and may vary as a result of normal manufacturing and operational conditions. Extreme operational conditions and/or stress on structural supports is beyond our control. Such conditions may result in damage to this product. Improvements to product may be made without notice.

Swedcom

SLCP 2x6014

Dual (2x) Circularly Polarized log-periodic antenna



Features

- Transmit Diversity Gain
- Can be configured to combine space & polarization diversity
- Outstanding performance over the entire band (700 - 800 MHz)
- Excellent Axial Ratio
- Optimized for 4G & 3G systems
- Low intermodulation
- Improved Side-to-side rejection
- Fading reduction
- Excellent isolation between ports

Electrical specifications

Frequency range:	**700-800 MHz**	
Impedance:	**50 ohm**	
Connector type:	**7/16 Din**	
Return loss:	**18 dB**	
Polarization:	**Circular**	
Gain ea. port [Circular]:	**2x14 dBdC**	
Gain ea. port [Linear]:	**2x11 dBdL**	
Axial Ratio:	**2 dB**	
Isolation between ports (TX band):	**30 dB**	
Front-to-back ratio:	**30 dB**	
Intermodulation (2x20W):	**IM3**	**150 dB**
	IM5	**160 dB**
	IM7/9	**170 dB**
Power rating:	**2x 500 W**	
H-plane (-3 dB point):	**2x 55°**	
V-plane (-3 dB point):	**2x 16°**	
Lightning protection:	**DC grounded**	

Mechanical specifications

Overall height:	**53 in**	**[1346 mm]**
Width:	**14 in**	**[356 mm]**
Depth:	**11 in**	**[279 mm]**
Weight (excluding brackets):	**20 lbs**	**[9 Kg]**
Wind load measured up to:	**150 mph**	**[240 Km/h]**
Wind area (side of antenna):	**5.15 sq. ft.**	**[0.48 sq.m]**
Lateral thrust at 113 mph/ 180 Km/h (worst case):	**263 lbs**	**[1171 N]**

Materials

Radiating Elements:	**Aluminum**
Transformer (Power distribution)	**Ceramic PCB**
Chassis:	**Aluminum**
Radome:	**Grey Fiberglass/PVC**
Mounting bolts:	**Stainless steel**

The SLCP 2x6014 is made in the U.S.A.

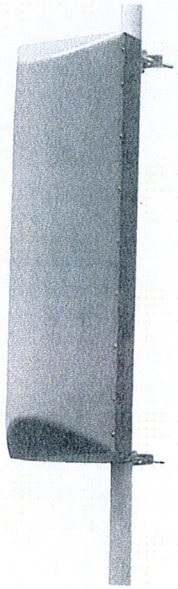
Amphenol ANTENNA SOLUTIONS

LPA-70063-4CF-EDIN-X

V-Pol | Log Periodic | 63° | 13.0 dBd

Replace "X" with desired electrical downtilt.

Antenna is also available with NE connector(s). Replace "EDIN" with "NE" in the model number when ordering.

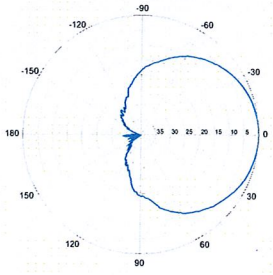


Electrical Characteristics	696-900 MHz	
Frequency bands	696-806 MHz	806-900 MHz
Polarization	Vertical	
Horizontal beamwidth	65°	63°
Vertical beamwidth	17°	15°
Gain	12.5 dBd (14.6 dBi)	13.0 dBd (15.1 dBi)
Electrical downtilt (X)	0, 2, 4, 6, 8, 10, 12, 14	
Impedance	50Ω	
VSWR	≤1.35:1	
Upper sidelobe suppression (0°)	-17.8 dB	-15.7 dB
Front-to-back ratio (+/-30°)	-37.3 dB	-31.7 dB
Null fill	5% (-26.02 dB)	
Input power	500 W	
Lightning protection	Direct Ground	
Connector(s)	1 Port / EDIN or NE / Female / Center (Back)	

Mechanical Characteristics		
Dimensions Length x Width x Depth	1205 x 385 x 332 mm	47.4 x 15.2 x 13.1 in
Depth of antenna with z-bracket	372 mm	14.6 in
Weight without mounting brackets	9.1 kg	20 lbs
Survival wind speed	> 201 km/hr	> 125 mph
Wind area	Front: 0.46 m^2 Side: 0.39 m^2	Front: 5.0 ft^2 Side: 4.2 ft^2
Wind load @ 161 km/hr (100 mph)	Front: 660 N Side: 550 N	Front: 149 lbf Side: 124 lbf

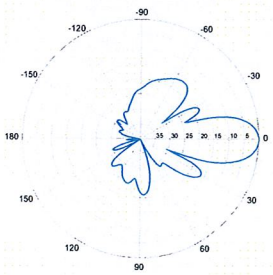
Mounting Options	Part Number	Fits Pipe Diameter	Weight
2-Point Mounting & Downtilt Bracket Kit (0-20°)	21699999	50-102 mm 2.0-4.0 in	5.4 kg 12 lbs
Lock-Down Brace	If the lock-down brace is used, the maximum diameter of the mounting pipe is 88.9 mm or 3.5 in.		

LPA-70063-4CF-EDIN-X



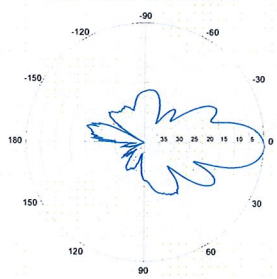
Horizontal | 750 MHz

LPA-70063-4CF-EDIN-0

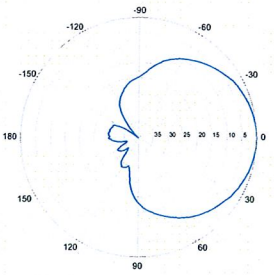


0° | Vertical | 750 MHz

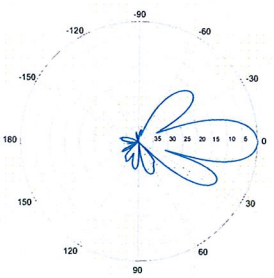
LPA-70063-4CF-EDIN-2



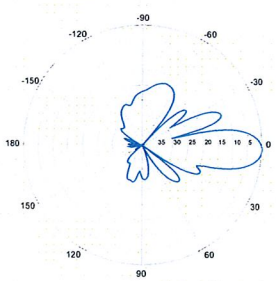
4° | Vertical | 750 MHz



Horizontal | 850 MHz



0° | Vertical | 850 MHz



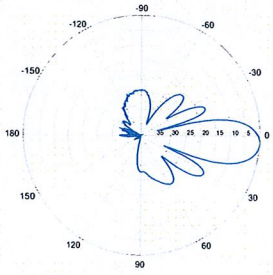
4° | Vertical | 850 MHz

Quoted performance parameters are provided to offer typical or range values only and may vary as a result of normal manufacturing and operational conditions. Extreme operational conditions and/or stress on structural supports is beyond our control. Such conditions may result in damage to this product. Improvements to product may be made without notice.

LPA-70063-4CF-EDIN-X

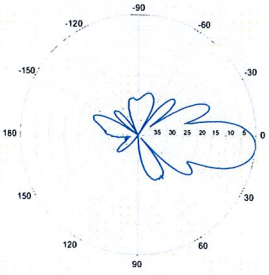
V-Pol | Log Periodic | 63° | 13.0 dBd

LPA-70063-4CF-EDIN-4



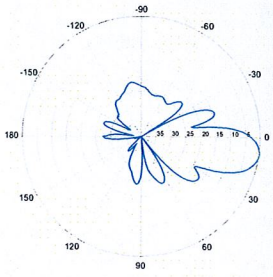
4° | Vertical | 750 MHz

LPA-70063-4CF-EDIN-6

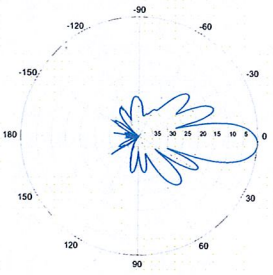


6° | Vertical | 750 MHz

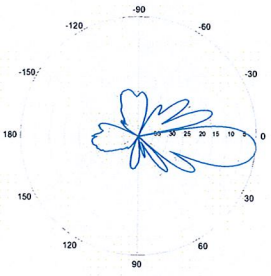
LPA-70063-4CF-EDIN-8



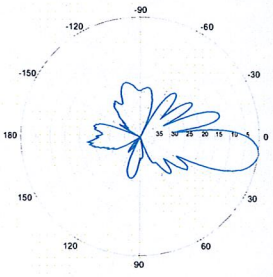
8° | Vertical | 750 MHz



4° | Vertical | 850 MHz

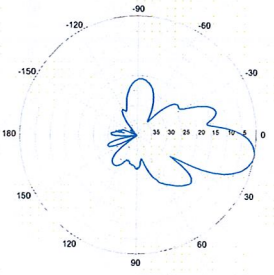


6° | Vertical | 850 MHz



8° | Vertical | 850 MHz

LPA-70063-4CF-EDIN-10

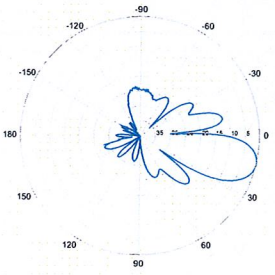


10° | Vertical | 750 MHz

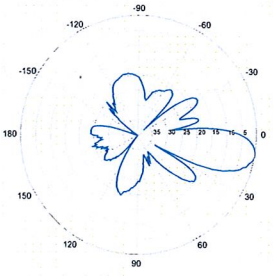
LPA-70063-4CF-EDIN-12

12° | Vertical | 750 MHz

LPA-70063-4CF-EDIN-14

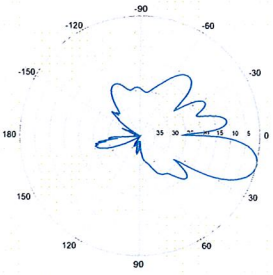


14° | Vertical | 750 MHz



10° | Vertical | 850 MHz

12° | Vertical | 850 MHz



14° | Vertical | 850 MHz

Quoted performance parameters are provided to offer typical or range values only and may vary as a result of normal manufacturing and operational conditions. Extreme operational conditions and/or stress on structural supports is beyond our control. Such conditions may result in damage to this product. Improvements to product may be made without notice.

	General	Power	Density					
Site Name: Prospect N								
Tower Height: Verizon @ 135ft								
CARRIER	**# OF CHAN.**	**WATTS ERP**	**HEIGHT**	**CALC. POWER DENS**	**FREQ.**	**MAX. PERMISS. EXP.**	**FRACTION MPE**	**Total**
*F&S Oil				0.0031	451	0.3007	1.03%	
*New Haven Transit				0.0031	451	0.3007	1.03%	
*US Post Office				0.0031	415	0.2767	1.12%	
*Central Comm.				0.0031	452	0.3013	1.03%	
*CT Motor Club				0.0381	150.92	0.2000	19.05%	
*Sprint-Nextel iDEN	9	100	146	0.0152	851	0.5673	2.68%	
*Sprint-Nextel CDMA	11	421	146	0.0781	1962.5	1.0000	7.81%	
*Clearwire	2	153	146	0.0052	2496	1.0000	0.52%	
*Clearwire	1	211	151	0.0033	23 GHz	1.0000	0.33%	
*Cingular TDMA	16	100	124	0.0374	880	0.5867	6.38%	
*Cingular GSM	2	296	124	0.0138	880	0.5867	2.36%	
*Cingular GSM	2	427	124	0.0200	1930	1.0000	2.00%	
Verizon	**7**	**370**	**135**	**0.0511**	**1970**	**1.0000**	**5.11%**	
Verizon	**9**	**348**	**135**	**0.0618**	**869**	**0.5793**	**10.67%**	
Verizon	**1**	**722**	**135**	**0.0142**	**757**	**0.4973**	**2.86%**	
								63.97%
* Source: Siting Council								

CENTEK engineering

Centered on Solutions℠

Structural Analysis Report

160' Existing Guyed Lattice Tower

Proposed Verizon Wireless
LTE Antenna Installation

Verizon Site Ref: Prospect North

54 Waterbury Road
Prospect, CT

Centek Project No. 11001.CO33

~~Date: July 21, 2011~~
Rev 1: August 10, 2011

Prepared for:

Verizon Wireless
99 East River Road, 9th Floor
East Hartford, CT 06108

63-2 North Branford Road, Branford, CT 06405 203.488.0580 Fax 203.488.8587 www.CentekEng.com

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- VERIZON RF DATA SHEET.
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Introduction

The purpose of this report is to summarize the results of the non-linear, P-Δ structural analysis of the antenna installation/modification proposed by Verizon Wireless on the existing guyed lattice tower located in Prospect, Connecticut.

The host tower is a 160-ft, three legged, guyed lattice tower originally manufactured by Utility Tower. The manufacturer's original tower design documents were not available for use in this analysis. The tower geometry, structure member size, guy anchor information, tower reinforcements and antenna and appurtenance inventory were taken from a previous structural analysis report prepared by Centek (formerly Natcomm LLC), for Verizon Wireless; job no. 08007.CO.15, dated May 14, 2008.

The tower consists of ten (10) vertical sections consisting of steel pipe legs with diagonal and horizontal steel pipe bracing conforming to ASTM A53 GR. B. The vertical tower sections are connected by bolted flange plates with the diagonal and horizontal bracing to pipe legs consisting of welded connections. The width of the tower face is 2.5-ft at the top and bottom.

Verizon Wireless proposes the removal of ten (10) panel antennas and the installation of ten (10) panel antennas mounted on three (3) existing T-Arm frames. Refer to the Antenna and Appurtenance Summary below for a detailed description of the proposed antenna and appurtenance configuration.

Antenna and Appurtenance Summary

The existing tower supports several communication antennas. The existing and proposed loads considered in the analysis consist of the following:

- UNKNOWN (Existing):
  Antenna: One (1) 14' by 2" ∅, one (1) 15' x 2.5" ∅, two (2) 20' x 2" ∅ Omni-directional whips and one (1) 5' 4-Bay dipole antenna mounted with an elevation of ±160-ft above grade level.
  Coax Cable: One (1) 3/8" ∅, four 1/2" ∅ and five (5) 7/8" ∅ coax cables running on a leg/face of the existing tower as specified in Section 3 of this report.
- Nextel (Existing/Reserved):
  Antennas: Nine (9) Andrew DB844H90-XY panel antennas mounted on three (3) existing boom gates to be relocated to three (3) Valmont 13-ft lightweight T-Frames p/n 800945 with a RAD center elevation of ±146-ft above grade level. Three (3) reserved DB844H90-XY panel antennas mounted on the proposed three (3) T-Frames with a RAD center elevation of 146-ft above grade level.
  Coax Cables: Nine (9) existing 1-1/4" ∅ and three (3) reserved 1-1/4" ∅ coax cables running on a leg/face of the existing tower as specified in Section 3 of this report.
- AT&T (Existing):
  Antennas: Two (2) EMS MB96RR900200DPBL panel antennas and four (4) 1900 TMAs mounted on three (3) PiROD 10-ft lightweight T-Frames with a RAD center elevation of ±124-ft above grade level.
  Coax Cables: Four (4) existing 1-1/4" ∅ coax cables running on a leg/face of the existing tower as specified in Section 3 of this report.

- UNKNOWN (Existing):
  Antenna: One (1) 20' 4-Bay dipole antenna mounted with an elevation of ±52-ft above grade level.
  Coax Cable: One (1) 1/2" ∅ coax cable running on a leg/face of the existing tower as specified in Section 3 of this report.
- VERIZON (Existing to Remain):
  Antennas: Two (2) Antel LPA-80080/6CF panel antennas mounted on (3) T-Frames with a RAD center elevation of ±135-ft above grade level.
  Coax Cables: Twelve (12) 1-5/8" ∅ coax cables running on a leg/face of the existing tower as specified in Section 3 of this report.
- VERIZON (Existing to Remove):
  Antennas: Four (4) Antel LPA-80080/6CF and six (6) LPA-185080/12CF panel antennas mounted on (3) T-Frames with a RAD center elevation of ±135-ft above grade level.
- **VERIZON (Proposed):**
  Antennas: Two (2) Swedcom SLCP SX6014, four (4) Swedcom SC-E 6014 REV2, one (1) Antel LPA-70063/4CF and three (3) BXA-171063-12BF panel antennas mounted on (3) T-Frames with a RAD center elevation of ±135-ft above grade level.
  Coax Cables: Six (6) 1-5/8" ∅ coax cables running on a leg/face of the existing tower as specified in Section 3 of this report.

Primary Assumptions Used in the Analysis

- The tower structure's theoretical capacity not including any assessment of the condition of the tower.
- The tower carries the horizontal and vertical loads due to the weight of antennas, ice load and wind.
- Tower is properly installed and maintained.
- Tower is in plumb condition.
- Tower loading for antennas and mounts as listed in this report.
- All bolts are appropriately tightened providing the necessary connection continuity.
- All welds are fabricated with ER-70S-6 electrodes.
- All members are assumed to be as specified in the original tower design documents.
- All members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
- All member protective coatings are in good condition.
- All tower members were properly designed, detailed, fabricated, installed and have been properly maintained since erection.
- Any deviation from the analyzed antenna loading will require a new analysis for verification of structural adequacy.
- All coax cables routed as specified in Section 3 of this report.
- **Modifications to the existing Nextel mount will be completed prior the installation of the proposed Verizon Wireless antennas.**

Analysis

The existing tower was analyzed using a comprehensive computer program entitled RISATower. The program analyzes the tower, considering the worst case loading condition. The tower is considered as loaded by concentric forces along the tower legs, and the model assumes that the leg members are subjected to bending, axial, and shear forces.

The existing tower was analyzed for 85 mph basic wind speed (fastest mile) with no ice and 74 mph with ½ inch accumulative ice to determine stresses in members as per guidelines of TIA/EIA-222-F-96 entitled "Structural Standards for Steel Antenna Towers and Antenna Supporting Structures", the American Institute of Steel Construction (AISC) and the Manual of Steel Construction; Allowable Stress Design (ASD).

Tower Loading

Tower loading was determined by the basic wind speed as applied to projected surface areas with modification factors per TIA/EIA-222-F, gravity loads of the tower structure and its components, and the application of ½" radial ice tower structure and its components.

Basic Wind Speed:	New Haven v = 85 mph (fastest mile)	*[Section 16 of TIA/EIA-222-F-96]*
	Prospect; v = 100 mph (3 second gust) equivalent to v = 80 mph (fastest mile)	*[Appendix K of the 2005 CT Building Code Supplement]*
	TIA/EIA wind speed criteria controls.	
Load Cases:	Load Case 1; 85 mph wind speed w/ no ice plus gravity load – used in calculation of tower stresses and rotation. This load case typically controls the design of monopole towers.	*[Section 2.3.16 of TIA/EIA-222-F-96]*
	Load Case 2; 74 mph wind speed w/ ½" radial ice plus gravity load – used in calculation of tower stresses. This load case typically controls the design of lattice towers.	*[Section 2.3.16 of TIA/EIA-222-F-96]*
	Load Case 3; Seismic – not checked	*[Section 1614.5 of State Bldg. Code 2005] does not control in the design of this structure type*

Tower Capacity

Tower stresses were calculated utilizing the structural analysis software RISATower. Allowable stresses were determined based on Table 5 of the TIA/EIA code with a 1/3 increase per Section 3.1.1.1 of the same code.

Calculated stresses were found to be within allowable limits. In Load Case 2, per RISATower "Section Capacity Table", this tower was found to be at **94.6%** of its total capacity.

Tower Section	Elevation	Stress Ratio (percentage of capacity)	Result
Diagonal (T3)	110'-0"-120'-0"	94.6%	**PASS**
Leg (T8)	20'-0"-40'-0"	79.5%	**PASS**
Guy B (T3)	110'-0"-120'-0"	91.6%	**PASS**

Foundation and Anchors

The existing guy anchor foundation consists of a three (3) 11-ft long x 3-ft wide x 3-ft thick reinforced concrete blocks.

Review of the foundation and anchor design consisted of verification of applied loads obtained from the tower design calculations and code checks of allowable stresses:

- The tower reactions developed from the governing Load Case 2 were used in the verification of the foundation:

Reactions	Vector	Proposed Base Reactions
Base	Shear	**1 kip**
	Compression	**85 kips**
Leg	Shear	**31 kips**
	Uplift	**33 kips**

- The foundation was found to be within allowable limits.

Foundation	Design Limit	IBC 2003/2005 CT State Building Code Section 3108.4.2 (FS)[1]	Proposed Loading (FS)[1]	Result
Reinforced Concrete Guy Anchor Block	Uplift	2.0	2.2	**PASS**
Reinforced Concrete Guy Anchor Block	Sliding	2.0	3.0	**PASS**

Note 1: FS denotes Factor of Safety

Conclusion

This analysis shows that the subject tower with the proposed modifications **is adequate** to support the existing and proposed modified antenna configuration.

Replacement of the existing Nextel boom gates with three (3) Valmont 13-ft Lightweight T-Frames P/N 800945 is required prior to the Verizon Wireless upgrade. The existing Nextel antennas should be relocated to the proposed mounts with a Rad center elevation equal to the existing.

The analysis is based, in part, on the information provided to this office by Verizon Wireless. If the existing conditions are different than the information in this report, Centek Engineering, Inc. must be contacted for resolution of any potential issues.

Please feel free to call with any questions or comments.

Respectfully Submitted by:

Carlo F. Centore, PE
Principal ~ Structural Engineer

Prepared by:

Timothy J. Lynn, EIT
Structural Engineer

Standard Conditions for Furnishing of Professional Engineering Services on Existing Structures

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessarily limited to:

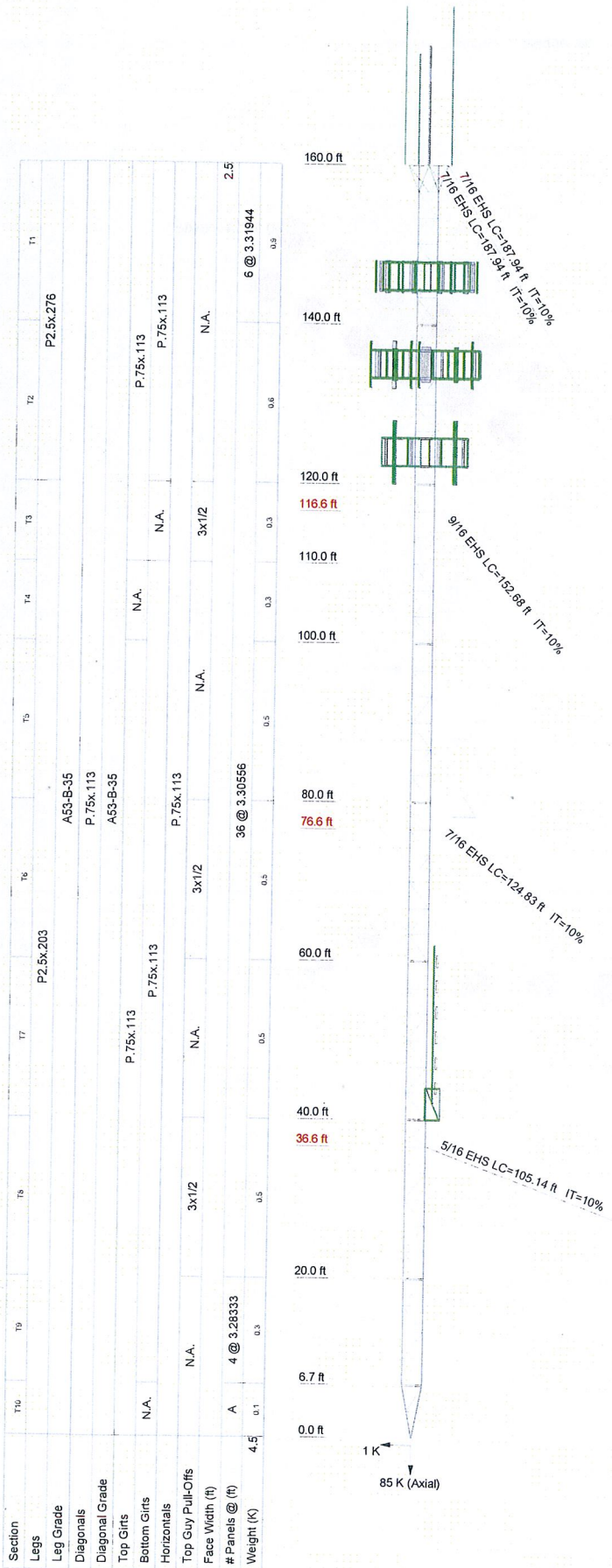
- Information supplied by the client regarding the structure itself, its foundations, the soil conditions, the antenna and feed line loading on the structure and its components, or other relevant information.
- Information from the field and/or drawings in the possession of Centek Engineering, Inc. or generated by field inspections or measurements of the structure.
- It is the responsibility of the client to ensure that the information provided to Centek Engineering, Inc. and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and are in an un-corroded condition and have not deteriorated. It is therefore assumed that its capacity has not significantly changed from the "as new" condition.
- All services will be performed to the codes specified by the client, and we do not imply to meet any other codes or requirements unless explicitly agreed in writing. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement. In the absence of information to the contrary, all work will be performed in accordance with the latest revision of ANSI/ASCE10 & ANSI/EIA-222
- All services performed, results obtained, and recommendations made are in accordance with generally accepted engineering principles and practices. Centek Engineering, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

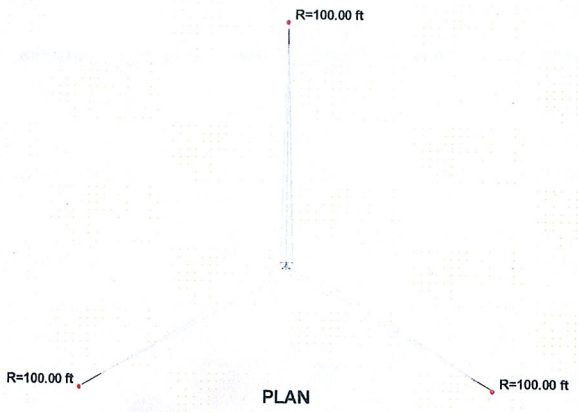
GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM

RISATower, is an integrated structural analysis and design software package for Designed specifically for the telecommunications industry, RISATower, formerly ERITower, automates much of the tower analysis and design required by the TIA/EIA 222 Standard.

RISATower Features:

- RISATower can analyze and design 3- and 4-sided guyed towers, 3- and 4-sided self-supporting towers and either round or tapered ground mounted poles with or without guys.
- The program analyzes towers using the TIA-222-G (2005) standard or any of the previous TIA/EIA standards back to RS-222 (1959). Steel design is checked using the AISC ASD 9th Edition or the AISC LRFD specifications.
- Linear and non-linear (P-delta) analyses can be used in determining displacements and forces in the structure. Wind pressures and forces are automatically calculated.
- Extensive graphics plots include material take-off, shear-moment, leg compression, displacement, twist, feed line, guy anchor and stress plots.
- RISATower contains unique features such as True Cable behavior, hog rod take-up, foundation stiffness and much more.





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
14' x 2" Dia Omni	160	SC-E 6014 Rev2 (Verizon - Proposed)	135
15' 2.5" Dia omni	160	SC-E 6014 Rev2 (Verizon - Proposed)	135
20' x 2" Dia Omni	160	SLCP 2X6014 (Verizon - Proposed)	135
20' x 2" Dia Omni	160	BXA-171063-12BF (Verizon - Proposed)	135
5' 4-Bay Diple	160	SC-E 6014 Rev2 (Verizon - Proposed)	135
(4) DB844H90E-XY (Nextel)	146	LPA-80080-6CF (Verizon - Existing)	135
(4) DB844H90E-XY (Nextel)	146	LPA-70063-4CF (Verizon - Proposed)	135
(4) DB844H90E-XY (Nextel)	146	BXA-171063-12BF (Verizon - Proposed)	135
13-ft Lightweight T-Frame (Nextel)	146	LPA-80080-6CF (Verizon - Existing)	135
13-ft Lightweight T-Frame (Nextel)	146	PiROD 10' Lightweight T-Frame (ATI)	124
13-ft Lightweight T-Frame (Nextel)	146	MB96RR900200DPBL (ATI)	124
13-ft Lightweight T-Frame (Verizon - Existing)	135	MB96RR900200DPBL (ATI)	124
13-ft Lightweight T-Frame (Verizon - Existing)	135	1900 TMA (ATI)	124
13-ft Lightweight T-Frame (Verizon - Existing)	135	1900 TMA (ATI)	124
SC-E 6014 Rev2 (Verizon - Proposed)	135	PiROD 10' Lightweight T-Frame (ATI)	124
SLCP 2X6014 (Verizon - Proposed)	135	PiROD 10' Lightweight T-Frame (ATI)	124
BXA-171063-12BF (Verizon - Proposed)	135	20' 4-Bay Dipole	52
		1' Side Arm	42

SYMBOL LIST

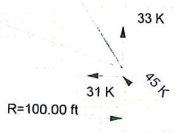
MARK	SIZE	MARK	SIZE
A	2 @ 3.26667		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-35	35 ksi	63 ksi			

TOWER DESIGN NOTES

1. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
2. Tower is also designed for a 74 mph basic wind with 0.50 in ice.
3. Deflections are based upon a 50 mph wind.
4. TOWER RATING: 94.6%

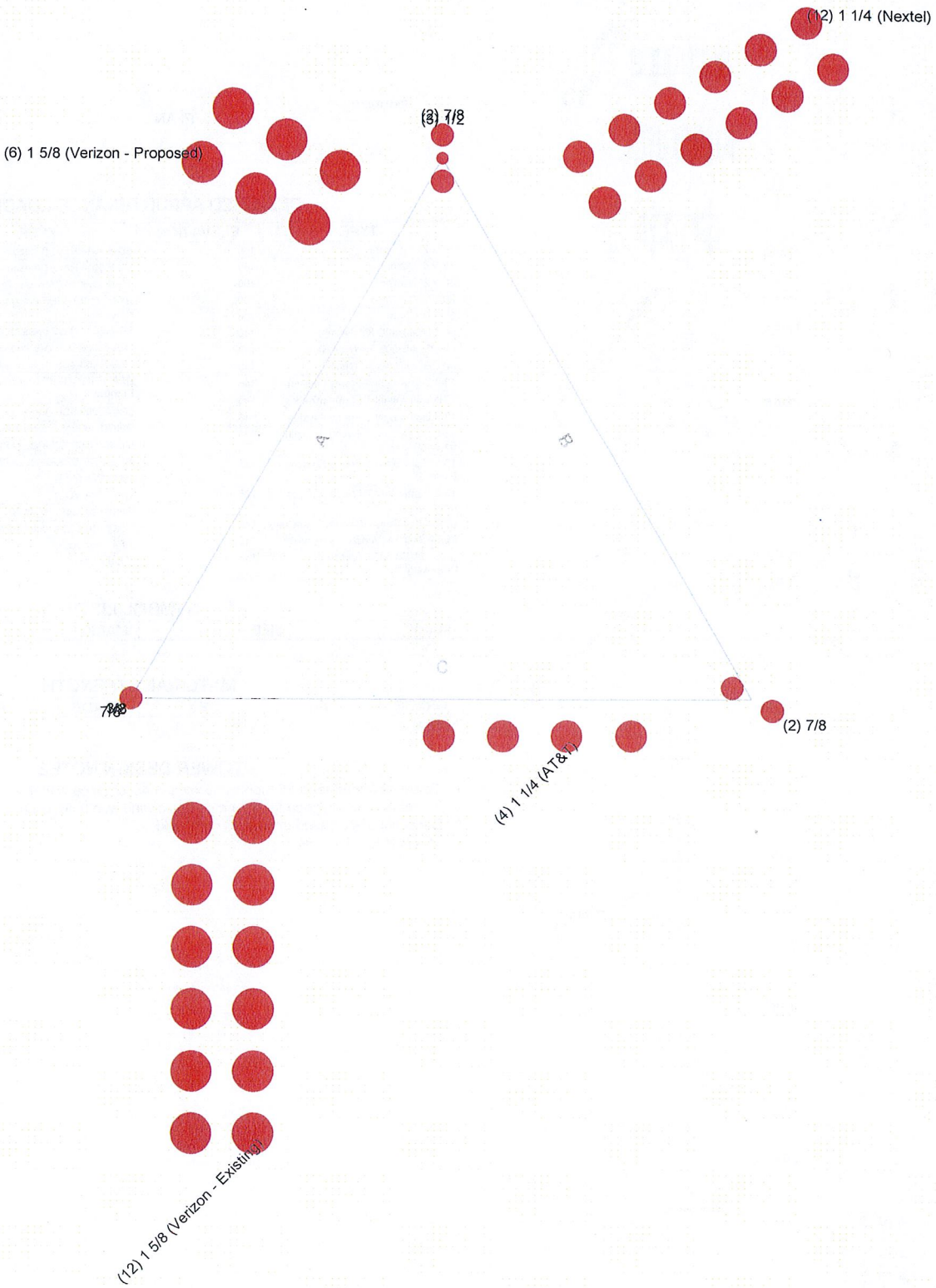


Centek Engineering Inc.
63-2 North Branford Road
Branford, CT 06405
Phone: 203.488.0580
FAX: 203.488.8587

Job: *11001.CO33 - Prospect North*
Project: *160' Guyed Tower - 54 Waterbury Road Prospect, CT*
Client: Verizon Wireless | Drawn by: TJL | App'd:
Code: TIA/EIA-222-F | Date: 08/10/11 | Scale: NTS
Path: J:\Jobs\1100100 WI\CO33 - Prospect North\Rev (1)\Calcs\ER\Proposed\160' Guyed Tower.eri | Dwg No. E-1

Feedline Plan

Round _____ Flat _____ App In Face _____ App Out Face _____



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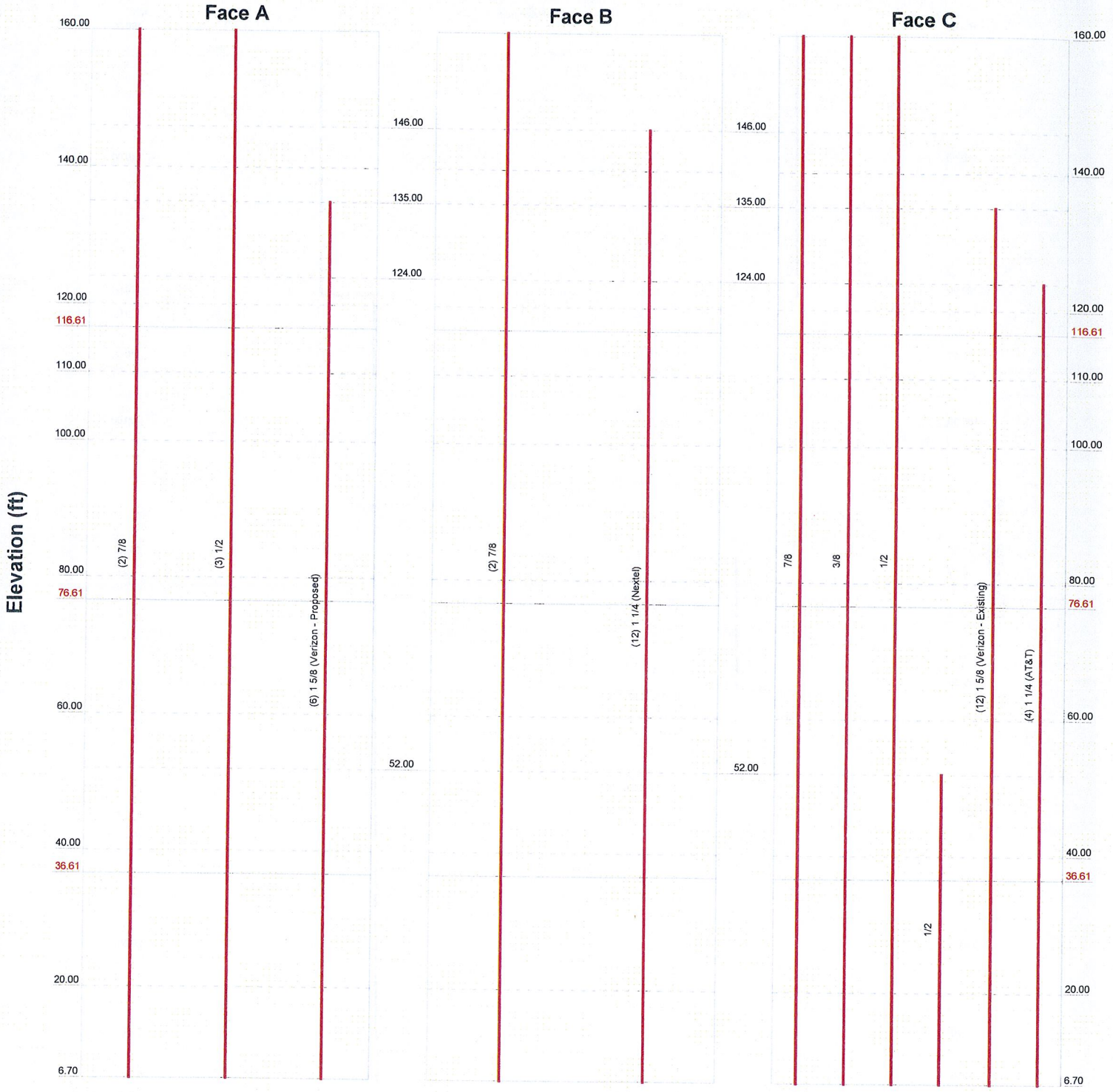
Client:	Verizon Wireless	Drawn by: TJL	App'd:
Code:	TIA/EIA-222-F	Date: 08/10/11	Scale: NTS
Path:	J:\Jobs\11100100 WK\CO33 - Prospect North\Rev (1)\Calcs\ER\Proposed\160' Guyed Tower.eri		Dwg No. E-7

Feedline Distribution Chart
6'8-13/32" - 160'

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



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Job:	***11001.CO33 - Prospect North***
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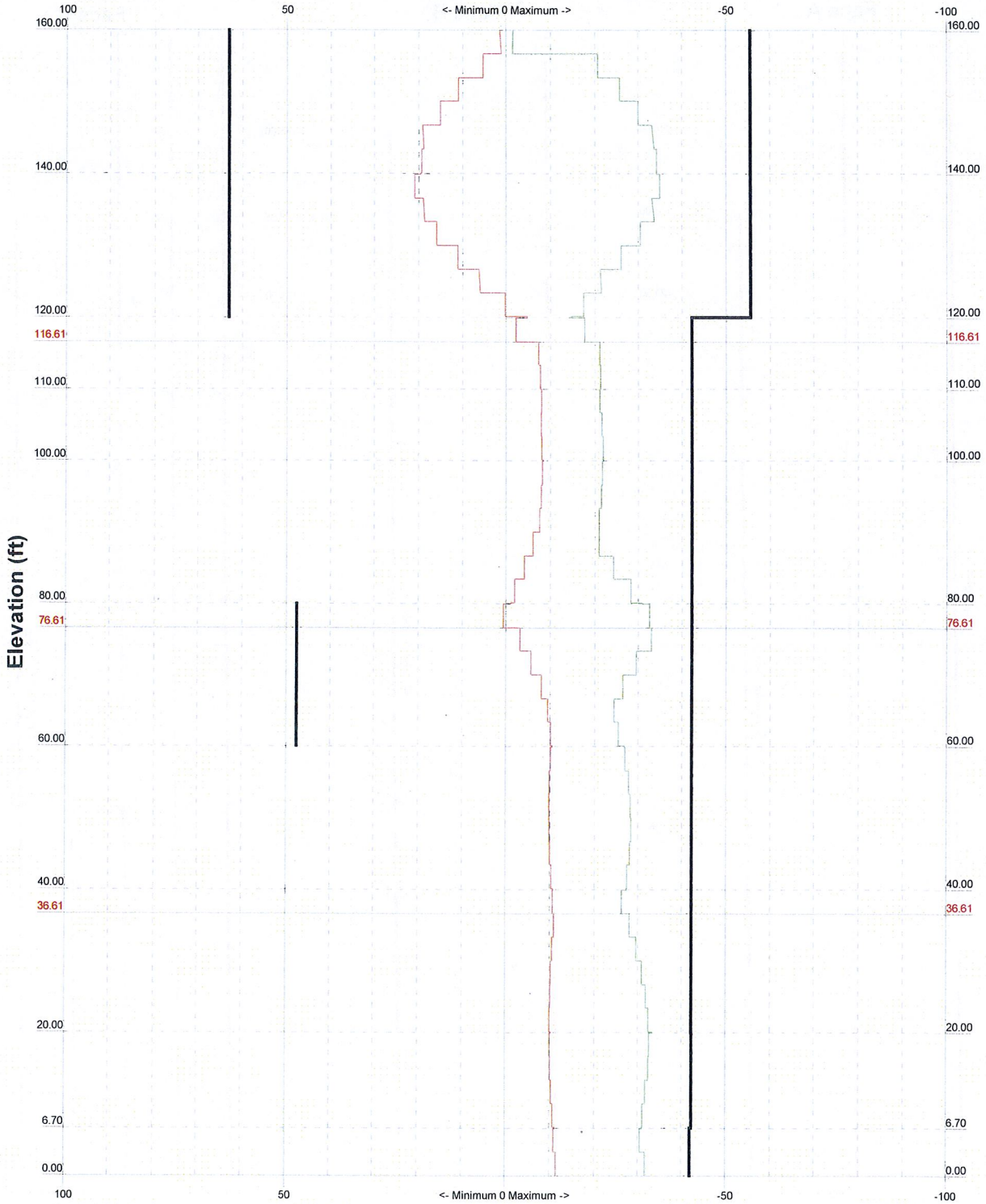
Client: Verizon Wireless	Drawn by: TJL — App'd:
Code: TIA/EIA-222-F	Date: 08/10/11 — Scale: NTS
Path: J:\Jobs\1100100 WNCO33 - Prospect North\Rev (1)\Calcs\ERI\Proposed\160' Guyed Tower eri	Dwg No. E-7

TIA/EIA-222-F - 85 mph/74 mph 0.5000 in Ice

Leg Capacity ——— Leg Compression (K)



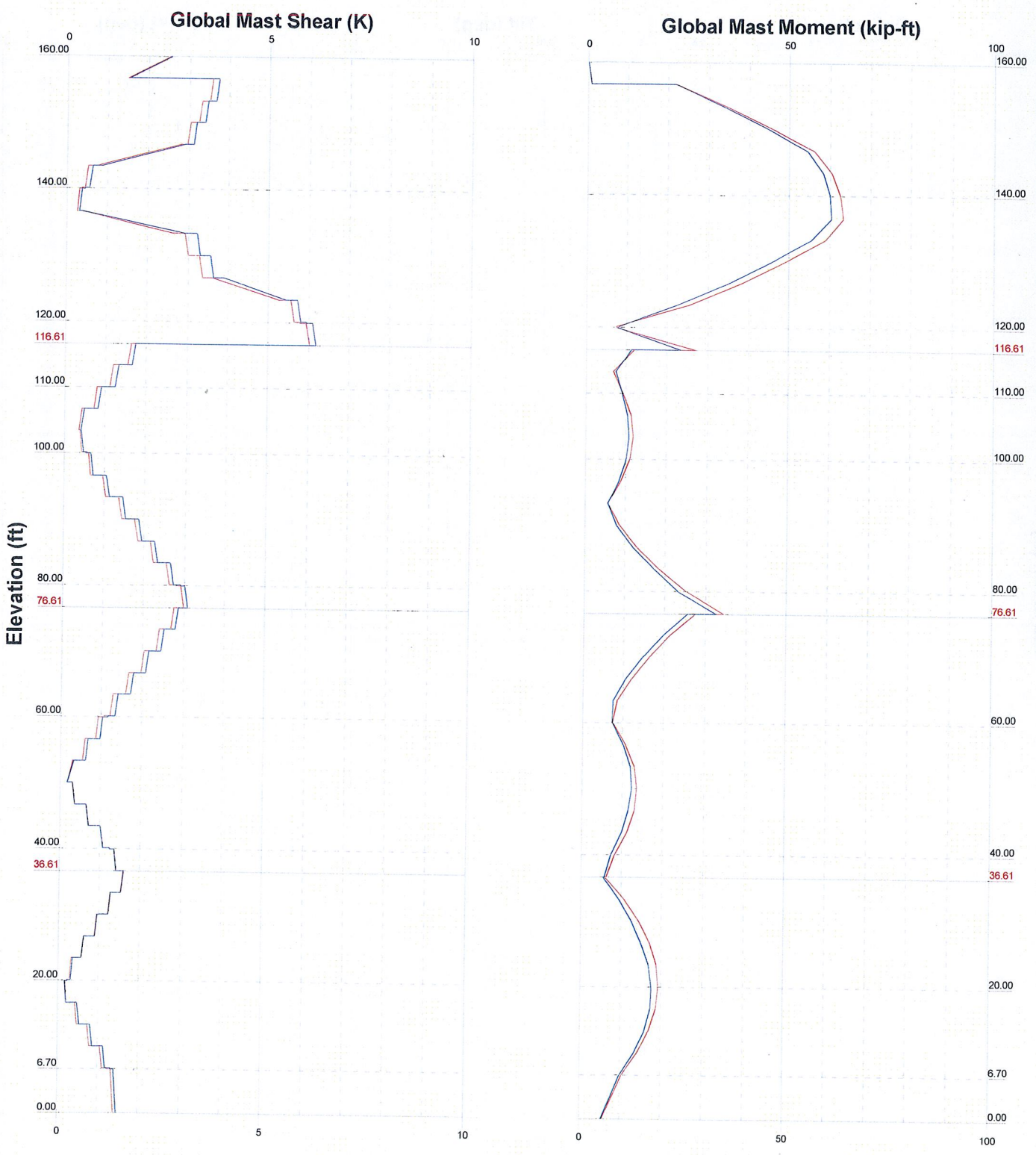
Centek Engineering Inc. 63-2 North Branford Road Branford, CT 06405 Phone: 203.488.0580 FAX: 203.488.8587	Job: 11001.CO33 - Prospect North		
	Project: 160' Guyed Tower - 54 Waterbury Road Prospect, CT		
	Client: Verizon Wireless	Drawn by: TJL	App'd:
	Code: TIA/EIA-222-F	Date: 08/10/11	Scale: NTS
	Path: J:\Jobs\1100100.WICO33 - Prospect North\Rev (1)\Calcs\ERI\Proposed\160' Guyed Tower er		Dwg No. E-3

TIA/EIA-222-F - 85 mph/74 mph 0.5000 in Ice

Vx Vz

Maximum Values

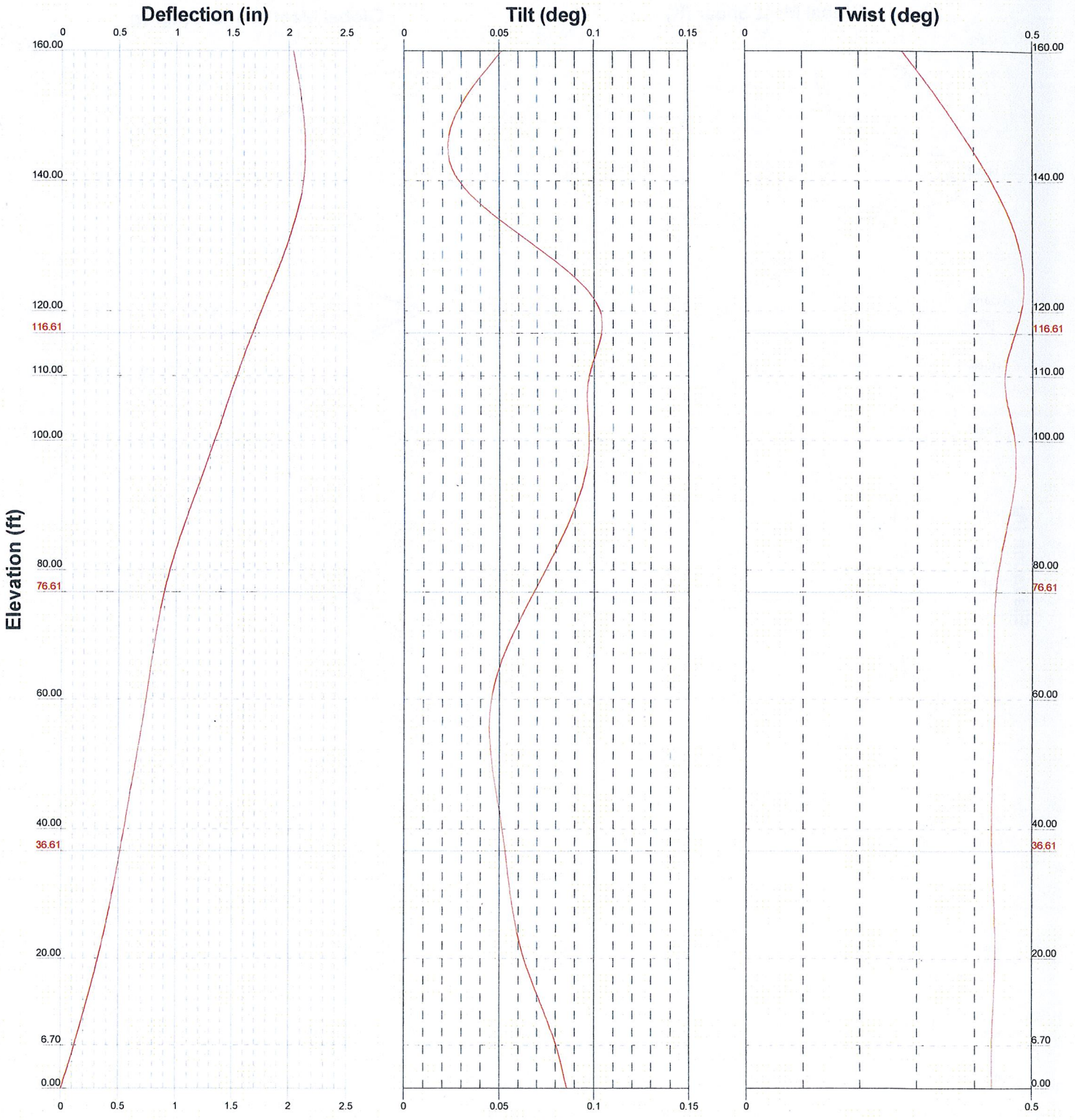
Mx Mz



Centek Engineering Inc. 63-2 North Branford Road Branford, CT 06405 Phone: 203.488.0580 FAX: 203.488.8587	Job: ***11001.CO33 - Prospect North*** Project: ***160' Guyed Tower - 54 Waterbury Road Prospect, CT*** Client: Verizon Wireless Drawn by: TJL App'd: Code: TIA/EIA-222-F Date: 08/10/11 Scale: NTS Path: J:\Jobs\1100100 WI\CO33 - Prospect North\Rev (1)\Calcs\ERI\Proposed\160' Guyed Tower.eri Dwg No. E-4

TIA/EIA-222-F - Service - 50 mph

Maximum Values

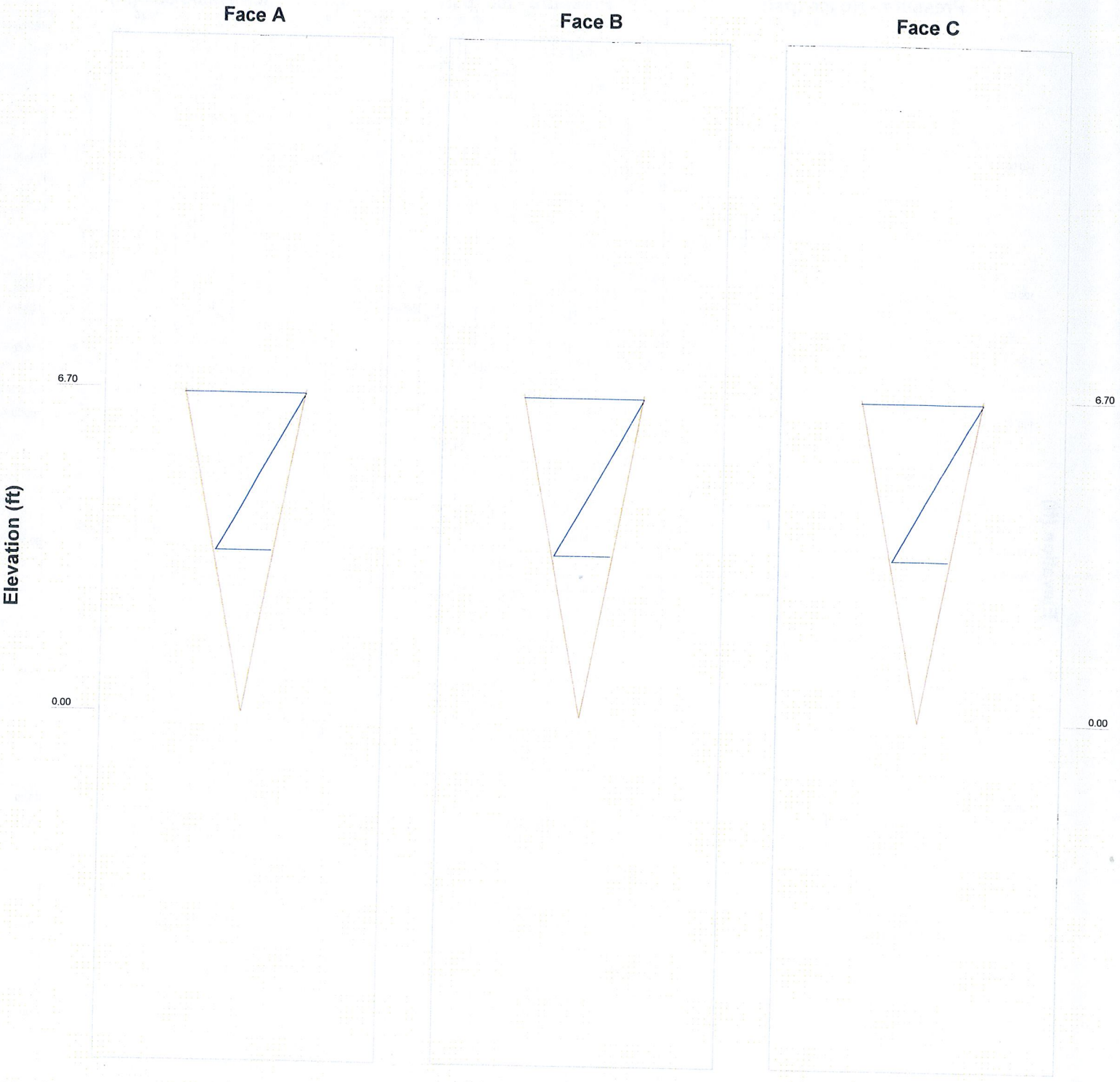


Centek Engineering Inc.
63-2 North Branford Road
Branford, CT 06405
Phone: 203.488.0580
FAX: 203.488.8587

Job:	***11001.CO33 - Prospect North***		
Project:	***160' Guyed Tower - 54 Waterbury Road Prospect, CT***		
Client:	Verizon Wireless	Drawn by: TJL	App'd:
Code:	TIA/EIA-222-F	Date: 08/10/11	Scale: NTS
Path:	J:\Jobs\1100100 WI\CO33 - Prospect North\Rev (1)\Calcs\ER\Proposed\160' Guyed Tower.eri		Dwg No. E-5

Stress Distribution Chart
0' - 6'8-13/32"

> 100% | 90%-100% | 75%-90% | 50%-75% | < 50% Overstress



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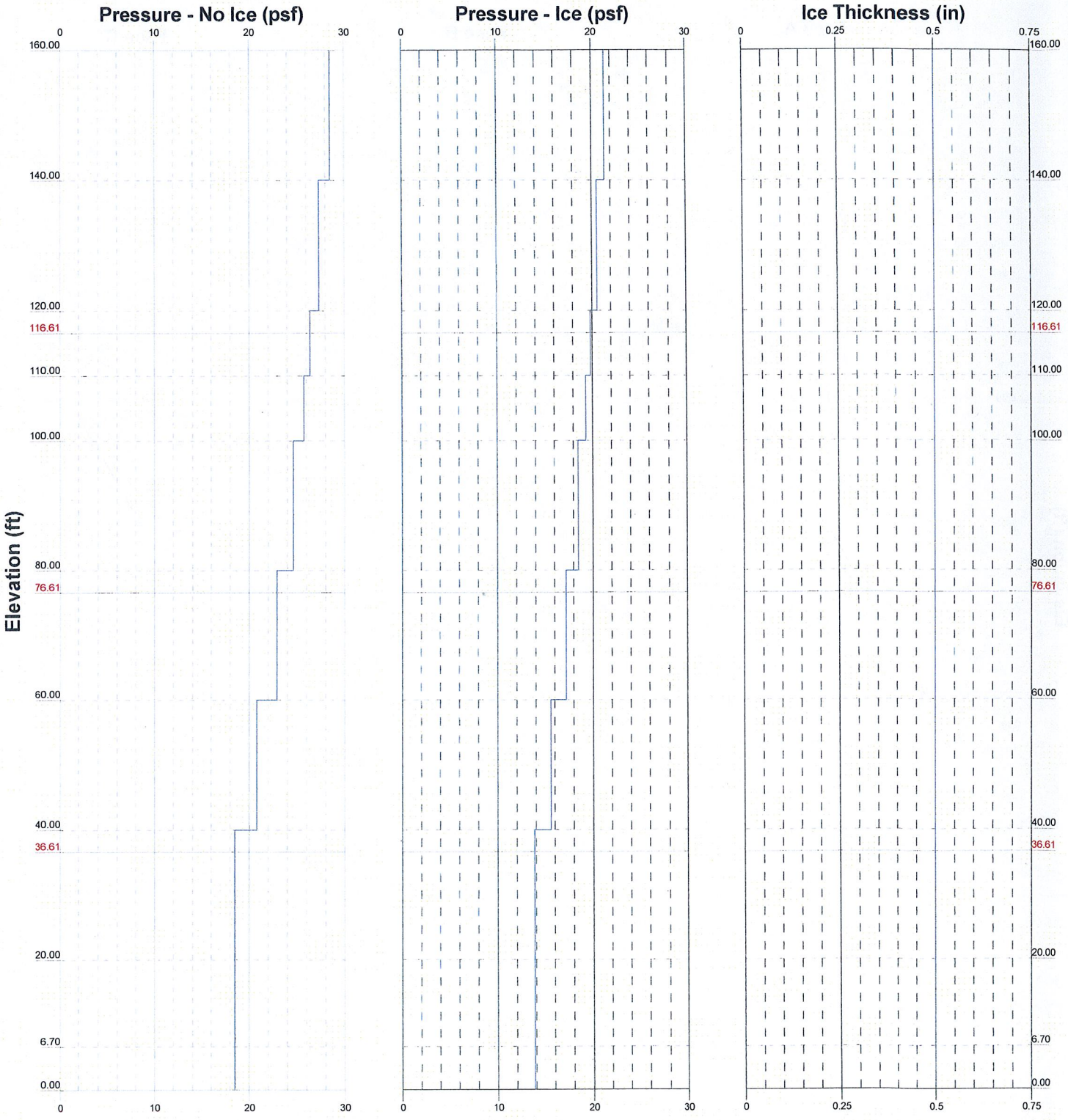
FAX: 203.488.8587

Job:	***11001.CO33 - Prospect North***		
Project:	***160' Guyed Tower - 54 Waterbury Road Prospect, CT***		
Client:	Verizon Wireless	Drawn by: TJL	App'd:
Code:	TIA/EIA-222-F	Date: 08/10/11	Scale: NTS
Path:	J:\Jobs\1100100 WrlCO33 - Prospect North\Rev (1)\Calcs\ER\Proposed\160' Guyed Tower en		Dwg No. E-8

Wind Pressures and Ice Thickness

TIA/EIA-222-F - 85 mph/74 mph 0.5000 in Ice



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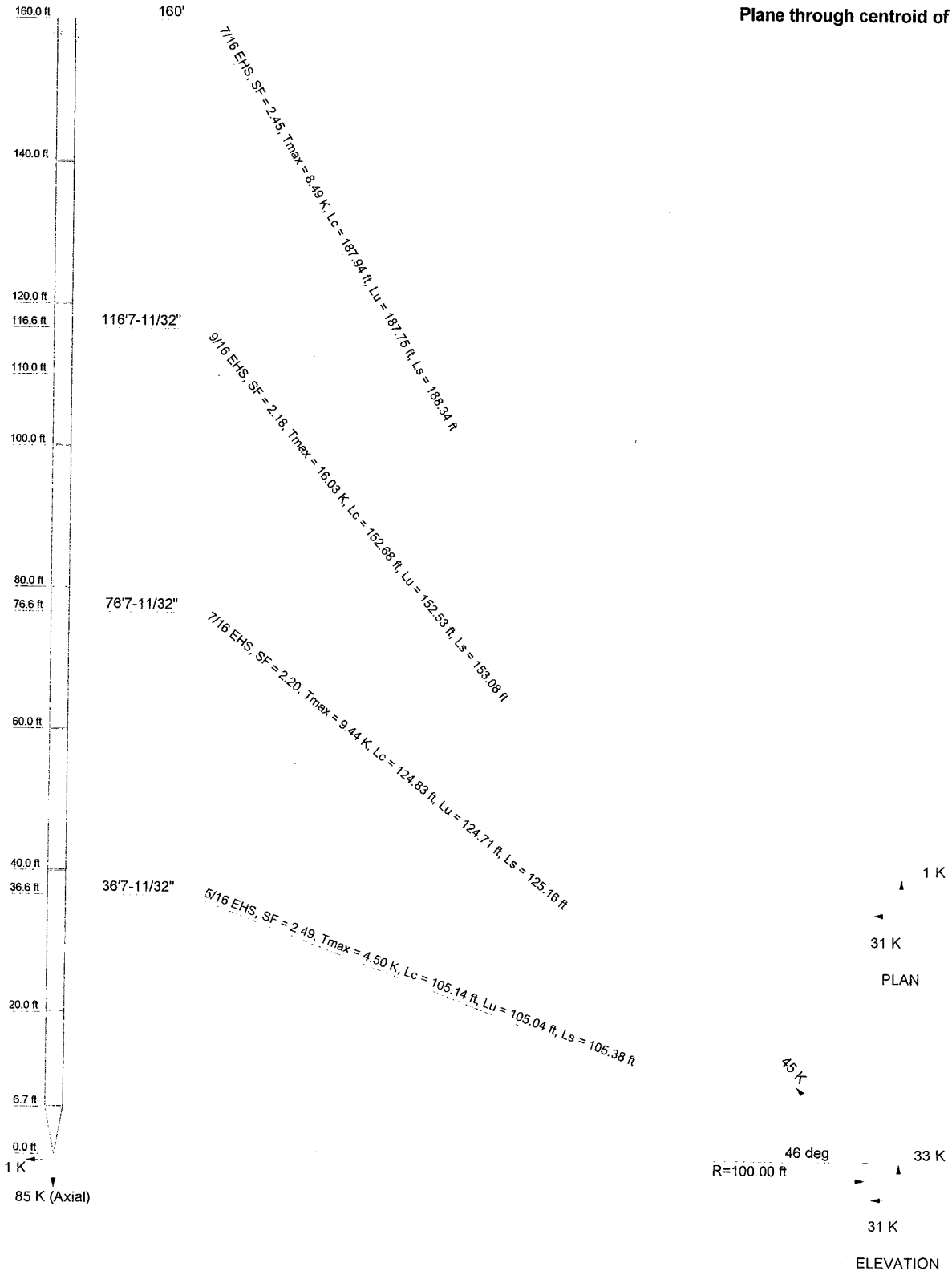
Branford, CT 06405
Phone: 203.488.0580
FAX: 203.488.8587

Job:	***11001.CO33 - Prospect North***		
Project:	***160' Guyed Tower - 54 Waterbury Road Prospect, CT***		
Client:	Verizon Wireless	Drawn by: TJL	App'd:
Code:	TIA/EIA-222-F	Date: 08/10/11	Scale: NTS
Path:	J:\Jobs\1100100 W\CO33 - Prospect North\Rev (1)\Calcs\ERI\Proposed\160' Guyed Tower eri		Dwg No. E-9

Guy Tensions and Tower Reactions

TIA/EIA-222-F - 85 mph/74 mph 0.5000 in Ice

Maximum Values
Anchor 'B'@100 ft Azimuth 120 deg Elev 0 ft
Plane through centroid of tower



Centek Engineering Inc.
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Phone: 203.488.0580
FAX: 203.488.8587

Job:	***11001.CO33 - Prospect North***		
Project:	***160' Guyed Tower - 54 Waterbury Road Prospect, CT***		
Client:	Verizon Wireless	Drawn by: TJL	App'd:
Code:	TIA/EIA-222-F	Date: 08/10/11	Scale: NTS
Path:	J:\Jobs\11001\00 WhCO33 - Prospect North\Rev (1)\Calcs\ER\Proposed\160' Guyed Tower.eri		Dwg No. E-6

RISATower	Job	Page
	11001.CO33 - Prospect North	1 of 51
Centek Engineering Inc. 63-2 North Branford Road Branford, CT 06405 Phone: 203.488.0580 FAX: 203.488.8587	Project 160' Guyed Tower - 54 Waterbury Road Prospect, CT	Date 17:17:12 08/10/11
	Client Verizon Wireless	Designed by TJL

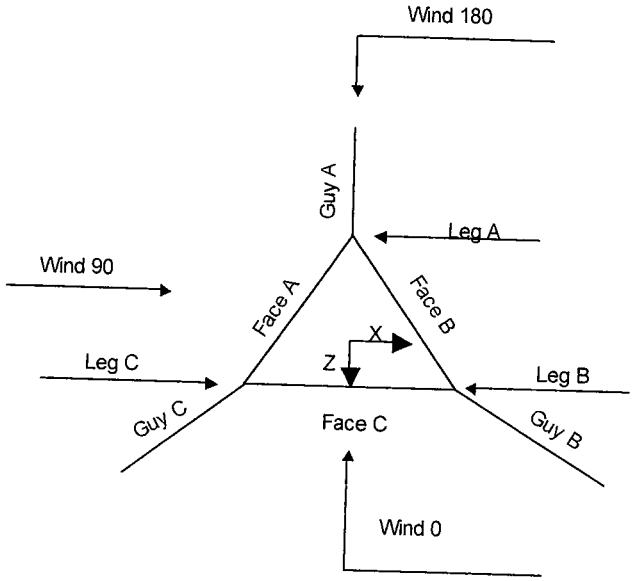
Tower Input Data

The main tower is a 3x guyed tower with an overall height of 160.00 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 2.50 ft at the top and tapered at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

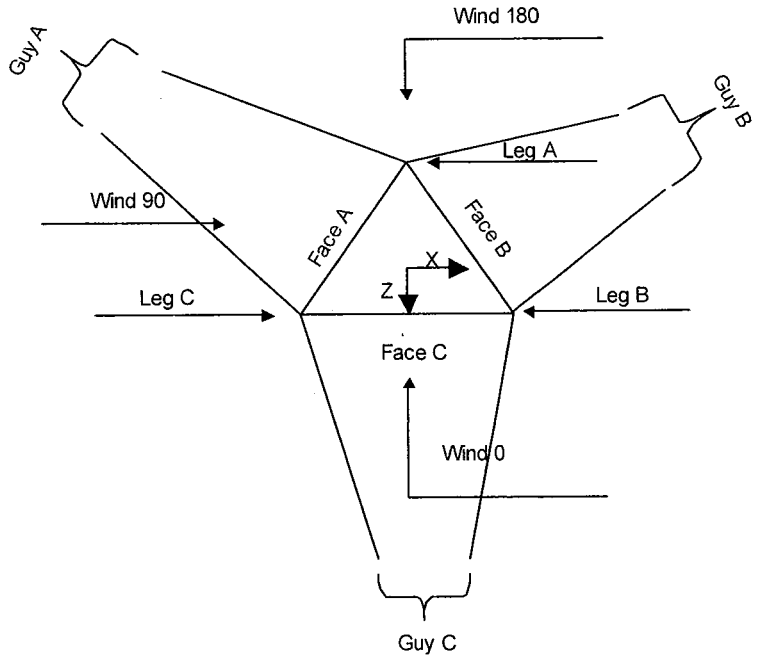
Basic wind speed of 85 mph.
Nominal ice thickness of 0.5000 in.
Ice density of 56 pcf.
A wind speed of 74 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 50 mph.
Pressures are calculated at each section.
Safety factor used in guy design is 2.
Stress ratio used in tower member design is 1.333.
Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

Options

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



Corner & Starmount Guyed Tower



Face Guyed

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	160.00-140.00			2.50	1	20.00
T2	140.00-120.00			2.50	1	20.00
T3	120.00-110.00			2.50	1	10.00
T4	110.00-100.00			2.50	1	10.00
T5	100.00-80.00			2.50	1	20.00
T6	80.00-60.00			2.50	1	20.00
T7	60.00-40.00			2.50	1	20.00
T8	40.00-20.00			2.50	1	20.00
T9	20.00-6.70			2.50	1	13.30
T10	6.70-0.00			2.50	1	6.70

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	160.00-140.00	3.32	K Brace Right	No	Yes	0.0000	1.0000
T2	140.00-120.00	3.31	K Brace Right	No	Yes	1.0000	1.0000
T3	120.00-110.00	3.31	K Brace Left	No	Yes	1.0000	0.0000
T4	110.00-100.00	3.31	K Brace Right	No	Yes	0.0000	1.0000
T5	100.00-80.00	3.31	K Brace Right	No	Yes	1.0000	1.0000
T6	80.00-60.00	3.31	K Brace Right	No	Yes	1.0000	1.0000
T7	60.00-40.00	3.31	K Brace Right	No	Yes	1.0000	1.0000
T8	40.00-20.00	3.31	K Brace Right	No	Yes	1.0000	1.0000
T9	20.00-6.70	3.28	K Brace Right	No	Yes	1.0000	1.0000
T10	6.70-0.00	3.27	K Brace Right	No	Yes	1.0000	1.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 160.00-140.00	Pipe	P2.5x.276	A53-B-35 (35 ksi)	Pipe	P.75x.113	A53-B-35 (35 ksi)
T2 140.00-120.00	Pipe	P2.5x.276	A53-B-35 (35 ksi)	Pipe	P.75x.113	A53-B-35 (35 ksi)
T3 120.00-110.00	Pipe	P2.5x.203	A53-B-35 (35 ksi)	Pipe	P.75x.113	A53-B-35 (35 ksi)
T4 110.00-100.00	Pipe	P2.5x.203	A53-B-35 (35 ksi)	Pipe	P.75x.113	A53-B-35 (35 ksi)
T5 100.00-80.00	Pipe	P2.5x.203	A53-B-35 (35 ksi)	Pipe	P.75x.113	A53-B-35 (35 ksi)
T6 80.00-60.00	Pipe	P2.5x.203	A53-B-35 (35 ksi)	Pipe	P.75x.113	A53-B-35 (35 ksi)
T7 60.00-40.00	Pipe	P2.5x.203	A53-B-35 (35 ksi)	Pipe	P.75x.113	A53-B-35 (35 ksi)
T8 40.00-20.00	Pipe	P2.5x.203	A53-B-35 (35 ksi)	Pipe	P.75x.113	A53-B-35 (35 ksi)
T9 20.00-6.70	Pipe	P2.5x.203	A53-B-35 (35 ksi)	Pipe	P.75x.113	A53-B-35 (35 ksi)
T10 6.70-0.00	Pipe	P2.5x.203	A53-B-35 (35 ksi)	Pipe	P.75x.113	A53-B-35 (35 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 160.00-140.00	Pipe	P.75x.113	A53-B-35 (35 ksi)	Pipe	P.75x.113	A53-B-35 (35 ksi)
T2 140.00-120.00	Pipe	P.75x.113	A53-B-35 (35 ksi)	Pipe	P.75x.113	A53-B-35 (35 ksi)
T3 120.00-110.00	Pipe	P.75x.113	A53-B-35 (35 ksi)	Pipe		A53-B-35 (35 ksi)
T4 110.00-100.00	Pipe		A53-B-35 (35 ksi)	Pipe	P.75x.113	A53-B-35 (35 ksi)
T5 100.00-80.00	Pipe	P.75x.113	A53-B-35	Pipe	P.75x.113	A53-B-35

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T6 80.00-60.00	Pipe	P.75x.113	(35 ksi) A53-B-35 (35 ksi)	Pipe	P.75x.113	(35 ksi) A53-B-35 (35 ksi)
T7 60.00-40.00	Pipe	P.75x.113	(35 ksi) A53-B-35 (35 ksi)	Pipe	P.75x.113	(35 ksi) A53-B-35 (35 ksi)
T8 40.00-20.00	Pipe	P.75x.113	(35 ksi) A53-B-35 (35 ksi)	Pipe	P.75x.113	(35 ksi) A53-B-35 (35 ksi)
T9 20.00-6.70	Pipe	P.75x.113	(35 ksi) A53-B-35 (35 ksi)	Pipe	P.75x.113	(35 ksi) A53-B-35 (35 ksi)
T10 6.70-0.00	Pipe	P.75x.113	(35 ksi) A53-B-35 (35 ksi)	Pipe	P.75x.113	(35 ksi) A53-B-35 (35 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 160.00-140.00	None	Flat Bar		A36 (36 ksi)	Pipe	P.75x.113	A53-B-35 (35 ksi)
T2 140.00-120.00	None	Flat Bar		A36 (36 ksi)	Pipe	P.75x.113	A53-B-35 (35 ksi)
T3 120.00-110.00	None	Flat Bar		A36 (36 ksi)	Pipe	P.75x.113	A53-B-35 (35 ksi)
T4 110.00-100.00	None	Flat Bar		A36 (36 ksi)	Pipe	P.75x.113	A53-B-35 (35 ksi)
T5 100.00-80.00	None	Flat Bar		A36 (36 ksi)	Pipe	P.75x.113	A53-B-35 (35 ksi)
T6 80.00-60.00	None	Flat Bar		A36 (36 ksi)	Pipe	P.75x.113	A53-B-35 (35 ksi)
T7 60.00-40.00	None	Flat Bar		A36 (36 ksi)	Pipe	P.75x.113	A53-B-35 (35 ksi)
T8 40.00-20.00	None	Flat Bar		A36 (36 ksi)	Pipe	P.75x.113	A53-B-35 (35 ksi)
T9 20.00-6.70	None	Flat Bar		A36 (36 ksi)	Pipe	P.75x.113	A53-B-35 (35 ksi)
T10 6.70-0.00	None	Flat Bar		A36 (36 ksi)	Pipe	P.75x.113	A53-B-35 (35 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
T1 160.00-140.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T2 140.00-120.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T3 120.00-	0.00	0.0000	A36	1	1	1	36.0000	36.0000

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
T4 110.00-100.00	0.00	0.0000	(36 ksi) A36 (36 ksi)	1	1	1	36.0000	36.0000
T5 100.00-80.00	0.00	0.0000	(36 ksi) A36 (36 ksi)	1	1	1	36.0000	36.0000
T6 80.00-60.00	0.00	0.0000	(36 ksi) A36 (36 ksi)	1	1	1	36.0000	36.0000
T7 60.00-40.00	0.00	0.0000	(36 ksi) A36 (36 ksi)	1	1	1	36.0000	36.0000
T8 40.00-20.00	0.00	0.0000	(36 ksi) A36 (36 ksi)	1	1	1	36.0000	36.0000
T9 20.00-6.70	0.00	0.0000	(36 ksi) A36 (36 ksi)	1	1	1	36.0000	36.0000
T10 6.70-0.00	0.00	0.0000	(36 ksi) A36 (36 ksi)	1	1	1	36.0000	36.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X 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 160.00-140.00	Yes	Yes	1	1	0.75	1	1	1	1	1
				1	0.75	1	1	1	1	1
T2 140.00-120.00	Yes	Yes	1	1	0.45	1	0.45	0.45	1	1
				1	0.45	1	0.45	0.45	1	1
T3 120.00-110.00	Yes	Yes	1	1	0.45	1	0.45	0.45	1	1
				1	0.45	1	0.45	0.45	1	1
T4 110.00-100.00	Yes	Yes	1	1	0.75	1	1	1	1	1
				1	0.75	1	1	1	1	1
T5 100.00-80.00	Yes	Yes	1	1	0.75	1	1	1	1	1
				1	0.75	1	1	1	1	1
T6 80.00-60.00	Yes	Yes	1	1	0.75	1	1	1	1	1
				1	0.75	1	1	1	1	1
T7 60.00-40.00	Yes	Yes	1	1	0.75	1	1	1	1	1
				1	0.75	1	1	1	1	1
T8 40.00-20.00	Yes	Yes	1	1	0.75	1	1	1	1	1
				1	0.75	1	1	1	1	1
T9 20.00-6.70	Yes	Yes	1	1	0.75	1	1	1	1	1
				1	0.75	1	1	1	1	1
T10 6.70-0.00	Yes	Yes	1	1	0.75	1	1	1	1	1
				1	0.75	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		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 160.00-140.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 140.00-120.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 120.00-110.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 110.00-100.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 100.00-80.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 80.00-60.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 60.00-40.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 40.00-20.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 20.00-6.70	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 6.70-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 160.00-140.00	Flange	0.6250 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 140.00-120.00	Flange	0.6250 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 120.00-110.00	Flange	0.6250 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 110.00-100.00	Flange	0.6250 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 100.00-80.00	Flange	0.6250 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T6 80.00-60.00	Flange	0.6250 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T7 60.00-40.00	Flange	0.6250 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T8 40.00-20.00	Flange	0.6250 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T9 20.00-6.70	Flange	0.6250 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T10 6.70-0.00	Flange	0.6250 A325N	4	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

Guy Data

Guy Elevation ft	Guy Grade		Guy Size	Initial Tension K	%	Guy Modulus ksi	Guy Weight plf	L_u ft	Anchor Radius ft	Anchor Azimuth Adj. °	Anchor Elevation ft	End Fitting Efficiency %
160	EHS	A	7/16	2.08	10%	21000	0.399	187.77	100.00	0.0000	0.00	100%
		B	7/16	2.08	10%	21000	0.399	187.77	100.00	0.0000	0.00	100%
		C	7/16	2.08	10%	21000	0.399	187.77	100.00	0.0000	0.00	100%
116.611	EHS	A	9/16	3.50	10%	21000	0.671	152.55	100.00	0.0000	0.00	100%
		B	9/16	3.50	10%	21000	0.671	152.55	100.00	0.0000	0.00	100%
		C	9/16	3.50	10%	21000	0.671	152.55	100.00	0.0000	0.00	100%
76.6111	EHS	A	7/16	2.08	10%	21000	0.399	124.72	100.00	0.0000	0.00	100%
		B	7/16	2.08	10%	21000	0.399	124.72	100.00	0.0000	0.00	100%
		C	7/16	2.08	10%	21000	0.399	124.72	100.00	0.0000	0.00	100%
36.6111	EHS	A	5/16	1.12	10%	21000	0.205	105.04	100.00	0.0000	0.00	100%
		B	5/16	1.12	10%	21000	0.205	105.04	100.00	0.0000	0.00	100%
		C	5/16	1.12	10%	21000	0.205	105.04	100.00	0.0000	0.00	100%

Guy Data(cont'd)

Guy Elevation ft	Mount Type	Torque-Arm Spread ft	Torque-Arm Leg Angle °	Torque-Arm Style	Torque-Arm Grade	Torque-Arm Type	Torque-Arm Size
160	Torque Arm	5.00	45.0000	Bat Ear	A36 (36 ksi)	Equal Angle	L3x3x3/8
116.611	Corner						
76.6111	Corner						
36.6111	Corner						

Guy Data (cont'd)

Guy Elevation ft	Diagonal Grade	Diagonal Type	Upper Diagonal Size	Lower Diagonal Size	Is Strap.	Pull-Off Grade	Pull-Off Type	Pull-Off Size
160.00	A572-50 (50 ksi)	Solid Round				A36 (36 ksi)	Flat Bar	
116.61	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Flat Bar	3x1/2
76.61	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Flat Bar	3x1/2
36.61	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Flat Bar	3x1/2

Guy Data (cont'd)

Guy Elevation ft	Cable Weight A K	Cable Weight B K	Cable Weight C K	Cable Weight D K	Tower Intercept A ft	Tower Intercept B ft	Tower Intercept C ft	Tower Intercept D ft
160	0.07	0.07	0.07		3.33	3.33	3.33	

Guy Elevation ft	Cable Weight A K	Cable Weight B K	Cable Weight C K	Cable Weight D K	Tower Intercept A ft	Tower Intercept B ft	Tower Intercept C ft	Tower Intercept D ft
					3.2 sec/pulse	3.2 sec/pulse	3.2 sec/pulse	
116.611	0.10	0.10	0.10		2.21	2.21	2.21	
					2.6 sec/pulse	2.6 sec/pulse	2.6 sec/pulse	
76.6111	0.05	0.05	0.05		1.48	1.48	1.48	
					2.1 sec/pulse	2.1 sec/pulse	2.1 sec/pulse	
36.6111	0.02	0.02	0.02		1.01	1.01	1.01	
					1.7 sec/pulse	1.7 sec/pulse	1.7 sec/pulse	

Guy Data *(cont'd)*

Guy Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Torque Arm K_x	Torque Arm K_y	Pull Off K_x	Pull Off K_y	Diagonal K_x	Diagonal K_y
160	Yes	Yes	1	1	1	1	1	1
116.611	No	No			1	1	1	1
76.6111	No	No			1	1	1	1
36.6111	No	No			1	1	1	1

Guy Data *(cont'd)*

Guy Elevation ft	Torque-Arm Bolt Size in	Torque-Arm Number	Torque-Arm Net Width Deduct in	Torque-Arm U	Pull Off Bolt Size in	Pull Off Number	Pull Off Net Width Deduct in	Pull Off U	Diagonal Bolt Size in	Diagonal Number	Diagonal Net Width Deduct in	Diagonal U
160	0.0000 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
116.611	0.0000 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
76.6111	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
36.6111	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75

Guy Pressures

Guy Elevation ft	Guy Location	z ft	q_z psf	q_z Ice psf	Ice Thickness in
160	A	80.00	24	18	0.5000
	B	80.00	24	18	0.5000
	C	80.00	24	18	0.5000
116.611	A	58.31	22	16	0.5000
	B	58.31	22	16	0.5000
	C	58.31	22	16	0.5000
76.6111	A	38.31	19	14	0.5000
	B	38.31	19	14	0.5000
	C	38.31	19	14	0.5000

Guy Elevation ft	Guy Location	z ft	q_z psf	q_z Ice psf	Ice Thickness in
36.6111	A	18.31	18	14	0.5000
	B	18.31	18	14	0.5000
	C	18.31	18	14	0.5000

Guy-Mast Forces (Excluding Wind) - No Ice

Guy Elevation ft	Guy Location	Chord Angle °	Guy Tension Top / Bottom K	F_x K	F_y K	F_z K	M_x kip-ft	M_y kip-ft	M_z kip-ft
160	A	58.3596	2.14	-0.03	1.84	-1.11	-2.65	2.81	-4.59
			2.08						
	A	58.3596	2.14	0.03	1.84	-1.11	-2.65	-2.81	4.59
			2.08						
	B	58.3596	2.14	0.97	1.84	0.53	5.30	2.81	0.00
			2.08						
	B	58.3596	2.14	0.94	1.84	0.58	-2.65	-2.81	-4.59
			2.08						
	C	58.3596	2.14	-0.94	1.84	0.58	-2.65	2.81	4.59
			2.08						
	C	58.3596	2.14	-0.97	1.84	0.53	5.30	-2.81	0.00
			2.08						
			Sum:	0.00	11.01	0.00	-0.00	0.00	0.00
116.611	A	49.7964	3.58	0.00	2.75	-2.28	-3.98	0.00	0.00
			3.50						
	B	49.7964	3.58	1.98	2.75	1.14	1.99	0.00	-3.44
			3.50						
	C	49.7964	3.58	-1.98	2.75	1.14	1.99	0.00	3.44
			3.50						
			Sum:	0.00	8.26	0.00	0.00	0.00	0.00
76.6111	A	37.8590	2.11	0.00	1.31	-1.65	-1.89	0.00	0.00
			2.08						
	B	37.8590	2.11	1.43	1.31	0.83	0.95	0.00	-1.64
			2.08						
	C	37.8590	2.11	-1.43	1.31	0.83	0.95	0.00	1.64
			2.08						
			Sum:	0.00	3.93	0.00	0.00	0.00	0.00
36.6111	A	20.3787	1.13	0.00	0.40	-1.05	-0.58	0.00	0.00
			1.12						
	B	20.3787	1.13	0.91	0.40	0.53	0.29	0.00	-0.50
			1.12						
	C	20.3787	1.13	-0.91	0.40	0.53	0.29	0.00	0.50
			1.12						
			Sum:	0.00	1.21	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 K	F_x K	F_y K	F_z K	M_x kip-ft	M_y kip-ft	M_z kip-ft

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top / Bottom K	F_x	F_y	F_z	M_x	M_y	M_z
ft		°		K	K	K	kip-ft	kip-ft	kip-ft
160	A	58.3596	3.05 2.89	-0.04	2.62	-1.56	-3.78	3.95	-6.55
	A	58.3596	3.05 2.89	0.04	2.62	-1.56	-3.78	-3.95	6.55
	B	58.3596	3.05 2.89	1.37	2.62	0.74	7.57	3.95	0.00
	B	58.3596	3.05 2.89	1.33	2.62	0.81	-3.78	-3.95	-6.55
	C	58.3596	3.05 2.89	-1.33	2.62	0.81	-3.78	3.95	6.55
	C	58.3596	3.05 2.89	-1.37	2.62	0.74	7.57	-3.95	0.00
			Sum:	0.00	15.73	0.00	-0.00	0.00	0.00
116.611	A	49.7964	5.00 4.85	0.00	3.86	-3.18	-5.58	0.00	0.00
	B	49.7964	5.00 4.85	2.75	3.86	1.59	2.79	0.00	-4.83
	C	49.7964	5.00 4.85	-2.75	3.86	1.59	2.79	0.00	4.83
			Sum:	0.00	11.59	0.00	0.00	0.00	0.00
76.6111	A	37.8590	2.99 2.92	0.00	1.87	-2.33	-2.71	0.00	0.00
	B	37.8590	2.99 2.92	2.02	1.87	1.17	1.35	0.00	-2.34
	C	37.8590	2.99 2.92	-2.02	1.87	1.17	1.35	0.00	2.34
			Sum:	0.00	5.62	0.00	0.00	0.00	0.00
36.6111	A	20.3787	1.62 1.60	0.00	0.60	-1.51	-0.86	0.00	0.00
	B	20.3787	1.62 1.60	1.31	0.60	0.75	0.43	0.00	-0.75
	C	20.3787	1.62 1.60	-1.31	0.60	0.75	0.43	0.00	0.75
			Sum:	0.00	1.79	0.00	0.00	0.00	0.00

Guy-Mast Forces (Excluding Wind) - Service

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top / Bottom K	F_x	F_y	F_z	M_x	M_y	M_z
ft		°		K	K	K	kip-ft	kip-ft	kip-ft
160	A	58.3596	2.14 2.08	-0.03	1.84	-1.11	-2.65	2.81	-4.59
	A	58.3596	2.14 2.08	0.03	1.84	-1.11	-2.65	-2.81	4.59
	B	58.3596	2.14 2.08	0.97	1.84	0.53	5.30	2.81	0.00
	B	58.3596	2.14 2.08	0.94	1.84	0.58	-2.65	-2.81	-4.59
	C	58.3596	2.14 2.08	-0.94	1.84	0.58	-2.65	2.81	4.59
	C	58.3596	2.14 2.08	-0.97	1.84	0.53	5.30	-2.81	0.00

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top Bottom K	F_x	F_y	F_z	M_x	M_y	M_z
ft		°		K	K	K	kip-ft	kip-ft	kip-ft
			Sum:	0.00	11.01	0.00	-0.00	0.00	0.00
116.611	A	49.7964	3.58	0.00	2.75	-2.28	-3.98	0.00	0.00
			3.50						
	B	49.7964	3.58	1.98	2.75	1.14	1.99	0.00	-3.44
			3.50						
	C	49.7964	3.58	-1.98	2.75	1.14	1.99	0.00	3.44
			3.50						
			Sum:	0.00	8.26	0.00	0.00	0.00	0.00
76.6111	A	37.8590	2.11	0.00	1.31	-1.65	-1.89	0.00	0.00
			2.08						
	B	37.8590	2.11	1.43	1.31	0.83	0.95	0.00	-1.64
			2.08						
	C	37.8590	2.11	-1.43	1.31	0.83	0.95	0.00	1.64
			2.08						
			Sum:	0.00	3.93	0.00	0.00	0.00	0.00
36.6111	A	20.3787	1.13	0.00	0.40	-1.05	-0.58	0.00	0.00
			1.12						
	B	20.3787	1.13	0.91	0.40	0.53	0.29	0.00	-0.50
			1.12						
	C	20.3787	1.13	-0.91	0.40	0.53	0.29	0.00	0.50
			1.12						
			Sum:	0.00	1.21	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
7/8	C	No	Ar (Leg)	160.00 - 6.00	0.0000	0	1	1	1.1100	1.1100		0.54
3/8	C	No	Ar (Leg)	160.00 - 6.00	0.0000	0	1	1	0.4000	0.4000		0.20
1/2	C	No	Ar (Leg)	160.00 - 6.00	0.0000	0	1	1	0.5800	0.5800		0.25
7/8	A	No	Ar (Leg)	160.00 - 6.00	0.0000	0	2	2	1.1100	1.1100		0.54
1/2	A	No	Ar (Leg)	160.00 - 6.00	0.0000	0	3	3	0.5800	0.5800		0.25
7/8	B	No	Ar (Leg)	160.00 - 6.00	0.0000	0	2	2	1.1100	1.1100		0.54
1/2	C	No	Ar (Leg)	52.00 - 6.00	0.0000	0	1	1	0.5800	0.5800		0.25
1 5/8 (Verizon - Existing)	C	No	Ar (CfAe)	135.00 - 6.00	5.0000	0.35	12	2	1.0000	1.9800		1.04
1 1/4 (AT&T)	C	Yes	Ar (CfAe)	124.00 - 1.00	1.0000	-0.15	4	4	1.5500	1.5500		0.66
1 1/4 (Nextel)	B	No	Ar (CfAe)	146.00 - 6.00	5.0000	-0.35	12	2	1.0000	1.5500		0.66
1 5/8 (Verizon - Proposed)	A	No	Ar (CfAe)	135.00 - 6.00	3.0000	0.35	6	2	1.0000	1.9800		1.04

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 K
T1	160.00-140.00	A	10.083	0.000	0.000	0.000	0.04
		B	11.850	0.000	0.000	0.000	0.07
		C	7.183	0.000	0.000	0.000	0.02
T2	140.00-120.00	A	15.033	0.000	0.000	0.000	0.13
		B	15.467	0.000	0.000	0.000	0.18
		C	14.200	0.000	0.000	0.000	0.22
T3	120.00-110.00	A	8.342	0.000	0.000	0.000	0.08
		B	7.733	0.000	0.000	0.000	0.09
		C	12.058	0.000	0.000	0.000	0.16
T4	110.00-100.00	A	8.342	0.000	0.000	0.000	0.08
		B	7.733	0.000	0.000	0.000	0.09
		C	12.058	0.000	0.000	0.000	0.16
T5	100.00-80.00	A	16.683	0.000	0.000	0.000	0.16
		B	15.467	0.000	0.000	0.000	0.18
		C	24.117	0.000	0.000	0.000	0.32
T6	80.00-60.00	A	16.683	0.000	0.000	0.000	0.16
		B	15.467	0.000	0.000	0.000	0.18
		C	24.117	0.000	0.000	0.000	0.32
T7	60.00-40.00	A	17.263	0.000	0.000	0.000	0.16
		B	15.467	0.000	0.000	0.000	0.18
		C	24.697	0.000	0.000	0.000	0.33
T8	40.00-20.00	A	17.650	0.000	0.000	0.000	0.16
		B	15.467	0.000	0.000	0.000	0.18
		C	25.083	0.000	0.000	0.000	0.33
T9	20.00-6.70	A	11.737	0.000	0.000	0.000	0.11
		B	10.285	0.000	0.000	0.000	0.12
		C	16.680	0.000	0.000	0.000	0.22
T10	6.70-0.00	A	0.618	0.000	0.000	0.000	0.01
		B	0.541	0.000	0.000	0.000	0.01
		C	3.461	0.000	0.000	0.000	0.02

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 K
T1	160.00-140.00	A	0.500	18.150	3.867	0.000	0.000	0.11
		B		17.975	5.142	0.000	0.000	0.22
		C		15.517	0.000	0.000	0.000	0.06
T2	140.00-120.00	A	0.500	21.875	7.592	0.000	0.000	0.38
		B		20.950	8.117	0.000	0.000	0.59
		C		22.642	3.725	0.000	0.000	0.62
T3	120.00-110.00	A	0.500	11.558	4.417	0.000	0.000	0.23
		B		10.475	4.058	0.000	0.000	0.29
		C		18.742	2.483	0.000	0.000	0.46
T4	110.00-100.00	A	0.500	11.558	4.417	0.000	0.000	0.23
		B		10.475	4.058	0.000	0.000	0.29
		C		18.742	2.483	0.000	0.000	0.46
T5	100.00-80.00	A	0.500	23.117	8.833	0.000	0.000	0.46
		B		20.950	8.117	0.000	0.000	0.59
		C		37.483	4.967	0.000	0.000	0.92
T6	80.00-60.00	A	0.500	23.117	8.833	0.000	0.000	0.46
		B		20.950	8.117	0.000	0.000	0.59
		C		37.483	4.967	0.000	0.000	0.92
T7	60.00-40.00	A	0.500	24.697	8.833	0.000	0.000	0.46
		B		20.950	8.117	0.000	0.000	0.59
		C		39.063	4.967	0.000	0.000	0.93
T8	40.00-20.00	A	0.500	25.750	8.833	0.000	0.000	0.46

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 K
T9	20.00-6.70	B	0.500	20.950	8.117	0.000	0.000	0.59
		C		40.117	4.967	0.000	0.000	0.94
		A		17.124	5.874	0.000	0.000	0.31
		B		13.932	5.398	0.000	0.000	0.39
		C		26.678	3.303	0.000	0.000	0.62
T10	6.70-0.00	A	0.500	0.901	0.309	0.000	0.000	0.02
		B		0.733	0.284	0.000	0.000	0.02
		C		5.654	0.174	0.000	0.000	0.07

Feed Line Shielding

Section	Elevation ft	Face	A_R ft^2	A_R Ice ft^2	A_F ft^2	A_F Ice ft^2
T1	160.00-140.00	A	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.000	0.000
T2	140.00-120.00	A	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	0.153	0.492	0.000	0.000
T3	120.00-110.00	A	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	0.315	1.083	0.129	0.213
T4	110.00-100.00	A	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	0.406	1.303	0.000	0.000
T5	100.00-80.00	A	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	0.766	2.461	0.000	0.000
T6	80.00-60.00	A	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	0.721	2.386	0.129	0.213
T7	60.00-40.00	A	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	0.766	2.461	0.000	0.000
T8	40.00-20.00	A	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	0.721	2.386	0.129	0.213
T9	20.00-6.70	A	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	0.525	1.685	0.000	0.000
T10	6.70-0.00	A	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	0.000
		C	0.154	0.494	0.000	0.000

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	160.00-140.00	0.3392	-1.2118	-0.0459	-0.6658
T2	140.00-120.00	-0.1817	-1.2859	-0.1706	-0.6135

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
T3	120.00-110.00	-0.1279	-0.2090	0.0254	0.2424
T4	110.00-100.00	-0.1255	-0.2026	0.0249	0.2413
T5	100.00-80.00	-0.1240	-0.1988	0.0292	0.2524
T6	80.00-60.00	-0.1267	-0.2058	0.0251	0.2419
T7	60.00-40.00	-0.2137	-0.1437	-0.1172	0.3316
T8	40.00-20.00	-0.2732	-0.1157	-0.2142	0.3719
T9	20.00-6.70	-0.2725	-0.1099	-0.2130	0.3770
T10	6.70-0.00	0.3085	0.9512	0.3287	1.0946

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral / Vert	Azimuth Adjustment	Placement		C_AA_A Front	C_AA_A Side	Weight
			ft / ft / ft	°	ft		ft^2	ft^2	K
14' x 2" Dia Omni	C	From Leg	0.00 / 0.00 / 7.00	0.0000	160.00	No Ice	2.80	2.80	0.04
						1/2" Ice	4.22	4.22	0.06
15' 2.5" Dia omni	A	From Leg	2.00 / 0.00 / 7.50	0.0000	160.00	No Ice	3.75	3.75	0.05
						1/2" Ice	5.28	5.28	0.08
20' x 2" Dia Omni	B	From Leg	2.00 / 0.00 / 10.00	0.0000	160.00	No Ice	4.00	4.00	0.02
						1/2" Ice	6.03	6.03	0.05
20' x 2" Dia Omni	C	From Leg	2.00 / 0.00 / 10.00	0.0000	160.00	No Ice	4.00	4.00	0.02
						1/2" Ice	6.03	6.03	0.05
5' 4-Bay Diple	A	From Leg	1.00 / 0.00 / 2.50	0.0000	160.00	No Ice	1.36	1.36	0.06
						1/2" Ice	1.67	1.67	0.07
(4) DB844H90E-XY (Nextel)	A	From Leg	3.00 / 0.00 / 0.00	0.0000	146.00	No Ice	2.87	3.73	0.01
						1/2" Ice	3.18	4.10	0.04
(4) DB844H90E-XY (Nextel)	B	From Leg	3.00 / 0.00 / 0.00	0.0000	146.00	No Ice	2.87	3.73	0.01
						1/2" Ice	3.18	4.10	0.04
(4) DB844H90E-XY (Nextel)	C	From Leg	3.00 / 0.00 / 0.00	0.0000	146.00	No Ice	2.87	3.73	0.01
						1/2" Ice	3.18	4.10	0.04
13-ft Lightweight T-Frame (Nextel)	A	From Leg	1.50 / 0.00 / 0.00	0.0000	146.00	No Ice	10.60	6.80	0.26
						1/2" Ice	16.80	7.80	0.36
13-ft Lightweight T-Frame (Nextel)	B	From Leg	1.50 / 0.00 / 0.00	0.0000	146.00	No Ice	10.60	6.80	0.26
						1/2" Ice	16.80	7.80	0.36
13-ft Lightweight T-Frame (Nextel)	C	From Leg	1.50 / 0.00 / 0.00	0.0000	146.00	No Ice	10.60	6.80	0.26
						1/2" Ice	16.80	7.80	0.36
MB96RR900200DPBL (AT&T)	B	From Leg	3.00 / 0.00 / 0.00	0.0000	124.00	No Ice	11.47	7.58	0.04
						1/2" Ice	12.08	8.17	0.10
MB96RR900200DPBL (AT&T)	C	From Leg	3.00 / 0.00	0.0000	124.00	No Ice	11.47	7.58	0.04
						1/2" Ice	12.08	8.17	0.10

Description	Face or Leg	Offset Type	Offsets: Horz Lateral / Vert	Azimuth Adjustment	Placement		C_AA_f Front	C_AA_f Side	Weight
			ft ft ft	°	ft		ft^2	ft^2	K
			0.00						
1900 TMA (AT&T)	B	From Leg	3.00 0.00 0.00	0.0000	124.00	No Ice 1/2" Ice	1.29 1.44	0.31 0.41	0.01 0.02
1900 TMA (AT&T)	C	From Leg	3.00 0.00 0.00	0.0000	124.00	No Ice 1/2" Ice	1.29 1.44	0.31 0.41	0.01 0.02
PiROD 10' Lightweight T-Frame (AT&T)	A	From Leg	2.00 0.00 0.00	0.0000	124.00	No Ice 1/2" Ice	9.30 14.50	9.30 14.50	0.25 0.34
PiROD 10' Lightweight T-Frame (AT&T)	B	From Leg	2.00 0.00 0.00	0.0000	124.00	No Ice 1/2" Ice	9.30 14.50	9.30 14.50	0.25 0.34
PiROD 10' Lightweight T-Frame (AT&T)	C	From Leg	2.00 0.00 0.00	0.0000	124.00	No Ice 1/2" Ice	9.30 14.50	9.30 14.50	0.25 0.34
1' Side Arm	B	From Leg	1.00 0.00 0.00	0.0000	42.00	No Ice 1/2" Ice	0.51 0.95	0.26 0.48	0.01 0.03
20' 4-Bay Dipole	B	From Leg	1.00 0.00 0.00	0.0000	52.00	No Ice 1/2" Ice	4.00 6.00	4.00 6.00	0.06 0.10
13-ft Lightweight T-Frame (Verizon - Existing)	A	From Leg	3.00 0.00 0.00	0.0000	135.00	No Ice 1/2" Ice	10.60 16.80	6.80 7.80	0.26 0.36
13-ft Lightweight T-Frame (Verizon - Existing)	B	From Leg	3.00 0.00 0.00	0.0000	135.00	No Ice 1/2" Ice	10.60 16.80	6.80 7.80	0.26 0.36
13-ft Lightweight T-Frame (Verizon - Existing)	C	From Leg	3.00 0.00 0.00	0.0000	135.00	No Ice 1/2" Ice	10.60 16.80	6.80 7.80	0.26 0.36
SC-E 6014 Rev2 (Verizon - Proposed)	A	From Leg	3.00 6.00 0.00	0.0000	135.00	No Ice 1/2" Ice	3.55 3.89	3.34 3.68	0.02 0.04
SLCP 2X6014 (Verizon - Proposed)	A	From Leg	3.00 0.00 0.00	0.0000	135.00	No Ice 1/2" Ice	7.21 7.65	5.67 6.09	0.02 0.07
BXA-171063-12BF (Verizon - Proposed)	A	From Leg	3.00 -4.00 0.00	0.0000	135.00	No Ice 1/2" Ice	4.73 5.18	3.57 4.01	0.02 0.04
SC-E 6014 Rev2 (Verizon - Proposed)	A	From Leg	3.00 -6.00 0.00	0.0000	135.00	No Ice 1/2" Ice	3.55 3.89	3.34 3.68	0.02 0.04
SC-E 6014 Rev2 (Verizon - Proposed)	B	From Leg	3.00 6.00 0.00	0.0000	135.00	No Ice 1/2" Ice	3.55 3.89	3.34 3.68	0.02 0.04
SLCP 2X6014 (Verizon - Proposed)	B	From Leg	3.00 0.00 0.00	0.0000	135.00	No Ice 1/2" Ice	7.21 7.65	5.67 6.09	0.02 0.07
BXA-171063-12BF (Verizon - Proposed)	B	From Leg	3.00 -4.00 0.00	0.0000	135.00	No Ice 1/2" Ice	4.73 5.18	3.57 4.01	0.02 0.04
SC-E 6014 Rev2 (Verizon - Proposed)	B	From Leg	3.00 -6.00 0.00	0.0000	135.00	No Ice 1/2" Ice	3.55 3.89	3.34 3.68	0.02 0.04
LPA-80080-6CF (Verizon - Existing)	C	From Leg	3.00 6.00	0.0000	135.00	No Ice 1/2" Ice	4.33 4.76	9.09 9.64	0.02 0.07

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00						
LPA-70063-4CF	C	From Leg	3.00	0.0000	135.00	No Ice	7.00	6.04	0.02
(Verizon - Proposed)			0.00			1/2" Ice	7.41	6.43	0.07
			0.00						
BXA-171063-12BF	C	From Leg	3.00	0.0000	135.00	No Ice	4.73	3.57	0.02
(Verizon - Proposed)			-4.00			1/2" Ice	5.18	4.01	0.04
			0.00						
LPA-80080-6CF	C	From Leg	3.00	0.0000	135.00	No Ice	4.33	9.09	0.02
(Verizon - Existing)			-6.00			1/2" Ice	4.76	9.64	0.07
			0.00						

Tower Pressures - No Ice

$G_H = 1.129$

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 160.00-140.00	150.00	1.541	29	54.792	A	0.000	23.024	9.583	41.62	0.000	0.000
					B	0.000	24.790		38.66	0.000	0.000
					C	0.000	20.124		47.62	0.000	0.000
T2 140.00-120.00	130.00	1.48	27	54.792	A	0.000	27.969	9.583	34.26	0.000	0.000
					B	0.000	28.402		33.74	0.000	0.000
					C	0.000	26.982		35.52	0.000	0.000
T3 120.00-110.00	115.00	1.429	26	27.396	A	0.565	14.513	4.792	31 78	0.000	0.000
					B	0.565	13.904		33.12	0.000	0.000
					C	0.436	17.914		26.11	0.000	0.000
T4 110.00-100.00	105.00	1.392	26	27.396	A	0.000	14.908	4.792	32.14	0.000	0.000
					B	0.000	14.300		33.51	0.000	0.000
					C	0.000	18.219		26.30	0.000	0.000
T5 100.00-80.00	90.00	1.332	25	54.792	A	0.000	29.619	9.583	32.36	0.000	0.000
					B	0.000	28.402		33.74	0.000	0.000
					C	0.000	36.286		26.41	0.000	0.000
T6 80.00-60.00	70.00	1.24	23	54.792	A	0.565	29.421	9.583	31.96	0.000	0.000
					B	0.565	28.204		33.31	0.000	0.000
					C	0.436	36.133		26.21	0.000	0.000
T7 60.00-40.00	50.00	1 126	21	54.792	A	0.000	30.199	9.583	31 73	0.000	0.000
					B	0.000	28.402		33.74	0.000	0.000
					C	0.000	36.866		26.00	0.000	0.000
T8 40.00-20.00	30.00	1	18	54.792	A	0.565	30.387	9.583	30.96	0.000	0.000
					B	0.565	28.204		33.31	0.000	0.000
					C	0.436	37.100		25.53	0.000	0.000
T9 20.00-6.70	13.35	1	18	36.436	A	0.000	20.405	6.373	31.23	0.000	0.000
					B	0.000	18.953		33.62	0.000	0.000
					C	0.000	24.824		25.67	0.000	0.000
T10 6.70-0.00	3.35	1	18	10.008	A	0.000	4.474	3.284	73.41	0.000	0.000
					B	0.000	4.397		74.68	0.000	0.000
					C	0.000	7.164		45.84	0.000	0.000

Tower Pressure - With Ice

$G_H = 1.129$

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1 160.00-140.00	150.00	1.541	21	0.5000	56.458	A	3.867	37.621	12.917	31.13	0.000	0.000
						B	5.142	37.446		30.33	0.000	0.000
						C	0.000	34.988		36.92	0.000	0.000
T2 140.00-120.00	130.00	1.48	21	0.5000	56.458	A	7.592	41.336	12.917	26.40	0.000	0.000
						B	8.117	40.411		26.62	0.000	0.000
						C	3.725	41.610		28.49	0.000	0.000
T3 120.00-110.00	115.00	1.429	20	0.5000	28.229	A	4.982	20.898	6.458	24.96	0.000	0.000
						B	4.623	19.815		26.43	0.000	0.000
						C	2.836	26.998		21.65	0.000	0.000
T4 110.00-100.00	105.00	1.392	19	0.5000	28.229	A	4.417	21.482	6.458	24.94	0.000	0.000
						B	4.058	20.398		26.41	0.000	0.000
						C	2.483	27.362		21.64	0.000	0.000
T5 100.00-80.00	90.00	1.332	18	0.5000	56.458	A	8.833	42.577	12.917	25.12	0.000	0.000
						B	8.117	40.411		26.62	0.000	0.000
						C	4.967	54.483		21.73	0.000	0.000
T6 80.00-60.00	70.00	1.24	17	0.5000	56.458	A	9.398	42.380	12.917	24.95	0.000	0.000
						B	8.682	40.213		26.42	0.000	0.000
						C	5.319	54.360		21.64	0.000	0.000
T7 60.00-40.00	50.00	1.126	16	0.5000	56.458	A	8.833	44.157	12.917	24.38	0.000	0.000
						B	8.117	40.411		26.62	0.000	0.000
						C	4.967	56.063		21.16	0.000	0.000
T8 40.00-20.00	30.00	1	14	0.5000	56.458	A	9.398	45.013	12.917	23.74	0.000	0.000
						B	8.682	40.213		26.42	0.000	0.000
						C	5.319	56.993		20.73	0.000	0.000
T9 20.00-6.70	13.35	1	14	0.5000	37.545	A	5.874	30.194	8.590	23.81	0.000	0.000
						B	5.398	27.002		26.51	0.000	0.000
						C	3.303	38.063		20.77	0.000	0.000
T10 6.70-0.00	3.35	1	14	0.5000	10.576	A	0.309	6.444	4.426	65.54	0.000	0.000
						B	0.284	6.276		67.47	0.000	0.000
						C	0.174	10.704		40.69	0.000	0.000

Tower Pressure - Service

$G_H = 1.129$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1 160.00-140.00	150.00	1.541	10	54.792	A	0.000	23.024	9.583	41.62	0.000	0.000
					B	0.000	24.790		38.66	0.000	0.000
					C	0.000	20.124		47.62	0.000	0.000
T2 140.00-120.00	130.00	1.48	9	54.792	A	0.000	27.969	9.583	34.26	0.000	0.000
					B	0.000	28.402		33.74	0.000	0.000
					C	0.000	26.982		35.52	0.000	0.000
T3 120.00-110.00	115.00	1.429	9	27.396	A	0.565	14.513	4.792	31.78	0.000	0.000
					B	0.565	13.904		33.12	0.000	0.000
					C	0.436	17.914		26.11	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T4 110.00-100.00	105.00	1.392	9	27.396	A	0.000	14.908	4.792	32.14	0.000	0.000
					B	0.000	14.300		33.51	0.000	0.000
					C	0.000	18.219		26.30	0.000	0.000
T5 100.00-80.00	90.00	1.332	9	54.792	A	0.000	29.619	9.583	32.36	0.000	0.000
					B	0.000	28.402		33.74	0.000	0.000
					C	0.000	36.286		26.41	0.000	0.000
T6 80.00-60.00	70.00	1.24	8	54.792	A	0.565	29.421	9.583	31.96	0.000	0.000
					B	0.565	28.204		33.31	0.000	0.000
					C	0.436	36.133		26.21	0.000	0.000
T7 60.00-40.00	50.00	1.126	7	54.792	A	0.000	30.199	9.583	31.73	0.000	0.000
					B	0.000	28.402		33.74	0.000	0.000
					C	0.000	36.866		26.00	0.000	0.000
T8 40.00-20.00	30.00	1	6	54.792	A	0.565	30.387	9.583	30.96	0.000	0.000
					B	0.565	28.204		33.31	0.000	0.000
					C	0.436	37.100		25.53	0.000	0.000
T9 20.00-6.70	13.35	1	6	36.436	A	0.000	20.405	6.373	31.23	0.000	0.000
					B	0.000	18.953		33.62	0.000	0.000
					C	0.000	24.824		25.67	0.000	0.000
T10 6.70-0.00	3.35	1	6	10.008	A	0.000	4.474	3.284	73.41	0.000	0.000
					B	0.000	4.397		74.68	0.000	0.000
					C	0.000	7.164		45.84	0.000	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1 160.00-140.00	0.13	0.60	A	0.42	2.025	0.66	1	1	15.197	1.06	52.98	B
		TA 0.29	B	0.452	1.97	0.674	1	1	16.719			
			C	0.367	2.132	0.639	1	1	12.855			
T2 140.00-120.00	0.53	0.60	A	0.51	1.887	0.703	1	1	19.659	1.16	58.23	B
			B	0.518	1.877	0.707	1	1	20.081			
			C	0.492	1.91	0.694	1	1	18.717			
T3 120.00-110.00	0.33	0.27	A	0.55	1.843	0.724	1	1	11.079	0.78	78.17	C
			B	0.528	1.866	0.712	1	1	10.469			
			C	0.67	1.777	0.799	1	1	14.746			
T4 110.00-100.00	0.33	0.25	A	0.544	1.849	0.721	1	1	10.749	0.75	74.90	C
			B	0.522	1.873	0.709	1	1	10.138			
			C	0.665	1.778	0.796	1	1	14.494			
T5 100.00-80.00	0.66	0.49	A	0.541	1.853	0.719	1	1	21.297	1.42	71.22	C
			B	0.518	1.877	0.707	1	1	20.081			
			C	0.662	1.779	0.794	1	1	28.799			
T6 80.00-60.00	0.66	0.52	A	0.547	1.846	0.723	1	1	21.829	1.35	67.27	C
			B	0.525	1.87	0.711	1	1	20.607			
			C	0.667	1.778	0.797	1	1	29.241			
T7 60.00-40.00	0.67	0.49	A	0.551	1.842	0.725	1	1	21.892	1.23	61.67	C
			B	0.518	1.877	0.707	1	1	20.081			
			C	0.673	1.777	0.801	1	1	29.525			
T8 40.00-20.00	0.67	0.52	A	0.565	1.83	0.733	1	1	22.832	1.13	56.48	C
			B	0.525	1.87	0.711	1	1	20.607			
			C	0.685	1.776	0.809	1	1	30.463			
T9 20.00-6.70	0.44	0.33	A	0.56	1.834	0.73	1	1	14.895	0.74	55.84	C
			B	0.52	1.875	0.708	1	1	13.419			
			C	0.681	1.776	0.807	1	1	20.026			
T10 6.70-0.00	0.04	0.14	A	0.447	1.978	0.672	1	1	3.006	0.22	32.99	C
			B	0.439	1.991	0.668	1	1	2.939			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
Sum Weight:	4.46	4.52	C	0.716	1.778	0.831	1	1	5.955	9.85		

Tower Forces - No Ice - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1 160.00-140.00	0.13	0.60 TA 0.29	A	0.42	2.025	0.66	0.825	1	15.197	1.06	52.98	B
			B	0.452	1.97	0.674	0.825	1	16.719			
			C	0.367	2.132	0.639	0.825	1	12.855			
T2 140.00-120.00	0.53	0.60	A	0.51	1.887	0.703	0.825	1	19.659	1.16	58.23	B
			B	0.518	1.877	0.707	0.825	1	20.081			
			C	0.492	1.91	0.694	0.825	1	18.717			
T3 120.00-110.00	0.33	0.27	A	0.55	1.843	0.724	0.825	1	10.980	0.78	77.77	C
			B	0.528	1.866	0.712	0.825	1	10.370			
			C	0.67	1.777	0.799	0.825	1	14.669			
T4 110.00-100.00	0.33	0.25	A	0.544	1.849	0.721	0.825	1	10.749	0.75	74.90	C
			B	0.522	1.873	0.709	0.825	1	10.138			
			C	0.665	1.778	0.796	0.825	1	14.494			
T5 100.00-80.00	0.66	0.49	A	0.541	1.853	0.719	0.825	1	21.297	1.42	71.22	C
			B	0.518	1.877	0.707	0.825	1	20.081			
			C	0.662	1.779	0.794	0.825	1	28.799			
T6 80.00-60.00	0.66	0.52	A	0.547	1.846	0.723	0.825	1	21.730	1.34	67.10	C
			B	0.525	1.87	0.711	0.825	1	20.508			
			C	0.667	1.778	0.797	0.825	1	29.164			
T7 60.00-40.00	0.67	0.49	A	0.551	1.842	0.725	0.825	1	21.892	1.23	61.67	C
			B	0.518	1.877	0.707	0.825	1	20.081			
			C	0.673	1.777	0.801	0.825	1	29.525			
T8 40.00-20.00	0.67	0.52	A	0.565	1.83	0.733	0.825	1	22.733	1.13	56.33	C
			B	0.525	1.87	0.711	0.825	1	20.508			
			C	0.685	1.776	0.809	0.825	1	30.386			
T9 20.00-6.70	0.44	0.33	A	0.56	1.834	0.73	0.825	1	14.895	0.74	55.84	C
			B	0.52	1.875	0.708	0.825	1	13.419			
			C	0.681	1.776	0.807	0.825	1	20.026			
T10 6.70-0.00	0.04	0.14	A	0.447	1.978	0.672	0.825	1	3.006	0.22	32.99	C
			B	0.439	1.991	0.668	0.825	1	2.939			
			C	0.716	1.778	0.831	0.825	1	5.955			
Sum Weight:	4.46	4.52								9.84		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1 160.00-140.00	0.13	0.60 TA 0.29	A	0.42	2.025	0.66	0.8	1	15.197	1.06	52.98	B
			B	0.452	1.97	0.674	0.8	1	16.719			
			C	0.367	2.132	0.639	0.8	1	12.855			
T2 140.00-	0.53	0.60	A	0.51	1.887	0.703	0.8	1	19.659	1.16	58.23	B

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
120.00			B	0.518	1.877	0.707	0.8	1	20.081			
			C	0.492	1.91	0.694	0.8	1	18.717			
T3 120.00-110.00	0.33	0.27	A	0.55	1.843	0.724	0.8	1	10.966	0.78	77.71	C
			B	0.528	1.866	0.712	0.8	1	10.356			
			C	0.67	1.777	0.799	0.8	1	14.659			
T4 110.00-100.00	0.33	0.25	A	0.544	1.849	0.721	0.8	1	10.749	0.75	74.90	C
			B	0.522	1.873	0.709	0.8	1	10.138			
			C	0.665	1.778	0.796	0.8	1	14.494			
T5 100.00-80.00	0.66	0.49	A	0.541	1.853	0.719	0.8	1	21.297	1.42	71.22	C
			B	0.518	1.877	0.707	0.8	1	20.081			
			C	0.662	1.779	0.794	0.8	1	28.799			
T6 80.00-60.00	0.66	0.52	A	0.547	1.846	0.723	0.8	1	21.716	1.34	67.07	C
			B	0.525	1.87	0.711	0.8	1	20.494			
			C	0.667	1.778	0.797	0.8	1	29.153			
T7 60.00-40.00	0.67	0.49	A	0.551	1.842	0.725	0.8	1	21.892	1.23	61.67	C
			B	0.518	1.877	0.707	0.8	1	20.081			
			C	0.673	1.777	0.801	0.8	1	29.525			
T8 40.00-20.00	0.67	0.52	A	0.565	1.83	0.733	0.8	1	22.719	1.13	56.31	C
			B	0.525	1.87	0.711	0.8	1	20.494			
			C	0.685	1.776	0.809	0.8	1	30.375			
T9 20.00-6.70	0.44	0.33	A	0.56	1.834	0.73	0.8	1	14.895	0.74	55.84	C
			B	0.52	1.875	0.708	0.8	1	13.419			
			C	0.681	1.776	0.807	0.8	1	20.026			
T10 6.70-0.00	0.04	0.14	A	0.447	1.978	0.672	0.8	1	3.006	0.22	32.99	C
			B	0.439	1.991	0.668	0.8	1	2.939			
			C	0.716	1.778	0.831	0.8	1	5.955			
Sum Weight:	4.46	4.52								9.84		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1 160.00-140.00	0.13	0.60 TA 0.29	A	0.42	2.025	0.66	0.85	1	15.197	1.06	52.98	B
			B	0.452	1.97	0.674	0.85	1	16.719			
			C	0.367	2.132	0.639	0.85	1	12.855			
T2 140.00-120.00	0.53	0.60	A	0.51	1.887	0.703	0.85	1	19.659	1.16	58.23	B
			B	0.518	1.877	0.707	0.85	1	20.081			
			C	0.492	1.91	0.694	0.85	1	18.717			
T3 120.00-110.00	0.33	0.27	A	0.55	1.843	0.724	0.85	1	10.994	0.78	77.83	C
			B	0.528	1.866	0.712	0.85	1	10.384			
			C	0.67	1.777	0.799	0.85	1	14.680			
T4 110.00-100.00	0.33	0.25	A	0.544	1.849	0.721	0.85	1	10.749	0.75	74.90	C
			B	0.522	1.873	0.709	0.85	1	10.138			
			C	0.665	1.778	0.796	0.85	1	14.494			
T5 100.00-80.00	0.66	0.49	A	0.541	1.853	0.719	0.85	1	21.297	1.42	71.22	C
			B	0.518	1.877	0.707	0.85	1	20.081			
			C	0.662	1.779	0.794	0.85	1	28.799			
T6 80.00-60.00	0.66	0.52	A	0.547	1.846	0.723	0.85	1	21.744	1.34	67.12	C
			B	0.525	1.87	0.711	0.85	1	20.522			
			C	0.667	1.778	0.797	0.85	1	29.175			
T7 60.00-40.00	0.67	0.49	A	0.551	1.842	0.725	0.85	1	21.892	1.23	61.67	C
			B	0.518	1.877	0.707	0.85	1	20.081			
			C	0.673	1.777	0.801	0.85	1	29.525			
T8 40.00-	0.67	0.52	A	0.565	1.83	0.733	0.85	1	22.747	1.13	56.35	C

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
20.00			B	0.525	1.87	0.711	0.85	1	20.522			
			C	0.685	1.776	0.809	0.85	1	30.397			
T9 20.00-6.70	0.44	0.33	A	0.56	1.834	0.73	0.85	1	14.895	0.74	55.84	C
			B	0.52	1.875	0.708	0.85	1	13.419			
			C	0.681	1.776	0.807	0.85	1	20.026			
T10 6.70-0.00	0.04	0.14	A	0.447	1.978	0.672	0.85	1	3.006	0.22	32.99	C
			B	0.439	1.991	0.668	0.85	1	2.939			
			C	0.716	1.778	0.831	0.85	1	5.955			
Sum Weight:	4.46	4.52								9.84		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1 160.00-140.00	0.40	0.85 TA 0.40	A	0.735	1.782	0.845	1	1	35.671	1.61	80.65	B
			B	0.754	1.789	0.86	1	1	37.352			
			C	0.62	1.793	0.766	1	1	26.796			
T2 140.00-120.00	1.58	0.85	A	0.867	1.88	0.953	1	1	46.985	2.05	102.35	A
			B	0.86	1.872	0.947	1	1	46.377			
			C	0.803	1.818	0.899	1	1	41.126			
T3 120.00-110.00	0.98	0.40	A	0.917	1.949	0.999	1	1	25.851	1.26*	126.30	C
			B	0.866	1.879	0.952	1	1	23.491			
			C	1	2.1	1	1	1	29.834			
T4 110.00-100.00	0.98	0.38	A	0.917	1.95	0.999	1	1	25.883	1.23*	123.06	C
			B	0.866	1.88	0.953	1	1	23.494			
			C	1	2.1	1	1	1	29.845			
T5 100.00-80.00	1.97	0.74	A	0.911	1.939	0.993	1	1	51.108	2.36*	117.76	C
			B	0.86	1.872	0.947	1	1	46.377			
			C	1	2.1	1	1	1	59.450			
T6 80.00-60.00	1.97	0.77	A	0.917	1.949	0.999	1	1	51.733	2.19*	109.60	C
			B	0.866	1.88	0.953	1	1	46.985			
			C	1	2.1	1	1	1	59.679			
T7 60.00-40.00	1.98	0.74	A	0.939	1.984	1	1	1	52.991	1.99*	99.56	C
			B	0.86	1.872	0.947	1	1	46.377			
			C	1	2.1	1	1	1	61.030			
T8 40.00-20.00	1.99	0.77	A	0.964	2.028	1	1	1	54.411	1.77*	88.41	C
			B	0.866	1.88	0.953	1	1	46.985			
			C	1	2.1	1	1	1	62.312			
T9 20.00-6.70	1.32	0.49	A	0.961	2.023	1	1	1	36.068	1.18*	88.41	C
			B	0.863	1.876	0.95	1	1	31.044			
			C	1	2.1	1	1	1	41.366			
T10 6.70-0.00	0.11	0.21	A	0.639	1.785	0.778	1	1	5.323	0.33*	49.44	C
			B	0.62	1.793	0.766	1	1	5.093			
			C	1	2.1	1	1	1	10.878			
Sum Weight:	13.28	6.58			*2A_g limit					15.97		

Tower Forces - With Ice - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1 160.00-140.00	0.40	0.85 TA 0.40	A	0.735	1.782	0.845	0.825	1	34.995	1.57	78.71	B
			B	0.754	1.789	0.86	0.825	1	36.453			
			C	0.62	1.793	0.766	0.825	1	26.796			
T2 140.00-120.00	1.58	0.85	A	0.867	1.88	0.953	0.825	1	45.657	1.99	99.45	A
			B	0.86	1.872	0.947	0.825	1	44.956			
			C	0.803	1.818	0.899	0.825	1	40.474			
T3 120.00-110.00	0.98	0.40	A	0.917	1.949	0.999	0.825	1	24.979	1.26*	126.30	C
			B	0.866	1.879	0.952	0.825	1	22.682			
			C	1	2.1	1	0.825	1	29.337			
T4 110.00-100.00	0.98	0.38	A	0.917	1.95	0.999	0.825	1	25.110	1.23*	123.06	C
			B	0.866	1.88	0.953	0.825	1	22.784			
			C	1	2.1	1	0.825	1	29.411			
T5 100.00-80.00	1.97	0.74	A	0.911	1.939	0.993	0.825	1	49.562	2.36*	117.76	C
			B	0.86	1.872	0.947	0.825	1	44.956			
			C	1	2.1	1	0.825	1	58.581			
T6 80.00-60.00	1.97	0.77	A	0.917	1.949	0.999	0.825	1	50.089	2.19*	109.60	C
			B	0.866	1.88	0.953	0.825	1	45.466			
			C	1	2.1	1	0.825	1	58.748			
T7 60.00-40.00	1.98	0.74	A	0.939	1.984	1	0.825	1	51.445	1.99*	99.56	C
			B	0.86	1.872	0.947	0.825	1	44.956			
			C	1	2.1	1	0.825	1	60.161			
T8 40.00-20.00	1.99	0.77	A	0.964	2.028	1	0.825	1	52.767	1.77*	88.41	C
			B	0.866	1.88	0.953	0.825	1	45.466			
			C	1	2.1	1	0.825	1	61.382			
T9 20.00-6.70	1.32	0.49	A	0.961	2.023	1	0.825	1	35.040	1.18*	88.41	C
			B	0.863	1.876	0.95	0.825	1	30.099			
			C	1	2.1	1	0.825	1	40.788			
T10 6.70-0.00	0.11	0.21	A	0.639	1.785	0.778	0.825	1	5.269	0.33*	49.44	C
			B	0.62	1.793	0.766	0.825	1	5.044			
			C	1	2.1	1	0.825	1	10.847			
Sum Weight:	13.28	6.58			*$2A_g$ limit					15.87		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1 160.00-140.00	0.40	0.85 TA 0.40	A	0.735	1.782	0.845	0.8	1	34.898	1.57	78.43	B
			B	0.754	1.789	0.86	0.8	1	36.324			
			C	0.62	1.793	0.766	0.8	1	26.796			
T2 140.00-120.00	1.58	0.85	A	0.867	1.88	0.953	0.8	1	45.467	1.98	99.04	A
			B	0.86	1.872	0.947	0.8	1	44.753			
			C	0.803	1.818	0.899	0.8	1	40.381			
T3 120.00-110.00	0.98	0.40	A	0.917	1.949	0.999	0.8	1	24.855	1.26*	126.30	C
			B	0.866	1.879	0.952	0.8	1	22.566			
			C	1	2.1	1	0.8	1	29.266			
T4 110.00-100.00	0.98	0.38	A	0.917	1.95	0.999	0.8	1	24.999	1.23*	123.06	C
			B	0.866	1.88	0.953	0.8	1	22.682			
			C	1	2.1	1	0.8	1	29.349			
T5 100.00-80.00	1.97	0.74	A	0.911	1.939	0.993	0.8	1	49.341	2.36*	117.76	C
			B	0.86	1.872	0.947	0.8	1	44.753			
			C	1	2.1	1	0.8	1	58.457			
T6 80.00-60.00	1.97	0.77	A	0.917	1.949	0.999	0.8	1	49.854	2.19*	109.60	C
			B	0.866	1.88	0.953	0.8	1	45.248			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
			C	1	2.1	1	0.8	1	58.615			
T7 60.00-40.00	1.98	0.74	A	0.939	1.984	1	0.8	1	51.224	1.99*	99.56	C
			B	0.86	1.872	0.947	0.8	1	44.753			
			C	1	2.1	1	0.8	1	60.037			
T8 40.00-20.00	1.99	0.77	A	0.964	2.028	1	0.8	1	52.532	1.77*	88.41	C
			B	0.866	1.88	0.953	0.8	1	45.248			
			C	1	2.1	1	0.8	1	61.249			
T9 20.00-6.70	1.32	0.49	A	0.961	2.023	1	0.8	1	34.893	1.18*	88.41	C
			B	0.863	1.876	0.95	0.8	1	29.964			
			C	1	2.1	1	0.8	1	40.705			
T10 6.70-0.00	0.11	0.21	A	0.639	1.785	0.778	0.8	1	5.261	0.33*	49.44	C
			B	0.62	1.793	0.766	0.8	1	5.036			
			C	1	2.1	1	0.8	1	10.843			
Sum Weight:	13.28	6.58			*$2A_g$ limit					15.86		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1 160.00-140.00	0.40	0.85 TA 0.40	A	0.735	1.782	0.845	0.85	1	35.091	1.58	78.99	B
			B	0.754	1.789	0.86	0.85	1	36.581			
			C	0.62	1.793	0.766	0.85	1	26.796			
T2 140.00-120.00	1.58	0.85	A	0.867	1.88	0.953	0.85	1	45.847	2.00	99.87	A
			B	0.86	1.872	0.947	0.85	1	45.159			
			C	0.803	1.818	0.899	0.85	1	40.567			
T3 120.00-110.00	0.98	0.40	A	0.917	1.949	0.999	0.85	1	25.104	1.26*	126.30	C
			B	0.866	1.879	0.952	0.85	1	22.798			
			C	1	2.1	1	0.85	1	29.408			
T4 110.00-100.00	0.98	0.38	A	0.917	1.95	0.999	0.85	1	25.220	1.23*	123.06	C
			B	0.866	1.88	0.953	0.85	1	22.885			
			C	1	2.1	1	0.85	1	29.473			
T5 100.00-80.00	1.97	0.74	A	0.911	1.939	0.993	0.85	1	49.783	2.36*	117.76	C
			B	0.86	1.872	0.947	0.85	1	45.159			
			C	1	2.1	1	0.85	1	58.705			
T6 80.00-60.00	1.97	0.77	A	0.917	1.949	0.999	0.85	1	50.324	2.19*	109.60	C
			B	0.866	1.88	0.953	0.85	1	45.683			
			C	1	2.1	1	0.85	1	58.881			
T7 60.00-40.00	1.98	0.74	A	0.939	1.984	1	0.85	1	51.666	1.99*	99.56	C
			B	0.86	1.872	0.947	0.85	1	45.159			
			C	1	2.1	1	0.85	1	60.285			
T8 40.00-20.00	1.99	0.77	A	0.964	2.028	1	0.85	1	53.002	1.77*	88.41	C
			B	0.866	1.88	0.953	0.85	1	45.683			
			C	1	2.1	1	0.85	1	61.515			
T9 20.00-6.70	1.32	0.49	A	0.961	2.023	1	0.85	1	35.187	1.18*	88.41	C
			B	0.863	1.876	0.95	0.85	1	30.234			
			C	1	2.1	1	0.85	1	40.870			
T10 6.70-0.00	0.11	0.21	A	0.639	1.785	0.778	0.85	1	5.276	0.33*	49.44	C
			B	0.62	1.793	0.766	0.85	1	5.051			
			C	1	2.1	1	0.85	1	10.851			
Sum Weight:	13.28	6.58			*$2A_g$ limit					15.88		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1 160.00-140.00	0.13	0.60 TA 0.29	A	0.42	2.025	0.66	1	1	15.197	0.37	18.33	B
			B	0.452	1.97	0.674	1	1	16.719			
			C	0.367	2.132	0.639	1	1	12.855			
T2 140.00-120.00	0.53	0.60	A	0.51	1.887	0.703	1	1	19.659	0.40	20.15	B
			B	0.518	1.877	0.707	1	1	20.081			
			C	0.492	1.91	0.694	1	1	18.717			
T3 120.00-110.00	0.33	0.27	A	0.55	1.843	0.724	1	1	11.079	0.27	27.05	C
			B	0.528	1.866	0.712	1	1	10.469			
			C	0.67	1.777	0.799	1	1	14.746			
T4 110.00-100.00	0.33	0.25	A	0.544	1.849	0.721	1	1	10.749	0.26	25.92	C
			B	0.522	1.873	0.709	1	1	10.138			
			C	0.665	1.778	0.796	1	1	14.494			
T5 100.00-80.00	0.66	0.49	A	0.541	1.853	0.719	1	1	21.297	0.49	24.65	C
			B	0.518	1.877	0.707	1	1	20.081			
			C	0.662	1.779	0.794	1	1	28.799			
T6 80.00-60.00	0.66	0.52	A	0.547	1.846	0.723	1	1	21.829	0.47	23.28	C
			B	0.525	1.87	0.711	1	1	20.607			
			C	0.667	1.778	0.797	1	1	29.241			
T7 60.00-40.00	0.67	0.49	A	0.551	1.842	0.725	1	1	21.892	0.43	21.34	C
			B	0.518	1.877	0.707	1	1	20.081			
			C	0.673	1.777	0.801	1	1	29.525			
T8 40.00-20.00	0.67	0.52	A	0.565	1.83	0.733	1	1	22.832	0.39	19.54	C
			B	0.525	1.87	0.711	1	1	20.607			
			C	0.685	1.776	0.809	1	1	30.463			
T9 20.00-6.70	0.44	0.33	A	0.56	1.834	0.73	1	1	14.895	0.26	19.32	C
			B	0.52	1.875	0.708	1	1	13.419			
			C	0.681	1.776	0.807	1	1	20.026			
T10 6.70-0.00	0.04	0.14	A	0.447	1.978	0.672	1	1	3.006	0.08	11.42	C
			B	0.439	1.991	0.668	1	1	2.939			
			C	0.716	1.778	0.831	1	1	5.955			
Sum Weight:	4.46	4.52								3.41		

Tower Forces - Service - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1 160.00-140.00	0.13	0.60 TA 0.29	A	0.42	2.025	0.66	0.825	1	15.197	0.37	18.33	B
			B	0.452	1.97	0.674	0.825	1	16.719			
			C	0.367	2.132	0.639	0.825	1	12.855			
T2 140.00-120.00	0.53	0.60	A	0.51	1.887	0.703	0.825	1	19.659	0.40	20.15	B
			B	0.518	1.877	0.707	0.825	1	20.081			
			C	0.492	1.91	0.694	0.825	1	18.717			
T3 120.00-110.00	0.33	0.27	A	0.55	1.843	0.724	0.825	1	10.980	0.27	26.91	C
			B	0.528	1.866	0.712	0.825	1	10.370			
			C	0.67	1.777	0.799	0.825	1	14.669			
T4 110.00-100.00	0.33	0.25	A	0.544	1.849	0.721	0.825	1	10.749	0.26	25.92	C
			B	0.522	1.873	0.709	0.825	1	10.138			
			C	0.665	1.778	0.796	0.825	1	14.494			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T5 100.00-80.00	0.66	0.49	A	0.541	1.853	0.719	0.825	1	21.297	0.49	24.65	C
			B	0.518	1.877	0.707	0.825	1	20.081			
			C	0.662	1.779	0.794	0.825	1	28.799			
T6 80.00-60.00	0.66	0.52	A	0.547	1.846	0.723	0.825	1	21.730	0.46	23.22	C
			B	0.525	1.87	0.711	0.825	1	20.508			
			C	0.667	1.778	0.797	0.825	1	29.164			
T7 60.00-40.00	0.67	0.49	A	0.551	1.842	0.725	0.825	1	21.892	0.43	21.34	C
			B	0.518	1.877	0.707	0.825	1	20.081			
			C	0.673	1.777	0.801	0.825	1	29.525			
T8 40.00-20.00	0.67	0.52	A	0.565	1.83	0.733	0.825	1	22.733	0.39	19.49	C
			B	0.525	1.87	0.711	0.825	1	20.508			
			C	0.685	1.776	0.809	0.825	1	30.386			
T9 20.00-6.70	0.44	0.33	A	0.56	1.834	0.73	0.825	1	14.895	0.26	19.32	C
			B	0.52	1.875	0.708	0.825	1	13.419			
			C	0.681	1.776	0.807	0.825	1	20.026			
T10 6.70-0.00	0.04	0.14	A	0.447	1.978	0.672	0.825	1	3.006	0.08	11.42	C
			B	0.439	1.991	0.668	0.825	1	2.939			
			C	0.716	1.778	0.831	0.825	1	5.955			
Sum Weight:	4.46	4.52								3.41		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1 160.00-140.00	0.13	0.60 TA 0.29	A	0.42	2.025	0.66	0.8	1	15.197	0.37	18.33	B
			B	0.452	1.97	0.674	0.8	1	16.719			
			C	0.367	2.132	0.639	0.8	1	12.855			
T2 140.00-120.00	0.53	0.60	A	0.51	1.887	0.703	0.8	1	19.659	0.40	20.15	B
			B	0.518	1.877	0.707	0.8	1	20.081			
			C	0.492	1.91	0.694	0.8	1	18.717			
T3 120.00-110.00	0.33	0.27	A	0.55	1.843	0.724	0.8	1	10.966	0.27	26.89	C
			B	0.528	1.866	0.712	0.8	1	10.356			
			C	0.67	1.777	0.799	0.8	1	14.659			
T4 110.00-100.00	0.33	0.25	A	0.544	1.849	0.721	0.8	1	10.749	0.26	25.92	C
			B	0.522	1.873	0.709	0.8	1	10.138			
			C	0.665	1.778	0.796	0.8	1	14.494			
T5 100.00-80.00	0.66	0.49	A	0.541	1.853	0.719	0.8	1	21.297	0.49	24.65	C
			B	0.518	1.877	0.707	0.8	1	20.081			
			C	0.662	1.779	0.794	0.8	1	28.799			
T6 80.00-60.00	0.66	0.52	A	0.547	1.846	0.723	0.8	1	21.716	0.46	23.21	C
			B	0.525	1.87	0.711	0.8	1	20.494			
			C	0.667	1.778	0.797	0.8	1	29.153			
T7 60.00-40.00	0.67	0.49	A	0.551	1.842	0.725	0.8	1	21.892	0.43	21.34	C
			B	0.518	1.877	0.707	0.8	1	20.081			
			C	0.673	1.777	0.801	0.8	1	29.525			
T8 40.00-20.00	0.67	0.52	A	0.565	1.83	0.733	0.8	1	22.719	0.39	19.49	C
			B	0.525	1.87	0.711	0.8	1	20.494			
			C	0.685	1.776	0.809	0.8	1	30.375			
T9 20.00-6.70	0.44	0.33	A	0.56	1.834	0.73	0.8	1	14.895	0.26	19.32	C
			B	0.52	1.875	0.708	0.8	1	13.419			
			C	0.681	1.776	0.807	0.8	1	20.026			
T10 6.70-0.00	0.04	0.14	A	0.447	1.978	0.672	0.8	1	3.006	0.08	11.42	C
			B	0.439	1.991	0.668	0.8	1	2.939			
			C	0.716	1.778	0.831	0.8	1	5.955			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
Sum Weight:	4.46	4.52								3.40		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1 160.00-140.00	0.13	0.60	A	0.42	2.025	0.66	0.85	1	15.197	0.37	18.33	B
		TA 0.29	B	0.452	1.97	0.674	0.85	1	16.719			
			C	0.367	2.132	0.639	0.85	1	12.855			
T2 140.00-120.00	0.53	0.60	A	0.51	1.887	0.703	0.85	1	19.659	0.40	20.15	B
			B	0.518	1.877	0.707	0.85	1	20.081			
			C	0.492	1.91	0.694	0.85	1	18.717			
T3 120.00-110.00	0.33	0.27	A	0.55	1.843	0.724	0.85	1	10.994	0.27	26.93	C
			B	0.528	1.866	0.712	0.85	1	10.384			
			C	0.67	1.777	0.799	0.85	1	14.680			
T4 110.00-100.00	0.33	0.25	A	0.544	1.849	0.721	0.85	1	10.749	0.26	25.92	C
			B	0.522	1.873	0.709	0.85	1	10.138			
			C	0.665	1.778	0.796	0.85	1	14.494			
T5 100.00-80.00	0.66	0.49	A	0.541	1.853	0.719	0.85	1	21.297	0.49	24.65	C
			B	0.518	1.877	0.707	0.85	1	20.081			
			C	0.662	1.779	0.794	0.85	1	28.799			
T6 80.00-60.00	0.66	0.52	A	0.547	1.846	0.723	0.85	1	21.744	0.46	23.23	C
			B	0.525	1.87	0.711	0.85	1	20.522			
			C	0.667	1.778	0.797	0.85	1	29.175			
T7 60.00-40.00	0.67	0.49	A	0.551	1.842	0.725	0.85	1	21.892	0.43	21.34	C
			B	0.518	1.877	0.707	0.85	1	20.081			
			C	0.673	1.777	0.801	0.85	1	29.525			
T8 40.00-20.00	0.67	0.52	A	0.565	1.83	0.733	0.85	1	22.747	0.39	19.50	C
			B	0.525	1.87	0.711	0.85	1	20.522			
			C	0.685	1.776	0.809	0.85	1	30.397			
T9 20.00-6.70	0.44	0.33	A	0.56	1.834	0.73	0.85	1	14.895	0.26	19.32	C
			B	0.52	1.875	0.708	0.85	1	13.419			
			C	0.681	1.776	0.807	0.85	1	20.026			
T10 6.70-0.00	0.04	0.14	A	0.447	1.978	0.672	0.85	1	3.006	0.08	11.42	C
			B	0.439	1.991	0.668	0.85	1	2.939			
			C	0.716	1.778	0.831	0.85	1	5.955			
Sum Weight:	4.46	4.52								3.41		

Force Totals (Does not include forces on guys)

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Torques kip-ft
Leg Weight	3.01			
Bracing Weight	1.51			
Total Member Self-Weight	4.52			
Guy Weight	0.97			
Total Weight	12.95			

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Torques kip-ft
Wind 0 deg - No Ice		-0.14	-17.16	-1.42
Wind 30 deg - No Ice		8.44	-14.78	-0.39
Wind 45 deg - No Ice		12.01	-12.02	0.19
Wind 60 deg - No Ice		14.76	-8.45	0.75
Wind 90 deg - No Ice		17.13	0.14	1.68
Wind 120 deg - No Ice		14.92	8.70	2.17
Wind 135 deg - No Ice		12.22	12.23	2.19
Wind 150 deg - No Ice		8.69	14.92	2.07
Wind 180 deg - No Ice		0.14	17.14	1.42
Wind 210 deg - No Ice		-8.44	14.78	0.39
Wind 225 deg - No Ice		-12.01	12.02	-0.19
Wind 240 deg - No Ice		-14.77	8.45	-0.75
Wind 270 deg - No Ice		-17.13	-0.14	-1.68
Wind 300 deg - No Ice		-14.91	-8.70	-2.17
Wind 315 deg - No Ice		-12.22	-12.23	-2.19
Wind 330 deg - No Ice		-8.69	-14.92	-2.07
Member Ice	2.06			
Guy Ice	1.31			
Total Weight Ice	27.08			
Wind 0 deg - Ice		-0.11	-22.84	-1.08
Wind 30 deg - Ice		11.27	-19.65	-0.02
Wind 45 deg - Ice		15.99	-16.00	0.53
Wind 60 deg - Ice		19.62	-11.27	1.04
Wind 90 deg - Ice		22.74	0.11	1.82
Wind 120 deg - Ice		19.83	11.52	2.11
Wind 135 deg - Ice		16.15	16.16	2.05
Wind 150 deg - Ice		11.47	19.76	1.84
Wind 180 deg - Ice		0.11	22.73	1.07
Wind 210 deg - Ice		-11.27	19.65	0.02
Wind 225 deg - Ice		-15.99	16.00	-0.53
Wind 240 deg - Ice		-19.71	11.32	-1.04
Wind 270 deg - Ice		-22.74	-0.11	-1.82
Wind 300 deg - Ice		-19.73	-11.46	-2.12
Wind 315 deg - Ice		-16.15	-16.16	-2.05
Wind 330 deg - Ice		-11.47	-19.76	-1.84
Total Weight	12.95			
Wind 0 deg - Service		-0.05	-5.94	-0.49
Wind 30 deg - Service		2.92	-5.11	-0.13
Wind 45 deg - Service		4.16	-4.16	0.06
Wind 60 deg - Service		5.11	-2.92	0.26
Wind 90 deg - Service		5.93	0.05	0.58
Wind 120 deg - Service		5.16	3.01	0.75
Wind 135 deg - Service		4.23	4.23	0.76
Wind 150 deg - Service		3.01	5.16	0.72
Wind 180 deg - Service		0.05	5.93	0.49
Wind 210 deg - Service		-2.92	5.11	0.13
Wind 225 deg - Service		-4.16	4.16	-0.06
Wind 240 deg - Service		-5.11	2.92	-0.26
Wind 270 deg - Service		-5.93	-0.05	-0.58
Wind 300 deg - Service		-5.16	-3.01	-0.75
Wind 315 deg - Service		-4.23	-4.23	-0.76
Wind 330 deg - Service		-3.01	-5.16	-0.72

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 45 deg - No Ice+Guy
5	Dead+Wind 60 deg - No Ice+Guy
6	Dead+Wind 90 deg - No Ice+Guy
7	Dead+Wind 120 deg - No Ice+Guy
8	Dead+Wind 135 deg - No Ice+Guy
9	Dead+Wind 150 deg - No Ice+Guy
10	Dead+Wind 180 deg - No Ice+Guy
11	Dead+Wind 210 deg - No Ice+Guy
12	Dead+Wind 225 deg - No Ice+Guy
13	Dead+Wind 240 deg - No Ice+Guy
14	Dead+Wind 270 deg - No Ice+Guy
15	Dead+Wind 300 deg - No Ice+Guy
16	Dead+Wind 315 deg - No Ice+Guy
17	Dead+Wind 330 deg - No Ice+Guy
18	Dead+Ice+Temp+Guy
19	Dead+Wind 0 deg+Ice+Temp+Guy
20	Dead+Wind 30 deg+Ice+Temp+Guy
21	Dead+Wind 45 deg+Ice+Temp+Guy
22	Dead+Wind 60 deg+Ice+Temp+Guy
23	Dead+Wind 90 deg+Ice+Temp+Guy
24	Dead+Wind 120 deg+Ice+Temp+Guy
25	Dead+Wind 135 deg+Ice+Temp+Guy
26	Dead+Wind 150 deg+Ice+Temp+Guy
27	Dead+Wind 180 deg+Ice+Temp+Guy
28	Dead+Wind 210 deg+Ice+Temp+Guy
29	Dead+Wind 225 deg+Ice+Temp+Guy
30	Dead+Wind 240 deg+Ice+Temp+Guy
31	Dead+Wind 270 deg+Ice+Temp+Guy
32	Dead+Wind 300 deg+Ice+Temp+Guy
33	Dead+Wind 315 deg+Ice+Temp+Guy
34	Dead+Wind 330 deg+Ice+Temp+Guy
35	Dead+Wind 0 deg - Service+Guy
36	Dead+Wind 30 deg - Service+Guy
37	Dead+Wind 45 deg - Service+Guy
38	Dead+Wind 60 deg - Service+Guy
39	Dead+Wind 90 deg - Service+Guy
40	Dead+Wind 120 deg - Service+Guy
41	Dead+Wind 135 deg - Service+Guy
42	Dead+Wind 150 deg - Service+Guy
43	Dead+Wind 180 deg - Service+Guy
44	Dead+Wind 210 deg - Service+Guy
45	Dead+Wind 225 deg - Service+Guy
46	Dead+Wind 240 deg - Service+Guy
47	Dead+Wind 270 deg - Service+Guy
48	Dead+Wind 300 deg - Service+Guy
49	Dead+Wind 315 deg - Service+Guy
50	Dead+Wind 330 deg - Service+Guy

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	160 - 140	Leg	Max Tension	7	19.49	0.04	0.10
			Max. Compression	27	-34.50	-0.27	0.15
			Max. Mx	31	-9.80	-0.49	-0.10

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	19	-22.65	0.20	-0.49
			Max. Vy	7	-0.86	0.04	0.10
			Max. Vx	17	0.69	0.05	-0.03
		Diagonal	Max Tension	14	4.20	0.00	0.00
			Max. Compression	23	-4.62	0.00	0.00
			Max. Mx	25	0.22	0.00	0.00
			Max. My	33	-1.52	0.00	0.00
			Max. Vy	25	-0.00	0.00	0.00
			Max. Vx	33	0.00	0.00	0.00
		Horizontal	Max Tension	17	1.58	0.00	0.00
			Max. Compression	8	-1.51	0.00	0.00
			Max. Mx	18	0.10	0.00	0.00
			Max. My	25	0.52	0.00	-0.00
			Max. Vy	18	-0.00	0.00	0.00
			Max. Vx	25	0.00	0.00	0.00
		Top Girt	Max Tension	26	1.46	0.00	0.00
			Max. Compression	34	-1.46	0.00	0.00
			Max. Mx	18	0.00	0.00	0.00
			Max. Vy	18	-0.00	0.00	0.00
		Bottom Girt	Max Tension	31	0.21	0.00	0.00
			Max. Compression	7	-0.07	0.00	0.00
			Max. Mx	18	0.05	0.00	0.00
			Max. My	25	-0.02	0.00	-0.00
			Max. Vy	18	-0.00	0.00	0.00
			Max. Vx	25	0.00	0.00	0.00
		Guy A	Bottom Tension	27	8.21		
			Top Tension	27	8.36		
			Top Cable Vert	27	7.23		
			Top Cable Norm	27	4.21		
			Top Cable Tan	27	0.00		
			Bot Cable Vert	27	-6.84		
			Bot Cable Norm	27	4.54		
			Bot Cable Tan	27	0.01		
		Guy B	Bottom Tension	32	8.34		
			Top Tension	32	8.49		
			Top Cable Vert	32	7.33		
			Top Cable Norm	32	4.27		
			Top Cable Tan	32	0.01		
			Bot Cable Vert	32	-6.95		
			Bot Cable Norm	32	4.61		
			Bot Cable Tan	32	0.01		
		Guy C	Bottom Tension	23	8.20		
			Top Tension	23	8.35		
			Top Cable Vert	23	7.21		
			Top Cable Norm	23	4.21		
			Top Cable Tan	23	0.08		
			Bot Cable Vert	23	-6.84		
			Bot Cable Norm	23	4.52		
			Bot Cable Tan	23	0.15		
		Torque Arm Top	Max Tension	19	6.33	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	30	3.32	-0.01	0.00
			Max. My	26	5.51	0.00	-0.00
			Max. Vy	30	0.01	0.00	0.00
			Max. Vx	26	0.00	0.00	0.00
		Torque Arm Bottom	Max Tension	6	1.63	0.00	0.00
			Max. Compression	23	-11.43	0.00	0.00
			Max. Mx	31	-4.05	-0.01	0.00
			Max. My	33	-10.94	0.00	-0.00
			Max. Vy	31	0.01	0.00	0.00
			Max. Vx	33	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T2	140 - 120	Leg	Max Tension	7	20.94	0.19	0.09
			Max. Compression	32	-35.19	-0.08	0.26
			Max. Mx	14	15.32	-0.72	0.01
			Max. My	2	-20.04	0.19	-0.89
			Max. Vy	31	-3.77	-0.03	-0.17
			Max. Vx	28	3.21	0.04	0.22
		Diagonal	Max Tension	31	6.46	0.00	0.00
			Max. Compression	23	-7.11	0.00	0.00
			Max. Mx	25	5.45	0.00	0.00
			Max. My	32	-0.20	0.00	0.00
			Max. Vy	25	-0.00	0.00	0.00
			Max. Vx	32	-0.00	0.00	0.00
		Horizontal	Max Tension	22	1.10	0.00	0.00
			Max. Compression	17	-0.79	0.00	0.00
			Max. Mx	18	0.13	0.00	0.00
			Max. My	33	0.81	0.00	-0.00
			Max. Vy	18	-0.00	0.00	0.00
			Max. Vx	33	0.00	0.00	0.00
		Top Girt	Max Tension	25	0.25	0.00	0.00
			Max. Compression	17	-0.11	0.00	0.00
			Max. Mx	18	0.05	0.00	0.00
			Max. My	25	0.05	0.00	-0.00
			Max. Vy	18	-0.00	0.00	0.00
			Max. Vx	25	0.00	0.00	0.00
		Bottom Girt	Max Tension	24	0.38	0.00	0.00
			Max. Compression	15	-0.20	0.00	0.00
			Max. Mx	18	0.07	0.00	0.00
			Max. My	25	-0.06	0.00	-0.00
			Max. Vy	18	-0.00	0.00	0.00
			Max. Vx	25	0.00	0.00	0.00
T3	120 - 110	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	29	-21.34	-0.18	0.32
			Max. Mx	31	-16.45	0.53	-0.02
			Max. My	19	-19.67	-0.13	0.51
			Max. Vy	31	-3.77	0.28	-0.17
			Max. Vx	28	3.21	0.19	-0.05
		Diagonal	Max Tension	23	6.32	0.00	0.00
			Max. Compression	31	-7.11	0.00	0.00
			Max. Mx	34	5.60	0.00	0.00
			Max. My	32	-0.77	0.00	0.00
			Max. Vy	34	-0.00	0.00	0.00
			Max. Vx	32	-0.00	0.00	0.00
		Horizontal	Max Tension	24	0.41	0.00	0.00
			Max. Compression	29	-0.37	0.00	0.00
			Max. Mx	18	0.22	0.00	0.00
			Max. My	25	0.36	0.00	-0.00
			Max. Vy	18	-0.00	0.00	0.00
			Max. Vx	25	0.00	0.00	0.00
		Top Girt	Max Tension	33	0.39	0.00	0.00
			Max. Compression	7	-0.13	0.00	0.00
			Max. Mx	18	0.08	0.00	0.00
			Max. My	25	0.27	0.00	-0.00
			Max. Vy	18	-0.00	0.00	0.00
			Max. Vx	25	0.00	0.00	0.00
		Guy A	Bottom Tension	26	15.75		
			Top Tension	26	15.90		
			Top Cable Vert	26	12.22		
			Top Cable Norm	26	10.17		
			Top Cable Tan	26	0.03		
			Bot Cable Vert	26	-11.87		
			Bot Cable Norm	26	10.35		

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Bot Cable Tan	26	0.16		
		Guy B	Bottom Tension	33	15.88		
			Top Tension	33	16.03		
			Top Cable Vert	33	12.33		
			Top Cable Norm	33	10.25		
			Top Cable Tan	33	0.01		
			Bot Cable Vert	33	-11.96		
			Bot Cable Norm	33	10.44		
			Bot Cable Tan	33	0.08		
		Guy C	Bottom Tension	21	15.69		
			Top Tension	21	15.85		
			Top Cable Vert	21	12.19		
			Top Cable Norm	21	10.13		
			Top Cable Tan	21	0.01		
			Bot Cable Vert	21	-11.82		
			Bot Cable Norm	21	10.32		
			Bot Cable Tan	21	0.08		
		Top Guy Pull-Off	Max Tension	34	6.42	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	18	1.69	0.01	0.00
			Max. My	33	1.16	0.00	-0.00
			Max. Vy	18	-0.01	0.00	0.00
			Max. Vx	33	0.00	0.00	0.00
T4	110 - 100	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	19	-22.10	0.20	0.28
			Max. Mx	24	-21.58	0.40	-0.01
			Max. My	30	-21.65	-0.18	0.35
			Max. Vy	7	0.46	0.12	-0.20
			Max. Vx	2	-0.38	0.12	0.21
		Diagonal	Max Tension	33	0.37	0.00	0.00
			Max. Compression	27	-1.62	0.00	0.00
			Max. Mx	25	-0.57	0.00	0.00
			Max. My	25	-0.72	0.00	-0.00
			Max. Vy	25	-0.00	0.00	0.00
			Max. Vx	25	0.00	0.00	0.00
		Horizontal	Max Tension	26	0.57	0.00	0.00
			Max. Compression	19	-0.38	0.00	0.00
			Max. Mx	18	0.23	0.00	0.00
			Max. My	25	0.48	0.00	-0.00
			Max. Vy	18	-0.00	0.00	0.00
			Max. Vx	25	0.00	0.00	0.00
		Bottom Girt	Max Tension	28	0.28	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	18	0.12	0.00	0.00
			Max. My	25	0.24	0.00	-0.00
			Max. Vy	18	-0.00	0.00	0.00
			Max. Vx	25	0.00	0.00	0.00
T5	100 - 80	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	24	-30.99	0.22	-0.37
			Max. Mx	19	-30.89	-0.47	-0.10
			Max. My	30	-30.58	0.15	0.47
			Max. Vy	23	1.76	0.17	-0.35
			Max. Vx	20	-1.57	0.12	0.27
		Diagonal	Max Tension	20	2.51	0.00	0.00
			Max. Compression	28	-3.80	0.00	0.00
			Max. Mx	25	1.10	0.00	0.00
			Max. My	25	-0.19	0.00	-0.00
			Max. Vy	25	-0.00	0.00	0.00
			Max. Vx	25	0.00	0.00	0.00
		Horizontal	Max Tension	23	0.63	0.00	0.00
			Max. Compression	24	-0.54	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	18	0.26	0.00	0.00
			Max. My	25	0.52	0.00	-0.00
			Max. Vy	18	-0.00	0.00	0.00
			Max. Vx	25	0.00	0.00	0.00
		Top Girt	Max Tension	34	0.30	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	18	0.12	0.00	0.00
			Max. My	25	0.24	0.00	-0.00
			Max. Vy	18	-0.00	0.00	0.00
			Max. Vx	25	0.00	0.00	0.00
		Bottom Girt	Max Tension	24	0.34	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	18	0.13	0.00	0.00
			Max. My	25	0.15	0.00	-0.00
			Max. Vy	18	-0.00	0.00	0.00
			Max. Vx	25	0.00	0.00	0.00
T6	80 - 60	Leg	Max Tension	15	0.59	0.17	-0.12
			Max. Compression	19	-33.22	-0.49	-0.01
			Max. Mx	31	-23.42	0.63	-0.08
			Max. My	19	-19.25	-0.14	0.62
			Max. Vy	23	1.77	0.02	-0.35
			Max. Vx	28	1.57	0.30	0.18
		Diagonal	Max Tension	28	2.58	0.00	0.00
			Max. Compression	20	-3.96	0.00	0.00
			Max. Mx	24	2.18	0.00	0.00
			Max. My	25	0.29	0.00	-0.00
			Max. Vy	24	-0.00	0.00	0.00
			Max. Vx	25	0.00	0.00	0.00
		Horizontal	Max Tension	23	0.63	0.00	0.00
			Max. Compression	19	-0.58	0.00	0.00
			Max. Mx	18	0.30	0.00	0.00
			Max. My	25	0.55	0.00	-0.00
			Max. Vy	18	-0.00	0.00	0.00
			Max. Vx	25	0.00	0.00	0.00
		Top Girt	Max Tension	20	0.35	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	18	0.13	0.00	0.00
			Max. My	25	0.32	0.00	-0.00
			Max. Vy	18	-0.00	0.00	0.00
			Max. Vx	25	0.00	0.00	0.00
		Bottom Girt	Max Tension	28	0.36	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	18	0.15	0.00	0.00
			Max. My	25	0.33	0.00	-0.00
			Max. Vy	18	-0.00	0.00	0.00
			Max. Vx	25	0.00	0.00	0.00
		Guy A	Bottom Tension	26	9.36		
			Top Tension	26	9.44		
			Top Cable Vert	26	5.85		
			Top Cable Norm	26	7.40		
			Top Cable Tan	26	0.02		
			Bot Cable Vert	26	-5.64		
			Bot Cable Norm	26	7.47		
			Bot Cable Tan	26	0.08		
		Guy B	Bottom Tension	34	9.35		
			Top Tension	34	9.42		
			Top Cable Vert	34	5.85		
			Top Cable Norm	34	7.39		
			Top Cable Tan	34	0.02		
			Bot Cable Vert	34	-5.64		
			Bot Cable Norm	34	7.46		

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Bot Cable Tan	34	0.08		
		Guy C	Bottom Tension	23	9.36		
			Top Tension	23	9.43		
			Top Cable Vert	23	5.85		
			Top Cable Norm	23	7.40		
			Top Cable Tan	23	0.02		
			Bot Cable Vert	23	-5.64		
			Bot Cable Norm	23	7.47		
			Bot Cable Tan	23	0.09		
		Top Guy Pull-Off	Max Tension	34	4.80	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	18	1.47	0.01	0.00
			Max. My	25	4.07	0.00	-0.00
			Max. Vy	18	-0.01	0.00	0.00
			Max. Vx	25	0.00	0.00	0.00
T7	60 - 40	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	20	-28.44	0.26	0.39
			Max. Mx	30	-26.93	-0.51	-0.00
			Max. My	29	-22.91	0.16	0.46
			Max. Vy	31	-0.78	0.18	-0.40
			Max. Vx	26	0.66	-0.44	0.03
		Diagonal	Max Tension	31	0.43	0.00	0.00
			Max. Compression	23	-2.11	0.00	0.00
			Max. Mx	25	0.33	0.00	0.00
			Max. My	24	-0.91	0.00	-0.00
			Max. Vy	25	0.00	0.00	0.00
			Max. Vx	24	-0.00	0.00	0.00
		Horizontal	Max Tension	29	0.70	0.00	0.00
			Max. Compression	20	-0.49	0.00	0.00
			Max. Mx	18	0.33	0.00	0.00
			Max. My	25	0.59	0.00	-0.00
			Max. Vy	18	-0.00	0.00	0.00
			Max. Vx	25	0.00	0.00	0.00
		Top Girt	Max Tension	19	0.28	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	18	0.16	0.00	0.00
			Max. My	25	0.26	0.00	-0.00
			Max. Vy	18	-0.00	0.00	0.00
			Max. Vx	25	0.00	0.00	0.00
		Bottom Girt	Max Tension	29	0.29	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	18	0.17	0.00	0.00
			Max. My	25	0.24	0.00	-0.00
			Max. Vy	18	-0.00	0.00	0.00
			Max. Vx	25	0.00	0.00	0.00
T8	40 - 20	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-33.52	-0.50	0.04
			Max. Mx	30	-27.54	0.58	-0.05
			Max. My	19	-26.03	-0.26	0.53
			Max. Vy	23	0.78	0.20	-0.36
			Max. Vx	26	0.66	-0.47	-0.03
		Diagonal	Max Tension	23	0.74	0.00	0.00
			Max. Compression	31	-2.54	0.00	0.00
			Max. Mx	25	-1.13	0.00	0.00
			Max. My	24	-1.09	0.00	-0.00
			Max. Vy	25	-0.00	0.00	0.00
			Max. Vx	24	0.00	0.00	0.00
		Horizontal	Max Tension	25	0.69	0.00	0.00
			Max. Compression	26	-0.58	0.00	0.00
			Max. Mx	18	0.36	0.00	0.00
			Max. My	25	0.62	0.00	-0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	18	-0.00	0.00	0.00
			Max. Vx	25	0.00	0.00	0.00
		Top Girt	Max Tension	31	0.33	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	18	0.16	0.00	0.00
			Max. My	25	0.32	0.00	-0.00
			Max. Vy	18	-0.00	0.00	0.00
			Max. Vx	25	0.00	0.00	0.00
		Bottom Girt	Max Tension	29	0.35	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	18	0.18	0.00	0.00
			Max. My	25	0.30	0.00	-0.00
			Max. Vy	18	-0.00	0.00	0.00
			Max. Vx	25	0.00	0.00	0.00
		Guy A	Bottom Tension	27	4.43		
			Top Tension	27	4.46		
			Top Cable Vert	27	1.59		
			Top Cable Norm	27	4.16		
			Top Cable Tan	27	0.00		
			Bot Cable Vert	27	-1.49		
			Bot Cable Norm	27	4.17		
			Bot Cable Tan	27	0.00		
		Guy B	Bottom Tension	33	4.48		
			Top Tension	33	4.50		
			Top Cable Vert	33	1.61		
			Top Cable Norm	33	4.20		
			Top Cable Tan	33	0.01		
			Bot Cable Vert	33	-1.51		
			Bot Cable Norm	33	4.21		
			Bot Cable Tan	33	0.02		
		Guy C	Bottom Tension	21	4.48		
			Top Tension	21	4.50		
			Top Cable Vert	21	1.61		
			Top Cable Norm	21	4.20		
			Top Cable Tan	21	0.01		
			Bot Cable Vert	21	-1.51		
			Bot Cable Norm	21	4.21		
			Bot Cable Tan	21	0.02		
		Top Guy Pull-Off	Max Tension	34	3.01	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	18	1.19	0.01	0.00
			Max. My	25	2.53	0.00	-0.00
			Max. Vy	18	-0.01	0.00	0.00
			Max. Vx	25	0.00	0.00	0.00
T9	20 - 6.7	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-33.52	-0.49	0.04
			Max. Mx	24	-30.80	0.57	-0.01
			Max. My	19	-30.31	-0.04	0.54
			Max. Vy	31	-3.13	0.50	-0.21
			Max. Vx	25	3.58	-0.44	-0.34
		Diagonal	Max Tension	21	0.37	0.00	0.00
			Max. Compression	28	-1.94	0.00	0.00
			Max. Mx	25	0.29	0.00	0.00
			Max. My	24	-1.01	0.00	-0.00
			Max. Vy	25	-0.00	0.00	0.00
			Max. Vx	24	0.00	0.00	0.00
		Horizontal	Max Tension	25	0.70	0.00	0.00
			Max. Compression	26	-0.58	0.00	0.00
			Max. Mx	18	0.36	0.00	0.00
			Max. My	25	0.62	0.00	-0.00
			Max. Vy	18	-0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	25	0.00	0.00	0.00
		Top Girt	Max Tension	29	0.34	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	18	0.18	0.00	0.00
			Max. My	25	0.31	0.00	-0.00
			Max. Vy	18	-0.00	0.00	0.00
			Max. Vx	25	0.00	0.00	0.00
		Bottom Girt	Max Tension	25	2.17	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	18	1.25	0.00	0.00
			Max. My	25	1.71	0.00	-0.00
			Max. Vy	18	-0.00	0.00	0.00
			Max. Vx	25	0.00	0.00	0.00
T10	6.7 - 0	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	25	-31.90	-0.03	-0.39
			Max. Mx	23	-30.85	0.37	-0.39
			Max. My	19	-31.14	-0.05	0.54
			Max. Vy	24	3.22	0.36	-0.39
			Max. Vx	30	-0.31	0.04	-0.45
		Diagonal	Max Tension	1	0.00	0.00	0.00
			Max. Compression	24	-1.45	0.00	0.00
			Max. Mx	29	-1.36	0.00	0.00
			Max. My	25	-1.42	0.00	-0.00
			Max. Vy	29	-0.00	0.00	0.00
			Max. Vx	25	0.00	0.00	0.00
		Horizontal	Max Tension	25	0.56	0.00	0.00
			Max. Compression	25	-0.56	0.00	0.00
			Max. Mx	18	0.32	0.00	0.00
			Max. My	33	0.54	0.00	-0.00
			Max. Vy	18	-0.00	0.00	0.00
			Max. Vx	33	0.00	0.00	0.00
		Top Girt	Max Tension	25	2.20	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	18	1.27	0.00	0.00
			Max. My	25	1.77	0.00	-0.00
			Max. Vy	18	-0.00	0.00	0.00
			Max. Vx	25	0.00	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Mast	Max. Vert	24	84.51	-0.48	-0.28
	Max. H_x	32	73.51	0.87	0.50
	Max. H_z	19	84.33	-0.01	0.56
	Max. M_x	1	0.00	-0.00	0.00
	Max. M_z	1	0.00	-0.00	0.00
	Max. Torsion	1	0.00	-0.00	0.00
	Min. Vert	1	36.38	-0.00	0.00
	Min. H_x	22	73.31	-0.89	0.51
	Min. H_z	27	73.42	0.01	-1.01
	Min. M_x	1	0.00	-0.00	0.00
	Min. M_z	1	0.00	-0.00	0.00
	Min. Torsion	1	0.00	-0.00	0.00
Guy C @ 100 ft Elev 0 ft	Max. Vert	13	-1.13	-0.53	0.31

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Azimuth 240 deg					
	Max. H_x	13	-1.13	-0.53	0.31
	Max. H_z	20	-32.06	-26.19	15.80
	Min. Vert	21	-32.36	-26.58	15.70
	Min. H_x	23	-32.17	-26.87	14.82
	Min. H_z	13	-1.13	-0.53	0.31
Guy B @ 100 ft Elev 0 ft	Max. Vert	7	-1.11	0.52	0.30
Azimuth 120 deg					
	Max. H_x	31	-32.22	26.90	14.84
	Max. H_z	34	-32.36	26.39	15.91
	Min. Vert	33	-32.67	26.80	15.81
	Min. H_x	7	-1.11	0.52	0.30
	Min. H_z	7	-1.11	0.52	0.30
Guy A @ 100 ft Elev 0 ft	Max. Vert	2	-1.11	-0.00	-0.61
Azimuth 0 deg					
	Max. H_x	31	-17.62	1.15	-16.35
	Max. H_z	2	-1.11	-0.00	-0.61
	Min. Vert	26	-32.34	-0.58	-30.80
	Min. H_x	23	-17.89	-1.15	-16.55
	Min. H_z	26	-32.34	-0.58	-30.80

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	36.38	0.00	-0.00	0.00	0.00	0.00
Dead+Wind 0 deg - No Ice+Guy	54.88	0.01	-0.46	0.00	0.00	0.00
Dead+Wind 30 deg - No Ice+Guy	51.34	0.38	-0.42	0.00	0.00	0.00
Dead+Wind 45 deg - No Ice+Guy	47.73	0.53	-0.39	0.00	0.00	0.00
Dead+Wind 60 deg - No Ice+Guy	45.48	0.62	-0.36	0.00	0.00	0.00
Dead+Wind 90 deg - No Ice+Guy	51.61	0.54	-0.11	0.00	0.00	0.00
Dead+Wind 120 deg - No Ice+Guy	55.14	0.39	0.22	0.00	0.00	0.00
Dead+Wind 135 deg - No Ice+Guy	54.32	0.28	0.38	0.00	0.00	0.00
Dead+Wind 150 deg - No Ice+Guy	51.81	0.17	0.52	0.00	0.00	0.00
Dead+Wind 180 deg - No Ice+Guy	45.62	-0.01	0.70	0.00	0.00	0.00
Dead+Wind 210 deg - No Ice+Guy	51.17	-0.18	0.53	0.00	0.00	0.00
Dead+Wind 225 deg - No Ice+Guy	53.67	-0.29	0.39	0.00	0.00	0.00
Dead+Wind 240 deg - No Ice+Guy	54.54	-0.40	0.23	0.00	0.00	0.00
Dead+Wind 270 deg - No Ice+Guy	51.31	-0.54	-0.11	0.00	0.00	0.00
Dead+Wind 300 deg - No Ice+Guy	45.72	-0.61	-0.35	0.00	0.00	0.00

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead+Wind 315 deg - No Ice+Guy	48.14	-0.52	-0.38	0.00	0.00	0.00
Dead+Wind 330 deg - No Ice+Guy	51.67	-0.36	-0.41	0.00	0.00	0.00
Dead+Ice+Temp+Guy	53.59	0.01	-0.00	0.00	0.00	0.00
Dead+Wind 0 deg+Ice+Temp+Guy	84.33	0.01	-0.56	0.00	0.00	0.00
Dead+Wind 30 deg+Ice+Temp+Guy	80.19	0.56	-0.52	0.00	0.00	0.00
Dead+Wind 45 deg+Ice+Temp+Guy	76.01	0.79	-0.50	0.00	0.00	0.00
Dead+Wind 60 deg+Ice+Temp+Guy	73.31	0.89	-0.51	0.00	0.00	0.00
Dead+Wind 90 deg+Ice+Temp+Guy	80.38	0.72	-0.21	0.00	0.00	0.00
Dead+Wind 120 deg+Ice+Temp+Guy	84.51	0.48	0.28	0.00	0.00	0.00
Dead+Wind 135 deg+Ice+Temp+Guy	83.38	0.33	0.51	0.00	0.00	0.00
Dead+Wind 150 deg+Ice+Temp+Guy	80.53	0.17	0.73	0.00	0.00	0.00
Dead+Wind 180 deg+Ice+Temp+Guy	73.42	-0.01	1.01	0.00	0.00	0.00
Dead+Wind 210 deg+Ice+Temp+Guy	80.07	-0.18	0.73	0.00	0.00	0.00
Dead+Wind 225 deg+Ice+Temp+Guy	82.91	-0.33	0.51	0.00	0.00	0.00
Dead+Wind 240 deg+Ice+Temp+Guy	84.10	-0.48	0.28	0.00	0.00	0.00
Dead+Wind 270 deg+Ice+Temp+Guy	80.18	-0.71	-0.21	0.00	0.00	0.00
Dead+Wind 300 deg+Ice+Temp+Guy	73.51	-0.87	-0.50	0.00	0.00	0.00
Dead+Wind 315 deg+Ice+Temp+Guy	76.32	-0.76	-0.49	0.00	0.00	0.00
Dead+Wind 330 deg+Ice+Temp+Guy	80.44	-0.53	-0.52	0.00	0.00	0.00
Dead+Wind 0 deg - Service+Guy	36.74	0.01	-0.27	0.00	0.00	0.00
Dead+Wind 30 deg - Service+Guy	36.87	0.14	-0.23	0.00	0.00	0.00
Dead+Wind 45 deg - Service+Guy	36.95	0.19	-0.19	0.00	0.00	0.00
Dead+Wind 60 deg - Service+Guy	36.98	0.23	-0.14	0.00	0.00	0.00
Dead+Wind 90 deg - Service+Guy	36.87	0.27	-0.00	0.00	0.00	0.00
Dead+Wind 120 deg - Service+Guy	36.74	0.23	0.13	0.00	0.00	0.00
Dead+Wind 135 deg - Service+Guy	36.79	0.19	0.19	0.00	0.00	0.00
Dead+Wind 150 deg - Service+Guy	36.88	0.13	0.23	0.00	0.00	0.00
Dead+Wind 180 deg - Service+Guy	36.99	0.00	0.26	0.00	0.00	0.00
Dead+Wind 210 deg - Service+Guy	36.87	-0.13	0.23	0.00	0.00	0.00
Dead+Wind 225 deg - Service+Guy	36.78	-0.18	0.19	0.00	0.00	0.00
Dead+Wind 240 deg - Service+Guy	36.74	-0.23	0.13	0.00	0.00	0.00

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead+Wind 270 deg - Service+Guy	36.87	-0.26	-0.00	0.00	0.00	0.00
Dead+Wind 300 deg - Service+Guy	36.99	-0.23	-0.14	0.00	0.00	0.00
Dead+Wind 315 deg - Service+Guy	36.96	-0.18	-0.19	0.00	0.00	0.00
Dead+Wind 330 deg - Service+Guy	36.88	-0.13	-0.23	0.00	0.00	0.00

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-12.95	0.00	-0.00	12.95	-0.00	0.001%
2	-0.14	-13.02	-18.98	0.14	13.02	18.98	0.003%
3	9.35	-12.95	-16.36	-9.35	12.95	16.36	0.005%
4	13.30	-12.90	-13.31	-13.30	12.90	13.31	0.003%
5	16.35	-12.88	-9.36	-16.35	12.88	9.36	0.001%
6	18.96	-12.95	0.14	-18.96	12.95	-0.14	0.001%
7	16.50	-13.02	9.62	-16.50	13.02	-9.62	0.001%
8	13.51	-13.00	13.52	-13.51	13.00	-13.51	0.001%
9	9.60	-12.95	16.50	-9.60	12.95	-16.50	0.001%
10	0.14	-12.88	18.97	-0.14	12.88	-18.97	0.001%
11	-9.35	-12.95	16.36	9.35	12.95	-16.36	0.005%
12	-13.30	-13.00	13.31	13.30	13.00	-13.31	0.007%
13	-16.36	-13.02	9.37	16.36	13.02	-9.37	0.003%
14	-18.96	-12.95	-0.14	18.96	12.95	0.14	0.002%
15	-16.49	-12.88	-9.61	16.49	12.88	9.61	0.001%
16	-13.51	-12.90	-13.52	13.51	12.90	13.51	0.001%
17	-9.60	-12.95	-16.50	9.60	12.95	16.50	0.001%
18	0.00	-27.08	0.00	-0.00	27.08	0.00	0.000%
19	-0.11	-27.26	-27.23	0.11	27.26	27.23	0.005%
20	13.47	-27.08	-23.45	-13.47	27.08	23.45	0.002%
21	19.11	-26.96	-19.10	-19.11	26.96	19.10	0.001%
22	23.43	-26.90	-13.46	-23.43	26.90	13.46	0.001%
23	27.13	-27.08	0.11	-27.13	27.08	-0.11	0.001%
24	23.63	-27.26	13.71	-23.63	27.26	-13.71	0.001%
25	19.26	-27.20	19.26	-19.26	27.20	-19.26	0.001%
26	13.66	-27.08	23.56	-13.66	27.08	-23.56	0.001%
27	0.11	-26.90	27.12	-0.11	26.90	-27.12	0.004%
28	-13.47	-27.08	23.45	13.47	27.08	-23.45	0.004%
29	-19.11	-27.20	19.10	19.10	27.20	-19.10	0.002%
30	-23.52	-27.26	13.52	23.52	27.26	-13.52	0.002%
31	-27.13	-27.08	-0.11	27.13	27.08	0.11	0.002%
32	-23.54	-26.90	-13.66	23.54	26.90	13.66	0.001%
33	-19.26	-26.96	-19.26	19.26	26.96	19.26	0.001%
34	-13.66	-27.08	-23.56	13.66	27.08	23.56	0.002%
35	-0.05	-12.97	-6.57	0.05	12.97	6.57	0.000%
36	3.24	-12.95	-5.66	-3.24	12.95	5.66	0.007%
37	4.60	-12.93	-4.61	-4.60	12.93	4.61	0.000%
38	5.66	-12.92	-3.24	-5.66	12.92	3.24	0.000%
39	6.56	-12.95	0.05	-6.56	12.95	-0.05	0.000%
40	5.71	-12.97	3.33	-5.71	12.97	-3.33	0.000%
41	4.67	-12.96	4.68	-4.67	12.96	-4.68	0.000%
42	3.32	-12.95	5.71	-3.32	12.95	-5.71	0.000%
43	0.05	-12.92	6.56	-0.05	12.92	-6.56	0.000%
44	-3.24	-12.95	5.66	3.24	12.95	-5.66	0.007%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
45	-4.60	-12.96	4.61	4.60	12.96	-4.61	0.002%
46	-5.66	-12.97	3.24	5.66	12.97	-3.24	0.000%
47	-6.56	-12.95	-0.05	6.56	12.95	0.05	0.000%
48	-5.71	-12.92	-3.33	5.71	12.92	3.33	0.000%
49	-4.67	-12.93	-4.68	4.67	12.93	4.68	0.000%
50	-3.32	-12.95	-5.71	3.32	12.95	5.71	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	7	0.00000001	0.00003528
2	Yes	17	0.00000001	0.00010347
3	Yes	16	0.00000001	0.00010882
4	Yes	16	0.00000001	0.00011454
5	Yes	13	0.00000001	0.00010421
6	Yes	18	0.00000001	0.00007405
7	Yes	18	0.00000001	0.00012715
8	Yes	18	0.00000001	0.00011551
9	Yes	18	0.00000001	0.00007995
10	Yes	14	0.00000001	0.00007420
11	Yes	16	0.00000001	0.00008088
12	Yes	16	0.00000001	0.00014653
13	Yes	17	0.00000001	0.00011050
14	Yes	17	0.00000001	0.00013644
15	Yes	14	0.00000001	0.00007574
16	Yes	17	0.00000001	0.00010585
17	Yes	18	0.00000001	0.00006170
18	Yes	6	0.00000001	0.00003872
19	Yes	17	0.00000001	0.00010468
20	Yes	18	0.00000001	0.00012561
21	Yes	18	0.00000001	0.00013717
22	Yes	14	0.00000001	0.00006040
23	Yes	19	0.00000001	0.00008704
24	Yes	19	0.00000001	0.00012427
25	Yes	19	0.00000001	0.00011702
26	Yes	19	0.00000001	0.00008943
27	Yes	13	0.00000001	0.00013443
28	Yes	17	0.00000001	0.00014064
29	Yes	18	0.00000001	0.00010962
30	Yes	18	0.00000001	0.00013284
31	Yes	18	0.00000001	0.00012499
32	Yes	14	0.00000001	0.00006926
33	Yes	18	0.00000001	0.00014103
34	Yes	18	0.00000001	0.00013175
35	Yes	11	0.00000001	0.00010243
36	Yes	9	0.00000001	0.00011357
37	Yes	11	0.00000001	0.00008562
38	Yes	12	0.00000001	0.00006669
39	Yes	13	0.00000001	0.00004121
40	Yes	13	0.00000001	0.00006247
41	Yes	13	0.00000001	0.00006360
42	Yes	13	0.00000001	0.00005476
43	Yes	12	0.00000001	0.00007435
44	Yes	9	0.00000001	0.00009469
45	Yes	10	0.00000001	0.00007854

46	Yes	11	0.00000001	0.00009751
47	Yes	12	0.00000001	0.00009530
48	Yes	13	0.00000001	0.00004056
49	Yes	13	0.00000001	0.00004215
50	Yes	12	0.00000001	0.00013842

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	160 - 140	2.034	48	0.0498	0.2737
T2	140 - 120	2.121	48	0.0315	0.4286
T3	120 - 110	1.752	48	0.1016	0.4798
T4	110 - 100	1.534	48	0.0951	0.4536
T5	100 - 80	1.337	48	0.0946	0.4673
T6	80 - 60	0.946	48	0.0738	0.4427
T7	60 - 40	0.741	38	0.0430	0.4380
T8	40 - 20	0.549	38	0.0508	0.4313
T9	20 - 6.7	0.325	38	0.0646	0.4356
T10	6.7 - 0	0.119	38	0.0792	0.4319

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
160.00	Guy	48	2.034	0.0498	0.2737	26582
146.00	(4) DB844H90E-XY	48	2.137	0.0221	0.3855	9493
135.00	13-ft Lightweight T-Frame	48	2.064	0.0492	0.4584	9142
124.00	MB96RR900200DPBL	48	1.845	0.0937	0.4875	51171
116.61	Guy	48	1.676	0.1017	0.4651	47221
76.61	Guy	48	0.899	0.0676	0.4383	18720
52.00	20' 4-Bay Dipole	38	0.669	0.0426	0.4359	110353
42.00	1' Side Arm	38	0.570	0.0493	0.4316	578601
36.61	Guy	38	0.515	0.0531	0.4314	212899

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	160 - 140	15.665	24	0.0635	0.9837
T2	140 - 120	15.423	24	0.2630	1.3274
T3	120 - 110	13.622	24	0.4946	1.4335
T4	110 - 100	12.550	24	0.5047	1.3944
T5	100 - 80	11.455	24	0.5470	1.2960
T6	80 - 60	9.006	24	0.5329	1.2020
T7	60 - 40	7.106	24	0.4540	1.1504
T8	40 - 20	5.048	24	0.5236	1.1212
T9	20 - 6.7	2.777	30	0.5986	1.1164

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T10	6.7 - 0	0.980	30	0.6721	1.1248

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
160.00	Guy	24	15.665	0.0635	0.9837	8137
146.00	(4) DB844H90E-XY	24	15.636	0.1923	1.2425	2906
135.00	13-ft Lightweight T-Frame	24	15.098	0.3317	1.3786	2747
124.00	MB96RR900200DPBL	24	14.054	0.4681	1.4319	11387
116.61	Guy	24	13.257	0.5018	1.4281	9938
76.61	Guy	24	8.648	0.5168	1.1929	5142
52.00	20' 4-Bay Dipole	24	6.317	0.4691	1.1355	12242
42.00	1' Side Arm	24	5.263	0.5145	1.1229	23285
36.61	Guy	24	4.683	0.5373	1.1187	18467

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	160	Leg	A325N	0.6250	4	0.38	13.50	0.028 ✓	1.333	Bolt Tension
T2	140	Leg	A325N	0.6250	4	4.87	13.49	0.361 ✓	1.333	Bolt Tension
T3	120	Leg	A325N	0.6250	4	0.00	13.35	0.000 ✓	1.333	Bolt Tension
T4	110	Leg	A325N	0.6250	4	0.00	13.50	0.000 ✓	1.333	Bolt Tension
T5	100	Leg	A325N	0.6250	4	0.00	13.50	0.000 ✓	1.333	Bolt Tension
T6	80	Leg	A325N	0.6250	4	0.00	13.47	0.000 ✓	1.333	Bolt Tension
T7	60	Leg	A325N	0.6250	4	0.00	13.49	0.000 ✓	1.333	Bolt Tension
T8	40	Leg	A325N	0.6250	4	0.00	13.49	0.000 ✓	1.333	Bolt Tension
T9	20	Leg	A325N	0.6250	4	0.00	13.50	0.000 ✓	1.333	Bolt Tension
T10	6.7	Leg	A325N	0.6250	4	0.00	13.39	0.000 ✓	1.333	Bolt Tension

Guy Design Data

Section No.	Elevation ft	Size	Initial Tension K	Breaking Load K	Actual T K	Allowable T_a K	Required S.F.	Actual S.F.
T1	160.00 (A) (352)	7/16 EHS	2.08	20.80	8.10	10.40	2.000	2.569 ✓
	160.00 (A)	7/16 EHS	2.08	20.80	8.36	10.40	2.000	2.487 ✓

Section No.	Elevation ft	Size	Initial Tension K	Breaking Load K	Actual T K	Allowable T_a K	Required S.F.	Actual S.F.
	(353)							
	160.00 (B) (346)	7/16 EHS	2.08	20.80	8.49	10.40	2.000	2.450 ✔
	160.00 (B) (347)	7/16 EHS	2.08	20.80	8.13	10.40	2.000	2.559 ✔
	160.00 (C) (340)	7/16 EHS	2.08	20.80	8.22	10.40	2.000	2.529 ✔
	160.00 (C) (341)	7/16 EHS	2.08	20.80	8.35	10.40	2.000	2.491 ✔
T3	116.61 (A) (360)	9/16 EHS	3.50	35.00	15.90	17.50	2.000	2.202 ✔
	116.61 (B) (359)	9/16 EHS	3.50	35.00	16.03	17.50	2.000	2.183 ✔
	116.61 (C) (358)	9/16 EHS	3.50	35.00	15.85	17.50	2.000	2.209 ✔
T6	76.61 (A) (363)	7/16 EHS	2.08	20.80	9.44	10.40	2.000	2.204 ✔
	76.61 (B) (362)	7/16 EHS	2.08	20.80	9.42	10.40	2.000	2.207 ✔
	76.61 (C) (361)	7/16 EHS	2.08	20.80	9.43	10.40	2.000	2.206 ✔
T8	36.61 (A) (366)	5/16 EHS	1.12	11.20	4.46	5.60	2.000	2.513 ✔
	36.61 (B) (365)	5/16 EHS	1.12	11.20	4.50	5.60	2.000	2.488 ✔
	36.61 (C) (364)	5/16 EHS	1.12	11.20	4.50	5.60	2.000	2.488 ✔

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 K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	160 - 140	P2.5x.276	20.00	3.32	43.1 K=1.00	1.00	18.455	2.2535	-34.50	41.59	0.829 ✔
T2	140 - 120	P2.5x.276	20.00	3.31	42.9 K=1.00	1.00	18.468	2.2535	-35.19	41.62	0.845 ✔
T3	120 - 110	P2.5x.203	10.00	3.31	41.9 K=1.00	1.00	18.557	1.7040	-21.34	31.62	0.675 ✔
T4	110 - 100	P2.5x.203	10.00	3.31	41.9 K=1.00	1.00	18.557	1.7040	-22.10	31.62	0.699 ✔
T5	100 - 80	P2.5x.203	20.00	3.31	41.9 K=1.00	1.00	18.557	1.7040	-30.99	31.62	0.980 ✔
T6	80 - 60	P2.5x.203	20.00	3.31	41.9 K=1.00	1.00	18.557	1.7040	-33.22	31.62	1.051 ✔
T7	60 - 40	P2.5x.203	20.00	3.31	41.9 K=1.00	1.00	18.557	1.7040	-28.44	31.62	0.899 ✔
T8	40 - 20	P2.5x.203	20.00	3.31	41.9 K=1.00	1.00	18.557	1.7040	-33.52	31.62	1.060 ✔
T9	20 - 6.7	P2.5x.203	13.30	3.28	41.6 K=1.00	1.00	18.578	1.7040	-33.52	31.66	1.059 ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	Mast Stability Index	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T10	6.7 - 0	P2.5x.203	6.85	3.43	43.4 K=1.00	1.00	18.437	1.7040	-31.90	31.42	1.015 ✓

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	160 - 140	P.75x.113	4.16	3.76	101.3 K=0.75	12.627	0.3326	-4.62	4.20	1.100 ✓
T2	140 - 120	P.75x.113	4.14	3.75	60.6 K=0.45	16.965	0.3326	-7.11	5.64	1.260 ✓
T3	120 - 110	P.75x.113	4.14	3.75	60.6 K=0.45	16.965	0.3326	-7.11	5.64	1.260 ✓
T4	110 - 100	P.75x.113	4.14	3.75	101.1 K=0.75	12.659	0.3326	-1.62	4.21	0.384 ✓
T5	100 - 80	P.75x.113	4.14	3.75	101.1 K=0.75	12.659	0.3326	-3.80	4.21	0.902 ✓
T6	80 - 60	P.75x.113	4.14	3.75	101.1 K=0.75	12.659	0.3326	-3.96	4.21	0.941 ✓
T7	60 - 40	P.75x.113	4.14	3.75	101.1 K=0.75	12.659	0.3326	-2.11	4.21	0.502 ✓
T8	40 - 20	P.75x.113	4.14	3.75	101.1 K=0.75	12.659	0.3326	-2.54	4.21	0.604 ✓
T9	20 - 6.7	P.75x.113	4.13	3.73	100.6 K=0.75	12.711	0.3326	-1.94	4.23	0.459 ✓
T10	6.7 - 0	P.75x.113	3.78	3.30	88.9 K=0.75	14.075	0.3326	-1.45	4.68	0.309 ✓

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	160 - 140	P.75x.113	2.50	2.26	81.3 K=1.00	14.912	0.3326	-1.51	4.96	0.305 ✓
T2	140 - 120	P.75x.113	2.50	2.26	36.6 K=0.45	18.954	0.3326	-0.79	6.30	0.125 ✓
T3	120 - 110	P.75x.113	2.50	2.26	36.6 K=0.45	18.954	0.3326	-0.37	6.30	0.059 ✓
T4	110 - 100	P.75x.113	2.50	2.26	81.3 K=1.00	14.912	0.3326	-0.38	4.96	0.077 ✓
T5	100 - 80	P.75x.113	2.50	2.26	81.3 K=1.00	14.912	0.3326	-0.54	4.96	0.108 ✓
T6	80 - 60	P.75x.113	2.50	2.26	81.3	14.912	0.3326	-0.58	4.96	0.116

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T7	60 - 40	P.75x.113	2.50	2.26	81.3 K=1.00	14.912	0.3326	-0.49	4.96	0.099 ✓
T8	40 - 20	P.75x.113	2.50	2.26	81.3 K=1.00	14.912	0.3326	-0.58	4.96	0.117 ✓
T9	20 - 6.7	P.75x.113	2.50	2.26	81.3 K=1.00	14.912	0.3326	-0.58	4.96	0.117 ✓
T10	6.7 - 0	P.75x.113	1.25	1.01	36.3 K=1.00	18.972	0.3326	-0.56	6.31	0.089 ✓

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 K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	160 - 140	P.75x.113	2.50	2.26	81.3 K=1.00	14.912	0.3326	-1.46	4.96	0.295 ✓
T2	140 - 120	P.75x.113	2.50	2.26	36.6 K=0.45	18.954	0.3326	-0.11	6.30	0.018 ✓
T3	120 - 110	P.75x.113	2.50	2.26	36.6 K=0.45	18.954	0.3326	-0.13	6.30	0.020 ✓

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 K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	160 - 140	P.75x.113	2.50	2.26	81.3 K=1.00	14.912	0.3326	-0.07	4.96	0.014 ✓
T2	140 - 120	P.75x.113	2.50	2.26	36.6 K=0.45	18.954	0.3326	-0.20	6.30	0.031 ✓

Torque-Arm Bottom Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	160 - 140 (344)	L3x3x3/8	4.16	3.96	100.4 K=1.24	12.922	2.1100	-11.11	27.27	0.407 ✓
T1	160 - 140 (345)	L3x3x3/8	4.16	3.96	100.4 K=1.24	12.922	2.1100	-11.14	27.27	0.409 ✓
T1	160 - 140 (350)	L3x3x3/8	4.16	3.96	100.4 K=1.24	12.922	2.1100	-11.43	27.27	0.419 ✓
T1	160 - 140 (351)	L3x3x3/8	4.16	3.96	100.4	12.922	2.1100	-11.42	27.27	0.419

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	160 - 140 (356)	L3x3x3/8	4.16	3.96	K=1.24 100.4	12.922	2.1100	-10.97	27.27	✓ 0.402 ✓
T1	160 - 140 (357)	L3x3x3/8	4.16	3.96	K=1.24 100.4	12.922	2.1100	-10.91	27.27	✓ 0.400 ✓

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 K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	160 - 140	P2.5x.276	20.00	3.32	43.1	21.000	2.2535	19.49	47.32	✓ 0.412
T2	140 - 120	P2.5x.276	20.00	3.31	42.9	21.000	2.2535	20.94	47.32	✓ 0.443
T6	80 - 60	P2.5x.203	20.00	3.31	41.9	21.000	1.7040	0.58	35.79	✓ 0.016 ✓

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	160 - 140	P.75x.113	4.16	3.76	135.1	21.000	0.3326	4.20	6.99	0.601 ✓
T2	140 - 120	P.75x.113	4.14	3.75	134.8	21.000	0.3326	6.46	6.99	0.925 ✓
T3	120 - 110	P.75x.113	4.14	3.75	134.8	21.000	0.3326	6.32	6.99	0.905 ✓
T4	110 - 100	P.75x.113	4.14	3.75	134.8	21.000	0.3326	0.37	6.99	0.053 ✓
T5	100 - 80	P.75x.113	4.14	3.75	134.8	21.000	0.3326	2.51	6.99	0.360 ✓
T6	80 - 60	P.75x.113	4.14	3.75	134.8	21.000	0.3326	2.58	6.99	0.369 ✓
T7	60 - 40	P.75x.113	4.14	3.75	134.8	21.000	0.3326	0.43	6.99	0.061 ✓
T8	40 - 20	P.75x.113	4.14	3.75	134.8	21.000	0.3326	0.74	6.99	0.106 ✓
T9	20 - 6.7	P.75x.113	4.13	3.73	134.2	21.000	0.3326	0.37	6.99	0.053 ✓

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	160 - 140	P.75x.113	2.50	2.26	81.3	21.000	0.3326	1.58	6.99	0.226 ✓
T2	140 - 120	P.75x.113	2.50	2.26	81.3	21.000	0.3326	1.10	6.99	0.157 ✓
T3	120 - 110	P.75x.113	2.50	2.26	81.3	21.000	0.3326	0.41	6.99	0.058 ✓
T4	110 - 100	P.75x.113	2.50	2.26	81.3	21.000	0.3326	0.57	6.99	0.082 ✓
T5	100 - 80	P.75x.113	2.50	2.26	81.3	21.000	0.3326	0.63	6.99	0.090 ✓
T6	80 - 60	P.75x.113	2.50	2.26	81.3	21.000	0.3326	0.63	6.99	0.091 ✓
T7	60 - 40	P.75x.113	2.50	2.26	81.3	21.000	0.3326	0.70	6.99	0.101 ✓
T8	40 - 20	P.75x.113	2.50	2.26	81.3	21.000	0.3326	0.69	6.99	0.098 ✓
T9	20 - 6.7	P.75x.113	2.50	2.26	81.3	21.000	0.3326	0.70	6.99	0.100 ✓
T10	6.7 - 0	P.75x.113	1.25	1.01	36.3	21.000	0.3326	0.56	6.99	0.080 ✓

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 K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	160 - 140	P.75x.113	2.50	2.26	81.3	21.000	0.3326	1.46	6.99	0.209 ✓
T2	140 - 120	P.75x.113	2.50	2.26	81.3	21.000	0.3326	0.25	6.99	0.035 ✓
T3	120 - 110	P.75x.113	2.50	2.26	81.3	21.000	0.3326	0.39	6.99	0.056 ✓
T5	100 - 80	P.75x.113	2.50	2.26	81.3	21.000	0.3326	0.30	6.99	0.043 ✓
T6	80 - 60	P.75x.113	2.50	2.26	81.3	21.000	0.3326	0.35	6.99	0.050 ✓
T7	60 - 40	P.75x.113	2.50	2.26	81.3	21.000	0.3326	0.28	6.99	0.041 ✓
T8	40 - 20	P.75x.113	2.50	2.26	81.3	21.000	0.3326	0.33	6.99	0.048 ✓
T9	20 - 6.7	P.75x.113	2.50	2.26	81.3	21.000	0.3326	0.34	6.99	0.048 ✓
T10	6.7 - 0	P.75x.113	2.47	2.23	80.2	21.000	0.3326	2.20	6.99	0.316 ✓

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 K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	160 - 140	P.75x.113	2.50	2.26	81.3	21.000	0.3326	0.21	6.99	0.031 ✓
T2	140 - 120	P.75x.113	2.50	2.26	81.3	21.000	0.3326	0.38	6.99	0.055 ✓
T4	110 - 100	P.75x.113	2.50	2.26	81.3	21.000	0.3326	0.28	6.99	0.040 ✓
T5	100 - 80	P.75x.113	2.50	2.26	81.3	21.000	0.3326	0.34	6.99	0.049 ✓
T6	80 - 60	P.75x.113	2.50	2.26	81.3	21.000	0.3326	0.36	6.99	0.052 ✓
T7	60 - 40	P.75x.113	2.50	2.26	81.3	21.000	0.3326	0.29	6.99	0.041 ✓
T8	40 - 20	P.75x.113	2.50	2.26	81.3	21.000	0.3326	0.35	6.99	0.049 ✓
T9	20 - 6.7	P.75x.113	2.50	2.26	81.3	21.000	0.3326	2.17	6.99	0.311 ✓

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 K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T3	120 - 110	3x1/2	2.50	2.26	187.9	21.600	1.5000	6.42	32.40	0.198 ✓
T6	80 - 60	3x1/2	2.50	2.26	187.9	21.600	1.5000	4.80	32.40	0.148 ✓
T8	40 - 20	3x1/2	2.50	2.26	187.9	21.600	1.5000	3.01	32.40	0.093 ✓

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 K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	160 - 140 (342)	L3x3x3/8	2.50	2.38	31.3	21.600	2.1100	6.29	45.58	0.138 ✓
T1	160 - 140 (343)	L3x3x3/8	2.50	2.38	31.3	21.600	2.1100	6.24	45.58	0.137 ✓
T1	160 - 140 (348)	L3x3x3/8	2.50	2.38	31.3	21.600	2.1100	6.33	45.58	0.139 ✓
T1	160 - 140 (349)	L3x3x3/8	2.50	2.38	31.3	21.600	2.1100	6.11	45.58	0.134 ✓
T1	160 - 140 (354)	L3x3x3/8	2.50	2.38	31.3	21.600	2.1100	6.28	45.58	0.138 ✓

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	160 - 140 (355)	L3x3x3/8	2.50	2.38	31.3	21.600	2.1100	6.20	45.58	0.136

Torque-Arm Bottom Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	160 - 140 (344)	L3x3x3/8	4.16	3.96	52.0	21.600	2.1100	1.45	45.58	0.032
T1	160 - 140 (345)	L3x3x3/8	4.16	3.96	52.0	21.600	2.1100	1.46	45.58	0.032
T1	160 - 140 (350)	L3x3x3/8	4.16	3.96	52.0	21.600	2.1100	1.59	45.58	0.035
T1	160 - 140 (351)	L3x3x3/8	4.16	3.96	52.0	21.600	2.1100	1.63	45.58	0.036
T1	160 - 140 (356)	L3x3x3/8	4.16	3.96	52.0	21.600	2.1100	1.33	45.58	0.029
T1	160 - 140 (357)	L3x3x3/8	4.16	3.96	52.0	21.600	2.1100	1.30	45.58	0.028

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
T1	160 - 140	Leg	P2.5x.276	3	-34.50	55.44	62.2	Pass
T2	140 - 120	Leg	P2.5x.276	44	-35.19	55.48	63.4	Pass
T3	120 - 110	Leg	P2.5x.203	86	-21.34	42.15	50.6	Pass
T4	110 - 100	Leg	P2.5x.203	106	-22.10	42.15	52.4	Pass
T5	100 - 80	Leg	P2.5x.203	131	-30.99	42.15	73.5	Pass
T6	80 - 60	Leg	P2.5x.203	174	-33.22	42.15	78.8	Pass
T7	60 - 40	Leg	P2.5x.203	214	-28.44	42.15	67.5	Pass
T8	40 - 20	Leg	P2.5x.203	258	-33.52	42.15	79.5	Pass
T9	20 - 6.7	Leg	P2.5x.203	300	-33.52	42.20	79.4	Pass
T10	6.7 - 0	Leg	P2.5x.203	330	-31.90	41.88	76.2	Pass
T1	160 - 140	Diagonal	P.75x.113	28	-4.62	5.60	82.5	Pass
T2	140 - 120	Diagonal	P.75x.113	52	-7.11	7.52	94.5	Pass
T3	120 - 110	Diagonal	P.75x.113	103	-7.11	7.52	94.6	Pass
T4	110 - 100	Diagonal	P.75x.113	128	-1.62	5.61	28.8	Pass
T5	100 - 80	Diagonal	P.75x.113	141	-3.80	5.61	67.7	Pass
T6	80 - 60	Diagonal	P.75x.113	213	-3.96	5.61	70.6	Pass
T7	60 - 40	Diagonal	P.75x.113	223	-2.11	5.61	37.7	Pass
T8	40 - 20	Diagonal	P.75x.113	289	-2.54	5.61	45.3	Pass
T9	20 - 6.7	Diagonal	P.75x.113	309	-1.94	5.64	34.4	Pass
T10	6.7 - 0	Diagonal	P.75x.113	339	-1.45	6.24	23.2	Pass
T1	160 - 140	Horizontal	P.75x.113	39	-1.51	6.61	22.9	Pass
T2	140 - 120	Horizontal	P.75x.113	55	1.10	9.31	11.8	Pass
T3	120 - 110	Horizontal	P.75x.113	95	-0.37	8.40	4.4	Pass
T4	110 - 100	Horizontal	P.75x.113	111	0.57	9.31	6.2	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
T5	100 - 80	Horizontal	P.75x.113	143	-0.54	6.61	8.1	Pass
T6	80 - 60	Horizontal	P.75x.113	185	-0.58	6.61	8.7	Pass
T7	60 - 40	Horizontal	P.75x.113	245	0.70	9.31	7.6	Pass
T8	40 - 20	Horizontal	P.75x.113	269	-0.58	6.61	8.8	Pass
T9	20 - 6.7	Horizontal	P.75x.113	311	-0.58	6.61	8.8	Pass
T10	6.7 - 0	Horizontal	P.75x.113	335	-0.56	8.41	6.7	Pass
T1	160 - 140	Top Girt	P.75x.113	4	-1.46	6.61	22.1	Pass
T2	140 - 120	Top Girt	P.75x.113	48	0.25	9.31	2.6	Pass
T3	120 - 110	Top Girt	P.75x.113	88	0.39	9.31	4.2	Pass
T5	100 - 80	Top Girt	P.75x.113	133	0.30	9.31	3.2	Pass
T6	80 - 60	Top Girt	P.75x.113	177	0.35	9.31	3.8	Pass
T7	60 - 40	Top Girt	P.75x.113	217	0.28	9.31	3.1	Pass
T8	40 - 20	Top Girt	P.75x.113	259	0.33	9.31	3.6	Pass
T9	20 - 6.7	Top Girt	P.75x.113	302	0.34	9.31	3.6	Pass
T10	6.7 - 0	Top Girt	P.75x.113	333	2.20	9.31	23.7	Pass
T1	160 - 140	Bottom Girt	P.75x.113	8	0.21	9.31	2.3	Pass
T2	140 - 120	Bottom Girt	P.75x.113	49	0.38	9.31	4.1	Pass
T4	110 - 100	Bottom Girt	P.75x.113	113	0.28	9.31	3.0	Pass
T5	100 - 80	Bottom Girt	P.75x.113	136	0.34	9.31	3.7	Pass
T6	80 - 60	Bottom Girt	P.75x.113	179	0.36	9.31	3.9	Pass
T7	60 - 40	Bottom Girt	P.75x.113	222	0.29	9.31	3.1	Pass
T8	40 - 20	Bottom Girt	P.75x.113	263	0.35	9.31	3.7	Pass
T9	20 - 6.7	Bottom Girt	P.75x.113	306	2.17	9.31	23.3	Pass
T1	160 - 140	Guy A@160	7/16	353	8.36	10.40	80.4	Pass
T3	120 - 110	Guy A@116.611	9/16	360	15.90	17.50	90.8	Pass
T6	80 - 60	Guy A@76.6111	7/16	363	9.44	10.40	90.7	Pass
T8	40 - 20	Guy A@36.6111	5/16	366	4.46	5.60	79.6	Pass
T1	160 - 140	Guy B@160	7/16	346	8.49	10.40	81.6	Pass
T3	120 - 110	Guy B@116.611	9/16	359	16.03	17.50	91.6	Pass
T6	80 - 60	Guy B@76.6111	7/16	362	9.42	10.40	90.6	Pass
T8	40 - 20	Guy B@36.6111	5/16	365	4.50	5.60	80.4	Pass
T1	160 - 140	Guy C@160	7/16	341	8.35	10.40	80.3	Pass
T3	120 - 110	Guy C@116.611	9/16	358	15.85	17.50	90.5	Pass
T6	80 - 60	Guy C@76.6111	7/16	361	9.43	10.40	90.7	Pass
T8	40 - 20	Guy C@36.6111	5/16	364	4.50	5.60	80.4	Pass
T3	120 - 110	Top Guy Pull-Off@116.611	3x1/2	100	6.42	43.19	14.9	Pass
T6	80 - 60	Top Guy Pull-Off@76.6111	3x1/2	208	4.80	43.19	11.1	Pass
T8	40 - 20	Top Guy Pull-Off@36.6111	3x1/2	292	3.01	43.19	7.0	Pass
T1	160 - 140	Torque Arm Top@160	L3x3x3/8	348	6.33	60.75	10.4	Pass
T1	160 - 140	Torque Arm Bottom@160	L3x3x3/8	350	-11.43	36.34	31.4	Pass

Summary		
Leg (T8)	79.5	Pass
Diagonal (T3)	94.6	Pass
Horizontal (T1)	22.9	Pass
Top Girt (T10)	23.7	Pass
Bottom Girt (T9)	23.3	Pass
Guy A (T3)	90.8	Pass
Guy B (T3)	91.6	Pass
Guy C (T6)	90.7	Pass
Top Guy Pull-Off (T3)	14.9	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
						Torque Arm Top (T1)	10.4	Pass
						Torque Arm Bottom (T1)	31.4	Pass
						Bolt Checks	27.1	Pass
						RATING =	**94.6**	**Pass**

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Centered on Solutions
63-2 North Branford Road
Branford, CT 06405
www.centekeng.com
P: (203) 488-0580
F: (203) 488-8587

Job :	Verizon Wireless ~ Prospect North: 160-ft Guyed Lattice Tower	Project No.	11001.CO33	Page Sheet	1	of 2
Address:	54 Waterbury Rd., Prospect, CT	Computed by	TJL	Date		8/10/11
Description:	Guy Anchor Evaluation - 2005 CSBC 3108.4.2/TIA Req	Checked by	CFC	Date		

CHECK UPLIFT RESISTANCE

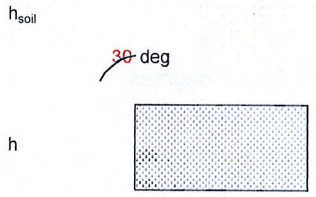
ANCHOR (B) AT 100.0ft RADIUS

RESULTS FROM COMPUTER ANALYSIS:

Uplift =	33	kips
Sliding =	31	kips

CONCRETE PARAMETERS:

γ conc =	150	pcf
w =	3	ft
h =	3	ft
d =	11	ft
Vol. =	*99.00*	ft^3
Wc =	*14.85*	kips



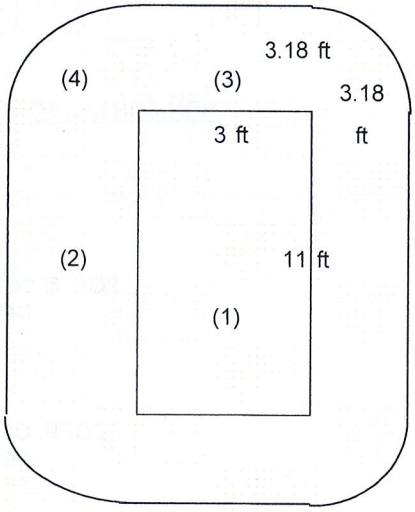
Foundation Section

SOIL PARAMETERS:

γ_{soil} =	120	pcf
h_{soil} =	5.5	ft
x =	*3.18*	ft

Soil Weight (Wr):

(1) =	21.78	kips
(2) =	23.05	kips
(3) =	6.29	kips
(4) =	6.97	kips
*(5) Anchor Reinf. =	0	kips
Total =	58.09	kips



Foundation Plan View

CHECK UPLIFT (PER EIA/TIA-222-F STANDARD AND 2005 CT BUILDING CODE):

Wr / 2.0 + Wc / 2.0 > UPLIFT

36.47 > *33* ***OK***

(Wr + Wc) / 2.0 > UPLIFT

36.47 > *33* ***OK***

→ ***GUY ANCHORS AGAINST UPLIFT ARE ADEQUATE***

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Job :	Verizon Wireless ~ Prospect North: 160-ft Guyed Lattice Tower	Project No.	11001.CO33	Page / Sheet	2 of 2
Address:	54 Waterbury Rd., Prospect, CT	Computed by	TJL	Date	8/10/11
Description:	Guy Anchor Evaluation - TIA Req	Checked by	CFC	Date	

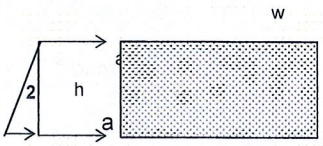
CHECK SLIDING RESISTANCE

SOIL PARAMETERS

γ soil =	120	pcf
h_{soil} =	5.5	ft
h =	3	ft
ϕ =	30	degrees

ANCHOR PARAMETERS

w =	3.0	ft
h =	3.0	ft
d =	11.0	ft



Foundation Elevation View

K_a = 0.33

K_p = 3.00

Δ = 2.67

HORIZONTAL FORCES

1 =	58.08 k
2 =	15.84 k
RESIST TO SLIDING =	73.92 k

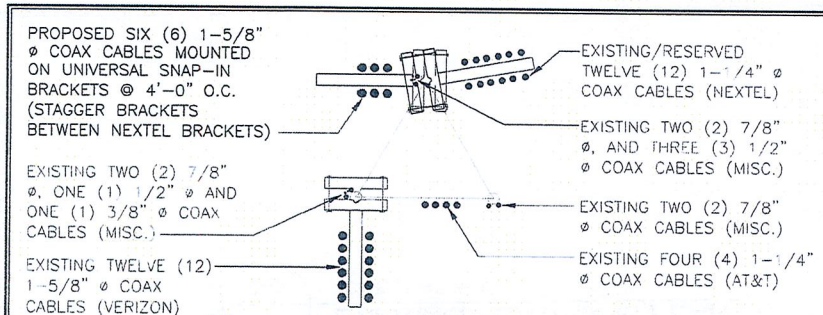
SOIL & CONCRETE WEIGHT =	Wr + Wc = 72.94 k
UPLIFT REACTIONS =	-33 k
SUM =	39.94 k

COEF. OF FRICTION, (0.45) =	17.97 k
RESIST TO SLIDING =	73.92 k
SUM =	91.89 k

SF AGAINST SLIDING

SF = 3.0 > 2 OK

→ *GUY ANCHORS AGAINST SLIDING ARE ADEQUATE*



2 / S-1 COAX CABLE PLAN

SCALE: N.T.S.

DESIGN BASIS:

1. GOVERNING CODE: 2005 CONNECTICUT STATE BUILDING CODE (CSBC) AS MODIFIED BY THE 2009 CT STATE SUPPLEMENT. SPECIFIC REFERENCE IS MADE TO SECTION 3108: RADIO AND TELEVISION TOWERS OF THE 2003 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE CSBC.
2. DESIGN CRITERIA

WIND LOAD: (ANTENNA MOUNT)

2005 CONNECTICUT STATE BUILDING CODE:

- BASIC WIND SPEED (V) = 80 MPH (FASTEST MILE) EQUIVALENT TO 100 MPH (3-SECOND GUST) AS PER APPENDIX K OF THE CONNECTICUT SUPPLEMENT.

TIA/EIA-222-F96 STANDARD: CONTROLS

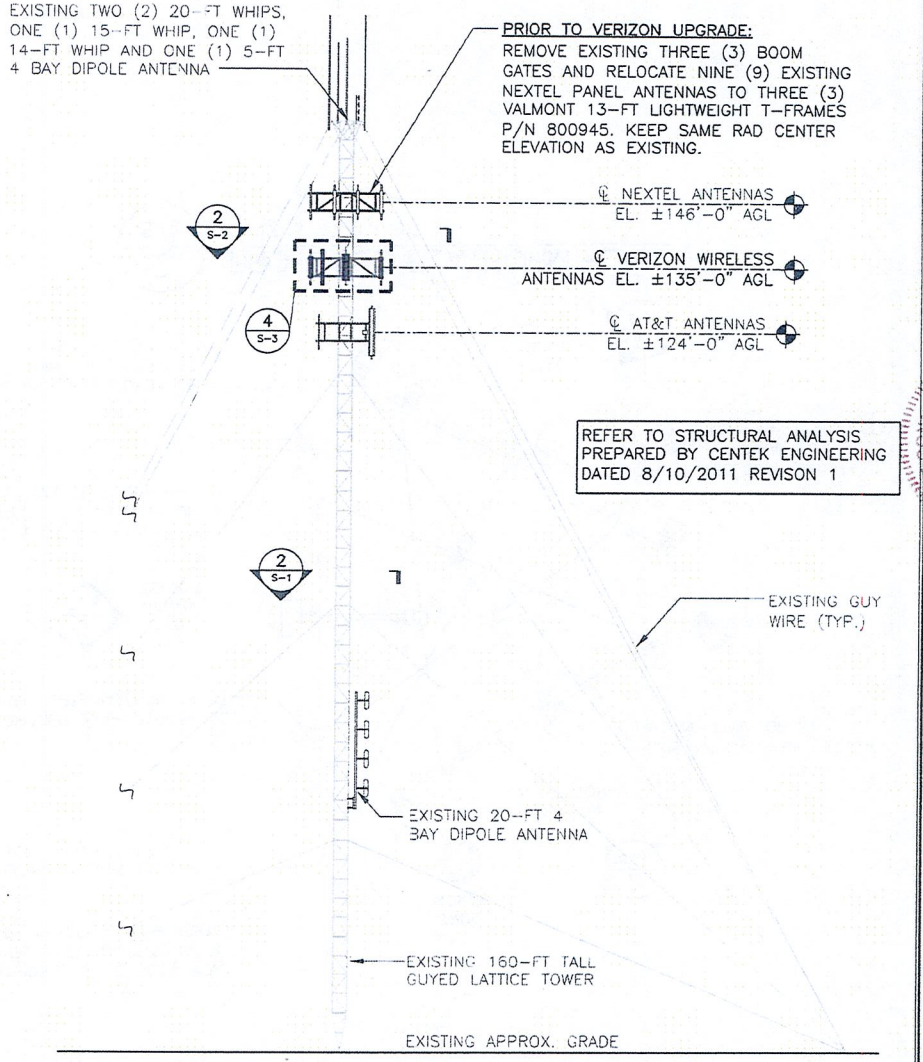
- BASIC WIND SPEED (V) = 85 MPH (FASTEST MILE).
- BASIC WIND SPEED (V) = 74 MPH (FASTEST MILE) CONCURRENT W/ 0.5" RADIAL ICE.

STRUCTURAL STEEL

1. ALL STRUCTURAL STEEL IS DESIGNED BY ALLOWABLE STRESS DESIGN (ASD)

A. STRUCTURAL STEEL (ANGLES)---ASTM A36 (FY = 36 KSI)
A. PIPE---ASTM A53 (FY = 35 KSI)
B. CONNECTION BOLTS---ASTM A325-N
C. U-BOLTS---ASTM A36
D. WELDING ELECTRODE---ASTM E 70XX

2. ALL STEEL MATERIAL (EXPOSED TO WEATHER) SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT DIPPED GALVANIZED) COATINGS" ON IRONS AND STEEL PRODUCTS.
3. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE".



1 / S-1 PROPOSED TOWER ELEVATION

SCALE: N.T.S.

REV	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
A	7/21/11	TJL	CFC	ISSUED FOR CONSTRUCTION
B	8/10/11	TJL	CFC	ISSUED FOR CONSTRUCTION

DESIGNED BY: TJL
DRAWN BY: TJL
CHK'D BY: CFC

PROFESSIONAL ENGINEER SEAL

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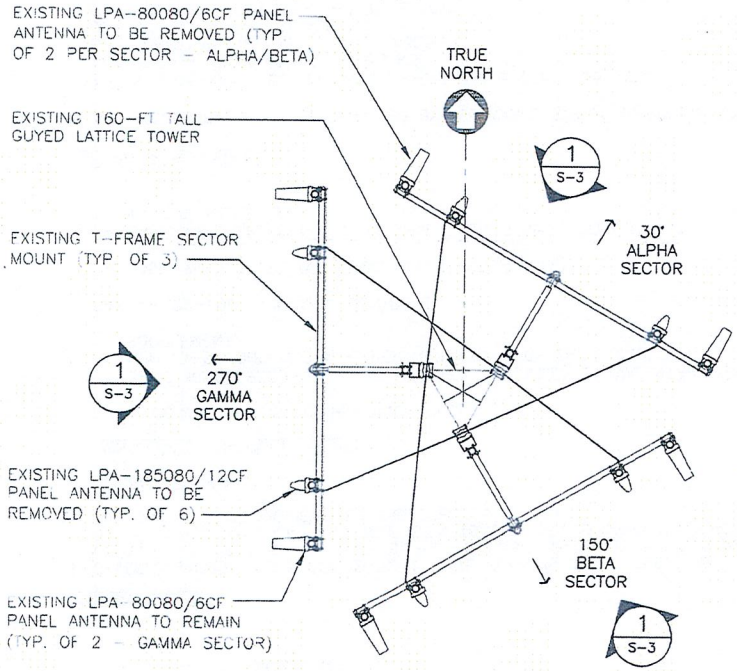
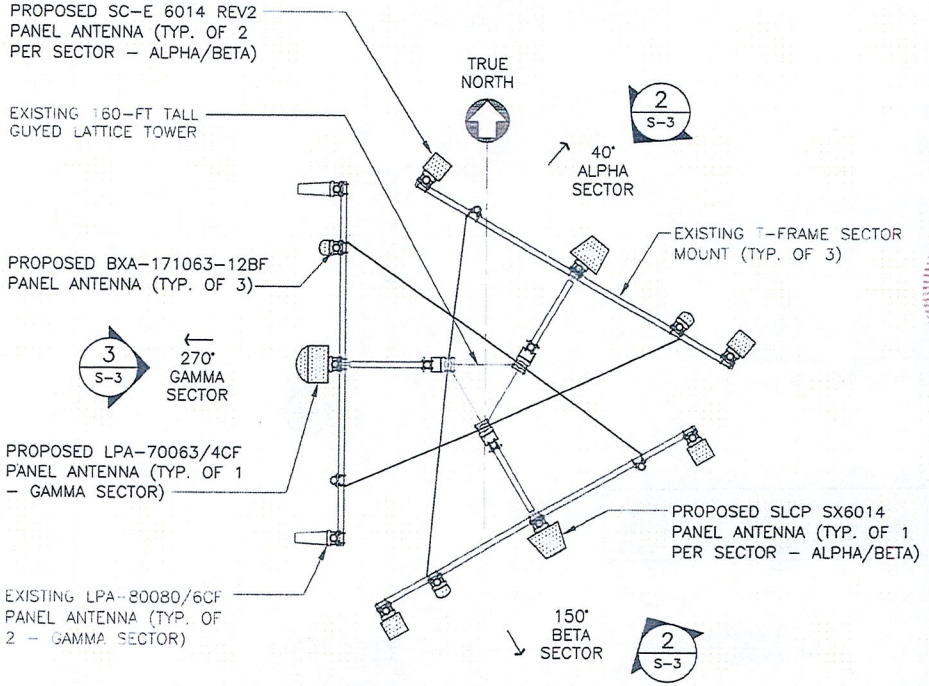
Cellco Partnership d/b/a Verizon Wireless
PROPOSED ANTENNA UPGRADES
PROSPECT NORTH
54 WATERBURY ROAD
PROSPECT, CT

DATE: 7/21/11
SCALE: AS SHOWN
JOB NO. 11001.C033

SHEET NO. S-1



1 S-2 **EXISTING PLATFORM PLAN**
SCALE: 1/4" = 1'-0"



2 S-2 **PROPOSED PLATFORM PLAN**
SCALE: 1/4" = 1'-0"

DESIGNED BY:	TJL
DRAWN BY:	TJL
CHK'D BY:	CFC

REV	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	8/10/11	TJL	CFC	ISSUED FOR CONSTRUCTION
A	7/21/11	TJL	CFC	ISSUED FOR CONSTRUCTION

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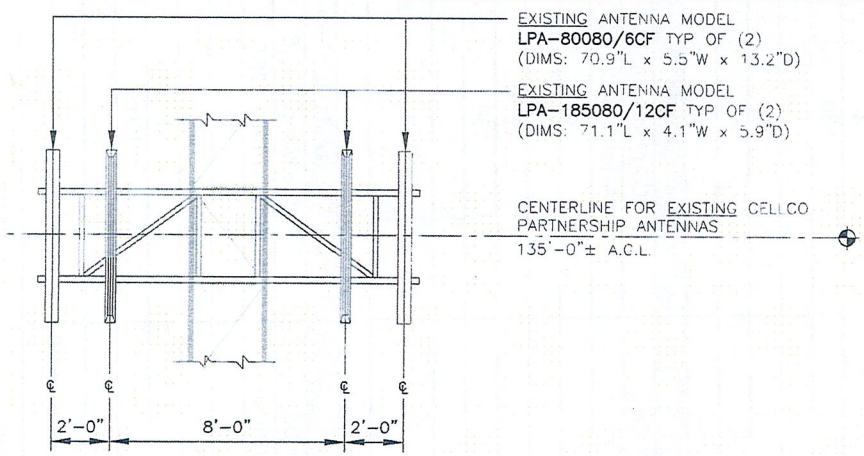
Cellco Partnership d/b/a Verizon Wireless
PROPOSED WIRELESS FACILITY

PROSPECT NORTH
54 WATERBURY ROAD
PROSPECT, CT

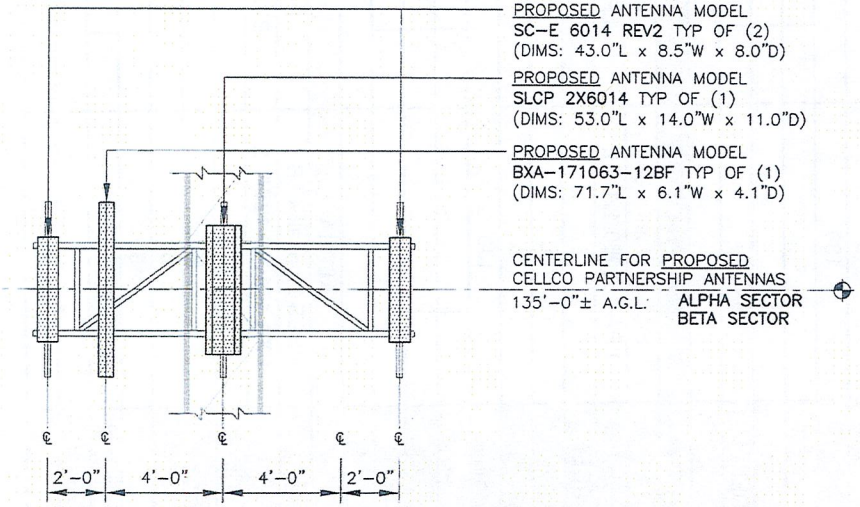
DATE:	7/21/11
SCALE:	AS SHOWN
JOB NO.	11001.C033

SHEET NO.
S-2



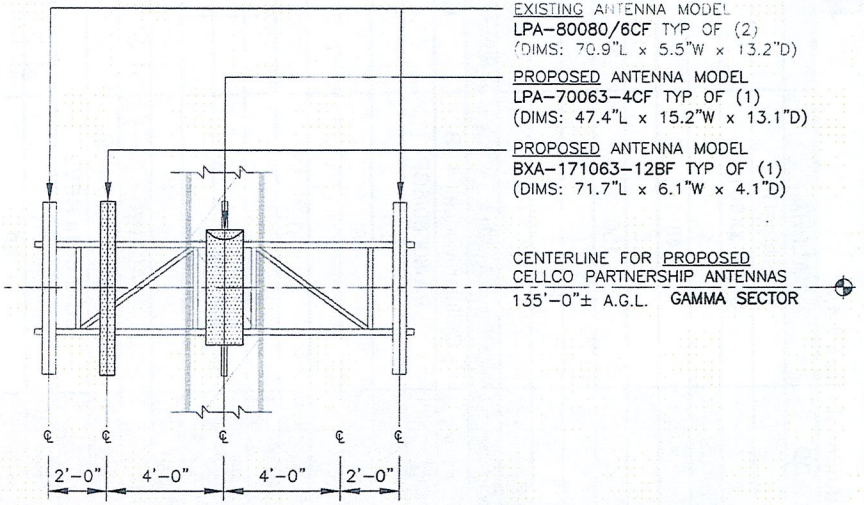
1 S-3 **EXISTING SECTOR ELEVATION**

SCALE: 1/4" = 1'-0"



2 S-3 **PROPOSED SECTOR ELEVATION**

SCALE: 1/4" = 1'-0"



3 S-3 **PROPOSED SECTOR ELEVATION**

SCALE: 1/4" = 1'-0"

DESIGNED BY:	TJL
DRAWN BY:	TJL
CHK'D BY:	CFC

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	5/10/11	TJL	CFC	ISSUED FOR CONSTRUCTION
1	7/21/11	TJL	CFC	ISSUED FOR CONSTRUCTION

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PROSPECT NORTH
54 WATERBURY ROAD
PROSPECT, CT

DATE:	7/21/11
SCALE:	AS SHOWN
JOB NO.	11001.C033

SHEET NO.
S-3

SITE NAME	PROSPECT NORTH CT	ECP - CELL #	2	144
LATITUDE	41-30-39.34 N	LONGITUDE	72-58-56.38 W	
		SAVE BUTTON		
Additional Comments: Additional Lines 1-1/4"		STRUCTURE TYPE	MONOPOLE	

700 Mhz - LTE ANTENNA ADD	ALPHA	BETA	GAMMA
EQUIPMENT TYPE	eNodeB	eNodeB	eNodeB
ANTENNA TYPE	SLCP 2X6014	SLCP 2X6014	LPA-70063/4CF_2E
QTY OF ANTENNAS PER FACE	1	1	1
ORIENTATION (DEG)	40	150	270
DOWN TILT (MECH/DEG)	5	2	0
RAD CTR (FT AGL)	130	130	130
TMA - QTY / MODEL			
DIPLEXER - QTY / MODEL			
MCPA BRICKS (QTY)			

850 Celluar - Current Config	ALPHA	BETA	GAMMA
EQUIPMENT TYPE	Cellular Modcell 4.0B	Cellular Modcell 4.0B	Cellular Modcell 4.0B
ANTENNA TYPE	LPA-80080/6CF	LPA-80080/6CF	LPA-80080/6CF
QTY OF ANTENNAS PER FACE	2	2	2
ORIENTATION (DEG)	30	150	270
DOWN TILT (MECH/DEG)	5	2	2
RAD CTR (FT AGL)	130	130	130
TMA - QTY / MODEL			
DIPLEXER - QTY / MODEL			
DIPLEXER KIT - QTY / MODEL			
MCPA BRICKS (QTY)			

850 Celluar - Future Config	ALPHA	BETA	GAMMA
EQUIPMENT TYPE	Cellular Modcell 4.0B	Cellular Modcell 4.0B	Cellular Modcell 4.0B
ANTENNA TYPE	SC-E 6014 REV2	SC-E 6014 REV2	LPA-80080/6CF
QTY OF ANTENNAS PER FACE	2	2	2
ORIENTATION (DEG)	40	150	270
DOWN TILT (MECH/DEG)	5	2	4
RAD CTR (FT AGL)	130	130	130
TMA - QTY / MODEL			
DIPLEXER - QTY / MODEL			
DIPLEXER KIT - QTY / MODEL			
MCPA BRICKS (QTY)			

1900 PCS - Current Config	ALPHA	BETA	GAMMA
EQUIPMENT TYPE	PCS Modcell 4.0B	PCS Modcell 4.0B	PCS Modcell 4.0B
ANTENNA TYPE	LPA-185080-12CF 2	LPA-185080-12CF 2	LPA-185080-12CF 2
QTY OF ANTENNAS PER FACE	2	2	2
ORIENTATION (DEG)	30	150	270
DOWN TILT (MECH/DEG)	2	2	2
RAD CTR (FT AGL)	130	130	130
TMA - QTY / MODEL			
DIPLEXER - QTY / MODEL			
DIPLEXER KIT - QTY / MODEL			
MCPA BRICKS (QTY)			

1900 PCS - Future Config	ALPHA	BETA	GAMMA
EQUIPMENT TYPE	PCS Modcell 4.0B	PCS Modcell 4.0B	PCS Modcell 4.0B
ANTENNA TYPE	BXA-171063-12BF_2	BXA-171063-12BF_2	BXA-171063-12BF_2
QTY OF ANTENNAS PER FACE	1	1	1
ORIENTATION (DEG)	40	150	270
DOWN TILT (MECH/DEG)	0	0	0
RAD CTR (FT AGL)	130	130	130
TMA - QTY / MODEL			
DIPLEX WITH CELLULAR CABLE			
MCPA BRICKS (QTY)			

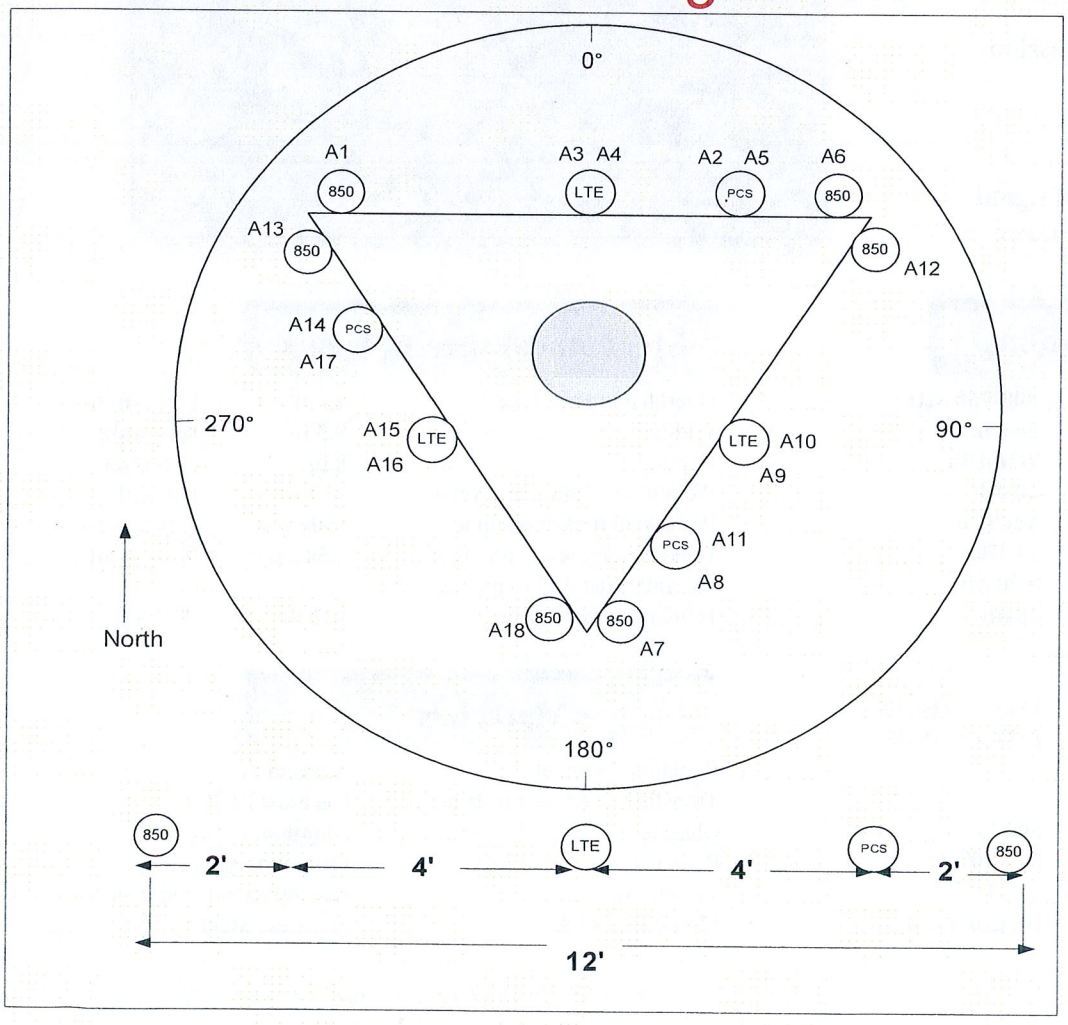
NUMBER OF CABLE'S NEEDED					ESTIMATED CABLE LENGTH			
MAINLINE SIZE	1 5/8"	TOTAL # OF MAINLINES		18	MAINLINE (FT)			
JUMPER SIZE	1/2 "	TOTAL # OF TOP JUMPERS		18	TOP JUMPER (FT)			12
Equipment Cable Ordering		MAIN CABLE	12	+ 6	TOP JUMPER #	12	+	6

TX / RX FREQUENCIES			TX POWER OUTPUT	
Cellular A-Band	PCS F-Band	700 Mhz C - E	Cellular (Watts)	20
TX - 869-880,890-891.5 MHz	TX - 1970-1975	TX - 746-757	PCS (Watts)	16
RX - 824-835,845-846.5 MHz	RX - 1890-1895	RX - 776-787	LTE (Watts)	40

ALPHA				BETA				GAMMA			
Ant.	Freq.	Func.	Color Code	Ant.	Freq.	Func.	Color Code	Ant.	Freq.	Func.	Color Code
A1	800	Tx1/Rx0	RED	A7	800	Tx2/Rx0	BLUE	A13	800	Tx3/Rx0	GREEN
A2	1900	Tx1/Rx0	RED/ WHITE	A8	1900	Tx2/Rx0	BLUE/ WHITE	A14	1900	Tx3/Rx0	GREEN/WHITE
A3	700	Tx1/Rx0	RED/ ORANGE	A9	700	Tx2/Rx0	BLUE/ ORANGE	A15	700	Tx3/Rx0	GREEN/ORANGE
A4	700	Tx4/Rx1	RED/RED/ ORANGE	A10	700	Tx5/Rx1	BLUE/BLUE/ ORANGE	A16	700	Tx6/Rx1	GREEN/GREEN/ ORANGE
A5	1900	Tx4/Rx1	RED/RED/ WHITE	A11	1900	Tx5/Rx1	BLUE/BLUE/ WHITE	A17	1900	Tx6/Rx1	GREEN/GREEN/ WHITE
A6	800	Tx4/Rx1	RED/RED	A12	800	Tx5/Rx1	BLUE/BLUE	A18	800	Tx6/Rx1	GREEN/GREEN

RF ENGINEER	RF MANAGER	INITIALS	DATE
Prepared By : Dany Bustamante	Steve Weatherbee	DB	8/8/2011

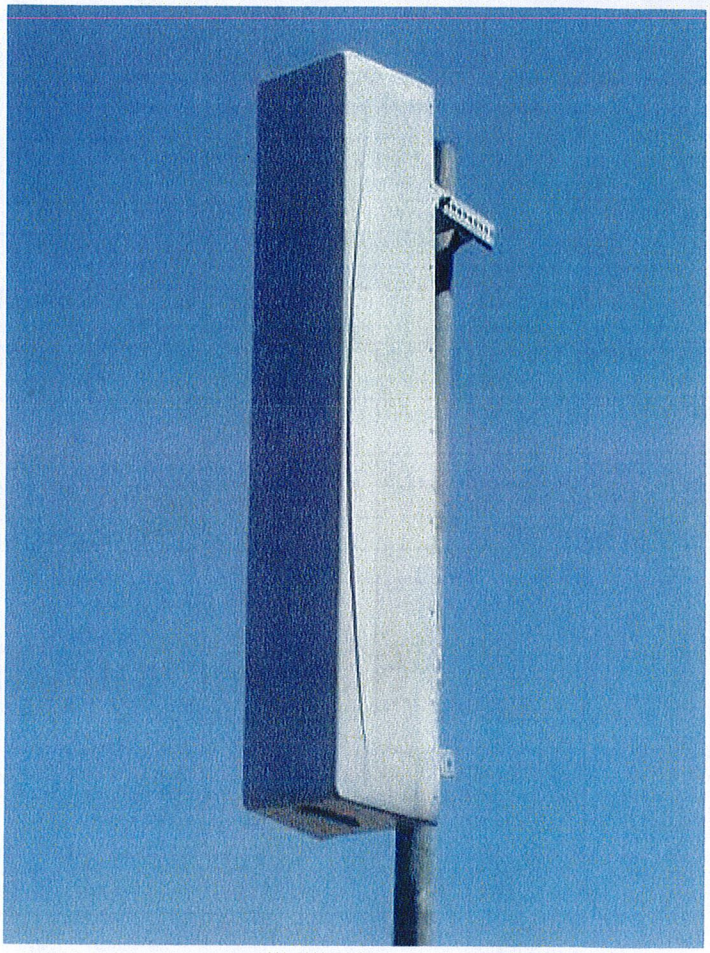
Site Configuration



Swedcom

SC-E 6014 *rev2*

Enhanced 800 - 960 MHz log-periodic antenna



Features

- **Small size**
- **Aesthetically pleasing**
- **Suitable for TDMA/CDMA/GSM/3G**
- **High return loss**
- **Low intermodulation**
- **High front-to-back ratio**
- **Outstanding performance over the entire band (800 - 960 MHz)**
- **Upper side-lobe suppression**
- **Rugged design**
- **Dramatically improved signal to interference performance**

Electrical specifications

Frequency range:	**800-960 MHz**
Impedance:	**50 ohm**
Connector type:	**7/16 Din**
Return loss:	**20 dB**
Polarization:	**Vertical**
Gain:	**14 dBd**
Front-to-back ratio:	**> 30 dB**
Upper side-lobe suppression:	**18 dB**
Intermodulation (2x20W):	**IM5 160 dB** **IM7/9 170 dB**
Power rating:	**500 W**
H-plane (-3 dB point):	**54 - 60°**
V-plane (-3 dB point):	**16 - 18°**
Lightning protection:	**DC grounded**

Mechanical specifications

Overall height:	**43 in**	**[1092 mm]**
Width:	**8.5 in**	**[216 mm]**
Depth:	**8 in**	**[203 mm]**
Weight (excluding brackets):	**15 lbs**	**[6.8 Kg]**
Wind load measured up to:	**150 mph**	**[240 Km/h]**
Wind area (side of antenna):	**2.54 sq. ft.**	**[0.24 sq.m]**
Lateral thrust At 113 mph/ 180Km/h (worst case):	**122 lbs**	**[577 N]**

Materials

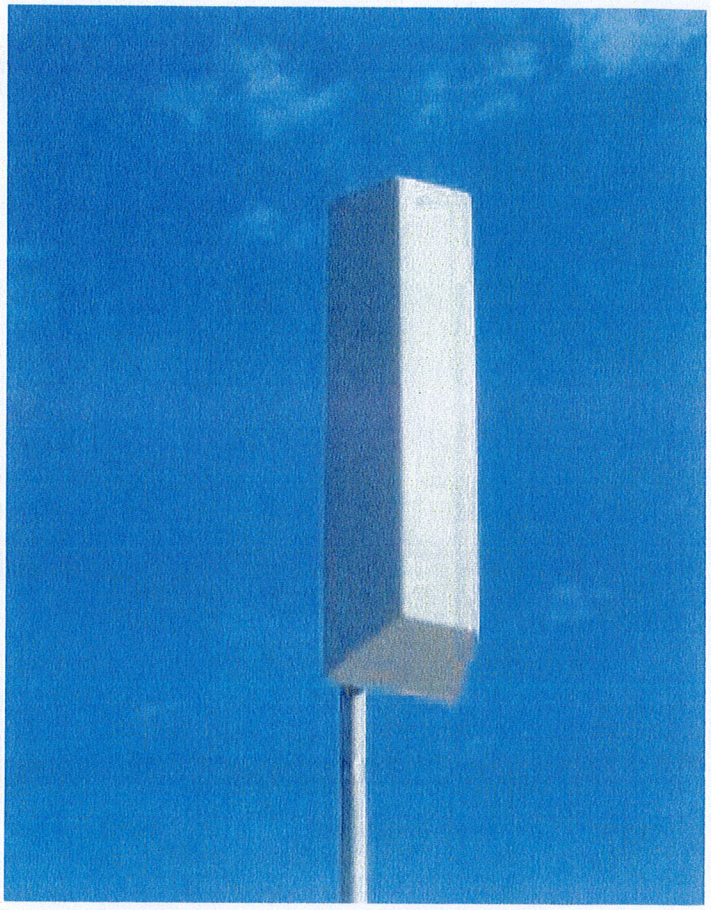
Radiating Elements:	**Aluminum**
Transformer (Power distribution)	**Ceramic PCB**
Chassis:	**Aluminum**
Radome:	**Grey Fiberglass/PVC**
Tilt-bracket:	**Hot dip galvanized steel**
Mounting bolts:	**Stainless steel**

The SC-E 6014 rev2 is made in the U.S.A.

Swedcom

SLCP 2x6014

Dual (2x) Circularly Polarized log-periodic antenna



Features

- **Transmit Diversity Gain**
- **Can be configured to combine space & polarization diversity**
- **Outstanding performance over the entire band (700 - 800 MHz)**
- **Excellent Axial Ratio**
- **Optimized for 4G & 3G systems**
- **Low intermodulation**
- **Improved Side-to-side rejection**
- **Fading reduction**
- **Excellent isolation between ports**

Electrical specifications

Frequency range:	**700-800 MHz**	
Impedance:	**50 ohm**	
Connector type:	**7/16 Din**	
Return loss:	**18 dB**	
Polarization:	**Circular**	
Gain ea. port [Circular]:	**2x14 dBdC**	
Gain ea. port [Linear]:	**2x11 dBdL**	
Axial Ratio:	**2 dB**	
Isolation between ports (TX band):	**30 dB**	
Front-to-back ratio:	**30 dB**	
Intermodulation (2x20W):	**IM3**	**150 dB**
	IM5	**160 dB**
	IM7/9	**170 dB**
Power rating:	**2x 500 W**	
H-plane (-3 dB point):	**2x 55°**	
V-plane (-3 dB point):	**2x 16°**	
Lightning protection:	**DC grounded**	

Mechanical specifications

Overall height:	**53 in**	**[1346 mm]**
Width:	**14 in**	**[356 mm]**
Depth:	**11 in**	**[279 mm]**
Weight (excluding brackets):	**20 lbs**	**[9 Kg]**
Wind load measured up to:	**150 mph**	**[240 Km/h]**
Wind area (side of antenna):	**5.15 sq. ft.**	**[0.48 sq.m]**
Lateral thrust at 113 mph/ 180 Km/h (worst case):	**263 lbs**	**[1171 N]**

Materials

Radiating Elements:	**Aluminum**
Transformer (Power distribution)	**Ceramic PCB**
Chassis:	**Aluminum**
Radome:	**Grey Fiberglass/PVC**
Mounting bolts:	**Stainless steel**

The SLCP 2x6014 is made in the U.S.A.

BXA-171063-12BF-EDIN-X

Replace "X" with desired electrical downtilt.

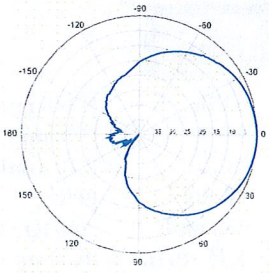
X-Pol | FET Panel | 63° | 19.0 dBi

Electrical Characteristics	1710-2170 MHz		
Frequency bands	1710-1880 MHz	1850-1990 MHz	1920-2170 MHz
Polarization	±45°	±45°	±45°
Horizontal beamwidth	68°	65°	60°
Vertical beamwidth	4.5°	4.5°	4.5°
Gain	16.1 dBd / 18.2 dBi	16.5 dBd / 18.6 dBi	16.9 dBd / 19.0 dBi
Electrical downtilt (X)	0, 2, 5		
Impedance	50Ω		
VSWR	≤1.5:1		
First upper sidelobe	< -17 dB		
Front-to-back ratio	> 30 dB		
In-band isolation	> 28 dB		
IM3 (20W carrier)	< -150 dBc		
Input power	300 W		
Lightning protection	Direct Ground		
Connector(s)	2 Ports / EDIN / Female / Bottom		
Operating temperature	-40° to +60° C / -40° to +140° F		

Mechanical Characteristics		
Dimensions Length x Width x Depth	1820 x 154 x 105 mm	71.7 x 6.1 x 4.1 in
Depth with z-brackets	133 mm	5.2 in
Weight without mounting brackets	6.8 kg	15 lbs
Survival wind speed	> 201 km/hr	> 125 mph
Wind area	Front: 0.28 m² Side: 0.19 m²	Front: 3.1 ft² Side: 2.1 ft²
Wind load @ 161 km/hr (100 mph)	Front: 460 N Side: 304 N	Front: 103 lbf Side: 68 lbf

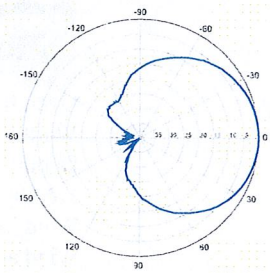
Mounting Options	Part Number	Fits Pipe Diameter	Weight
2-Point Mounting Bracket Kit	26799997	50-102 mm 2.0-4.0 in	2.3 kg 5 lbs
2-Point Mounting & Downtilt Bracket Kit	26799999	50-102 mm 2.0-4.0 in	3.6 kg 8 lbs
Concealment Configurations	For concealment configurations, order BXA-171063-12BF-EDIN-X-FP		

BXA-171063-12BF-EDIN-X



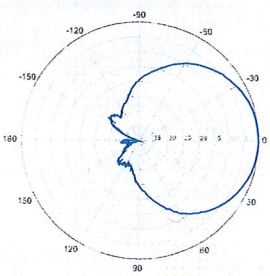
Horizontal | 1710-1880 MHz

BXA-171063-12BF-EDIN-X



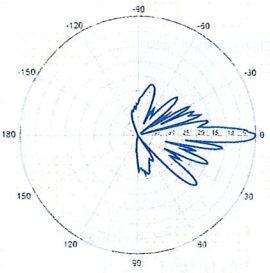
Horizontal | 1850-1990 MHz

BXA-171063-12BF-EDIN-X



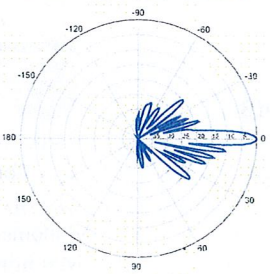
Horizontal | 1920-2170 MHz

BXA-171063-12BF-EDIN-0



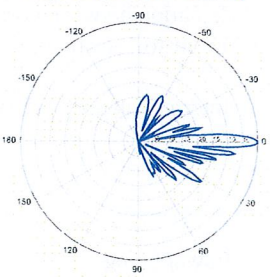
0° | Vertical | 1710-1880 MHz

BXA-171063-12BF-EDIN-0



0° | Vertical | 1850-1990 MHz

BXA-171063-12BF-EDIN-0



0° | Vertical | 1920-2170 MHz

Quoted performance parameters are provided to offer typical or range values only and may vary as a result of normal manufacturing and operational conditions. Extreme operational conditions and/or stress on structural supports is beyond our control. Such conditions may result in damage to this product. Improvements to product may be made without notice.

Vertically Polarized, Log Periodic 80° / 14 dBd

LPA-80080/6CF ___

When ordering replace "___" with connector type.

Mechanical specifications

Length	1800 mm	70.9 in
Width	140 mm	5.5 in
Depth	335 mm	13.2 in
Depth with z-bracket	375 mm	14.8 in
[4] Weight	9.5 kg	21.0 lbs
Wind Area		
Fore/Aft	0.25 m^2	2.7 ft^2
Side	0.60 m^2	6.5 ft^2
Rated Wind Velocity (Safety factor 2.0)	>295 km/hr	>183 mph
Wind Load @ 100 mph (161 km/hr)		
Fore/Aft	415 N	93.3 lbs
Side	870 N	195.6 lbs

Antenna consisting of aluminum alloy with brass feedlines covered by a UV safe fiberglass radome.

Mounting and Downtilting

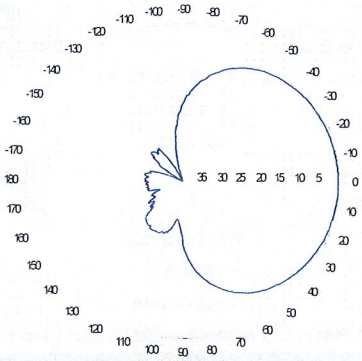
Mounting brackets attach to a pipe diameter of Ø50-102 mm (2.0-4.0 in). If the lock-down brace is used, the maximum diameter is Ø88.9 mm (3.5 in)

Mounting Bracket & Downtilt Bracket Kit #21699999

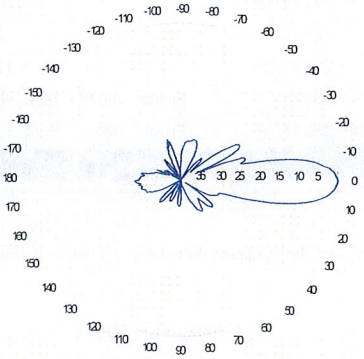
Electrical specifications

Frequency Range	806-960 MHz
Impedance	50Ω
[3] Connector(s)	NE or E-DIN 1 port / center
[1] VSWR	≤ 1.4:1
Polarization	Vertical
[1] Gain	14 dBd
[2] Power Rating	500 W
[1] Half Power Angle	
H-Plane	80°
E-Plane	10°
[1] Electrical Downtilt	0°
[1] Null Fill	10%
Lightning Protection	Direct Ground

Radiation pattern[1]



Horizontal

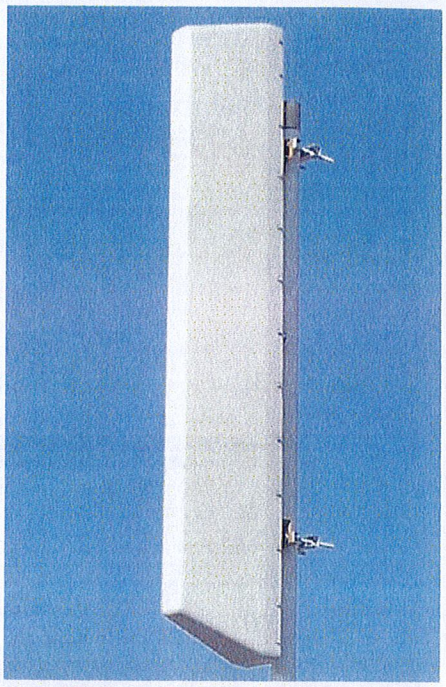


Vertical

Featuring upper side lobe suppression.

Radiation patterns for all antennas are measured with the antenna mounted on a fiberglass pole.

Mounting on a metal pole will typically improve the Front-to-Back ratio.



Amphenol Antel's Exclusive 3T (True Transmission Line Technology) Antenna Design:

- True log-periodic design allows for superior front-to-side characteristics to minimize sector overlap.
- Unique feedline design eliminates the need for conventional solder joints in the signal path.
- A non-collinear system with access to every radiating element for broad band-width and superior performance.
- Air as insulation for virtually no internal signal loss.

This Amphenol Antel antenna is under a five-year limited warranty for repair or replacement.

Antenna available with center-fed connector only.

1) Typical values.
2) Power rating limited by connector only.
3) NE indicates an elongated N connector. E-DIN indicates an elongated DIN connector.
4) The antenna weight listed above does not include the bracket weight.

Improvements to mechanical and/or electrical performance of the antenna may be made without notice.

CF Denotes a Center-Fed Connector.

806-960 MHz

Amphenol Antel, Inc. 1300 Capital Drive Rockford, Illinois 61109 USA Tel. (815) 399-0001
Toll-Free (888) 417-9562 Fax. (815) 399-0156 antel@antelinc.com www.antelinc.com

Amphenol Antel, Inc. The Antenna Technology Company

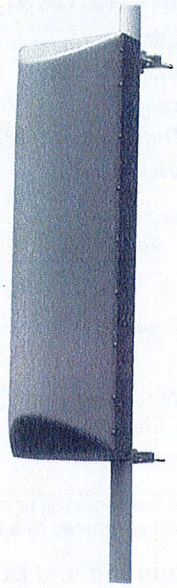
Revision Date: 7/5/07

LPA-70063-4CF-EDIN-X

V-Pol | Log Periodic | 63° | 13.0 dBd

Replace "X" with desired electrical downtilt.

Antenna is also available with NE connector(s). Replace "EDIN" with "NE" in the model number when ordering.

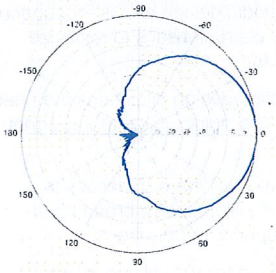


Electrical Characteristics	696-900 MHz	
Frequency bands	696-806 MHz	806-900 MHz
Polarization	Vertical	
Horizontal beamwidth	65°	63°
Vertical beamwidth	17°	15°
Gain	12.5 dBd (14.6 dBi)	13.0 dBd (15.1 dBi)
Electrical downtilt (X)	0, 2, 4, 6, 8, 10, 12, 14	
Impedance	50Ω	
VSWR	≤1.35:1	
Upper sidelobe suppression (0°)	-17.8 dB	-15.7 dB
Front-to-back ratio (+/-30°)	-37.3 dB	-31.7 dB
Null fill	5% (-26.02 dB)	
Input power	500 W	
Lightning protection	Direct Ground	
Connector(s)	1 Port / EDIN or NE / Female / Center (Back)	

Mechanical Characteristics		
Dimensions Length x Width x Depth	1205 x 385 x 332 mm	47.4 x 15.2 x 13.1 in
Depth of antenna with z-bracket	372 mm	14.6 in
Weight without mounting brackets	9.1 kg	20 lbs
Survival wind speed	> 201 km/hr	> 125 mph
Wind area	Front: 0.46 m² Side: 0.39 m²	Front: 5.0 ft² Side: 4.2 ft²
Wind load @ 161 km/hr (100 mph)	Front: 660 N Side: 550 N	Front: 149 lbf Side: 124 lbf

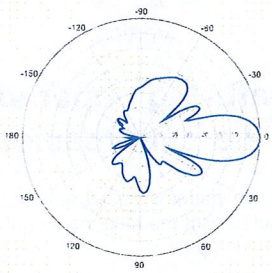
Mounting Options	Part Number	Fits Pipe Diameter	Weight
2-Point Mounting & Downtilt Bracket Kit (0-20°)	21699999	50-102 mm 2.0-4.0 in	5.4 kg 12 lbs
Lock-Down Brace	If the lock-down brace is used, the maximum diameter of the mounting pipe is 88.9 mm or 3.5 in.		

LPA-70063-4CF-EDIN-X



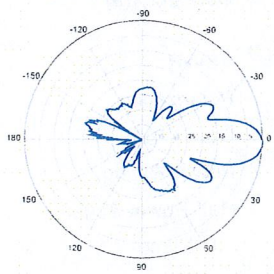
Horizontal | 750 MHz

LPA-70063-4CF-EDIN-0

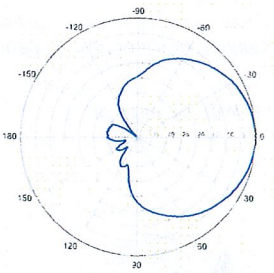


0° | Vertical | 750 MHz

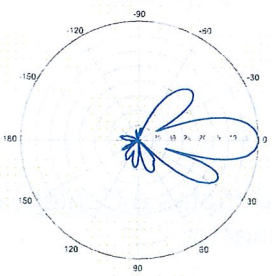
LPA-70063-4CF-EDIN-2



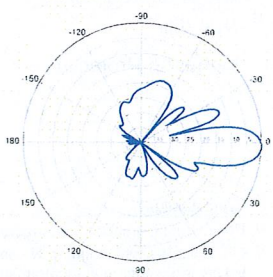
4° | Vertical | 750 MHz



Horizontal | 850 MHz



0° | Vertical | 850 MHz



4° | Vertical | 850 MHz

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