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Also admitted in Massachusetts

December 12, 2014

ORIGINAL

Melanie Bachman
Acting Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: **EM-VER-003-130607 – Cellco Partnership d/b/a Verizon Wireless**
Pumpkin Hill Road, Ashford, Connecticut

Dear Ms. Bachman:

On July 11, 2013, the Siting Council acknowledged receipt of Cellco's notice of intent to modify its telecommunications facility off Pumpkin Hill Road in Ashford. The modification involved the replacement of certain antennas.

On November 25, 2014, Cellco filed a Petition for Declaratory Ruling with the Council (Petition No. 1121) to rebuild the Pumpkin Hill Road tower. As a part of this tower reconstruction project, Cellco will install new antennas, remote radio heads and fiber-optic cables. The antenna modifications authorized under EM-VER-003-130607 will not be completed and the conditions of that approval will not be satisfied. Cellco will, of course, comply with all conditions of approval associated with Petition No. 1121.

If you have any questions please do not hesitate to contact me.

Sincerely,

Kenneth C. Baldwin

Attachment
Copy to:
Sandy M. Carter
Brian Ragozzine
Mark Gauger

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

July 11, 2013

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

RE: **EM-VER -003-130607** – Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at Pumpkin Hill Road, Ashford, 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:

- Prior to antenna installation, the tower reinforcements detailed in Section 4 of the Structural Analysis and Tower Reinforcement Report prepared by Centek Engineering dated May 29, 2013, and stamped by Carlo Centore shall be implemented;
- Within 45 days following completion of the 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 structure and foundation do 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 the 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;
- Within 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 June 6, 2013. 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.

CSC
CONNECTICUT SITING COUNCIL

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,

Melanie A. Bachman
Acting Executive Director

MAB/CDM/jb

c: The Honorable Ralph H. Fletcher, First Selectman, Town of Ashford
Michael Gardner, Zoning Enforcement Officer, Town of Ashford
Charter Communications

ROBINSON & COLE

EM-VER-003-130607

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Also admitted in Massachusetts

June 5, 2013

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

Re: **Notice of Exempt Modification – Facility Modification**
Pumpkin Hill Road, Ashford, Connecticut

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains twelve (12) antennas at the 240-foot level of the existing 300-foot guyed lattice tower off Pumpkin Hill Road in Ashford. The tower is owned by Charter Communications. The Council approved Cellco's use of this tower in 2000. Cellco now intends to remove all of its antennas and install three (3) model BXA-80080-4CF cellular antennas and three (3) model BXA-70063-6CF LTE antennas at the 240-foot level on the tower; and three (3) model 171085-8CF PCS antennas at the 248-foot level on the tower, for a total of nine (9) antennas. Cellco also intends to install six (6) coaxial cable diplexers behind its antennas. Attached behind Tab 1 are the specifications for the replacement antennas and cable diplexers.

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 Ralph H. Fletcher, First Selectman of the Town of Ashford. A copy of this letter is also being sent to Irene Bunte, the owner 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).

1. The proposed modifications will not result in an increase in the height of the existing tower. Cellco's replacement antennas and diplexers will be located at the 240-foot and 248-foot levels of the 300-foot tower.

2. The proposed modifications will not involve any change to ground-mounted equipment and, therefore, will not require the extension of the site boundary.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

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

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

6. The tower and its foundation, with certain modifications, can support Cellco's proposed antenna modifications. (*See* Structural Analysis and Tower Reinforcement Report attached behind 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:
Ralph H. Fletcher, Ashford First Selectman
Irene Bunte
Sandy M. Carter

BXA-80080-4CF-EDIN-X

X-Pol | FET Panel | 80° | 12.0 dBd

Replace "X" with desired electrical downtilt.

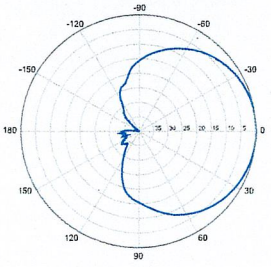
Antenna is also available with NE connector(s). Replace "EDIN" with "NE" in the model number when ordering.

Electrical Characteristics	
Frequency bands	806-900 MHz*
*Optional frequency band for iDEN	806-941 MHz (specify when ordering)
Polarization	±45°
Horizontal beamwidth	80°
Vertical beamwidth	15°
Gain	12.0 dBd (14.1 dBi)
Electrical downtilt (X)	0, 2, 4, 6, 8, 10, 12, 14
Impedance	50Ω
VSWR	≤1.4:1
Upper sidelobe suppression (0°)	-13.1 dB
Front-to-back ratio (+/-30°)	-36.7 dB
Null fill	5% (-26.02 dB)
Isolation between ports	< -30 dB
Input power with EDIN connectors	500 W
Input power with NE connectors	300 W
Lightning protection	Direct Ground
Connector(s)	2 Ports / EDIN or NE / Female / Center (Back)

Mechanical Characteristics				
Dimensions Length x Width x Depth	1206 x 204 x 151 mm		47.5 x 8.0 x 5.9 in	
Depth with z-brackets	196 mm		7.7 in	
Weight without mounting brackets	5.4 kg		12 lbs	
Survival wind speed	> 201 km/hr		> 125 mph	
Wind area	Front: 0.25 m²	Side: 0.18 m²	Front: 2.6 ft²	Side: 1.9 ft²
Wind load @ 161 km/hr (100 mph)	Front: 351 N	Side: 280 N	Front: 79 lbf	Side: 61 lbf

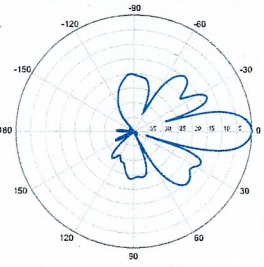
Mounting Options	Part Number	Fits Pipe Diameter	Weight
2-Point Mounting & Downtilt Bracket Kit	36210006	40-115 mm 1.57-4.5 in	4.1 kg 9 lbs
Concealment Configurations	For concealment configurations, order BXA-80080-4CF-EDIN-X-FP		

BXA-80080-4CF-EDIN-X



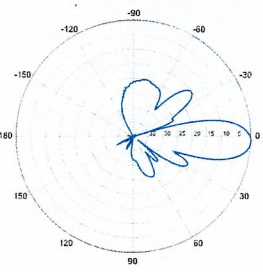
Horizontal

BXA-80080-4CF-EDIN-0



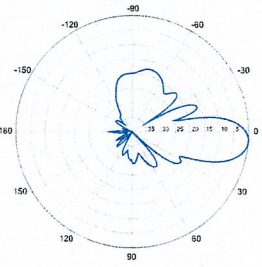
0° | Vertical

BXA-80080-4CF-EDIN-2



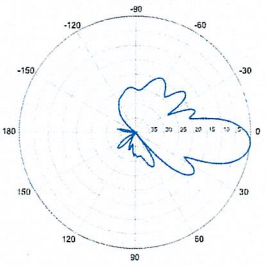
2° | Vertical

BXA-80080-4CF-EDIN-4



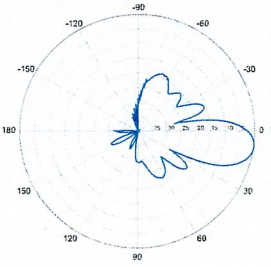
4° | Vertical

BXA-80080-4CF-EDIN-6



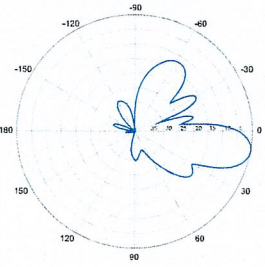
6° | Vertical

BXA-80080-4CF-EDIN-8



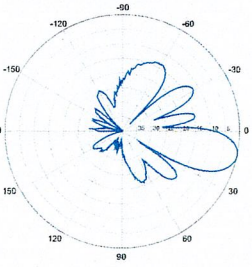
8° | Vertical

BXA-80080-4CF-EDIN-10



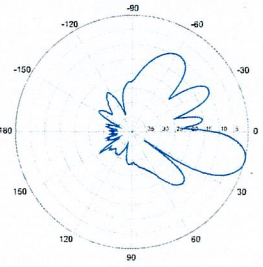
10° | Vertical

BXA-80080-4CF-EDIN-12



12° | Vertical

BXA-80080-4CF-EDIN-14



14° | Vertical

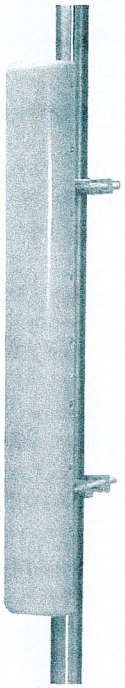
BXA-171085-8CF-EDIN-X

Replace "X" with desired electrical downtilt.

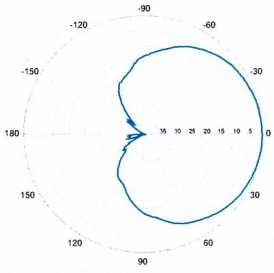
X-Pol | FET Panel | 85° | 16.4 dBi

Electrical Characteristics	1710-2170 MHz		
Frequency bands	1710-1880 MHz	1850-1990 MHz	1920-2170 MHz
Polarization	±45°	±45°	±45°
Horizontal beamwidth	88°	85°	80°
Vertical beamwidth	7°	7°	7°
Gain	13.5 dBd / 15.6 dBi	13.9 dBd / 16.0 dBi	14.3 dBd / 16.4 dBi
Electrical downtilt (X)	0, 2, 4		
Impedance	50Ω		
VSWR	≤1.5:1		
First upper sidelobe	< -17 dB		
Front-to-back isolation	> 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 / Center (Back)		
Operating temperature	-40° to +60° C / -40° to +140° F		
Mechanical Characteristics			
Dimensions Length x Width x Depth	1232 x 154 x 105 mm		48.5 x 6.1 x 4.1 in
Depth with t-brackets	133 mm		5.2 in
Weight without mounting brackets	4.8 kg		10.5 lbs
Survival wind speed	296 km/hr		184 mph
Wind area	Front: 0.19 m² Side: 0.14 m²		Front: 2.0 ft² Side: 1.5 ft²
Wind load @ 161 km/hr (100 mph)	Front: 281 N Side: 223 N		Front: 63 lbf Side: 50 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-171085-8CF-EDIN-X-FP		

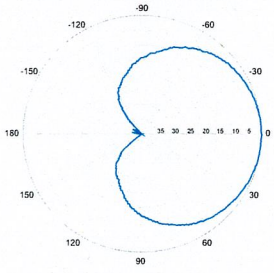


BXA-171085-8CF-EDIN-X



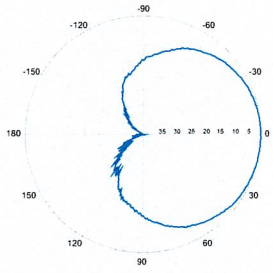
Horizontal | 1710-1880 MHz

BXA-171085-8CF-EDIN-X



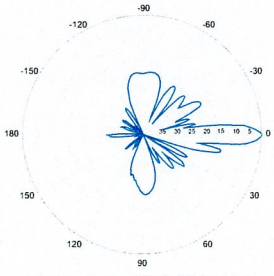
Horizontal | 1850-1990 MHz

BXA-171085-8CF-EDIN-X



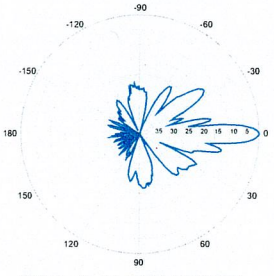
Horizontal | 1920-2170 MHz

BXA-171085-8CF-EDIN-0



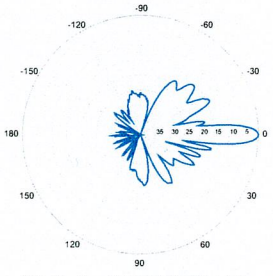
0° | Vertical | 1710-1880 MHz

BXA-171085-8CF-EDIN-0



0° | Vertical | 1850-1990 MHz

BXA-171085-8CF-EDIN-0

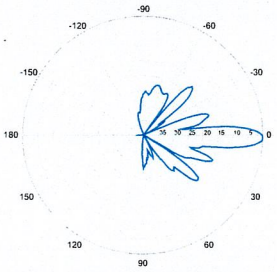


0° | Vertical | 1920-2170 MHz

BXA-171085-8CF-EDIN-X

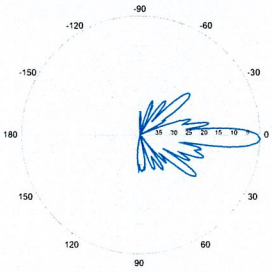
X-Pol | FET Panel | 85° | 16.4 dBi

BXA-171085-8CF-EDIN-2



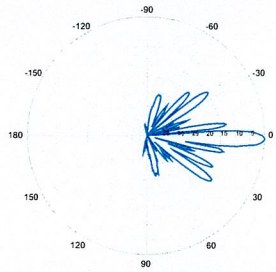
2° | Vertical | 1710-1880 MHz

BXA-171085-8CF-EDIN-2



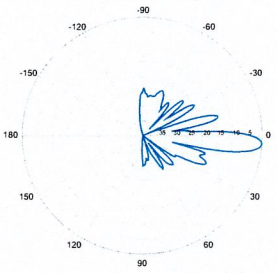
2° | Vertical | 1850-1990 MHz

BXA-171085-8CF-EDIN-2



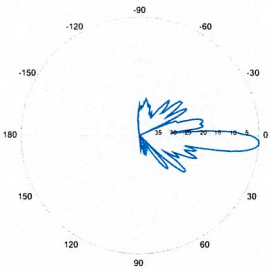
2° | Vertical | 1920-2170 MHz

BXA-171085-8CF-EDIN-4



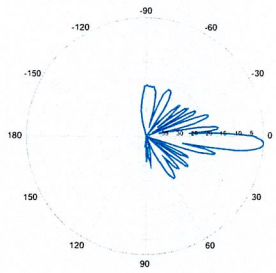
4° | Vertical | 1710-1880 MHz

BXA-171085-8CF-EDIN-4



4° | Vertical | 1850-1990 MHz

BXA-171085-8CF-EDIN-4



4° | Vertical | 1920-2170 MHz

Amphenol ANTENNA SOLUTIONS

BXA-70063-6CF-EDIN-X

X-Pol | FET Panel | 63° | 14.5 dBd

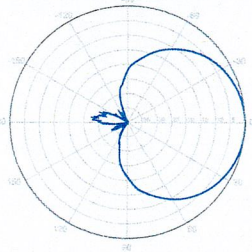
Replace "X" with desired electrical downtilt.

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	±45°	
Horizontal beamwidth	65°	63°
Vertical beamwidth	13°	11°
Gain	14.0 dBd (16.1 dBi)	14.5 dBd (16.6 dBi)
Electrical downtilt (X)	0, 2, 3, 4, 5, 6, 8, 10	
Impedance	50Ω	
VSWR	≤1.35:1	
Upper sidelobe suppression (0°)	-18.3 dB	-18.2 dB
Front-to-back ratio (+/-30°)	-33.4 dB	-36.3 dB
Null fill	5% (-26.02 dB)	
Isolation between ports	< -25 dB	
Input power with EDIN connectors	500 W	
Input power with NE connectors	300 W	
Lightning protection	Direct Ground	
Connector(s)	2 Ports / EDIN or NE / Female / Center (Back)	
Mechanical Characteristics		
Dimensions Length x Width x Depth	1804 x 285 x 132 mm	71.0 x 11.2 x 5.2 in
Depth with z-brackets	172 mm	6.8 in
Weight without mounting brackets	7.9 kg	17 lbs
Survival wind speed	> 201 km/hr	> 125 mph
Wind area	Front: 0.51 m^2 Side: 0.24 m^2	Front: 5.5 ft^2 Side: 2.6 ft^2
Wind load @ 161 km/hr (100 mph)	Front: 759 N Side: 391 N	Front: 169 lbf Side: 89 lbf

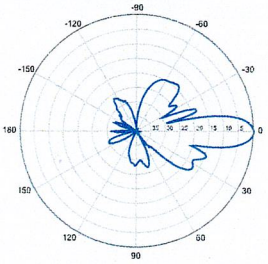
Mounting Options	Part Number	Fits Pipe Diameter	Weight
3-Point Mounting & Downtilt Bracket Kit	36210008	40-115 mm 1.57-4.5 in	6.9 kg 15.2 lbs
Concealment Configurations	For concealment configurations, order BXA-70063-6CF-EDIN-X-FP		

BXA-70063-6CF-EDIN-X



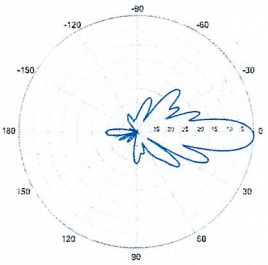
Horizontal | 750 MHz

BXA-70063-6CF-EDIN-0

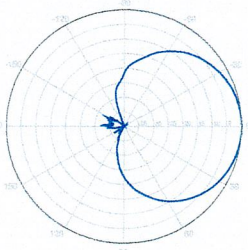


0° | Vertical | 750 MHz

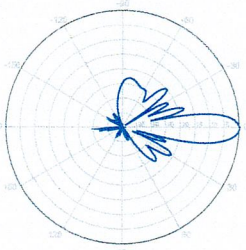
BXA-70063-6CF-EDIN-2



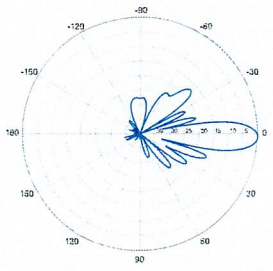
2° | Vertical | 750 MHz



Horizontal | 850 MHz



0° | Vertical | 850 MHz

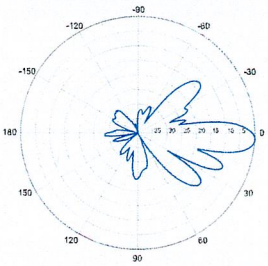


2° | Vertical | 850 MHz

BXA-70063-6CF-EDIN-X

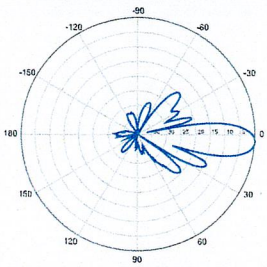
X-Pol | FET Panel | 63° | 14.5 dBd

BXA-70063-6CF-EDIN-3



3° | Vertical | 750 MHz

BXA-70063-6CF-EDIN-4



4° | Vertical | 750 MHz

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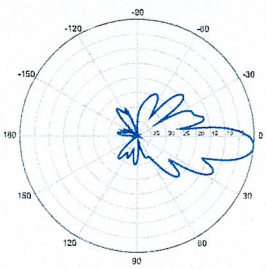
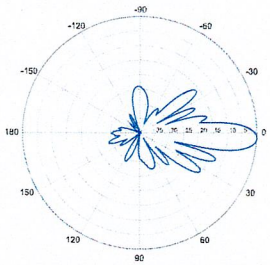
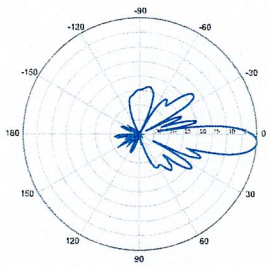


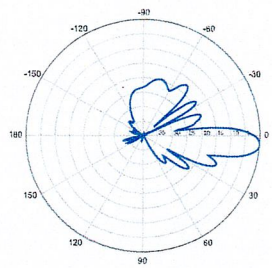
5° | Vertical | 750 MHz



3° | Vertical | 850 MHz

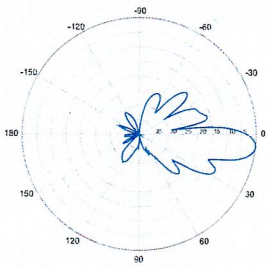


4° | Vertical | 850 MHz



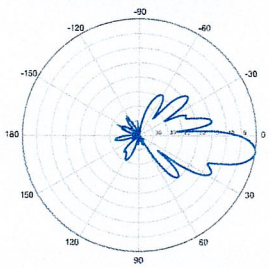
5° | Vertical | 850 MHz

BXA-70063-6CF-EDIN-6



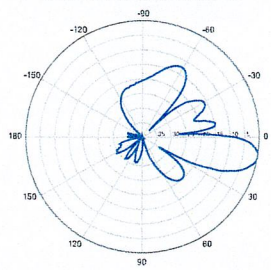
6° | Vertical | 750 MHz

BXA-70063-6CF-EDIN-8

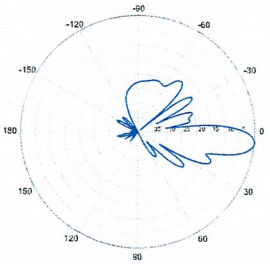


8° | Vertical | 750 MHz

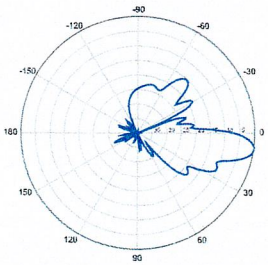
BXA-70063-6CF-EDIN-10



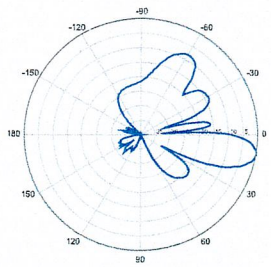
10° | Vertical | 750 MHz



6° | Vertical | 850 MHz



8° | Vertical | 850 MHz



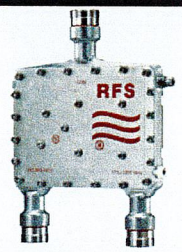
10° | Vertical | 850 MHz

Product Data Sheet **FD9R6004/2C-3L**

ShareLite Wideband Diplexer – In-line 698-960 MHz/1710-2200 MHz, DC pass in high frequency path

Product Description

The ShareLite FD9R6004 Series of diplexers are designed to enable feeder sharing between systems in the 698-960 MHz range and in the 1710-2200 MHz range. The diplexer is equipped with in-line connector placement so it can be installed in the BTS cabinet or at the tower top. This is especially valuable in crowded sites or when the feeders are not easily accessible. Due to its wideband design, the FD9R6004 Series can accommodate many combining solutions between 698-960 MHz and 1710-2200 MHz systems such as LTE 700 MHz, Cellular 800 MHz with PCS, GSM900 with GSM1800, or GSM900 with UMTS. This diplexer features a highly selective filter. It provides a high level of isolation between ports, while keeping the insertion loss on both paths at an extremely low level. The FD9R6004 diplexers are available with various DC pass options, helpful in configurations with or without the Tower Mount Amplifiers installed.



Features/Benefits

- **LTE ready design**
- **Extremely Low Insertion Loss**
- **High level of Rejection between bands – Protection against interferences**
- **Extremely High Power Handling Capability**
- **Integrated DC block/bypass versions available**
- **Very compact & small size design – Easy installation and reduced tower load**
- **In-line long-neck connectors for easy connection & waterproofing**
- **Exceptional reliability & environmental protection (IP 67)**
- **Equipped with 1 * Breathable Vent – Prevent any humidity inside the product**
- **Mounting hardware for Wall and Pole mount provided (P/N SEM2-1A)**
- **Grounding already provided through the mounting bracket**
- **Kit available for easy dual mount**

Technical Specifications

Product Type	Diplexer/Cross Band Coupler
Application	LTE700, GSM900, UMTS, GSM1800, Cellular 800, PCS
Frequency Range 1, MHz	698-960
Frequency Range 2, MHz	1710-2200
Configuration	Sharelite Single diplexer, outdoor, DC pass in the 1710-2170MHz path, with mounting hardware SEM2-1A
Mounting	Wall Mounting: With 4 screws (maximum 6mm diameter); Pole Mounting: With included clamp set 40-110mm (1.57-4.33)
Return Loss All Ports Min/Typ, dB	19/23
Power Handling Continuous, Max, W	1250 at common port; 750 in low frequency path & 500 in high frequency path
Power Handling Peak, Max, W	15000 in low frequency path & 8000 in high frequency path
Impedance, Ohms	50
Insertion Loss, Path 1, dB	0.07 typ.
Insertion Loss, Path 2, dB	0.13 typ.
Rejection Between Bands Min/Typ, dB	58/64@698-960MHz; 57/70@1710-2200MHz
IMP Level at the COM Port, Typ, dBm	-112 @ 2x43
DC Pass in Low Frequency Path	No
DC Pass in High Frequency Path	Yes
Temperature Range, °C (°F)	-40 to +60 (-40 to +140)
Environmental	ETSI 300-019-2-4 Class 4.1E
Ingress Protection	IP 67
Lightning Protection	EN/IEC61000-4-5 Level 4
Connectors	In-line long-neck 7-16-Female
Weight, kg (lb)	1.2 (2.6)
Shipping Weight, kg (lb)	3.2 (7) for 2 * single units in 1 * box, 9.8 (21.6) for 6 * units = 3 * Boxes in 1 * overwrap
Dimensions, H x W x D, mm (in)	147 x 164 x 37 (5.8 x 6.5 x 1.5)
Shipping Dimensions, H x W x D, mm (in)	254 x 406 x 82 (10 x 16 x 3.2) for 2 * Single Units in 1 * box, 280 x 406 x 241 (11 x 16 x 9.5) for 6 * units = 3 * Boxes in 1 * overwrap
Volume, L	0.43
Housing	Aluminum

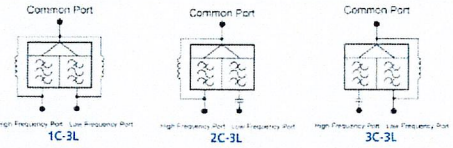
Notes

ShareLite Wideband Diplexer – In-line 698-960 MHz/1710-2200 MHz, DC pass in high frequency path

Other Documentation

FD9R6004/2C-3L Installation Instructions: Wideband_Diplexer_Installation_Rev5.pdf

Selection Guide Diplexer 698-960 / 1710-2200MHz					
	Model Number	Full DC Pass	DC Pass High Band	DC Pass Low Band	Mounting Hardware Included
Single	FD9R6004/1C-3L				X
	FD9R6004/2C-3L				X
	FD9R6004/3C-3L				X
Dual	KIT-FD9R6004/1C-DL				X
	KIT-FD9R6004/2C-DL				X
	KIT-FD9R6004/3C-DL				X



The FD9R6004 Series is upgradeable to a Dual Diplexer kit by means of 2 diplexers and mounting hardware kits SEM2-1A and SEM2-3

Mounting Hardware and Ground Cable Ordering Information		
Model Number	**Description**	
SEM2-1A	Mounting Hardware, Pole mount ø40-110mm (Included with the Single and Dual Diplexer) Wall Screws M6 (Not included with the product)	
SEM2-3	Assembly kit for 2 pcs of FD9R6004/xC-3L (Can be ordered separately but included with the Dual Diplexer Kit)	
CA020-2	Ground Cable, 2m, includes lugs (Optional)	
CA030-2	Ground Cable, 2m, includes lugs (Optional)	
SEM6	Mounting Hardware for 6 Diplexers, Tower Base (Optional)	

	General	Power	Density					
Site Name: Ashford								
Tower Height: Verizon @ 240ft								
CARRIER	**# OF CHAN.**	**WATTS ERP**	**HEIGHT**	**CALC. POWER DENS**	**FREQ.**	**MAX. PERMISS. EXP.**	**FRACTION MPE**	**Total**
*AT&T UMTS	2	565	197.5	0.0104	880	0.5867	1.78%	
*AT&T UMTS	2	875	197.5	0.0161	1900	1.0000	1.61%	
*AT&T GSM	1	283	197.5	0.0026	880	0.5867	0.44%	
*AT&T GSM	4	525	197.5	0.0194	1900	1.0000	1.94%	
*AT&T LTE	1	1771	197.5	0.0163	734	0.4893	3.34%	
Verizon PCS	**11**	**202**	**240**	**0.0139**	**1970**	**1.0000**	**1.39%**	
Verizon Cellular	**9**	**225**	**240**	**0.0126**	**869**	**0.5793**	**2.18%**	
Verizon AWS	**1**	**1750**	**240**	**0.0109**	**2145**	**1.0000**	**1.09%**	
Verizon 700	**1**	**749**	**240**	**0.0047**	**698**	**0.4653**	**1.00%**	
								14.77%
* Source: Siting Council								

CENTEK engineering

Centered on Solutions℠

Structural Analysis and Tower Reinforcement Report

300-ft Existing Guyed Lattice Tower

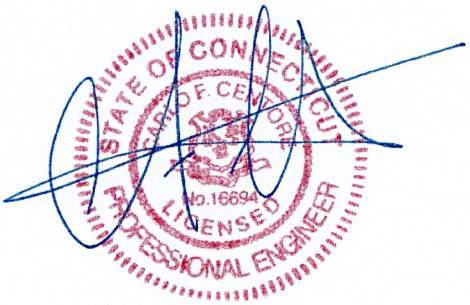
Proposed Verizon Wireless
Antenna Upgrade

Verizon Site Ref: Ashford

353 Pumpkin Hill Road
Ashford, CT

Centek Project No. 13048

~~Date: May 17, 2013~~
Rev 1: May 29, 2013



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

Table of Contents

SECTION 4 – TOWER REINFORCEMENT DRAWINGS

SECTION 5 – REFERENCE MATERIAL

Introduction

The purpose of this report is to summarize the results of the non-linear, P-Δ structural analysis of the antenna upgrade proposed by Verizon Wireless on the existing guyed lattice tower located in Ashford, CT.

The host tower is a 300-ft, three face, guyed steel lattice tower. The tower geometry and structure member sizes were obtained from a tower mapping report prepared by Hightower Solutions Site. No. 11463, dated February 7, 2012. The foundation information was obtained from a foundation investigation report prepared by Hudson Design Group dated January 15, 2013. Previous reinforcement modification design prepared by Hudson Design Group for AT&T dated January 30, 2013 was not considered in this analysis.

Antenna and appurtenance information was taken from field verification from grade conducted by Centek personnel on March 11, 2013 and a Verizon RF data sheet.

The tower consists of fifteen (15) vertical sections constructed of steel pipe legs conforming to ASTM A53 Grade B. Diagonal lateral support bracing consists of steel pipe construction conforming to ASTM A53 Grade B. Horizontal lateral support bracing consists of steel pipe and flat bar construction conforming to ASTM A53 Grade B and ASTM A36 respectively. 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 3.125-ft throughout its length. The tower pipe leg member sizes from 0-ft to 80-ft were field verified by CSB Communications during May of 2013 by use of an ultrasonic meter.

Antenna and Appurtenance Summary

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

- AT&T Mobility (Existing):
  Antennas: Six (6) Powerwave 7770 panel antennas and twelve (12) Powerwave LGP21401 TMAS mounted on three (3) 13-ft T-Frames with a RAD center elevation of 196.2-ft above grade level.
  Coax Cables: Twelve (12) 1 5/8" ∅ coax cables running on a face of the existing tower.
- VERIZON (Existing to Remain):
  Coax Cables: Twelve (12) 1 5/8" ∅ coax cables running on a face of the existing tower.
- **VERIZON (Existing to Remove):**
  Antennas: Six (6) Decibel DB844H80-XY and six (6) Decibel 948F85T2E-M panel antennas mounted on three (3) boom gates with a RAD center elevation of 240-ft above grade level.
- **Verizon (Proposed):**
  Antennas: Three (3) Antel BXA-80080-4CF panel antennas, three (3) Antel BXA-70063-6CF panel antennas and six (6) RFS FD9R6004/2C-3L diplexers mounted on three (3) dual standoff mounts with a RAD center elevation of 240-ft above grade level.

- **Verizon (Proposed):**
  Antennas: Three (3) Antel BXA-171085-8CF panel antennas leg mounted with a RAD center elevation of 248-ft above grade level.

  Note: All existing appurtenances, mounts, associated hardware and cables not listed above shall be removed from the tower.

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 within this report.
- **All existing appurtenances, mounts, associated hardware and cables not listed above shall be removed from the tower.**

Analysis

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

The existing tower was analyzed for the controlling basic wind speed (fastest mile) with no ice and a 75% reduction of wind force 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).

The controlling wind speed is determined by evaluating the local available wind speed data as provided in Appendix K of the CSBC[1] and the wind speed data available in the TIA/EIA-222-F-96 Standard. The higher of the two wind speeds is utilized in preparation on the tower analysis.

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 on the tower structure and its components.

Basic Wind Speed:	Windham; v = 85 mph (fastest mile)	*[Section 16 of TIA/EIA-222-F-96]*
	Ashford; v = 100 mph (3 second gust) equivalent to v = 80 mph (fastest mile)	*[Appendix K of the 2005 CT Building Code Supplement]*
	TIA/EIA-222-F wind speed controls.	
Load Cases:	Load Case 1; 85 mph wind speed w/ no ice plus gravity load – used in calculation of tower stresses and rotation.	*[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. The 74 mph wind speed velocity represents 75% of the wind pressure generated by the 85 mph wind speed.	*[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*

[1] The 2005 Connecticut State Building Code as amended by the 2009 CT State Supplement. (CSBC)

Tower Capacity

Tower stresses were calculated utilizing the structural analysis software tnxTower. 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 **with the reinforcements outlined in section 4 of this report were found** to be within allowable limits. In Load Case 2, per tnxTower "Section Capacity Table", this tower was found to be at **98.6%** of its total capacity with reinforcement.

Tower Section	Elevation	Stress Ratio (percentage of capacity)	Result
Leg (T5)	200'-0"-220'-0"	98.6%	**PASS**
Diagonal (T7)	160'-0"-180'-0"	47.3%	**PASS**
Guy A (T4)	220'-0"-240'-0"	78.5%	**PASS**

Foundation and Anchors

The existing tower base foundation consists of a 4.0-ft square x 2.8-ft long reinforced concrete pedestal with a 5.0-ft square x 3.2-ft thick reinforced concrete pad bearing directly on the existing sub grade. Additionally, guy wire loading is transferred to six (6) existing reinforced concrete anchor support blocks of varying size. The foundation information was obtained from a foundation investigation report prepared by Hudson Design Group dated January 15, 2013.

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 worst case tower base and guy anchor reactions developed from the governing Load Case 2 were used in the verification of the anchorage foundations:

Tower Guy Max Reactions	
Vector	**Existing Guy Anchor A (Radius = 273-ft)**
Horizontal (In Plane of GW)	**44.6 kips**
Horizontal (Out of Plane of GW)	**3.5 kips**
Vertical	**35.0 kips**
Tower Base Reactions	
Vector	**Reaction**
Horizontal Shear	**2.0 kips**
Axial Compression	**127 kips**
Moment	**68 ft-kips**

- The tower base and guy anchor foundations **with the reinforcements outlined in section 4 of this report were found** to be within allowable limits.

Foundation	Design Limit	IBC 2003/2005 CT State Building Code Section 3108.4.2 (FS)[1]	Existing Condition (FS)[1]	Result
Reinf. Conc. Anchor Block (B) at 253-ft radius.	Uplift	2.0	3.3	**PASS**
	Sliding	1.5	1.9	**PASS**
		Allowable	**Proposed**	
Base Foundation	Bearing	20 ksf [2]	9.7 ksf	**PASS**

Note 1: FS denotes 'Factor of Safety'.
Note 2: Per foundation investigation report and structural analysis report prepared by Hudson Design Group dated January 15, 2013 and January 28, 2013 respectively.

Conclusion

This analysis shows that the subject tower **with the reinforcements detailed in section 4 of this report is adequate** to support the proposed modified antenna configuration.

Tower Maintenance Remedial Work (Not included in this analysis):

- Refer to Tower Inspection Report prepared by CSB Communications, dated November 1, 2012.

This report is not intended to serve as a specification for remedial items recommended herein. Site specific engineering documents and/or repair procedures prepared by a licensed engineer are necessary for any remedial work discussed.

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

STATE OF CONNECTICUT
CARLO F. CENTORE
No. 15894
LICENSED
PROFESSIONAL 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:

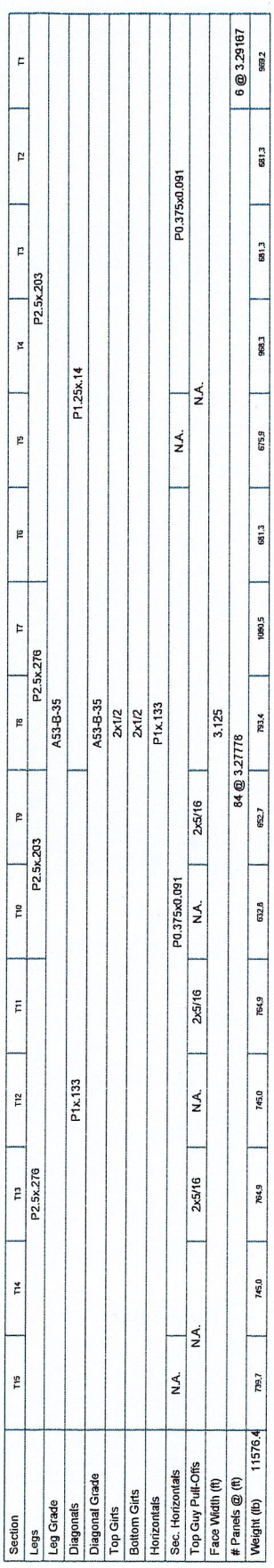
- Information supplied by the client regarding the structure itself, its foundations, the soil conditions, the antenna and feed line loading on the structure and its components, or other relevant information.
- Information from the field and/or drawings in the possession of CENTEK engineering, Inc. or generated by field inspections or measurements of the structure.
- It is the responsibility of the client to ensure that the information provide 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.

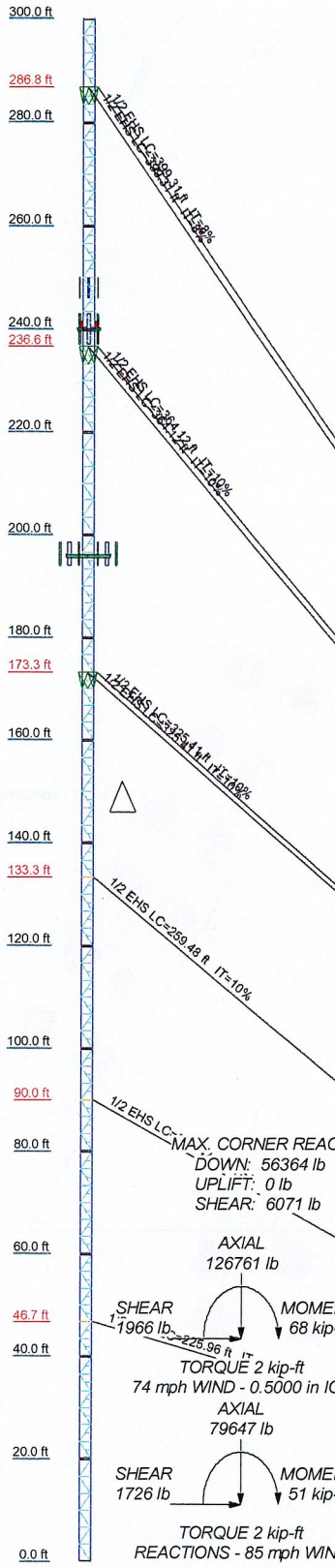
General Description of Structural Analysis Program

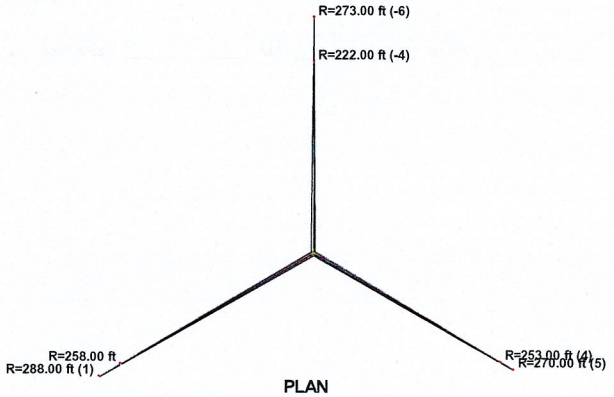
tnxTower, is an integrated structural analysis and design software package for Designed specifically for the telecommunications industry, tnxTower, formerly ERITower, automates much of the tower analysis and design required by the TIA/EIA 222 Standard.

tnxTower Features:

- tnxTower 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.
- tnxTower contains unique features such as True Cable behavior, hog rod take-up, foundation stiffness and much more.







PLAN

DESIGNED APPURTENANCE LOADING

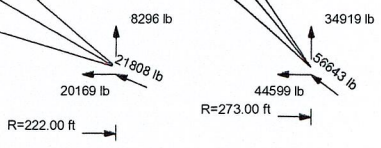
TYPE	ELEVATION	TYPE	ELEVATION
BXA-171085-8CF (Verizon - proposed)	248	Valmont Dual Standoff B1827 (Verizon - proposed)	240
BXA-171085-8CF (Verizon - proposed)	248	Valmont Dual Standoff B1827 (Verizon - proposed)	240
BXA-171085-8CF (Verizon - proposed)	248	(2) 7770.00 (ATI)	196.2
BXA-80080-4CF (Verizon - proposed)	240	(2) 7770.00 (ATI)	196.2
BXA-80080-4CF (Verizon - proposed)	240	(2) 7770.00 (ATI)	196.2
BXA-80080-4CF (Verizon - proposed)	240	(2) LGP21401 TMA (ATI)	196.2
BXA-70063/6CF (Verizon - proposed)	240	(2) LGP21401 TMA (ATI)	196.2
BXA-70063/6CF (Verizon - proposed)	240	(2) LGP21401 TMA (ATI)	196.2
BXA-70063/6CF (Verizon - proposed)	240	(2) LGP21401 TMA (ATI)	196.2
(2) FD9R6004/2C-3L Diplexer (Verizon - proposed)	240	(2) LGP21401 TMA (ATI)	196.2
(2) FD9R6004/2C-3L Diplexer (Verizon - proposed)	240	(2) LGP21401 TMA (ATI)	196.2
(2) FD9R6004/2C-3L Diplexer (Verizon - proposed)	240	13-ft T-Frame (ATI)	196.2
Valmont Dual Standoff B1827 (Verizon - proposed)	240	13-ft T-Frame (ATI)	196.2
		13-ft T-Frame (ATI)	196.2

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: 98.6%



Centek Engineering Inc.
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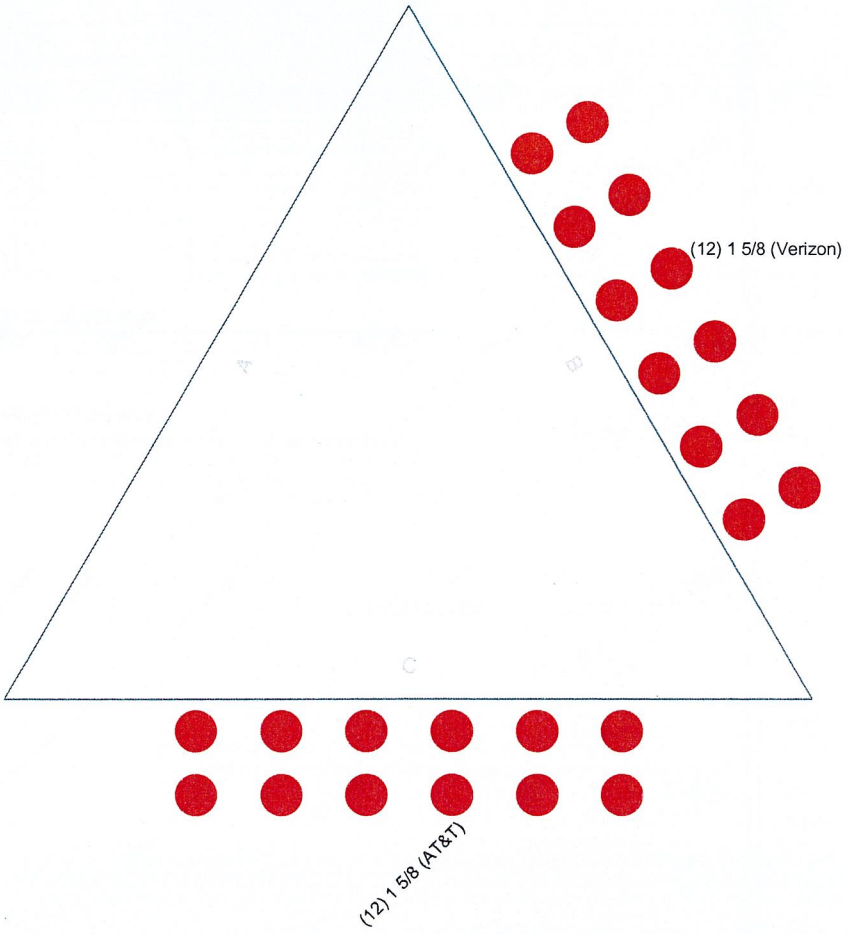
Branford, CT 06405
Phone: (203) 488-0580
FAX: (203) 488-8587

Job: ***13048 ~ Ashford***		
Project: ***300-ft Guyed Tower - 353 Pumpkin Hill Rd., Ashford, CT***		
Client: Verizon Wireless	Drawn by: TJL	App'd:
Code: TIA/EIA-222-F	Date: 05/29/13	Scale: NTS
Path: J:\Jobs\1304800.WIEngineering\Structural\Rev (1)\Calcs\ERR85mph 300-ft Guyed Tower.eri		Dwg No. E-1

Feedline Plan

Round Flat App In Face App Out Face



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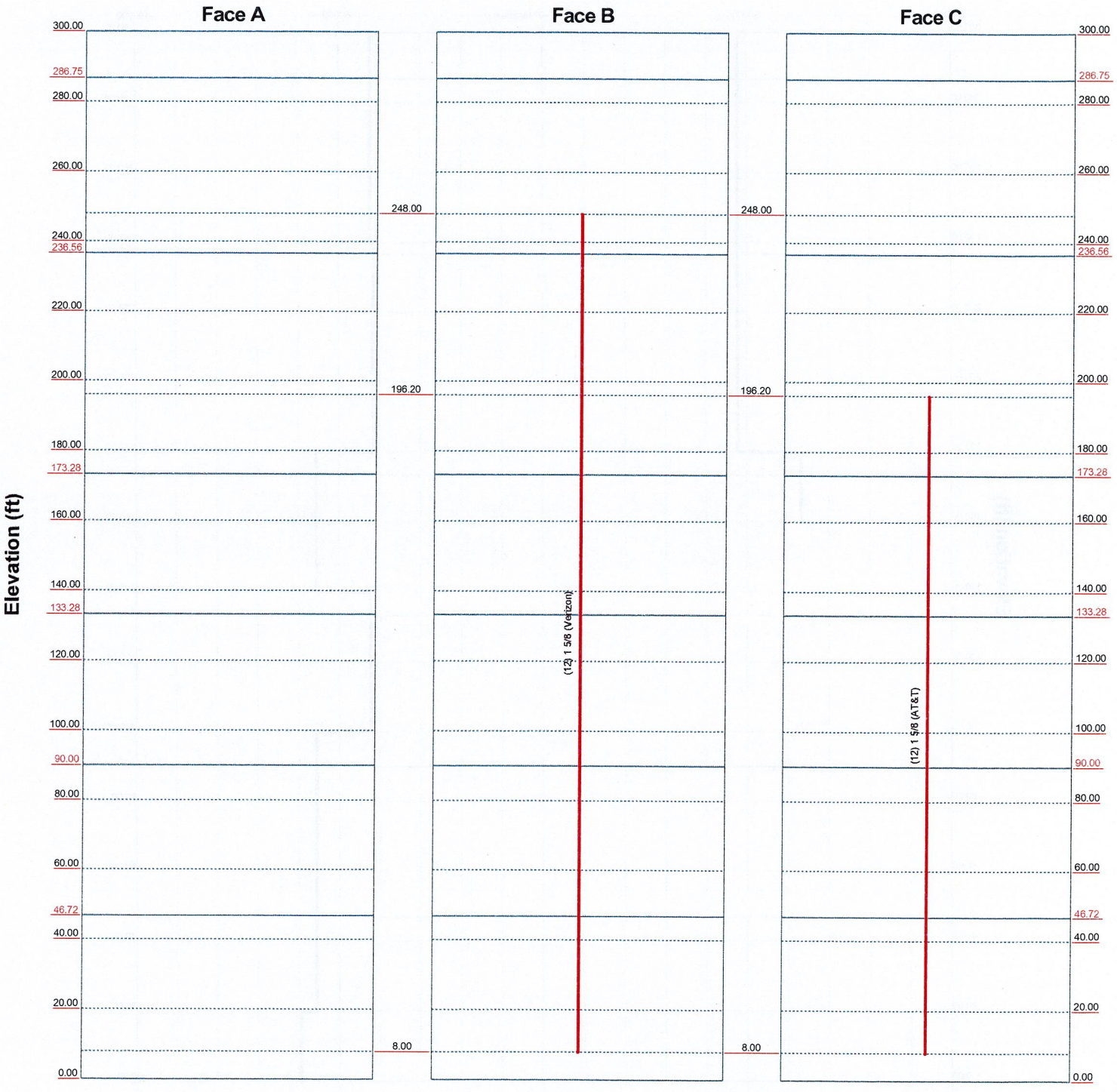
Path: J:\Jobs\13048\00.WIEngineering\Structural\Rev (1)\Calcs\ER\85mph 300-ft Guyed Tower.eri		Dwg No. E-7

Feedline Distribution Chart
0' - 300'

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



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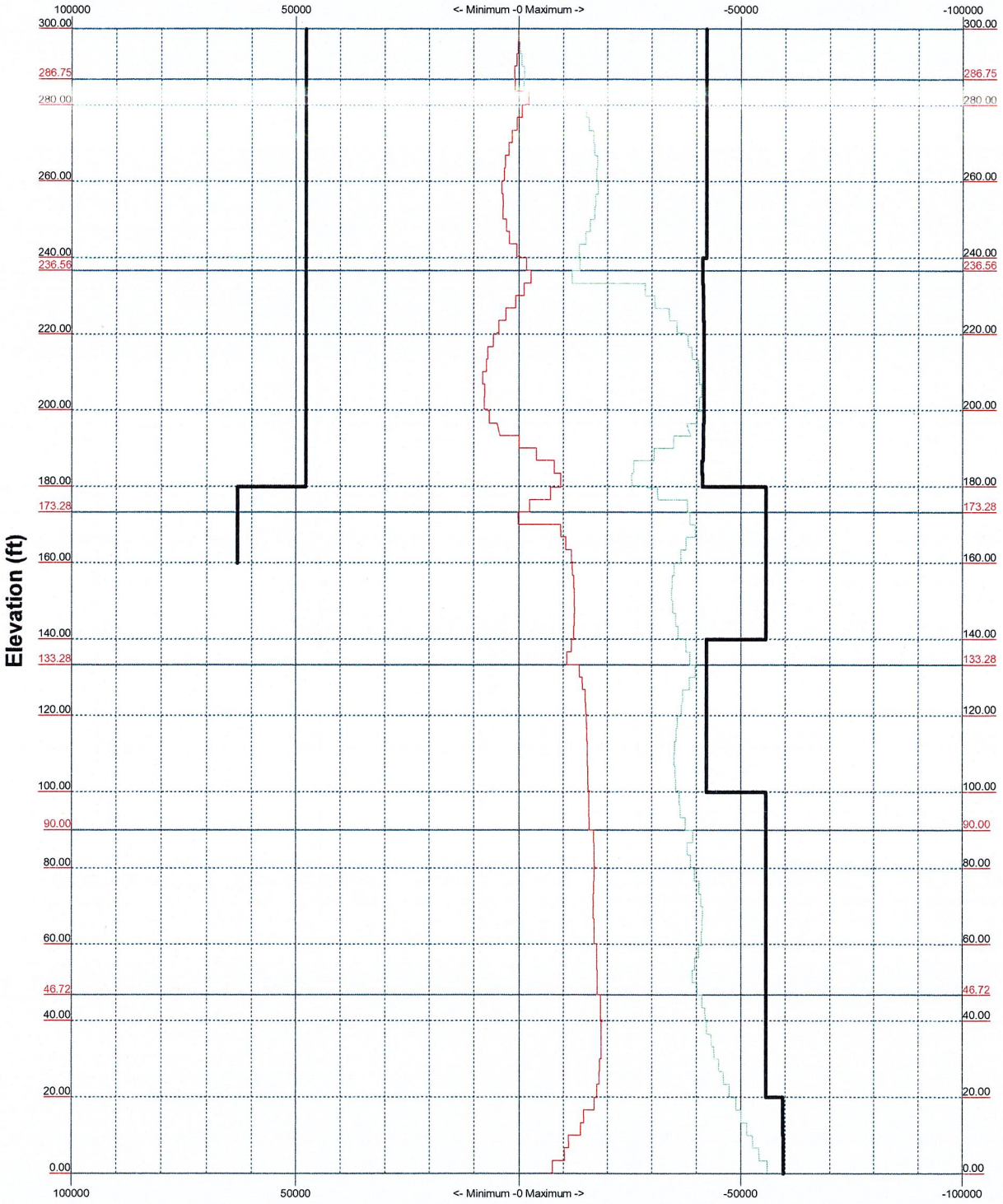
	Client: Verizon Wireless	Drawn by: TJL	App'd:
	Code: TIA/EIA-222-F	Date: 05/29/13	Scale: NTS
	Path: J:\Jobs\1304800 WNEngineering\Structural\Rev (1)\Calcs\ERI\85mph 300-ft Guyed Tower en		Dwg No. E-7

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

Leg Capacity ——— **Leg Compression (lb)**



Centek Engineering Inc. 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job: **13048 ~ Ashford**		
	Project: ***300-ft Guyed Tower - 353 Pumpkin Hill Rd., Ashford, CT***		
	Client: Verizon Wireless	Drawn by: TJL	App'd:
	Code: TIA/EIA-222-F	Date: 05/29/13	Scale: NTS
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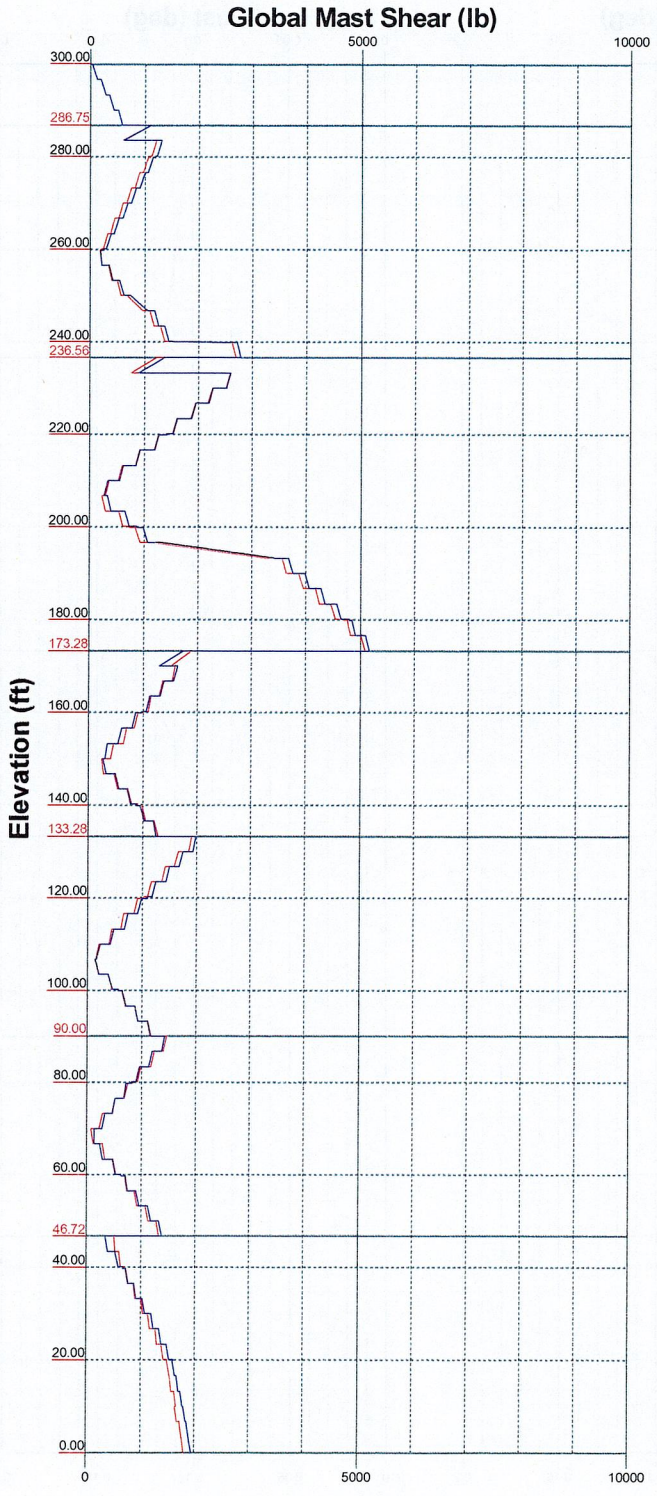
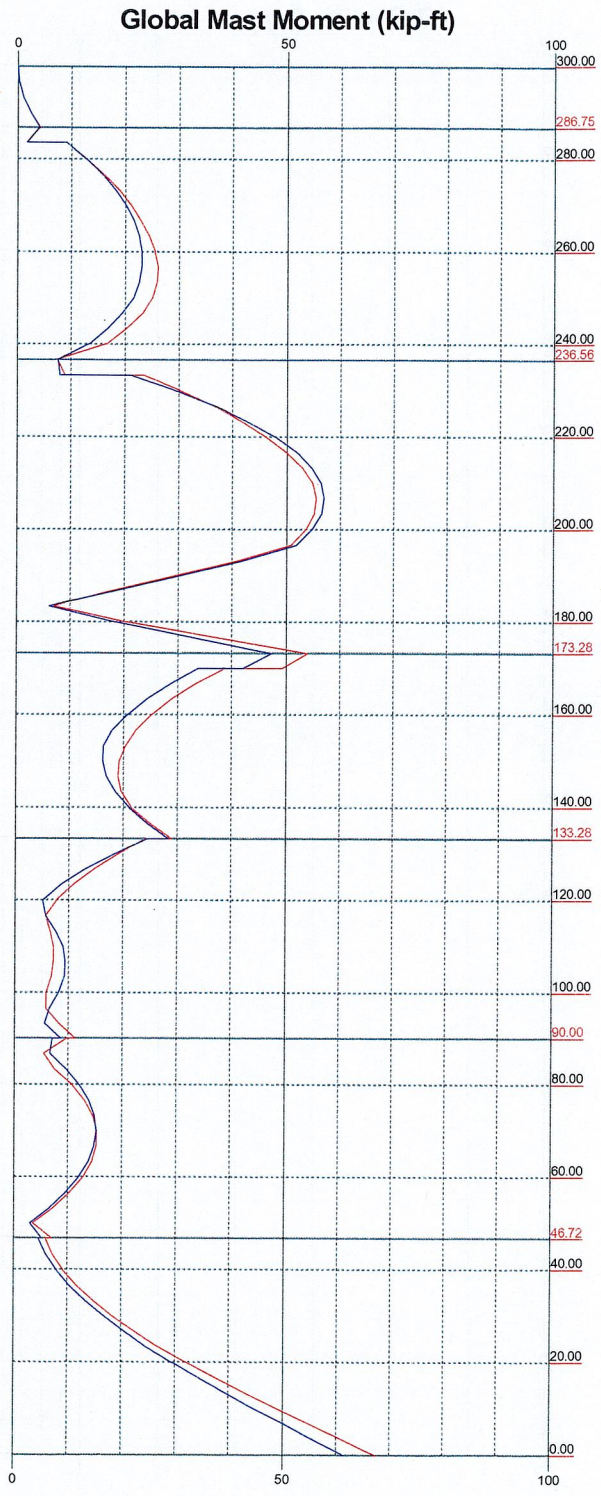
TIA/EIA-222-F - 85 mph/74 mph 0.5000 in Ice

Vx Vz

Maximum Values

Mx Mz





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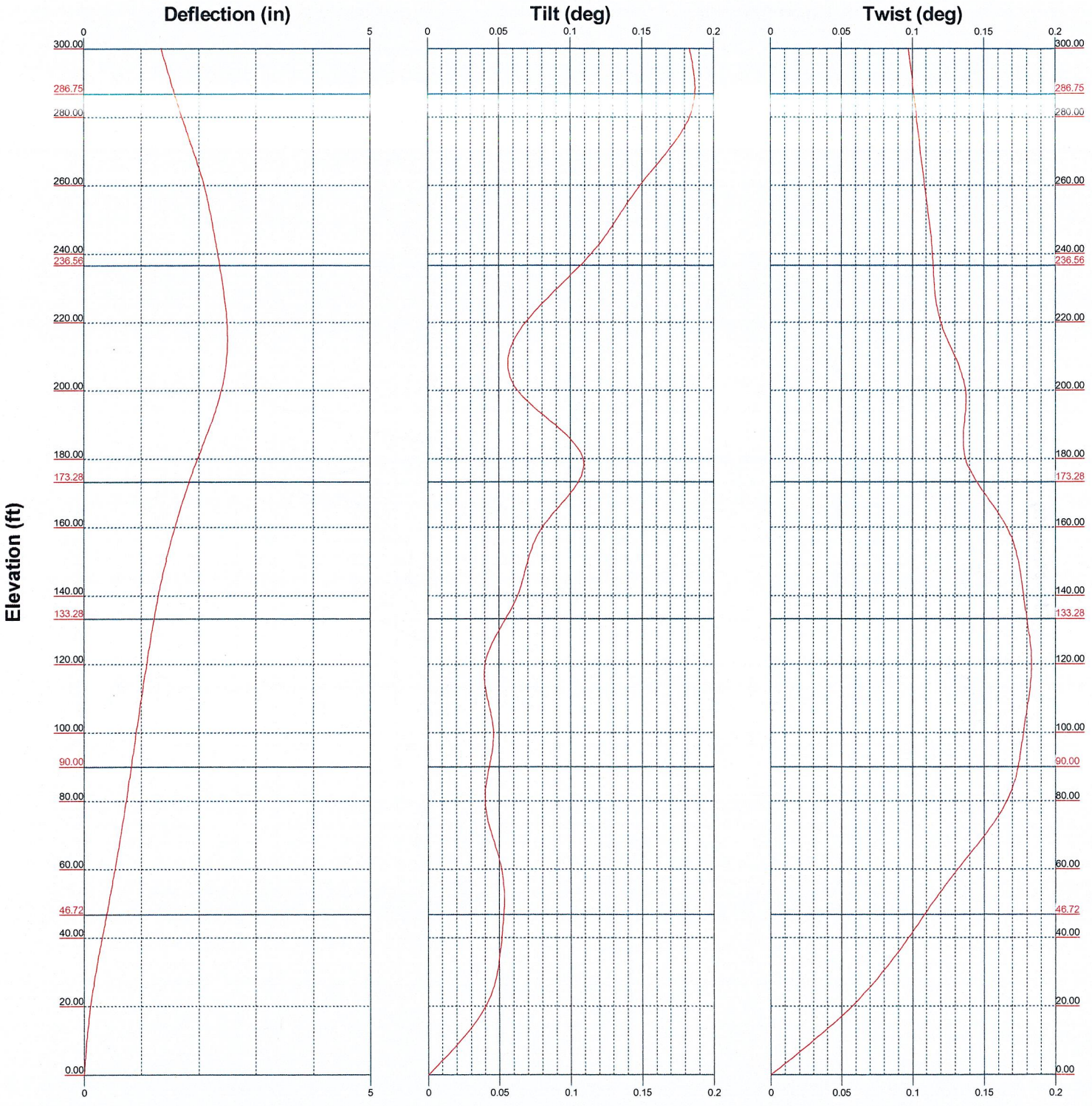
Job: ***13048 ~ Ashford***		
Project: ***300-ft Guyed Tower - 353 Pumpkin Hill Rd., Ashford, CT***		
Client: Verizon Wireless	Drawn by: TJL	App'd:
Code: TIA/EIA-222-F	Date: 05/29/13	Scale: NTS
Path: J:\Jobs\13048\00.WE\Engineering\Structural\Rev (1)\Calcs\ERI85mph 300-ft Guyed Tower.eri		Dwg No. E-4

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

Maximum Values



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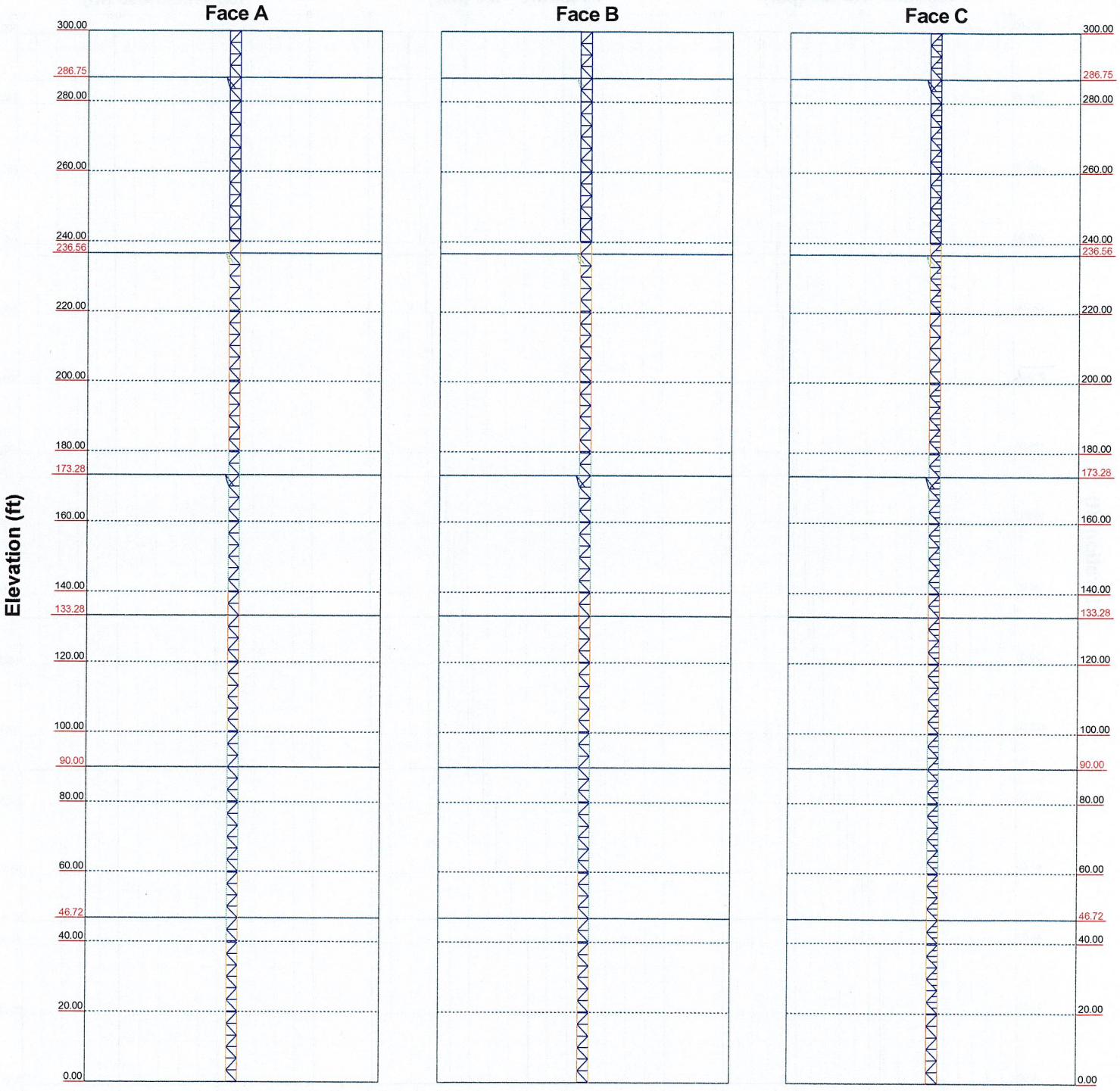
Job: ***13048 ~ Ashford***			
Project: ***300-ft Guyed Tower - 353 Pumpkin Hill Rd., Ashford, CT***			
Client: Verizon Wireless	Drawn by: TJL	App'd:	
Code: TIA/EIA-222-F	Date: 05/29/13	Scale: NTS	
Path: J:\Jobs\1304800.WIE\engineering\Structural\Rev (1)\Calcs\ERI\85mph 300-ft Guyed Tower erl		Dwg No. E-5	

Stress Distribution Chart
0' - 300'

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



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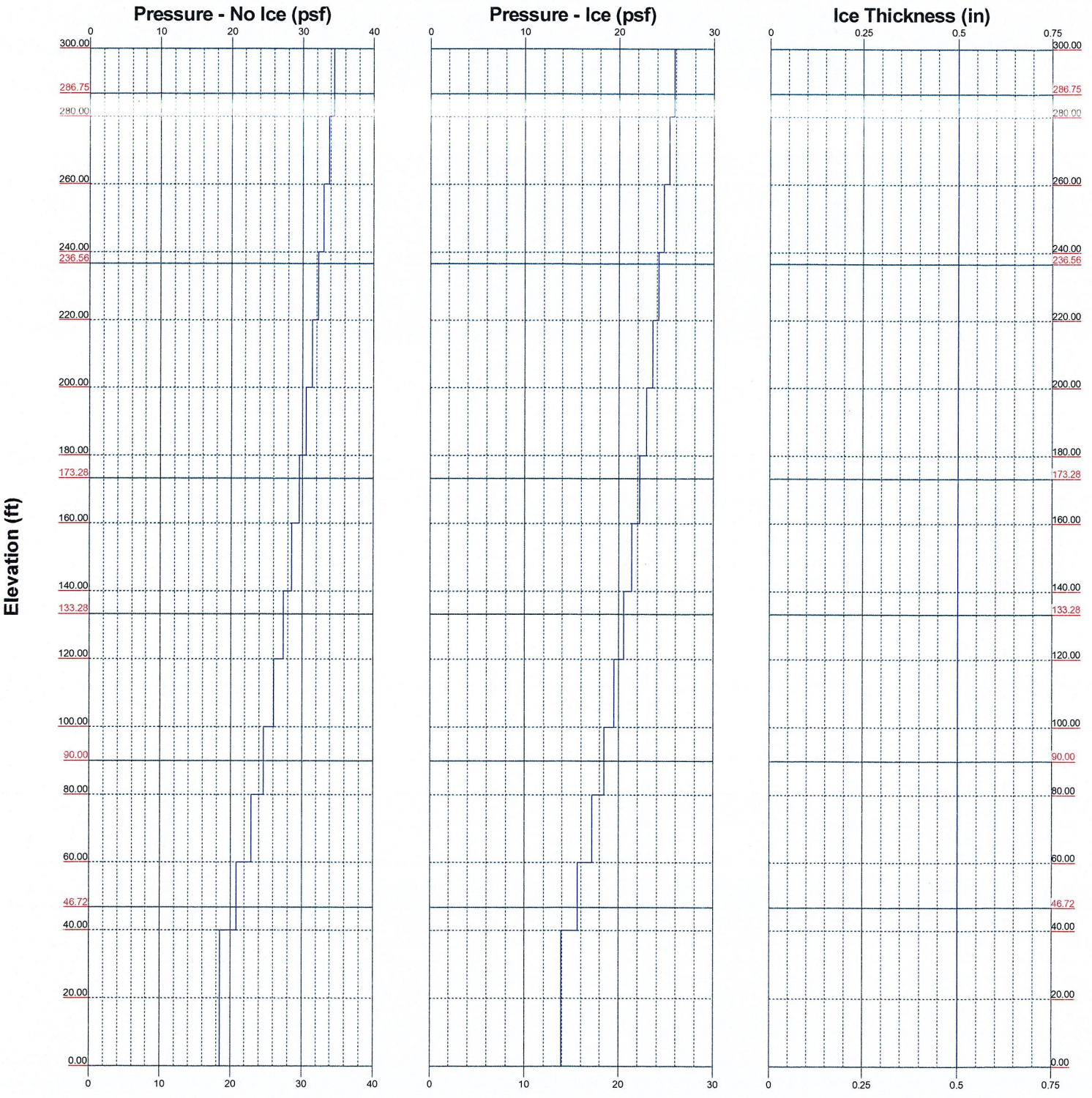
Job: ***13048 ~ Ashford***		
Project: ***300-ft Guyed Tower - 353 Pumpkin Hill Rd., Ashford, CT***		
Client: Verizon Wireless	Drawn by: TJL	App'd:
Code: TIA/EIA-222-F	Date: 05/29/13	Scale: NTS
Path: J:\Jobs\1304800 W\Engineering\Structural\Rev (1)\Calcs\ERI\85mph 300-ft Guyed Tower.eri		Dwg No. E-8

Wind Pressures and Ice Thickness

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



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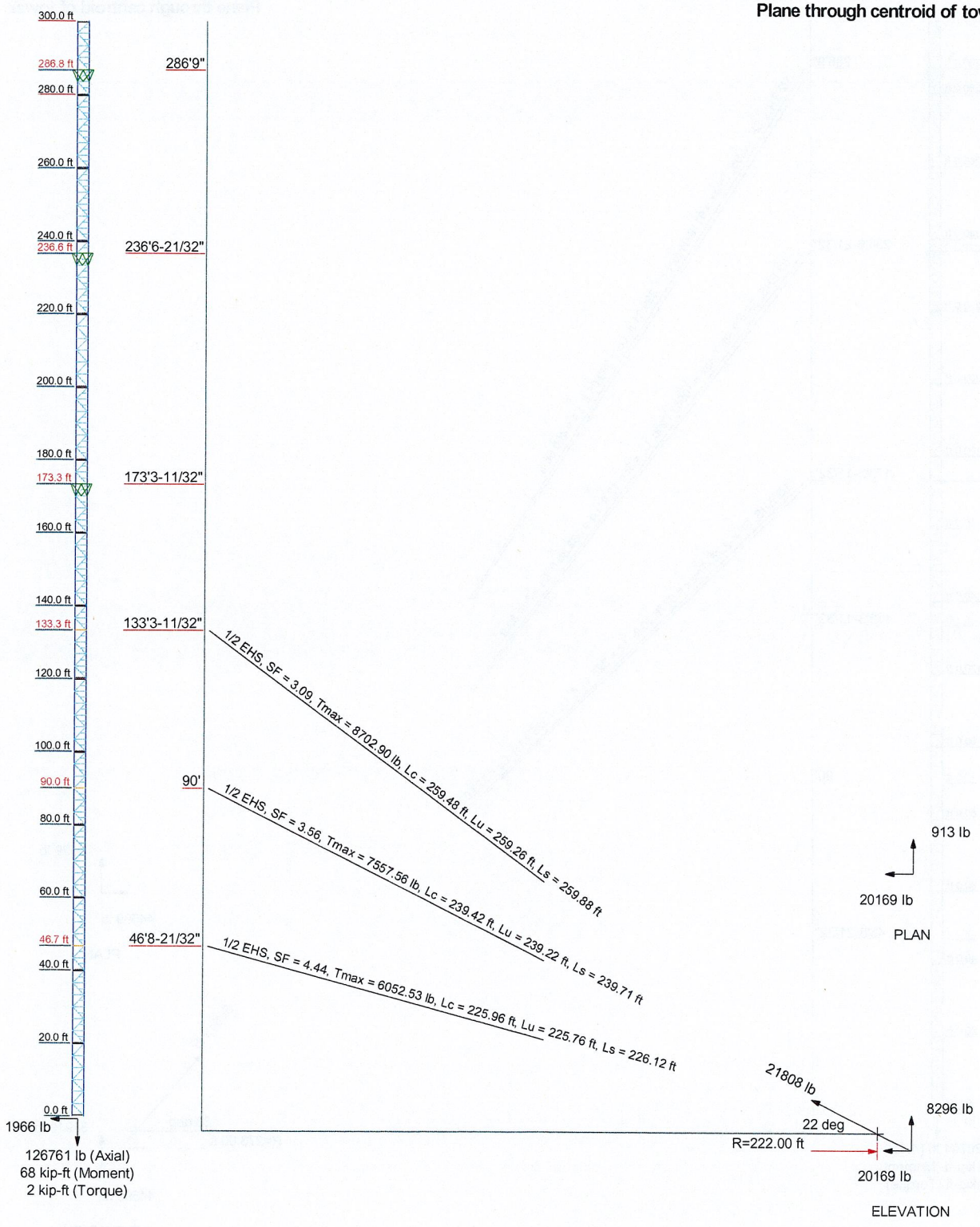
	Project: ***300-ft Guyed Tower - 353 Pumpkin Hill Rd., Ashford, CT***		
	Client: Verizon Wireless	Drawn by: TJL	App'd:
	Code: TIA/EIA-222-F	Date: 05/29/13	Scale: NTS
	Path: J:\Jobs\1304800.WI\Engineering\Structural\Rev (1)\Calcs\ERI85mph 300-ft Guyed Tower.er		Dwg No. E-9

Guy Tensions and Tower Reactions

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

Maximum Values
Anchor 'A'@222 ft Azimuth 0 deg Elev -4 ft
Plane through centroid of tower



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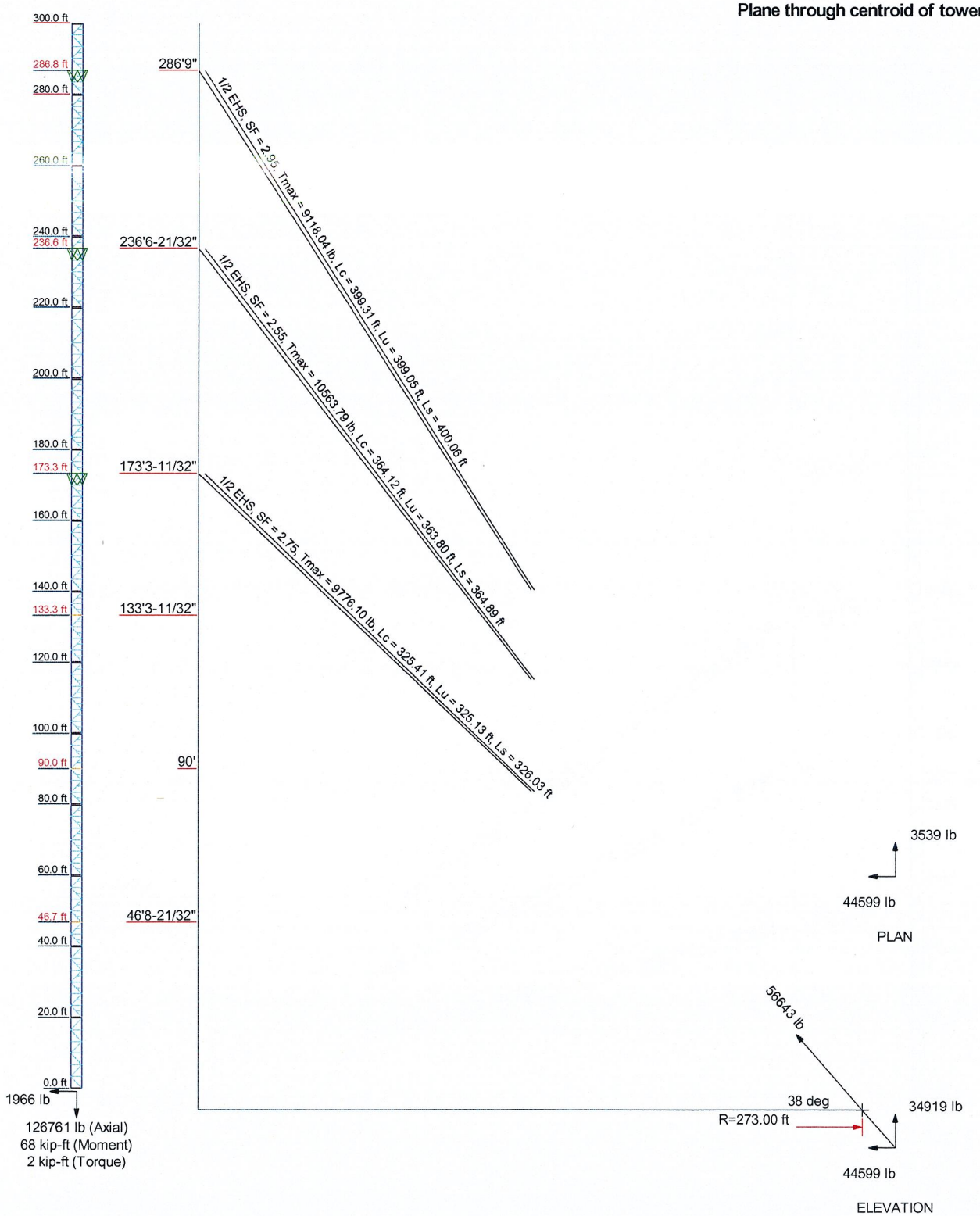
	Project: ***300-ft Guyed Tower - 353 Pumpkin Hill Rd., Ashford, CT***		
	Client: Verizon Wireless	Drawn by: TJL	App'd:
	Code: TIA/EIA-222-F	Date: 05/29/13	Scale: NTS
	Path: J:\Jobs\1304800 W\Engineering\Structural\Rev (1)\Calcs\ER\85mph 300-ft Guyed Tower er		Dwg No. E-6

Guy Tensions and Tower Reactions

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

Maximum Values
Anchor 'A'@273 ft Azimuth 0 deg Elev -6 ft
Plane through centroid of tower



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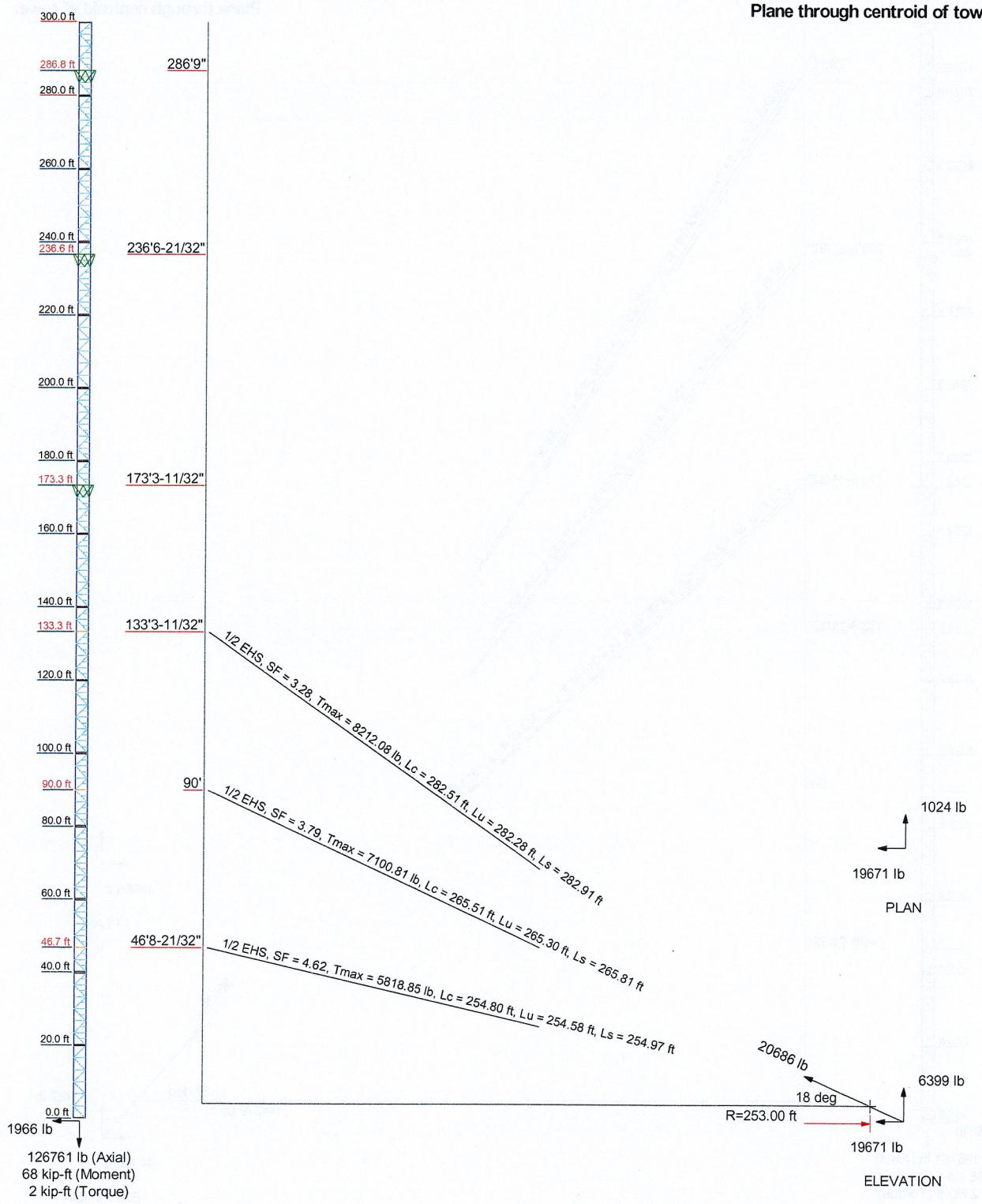
	Project: **300-ft Guyed Tower - 353 Pumpkin Hill Rd., Ashford, CT**		
	Client: Verizon Wireless	Drawn by: TJL	App'd:
	Code: TIA/EIA-222-F	Date: 05/29/13	Scale: NTS
	Path: J:\Jobs\1304800.WIEngineering\Structural\Rev (1)\Calcs\ERI\85mph 300-ft Guyed Tower.eri		Dwg No. E-6

Guy Tensions and Tower Reactions

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

Maximum Values
Anchor 'B'@253 ft Azimuth 120 deg Elev 4 ft
Plane through centroid of tower



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Client: Verizon Wireless	Drawn by: TJL	App'd:	
Code: TIA/EIA-222-F	Date: 05/29/13	Scale: NTS	
Path: J:\Jobs\1304800.WIEngineering\Structural\Rev (1)\Calcs\ER\85mph 300-ft Guyed Tower.eri		Dwg No. E-6	

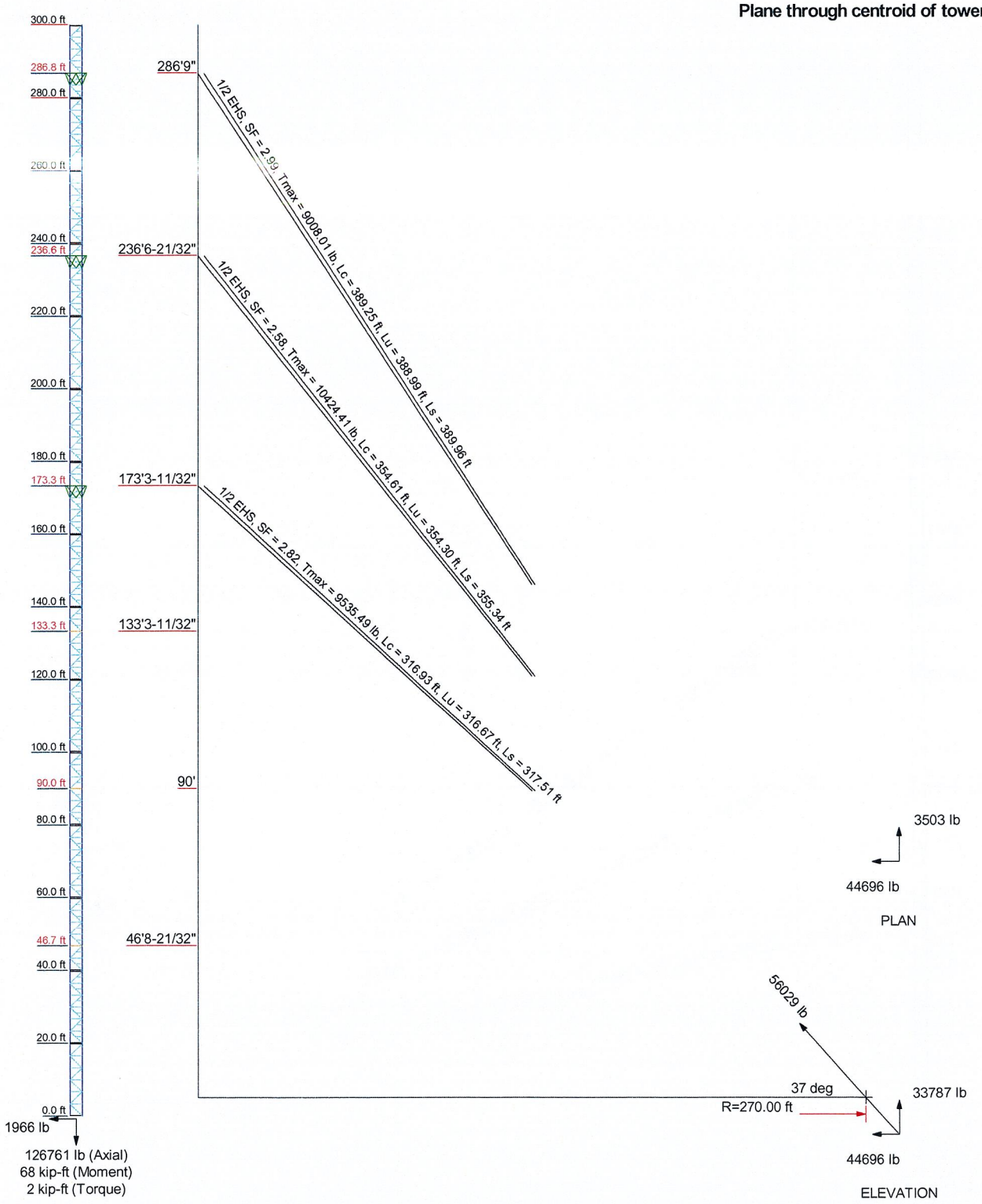
Guy Tensions and Tower Reactions

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

Maximum Values

Anchor 'B'@270 ft Azimuth 120 deg Elev 5 ft

Plane through centroid of tower



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Client: Verizon Wireless	Drawn by: TJL	App'd:
Code: TIA/EIA-222-F	Date: 05/29/13	Scale: NTS
Path: J:\Jobs\13048\00 WIP\Engineering\Structural\Rev (1)\Calcs\ERI\85mph 300-ft Guyed Tower.eri		Dwg No. E-6

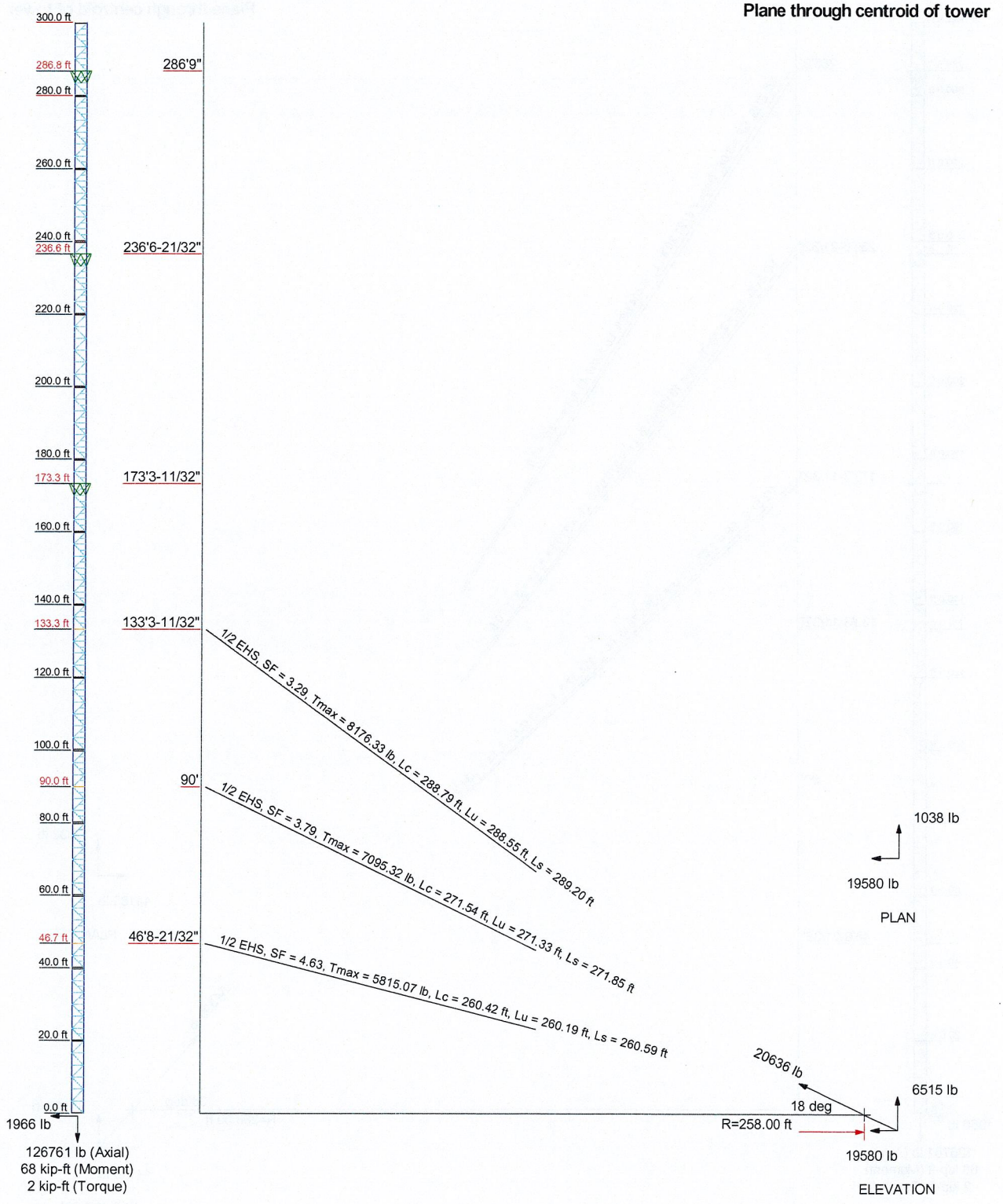
Guy Tensions and Tower Reactions

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

Maximum Values

Anchor 'C'@258 ft Azimuth 240 deg Elev 0 ft

Plane through centroid of tower



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Job: ***13048 ~ Ashford***		
Project: ***300-ft Guyed Tower - 353 Pumpkin Hill Rd., Ashford, CT***		
Client: Verizon Wireless	Drawn by: TJL	App'd:
Code: TIA/EIA-222-F	Date: 05/29/13	Scale: NTS
Path: J:\Jobs\1304800.WIP\engineering\Structural\Rev (1)\Calcs\ERI85mph 300-ft Guyed Tower.eri		Dwg No. E-6

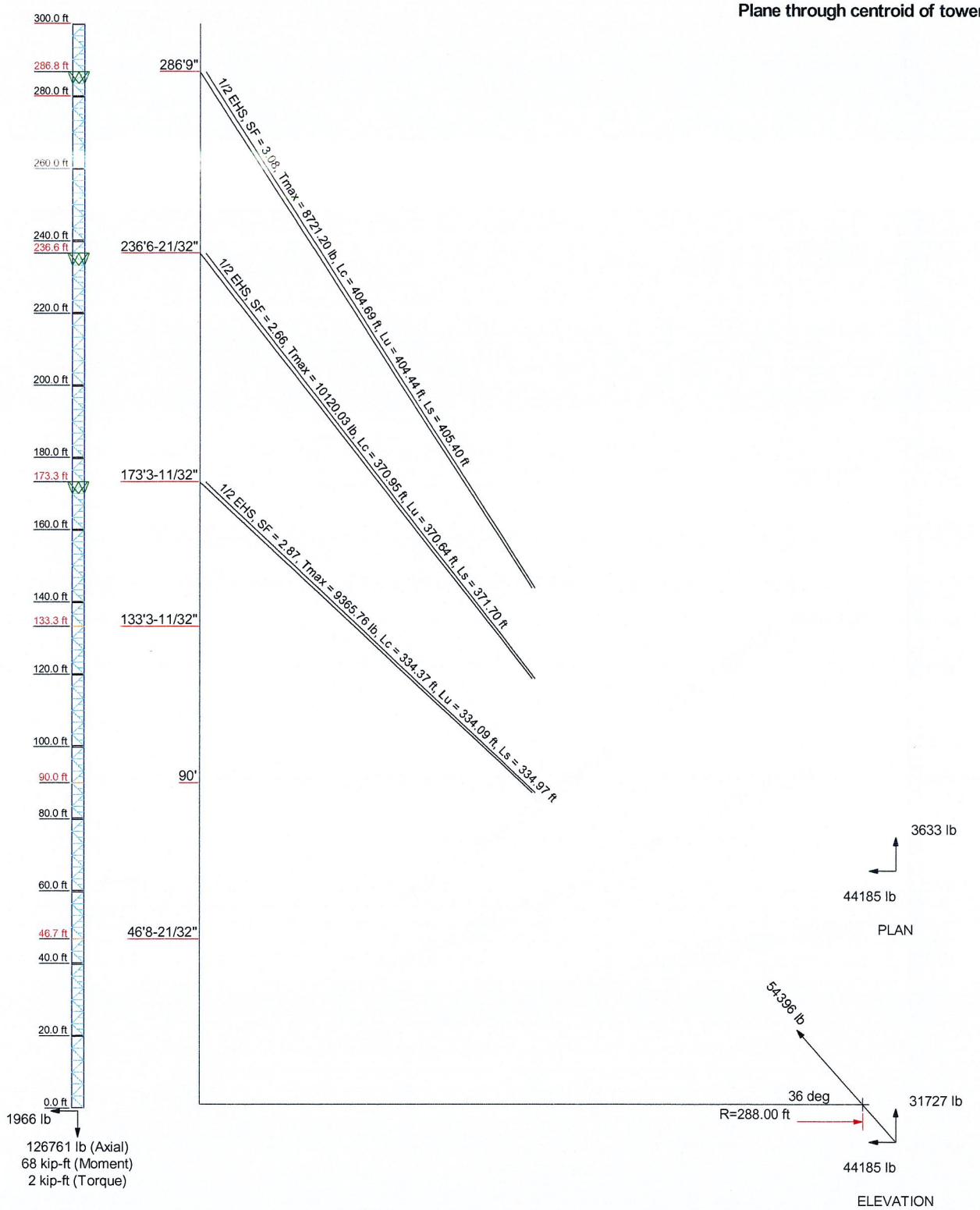
Guy Tensions and Tower Reactions

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

Maximum Values

Anchor 'C'@288 ft Azimuth 240 deg Elev 1 ft

Plane through centroid of tower



Centek Engineering Inc. 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job: ***13048 ~ Ashford***		
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	Client: Verizon Wireless	Drawn by: TJL	App'd:
	Code: TIA/EIA-222-F	Date: 05/29/13	Scale: NTS
	Path: J:\Jobs\1304800.WIP\Engineering\Structural\Rev (1)\Calcs\ERI\85mph 300-ft Guyed Tower.eri		Dwg No. E-6

tnxTower	Job	Page
	13048 ~ Ashford	1 of 69
Centek Engineering Inc. 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	**Project** 300-ft Guyed Tower - 353 Pumpkin Hill Rd., Ashford, CT	**Date** 13:20:26 05/29/13
	Client Verizon Wireless	**Designed by** TJL

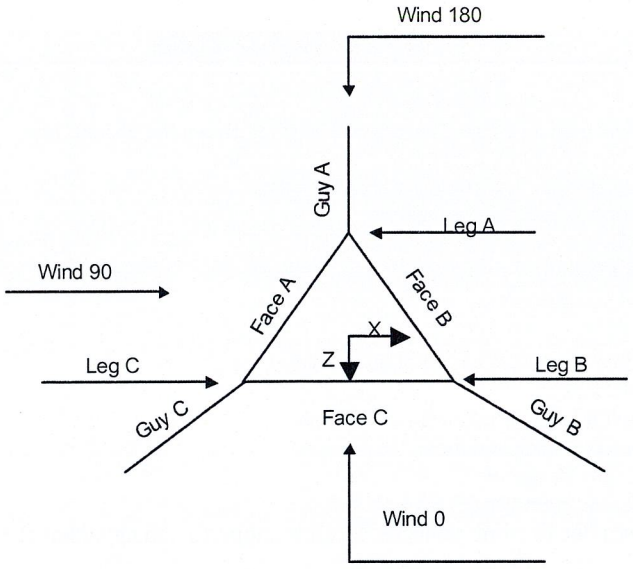
Tower Input Data

The main tower is a 3x guyed tower with an overall height of 300.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 3.13 ft at the top and 3.13 ft at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

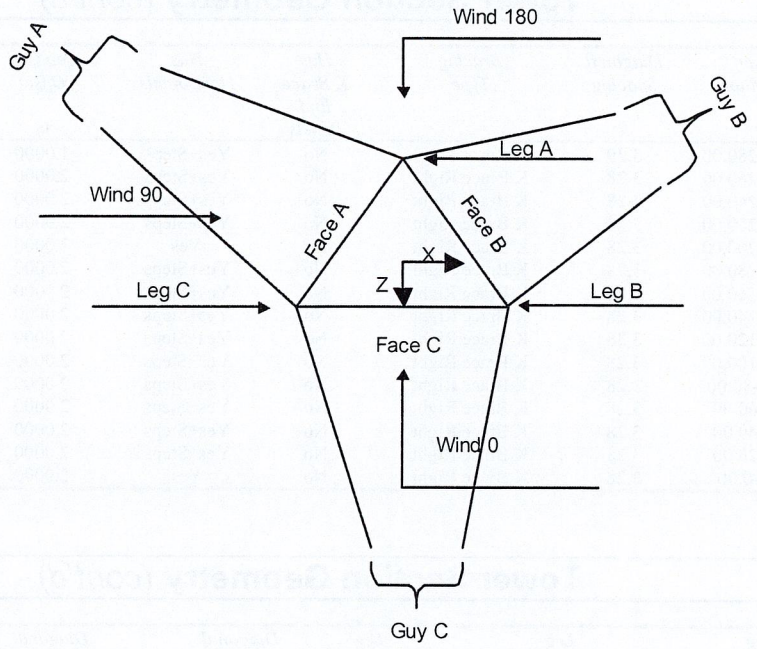
Basic wind speed of 85 mph.
Nominal ice thickness of 0.5000 in.
Ice density of 56 pcf.
A wind speed of 74 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 50 mph.
Pressures are calculated at each section.
Safety factor used in guy design is 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*	*Assembly Database*	*Description*	*Section Width*	*Number of Sections*	*Section Length*
	ft			*ft*		*ft*
T1	300.00-280.00			3.13	1	20.00
T2	280.00-260.00			3.13	1	20.00
T3	260.00-240.00			3.13	1	20.00
T4	240.00-220.00			3.13	1	20.00
T5	220.00-200.00			3.13	1	20.00
T6	200.00-180.00			3.13	1	20.00
T7	180.00-160.00			3.13	1	20.00
T8	160.00-140.00			3.13	1	20.00
T9	140.00-120.00			3.13	1	20.00
T10	120.00-100.00			3.13	1	20.00
T11	100.00-80.00			3.13	1	20.00
T12	80.00-60.00			3.13	1	20.00
T13	60.00-40.00			3.13	1	20.00
T14	40.00-20.00			3.13	1	20.00
T15	20.00-0.00			3.13	1	20.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	300.00-280.00	3.29	K Brace Right	No	Yes+Steps	1.0000	2.0000
T2	280.00-260.00	3.28	K Brace Right	No	Yes+Steps	2.0000	2.0000
T3	260.00-240.00	3.28	K Brace Right	No	Yes+Steps	2.0000	2.0000
T4	240.00-220.00	3.28	K Brace Right	No	Yes+Steps	2.0000	2.0000
T5	220.00-200.00	3.28	K Brace Right	No	Yes	2.0000	2.0000
T6	200.00-180.00	3.28	K Brace Right	No	Yes+Steps	2.0000	2.0000
T7	180.00-160.00	3.28	K Brace Right	No	Yes+Steps	2.0000	2.0000
T8	160.00-140.00	3.28	K Brace Right	No	Yes+Steps	2.0000	2.0000
T9	140.00-120.00	3.28	K Brace Right	No	Yes+Steps	2.0000	2.0000
T10	120.00-100.00	3.28	K Brace Right	No	Yes+Steps	2.0000	2.0000
T11	100.00-80.00	3.28	K Brace Right	No	Yes+Steps	2.0000	2.0000
T12	80.00-60.00	3.28	K Brace Right	No	Yes+Steps	2.0000	2.0000
T13	60.00-40.00	3.28	K Brace Right	No	Yes+Steps	2.0000	2.0000
T14	40.00-20.00	3.28	K Brace Right	No	Yes+Steps	2.0000	2.0000
T15	20.00-0.00	3.28	K Brace Right	No	Yes	2.0000	2.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 300.00-280.00	Pipe	P2.5x.203	A53-B-35 (35 ksi)	Pipe	P1.25x.14	A53-B-35 (35 ksi)
T2 280.00-260.00	Pipe	P2.5x.203	A53-B-35 (35 ksi)	Pipe	P1.25x.14	A53-B-35 (35 ksi)
T3 260.00-240.00	Pipe	P2.5x.203	A53-B-35 (35 ksi)	Pipe	P1.25x.14	A53-B-35 (35 ksi)
T4 240.00-220.00	Pipe	P2.5x.203	A53-B-35 (35 ksi)	Pipe	P1.25x.14	A53-B-35 (35 ksi)
T5 220.00-200.00	Pipe	P2.5x.203	A53-B-35 (35 ksi)	Pipe	P1.25x.14	A53-B-35 (35 ksi)
T6 200.00-180.00	Pipe	P2.5x.203	A53-B-35 (35 ksi)	Pipe	P1.25x.14	A53-B-35 (35 ksi)
T7 180.00-160.00	Pipe	P2.5x.276	A53-B-35 (35 ksi)	Pipe	P1.25x.14	A53-B-35 (35 ksi)
T8 160.00-140.00	Pipe	P2.5x.276	A53-B-35 (35 ksi)	Pipe	P1.25x.14	A53-B-35 (35 ksi)
T9 140.00-120.00	Pipe	P2.5x.203	A53-B-35 (35 ksi)	Pipe	P1x.133	A53-B-35 (35 ksi)
T10 120.00-100.00	Pipe	P2.5x.203	A53-B-35 (35 ksi)	Pipe	P1x.133	A53-B-35 (35 ksi)
T11 100.00-80.00	Pipe	P2.5x.276	A53-B-35 (35 ksi)	Pipe	P1x.133	A53-B-35 (35 ksi)
T12 80.00-60.00	Pipe	P2.5x.276	A53-B-35 (35 ksi)	Pipe	P1x.133	A53-B-35 (35 ksi)
T13 60.00-40.00	Pipe	P2.5x.276	A53-B-35 (35 ksi)	Pipe	P1x.133	A53-B-35 (35 ksi)
T14 40.00-20.00	Pipe	P2.5x.276	A53-B-35 (35 ksi)	Pipe	P1x.133	A53-B-35 (35 ksi)

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T15 20.00-0.00	Pipe	P2.5x.276	A53-B-35 (35 ksi)	Pipe	P1x.133	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 300.00-280.00	Flat Bar	2x1/2	A36 (36 ksi)	Flat Bar	2x1/2	A36 (36 ksi)
T2 280.00-260.00	Flat Bar	2x1/2	A36 (36 ksi)	Flat Bar	2x1/2	A36 (36 ksi)
T3 260.00-240.00	Flat Bar	2x1/2	A36 (36 ksi)	Flat Bar	2x1/2	A36 (36 ksi)
T4 240.00-220.00	Flat Bar	2x1/2	A36 (36 ksi)	Flat Bar	2x1/2	A36 (36 ksi)
T5 220.00-200.00	Flat Bar	2x1/2	A36 (36 ksi)	Flat Bar	2x1/2	A36 (36 ksi)
T6 200.00-180.00	Flat Bar	2x1/2	A36 (36 ksi)	Flat Bar	2x1/2	A36 (36 ksi)
T7 180.00-160.00	Flat Bar	2x1/2	A36 (36 ksi)	Flat Bar	2x1/2	A36 (36 ksi)
T8 160.00-140.00	Flat Bar	2x1/2	A36 (36 ksi)	Flat Bar	2x1/2	A36 (36 ksi)
T9 140.00-120.00	Flat Bar	2x1/2	A36 (36 ksi)	Flat Bar	2x1/2	A36 (36 ksi)
T10 120.00-100.00	Flat Bar	2x1/2	A36 (36 ksi)	Flat Bar	2x1/2	A36 (36 ksi)
T11 100.00-80.00	Flat Bar	2x1/2	A36 (36 ksi)	Flat Bar	2x1/2	A36 (36 ksi)
T12 80.00-60.00	Flat Bar	2x1/2	A36 (36 ksi)	Flat Bar	2x1/2	A36 (36 ksi)
T13 60.00-40.00	Flat Bar	2x1/2	A36 (36 ksi)	Flat Bar	2x1/2	A36 (36 ksi)
T14 40.00-20.00	Flat Bar	2x1/2	A36 (36 ksi)	Flat Bar	2x1/2	A36 (36 ksi)
T15 20.00-0.00	Flat Bar	2x1/2	A36 (36 ksi)	Flat Bar	2x1/2	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 300.00-280.00	None	Single Angle		A36 (36 ksi)	Pipe	P1x.133	A53-B-35 (35 ksi)
T2 280.00-260.00	None	Single Angle		A36 (36 ksi)	Pipe	P1x.133	A53-B-35 (35 ksi)
T3 260.00-240.00	None	Single Angle		A36 (36 ksi)	Pipe	P1x.133	A53-B-35 (35 ksi)

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T4 240.00-220.00	None	Single Angle		A36 (36 ksi)	Pipe	P1x.133	A53-B-35 (35 ksi)
T5 220.00-200.00	None	Single Angle		A36 (36 ksi)	Pipe	P1x.133	A53-B-35 (35 ksi)
T6 200.00-180.00	None	Single Angle		A36 (36 ksi)	Pipe	P1x.133	A53-B-35 (35 ksi)
T7 180.00-160.00	None	Single Angle		A36 (36 ksi)	Pipe	P1x.133	A53-B-35 (35 ksi)
T8 160.00-140.00	None	Single Angle		A36 (36 ksi)	Pipe	P1x.133	A53-B-35 (35 ksi)
T9 140.00-120.00	None	Single Angle		A36 (36 ksi)	Pipe	P1x.133	A53-B-35 (35 ksi)
T10 120.00-100.00	None	Single Angle		A36 (36 ksi)	Pipe	P1x.133	A53-B-35 (35 ksi)
T11 100.00-80.00	None	Single Angle		A36 (36 ksi)	Pipe	P1x.133	A53-B-35 (35 ksi)
T12 80.00-60.00	None	Single Angle		A36 (36 ksi)	Pipe	P1x.133	A53-B-35 (35 ksi)
T13 60.00-40.00	None	Single Angle		A36 (36 ksi)	Pipe	P1x.133	A53-B-35 (35 ksi)
T14 40.00-20.00	None	Single Angle		A36 (36 ksi)	Pipe	P1x.133	A53-B-35 (35 ksi)
T15 20.00-0.00	None	Single Angle		A36 (36 ksi)	Pipe	P1x.133	A53-B-35 (35 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T1 300.00-280.00	Pipe	P0.375x0.091	A53-B-35 (35 ksi)	Solid Round		A572-50 (50 ksi)
T2 280.00-260.00	Pipe	P0.375x0.091	A53-B-35 (35 ksi)	Solid Round		A572-50 (50 ksi)
T3 260.00-240.00	Pipe	P0.375x0.091	A53-B-35 (35 ksi)	Solid Round		A572-50 (50 ksi)
T4 240.00-220.00	Pipe	P0.375x0.091	A53-B-35 (35 ksi)	Solid Round		A572-50 (50 ksi)
T5 220.00-200.00	Equal Angle	L3x3x1/4	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T6 200.00-180.00	Pipe	P0.375x0.091	A53-B-35 (35 ksi)	Solid Round		A572-50 (50 ksi)
T7 180.00-160.00	Pipe	P0.375x0.091	A53-B-35 (35 ksi)	Solid Round		A572-50 (50 ksi)
T8 160.00-140.00	Pipe	P0.375x0.091	A53-B-35 (35 ksi)	Solid Round		A572-50 (50 ksi)
T9 140.00-120.00	Pipe	P0.375x0.091	A53-B-35 (35 ksi)	Solid Round		A572-50 (50 ksi)
T10 120.00-100.00	Pipe	P0.375x0.091	A53-B-35 (35 ksi)	Solid Round		A572-50 (50 ksi)
T11 100.00-80.00	Pipe	P0.375x0.091	A53-B-35 (35 ksi)	Solid Round		A572-50 (50 ksi)
T12 80.00-60.00	Pipe	P0.375x0.091	A53-B-35 (35 ksi)	Solid Round		A572-50 (50 ksi)

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T13 60.00-40.00	Pipe	P0.375x0.091	A53-B-35 (35 ksi)	Solid Round		A572-50 (50 ksi)
T14 40.00-20.00	Pipe	P0.375x0.091	A53-B-35 (35 ksi)	Solid Round		A572-50 (50 ksi)
T15 20.00-0.00	Equal Angle	L3x3x1/4	A36 (36 ksi)	Solid Round		A572-50 (50 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 300.00-280.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T2 280.00-260.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T3 260.00-240.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T4 240.00-220.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T5 220.00-200.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T6 200.00-180.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T7 180.00-160.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T8 160.00-140.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T9 140.00-120.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T10 120.00-100.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T11 100.00-80.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T12 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T13 60.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T14 40.00-20.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T15 20.00-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000

Tower Section Geometry *(cont'd)*

K Factors[1]

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1	Yes	Yes	1	1	1	1	1	1	1	1
300.00-280.00				1	1	1	1	1	1	1
T2	Yes	Yes	1	1	1	1	1	1	1	1
280.00-260.00				1	1	1	1	1	1	1
T3	Yes	Yes	1	1	1	1	1	1	1	1
260.00-240.00				1	1	1	1	1	1	1
T4	Yes	Yes	1	1	1	1	1	1	1	1
240.00-220.00				1	1	1	1	1	1	1
T5	Yes	Yes	1	1	1	1	1	1	1	1
220.00-200.00				1	1	1	1	1	1	1
T6	Yes	Yes	1	1	1	1	1	1	1	1
200.00-180.00				1	1	1	1	1	1	1
T7	Yes	Yes	1	1	1	1	1	1	1	1
180.00-160.00				1	1	1	1	1	1	1
T8	Yes	Yes	1	1	1	1	1	1	1	1
160.00-140.00				1	1	1	1	1	1	1
T9	Yes	Yes	1	1	1	1	1	1	1	1
140.00-120.00				1	1	1	1	1	1	1
T10	Yes	Yes	1	1	1	1	1	1	1	1
120.00-100.00				1	1	1	1	1	1	1
T11	Yes	Yes	1	1	1	1	1	1	1	1
100.00-80.00				1	1	1	1	1	1	1
T12	Yes	Yes	1	1	1	1	1	1	1	1
80.00-60.00				1	1	1	1	1	1	1
T13	Yes	Yes	1	1	1	1	1	1	1	1
60.00-40.00				1	1	1	1	1	1	1
T14	Yes	Yes	1	1	1	1	1	1	1	1
40.00-20.00				1	1	1	1	1	1	1
T15	Yes	Yes	0.5	1	1	1	1	1	1	1
20.00-0.00				1	1	1	1	1	1	1

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		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	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
300.00-280.00														
T2	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
280.00-260.00														
T3	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
260.00-240.00														
T4	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
240.00-220.00														
T5	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
220.00-200.00														
T6	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
200.00-180.00														

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
T7 180.00-160.00	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 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
T9 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
T10 120.00-100.00	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
T11 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
T12 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
T13 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
T14 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
T15 20.00-0.00	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	Connection Offsets							
	Diagonal				K-Bracing			
	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.
ft	in	in	in	in	in	in	in	in
T1 300.00-280.00	0.0000	0.0000	0.0000	0.0000	3.2500	0.0000	3.2500	0.0000
T2 280.00-260.00	0.0000	0.0000	0.0000	0.0000	3.2500	0.0000	3.2500	0.0000
T3 260.00-240.00	0.0000	0.0000	0.0000	0.0000	3.2500	0.0000	3.2500	0.0000
T4 240.00-220.00	0.0000	0.0000	0.0000	0.0000	3.2500	0.0000	3.2500	0.0000
T5 220.00-200.00	0.0000	0.0000	0.0000	0.0000	3.2500	0.0000	3.2500	0.0000
T6 200.00-180.00	0.0000	0.0000	0.0000	0.0000	3.2500	0.0000	3.2500	0.0000
T7 180.00-160.00	0.0000	0.0000	0.0000	0.0000	3.2500	0.0000	3.2500	0.0000
T8 160.00-140.00	0.0000	0.0000	0.0000	0.0000	3.2500	0.0000	3.2500	0.0000
T9 140.00-120.00	0.0000	0.0000	0.0000	0.0000	3.2500	0.0000	3.2500	0.0000
T10 120.00-100.00	0.0000	0.0000	0.0000	0.0000	3.2500	0.0000	3.2500	0.0000
T11 100.00-80.00	0.0000	0.0000	0.0000	0.0000	3.2500	0.0000	3.2500	0.0000
T12 80.00-60.00	0.0000	0.0000	0.0000	0.0000	3.2500	0.0000	3.2500	0.0000

Tower Elevation	Connection Offsets							
	Diagonal				K-Bracing			
	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.
ft	in	in	in	in	in	in	in	in
T13 60.00-40.00	0.0000	0.0000	0.0000	0.0000	3.2500	0.0000	3.2500	0.0000
T14 40.00-20.00	0.0000	0.0000	0.0000	0.0000	3.2500	0.0000	3.2500	0.0000
T15 20.00-0.00	0.0000	0.0000	0.0000	0.0000	3.2500	0.0000	3.2500	0.0000

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 300.00-280.00	Flange	0.7500 A325N	3	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 280.00-260.00	Flange	0.7500 A325N	3	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 260.00-240.00	Flange	0.7500 A325N	3	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 240.00-220.00	Flange	0.7500 A325N	3	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 220.00-200.00	Flange	0.7500 A325N	3	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T6 200.00-180.00	Flange	0.7500 A325N	3	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T7 180.00-160.00	Flange	0.7500 A325N	3	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T8 160.00-140.00	Flange	0.7500 A325N	3	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T9 140.00-120.00	Flange	0.7500 A325N	3	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T10 120.00-100.00	Flange	0.7500 A325N	3	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T11 100.00-80.00	Flange	0.7500 A325N	3	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T12 80.00-60.00	Flange	0.7500 A325N	3	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T13 60.00-40.00	Flange	0.7500 A325N	3	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T14 40.00-20.00	Flange	0.7500 A325N	3	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T15 20.00-0.00	Flange	0.7500 A325N	3	0.0000 A325N	0	0.0000 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

Guy Data

Guy Elevation ft	Guy Grade		Guy Size	Initial Tension lb	%	Guy Modulus ksi	Guy Weight plf	L_u ft	Anchor Radius ft	Anchor Azimuth Adj. °	Anchor Elevation ft	End Fitting Efficiency %
286.75	EHS	A	1/2	2152.00	8%	21000	0.517	399.10	273.00	0.0000	-6.00	100%
		B	1/2	2152.00	8%	21000	0.517	389.03	270.00	0.0000	5.00	100%
		C	1/2	2152.00	8%	21000	0.517	404.48	288.00	0.0000	1.00	100%
236.556	EHS	A	1/2	2690.00	10%	21000	0.517	363.84	273.00	0.0000	-6.00	100%
		B	1/2	2690.00	10%	21000	0.517	354.34	270.00	0.0000	5.00	100%
		C	1/2	2690.00	10%	21000	0.517	370.67	288.00	0.0000	1.00	100%
173.278	EHS	A	1/2	2690.00	10%	21000	0.517	325.16	273.00	0.0000	-6.00	100%
		B	1/2	2690.00	10%	21000	0.517	316.69	270.00	0.0000	5.00	100%
		C	1/2	2690.00	10%	21000	0.517	334.12	288.00	0.0000	1.00	100%
133.278	EHS	A	1/2	2690.00	10%	21000	0.517	259.28	222.00	0.0000	-4.00	100%
		B	1/2	2690.00	10%	21000	0.517	282.29	253.00	0.0000	4.00	100%
		C	1/2	2690.00	10%	21000	0.517	288.57	258.00	0.0000	0.00	100%
90	EHS	A	1/2	2690.00	10%	21000	0.517	239.23	222.00	0.0000	-4.00	100%
		B	1/2	2690.00	10%	21000	0.517	265.31	253.00	0.0000	4.00	100%
		C	1/2	2690.00	10%	21000	0.517	271.34	258.00	0.0000	0.00	100%
46.7222	EHS	A	1/2	2959.00	11%	21000	0.517	225.76	222.00	0.0000	-4.00	100%
		B	1/2	2959.00	11%	21000	0.517	254.58	253.00	0.0000	4.00	100%
		C	1/2	2959.00	11%	21000	0.517	260.20	258.00	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
286.75	Torque Arm	5.00	45.0000	Bat Ear	A36 (36 ksi)	Single Angle	L3x3x3/8
236.556	Torque Arm	5.00	45.0000	Bat Ear	A36 (36 ksi)	Single Angle	L3x3x3/8
173.278	Torque Arm	5.00	45.0000	Bat Ear	A36 (36 ksi)	Single Angle	L3x3x3/8
133.278	Corner						
90	Corner						
46.7222	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
286.75	A53-B-42 (42 ksi)	Pipe				A36 (36 ksi)	Flat Bar	
236.56	A53-B-42 (42 ksi)	Pipe				A36 (36 ksi)	Flat Bar	
173.28	A53-B-42 (42 ksi)	Pipe				A36 (36 ksi)	Flat Bar	
133.28	A53-B-42 (42 ksi)	Pipe			Yes	A36 (36 ksi)	Flat Bar	2x5/16
90.00	A53-B-42 (42 ksi)	Pipe			Yes	A36 (36 ksi)	Flat Bar	2x5/16

Guy Elevation ft	Diagonal Grade	Diagonal Type	Upper Diagonal Size	Lower Diagonal Size	Is Strap.	Pull-Off Grade	Pull-Off Type	Pull-Off Size
46.72	A53-B-42 (42 ksi)	Pipe			Yes	A36 (36 ksi)	Flat Bar	2x5/16

Guy Data *(cont'd)*

Guy Elevation ft	Cable Weight A lb	Cable Weight B lb	Cable Weight C lb	Cable Weight D lb	Tower Intercept A ft	Tower Intercept B ft	Tower Intercept C ft	Tower Intercept D ft
286.75	206.33	201.13	209.12		18.50 7.4 sec/pulse	17.60 7.2 sec/pulse	19.02 7.5 sec/pulse	
236.556	188.10	183.19	191.64		12.45 6.1 sec/pulse	11.82 5.9 sec/pulse	12.93 6.2 sec/pulse	
173.278	168.11	163.73	172.74		10.00 5.5 sec/pulse	9.49 5.3 sec/pulse	10.56 5.6 sec/pulse	
133.278	134.05	145.95	149.19		6.38 4.4 sec/pulse	7.57 4.8 sec/pulse	7.91 4.9 sec/pulse	
90	123.68	137.16	140.28		5.46 4.0 sec/pulse	6.72 4.5 sec/pulse	7.02 4.6 sec/pulse	
46.7222	116.72	131.62	134.52		4.44 3.6 sec/pulse	5.65 4.1 sec/pulse	5.90 4.2 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
286.75	Yes	No	1	1	1	1	1	1
236.556	Yes	No	1	1	1	1	1	1
173.278	Yes	No	1	1	1	1	1	1
133.278	No	No			1	1	1	1
90	No	No			1	1	1	1
46.7222	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
286.75	0.6250 A325N	2	0.0000	1	0.0000 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
236.556	0.6250 A325N	2	0.0000	1	0.0000 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
173.278	0.6250 A325N	2	0.0000	1	0.0000 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
133.278	0.0000 A325N	0	0.0000	1	0.0000 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75

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
90	0.0000 A325N	0	0.0000	1	0.0000 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
46.7222	0.6250 A325N	0	0.0000	0.75	0.0000 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75

Guy Pressures

Guy Elevation ft	Guy Location	z ft	q_z psf	q_z Ice psf	Ice Thickness in
286.75	A	140.38	28	21	0.5000
	B	145.88	28	21	0.5000
	C	143.88	28	21	0.5000
236.556	A	115.28	26	20	0.5000
	B	120.78	27	20	0.5000
	C	118.78	27	20	0.5000
173.278	A	83.64	24	18	0.5000
	B	89.14	25	18	0.5000
	C	87.14	24	18	0.5000
133.278	A	64.64	22	17	0.5000
	B	68.64	23	17	0.5000
	C	66.64	23	17	0.5000
90	A	43.00	20	15	0.5000
	B	47.00	20	15	0.5000
	C	45.00	20	15	0.5000
46.7222	A	21.36	18	14	0.5000
	B	25.36	18	14	0.5000
	C	23.36	18	14	0.5000

Guy-Mast Forces (Excluding Wind) - No Ice

Guy Elevation ft	Guy Location	Chord Angle °	Guy Tension Top / Bottom lb	F_x lb	F_y lb	F_z lb	M_x kip-ft	M_y kip-ft	M_z kip-ft
286.75	A	47.1496	2303.24 2152.00	-13.93	1736.03	-1513.58	-2.51	3.80	-4.34
	A	47.1496	2303.24 2152.00	13.93	1736.03	-1513.58	-2.51	-3.80	4.34
	B	46.3721	2297.56 2152.00	1335.34	1710.68	754.47	4.94	3.85	0.00
	B	46.3721	2297.56 2152.00	1321.07	1710.68	779.20	-2.47	-3.85	-4.28
	C	44.9182	2299.63 2152.00	-1356.80	1675.90	799.21	-2.42	3.96	4.19
	C	44.9182	2299.63 2152.00	-1370.54	1675.90	775.42	4.84	-3.96	0.00
			Sum:	-70.93	10245.23	81.14	-0.12	0.00	-0.09
236.556	A	41.7702	2815.40 2690.11	-18.89	1927.57	-2051.97	-2.78	5.16	-4.82
	A	41.7702	2815.40	18.89	1927.57	-2051.97	-2.78	-5.16	4.82

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top / Bottom	F_x	F_y	F_z	M_x	M_y	M_z
ft		°	lb	lb	lb	lb	kip-ft	kip-ft	kip-ft
			2690.11						
	B	40.7674	2809.61	1812.36	1886.98	1023.99	5.45	5.23	0.00
			2690.00						
	B	40.7674	2809.61	1792.98	1886.98	1057.55	-2.72	-5.23	-4.72
			2690.00						
	C	39.4199	2811.67	-1830.06	1842.37	1077.98	-2.66	5.34	4.61
			2690.00						
	C	39.4199	2811.67	-1848.59	1842.37	1045.89	5.32	-5.34	0.00
			2690.00						
			Sum:	-73.32	11313.85	101.47	-0.18	0.00	-0.11
173.278	A	33.4311	2782.61	-21.01	1591.41	-2282.51	-2.30	5.74	-3.98
			2690.00						
	A	33.4311	2782.61	21.01	1591.41	-2282.51	-2.30	-5.74	3.98
			2690.00						
	B	32.0702	2776.92	2015.88	1533.06	1138.98	4.43	5.82	0.00
			2690.00						
	B	32.0702	2776.92	1994.32	1533.06	1176.31	-2.21	-5.82	-3.83
			2690.00						
	C	31.0133	2778.99	-2018.39	1495.11	1188.92	-2.16	5.89	3.74
			2690.00						
	C	31.0133	2778.99	-2038.83	1495.11	1153.52	4.32	-5.89	0.00
			2690.00						
			Sum:	-47.02	9239.16	92.70	-0.22	0.00	-0.09
133.278	A	31.9409	2760.91	0.00	1508.80	-2312.17	-2.72	0.00	0.00
			2690.00						
	B	27.2326	2756.78	2096.40	1319.09	1210.36	1.19	0.00	-2.06
			2690.00						
	C	27.4843	2758.85	-2092.40	1331.81	1208.05	1.20	0.00	2.08
			2690.00						
			Sum:	4.00	4159.70	106.23	-0.33	0.00	0.02
90	A	23.1173	2738.56	0.00	1127.43	-2495.72	-2.03	0.00	0.00
			2690.00						
	B	18.8993	2734.42	2221.53	947.00	1282.60	0.85	0.00	-1.48
			2690.00						
	C	19.3561	2736.49	-2216.21	969.32	1279.53	0.87	0.00	1.51
			2690.00						
			Sum:	5.32	3043.75	66.42	-0.31	0.00	0.03
46.7222	A	12.9718	2985.20	0.00	725.47	-2895.70	-1.31	0.00	0.00
			2959.00						
	B	9.6522	2981.07	2535.10	563.75	1463.64	0.51	0.00	-0.88
			2959.00						
	C	10.3354	2983.13	-2530.63	600.26	1461.06	0.54	-0.00	0.94
			2959.00						
			Sum:	4.47	1889.47	28.99	-0.26	0.00	0.06

Guy-Mast Forces (Excluding Wind) - Ice

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top / Bottom	F_x	F_y	F_z	M_x	M_y	M_z
ft		°	lb	lb	lb	lb	kip-ft	kip-ft	kip-ft
286.75	A	47.1496	3819.15	-22.84	2903.28	-2481.19	-4.19	6.24	-7.26
			3489.24						

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top Bottom lb	F_x	F_y	F_z	M_x	M_y	M_z
ft		°		lb	lb	lb	kip-ft	kip-ft	kip-ft
	A	47.1496	3819.15 3489.24	22.84	2903.28	-2481.19	-4.19	-6.24	7.26
	B	46.3721	3804.35 3486.83	2186.70	2857.44	1235.49	8.25	6.31	0.00
	B	46.3721	3804.35 3486.83	2163.32	2857.44	1275.99	-4.12	-6.31	-7.14
	C	44.9182	3843.01 3520.99	-2242.92	2827.10	1321.17	-4.08	6.54	7.07
	C	44.9182	3843.01 3520.99	-2265.63	2827.10	1281.84	8.16	-6.54	0.00
			Sum:	-158.53	17175.65	152.11	-0.18	0.00	-0.08
236.556	A	41.7702	4288.76 4015.46	-28.48	2970.45	-3093.39	-4.29	7.77	-7.43
	A	41.7702	4288.76 4015.46	28.48	2970.45	-3093.39	-4.29	-7.77	7.43
	B	40.7674	4274.06 4013.16	2729.55	2904.95	1542.21	8.39	7.88	0.00
	B	40.7674	4274.06 4013.16	2700.37	2904.95	1592.76	-4.19	-7.88	-7.26
	C	39.4199	4314.42 4049.01	-2780.43	2863.75	1637.79	-4.13	8.11	7.16
	C	39.4199	4314.42 4049.01	-2808.58	2863.75	1589.03	8.27	-8.11	0.00
			Sum:	-159.09	17478.32	175.01	-0.25	0.00	-0.10
173.278	A	33.4311	4235.65 4033.65	-31.74	2460.76	-3447.37	-3.55	8.66	-6.15
	A	33.4311	4235.65 4033.65	31.74	2460.76	-3447.37	-3.55	-8.66	6.15
	B	32.0702	4220.51 4030.90	3041.29	2368.67	1718.34	6.84	8.78	0.00
	B	32.0702	4220.51 4030.90	3008.77	2368.67	1774.66	-3.42	-8.78	-5.92
	C	31.0133	4260.82 4066.71	-3071.90	2333.20	1809.48	-3.37	8.96	5.83
	C	31.0133	4260.82 4066.71	-3103.00	2333.20	1755.60	6.74	-8.96	0.00
			Sum:	-124.84	14325.27	163.33	-0.32	0.00	-0.09
133.278	A	31.9409	4097.00 3942.32	0.00	2272.44	-3409.02	-4.10	0.00	0.00
	B	27.2326	4152.77 4007.11	3139.46	2025.80	1812.57	1.83	0.00	-3.17
	C	27.4843	4166.33 4016.15	-3140.93	2050.46	1813.41	1.85	-0.00	3.20
			Sum:	-1.46	6348.71	216.96	-0.42	0.00	0.04
90	A	23.1173	4060.04 3954.12	0.00	1707.88	-3683.35	-3.08	0.00	0.00
	B	18.8993	4116.34 4019.44	3330.80	1466.95	1923.04	1.32	0.00	-2.29
	C	19.3561	4130.05 4028.65	-3330.88	1504.77	1923.08	1.36	-0.00	2.35
			Sum:	-0.08	4679.60	162.77	-0.40	0.00	0.06
46.7222	A	12.9718	4273.51 4216.37	0.00	1080.03	-4134.79	-1.95	0.00	0.00
	B	9.6522	4329.29 4281.15	3673.62	865.27	2120.97	0.78	0.00	-1.35
	C	10.3354	4342.91 4290.27	-3675.52	921.02	2122.06	0.83	-0.00	1.44
			Sum:	-1.90	2866.32	108.25	-0.34	0.00	0.09

Guy-Mast Forces (Excluding Wind) - Service

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top / Bottom	F_x	F_y	F_z	M_x	M_y	M_z
ft		°	lb	lb	lb	lb	kip-ft	kip-ft	kip-ft
286.75	A	47.1496	2303.24 2152.00	-13.93	1736.03	-1513.58	-2.51	3.80	-4.34
	A	47.1496	2303.24 2152.00	13.93	1736.03	-1513.58	-2.51	-3.80	4.34
	B	46.3721	2297.56 2152.00	1335.34	1710.68	754.47	4.94	3.85	0.00
	B	46.3721	2297.56 2152.00	1321.07	1710.68	779.20	-2.47	-3.85	-4.28
	C	44.9182	2299.63 2152.00	-1356.80	1675.90	799.21	-2.42	3.96	4.19
	C	44.9182	2299.63 2152.00	-1370.54	1675.90	775.42	4.84	-3.96	0.00
			Sum:	-70.93	10245.23	81.14	-0.12	0.00	-0.09
236.556	A	41.7702	2815.40 2690.11	-18.89	1927.57	-2051.97	-2.78	5.16	-4.82
	A	41.7702	2815.40 2690.11	18.89	1927.57	-2051.97	-2.78	-5.16	4.82
	B	40.7674	2809.61 2690.00	1812.36	1886.98	1023.99	5.45	5.23	0.00
	B	40.7674	2809.61 2690.00	1792.98	1886.98	1057.55	-2.72	-5.23	-4.72
	C	39.4199	2811.67 2690.00	-1830.06	1842.37	1077.98	-2.66	5.34	4.61
	C	39.4199	2811.67 2690.00	-1848.59	1842.37	1045.89	5.32	-5.34	0.00
			Sum:	-73.32	11313.85	101.47	-0.18	0.00	-0.11
173.278	A	33.4311	2782.61 2690.00	-21.01	1591.41	-2282.51	-2.30	5.74	-3.98
	A	33.4311	2782.61 2690.00	21.01	1591.41	-2282.51	-2.30	-5.74	3.98
	B	32.0702	2776.92 2690.00	2015.88	1533.06	1138.98	4.43	5.82	0.00
	B	32.0702	2776.92 2690.00	1994.32	1533.06	1176.31	-2.21	-5.82	-3.83
	C	31.0133	2778.99 2690.00	-2018.39	1495.11	1188.92	-2.16	5.89	3.74
	C	31.0133	2778.99 2690.00	-2038.83	1495.11	1153.52	4.32	-5.89	0.00
			Sum:	-47.02	9239.16	92.70	-0.22	0.00	-0.09
133.278	A	31.9409	2760.91 2690.00	0.00	1508.80	-2312.17	-2.72	0.00	0.00
	B	27.2326	2756.78 2690.00	2096.40	1319.09	1210.36	1.19	0.00	-2.06
	C	27.4843	2758.85 2690.00	-2092.40	1331.81	1208.05	1.20	0.00	2.08
			Sum:	4.00	4159.70	106.23	-0.33	0.00	0.02
90	A	23.1173	2738.56 2690.00	0.00	1127.43	-2495.72	-2.03	0.00	0.00
	B	18.8993	2734.42 2690.00	2221.53	947.00	1282.60	0.85	0.00	-1.48
	C	19.3561	2736.49	-2216.21	969.32	1279.53	0.87	0.00	1.51

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top Bottom	F_x	F_y	F_z	M_x	M_y	M_z
ft		°	lb	lb	lb	lb	kip-ft	kip-ft	kip-ft
			2690.00						
			Sum:	5.32	3043.75	66.42	-0.31	0.00	0.03
46.7222	A	12.9718	2985.20	0.00	725.47	-2895.70	-1.31	0.00	0.00
			2959.00						
	B	9.6522	2981.07	2535.10	563.75	1463.64	0.51	0.00	-0.88
			2959.00						
	C	10.3354	2983.13	-2530.63	600.26	1461.06	0.54	-0.00	0.94
			2959.00						
			Sum:	4.47	1889.47	28.99	-0.26	0.00	0.06

Guy-Tensioning Information

				Temperature At Time Of Tensioning													
				0 F		20 F		40 F		60 F		80 F		100 F		120 F	
Guy Elevation		H	V	Initial Tension	Intercept	Initial Tension	Intercept	Initial Tension	Intercept	Initial Tension	Intercept	Initial Tension	Intercept	Initial Tension	Intercept	Initial Tension	Intercept
ft		ft	ft	lb	ft	lb	ft	lb	ft	lb	ft	lb	ft	lb	ft	lb	ft
286.75	A	271.57	292.75	2568	15.58	2423	16.49	2284	17.46	2152	18.50	2027	19.61	1909	20.77	1800	21.99
	B	268.57	281.75	2584	14.73	2433	15.62	2289	16.58	2152	17.60	2023	18.69	1901	19.85	1788	21.06
	C	286.57	285.75	2591	15.88	2437	16.85	2291	17.90	2152	19.02	2022	20.21	1900	21.46	1788	22.76
236.556	A	271.57	242.56	3266	10.29	3068	10.94	2876	11.66	2690	12.45	2511	13.31	2341	14.26	2180	15.28
	B	268.57	231.56	3287	9.70	3082	10.34	2883	11.04	2690	11.82	2505	12.67	2329	13.61	2163	14.62
	C	286.57	235.56	3298	10.58	3089	11.29	2886	12.07	2690	12.93	2503	13.87	2326	14.90	2161	16.01
173.278	A	271.57	179.28	3415	7.90	3165	8.52	2923	9.21	2690	10.00	2469	10.88	2254	11.90	2063	12.98
	B	268.57	168.28	3441	7.44	3182	8.04	2931	8.72	2690	9.49	2461	10.37	2246	11.34	2042	12.46
	C	286.57	172.28	3443	8.28	3183	8.95	2931	9.71	2690	10.56	2463	11.53	2244	12.63	2050	13.80
133.278	A	220.20	137.28	3483	4.94	3212	5.36	2947	5.83	2690	6.38	2443	7.02	2209	7.75	1991	8.59
	B	251.20	129.28	3536	5.77	3245	6.29	2962	6.88	2690	7.57	2432	8.37	2192	9.27	1972	10.29
	C	256.20	133.28	3528	6.05	3239	6.58	2959	7.20	2690	7.91	2435	8.73	2198	9.66	1981	10.70
90	A	220.20	94.00	3625	4.06	3305	4.45	2992	4.91	2690	5.46	2402	6.10	2133	6.87	1887	7.75
	B	251.20	86.00	3652	4.95	3320	5.45	2998	6.03	2690	6.72	2400	7.52	2133	8.45	1894	9.51
	C	256.20	90.00	3642	5.20	3313	5.71	2994	6.31	2690	7.02	2404	7.85	2141	8.81	1905	9.89
46.7222	A	220.20	50.72	4036	3.26	3669	3.58	3309	3.97	2959	4.44	2623	5.00	2306	5.69	2014	6.51
	B	251.20	42.72	4037	4.14	3667	4.56	3307	5.05	2959	5.65	2628	6.36	2320	7.20	2041	8.18
	C	256.20	46.72	4028	4.33	3661	4.77	3304	5.28	2959	5.90	2632	6.63	2327	7.49	2051	8.50

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement	Face Offset	Lateral Offset	#	# Per Row	Clear Spacing	Width or Diameter	Perimeter	Weight
				ft	in	(Frac FW)			in	in	in	plf
1 5/8 (Verizon)	B	Yes	Ar (CfAe)	248.00 - 8.00	0.5000	0	12	6	1.9800 1.0000	1.9800		1.04
1 5/8 (AT&T)	C	Yes	Ar (CfAe)	196.20 - 8.00	0.5000	0	12	6	1.9800 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 lb
T1	300.00-280.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
T2	280.00-260.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
T3	260.00-240.00	A	0.000	0.000	0.000	0.000	0.00
		B	7.920	0.000	0.000	0.000	99.84
		C	0.000	0.000	0.000	0.000	0.00
T4	240.00-220.00	A	0.000	0.000	0.000	0.000	0.00
		B	19.800	0.000	0.000	0.000	249.60
		C	0.000	0.000	0.000	0.000	0.00
T5	220.00-200.00	A	0.000	0.000	0.000	0.000	0.00
		B	19.800	0.000	0.000	0.000	249.60
		C	0.000	0.000	0.000	0.000	0.00
T6	200.00-180.00	A	0.000	0.000	0.000	0.000	0.00
		B	19.800	0.000	0.000	0.000	249.60
		C	16.038	0.000	0.000	0.000	202.18
T7	180.00-160.00	A	0.000	0.000	0.000	0.000	0.00
		B	19.800	0.000	0.000	0.000	249.60
		C	19.800	0.000	0.000	0.000	249.60
T8	160.00-140.00	A	0.000	0.000	0.000	0.000	0.00
		B	19.800	0.000	0.000	0.000	249.60
		C	19.800	0.000	0.000	0.000	249.60
T9	140.00-120.00	A	0.000	0.000	0.000	0.000	0.00
		B	19.800	0.000	0.000	0.000	249.60
		C	19.800	0.000	0.000	0.000	249.60
T10	120.00-100.00	A	0.000	0.000	0.000	0.000	0.00
		B	19.800	0.000	0.000	0.000	249.60
		C	19.800	0.000	0.000	0.000	249.60
T11	100.00-80.00	A	0.000	0.000	0.000	0.000	0.00
		B	19.800	0.000	0.000	0.000	249.60
		C	19.800	0.000	0.000	0.000	249.60
T12	80.00-60.00	A	0.000	0.000	0.000	0.000	0.00
		B	19.800	0.000	0.000	0.000	249.60
		C	19.800	0.000	0.000	0.000	249.60
T13	60.00-40.00	A	0.000	0.000	0.000	0.000	0.00
		B	19.800	0.000	0.000	0.000	249.60
		C	19.800	0.000	0.000	0.000	249.60
T14	40.00-20.00	A	0.000	0.000	0.000	0.000	0.00
		B	19.800	0.000	0.000	0.000	249.60
		C	19.800	0.000	0.000	0.000	249.60
T15	20.00-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	11.880	0.000	0.000	0.000	149.76
		C	11.880	0.000	0.000	0.000	149.76

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T1	300.00-280.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
T2	280.00-260.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
T3	260.00-240.00	A	0.500	0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
		B		11.920	0.000	0.000	0.000	245.27
		C		0.000	0.000	0.000	0.000	0.00
T4	240.00-220.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		29.800	0.000	0.000	0.000	613.19
		C		0.000	0.000	0.000	0.000	0.00
T5	220.00-200.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		29.800	0.000	0.000	0.000	613.19
		C		0.000	0.000	0.000	0.000	0.00
T6	200.00-180.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		29.800	0.000	0.000	0.000	613.19
		C		24.138	0.000	0.000	0.000	496.68
T7	180.00-160.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		29.800	0.000	0.000	0.000	613.19
		C		29.800	0.000	0.000	0.000	613.19
T8	160.00-140.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		29.800	0.000	0.000	0.000	613.19
		C		29.800	0.000	0.000	0.000	613.19
T9	140.00-120.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		29.800	0.000	0.000	0.000	613.19
		C		29.800	0.000	0.000	0.000	613.19
T10	120.00-100.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		29.800	0.000	0.000	0.000	613.19
		C		29.800	0.000	0.000	0.000	613.19
T11	100.00-80.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		29.800	0.000	0.000	0.000	613.19
		C		29.800	0.000	0.000	0.000	613.19
T12	80.00-60.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		29.800	0.000	0.000	0.000	613.19
		C		29.800	0.000	0.000	0.000	613.19
T13	60.00-40.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		29.800	0.000	0.000	0.000	613.19
		C		29.800	0.000	0.000	0.000	613.19
T14	40.00-20.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		29.800	0.000	0.000	0.000	613.19
		C		29.800	0.000	0.000	0.000	613.19
T15	20.00-0.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		17.880	0.000	0.000	0.000	367.91
		C		17.880	0.000	0.000	0.000	367.91

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	300.00-280.00	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	280.00-260.00	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
T3	260.00-240.00	A	0.000	0.000	0.000	0.000
		B	0.693	1.823	0.132	0.199
		C	0.000	0.000	0.000	0.000
T4	240.00-220.00	A	0.000	0.000	0.000	0.000
		B	1.733	4.557	0.330	0.497
		C	0.000	0.000	0.000	0.000
T5	220.00-200.00	A	0.000	0.000	0.000	0.000

Section	Elevation	Face	A_R	A_R Ice	A_F	A_F Ice
	ft		ft^2	ft^2	ft^2	ft^2
		B	1.733	4.557	0.330	0.497
		C	0.000	0.000	0.000	0.000
T6	200.00-180.00	A	0.000	0.000	0.000	0.000
		B	1.733	4.557	0.330	0.497
		C	1.539	4.197	0.267	0.402
T7	180.00-160.00	A	0.000	0.000	0.000	0.000
		B	1.733	4.557	0.330	0.497
		C	1.900	5.181	0.330	0.497
T8	160.00-140.00	A	0.000	0.000	0.000	0.000
		B	1.733	4.557	0.330	0.497
		C	1.900	5.181	0.330	0.497
T9	140.00-120.00	A	0.000	0.000	0.000	0.000
		B	1.486	4.309	0.495	0.745
		C	1.653	4.933	0.495	0.745
T10	120.00-100.00	A	0.000	0.000	0.000	0.000
		B	1.486	4.185	0.330	0.497
		C	1.653	4.809	0.330	0.497
T11	100.00-80.00	A	0.000	0.000	0.000	0.000
		B	1.486	4.309	0.495	0.745
		C	1.653	4.933	0.495	0.745
T12	80.00-60.00	A	0.000	0.000	0.000	0.000
		B	1.486	4.185	0.330	0.497
		C	1.653	4.809	0.330	0.497
T13	60.00-40.00	A	0.000	0.000	0.000	0.000
		B	1.486	4.309	0.495	0.745
		C	1.653	4.933	0.495	0.745
T14	40.00-20.00	A	0.000	0.000	0.000	0.000
		B	1.486	4.185	0.330	0.497
		C	1.653	4.809	0.330	0.497
T15	20.00-0.00	A	0.000	0.000	0.000	0.000
		B	0.891	2.511	0.198	0.298
		C	0.891	2.511	0.198	0.298

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
T1	300.00-280.00	0.0000	0.0000	0.0000	0.0000
T2	280.00-260.00	0.0000	0.0000	0.0000	0.0000
T3	260.00-240.00	1.5600	-0.9007	1.4939	-0.8625
T4	240.00-220.00	3.2617	-1.8831	3.1452	-1.8159
T5	220.00-200.00	3.2863	-1.8974	3.1861	-1.8395
T6	200.00-180.00	2.6759	0.9343	2.6042	0.8708
T7	180.00-160.00	2.5678	1.4546	2.5033	1.3724
T8	160.00-140.00	2.5678	1.4546	2.5033	1.3724
T9	140.00-120.00	2.5972	1.4714	2.5033	1.3724
T10	120.00-100.00	2.6573	1.5057	2.5718	1.4111
T11	100.00-80.00	2.5972	1.4714	2.5033	1.3724
T12	80.00-60.00	2.6573	1.5057	2.5718	1.4111
T13	60.00-40.00	2.5972	1.4714	2.5033	1.3724
T14	40.00-20.00	2.6573	1.5057	2.5718	1.4111
T15	20.00-0.00	1.9486	1.1250	1.8752	1.0826

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
BXA-171085-8CF	A	From Leg	1.00	0.0000	248.00	No Ice		2.94	2.16	10.50
(Verizon - proposed)			0.00			1/2" Ice		3.26	2.46	29.28
			0.00							
BXA-171085-8CF	B	From Leg	1.00	0.0000	248.00	No Ice		2.94	2.16	10.50
(Verizon - proposed)			0.00			1/2" Ice		3.26	2.46	29.28
			0.00							
BXA-171085-8CF	C	From Leg	1.00	0.0000	248.00	No Ice		2.94	2.16	10.50
(Verizon - proposed)			0.00			1/2" Ice		3.26	2.46	29.28
			0.00							
BXA-80080-4CF	A	From Leg	1.00	0.0000	240.00	No Ice		3.69	2.79	12.00
(Verizon - proposed)			0.00			1/2" Ice		4.06	3.10	36.95
			0.00							
BXA-80080-4CF	B	From Leg	1.00	0.0000	240.00	No Ice		3.69	2.79	12.00
(Verizon - proposed)			0.00			1/2" Ice		4.06	3.10	36.95
			0.00							
BXA-80080-4CF	C	From Leg	1.00	0.0000	240.00	No Ice		3.69	2.79	12.00
(Verizon - proposed)			0.00			1/2" Ice		4.06	3.10	36.95
			0.00							
BXA-70063/6CF	A	From Leg	1.00	0.0000	240.00	No Ice		7.73	4.16	17.00
(Verizon - proposed)			0.00			1/2" Ice		8.27	4.60	59.49
			0.00							
BXA-70063/6CF	B	From Leg	1.00	0.0000	240.00	No Ice		7.73	4.16	17.00
(Verizon - proposed)			0.00			1/2" Ice		8.27	4.60	59.49
			0.00							
BXA-70063/6CF	C	From Leg	1.00	0.0000	240.00	No Ice		7.73	4.16	17.00
(Verizon - proposed)			0.00			1/2" Ice		8.27	4.60	59.49
			0.00							
(2) FD9R6004/2C-3L	A	From Leg	0.50	0.0000	240.00	No Ice		0.37	0.08	3.00
Diplexer			0.00			1/2" Ice		0.45	0.14	5.30
(Verizon - proposed)			0.00							
(2) FD9R6004/2C-3L	B	From Leg	0.50	0.0000	240.00	No Ice		0.37	0.08	3.00
Diplexer			0.00			1/2" Ice		0.45	0.14	5.30
(Verizon - proposed)			0.00							
(2) FD9R6004/2C-3L	C	From Leg	0.50	0.0000	240.00	No Ice		0.37	0.08	3.00
Diplexer			0.00			1/2" Ice		0.45	0.14	5.30
(Verizon - proposed)			0.00							
Valmont Dual Standoff	A	From Leg	1.00	0.0000	240.00	No Ice		2.10	1.58	60.00
B1827			0.00			1/2" Ice		2.38	1.79	106.02
(Verizon - proposed)			0.00							
Valmont Dual Standoff	B	From Leg	1.00	0.0000	240.00	No Ice		2.10	1.58	60.00
B1827			0.00			1/2" Ice		2.38	1.79	106.02
(Verizon - proposed)			0.00							
Valmont Dual Standoff	C	From Leg	1.00	0.0000	240.00	No Ice		2.10	1.58	60.00
B1827			0.00			1/2" Ice		2.38	1.79	106.02
(Verizon - proposed)			0.00							
(2) 7770.00	A	From Leg	4.00	0.0000	196.20	No Ice		5.88	2.93	35.00
(AT&T)			0.00			1/2" Ice		6.31	3.27	67.63
			0.00							
(2) 7770.00	B	From Leg	4.00	0.0000	196.20	No Ice		5.88	2.93	35.00
(AT&T)			0.00			1/2" Ice		6.31	3.27	67.63
			0.00							
(2) 7770.00	C	From Leg	4.00	0.0000	196.20	No Ice		5.88	2.93	35.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
(AT&T)			0.00 0.00			1/2" Ice	6.31	3.27	67.63
(2) LGP21401 TMA	A	From Leg	4.00	0.0000	196.20	No Ice	0.00	0.37	17.50
(AT&T)			0.00 0.00			1/2" Ice	0.00	0.48	23.31
(2) LGP21401 TMA	A	From Leg	4.00	0.0000	196.20	No Ice	0.00	0.37	17.50
(AT&T)			0.00 0.00			1/2" Ice	0.00	0.48	23.31
(2) LGP21401 TMA	B	From Leg	4.00	0.0000	196.20	No Ice	0.00	0.37	17.50
(AT&T)			0.00 0.00			1/2" Ice	0.00	0.48	23.31
(2) LGP21401 TMA	B	From Leg	4.00	0.0000	196.20	No Ice	0.00	0.37	17.50
(AT&T)			0.00 0.00			1/2" Ice	0.00	0.48	23.31
(2) LGP21401 TMA	C	From Leg	4.00	0.0000	196.20	No Ice	0.00	0.37	17.50
(AT&T)			0.00 0.00			1/2" Ice	0.00	0.48	23.31
(2) LGP21401 TMA	C	From Leg	4.00	0.0000	196.20	No Ice	0.00	0.37	17.50
(AT&T)			0.00 0.00			1/2" Ice	0.00	0.48	23.31
13-ft T-Frame	A	From Leg	1.50	0.0000	196.20	No Ice	11.70	11.70	531.00
(AT&T)			0.00 0.00			1/2" Ice	16.40	16.40	744.00
13-ft T-Frame	B	From Leg	1.50	0.0000	196.20	No Ice	11.70	11.70	531.00
(AT&T)			0.00 0.00			1/2" Ice	16.40	16.40	744.00
13-ft T-Frame	C	From Leg	1.50	0.0000	196.20	No Ice	11.70	11.70	531.00
(AT&T)			0.00 0.00			1/2" Ice	16.40	16.40	744.00

Tower Pressures - No Ice

$G_H = 1.088$

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	290.00	1.861	34	67.292	A	0.962	14.643	9.583	61.41	0.000	0.000
300.00-280.00					B	0.962	14.643		61.41	0.000	0.000
					C	0.962	15.130		59.56	0.000	0.000
T2	270.00	1.823	34	67.292	A	0.962	14.635	9.583	61.44	0.000	0.000
280.00-260.00					B	0.962	14.635		61.44	0.000	0.000
					C	0.962	15.122		59.58	0.000	0.000
T3	250.00	1.783	33	67.292	A	0.962	14.635	9.583	61.44	0.000	0.000
260.00-240.00					B	0.830	21.862		42.23	0.000	0.000
					C	0.962	15.122		59.58	0.000	0.000
T4	230.00	1.741	32	67.292	A	0.962	14.635	9.583	61.44	0.000	0.000
240.00-220.00					B	0.632	32.702		28.75	0.000	0.000
					C	0.962	15.122		59.58	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
T5	210.00	1.697	31	67.292	A	0.962	14.635	9.583	61.44	0.000	0.000
220.00-200.00					B	0.632	32.702		28.75	0.000	0.000
					C	0.962	14.635		61.44	0.000	0.000
T6	190.00	1.649	30	67.292	A	0.962	14.635	9.583	61.44	0.000	0.000
200.00-180.00					B	0.632	32.702		28.75	0.000	0.000
					C	0.695	29.621		31.61	0.000	0.000
T7	170.00	1.597	30	67.292	A	0.962	14.635	9.583	61.44	0.000	0.000
180.00-160.00					B	0.632	32.702		28.75	0.000	0.000
					C	0.632	33.022		28.48	0.000	0.000
T8	150.00	1.541	29	67.292	A	0.962	14.635	9.583	61.44	0.000	0.000
160.00-140.00					B	0.632	32.702		28.75	0.000	0.000
					C	0.632	33.022		28.48	0.000	0.000
T9	130.00	1.48	27	67.292	A	1.443	13.914	9.583	62.41	0.000	0.000
140.00-120.00					B	0.948	32.228		28.89	0.000	0.000
					C	0.948	32.548		28.61	0.000	0.000
T10	110.00	1.411	26	67.292	A	0.962	13.914	9.583	64.42	0.000	0.000
120.00-100.00					B	0.632	32.228		29.16	0.000	0.000
					C	0.632	32.548		28.88	0.000	0.000
T11	90.00	1.332	25	67.292	A	1.443	13.914	9.583	62.41	0.000	0.000
100.00-80.00					B	0.948	32.228		28.89	0.000	0.000
					C	0.948	32.548		28.61	0.000	0.000
T12	70.00	1.24	23	67.292	A	0.962	13.914	9.583	64.42	0.000	0.000
80.00-60.00					B	0.632	32.228		29.16	0.000	0.000
					C	0.632	32.548		28.88	0.000	0.000
T13	50.00	1.126	21	67.292	A	1.443	13.914	9.583	62.41	0.000	0.000
60.00-40.00					B	0.948	32.228		28.89	0.000	0.000
					C	0.948	32.548		28.61	0.000	0.000
T14	30.00	1	18	67.292	A	0.962	13.914	9.583	64.42	0.000	0.000
40.00-20.00					B	0.632	32.228		29.16	0.000	0.000
					C	0.632	32.548		28.88	0.000	0.000
T15 20.00-0.00	10.00	1	18	67.292	A	0.962	13.914	9.583	64.42	0.000	0.000
					B	0.764	24.902		37.34	0.000	0.000
					C	0.764	24.902		37.34	0.000	0.000

Tower Pressure - With Ice

$G_H = 1.088$

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	290.00	1.861	26	0.5000	68.958	A	0.962	21.755	12.917	56.86	0.000	0.000
300.00-280.00						B	0.962	21.755		56.86	0.000	0.000
						C	0.962	22.963		53.99	0.000	0.000
T2	270.00	1.823	25	0.5000	68.958	A	0.962	21.742	12.917	56.89	0.000	0.000
280.00-260.00						B	0.962	21.742		56.89	0.000	0.000
						C	0.962	22.951		54.02	0.000	0.000
T3	250.00	1.783	25	0.5000	68.958	A	0.962	21.742	12.917	56.89	0.000	0.000
260.00-240.00						B	0.763	31.839		39.62	0.000	0.000
						C	0.962	22.951		54.02	0.000	0.000
T4	230.00	1.741	24	0.5000	68.958	A	0.962	21.742	12.917	56.89	0.000	0.000
240.00-220.00						B	0.465	46.985		27.22	0.000	0.000
						C	0.962	22.951		54.02	0.000	0.000
T5	210.00	1.697	24	0.5000	68.958	A	0.962	21.742	12.917	56.89	0.000	0.000
220.00-200.00						B	0.465	46.985		27.22	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
						C	0.962	21.742		56.89	0.000	0.000
T6	190.00	1.649	23	0.5000	68.958	A	0.962	21.742	12.917	56.89	0.000	0.000
200.00-180.00						B	0.465	46.985		27.22	0.000	0.000
						C	0.560	42.892		29.73	0.000	0.000
T7	170.00	1.597	22	0.5000	68.958	A	0.962	21.742	12.917	56.89	0.000	0.000
180.00-160.00						B	0.465	46.985		27.22	0.000	0.000
						C	0.465	47.569		26.89	0.000	0.000
T8	150.00	1.541	21	0.5000	68.958	A	0.962	21.742	12.917	56.89	0.000	0.000
160.00-140.00						B	0.465	46.985		27.22	0.000	0.000
						C	0.465	47.569		26.89	0.000	0.000
T9	130.00	1.48	21	0.5000	68.958	A	1.443	21.261	12.917	56.89	0.000	0.000
140.00-120.00						B	0.698	46.752		27.22	0.000	0.000
						C	0.698	47.337		26.89	0.000	0.000
T10	110.00	1.411	20	0.5000	68.958	A	0.962	21.021	12.917	58.76	0.000	0.000
120.00-100.00						B	0.465	46.636		27.42	0.000	0.000
						C	0.465	47.220		27.09	0.000	0.000
T11	90.00	1.332	18	0.5000	68.958	A	1.443	21.261	12.917	56.89	0.000	0.000
100.00-80.00						B	0.698	46.752		27.22	0.000	0.000
						C	0.698	47.337		26.89	0.000	0.000
T12 80.00-60.00	70.00	1.24	17	0.5000	68.958	A	0.962	21.021	12.917	58.76	0.000	0.000
						B	0.465	46.636		27.42	0.000	0.000
						C	0.465	47.220		27.09	0.000	0.000
T13 60.00-40.00	50.00	1.126	16	0.5000	68.958	A	1.443	21.261	12.917	56.89	0.000	0.000
						B	0.698	46.752		27.22	0.000	0.000
						C	0.698	47.337		26.89	0.000	0.000
T14 40.00-20.00	30.00	1	14	0.5000	68.958	A	0.962	21.021	12.917	58.76	0.000	0.000
						B	0.465	46.636		27.42	0.000	0.000
						C	0.465	47.220		27.09	0.000	0.000
T15 20.00-0.00	10.00	1	14	0.5000	68.958	A	0.962	21.021	12.917	58.76	0.000	0.000
						B	0.664	36.390		34.86	0.000	0.000
						C	0.664	36.390		34.86	0.000	0.000

Tower Pressure - Service

$G_H = 1.088$

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	290.00	1.861	12	67.292	A	0.962	14.643	9.583	61.41	0.000	0.000
300.00-280.00					B	0.962	14.643		61.41	0.000	0.000
					C	0.962	15.130		59.56	0.000	0.000
T2	270.00	1.823	12	67.292	A	0.962	14.635	9.583	61.44	0.000	0.000
280.00-260.00					B	0.962	14.635		61.44	0.000	0.000
					C	0.962	15.122		59.58	0.000	0.000
T3	250.00	1.783	11	67.292	A	0.962	14.635	9.583	61.44	0.000	0.000
260.00-240.00					B	0.830	21.862		42.23	0.000	0.000
					C	0.962	15.122		59.58	0.000	0.000
T4	230.00	1.741	11	67.292	A	0.962	14.635	9.583	61.44	0.000	0.000
240.00-220.00					B	0.632	32.702		28.75	0.000	0.000
					C	0.962	15.122		59.58	0.000	0.000
T5	210.00	1.697	11	67.292	A	0.962	14.635	9.583	61.44	0.000	0.000
220.00-200.00					B	0.632	32.702		28.75	0.000	0.000
					C	0.962	14.635		61.44	0.000	0.000

Section Elevation	z	K_Z	q_z	A_G	Face	A_F	A_R	A_{leg}	Leg %	C_AA_A In Face	C_AA_A Out Face
ft	ft		psf	ft^2		ft^2	ft^2	ft^2		ft^2	ft^2
T6	190.00	1.649	11	67.292	A	0.962	14.635	9.583	61.44	0.000	0.000
200.00-180.00					B	0.632	32.702		28.75	0.000	0.000
					C	0.695	29.621		31.61	0.000	0.000
T7	170.00	1.597	10	67.292	A	0.962	14.635	9.583	61.44	0.000	0.000
180.00-160.00					B	0.632	32.702		28.75	0.000	0.000
					C	0.632	33.022		28.48	0.000	0.000
T8	150.00	1.541	10	67.292	A	0.962	14.635	9.583	61.44	0.000	0.000
160.00-140.00					B	0.632	32.702		28.75	0.000	0.000
					C	0.632	33.022		28.48	0.000	0.000
T9	130.00	1.48	9	67.292	A	1.443	13.914	9.583	62.41	0.000	0.000
140.00-120.00					B	0.948	32.228		28.89	0.000	0.000
					C	0.948	32.548		28.61	0.000	0.000
T10	110.00	1.411	9	67.292	A	0.962	13.914	9.583	64.42	0.000	0.000
120.00-100.00					B	0.632	32.228		29.16	0.000	0.000
					C	0.632	32.548		28.88	0.000	0.000
T11	90.00	1.332	9	67.292	A	1.443	13.914	9.583	62.41	0.000	0.000
100.00-80.00					B	0.948	32.228		28.89	0.000	0.000
					C	0.948	32.548		28.61	0.000	0.000
T12	70.00	1.24	8	67.292	A	0.962	13.914	9.583	64.42	0.000	0.000
80.00-60.00					B	0.632	32.228		29.16	0.000	0.000
					C	0.632	32.548		28.88	0.000	0.000
T13	50.00	1.126	7	67.292	A	1.443	13.914	9.583	62.41	0.000	0.000
60.00-40.00					B	0.948	32.228		28.89	0.000	0.000
					C	0.948	32.548		28.61	0.000	0.000
T14	30.00	1	6	67.292	A	0.962	13.914	9.583	64.42	0.000	0.000
40.00-20.00					B	0.632	32.228		29.16	0.000	0.000
					C	0.632	32.548		28.88	0.000	0.000
T15 20.00-0.00	10.00	1	6	67.292	A	0.962	13.914	9.583	64.42	0.000	0.000
					B	0.764	24.902		37.34	0.000	0.000
					C	0.764	24.902		37.34	0.000	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	Face	e	C_F	R_R	D_F	D_R	A_E	F	w	Ctrl. Face
ft	lb	lb							ft^2	lb	plf	
T1	0.00	681.67	A	0.232	2.493	0.597	1	1	9.710	927.33	46.37	C
300.00-280.00		TA 287.56	B	0.232	2.493	0.597	1	1	9.710			
			C	0.239	2.471	0.599	1	1	10.027			
T2	0.00	681.26	A	0.232	2.493	0.597	1	1	9.705	908.27	45.41	C
280.00-260.00			B	0.232	2.493	0.597	1	1	9.705			
			C	0.239	2.471	0.599	1	1	10.022			
T3	99.84	681.26	A	0.232	2.493	0.597	1	1	9.705	1150.14	57.51	B
260.00-240.00			B	0.337	2.202	0.628	1	1	14.559			
			C	0.239	2.471	0.599	1	1	10.022			
T4	249.60	681.26	A	0.232	2.493	0.597	1	1	9.705	1560.33	78.02	B
240.00-220.00		TA 287.08	B	0.495	1.906	0.695	1	1	23.364			
			C	0.239	2.471	0.599	1	1	10.022			
T5	249.60	675.93	A	0.232	2.493	0.597	1	1	9.705	1520.30	76.01	B
220.00-200.00			B	0.495	1.906	0.695	1	1	23.364			
			C	0.232	2.493	0.597	1	1	9.705			
T6	451.78	681.26	A	0.232	2.493	0.597	1	1	9.705	1477.44	73.87	B
200.00-180.00			B	0.495	1.906	0.695	1	1	23.364			
			C	0.451	1.973	0.674	1	1	20.644			
T7	499.20	793.45	A	0.232	2.493	0.597	1	1	9.705	1444.97	72.25	C
180.00-160.00		TA 287.08	B	0.495	1.906	0.695	1	1	23.364			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
			C	0.5	1.9	0.698	1	1	23.666			
T8	499.20	793.45	A	0.232	2.493	0.597	1	1	9.705	1394.21	69.71	C
160.00-140.00			B	0.495	1.906	0.695	1	1	23.364			
			C	0.5	1.9	0.698	1	1	23.666			
T9	499.20	652.75	A	0.228	2.504	0.597	1	1	9.743	1337.49	66.87	C
140.00-120.00			B	0.493	1.909	0.694	1	1	23.313			
			C	0.498	1.903	0.696	1	1	23.613			
T10	499.20	632.81	A	0.221	2.527	0.595	1	1	9.239	1258.04	62.90	C
120.00-100.00			B	0.488	1.916	0.692	1	1	22.921			
			C	0.493	1.909	0.694	1	1	23.220			
T11	499.20	764.94	A	0.228	2.504	0.597	1	1	9.743	1204.10	60.20	C
100.00-80.00			B	0.493	1.909	0.694	1	1	23.313			
			C	0.498	1.903	0.696	1	1	23.613			
T12	499.20	745.00	A	0.221	2.527	0.595	1	1	9.239	1105.63	55.28	C
80.00-60.00			B	0.488	1.916	0.692	1	1	22.921			
			C	0.493	1.909	0.694	1	1	23.220			
T13	499.20	764.94	A	0.228	2.504	0.597	1	1	9.743	1017.95	50.90	C
60.00-40.00			B	0.493	1.909	0.694	1	1	23.313			
			C	0.498	1.903	0.696	1	1	23.613			
T14	499.20	745.00	A	0.221	2.527	0.595	1	1	9.239	891.87	44.59	C
40.00-20.00			B	0.488	1.916	0.692	1	1	22.921			
			C	0.493	1.909	0.694	1	1	23.220			
T15	299.52	739.67	A	0.221	2.527	0.595	1	1	9.239	710.69	35.53	C
20.00-0.00			B	0.381	2.102	0.644	1	1	16.806			
			C	0.381	2.102	0.644	1	1	16.806			
Sum Weight:	5343.94	11576.35								17908.76		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	0.00	681.67	A	0.232	2.493	0.597	0.8	1	9.517	909.54	45.48	C
300.00-280.00		TA 287.56	B	0.232	2.493	0.597	0.8	1	9.517			
			C	0.239	2.471	0.599	0.8	1	9.835			
T2	0.00	681.26	A	0.232	2.493	0.597	0.8	1	9.512	890.83	44.54	C
280.00-260.00			B	0.232	2.493	0.597	0.8	1	9.512			
			C	0.239	2.471	0.599	0.8	1	9.830			
T3	99.84	681.26	A	0.232	2.493	0.597	0.8	1	9.512	1137.03	56.85	B
260.00-240.00			B	0.337	2.202	0.628	0.8	1	14.393			
			C	0.239	2.471	0.599	0.8	1	9.830			
T4	249.60	681.26	A	0.232	2.493	0.597	0.8	1	9.512	1551.89	77.59	B
240.00-220.00		TA 287.08	B	0.495	1.906	0.695	0.8	1	23.238			
			C	0.239	2.471	0.599	0.8	1	9.830			
T5	249.60	675.93	A	0.232	2.493	0.597	0.8	1	9.512	1512.07	75.60	B
220.00-200.00			B	0.495	1.906	0.695	0.8	1	23.238			
			C	0.232	2.493	0.597	0.8	1	9.512			
T6	451.78	681.26	A	0.232	2.493	0.597	0.8	1	9.512	1469.45	73.47	B
200.00-180.00			B	0.495	1.906	0.695	0.8	1	23.238			
			C	0.451	1.973	0.674	0.8	1	20.505			
T7	499.20	793.45	A	0.232	2.493	0.597	0.8	1	9.512	1437.26	71.86	C
180.00-160.00		TA 287.08	B	0.495	1.906	0.695	0.8	1	23.238			
			C	0.5	1.9	0.698	0.8	1	23.540			
T8	499.20	793.45	A	0.232	2.493	0.597	0.8	1	9.512	1386.77	69.34	C
160.00-140.00			B	0.495	1.906	0.695	0.8	1	23.238			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F lb	w plf	Ctrl. Face
			C	0.5	1.9	0.698	0.8	1	23.540			
T9	499.20	652.75	A	0.228	2.504	0.597	0.8	1	9.454	1326.75	66.34	C
140.00-120.00			B	0.493	1.909	0.694	0.8	1	23.123			
			C	0.498	1.903	0.696	0.8	1	23.423			
T10	499.20	632.81	A	0.221	2.527	0.595	0.8	1	9.047	1251.19	62.56	C
120.00-100.00			B	0.488	1.916	0.692	0.8	1	22.795			
			C	0.493	1.909	0.694	0.8	1	23.093			
T11	499.20	764.94	A	0.228	2.504	0.597	0.8	1	9.454	1194.43	59.72	C
100.00-80.00			B	0.493	1.909	0.694	0.8	1	23.123			
			C	0.498	1.903	0.696	0.8	1	23.423			
T12	499.20	745.00	A	0.221	2.527	0.595	0.8	1	9.047	1099.61	54.98	C
80.00-60.00			B	0.488	1.916	0.692	0.8	1	22.795			
			C	0.493	1.909	0.694	0.8	1	23.093			
T13	499.20	764.94	A	0.228	2.504	0.597	0.8	1	9.454	1009.78	50.49	C
60.00-40.00			B	0.493	1.909	0.694	0.8	1	23.123			
			C	0.498	1.903	0.696	0.8	1	23.423			
T14	499.20	745.00	A	0.221	2.527	0.595	0.8	1	9.047	887.01	44.35	C
40.00-20.00			B	0.488	1.916	0.692	0.8	1	22.795			
			C	0.493	1.909	0.694	0.8	1	23.093			
T15	299.52	739.67	A	0.221	2.527	0.595	0.8	1	9.047	704.23	35.21	C
20.00-0.00			B	0.381	2.102	0.644	0.8	1	16.653			
			C	0.381	2.102	0.644	0.8	1	16.653			
Sum Weight:	5343.94	11576.35								17767.87		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F lb	w plf	Ctrl. Face
T1	0.00	681.67	A	0.232	2.493	0.597	0.85	1	9.565	913.99	45.70	C
300.00-280.00		TA 287.56	B	0.232	2.493	0.597	0.85	1	9.565			
			C	0.239	2.471	0.599	0.85	1	9.883			
T2	0.00	681.26	A	0.232	2.493	0.597	0.85	1	9.560	895.19	44.76	C
280.00-260.00			B	0.232	2.493	0.597	0.85	1	9.560			
			C	0.239	2.471	0.599	0.85	1	9.878			
T3	99.84	681.26	A	0.232	2.493	0.597	0.85	1	9.560	1140.31	57.02	B
260.00-240.00			B	0.337	2.202	0.628	0.85	1	14.434			
			C	0.239	2.471	0.599	0.85	1	9.878			
T4	249.60	681.26	A	0.232	2.493	0.597	0.85	1	9.560	1554.00	77.70	B
240.00-220.00		TA 287.08	B	0.495	1.906	0.695	0.85	1	23.269			
			C	0.239	2.471	0.599	0.85	1	9.878			
T5	249.60	675.93	A	0.232	2.493	0.597	0.85	1	9.560	1514.13	75.71	B
220.00-200.00			B	0.495	1.906	0.695	0.85	1	23.269			
			C	0.232	2.493	0.597	0.85	1	9.560			
T6	451.78	681.26	A	0.232	2.493	0.597	0.85	1	9.560	1471.44	73.57	B
200.00-180.00			B	0.495	1.906	0.695	0.85	1	23.269			
			C	0.451	1.973	0.674	0.85	1	20.540			
T7	499.20	793.45	A	0.232	2.493	0.597	0.85	1	9.560	1439.19	71.96	C
180.00-160.00		TA 287.08	B	0.495	1.906	0.695	0.85	1	23.269			
			C	0.5	1.9	0.698	0.85	1	23.572			
T8	499.20	793.45	A	0.232	2.493	0.597	0.85	1	9.560	1388.63	69.43	C
160.00-140.00			B	0.495	1.906	0.695	0.85	1	23.269			
			C	0.5	1.9	0.698	0.85	1	23.572			
T9	499.20	652.75	A	0.228	2.504	0.597	0.85	1	9.527	1329.44	66.47	C
140.00-120.00			B	0.493	1.909	0.694	0.85	1	23.170			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
			C	0.498	1.903	0.696	0.85	1	23.471			
T10	499.20	632.81	A	0.221	2.527	0.595	0.85	1	9.095	1252.91	62.65	C
120.00-100.00			B	0.488	1.916	0.692	0.85	1	22.826			
			C	0.493	1.909	0.694	0.85	1	23.125			
T11	499.20	764.94	A	0.228	2.504	0.597	0.85	1	9.527	1196.85	59.84	C
100.00-80.00			B	0.493	1.909	0.694	0.85	1	23.170			
			C	0.498	1.903	0.696	0.85	1	23.471			
T12	499.20	745.00	A	0.221	2.527	0.595	0.85	1	9.095	1101.12	55.06	C
80.00-60.00			B	0.488	1.916	0.692	0.85	1	22.826			
			C	0.493	1.909	0.694	0.85	1	23.125			
T13	499.20	764.94	A	0.228	2.504	0.597	0.85	1	9.527	1011.82	50.59	C
60.00-40.00			B	0.493	1.909	0.694	0.85	1	23.170			
			C	0.498	1.903	0.696	0.85	1	23.471			
T14	499.20	745.00	A	0.221	2.527	0.595	0.85	1	9.095	888.23	44.41	C
40.00-20.00			B	0.488	1.916	0.692	0.85	1	22.826			
			C	0.493	1.909	0.694	0.85	1	23.125			
T15	299.52	739.67	A	0.221	2.527	0.595	0.85	1	9.095	705.85	35.29	C
20.00-0.00			B	0.381	2.102	0.644	0.85	1	16.691			
			C	0.381	2.102	0.644	0.85	1	16.691			
Sum Weight:	5343.94	11576.35								17803.09		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	0.00	995.83	A	0.329	2.221	0.625	1	1	14.566	945.68	47.28	C
300.00-280.00		TA 396.30	B	0.329	2.221	0.625	1	1	14.566			
			C	0.347	2.179	0.631	1	1	15.460			
T2	0.00	995.18	A	0.329	2.221	0.625	1	1	14.557	926.19	46.31	C
280.00-260.00			B	0.329	2.221	0.625	1	1	14.557			
			C	0.347	2.179	0.631	1	1	15.451			
T3	245.27	995.18	A	0.329	2.221	0.625	1	1	14.557	1175.53	58.78	B
260.00-240.00			B	0.473	1.938	0.684	1	1	22.541			
			C	0.347	2.179	0.631	1	1	15.451			
T4	613.19	995.18	A	0.329	2.221	0.625	1	1	14.557	1800.79	90.04	B
240.00-220.00		TA 395.64	B	0.688	1.776	0.811	1	1	38.592			
			C	0.347	2.179	0.631	1	1	15.451			
T5	613.19	983.12	A	0.329	2.221	0.625	1	1	14.557	1754.59	87.73	B
220.00-200.00			B	0.688	1.776	0.811	1	1	38.592			
			C	0.329	2.221	0.625	1	1	14.557			
T6	1109.87	995.18	A	0.329	2.221	0.625	1	1	14.557	1705.12	85.26	B
200.00-180.00			B	0.688	1.776	0.811	1	1	38.592			
			C	0.63	1.788	0.772	1	1	33.693			
T7	1226.37	1107.36	A	0.329	2.221	0.625	1	1	14.557	1684.34	84.22	C
180.00-160.00		TA 395.64	B	0.688	1.776	0.811	1	1	38.592			
			C	0.697	1.776	0.817	1	1	39.351			
T8	1226.37	1107.36	A	0.329	2.221	0.625	1	1	14.557	1625.17	81.26	C
160.00-140.00			B	0.688	1.776	0.811	1	1	38.592			
			C	0.697	1.776	0.817	1	1	39.351			
T9	1226.37	960.78	A	0.329	2.221	0.625	1	1	14.737	1561.75	78.09	C
140.00-120.00			B	0.688	1.776	0.811	1	1	38.636			
			C	0.697	1.776	0.817	1	1	39.394			
T10	1226.37	929.55	A	0.319	2.247	0.622	1	1	14.033	1470.10	73.51	C
120.00-100.00			B	0.683	1.776	0.808	1	1	38.144			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
			C	0.692	1.776	0.814	1	1	38.897			
T11	1226.37	1072.97	A	0.329	2.221	0.625	1	1	14.737	1405.99	70.30	C
100.00-80.00			B	0.688	1.776	0.811	1	1	38.636			
			C	0.697	1.776	0.817	1	1	39.394			
T12	1226.37	1041.74	A	0.319	2.247	0.622	1	1	14.033	1292.00	64.60	C
80.00-60.00			B	0.683	1.776	0.808	1	1	38.144			
			C	0.692	1.776	0.814	1	1	38.897			
T13	1226.37	1072.97	A	0.329	2.221	0.625	1	1	14.737	1188.63	59.43	C
60.00-40.00			B	0.688	1.776	0.811	1	1	38.636			
			C	0.697	1.776	0.817	1	1	39.394			
T14	1226.37	1041.74	A	0.319	2.247	0.622	1	1	14.033	1042.21	52.11	C
40.00-20.00			B	0.683	1.776	0.808	1	1	38.144			
			C	0.692	1.776	0.814	1	1	38.897			
T15	735.82	1029.68	A	0.319	2.247	0.622	1	1	14.033	749.63	37.48	C
20.00-0.00			B	0.537	1.856	0.717	1	1	26.765			
			C	0.537	1.856	0.717	1	1	26.765			
Sum Weight:	13128.33	16511.38								20327.72		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	0.00	995.83	A	0.329	2.221	0.625	0.8	1	14.374	933.91	46.70	C
300.00-280.00		TA 396.30	B	0.329	2.221	0.625	0.8	1	14.374			
			C	0.347	2.179	0.631	0.8	1	15.268			
T2	0.00	995.18	A	0.329	2.221	0.625	0.8	1	14.365	914.66	45.73	C
280.00-260.00			B	0.329	2.221	0.625	0.8	1	14.365			
			C	0.347	2.179	0.631	0.8	1	15.259			
T3	245.27	995.18	A	0.329	2.221	0.625	0.8	1	14.365	1167.57	58.38	B
260.00-240.00			B	0.473	1.938	0.684	0.8	1	22.388			
			C	0.347	2.179	0.631	0.8	1	15.259			
T4	613.19	995.18	A	0.329	2.221	0.625	0.8	1	14.365	1796.45	89.82	B
240.00-220.00		TA 395.64	B	0.688	1.776	0.811	0.8	1	38.499			
			C	0.347	2.179	0.631	0.8	1	15.259			
T5	613.19	983.12	A	0.329	2.221	0.625	0.8	1	14.365	1750.36	87.52	B
220.00-200.00			B	0.688	1.776	0.811	0.8	1	38.499			
			C	0.329	2.221	0.625	0.8	1	14.365			
T6	1109.87	995.18	A	0.329	2.221	0.625	0.8	1	14.365	1701.01	85.05	B
200.00-180.00			B	0.688	1.776	0.811	0.8	1	38.499			
			C	0.63	1.788	0.772	0.8	1	33.581			
T7	1226.37	1107.36	A	0.329	2.221	0.625	0.8	1	14.365	1680.36	84.02	C
180.00-160.00		TA 395.64	B	0.688	1.776	0.811	0.8	1	38.499			
			C	0.697	1.776	0.817	0.8	1	39.258			
T8	1226.37	1107.36	A	0.329	2.221	0.625	0.8	1	14.365	1621.33	81.07	C
160.00-140.00			B	0.688	1.776	0.811	0.8	1	38.499			
			C	0.697	1.776	0.817	0.8	1	39.258			
T9	1226.37	960.78	A	0.329	2.221	0.625	0.8	1	14.449	1556.22	77.81	C
140.00-120.00			B	0.688	1.776	0.811	0.8	1	38.496			
			C	0.697	1.776	0.817	0.8	1	39.254			
T10	1226.37	929.55	A	0.319	2.247	0.622	0.8	1	13.841	1466.59	73.33	C
120.00-100.00			B	0.683	1.776	0.808	0.8	1	38.051			
			C	0.692	1.776	0.814	0.8	1	38.804			
T11	1226.37	1072.97	A	0.329	2.221	0.625	0.8	1	14.449	1401.01	70.05	C
100.00-80.00			B	0.688	1.776	0.811	0.8	1	38.496			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F lb	w plf	Ctrl. Face
			C	0.697	1.776	0.817	0.8	1	39.254			
T12	1226.37	1041.74	A	0.319	2.247	0.622	0.8	1	13.841	1288.91	64.45	C
80.00-60.00			B	0.683	1.776	0.808	0.8	1	38.051			
			C	0.692	1.776	0.814	0.8	1	38.804			
T13	1226.37	1072.97	A	0.329	2.221	0.625	0.8	1	14.449	1184.42	59.22	C
60.00-40.00			B	0.688	1.776	0.811	0.8	1	38.496			
			C	0.697	1.776	0.817	0.8	1	39.254			
T14	1226.37	1041.74	A	0.319	2.247	0.622	0.8	1	13.841	1039.71	51.99	C
40.00-20.00			B	0.683	1.776	0.808	0.8	1	38.051			
			C	0.692	1.776	0.814	0.8	1	38.804			
T15	735.82	1029.68	A	0.319	2.247	0.622	0.8	1	13.841	745.91	37.30	C
20.00-0.00			B	0.537	1.856	0.717	0.8	1	26.632			
			C	0.537	1.856	0.717	0.8	1	26.632			
Sum Weight:	13128.33	16511.38								20248.42		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F lb	w plf	Ctrl. Face
T1	0.00	995.83	A	0.329	2.221	0.625	0.85	1	14.422	936.86	46.84	C
300.00-280.00		TA 396.30	B	0.329	2.221	0.625	0.85	1	14.422			
			C	0.347	2.179	0.631	0.85	1	15.316			
T2	0.00	995.18	A	0.329	2.221	0.625	0.85	1	14.413	917.54	45.88	C
280.00-260.00			B	0.329	2.221	0.625	0.85	1	14.413			
			C	0.347	2.179	0.631	0.85	1	15.307			
T3	245.27	995.18	A	0.329	2.221	0.625	0.85	1	14.413	1169.56	58.48	B
260.00-240.00			B	0.473	1.938	0.684	0.85	1	22.427			
			C	0.347	2.179	0.631	0.85	1	15.307			
T4	613.19	995.18	A	0.329	2.221	0.625	0.85	1	14.413	1797.53	89.88	B
240.00-220.00		TA 395.64	B	0.688	1.776	0.811	0.85	1	38.522			
			C	0.347	2.179	0.631	0.85	1	15.307			
T5	613.19	983.12	A	0.329	2.221	0.625	0.85	1	14.413	1751.41	87.57	B
220.00-200.00			B	0.688	1.776	0.811	0.85	1	38.522			
			C	0.329	2.221	0.625	0.85	1	14.413			
T6	1109.87	995.18	A	0.329	2.221	0.625	0.85	1	14.413	1702.04	85.10	B
200.00-180.00			B	0.688	1.776	0.811	0.85	1	38.522			
			C	0.63	1.788	0.772	0.85	1	33.609			
T7	1226.37	1107.36	A	0.329	2.221	0.625	0.85	1	14.413	1681.35	84.07	C
180.00-160.00		TA 395.64	B	0.688	1.776	0.811	0.85	1	38.522			
			C	0.697	1.776	0.817	0.85	1	39.281			
T8	1226.37	1107.36	A	0.329	2.221	0.625	0.85	1	14.413	1622.29	81.11	C
160.00-140.00			B	0.688	1.776	0.811	0.85	1	38.522			
			C	0.697	1.776	0.817	0.85	1	39.281			
T9	1226.37	960.78	A	0.329	2.221	0.625	0.85	1	14.521	1557.60	77.88	C
140.00-120.00			B	0.688	1.776	0.811	0.85	1	38.531			
			C	0.697	1.776	0.817	0.85	1	39.289			
T10	1226.37	929.55	A	0.319	2.247	0.622	0.85	1	13.889	1467.46	73.37	C
120.00-100.00			B	0.683	1.776	0.808	0.85	1	38.074			
			C	0.692	1.776	0.814	0.85	1	38.827			
T11	1226.37	1072.97	A	0.329	2.221	0.625	0.85	1	14.521	1402.26	70.11	C
100.00-80.00			B	0.688	1.776	0.811	0.85	1	38.531			
			C	0.697	1.776	0.817	0.85	1	39.289			
T12	1226.37	1041.74	A	0.319	2.247	0.622	0.85	1	13.889	1289.68	64.48	C
80.00-60.00			B	0.683	1.776	0.808	0.85	1	38.074			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
			C	0.692	1.776	0.814	0.85	1	38.827			
T13	1226.37	1072.97	A	0.329	2.221	0.625	0.85	1	14.521	1185.47	59.27	C
60.00-40.00			B	0.688	1.776	0.811	0.85	1	38.531			
			C	0.697	1.776	0.817	0.85	1	39.289			
T14	1226.37	1041.74	A	0.319	2.247	0.622	0.85	1	13.889	1040.34	52.02	C
40.00-20.00			B	0.683	1.776	0.808	0.85	1	38.074			
			C	0.692	1.776	0.814	0.85	1	38.827			
T15	735.82	1029.68	A	0.319	2.247	0.622	0.85	1	13.889	746.84	37.34	C
20.00-0.00			B	0.537	1.856	0.717	0.85	1	26.665			
			C	0.537	1.856	0.717	0.85	1	26.665			
Sum Weight:	13128.33	16511.38								20268.24		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	0.00	681.67	A	0.232	2.493	0.597	1	1	9.710	320.88	16.04	C
300.00-280.00		TA 287.56	B	0.232	2.493	0.597	1	1	9.710			
			C	0.239	2.471	0.599	1	1	10.027			
T2	0.00	681.26	A	0.232	2.493	0.597	1	1	9.705	314.28	15.71	C
280.00-260.00			B	0.232	2.493	0.597	1	1	9.705			
			C	0.239	2.471	0.599	1	1	10.022			
T3	99.84	681.26	A	0.232	2.493	0.597	1	1	9.705	397.97	19.90	B
260.00-240.00			B	0.337	2.202	0.628	1	1	14.559			
			C	0.239	2.471	0.599	1	1	10.022			
T4	249.60	681.26	A	0.232	2.493	0.597	1	1	9.705	539.91	27.00	B
240.00-220.00		TA 287.08	B	0.495	1.906	0.695	1	1	23.364			
			C	0.239	2.471	0.599	1	1	10.022			
T5	249.60	675.93	A	0.232	2.493	0.597	1	1	9.705	526.05	26.30	B
220.00-200.00			B	0.495	1.906	0.695	1	1	23.364			
			C	0.232	2.493	0.597	1	1	9.705			
T6	451.78	681.26	A	0.232	2.493	0.597	1	1	9.705	511.22	25.56	B
200.00-180.00			B	0.495	1.906	0.695	1	1	23.364			
			C	0.451	1.973	0.674	1	1	20.644			
T7	499.20	793.45	A	0.232	2.493	0.597	1	1	9.705	499.99	25.00	C
180.00-160.00		TA 287.08	B	0.495	1.906	0.695	1	1	23.364			
			C	0.5	1.9	0.698	1	1	23.666			
T8	499.20	793.45	A	0.232	2.493	0.597	1	1	9.705	482.43	24.12	C
160.00-140.00			B	0.495	1.906	0.695	1	1	23.364			
			C	0.5	1.9	0.698	1	1	23.666			
T9	499.20	652.75	A	0.228	2.504	0.597	1	1	9.743	462.80	23.14	C
140.00-120.00			B	0.493	1.909	0.694	1	1	23.313			
			C	0.498	1.903	0.696	1	1	23.613			
T10	499.20	632.81	A	0.221	2.527	0.595	1	1	9.239	435.31	21.77	C
120.00-100.00			B	0.488	1.916	0.692	1	1	22.921			
			C	0.493	1.909	0.694	1	1	23.220			
T11	499.20	764.94	A	0.228	2.504	0.597	1	1	9.743	416.64	20.83	C
100.00-80.00			B	0.493	1.909	0.694	1	1	23.313			
			C	0.498	1.903	0.696	1	1	23.613			
T12	499.20	745.00	A	0.221	2.527	0.595	1	1	9.239	382.57	19.13	C
80.00-60.00			B	0.488	1.916	0.692	1	1	22.921			
			C	0.493	1.909	0.694	1	1	23.220			
T13	499.20	764.94	A	0.228	2.504	0.597	1	1	9.743	352.23	17.61	C
60.00-40.00			B	0.493	1.909	0.694	1	1	23.313			

Section Elevation	Add Weight	Self Weight	Face	e	C_F	R_R	D_F	D_R	A_E	F	w	Ctrl. Face
ft	lb	lb							ft^2	lb	plf	
			C	0.498	1.903	0.696	1	1	23.613			
T14	499.20	745.00	A	0.221	2.527	0.595	1	1	9.239	308.60	15.43	C
40.00-20.00			B	0.488	1.916	0.692	1	1	22.921			
			C	0.493	1.909	0.694	1	1	23.220			
T15	299.52	739.67	A	0.221	2.527	0.595	1	1	9.239	245.91	12.30	C
20.00-0.00			B	0.381	2.102	0.644	1	1	16.806			
			C	0.381	2.102	0.644	1	1	16.806			
Sum Weight:	5343.94	11576.35								6196.80		

Tower Forces - Service - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	Face	e	C_F	R_R	D_F	D_R	A_E	F	w	Ctrl. Face
ft	lb	lb							ft^2	lb	plf	
T1	0.00	681.67	A	0.232	2.493	0.597	0.8	1	9.517	314.72	15.74	C
300.00-280.00		TA 287.56	B	0.232	2.493	0.597	0.8	1	9.517			
			C	0.239	2.471	0.599	0.8	1	9.835			
T2	0.00	681.26	A	0.232	2.493	0.597	0.8	1	9.512	308.25	15.41	C
280.00-260.00			B	0.232	2.493	0.597	0.8	1	9.512			
			C	0.239	2.471	0.599	0.8	1	9.830			
T3	99.84	681.26	A	0.232	2.493	0.597	0.8	1	9.512	393.44	19.67	B
260.00-240.00			B	0.337	2.202	0.628	0.8	1	14.393			
			C	0.239	2.471	0.599	0.8	1	9.830			
T4	249.60	681.26	A	0.232	2.493	0.597	0.8	1	9.512	536.99	26.85	B
240.00-220.00		TA 287.08	B	0.495	1.906	0.695	0.8	1	23.238			
			C	0.239	2.471	0.599	0.8	1	9.830			
T5	249.60	675.93	A	0.232	2.493	0.597	0.8	1	9.512	523.21	26.16	B
220.00-200.00			B	0.495	1.906	0.695	0.8	1	23.238			
			C	0.232	2.493	0.597	0.8	1	9.512			
T6	451.78	681.26	A	0.232	2.493	0.597	0.8	1	9.512	508.46	25.42	B
200.00-180.00			B	0.495	1.906	0.695	0.8	1	23.238			
			C	0.451	1.973	0.674	0.8	1	20.505			
T7	499.20	793.45	A	0.232	2.493	0.597	0.8	1	9.512	497.32	24.87	C
180.00-160.00		TA 287.08	B	0.495	1.906	0.695	0.8	1	23.238			
			C	0.5	1.9	0.698	0.8	1	23.540			
T8	499.20	793.45	A	0.232	2.493	0.597	0.8	1	9.512	479.85	23.99	C
160.00-140.00			B	0.495	1.906	0.695	0.8	1	23.238			
			C	0.5	1.9	0.698	0.8	1	23.540			
T9	499.20	652.75	A	0.228	2.504	0.597	0.8	1	9.454	459.08	22.95	C
140.00-120.00			B	0.493	1.909	0.694	0.8	1	23.123			
			C	0.498	1.903	0.696	0.8	1	23.423			
T10	499.20	632.81	A	0.221	2.527	0.595	0.8	1	9.047	432.94	21.65	C
120.00-100.00			B	0.488	1.916	0.692	0.8	1	22.795			
			C	0.493	1.909	0.694	0.8	1	23.093			
T11	499.20	764.94	A	0.228	2.504	0.597	0.8	1	9.454	413.30	20.66	C
100.00-80.00			B	0.493	1.909	0.694	0.8	1	23.123			
			C	0.498	1.903	0.696	0.8	1	23.423			
T12	499.20	745.00	A	0.221	2.527	0.595	0.8	1	9.047	380.49	19.02	C
80.00-60.00			B	0.488	1.916	0.692	0.8	1	22.795			
			C	0.493	1.909	0.694	0.8	1	23.093			
T13	499.20	764.94	A	0.228	2.504	0.597	0.8	1	9.454	349.40	17.47	C
60.00-40.00			B	0.493	1.909	0.694	0.8	1	23.123			
			C	0.498	1.903	0.696	0.8	1	23.423			
T14	499.20	745.00	A	0.221	2.527	0.595	0.8	1	9.047	306.93	15.35	C
40.00-20.00			B	0.488	1.916	0.692	0.8	1	22.795			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
			C	0.493	1.909	0.694	0.8	1	23.093			
T15	299.52	739.67	A	0.221	2.527	0.595	0.8	1	9.047	243.68	12.18	C
20.00-0.00			B	0.381	2.102	0.644	0.8	1	16.653			
			C	0.381	2.102	0.644	0.8	1	16.653			
Sum Weight:	5343.94	11576.35								6148.05		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F lb	w plf	Ctrl. Face
T1	0.00	681.67	A	0.232	2.493	0.597	0.85	1	9.565	316.26	15.81	C
300.00-280.00		TA 287.56	B	0.232	2.493	0.597	0.85	1	9.565			
			C	0.239	2.471	0.599	0.85	1	9.883			
T2	0.00	681.26	A	0.232	2.493	0.597	0.85	1	9.560	309.75	15.49	C
280.00-260.00			B	0.232	2.493	0.597	0.85	1	9.560			
			C	0.239	2.471	0.599	0.85	1	9.878			
T3	99.84	681.26	A	0.232	2.493	0.597	0.85	1	9.560	394.57	19.73	B
260.00-240.00			B	0.337	2.202	0.628	0.85	1	14.434			
			C	0.239	2.471	0.599	0.85	1	9.878			
T4	249.60	681.26	A	0.232	2.493	0.597	0.85	1	9.560	537.72	26.89	B
240.00-220.00		TA 287.08	B	0.495	1.906	0.695	0.85	1	23.269			
			C	0.239	2.471	0.599	0.85	1	9.878			
T5	249.60	675.93	A	0.232	2.493	0.597	0.85	1	9.560	523.92	26.20	B
220.00-200.00			B	0.495	1.906	0.695	0.85	1	23.269			
			C	0.232	2.493	0.597	0.85	1	9.560			
T6	451.78	681.26	A	0.232	2.493	0.597	0.85	1	9.560	509.15	25.46	B
200.00-180.00			B	0.495	1.906	0.695	0.85	1	23.269			
			C	0.451	1.973	0.674	0.85	1	20.540			
T7	499.20	793.45	A	0.232	2.493	0.597	0.85	1	9.560	497.99	24.90	C
180.00-160.00		TA 287.08	B	0.495	1.906	0.695	0.85	1	23.269			
			C	0.5	1.9	0.698	0.85	1	23.572			
T8	499.20	793.45	A	0.232	2.493	0.597	0.85	1	9.560	480.49	24.02	C
160.00-140.00			B	0.495	1.906	0.695	0.85	1	23.269			
			C	0.5	1.9	0.698	0.85	1	23.572			
T9	499.20	652.75	A	0.228	2.504	0.597	0.85	1	9.527	460.01	23.00	C
140.00-120.00			B	0.493	1.909	0.694	0.85	1	23.170			
			C	0.498	1.903	0.696	0.85	1	23.471			
T10	499.20	632.81	A	0.221	2.527	0.595	0.85	1	9.095	433.53	21.68	C
120.00-100.00			B	0.488	1.916	0.692	0.85	1	22.826			
			C	0.493	1.909	0.694	0.85	1	23.125			
T11	499.20	764.94	A	0.228	2.504	0.597	0.85	1	9.527	414.13	20.71	C
100.00-80.00			B	0.493	1.909	0.694	0.85	1	23.170			
			C	0.498	1.903	0.696	0.85	1	23.471			
T12	499.20	745.00	A	0.221	2.527	0.595	0.85	1	9.095	381.01	19.05	C
80.00-60.00			B	0.488	1.916	0.692	0.85	1	22.826			
			C	0.493	1.909	0.694	0.85	1	23.125			
T13	499.20	764.94	A	0.228	2.504	0.597	0.85	1	9.527	350.11	17.51	C
60.00-40.00			B	0.493	1.909	0.694	0.85	1	23.170			
			C	0.498	1.903	0.696	0.85	1	23.471			
T14	499.20	745.00	A	0.221	2.527	0.595	0.85	1	9.095	307.35	15.37	C
40.00-20.00			B	0.488	1.916	0.692	0.85	1	22.826			
			C	0.493	1.909	0.694	0.85	1	23.125			
T15	299.52	739.67	A	0.221	2.527	0.595	0.85	1	9.095	244.24	12.21	C
20.00-0.00			B	0.381	2.102	0.644	0.85	1	16.691			

Section Elevation ft	Add Weight lb	Self Weight lb	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F lb	w plf	Ctrl. Face
Sum Weight:	5343.94	11576.35	C	0.381	2.102	0.644	0.85	1	16.691	6160.24		

Force Totals (Does not include forces on guys)

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Torques kip-ft
Leg Weight	6003.99			
Bracing Weight	5572.36			
Total Member Self-Weight	11576.35			
Guy Weight	4581.35			
Total Weight	23831.14			
Wind 0 deg - No Ice		0.00	-22910.47	3.53
Wind 30 deg - No Ice		11402.40	-19749.54	3.44
Wind 60 deg - No Ice		19719.03	-11384.79	2.44
Wind 90 deg - No Ice		22804.80	0.00	0.80
Wind 120 deg - No Ice		19841.05	11455.24	-1.07
Wind 150 deg - No Ice		11402.40	19749.54	-2.65
Wind 180 deg - No Ice		0.00	22769.58	-3.51
Wind 210 deg - No Ice		-11402.40	19749.54	-3.44
Wind 240 deg - No Ice		-19841.05	11455.24	-2.46
Wind 270 deg - No Ice		-22804.80	0.00	-0.80
Wind 300 deg - No Ice		-19719.03	-11384.79	1.07
Wind 330 deg - No Ice		-11402.40	-19749.54	2.65
Member Ice	4935.02			
Guy Ice	5413.13			
Total Weight Ice	43278.75			
Wind 0 deg - Ice		0.00	-24805.15	3.94
Wind 30 deg - Ice		12372.84	-21430.38	3.84
Wind 60 deg - Ice		21413.21	-12362.93	2.71
Wind 90 deg - Ice		24745.68	0.00	0.86
Wind 120 deg - Ice		21481.89	12402.58	-1.22
Wind 150 deg - Ice		12372.84	21430.38	-2.98
Wind 180 deg - Ice		0.00	24725.85	-3.93
Wind 210 deg - Ice		-12372.84	21430.38	-3.84
Wind 240 deg - Ice		-21481.89	12402.58	-2.72
Wind 270 deg - Ice		-24745.68	0.00	-0.86
Wind 300 deg - Ice		-21413.21	-12362.93	1.22
Wind 330 deg - Ice		-12372.84	-21430.38	2.98
Total Weight	23831.14			
Wind 0 deg - Service		0.00	-7927.50	1.22
Wind 30 deg - Service		3945.47	-6833.75	1.19
Wind 60 deg - Service		6823.20	-3939.37	0.85
Wind 90 deg - Service		7890.94	0.00	0.28
Wind 120 deg - Service		6865.42	3963.75	-0.37
Wind 150 deg - Service		3945.47	6833.75	-0.92
Wind 180 deg - Service		0.00	7878.75	-1.21
Wind 210 deg - Service		-3945.47	6833.75	-1.19
Wind 240 deg - Service		-6865.42	3963.75	-0.85
Wind 270 deg - Service		-7890.94	0.00	-0.28
Wind 300 deg - Service		-6823.20	-3939.37	0.37
Wind 330 deg - Service		-3945.47	-6833.75	0.92

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice+Guy
3	Dead+Wind 30 deg - No Ice+Guy
4	Dead+Wind 60 deg - No Ice+Guy
5	Dead+Wind 90 deg - No Ice+Guy
6	Dead+Wind 120 deg - No Ice+Guy
7	Dead+Wind 150 deg - No Ice+Guy
8	Dead+Wind 180 deg - No Ice+Guy
9	Dead+Wind 210 deg - No Ice+Guy
10	Dead+Wind 240 deg - No Ice+Guy
11	Dead+Wind 270 deg - No Ice+Guy
12	Dead+Wind 300 deg - No Ice+Guy
13	Dead+Wind 330 deg - No Ice+Guy
14	Dead+Ice+Temp+Guy
15	Dead+Wind 0 deg+Ice+Temp+Guy
16	Dead+Wind 30 deg+Ice+Temp+Guy
17	Dead+Wind 60 deg+Ice+Temp+Guy
18	Dead+Wind 90 deg+Ice+Temp+Guy
19	Dead+Wind 120 deg+Ice+Temp+Guy
20	Dead+Wind 150 deg+Ice+Temp+Guy
21	Dead+Wind 180 deg+Ice+Temp+Guy
22	Dead+Wind 210 deg+Ice+Temp+Guy
23	Dead+Wind 240 deg+Ice+Temp+Guy
24	Dead+Wind 270 deg+Ice+Temp+Guy
25	Dead+Wind 300 deg+Ice+Temp+Guy
26	Dead+Wind 330 deg+Ice+Temp+Guy
27	Dead+Wind 0 deg - Service+Guy
28	Dead+Wind 30 deg - Service+Guy
29	Dead+Wind 60 deg - Service+Guy
30	Dead+Wind 90 deg - Service+Guy
31	Dead+Wind 120 deg - Service+Guy
32	Dead+Wind 150 deg - Service+Guy
33	Dead+Wind 180 deg - Service+Guy
34	Dead+Wind 210 deg - Service+Guy
35	Dead+Wind 240 deg - Service+Guy
36	Dead+Wind 270 deg - Service+Guy
37	Dead+Wind 300 deg - Service+Guy
38	Dead+Wind 330 deg - Service+Guy

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	300 - 280	Leg	Max Tension	4	1012.50	-0.01	-0.01
			Max. Compression	21	-14696.18	-0.16	0.03
			Max. Mx	20	-13848.57	-0.20	-0.03
			Max. My	16	-13227.75	0.07	0.17
			Max. Vy	5	-548.30	-0.04	-0.06
			Max. Vx	2	538.23	-0.03	0.08
		Diagonal	Max Tension	13	1251.70	0.00	0.00
			Max. Compression	20	-1535.66	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	19	668.74	0.01	0.00
			Max. My	22	264.79	0.00	0.00
			Max. Vy	19	-5.65	0.00	0.00
			Max. Vx	22	-0.06	0.00	0.00
		Horizontal	Max Tension	21	1008.14	0.00	0.00
			Max. Compression	22	-1983.67	0.00	0.00
			Max. Mx	14	412.60	0.00	0.00
			Max. My	22	238.20	0.00	0.00
			Max. Vy	14	-4.36	0.00	0.00
			Max. Vx	22	-0.00	0.00	0.00
		Secondary Horizontal	Max Tension	23	0.01	-0.00	-0.00
			Max. Compression	19	-0.01	-0.00	-0.00
			Max. Mx	15	-0.00	-0.00	0.00
			Max. My	15	-0.00	-0.00	0.00
			Max. Vy	15	1.26	-0.00	0.00
			Max. Vx	15	-0.00	-0.00	0.00
		Top Girt	Max Tension	21	28.58	0.00	0.00
			Max. Compression	19	-27.53	0.00	0.00
			Max. Mx	14	0.47	0.01	0.00
			Max. My	22	-23.28	0.00	0.00
			Max. Vy	14	-7.31	0.00	0.00
			Max. Vx	22	-0.00	0.00	0.00
		Bottom Girt	Max Tension	21	392.69	0.00	0.00
			Max. Compression	2	-285.85	0.00	0.00
			Max. Mx	14	51.35	0.01	0.00
			Max. My	16	264.88	0.00	0.00
			Max. Vy	14	-7.31	0.00	0.00
			Max. Vx	16	-0.00	0.00	0.00
		Guy A	Bottom Tension	21	8790.63		
			Top Tension	21	9118.04		
			Top Cable Vert	21	7016.63		
			Top Cable Norm	21	5822.85		
			Top Cable Tan	21	2.83		
			Bot Cable Vert	21	-6067.26		
			Bot Cable Norm	21	6361.09		
			Bot Cable Tan	21	6.39		
		Guy B	Bottom Tension	25	8692.86		
			Top Tension	25	9008.01		
			Top Cable Vert	25	6847.04		
			Top Cable Norm	25	5853.40		
			Top Cable Tan	25	3.04		
			Bot Cable Vert	25	-5921.66		
			Bot Cable Norm	25	6363.94		
			Bot Cable Tan	25	6.03		
		Guy C	Bottom Tension	17	8401.33		
			Top Tension	17	8721.20		
			Top Cable Vert	17	6498.76		
			Top Cable Norm	17	5815.96		
			Top Cable Tan	17	3.85		
			Bot Cable Vert	17	-5550.42		
			Bot Cable Norm	17	6306.75		
			Bot Cable Tan	17	4.74		
		Torque Arm Top	Max Tension	25	7082.42	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	25	6632.71	-0.01	0.00
			Max. My	22	6870.46	0.00	0.00
			Max. Vy	25	12.50	0.00	0.00
			Max. Vx	22	-0.00	0.00	0.00
		Torque Arm Bottom	Max Tension	1	0.00	0.00	0.00
			Max. Compression	21	-8687.17	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	19	-6927.86	-0.01	0.00
			Max. My	22	-3667.72	0.00	-0.00
			Max. Vy	19	12.59	0.00	0.00
			Max. Vx	22	0.16	0.00	0.00
T2	280 - 260	Leg	Max Tension	2	3423.21	-0.04	-0.00
			Max. Compression	21	-18048.37	-0.20	0.02
			Max. Mx	20	-16772.22	0.23	-0.01
			Max. My	20	-10750.80	0.06	0.20
			Max. Vy	5	-546.72	0.05	-0.06
			Max. Vx	2	536.70	-0.07	-0.01
		Diagonal	Max Tension	7	1122.96	0.00	0.00
			Max. Compression	26	-1491.67	0.00	0.00
			Max. Mx	15	439.48	0.01	0.00
			Max. My	22	257.12	0.00	0.00
			Max. Vy	15	5.65	0.00	0.00
			Max. Vx	22	0.06	0.00	0.00
		Horizontal	Max Tension	21	312.61	0.00	0.00
			Max. Compression	21	-312.61	0.00	0.00
			Max. Mx	14	121.20	0.00	0.00
			Max. My	22	294.15	0.00	0.00
			Max. Vy	14	-4.36	0.00	0.00
			Max. Vx	22	-0.00	0.00	0.00
		Secondary Horizontal	Max Tension	23	0.01	-0.00	-0.00
			Max. Compression	19	-0.01	-0.00	-0.00
			Max. Mx	15	-0.00	-0.00	0.00
			Max. My	15	-0.00	-0.00	0.00
			Max. Vy	15	1.26	-0.00	0.00
			Max. Vx	15	-0.00	-0.00	0.00
		Top Girt	Max Tension	15	340.35	0.00	0.00
			Max. Compression	8	-206.75	0.00	0.00
			Max. Mx	14	43.93	0.01	0.00
			Max. My	16	-72.45	0.00	0.00
			Max. Vy	14	-7.31	0.00	0.00
			Max. Vx	16	-0.00	0.00	0.00
		Bottom Girt	Max Tension	20	225.55	0.00	0.00
			Max. Compression	2	-83.04	0.00	0.00
			Max. Mx	14	56.34	0.01	0.00
			Max. My	16	81.17	0.00	0.00
			Max. Vy	14	-7.31	0.00	0.00
			Max. Vx	16	-0.00	0.00	0.00
T3	260 - 240	Leg	Max Tension	2	3748.10	-0.07	-0.05
			Max. Compression	21	-18050.11	-0.19	0.03
			Max. Mx	24	-12270.71	-0.33	-0.07
			Max. My	21	-8561.46	0.03	0.36
			Max. Vy	25	-798.18	0.05	-0.18
			Max. Vx	21	743.22	-0.19	0.05
		Diagonal	Max Tension	3	1212.43	0.00	0.00
			Max. Compression	21	-1850.25	0.00	0.00
			Max. Mx	23	-217.97	0.01	0.00
			Max. My	22	-315.37	0.00	0.00
			Max. Vy	23	-5.64	0.00	0.00
			Max. Vx	22	0.05	0.00	0.00
		Horizontal	Max Tension	21	393.55	0.00	0.00
			Max. Compression	21	-312.64	0.00	0.00
			Max. Mx	21	312.64	0.00	0.00
			Max. My	22	217.02	0.00	-0.00
			Max. Vy	21	-4.36	0.00	0.00
			Max. Vx	22	-0.00	0.00	0.00
		Secondary Horizontal	Max Tension	23	0.01	-0.00	-0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	19	-0.01	-0.00	-0.00
			Max. Mx	15	-0.00	-0.00	0.00
			Max. My	16	0.00	-0.00	0.00
			Max. Vy	15	1.26	-0.00	0.00
			Max. Vx	16	-0.00	-0.00	0.00
		Top Girt	Max Tension	26	226.79	0.00	0.00
			Max. Compression	9	-27.71	0.00	0.00
			Max. Mx	14	63.40	0.01	0.00
			Max. My	16	147.16	0.00	0.00
			Max. Vy	14	-7.31	0.00	0.00
			Max. Vx	16	-0.00	0.00	0.00
		Bottom Girt	Max Tension	21	379.00	0.00	0.00
			Max. Compression	3	-155.12	0.00	0.00
			Max. Mx	25	147.16	0.01	0.00
			Max. My	22	67.63	0.00	-0.00
			Max. Vy	25	-7.31	0.00	0.00
			Max. Vx	22	-0.00	0.00	0.00
T4	240 - 220	Leg	Max Tension	10	4861.93	0.07	0.08
			Max. Compression	21	-37463.87	-0.42	0.05
			Max. Mx	21	-37461.48	-0.47	-0.06
			Max. My	17	-35318.23	-0.17	-0.42
			Max. Vy	11	-1130.01	0.15	-0.07
			Max. Vx	8	1096.42	-0.16	-0.12
		Diagonal	Max Tension	9	2444.18	0.00	0.00
			Max. Compression	26	-3145.42	0.00	0.00
			Max. Mx	23	1846.09	0.01	0.00
			Max. My	22	1132.88	0.00	0.00
			Max. Vy	23	-5.64	0.00	0.00
			Max. Vx	22	-0.05	0.00	0.00
		Horizontal	Max Tension	26	2144.69	0.00	0.00
			Max. Compression	24	-2783.74	0.00	0.00
			Max. Mx	25	294.97	0.00	0.00
			Max. My	22	2133.06	0.00	-0.00
			Max. Vy	25	-4.36	0.00	0.00
			Max. Vx	22	-0.00	0.00	0.00
		Secondary Horizontal	Max Tension	23	0.00	-0.00	-0.00
			Max. Compression	19	-0.00	-0.00	-0.00
			Max. Mx	21	-0.00	-0.00	0.00
			Max. My	3	0.00	-0.00	0.00
			Max. Vy	21	1.26	-0.00	0.00
			Max. Vx	3	-0.00	-0.00	0.00
		Top Girt	Max Tension	4	731.91	0.00	0.00
			Max. Compression	10	-630.30	0.00	0.00
			Max. Mx	25	-158.79	0.01	0.00
			Max. My	22	124.04	0.00	-0.00
			Max. Vy	25	-7.31	0.00	0.00
			Max. Vx	22	-0.00	0.00	0.00
		Bottom Girt	Max Tension	21	673.96	0.00	0.00
			Max. Compression	2	-247.54	0.00	0.00
			Max. Mx	25	-18.24	0.01	0.00
			Max. My	22	623.63	0.00	0.00
			Max. Vy	25	-7.31	0.00	0.00
			Max. Vx	22	-0.00	0.00	0.00
		Guy A	Bottom Tension	21	10292.53		
			Top Tension	21	10563.79		
			Top Cable Vert	21	7323.71		
			Top Cable Norm	21	7612.94		
			Top Cable Tan	21	1.74		
			Bot Cable Vert	21	-6523.81		
			Bot Cable Norm	21	7960.91		

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Bot Cable Tan	21	5.48		
		Guy B	Bottom Tension	25	10165.41		
			Top Tension	25	10424.41		
			Top Cable Vert	25	7087.89		
			Top Cable Norm	25	7643.97		
			Top Cable Tan	25	1.70		
			Bot Cable Vert	25	-6313.11		
			Bot Cable Norm	25	7967.44		
			Bot Cable Tan	25	5.36		
		Guy C	Bottom Tension	17	9856.37		
			Top Tension	17	10120.03		
			Top Cable Vert	17	6719.67		
			Top Cable Norm	17	7567.10		
			Top Cable Tan	17	3.03		
			Bot Cable Vert	17	-5924.86		
			Bot Cable Norm	17	7876.80		
			Bot Cable Tan	17	3.67		
		Torque Arm Top	Max Tension	21	8023.77	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	21	8023.77	-0.01	0.00
			Max. My	22	5798.09	0.00	-0.00
			Max. Vy	21	12.50	0.00	0.00
			Max. Vx	22	0.00	0.00	0.00
		Torque Arm Bottom	Max Tension	6	514.69	0.00	0.00
			Max. Compression	25	-10204.35	0.00	0.00
			Max. Mx	23	-6571.09	-0.01	0.00
			Max. My	22	-1166.09	0.00	-0.00
			Max. Vy	23	-12.55	0.00	0.00
			Max. Vx	22	-0.13	0.00	0.00
T5	220 - 200	Leg	Max Tension	10	7984.04	-0.11	-0.07
			Max. Compression	21	-41102.71	0.48	0.06
			Max. Mx	22	-37656.20	-0.50	-0.00
			Max. My	25	-40156.21	0.18	-0.46
			Max. Vy	18	-744.47	0.21	-0.19
			Max. Vx	21	-656.53	-0.42	0.05
		Diagonal	Max Tension	11	1002.49	0.00	0.00
			Max. Compression	17	-2101.39	0.00	0.00
			Max. Mx	25	-489.14	0.01	0.00
			Max. My	22	-440.97	0.00	0.00
			Max. Vy	25	5.65	0.00	0.00
			Max. Vx	22	-0.06	0.00	0.00
		Horizontal	Max Tension	21	711.92	0.00	0.00
			Max. Compression	21	-711.92	0.00	0.00
			Max. Mx	15	483.54	0.00	0.00
			Max. My	22	653.04	0.00	-0.00
			Max. Vy	15	-4.36	0.00	0.00
			Max. Vx	22	0.00	0.00	0.00
		Top Girt	Max Tension	18	443.19	0.00	0.00
			Max. Compression	8	-158.23	0.00	0.00
			Max. Mx	25	265.11	0.01	0.00
			Max. My	22	-49.14	0.00	0.00
			Max. Vy	25	-7.31	0.00	0.00
			Max. Vx	22	-0.00	0.00	0.00
		Bottom Girt	Max Tension	24	361.19	0.00	0.00
			Max. Compression	5	-5.44	0.00	0.00
			Max. Mx	25	278.46	0.01	0.00
			Max. My	22	330.72	0.00	-0.00
			Max. Vy	25	-7.31	0.00	0.00
			Max. Vx	22	0.00	0.00	0.00
T6	200 - 180	Leg	Max Tension	10	6963.41	-0.01	0.13
			Max. Compression	21	-40958.22	-0.45	0.04

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	25	-24840.70	-0.54	-0.21
			Max. My	22	-25146.23	0.01	0.57
			Max. Vy	24	-2182.19	0.23	-0.29
			Max. Vx	26	-2053.42	-0.31	0.07
		Diagonal	Max Tension	20	4129.00	0.00	0.00
			Max. Compression	26	-5368.67	0.00	0.00
			Max. Mx	21	2668.19	0.01	0.00
			Max. My	22	-2671.15	0.00	0.00
			Max. Vy	21	-5.66	0.00	0.00
			Max. Vx	22	-0.08	0.00	0.00
		Horizontal	Max Tension	17	1277.59	0.00	0.00
			Max. Compression	21	-709.42	0.00	0.00
			Max. Mx	25	438.66	0.00	0.00
			Max. My	22	657.53	0.00	-0.00
			Max. Vy	25	-4.36	0.00	0.00
			Max. Vx	22	0.00	0.00	0.00
		Secondary Horizontal	Max Tension	17	0.01	-0.00	-0.00
			Max. Compression	25	-0.01	-0.00	-0.00
			Max. Mx	21	-0.00	-0.00	0.00
			Max. My	21	-0.00	-0.00	0.00
			Max. Vy	21	1.26	-0.00	0.00
			Max. Vx	21	-0.00	-0.00	0.00
		Top Girt	Max Tension	18	462.30	0.00	0.00
			Max. Compression	24	-112.55	0.00	0.00
			Max. Mx	25	-12.92	0.01	0.00
			Max. My	22	13.96	0.00	-0.00
			Max. Vy	25	-7.31	0.00	0.00
			Max. Vx	22	0.00	0.00	0.00
		Bottom Girt	Max Tension	15	1173.44	0.00	0.00
			Max. Compression	21	-710.38	0.00	0.00
			Max. Mx	14	148.88	0.01	0.00
			Max. My	22	997.25	0.00	-0.00
			Max. Vy	14	-7.31	0.00	0.00
			Max. Vx	22	0.00	0.00	0.00
T7	180 - 160	Leg	Max Tension	12	115.84	0.23	-0.02
			Max. Compression	19	-39758.36	0.18	-0.42
			Max. Mx	19	-16146.33	-0.62	-0.33
			Max. My	15	-16914.24	0.03	0.66
			Max. Vy	24	-2181.75	0.59	-0.29
			Max. Vx	26	-2053.86	-0.10	0.41
		Diagonal	Max Tension	26	4653.54	0.00	0.00
			Max. Compression	20	-5742.17	0.00	0.00
			Max. Mx	21	3548.47	0.01	0.00
			Max. My	22	-3213.07	0.00	0.00
			Max. Vy	21	5.66	0.00	0.00
			Max. Vx	22	-0.08	0.00	0.00
		Horizontal	Max Tension	24	3993.26	0.00	0.00
			Max. Compression	22	-3693.89	0.00	0.00
			Max. Mx	14	348.13	0.00	0.00
			Max. My	22	635.36	0.00	-0.00
			Max. Vy	14	-4.36	0.00	0.00
			Max. Vx	22	0.00	0.00	0.00
		Secondary Horizontal	Max Tension	18	0.01	-0.00	-0.00
			Max. Compression	25	-0.01	-0.00	-0.00
			Max. Mx	21	-0.00	-0.00	0.00
			Max. My	21	-0.00	-0.00	0.00
			Max. Vy	21	1.26	-0.00	0.00
			Max. Vx	21	-0.00	-0.00	0.00
		Top Girt	Max Tension	21	1320.42	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	15	-973.02	0.00	0.00
			Max. Mx	14	127.14	0.01	0.00
			Max. My	22	-724.14	0.00	-0.00
			Max. Vy	14	-7.31	0.00	0.00
			Max. Vx	22	0.00	0.00	0.00
		Bottom Girt	Max Tension	21	534.61	0.00	0.00
			Max. Compression	2	-91.04	0.00	0.00
			Max. Mx	14	192.33	0.01	0.00
			Max. My	16	335.70	0.00	-0.00
			Max. Vy	14	-7.31	0.00	0.00
			Max. Vx	16	0.00	0.00	0.00
		Guy A	Bottom Tension	21	9575.12		
			Top Tension	21	9776.10		
			Top Cable Vert	21	5620.16		
			Top Cable Norm	21	7999.12		
			Top Cable Tan	21	1.33		
			Bot Cable Vert	21	-5010.30		
			Bot Cable Norm	21	8159.64		
			Bot Cable Tan	21	3.54		
		Guy B	Bottom Tension	25	9346.80		
			Top Tension	25	9535.49		
			Top Cable Vert	25	5290.83		
			Top Cable Norm	25	7933.02		
			Top Cable Tan	25	0.46		
			Bot Cable Vert	25	-4706.22		
			Bot Cable Norm	25	8075.53		
			Bot Cable Tan	25	4.25		
		Guy C	Bottom Tension	17	9172.52		
			Top Tension	17	9365.76		
			Top Cable Vert	17	5064.40		
			Top Cable Norm	17	7878.40		
			Top Cable Tan	17	2.82		
			Bot Cable Vert	17	-4460.52		
			Bot Cable Norm	17	8014.91		
			Bot Cable Tan	17	1.67		
		Torque Arm Top	Max Tension	25	8474.35	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	4015.44	-0.01	0.00
			Max. My	22	7364.84	0.00	-0.00
			Max. Vy	14	12.50	0.00	0.00
			Max. Vx	22	0.00	0.00	0.00
		Torque Arm Bottom	Max Tension	10	422.06	0.00	0.00
			Max. Compression	21	-7520.74	0.00	0.00
			Max. Mx	21	-4023.53	-0.01	0.00
			Max. My	22	-6739.74	0.00	-0.00
			Max. Vy	21	12.60	0.00	0.00
			Max. Vx	22	0.18	0.00	0.00
T8	160 - 140	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37234.22	-0.48	0.05
			Max. Mx	25	-34776.09	0.57	-0.01
			Max. My	25	-33169.21	0.25	0.49
			Max. Vy	23	566.15	0.24	-0.33
			Max. Vx	16	-470.20	0.18	0.38
		Diagonal	Max Tension	23	464.74	0.00	0.00
			Max. Compression	22	-1833.64	0.00	0.00
			Max. Mx	21	-850.27	0.01	0.00
			Max. My	22	-879.68	0.00	0.00
			Max. Vy	21	-5.65	0.00	0.00
			Max. Vx	22	-0.07	0.00	0.00
		Horizontal	Max Tension	25	703.96	0.00	0.00
			Max. Compression	26	-644.92	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Mx	14	371.59	0.00	0.00
			Max. My	22	636.25	0.00	-0.00
			Max. Vy	14	-4.36	0.00	0.00
			Max. Vx	22	0.00	0.00	0.00
		Secondary Horizontal	Max Tension	17	0.01	-0.00	-0.00
			Max. Compression	25	-0.01	-0.00	-0.00
			Max. Mx	21	-0.00	-0.00	0.00
			Max. My	21	-0.00	-0.00	0.00
			Max. Vy	21	1.26	-0.00	0.00
			Max. Vx	21	-0.00	-0.00	0.00
		Top Girt	Max Tension	19	440.94	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	168.07	0.01	0.00
			Max. My	16	254.13	0.00	-0.00
			Max. Vy	14	-7.31	0.00	0.00
			Max. Vx	16	0.00	0.00	0.00
		Bottom Girt	Max Tension	22	466.75	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	25	399.01	0.01	0.00
			Max. My	16	120.90	0.00	-0.00
			Max. Vy	25	-7.31	0.00	0.00
			Max. Vx	16	0.00	0.00	0.00
T9	140 - 120	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	16	-39765.93	0.59	0.02
			Max. Mx	17	-36661.02	-0.66	0.02
			Max. My	25	-37327.16	0.33	0.58
			Max. Vy	18	-537.48	0.15	-0.44
			Max. Vx	22	466.46	0.31	0.32
		Diagonal	Max Tension	11	1069.61	0.00	0.00
			Max. Compression	18	-2756.41	0.00	0.00
			Max. Mx	21	289.34	0.00	0.00
			Max. My	22	-1186.81	0.00	0.00
			Max. Vy	21	4.38	0.00	0.00
			Max. Vx	22	-0.05	0.00	0.00
		Horizontal	Max Tension	25	2052.55	0.00	0.00
			Max. Compression	16	-688.77	0.00	0.00
			Max. Mx	14	447.36	0.00	0.00
			Max. My	22	673.99	0.00	-0.00
			Max. Vy	14	-4.36	0.00	0.00
			Max. Vx	22	0.00	0.00	0.00
		Secondary Horizontal	Max Tension	17	0.01	-0.00	-0.00
			Max. Compression	25	-0.01	-0.00	-0.00
			Max. Mx	21	-0.00	-0.00	0.00
			Max. My	21	-0.00	-0.00	0.00
			Max. Vy	21	1.26	-0.00	0.00
			Max. Vx	21	-0.00	-0.00	0.00
		Top Girt	Max Tension	17	529.26	0.00	0.00
			Max. Compression	9	-80.46	0.00	0.00
			Max. Mx	25	147.12	0.01	0.00
			Max. My	16	492.83	0.00	-0.00
			Max. Vy	25	-7.31	0.00	0.00
			Max. Vx	16	0.00	0.00	0.00
		Bottom Girt	Max Tension	25	606.49	0.00	0.00
			Max. Compression	6	-63.96	0.00	0.00
			Max. Mx	26	296.77	0.01	0.00
			Max. My	22	103.87	0.00	-0.00
			Max. Vy	26	-7.31	0.00	0.00
			Max. Vx	22	0.00	0.00	0.00
		Guy A	Bottom Tension	21	8548.86		

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Top Tension	21	8702.90		
			Top Cable Vert	21	4782.69		
			Top Cable Norm	21	7270.93		
			Top Cable Tan	21	0.20		
			Bot Cable Vert	21	-4321.40		
			Bot Cable Norm	21	7376.21		
			Bot Cable Tan	21	0.20		
		Guy B	Bottom Tension	25	8066.92		
			Top Tension	25	8212.08		
			Top Cable Vert	25	3948.12		
			Top Cable Norm	25	7200.74		
			Top Cable Tan	25	1.70		
			Bot Cable Vert	25	-3483.11		
			Bot Cable Norm	25	7276.21		
			Bot Cable Tan	25	1.70		
		Guy C	Bottom Tension	17	8026.67		
			Top Tension	17	8176.33		
			Top Cable Vert	17	3968.08		
			Top Cable Norm	17	7148.89		
			Top Cable Tan	17	1.58		
			Bot Cable Vert	17	-3491.79		
			Bot Cable Norm	17	7227.36		
			Bot Cable Tan	17	1.58		
		Top Guy Pull-Off	Max Tension	25	2597.54	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	25	1250.68	0.00	0.00
			Max. My	16	1163.93	0.00	-0.00
			Max. Vy	25	-5.21	0.00	0.00
			Max. Vx	16	0.00	0.00	0.00
T10	120 - 100	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	25	-36741.45	-0.58	-0.03
			Max. Mx	21	-34545.35	0.62	-0.00
			Max. My	21	-35261.85	-0.30	-0.54
			Max. Vy	24	539.64	0.26	-0.44
			Max. Vx	15	461.99	0.24	0.42
		Diagonal	Max Tension	11	324.72	0.00	0.00
			Max. Compression	18	-1881.28	0.00	0.00
			Max. Mx	21	-888.91	0.00	0.00
			Max. My	22	-1158.89	0.00	0.00
			Max. Vy	21	4.38	0.00	0.00
			Max. Vx	22	-0.05	0.00	0.00
		Horizontal	Max Tension	21	776.12	0.00	0.00
			Max. Compression	25	-636.38	0.00	0.00
			Max. Mx	16	626.24	0.00	0.00
			Max. My	22	726.70	0.00	-0.00
			Max. Vy	16	-4.36	0.00	0.00
			Max. Vx	22	0.00	0.00	0.00
		Secondary Horizontal	Max Tension	17	0.01	-0.00	-0.00
			Max. Compression	25	-0.01	-0.00	-0.00
			Max. Mx	21	-0.00	-0.00	0.00
			Max. My	21	-0.00	-0.00	0.00
			Max. Vy	21	1.26	-0.00	0.00
			Max. Vx	21	-0.00	-0.00	0.00
		Top Girt	Max Tension	19	482.92	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	26	303.78	0.01	0.00
			Max. My	22	427.53	0.00	-0.00
			Max. Vy	26	-7.31	0.00	0.00
			Max. Vx	22	0.00	0.00	0.00
		Bottom Girt	Max Tension	16	395.29	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	16	395.29	0.01	0.00
			Max. My	22	322.68	0.00	-0.00
			Max. Vy	16	-7.31	0.00	0.00
			Max. Vx	22	0.00	0.00	0.00
T11	100 - 80	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	21	-39838.34	-0.54	0.01
			Max. Mx	25	-37379.24	0.63	0.02
			Max. My	21	-39190.52	-0.29	-0.55
			Max. Vy	24	449.28	0.32	-0.46
			Max. Vx	16	574.10	0.23	0.53
		Diagonal	Max Tension	9	735.30	0.00	0.00
			Max. Compression	16	-2575.05	0.00	0.00
			Max. Mx	21	-407.03	0.00	0.00
			Max. My	22	-1402.65	0.00	0.00
			Max. Vy	21	4.38	0.00	0.00
			Max. Vx	22	-0.05	0.00	0.00
		Horizontal	Max Tension	21	2001.78	0.00	0.00
			Max. Compression	21	-690.02	0.00	0.00
			Max. Mx	22	1243.06	0.00	0.00
			Max. My	22	662.96	0.00	-0.00
			Max. Vy	22	4.36	0.00	0.00
			Max. Vx	22	0.00	0.00	0.00
		Secondary Horizontal	Max Tension	17	0.01	-0.00	-0.00
			Max. Compression	25	-0.01	-0.00	-0.00
			Max. Mx	21	-0.00	-0.00	0.00
			Max. My	21	-0.00	-0.00	0.00
			Max. Vy	21	1.26	-0.00	0.00
			Max. Vx	21	-0.00	-0.00	0.00
		Top Girt	Max Tension	21	498.42	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	16	89.15	0.01	0.00
			Max. My	22	201.40	0.00	-0.00
			Max. Vy	14	7.31	0.00	0.00
			Max. Vx	22	0.00	0.00	0.00
		Bottom Girt	Max Tension	16	580.19	0.00	0.00
			Max. Compression	9	-16.44	0.00	0.00
			Max. Mx	14	231.29	0.01	0.00
			Max. My	16	409.58	0.00	0.00
			Max. Vy	14	7.31	0.00	0.00
			Max. Vx	16	0.00	0.00	0.00
		Guy A	Bottom Tension	21	7451.92		
			Top Tension	21	7557.56		
			Top Cable Vert	21	3116.60		
			Top Cable Norm	21	6885.02		
			Top Cable Tan	21	0.31		
			Bot Cable Vert	21	-2764.00		
			Bot Cable Norm	21	6920.36		
			Bot Cable Tan	21	0.31		
		Guy B	Bottom Tension	25	7004.13		
			Top Tension	25	7100.81		
			Top Cable Vert	25	2462.22		
			Top Cable Norm	25	6660.26		
			Top Cable Tan	25	1.29		
			Bot Cable Vert	25	-2097.06		
			Bot Cable Norm	25	6682.83		
			Bot Cable Tan	25	1.29		
		Guy C	Bottom Tension	17	6994.14		
			Top Tension	17	7095.32		
			Top Cable Vert	17	2517.98		

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Top Cable Norm	17	6633.51		
			Top Cable Tan	17	1.37		
			Bot Cable Vert	17	-2142.41		
			Bot Cable Norm	17	6657.94		
			Bot Cable Tan	17	1.37		
		Top Guy Pull-Off	Max Tension	21	2533.25	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	22	1573.09	0.00	0.00
			Max. My	22	1330.92	0.00	-0.00
			Max. Vy	22	5.21	0.00	0.00
			Max. Vx	22	0.00	0.00	0.00
T12	80 - 60	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	25	-41481.15	0.27	-0.49
			Max. Mx	21	-41385.27	-0.62	0.01
			Max. My	25	-41266.77	0.30	-0.54
			Max. Vy	24	452.07	0.24	-0.45
			Max. Vx	16	580.72	0.27	0.44
		Diagonal	Max Tension	3	485.76	0.00	0.00
			Max. Compression	22	-1980.83	0.00	0.00
			Max. Mx	25	-559.98	0.00	0.00
			Max. My	22	-837.46	0.00	0.00
			Max. Vy	25	-4.38	0.00	0.00
			Max. Vx	22	-0.04	0.00	0.00
		Horizontal	Max Tension	21	769.57	0.00	0.00
			Max. Compression	25	-718.47	0.00	0.00
			Max. Mx	15	681.04	0.00	0.00
			Max. My	22	688.65	0.00	-0.00
			Max. Vy	15	4.36	0.00	0.00
			Max. Vx	22	0.00	0.00	0.00
		Secondary Horizontal	Max Tension	17	0.01	-0.00	-0.00
			Max. Compression	25	-0.01	-0.00	-0.00
			Max. Mx	21	-0.00	-0.00	0.00
			Max. My	7	0.00	-0.00	0.00
			Max. Vy	21	1.26	-0.00	0.00
			Max. Vx	7	-0.00	-0.00	0.00
		Top Girt	Max Tension	22	494.80	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	213.54	0.01	0.00
			Max. My	16	170.55	0.00	0.00
			Max. Vy	14	7.31	0.00	0.00
			Max. Vx	16	0.00	0.00	0.00
		Bottom Girt	Max Tension	16	475.38	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	237.50	0.01	0.00
			Max. My	16	475.34	0.00	0.00
			Max. Vy	14	7.31	0.00	0.00
			Max. Vx	16	0.00	0.00	0.00
T13	60 - 40	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	21	-42718.34	0.31	0.48
			Max. Mx	25	-40092.55	0.63	-0.00
			Max. My	21	-40220.79	0.33	-0.55
			Max. Vy	16	612.55	0.25	-0.47
			Max. Vx	22	400.88	-0.54	-0.01
		Diagonal	Max Tension	10	677.10	0.00	0.00
			Max. Compression	17	-2505.76	0.00	0.00
			Max. Mx	17	443.66	0.00	0.00
			Max. My	22	-1716.68	0.00	0.00
			Max. Vy	17	-4.38	0.00	0.00
			Max. Vx	22	-0.04	0.00	0.00
		Horizontal	Max Tension	15	1758.25	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	21	-739.90	0.00	0.00
			Max. Mx	14	1277.53	0.00	0.00
			Max. My	22	697.65	0.00	-0.00
			Max. Vy	14	4.36	0.00	0.00
			Max. Vx	22	0.00	0.00	0.00
		Secondary Horizontal	Max Tension	17	0.01	-0.00	-0.00
			Max. Compression	25	-0.01	-0.00	-0.00
			Max. Mx	21	-0.00	-0.00	0.00
			Max. My	7	0.00	-0.00	0.00
			Max. Vy	21	1.26	-0.00	0.00
			Max. Vx	7	-0.00	-0.00	0.00
		Top Girt	Max Tension	22	571.14	0.00	0.00
			Max. Compression	2	-42.91	0.00	0.00
			Max. Mx	14	220.56	0.01	0.00
			Max. My	16	125.48	0.00	0.00
			Max. Vy	14	7.31	0.00	0.00
			Max. Vx	16	0.00	0.00	0.00
		Bottom Girt	Max Tension	16	605.26	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	240.64	0.01	0.00
			Max. My	16	605.22	0.00	0.00
			Max. Vy	14	7.31	0.00	0.00
			Max. Vx	16	-0.00	0.00	0.00
		Guy A	Bottom Tension	21	5995.47		
			Top Tension	21	6052.53		
			Top Cable Vert	21	1490.14		
			Top Cable Norm	21	5866.23		
			Top Cable Tan	21	0.20		
			Bot Cable Vert	21	-1210.43		
			Bot Cable Norm	21	5872.01		
			Bot Cable Tan	21	0.20		
		Guy B	Bottom Tension	25	5770.79		
			Top Tension	25	5818.85		
			Top Cable Vert	25	1121.68		
			Top Cable Norm	25	5709.72		
			Top Cable Tan	25	0.44		
			Bot Cable Vert	25	-818.58		
			Bot Cable Norm	25	5712.43		
			Bot Cable Tan	25	0.44		
		Guy C	Bottom Tension	17	5762.50		
			Top Tension	17	5815.07		
			Top Cable Vert	17	1193.14		
			Top Cable Norm	17	5691.35		
			Top Cable Tan	17	0.59		
			Bot Cable Vert	17	-881.02		
			Bot Cable Norm	17	5694.75		
			Bot Cable Tan	17	0.59		
		Top Guy Pull-Off	Max Tension	15	2225.07	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	14	1616.71	0.00	0.00
			Max. My	22	2070.29	0.00	-0.00
			Max. Vy	14	5.21	0.00	0.00
			Max. Vx	22	0.00	0.00	0.00
T14	40 - 20	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	25	-48387.28	0.32	0.56
			Max. Mx	25	-43367.79	0.70	-0.02
			Max. My	21	-46215.45	-0.36	-0.61
			Max. Vy	17	945.68	0.22	-0.53
			Max. Vx	21	779.48	-0.54	-0.03
		Diagonal	Max Tension	22	987.46	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	17	-2967.94	0.00	0.00
			Max. Mx	17	324.10	0.00	0.00
			Max. My	22	-1501.86	0.00	0.00
			Max. Vy	17	-4.38	0.00	0.00
			Max. Vx	22	-0.03	0.00	0.00
		Horizontal	Max Tension	25	838.09	0.00	0.00
			Max. Compression	25	-838.09	0.00	0.00
			Max. Mx	14	527.19	0.00	0.00
			Max. My	22	769.96	0.00	-0.00
			Max. Vy	14	4.36	0.00	0.00
			Max. Vx	22	0.00	0.00	0.00
		Secondary Horizontal	Max Tension	17	0.01	-0.00	-0.00
			Max. Compression	25	-0.01	-0.00	-0.00
			Max. Mx	21	-0.00	-0.00	0.00
			Max. My	7	0.00	-0.00	0.00
			Max. Vy	21	1.26	-0.00	0.00
			Max. Vx	7	-0.00	-0.00	0.00
		Top Girt	Max Tension	22	629.62	0.00	0.00
			Max. Compression	3	-11.88	0.00	0.00
			Max. Mx	14	237.19	0.01	0.00
			Max. My	16	0.16	0.00	0.00
			Max. Vy	14	7.31	0.00	0.00
			Max. Vx	16	0.00	0.00	0.00
		Bottom Girt	Max Tension	16	698.93	0.00	0.00
			Max. Compression	9	-123.57	0.00	0.00
			Max. Mx	26	475.65	0.01	0.00
			Max. My	22	267.39	0.00	-0.00
			Max. Vy	26	-7.31	0.00	0.00
			Max. Vx	22	0.00	0.00	0.00
T15	20 - 0	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	25	-56352.34	-0.00	0.00
			Max. Mx	23	-30274.89	-0.92	-0.38
			Max. My	21	-17138.55	0.09	1.02
			Max. Vy	23	-5529.20	-0.00	-0.00
			Max. Vx	21	6105.94	-0.00	0.00
		Diagonal	Max Tension	21	2071.53	0.00	0.00
			Max. Compression	17	-3199.36	0.00	0.00
			Max. Mx	17	1222.43	0.00	0.00
			Max. My	22	-2248.19	0.00	0.00
			Max. Vy	17	4.37	0.00	0.00
			Max. Vx	22	-0.02	0.00	0.00
		Horizontal	Max Tension	25	976.05	0.00	0.00
			Max. Compression	25	-976.05	0.00	0.00
			Max. Mx	26	893.36	0.00	0.00
			Max. My	22	930.40	0.00	-0.00
			Max. Vy	26	-4.36	0.00	0.00
			Max. Vx	22	0.00	0.00	0.00
		Top Girt	Max Tension	22	802.00	0.00	0.00
			Max. Compression	2	-157.40	0.00	0.00
			Max. Mx	26	210.19	0.01	0.00
			Max. My	22	315.20	0.00	-0.00
			Max. Vy	26	-7.31	0.00	0.00
			Max. Vx	22	0.00	0.00	0.00
		Bottom Girt	Max Tension	16	3740.06	0.00	0.00
			Max. Compression	9	-411.04	0.00	0.00
			Max. Mx	14	3247.84	0.01	0.00
			Max. Vy	14	-7.31	0.00	0.00
			Max. Vx	21	0.00	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Leg C	Max. Vert	25	56363.64	-4141.12	2594.36
	Max. H_x	10	39350.07	476.93	-347.17
	Max. H_z	15	30302.24	-4671.63	2990.65
	Min. Vert	4	7144.74	-478.70	327.39
	Min. H_x	17	16366.37	-4980.62	2954.83
	Min. H_z	8	35716.30	285.17	-492.72
Leg B	Max. Vert	19	56055.22	3624.56	2418.40
	Max. H_x	23	30297.61	5410.64	2317.04
	Max. H_z	15	30405.66	4199.55	2933.98
	Min. Vert	12	7766.18	739.40	137.71
	Min. H_x	4	36297.04	-1000.75	217.34
	Min. H_z	9	28935.55	567.50	-377.29
Leg A	Max. Vert	15	52746.98	495.53	-4229.91
	Max. H_x	25	51734.14	568.91	-4397.16
	Max. H_z	2	37487.44	459.52	825.05
	Min. Vert	8	8284.14	-450.21	-811.64
	Min. H_x	21	17160.41	-501.40	-6049.96
	Min. H_z	21	17160.41	-501.40	-6049.96
Guy C @ 288 ft Elev 1 ft Azimuth 240 deg	Max. Vert	10	-3602.86	-3216.83	1857.70
	Max. H_x	10	-3602.86	-3216.83	1857.70
	Max. H_z	17	-31727.27	-38266.74	22090.38
	Min. Vert	17	-31727.27	-38266.74	22090.38
	Min. H_x	17	-31727.27	-38266.74	22090.38
	Min. H_z	10	-3602.86	-3216.83	1857.70
Guy B @ 270 ft Elev 5 ft Azimuth 120 deg	Max. Vert	6	-3870.82	3207.09	1850.45
	Max. H_x	25	-33787.35	38711.75	22341.00
	Max. H_z	25	-33787.35	38711.75	22341.00
	Min. Vert	25	-33787.35	38711.75	22341.00
	Min. H_x	6	-3870.82	3207.09	1850.45
	Min. H_z	6	-3870.82	3207.09	1850.45
Guy A @ 273 ft Elev -6 ft Azimuth 0 deg	Max. Vert	2	-4103.24	1.43	-3763.63
	Max. H_x	24	-22065.42	3539.32	-26765.85
	Max. H_z	2	-4103.24	1.43	-3763.63
	Min. Vert	21	-34918.76	4.75	-44599.12
	Min. H_x	18	-22070.88	-3535.91	-26747.82
	Min. H_z	21	-34918.76	4.75	-44599.12
Guy C @ 258 ft Elev 0 ft Azimuth 240 deg	Max. Vert	10	-1035.64	-3516.53	2030.33
	Max. H_x	10	-1035.64	-3516.53	2030.33
	Max. H_z	17	-6515.23	-16958.59	9786.96
	Min. Vert	17	-6515.23	-16958.59	9786.96
	Min. H_x	17	-6515.23	-16958.59	9786.96
	Min. H_z	10	-1035.64	-3516.53	2030.33
Guy B @ 253 ft Elev 4 ft Azimuth 120 deg	Max. Vert	6	-1006.54	3529.92	2037.86
	Max. H_x	25	-6398.75	17037.71	9832.76
	Max. H_z	25	-6398.75	17037.71	9832.76

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Guy A @ 222 ft Elev -4 ft Azimuth 0 deg	Min. Vert	25	-6398.75	17037.71	9832.76
	Min. H_x	6	-1006.54	3529.92	2037.86
	Min. H_z	6	-1006.54	3529.92	2037.86
	Max. Vert	2	-1243.03	0.16	-3839.67
	Max. H_x	24	-5155.22	913.21	-13364.29
	Max. H_z	2	-1243.03	0.16	-3839.67
	Min. Vert	21	-8295.83	-0.31	-20168.58
	Min. H_x	18	-5118.15	-913.12	-13289.22
	Min. H_z	21	-8295.83	-0.31	-20168.58

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	59155.20	-7.51	3.25	0.67	-0.09	0.06
Dead+Wind 0 deg - No Ice+Guy	70689.32	-7.79	-1568.84	-37.68	-0.21	1.20
Dead+Wind 30 deg - No Ice+Guy	74710.24	977.43	-1250.76	-30.08	-31.29	1.55
Dead+Wind 60 deg - No Ice+Guy	77364.61	1510.75	-814.09	-22.01	-45.55	1.11
Dead+Wind 90 deg - No Ice+Guy	75074.81	1603.35	-144.54	-6.38	-44.25	0.39
Dead+Wind 120 deg - No Ice+Guy	71850.07	1374.90	802.47	21.49	-35.48	-0.01
Dead+Wind 150 deg - No Ice+Guy	76671.05	628.21	1446.10	41.57	-13.14	-0.38
Dead+Wind 180 deg - No Ice+Guy	79646.72	-4.61	1676.24	49.43	0.11	-1.03
Dead+Wind 210 deg - No Ice+Guy	76648.03	-640.80	1441.85	41.44	13.34	-1.41
Dead+Wind 240 deg - No Ice+Guy	72081.91	-1386.27	796.48	21.45	35.50	-0.99
Dead+Wind 270 deg - No Ice+Guy	75959.63	-1616.95	-146.57	-6.25	43.93	-0.25
Dead+Wind 300 deg - No Ice+Guy	78601.14	-1520.70	-817.04	-21.83	45.00	0.15
Dead+Wind 330 deg - No Ice+Guy	75620.92	-990.98	-1254.20	-29.98	30.81	0.52
Dead+Ice+Temp+Guy	91197.84	-22.26	21.29	2.52	-0.06	0.07
Dead+Wind 0 deg+Ice+Temp+Guy	113454.88	-23.44	-1694.72	-40.40	-0.16	1.23
Dead+Wind 30 deg+Ice+Temp+Guy	119143.70	1150.16	-1318.76	-30.76	-46.21	1.87
Dead+Wind 60 deg+Ice+Temp+Guy	123509.37	1704.89	-899.92	-27.15	-61.84	1.21
Dead+Wind 90 deg+Ice+Temp+Guy	119463.38	1755.21	-213.02	-12.68	-54.25	0.24
Dead+Wind 120 deg+Ice+Temp+Guy	114542.08	1501.75	913.87	27.41	-40.03	0.06
Dead+Wind 150 deg+Ice+Temp+Guy	122071.70	604.35	1648.91	56.67	-8.53	-0.12
Dead+Wind 180 deg+Ice+Temp+Guy	126761.33	-14.20	1904.67	67.91	0.07	-1.03

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	kip-ft	kip-ft	kip-ft
Dead+Wind 210 deg+Ice+Temp+Guy	121528.52	-638.64	1644.55	56.44	8.71	-1.68
Dead+Wind 240 deg+Ice+Temp+Guy	114309.06	-1542.75	906.77	27.34	40.17	-1.02
Dead+Wind 270 deg+Ice+Temp+Guy	120484.68	-1798.48	-220.95	-12.57	53.93	-0.04
Dead+Wind 300 deg+Ice+Temp+Guy	125290.00	-1743.25	-909.03	-26.98	61.21	0.15
Dead+Wind 330 deg+Ice+Temp+Guy	120703.76	-1193.41	-1326.28	-30.71	45.76	0.33
Dead+Wind 0 deg - Service+Guy	61318.15	-7.39	-555.81	-13.43	-0.15	0.43
Dead+Wind 30 deg - Service+Guy	61246.73	305.64	-473.94	-11.25	-9.10	0.55
Dead+Wind 60 deg - Service+Guy	61392.45	511.09	-281.90	-6.85	-14.34	0.41
Dead+Wind 90 deg - Service+Guy	61441.75	574.88	-12.10	-0.24	-15.48	0.18
Dead+Wind 120 deg - Service+Guy	61705.48	491.44	286.11	8.00	-13.03	0.04
Dead+Wind 150 deg - Service+Guy	61958.36	263.03	502.48	13.97	-6.53	-0.10
Dead+Wind 180 deg - Service+Guy	62099.95	-7.55	579.83	16.11	-0.03	-0.32
Dead+Wind 210 deg - Service+Guy	61881.97	-278.46	501.94	13.96	6.46	-0.44
Dead+Wind 240 deg - Service+Guy	61788.73	-506.80	285.27	8.01	12.92	-0.30
Dead+Wind 270 deg - Service+Guy	61677.25	-589.41	-12.83	-0.21	15.27	-0.06
Dead+Wind 300 deg - Service+Guy	61758.85	-524.95	-282.23	-6.81	14.06	0.08
Dead+Wind 330 deg - Service+Guy	61558.97	-319.99	-473.91	-11.22	8.80	0.21

Solution Summary

Load Comb.	Sum of Applied Forces PX lb	PY lb	PZ lb	Sum of Reactions PX lb	PY lb	PZ lb	% Error
1	0.00	-23830.76	0.00	2.10	23830.78	-1.19	0.010%
2	-58.87	-24348.93	-30109.60	58.93	24348.92	30108.36	0.003%
3	14874.93	-23811.81	-25900.24	-14875.33	23811.80	25899.17	0.003%
4	25746.38	-23268.47	-14931.22	-25746.71	23268.50	14932.90	0.005%
5	29737.18	-23853.92	40.90	-29736.34	23853.91	-39.82	0.004%
6	25940.94	-24428.68	15111.52	-25940.15	24428.66	-15111.08	0.002%
7	14981.05	-23872.87	26002.26	-14979.80	23872.86	-26002.11	0.003%
8	58.87	-23312.59	29968.70	-60.00	23312.61	-29969.13	0.003%
9	-14874.93	-23849.72	25900.24	14873.50	23849.70	-25899.99	0.004%
10	-25868.39	-24393.06	15001.66	25867.62	24393.04	-15001.17	0.002%
11	-29737.18	-23807.61	-40.90	29736.28	23807.59	42.05	0.004%
12	-25818.92	-23232.85	-15041.08	25818.36	23232.86	15042.79	0.005%
13	-14981.05	-23788.65	-26002.26	14981.48	23788.64	26001.27	0.003%
14	0.00	-43277.94	0.00	-1.41	43277.93	1.50	0.005%
15	-132.45	-44443.82	-41003.19	132.48	44443.82	41002.27	0.002%
16	20186.02	-43235.29	-35269.48	-20186.76	43235.29	35267.88	0.003%
17	34974.75	-42012.78	-20342.39	-34974.45	42012.80	20344.64	0.004%
18	40343.53	-43330.04	92.01	-40342.45	43330.03	-90.36	0.003%

Load Comb.	Sum of Applied Forces PX lb	PY lb	PZ lb	Sum of Reactions PX lb	PY lb	PZ lb	% Error
19	35206.65	-44623.24	20629.23	-35206.02	44623.24	-20628.80	0.001%
20	20424.80	-43372.68	35499.02	-20422.48	43372.67	-35498.83	0.004%
21	132.45	-42112.05	40923.89	-134.15	42112.06	-40923.98	0.003%
22	-20186.02	-43320.58	35269.48	20183.82	43320.56	-35269.26	0.004%
23	-35043.42	-44543.09	20382.04	35042.67	44543.09	-20381.53	0.002%
24	-40343.53	-43225.83	-92.01	40342.88	43225.82	93.01	0.002%
25	-35137.97	-41932.63	-20589.58	35136.95	41932.63	20591.57	0.004%
26	-20424.80	-43183.19	-35499.02	20425.77	43183.18	35497.16	0.004%
27	-20.37	-24010.06	-10418.55	20.15	24010.06	10416.91	0.006%
28	5147.03	-23824.21	-8962.02	-5145.64	23824.19	8961.22	0.006%
29	8908.78	-23636.20	-5166.51	-8907.07	23636.19	5166.05	0.007%
30	10289.68	-23838.78	14.15	-10287.91	23838.77	-14.41	0.007%
31	8976.10	-24037.65	5228.90	-8975.49	24037.65	-5228.39	0.003%
32	5183.75	-23845.34	8997.32	-5184.05	23845.32	-8996.37	0.004%
33	20.37	-23651.47	10369.79	-20.78	23651.46	-10368.86	0.004%
34	-5147.03	-23837.32	8962.02	5146.80	23837.31	-8961.12	0.004%
35	-8951.00	-24025.33	5190.89	8950.08	24025.32	-5190.27	0.004%
36	-10289.68	-23822.75	-14.15	10288.88	23822.75	14.11	0.003%
37	-8933.88	-23623.87	-5204.52	8931.64	23623.86	5204.87	0.009%
38	-5183.75	-23816.19	-8997.32	5182.87	23816.19	8997.32	0.003%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	10	0.00000001	0.00005599
2	Yes	17	0.00000001	0.00003772
3	Yes	18	0.00000001	0.00002814
4	Yes	14	0.00000001	0.00003731
5	Yes	18	0.00000001	0.00003685
6	Yes	18	0.00000001	0.00003423
7	Yes	18	0.00000001	0.00003341
8	Yes	15	0.00000001	0.00002741
9	Yes	18	0.00000001	0.00003478
10	Yes	18	0.00000001	0.00003033
11	Yes	18	0.00000001	0.00003319
12	Yes	15	0.00008951	0.00003102
13	Yes	18	0.00000001	0.00002425
14	Yes	11	0.00010000	0.00003040
15	Yes	16	0.00000001	0.00002115
16	Yes	17	0.00008037	0.00003634
17	Yes	14	0.00006278	0.00004282
18	Yes	17	0.00008726	0.00004408
19	Yes	16	0.00000001	0.00002039
20	Yes	16	0.00008550	0.00006201
21	Yes	16	0.00006757	0.00002783
22	Yes	17	0.00009145	0.00004566
23	Yes	16	0.00000001	0.00002049
24	Yes	18	0.00000001	0.00002267
25	Yes	16	0.00008256	0.00002717
26	Yes	16	0.00008308	0.00004886
27	Yes	11	0.00000001	0.00008548
28	Yes	11	0.00000001	0.00009092
29	Yes	11	0.00000001	0.00004941
30	Yes	11	0.00000001	0.00009609
31	Yes	12	0.00000001	0.00003821

32	Yes	12	0.00000001	0.00004614
33	Yes	12	0.00000001	0.00002702
34	Yes	12	0.00000001	0.00004830
35	Yes	12	0.00000001	0.00004549
36	Yes	12	0.00000001	0.00004417
37	Yes	11	0.00000001	0.00006028
38	Yes	12	0.00000001	0.00004347

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	300 - 280	1.340	32	0.1839	0.0956
T2	280 - 260	1.703	33	0.1834	0.1004
T3	260 - 240	2.086	33	0.1510	0.1069
T4	240 - 220	2.330	33	0.1135	0.1125
T5	220 - 200	2.492	33	0.0676	0.1221
T6	200 - 180	2.396	33	0.0642	0.1354
T7	180 - 160	1.976	33	0.1070	0.1371
T8	160 - 140	1.584	33	0.0781	0.1648
T9	140 - 120	1.291	33	0.0618	0.1788
T10	120 - 100	1.090	33	0.0420	0.1840
T11	100 - 80	0.913	33	0.0443	0.1783
T12	80 - 60	0.734	33	0.0426	0.1637
T13	60 - 40	0.539	33	0.0516	0.1340
T14	40 - 20	0.312	33	0.0510	0.0974
T15	20 - 0	0.110	33	0.0388	0.0588

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
286.75	Guy	33	1.559	0.1866	0.0956	3177
248.00	BXA-171085-8CF	33	2.244	0.1283	0.1114	18397
240.00	BXA-80080-4CF	33	2.330	0.1135	0.1125	47724
236.56	Guy	33	2.366	0.1071	0.1118	36924
196.20	(2) 7770.00	33	2.333	0.0767	0.1371	12609
173.28	Guy	33	1.832	0.1018	0.1343	41151
133.28	Guy	33	1.216	0.0547	0.1809	53892
90.00	Guy	33	0.824	0.0433	0.1725	193493
46.72	Guy	33	0.390	0.0524	0.1085	321064

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	300 - 280	11.704	21	0.3966	0.4697
T2	280 - 260	12.366	21	0.3954	0.4677

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T3	260 - 240	12.851	21	0.3048	0.4911
T4	240 - 220	12.936	21	0.2102	0.5119
T5	220 - 200	12.817	21	0.1224	0.5566
T6	200 - 180	11.862	21	0.3585	0.5937
T7	180 - 160	9.898	21	0.4861	0.5977
T8	160 - 140	8.059	21	0.3853	0.6512
T9	140 - 120	6.575	21	0.3220	0.6903
T10	120 - 100	5.456	21	0.2409	0.7005
T11	100 - 80	4.469	21	0.2377	0.6733
T12	80 - 60	3.511	21	0.2264	0.6119
T13	60 - 40	2.515	21	0.2529	0.5060
T14	40 - 20	1.425	21	0.2450	0.3634
T15	20 - 0	0.476	21	0.1767	0.1962

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
286.75	Guy	21	12.150	0.4049	0.4551	5781
248.00	BXA-171085-8CF	21	12.930	0.2480	0.5060	12496
240.00	BXA-80080-4CF	21	12.936	0.2102	0.5119	20215
236.56	Guy	21	12.938	0.1905	0.5123	15587
196.20	(2) 7770.00	21	11.540	0.4006	0.5977	4588
173.28	Guy	21	9.236	0.4652	0.5831	8364
133.28	Guy	21	6.167	0.2934	0.6961	13790
90.00	Guy	21	3.990	0.2311	0.6475	27960
46.72	Guy	21	1.794	0.2532	0.4157	55773

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	300	Leg	A325N	0.7500	3	0.00	19433.90	0.000 ✔	1.333	Bolt Tension
		Torque Arm Top@286.75	A325N	0.6250	2	3541.21	6442.72	0.550 ✔	1.333	Bolt Shear
		Torque Arm Bottom@286.75	A325N	0.6250	2	4343.58	6442.72	0.674 ✔	1.333	Bolt Shear
T2	280	Leg	A325N	0.7500	3	1141.07	19438.20	0.059 ✔	1.333	Bolt Tension
T3	260	Leg	A325N	0.7500	3	0.00	19430.30	0.000 ✔	1.333	Bolt Tension
T4	240	Leg	A325N	0.7500	3	1620.64	19436.30	0.083 ✔	1.333	Bolt Tension
		Torque Arm Top@236.556	A325N	0.6250	2	4011.89	6442.72	0.623 ✔	1.333	Bolt Shear
		Torque Arm Bottom@236.556	A325N	0.6250	2	5102.17	6442.72	0.792 ✔	1.333	Bolt Shear
T5	220	Leg	A325N	0.7500	3	2321.16	19437.40	0.119 ✔	1.333	Bolt Tension

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load / Allowable	Allowable Ratio	Criteria
T6	200	Leg	A325N	0.7500	3	0.00	19366.70	0.000 ✓	1.333	Bolt Tension
T7	180	Leg	A325N	0.7500	3	0.00	19434.20	0.000 ✓	1.333	Bolt Tension
		Torque Arm Top@173.278	A325N	0.6250	2	4237.17	6442.72	0.658 ✓	1.333	Bolt Shear
		Torque Arm Bottom@173.278	A325N	0.6250	2	3760.37	6442.72	0.584 ✓	1.333	Bolt Shear
T8	160	Leg	A325N	0.7500	3	0.00	19435.20	0.000 ✓	1.333	Bolt Tension
T9	140	Leg	A325N	0.7500	3	0.00	19435.00	0.000 ✓	1.333	Bolt Tension
T10	120	Leg	A325N	0.7500	3	0.00	19437.50	0.000 ✓	1.333	Bolt Tension
T11	100	Leg	A325N	0.7500	3	0.00	19433.90	0.000 ✓	1.333	Bolt Tension
T12	80	Leg	A325N	0.7500	3	0.00	19436.20	0.000 ✓	1.333	Bolt Tension
T13	60	Leg	A325N	0.7500	3	0.00	19433.60	0.000 ✓	1.333	Bolt Tension
T14	40	Leg	A325N	0.7500	3	0.00	19426.70	0.000 ✓	1.333	Bolt Tension
T15	20	Leg	A325N	0.7500	3	0.00	18961.40	0.000 ✓	1.333	Bolt Tension

Guy Design Data

Section No.	Elevation ft	Size	Initial Tension lb	Breaking Load lb	Actual T lb	Allowable T_a lb	Required S.F.	Actual S.F.
T1	286.75 (A) (721)	1/2 EHS	2152.00	26900.04	9118.04	13450.00	2.000	2.950 ✓
	286.75 (A) (722)	1/2 EHS	2152.00	26900.04	9045.30	13450.00	2.000	2.974 ✓
	286.75 (B) (715)	1/2 EHS	2152.00	26900.04	8970.79	13450.00	2.000	2.999 ✓
	286.75 (B) (716)	1/2 EHS	2152.00	26900.04	9008.01	13450.00	2.000	2.986 ✓
	286.75 (C) (709)	1/2 EHS	2152.00	26900.04	8690.61	13450.00	2.000	3.095 ✓
	286.75 (C) (710)	1/2 EHS	2152.00	26900.04	8721.20	13450.00	2.000	3.084 ✓
T4	236.56 (A) (739)	1/2 EHS	2690.00	26900.04	10563.80	13450.00	2.000	2.546 ✓
	236.56 (A) (740)	1/2 EHS	2690.00	26900.04	10411.00	13450.00	2.000	2.584 ✓
	236.56 (B) (733)	1/2 EHS	2690.00	26900.04	10358.00	13450.00	2.000	2.597 ✓
	236.56 (B) (734)	1/2 EHS	2690.00	26900.04	10424.40	13450.00	2.000	2.580 ✓
	236.56 (C) (727)	1/2 EHS	2690.00	26900.04	10059.10	13450.00	2.000	2.674 ✓
	236.56 (C) (728)	1/2 EHS	2690.00	26900.04	10120.00	13450.00	2.000	2.658 ✓
T7	173.28 (A) (757)	1/2 EHS	2690.00	26900.04	9776.10	13450.00	2.000	2.752 ✓
	173.28 (A) (758)	1/2 EHS	2690.00	26900.04	9539.59	13450.00	2.000	2.820 ✓

Section No.	Elevation ft	Size	Initial Tension lb	Breaking Load lb	Actual T lb	Allowable T_a lb	Required S.F.	Actual S.F.
	173.28 (B) (751)	1/2 EHS	2690.00	26900.04	9488.77	13450.00	2.000	2.835 ✓
	173.28 (B) (752)	1/2 EHS	2690.00	26900.04	9535.49	13450.00	2.000	2.821 ✓
	173.28 (C) (745)	1/2 EHS	2690.00	26900.04	9201.40	13450.00	2.000	2.923 ✓
	173.28 (C) (746)	1/2 EHS	2690.00	26900.04	9365.76	13450.00	2.000	2.872 ✓
T9	133.28 (A) (768)	1/2 EHS	2690.00	26900.04	8702.90	13450.00	2.000	3.091 ✓
	133.28 (B) (767)	1/2 EHS	2690.00	26900.04	8212.08	13450.00	2.000	3.276 ✓
	133.28 (C) (763)	1/2 EHS	2690.00	26900.04	8176.33	13450.00	2.000	3.290 ✓
T11	90.00 (A) (774)	1/2 EHS	2690.00	26900.04	7557.56	13450.00	2.000	3.559 ✓
	90.00 (B) (773)	1/2 EHS	2690.00	26900.04	7100.81	13450.00	2.000	3.788 ✓
	90.00 (C) (769)	1/2 EHS	2690.00	26900.04	7095.32	13450.00	2.000	3.791 ✓
T13	46.72 (A) (780)	1/2 EHS	2959.00	26900.04	6052.53	13450.00	2.000	4.444 ✓
	46.72 (B) (779)	1/2 EHS	2959.00	26900.04	5818.85	13450.00	2.000	4.623 ✓
	46.72 (C) (775)	1/2 EHS	2959.00	26900.04	5815.07	13450.00	2.000	4.626 ✓

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	Mast Stability Index	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	300 - 280	P2.5x.203	20.00	3.29	41.7 K=1.00	1.00	18.570	1.7040	-14696.20	31644.50	0.464 ✓
T2	280 - 260	P2.5x.203	20.00	3.28	41.5 K=1.00	1.00	18.584	1.7040	-18048.40	31667.60	0.570 ✓
T3	260 - 240	P2.5x.203	20.00	3.28	41.5 K=1.00	1.00	18.584	1.7040	-18050.10	31667.60	0.570 ✓
T4	240 - 220	P2.5x.203	20.00	3.28	41.5 K=1.00	0.99	18.328	1.7040	-37463.90	31231.40	1.200 ✓
T5	220 - 200	P2.5x.203	20.00	3.28	41.5 K=1.00	0.99	18.348	1.7040	-41102.70	31265.20	1.315 ✓
T6	200 - 180	P2.5x.203	20.00	3.28	41.5 K=1.00	0.99	18.340	1.7040	-40958.20	31251.90	1.311 ✓
T7	180 - 160	P2.5x.276	20.00	3.28	42.6 K=1.00	1.00	18.502	2.2535	-39758.40	41695.80	0.954 ✓
T8	160 - 140	P2.5x.276	20.00	3.28	42.6 K=1.00	1.00	18.502	2.2535	-37234.20	41695.80	0.893 ✓
T9	140 - 120	P2.5x.203	20.00	3.28	41.5 K=1.00	1.00	18.584	1.7040	-39765.90	31667.60	1.256 ✓
T10	120 - 100	P2.5x.203	20.00	3.28	41.5	1.00	18.584	1.7040	-36741.40	31667.60	1.160

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	Mast Stability Index	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
					K=1.00						✓
T11	100 - 80	P2.5x.276	20.00	3.28	42.6 K=1.00	1.00	18.502	2.2535	-39838.30	41695.80	0.955 ✓
T12	80 - 60	P2.5x.276	20.00	3.28	42.6 K=1.00	1.00	18.502	2.2535	-41481.10	41695.80	0.995 ✓
T13	60 - 40	P2.5x.276	20.00	3.28	42.6 K=1.00	1.00	18.502	2.2535	-42718.30	41695.80	1.025 ✓
T14	40 - 20	P2.5x.276	20.00	3.28	42.6 K=1.00	1.00	18.502	2.2535	-48387.30	41695.80	1.160 ✓
T15	20 - 0	P2.5x.276	20.00	3.28	21.3 K=0.50	0.99	19.800	2.2535	-56352.30	44619.20	1.263 ✓

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	300 - 280	P1.25x.14	4.54	4.19	93.2 K=1.00	13.591	0.6685	-1535.66	9086.24	0.169 ✓
T2	280 - 260	P1.25x.14	4.53	4.18	93.0 K=1.00	13.615	0.6685	-1491.67	9102.16	0.164 ✓
T3	260 - 240	P1.25x.14	4.53	4.18	93.0 K=1.00	13.615	0.6685	-1850.25	9102.16	0.203 ✓
T4	240 - 220	P1.25x.14	4.53	4.18	93.0 K=1.00	13.615	0.6685	-3145.42	9102.16	0.346 ✓
T5	220 - 200	P1.25x.14	4.53	4.18	93.0 K=1.00	13.615	0.6685	-2101.39	9102.16	0.231 ✓
T6	200 - 180	P1.25x.14	4.53	4.18	93.0 K=1.00	13.615	0.6685	-5368.67	9102.16	0.590 ✓
T7	180 - 160	P1.25x.14	4.53	4.18	93.0 K=1.00	13.615	0.6685	-5742.17	9102.16	0.631 ✓
T8	160 - 140	P1.25x.14	4.53	4.18	93.0 K=1.00	13.615	0.6685	-1833.64	9102.16	0.201 ✓
T9	140 - 120	P1x.133	4.53	4.18	119.3 K=1.00	10.322	0.4939	-2756.41	5097.68	0.541 ✓
T10	120 - 100	P1x.133	4.53	4.18	119.3 K=1.00	10.322	0.4939	-1881.28	5097.68	0.369 ✓
T11	100 - 80	P1x.133	4.53	4.18	119.3 K=1.00	10.322	0.4939	-2575.05	5097.68	0.505 ✓
T12	80 - 60	P1x.133	4.53	4.18	119.3 K=1.00	10.322	0.4939	-1980.83	5097.68	0.389 ✓
T13	60 - 40	P1x.133	4.53	4.18	119.3 K=1.00	10.322	0.4939	-2505.76	5097.68	0.492 ✓
T14	40 - 20	P1x.133	4.53	4.18	119.3 K=1.00	10.322	0.4939	-2967.94	5097.68	0.582 ✓
T15	20 - 0	P1x.133	4.53	4.18	119.3 K=1.00	10.322	0.4939	-3199.36	5097.68	0.628 ✓

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	300 - 280	P1x.133	3.13	2.89	82.3 K=1.00	14.800	0.4939	-1983.67	7309.48	0.271 ✓
T2	280 - 260	P1x.133	3.13	2.89	82.3 K=1.00	14.800	0.4939	-312.61	7309.48	0.043 ✓
T3	260 - 240	P1x.133	3.13	2.89	82.3 K=1.00	14.800	0.4939	-312.64	7309.48	0.043 ✓
T4	240 - 220	P1x.133	3.13	2.89	82.3 K=1.00	14.800	0.4939	-2783.74	7309.48	0.381 ✓
T5	220 - 200	P1x.133	3.13	2.89	82.3 K=1.00	14.800	0.4939	-711.92	7309.48	0.097 ✓
T6	200 - 180	P1x.133	3.13	2.89	82.3 K=1.00	14.800	0.4939	-709.42	7309.48	0.097 ✓
T7	180 - 160	P1x.133	3.13	2.89	82.3 K=1.00	14.800	0.4939	-3693.89	7309.48	0.505 ✓
T8	160 - 140	P1x.133	3.13	2.89	82.3 K=1.00	14.800	0.4939	-644.92	7309.48	0.088 ✓
T9	140 - 120	P1x.133	3.13	2.89	82.3 K=1.00	14.800	0.4939	-688.77	7309.48	0.094 ✓
T10	120 - 100	P1x.133	3.13	2.89	82.3 K=1.00	14.800	0.4939	-636.38	7309.48	0.087 ✓
T11	100 - 80	P1x.133	3.13	2.89	82.3 K=1.00	14.800	0.4939	-690.02	7309.48	0.094 ✓
T12	80 - 60	P1x.133	3.13	2.89	82.3 K=1.00	14.800	0.4939	-718.47	7309.48	0.098 ✓
T13	60 - 40	P1x.133	3.13	2.89	82.3 K=1.00	14.800	0.4939	-739.90	7309.48	0.101 ✓
T14	40 - 20	P1x.133	3.13	2.89	82.3 K=1.00	14.800	0.4939	-838.09	7309.48	0.115 ✓
T15	20 - 0	P1x.133	3.13	2.89	82.3 K=1.00	14.800	0.4939	-976.05	7309.48	0.134 ✓

Secondary Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	300 - 280	P0.375x0.091	1.56	1.44	82.9 K=1.00	14.744	0.1670	-0.01	2461.56	0.000 ✓
T2	280 - 260	P0.375x0.091	1.56	1.44	82.9 K=1.00	14.744	0.1670	-0.01	2461.56	0.000 ✓
T3	260 - 240	P0.375x0.091	1.56	1.44	82.9	14.744	0.1670	-0.01	2461.56	0.000

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio P / P_a
					K=1.00					✓
T4	240 - 220	P0.375x0.091	1.56	1.44	82.9 K=1.00	14.744	0.1670	-0.00	2461.56	0.000 ✓
T6	200 - 180	P0.375x0.091	1.56	1.44	82.9 K=1.00	14.744	0.1670	-0.01	2461.56	0.000 ✓
T7	180 - 160	P0.375x0.091	1.56	1.44	82.9 K=1.00	14.744	0.1670	-0.01	2461.56	0.000 ✓
T8	160 - 140	P0.375x0.091	1.56	1.44	82.9 K=1.00	14.744	0.1670	-0.01	2461.56	0.000 ✓
T9	140 - 120	P0.375x0.091	1.56	1.44	82.9 K=1.00	14.744	0.1670	-0.01	2461.56	0.000 ✓
T10	120 - 100	P0.375x0.091	1.56	1.44	82.9 K=1.00	14.744	0.1670	-0.01	2461.56	0.000 ✓
T11	100 - 80	P0.375x0.091	1.56	1.44	82.9 K=1.00	14.744	0.1670	-0.01	2461.56	0.000 ✓
T12	80 - 60	P0.375x0.091	1.56	1.44	82.9 K=1.00	14.744	0.1670	-0.01	2461.56	0.000 ✓
T13	60 - 40	P0.375x0.091	1.56	1.44	82.9 K=1.00	14.744	0.1670	-0.01	2461.56	0.000 ✓
T14	40 - 20	P0.375x0.091	1.56	1.44	82.9 K=1.00	14.744	0.1670	-0.01	2461.56	0.000 ✓

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio P / P_a
T1	300 - 280	2x1/2	3.13	2.89	239.9 K=1.00	2.595	1.0000	-27.53	2594.96	0.011 ✓
T2	280 - 260	KL/R > 200 (C) - 4 2x1/2	3.13	2.89	239.9 K=1.00	2.595	1.0000	-206.75	2594.96	0.080 ✓
T3	260 - 240	KL/R > 200 (C) - 53 2x1/2	3.13	2.89	239.9 K=1.00	2.595	1.0000	-27.71	2594.96	0.011 ✓
T4	240 - 220	KL/R > 200 (C) - 100 2x1/2	3.13	2.89	239.9 K=1.00	2.595	1.0000	-630.30	2594.96	0.243 ✓
T5	220 - 200	KL/R > 200 (C) - 150 2x1/2	3.13	2.89	239.9 K=1.00	2.595	1.0000	-158.23	2594.96	0.061 ✓
T6	200 - 180	KL/R > 200 (C) - 197 2x1/2	3.13	2.89	239.9 K=1.00	2.595	1.0000	-112.55	2594.96	0.043 ✓
T7	180 - 160	KL/R > 200 (C) - 240 2x1/2	3.13	2.89	239.9 K=1.00	2.595	1.0000	-973.02	2594.96	0.375 ✓
T9	140 - 120	KL/R > 200 (C) - 287 2x1/2	3.13	2.89	239.9 K=1.00	2.595	1.0000	-80.46	2594.96	0.031 ✓
		KL/R > 200 (C) - 384								

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T13	60 - 40	2x1/2	3.13	2.89	239.9 K=1.00	2.595	1.0000	-42.91	2594.96	0.017 ✔
		KL/R > 200 (C) - 575								
T14	40 - 20	2x1/2	3.13	2.89	239.9 K=1.00	2.595	1.0000	-11.88	2594.96	0.005 ✔
		KL/R > 200 (C) - 622								
T15	20 - 0	2x1/2	3.13	2.89	239.9 K=1.00	2.595	1.0000	-157.40	2594.96	0.061 ✔
		KL/R > 200 (C) - 671								

Bottom Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	300 - 280	2x1/2	3.13	2.89	239.9 K=1.00	2.595	1.0000	-285.85	2594.96	0.110 ✔
		KL/R > 200 (C) - 8								
T2	280 - 260	2x1/2	3.13	2.89	239.9 K=1.00	2.595	1.0000	-83.04	2594.96	0.032 ✔
		KL/R > 200 (C) - 56								
T3	260 - 240	2x1/2	3.13	2.89	239.9 K=1.00	2.595	1.0000	-155.12	2594.96	0.060 ✔
		KL/R > 200 (C) - 105								
T4	240 - 220	2x1/2	3.13	2.89	239.9 K=1.00	2.595	1.0000	-247.54	2594.96	0.095 ✔
		KL/R > 200 (C) - 152								
T5	220 - 200	2x1/2	3.13	2.89	239.9 K=1.00	2.595	1.0000	-5.44	2594.96	0.002 ✔
		KL/R > 200 (C) - 200								
T6	200 - 180	2x1/2	3.13	2.89	239.9 K=1.00	2.595	1.0000	-710.38	2594.96	0.274 ✔
		KL/R > 200 (C) - 242								
T7	180 - 160	2x1/2	3.13	2.89	239.9 K=1.00	2.595	1.0000	-91.04	2594.96	0.035 ✔
		KL/R > 200 (C) - 290								
T9	140 - 120	2x1/2	3.13	2.89	239.9 K=1.00	2.595	1.0000	-63.96	2594.96	0.025 ✔
		KL/R > 200 (C) - 385								
T11	100 - 80	2x1/2	3.13	2.89	239.9 K=1.00	2.595	1.0000	-16.44	2594.96	0.006 ✔
		KL/R > 200 (C) - 483								
T14	40 - 20	2x1/2	3.13	2.89	239.9 K=1.00	2.595	1.0000	-123.57	2594.96	0.048 ✔
		KL/R > 200 (C) - 626								
T15	20 - 0	2x1/2	3.13	2.89	239.9 K=1.00	2.595	1.0000	-411.04	2594.96	0.158 ✔
		KL/R > 200 (C) - 674								

Torque-Arm Bottom Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	300 - 280 (713)	L3x3x3/8	4.15	3.42	95.0 K=1.36	13.605	2.1100	-8138.41	28706.00	0.284 ✓
T1	300 - 280 (714)	L3x3x3/8	4.15	3.42	95.0 K=1.36	13.605	2.1100	-8554.57	28706.00	0.298 ✓
T1	300 - 280 (719)	L3x3x3/8	4.15	3.42	95.0 K=1.36	13.605	2.1100	-8206.53	28706.00	0.286 ✓
T1	300 - 280 (720)	L3x3x3/8	4.15	3.42	95.0 K=1.36	13.605	2.1100	-8381.36	28706.00	0.292 ✓
T1	300 - 280 (725)	L3x3x3/8	4.15	3.42	95.0 K=1.36	13.605	2.1100	-8588.48	28706.00	0.299 ✓
T1	300 - 280 (726)	L3x3x3/8	4.15	3.42	95.0 K=1.36	13.605	2.1100	-8687.17	28706.00	0.303 ✓
T4	240 - 220 (731)	L3x3x3/8	4.14	3.41	94.9 K=1.36	13.618	2.1100	-10146.50	28733.70	0.353 ✓
T4	240 - 220 (732)	L3x3x3/8	4.14	3.41	94.9 K=1.36	13.618	2.1100	-9047.92	28733.70	0.315 ✓
T4	240 - 220 (737)	L3x3x3/8	4.14	3.41	94.9 K=1.36	13.618	2.1100	-9281.85	28733.70	0.323 ✓
T4	240 - 220 (738)	L3x3x3/8	4.14	3.41	94.9 K=1.36	13.618	2.1100	-9860.83	28733.70	0.343 ✓
T4	240 - 220 (743)	L3x3x3/8	4.14	3.41	94.9 K=1.36	13.618	2.1100	-10204.30	28733.70	0.355 ✓
T4	240 - 220 (744)	L3x3x3/8	4.14	3.41	94.9 K=1.36	13.618	2.1100	-9752.29	28733.70	0.339 ✓
T7	180 - 160 (749)	L3x3x3/8	4.14	3.41	94.9 K=1.36	13.618	2.1100	-6716.12	28733.70	0.234 ✓
T7	180 - 160 (750)	L3x3x3/8	4.14	3.41	94.9 K=1.36	13.618	2.1100	-6404.13	28733.70	0.223 ✓
T7	180 - 160 (755)	L3x3x3/8	4.14	3.41	94.9 K=1.36	13.618	2.1100	-6190.93	28733.70	0.215 ✓
T7	180 - 160 (756)	L3x3x3/8	4.14	3.41	94.9 K=1.36	13.618	2.1100	-7107.68	28733.70	0.247 ✓
T7	180 - 160 (761)	L3x3x3/8	4.14	3.41	94.9 K=1.36	13.618	2.1100	-6256.15	28733.70	0.218 ✓
T7	180 - 160 (762)	L3x3x3/8	4.14	3.41	94.9 K=1.36	13.618	2.1100	-7520.74	28733.70	0.262 ✓

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	300 - 280	P2.5x.203	20.00	3.29	41.7	21.000	1.7040	1012.50	35785.10	0.028

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T2	280 - 260	P2.5x.203	20.00	3.28	41.5	21.000	1.7040	3423.21	35785.10	0.096
T3	260 - 240	P2.5x.203	20.00	3.28	41.5	21.000	1.7040	3748.10	35785.10	0.105
T4	240 - 220	P2.5x.203	20.00	3.28	41.5	21.000	1.7040	4861.93	35785.10	0.136
T5	220 - 200	P2.5x.203	20.00	3.28	41.5	21.000	1.7040	7984.04	35785.10	0.223
T6	200 - 180	P2.5x.203	20.00	3.28	41.5	21.000	1.7040	6963.41	35785.10	0.195
T7	180 - 160	P2.5x.276	20.00	3.28	42.6	21.000	2.2535	115.84	47324.30	0.002

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	300 - 280	P1.25x.14	4.54	4.19	93.2	21.000	0.6685	1251.70	14039.10	0.089
T2	280 - 260	P1.25x.14	4.53	4.18	93.0	21.000	0.6685	1122.96	14039.10	0.080
T3	260 - 240	P1.25x.14	4.53	4.18	93.0	21.000	0.6685	1212.43	14039.10	0.086
T4	240 - 220	P1.25x.14	4.53	4.18	93.0	21.000	0.6685	2444.18	14039.10	0.174
T5	220 - 200	P1.25x.14	4.53	4.18	93.0	21.000	0.6685	1002.49	14039.10	0.071
T6	200 - 180	P1.25x.14	4.53	4.18	93.0	21.000	0.6685	4129.00	14039.10	0.294
T7	180 - 160	P1.25x.14	4.53	4.18	93.0	21.000	0.6685	4653.54	14039.10	0.331
T8	160 - 140	P1.25x.14	4.53	4.18	93.0	21.000	0.6685	464.74	14039.10	0.033
T9	140 - 120	P1x.133	4.53	4.18	119.3	21.000	0.4939	1069.61	10371.40	0.103
T10	120 - 100	P1x.133	4.53	4.18	119.3	21.000	0.4939	324.72	10371.40	0.031
T11	100 - 80	P1x.133	4.53	4.18	119.3	21.000	0.4939	735.30	10371.40	0.071
T12	80 - 60	P1x.133	4.53	4.18	119.3	21.000	0.4939	485.76	10371.40	0.047
T13	60 - 40	P1x.133	4.53	4.18	119.3	21.000	0.4939	677.10	10371.40	0.065
T14	40 - 20	P1x.133	4.53	4.18	119.3	21.000	0.4939	987.46	10371.40	0.095
T15	20 - 0	P1x.133	4.53	4.18	119.3	21.000	0.4939	2071.53	10371.40	0.200

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	300 - 280	P1x.133	3.13	2.89	82.3	21.000	0.4939	1008.14	10371.40	0.097 ✓
T2	280 - 260	P1x.133	3.13	2.89	82.3	21.000	0.4939	312.61	10371.40	0.030 ✓
T3	260 - 240	P1x.133	3.13	2.89	82.3	21.000	0.4939	393.55	10371.40	0.038 ✓
T4	240 - 220	P1x.133	3.13	2.89	82.3	21.000	0.4939	2144.69	10371.40	0.207 ✓
T5	220 - 200	P1x.133	3.13	2.89	82.3	21.000	0.4939	711.92	10371.40	0.069 ✓
T6	200 - 180	P1x.133	3.13	2.89	82.3	21.000	0.4939	1277.59	10371.40	0.123 ✓
T7	180 - 160	P1x.133	3.13	2.89	82.3	21.000	0.4939	3993.26	10371.40	0.385 ✓
T8	160 - 140	P1x.133	3.13	2.89	82.3	21.000	0.4939	703.96	10371.40	0.068 ✓
T9	140 - 120	P1x.133	3.13	2.89	82.3	21.000	0.4939	2052.55	10371.40	0.198 ✓
T10	120 - 100	P1x.133	3.13	2.89	82.3	21.000	0.4939	776.12	10371.40	0.075 ✓
T11	100 - 80	P1x.133	3.13	2.89	82.3	21.000	0.4939	2001.78	10371.40	0.193 ✓
T12	80 - 60	P1x.133	3.13	2.89	82.3	21.000	0.4939	769.57	10371.40	0.074 ✓
T13	60 - 40	P1x.133	3.13	2.89	82.3	21.000	0.4939	1758.25	10371.40	0.170 ✓
T14	40 - 20	P1x.133	3.13	2.89	82.3	21.000	0.4939	838.09	10371.40	0.081 ✓
T15	20 - 0	P1x.133	3.13	2.89	82.3	21.000	0.4939	976.05	10371.40	0.094 ✓

Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	300 - 280	P0.375x0.091	1.56	1.44	82.9	21.000	0.1670	0.01	3506.09	0.000 ✓
T2	280 - 260	P0.375x0.091	1.56	1.44	82.9	21.000	0.1670	0.01	3506.09	0.000 ✓
T3	260 - 240	P0.375x0.091	1.56	1.44	82.9	21.000	0.1670	0.01	3506.09	0.000 ✓
T4	240 - 220	P0.375x0.091	1.56	1.44	82.9	21.000	0.1670	0.00	3506.09	0.000 ✓
T6	200 - 180	P0.375x0.091	1.56	1.44	82.9	21.000	0.1670	0.01	3506.09	0.000 ✓

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T7	180 - 160	P0.375x0.091	1.56	1.44	82.9	21.000	0.1670	0.01	3506.09	0.000 ✓
T8	160 - 140	P0.375x0.091	1.56	1.44	82.9	21.000	0.1670	0.01	3506.09	0.000 ✓
T9	140 - 120	P0.375x0.091	1.56	1.44	82.9	21.000	0.1670	0.01	3506.09	0.000 ✓
T10	120 - 100	P0.375x0.091	1.56	1.44	82.9	21.000	0.1670	0.01	3506.09	0.000 ✓
T11	100 - 80	P0.375x0.091	1.56	1.44	82.9	21.000	0.1670	0.01	3506.09	0.000 ✓
T12	80 - 60	P0.375x0.091	1.56	1.44	82.9	21.000	0.1670	0.01	3506.09	0.000 ✓
T13	60 - 40	P0.375x0.091	1.56	1.44	82.9	21.000	0.1670	0.01	3506.09	0.000 ✓
T14	40 - 20	P0.375x0.091	1.56	1.44	82.9	21.000	0.1670	0.01	3506.09	0.000 ✓

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	300 - 280	2x1/2	3.13	2.89	239.9	21.600	1.0000	28.58	21600.00	0.001 ✓
T2	280 - 260	2x1/2	3.13	2.89	239.9	21.600	1.0000	340.35	21600.00	0.016 ✓
T3	260 - 240	2x1/2	3.13	2.89	239.9	21.600	1.0000	226.79	21600.00	0.010 ✓
T4	240 - 220	2x1/2	3.13	2.89	239.9	21.600	1.0000	731.91	21600.00	0.034 ✓
T5	220 - 200	2x1/2	3.13	2.89	239.9	21.600	1.0000	443.19	21600.00	0.021 ✓
T6	200 - 180	2x1/2	3.13	2.89	239.9	21.600	1.0000	462.30	21600.00	0.021 ✓
T7	180 - 160	2x1/2	3.13	2.89	239.9	21.600	1.0000	1320.42	21600.00	0.061 ✓
T8	160 - 140	2x1/2	3.13	2.89	239.9	21.600	1.0000	440.94	21600.00	0.020 ✓
T9	140 - 120	2x1/2	3.13	2.89	239.9	21.600	1.0000	529.26	21600.00	0.025 ✓
T10	120 - 100	2x1/2	3.13	2.89	239.9	21.600	1.0000	482.92	21600.00	0.022 ✓
T11	100 - 80	2x1/2	3.13	2.89	239.9	21.600	1.0000	498.42	21600.00	0.023 ✓
T12	80 - 60	2x1/2	3.13	2.89	239.9	21.600	1.0000	494.80	21600.00	0.023 ✓
T13	60 - 40	2x1/2	3.13	2.89	239.9	21.600	1.0000	571.14	21600.00	0.026 ✓
T14	40 - 20	2x1/2	3.13	2.89	239.9	21.600	1.0000	629.62	21600.00	0.029 ✓

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T15	20 - 0	2x1/2	3.13	2.89	239.9	21.600	1.0000	802.00	21600.00	0.037

Bottom Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	300 - 280	2x1/2	3.13	2.89	239.9	21.600	1.0000	392.69	21600.00	0.018
T2	280 - 260	2x1/2	3.13	2.89	239.9	21.600	1.0000	225.55	21600.00	0.010
T3	260 - 240	2x1/2	3.13	2.89	239.9	21.600	1.0000	379.00	21600.00	0.018
T4	240 - 220	2x1/2	3.13	2.89	239.9	21.600	1.0000	673.96	21600.00	0.031
T5	220 - 200	2x1/2	3.13	2.89	239.9	21.600	1.0000	361.19	21600.00	0.017
T6	200 - 180	2x1/2	3.13	2.89	239.9	21.600	1.0000	1173.44	21600.00	0.054
T7	180 - 160	2x1/2	3.13	2.89	239.9	21.600	1.0000	534.61	21600.00	0.025
T8	160 - 140	2x1/2	3.13	2.89	239.9	21.600	1.0000	466.75	21600.00	0.022
T9	140 - 120	2x1/2	3.13	2.89	239.9	21.600	1.0000	606.49	21600.00	0.028
T10	120 - 100	2x1/2	3.13	2.89	239.9	21.600	1.0000	395.29	21600.00	0.018
T11	100 - 80	2x1/2	3.13	2.89	239.9	21.600	1.0000	580.19	21600.00	0.027
T12	80 - 60	2x1/2	3.13	2.89	239.9	21.600	1.0000	475.38	21600.00	0.022
T13	60 - 40	2x1/2	3.13	2.89	239.9	21.600	1.0000	605.26	21600.00	0.028
T14	40 - 20	2x1/2	3.13	2.89	239.9	21.600	1.0000	698.93	21600.00	0.032
T15	20 - 0	2x1/2	3.13	2.89	239.9	21.600	1.0000	3247.84	21600.00	0.150*

* DL controls

Top Guy Pull-Off Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T9	140 - 120	2x5/16	3.13	2.89	383.8	21.600	0.6250	2597.54	13500.00	0.192 ✓
T11	100 - 80	2x5/16	3.13	2.89	383.8	21.600	0.6250	2533.25	13500.00	0.188 ✓
T13	60 - 40	2x5/16	3.13	2.89	383.8	21.600	0.6250	2225.07	13500.00	0.165 ✓

Torque-Arm Top Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T1	300 - 280 (711)	L3x3x3/8	2.53	1.87	31.6	21.600	2.1100	6996.37	45576.00	0.154 ✓
T1	300 - 280 (712)	L3x3x3/8	2.53	1.87	31.6	21.600	2.1100	6879.08	45576.00	0.151 ✓
T1	300 - 280 (717)	L3x3x3/8	2.53	1.87	31.6	21.600	2.1100	6935.06	45576.00	0.152 ✓
T1	300 - 280 (718)	L3x3x3/8	2.53	1.87	31.6	21.600	2.1100	6945.35	45576.00	0.152 ✓
T1	300 - 280 (723)	L3x3x3/8	2.53	1.87	31.6	21.600	2.1100	7046.72	45576.00	0.155 ✓
T1	300 - 280 (724)	L3x3x3/8	2.53	1.87	31.6	21.600	2.1100	7082.42	45576.00	0.155 ✓
T4	240 - 220 (729)	L3x3x3/8	2.53	1.87	31.6	21.600	2.1100	7461.97	45576.00	0.164 ✓
T4	240 - 220 (730)	L3x3x3/8	2.53	1.87	31.6	21.600	2.1100	7932.11	45576.00	0.174 ✓
T4	240 - 220 (735)	L3x3x3/8	2.53	1.87	31.6	21.600	2.1100	7963.45	45576.00	0.175 ✓
T4	240 - 220 (736)	L3x3x3/8	2.53	1.87	31.6	21.600	2.1100	7442.84	45576.00	0.163 ✓
T4	240 - 220 (741)	L3x3x3/8	2.53	1.87	31.6	21.600	2.1100	8023.77	45576.00	0.176 ✓
T4	240 - 220 (742)	L3x3x3/8	2.53	1.87	31.6	21.600	2.1100	7683.54	45576.00	0.169 ✓
T7	180 - 160 (747)	L3x3x3/8	2.53	1.87	31.6	21.600	2.1100	7740.90	45576.00	0.170 ✓
T7	180 - 160 (748)	L3x3x3/8	2.53	1.87	31.6	21.600	2.1100	8216.89	45576.00	0.180 ✓
T7	180 - 160 (753)	L3x3x3/8	2.53	1.87	31.6	21.600	2.1100	8190.78	45576.00	0.180 ✓
T7	180 - 160 (754)	L3x3x3/8	2.53	1.87	31.6	21.600	2.1100	7720.63	45576.00	0.169 ✓
T7	180 - 160 (759)	L3x3x3/8	2.53	1.87	31.6	21.600	2.1100	7933.31	45576.00	0.174 ✓
T7	180 - 160 (760)	L3x3x3/8	2.53	1.87	31.6	21.600	2.1100	8474.35	45576.00	0.186 ✓

Torque-Arm Bottom Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P lb	Allow. P_a lb	Ratio $\frac{P}{P_a}$
T4	240 - 220 (731)	L3x3x3/8	4.14	3.41	51.8	21.600	2.1100	26.85	45576.00	0.001 ✓
T4	240 - 220 (732)	L3x3x3/8	4.14	3.41	51.8	21.600	2.1100	487.49	45576.00	0.011 ✓
T4	240 - 220 (737)	L3x3x3/8	4.14	3.41	51.8	21.600	2.1100	514.69	45576.00	0.011 ✓
T4	240 - 220 (738)	L3x3x3/8	4.14	3.41	51.8	21.600	2.1100	302.24	45576.00	0.007 ✓
T4	240 - 220 (743)	L3x3x3/8	4.14	3.41	51.8	21.600	2.1100	168.58	45576.00	0.004 ✓
T4	240 - 220 (744)	L3x3x3/8	4.14	3.41	51.8	21.600	2.1100	483.00	45576.00	0.011 ✓
T7	180 - 160 (750)	L3x3x3/8	4.14	3.41	51.8	21.600	2.1100	313.87	45576.00	0.007 ✓
T7	180 - 160 (755)	L3x3x3/8	4.14	3.41	51.8	21.600	2.1100	422.06	45576.00	0.009 ✓
T7	180 - 160 (761)	L3x3x3/8	4.14	3.41	51.8	21.600	2.1100	305.16	45576.00	0.007 ✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
T1	300 - 280	Leg	P2.5x.203	3	-14696.20	42182.12	34.8	Pass
T2	280 - 260	Leg	P2.5x.203	51	-18048.40	42212.91	42.8	Pass
T3	260 - 240	Leg	P2.5x.203	99	-18050.10	42212.91	42.8	Pass
T4	240 - 220	Leg	P2.5x.203	147	-37463.90	41631.45	90.0	Pass
T5	220 - 200	Leg	P2.5x.203	195	-41102.70	41676.51	98.6	Pass
T6	200 - 180	Leg	P2.5x.203	237	-40958.20	41658.78	98.3	Pass
T7	180 - 160	Leg	P2.5x.276	284	-39758.40	55580.50	71.5	Pass
T8	160 - 140	Leg	P2.5x.276	333	-37234.20	55580.50	67.0	Pass
T9	140 - 120	Leg	P2.5x.203	381	-39765.90	42212.91	94.2	Pass
T10	120 - 100	Leg	P2.5x.203	429	-36741.40	42212.91	87.0	Pass
T11	100 - 80	Leg	P2.5x.276	477	-39838.30	55580.50	71.7	Pass
T12	80 - 60	Leg	P2.5x.276	524	-41481.10	55580.50	74.6	Pass
T13	60 - 40	Leg	P2.5x.276	571	-42718.30	55580.50	76.9	Pass
T14	40 - 20	Leg	P2.5x.276	619	-48387.30	55580.50	87.1	Pass
T15	20 - 0	Leg	P2.5x.276	667	-56352.30	59477.39	94.7	Pass
T1	300 - 280	Diagonal	P1.25x.14	11	-1535.66	12111.96	12.7	Pass
T2	280 - 260	Diagonal	P1.25x.14	94	-1491.67	12133.18	12.3	Pass
T3	260 - 240	Diagonal	P1.25x.14	108	-1850.25	12133.18	15.2	Pass
T4	240 - 220	Diagonal	P1.25x.14	176	-3145.42	12133.18	25.9	Pass
T5	220 - 200	Diagonal	P1.25x.14	232	-2101.39	12133.18	17.3	Pass
T6	200 - 180	Diagonal	P1.25x.14	245	-5368.67	12133.18	44.2	Pass
T7	180 - 160	Diagonal	P1.25x.14	328	-5742.17	12133.18	47.3	Pass
T8	160 - 140	Diagonal	P1.25x.14	342	-1833.64	12133.18	15.1	Pass
T9	140 - 120	Diagonal	P1x.133	409	-2756.41	6795.21	40.6	Pass
T10	120 - 100	Diagonal	P1x.133	471	-1881.28	6795.21	27.7	Pass
T11	100 - 80	Diagonal	P1x.133	500	-2575.05	6795.21	37.9	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
T12	80 - 60	Diagonal	P1x.133	569	-1980.83	6795.21	29.2	Pass
T13	60 - 40	Diagonal	P1x.133	594	-2505.76	6795.21	36.9	Pass
T14	40 - 20	Diagonal	P1x.133	628	-2967.94	6795.21	43.7	Pass
T15	20 - 0	Diagonal	P1x.133	688	-3199.36	6795.21	47.1	Pass
T1	300 - 280	Horizontal	P1x.133	22	-1983.67	9743.54	20.4	Pass
T2	280 - 260	Horizontal	P1x.133	63	-312.61	9743.54	3.2	Pass
T3	260 - 240	Horizontal	P1x.133	111	-312.64	9743.54	3.2	Pass
T4	240 - 220	Horizontal	P1x.133	187	-2783.74	9743.54	28.6	Pass
T5	220 - 200	Horizontal	P1x.133	207	-711.92	9743.54	7.3	Pass
T6	200 - 180	Horizontal	P1x.133	276	1277.59	13825.08	9.2	Pass
T7	180 - 160	Horizontal	P1x.133	318	-3693.89	9743.54	37.9	Pass
T8	160 - 140	Horizontal	P1x.133	345	-644.92	9743.54	6.6	Pass
T9	140 - 120	Horizontal	P1x.133	414	2052.55	13825.08	14.8	Pass
T10	120 - 100	Horizontal	P1x.133	441	-636.38	9743.54	6.5	Pass
T11	100 - 80	Horizontal	P1x.133	503	2001.78	13825.08	14.5	Pass
T12	80 - 60	Horizontal	P1x.133	536	-718.47	9743.54	7.4	Pass
T13	60 - 40	Horizontal	P1x.133	591	1758.25	13825.08	12.7	Pass
T14	40 - 20	Horizontal	P1x.133	639	-838.09	9743.54	8.6	Pass
T15	20 - 0	Horizontal	P1x.133	681	-976.05	9743.54	10.0	Pass
T1	300 - 280	Secondary Horizontal	P0.375x0.091	27	-0.01	3281.26	0.1	Pass
T2	280 - 260	Secondary Horizontal	P0.375x0.091	75	-0.01	3281.26	0.1	Pass
T3	260 - 240	Secondary Horizontal	P0.375x0.091	123	-0.00	3281.26	0.1	Pass
T4	240 - 220	Secondary Horizontal	P0.375x0.091	171	-0.00	3281.26	0.1	Pass
T6	200 - 180	Secondary Horizontal	P0.375x0.091	275	-0.01	3281.26	0.1	Pass
T7	180 - 160	Secondary Horizontal	P0.375x0.091	295	-0.01	3281.26	0.1	Pass
T8	160 - 140	Secondary Horizontal	P0.375x0.091	343	-0.01	3281.26	0.1	Pass
T9	140 - 120	Secondary Horizontal	P0.375x0.091	391	-0.01	3281.26	0.1	Pass
T10	120 - 100	Secondary Horizontal	P0.375x0.091	453	-0.01	3281.26	0.1	Pass
T11	100 - 80	Secondary Horizontal	P0.375x0.091	487	-0.00	3281.26	0.1	Pass
T12	80 - 60	Secondary Horizontal	P0.375x0.091	563	-0.01	3281.26	0.1	Pass
T13	60 - 40	Secondary Horizontal	P0.375x0.091	597	-0.01	3281.26	0.1	Pass
T14	40 - 20	Secondary Horizontal	P0.375x0.091	659	-0.01	3281.26	0.1	Pass
T1	300 - 280	Top Girt	2x1/2	4	-27.53	3459.08	0.8	Pass
T2	280 - 260	Top Girt	2x1/2	53	-206.75	3459.08	6.0	Pass
T3	260 - 240	Top Girt	2x1/2	100	-27.71	3459.08	0.8	Pass
T4	240 - 220	Top Girt	2x1/2	150	-630.30	3459.08	18.2	Pass
T5	220 - 200	Top Girt	2x1/2	197	-158.23	3459.08	4.6	Pass
T6	200 - 180	Top Girt	2x1/2	240	-112.55	3459.08	3.3	Pass
T7	180 - 160	Top Girt	2x1/2	287	-973.02	3459.08	28.1	Pass
T8	160 - 140	Top Girt	2x1/2	334	440.94	28792.80	1.5	Pass
T9	140 - 120	Top Girt	2x1/2	384	-80.46	3459.08	2.3	Pass
T10	120 - 100	Top Girt	2x1/2	430	482.92	28792.80	1.7	Pass
T11	100 - 80	Top Girt	2x1/2	479	498.42	28792.80	1.7	Pass
T12	80 - 60	Top Girt	2x1/2	528	494.80	28792.80	1.7	Pass
T13	60 - 40	Top Girt	2x1/2	575	571.14	28792.80	2.0	Pass
T14	40 - 20	Top Girt	2x1/2	623	629.62	28792.80	2.2	Pass
T15	20 - 0	Top Girt	2x1/2	671	-157.40	3459.08	4.6	Pass
T1	300 - 280	Bottom Girt	2x1/2	8	-285.85	3459.08	8.3	Pass
T2	280 - 260	Bottom Girt	2x1/2	56	-83.04	3459.08	2.4	Pass
T3	260 - 240	Bottom Girt	2x1/2	105	-155.12	3459.08	4.5	Pass
T4	240 - 220	Bottom Girt	2x1/2	152	-247.54	3459.08	7.2	Pass
T5	220 - 200	Bottom Girt	2x1/2	201	361.19	28792.80	1.3	Pass
T6	200 - 180	Bottom Girt	2x1/2	242	-710.38	3459.08	20.5	Pass
T7	180 - 160	Bottom Girt	2x1/2	290	-91.04	3459.08	2.6	Pass
T8	160 - 140	Bottom Girt	2x1/2	339	466.75	28792.80	1.6	Pass
T9	140 - 120	Bottom Girt	2x1/2	385	606.49	28792.80	2.1	Pass
T10	120 - 100	Bottom Girt	2x1/2	434	395.29	28792.80	1.4	Pass
T11	100 - 80	Bottom Girt	2x1/2	483	580.19	28792.80	2.0	Pass
T12	80 - 60	Bottom Girt	2x1/2	529	475.38	28792.80	1.7	Pass
T13	60 - 40	Bottom Girt	2x1/2	577	605.26	28792.80	2.1	Pass
T14	40 - 20	Bottom Girt	2x1/2	626	-123.57	3459.08	3.6	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF*Pallow lb	% Capacity	Pass Fail
T15	20 - 0	Bottom Girt	2x1/2	675	3247.84	21600.00	15.0	Pass
T1	300 - 280	Guy A@286.75	1/2	721	9118.04	13450.00	67.8	Pass
T4	240 - 220	Guy A@236.556	1/2	739	10563.80	13450.00	78.5	Pass
T7	180 - 160	Guy A@173.278	1/2	757	9776.10	13450.00	72.7	Pass
T9	140 - 120	Guy A@133.278	1/2	768	8702.90	13450.00	64.7	Pass
T11	100 - 80	Guy A@90	1/2	774	7557.56	13450.00	56.2	Pass
T13	60 - 40	Guy A@46.7222	1/2	780	6052.53	13450.00	45.0	Pass
T1	300 - 280	Guy B@286.75	1/2	716	9008.01	13450.00	67.0	Pass
T4	240 - 220	Guy B@236.556	1/2	734	10424.40	13450.00	77.5	Pass
T7	180 - 160	Guy B@173.278	1/2	752	9535.49	13450.00	70.9	Pass
T9	140 - 120	Guy B@133.278	1/2	767	8212.08	13450.00	61.1	Pass
T11	100 - 80	Guy B@90	1/2	773	7100.81	13450.00	52.8	Pass
T13	60 - 40	Guy B@46.7222	1/2	779	5818.85	13450.00	43.3	Pass
T1	300 - 280	Guy C@286.75	1/2	710	8721.20	13450.00	64.8	Pass
T4	240 - 220	Guy C@236.556	1/2	728	10120.00	13450.00	75.2	Pass
T7	180 - 160	Guy C@173.278	1/2	746	9365.76	13450.00	69.6	Pass
T9	140 - 120	Guy C@133.278	1/2	763	8176.33	13450.00	60.8	Pass
T11	100 - 80	Guy C@90	1/2	769	7095.32	13450.00	52.8	Pass
T13	60 - 40	Guy C@46.7222	1/2	775	5815.07	13450.00	43.2	Pass
T9	140 - 120	Top Guy Pull-Off@133.278	2x5/16	765	2597.54	17995.50	14.4	Pass
T11	100 - 80	Top Guy Pull-Off@90	2x5/16	771	2533.25	17995.50	14.1	Pass
T13	60 - 40	Top Guy Pull-Off@46.7222	2x5/16	776	2225.07	17995.50	12.4	Pass
T1	300 - 280	Torque Arm Top@286.75	L3x3x3/8	724	7082.42	60752.81	11.7 41.2 (b)	Pass
T4	240 - 220	Torque Arm Top@236.556	L3x3x3/8	741	8023.77	60752.81	13.2 46.7 (b)	Pass
T7	180 - 160	Torque Arm Top@173.278	L3x3x3/8	760	8474.35	60752.81	13.9 49.3 (b)	Pass
T1	300 - 280	Torque Arm Bottom@286.75	L3x3x3/8	726	-8687.17	38265.10	22.7 50.6 (b)	Pass
T4	240 - 220	Torque Arm Bottom@236.556	L3x3x3/8	743	-10204.30	38302.02	26.6 59.4 (b)	Pass
T7	180 - 160	Torque Arm Bottom@173.278	L3x3x3/8	762	-7520.74	38302.02	19.6 43.8 (b)	Pass
						Summary		
						Leg (T5)	98.6	Pass
						Diagonal (T7)	47.3	Pass
						Horizontal (T7)	37.9	Pass
						Secondary Horizontal (T1)	0.1	Pass
						Top Girt (T7)	28.1	Pass
						Bottom Girt (T6)	20.5	Pass
						Guy A (T4)	78.5	Pass
						Guy B (T4)	77.5	Pass
						Guy C (T4)	75.2	Pass
						Top Guy Pull-Off (T9)	14.4	Pass
						Torque Arm Top (T7)	49.3	Pass
						Torque Arm Bottom (T4)	59.4	Pass
						Bolt Checks	59.4	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
						RATING =	**98.6**	**Pass**

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Subject:	Base Foundation Analysis
Location:	300-ft Guyed Lattice Tower Ashford, CT
Rev. 0: 5/14/13	Prepared by: T.J.L. Checked by: C.F.C. Job No. 13048

Standard Monopole Foundation:

Input Data:

Tower Data

Shear Force =	Shear := 2.0·kip	(User Input from RISATower)	
Axial Force =	Axial := 127·kip	(User Input from RISATower)	
Base Moment =	Moment := 68·kip·ft	(User Input from RISATower)	
Tower Height =	$H_t := 300 \cdot ft$	(User Input)	

Footing Data:

Overall Depth of Footing =	$D_f := 5.7 \cdot ft$	(User Input)	
Length of Pier =	$L_p := 2.8 \cdot ft$	(User Input)	
Extension of Pier Above Grade =	$L_{pag} := 2.5 \cdot ft$	(User Input)	
Diameter of Pier =	$d_p := 4 \cdot ft$	(User Input)	
Thickness of Footing =	$T_f := 3.2 \cdot ft$	(User Input)	
Width of Footing =	$W_f := 5 \cdot ft$	(User Input)	

Material Properties:

Concrete Compressive Strength =	$f_c := 3000 \cdot psi$	(User Input)	
Steel Reinforcment Yield Strength =	$f_y := 60000 \cdot psi$	(User Input)	
Internal Friction Angle of Soil =	$\Phi_s := 30 \cdot deg$	(User Input)	
Allowable Soil Bearing Capacity =	$q_s := 20000 \cdot psf$	(User Input)	
Unit Weight of Soil =	$\gamma_{soil} := 100 \cdot pcf$	(User Input)	
Unit Weight of Concrete =	$\gamma_{conc} := 150 \cdot pcf$	(User Input)	
Foundation Bouyancy =	Bouyancy := 0	(User Input)	(Yes=1 / No=0)
Depth to Neglect =	$n := 0 \cdot ft$	(User Input)	
Cohesion of Clay Type Soil =	$c := 0 \cdot ksf$	(User Input)	(Use 0 for Sandy Soil)
Seismic Zone Factor =	Z := 2	(User Input)	(UBC-1997 Fig 23-2)
Coefficient of Friction Between Concrete =	$\mu := 0.45$	(User Input)	

Calculated Factors:

Coefficient of Lateral Soil Pressure =

$$K_p := \frac{1 + \sin(\Phi_s)}{1 - \sin(\Phi_s)} = 3$$

Load Factor =

$$LF := \begin{cases} 1.333 & \text{if } H_t \le 700 \cdot ft \\ 1.7 & \text{if } H_t \ge 1200 \cdot ft \\ 1.333 + \left(\frac{H_t - 700ft}{1200ft - 700ft}\right) \cdot 0.4 & \text{otherwise} \end{cases} = 1.333$$

Stability of Footing:

Adjusted Concrete Unit Weight = $\gamma_c := if(Bouyancy = 1, \gamma_{conc} - 62.4pcf, \gamma_{conc}) = 150 \cdot pcf$

Adjusted Soil Unit Weight = $\gamma_s := if(Bouyancy = 1, \gamma_{soil} - 62.4pcf, \gamma_{soil}) = 100 \cdot pcf$

Passive Pressure = $P_{pn} := K_p \cdot \gamma_s \cdot n + c \cdot 2 \cdot \sqrt{K_p} = 0 \cdot ksf$

$P_{pt} := K_p \cdot \gamma_s \cdot (D_f - T_f) + c \cdot 2 \cdot \sqrt{K_p} = 0.75 \cdot ksf$

$P_{top} := if[n < (D_f - T_f), P_{pt}, P_{pn}] = 0.75 \cdot ksf$

$P_{bot} := K_p \cdot \gamma_s \cdot D_f + c \cdot 2 \cdot \sqrt{K_p} = 1.71 \cdot ksf$

$P_{ave} := \frac{P_{top} + P_{bot}}{2} = 1.23 \cdot ksf$

$T_p := if[n < (D_f - T_f), T_f, (D_f - n)] = 3.2$

$A_p := W_f \cdot T_p = 16$

Ultimate Shear = $S_u := P_{ave} \cdot A_p = 19.68 \cdot kip$

Weight of Concrete = $WT_c := \left[\left(W_f^2 \cdot T_f\right) + d_p^2 L_p\right] \cdot \gamma_c = 18.72 \cdot kip$

Weight of Soil Above Footing = $WT_{s1} := \left[\left(W_f^2 - d_p^2\right) \cdot \begin{cases} (L_p - L_{pag} - n) & \text{if } (L_p - L_{pag} - n) \geq 0 \\ 0 & \text{if } (L_p - L_{pag} - n) \leq 0 \end{cases}\right] \cdot \gamma_s = 0.27 \cdot kip$

Weight of Soil Wedge at Back Face = $WT_{s2} := \left(\frac{D_f^2 \cdot \tan(\Phi_s)}{2} \cdot W_f\right) \cdot \gamma_s = 4.69 \cdot kip$

Weight of Soil Wedge at back face Corners = $WT_{s3} := 2 \cdot \left[(D_f)^3 \cdot \frac{\tan(\Phi_s)}{3}\right] \cdot \gamma_s = 7.128 \cdot kips$

Total Weight = $WT_{tot} := WT_c + WT_{s1} + Axial = 145.99 \cdot kip$

Resisting Moment = $M_r := (WT_{tot}) \cdot \frac{W_f}{2} + S_u \cdot \frac{T_f}{3} + \left[(WT_{s2} + WT_{s3}) \cdot \left(W_f + \frac{D_f \cdot \tan(\Phi_s)}{3}\right)\right] = 458 \cdot kip \cdot ft$

Overturning Moment = $M_{ot} := Moment + Shear \cdot (L_p + T_f) = 80 \cdot kip \cdot ft$

Factor of Safety Actual = $FS := \frac{M_r}{M_{ot}} = 5.73$

Factor of Safety Required = $FS_{req} := 2$

$OverTurning\_Moment\_Check := if(FS \geq FS_{req}, "Okay", "No Good")$

$OverTurning\_Moment\_Check = "Okay"$

Check Sliding:

Soil/Concrete Friction Resistance = $Sl_2 := \mu \cdot WT_{tot} = 65.7 \cdot kips$

Total Sliding Resistance = $Sl_{tot} := S_u + Sl_2 = 85.38 \cdot kips$

Factor of Safety Actual = $FS := \frac{Sl_{tot}}{Shear} = 42.69$

Factor of Safety Required = $FS_{req} := 1.5$

$Sliding\_Resistance\_Check := if(FS \geq FS_{req}, "Okay", "No Good")$

Sliding_Resistance_Check = "Okay"

Concrete Bearing Capacity:

Strength Reduction Factor = $\Phi_c := 0.65$ (ACI-2008 9.3.2.2)

Bearing Strength Between Pier and Pad = $P_b := \Phi_c \cdot 0.85 \cdot f_c \cdot d_p^2 = 3818.88 \cdot kips$ (ACI-2008 10.14)

$Bearing\_Check := if(P_b > LF \cdot Axial, "Okay", "No Good")$

Bearing_Check = "Okay"

Bearing Pressure Caused by Footing:

Area of the Mat = $A_{mat} := W_f^2 = 25$

Section Modulus of Mat = $S := \frac{W_f^3}{6} = 20.83 \cdot ft^3$

Maximum Pressure in Mat = $P_{max} := \frac{WT_c + Axial}{A_{mat}} + \frac{M_{ot}}{S} = 9.669 \cdot ksf$

$Max\_Pressure\_Check := if(P_{max} < q_s, "Okay", "No Good")$

Max_Pressure_Check = "Okay"

Minimum Pressure in Mat = $P_{min} := \frac{WT_c + Axial}{A_{mat}} - \frac{M_{ot}}{S} = 1.989 \cdot ksf$

$Min\_Pressure\_Check := if[(P_{min} \geq 0) \cdot (P_{min} < q_s), "Okay", "No Good"]$

Min_Pressure_Check = "Okay"

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Job :	Verizon - Ashford: 300-ft Guyed Lattice Tower	Project No.	13048	Page Sheet 1	of of 2
Address:	353 Pumpkin Hill Rd., Ashford, CT.	Computed by	TJL	Date	5/15/13
Description:	Guy Anchor Evaluation - 2005 CSBC 3108.4.2/TIA Req	Checked by	CFC	Date	

CHECK UPLIFT RESISTANCE

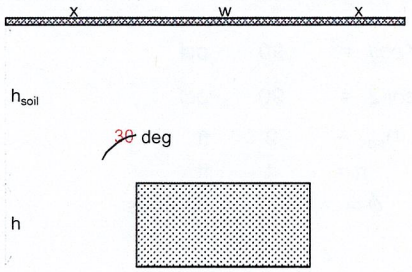
ANCHOR (B) AT 253.00-ft RADIUS

RESULTS FROM COMPUTER ANALYSIS:

Uplift =	6.4	kips
Sliding =	19.7	kips

CONCRETE PARAMETERS:

γ conc =	150	pcf
w =	3	ft
h =	4	ft
d =	8	ft
Vol. =	*96.00*	ft^3
Wc =	*14.40*	kips



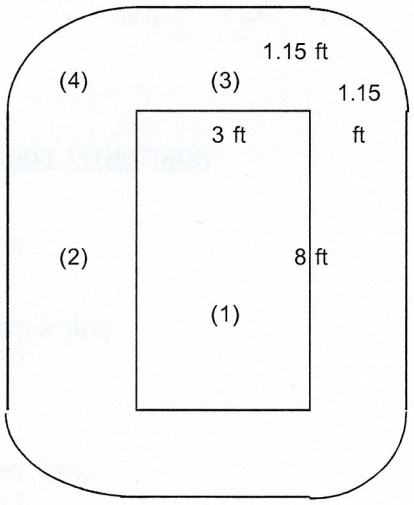
Foundation Section

SOIL PARAMETERS:

γ_{soil} =	90	pcf
h_{soil} =	2	ft
x =	*1.15*	ft

Soil Weight (Wr):

(1) =	4.32	kips
(2) =	1.66	kips
(3) =	0.62	kips
(4) =	0.25	kips
*(5) Anchor Reinf. =	0	kips
Total =	6.86	kips



Foundation Plan View

CHECK UPLIFT (PER EIA/TIA-222-F STANDARD):

Wr / 2.0 + Wc / 1.25 > UPLIFT

14.95 > *6.4* ***OK***

(Wr + Wc) / 1.5 > UPLIFT

14.17 > *6.4* ***OK***

CHECK UPLIFT (PER 2005 CT BUILDING CODE):

(Wr + Wc) / 2.0 > UPLIFT

10.63 > *6.4* ***OK***

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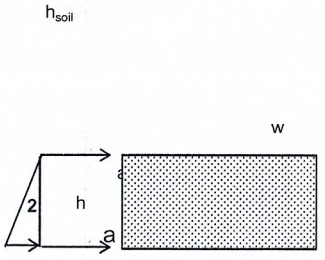
Job :	Verizon - Ashford: 300-ft Guyed Lattice Tower	Project No.	13048	Page Sheet 2	of of 2
Address:	353 Pumpkin Hill Rd., Ashford, CT.	Computed by	TJL	Date	5/15/13
Description:	Guy Anchor Evaluation - 2005 CSBC 3108.4.2/TIA Req	Checked by	CFC	Date	

CHECK SLIDING RESISTANCE

SOIL PARAMETERS

γ soil =	90	pcf	w =	3.0	ft
γ soil2 =	90	pcf			
h_{soil} =	2	ft	h =	4.0	ft
h =	4	ft	d =	8.0	ft
ϕ =	30	degrees			

ANCHOR PARAMETERS



Foundation Elevation View

K_a = 0.33

K_p = 3.00

Δ = 2.67

HORIZONTAL FORCES

1 =		15.36 k
2 =		15.36 k
RESIST TO SLIDING =		30.72 k
SOIL & CONCRETE WEIGHT =	Wr + Wc =	21.26 k
UPLIFT REACTIONS =		-6.4 k
SUM =		14.86 k
COEF. OF FRICTION, (0.45) =		6.69 k
RESIST TO SLIDING =		30.72 k
SUM =		37.41 k

SF AGAINST SLIDING

SF = 1.9 > 1.5 OK

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Job :	Verizon - Ashford: 300-ft Guyed Lattice Tower	Project No.	13048	Page Sheet	1	of 2
Address:	353 Pumpkin Hill Rd., Ashford, CT.	Computed by	TJL	Date		5/29/13
Description:	Guy Anchor Evaluation - 2005 CSBC 3108.4.2/TIA Req	Checked by	CFC	Date		

CHECK UPLIFT RESISTANCE

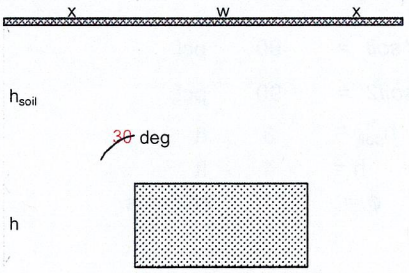
ANCHOR (B) AT 270.00-ft RADIUS

RESULTS FROM COMPUTER ANALYSIS:

Uplift =	33.8	kips
Sliding =	44.7	kips

CONCRETE PARAMETERS:

γ_{conc} =	150	pcf
w =	6	ft
h =	4	ft
d =	8	ft
Vol. =	*192.00*	ft^3
Wc =	*28.80*	kips



Foundation Section

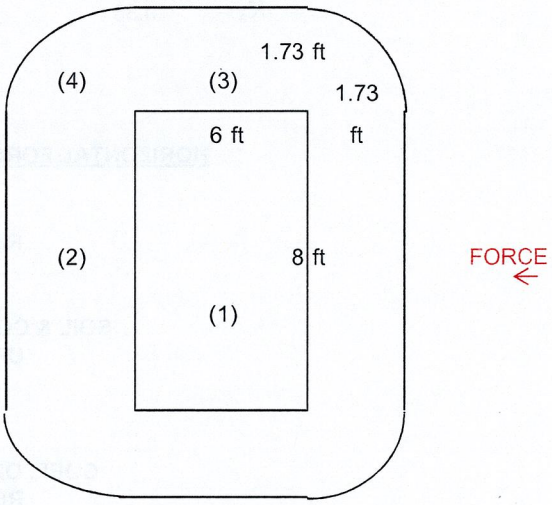
SOIL PARAMETERS:

γ_{soil} =	90	pcf
h_{soil} =	3	ft
x =	*1.73*	ft

Soil Weight (Wr):

(1) =	12.96	kips
(2) =	3.74	kips
(3) =	2.81	kips
(4) =	0.85	kips
*(5) Anchor Reinf. =	0	kips
Total =	20.36	kips

Weight of Stone[(1)] = 80 kips



Foundation Plan View

CHECK UPLIFT (PER EIA/TIA-222-F STANDARD):

Wr / 2.0 + Wc / 1.25 > UPLIFT

73.22 > *33.8* ***OK***

(Wr + Wc) / 1.5 > UPLIFT

86.10 > *33.8* ***OK***

CHECK UPLIFT (PER 2005 CT BUILDING CODE):

(Wr + Wc) / 2.0 > UPLIFT

64.58 > *33.8* ***OK***

Note 1: Refer to Reinforcement Drawings dated 5/15/13 located in section 4 of this report for stone placement details

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Job :	Verizon - Ashford: 300-ft Guyed Lattice Tower	Project No.	13048	Page Sheet 2	of of 2
Address:	353 Pumpkin Hill Rd., Ashford, CT.	Computed by	TJL	Date	5/29/13
Description:	Guy Anchor Evaluation - 2005 CSBC 3108.4.2/TIA Req	Checked by	CFC	Date	

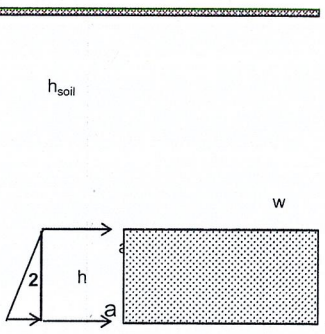
CHECK SLIDING RESISTANCE

SOIL PARAMETERS

γ soil =	90	pcf
γ soil2 =	90	pcf
h_{soil} =	3	ft
h =	4	ft
ϕ =	30	degrees

ANCHOR PARAMETERS

w =	6.0	ft
h =	4.0	ft
d =	8.0	ft



Foundation Elevation View

K_a = 0.33

K_p = 3.00

Δ = 2.67

HORIZONTAL FORCES

1 =	23.04 k
2 =	15.36 k
RESIST TO SLIDING =	38.40 k

SOIL & CONCRETE WEIGHT =	Wr + Wc = 129.16 k
UPLIFT REACTIONS =	-33.8 k
SUM =	95.36 k

COEF. OF FRICTION, (0.45) =	42.91 k
RESIST TO SLIDING =	38.40 k
SUM =	81.31 k

SF AGAINST SLIDING

SF = 1.8 > 1.5 OK

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Job :	Verizon - Ashford: 300-ft Guyed Lattice Tower	Project No.	13048	Page Sheet	1	of 2
Address:	353 Pumpkin Hill Rd., Ashford, CT.	Computed by	TJL	Date		5/17/13
Description:	Guy Anchor Evaluation - 2005 CSBC 3108.4.2/TIA Req	Checked by	CFC	Date		

CHECK UPLIFT RESISTANCE

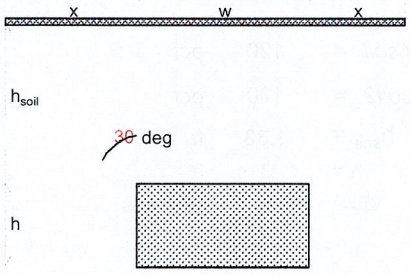
ANCHOR (C) AT 258.00-ft RADIUS

RESULTS FROM COMPUTER ANALYSIS:

Uplift =	6.5	kips
Sliding =	19.6	kips

CONCRETE PARAMETERS:

γ_{conc} =	150	pcf
w =	2	ft
h =	3	ft
d =	9.5	ft
Vol. =	*57.00*	ft^3
Wc =	*8.55*	kips



Foundation Section

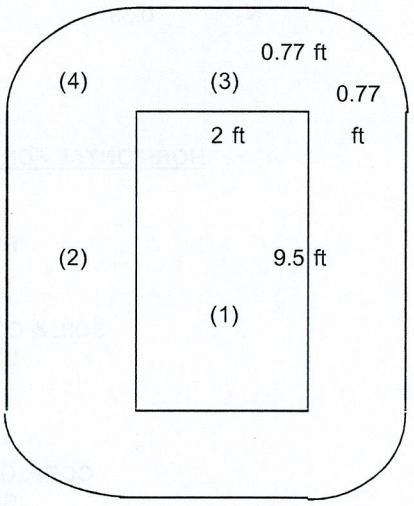
SOIL PARAMETERS:

γ_{soil} =	120	pcf
h_{soil} =	1.33	ft
x =	*0.77*	ft

Soil Weight (Wr):

(1) =	3.03	kips
(2) =	1.16	kips
(3) =	0.25	kips
(4) =	0.10	kips
*(5) Anchor Reinf. =	0	kips
Total =	4.54	kips

Weight of Stone[(1)] = 15 kips



Foundation Plan View

CHECK UPLIFT (PER EIA/TIA-222-F STANDARD):

Wr / 2.0 + Wc / 1.25 > UPLIFT

16.61 > *6.5* ***OK***

(Wr + Wc) / 1.5 > UPLIFT

18.73 > *6.5* ***OK***

CHECK UPLIFT (PER 2005 CT BUILDING CODE):

(Wr + Wc) / 2.0 > UPLIFT

14.05 > *6.5* ***OK***

Note 1: Refer to Reinforcement Drawings dated 5/15/13 located in section 4 of this report for stone placement details

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Job :	Verizon - Ashford: 300-ft Guyed Lattice Tower	Project No.	13048	Page Sheet 2	of of 2
Address:	353 Pumpkin Hill Rd., Ashford, CT.	Computed by	TJL	Date	5/17/13
Description:	Guy Anchor Evaluation - 2005 CSBC 3108.4.2/TIA Req	Checked by	CFC	Date	

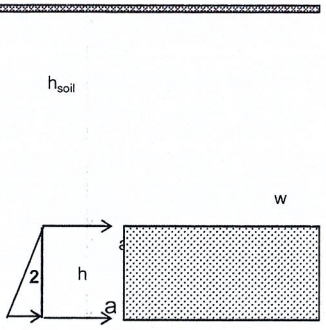
CHECK SLIDING RESISTANCE

SOIL PARAMETERS

γ soil =	120	pcf
γ soil2 =	120	pcf
h_{soil} =	1.33	ft
h =	3	ft
ϕ =	30	degrees

ANCHOR PARAMETERS

w =	2.0	ft
h =	3.0	ft
d =	9.5	ft



Foundation Elevation View

K_a = 0.33

K_p = 3.00

Δ = 2.67

HORIZONTAL FORCES

1 =	12.13 k
2 =	13.68 k
RESIST TO SLIDING =	25.81 k

SOIL & CONCRETE WEIGHT =	Wr + Wc =	28.09 k
UPLIFT REACTIONS =		-6.5 k
SUM =		21.59 k

COEF. OF FRICTION, (0.45) =	9.72 k
RESIST TO SLIDING =	25.81 k
SUM =	35.53 k

SF AGAINST SLIDING

SF = 1.8 > 1.5 OK

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Job :	Verizon - Ashford: 300-ft Guyed Lattice Tower	Project No.	13048	Page Sheet 1	of of 2
Address:	353 Pumpkin Hill Rd., Ashford, CT.	Computed by	TJL	Date	5/29/13
Description:	Guy Anchor Evaluation - 2005 CSBC 3108.4.2/TIA Req	Checked by	CFC	Date	

CHECK UPLIFT RESISTANCE

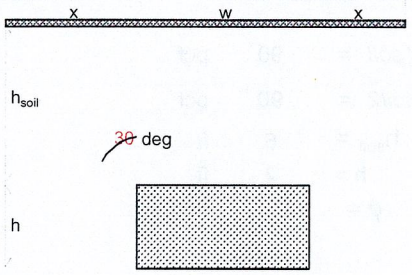
ANCHOR (C) AT 288.00-ft RADIUS

RESULTS FROM COMPUTER ANALYSIS:

Uplift =	31.7	kips
Sliding =	44.2	kips

CONCRETE PARAMETERS:

γ_{conc} =	150	pcf
w =	6	ft
h =	2	ft
d =	6	ft
Vol. =	*72.00*	ft^3
Wc =	*10.80*	kips



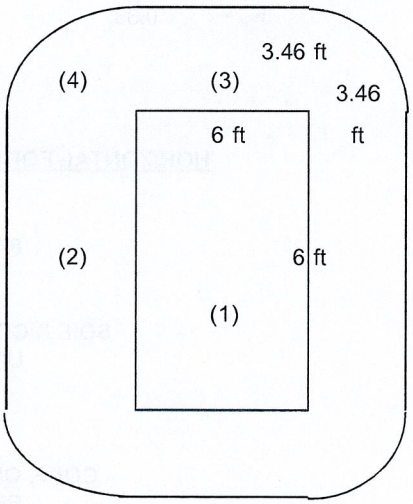
Foundation Section

SOIL PARAMETERS:

γ_{soil} =	90	pcf
h_{soil} =	6	ft
x =	*3.46*	ft

Soil Weight (Wr):

(1) =	19.44	kips
(2) =	11.22	kips
(3) =	11.22	kips
(4) =	6.79	kips
*(5) Anchor Reinf. =	0	kips
Total =	48.67	kips



Foundation Plan View

Weight of Stone[(1)] = 80 kips

CHECK UPLIFT (PER EIA/TIA-222-F STANDARD):

Wr / 2.0 + Wc / 1.25 > UPLIFT

72.98 > *31.7* ***OK***

(Wr + Wc) / 1.5 > UPLIFT

92.98 > *31.7* ***OK***

CHECK UPLIFT (PER 2005 CT BUILDING CODE):

(Wr + Wc) / 2.0 > UPLIFT

69.74 > *31.7* ***OK***

Note 1: Refer to Reinforcement Drawings dated 5/15/13 located in section 4 of this report for stone placement details

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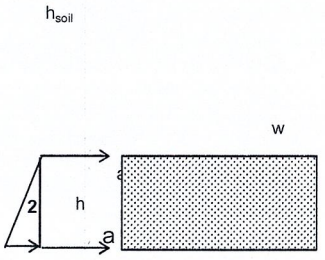
Job :	Verizon - Ashford: 300-ft Guyed Lattice Tower	Project No.	13048	Page Sheet 2	of 2
Address:	353 Pumpkin Hill Rd., Ashford, CT.	Computed by	TJL	Date	5/29/13
Description:	Guy Anchor Evaluation - 2005 CSBC 3108.4.2/TIA Req	Checked by	CFC	Date	

CHECK SLIDING RESISTANCE

SOIL PARAMETERS

γ soil =	90	pcf	w =	6.0	ft
γ soil2 =	90	pcf			
h_{soil} =	6	ft	h =	2.0	ft
h =	2	ft	d =	6.0	ft
ϕ =	30	degrees			

ANCHOR PARAMETERS



Foundation Elevation View

K_a = 0.33

K_p = 3.00

Δ = 2.67

HORIZONTAL FORCES

1 =	17.28 k
2 =	2.88 k
RESIST TO SLIDING =	20.16 k

SOIL & CONCRETE WEIGHT =	Wr + Wc = 139.47 k
UPLIFT REACTIONS =	-31.7 k
SUM =	107.77 k

COEF. OF FRICTION, (0.45) =	48.50 k
RESIST TO SLIDING =	20.16 k
SUM =	68.66 k

SF AGAINST SLIDING

SF = 1.6 > 1.5 OK

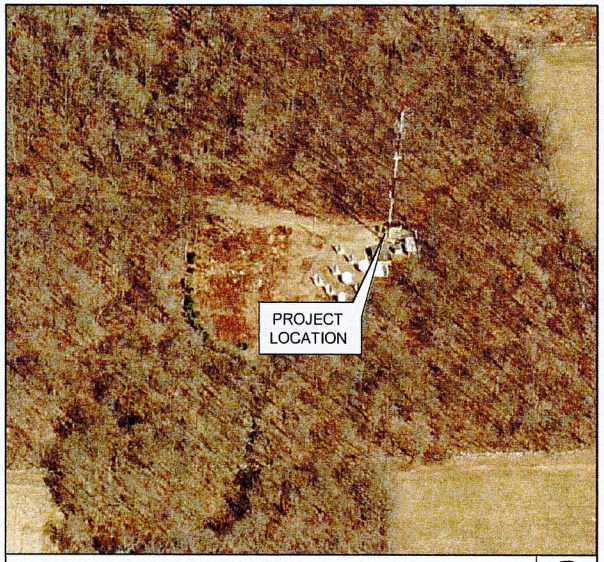
verizonwireless

TOWER REINFORCEMENT DESIGN

ASHFORD

353 PUMPKIN HILL ROAD

ASHFORD, CT 06278



VICINITY MAP

NORTH

PROJECT SUMMARY

SITE ADDRESS:	353 PUMPKIN HILL ROAD ASHFORD, CT 06278
PROJECT COORDINATES:	LAT: 41°-50'-52.90N LON: 72°-07'-17.00W ELEV: ±776' AMSL
TOWER OWNER:	VERIZON WIRELESS 99 E. RIVER DRIVE EAST HARTFORD, CT 06108
VERIZON SITE REF.:	ASHFORD
VERIZON CONTACT:	BRIAN RAGGOZZINE 860.982.4246
ENGINEER OF RECORD:	CENTEK ENGINEERING, INC. 63-2 NORTH BRANFORD ROAD BRANFORD, CT 06405
CENTEK CONTACT:	CARLO F. CENTORE, PE 203.488.0580 ext. 122

SHEET INDEX

SHT. NO.	DESCRIPTION	REV.
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S-1	TOWER ELEVATION AND PLAN	0
S-2	FOUNDATION REINFORCEMENT DETAILS	0
S-3	FOUNDATION REINFORCEMENT DETAILS	0
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DESIGNED BY:	TJL
DRAWN BY:	TJL
CHK'D BY:	CFC

REV.	DATE	DRAWN BY	DESCRIPTION
0	5/15/13	TJL	CFC ISSUED FOR CONSTRUCTION
1	5/29/13	TJL	CFC ISSUED FOR CONSTRUCTION

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EAST HARTFORD, CT 06108

ASHFORD
353 PUMPKIN HILL ROAD
ASHFORD, CT 06278

DATE:	5/7/13
SCALE:	AS SHOWN
JOB NO.	13048

TITLE SHEET

SHEET NO.
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Sheet No. 1 of 9

DESIGN BASIS

1. GOVERNING CODE: 2003 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2005 CT STATE BUILDING CODE AND 2009 AMENDMENTS.

2. TIA/EIA-222-F-1996 "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES".

3. DESIGN CRITERIA

   WIND LOAD: (TIA/EIA-222-F-1996)
   BASIC WIND SPEED (V) = 85 MPH (FASTEST MILE)

   WIND LOAD: (2005 CT STATE BUILDING CODE APPENDIX K)
   BASIC WIND SPEED (V) = 100 MPH (3-SECOND GUST)
   EQUIVALENT TO (V) = 80 MPH (FASTEST MILE)

   TIA/EIA-222-F-1996 WIND SPEED CONTROLS

GENERAL NOTES

1. REFER TO STRUCTURAL ANALYSIS AND REINFORCEMENT DESIGN PREPARED BY CENTEK ENGINEERING, INC., FOR VERIZON WIRELESS, REVISION #1, DATED 5/29/13.

2. TOWER GEOMETRY AND STRUCTURE MEMBER SIZES WERE OBTAINED FROM A TOWER MAPPING REPORT PREPARED BY HIGHTOWER SOLUTIONS SITE #11463, DATED FEBRUARY 7, 2012.

3. FOUNDATION INFORMATION WAS OBTAINED FROM A FOUNDATION INVESTIGATION REPORT PREPARED BY HUDSON DESIGN GROUP DATED JANUARY 15, 2013.

4. PROVIDE TEMPORARY ANCHORS, GUYING AND/OR BRACING AS REQUIRED TO SAFELY CONDUCT THE WORK.

5. ALL WORK SHALL BE IN ACCORDANCE WITH TIA/EIA-222 REVISION "F" "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES".

6. THE TOWER STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER REINFORCEMENTS ARE COMPLETE. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE AND TO INSURE THE SAFETY OF THE TOWER STRUCTURE AND ITS COMPONENT PARTS DURING ERECTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, TEMPORARY BRACING, GUYS OR TIE-DOWNS, WHICH MIGHT BE NECESSARY.

5. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY. MAINTAIN EXISTING SITE OPERATIONS, COORDINATE WORK WITH TOWER OWNER.

6. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS SCOPE OF WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.

7. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA.

8. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.

9. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.

10. CONTRACTOR SHALL TAKE FIELD MEASUREMENTS NECESSARY TO ASSURE PROPER FIT OF ALL FINISHED WORK.

11. TOWER REINFORCING SHALL BE CONDUCTED BY FIELD CREWS EXPERIENCED IN THE ASSEMBLY AND ERECTION OF RADIO ANTENNAS AND SUPPORT STRUCTURES. ALL SAFETY PROCEDURES, RIGGING AND ERECTION METHODS SHALL BE STANDARD TO THE INDUSTRY AND IN COMPLIANCE WITH OSHA.

12. EXISTING COAXIAL CABLES AND ALL ACCESSORIES SHALL BE RELOCATED AS NECESSARY AND REINSTALLED BY THE CONTRACTOR WITHOUT INTERRUPTION IN SERVICE WHERE THEY ARE IN CONFLICT WITH TOWER REINFORCEMENT.

13. IF ANY FIELD CONDITIONS EXIST WHICH PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL PROCEED WITH AFFECTED WORK AFTER CONFLICT IS SATISFACTORILY RESOLVED.

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

NO	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
2	5/29/13	TJL	CFC	ISSUED FOR CONSTRUCTION
1	5/19/13	TJL	CFC	ISSUED FOR CONSTRUCTION

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JOB NO.	13048

DESIGN BASIS & GENERAL NOTES

SHEET NO.
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Sheet No. 2 of 9

SITE NOTES

1. THE CONTRACTOR SHALL CALL UTILITIES PRIOR TO THE START OF CONSTRUCTION.
2. ACTIVE EXISTING UTILITIES, WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES. THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY, PRIOR TO PROCEEDING, SHOULD ANY UNCOVERED EXISTING UTILITY PRECLUDE COMPLETION OF THE WORK IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
3. ALL RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED OFF SITE AND BE LEGALLY DISPOSED, AT NO ADDITIONAL COST.
4. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE EQUIPMENT AND TOWER AREAS.
5. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
6. THE SUBGRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
7. THE AREAS OF THE COMPOUND DISTURBED BY THE WORK SHALL BE RETURNED TO THEIR ORIGINAL CONDITION.
8. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.

EARTHWORK NOTES

1. COMPACTED GRAVEL FILL SHALL BE FURNISHED AND PLACED AS A FOUNDATION FOR STRUCTURES, WHERE SHOWN ON THE CONTRACT DRAWINGS OR DIRECTED BY THE ENGINEER.
2. CRUSHED STONE FILL SHALL BE PLACED IN 12" MAX. LIFTS AND CONSOLIDATED USING A HAND OPERATED VIBRATORY PLATE COMPACTOR WITH A MINIMUM OF 2 PASSES OF COMPACTOR PER LIFT.
3. COMPACTED GRAVEL FILL TO BE WELL GRADED BANK RUN GRAVEL MEETING THE FOLLOWING GRADATION REQUIREMENTS:

SIEVE DESIGNATION	% PASSING
1 ½"	100
No. 4	40–70
No. 100	5–20
No. 200	4–8

4. CRUSHED STONE TO BE UNIFORMLY GRADED, CLEAN, HARD PROCESS AGGREGATE MEETING THE FOLLOWING GRADATION REQUIREMENTS:

SIEVE DESIGNATION	% PASSING
1"	100
¾"	90–100
½"	0–15
⅜"	0–5

5. SELECT BACKFILL FOR FOUNDATION WALLS SHALL BE FREE OF ORGANIC MATERIAL, TOPSOIL, DEBRIS AND BOULDERS LARGER THAN 6".
6. GRAVEL AND GRANULAR FILL SHALL BE INSTALLED IN 10" MAX. LIFTS. COMPACTED TO 95% MIN. AT MAX. DRY DENSITY.
7. NON WOVEN GEOTEXTILE FOR SEPARATION PURPOSES SHALL BE MIRAFI 140N, OR ENGINEER APPROVED EQUAL.

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

REV.	DATE	DRAWN BY/CHK'D BY	DESCRIPTION
2	5/28/13	TJL / CFC	ISSUED FOR CONSTRUCTION
1	5/15/13	TJL / CFC	ISSUED FOR CONSTRUCTION

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PROPOSED TOWER FACILITY
ASHFORD
ASHFORD HILL ROAD
ASHFORD, CT

DATE:	5/7/13
SCALE:	AS SHOWN
JOB NO.	13048

SITE & EARTHWORK NOTES

SHEET NO.
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Sheet No. 3 of 9

STRUCTURAL STEEL

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

2. MATERIAL SPECIFICATIONS

   A. STRUCTURAL STEEL (W SHAPES)---ASTM A992 (FY = 50 KSI)
   B. STRUCTURAL STEEL (OTHER SHAPES)---ASTM A36 (FY = 36 KSI).
   C. STRUCTURAL STEEL (TOWER REINF. PLATES---ASTM A572_GR50 (50 KSI)
   D. STRUCTURAL HSS (RECTANGULAR SHAPES)---ASTM A500 GRADE B, (FY = 46 KSI)
   E. STRUCTURAL HSS (ROUND SHAPES)---ASTM A500 GRADE B, (FY = 42 KSI)
   F. PIPE---ASTM A53 GRADE B (FY = 35 KSI)

3. FASTENER SPECIFICATIONS

   A. CONNECTION BOLTS---ASTM A325-N, UNLESS OTHERWISE SCHEDULED.
   B. U-BOLTS---ASTM A307
   C. ANCHOR RODS---ASTM F1554
   D. WELDING ELECTRODES---ASTM E70XX FOR A36 & A572_GR50 STEELS, ASTM E80XX FOR A572_GR65 STEEL.
   E. BLIND BOLTS---AS1252 PROPERTY CLASS 8.8 (FU=120 KSI).

4. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE ENGINEER FOR REVIEW. SHOP DRAWINGS SHALL INCLUDE THE FOLLOWING: SECTION PROFILES, SIZES, CONNECTION ATTACHMENTS, REINFORCING, ANCHORAGE, SIZE AND TYPE OF FASTENERS AND ACCESSORIES. INCLUDE ERECTION DRAWINGS, ELEVATIONS AND DETAILS.

5. STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST PROVISIONS OF AISC MANUAL OF STEEL CONSTRUCTION.

6. PROVIDE ALL PLATES, CLIP ANGLES, CLOSURE PIECES, STRAP ANCHORS, MISCELLANEOUS PIECES AND HOLES REQUIRED TO COMPLETE THE STRUCTURE.

7. FIT AND SHOP ASSEMBLE FABRICATIONS IN THE LARGEST PRACTICAL SECTIONS FOR DELIVERY TO SITE.

8. INSTALL FABRICATIONS PLUMB AND LEVEL, ACCURATELY FITTED, AND FREE FROM DISTORTIONS OR DEFECTS.

9. AFTER ERECTION OF STRUCTURES, TOUCHUP ALL WELDS, ABRASIONS AND NON-GALVANIZED SURFACES WITH A 95% ORGANIC ZINC RICH PAINT IN ACCORDANCE WITH ASTM 780.

10. 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.

11. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC COATING (HOT-DIP) ON IRON AND STEEL HARDWARE".

12. CONTRACTOR SHALL COMPLY WITH AWS CODE FOR PROCEDURES APPEARANCE AND QUALITY OF WELDS, AND WELDING PROCESSES SHALL BE QUALIFIED IN ACCORDANCE WITH AWS "STANDARD QUALIFICATION PROCEDURES". ALL WELDING SHALL BE DONE USING THE SCHEDULED ELECTRODES AND WELDING SHALL CONFORM TO AISC AND D1.1 WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLET J2.4 IN THE AISC "MANUAL OF STEEL CONSTRUCTION" 9TH EDITION. AT THE COMPLETION OF WELDING, ALL DAMAGE TO GALVANIZED COATING SHALL BE REPAIRED.

13. THE ENGINEER SHALL BE NOTIFIED OF ANY INCORRECTLY FABRICATED, DAMAGED OR OTHERWISE MISFITTING OR NON CONFORMING MATERIALS OR CONDITIONS TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH ACTION SHALL REQUIRE ENGINEER REVIEW.

14. CONNECTION ANGLES SHALL HAVE A MINIMUM THICKNESS OF 1/4 INCHES.

15. STRUCTURAL CONNECTION BOLTS SHALL CONFORM TO ASTM A325. ALL BOLTS SHALL BE 3/4" DIAMETER MINIMUM AND SHALL HAVE A MINIMUM OF TWO BOLTS, UNLESS OTHERWISE ON THE DRAWINGS.

16. LOCK WASHER ARE NOT PERMITTED FOR A325 BOLTED STEEL ASSEMBLIES.

17. SHOP CONNECTIONS SHALL BE WELDED OR HIGH STRENGTH BOLTED.

18. MILL BEARING ENDS OF COLUMNS, STIFFENERS, AND OTHER BEARING SURFACES TO TRANSFER LOAD OVER ENTIRE CROSS SECTION.

19. FABRICATE BEAMS WITH MILL CAMBER UP.

20. LEVEL AND PLUMB INDIVIDUAL MEMBERS OF THE STRUCTURE TO AN ACCURACY OF 1:500, BUT NOT TO EXCEED 1/4" IN THE FULL HEIGHT OF THE COLUMN.

21. COMMENCEMENT OF STRUCTURAL STEEL WORK WITHOUT NOTIFYING THE ENGINEER OF ANY DISCREPANCIES WILL BE CONSIDERED ACCEPTANCE OF PRECEDING WORK.

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

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
3	5/28/13	TJL	CFC	ISSUED FOR CONSTRUCTION
2	5/10/13	TJL	CFC	ISSUED FOR CONSTRUCTION

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JOB NO.	13048

STRUCTURAL STEEL NOTES

SHEET NO.
N-3
Sheet No. 4 of 9

MODIFICATION INSPECTION REPORT REQUIREMENTS

PRE-CONSTUCTION		DURING CONSTRUCTION		POST-CONSTRUCTION	
SCHEDULED ITEM	REPORT ITEM	SCHEDULED ITEM	REPORT ITEM	SCHEDULED ITEM	REPORT ITEM
X	EOR MODIFICATION INSPECTION DRAWING	–	FOUNDATIONS	X	MODIFICATION INSPECTOR RECORD REDLINE DRAWING
X	EOR APPROVED SHOP DRAWINGS	X	EARTHWORK: BACKFILL MATERIAL & COMPACTION	–	POST–INSTALLED ANCHOR ROD PULL–OUT TEST
–	EOR APPROVED POST–INSTALLED ANCHOR MPII	–	CONCRETE TESTING	X	PHOTOGRAPHS
–	FABRICATION INSPECTION	X	STEEL INSPECTION		
–	FABRICATOR CERTIFIED WELDER INSPECTION	–	POST INSTALLED ANCHOR ROD VERIFICATION		
X	MATERIAL CERTIFICATIONS	–	BASE PLATE GROUT VERIFICATION		
		–	CONTRACTOR'S CERTIFIED WELD INSPECTION		
		X	ON–SITE COLD GALVANIZING/PAINTING VERIFICATION		
		–	GUY WIRE TENSION REPORT		
		X	CONTRACTOR AS–BUILT REDLINE DRAWINGS		

NOTES:
1. REFER TO MODIFICATION INSPECTION NOTES FOR ADDITIONAL REQUIREMENTS
2. "X" DENOTES DOCUMENT REQUIRED FOR INCLUSION IN MODIFICATION INSPECTION FINAL REPORT.
3. "–" DENOTES DOCUMENT NOT REQUIRED FOR INCLUSION IN MODIFICATION INSPECTION FINAL REPORT.
4. EOR – ENGINEER OF RECORD
4. MPII – "MANUFACTURER'S PRINTED INSTALLATION GUIDELINES"

GENERAL

1. THE MODIFICATION INSPECTION IS A VISUAL INSPECTION OF STRUCTURAL MODIFICATIONS, TO INCLUDE A REVIEW AND COMPILATION OF SPECIFIED SUBMITTALS AND CONSTRUCTION INSPECTIONS, AS AN ASSURANCE OF COMPLIANCE WITH THE CONSTRUCTION DOCUMENTS PREPARED UNDER THE DIRECTION OF THE ENGINEER OF RECORD (EOR).
2. THE MODIFICATION INSPECTION IS TO CONFIRM INSTALLATION CONFIGURATION AND GENERAL WORKMANSHIP AND IS NOT A REVIEW OF THE MODIFICATION DESIGN. OWNERSHIP OF THE MODIFICATION DESIGN EFFECTIVENESS AND INTENT RESIDES WITH THE ENGINEER OF RECORD.
3. TO ENSURE COMPLIANCE WITH THE MODIFICATION INSPECTION REQUIREMENTS THE GENERAL CONTRACTOR (GC) AND THE MODIFICATION INSPECTOR (MI) COMMENCE COMMUNICATION UPON AUTHORIZATION TO PROCEED BY THE CLIENT. EACH PARTY SHALL BE PROACTIVE IN CONTACTING THE OTHER. THE EOR SHALL BE CONTACTED IF SPECIFIC GC/MI CONTACT INFORMATION IS NOT MADE AVAILABLE.
4. THE GC SHALL PROVIDE THE MI WITH A MINIMUM OF 5 BUSINESS DAYS NOTICE OF IMPENDING INSPECTIONS.
5. WHEN POSSIBLE, THE GC AND MI SHALL BE ON SITE DURING THE MODIFICATION INSPECTION TO HAVE ANY NOTED DEFICIENCIES ADDRESSED DURING THE INITIAL MODIFICATION INSPECTION.

MODIFICATION INSPECTOR (MI)

1. THE MI SHALL CONTACT THE GC UPON AUTHORIZATION BY THE CLIENT TO:
   - REVIEW THE MODIFICATION INSPECTION REPORT REQUIREMENTS.
   - WORK WITH THE GC IN DEVELOPMENT OF A SCHEDULE FOR ON–SITE INSPECTIONS.
   - DISCUSS CRITICAL INSPECTIONS AND PROJECT CONCERNS.
2. THE MI IS RESPONSIBLE FOR COLLECTION OF ALL INSPECTION AND TEST REPORTS, REVIEWING REPORTS FOR ADHERENCE TO THE CONTRACT DOCUMENTS, CONDUCTING ON–SITE INSPECTIONS AND COMPILATION & SUBMISSION OF THE MODIFICATION INSPECTION REPORT TO THE CLIENT AND THE EOR.

GENERAL CONTRACTOR (GC)

1. THE GC IS REQUIRED TO CONTACT THE GC UPON AUTHORIZATION TO PROCEED WITH CONSTRUCTION BY THE CLIENT TO:
   - REVIEW THE MODIFICATION INSPECTION REPORT REQUIREMENTS.
   - WORK WITH THE MI IN DEVELOPMENT OF A SCHEDULE FOR ON–SITE INSPECTIONS.
   - DISCUSS CRITICAL INSPECTIONS AND PROJECT CONCERNS.
2. THE GC IS RESPONSIBLE FOR COORDINATING AND SCHEDULING IN ADVANCE ALL REQUIRED INSPECTIONS AND TESTS WITH THE MI.

CORRECTION OF FAILING MODIFICATION INSPECTION

1. SHOULD THE STRUCTURAL MODIFICATION NOT COMPLY WITH THE REQUIREMENTS OF THE CONSTRUCTION DOCUMENTS, THE GC SHALL WORK WITH THE MODIFICATION INSPECTOR IN A VIABLE REMEDIATION PLAN AS FOLLOWS:
   - CORRECT ALL DEFICIENCIES TO COMPLY WITH THE CONTRACT DOCUMENTS AND COORDINATE WITH THE MI FOR A FOLLOW UP INSPECTION.
   - WITH CLIENT AUTHORIZATION, THE GC MAY WORK WITH THE EOR TO REANALYZE THE MODIFICATION USING THE AS–BUILT CONDITION.

REQUIRED PHOTOGRAPHS

1. THE GC AND MI SHALL AT MINIMUM PHOTO DOCUMENT THE FOLLOWING FOR INCLUSION IN THE MODIFICATION INSPECTION REPORT:
   - PRE–CONSTRUCTION: GENERAL CONDITION OF THE SITE.
   - DURING CONSTRUCTION: RAW MATERIALS, CRITICAL DETAILS, WELD PREPARATION, BOLT INSTALLATION & TORQUE, FINAL INSTALLED CONDITION & SURFACE COATING REPAIRS.
   - POST–CONSTRUCTION: FINAL CONDITION OF THE SITE

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

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
0	5/7/13	TJL	CFC	ISSUED FOR CONSTRUCTION

PROFESSIONAL ENGINEER (STATE OF OHIO) No. 76664 REGISTERED PROFESSIONAL ENGINEER

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ASHFORD

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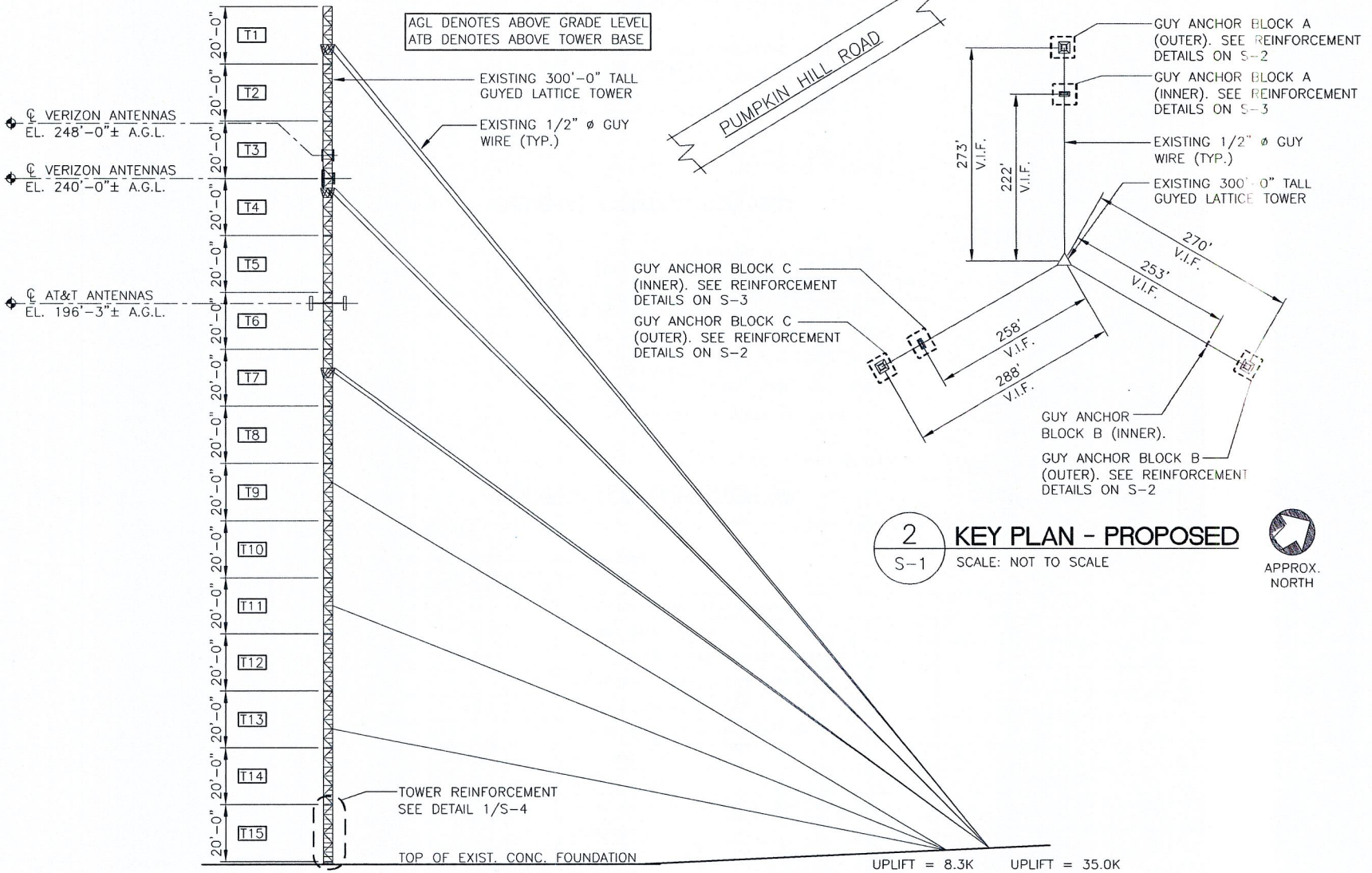
MODIFICATION INSPECTION REQUIREMENTS

SHEET NO.
MI-1
Sheet No. 5 of 9



1 / S-1 **TOWER ELEVATION - PROPOSED**
SCALE: NOT TO SCALE

2 / S-1 **KEY PLAN - PROPOSED**
SCALE: NOT TO SCALE

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

REV.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
1	5/29/13	TJL	CFC	ISSUED FOR CONSTRUCTION
0	5/15/13	TJL	CFC	ISSUED FOR CONSTRUCTION

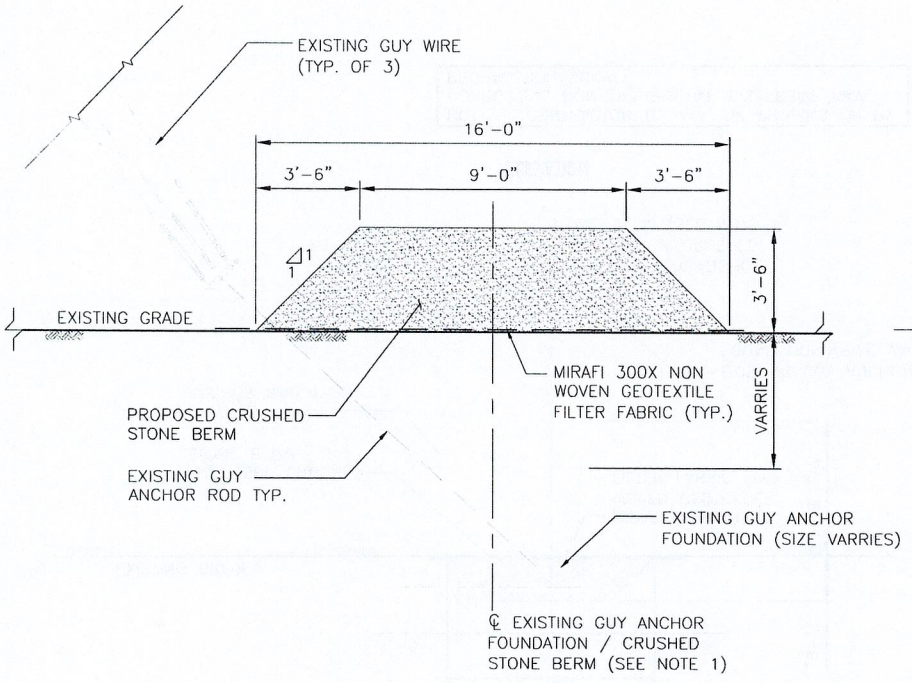
CENTEK engineering
Centered on Solutions
www.CentekEng.com
(203) 488-0580
(203) 488-8587 Fax
63-2 North Branford Road, Branford, CT 06405

VERIZON WIRELESS
ASHFORD

DATE: 5/7/13
SCALE: AS SHOWN
JOB NO. 13048

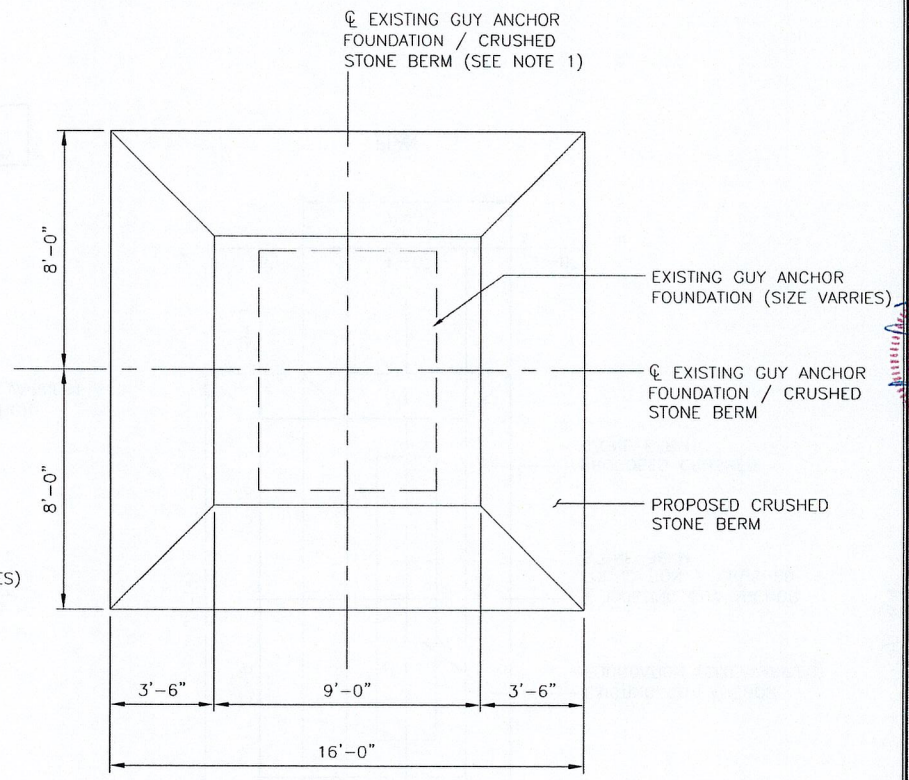
TOWER ELEVATION AND PLAN

SHEET NO. S-1
Sheet No. 6 of 9



ELEVATION

NOTE 1: CONTRACTOR TO V.I.F. BY PROBING OR BY CONDUCTING NON-DESTRUCTIVE DISPERSIVE WAVE PROPAGATION SURVEY



PLAN

1 / S-2 GUY ANCHOR FOUNDATION REINFORCEMENT DETAILS

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

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

NO	DATE	DRAWN BY/CHK'D BY	DESCRIPTION
1	5/29/13	TJL	CFC ISSUED FOR CONSTRUCTION
2	5/7/13	TJL	CFC ISSUED FOR CONSTRUCTION

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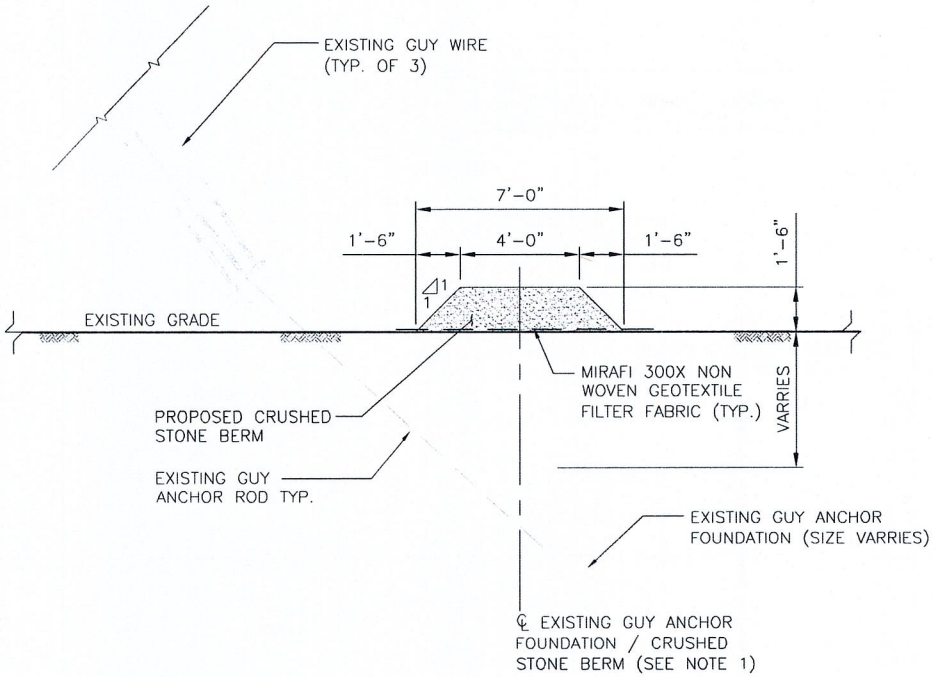
ASHFORD

DATE:	5/7/13
SCALE:	AS SHOWN
JOB NO.	13048

FOUNDATION REINFORCEMENT DETAILS

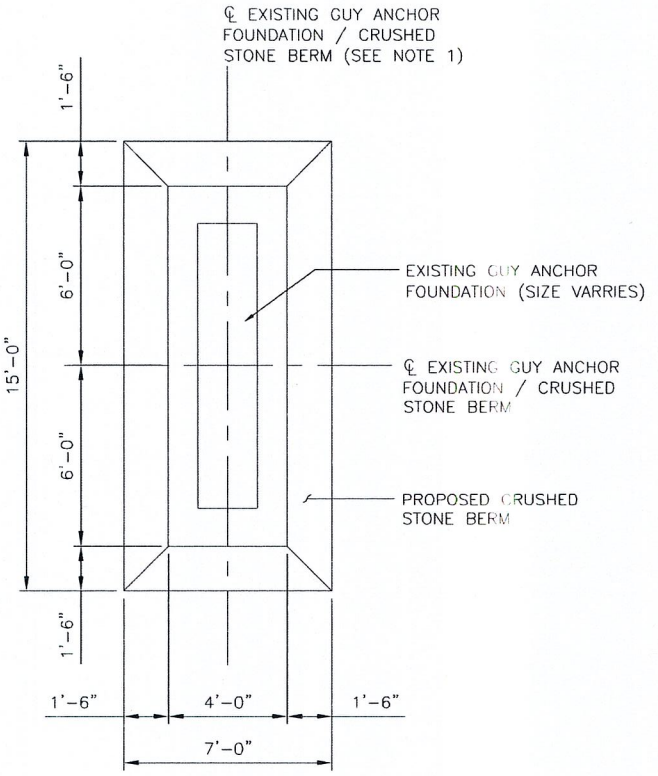
SHEET NO. S-2

Sheet No. 7 of 9



ELEVATION

NOTE 1: CONTRACTOR TO V.I.F. BY PROBING OR BY CONDUCTING NON-DESTRUCTIVE DISPERSIVE WAVE PROPAGATION SURVEY



PLAN

1 / S-3 GUY ANCHOR FOUNDATION REINFORCEMENT DETAILS

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

DESIGNED BY:	TJL		
DRAWN BY:	TJL		
CHK'D BY:	CFC		
1	5/7/13	TJL	CFC
0	5/13/13	TJL	CFC
REV.	DATE	DRAWN BY	CHK'D BY

ISSUED FOR CONSTRUCTION
ISSUED FOR CONSTRUCTION
DESCRIPTION

PROFESSIONAL ENGINEER SEAL

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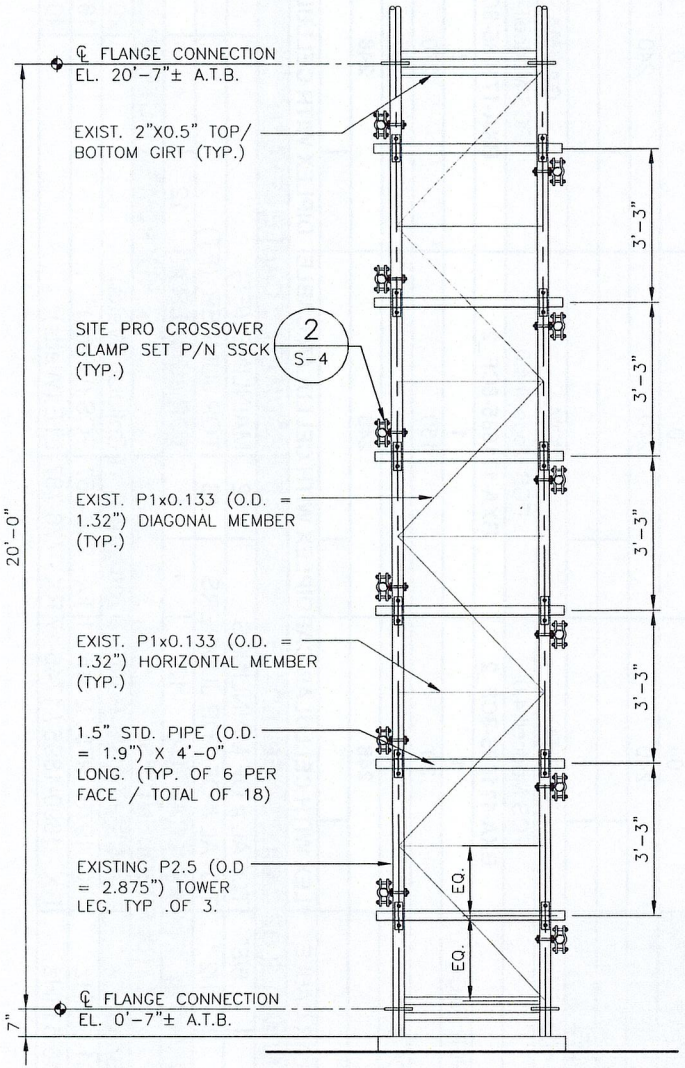
ASHFORD

DATE: 5/7/13
SCALE: AS SHOWN
JOB NO. 13048

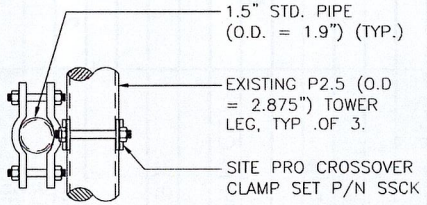
FOUNDATION REINFORCEMENT DETAILS

SHEET NO.
S-3
Sheet No. 8 of 9



1 / S-4 **REINFORCEMENT ELEVATION**

SCALE: NOT TO SCALE



2 / S-4 **CONNECTION DETAIL**

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

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

NO.	DATE	DRAWN BY	CHK'D BY	DESCRIPTION
1	5/29/13	TJL	CFC	ISSUED FOR CONSTRUCTION
0	5/7/13	TJL	CFC	ISSUED FOR CONSTRUCTION

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VERIZON WIRELESS

ASHFORD

DATE:	5/7/13
SCALE:	AS SHOWN
JOB NO.	13048

TOWER REINFORCEMENT DETAILS

SHEET NO.
S-4
Sheet No. 9 of 9

SITE NAME	ASHFORD CT	ECP - CELL #	2	71
LATITUDE	41-50-52.90 N	LONGITUDE	72-07-17.00 W	
Additional Comments: LTE antenna add tower legs @ 140% set cell and LTE side by side @ 240, and place PCS @ 248 and adding diplexers to the main lines.		SAVE BUTTON		
		STRUCTURE TYPE		

700 Mhz - LTE ANTENNA ADD	ALPHA	BETA	GAMMA
EQUIPMENT TYPE	eNodeB	eNodeB	eNodeB
ANTENNA TYPE	BXA-70063-6CF_4	BXA-70063-6CF_4	BXA-70063-6CF_4
QTY OF ANTENNAS PER FACE	1	1	1
ORIENTATION (DEG)	30	150	270
DOWN TILT (MECH/DEG)	2	2	2
RAD CTR (FT AGL)	240	240	240
TMA - QTY / MODEL			
DIPLEXER - QTY / MODEL			

850 Celluar - Current Config	ALPHA	BETA	GAMMA
EQUIPMENT TYPE	#N/A	#N/A	#N/A
ANTENNA TYPE	DB844H80-XY	DB844H80-XY	DB844H80-XY
QTY OF ANTENNAS PER FACE	2	2	2
ORIENTATION (DEG)	30	150	270
DOWN TILT (MECH/DEG)	0	0	0
RAD CTR (FT AGL)	240	240	240
TMA - QTY / MODEL			
DIPLEXER - QTY / MODEL			

850 Celluar - Future Config	ALPHA	BETA	GAMMA
EQUIPMENT TYPE	#N/A	#N/A	#N/A
ANTENNA TYPE	BXA-80080-4CF	BXA-80080-4CF	BXA-80080-4CF
QTY OF ANTENNAS PER FACE	1	1	1
ORIENTATION (DEG)	30	150	270
DOWN TILT (MECH/DEG)	0	0	2
RAD CTR (FT AGL)	240	240	240
TMA - QTY / MODEL			
DIPLEXER - QTY / MODEL	2 FD9R6004/2C-3L	2 FD9R6004/2C-3L	2 FD9R6004/2C-3L
DIPLEX WITH LTE CABLE			

1900 PCS - Current Config	ALPHA	BETA	GAMMA
EQUIPMENT TYPE	PCS Modcell 4.0	PCS Modcell 4.0	PCS Modcell 4.0
ANTENNA TYPE	948F85T2E-M_2	948F85T2E-M_2	948F85T2E-M_2
QTY OF ANTENNAS PER FACE	2	2	2
ORIENTATION (DEG)	30	150	270
DOWN TILT (MECH/DEG)	0	0	0
RAD CTR (FT AGL)	240	240	240
TMA - QTY / MODEL			
DIPLEXER - QTY / MODEL			

1900 PCS - Future Config	ALPHA	BETA	GAMMA
EQUIPMENT TYPE	PCS Modcell 4.0	PCS Modcell 4.0	PCS Modcell 4.0
ANTENNA TYPE	BXA-171085-8CF_2	BXA-171085-8CF_2	BXA-171085-8CF_2
QTY OF ANTENNAS PER FACE	1	1	1
ORIENTATION (DEG)	30	150	270
DOWN TILT (MECH/DEG)	0	0	0
RAD CTR (FT AGL)	248	248	248
TMA - QTY / MODEL			
DIPLEX WITH CELLULAR CABLE	LEX WITH CELLULAR CAB	DIPLEX WITH CELLULAR CABLE	DIPLEX WITH CELLULAR CABLE

NUMBER OF CABLE'S NEEDED					ESTIMATED CABLE LENGTH			
MAINLINE SIZE	1 5/8"	TOTAL # OF MAINLINES		12	MAINLINE (FT)			
JUMPER SIZE	1/2 "	TOTAL # OF TOP JUMPERS		18	TOP JUMPER (FT)			12
Equipment Cable Ordering		MAIN CABLE	12 +	0	TOP JUMPER #	12	+	6

TX / RX FREQUENCIES			TX POWER OUTPUT	
Cellular A-Band	PCS F / AWS-Band	700 Mhz C - E	Cellular (Watts)	20
TX - 869-880,890-891.5 MHz	TX - 1970-1975 / 2145-21	TX - 746-757	PCS (Watts)	16
RX - 824-835,845-846.5 MHz	RX - 1890-1895 / 1745-17	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: Mark Brauer				Steve Weatherbee				MB			4/18/2012

Site Configuration

Amphenol ANTENNA SOLUTIONS

BXA-70063-6CF-EDIN-X

X-Pol | FET Panel | 63° | 14.5 dBd

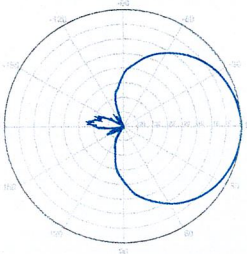
Replace "X" with desired electrical downtilt.

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

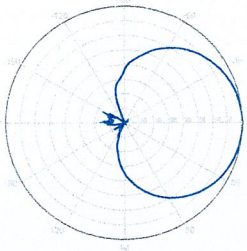
Electrical Characteristics	696-900 MHz	
Frequency bands	696-806 MHz	806-900 MHz
Polarization	±45°	
Horizontal beamwidth	65°	63°
Vertical beamwidth	13°	11°
Gain	14.0 dBd (16.1 dBi)	14.5 dBd (16.6 dBi)
Electrical downtilt (X)	0, 2, 3, 4, 5, 6, 8, 10	
Impedance	50Ω	
VSWR	≤1.35:1	
Upper sidelobe suppression (0°)	-18.3 dB	-18.2 dB
Front-to-back ratio (+/-30°)	-33.4 dB	-36.3 dB
Null fill	5% (-26.02 dB)	
Isolation between ports	< -25 dB	
Input power with EDIN connectors	500 W	
Input power with NE connectors	300 W	
Lightning protection	Direct Ground	
Connector(s)	2 Ports / EDIN or NE / Female / Center (Back)	
Mechanical Characteristics		
Dimensions Length x Width x Depth	1804 x 285 x 132 mm	71.0 x 11.2 x 5.2 in
Depth with z-brackets	172 mm	6.8 in
Weight without mounting brackets	7.9 kg	17 lbs
Survival wind speed	> 201 km/hr	> 125 mph
Wind area	Front: 0.51 m^2 Side: 0.24 m^2	Front: 5.5 ft^2 Side: 2.6 ft^2
Wind load @ 161 km/hr (100 mph)	Front: 759 N Side: 391 N	Front: 169 lbf Side: 89 lbf

Mounting Options	Part Number	Fits Pipe Diameter	Weight
3-Point Mounting & Downtilt Bracket Kit	36210008	40-115 mm 1.57-4.5 in	6.9 kg 15.2 lbs
Concealment Configurations	For concealment configurations, order BXA-70063-6CF-EDIN-X-FP		

BXA-70063-6CF-EDIN-X

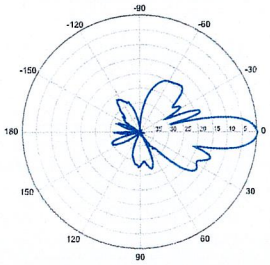


Horizontal | 750 MHz

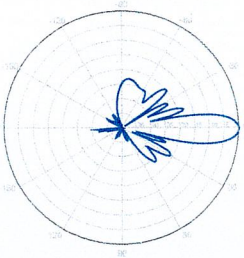


Horizontal | 850 MHz

BXA-70063-6CF-EDIN-0

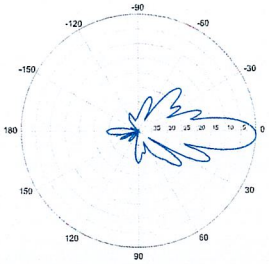


0° | Vertical | 750 MHz

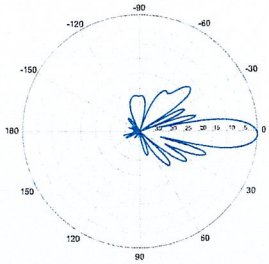


0° | Vertical | 850 MHz

BXA-70063-6CF-EDIN-2



2° | Vertical | 750 MHz



2° | 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.

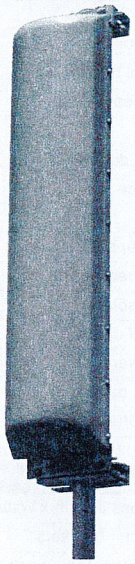
Amphenol ANTENNA SOLUTIONS

BXA-80080-4CF-EDIN-X

X-Pol | FET Panel | 80° | 12.0 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.

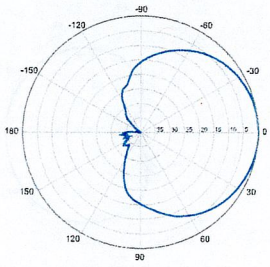


Electrical Characteristics	
Frequency bands	806-900 MHz*
*Optional frequency band for iDEN	806-941 MHz (specify when ordering)
Polarization	±45°
Horizontal beamwidth	80°
Vertical beamwidth	15°
Gain	12.0 dBd (14.1 dBi)
Electrical downtilt (X)	0, 2, 4, 6, 8, 10, 12, 14
Impedance	50Ω
VSWR	≤1.4:1
Upper sidelobe suppression (0°)	-13.1 dB
Front-to-back ratio (+/-30°)	-36.7 dB
Null fill	5% (-26.02 dB)
Isolation between ports	< -30 dB
Input power with EDIN connectors	500 W
Input power with NE connectors	300 W
Lightning protection	Direct Ground
Connector(s)	2 Ports / EDIN or NE / Female / Center (Back)

Mechanical Characteristics		
Dimensions Length x Width x Depth	1206 x 204 x 151 mm	47.5 x 8.0 x 5.9 in
Depth with z-brackets	196 mm	7.7 in
Weight without mounting brackets	5.4 kg	12 lbs
Survival wind speed	> 201 km/hr	> 125 mph
Wind area	Front: 0.25 m^2 Side: 0.18 m^2	Front: 2.6 ft^2 Side: 1.9 ft^2
Wind load @ 161 km/hr (100 mph)	Front: 351 N Side: 280 N	Front: 79 lbf Side: 61 lbf

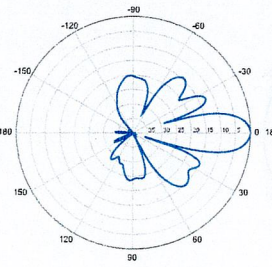
Mounting Options	Part Number	Fits Pipe Diameter	Weight
2-Point Mounting Bracket Kit	36210002	50-160 mm 2.0-6.3 in	4.5 kg 10 lbs
2-Point Downtilt Bracket Kit (0-20°)	36114003	50-160 mm 2.0-6.3 in	4.9 kg 11 lbs
Downtilt Mounting Applications	A mounting bracket and downtilt bracket kit must be ordered for downtilt applications		
Concealment Configurations	For concealment configurations, order BXA-80080-4CF-EDIN-X-FP		

BXA-80080-4CF-EDIN-X



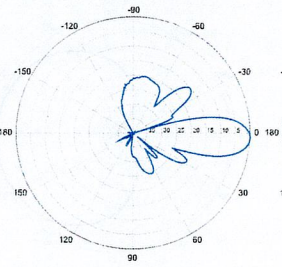
Horizontal

BXA-80080-4CF-EDIN-0



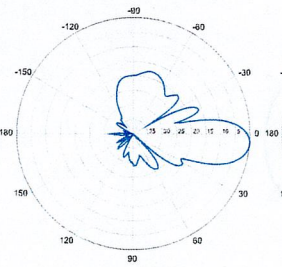
0° | Vertical

BXA-80080-4CF-EDIN-2



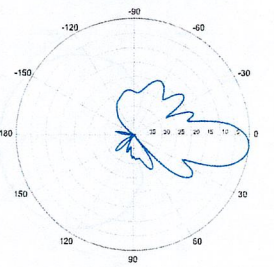
2° | Vertical

BXA-80080-4CF-EDIN-4



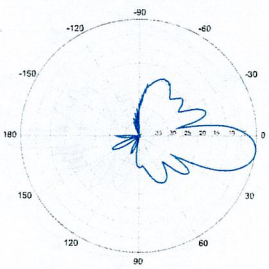
4° | Vertical

BXA-80080-4CF-EDIN-6



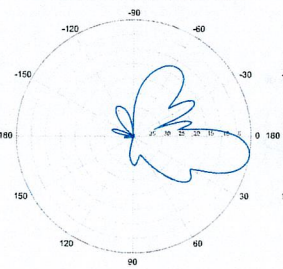
6° | Vertical

BXA-80080-4CF-EDIN-8



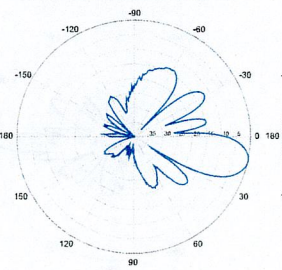
8° | Vertical

BXA-80080-4CF-EDIN-10



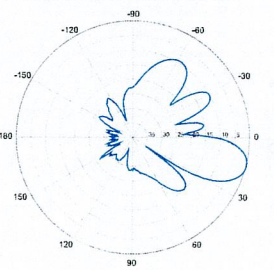
10° | Vertical

BXA-80080-4CF-EDIN-12



12° | Vertical

BXA-80080-4CF-EDIN-14



14° | Vertical

BXA-171085-8CF-EDIN-X

Replace "X" with desired electrical downtilt

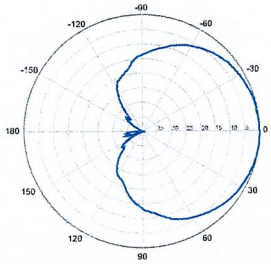
X-Pol | FET Panel | 85° | 16.4 dBi

Electrical Characteristics	1710-2170 MHz		
Frequency bands	1710-1880 MHz	1850-1990 MHz	1920-2170 MHz
Polarization	±45°	±45°	±45°
Horizontal beamwidth	88°	85°	80°
Vertical beamwidth	7°	7°	7°
Gain	13.5 dBd / 15.6 dBi	13.9 dBd / 16.0 dBi	14.3 dBd / 16.4 dBi
Electrical downtilt (X)	0, 2, 4		
Impedance	50Ω		
VSWR	≤1.5:1		
First upper sidelobe	< -17 dB		
Front-to-back isolation	> 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 / Center (Back)		
Operating temperature	-40° to +60° C / -40° to +140° F		

Mechanical Characteristics		
Dimensions Length x Width x Depth	1232 x 154 x 105 mm	48.5 x 6.1 x 4.1 in
Depth with t-brackets	133 mm	5.2 in
Weight without mounting brackets	4.8 kg	10.5 lbs
Survival wind speed	296 km/hr	184 mph
Wind area	Front: 0.19 m² Side: 0.14 m²	Front: 2.0 ft² Side: 1.5 ft²
Wind load @ 161 km/hr (100 mph)	Front: 281 N Side: 223 N	Front: 63 lbf Side: 50 lbf

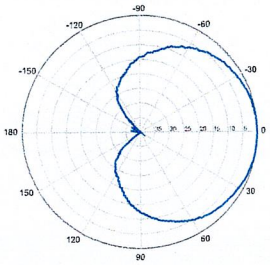
Mounting Options	Part Number	Fits Pipe Diameter	Weight
2-Point Mounting Bracket Kit	26799997	50-102 mm 2.0-4.0 in	2.3 kg 5 lbs
2-Point Mounting & Downtilt Bracket Kit	26799999	50-102 mm 2.0-4.0 in	3.6 kg 8 lbs
Concealment Configurations	For concealment configurations, order BXA-171085-8CF-EDIN-X-FP		

BXA-171085-8CF-EDIN-X



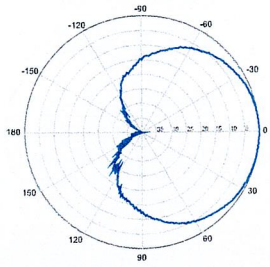
Horizontal | 1710-1880 MHz

BXA-171085-8CF-EDIN-X



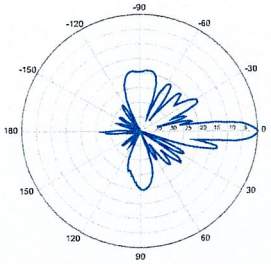
Horizontal | 1850-1990 MHz

BXA-171085-8CF-EDIN-X



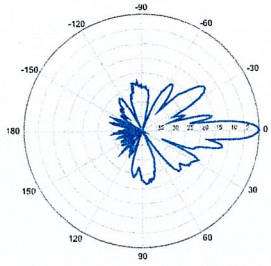
Horizontal | 1920-2170 MHz

BXA-171085-8CF-EDIN-0



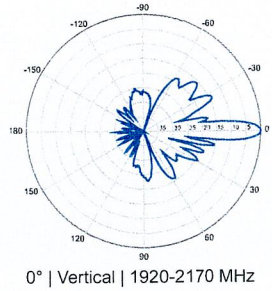
0° | Vertical | 1710-1880 MHz

BXA-171085-8CF-EDIN-0



0° | Vertical | 1850-1990 MHz

BXA-171085-8CF-EDIN-0



0° | Vertical | 1920-2170 MHz

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Attorney/Firm: ROBINSON & COLE LLP (050604) **E-Mail:** rdomin@rc.com Logout

FBT-CV11-6018449-S GORDON, CRAIG v. GEIGNETTER, CAROLYN Et Al

Prefix/Suffix: [none] **Case Type:** M90 **File Date:** 04/27/2011 **Return Date:** 05/03/2011

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Information updated as of: 06/03/2013

Case Information

Case Type: M90 - MISC - ALL OTHER
Court Location: BRIDGEPORT
List Type: COURT (CT)
Trial List Claim: 08/24/2012
Referral Judge or Magistrate:
Last Action Date: 05/29/2013 (The "last action date" is the date the information was entered in the system)

Disposition Information

Disposition Date:
Disposition:
Judge or Magistrate:

Party & Appearance Information

Party		No Fee Party
P-01 CRAIG GORDON		
Attorney: GORDON AND DENICOLA (425392) 1087 BROAD STREET BRIDGEPORT, CT 06604	File Date: 04/27/2011	
D-50 CAROLYN GEIGNETTER		
Attorney: ROBINSON & COLE LLP (050604) 280 TRUMBULL STREET HARTFORD, CT 06103	File Date: 05/03/2011	
D-51 GEORGE GEIGNETTER		
Attorney: ROBINSON & COLE LLP (050604) 280 TRUMBULL STREET HARTFORD, CT 06103	File Date: 05/03/2011	
D-52 J&G GLASS CO INC.		
Attorney: ROBINSON & COLE LLP (050604) 280 TRUMBULL STREET HARTFORD, CT 06103	File Date: 05/03/2011	

Viewing Documents on Civil Cases: Attorneys who have an appearance on the case can view pleadings, orders and other documents that are ***paperless*** by selecting the document link below. Any attorney without an appearance on the case can look at court orders and judicial notices that are ***electronic*** on this case by choosing the link next to the order or selecting "Notices" from the tab at the top of this page and choosing the link to the notice on this website. Pleadings and other documents that are paperless can be viewed during normal business hours at any Judicial District courthouse and at many geographical area courthouses. Any pleadings or documents that are ***not paperless*** can be viewed during normal business hours at the Clerk's Office in the Judicial District where the case is. Some pleadings, orders and other documents are protected by court order and can be seen at the

Clerk's Office in the Judicial District where the case is only by attorneys or parties on the case.

Motions / Pleadings / Documents / Case Status

Entry No	File Date	Filed By	Description	Arguable
	05/03/2011	D	**APPEARANCE** Appearance	
	11/04/2011		**CLAIM/RECLAIM** Claim/Reclaim	
100.30	04/27/2011	P	**SUMMONS**	No
100.31	04/27/2011	P	**COMPLAINT**	No
100.32	04/27/2011	P	**RETURN OF SERVICE**	No
101.00	06/03/2011	D	**ANSWER AND SPECIAL DEFENSE AND COUNTERCLAIM**	No
102.00	08/05/2011	D	**MOTION FOR DEFAULT-FAILURE TO PLEAD** *RESULT:* Granted 8/22/2011 BY THE CLERK	No
102.10	08/22/2011	C	**ORDER** granted *RESULT:* Granted 8/22/2011 BY THE CLERK	No
103.00	08/11/2011	P	**REQUEST TO REVISE** Req Revise Addressed to Ans, SD and Counterclaim	No
104.00	08/15/2011	D	**OBJECTION TO REQUEST TO REVISE** *RESULT:* Order 8/28/2011 HON L MELVILLE	No
104.10	08/31/2011	C	**ORDER** *RESULT:* Order 8/28/2011 HON L MELVILLE	No
105.00	08/22/2011	P	**AMENDMENT** Amendment to Request to Revise #103	No
106.00	10/26/2011	D	**OBJECTION TO REQUEST TO REVISE** RE: PLAINTIFF'S AMENDED REQUEST TO REVISE *RESULT:* Order 11/7/2011 HON WILLIAM RUSH	No
106.10	11/07/2011	C	**ORDER** *RESULT:* Order 11/7/2011 HON WILLIAM RUSH	No
107.00	11/04/2011	P	**AFFIDAVIT OF ATTEMPT TO RESOLVE OBJECTION**	No
108.00	11/08/2011	P	**AFFIDAVIT OF ATTEMPT TO RESOLVE OBJECTION**	No
109.00	12/21/2011	P	**MOTION FOR DEFAULT-FAILURE TO PLEAD** *RESULT:* Granted 1/13/2012 BY THE CLERK	No
109.10	01/13/2012	C	**ORDER** GRANTED- PARTIES 50, 51, 52 *RESULT:* Granted 1/13/2012 BY THE CLERK	No
110.00	12/23/2011	D	**SPECIAL DEFENSE** DEFENDANTS' REVISED SPECIAL DEFENSES	No
111.00	12/23/2011	D	**MOTION FOR DEFAULT-FAILURE TO PLEAD** AGAINST GORDON RE: COUNTERCLAIM *RESULT:* Denied 1/20/2012 BY THE CLERK	No
111.10	01/20/2012	C	**ORDER** *RESULT:* Denied 1/20/2012 BY THE CLERK	No
112.00	01/04/2012	P	**OBJECTION TO MOTION FOR DEFAULT** Objection to Motion for Default # 111	No
113.00	01/06/2012	P	**REPLY** Reply to Ans and Special Defenses to Counterclaim	No
114.00	03/08/2012	D	**MOTION TO OPEN DEFAULT**	No

			RESULT: Granted 3/19/2012 HON DALE RADCLIFFE	
114.10	03/19/2012	C	**ORDER** order on motion 114.00 *RESULT:* Granted 3/19/2012 HON DALE RADCLIFFE	No
115.00	08/24/2012	D	**REPLY TO SPECIAL DEFENSE** BY J&G GLASS RE: COUNTERCLAIM	No
116.00	08/24/2012	D	**CERTIFICATE OF CLOSED PLEADINGS AND CLAIM FOR TRIAL LIST**	No
117.00	08/30/2012	P	**SUBSEQUENT CLAIM FOR TRIAL**	No
118.00	05/17/2013	P	**MOTION FOR ORDER**	No
119.00	05/28/2013	D	**MOTION FOR CONTINUANCE** ! NEW *RESULT:* Denied 5/29/2013 HON BARBARA BELLIS	No
119.10	05/29/2013	C	**ORDER** ! NEW *RESULT:* Denied 5/29/2013 HON BARBARA BELLIS	No
120.00	05/29/2013	P	**REPLY** ! NEW Response to Request for Continuance #119	No

Individually Scheduled Court Dates as of 05/31/2013				
FBT-CV11-6018449-S - GORDON, CRAIG v. GEIGNETTER, CAROLYN Et Al				
#	**Date**	**Time**	**Event Description**	**Status**
1	06/04/2013	10:00AM	Trial	Proceeding

Judicial ADR events may be heard in a court location different from where the case was filed. Please see the JDNO/Notices tab on the Case Detail screen for scheduling location information.

Note: This listing of court activity does not include motions or pleadings that are scheduled for the short calendars.

Periodic changes to terminology may be made which do not affect the status of the case.

Disclaimer: For civil and family cases statewide, case information can be seen on this website for a period of time, from one year to a maximum period of ten years, after the disposition date. If the Connecticut Practice Book Sections 7-10 and 7-11 give a shorter period of time, the case information will be displayed for the shorter period. Under the Federal Violence Against Women Act of 2005, cases for relief from physical abuse, foreign protective orders, and motions that would be likely to publicly reveal the identity or location of a protected party may not be displayed and may be available only at the courts.