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kbaldwin@rc.com
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Also admitted in Massachusetts

January 2, 2013

ORIGINAL

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CONNECTICUT
SITING COUNCIL

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

Re: **Notice of Exempt Modification – Antenna Swap**
130 Vernon Road, Bolton, Connecticut

Dear Ms. Roberts:

Cellco Partnership d/b/a Verizon Wireless (“Cellco”) currently maintains ten (10) wireless telecommunications antennas at the 121-foot level on an existing 280-foot tower at the above-referenced address. The tower and underlying property are owned by Mountaintop Enterprises. Cellco’s use of the tower was approved by the Council in 1993. Cellco now intends to replace all of its existing antennas with two (2) model LPA-80080-4CF cellular antennas; two (2) model LPA-80063-4CF cellular antennas; two (2) model LPA-171063-8CF PCS antennas; two (2) model LPA-171080-8CF PCS antennas; and two (2) model BXA-70063-6CF LTE antennas, all at the same 121-foot level. Cellco also intends to install two (2) additional coax cables attached to the leg of the lattice tower. Attached behind Tab 1 are the specifications for the replacement antennas.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Robert R. Morra, First Selectman of the Town of Bolton.

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



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11984446-v1

ROBINSON & COLE LLP

Linda Roberts
January 2, 2013
Page 2

1. The proposed modifications will not result in an increase in the height of the existing tower. Cellco's replacement antennas will be located at the 121-foot level on the existing 280-foot tower.
2. The proposed modifications do not involve any change to ground-mounted equipment and, therefore, will not require the extension of the site boundaries.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, 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) adopted safety standard. A cumulative 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 can support Cellco's proposed modifications. (*See Structural Analysis 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:

Robert R. Morra, Bolton First Selectman
Mountaintop Enterprises
Sandy M. Carter



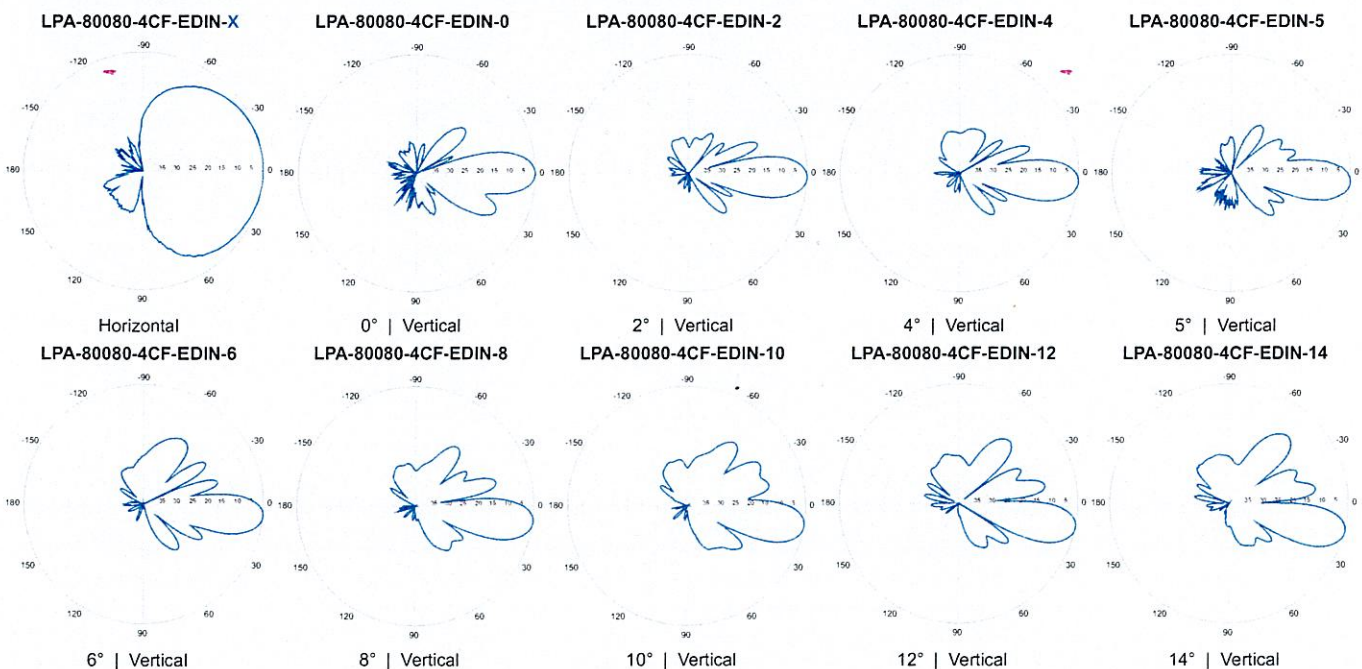
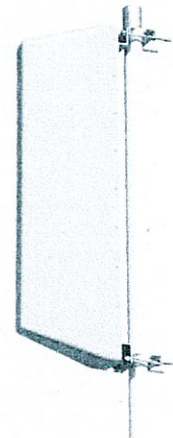
LPA-80080-4CF-EDIN-X

V-Pol | Log Periodic | 80° | 12.5 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	
Frequency bands	806-960 MHz
Polarization	Vertical
Horizontal beamwidth	80°
Vertical beamwidth	15°
Gain	12.5 dBd (14.6 dBi)
Electrical downtilt (X)	0, 2, 4, 5, 6, 8, 10, 12, 14
Impedance	50Ω
VSWR	≤1.4:1
Upper sidelobe suppression (0°)	-14.2 dB
Front-to-back ratio (+/-30°)	-34.7 dB
Null fill	15% (-16.48 dB)
Input power	500 W
Lightning protection	Direct Ground
Connector(s)	1 Port / EDIN or NE / Female / Center (Back)
Mechanical Characteristics	
Dimensions Length x Width x Depth	1200 x 140 x 335 mm47.2 x 5.5 x 13.2 in
Depth of antenna with z-bracket	375 mm14.8 in
Weight without mounting brackets	5.4 kg12 lbs
Survival wind speed	> 201 km/hr> 125 mph
Wind area	Front: 0.17 m² Side: 0.40 m²Front: 1.8 ft² Side: 4.3 ft²
Wind load @ 161 km/hr (100 mph)	Front: 254 N Side: 574 NFront: 57 lbf Side: 129 lbf
Mounting Options	
Part Number	Fits Pipe DiameterWeight
2-Point Mounting & Downtilt Bracket Kit (0-20°)	2169999950-102 mm 2.0-4.0 in5.4 kg 12 lbs
Lock-Down Brace	If the lock-down brace is used, the maximum diameter of the mounting pipe is 88.9 mm or 3.5 in



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

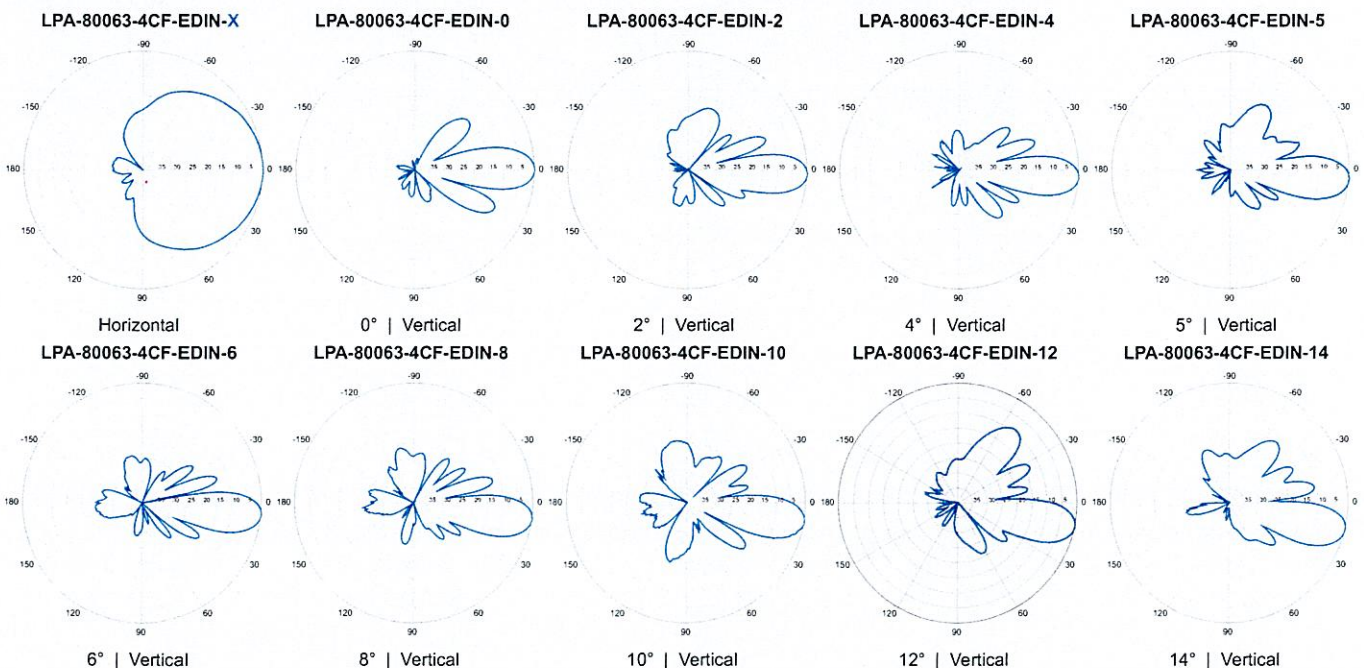
LPA-80063-4CF-EDIN-X

V-Pol | Log Periodic | 63° | 13.0 dBd

Replace "X" with desired electrical downtilt.

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

Electrical Characteristics		
Frequency bands	806-960 MHz	
Polarization	Vertical	
Horizontal beamwidth	63°	
Vertical beamwidth	15°	
Gain	13.0 dBd (15.1 dBi)	
Electrical downtilt (X)	0, 2, 4, 5, 6, 8, 10, 12, 14	
Impedance	50Ω	
VSWR	≤1.4:1	
Upper sidelobe suppression (0°)	-15.7 dB	
Front-to-back ratio (+/-30°)	-31.7 dB	
Null fill	5% (-26.02 dB)	
Input power	500 W	
Lightning protection	Direct Ground	
Connector(s)	1 Port / EDIN or NE / Female / Center (Back)	
Mechanical Characteristics		
Dimensions Length x Width x Depth	1205 x 385 x 332 mm47.4 x 15.2 x 13.1 in	
Depth of antenna with z-bracket	372 mm14.6 in	
Weight without mounting brackets	9.1 kg20 lbs	
Survival wind speed	> 201 km/hr> 125 mph	
Wind area	Front: 0.46 m² Side: 0.39 m²Front: 5.0 ft² Side: 4.2 ft²	
Wind load @ 161 km/hr (100 mph)	Front: 660 N Side: 550 NFront: 149 lbf Side: 124 lbf	
Mounting Options		
Part Number	Fits Pipe Diameter	Weight
2-Point Mounting & Downtilt Bracket Kit (0-20°)	2169999950-102 mm 2.0-4.0 in	5.4 kg 12 lbs
Lock-Down Brace	If the lock-down brace is used, the maximum diameter of the mounting pipe is 88.9 mm or 3.5 in.	



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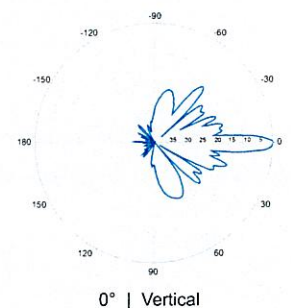
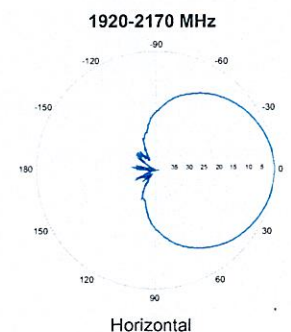
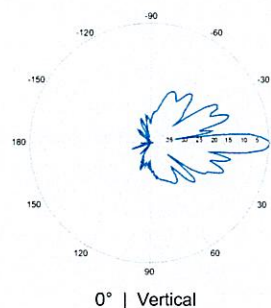
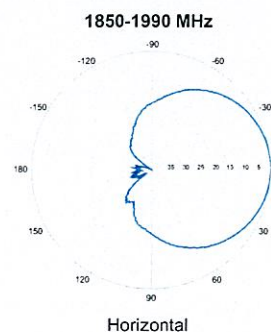
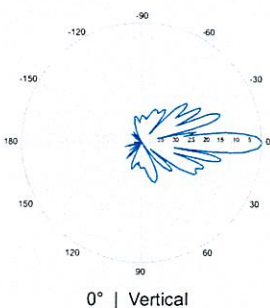
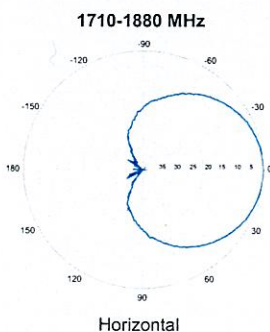
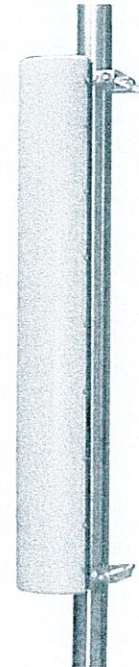
LPA-171063-8CF-EDIN-X

V-Pol | Log Periodic | 63° | 17.0-17.5 dBi

Replace "X" with desired electrical downtilt.

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

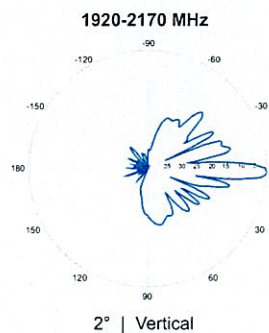
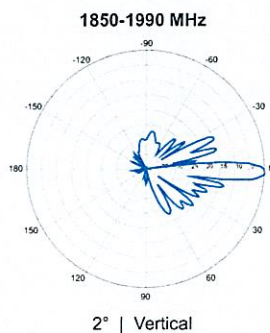
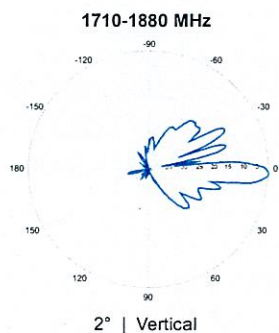
Electrical Characteristics		1710-2170 MHz					
Frequency bands	1710-1755 MHz		1850-1990 MHz		1920-2170 MHz		
Polarization	Vertical						
Horizontal beamwidth	61°		63°		60°		
Vertical beamwidth	6°		7°		6°		
Gain	14.9 dBd (17.0 dBi)		15.4 dBd (17.5 dBi)		14.9 dBd (17.0 dBi)		
Electrical downtilt (X)	0, 2						
Impedance	50Ω						
VSWR	≤ 1.5:1						
Null fill	5% (-26.02 dB)						
Input power	250 W						
Lightning protection	Direct Ground						
Connector(s)	1 Port / EDIN or NE / Female / Center (Back)						
Mechanical Characteristics							
Dimensions Length x Width x Depth	1207 x 203 x 203 mm			47.5 x 8.0 x 8.0 in			
Weight without mounting brackets	5.2 kg			11.5 lbs			
Survival wind speed	>201 km/hr			>125 mph			
Wind area	Front: 0.20 m² Side: 0.27 m²			Front: 2.2 ft² Side: 2.9 ft²			
Wind load @ 161 km/hr (100 mph)	Front: 246 N Side: 323 N			Front: 55.3 lbf Side: 72.7 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 5.0 lbs	
2-Point Mounting and Downtilt Bracket Kit		26799999		50-102 mm 2.0-4.0 in		2.3 kg 5.0 lbs	



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LPA-171063-8CF-EDIN-X

V-Pol | Log Periodic | 63° | 17.0-17.5 dBi



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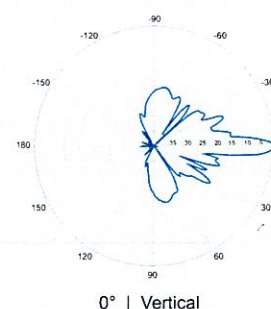
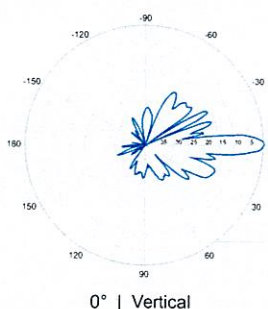
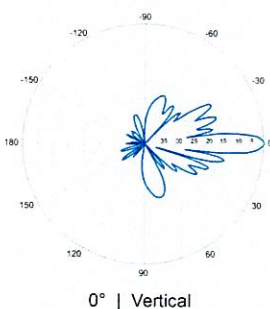
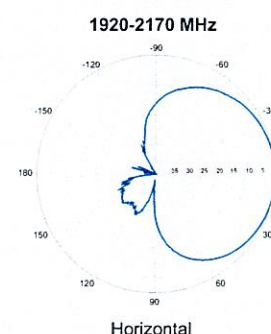
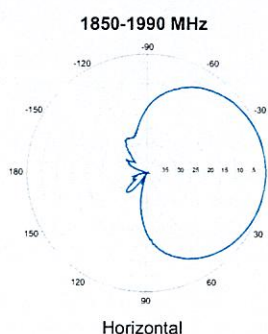
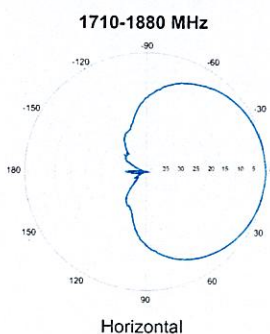
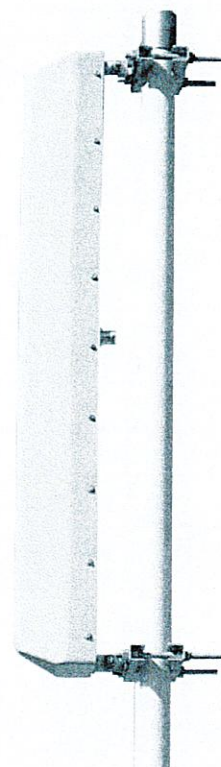
LPA-171080-8CF-EDIN-X

V-Pol | Log Periodic | 80° | 16.0-16.5 dBi

Replace "X" with desired electrical downtilt.

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

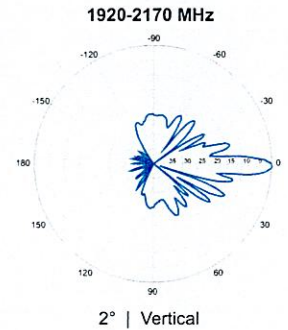
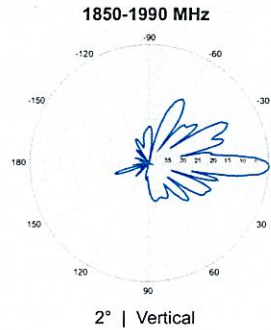
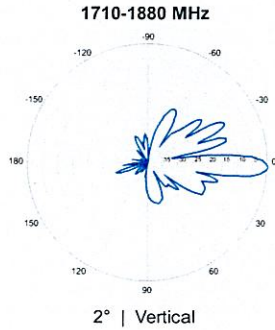
Electrical Characteristics		1710-2170 MHz					
Frequency bands	1710-1880 MHz	1850-1990 MHz		1920-2170 MHz			
Polarization	Vertical						
Horizontal beamwidth	78°	80°		77°			
Vertical beamwidth	6°	7°		6°			
Gain	13.9 dBd (16.0 dBi)	14.4 dBd (16.5 dBi)		13.9 dBd (16.0 dBi)			
Electrical downtilt (X)	0, 2						
Impedance	50Ω						
VSWR	≤ 1.5:1						
Null fill	5% (-26.02 dB)						
Input power	250 W						
Lightning protection	Direct Ground						
Connector(s)	1 Port / EDIN or NE / Female / Center (Back)						
Mechanical Characteristics							
Dimensions Length x Width x Depth	1207 x 105 x 175 mm		47.5 x 4.1 x 6.9 in				
Weight without mounting brackets	3.9 kg		8.5 lbs				
Survival wind speed	>276 km/hr		>171 mph				
Wind area	Front: 0.14 m² Side: 0.22 m²		Front: 1.5 ft² Side: 2.3 ft²				
Wind load @ 161 km/hr (100 mph)	Front: 185 N Side: 317 N		Front: 42 lbf Side: 71 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 5.0 lbs	
2-Point Mounting and Downtilt Bracket Kit		26799999		50-102 mm 2.0-4.0 in		2.3 kg 5.0 lbs	



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LPA-171080-8CF-EDIN-X

V-Pol | Log Periodic | 80° | 16.0-16.5 dBi



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BXA-70063-6CF-EDIN-X

X-Pol | FET Panel | 63° | 14.5 dBd

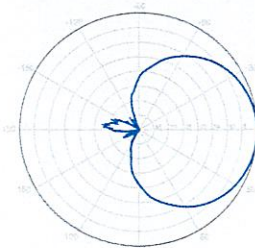
Replace "X" with desired electrical downtilt.

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

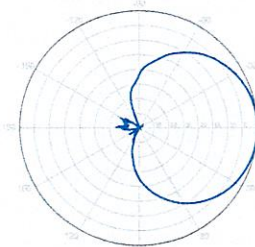
Electrical Characteristics	696-900 MHz					
Frequency bands	696-806 MHz		806-900 MHz			
Polarization	±45°					
Horizontal beamwidth	65°		63°			
Vertical beamwidth	13°		11°			
Gain	14.0 dBd (16.1 dBi)		14.5 dBd (16.6 dBi)			
Electrical downtilt (X)	0, 2, 3, 4, 5, 6, 8, 10					
Impedance	50Ω					
VSWR	≤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

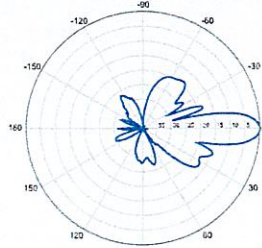


Horizontal | 750 MHz

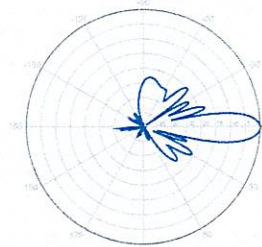


Horizontal | 850 MHz

BXA-70063-6CF-EDIN-0

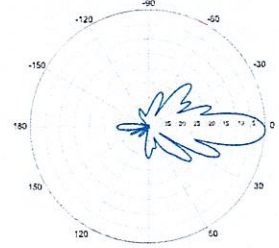


0° | Vertical | 750 MHz

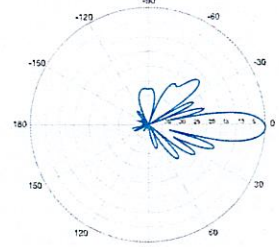


0° | Vertical | 850 MHz

BXA-70063-6CF-EDIN-2



2° | Vertical | 750 MHz



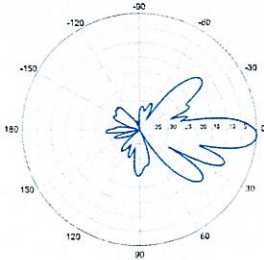
2° | Vertical | 850 MHz

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BXA-70063-6CF-EDIN-X

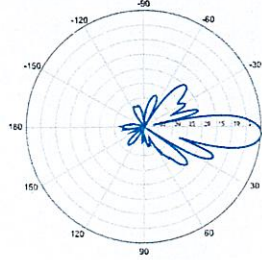
X-Pol | FET Panel | 63° | 14.5 dBd

BXA-70063-6CF-EDIN-3



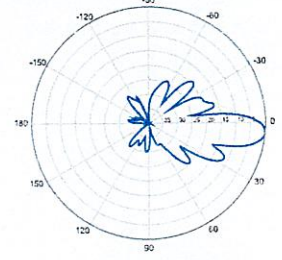
3° | Vertical | 750 MHz

BXA-70063-6CF-EDIN-4

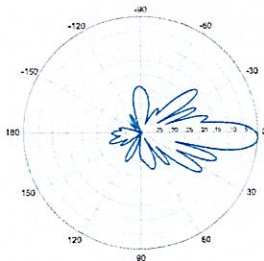


4° | Vertical | 750 MHz

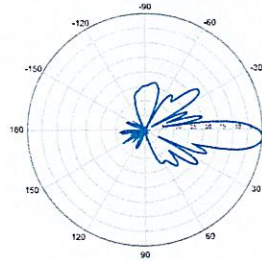
BXA-70063-6CF-EDIN-5



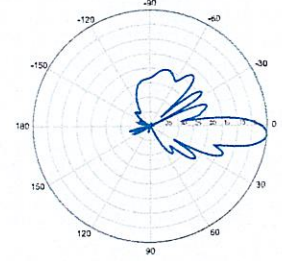
5° | Vertical | 750 MHz



3° | Vertical | 850 MHz

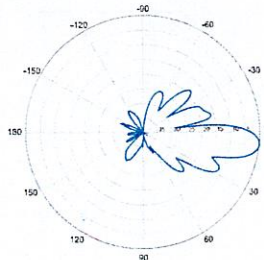


4° | Vertical | 850 MHz



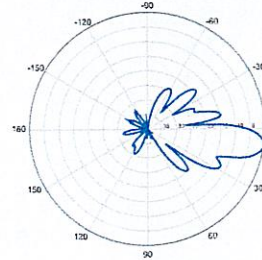
5° | Vertical | 850 MHz

BXA-70063-6CF-EDIN-6



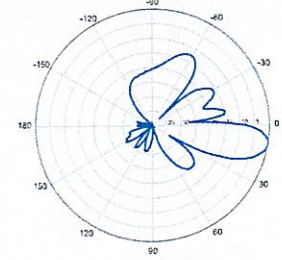
6° | Vertical | 750 MHz

BXA-70063-6CF-EDIN-8

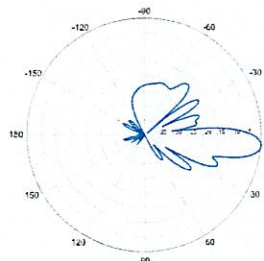


8° | Vertical | 750 MHz

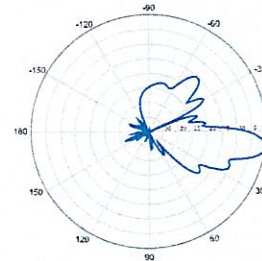
BXA-70063-6CF-EDIN-10



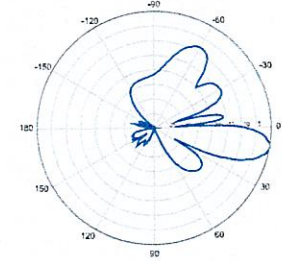
10° | Vertical | 750 MHz



6° | Vertical | 850 MHz



8° | Vertical | 850 MHz



10° | Vertical | 850 MHz

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DETAILED STRUCTURAL ANALYSIS AND EVALUATION OF AN EXISTING 280' GUYED TOWER AND ITS FOUNDATION FOR PROPOSED ANTENNA ARRANGEMENT

Site Name: Bolton CT
Address: 130 Vernon Road
Bolton, Connecticut

prepared for



Verizon Wireless
99 East River Drive
East Hartford, Connecticut 06108

prepared by



URS CORPORATION
500 ENTERPRISE DRIVE, SUITE 3B
ROCKY HILL, CT 06067
TEL. 860-529-8882

36922278.00000
VZ5-120

July 26, 2012

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- 5. CONCLUSIONS AND RECOMMENDATIONS**
- 6. DRAWINGS AND DATA**
 - **TNX TOWER INPUT / OUTPUT SUMMARY**
 - **TNX TOWER FEEDLINE DISTRIBUTION**
 - **TNX TOWER FEEDLINE PLAN**
 - **GUY TENSIONS AND TOWER REACTIONS**
 - **TNX TOWER DETAILED OUTPUT**
 - **FOUNDATION ANALYSIS**

1. EXECUTIVE SUMMARY

This report summarizes the structural analysis of the existing 280' guyed lattice tower located at 130 Vernon Road in Bolton, Connecticut. The analysis was conducted in accordance with the 2005 Connecticut State Building Code which requires a three second gust wind speed of 100 mph which converts to a 80 mph fastest mile per 2003 IBC (Table 1609.3.1) and the TIA/EIA-222-F standard for a wind velocity of 85 mph (fastest mile). The wind speed from the TIA/EIA-222-F governs the design at 85 mph (fastest mile) and 74 mph (fastest mile) concurrent with ½" ice. The antenna loading considered in the analysis consists of all existing and proposed antennas, transmission lines, and ancillary items as outlined in the Introduction Section of this report. The proposed Verizon Wireless modification is as follows:

Proposed Antenna and Mount	Carrier	Antenna Center Elevation
<u>Remove:</u> (6) Andrews DB844H105ESX (4) Andrews 948F85T2E-M (Alpha and Beta Sectors Only) <u>Install:</u> (2) 1-5/8" coaxial cables <u>Alpha:</u> (1) BXA-70063-6CF (2) LPA-80080-4CF (2) LPA-171080-8CF <u>Beta:</u> (1) BXA-70063-6CF (2) LPA-80063-4CF (2) LPA-171063-8CF	Verizon Wireless	121'-0"

Verify that all u-bolts that are part of a previous structural upgrade should be tightened and any missing u-bolts need to be replaced. Also verify that the tower is plumb and the tension on the guy wires are tensioned to the manufacturers specifications per Tower Inspection Report prepared by Northeast Towers.

The results of the analysis indicate that the tower structure and foundation is in compliance with the proposed loading conditions. **The tower is considered structurally adequate with the wind load classification specified above and all the existing and proposed antenna loading.**

This analysis is based on:

- 1) The tower structure's theoretical capacity, not including any assessment of the condition of the tower.
- 2) Geotechnical information taken from report by Dr. Clarence Welti, P.E., P.C. Geotechnical Engineering dated February 13, 1991.
- 3) Tower geometry, structural member sizes and foundation information taken from structural analysis performed by L&R Communications, Limited, L&R File No. 92-43-023, signed and sealed October 16, 1992.
- 4) Structural analysis performed by LeBlanc Communications Inc., File No. 4180105, signed and sealed February 4, 1998.
- 5) Structural analysis prepared by Paul J. Ford and Company, Job No. 36500-16, dated December 6, 2000.

1. **EXECUTIVE SUMMARY (continued)**

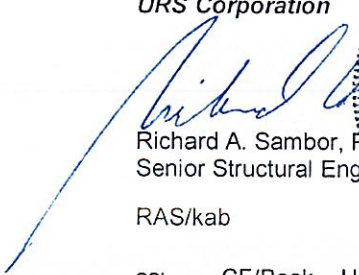
- 6) Structural analysis performed by URS Corp for Cingular Wireless, Job No. F3-00002292.58 signed and sealed August 15, 2002.
- 7) Structural analysis performed by URS Corp for Cingular Wireless, Job No. 36911793 signed and sealed September 19, 2002.
- 8) Structural analysis performed by URS Corp for Verizon Wireless, Job No. VZ1-127 / 36930618, signed and sealed January 27, 2005.
- 9) Structural analysis performed by URS Corp for Cingular/AT&T, Job No. SAI-045 / 36924835, signed and sealed March 30, 2009.
- 10) Structural analysis performed by URS Corp for WMRQ, Job No. 36923441, signed and sealed July 9, 2009.
- 11) Structural analysis performed by URS Corp for WBMW, Job No. 36924402, signed and sealed July 14, 2010.
- 12) Structural analysis performed by URS Corp for AT&T, Job No. 36939370, signed and sealed July 26, 2010.
- 13) Antenna loading and coaxial cable locations taken from tower inspection report prepared by Northeast Towers, Inc., dated July 13, 2012.
- 14) Proposed Verizon Wireless antennas taken from RFDS dated April 25, 2012, received by URS via email on May 14, 2012.
- 15) Antenna and mount configuration as specified on the inventory page following this Executive Summary.

This report is only valid as per the assumptions and data utilized in this report for antenna inventory, mounts and associated cables. The user of this report shall field verify the assumption of the antenna and mount configuration as well as the physical condition of the tower and connections. Notify the engineer in writing immediately if any of the information in this report is found to be other than specified.

If you should have any questions, please call.

Sincerely,

URS Corporation


Richard A. Sambor, P.E.
Senior Structural Engineer

RAS/kab

cc: CF/Book – URS



2. INTRODUCTION

The subject tower is located at 130 Vernon Road in Bolton, Connecticut. The structure is a 280' guyed lattice tower. The inventory is summarized in the table below:

Antenna Type	Carrier	Mount	Antenna Centerline Elevation	Cable
10' Omnidirectional Antenna	Not in Operation	3' Standoff	284'	1-1/4"
FM Antenna	WMRQ (Existing)	5' Standoff	289'	7/8"
Kathrein MF-950B Grid Antenna	WBMW (Existing)	Leg Mounted	280'	1-1/4"
14' Whip antenna	Unknown (Existing)	3' Standoff	260'	1-1/4" (shared with dipole)
ASPA-711 Dipole Antenna	Unknown (Existing)	1' Standoff	260'	1-1/4" (shared with whip)
(9) DB844H90E-XY Panel antenna	Nextel (Existing)	Boom Mount	226'	(9) 1-5/8"
8' Dish with Radome	Unknown (Existing)	Leg Mount	212'-6"	(1) EW60
8' Dish with Radome	Unknown (Existing)	Leg Mount	204'-6"	(1) EW60
6' Dish with Radome	Unknown (Existing)	Leg Mount	204'-6"	(1) EW60
(2) EMS RR90-17-02DP Panel Antennas	AT&T (Existing)	T-Arm	180'-6"	(4) 1-5/8"
None	Not in Operation	6' Standoff	180'-6"	N/A
(6) Powerwave 7770 Panel Antennas (6) LGP21401 TMAs (12) LGP21901 Diplexers	AT&T (Existing)	Shared with Below	164'	(12) 1-5/8"
(3) SBNH-1D6565C Panel Antennas (6) Ericsson RRUs (1) Surge Suppressor	AT&T (Proposed)	(3) Andrew 12' Sector Frames, (SF-U12-3-72)	164'	(1) 3" Flex Conduit with 3 Fiber & 6 DC
6.5' Dish with Radome	Unknown (Existing)	Leg Mount	153'	(1) EW60
5.5' Dish with Radome	Unknown (Existing)	Leg Mount	153'	(1) EW60
22' Whip Antenna	Unknown (Existing)	6' Standoff	132'	(1) 1-1/4"
12' Dipole	Unknown (Existing)	6' Standoff	132'	(1) 1-1/4"
12.5' Omni	Not in Operation	1.5' Standoff	125'	Dead Line
1' Yagi	Not in Operation	Leg Mount	124'-6"	N/A
N/A	Verizon (Existing)	(2) T-Arms	121'	(6) 1-1/4" (4) 1-5/8"
<u>Alpha:</u> (1) BXA-70063-6CF (2) LPA-80080-4CF (2) LPA-171080-8CF <u>Beta:</u> (1) BXA-70063-6CF (2) LPA-80063-4CF (2) LPA-171063-8CF	Verizon (Proposed)	<i>Shared with Above</i>	121'	(2) 1-5/8"

Antenna Type	Carrier	Mount	Antenna Centerline Elevation	Cable
4' Dish with Radome	Unknown (Existing)	Leg Mount	113'	(1) EW-90
9' Dish with Radome	Unknown (Existing)	Leg Mount	104'-6"	(1) EW-60

Note: There are several items on the tower which are either unused or not functional and the carriers are not known at this time. These items are identified in the inventory.

This structural analysis of the communications tower was performed by URS Corporation (URS) for Verizon Wireless. The purpose of this analysis was to investigate the structural integrity of the existing tower with its existing and proposed antenna loads. This analysis was conducted to evaluate stress on the tower and the effect of forces to the foundation of the tower resulting from existing and proposed antenna arrangements.

3. ANALYSIS METHODOLOGY AND LOADING CONDITIONS

The structural analysis was done in accordance with the 2005 Connecticut State Building Code, TIA/EIA-222-F—Structural Standard for Steel Antenna Towers and Antenna Supporting Structures, and the American Institute of Steel Construction (AISC) Manual of Steel Construction—Allowable Stress Design (ASD).

The Connecticut State Building Code requires a three second gust wind speed of 100 mph which converts to a 80 mph fastest mile per 2003 IBC (Table 1609.3.1). The TIA/EIA-222-F requires a basic wind speed of 85 mph fastest mile. In this case the wind speed from the TIA/EIA-222-F governs the design.

The analysis was conducted using TNX Tower 6.0. Two load conditions were evaluated as shown below which were compared to allowable stresses according to AISC and TIA/EIA.

Load Condition 1 = 85 mph (fastest mile) Wind Load (without ice) + Tower Dead Load
Load Condition 2 = 74 mph (fastest mile) Wind Load (with ice) + Ice Load + Tower Dead Load

Please note that wind pressure is a function of velocity squared. Under Load Condition 2, a 25 percent reduction in wind pressure is allowed by code to account for the unlikelihood of the full wind pressure and ice load occurring at the same time. The same results may be achieved by utilizing a lower wind pressure without taking the 25 percent reduction, as shown above.

The TIA/EIA standard permits a one-third increase in allowable stresses for towers and monopoles less than 700 feet tall. For the purposes of this analysis, in computing the load capacity the allowable stresses of the tower members were increased by one-third.

4. FINDINGS AND EVALUATION

Stresses on the tower structure were evaluated to compare with allowable stresses in accordance with AISC. The calculated stresses under the proposed loading were within the allowable limits (see table below). Detailed analysis and calculations for the proposed load condition are provided in section 6 of this report.

COMPONENT (SECTION NO.)	CONTROLLING COMPONENT / ELEVATION	STRESS RATIO (% CAPACITY)	PASS/FAIL
Legs (T12)	40'-60'	90.8%	Pass
Diagonal (T1)	260'-280'	75.4%	Pass
Top Girt (T1)	260'-280'	7.4%	Pass
Sec. Horizontal (T12)	40'-60'	11.5%	Pass
Guy A (T11)	60'-80'	95.5%	Pass
Guy B (T11)	60'-80'	92.0%	Pass
Guy C (T8)	120'-140'	96.9%	Pass
Top Guy Pull-Off (T8)	120'-140'	27.8%	Pass
Bottom Guy Pull-Off (T8)	120'-140'	12.7%	Pass
Torque Arm Top (T5)	180'-200'	27.4%	Pass
Torque Arm Bottom (T5)	180'-200'	53.3%	Pass
Foundation	Guy Anchor Shear	98.9%	Pass

5. CONCLUSIONS AND RECOMMENDATIONS

The results of the analysis indicate that the tower structure, guys and foundation are in compliance with the proposed loading conditions. **The tower is considered structurally adequate with the wind load classification specified above and all the existing and proposed antenna loading.**

Limitations/Assumptions:

This report is based on the following:

1. Tower inventory as listed in this report.
2. Tower is properly installed and maintained.
3. All members are as specified in the original design documents and are in good condition.
4. All required members are in place.
5. All bolts are in place and are properly tightened.
6. Tower is in plumb condition.
7. All member protective coatings are in good condition.
8. All tower members were properly designed, detailed, fabricated, and installed and have been properly maintained since erection.
9. Foundations were properly constructed to support original design loads as specified in the original design documents.
10. All coaxial cable is installed as specified in Section 6 of this report.

URS is not responsible for any modifications completed prior to or hereafter in which URS is not or was not directly involved. Modifications include but are not limited to:

- A. Adding antennas
- B. Removing/replacing antennas
- C. Adding coaxial cables

URS hereby states that this document represents the entire report and that it assumes no liability for any factual changes that may occur after the date of this report. All representations, recommendations, and conclusions are based upon information contained and set forth herein. If you are aware of any information which conflicts with that which is contained herein, or you are aware of any defects arising from original design, material, fabrication, or erection deficiencies, you should disregard this report and immediately contact URS. URS disclaims all liability for any representation, recommendation, or conclusion not expressly stated herein.

Ongoing and Periodic Inspection and Maintenance:

After the Contractor has successfully completed the installation and the work has been accepted, the owner will be responsible for the ongoing and periodic inspection and maintenance of the tower.

The owner shall refer to TIA/EIA-222-F for recommendations for maintenance and inspection. The frequency of the inspection and maintenance intervals is to be determined by the owner based upon actual site and environmental conditions. It is recommended that a complete and thorough inspection of the entire tower structural system be performed at least yearly and more frequently as conditions warrant. According to TIA/EIA-222-F section 14.1, Note 1: It is recommended that the structure be inspected after severe wind and/or ice storms or other extreme loading conditions.

6. DRAWINGS AND DATA

TNX TOWER INPUT/OUTPUT SUMMARY

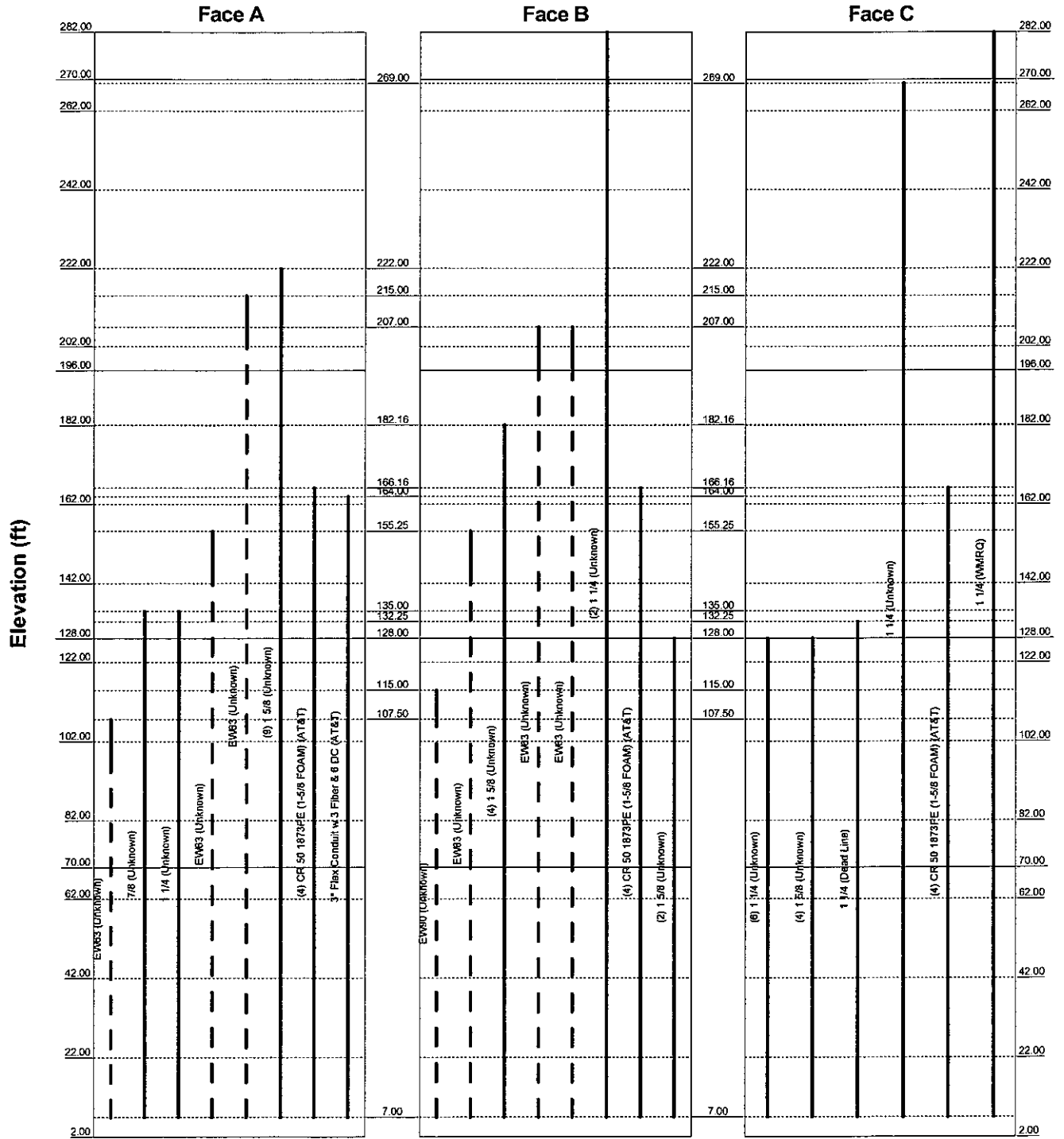
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TNX TOWER FEEDLINE DISTRIBUTION

Feedline Distribution Chart

2' - 282'

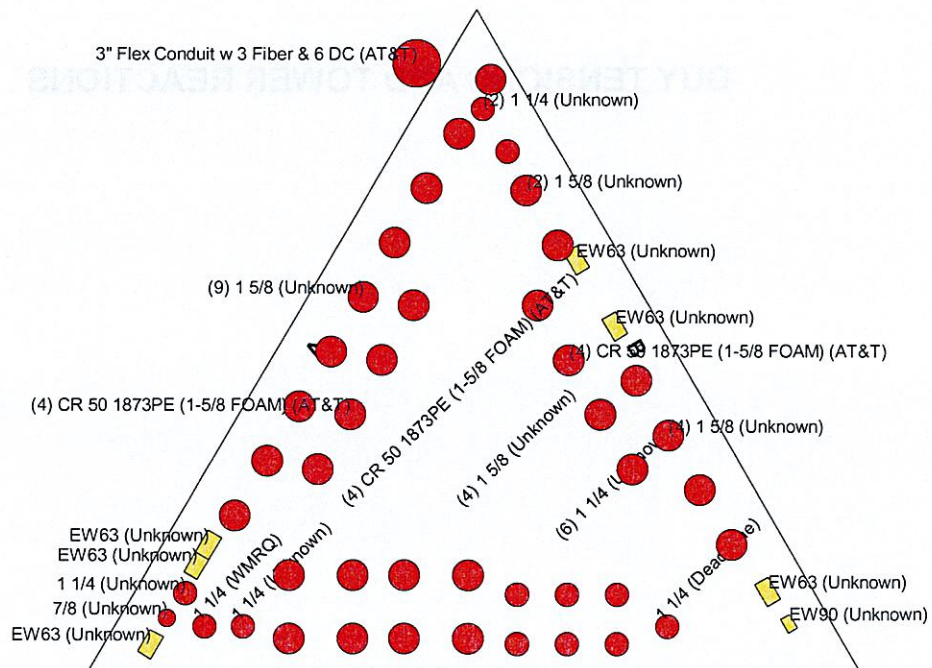
Round Flat App In Face App Out Face Truss Leg



URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: (860) 529-8882 FAX: (860) 529-3991			Job: 280' Guyed Tower Project: 130 Vernon Rd Bolton, CT Client: Verizon Code: TIA/EIA-222-F Path: P:\Q8\ERI Files\280' Guyed Tower Bolton, CT.eri		
Drawn by: kevin barker Date: 07/26/12		App'd: Scale: NTS Dwg No. E-7			

TNX TOWER FEEDLINE PLAN

Feedline Plan



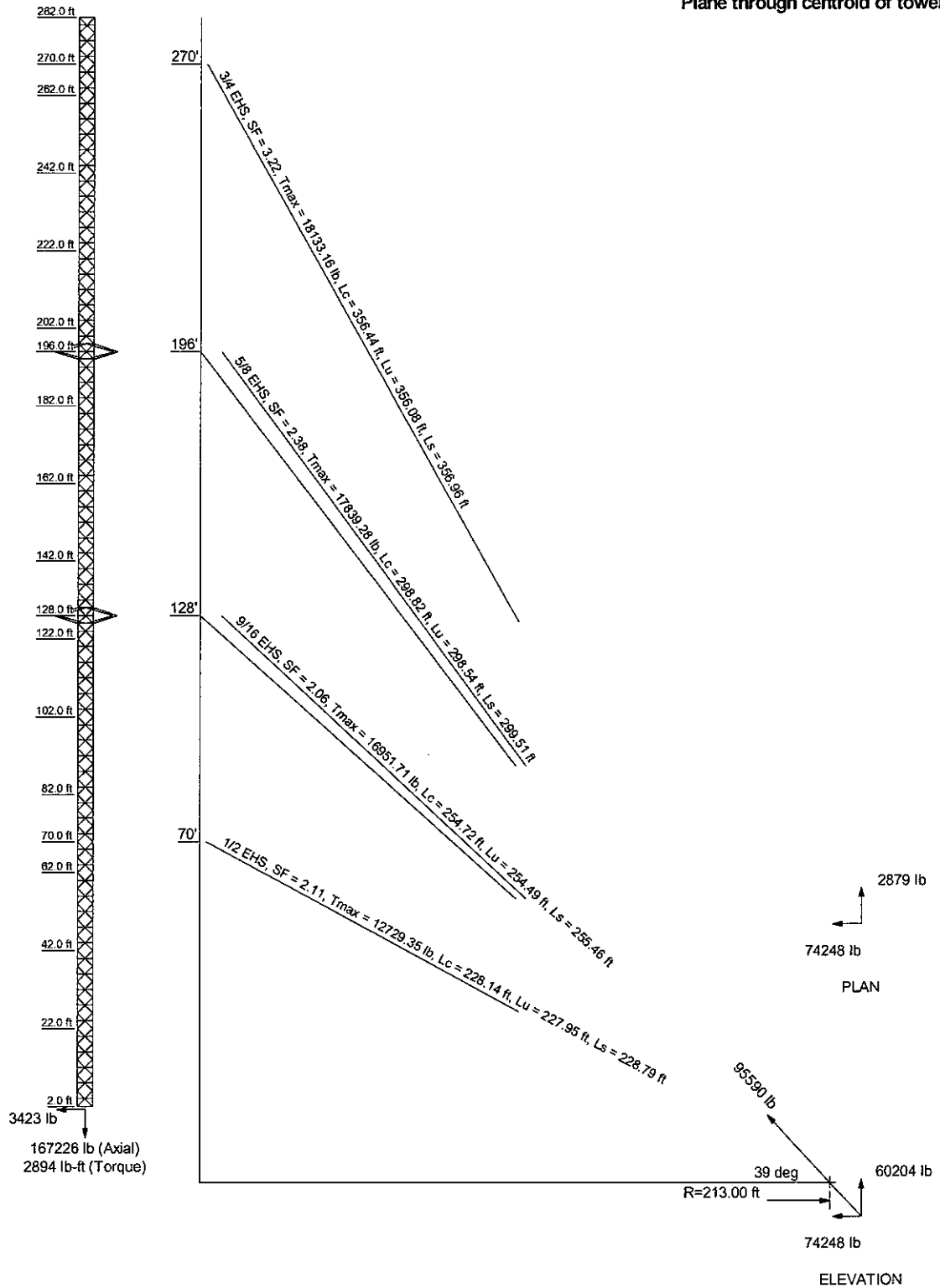
URS Corporation		Job: 280' Guyed Tower	
500 Enterprise Drive, Suite 3B		Project: 130 Vernon Rd Bolton, CT	
Rocky Hill, CT 06067		Client: Verizon	Drawn by: kevin barker App'd:
Phone: (860) 529-8882		Code: TIA/EIA-222-F	Date: 07/26/12 Scale: NTS
FAX: (860) 529-3991		Path: P:\08\ERI Files\280' Guyed Tower Bolton, CT.eri	Dwg No. E-7

GUY TENSIONS AND TOWER REACTIONS

Guy Tensions and Tower Reactions TIA/EIA-222-F - 85 mph/74 mph 0.5000 in Ice

Maximum Values

Anchor 'C' @ 213 ft Azimuth 240 deg Elev -17.5 ft
Plane through centroid of tower



URS Corporation		Job: 280' Guyed Tower	
500 Enterprise Drive, Suite 3B		Project: 130 Vernon Rd Bolton, CT	
Rocky Hill, CT 06067		Client: Verizon	Drawn by: kevin barker
Phone: (860) 529-8882		Code: TIA/EIA-222-F	Date: 07/26/12
FAX: (860) 529-3991		Path: P:\08\ERI Files\280' Guyed Tower Bolton, CT.mxd	Scale: NTS
			Dwg No. E-6

TNX TOWER DETAILED OUTPUT

tnxTower URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: (860) 529-8882 FAX: (860) 529-3991	Job	280' Guyed Tower	Page	1 of 59
	Project	130 Vernon Rd Bolton, CT	Date	17:57:20 07/26/12
	Client	Verizon	Designed by	kevin_barker

Tower Input Data

The main tower is a 3x guyed tower with an overall height of 282.00 ft above the ground line.

The base of the tower is set at an elevation of 2.00 ft above the ground line.

The face width of the tower is 4.00 ft at the top and 4.00 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.

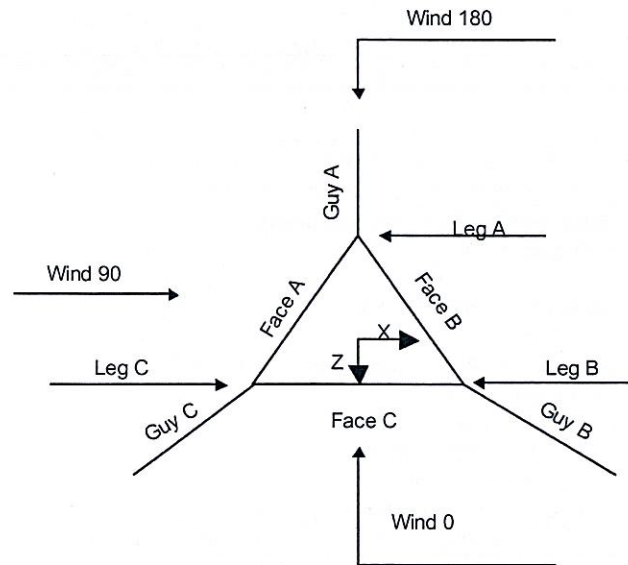
Stress ratio used in tower member design is 1.333.

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

Options

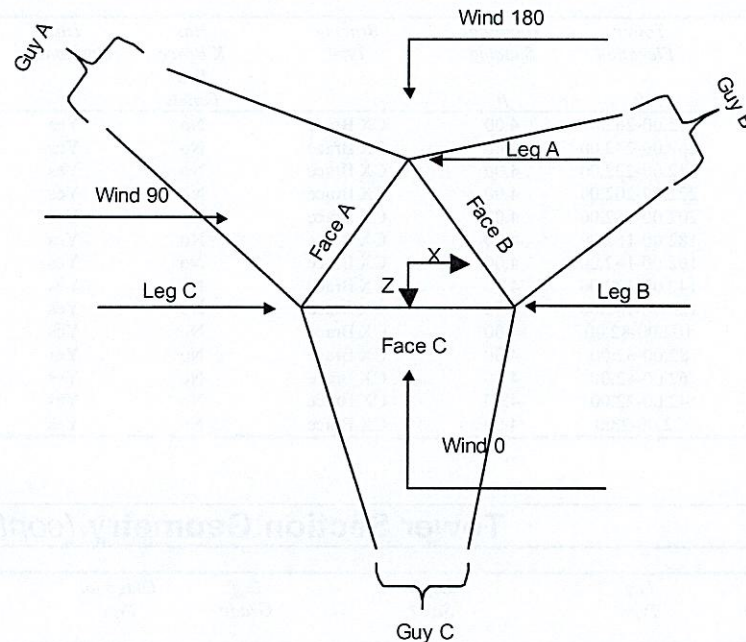
Consider Moments - Legs	Distribute Leg Loads As Uniform	Treat Feedline Bundles As Cylinder
Consider Moments - Horizontals	Assume Legs Pinned	Use ASCE 10 X-Brace Ly Rules
Consider Moments - Diagonals	✓ Assume Rigid Index Plate	✓ Calculate Redundant Bracing Forces
Use Moment Magnification	✓ Use Clear Spans 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		

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Corner & Starmount Guyed Tower

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Face Guyed

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	282.00-262.00			4.00	1	20.00
T2	262.00-242.00			4.00	1	20.00
T3	242.00-222.00			4.00	1	20.00
T4	222.00-202.00			4.00	1	20.00
T5	202.00-182.00			4.00	1	20.00
T6	182.00-162.00			4.00	1	20.00
T7	162.00-142.00			4.00	1	20.00
T8	142.00-122.00			4.00	1	20.00
T9	122.00-102.00			4.00	1	20.00
T10	102.00-82.00			4.00	1	20.00
T11	82.00-62.00			4.00	1	20.00
T12	62.00-42.00			4.00	1	20.00
T13	42.00-22.00			4.00	1	20.00
T14	22.00-2.00			4.00	1	20.00

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Tower Section Geometry (cont'd)

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	282.00-262.00	4.00	CX Brace	No	Yes	0.0000	0.0000
T2	262.00-242.00	4.00	CX Brace	No	Yes	0.0000	0.0000
T3	242.00-222.00	4.00	CX Brace	No	Yes	0.0000	0.0000
T4	222.00-202.00	4.00	CX Brace	No	Yes	0.0000	0.0000
T5	202.00-182.00	4.00	CX Brace	No	Yes	0.0000	0.0000
T6	182.00-162.00	4.00	CX Brace	No	Yes	0.0000	0.0000
T7	162.00-142.00	4.00	CX Brace	No	Yes	0.0000	0.0000
T8	142.00-122.00	4.00	CX Brace	No	Yes	0.0000	0.0000
T9	122.00-102.00	4.00	CX Brace	No	Yes	0.0000	0.0000
T10	102.00-82.00	4.00	CX Brace	No	Yes	0.0000	0.0000
T11	82.00-62.00	4.00	CX Brace	No	Yes	0.0000	0.0000
T12	62.00-42.00	4.00	CX Brace	No	Yes	0.0000	0.0000
T13	42.00-22.00	4.00	CX Brace	No	Yes	0.0000	0.0000
T14	22.00-2.00	4.00	CX Brace	No	Yes	0.0000	0.0000

Tower Section Geometry (cont'd)

Tower Elevation	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
ft						
T1 282.00-262.00	Solid Round	2	A139-45 (45 ksi)	Solid Round	7/8	A36 (36 ksi)
T2 262.00-242.00	Solid Round	2	A139-45 (45 ksi)	Solid Round	7/8	A36 (36 ksi)
T3 242.00-222.00	Solid Round	2	A139-45 (45 ksi)	Solid Round	7/8	A36 (36 ksi)
T4 222.00-202.00	Solid Round	2	A139-45 (45 ksi)	Arbitrary Shape	SR7/8+L2.5x2.5x0.25	A36 (36 ksi)
T5 202.00-182.00	Solid Round	2	A139-45 (45 ksi)	Arbitrary Shape	SR7/8+L2.5x2.5x0.25	A36 (36 ksi)
T6 182.00-162.00	Solid Round	2	A139-45 (45 ksi)	Solid Round	7/8	A36 (36 ksi)
T7 162.00-142.00	Solid Round	2	A139-45 (45 ksi)	Solid Round	7/8	A36 (36 ksi)
T8 142.00-122.00	Solid Round	2	A139-45 (45 ksi)	Arbitrary Shape	SR7/8+L2.5x2.5x0.25	A36 (36 ksi)
T9 122.00-102.00	Solid Round	2	A139-45 (45 ksi)	Arbitrary Shape	SR7/8+L2.5x2.5x0.25	A36 (36 ksi)
T10 102.00-82.00	Solid Round	2	A139-45 (45 ksi)	Solid Round	7/8	A36 (36 ksi)
T11 82.00-62.00	Solid Round	2	A139-45 (45 ksi)	Solid Round	7/8	A36 (36 ksi)
T12 62.00-42.00	Solid Round	2	A139-45 (45 ksi)	Solid Round	7/8	A36 (36 ksi)
T13 42.00-22.00	Solid Round	2	A139-45 (45 ksi)	Solid Round	7/8	A36 (36 ksi)
T14 22.00-2.00	Solid Round	2	A139-45 (45 ksi)	Solid Round	7/8	A36 (36 ksi)

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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 282.00-262.00	Single Angle	L3x3x1/4	A36 (36 ksi)	Solid Round		A36 (36 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 282.00-262.00	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T2 262.00-242.00	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T3 242.00-222.00	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T4 222.00-202.00	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T5 202.00-182.00	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T6 182.00-162.00	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T7 162.00-142.00	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T8 142.00-122.00	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T9 122.00-102.00	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T10 102.00-82.00	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T11 82.00-62.00	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T12 62.00-42.00	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T13 42.00-22.00	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)
T14 22.00-2.00	Single Angle	L2 1/2x2x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)

Tower Section Geometry (cont'd)

Tower Elevation ft	Gusset Area (per face) ft ²	Gusset Thickness in	Gusset Grade	Adjust. Factor A _f	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
T1 282.00-262.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000

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Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals
ft	ft ²	in					in	in
T2	0.00	0.0000	A36	1	1	1	36.0000	36.0000
262.00-242.00			(36 ksi)					
T3	0.00	0.0000	A36	1	1	1	36.0000	36.0000
242.00-222.00			(36 ksi)					
T4	0.00	0.0000	A36	1	1	1	36.0000	36.0000
222.00-202.00			(36 ksi)					
T5	0.00	0.0000	A36	1	1	1	36.0000	36.0000
202.00-182.00			(36 ksi)					
T6	0.00	0.0000	A36	1	1	1	36.0000	36.0000
182.00-162.00			(36 ksi)					
T7	0.00	0.0000	A36	1	1	1	36.0000	36.0000
162.00-142.00			(36 ksi)					
T8	0.00	0.0000	A36	1	1	1	36.0000	36.0000
142.00-122.00			(36 ksi)					
T9	0.00	0.0000	A36	1	1	1	36.0000	36.0000
122.00-102.00			(36 ksi)					
T10	0.00	0.0000	A36	1	1	1	36.0000	36.0000
102.00-82.00			(36 ksi)					
T11	0.00	0.0000	A36	1	1	1	36.0000	36.0000
82.00-62.00			(36 ksi)					
T12	0.00	0.0000	A36	1	1	1	36.0000	36.0000
62.00-42.00			(36 ksi)					
T13	0.00	0.0000	A36	1	1	1	36.0000	36.0000
42.00-22.00			(36 ksi)					
T14 22.00-2.00	0.00	0.0000	A36	1	1	1	36.0000	36.0000
			(36 ksi)					

Tower Section Geometry (cont'd)

Tower Elevation	Calc K Single Angles	Calc K Solid Rounds	Legs	K Factors ¹						
				X Brace Diags	K Brace Diags	Single Diags	Girts	Horiz.	Sec. Horiz.	Inner Brace
				X Y	X Y	X Y	X Y	X Y	X Y	X Y
T1	No	No	1	0.5	1	1	1	1	1	1
282.00-262.00				0.5	1	1	1	1	1	1
T2	No	No	1	0.5	1	1	1	1	1	1
262.00-242.00				0.5	1	1	1	1	1	1
T3	No	No	1	0.5	1	1	1	1	1	1
242.00-222.00				0.5	1	1	1	1	1	1
T4	No	No	1	0.5	1	1	1	1	1	1
222.00-202.00				0.5	1	1	1	1	1	1
T5	No	No	1	0.5	1	1	1	1	1	1
202.00-182.00				0.5	1	1	1	1	1	1
T6	No	No	1	0.5	1	1	1	1	1	1
182.00-162.00				0.5	1	1	1	1	1	1
T7	No	No	1	0.5	1	1	1	1	1	1
162.00-142.00				0.5	1	1	1	1	1	1
T8	No	No	1	0.5	1	1	1	1	1	1
142.00-122.00				0.5	1	1	1	1	1	1
T9	No	No	1	0.5	1	1	1	1	1	1
122.00-102.00				0.5	1	1	1	1	1	1
T10	No	No	1	0.5	1	1	1	1	1	1
102.00-82.00				0.5	1	1	1	1	1	1

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Tower Elevation	Calc K Single Angles	Calc K Solid Rounds	Legs	K Factors ¹						
				X Brace Diags	K Brace Diags	Single Diags	Girts	Horiz.	Sec. Horiz.	Inner Brace
				X Y	X Y	X Y	X Y	X Y	X Y	X Y
ft										
T11	No	No	1	0.5	1	1	1	1	1	1
82.00-62.00				0.5	1	1	1	1	1	1
T12	No	No	1	0.5	1	1	1	1	1	1
62.00-42.00				0.5	1	1	1	1	1	1
T13	No	No	1	0.5	1	1	1	1	1	1
42.00-22.00				0.5	1	1	1	1	1	1
T14	No	No	1	0.5	1	1	1	1	1	1
22.00-2.00				0.5	1	1	1	1	1	1

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

Tower Section Geometry (cont'd)

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
282.00-262.00														
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
262.00-242.00														
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
242.00-222.00														
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
222.00-202.00														
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
202.00-182.00														
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
182.00-162.00														
T7	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
162.00-142.00														
T8	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
142.00-122.00														
T9	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
122.00-102.00														
T10	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
102.00-82.00														
T11	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
82.00-62.00														
T12	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
62.00-42.00														
T13	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
42.00-22.00														
T14	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
22.00-2.00														

Guy Data

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Guy Elevation	Guy Grade	Guy Size	Initial Tension	%	Guy Modulus	Guy Weight	L _n	Anchor Radius	Anchor Azimuth Adj.	Anchor Elevation	End Fitting Efficiency
ft			lb		ksi	plf	ft	ft	°	ft	%
270	EHS	A 3/4	5830.00	10%	19000	1.155	366.92	219.00	0.0000	-26.50	100%
		B 3/4	5830.00	10%	19000	1.155	343.34	205.00	0.0000	-7.50	100%
		C 3/4	5830.00	10%	19000	1.155	356.13	213.00	0.0000	-17.50	100%
196	EHS	A 5/8	3799.04	8.96%	21000	0.813	309.24	219.00	0.0000	-26.50	100%
		B 5/8	4240.00	10%	21000	0.813	285.85	205.00	0.0000	-7.50	100%
		C 5/8	4240.00	10%	21000	0.813	298.58	213.00	0.0000	-17.50	100%
128	EHS	A 9/16	3500.00	10%	21000	0.671	264.60	219.00	0.0000	-26.50	100%
		B 9/16	3500.00	10%	21000	0.671	242.28	205.00	0.0000	-7.50	100%
		C 9/16	3500.00	10%	21000	0.671	254.52	213.00	0.0000	-17.50	100%
70	EHS	A 1/2	3497.00	13%	21000	0.517	236.95	219.00	0.0000	-26.50	100%
		B 1/2	2690.00	10%	21000	0.517	216.83	205.00	0.0000	-7.50	100%
		C 1/2	2690.00	10%	21000	0.517	227.96	213.00	0.0000	-17.50	100%

Guy Data(cont'd)

Guy Elevation	Mount Type	Torque-Arm Spread	Torque-Arm Leg Angle	Torque-Arm Style	Torque-Arm Grade	Torque-Arm Type	Torque-Arm Size
ft		ft	°				
270	Corner						
196	Torque Arm	14.00	15.0000	Wing	A36 (36 ksi)	Single Angle	L4x4x3/8
128	Torque Arm	14.00	15.0000	Wing	A36 (36 ksi)	Single Angle	L4x4x3/8
70	Corner						

Guy Data (cont'd)

Guy Elevation	Diagonal Grade	Diagonal Type	Upper Diagonal Size	Lower Diagonal Size	Is Strap.	Pull-Off Grade	Pull-Off Type	Pull-Off Size
ft								
270.00	A572-50 (50 ksi)	Solid Round				A36 (36 ksi)	Solid Round	
196.00	A572-50 (50 ksi)	Solid Round			Yes	A36 (36 ksi)	Single Angle	L4x4x3/8
128.00	A572-50 (50 ksi)	Solid Round			Yes	A36 (36 ksi)	Single Angle	L4x4x3/8
70.00	A572-50 (50 ksi)	Solid Round				A36 (36 ksi)	Solid Round	

Guy Data (cont'd)

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

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Guy Elevation	Cable Weight A	Cable Weight B	Cable Weight C	Cable Weight D	Tower Intercept A	Tower Intercept B	Tower Intercept C	Tower Intercept D
ft	lb	lb	lb	lb	ft	ft	ft	ft
270	423.80	396.56	411.33		12.97	11.38	12.23	
					6.2 sec/pulse	5.8 sec/pulse	6.0 sec/pulse	
196	251.41	232.40	242.75		10.00	7.69	8.38	
					5.5 sec/pulse	4.8 sec/pulse	5.0 sec/pulse	
128	177.55	162.57	170.78		6.62	5.56	6.13	
					4.4 sec/pulse	4.1 sec/pulse	4.3 sec/pulse	
70	122.50	112.10	117.85		4.13	4.49	4.96	
					3.5 sec/pulse	3.7 sec/pulse	3.8 sec/pulse	

Guy Data (cont'd)

Guy Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Torque Arm		Pull Off		Diagonal	
			K _x	K _y	K _x	K _y	K _x	K _y
270	No	No			1	1	1	1
196	No	No	1	1	1	1	1	1
128	No	No	1	1	1	1	1	1
70	No	No			1	1	1	1

Guy Data (cont'd)

Guy Elevation ft	Torque-Arm				Pull Off				Diagonal			
	Bolt Size in	Number	Net Width Deduct in	U	Bolt Size in	Number	Net Width Deduct in	U	Bolt Size in	Number	Net Width Deduct in	U
270	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
196	0.0000 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
128	0.0000 A325N	0	0.0000	1	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75
70	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75	0.6250 A325N	0	0.0000	0.75

Guy Pressures

Guy Elevation ft	Guy Location	z ft	q _z psf	q _z Ice psf	Ice Thickness in
270	A	121.75	27	20	0.5000
	B	131.25	27	21	0.5000
	C	126.25	27	20	0.5000
196	A	84.75	24	18	0.5000
	B	94.25	25	19	0.5000
	C	89.25	25	18	0.5000
128	A	50.75	21	16	0.5000
	B	60.25	22	16	0.5000

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Guy Elevation ft	Guy Location	z ft	q _z psf	q _z Ice psf	Ice Thickness in
70	C	55.25	21	16	0.5000
	A	21.75	18	14	0.5000
	B	31.25	18	14	0.5000
	C	26.25	18	14	0.5000

Guy-Mast Forces (Excluding Wind) - No Ice

Guy Elevation ft	Guy Location	Chord Angle °	Guy Tension Top Bottom lb	F _x lb	F _y lb	F _z lb	M _x lb-ft	M _y lb-ft	M _z lb-ft
270	A	53.8396	6172.14 5830.00	0.00	5056.62	-3539.19	-11677.76	0.00	0.00
	B	53.8550	6150.21 5830.00	3058.49	5035.14	1765.82	5814.08	0.00	-10070.28
	C	53.7647	6161.75 5830.00	-3067.94	5041.58	1771.28	5821.51	-0.00	10083.15
			Sum:	-9.45	15133.33	-2.10	-42.17	-0.00	12.87
196	A	45.9725	3979.87 3799.12	-87.94	2922.02	-2700.63	-11809.19	19259.85	-20454.12
	A	45.9725	3979.87 3799.12	87.94	2922.02	-2700.63	-11809.19	-19259.85	20454.12
	B	45.3427	4405.30 4240.00	2681.71	3190.78	1426.19	25790.79	21675.98	0.00
	B	45.3427	4405.30 4240.00	2575.97	3190.78	1609.33	-12895.39	-21675.98	-22335.48
	C	45.5998	4413.42 4240.00	-2568.71	3212.45	1600.04	-12982.98	21581.64	22487.18
	C	45.5998	4413.42 4240.00	-2670.04	3212.45	1424.55	25965.96	-21581.64	0.00
			Sum:	18.93	18650.51	658.85	2259.99	0.00	151.71
	A	35.6920	3603.58 3500.00	-93.86	2160.85	-2882.31	-8732.96	20555.51	-15125.93
	A	35.6920	3603.58 3500.00	93.86	2160.85	-2882.31	-8732.96	-20555.51	15125.93
	B	33.9744	3590.84 3500.00	2595.29	2062.43	1380.23	16670.40	20977.44	0.00
	B	33.9744	3590.84 3500.00	2492.96	2062.43	1557.47	-8335.20	-20977.44	-14436.99
	C	34.8348	3597.55 3500.00	-2471.78	2112.36	1539.66	-8537.01	20767.23	14786.53
70	C	34.8348	3597.55 3500.00	-2569.28	2112.36	1370.79	17074.02	-20767.23	0.00
			Sum:	47.18	12671.27	83.53	-593.71	0.00	349.54
	A	24.0051	3546.83 3497.00	0.00	1493.97	-3216.84	-3450.18	0.00	0.00
	B	20.9247	2730.03 2690.00	2191.72	1023.84	1265.39	1182.23	0.00	-2047.69
	C	22.5532	2735.20 2690.00	-2169.04	1099.25	1252.29	1269.30	-0.00	2198.49
			Sum:	22.68	3617.06	-699.16	-998.64	0.00	150.81

tnxTower URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: (860) 529-8882 FAX: (860) 529-3991	Job	280' Guyed Tower	Page 11 of 59
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	Client	Verizon	Designed by kevin_barker

Guy-Mast Forces (Excluding Wind) - Ice

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top Bottom lb	F_x	F_y	F_z	M_x	M_y	M_z
ft		°		lb	lb	lb	lb-ft	lb-ft	lb-ft
270	A	53.8396	8569.71	0.00	7040.78	-4885.42	-16259.98	0.00	0.00
			8001.40						
	B	53.8550	8517.80	4212.49	6992.34	2432.08	8074.06	0.00	-13984.68
			7985.91						
	C	53.7647	8546.06	-4230.94	7011.94	2442.74	8096.69	-0.00	14023.88
			7995.00						
			Sum:	-18.45	21045.06	-10.60	-89.23	-0.00	39.20
196	A	45.9725	5905.34	-129.72	4357.49	-3983.53	-17610.59	28408.99	-30502.43
			5571.82						
	A	45.9725	5905.34	129.72	4357.49	-3983.53	-17610.59	-28408.99	30502.43
			5571.82						
	B	45.3427	6291.82	3807.91	4581.01	2025.13	37027.84	30778.96	0.00
			5986.80						
	B	45.3427	6291.82	3657.77	4581.01	2285.18	-18513.92	-30778.96	-32067.05
			5986.80						
	C	45.5998	6317.07	-3654.53	4622.53	2276.39	-18681.74	30704.35	32357.72
			5997.06						
	C	45.5998	6317.07	-3798.68	4622.53	2026.72	37363.47	-30704.35	0.00
			5997.06						
			Sum:	12.47	27122.06	646.35	1974.48	0.00	290.66
128	A	35.6920	5222.87	-135.30	3161.98	-4154.75	-12778.98	29630.05	-22133.85
			5019.11						
	A	35.6920	5222.87	135.30	3161.98	-4154.75	-12778.98	-29630.05	22133.85
			5019.11						
	B	33.9744	5177.55	3723.86	3002.97	1980.43	24272.69	30099.57	0.00
			4998.85						
	B	33.9744	5177.55	3577.03	3002.97	2234.74	-12136.34	-30099.57	-21020.76
			4998.85						
	C	34.8348	5202.53	-3556.03	3084.56	2215.04	-12466.10	29876.84	21591.91
			5010.64						
	C	34.8348	5202.53	-3696.30	3084.56	1972.09	24932.19	-29876.84	0.00
			5010.64						
			Sum:	48.55	18499.01	92.80	-955.52	0.00	571.15
70	A	24.0051	4811.01	0.00	2068.48	-4343.64	-4776.95	0.00	0.00
			4702.30						
	B	20.9247	4010.66	3207.50	1538.83	1851.85	1776.89	0.00	-3077.66
			3923.33						
	C	22.5532	4035.40	-3186.50	1657.13	1839.72	1913.49	-0.00	3314.27
			3936.80						
			Sum:	21.00	5264.44	-652.07	-1086.57	0.00	236.61

Guy-Mast Forces (Excluding Wind) - Service

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top Bottom lb	F_x	F_y	F_z	M_x	M_y	M_z
ft		°		lb	lb	lb	lb-ft	lb-ft	lb-ft
270	A	53.8396	6172.14	0.00	5056.62	-3539.19	-11677.76	0.00	0.00
			5830.00						
	B	53.8550	6150.21	3058.49	5035.14	1765.82	5814.08	0.00	-10070.28

tnxTower URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: (860) 529-8882 FAX: (860) 529-3991	Job	280' Guyed Tower	Page	12 of 59
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	Client	Verizon	Designed by	kevin_barker

Guy Elevation	Guy Location	Chord Angle	Guy Tension Top Bottom lb	F _x	F _y	F _z	M _x	M _y	M _z
ft		°		lb	lb	lb	lb-ft	lb-ft	lb-ft
196	C	53.7647	5830.00 6161.75 5830.00 Sum:	-3067.94	5041.58	1771.28	5821.51	-0.00	10083.15
	A	45.9725	3979.87 3799.12	-87.94	2922.02	-2700.63	-11809.19	19259.85	-20454.12
	A	45.9725	3979.87 3799.12	87.94	2922.02	-2700.63	-11809.19	-19259.85	20454.12
	B	45.3427	4405.30 4240.00	2681.71	3190.78	1426.19	25790.79	21675.98	0.00
	B	45.3427	4405.30 4240.00	2575.97	3190.78	1609.33	-12895.39	-21675.98	-22335.48
	C	45.5998	4413.42 4240.00	-2568.71	3212.45	1600.04	-12982.98	21581.64	22487.18
	C	45.5998	4413.42 4240.00	-2670.04	3212.45	1424.55	25965.96	-21581.64	0.00
			Sum:	18.93	18650.51	658.85	2259.99	0.00	151.71
	A	35.6920	3603.58 3500.00	-93.86	2160.85	-2882.31	-8732.96	20555.51	-15125.93
	A	35.6920	3603.58 3500.00	93.86	2160.85	-2882.31	-8732.96	-20555.51	15125.93
128	B	33.9744	3590.84 3500.00	2595.29	2062.43	1380.23	16670.40	20977.44	0.00
	B	33.9744	3590.84 3500.00	2492.96	2062.43	1557.47	-8335.20	-20977.44	-14436.99
	C	34.8348	3597.55 3500.00	-2471.78	2112.36	1539.66	-8537.01	20767.23	14786.53
	C	34.8348	3597.55 3500.00	-2569.28	2112.36	1370.79	17074.02	-20767.23	0.00
			Sum:	47.18	12671.27	83.53	-593.71	0.00	349.54
	A	24.0051	3546.83 3497.00	0.00	1493.97	-3216.84	-3450.18	0.00	0.00
	B	20.9247	2730.03 2690.00	2191.72	1023.84	1265.39	1182.23	0.00	-2047.69
	C	22.5532	2735.20 2690.00	-2169.04	1099.25	1252.29	1269.30	-0.00	2198.49
			Sum:	22.68	3617.06	-699.16	-998.64	0.00	150.81

Guy-Tensioning Information

Temperature At Time Of Tensioning																	
Guy Elevation ft	H	V	0 F		20 F		40 F		60 F		80 F		100 F		120 F		
			Initial Tension lb	Intercept ft	Initial Tension lb	Intercept ft	Initial Tension lb	Intercept ft	Initial Tension lb	Intercept ft	Initial Tension lb	Intercept ft	Initial Tension lb	Intercept ft	Initial Tension lb	Intercept ft	
270	A	216.69	296.50	6599	11.49	6339	11.95	6083	12.44	5830	12.97	5582	13.53	5338	14.13	5100	14.77
	B	202.69	277.50	6609	10.06	6346	10.47	6086	10.91	5830	11.38	5578	11.88	5330	12.42	5087	12.99
	C	210.69	287.50	6606	10.82	6344	11.26	6085	11.73	5830	12.23	5579	12.76	5333	13.34	5092	13.95
196	A	215.07	222.50	4603	8.29	4328	8.80	4060	9.37	3799	10.00	3548	10.70	3306	11.46	3078	12.29
	B	201.08	203.50	5106	6.41	4813	6.79	4524	7.22	4240	7.69	3963	8.22	3694	8.81	3435	9.46
	C	209.08	213.50	5091	7.00	4803	7.42	4518	7.88	4240	8.38	3968	8.95	3705	9.57	3451	10.26
128	A	215.07	154.50	4445	5.23	4123	5.63	3807	6.09	3500	6.62	3203	7.22	2920	7.91	2653	8.70
	B	201.08	135.50	4499	4.34	4159	4.69	3825	5.09	3500	5.56	3185	6.10	2884	6.73	2601	7.45
	C	209.08	145.50	4472	4.81	4141	5.19	3816	5.63	3500	6.13	3195	6.71	2903	7.37	2629	8.13
70	A	216.69	96.50	4471	3.23	4142	3.49	3817	3.78	3497	4.13	3183	4.53	2877	5.01	2582	5.58
	B	202.69	77.50	3671	3.29	3336	3.62	3008	4.02	2690	4.49	2386	5.06	2100	5.74	1840	6.55
	C	210.69	87.50	3642	3.67	3316	4.03	2998	4.45	2690	4.96	2396	5.56	2120	6.28	1868	7.12

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Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
EW63 (Unknown)	A	Yes	Af(CfAe)	107.50 - 7.00	-2.0000	-0.43	1	1	1.5742	1.5742	5.0668	0.51
EW90 (Unknown)	B	Yes	Af(CfAe)	115.00 - 7.00	-2.0000	0.4	1	1	0.9869	0.9869	3.2550	0.32
1 1/4 (Unknown)	C	Yes	Ar(CfAe)	128.00 - 7.00	-4.0000	-0.12	6	3	1.5500	1.5500		0.66
1 5/8 (Unknown)	C	Yes	Ar(CfAe)	128.00 - 7.00	-5.0000	0.05	4	2	1.9800	1.9800		1.04
1 1/4 (Unknown)	C	Yes	Ar(CfAe)	132.25 - 7.00	-2.0000	-0.25	1	1	1.5500	1.5500		0.66
(Dead Line) 7/8	A	Yes	Ar(CfAe)	135.00 - 7.00	-2.0000	-0.39	1	1	1.1100	1.1100		0.54
(Unknown) 1 1/4	A	Yes	Ar(CfAe)	135.00 - 7.00	-2.0000	-0.35	1	1	1.5500	1.5500		0.66
(Unknown) EW63	B	Yes	Af(CfAe)	155.25 - 7.00	-2.0000	0.35	1	1	1.5742	1.5742	5.0668	0.51
(Unknown) EW63	A	Yes	Af(CfAe)	155.25 - 7.00	-2.0000	-0.31	1	1	1.5742	1.5742	5.0668	0.51
(Unknown) 1 5/8	B	Yes	Ar(CfAe)	182.16 - 7.00	-2.0000	0.15	4	4	1.9800	1.9800		1.04
(Unknown) EW63	B	Yes	Af(CfAe)	207.00 - 7.00	-2.0000	-0.05	1	1	1.5742	1.5742	5.0668	0.51
(Unknown) EW63	B	Yes	Af(CfAe)	207.00 - 7.00	-2.0000	-0.15	1	1	1.5742	1.5742	5.0668	0.51
(Unknown) EW63	A	Yes	Af(CfAe)	215.00 - 7.00	-2.0000	-0.28	1	1	1.5742	1.5742	5.0668	0.51
(Unknown) 1 5/8	A	Yes	Ar(CfAe)	222.00 - 7.00	-2.0000	0.1	9	9	1.9800	1.9800		1.04
(Unknown) 1 1/4	C	Yes	Ar(CfAe)	269.00 - 7.00	-2.0000	0.3	1	1	1.5500	1.5500		0.66
(Unknown) 1 1/4	B	Yes	Ar(CfAe)	282.00 - 7.00	-2.0000	-0.35	2	2	1.5500	1.5500		0.66
(Unknown) CR 50 1873PE (1-5/8 FOAM) (AT&T)	A	Yes	Ar(CfAe)	166.16 - 7.00	-5.0000	0	4	4	1.9800	1.9800		0.83
CR 50 1873PE (1-5/8 FOAM) (AT&T)	B	Yes	Ar(CfAe)	166.16 - 7.00	-5.0000	0	4	4	1.9800	1.9800		0.83
CR 50 1873PE (1-5/8 FOAM) (AT&T)	C	Yes	Ar(CfAe)	166.16 - 7.00	-5.0000	0.2	4	2	1.9800	1.9800		0.83
1 1/4 (WMRQ)	C	Yes	Ar(CfAe)	282.00 - 7.00	-2.0000	0.35	1	1	1.5500	1.5500		0.66
3" Flex Conduit w 3 Fiber & 6 DC (AT&T)	A	Yes	Ar(CfAe)	164.00 - 7.00	0.0000	0.4	1	1	3.0000	3.0000		3.00
1 5/8 (Unknown)	B	Yes	Ar(CfAe)	128.00 - 7.00	-2.0000	-0.22	2	2	1.9800	1.9800		1.04

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	Client	Verizon	Designed by	kevin_barker

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight lb
T1	282.00-262.00	A	0.000	0.000	0.000	0.000	0.00
		B	5.167	0.000	0.000	0.000	26.40
		C	3.488	0.000	0.000	0.000	17.82
T2	262.00-242.00	A	0.000	0.000	0.000	0.000	0.00
		B	5.167	0.000	0.000	0.000	26.40
		C	5.167	0.000	0.000	0.000	26.40
T3	242.00-222.00	A	0.000	0.000	0.000	0.000	0.00
		B	5.167	0.000	0.000	0.000	26.40
		C	5.167	0.000	0.000	0.000	26.40
T4	222.00-202.00	A	29.700	1.705	0.000	0.000	193.83
		B	5.167	1.312	0.000	0.000	31.50
		C	5.167	0.000	0.000	0.000	26.40
T5	202.00-182.00	A	29.700	2.624	0.000	0.000	197.40
		B	5.272	5.247	0.000	0.000	47.47
		C	5.167	0.000	0.000	0.000	26.40
T6	182.00-162.00	A	32.946	2.624	0.000	0.000	217.21
		B	21.112	5.247	0.000	0.000	143.81
		C	6.539	0.000	0.000	0.000	40.21
T7	162.00-142.00	A	47.900	4.362	0.000	0.000	330.56
		B	31.567	6.986	0.000	0.000	203.16
		C	11.767	0.000	0.000	0.000	92.80
T8	142.00-122.00	A	50.782	5.247	0.000	0.000	349.60
		B	33.547	7.871	0.000	0.000	219.08
		C	17.396	0.000	0.000	0.000	148.29
T9	122.00-102.00	A	52.333	5.969	0.000	0.000	360.81
		B	38.167	8.940	0.000	0.000	252.36
		C	28.700	0.000	0.000	0.000	268.40
T10	102.00-82.00	A	52.333	7.871	0.000	0.000	368.20
		B	38.167	9.516	0.000	0.000	254.60
		C	28.700	0.000	0.000	0.000	268.40
T11	82.00-62.00	A	52.333	7.871	0.000	0.000	368.20
		B	38.167	9.516	0.000	0.000	254.60
		C	28.700	0.000	0.000	0.000	268.40
T12	62.00-42.00	A	52.333	7.871	0.000	0.000	368.20
		B	38.167	9.516	0.000	0.000	254.60
		C	28.700	0.000	0.000	0.000	268.40
T13	42.00-22.00	A	52.333	7.871	0.000	0.000	368.20
		B	38.167	9.516	0.000	0.000	254.60
		C	28.700	0.000	0.000	0.000	268.40
T14	22.00-2.00	A	39.250	5.903	0.000	0.000	276.15
		B	28.625	7.137	0.000	0.000	190.95
		C	21.525	0.000	0.000	0.000	201.30

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight lb
T1	282.00-262.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		8.500	0.000	0.000	0.000	76.49
		C		5.737	0.000	0.000	0.000	51.63
T2	262.00-242.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		8.500	0.000	0.000	0.000	76.49
		C		8.500	0.000	0.000	0.000	76.49
T3	242.00-222.00	A	0.500	0.000	0.000	0.000	0.000	0.00

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Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft ²	A_F ft ²	$C_A A_A$ In Face ft ²	$C_A A_A$ Out Face ft ²	Weight lb
T4	222.00-202.00	B	0.500	8.500	0.000	0.000	0.000	76.49
		C		8.500	0.000	0.000	0.000	76.49
		A		44.700	2.428	0.000	0.000	484.11
T5	202.00-182.00	B	0.500	8.500	1.867	0.000	0.000	95.12
		C		8.500	0.000	0.000	0.000	76.49
		A		44.700	3.735	0.000	0.000	497.15
T6	182.00-162.00	B	0.500	8.659	7.470	0.000	0.000	152.66
		C		8.500	0.000	0.000	0.000	76.49
		A		49.499	3.735	0.000	0.000	546.45
T7	162.00-142.00	B	0.500	32.499	7.470	0.000	0.000	394.44
		C		10.566	0.000	0.000	0.000	115.51
		A		71.233	6.209	0.000	0.000	812.20
T8	142.00-122.00	B	0.500	48.233	9.944	0.000	0.000	567.70
		C		18.433	0.000	0.000	0.000	264.09
		A		76.282	7.470	0.000	0.000	869.44
T9	122.00-102.00	B	0.500	51.213	11.204	0.000	0.000	610.94
		C		27.416	0.000	0.000	0.000	413.85
		A		79.000	8.497	0.000	0.000	903.74
T10	102.00-82.00	B	0.500	58.167	12.996	0.000	0.000	699.65
		C		45.367	0.000	0.000	0.000	736.20
		A		79.000	11.204	0.000	0.000	930.76
T11	82.00-62.00	B	0.500	58.167	13.960	0.000	0.000	708.89
		C		45.367	0.000	0.000	0.000	736.20
		A		79.000	11.204	0.000	0.000	930.76
T12	62.00-42.00	B	0.500	58.167	13.960	0.000	0.000	708.89
		C		45.367	0.000	0.000	0.000	736.20
		A		79.000	11.204	0.000	0.000	930.76
T13	42.00-22.00	B	0.500	58.167	13.960	0.000	0.000	708.89
		C		45.367	0.000	0.000	0.000	736.20
		A		79.000	11.204	0.000	0.000	930.76
T14	22.00-2.00	B	0.500	59.250	8.403	0.000	0.000	698.07
		C		43.625	10.470	0.000	0.000	531.67
		A		34.025	0.000	0.000	0.000	552.15

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	282.00-262.00	A	0.000	0.000	0.000	0.000
		B	0.266	1.152	0.334	0.549
		C	0.180	0.777	0.225	0.371
T2	262.00-242.00	A	0.000	0.000	0.000	0.000
		B	0.266	1.116	0.269	0.443
		C	0.266	1.116	0.269	0.443
T3	242.00-222.00	A	0.000	0.000	0.000	0.000
		B	0.266	1.116	0.269	0.443
		C	0.266	1.116	0.269	0.443
T4	222.00-202.00	A	0.000	0.989	6.262	11.335
		B	0.000	0.222	1.292	2.541
		C	0.000	0.177	1.030	2.029
T5	202.00-182.00	A	0.000	1.429	7.523	13.326
		B	0.000	0.503	2.448	4.689
		C	0.000	0.248	1.202	2.312
T6	182.00-162.00	A	1.834	7.064	1.853	2.802

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	Client	Verizon	Designed by	kevin_barker

Section	Elevation	Face	A_R	$A_{R_{Ice}}$	A_F	$A_{F_{Ice}}$
	ft		ft ²	ft ²	ft ²	ft ²
T7	162.00-142.00	B	1.359	5.395	1.373	2.140
		C	0.337	1.388	0.341	0.550
		A	2.695	10.291	2.722	4.082
T8	142.00-122.00	B	1.988	7.834	2.008	3.107
		C	0.607	2.421	0.613	0.960
		A	0.000	2.475	13.040	23.084
T9	122.00-102.00	B	0.000	1.869	9.639	17.432
		C	0.000	0.800	4.048	7.458
		A	0.000	1.849	11.625	21.185
T10	102.00-82.00	B	0.000	1.525	9.393	17.469
		C	0.000	0.945	5.723	10.828
		A	3.104	12.064	3.136	4.785
T11	82.00-62.00	B	2.459	9.763	2.483	3.872
		C	1.480	5.957	1.495	2.363
		A	3.104	12.064	3.136	4.785
T12	62.00-42.00	B	2.459	9.763	2.483	3.872
		C	1.480	5.957	1.495	2.363
		A	3.104	12.064	3.136	4.785
T13	42.00-22.00	B	2.459	9.763	2.483	3.872
		C	1.480	5.957	1.495	2.363
		A	3.104	12.064	3.136	4.785
T14	22.00-2.00	B	2.328	9.048	2.352	3.589
		C	1.844	7.323	1.863	2.904
		A	1.110	4.468	1.121	1.772

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	$CP_{X_{Ice}}$	$CP_{Z_{Ice}}$
	ft	in	in	in	in
T1	282.00-262.00	-0.8168	-1.0593	-0.7564	-0.9810
T2	262.00-242.00	-1.2562	-0.7857	-1.1616	-0.7265
T3	242.00-222.00	-1.2562	-0.7857	-1.1616	-0.7265
T4	222.00-202.00	-2.4029	-2.6664	-2.4653	-2.7234
T5	202.00-182.00	-1.9857	-2.5538	-2.0502	-2.5800
T6	182.00-162.00	-1.1101	-3.2125	-1.0722	-2.9579
T7	162.00-142.00	-1.2902	-3.2299	-1.2446	-2.9806
T8	142.00-122.00	-1.0212	-1.9805	-1.0812	-1.9145
T9	122.00-102.00	-0.8461	-1.5347	-0.8922	-1.4216
T10	102.00-82.00	-1.1330	-1.6315	-1.0953	-1.4153
T11	82.00-62.00	-1.1330	-1.6315	-1.0953	-1.4153
T12	62.00-42.00	-1.1330	-1.6315	-1.0953	-1.4153
T13	42.00-22.00	-1.1330	-1.6315	-1.0953	-1.4153
T14	22.00-2.00	-1.0414	-1.4997	-0.9959	-1.2868

Discrete Tower Loads

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	Client	Verizon	Designed by	kevin_barker

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight lb
6'8"x4" Pipe Mount (Verizon)	A	From Leg	0.50 0.00 0.00	0.0000	121.00	No Ice 1/2" Ice	2.60 3.01	2.60 3.01	72.00 93.13
6'8"x4" Pipe Mount (Verizon)	B	From Leg	0.50 0.00 0.00	0.0000	121.00	No Ice 1/2" Ice	2.60 3.01	2.60 3.01	72.00 93.13
14' Dipole (Unknown)	C	From Leg	4.00 0.00 0.00	0.0000	132.00	No Ice 1/2" Ice	2.80 4.22	2.80 4.22	75.00 97.50
6' Stand-off (Unknown)	C	From Leg	3.00 0.00 0.00	0.0000	132.00	No Ice 1/2" Ice	1.20 1.40	4.50 5.50	75.00 125.00
2.5" x 22' Whip (Unknown)	A	From Leg	4.00 0.00 0.00	0.0000	132.00	No Ice 1/2" Ice	5.51 7.77	5.51 7.77	150.30 191.34
6' Stand-off (Unknown)	A	From Leg	3.00 0.00 0.00	0.0000	132.00	No Ice 1/2" Ice	1.20 1.40	4.50 5.50	75.00 125.00
RR90-17-02DP w/Mount Pipe (AT&T)	A	From Leg	3.50 5.00 0.00	0.0000	181.50	No Ice 1/2" Ice	4.91 5.57	3.64 4.70	43.55 81.64
RR90-17-02DP w/Mount Pipe (AT&T)	B	From Leg	3.50 5.00 0.00	0.0000	181.50	No Ice 1/2" Ice	4.91 5.57	3.64 4.70	43.55 81.64
Pirol 10' PCS Frame (1) (AT&T)	A	From Leg	1.50 0.00 0.00	0.0000	181.50	No Ice 1/2" Ice	9.00 13.20	9.00 13.20	250.00 350.00
Pirol 10' PCS Frame (1) (AT&T)	A	From Leg	1.50 0.00 0.00	0.0000	181.50	No Ice 1/2" Ice	9.00 13.20	9.00 13.20	250.00 350.00
(3) DB844H90E-XY w/Mount Pipe (Nextel)	A	From Leg	2.50 0.00 0.00	0.0000	226.00	No Ice 1/2" Ice	3.58 4.20	5.40 6.49	35.55 76.59
(3) DB844H90E-XY w/Mount Pipe (Nextel)	B	From Leg	2.50 0.00 0.00	0.0000	226.00	No Ice 1/2" Ice	3.58 4.20	5.40 6.49	35.55 76.59
(3) DB844H90E-XY w/Mount Pipe (Nextel)	C	From Leg	2.50 0.00 0.00	0.0000	226.00	No Ice 1/2" Ice	3.58 4.20	5.40 6.49	35.55 76.59
Pirol 15' T-Frame Sector Mount (1) (Nextel)	A	From Leg	2.00 0.00 0.00	0.0000	226.00	No Ice 1/2" Ice	15.00 20.60	15.00 20.60	500.00 650.00
Pirol 15' T-Frame Sector Mount (1) (Nextel)	B	From Leg	2.00 0.00 0.00	0.0000	226.00	No Ice 1/2" Ice	15.00 20.60	15.00 20.60	500.00 650.00
Pirol 15' T-Frame Sector Mount (1) (Nextel)	C	From Leg	2.00 0.00 0.00	0.0000	226.00	No Ice 1/2" Ice	15.00 20.60	15.00 20.60	500.00 650.00
ASP-711 (Unknown)	A	From Leg	1.50 0.00 0.00	0.0000	260.00	No Ice 1/2" Ice	1.30 3.63	1.30 3.63	13.00 31.56
3' Stand-off (Unknown)	A	From Leg	0.75 0.00 0.00	0.0000	260.00	No Ice 1/2" Ice	1.00 1.20	2.00 2.70	50.00 75.00
2.5" x 14' Omni (Unknown)	B	From Leg	3.50 0.00 0.00	0.0000	260.00	No Ice 1/2" Ice	3.50 4.93	3.50 4.93	30.00 55.97

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	Client	Verizon	Designed by	kevin_barker

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight lb
3' Stand-off (Unknown)	B	From Leg	1.50 0.00 0.00	0.0000	260.00	No Ice 1/2" Ice	1.00 1.20	2.00 2.70	50.00 75.00
6' Stand-off (Unknown)	A	From Leg	2.50 0.00 0.00	0.0000	281.00	No Ice 1/2" Ice	1.20 1.40	4.50 5.50	75.00 125.00
6' Stand-off (Unknown)	B	From Leg	2.50 0.00 0.00	0.0000	281.00	No Ice 1/2" Ice	1.20 1.40	4.50 5.50	75.00 125.00
6' Stand-off (Unknown)	C	From Leg	2.50 0.00 0.00	0.0000	281.00	No Ice 1/2" Ice	1.20 1.40	4.50 5.50	75.00 125.00
Flash Beacon Lighting (Unknown)	C	None		0.0000	287.00	No Ice 1/2" Ice	2.70 3.10	2.70 3.10	50.00 70.00
Flash Beacon Lighting (Unknown)	C	None		0.0000	290.50	No Ice 1/2" Ice	2.70 3.10	2.70 3.10	50.00 70.00
1' Yagi antenna (Not Used)	C	From Leg	0.50 0.00 0.00	0.0000	124.50	No Ice 1/2" Ice	0.50 0.86	0.50 0.86	25.00 29.40
3" x 12.5' Omni (Not Used)	B	From Leg	2.00 0.00 0.00	0.0000	125.00	No Ice 1/2" Ice	3.75 5.03	3.75 5.03	30.00 57.13
3' Stand-off (Not Used)	B	From Leg	1.50 0.00 0.00	0.0000	125.00	No Ice 1/2" Ice	1.00 1.20	2.00 2.70	50.00 75.00
6' Stand-off (Not Used)	C	From Leg	3.00 0.00 0.00	0.0000	180.50	No Ice 1/2" Ice	1.20 1.40	4.50 5.50	75.00 125.00
2.5" x 10' Omni (Not Used)	A	From Leg	1.00 0.00 0.00	0.0000	284.00	No Ice 1/2" Ice	2.50 3.53	2.50 3.53	30.00 48.64
FM Antenna (WMRQ)	B	From Face	4.50 0.00 0.00	0.0000	289.00	No Ice 1/2" Ice	8.30 13.00	8.30 13.00	102.00 132.60
(2) 7770 Panel Antenna (AT&T)	A	From Leg	4.00 0.00 0.00	0.0000	164.00	No Ice 1/2" Ice	5.88 6.31	2.93 3.27	35.00 67.63
(2) 7770 Panel Antenna (AT&T)	B	From Leg	4.00 0.00 0.00	0.0000	164.00	No Ice 1/2" Ice	5.88 6.31	2.93 3.27	35.00 67.63
(2) 7770 Panel Antenna (AT&T)	C	From Leg	4.00 0.00 0.00	0.0000	164.00	No Ice 1/2" Ice	5.88 6.31	2.93 3.27	35.00 67.63
(2) LGP214nn TMA (AT&T)	A	From Leg	4.00 0.00 0.00	0.0000	164.00	No Ice 1/2" Ice	1.29 1.45	0.23 0.31	1.90 9.06
(4) LGP 219nn (AT&T)	A	From Leg	4.00 0.00 0.00	0.0000	164.00	No Ice 1/2" Ice	0.23 0.30	0.12 0.17	5.50 7.70
(2) LGP214nn TMA (AT&T)	B	From Leg	4.00 0.00 0.00	0.0000	164.00	No Ice 1/2" Ice	1.29 1.45	0.23 0.31	1.90 9.06
(4) LGP 219nn (AT&T)	B	From Leg	4.00 0.00 0.00	0.0000	164.00	No Ice 1/2" Ice	0.23 0.30	0.12 0.17	5.50 7.70
(2) LGP214nn TMA (AT&T)	C	From Leg	4.00 0.00	0.0000	164.00	No Ice 1/2" Ice	1.29 1.45	0.23 0.31	1.90 9.06

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	Client	Verizon	Designed by	kevin_barker

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight lb
(4) LGP 219nn (AT&T)	C	From Leg	0.00 4.00 0.00 0.00	0.0000	164.00	No Ice 1/2" Ice	0.23 0.30	0.12 0.17	5.50 7.70
SBNH-1D6565C (AT&T)	A	From Leg	4.00 0.00 0.00	0.0000	164.00	No Ice 1/2" Ice	11.41 12.02	7.70 8.29	61.00 126.70
SBNH-1D6565C (AT&T)	B	From Leg	4.00 0.00 0.00	0.0000	164.00	No Ice 1/2" Ice	11.41 12.02	7.70 8.29	61.00 126.70
SBNH-1D6565C (AT&T)	C	From Leg	4.00 0.00 0.00	0.0000	164.00	No Ice 1/2" Ice	11.41 12.02	7.70 8.29	61.00 126.70
Surge Suppressor (AT&T)	C	None		0.0000	164.00	No Ice 1/2" Ice	0.80 0.94	0.80 0.94	30.00 41.94
(2) RRU (AT&T)	A	From Leg	4.00 0.00 0.00	0.0000	164.00	No Ice 1/2" Ice	1.40 1.56	0.70 0.82	10.00 20.34
(2) RRU (AT&T)	B	From Leg	4.00 0.00 0.00	0.0000	164.00	No Ice 1/2" Ice	1.40 1.56	0.70 0.82	10.00 20.34
(2) RRU (AT&T)	C	From Leg	4.00 0.00 0.00	0.0000	164.00	No Ice 1/2" Ice	1.40 1.56	0.70 0.82	10.00 20.34
Andrew 12' Sector Frame (SF-U12-3-72) (AT&T)	A	From Leg	2.00 0.00 0.00	0.0000	164.00	No Ice 1/2" Ice	10.80 15.10	10.80 15.10	487.00 633.10
Andrew 12' Sector Frame (SF-U12-3-72) (AT&T)	B	From Leg	2.00 0.00 0.00	0.0000	164.00	No Ice 1/2" Ice	10.80 15.10	10.80 15.10	487.00 633.10
Andrew 12' Sector Frame (SF-U12-3-72) (AT&T)	C	From Leg	2.00 0.00 0.00	0.0000	164.00	No Ice 1/2" Ice	10.80 15.10	10.80 15.10	487.00 633.10
BXA-70063-6CF-EDIN (Verizon)	A	From Leg	1.00 0.00 0.00	0.0000	121.00	No Ice 1/2" Ice	7.73 8.27	4.16 4.60	20.00 62.49
BXA-70063-6CF-EDIN (Verizon)	B	From Leg	1.00 0.00 0.00	0.0000	121.00	No Ice 1/2" Ice	7.73 8.27	4.16 4.60	20.00 62.49
(2) LPA-80080-4CF-EDIN (Verizon)	A	From Leg	1.00 0.00 0.00	0.0000	121.00	No Ice 1/2" Ice	2.62 2.92	6.06 6.45	20.00 53.12
(2) LPA-80063-4CF (Verizon)	B	From Leg	1.00 0.00 0.00	0.0000	121.00	No Ice 1/2" Ice	7.00 7.41	6.04 6.43	32.00 84.41
(2) LPA-171080-8CF-EDIN (Verizon)	A	From Leg	1.00 0.00 0.00	0.0000	121.00	No Ice 1/2" Ice	2.10 2.40	3.19 3.54	13.50 33.28
(2) LPA-171063-8CF-EDIN (Verizon)	B	From Leg	1.00 0.00 0.00	0.0000	121.00	No Ice 1/2" Ice	3.69 4.06	3.69 4.06	16.50 45.29

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Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft ²	Weight lb
9' Dish w/ Radome (Unknown)	C	Paraboloid w/Radome	From Leg	3.00 0.00 0.00	0.0000		104.50	9.00	No Ice 1/2" Ice	63.62 64.80	100.00 432.64
4' Dish w/ Radome (Unknown)	C	Paraboloid w/Radome	From Leg	4.00 0.00 0.00	0.0000		113.00	4.00	No Ice 1/2" Ice	12.57 13.10	50.00 117.25
6.5' Dish w/ Radome (Unknown)	C	Paraboloid w/Radome	From Leg	2.25 0.00 0.00	0.0000		153.00	6.50	No Ice 1/2" Ice	33.18 34.04	75.00 249.74
5.5' Dish w/ Radome (Unknown)	A	Paraboloid w/Radome	From Leg	2.50 0.00 0.00	0.0000		153.00	5.50	No Ice 1/2" Ice	23.76 24.48	75.00 200.66
8' Dish w/ Radome (Unknown)	A	Paraboloid w/Radome	From Leg	2.83 0.00 0.00	0.0000		204.50	8.00	No Ice 1/2" Ice	50.27 51.32	75.00 338.44
6' Dish w/ Radome (Unknown)	C	Paraboloid w/Radome	From Leg	2.25 0.00 0.00	0.0000		204.50	6.00	No Ice 1/2" Ice	28.27 29.07	75.00 224.23
8' Dish w/ Radome (Unknown)	C	Paraboloid w/Radome	From Leg	2.83 0.00 0.00	0.0000		212.50	8.00	No Ice 1/2" Ice	50.27 51.32	75.00 338.44
MF-950B (WBMW)	C	Grid	From Leg	0.50 0.00 0.00	0.0000		280.00	1.33	No Ice 1/2" Ice	2.66 3.50	13.00 21.00

Tower Pressures - No Ice

$$G_H = 1.092$$

Section Elevation ft	z ft	K _z	q _z psf	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
T1 282.00-262.00	272.00	1.827	34	83.333	A	4.951	10.620	6.667	42.81	0.000	0.000
					B	4.618	15.520		33.11	0.000	0.000
					C	4.726	13.927		35.74	0.000	0.000
T2 262.00-242.00	252.00	1.788	33	83.333	A	3.993	10.620	6.667	45.62	0.000	0.000
					B	3.724	15.520		34.64	0.000	0.000
					C	3.724	15.520		34.64	0.000	0.000
T3 242.00-222.00	232.00	1.746	32	83.333	A	3.993	10.620	6.667	45.62	0.000	0.000
					B	3.724	15.520		34.64	0.000	0.000
					C	3.724	15.520		34.64	0.000	0.000
T4 222.00-202.00	212.00	1.701	31	83.333	A	10.730	36.367	6.667	14.16	0.000	0.000
					B	15.307	11.833		24.56	0.000	0.000
					C	14.257	11.833		25.55	0.000	0.000
T5 202.00-182.00	192.00	1.654	31	83.333	A	12.944	36.367	6.667	13.52	0.000	0.000
					B	20.642	11.939		20.46	0.000	0.000
					C	16.640	11.833		23.41	0.000	0.000
T6 182.00-162.00	172.00	1.603	30	83.333	A	4.764	41.731	6.667	14.34	0.000	0.000
					B	7.868	30.373		17.43	0.000	0.000
					C	3.652	16.822		32.56	0.000	0.000
T7	152.00	1.547	29	83.333	A	5.633	55.825	6.667	10.85	0.000	0.000

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	Project	130 Vernon Rd Bolton, CT	Date	17:57:20 07/26/12
	Client	Verizon	Designed by	kevin_barker

Section Elevation	z	K _Z	q _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
ft	ft		psf	ft ²		ft ²	ft ²	ft ²			
162.00-142.00					B	8.971	40.199	-	13.56	0.000	0.000
					C	3.380	21.780		26.50	0.000	0.000
T8	132.00	1.486	27	83.333	A	10.050	57.448	6.667	9.88	0.000	0.000
142.00-122.00					B	16.075	40.213		11.84	0.000	0.000
					C	13.794	24.062		17.61	0.000	0.000
T9	112.00	1.418	26	83.333	A	9.631	59.000	6.667	9.71	0.000	0.000
122.00-102.00					B	14.834	44.833		11.17	0.000	0.000
					C	9.564	35.367		14.84	0.000	0.000
T10	92.00	1.34	25	83.333	A	8.728	59.849	6.667	9.72	0.000	0.000
102.00-82.00					B	11.026	46.328		11.62	0.000	0.000
					C	2.498	37.840		16.53	0.000	0.000
T11	72.00	1.25	23	83.333	A	8.728	59.849	6.667	9.72	0.000	0.000
82.00-62.00					B	11.026	46.328		11.62	0.000	0.000
					C	2.498	37.840		16.53	0.000	0.000
T12	52.00	1.139	21	83.333	A	8.728	59.849	6.667	9.72	0.000	0.000
62.00-42.00					B	11.026	46.328		11.62	0.000	0.000
					C	2.498	37.840		16.53	0.000	0.000
T13	32.00	1	18	83.333	A	8.728	59.849	6.667	9.72	0.000	0.000
42.00-22.00					B	11.026	46.328		11.62	0.000	0.000
					C	2.498	37.840		16.53	0.000	0.000
T14	22.00-2.00	1	18	83.333	A	7.545	47.541	6.667	12.10	0.000	0.000
					B	9.267	37.401		14.29	0.000	0.000
					C	2.872	31.035		19.66	0.000	0.000

Tower Pressure - With Ice

$$G_H = 1.092$$

Section Elevation	z	K _Z	q _z	t _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
ft	ft		psf	in	ft ²		ft ²	ft ²	ft ²			
T1	272.00	1.827	25	0.5000	85.000	A	4.951	20.387	10.000	39.47	0.000	0.000
282.00-262.00						B	4.402	27.736		31.12	0.000	0.000
						C	4.581	25.347		33.41	0.000	0.000
T2	252.00	1.788	25	0.5000	85.000	A	3.993	20.068	10.000	41.56	0.000	0.000
262.00-242.00						B	3.550	27.452		32.26	0.000	0.000
						C	3.550	27.452		32.26	0.000	0.000
T3	232.00	1.746	24	0.5000	85.000	A	3.993	20.068	10.000	41.56	0.000	0.000
242.00-222.00						B	3.550	27.452		32.26	0.000	0.000
						C	3.550	27.452		32.26	0.000	0.000
T4	212.00	1.701	24	0.5000	85.000	A	9.392	55.308	10.000	15.46	0.000	0.000
222.00-202.00						B	17.625	19.875		26.67	0.000	0.000
						C	16.270	19.920		27.63	0.000	0.000
T5	192.00	1.654	23	0.5000	85.000	A	11.263	55.507	10.000	14.98	0.000	0.000
202.00-182.00						B	23.635	20.392		22.71	0.000	0.000
						C	18.542	20.488		25.62	0.000	0.000
T6	172.00	1.603	22	0.5000	85.000	A	4.926	62.503	10.000	14.83	0.000	0.000
182.00-162.00						B	9.323	47.172		17.70	0.000	0.000
						C	3.443	29.246		30.59	0.000	0.000
T7	152.00	1.547	21	0.5000	85.000	A	6.121	81.010	10.000	11.48	0.000	0.000
162.00-142.00						B	10.830	60.467		14.03	0.000	0.000
						C	3.033	36.080		25.57	0.000	0.000
T8	132.00	1.486	21	0.5000	85.000	A	5.240	86.043	10.000	10.95	0.000	0.000
142.00-122.00						B	14.627	61.580		13.12	0.000	0.000
						C	13.397	38.853		19.14	0.000	0.000

tnxTower URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: (860) 529-8882 FAX: (860) 529-3991	Job	280' Guyed Tower	Page	22 of 59
	Project	130 Vernon Rd Bolton, CT	Date	17:57:20 07/26/12
	Client	Verizon	Designed by	kevin_barker

Section Elevation	z	K _Z	q _z	t _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
ft	ft		psf	in	ft ²		ft ²	ft ²	ft ²			
T9 122.00-102.00	112.00	1.418	20	0.5000	85.000	A	5.610	88.748	10.000	10.60	0.000	0.000
						B	13.826	68.239		12.19	0.000	0.000
						C	7.471	56.019		15.75	0.000	0.000
T10 102.00-82.00	92.00	1.34	19	0.5000	85.000	A	10.412	87.003	10.000	10.27	0.000	0.000
						B	14.081	68.471		12.11	0.000	0.000
						C	1.630	59.477		16.36	0.000	0.000
T11 82.00-62.00	72.00	1.25	17	0.5000	85.000	A	10.412	87.003	10.000	10.27	0.000	0.000
						B	14.081	68.471		12.11	0.000	0.000
						C	1.630	59.477		16.36	0.000	0.000
T12 62.00-42.00	52.00	1.139	16	0.5000	85.000	A	10.412	87.003	10.000	10.27	0.000	0.000
						B	14.081	68.471		12.11	0.000	0.000
						C	1.630	59.477		16.36	0.000	0.000
T13 42.00-22.00	32.00	1	14	0.5000	85.000	A	10.412	87.003	10.000	10.27	0.000	0.000
						B	14.081	68.471		12.11	0.000	0.000
						C	1.630	59.477		16.36	0.000	0.000
T14 22.00-2.00	12.00	1	14	0.5000	85.000	A	8.808	70.269	10.000	12.65	0.000	0.000
						B	11.559	56.370		14.72	0.000	0.000
						C	2.221	49.625		19.29	0.000	0.000

Tower Pressure - Service

$$G_H = 1.092$$

Section Elevation	z	K _Z	q _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
ft	ft		psf	ft ²		ft ²	ft ²	ft ²			
T1 282.00-262.00	272.00	1.827	12	83.333	A	4.951	10.620	6.667	42.81	0.000	0.000
					B	4.618	15.520		33.11	0.000	0.000
					C	4.726	13.927		35.74	0.000	0.000
T2 262.00-242.00	252.00	1.788	11	83.333	A	3.993	10.620	6.667	45.62	0.000	0.000
					B	3.724	15.520		34.64	0.000	0.000
					C	3.724	15.520		34.64	0.000	0.000
T3 242.00-222.00	232.00	1.746	11	83.333	A	3.993	10.620	6.667	45.62	0.000	0.000
					B	3.724	15.520		34.64	0.000	0.000
					C	3.724	15.520		34.64	0.000	0.000
T4 222.00-202.00	212.00	1.701	11	83.333	A	10.730	36.367	6.667	14.16	0.000	0.000
					B	15.307	11.833		24.56	0.000	0.000
					C	14.257	11.833		25.55	0.000	0.000
T5 202.00-182.00	192.00	1.654	11	83.333	A	12.944	36.367	6.667	13.52	0.000	0.000
					B	20.642	11.939		20.46	0.000	0.000
					C	16.640	11.833		23.41	0.000	0.000
T6 182.00-162.00	172.00	1.603	10	83.333	A	4.764	41.731	6.667	14.34	0.000	0.000
					B	7.868	30.373		17.43	0.000	0.000
					C	3.652	16.822		32.56	0.000	0.000
T7 162.00-142.00	152.00	1.547	10	83.333	A	5.633	55.825	6.667	10.85	0.000	0.000
					B	8.971	40.199		13.56	0.000	0.000
					C	3.380	21.780		26.50	0.000	0.000
T8 142.00-122.00	132.00	1.486	10	83.333	A	10.050	57.448	6.667	9.88	0.000	0.000
					B	16.075	40.213		11.84	0.000	0.000
					C	13.794	24.062		17.61	0.000	0.000
T9 122.00-102.00	112.00	1.418	9	83.333	A	9.631	59.000	6.667	9.71	0.000	0.000
					B	14.834	44.833		11.17	0.000	0.000
					C	9.564	35.367		14.84	0.000	0.000
T10	92.00	1.34	9	83.333	A	8.728	59.849	6.667	9.72	0.000	0.000

tnxTower URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: (860) 529-8882 FAX: (860) 529-3991	Job	280' Guyed Tower	Page	23 of 59
	Project	130 Vernon Rd Bolton, CT	Date	17:57:20 07/26/12
	Client	Verizon	Designed by	kevin_barker

Section Elevation	z	K _Z	q _z	A _G	F _{a c e}	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face	C _A A _A Out Face
ft	ft		psf	ft ²		ft ²	ft ²	ft ²		ft ²	ft ²
102.00-82.00					B	11.026	46.328		11.62	0.000	0.000
					C	2.498	37.840		16.53	0.000	0.000
T11	72.00	1.25	8	83.333	A	8.728	59.849	6.667	9.72	0.000	0.000
82.00-62.00					B	11.026	46.328		11.62	0.000	0.000
					C	2.498	37.840		16.53	0.000	0.000
T12	52.00	1.139	7	83.333	A	8.728	59.849	6.667	9.72	0.000	0.000
62.00-42.00					B	11.026	46.328		11.62	0.000	0.000
					C	2.498	37.840		16.53	0.000	0.000
T13	32.00	1	6	83.333	A	8.728	59.849	6.667	9.72	0.000	0.000
42.00-22.00					B	11.026	46.328		11.62	0.000	0.000
					C	2.498	37.840		16.53	0.000	0.000
T14	22.00-2.00	1	6	83.333	A	7.545	47.541	6.667	12.10	0.000	0.000
					B	9.267	37.401		14.29	0.000	0.000
					C	2.872	31.035		19.66	0.000	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F _{a c e}	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T1	44.22	1212.63	A	0.187	2.641	0.588	1	1	11.194	1265.66	63.28	B
282.00-262.00			B	0.242	2.463	0.6	1	1	13.926			
			C	0.224	2.518	0.596	1	1	13.021			
T2	52.80	1153.83	A	0.175	2.68	0.586	1	1	10.213	1170.86	58.54	C
262.00-242.00			B	0.231	2.496	0.597	1	1	12.992			
			C	0.231	2.496	0.597	1	1	12.992			
T3	52.80	1153.83	A	0.175	2.68	0.586	1	1	10.213	1143.52	57.18	C
242.00-222.00			B	0.231	2.496	0.597	1	1	12.992			
			C	0.231	2.496	0.597	1	1	12.992			
T4	251.73	2014.07	A	0.565	1.83	0.733	1	1	37.383	2350.71	117.54	A
222.00-202.00			B	0.326	2.23	0.624	1	1	22.692			
			C	0.313	2.262	0.62	1	1	21.593			
T5	271.27	2247.64	A	0.592	1.809	0.749	1	1	40.167	2427.89	121.39	A
202.00-182.00		TA 873.93	B	0.391	2.082	0.648	1	1	28.378			
			C	0.342	2.191	0.63	1	1	24.090			
T6	401.23	1153.83	A	0.558	1.836	0.729	1	1	35.176	2090.90	104.54	A
182.00-162.00			B	0.459	1.959	0.677	1	1	28.442			
			C	0.246	2.45	0.601	1	1	13.759			
T7	626.51	1153.83	A	0.737	1.783	0.847	1	1	52.938	2949.71	147.49	A
162.00-142.00			B	0.59	1.811	0.748	1	1	39.021			
			C	0.302	2.291	0.616	1	1	16.807			
T8	716.97	2247.64	A	0.81	1.824	0.905	1	1	62.018	3394.86	169.74	A
142.00-122.00		TA 873.93	B	0.675	1.777	0.803	1	1	48.353			
			C	0.454	1.967	0.675	1	1	30.042			
T9	881.56	2014.07	A	0.824	1.835	0.916	1	1	63.670	3346.60	167.33	A
122.00-102.00			B	0.716	1.778	0.831	1	1	52.112			
			C	0.539	1.854	0.718	1	1	34.967			
T10	891.20	1153.83	A	0.823	1.835	0.915	1	1	63.513	3154.90	157.75	A
102.00-82.00			B	0.688	1.776	0.812	1	1	48.624			
			C	0.484	1.922	0.689	1	1	28.589			
T11	891.20	1153.83	A	0.823	1.835	0.915	1	1	63.513	2941.51	147.08	A
82.00-62.00			B	0.688	1.776	0.812	1	1	48.624			
			C	0.484	1.922	0.689	1	1	28.589			
T12	891.20	1153.83	A	0.823	1.835	0.915	1	1	63.513	2680.34	134.02	A
62.00-42.00			B	0.688	1.776	0.812	1	1	48.624			
			C	0.484	1.922	0.689	1	1	28.589			

tnxTower URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: (860) 529-8882 FAX: (860) 529-3991	Job	280' Guyed Tower	Page	24 of 59
	Project	130 Vernon Rd Bolton, CT	Date	17:57:20 07/26/12
	Client	Verizon	Designed by	kevin_barker

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T13 42.00-22.00	891.20	1153.83	A	0.823	1.835	0.915	1	1	63.513	2353.77	117.69	A
			B	0.688	1.776	0.812	1	1	48.624			
			C	0.484	1.922	0.689	1	1	28.589			
T14 22.00-2.00	668.40	1153.83	A	0.661	1.779	0.793	1	1	45.238	1625.41	81.27	A
			B	0.56	1.834	0.73	1	1	36.568			
			C	0.407	2.051	0.654	1	1	23.182			
Sum Weight:	7532.29	21868.35								32896.66		

Tower Forces - No Ice - Wind 45 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T1 282.00-262.00	44.22	1212.63	A	0.187	2.641	0.588	0.825	1	10.327	1192.22	59.61	B
			B	0.242	2.463	0.6	0.825	1	13.118			
			C	0.224	2.518	0.596	0.825	1	12.194			
T2 262.00-242.00	52.80	1153.83	A	0.175	2.68	0.586	0.825	1	9.514	1112.13	55.61	C
			B	0.231	2.496	0.597	0.825	1	12.341			
			C	0.231	2.496	0.597	0.825	1	12.341			
T3 242.00-222.00	52.80	1153.83	A	0.175	2.68	0.586	0.825	1	9.514	1086.17	54.31	C
			B	0.231	2.496	0.597	0.825	1	12.341			
			C	0.231	2.496	0.597	0.825	1	12.341			
T4 222.00-202.00	251.73	2014.07	A	0.565	1.83	0.733	0.825	1	35.506	2232.63	111.63	A
			B	0.326	2.23	0.624	0.825	1	20.014			
			C	0.313	2.262	0.62	0.825	1	19.099			
T5 202.00-182.00	271.27	2247.64	A	0.592	1.809	0.749	0.825	1	37.902	2290.97	114.55	A
		TA 873.93	B	0.391	2.082	0.648	0.825	1	24.765			
			C	0.342	2.191	0.63	0.825	1	21.178			
T6 182.00-162.00	401.23	1153.83	A	0.558	1.836	0.729	0.825	1	34.343	2041.34	102.07	A
			B	0.459	1.959	0.677	0.825	1	27.065			
			C	0.246	2.45	0.601	0.825	1	13.120			
T7 162.00-142.00	626.51	1153.83	A	0.737	1.783	0.847	0.825	1	51.953	2894.78	144.74	A
			B	0.59	1.811	0.748	0.825	1	37.451			
			C	0.302	2.291	0.616	0.825	1	16.216			
T8 142.00-122.00	716.97	2247.64	A	0.81	1.824	0.905	0.825	1	60.259	3298.58	164.93	A
		TA 873.93	B	0.675	1.777	0.803	0.825	1	45.540			
			C	0.454	1.967	0.675	0.825	1	27.628			
T9 122.00-102.00	881.56	2014.07	A	0.824	1.835	0.916	0.825	1	61.984	3258.01	162.90	A
			B	0.716	1.778	0.831	0.825	1	49.516			
			C	0.539	1.854	0.718	0.825	1	33.293			
T10 102.00-82.00	891.20	1153.83	A	0.823	1.835	0.915	0.825	1	61.985	3079.03	153.95	A
			B	0.688	1.776	0.812	0.825	1	46.694			
			C	0.484	1.922	0.689	0.825	1	28.152			
T11 82.00-62.00	891.20	1153.83	A	0.823	1.835	0.915	0.825	1	61.985	2870.77	143.54	A
			B	0.688	1.776	0.812	0.825	1	46.694			
			C	0.484	1.922	0.689	0.825	1	28.152			
T12 62.00-42.00	891.20	1153.83	A	0.823	1.835	0.915	0.825	1	61.985	2615.88	130.79	A
			B	0.688	1.776	0.812	0.825	1	46.694			
			C	0.484	1.922	0.689	0.825	1	28.152			
T13 42.00-22.00	891.20	1153.83	A	0.823	1.835	0.915	0.825	1	61.985	2297.17	114.86	A
			B	0.688	1.776	0.812	0.825	1	46.694			
			C	0.484	1.922	0.689	0.825	1	28.152			
T14 22.00-2.00	668.40	1153.83	A	0.661	1.779	0.793	0.825	1	43.918	1577.97	78.90	A
			B	0.56	1.834	0.73	0.825	1	34.946			
			C	0.407	2.051	0.654	0.825	1	22.679			

tnxTower URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: (860) 529-8882 FAX: (860) 529-3991	Job	280' Guyed Tower	Page	25 of 59
	Project	130 Vernon Rd Bolton, CT	Date	17:57:20 07/26/12
	Client	Verizon	Designed by	kevin_barker

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
Sum Weight:	7532.29	21868.35								31847.65		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T1 282.00-262.00	44.22	1212.63	A	0.187	2.641	0.588	0.8	1	10.203	1181.73	59.09	B
			B	0.242	2.463	0.6	0.8	1	13.003			
			C	0.224	2.518	0.596	0.8	1	12.075			
T2 262.00-242.00	52.80	1153.83	A	0.175	2.68	0.586	0.8	1	9.414	1103.74	55.19	C
			B	0.231	2.496	0.597	0.8	1	12.248			
			C	0.231	2.496	0.597	0.8	1	12.248			
T3 242.00-222.00	52.80	1153.83	A	0.175	2.68	0.586	0.8	1	9.414	1077.97	53.90	C
			B	0.231	2.496	0.597	0.8	1	12.248			
			C	0.231	2.496	0.597	0.8	1	12.248			
T4 222.00-202.00	251.73	2014.07	A	0.565	1.83	0.733	0.8	1	35.237	2215.76	110.79	A
			B	0.326	2.23	0.624	0.8	1	19.631			
			C	0.313	2.262	0.62	0.8	1	18.742			
T5 202.00-182.00	271.27	2247.64	A	0.592	1.809	0.749	0.8	1	37.578	2271.41	113.57	A
		TA 873.93	B	0.391	2.082	0.648	0.8	1	24.249			
			C	0.342	2.191	0.63	0.8	1	20.762			
T6 182.00-162.00	401.23	1153.83	A	0.558	1.836	0.729	0.8	1	34.224	2034.26	101.71	A
			B	0.459	1.959	0.677	0.8	1	26.868			
			C	0.246	2.45	0.601	0.8	1	13.028			
T7 162.00-142.00	626.51	1153.83	A	0.737	1.783	0.847	0.8	1	51.812	2886.94	144.35	A
			B	0.59	1.811	0.748	0.8	1	37.227			
			C	0.302	2.291	0.616	0.8	1	16.131			
T8 142.00-122.00	716.97	2247.64	A	0.81	1.824	0.905	0.8	1	60.008	3284.83	164.24	A
		TA 873.93	B	0.675	1.777	0.803	0.8	1	45.138			
			C	0.454	1.967	0.675	0.8	1	27.283			
T9 122.00-102.00	881.56	2014.07	A	0.824	1.835	0.916	0.8	1	61.744	3245.36	162.27	A
			B	0.716	1.778	0.831	0.8	1	49.145			
			C	0.539	1.854	0.718	0.8	1	33.054			
T10 102.00-82.00	891.20	1153.83	A	0.823	1.835	0.915	0.8	1	61.767	3068.19	153.41	A
			B	0.688	1.776	0.812	0.8	1	46.419			
			C	0.484	1.922	0.689	0.8	1	28.089			
T11 82.00-62.00	891.20	1153.83	A	0.823	1.835	0.915	0.8	1	61.767	2860.66	143.03	A
			B	0.688	1.776	0.812	0.8	1	46.419			
			C	0.484	1.922	0.689	0.8	1	28.089			
T12 62.00-42.00	891.20	1153.83	A	0.823	1.835	0.915	0.8	1	61.767	2606.67	130.33	A
			B	0.688	1.776	0.812	0.8	1	46.419			
			C	0.484	1.922	0.689	0.8	1	28.089			
T13 42.00-22.00	891.20	1153.83	A	0.823	1.835	0.915	0.8	1	61.767	2289.08	114.45	A
			B	0.688	1.776	0.812	0.8	1	46.419			
			C	0.484	1.922	0.689	0.8	1	28.089			
T14 22.00-2.00	668.40	1153.83	A	0.661	1.779	0.793	0.8	1	43.729	1571.20	78.56	A
			B	0.56	1.834	0.73	0.8	1	34.714			
			C	0.407	2.051	0.654	0.8	1	22.608			
Sum Weight:	7532.29	21868.35								31697.79		

tnxTower URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: (860) 529-8882 FAX: (860) 529-3991	Job	280' Guyed Tower	Page	26 of 59
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	Client	Verizon	Designed by	kevin_barker

Tower Forces - No Ice - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T1 282.00-262.00	44.22	1212.63	A	0.187	2.641	0.588	0.85	1	10.451	1202.71	60.14	B
			B	0.242	2.463	0.6	0.85	1	13.234			
			C	0.224	2.518	0.596	0.85	1	12.312			
T2 262.00-242.00	52.80	1153.83	A	0.175	2.68	0.586	0.85	1	9.614	1120.52	56.03	C
			B	0.231	2.496	0.597	0.85	1	12.434			
			C	0.231	2.496	0.597	0.85	1	12.434			
T3 242.00-222.00	52.80	1153.83	A	0.175	2.68	0.586	0.85	1	9.614	1094.36	54.72	C
			B	0.231	2.496	0.597	0.85	1	12.434			
			C	0.231	2.496	0.597	0.85	1	12.434			
T4 222.00-202.00	251.73	2014.07	A	0.565	1.83	0.733	0.85	1	35.774	2249.50	112.47	A
			B	0.326	2.23	0.624	0.85	1	20.396			
			C	0.313	2.262	0.62	0.85	1	19.455			
T5 202.00-182.00	271.27	2247.64 TA 873.93	A	0.592	1.809	0.749	0.85	1	38.225	2310.53	115.53	A
			B	0.391	2.082	0.648	0.85	1	25.281			
			C	0.342	2.191	0.63	0.85	1	21.594			
T6 182.00-162.00	401.23	1153.83	A	0.558	1.836	0.729	0.85	1	34.462	2048.42	102.42	A
			B	0.459	1.959	0.677	0.85	1	27.262			
			C	0.246	2.45	0.601	0.85	1	13.211			
T7 162.00-142.00	626.51	1153.83	A	0.737	1.783	0.847	0.85	1	52.093	2902.63	145.13	A
			B	0.59	1.811	0.748	0.85	1	37.675			
			C	0.302	2.291	0.616	0.85	1	16.300			
T8 142.00-122.00	716.97	2247.64 TA 873.93	A	0.81	1.824	0.905	0.85	1	60.510	3312.34	165.62	A
			B	0.675	1.777	0.803	0.85	1	45.942			
			C	0.454	1.967	0.675	0.85	1	27.973			
T9 122.00-102.00	881.56	2014.07	A	0.824	1.835	0.916	0.85	1	62.225	3270.67	163.53	A
			B	0.716	1.778	0.831	0.85	1	49.887			
			C	0.539	1.854	0.718	0.85	1	33.532			
T10 102.00-82.00	891.20	1153.83	A	0.823	1.835	0.915	0.85	1	62.203	3089.87	154.49	A
			B	0.688	1.776	0.812	0.85	1	46.970			
			C	0.484	1.922	0.689	0.85	1	28.214			
T11 82.00-62.00	891.20	1153.83	A	0.823	1.835	0.915	0.85	1	62.203	2880.87	144.04	A
			B	0.688	1.776	0.812	0.85	1	46.970			
			C	0.484	1.922	0.689	0.85	1	28.214			
T12 62.00-42.00	891.20	1153.83	A	0.823	1.835	0.915	0.85	1	62.203	2625.09	131.25	A
			B	0.688	1.776	0.812	0.85	1	46.970			
			C	0.484	1.922	0.689	0.85	1	28.214			
T13 42.00-22.00	891.20	1153.83	A	0.823	1.835	0.915	0.85	1	62.203	2305.25	115.26	A
			B	0.688	1.776	0.812	0.85	1	46.970			
			C	0.484	1.922	0.689	0.85	1	28.214			
T14 22.00-2.00	668.40	1153.83	A	0.661	1.779	0.793	0.85	1	44.106	1584.75	79.24	A
			B	0.56	1.834	0.73	0.85	1	35.178			
			C	0.407	2.051	0.654	0.85	1	22.751			
Sum Weight:	7532.29	21868.35								31997.51		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T1 282.00-262.00	128.12	1607.29	A	0.298	2.301	0.615	1	1	17.496	1297.81	64.89	B
			B	0.378	2.109	0.643	1	1	22.234			
			C	0.352	2.167	0.633	1	1	20.631			

tnxTower URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: (860) 529-8882 FAX: (860) 529-3991	Job	280' Guyed Tower	Page	27 of 59
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	Client	Verizon	Designed by	kevin_barker

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T2 262.00-242.00	152.98	1515.91	A	0.283	2.342	0.611	1	1	16.252	1219.34	60.97	C
			B	0.365	2.138	0.638	1	1	21.060			
			C	0.365	2.138	0.638	1	1	21.060			
T3 242.00-222.00	152.98	1515.91	A	0.283	2.342	0.611	1	1	16.252	1190.87	59.54	C
			B	0.365	2.138	0.638	1	1	21.060			
			C	0.365	2.138	0.638	1	1	21.060			
T4 222.00-202.00	655.73	2563.59	A	0.761	1.792	0.865	1	1	57.260	2645.33	132.27	A
			B	0.441	1.988	0.669	1	1	30.928			
			C	0.426	2.015	0.662	1	1	29.466			
T5 202.00-182.00	726.30	2880.99	A	0.786	1.806	0.885	1	1	60.371	2731.77	136.59	A
		TA	B	0.518	1.878	0.707	1	1	38.048			
		1187.59	C	0.459	1.959	0.678	1	1	32.424			
T6 182.00-162.00	1056.40	1515.91	A	0.793	1.811	0.891	1	1	60.613	2665.51	133.28	A
			B	0.665	1.778	0.795	1	1	46.839			
			C	0.385	2.095	0.645	1	1	22.319			
T7 162.00-142.00	1643.98	1515.91	A	1	2.1	1	1	1	87.131	3984.38*	199.22	A
			B	0.839	1.85	0.929	1	1	66.993			
			C	0.46	1.957	0.678	1	1	27.495			
T8 142.00-122.00	1894.22	2880.99	A	1	2.1	1	1	1	91.283	3826.97*	191.35	A
		TA	B	0.897	1.919	0.98	1	1	74.972			
		1187.59	C	0.615	1.796	0.763	1	1	43.030			
T9 122.00-102.00	2339.59	2563.59	A	1	2.1	1	1	1	94.358	3651.47*	182.57	A
			B	0.965	2.032	1	1	1	82.065			
			C	0.747	1.786	0.855	1	1	55.341			
T10 102.00-82.00	2375.85	1515.91	A	1	2.1	1	1	1	97.416	3451.90*	172.60	A
			B	0.971	2.042	1	1	1	82.552			
			C	0.719	1.778	0.834	1	1	51.209			
T11 82.00-62.00	2375.85	1515.91	A	1	2.1	1	1	1	97.416	3218.42*	160.92	A
			B	0.971	2.042	1	1	1	82.552			
			C	0.719	1.778	0.834	1	1	51.209			
T12 62.00-42.00	2375.85	1515.91	A	1	2.1	1	1	1	97.416	2932.67*	146.63	A
			B	0.971	2.042	1	1	1	82.552			
			C	0.719	1.778	0.834	1	1	51.209			
T13 42.00-22.00	2375.85	1515.91	A	1	2.1	1	1	1	97.416	2575.36*	128.77	A
			B	0.971	2.042	1	1	1	82.552			
			C	0.719	1.778	0.834	1	1	51.209			
T14 22.00-2.00	1781.89	1515.91	A	0.93	1.97	1	1	1	79.077	2360.18	118.01	A
			B	0.799	1.815	0.896	1	1	62.051			
			C	0.61	1.798	0.76	1	1	39.923			
Sum Weight:	20035.59	28514.80			2A _g limit					37751.98		

Tower Forces - With Ice - Wind 45 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T1 282.00-262.00	128.12	1607.29	A	0.298	2.301	0.615	0.825	1	16.630	1252.84	62.64	B
			B	0.378	2.109	0.643	0.825	1	21.463			
			C	0.352	2.167	0.633	0.825	1	19.830			
T2 262.00-242.00	152.98	1515.91	A	0.283	2.342	0.611	0.825	1	15.553	1183.37	59.17	C
			B	0.365	2.138	0.638	0.825	1	20.439			
			C	0.365	2.138	0.638	0.825	1	20.439			
T3 242.00-222.00	152.98	1515.91	A	0.283	2.342	0.611	0.825	1	15.553	1155.74	57.79	C
			B	0.365	2.138	0.638	0.825	1	20.439			

tnxTower URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: (860) 529-8882 FAX: (860) 529-3991	Job	280' Guyed Tower	Page	28 of 59
	Project	130 Vernon Rd Bolton, CT	Date	17:57:20 07/26/12
	Client	Verizon	Designed by	kevin_barker

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T4	655.73	2563.59	C	0.365	2.138	0.638	0.825	1	20.439			
222.00-202.00			A	0.761	1.792	0.865	0.825	1	55.616	2569.40	128.47	A
			B	0.441	1.988	0.669	0.825	1	27.843			
			C	0.426	2.015	0.662	0.825	1	26.619			
T5	726.30	2880.99	A	0.786	1.806	0.885	0.825	1	58.399	2642.58	132.13	A
202.00-182.00			TA	0.518	1.878	0.707	0.825	1	33.912			
		1187.59	C	0.459	1.959	0.678	0.825	1	29.179			
T6	1056.40	1515.91	A	0.793	1.811	0.891	0.825	1	59.751	2627.60	131.38	A
182.00-162.00			B	0.665	1.778	0.795	0.825	1	45.207			
			C	0.385	2.095	0.645	0.825	1	21.717			
T7	1643.98	1515.91	A	1	2.1	1	0.825	1	86.060	3984.38*	199.22	A
162.00-142.00			B	0.839	1.85	0.929	0.825	1	65.098			
			C	0.46	1.957	0.678	0.825	1	26.964			
T8	1894.22	2880.99	A	1	2.1	1	0.825	1	90.366	3826.97*	191.35	A
142.00-122.00			TA	0.897	1.919	0.98	0.825	1	72.413			
		1187.59	C	0.615	1.796	0.763	0.825	1	40.686			
T9	2339.59	2563.59	A	1	2.1	1	0.825	1	93.376	3651.47*	182.57	A
122.00-102.00			B	0.965	2.032	1	0.825	1	79.645			
			C	0.747	1.786	0.855	0.825	1	54.033			
T10	2375.85	1515.91	A	1	2.1	1	0.825	1	95.594	3451.90*	172.60	A
102.00-82.00			B	0.971	2.042	1	0.825	1	80.088			
			C	0.719	1.778	0.834	0.825	1	50.924			
T11	2375.85	1515.91	A	1	2.1	1	0.825	1	95.594	3218.42*	160.92	A
82.00-62.00			B	0.971	2.042	1	0.825	1	80.088			
			C	0.719	1.778	0.834	0.825	1	50.924			
T12	2375.85	1515.91	A	1	2.1	1	0.825	1	95.594	2932.67*	146.63	A
62.00-42.00			B	0.971	2.042	1	0.825	1	80.088			
			C	0.719	1.778	0.834	0.825	1	50.924			
T13	2375.85	1515.91	A	1	2.1	1	0.825	1	95.594	2575.36*	128.77	A
42.00-22.00			B	0.971	2.042	1	0.825	1	80.088			
			C	0.719	1.778	0.834	0.825	1	50.924			
T14	1781.89	1515.91	A	0.93	1.97	1	0.825	1	77.536	2314.18	115.71	A
22.00-2.00			B	0.799	1.815	0.896	0.825	1	60.028			
			C	0.61	1.798	0.76	0.825	1	39.534			
Sum Weight:	20035.59	28514.80			*2A _g limit					37386.86		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T1	128.12	1607.29	A	0.298	2.301	0.615	0.8	1	16.506	1246.41	62.32	B
282.00-262.00			B	0.378	2.109	0.643	0.8	1	21.353			
			C	0.352	2.167	0.633	0.8	1	19.715			
T2	152.98	1515.91	A	0.283	2.342	0.611	0.8	1	15.453	1178.23	58.91	C
262.00-242.00			B	0.365	2.138	0.638	0.8	1	20.350			
			C	0.365	2.138	0.638	0.8	1	20.350			
T3	152.98	1515.91	A	0.283	2.342	0.611	0.8	1	15.453	1150.72	57.54	C
242.00-222.00			B	0.365	2.138	0.638	0.8	1	20.350			
			C	0.365	2.138	0.638	0.8	1	20.350			
T4	655.73	2563.59	A	0.761	1.792	0.865	0.8	1	55.382	2558.55	127.93	A
222.00-202.00			B	0.441	1.988	0.669	0.8	1	27.402			
			C	0.426	2.015	0.662	0.8	1	26.212			
T5	726.30	2880.99	A	0.786	1.806	0.885	0.8	1	58.118	2629.84	131.49	A

tnxTower URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: (860) 529-8882 FAX: (860) 529-3991	Job	280' Guyed Tower	Page	29 of 59
	Project	130 Vernon Rd Bolton, CT	Date	17:57:20 07/26/12
	Client	Verizon	Designed by	kevin_barker

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
202.00-182.00		TA	B	0.518	1.878	0.707	0.8	1	33.321			
		1187.59	C	0.459	1.959	0.678	0.8	1	28.715			
T6	1056.40	1515.91	A	0.793	1.811	0.891	0.8	1	59.628	2622.19	131.11	A
182.00-162.00			B	0.665	1.778	0.795	0.8	1	44.974			
			C	0.385	2.095	0.645	0.8	1	21.631			
T7	1643.98	1515.91	A	1	2.1	1	0.8	1	85.907	3984.38*	199.22	A
162.00-142.00			B	0.839	1.85	0.929	0.8	1	64.827			
			C	0.46	1.957	0.678	0.8	1	26.889			
T8	1894.22	2880.99	A	1	2.1	1	0.8	1	90.235	3826.97*	191.35	A
142.00-122.00		TA	B	0.897	1.919	0.98	0.8	1	72.047			
		1187.59	C	0.615	1.796	0.763	0.8	1	40.351			
T9	2339.59	2563.59	A	1	2.1	1	0.8	1	93.236	3651.47*	182.57	A
122.00-102.00			B	0.965	2.032	1	0.8	1	79.300			
			C	0.747	1.786	0.855	0.8	1	53.847			
T10	2375.85	1515.91	A	1	2.1	1	0.8	1	95.333	3451.90*	172.60	A
102.00-82.00			B	0.971	2.042	1	0.8	1	79.736			
			C	0.719	1.778	0.834	0.8	1	50.883			
T11	2375.85	1515.91	A	1	2.1	1	0.8	1	95.333	3218.42*	160.92	A
82.00-62.00			B	0.971	2.042	1	0.8	1	79.736			
			C	0.719	1.778	0.834	0.8	1	50.883			
T12	2375.85	1515.91	A	1	2.1	1	0.8	1	95.333	2932.67*	146.63	A
62.00-42.00			B	0.971	2.042	1	0.8	1	79.736			
			C	0.719	1.778	0.834	0.8	1	50.883			
T13	2375.85	1515.91	A	1	2.1	1	0.8	1	95.333	2575.36*	128.77	A
42.00-22.00			B	0.971	2.042	1	0.8	1	79.736			
			C	0.719	1.778	0.834	0.8	1	50.883			
T14	1781.89	1515.91	A	0.93	1.97	1	0.8	1	77.316	2307.60	115.38	A
22.00-2.00			B	0.799	1.815	0.896	0.8	1	59.739			
			C	0.61	1.798	0.76	0.8	1	39.478			
Sum Weight:	20035.59	28514.80			2A _g limit					37334.71		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T1	128.12	1607.29	A	0.298	2.301	0.615	0.85	1	16.753	1259.26	62.96	B
282.00-262.00			B	0.378	2.109	0.643	0.85	1	21.573			
			C	0.352	2.167	0.633	0.85	1	19.944			
T2	152.98	1515.91	A	0.283	2.342	0.611	0.85	1	15.653	1188.51	59.43	C
262.00-242.00			B	0.365	2.138	0.638	0.85	1	20.528			
			C	0.365	2.138	0.638	0.85	1	20.528			
T3	152.98	1515.91	A	0.283	2.342	0.611	0.85	1	15.653	1160.76	58.04	C
242.00-222.00			B	0.365	2.138	0.638	0.85	1	20.528			
			C	0.365	2.138	0.638	0.85	1	20.528			
T4	655.73	2563.59	A	0.761	1.792	0.865	0.85	1	55.851	2580.25	129.01	A
222.00-202.00			B	0.441	1.988	0.669	0.85	1	28.284			
			C	0.426	2.015	0.662	0.85	1	27.026			
T5	726.30	2880.99	A	0.786	1.806	0.885	0.85	1	58.681	2655.32	132.77	A
202.00-182.00		TA	B	0.518	1.878	0.707	0.85	1	34.503			
		1187.59	C	0.459	1.959	0.678	0.85	1	29.642			
T6	1056.40	1515.91	A	0.793	1.811	0.891	0.85	1	59.874	2633.02	131.65	A
182.00-162.00			B	0.665	1.778	0.795	0.85	1	45.441			
			C	0.385	2.095	0.645	0.85	1	21.803			

tnxTower URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: (860) 529-8882 FAX: (860) 529-3991	Job	Page
	280' Guyed Tower	30 of 59
	Project	Date
	130 Vernon Rd Bolton, CT	17:57:20 07/26/12
	Client	Designed by
	Verizon	kevin_barker

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T7 162.00-142.00	1643.98	1515.91	A	1	2.1	1	0.85	1	86.213	3984.38*	199.22	A
			B	0.839	1.85	0.929	0.85	1	65.368			
			C	0.46	1.957	0.678	0.85	1	27.040			
T8 142.00-122.00	1894.22	2880.99	A	1	2.1	1	0.85	1	90.497	3826.97*	191.35	A
		TA	B	0.897	1.919	0.98	0.85	1	72.778			
		1187.59	C	0.615	1.796	0.763	0.85	1	41.021			
T9 122.00-102.00	2339.59	2563.59	A	1	2.1	1	0.85	1	93.517	3651.47*	182.57	A
			B	0.965	2.032	1	0.85	1	79.991			
			C	0.747	1.786	0.855	0.85	1	54.220			
T10 102.00-82.00	2375.85	1515.91	A	1	2.1	1	0.85	1	95.854	3451.90*	172.60	A
			B	0.971	2.042	1	0.85	1	80.440			
			C	0.719	1.778	0.834	0.85	1	50.965			
T11 82.00-62.00	2375.85	1515.91	A	1	2.1	1	0.85	1	95.854	3218.42*	160.92	A
			B	0.971	2.042	1	0.85	1	80.440			
			C	0.719	1.778	0.834	0.85	1	50.965			
T12 62.00-42.00	2375.85	1515.91	A	1	2.1	1	0.85	1	95.854	2932.67*	146.63	A
			B	0.971	2.042	1	0.85	1	80.440			
			C	0.719	1.778	0.834	0.85	1	50.965			
T13 42.00-22.00	2375.85	1515.91	A	1	2.1	1	0.85	1	95.854	2575.36*	128.77	A
			B	0.971	2.042	1	0.85	1	80.440			
			C	0.719	1.778	0.834	0.85	1	50.965			
T14 22.00-2.00	1781.89	1515.91	A	0.93	1.97	1	0.85	1	77.756	2320.75	116.04	A
			B	0.799	1.815	0.896	0.85	1	60.317			
			C	0.61	1.798	0.76	0.85	1	39.590			
Sum Weight:	20035.59	28514.80			*2A _g limit					37439.02		

Tower Forces - Service - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T1 282.00-262.00	44.22	1212.63	A	0.187	2.641	0.588	1	1	11.194	437.94	21.90	B
			B	0.242	2.463	0.6	1	1	13.926			
			C	0.224	2.518	0.596	1	1	13.021			
T2 262.00-242.00	52.80	1153.83	A	0.175	2.68	0.586	1	1	10.213	405.14	20.26	C
			B	0.231	2.496	0.597	1	1	12.992			
			C	0.231	2.496	0.597	1	1	12.992			
T3 242.00-222.00	52.80	1153.83	A	0.175	2.68	0.586	1	1	10.213	395.68	19.78	C
			B	0.231	2.496	0.597	1	1	12.992			
			C	0.231	2.496	0.597	1	1	12.992			
T4 222.00-202.00	251.73	2014.07	A	0.565	1.83	0.733	1	1	37.383	813.39	40.67	A
			B	0.326	2.23	0.624	1	1	22.692			
			C	0.313	2.262	0.62	1	1	21.593			
T5 202.00-182.00	271.27	2247.64	A	0.592	1.809	0.749	1	1	40.167	840.10	42.01	A
		TA 873.93	B	0.391	2.082	0.648	1	1	28.378			
			C	0.342	2.191	0.63	1	1	24.090			
T6 182.00-162.00	401.23	1153.83	A	0.558	1.836	0.729	1	1	35.176	723.49	36.17	A
			B	0.459	1.959	0.677	1	1	28.442			
			C	0.246	2.45	0.601	1	1	13.759			
T7 162.00-142.00	626.51	1153.83	A	0.737	1.783	0.847	1	1	52.938	1020.66	51.03	A
			B	0.59	1.811	0.748	1	1	39.021			
			C	0.302	2.291	0.616	1	1	16.807			
T8 142.00-122.00	716.97	2247.64	A	0.81	1.824	0.905	1	1	62.018	1174.69	58.73	A
		TA 873.93	B	0.675	1.777	0.803	1	1	48.353			

tnxTower URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: (860) 529-8882 FAX: (860) 529-3991	Job	280' Guyed Tower	Page	31 of 59
	Project	130 Vernon Rd Bolton, CT	Date	17:57:20 07/26/12
	Client	Verizon	Designed by	kevin_barker

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T9	881.56	2014.07	C	0.454	1.967	0.675	1	1	30.042			
122.00-102.00			A	0.824	1.835	0.916	1	1	63.670	1157.99	57.90	A
			B	0.716	1.778	0.831	1	1	52.112			
			C	0.539	1.854	0.718	1	1	34.967			
T10	891.20	1153.83	A	0.823	1.835	0.915	1	1	63.513	1091.66	54.58	A
102.00-82.00			B	0.688	1.776	0.812	1	1	48.624			
			C	0.484	1.922	0.689	1	1	28.589			
T11	891.20	1153.83	A	0.823	1.835	0.915	1	1	63.513	1017.82	50.89	A
82.00-62.00			B	0.688	1.776	0.812	1	1	48.624			
			C	0.484	1.922	0.689	1	1	28.589			
T12	891.20	1153.83	A	0.823	1.835	0.915	1	1	63.513	927.45	46.37	A
62.00-42.00			B	0.688	1.776	0.812	1	1	48.624			
			C	0.484	1.922	0.689	1	1	28.589			
T13	891.20	1153.83	A	0.823	1.835	0.915	1	1	63.513	814.45	40.72	A
42.00-22.00			B	0.688	1.776	0.812	1	1	48.624			
			C	0.484	1.922	0.689	1	1	28.589			
T14	668.40	1153.83	A	0.661	1.779	0.793	1	1	45.238	562.43	28.12	A
22.00-2.00			B	0.56	1.834	0.73	1	1	36.568			
			C	0.407	2.051	0.654	1	1	23.182			
Sum Weight:	7532.29	21868.35								11382.93		

Tower Forces - Service - Wind 45 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T1	44.22	1212.63	A	0.187	2.641	0.588	0.825	1	10.327	412.53	20.63	B
282.00-262.00			B	0.242	2.463	0.6	0.825	1	13.118			
			C	0.224	2.518	0.596	0.825	1	12.194			
T2	52.80	1153.83	A	0.175	2.68	0.586	0.825	1	9.514	384.82	19.24	C
262.00-242.00			B	0.231	2.496	0.597	0.825	1	12.341			
			C	0.231	2.496	0.597	0.825	1	12.341			
T3	52.80	1153.83	A	0.175	2.68	0.586	0.825	1	9.514	375.84	18.79	C
242.00-222.00			B	0.231	2.496	0.597	0.825	1	12.341			
			C	0.231	2.496	0.597	0.825	1	12.341			
T4	251.73	2014.07	A	0.565	1.83	0.733	0.825	1	35.506	772.54	38.63	A
222.00-202.00			B	0.326	2.23	0.624	0.825	1	20.014			
			C	0.313	2.262	0.62	0.825	1	19.099			
T5	271.27	2247.64	A	0.592	1.809	0.749	0.825	1	37.902	792.72	39.64	A
202.00-182.00		TA 873.93	B	0.391	2.082	0.648	0.825	1	24.765			
			C	0.342	2.191	0.63	0.825	1	21.178			
T6	401.23	1153.83	A	0.558	1.836	0.729	0.825	1	34.343	706.35	35.32	A
182.00-162.00			B	0.459	1.959	0.677	0.825	1	27.065			
			C	0.246	2.45	0.601	0.825	1	13.120			
T7	626.51	1153.83	A	0.737	1.783	0.847	0.825	1	51.953	1001.65	50.08	A
162.00-142.00			B	0.59	1.811	0.748	0.825	1	37.451			
			C	0.302	2.291	0.616	0.825	1	16.216			
T8	716.97	2247.64	A	0.81	1.824	0.905	0.825	1	60.259	1141.38	57.07	A
142.00-122.00		TA 873.93	B	0.675	1.777	0.803	0.825	1	45.540			
			C	0.454	1.967	0.675	0.825	1	27.628			
T9	881.56	2014.07	A	0.824	1.835	0.916	0.825	1	61.984	1127.34	56.37	A
122.00-102.00			B	0.716	1.778	0.831	0.825	1	49.516			
			C	0.539	1.854	0.718	0.825	1	33.293			
T10	891.20	1153.83	A	0.823	1.835	0.915	0.825	1	61.985	1065.41	53.27	A
102.00-82.00			B	0.688	1.776	0.812	0.825	1	46.694			

tnxTower URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: (860) 529-8882 FAX: (860) 529-3991	Job	280' Guyed Tower	Page	32 of 59
	Project	130 Vernon Rd Bolton, CT	Date	17:57:20 07/26/12
	Client	Verizon	Designed by	kevin_barker

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T11	891.20	1153.83	C	0.484	1.922	0.689	0.825	1	28.152			
82.00-62.00			A	0.823	1.835	0.915	0.825	1	61.985	993.34	49.67	A
			B	0.688	1.776	0.812	0.825	1	46.694			
			C	0.484	1.922	0.689	0.825	1	28.152			
T12	891.20	1153.83	A	0.823	1.835	0.915	0.825	1	61.985	905.15	45.26	A
62.00-42.00			B	0.688	1.776	0.812	0.825	1	46.694			
			C	0.484	1.922	0.689	0.825	1	28.152			
T13	891.20	1153.83	A	0.823	1.835	0.915	0.825	1	61.985	794.87	39.74	A
42.00-22.00			B	0.688	1.776	0.812	0.825	1	46.694			
			C	0.484	1.922	0.689	0.825	1	28.152			
T14	668.40	1153.83	A	0.661	1.779	0.793	0.825	1	43.918	546.01	27.30	A
22.00-2.00			B	0.56	1.834	0.73	0.825	1	34.946			
			C	0.407	2.051	0.654	0.825	1	22.679			
Sum Weight:	7532.29	21868.35								11019.95		

Tower Forces - Service - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T1	44.22	1212.63	A	0.187	2.641	0.588	0.8	1	10.203	408.90	20.45	B
282.00-262.00			B	0.242	2.463	0.6	0.8	1	13.003			
			C	0.224	2.518	0.596	0.8	1	12.075			
T2	52.80	1153.83	A	0.175	2.68	0.586	0.8	1	9.414	381.92	19.10	C
262.00-242.00			B	0.231	2.496	0.597	0.8	1	12.248			
			C	0.231	2.496	0.597	0.8	1	12.248			
T3	52.80	1153.83	A	0.175	2.68	0.586	0.8	1	9.414	373.00	18.65	C
242.00-222.00			B	0.231	2.496	0.597	0.8	1	12.248			
			C	0.231	2.496	0.597	0.8	1	12.248			
T4	251.73	2014.07	A	0.565	1.83	0.733	0.8	1	35.237	766.70	38.33	A
222.00-202.00			B	0.326	2.23	0.624	0.8	1	19.631			
			C	0.313	2.262	0.62	0.8	1	18.742			
T5	271.27	2247.64	A	0.592	1.809	0.749	0.8	1	37.578	785.96	39.30	A
202.00-182.00		TA 873.93	B	0.391	2.082	0.648	0.8	1	24.249			
			C	0.342	2.191	0.63	0.8	1	20.762			
T6	401.23	1153.83	A	0.558	1.836	0.729	0.8	1	34.224	703.90	35.19	A
182.00-162.00			B	0.459	1.959	0.677	0.8	1	26.868			
			C	0.246	2.45	0.601	0.8	1	13.028			
T7	626.51	1153.83	A	0.737	1.783	0.847	0.8	1	51.812	998.94	49.95	A
162.00-142.00			B	0.59	1.811	0.748	0.8	1	37.227			
			C	0.302	2.291	0.616	0.8	1	16.131			
T8	716.97	2247.64	A	0.81	1.824	0.905	0.8	1	60.008	1136.62	56.83	A
142.00-122.00		TA 873.93	B	0.675	1.777	0.803	0.8	1	45.138			
			C	0.454	1.967	0.675	0.8	1	27.283			
T9	881.56	2014.07	A	0.824	1.835	0.916	0.8	1	61.744	1122.96	56.15	A
122.00-102.00			B	0.716	1.778	0.831	0.8	1	49.145			
			C	0.539	1.854	0.718	0.8	1	33.054			
T10	891.20	1153.83	A	0.823	1.835	0.915	0.8	1	61.767	1061.66	53.08	A
102.00-82.00			B	0.688	1.776	0.812	0.8	1	46.419			
			C	0.484	1.922	0.689	0.8	1	28.089			
T11	891.20	1153.83	A	0.823	1.835	0.915	0.8	1	61.767	989.85	49.49	A
82.00-62.00			B	0.688	1.776	0.812	0.8	1	46.419			
			C	0.484	1.922	0.689	0.8	1	28.089			
T12	891.20	1153.83	A	0.823	1.835	0.915	0.8	1	61.767	901.96	45.10	A
62.00-42.00			B	0.688	1.776	0.812	0.8	1	46.419			

tnxTower URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: (860) 529-8882 FAX: (860) 529-3991	Job	280' Guyed Tower	Page	33 of 59
	Project	130 Vernon Rd Bolton, CT	Date	17:57:20 07/26/12
	Client	Verizon	Designed by	kevin_barker

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T13	891.20	1153.83	C	0.484	1.922	0.689	0.8	1	28.089			
42.00-22.00			A	0.823	1.835	0.915	0.8	1	61.767	792.07	39.60	A
			B	0.688	1.776	0.812	0.8	1	46.419			
			C	0.484	1.922	0.689	0.8	1	28.089			
T14	668.40	1153.83	A	0.661	1.779	0.793	0.8	1	43.729	543.67	27.18	A
22.00-2.00			B	0.56	1.834	0.73	0.8	1	34.714			
			C	0.407	2.051	0.654	0.8	1	22.608			
Sum Weight:	7532.29	21868.35								10968.10		

Tower Forces - Service - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
T1	44.22	1212.63	A	0.187	2.641	0.588	0.85	1	10.451	416.16	20.81	B
282.00-262.00			B	0.242	2.463	0.6	0.85	1	13.234			
			C	0.224	2.518	0.596	0.85	1	12.312			
T2	52.80	1153.83	A	0.175	2.68	0.586	0.85	1	9.614	387.72	19.39	C
262.00-242.00			B	0.231	2.496	0.597	0.85	1	12.434			
			C	0.231	2.496	0.597	0.85	1	12.434			
T3	52.80	1153.83	A	0.175	2.68	0.586	0.85	1	9.614	378.67	18.93	C
242.00-222.00			B	0.231	2.496	0.597	0.85	1	12.434			
			C	0.231	2.496	0.597	0.85	1	12.434			
T4	251.73	2014.07	A	0.565	1.83	0.733	0.85	1	35.774	778.37	38.92	A
222.00-202.00			B	0.326	2.23	0.624	0.85	1	20.396			
			C	0.313	2.262	0.62	0.85	1	19.455			
T5	271.27	2247.64	A	0.592	1.809	0.749	0.85	1	38.225	799.49	39.97	A
202.00-182.00		TA 873.93	B	0.391	2.082	0.648	0.85	1	25.281			
			C	0.342	2.191	0.63	0.85	1	21.594			
T6	401.23	1153.83	A	0.558	1.836	0.729	0.85	1	34.462	708.80	35.44	A
182.00-162.00			B	0.459	1.959	0.677	0.85	1	27.262			
			C	0.246	2.45	0.601	0.85	1	13.211			
T7	626.51	1153.83	A	0.737	1.783	0.847	0.85	1	52.093	1004.37	50.22	A
162.00-142.00			B	0.59	1.811	0.748	0.85	1	37.675			
			C	0.302	2.291	0.616	0.85	1	16.300			
T8	716.97	2247.64	A	0.81	1.824	0.905	0.85	1	60.510	1146.14	57.31	A
142.00-122.00		TA 873.93	B	0.675	1.777	0.803	0.85	1	45.942			
			C	0.454	1.967	0.675	0.85	1	27.973			
T9	881.56	2014.07	A	0.824	1.835	0.916	0.85	1	62.225	1131.72	56.59	A
122.00-102.00			B	0.716	1.778	0.831	0.85	1	49.887			
			C	0.539	1.854	0.718	0.85	1	33.532			
T10	891.20	1153.83	A	0.823	1.835	0.915	0.85	1	62.203	1069.16	53.46	A
102.00-82.00			B	0.688	1.776	0.812	0.85	1	46.970			
			C	0.484	1.922	0.689	0.85	1	28.214			
T11	891.20	1153.83	A	0.823	1.835	0.915	0.85	1	62.203	996.84	49.84	A
82.00-62.00			B	0.688	1.776	0.812	0.85	1	46.970			
			C	0.484	1.922	0.689	0.85	1	28.214			
T12	891.20	1153.83	A	0.823	1.835	0.915	0.85	1	62.203	908.34	45.42	A
62.00-42.00			B	0.688	1.776	0.812	0.85	1	46.970			
			C	0.484	1.922	0.689	0.85	1	28.214			
T13	891.20	1153.83	A	0.823	1.835	0.915	0.85	1	62.203	797.67	39.88	A
42.00-22.00			B	0.688	1.776	0.812	0.85	1	46.970			
			C	0.484	1.922	0.689	0.85	1	28.214			
T14	668.40	1153.83	A	0.661	1.779	0.793	0.85	1	44.106	548.36	27.42	A
22.00-2.00			B	0.56	1.834	0.73	0.85	1	35.178			

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	Client	Verizon	Designed by	kevin_barker

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	R _R	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
Sum Weight:	7532.29	21868.35	C	0.407	2.051	0.654	0.85	1	22.751	11071.80		

Force Totals (Does not include forces on guys)

Load Case	Vertical Forces	Sum of Forces X	Sum of Forces Z	Sum of Torques
	lb	lb	lb	lb-ft
Leg Weight	8979.76			
Bracing Weight	12888.60			
Total Member Self-Weight	21868.35			
Guy Weight	4059.04			
Total Weight	39929.44			
Wind 0 deg - No Ice		514.97	-51032.88	-13969.10
Wind 30 deg - No Ice		25665.05	-44217.90	-15772.55
Wind 45 deg - No Ice		35924.53	-35846.87	-14489.04
Wind 60 deg - No Ice		43797.35	-25000.90	-14942.55
Wind 90 deg - No Ice		50977.03	321.28	-9934.27
Wind 120 deg - No Ice		44549.60	25247.79	-271.59
Wind 135 deg - No Ice		35674.21	34555.04	4033.26
Wind 150 deg - No Ice		25436.66	42293.90	9909.94
Wind 180 deg - No Ice		326.69	48735.67	16256.29
Wind 210 deg - No Ice		-25172.42	43403.25	17555.85
Wind 225 deg - No Ice		-35443.72	35672.06	17643.15
Wind 240 deg - No Ice		-44339.75	25721.27	14240.69
Wind 270 deg - No Ice		-49342.81	317.81	7002.43
Wind 300 deg - No Ice		-41400.26	-23994.18	-1313.74
Wind 315 deg - No Ice		-33713.83	-34322.53	-5215.11
Wind 330 deg - No Ice		-23758.10	-42475.05	-8761.40
Member Ice	6646.44			
Guy Ice	3447.39			
Total Weight Ice	66980.40			
Wind 0 deg - Ice		518.35	-53699.49	-11088.55
Wind 30 deg - Ice		27230.99	-46825.80	-14047.39
Wind 45 deg - Ice		38216.44	-38089.61	-13706.10
Wind 60 deg - Ice		46673.66	-26724.20	-14550.14
Wind 90 deg - Ice		54058.64	170.32	-10980.41
Wind 120 deg - Ice		46844.57	26537.00	-2830.70
Wind 135 deg - Ice		38014.79	37024.72	1112.66
Wind 150 deg - Ice		26953.94	45319.88	6366.69
Wind 180 deg - Ice		241.26	52398.14	12977.01
Wind 210 deg - Ice		-26764.09	46199.21	15552.88
Wind 225 deg - Ice		-37776.37	37946.37	16215.28
Wind 240 deg - Ice		-46608.60	26999.29	13919.25
Wind 270 deg - Ice		-52758.59	244.15	8594.36
Wind 300 deg - Ice		-44770.30	-25903.88	1573.13
Wind 315 deg - Ice		-36450.12	-36876.84	-2020.46
Wind 330 deg - Ice		-25660.58	-45461.59	-5486.13
Total Weight	39929.44			
Wind 0 deg - Service		178.19	-17658.44	-4833.60
Wind 30 deg - Service		8880.64	-15300.31	-5457.63
Wind 45 deg - Service		12430.63	-12403.76	-5013.51
Wind 60 deg - Service		15154.79	-8650.83	-5170.43
Wind 90 deg - Service		17639.11	111.17	-3437.46
Wind 120 deg - Service		15415.09	8736.26	-93.98

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Load Case	Vertical Forces <i>lb</i>	Sum of Forces <i>X</i> <i>lb</i>	Sum of Forces <i>Z</i> <i>lb</i>	Sum of Torques <i>lb-ft</i>
Wind 135 deg - Service		12344.02	11956.76	1395.59
Wind 150 deg - Service		8801.61	14634.57	3429.04
Wind 180 deg - Service		113.04	16863.55	5625.01
Wind 210 deg - Service		-8710.18	15018.42	6074.69
Wind 225 deg - Service		-12264.26	12343.27	6104.90
Wind 240 deg - Service		-15342.48	8900.09	4927.58
Wind 270 deg - Service		-17073.64	109.97	2422.99
Wind 300 deg - Service		-14325.35	-8302.48	-454.58
Wind 315 deg - Service		-11665.68	-11876.31	-1804.54
Wind 330 deg - Service		-8220.79	-14697.25	-3031.63

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice+Guy
3	Dead+Wind 30 deg - No Ice+Guy
4	Dead+Wind 45 deg - No Ice+Guy
5	Dead+Wind 60 deg - No Ice+Guy
6	Dead+Wind 90 deg - No Ice+Guy
7	Dead+Wind 120 deg - No Ice+Guy
8	Dead+Wind 135 deg - No Ice+Guy
9	Dead+Wind 150 deg - No Ice+Guy
10	Dead+Wind 180 deg - No Ice+Guy
11	Dead+Wind 210 deg - No Ice+Guy
12	Dead+Wind 225 deg - No Ice+Guy
13	Dead+Wind 240 deg - No Ice+Guy
14	Dead+Wind 270 deg - No Ice+Guy
15	Dead+Wind 300 deg - No Ice+Guy
16	Dead+Wind 315 deg - No Ice+Guy
17	Dead+Wind 330 deg - No Ice+Guy
18	Dead+Ice+Temp+Guy
19	Dead+Wind 0 deg+Ice+Temp+Guy
20	Dead+Wind 30 deg+Ice+Temp+Guy
21	Dead+Wind 45 deg+Ice+Temp+Guy
22	Dead+Wind 60 deg+Ice+Temp+Guy
23	Dead+Wind 90 deg+Ice+Temp+Guy
24	Dead+Wind 120 deg+Ice+Temp+Guy
25	Dead+Wind 135 deg+Ice+Temp+Guy
26	Dead+Wind 150 deg+Ice+Temp+Guy
27	Dead+Wind 180 deg+Ice+Temp+Guy
28	Dead+Wind 210 deg+Ice+Temp+Guy
29	Dead+Wind 225 deg+Ice+Temp+Guy
30	Dead+Wind 240 deg+Ice+Temp+Guy
31	Dead+Wind 270 deg+Ice+Temp+Guy
32	Dead+Wind 300 deg+Ice+Temp+Guy
33	Dead+Wind 315 deg+Ice+Temp+Guy
34	Dead+Wind 330 deg+Ice+Temp+Guy
35	Dead+Wind 0 deg - Service+Guy
36	Dead+Wind 30 deg - Service+Guy
37	Dead+Wind 45 deg - Service+Guy
38	Dead+Wind 60 deg - Service+Guy
39	Dead+Wind 90 deg - Service+Guy

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Comb. No.	Description
40	Dead+Wind 120 deg - Service+Guy
41	Dead+Wind 135 deg - Service+Guy
42	Dead+Wind 150 deg - Service+Guy
43	Dead+Wind 180 deg - Service+Guy
44	Dead+Wind 210 deg - Service+Guy
45	Dead+Wind 225 deg - Service+Guy
46	Dead+Wind 240 deg - Service+Guy
47	Dead+Wind 270 deg - Service+Guy
48	Dead+Wind 300 deg - Service+Guy
49	Dead+Wind 315 deg - Service+Guy
50	Dead+Wind 330 deg - Service+Guy

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
T1	282 - 262	Leg	Max Tension	22	7393.77	-240.82	141.00
			Max. Compression	27	-14540.91	11.61	450.79
			Max. Mx	20	-830.98	-771.40	309.84
			Max. My	27	-14466.40	-2.84	-845.74
			Max. Vy	24	-558.61	0.00	0.00
			Max. Vx	34	571.47	0.00	-0.00
		Diagonal	Max Tension	23	4639.19	0.00	0.00
			Max. Compression	32	-4080.80	0.00	0.00
			Max. Mx	24	2132.57	8.22	0.00
			Max. My	23	2588.02	0.00	0.08
			Max. Vy	24	-5.81	0.00	0.00
			Max. Vx	23	-0.06	0.00	0.00
		Secondary Horizontal	Max Tension	30	296.42	0.00	0.00
			Max. Compression	27	-251.86	0.00	0.00
			Max. Mx	18	140.39	-9.77	0.00
			Max. My	23	213.66	0.00	0.00
			Max. Vy	18	9.77	0.00	0.00
			Max. Vx	23	-0.00	0.00	0.00
		Top Girt	Max Tension	1	0.00	0.00	0.00
			Max. Compression	30	-2205.91	0.00	0.00
			Max. Mx	18	-1163.24	-15.23	0.00
			Max. My	23	-1369.38	0.00	0.00
			Max. Vy	18	15.23	0.00	0.00
			Max. Vx	23	-0.00	0.00	0.00
		Guy A	Bottom Tension	27	17450.70		
			Top Tension	27	18015.42		
			Top Cable Vert	27	14905.61		
			Top Cable Norm	27	10118.21		
			Top Cable Tan	27	2.28		
			Bot Cable Vert	27	-13658.51		
		Guy B	Bot Cable Norm	27	10861.50		
			Bot Cable Tan	27	2.28		
			Bottom Tension	32	17417.35		
			Top Tension	32	17945.78		
			Top Cable Vert	32	14832.60		
			Top Cable Norm	32	10101.73		
		Guy C	Top Cable Tan	32	1.18		
			Bot Cable Vert	32	-13654.61		
			Bot Cable Norm	32	10812.75		
			Bot Cable Tan	32	1.18		
			Bottom Tension	22	17585.68		

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
T2	262 - 242	Leg	Top Tension	22	18133.16		
			Top Cable Vert	22	14977.78		
			Top Cable Norm	22	10221.43		
			Top Cable Tan	22	3.49		
			Bot Cable Vert	22	-13761.95		
			Bot Cable Norm	22	10948.27		
			Bot Cable Tan	22	3.49		
			Max Tension	13	12639.54	-86.22	52.40
			Max. Compression	27	-27480.63	-1.06	6.92
			Max. Mx	20	-18395.69	-484.67	167.79
			Max. My	27	-19970.04	-42.19	-515.76
			Max. Vy	21	-368.86	-478.89	208.04
			Max. Vx	27	-393.06	-42.19	-515.76
		Diagonal	Max Tension	27	2646.92	0.00	0.00
			Max. Compression	27	-2332.75	0.00	0.00
			Max. Mx	24	1423.67	8.22	0.00
			Max. My	23	1559.10	0.00	0.08
			Max. Vy	24	-5.81	0.00	0.00
			Max. Vx	23	-0.06	0.00	0.00
		Secondary Horizontal	Max Tension	27	475.98	0.00	0.00
			Max. Compression	27	-475.98	0.00	0.00
			Max. Mx	32	134.03	-9.77	0.00
			Max. My	23	233.35	0.00	0.00
			Max. Vy	18	9.77	0.00	0.00
			Max. Vx	23	-0.00	0.00	0.00
T3	242 - 222	Leg	Max Tension	13	19081.25	-26.84	19.39
			Max. Compression	27	-31143.53	-6.21	-111.01
			Max. Mx	20	-26848.65	-169.59	60.69
			Max. My	27	-29721.91	-0.62	-184.11
			Max. Vy	6	-1058.51	-27.93	133.63
			Max. Vx	10	-1124.72	-7.39	-104.94
		Diagonal	Max Tension	33	1703.93	0.00	0.00
			Max. Compression	34	-2096.39	0.00	0.00
			Max. Mx	24	-219.85	8.21	0.00
			Max. My	23	-778.12	0.00	0.06
			Max. Vy	24	-5.80	0.00	0.00
			Max. Vx	23	-0.05	0.00	0.00
		Secondary Horizontal	Max Tension	27	539.42	0.00	0.00
			Max. Compression	27	-539.42	0.00	0.00
			Max. Mx	25	469.60	-9.77	0.00
			Max. My	23	274.06	0.00	0.00
			Max. Vy	25	9.77	0.00	0.00
			Max. Vx	23	-0.00	0.00	0.00
T4	222 - 202	Leg	Max Tension	13	14236.02	8.65	-4.70
			Max. Compression	28	-26887.64	-100.17	-77.12
			Max. Mx	5	-13502.00	816.44	-48.99
			Max. My	3	-6968.51	62.47	-741.64
			Max. Vy	5	-830.60	-419.14	11.64
			Max. Vx	3	737.03	-51.79	354.28
		Diagonal	Max Tension	3	4370.34	0.00	0.00
			Max. Compression	3	-4214.59	0.00	0.00
			Max. Mx	24	-1354.77	25.72	0.00
			Max. My	23	-1381.32	0.00	0.16
			Max. Vy	24	-18.18	0.00	0.00
			Max. Vx	23	0.11	0.00	0.00
		Secondary Horizontal	Max Tension	28	465.71	0.00	0.00
			Max. Compression	28	-465.71	0.00	0.00
			Max. Mx	18	210.55	-9.77	0.00

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
T5	202 - 182	Leg	Max. My	23	346.32	0.00	0.00
			Max. Vy	18	9.77	0.00	0.00
			Max. Vx	23	-0.00	0.00	0.00
			Max Tension	15	7894.76	41.87	129.29
			Max. Compression	28	-42969.90	7.09	-355.86
			Max. Mx	6	-19503.97	364.81	40.78
			Max. My	27	-42249.99	7.76	-367.46
			Max. Vy	6	277.83	-173.37	-42.02
			Max. Vx	27	278.25	7.76	-367.46
		Diagonal	Max Tension	3	5113.59	0.00	0.00
			Max. Compression	27	-9318.51	0.00	0.00
			Max. Mx	24	2166.19	25.71	0.00
			Max. My	23	-2271.40	0.00	0.15
			Max. Vy	24	-18.18	0.00	0.00
			Max. Vx	23	0.11	0.00	0.00
		Secondary Horizontal	Max Tension	28	744.26	0.00	0.00
			Max. Compression	28	-744.26	0.00	0.00
			Max. Mx	18	367.77	-9.77	0.00
			Max. My	23	613.07	0.00	0.00
			Max. Vy	18	9.77	0.00	0.00
			Max. Vx	23	-0.00	0.00	0.00
		Guy A	Bottom Tension	27	16889.88		
			Top Tension	27	17220.84		
			Top Cable Vert	27	12635.21		
			Top Cable Norm	27	11700.79		
			Top Cable Tan	27	11.53		
			Bot Cable Vert	27	-11813.28		
		Guy B	Bot Cable Norm	27	12071.22		
			Bot Cable Tan	27	11.81		
			Bottom Tension	32	16708.89		
			Top Tension	32	17011.63		
			Top Cable Vert	32	12340.02		
			Top Cable Norm	32	11709.80		
		Guy C	Top Cable Tan	32	10.55		
			Bot Cable Vert	32	-11573.51		
			Bot Cable Norm	32	12051.58		
			Bot Cable Tan	32	12.97		
			Bottom Tension	21	17521.99		
			Top Tension	21	17839.28		
		Top Guy Pull-Off	Top Cable Vert	21	12990.35		
			Top Cable Norm	21	12226.51		
			Top Cable Tan	21	54.33		
			Bot Cable Vert	21	-12194.48		
			Bot Cable Norm	21	12581.86		
			Bot Cable Tan	21	107.43		
		Bottom Guy Pull-Off	Max Tension	22	19758.44	0.00	0.00
			Max. Compression	2	-5390.08	0.00	0.00
			Max. Mx	18	4516.80	-26.45	0.00
			Max. My	23	17954.42	0.00	0.00
			Max. Vy	18	26.45	0.00	0.00
			Max. Vx	23	-0.00	0.00	0.00
		Torque Arm Top	Max Tension	32	3175.78	0.00	0.00
			Max. Compression	2	-3069.34	0.00	0.00
			Max. Mx	18	452.01	-26.45	0.00
			Max. My	23	2904.06	0.00	0.00
			Max. Vy	18	26.45	0.00	0.00
			Max. Vx	23	-0.00	0.00	0.00
		Torque Arm Top	Max Tension	23	22589.26	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
T6	182 - 162	Torque Arm Bottom	Max. Mx	24	6287.14	-89.26	0.00
			Max. My	23	12513.64	0.00	0.14
			Max. Vy	24	47.71	0.00	0.00
			Max. Vx	23	-0.08	0.00	0.00
			Max Tension	2	936.88	0.00	0.00
			Max. Compression	21	-22965.44	0.00	0.00
			Max. Mx	24	-15938.27	-89.31	0.00
			Max. My	23	-497.36	0.00	-0.16
			Max. Vy	24	47.74	0.00	0.00
			Max. Vx	23	-0.08	0.00	0.00
		Leg	Max Tension	7	13061.76	-256.66	-145.47
			Max. Compression	27	-58088.77	14.15	-574.49
			Max. Mx	6	-45271.66	1022.42	-192.05
			Max. My	27	-57035.00	4.18	1100.82
			Max. Vy	6	-771.85	-515.49	195.58
			Max. Vx	27	-871.08	-1.30	-628.40
		Diagonal	Max Tension	23	2041.00	0.00	0.00
			Max. Compression	23	-2025.49	0.00	0.00
			Max. Mx	27	398.93	8.19	0.00
			Max. My	23	504.93	0.00	0.04
			Max. Vy	27	-5.79	0.00	0.00
			Max. Vx	23	-0.03	0.00	0.00
		Secondary Horizontal	Max Tension	27	1006.13	0.00	0.00
			Max. Compression	27	-1006.13	0.00	0.00
			Max. Mx	18	402.52	-9.77	0.00
			Max. My	23	667.01	0.00	0.00
			Max. Vy	18	9.77	0.00	0.00
			Max. Vx	23	-0.00	0.00	0.00
T7	162 - 142	Leg	Max Tension	7	10086.33	-321.42	-184.30
			Max. Compression	27	-55495.37	-26.28	-121.04
			Max. Mx	6	-44038.14	-484.95	181.52
			Max. My	27	-55392.72	14.15	-574.49
			Max. Vy	12	492.41	133.78	-291.31
			Max. Vx	3	631.90	-219.75	264.68
		Diagonal	Max Tension	28	3847.85	0.00	0.00
			Max. Compression	29	-3937.35	0.00	0.00
			Max. Mx	28	3847.85	8.20	0.00
			Max. My	27	-644.91	0.00	-0.05
			Max. Vy	28	-5.80	0.00	0.00
			Max. Vx	27	0.04	0.00	0.00
		Secondary Horizontal	Max Tension	27	961.21	0.00	0.00
			Max. Compression	27	-961.21	0.00	0.00
			Max. Mx	33	607.61	-9.77	0.00
			Max. My	27	961.21	0.00	-0.00
			Max. Vy	33	9.77	0.00	0.00
			Max. Vx	27	0.00	0.00	0.00
T8	142 - 122	Leg	Max Tension	5	4579.52	-137.91	175.75
			Max. Compression	23	-50106.82	-167.41	-367.16
			Max. Mx	30	-40409.46	411.98	131.32
			Max. My	26	-36542.87	-135.90	-444.81
			Max. Vy	6	-343.48	-370.60	-78.86
			Max. Vx	2	308.84	27.82	330.02
		Diagonal	Max Tension	28	4941.05	0.00	0.00
			Max. Compression	20	-11681.80	0.00	0.00
			Max. Mx	28	4088.14	25.74	0.00
			Max. My	27	-817.10	0.00	-0.15
			Max. Vy	28	-18.20	0.00	0.00
			Max. Vx	27	0.11	0.00	0.00
		Secondary	Max Tension	23	867.88	0.00	0.00

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	Client	Verizon	Designed by	kevin_barker

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
Horizontal							
			Max. Compression	23	-867.88	0.00	0.00
			Max. Mx	22	805.87	-9.77	0.00
			Max. My	27	788.21	0.00	-0.00
			Max. Vy	22	9.77	0.00	0.00
			Max. Vx	27	0.00	0.00	0.00
Guy A			Bottom Tension	28	16441.81		
			Top Tension	28	16643.50		
			Top Cable Vert	28	9893.79		
			Top Cable Norm	28	13383.36		
			Top Cable Tan	28	68.12		
			Bot Cable Vert	28	-9338.00		
			Bot Cable Norm	28	13531.72		
			Bot Cable Tan	28	164.95		
Guy B			Bottom Tension	33	15882.89		
			Top Tension	33	16060.25		
			Top Cable Vert	33	9146.01		
			Top Cable Norm	33	13201.55		
			Top Cable Tan	33	30.71		
			Bot Cable Vert	33	-8642.37		
			Bot Cable Norm	33	13325.45		
			Bot Cable Tan	33	90.54		
Guy C			Bottom Tension	21	16761.29		
			Top Tension	21	16951.71		
			Top Cable Vert	21	9856.32		
			Top Cable Norm	21	13791.78		
			Top Cable Tan	21	17.79		
			Bot Cable Vert	21	-9328.91		
			Bot Cable Norm	21	13925.02		
			Bot Cable Tan	21	77.10		
Top Guy Pull-Off			Max Tension	22	22854.36	0.00	0.00
			Max. Compression	19	-5461.78	0.00	0.00
			Max. Mx	22	22854.35	-26.45	0.00
			Max. My	27	573.85	0.00	0.00
			Max. Vy	22	26.45	0.00	0.00
			Max. Vx	27	-0.00	0.00	0.00
Bottom Guy Pull-Off			Max Tension	32	10452.32	0.00	0.00
			Max. Compression	2	-2593.10	0.00	0.00
			Max. Mx	22	10389.52	-26.45	0.00
			Max. My	27	1086.14	0.00	-0.00
			Max. Vy	22	26.45	0.00	0.00
			Max. Vx	27	0.00	0.00	0.00
Torque Arm Top			Max Tension	23	20727.82	0.00	0.00
			Max. Compression	1	0.00	0.00	0.00
			Max. Mx	28	19155.88	-89.27	0.00
			Max. My	27	6099.89	0.00	-0.12
			Max. Vy	28	47.72	0.00	0.00
			Max. Vx	27	0.06	0.00	0.00
Torque Arm Bottom			Max Tension	6	4756.05	0.00	0.00
			Max. Compression	20	-20487.49	0.00	0.00
			Max. Mx	28	-10150.45	-89.29	0.00
			Max. My	27	-19522.33	0.00	0.09
			Max. Vy	28	47.73	0.00	0.00
			Max. Vx	27	-0.05	0.00	0.00
Leg			Max Tension	1	0.00	0.00	0.00
T9	122 - 102		Max. Compression	23	-69859.62	-452.19	202.36
			Max. Mx	6	-58829.55	663.01	-18.60
			Max. My	17	-42468.31	-133.02	-814.05
			Max. Vy	7	-717.02	-415.87	-91.05
			Max. Vx	17	830.77	-10.09	427.00

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	Client	Verizon	Designed by	kevin_barker

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
T10	102 - 82	Diagonal	Max Tension	20	4568.17	0.00	0.00
			Max. Compression	19	-4479.30	0.00	0.00
			Max. Mx	28	-345.73	25.75	0.00
			Max. My	29	1619.50	0.00	-0.14
			Max. Vy	28	-18.21	0.00	0.00
			Max. Vx	29	-0.10	0.00	0.00
		Secondary Horizontal	Max Tension	23	1210.00	0.00	0.00
			Max. Compression	23	-1210.00	0.00	0.00
			Max. Mx	22	783.99	-9.77	0.00
			Max. My	26	1128.15	0.00	0.00
			Max. Vy	22	9.77	0.00	0.00
			Max. Vx	26	-0.00	0.00	0.00
		Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	23	-74354.41	-583.89	564.72
			Max. Mx	19	-60328.48	815.01	123.54
			Max. My	25	-68598.45	270.13	-788.44
			Max. Vy	19	-611.18	815.01	123.54
			Max. Vx	25	631.54	270.13	-788.44
		Diagonal	Max Tension	25	2066.18	0.00	0.00
			Max. Compression	26	-2874.30	0.00	0.00
			Max. Mx	29	-597.35	8.23	0.00
			Max. My	30	-2514.47	0.00	-0.06
			Max. Vy	29	-5.82	0.00	0.00
			Max. Vx	30	0.04	0.00	0.00
		Secondary Horizontal	Max Tension	23	1287.86	0.00	0.00
			Max. Compression	23	-1287.86	0.00	0.00
			Max. Mx	22	605.11	-9.77	0.00
			Max. My	29	1195.17	0.00	-0.00
			Max. Vy	22	9.77	0.00	0.00
			Max. Vx	29	0.00	0.00	0.00
T11	82 - 62	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	23	-73077.74	387.72	-475.78
			Max. Mx	19	-69009.91	-1604.68	300.27
			Max. My	29	-63157.02	-461.12	-1599.33
			Max. Vy	19	1050.71	494.79	-185.12
			Max. Vx	29	-1069.63	-461.15	-1599.32
		Diagonal	Max Tension	27	4467.88	0.00	0.00
			Max. Compression	27	-4021.27	0.00	0.00
			Max. Mx	25	-3484.14	8.24	0.00
			Max. My	30	-2701.67	0.00	-0.08
			Max. Vy	25	-5.83	0.00	0.00
			Max. Vx	30	0.05	0.00	0.00
		Secondary Horizontal	Max Tension	23	1265.74	0.00	0.00
			Max. Compression	23	-1265.74	0.00	0.00
			Max. Mx	18	690.16	-9.77	0.00
			Max. My	29	1181.18	0.00	-0.00
			Max. Vy	18	9.77	0.00	0.00
			Max. Vx	29	0.00	0.00	0.00
		Guy A	Bottom Tension	28	12743.23		
			Top Tension	28	12851.02		
			Top Cable Vert	28	5375.99		
			Top Cable Norm	28	11672.40		
			Top Cable Tan	28	49.55		
			Bot Cable Vert	28	-5002.76		
		Guy B	Bot Cable Norm	28	11719.60		
			Bot Cable Tan	28	115.11		
			Bottom Tension	32	12292.24		
			Top Tension	32	12379.20		

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
T12	62 - 42	Guy C	Top Cable Vert	32	4542.10		
			Top Cable Norm	32	11515.81		
			Top Cable Tan	32	1.37		
			Bot Cable Vert	32	-4238.86		
			Bot Cable Norm	32	11538.25		
			Bot Cable Tan	32	1.37		
			Bottom Tension	21	12631.31		
			Top Tension	21	12729.35		
			Top Cable Vert	21	5015.10		
			Top Cable Norm	21	11699.79		
			Top Cable Tan	21	9.93		
			Bot Cable Vert	21	-4677.92		
			Bot Cable Norm	21	11733.05		
			Bot Cable Tan	21	50.65		
		Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	23	-85696.31	-70.03	5.69
			Max. Mx	19	-72410.71	-1179.79	184.15
			Max. My	25	-73847.77	386.88	-1140.92
			Max. Vy	19	-812.34	442.83	-201.68
			Max. Vx	25	-827.44	386.88	-1140.92
		Diagonal	Max Tension	27	3155.64	0.00	0.00
			Max. Compression	27	-2877.51	0.00	0.00
			Max. Mx	25	219.86	8.27	0.00
			Max. My	30	1235.67	0.00	-0.09
			Max. Vy	25	-5.85	0.00	0.00
		Secondary Horizontal	Max. Vx	30	0.06	0.00	0.00
			Max Tension	23	1484.30	0.00	0.00
			Max. Compression	23	-1484.30	0.00	0.00
			Max. Mx	18	687.81	-9.77	0.00
			Max. My	29	1367.57	0.00	-0.00
			Max. Vy	18	9.77	0.00	0.00
			Max. Vx	29	0.00	0.00	0.00
T13	42 - 22	Leg	Max Tension	1	0.00	0.00	0.00
			Max. Compression	21	-84903.88	-145.01	85.04
			Max. Mx	19	-71773.91	668.36	126.00
			Max. My	25	-77137.48	197.94	-662.77
			Max. Vy	20	-533.97	-640.97	209.29
			Max. Vx	28	-561.24	-134.20	-651.82
		Diagonal	Max Tension	29	1561.60	0.00	0.00
			Max. Compression	29	-2250.61	0.00	0.00
			Max. Mx	25	992.99	8.30	0.00
			Max. My	30	-187.01	0.00	-0.11
			Max. Vy	25	-5.87	0.00	0.00
		Secondary Horizontal	Max. Vx	30	0.08	0.00	0.00
			Max Tension	21	1470.58	0.00	0.00
			Max. Compression	21	-1470.58	0.00	0.00
			Max. Mx	18	698.73	-9.77	0.00
		Leg	Max. My	29	1359.21	0.00	-0.00
			Max. Vy	18	9.77	0.00	0.00
			Max. Vx	29	0.00	0.00	0.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	21	-75613.38	-189.84	101.56
			Max. Mx	19	-67483.68	511.31	154.16
			Max. My	25	-71520.13	104.06	-535.83
			Max. Vy	20	-435.88	-501.94	207.39
			Max. Vx	28	-474.28	-69.02	-533.30
		Diagonal	Max Tension	20	2824.15	0.00	0.00
			Max. Compression	20	-3569.34	0.00	0.00
			Max. Mx	25	2128.61	8.31	0.00

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
		Secondary Horizontal	Max. My	24	-156.57	0.00	0.12
			Max. Vy	25	-5.88	0.00	0.00
			Max. Vx	24	-0.08	0.00	0.00
			Max Tension	21	1309.66	0.00	0.00
			Max. Compression	21	-1309.66	0.00	0.00
		Base Beam	Max. Mx	18	708.60	-9.77	0.00
			Max. My	29	1239.48	0.00	-0.00
			Max. Vy	18	9.77	0.00	0.00
			Max. Vx	29	0.00	0.00	0.00
			Max Tension	24	3384.60	-128264.61	66.96
			Max. Compression	22	-2645.40	370.81	1.36
			Max. Mx	24	-55737.18	-128338.23	-1786.83
			Max. My	23	-54810.47	-126228.49	2944.26
			Max. Vy	24	-55737.18	-128338.23	-1786.83
			Max. Vx	23	1272.73	-126228.49	2944.26

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Guy C @ 213 ft Elev -17.5 ft Azimuth 240 deg	Max. Vert	13	-1776.12	-1213.91	699.96
	Max. H _x	13	-1776.12	-1213.91	699.96
	Max. H _z	21	-60204.44	-63964.39	37706.64
	Min. Vert	21	-60204.44	-63964.39	37706.64
	Min. H _x	22	-60188.39	-64134.61	37086.97
	Min. H _z	13	-1776.12	-1213.91	699.96
Guy B @ 205 ft Elev -7.5 ft Azimuth 120 deg	Max. Vert	7	-1710.12	1177.60	679.60
	Max. H _x	32	-58153.87	63107.11	36448.02
	Max. H _z	33	-57803.45	62550.55	36806.94
	Min. Vert	32	-58153.87	63107.11	36448.02
	Min. H _x	7	-1710.12	1177.60	679.60
	Min. H _z	7	-1710.12	1177.60	679.60
Guy A @ 219 ft Elev -26.5 ft Azimuth 0 deg	Max. Vert	2	-1898.94	-0.52	-1476.56
	Max. H _x	31	-32966.94	2907.89	-38950.26
	Max. H _z	2	-1898.94	-0.52	-1476.56
	Min. Vert	27	-60001.05	37.58	-72516.93
	Min. H _x	23	-32998.85	-2930.47	-39129.79
	Min. H _z	27	-60001.05	37.58	-72516.93
Mast	Max. Vert	24	167226.01	-2690.95	-1419.17
	Max. H _x	31	163111.84	3192.52	242.36
	Max. H _z	19	165867.50	-7.87	3171.95
	Max. M _x	1	0.00	-11.31	136.89
	Max. M _z	1	0.00	-11.31	136.89
	Max. Torsion	5	2563.54	-2516.51	1523.39
	Min. Vert	1	85780.18	-11.31	136.89
	Min. H _x	23	164525.79	-3152.47	265.38
	Min. H _z	27	157674.73	-3.80	-3226.92
	Min. M _x	1	0.00	-11.31	136.89
	Min. M _z	1	0.00	-11.31	136.89

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Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
	Min. Torsion	10	-2894.42	13.33	-2783.23

Tower Mast Reaction Summary

Load Combination	Vertical lb	Shear _x lb	Shear _z lb	Overturning Moment, M _x lb-ft	Overturning Moment, M _z lb-ft	Torque lb-ft
Dead Only	85780.18	11.31	-136.89	0.00	0.00	0.01
Dead+ Wind 0 deg - No Ice+Guy	127574.63	0.33	-2793.89	0.00	0.00	-2170.00
Dead+ Wind 30 deg - No Ice+Guy	122777.42	1438.62	-2364.38	0.00	0.00	-2312.49
Dead+ Wind 45 deg - No Ice+Guy	116147.81	2053.61	-2010.23	0.00	0.00	-2238.84
Dead+ Wind 60 deg - No Ice+Guy	111193.67	2516.51	-1523.39	0.00	0.00	-2563.54
Dead+ Wind 90 deg - No Ice+Guy	122892.00	2755.79	-212.77	0.00	0.00	-1591.11
Dead+ Wind 120 deg - No Ice+Guy	129005.35	2364.47	1233.89	0.00	0.00	-112.55
Dead+ Wind 135 deg - No Ice+Guy	125934.55	1865.86	1811.53	0.00	0.00	644.34
Dead+ Wind 150 deg - No Ice+Guy	121727.88	1317.72	2318.23	0.00	0.00	1504.68
Dead+ Wind 180 deg - No Ice+Guy	110256.12	-13.33	2783.23	0.00	0.00	2894.42
Dead+ Wind 210 deg - No Ice+Guy	122258.25	-1296.45	2282.91	0.00	0.00	2674.98
Dead+ Wind 225 deg - No Ice+Guy	126211.04	-1846.68	1781.36	0.00	0.00	2642.09
Dead+ Wind 240 deg - No Ice+Guy	128536.58	-2359.91	1232.76	0.00	0.00	2315.77
Dead+ Wind 270 deg - No Ice+Guy	120582.01	-2813.47	-183.97	0.00	0.00	1333.30
Dead+ Wind 300 deg - No Ice+Guy	110087.57	-2559.23	-1534.83	0.00	0.00	-235.85
Dead+ Wind 315 deg - No Ice+Guy	114106.27	-2084.60	-2077.32	0.00	0.00	-997.56
Dead+ Wind 330 deg - No Ice+Guy	120027.76	-1464.61	-2462.30	0.00	0.00	-1538.16
Dead+Ice+Temp+Guy	123218.87	25.04	-114.72	0.00	0.00	1.06
Dead+ Wind 0 deg+Ice+Temp+Guy	165867.50	7.87	-3171.95	0.00	0.00	-2012.97
Dead+ Wind 30 deg+Ice+Temp+Guy	164641.51	1706.74	-2653.13	0.00	0.00	-2045.09
Dead+ Wind 45 deg+Ice+Temp+Guy	161095.51	2410.37	-2236.26	0.00	0.00	-2129.04
Dead+ Wind 60 deg+Ice+Temp+Guy	158597.24	2915.66	-1731.16	0.00	0.00	-2551.75
Dead+ Wind 90 deg+Ice+Temp+Guy	164525.79	3152.47	-265.38	0.00	0.00	-2141.14
Dead+ Wind 120 deg+Ice+Temp+Guy	167226.01	2690.95	1419.17	0.00	0.00	-397.05
Dead+ Wind 135 deg+Ice+Temp+Guy	166037.87	2131.24	2117.27	0.00	0.00	563.51
Dead+ Wind 150 deg+Ice+Temp+Guy	163656.87	1460.84	2686.18	0.00	0.00	1518.72

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Load Combination	Vertical lb	Shear _x lb	Shear _z lb	Overturning Moment, M _x lb-ft	Overturning Moment, M _z lb-ft	Torque lb-ft
Dead+ Wind 180	157674.73	3.80	3226.92	0.00	0.00	2454.49
deg+Ice+Temp+Guy						
Dead+ Wind 210	164221.40	-1407.09	2646.73	0.00	0.00	2357.06
deg+Ice+Temp+Guy						
Dead+ Wind 225	166201.59	-2088.78	2086.01	0.00	0.00	2474.96
deg+Ice+Temp+Guy						
Dead+ Wind 240	166729.75	-2671.45	1417.69	0.00	0.00	2430.97
deg+Ice+Temp+Guy						
Dead+ Wind 270	163111.84	-3192.52	-242.36	0.00	0.00	1919.20
deg+Ice+Temp+Guy						
Dead+ Wind 300	158068.49	-2943.81	-1746.91	0.00	0.00	165.45
deg+Ice+Temp+Guy						
Dead+ Wind 315	159842.20	-2422.63	-2322.20	0.00	0.00	-870.39
deg+Ice+Temp+Guy						
Dead+ Wind 330	162728.65	-1715.57	-2763.21	0.00	0.00	-1552.75
deg+Ice+Temp+Guy						
Dead+ Wind 0 deg - Service+Guy	88337.30	11.64	-1258.48	0.00	0.00	-707.55
Dead+ Wind 30 deg - Service+Guy	88105.68	549.50	-1070.18	0.00	0.00	-739.29
Dead+ Wind 45 deg - Service+Guy	88009.50	772.40	-891.53	0.00	0.00	-688.02
Dead+ Wind 60 deg - Service+Guy	87931.42	943.49	-666.32	0.00	0.00	-709.80
Dead+ Wind 90 deg - Service+Guy	87811.76	1117.96	-122.20	0.00	0.00	-505.22
Dead+ Wind 120 deg - Service+Guy	87903.81	1021.15	447.29	0.00	0.00	-17.45
Dead+ Wind 135 deg - Service+Guy	87665.48	811.86	651.18	0.00	0.00	230.32
Dead+ Wind 150 deg - Service+Guy	87533.81	574.35	819.53	0.00	0.00	503.40
Dead+ Wind 180 deg - Service+Guy	87547.83	5.41	945.66	0.00	0.00	773.36
Dead+ Wind 210 deg - Service+Guy	87727.05	-556.49	813.48	0.00	0.00	833.06
Dead+ Wind 225 deg - Service+Guy	87908.13	-790.61	645.83	0.00	0.00	841.21
Dead+ Wind 240 deg - Service+Guy	88158.93	-996.95	447.46	0.00	0.00	735.12
Dead+ Wind 270 deg - Service+Guy	88042.28	-1102.66	-116.80	0.00	0.00	400.36
Dead+ Wind 300 deg - Service+Guy	88151.71	-933.94	-668.47	0.00	0.00	-58.24
Dead+ Wind 315 deg - Service+Guy	88148.77	-760.35	-900.14	0.00	0.00	-287.13
Dead+ Wind 330 deg - Service+Guy	88124.08	-534.11	-1082.58	0.00	0.00	-478.85

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
1	0.00	-39929.02	0.00	5.95	39929.06	15.13	0.041%
2	504.37	-40193.96	-56287.27	-502.55	40191.38	56192.58	0.137%
3	28289.86	-39903.55	-48752.26	-28297.75	39901.39	48663.15	0.130%
4	39655.16	-39697.05	-39544.09	-39672.97	39695.50	39461.82	0.123%

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Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
5	48367.75	-39619.38	-27622.53	-48343.09	39619.49	27684.03	0.097%
6	56256.05	-39960.50	332.24	-56183.51	39958.37	-275.99	0.133%
7	49139.29	-40293.46	27892.80	-49047.87	40290.53	-27837.58	0.154%
8	39428.13	-40205.60	38274.75	-39338.54	40202.91	-38226.46	0.150%
9	28084.82	-39985.96	46846.79	-27998.43	39983.73	-46807.51	0.140%
10	337.29	-39664.08	53990.06	-274.57	39664.04	-53995.43	0.094%
11	-27797.22	-39954.49	47937.61	27715.58	39952.30	-47897.97	0.133%
12	-39174.35	-40161.00	39369.28	39090.15	40158.43	-39321.56	0.141%
13	-48910.15	-40238.66	28342.90	48826.18	40235.95	-28289.96	0.143%
14	-54621.82	-39897.55	306.85	54555.99	39895.64	-253.67	0.125%
15	-45989.95	-39564.59	-26639.18	46015.84	39565.05	26650.63	0.043%
16	-37467.75	-39652.45	-38042.24	37486.50	39651.20	37969.92	0.112%
17	-26406.26	-39872.08	-47027.93	26417.16	39870.19	46946.49	0.123%
18	0.00	-66979.63	0.00	-2.34	66979.61	-2.38	0.005%
19	497.52	-67509.21	-63837.87	-495.60	67506.71	63738.33	0.107%
20	32294.97	-66928.72	-55573.02	-32310.57	66926.64	55475.47	0.106%
21	45416.12	-66516.05	-45221.24	-45443.33	66514.65	45131.20	0.102%
22	55493.24	-66360.63	-31782.70	-55432.29	66359.59	31779.93	0.066%
23	64244.13	-67042.31	192.10	-64168.74	67040.26	-124.30	0.109%
24	55702.50	-67707.81	31641.68	-55611.12	67705.07	-31585.85	0.115%
25	45260.70	-67532.05	44200.61	-45166.17	67529.45	-44153.73	0.114%
26	32064.09	-67093.22	54103.51	-31965.56	67091.00	-54066.84	0.114%
27	262.09	-66450.05	62536.51	-232.71	66448.92	-62480.71	0.069%
28	-31828.07	-67030.54	54946.43	31734.77	67028.41	-54908.89	0.109%
29	-44976.05	-67443.22	45078.01	44883.50	67440.66	-45029.58	0.113%
30	-55428.18	-67598.63	32057.79	55340.14	67596.00	-32001.68	0.112%
31	-62944.08	-66916.95	222.37	62877.42	66915.21	-160.36	0.099%
32	-53628.22	-66251.45	-31008.56	53615.38	66251.00	30986.35	0.028%
33	-43696.03	-66427.21	-44052.73	43724.84	66426.02	43968.00	0.098%
34	-30770.73	-66866.04	-54245.22	30788.48	66864.30	54158.41	0.097%
35	174.52	-40020.70	-19476.57	-173.76	40020.41	19451.82	0.056%
36	9788.88	-39920.21	-16869.29	-9792.05	39919.99	16844.90	0.055%
37	13721.51	-39848.75	-13683.07	-13725.69	39848.59	13657.97	0.057%
38	16736.24	-39821.88	-9557.97	-16717.58	39821.72	9548.27	0.048%
39	19465.76	-39939.91	114.96	-19448.20	39939.75	-97.99	0.055%
40	17003.22	-40055.12	9651.49	-16983.00	40054.85	-9638.68	0.054%
41	13642.95	-40024.72	13243.86	-13621.61	40024.48	-13233.10	0.054%
42	9717.93	-39948.73	16209.96	-9695.38	39948.55	-16201.64	0.054%
43	116.71	-39837.35	18681.68	-116.35	39837.20	-18661.46	0.046%
44	-9618.42	-39937.83	16587.41	9595.64	39937.64	-16578.08	0.056%
45	-13555.14	-40009.29	13622.59	13532.47	40009.02	-13610.37	0.058%
46	-16923.93	-40036.16	9807.23	16904.46	40035.90	-9794.11	0.053%
47	-18900.28	-39918.13	106.18	18885.43	39918.01	-90.76	0.048%
48	-15913.48	-39802.92	-9217.71	15897.37	39802.77	9209.25	0.042%
49	-12964.62	-39833.32	-13163.40	12969.46	39833.20	13141.64	0.051%
50	-9137.11	-39909.32	-16272.64	9141.32	39909.16	16251.75	0.048%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	20	0.00000001	0.00004916
2	Yes	96	0.00019272	0.00008943
3	Yes	91	0.00019372	0.00007857
4	Yes	86	0.00019544	0.00005732
5	Yes	33	0.00019570	0.00015700

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6	Yes	98	0.00019331	0.00007300
7	Yes	101	0.00019970	0.00009178
8	Yes	99	0.00019916	0.00008624
9	Yes	96	0.00019899	0.00007643
10	Yes	36	0.00019248	0.00016699
11	Yes	94	0.00019190	0.00007840
12	Yes	97	0.00019350	0.00008742
13	Yes	99	0.00019366	0.00009082
14	Yes	94	0.00019586	0.00007059
15	Yes	29	0.00018075	0.00012914
16	Yes	84	0.00019307	0.00004979
17	Yes	90	0.00019436	0.00007107
18	Yes	12	0.00020000	0.00018082
19	Yes	98	0.00019545	0.00006803
20	Yes	93	0.00019797	0.00005928
21	Yes	87	0.00019139	0.00003944
22	Yes	25	0.00019857	0.00018202
23	Yes	100	0.00019516	0.00005088
24	Yes	104	0.00019247	0.00006451
25	Yes	102	0.00019207	0.00006094
26	Yes	98	0.00019873	0.00005369
27	Yes	30	0.00019730	0.00015931
28	Yes	96	0.00019471	0.00005805
29	Yes	99	0.00019569	0.00006612
30	Yes	101	0.00019656	0.00006819
31	Yes	97	0.00019276	0.00004937
32	Yes	22	0.00011854	0.00017806
33	Yes	84	0.00019762	0.00003604
34	Yes	93	0.00019140	0.00005116
35	Yes	41	0.00019268	0.00004520
36	Yes	37	0.00019150	0.00003961
37	Yes	31	0.00019855	0.00004250
38	Yes	20	0.00000001	0.00006744
39	Yes	38	0.00019390	0.00005025
40	Yes	44	0.00018962	0.00005972
41	Yes	41	0.00019374	0.00005989
42	Yes	37	0.00018961	0.00005444
43	Yes	20	0.00000001	0.00007685
44	Yes	37	0.00018705	0.00005109
45	Yes	40	0.00019954	0.00005985
46	Yes	43	0.00018125	0.00005486
47	Yes	37	0.00000001	0.00004066
48	Yes	19	0.00000001	0.00007080
49	Yes	30	0.00000001	0.00004157
50	Yes	36	0.00000001	0.00003636

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	282 - 262	2.474	43	0.1174	0.1002
T2	262 - 242	2.859	43	0.1168	0.0906
T3	242 - 222	3.195	43	0.0902	0.0831
T4	222 - 202	3.376	43	0.0513	0.0886
T5	202 - 182	3.403	43	0.0373	0.0859
T6	182 - 162	3.456	44	0.0482	0.0841
T7	162 - 142	3.404	44	0.0539	0.0833
T8	142 - 122	3.229	46	0.0834	0.0658
T9	122 - 102	3.125	35	0.0570	0.0606

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Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T10	102 - 82	3.125	35	0.0682	0.0712
T11	82 - 62	2.926	35	0.0929	0.0603
T12	62 - 42	2.527	35	0.1176	0.0482
T13	42 - 22	1.916	35	0.1765	0.0350
T14	22 - 2	1.049	35	0.2312	0.0188

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
290.50	Flash Beacon Lighting	43	2.474	0.1174	0.1002	591846
289.00	FM Antenna	43	2.474	0.1174	0.1002	591846
287.00	Flash Beacon Lighting	43	2.474	0.1174	0.1002	591846
284.00	2.5" x 10' Omni	43	2.474	0.1174	0.1002	591846
281.00	6' Stand-off	43	2.494	0.1176	0.0997	591846
280.00	MF-950B	43	2.513	0.1179	0.0992	591846
270.00	Guy	43	2.707	0.1192	0.0944	246603
260.00	ASP-711	43	2.897	0.1155	0.0896	100939
226.00	(3) DB844H90E-XY w/Mount Pipe	43	3.355	0.0580	0.0881	23115
212.50	8' Dish w/ Radome	43	3.397	0.0405	0.0880	61390
204.50	8' Dish w/ Radome	43	3.401	0.0372	0.0864	38245
196.00	Guy	43	3.410	0.0417	0.0848	47202
181.50	RR90-17-02DP w/Mount Pipe	44	3.457	0.0478	0.0841	34795
180.50	6' Stand-off	44	3.459	0.0468	0.0842	32590
164.00	(2) 7770 Panel Antenna	44	3.420	0.0485	0.0842	16202
153.00	6.5' Dish w/ Radome	46	3.335	0.0744	0.0761	33308
132.00	14' Dipole	46	3.142	0.0714	0.0609	42390
128.00	Guy	35	3.122	0.0646	0.0603	43999
125.00	3" x 12.5' Omni	35	3.123	0.0602	0.0602	45022
124.50	1' Yagi antenna	35	3.123	0.0596	0.0603	45457
121.00	6'8"x4" Pipe Mount	35	3.127	0.0563	0.0610	56828
113.00	4' Dish w/ Radome	35	3.137	0.0567	0.0661	56946
104.50	9' Dish w/ Radome	35	3.133	0.0650	0.0707	21329
70.00	Guy	35	2.709	0.1038	0.0527	24919

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	282 - 262	12.436	28	0.4514	0.4369
T2	262 - 242	13.820	28	0.4514	0.4039
T3	242 - 222	15.433	7	0.3666	0.3671
T4	222 - 202	16.694	7	0.2286	0.3291
T5	202 - 182	17.416	7	0.1689	0.3235
T6	182 - 162	18.022	7	0.1380	0.3163
T7	162 - 142	18.144	7	0.1662	0.3080
T8	142 - 122	17.469	24	0.2519	0.2720
T9	122 - 102	16.747	24	0.2035	0.2628
T10	102 - 82	15.907	24	0.3248	0.2885
T11	82 - 62	14.298	24	0.5074	0.2398

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Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T12	62 - 42	11.967	24	0.6474	0.1873
T13	42 - 22	8.832	24	0.8608	0.1299
T14	22 - 2	4.761	24	1.0639	0.0671

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
290.50	Flash Beacon Lighting	28	12.436	0.4514	0.4369	172649
289.00	FM Antenna	28	12.436	0.4514	0.4369	172649
287.00	Flash Beacon Lighting	28	12.436	0.4514	0.4369	172649
284.00	2.5" x 10' Omni	28	12.436	0.4514	0.4369	172649
281.00	6' Stand-off	28	12.506	0.4523	0.4353	172649
280.00	MF-950B	28	12.576	0.4532	0.4336	172649
270.00	Guy	28	13.272	0.4584	0.4173	71937
260.00	ASP-711	13	13.960	0.4473	0.4005	30802
226.00	(3) DB844H90E-XY w/Mount Pipe	7	16.493	0.2539	0.3345	7090
212.50	8' Dish w/ Radome	7	17.073	0.1894	0.3270	15312
204.50	8' Dish w/ Radome	7	17.336	0.1717	0.3243	13126
196.00	Guy	7	17.612	0.1661	0.3215	17885
181.50	RR90-17-02DP w/Mount Pipe	7	18.034	0.1354	0.3161	9452
180.50	6' Stand-off	7	18.056	0.1305	0.3156	8868
164.00	(2) 7770 Panel Antenna	7	18.171	0.1503	0.3091	4545
153.00	6.5' Dish w/ Radome	7	17.903	0.2273	0.2945	7967
132.00	14' Dipole	24	17.101	0.2220	0.2600	13136
128.00	Guy	24	16.958	0.2110	0.2591	13085
125.00	3" x 12.5' Omni	24	16.852	0.2051	0.2601	13141
124.50	1' Yagi antenna	24	16.834	0.2045	0.2604	13226
121.00	6"8"x4" Pipe Mount	24	16.713	0.2044	0.2640	16082
113.00	4' Dish w/ Radome	24	16.426	0.2332	0.2777	10984
104.50	9' Dish w/ Radome	24	16.046	0.3015	0.2884	5513
70.00	Guy	24	12.986	0.5902	0.2073	6574

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	270.00 (A) (678)	3/4 EHS	5830.00	58299.91	18015.40	29150.00	2.000	3.236 ✓
	270.00 (B) (677)	3/4 EHS	5830.00	58299.91	17945.80	29150.00	2.000	3.249 ✓
	270.00 (C) (676)	3/4 EHS	5830.00	58299.91	18133.20	29150.00	2.000	3.215 ✓
T5	196.00 (A) (697)	5/8 EHS	3799.04	42399.99	16661.30	21200.00	2.000	2.545 ✓
	196.00 (A) (698)	5/8 EHS	3799.04	42399.99	17220.80	21200.00	2.000	2.462 ✓
	196.00 (B) (691)	5/8 EHS	4240.00	42399.99	16806.50	21200.00	2.000	2.523 ✓
	196.00 (B)	5/8 EHS	4240.00	42399.99	17011.60	21200.00	2.000	2.492 ✓

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Section No.	Elevation ft	Size	Initial Tension lb	Breaking Load lb	Actual T lb	Allowable T _a lb	Required S.F.	Actual S.F.
T8	(692) 196.00 (C)	5/8 EHS	4240.00	42399.99	17839.30	21200.00	2.000	2.377 ✓
	(679) 196.00 (C)	5/8 EHS	4240.00	42399.99	16926.70	21200.00	2.000	2.505 ✓
	(680) 128.00 (A)	9/16 EHS	3500.00	35000.04	16000.40	17500.00	2.000	2.187 ✓
	(721) 128.00 (A)	9/16 EHS	3500.00	35000.04	16643.50	17500.00	2.000	2.103 ✓
	(722) 128.00 (B)	9/16 EHS	3500.00	35000.04	16060.20	17500.00	2.000	2.179 ✓
	(715) 128.00 (B)	9/16 EHS	3500.00	35000.04	16023.50	17500.00	2.000	2.184 ✓
	(716) 128.00 (C)	9/16 EHS	3500.00	35000.04	16951.70	17500.00	2.000	2.065 ✓
	(703) 128.00 (C)	9/16 EHS	3500.00	35000.04	16271.40	17500.00	2.000	2.151 ✓
	(704) 70.00 (A)	1/2 EHS	3497.00	26900.04	12851.00	13450.00	2.000	2.093 ✓
T11	(729) 70.00 (B) (728)	1/2 EHS	2690.00	26900.04	12379.20	13450.00	2.000	2.173 ✓
	70.00 (C) (727)	1/2 EHS	2690.00	26900.04	12729.40	13450.00	2.000	2.113 ✓

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 P P _a
T1	282 - 262	2	20.00	2.00	48.0 K=1.00	1.00	22.528	3.1416	-14540.90	70773.60	0.205 ✓
T2	262 - 242	2	20.00	2.00	48.0 K=1.00	1.00	22.528	3.1416	-27480.60	70773.60	0.388 ✓
T3	242 - 222	2	20.00	2.00	48.0 K=1.00	1.00	22.528	3.1416	-31143.50	70773.60	0.440 ✓
T4	222 - 202	2	20.00	2.00	48.0 K=1.00	1.00	22.528	3.1416	-26887.60	70773.60	0.380 ✓
T5	202 - 182	2	20.00	2.00	48.0 K=1.00	1.00	22.528	3.1416	-42969.90	70773.60	0.607 ✓
T6	182 - 162	2	20.00	2.00	48.0 K=1.00	1.00	22.528	3.1416	-58088.80	70773.60	0.821 ✓
T7	162 - 142	2	20.00	2.00	48.0 K=1.00	1.00	22.528	3.1416	-55495.40	70773.60	0.784 ✓
T8	142 - 122	2	20.00	2.00	48.0 K=1.00	1.00	22.528	3.1416	-50106.80	70773.60	0.708 ✓
T9	122 - 102	2	20.00	2.00	48.0 K=1.00	1.00	22.528	3.1416	-69859.60	70773.60	0.987 ✓
T10	102 - 82	2	20.00	2.00	48.0 K=1.00	1.00	22.528	3.1416	-74354.40	70773.60	1.051 ✓

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	Mast Stability Index	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio $\frac{P}{P_a}$
T11	82 - 62	2	20.00	2.00	48.0 K=1.00	1.00	22.528	3.1416	-73077.70	70773.60	1.033 ✓
T12	62 - 42	2	20.00	2.00	48.0 K=1.00	1.00	22.528	3.1416	-85696.30	70773.60	1.211 ✓
T13	42 - 22	2	20.00	2.00	48.0 K=1.00	1.00	22.528	3.1416	-84903.90	70773.60	1.200 ✓
T14	22 - 2	2	20.00	2.00	48.0 K=1.00	1.00	22.528	3.1416	-75613.40	70773.60	1.068 ✓

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	282 - 262	7/8	5.66	5.42	148.7 K=0.50	6.754	0.6013	-4080.80	4061.32	1.005 ✓
T2	262 - 242	7/8	5.66	5.42	148.7 K=0.50	6.754	0.6013	-2332.75	4061.32	0.574 ✓
T3	242 - 222	7/8	5.66	5.42	148.7 K=0.50	6.754	0.6013	-2096.39	4061.32	0.516 ✓
T4	222 - 202	SR7/8+L2.5x2.5x0.25	5.66	5.42	53.0 K=0.50	18.081	2.0910	-4214.59	37807.40	0.111 ✓
T5	202 - 182	SR7/8+L2.5x2.5x0.25	5.66	5.42	53.0 K=0.50	18.081	2.0910	-9318.51	37807.40	0.246 ✓
T6	182 - 162	7/8	5.66	5.42	148.7 K=0.50	6.754	0.6013	-2025.49	4061.32	0.499 ✓
T7	162 - 142	7/8	5.66	5.42	148.7 K=0.50	6.754	0.6013	-3937.35	4061.32	0.969 ✓
T8	142 - 122	SR7/8+L2.5x2.5x0.25	5.66	5.42	53.0 K=0.50	18.081	2.0910	-11681.80	37807.40	0.309 ✓
T9	122 - 102	SR7/8+L2.5x2.5x0.25	5.66	5.42	53.0 K=0.50	18.081	2.0910	-4479.30	37807.40	0.118 ✓
T10	102 - 82	7/8	5.66	5.42	148.7 K=0.50	6.754	0.6013	-2874.30	4061.32	0.708 ✓
T11	82 - 62	7/8	5.66	5.42	148.7 K=0.50	6.754	0.6013	-4021.27	4061.32	0.990 ✓
T12	62 - 42	7/8	5.66	5.42	148.7 K=0.50	6.754	0.6013	-2877.51	4061.32	0.709 ✓
T13	42 - 22	7/8	5.66	5.42	148.7 K=0.50	6.754	0.6013	-2250.61	4061.32	0.554 ✓
T14	22 - 2	7/8	5.66	5.42	148.7 K=0.50	6.754	0.6013	-3569.34	4061.32	0.879 ✓

Secondary Horizontal Design Data (Compression)

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio $\frac{P}{P_a}$
T1	282 - 262	L2 1/2x2x3/16	4.00	3.83	107.7 K=1.00	11.976	0.8090	-251.86	9688.31	0.026 ✓
T2	262 - 242	L2 1/2x2x3/16	4.00	3.83	107.7 K=1.00	11.976	0.8090	-475.98	9688.31	0.049 ✓
T3	242 - 222	L2 1/2x2x3/16	4.00	3.83	107.7 K=1.00	11.976	0.8090	-539.42	9688.31	0.056 ✓
T4	222 - 202	L2 1/2x2x3/16	4.00	3.83	107.7 K=1.00	11.976	0.8090	-465.71	9688.31	0.048 ✓
T5	202 - 182	L2 1/2x2x3/16	4.00	3.83	107.7 K=1.00	11.976	0.8090	-744.26	9688.31	0.077 ✓
T6	182 - 162	L2 1/2x2x3/16	4.00	3.83	107.7 K=1.00	11.976	0.8090	-1006.13	9688.31	0.104 ✓
T7	162 - 142	L2 1/2x2x3/16	4.00	3.83	107.7 K=1.00	11.976	0.8090	-961.21	9688.31	0.099 ✓
T8	142 - 122	L2 1/2x2x3/16	4.00	3.83	107.7 K=1.00	11.976	0.8090	-867.88	9688.31	0.090 ✓
T9	122 - 102	L2 1/2x2x3/16	4.00	3.83	107.7 K=1.00	11.976	0.8090	-1210.00	9688.31	0.125 ✓
T10	102 - 82	L2 1/2x2x3/16	4.00	3.83	107.7 K=1.00	11.976	0.8090	-1287.86	9688.31	0.133 ✓
T11	82 - 62	L2 1/2x2x3/16	4.00	3.83	107.7 K=1.00	11.976	0.8090	-1265.74	9688.31	0.131 ✓
T12	62 - 42	L2 1/2x2x3/16	4.00	3.83	107.7 K=1.00	11.976	0.8090	-1484.30	9688.31	0.153 ✓
T13	42 - 22	L2 1/2x2x3/16	4.00	3.83	107.7 K=1.00	11.976	0.8090	-1470.58	9688.31	0.152 ✓
T14	22 - 2	L2 1/2x2x3/16	4.00	3.83	107.7 K=1.00	11.976	0.8090	-1309.66	9688.31	0.135 ✓

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio $\frac{P}{P_a}$
T1	282 - 262	L3x3x1/4	4.00	3.83	77.7 K=1.00	15.609	1.4400	-2205.91	22476.90	0.098 ✓

Top Guy Pull-Off Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio $\frac{P}{P_a}$
T5	202 - 182	L4x4x3/8	4.00	3.83	58.4 K=1.00	17.585	2.8600	-5390.08	50292.20	0.107 ✓
T8	142 - 122	L4x4x3/8	4.00	3.83	58.4 K=1.00	17.585	2.8600	-5461.78	50292.20	0.109 ✓

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Bottom Guy Pull-Off Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio $\frac{P}{P_a}$
T5	202 - 182	L4x4x3/8	4.00	3.83	58.4 K=1.00	17.585	2.8600	-3069.34	50292.20	0.061 ✓
T8	142 - 122	L4x4x3/8	4.00	3.83	58.4 K=1.00	17.585	2.8600	-2593.10	50292.20	0.052 ✓

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 $\frac{P}{P_a}$
T5	202 - 182 (686)	L4x4x3/8	7.48	7.40	112.6 K=1.00	11.313	2.8600	-22965.40	32355.50	0.710 ✓
T5	202 - 182 (687)	L4x4x3/8	7.48	7.40	112.6 K=1.00	11.313	2.8600	-22136.00	32355.50	0.684 ✓
T5	202 - 182 (695)	L4x4x3/8	7.48	7.40	112.6 K=1.00	11.313	2.8600	-21597.60	32355.50	0.668 ✓
T5	202 - 182 (696)	L4x4x3/8	7.48	7.40	112.6 K=1.00	11.313	2.8600	-21928.50	32355.50	0.678 ✓
T5	202 - 182 (701)	L4x4x3/8	7.48	7.40	112.6 K=1.00	11.313	2.8600	-21994.50	32355.50	0.680 ✓
T5	202 - 182 (702)	L4x4x3/8	7.48	7.40	112.6 K=1.00	11.313	2.8600	-21606.70	32355.50	0.668 ✓
T8	142 - 122 (710)	L4x4x3/8	7.48	7.40	112.6 K=1.00	11.313	2.8600	-20487.50	32355.50	0.633 ✓
T8	142 - 122 (711)	L4x4x3/8	7.48	7.40	112.6 K=1.00	11.313	2.8600	-20451.20	32355.50	0.632 ✓
T8	142 - 122 (719)	L4x4x3/8	7.48	7.40	112.6 K=1.00	11.313	2.8600	-19541.70	32355.50	0.604 ✓
T8	142 - 122 (720)	L4x4x3/8	7.48	7.40	112.6 K=1.00	11.313	2.8600	-20193.30	32355.50	0.624 ✓
T8	142 - 122 (725)	L4x4x3/8	7.48	7.40	112.6 K=1.00	11.313	2.8600	-19184.30	32355.50	0.593 ✓
T8	142 - 122 (726)	L4x4x3/8	7.48	7.40	112.6 K=1.00	11.313	2.8600	-19717.30	32355.50	0.609 ✓

Tension Checks

Leg Design Data (Tension)

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio $\frac{P}{P_a}$
T1	282 - 262	2	20.00	2.00	48.0	27.000	3.1416	7393.77	84823.00	0.087
T2	262 - 242	2	20.00	2.00	48.0	27.000	3.1416	12639.50	84823.00	0.149
T3	242 - 222	2	20.00	2.00	48.0	27.000	3.1416	19081.20	84823.00	0.225
T4	222 - 202	2	20.00	2.00	48.0	27.000	3.1416	14236.00	84823.00	0.168
T5	202 - 182	2	20.00	2.00	48.0	27.000	3.1416	7894.76	84823.00	0.093
T6	182 - 162	2	20.00	2.00	48.0	27.000	3.1416	13061.80	84823.00	0.154
T7	162 - 142	2	20.00	2.00	48.0	27.000	3.1416	10086.30	84823.00	0.119
T8	142 - 122	2	20.00	2.00	48.0	27.000	3.1416	4579.52	84823.00	0.054

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	282 - 262	7/8	5.66	5.42	297.4	21.600	0.6013	4639.19	12988.50	0.357
T2	262 - 242	7/8	5.66	5.42	297.4	21.600	0.6013	2646.92	12988.50	0.204
T3	242 - 222	7/8	5.66	5.42	297.4	21.600	0.6013	1703.93	12988.50	0.131
T4	222 - 202	SR7/8+L2.5x2.5x0.25	5.66	5.42	106.0	21.600	2.0910	4370.34	45165.60	0.097
T5	202 - 182	SR7/8+L2.5x2.5x0.25	5.66	5.42	106.0	21.600	2.0910	5113.59	45165.60	0.113
T6	182 - 162	7/8	5.66	5.42	297.4	21.600	0.6013	2041.00	12988.50	0.157
T7	162 - 142	7/8	5.66	5.42	297.4	21.600	0.6013	3847.85	12988.50	0.296
T8	142 - 122	SR7/8+L2.5x2.5x0.25	5.66	5.42	106.0	21.600	2.0910	4941.05	45165.60	0.109
T9	122 - 102	SR7/8+L2.5x2.5x0.25	5.66	5.42	106.0	21.600	2.0910	4568.17	45165.60	0.101
T10	102 - 82	7/8	5.66	5.42	297.4	21.600	0.6013	2066.18	12988.50	0.159
T11	82 - 62	7/8	5.66	5.42	297.4	21.600	0.6013	4467.88	12988.50	0.344
T12	62 - 42	7/8	5.66	5.42	297.4	21.600	0.6013	3155.64	12988.50	0.243
T13	42 - 22	7/8	5.66	5.42	297.4	21.600	0.6013	1561.60	12988.50	0.120
T14	22 - 2	7/8	5.66	5.42	297.4	21.600	0.6013	2824.15	12988.50	0.217

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Section No.	Elevation	Size	L	L _u	Kl/r	F _a	A	Actual P	Allow. P _a	Ratio P
	ft		ft	ft		ksi	in ²	lb	lb	P _a

Secondary Horizontal Design Data (Tension)

Section No.	Elevation	Size	L	L _u	Kl/r	F _a	A	Actual P	Allow. P _a	Ratio P
	ft		ft	ft		ksi	in ²	lb	lb	P _a
T1	282 - 262	L2 1/2x2x3/16	4.00	3.83	76.7	21.600	0.8090	296.42	17474.40	0.017
T2	262 - 242	L2 1/2x2x3/16	4.00	3.83	76.7	21.600	0.8090	475.98	17474.40	0.027
T3	242 - 222	L2 1/2x2x3/16	4.00	3.83	76.7	21.600	0.8090	539.42	17474.40	0.031
T4	222 - 202	L2 1/2x2x3/16	4.00	3.83	76.7	21.600	0.8090	465.71	17474.40	0.027
T5	202 - 182	L2 1/2x2x3/16	4.00	3.83	76.7	21.600	0.8090	744.26	17474.40	0.043
T6	182 - 162	L2 1/2x2x3/16	4.00	3.83	76.7	21.600	0.8090	1006.13	17474.40	0.058
T7	162 - 142	L2 1/2x2x3/16	4.00	3.83	76.7	21.600	0.8090	961.21	17474.40	0.055
T8	142 - 122	L2 1/2x2x3/16	4.00	3.83	76.7	21.600	0.8090	867.88	17474.40	0.050
T9	122 - 102	L2 1/2x2x3/16	4.00	3.83	76.7	21.600	0.8090	1210.00	17474.40	0.069
T10	102 - 82	L2 1/2x2x3/16	4.00	3.83	76.7	21.600	0.8090	1287.86	17474.40	0.074
T11	82 - 62	L2 1/2x2x3/16	4.00	3.83	76.7	21.600	0.8090	1265.74	17474.40	0.072
T12	62 - 42	L2 1/2x2x3/16	4.00	3.83	76.7	21.600	0.8090	1484.30	17474.40	0.085
T13	42 - 22	L2 1/2x2x3/16	4.00	3.83	76.7	21.600	0.8090	1470.58	17474.40	0.084
T14	22 - 2	L2 1/2x2x3/16	4.00	3.83	76.7	21.600	0.8090	1309.66	17474.40	0.075

Top Guy Pull-Off Design Data (Tension)

Section No.	Elevation	Size	L	L _u	Kl/r	F _a	A	Actual P	Allow. P _a	Ratio P
	ft		ft	ft		ksi	in ²	lb	lb	P _a
T5	202 - 182	L4x4x3/8	4.00	3.83	37.4	21.600	2.8600	19758.40	61776.00	0.320
T8	142 - 122	L4x4x3/8	4.00	3.83	37.4	21.600	2.8600	22854.40	61776.00	0.370

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Bottom 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 P P _a
T5	202 - 182	L4x4x3/8	4.00	3.83	37.4	21.600	2.8600	3175.78	61776.00	0.051
T8	142 - 122	L4x4x3/8	4.00	3.83	37.4	21.600	2.8600	10452.30	61776.00	0.169

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 P P _a
T5	202 - 182 (681)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	21829.30	61776.00	0.353
T5	202 - 182 (682)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	22589.30	61776.00	0.366
T5	202 - 182 (693)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	21793.10	61776.00	0.353
T5	202 - 182 (694)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	21948.80	61776.00	0.355
T5	202 - 182 (699)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	21310.60	61776.00	0.345
T5	202 - 182 (700)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	22217.00	61776.00	0.360
T8	142 - 122 (705)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	20182.20	61776.00	0.327
T8	142 - 122 (706)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	20727.80	61776.00	0.336
T8	142 - 122 (717)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	19522.00	61776.00	0.316
T8	142 - 122 (718)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	19616.70	61776.00	0.318
T8	142 - 122 (723)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	19281.50	61776.00	0.312
T8	142 - 122 (724)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	20152.50	61776.00	0.326

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 P P _a
T5	202 - 182 (686)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	649.17	61776.00	0.011
T5	202 - 182 (687)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	715.07	61776.00	0.012
T5	202 - 182 (695)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	811.43	61776.00	0.013

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio $\frac{P}{P_a}$
T5	202 - 182 (696)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	930.03	61776.00	0.015 ✓
T5	202 - 182 (701)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	760.88	61776.00	0.012 ✓
T5	202 - 182 (702)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	936.88	61776.00	0.015 ✓
T8	142 - 122 (710)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	4303.11	61776.00	0.070 ✓
T8	142 - 122 (711)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	4497.85	61776.00	0.073 ✓
T8	142 - 122 (719)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	4756.05	61776.00	0.077 ✓
T8	142 - 122 (720)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	4741.46	61776.00	0.077 ✓
T8	142 - 122 (725)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	4213.27	61776.00	0.068 ✓
T8	142 - 122 (726)	L4x4x3/8	7.48	7.40	72.2	21.600	2.8600	4390.90	61776.00	0.071 ✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF*P _{allow} lb	% Capacity	Pass Fail
T1	282 - 262	Leg	2	3	-14540.90	94341.21	15.4	Pass
T2	262 - 242	Leg	2	54	-27480.60	94341.21	29.1	Pass
T3	242 - 222	Leg	2	102	-31143.50	94341.21	33.0	Pass
T4	222 - 202	Leg	2	150	-26887.60	94341.21	28.5	Pass
T5	202 - 182	Leg	2	198	-42969.90	94341.21	45.5	Pass
T6	182 - 162	Leg	2	246	-58088.80	94341.21	61.6	Pass
T7	162 - 142	Leg	2	294	-55495.40	94341.21	58.8	Pass
T8	142 - 122	Leg	2	342	-50106.80	94341.21	53.1	Pass
T9	122 - 102	Leg	2	388	-69859.60	94341.21	74.0	Pass
T10	102 - 82	Leg	2	436	-74354.40	94341.21	78.8	Pass
T11	82 - 62	Leg	2	484	-73077.70	94341.21	77.5	Pass
T12	62 - 42	Leg	2	532	-85696.30	94341.21	90.8	Pass
T13	42 - 22	Leg	2	580	-84903.90	94341.21	90.0	Pass
T14	22 - 2	Leg	2	628	-75613.40	94341.21	80.1	Pass
T1	282 - 262	Diagonal	7/8	37	-4080.80	5413.74	75.4	Pass
T2	262 - 242	Diagonal	7/8	86	-2332.75	5413.74	43.1	Pass
T3	242 - 222	Diagonal	7/8	106	-2096.39	5413.74	38.7	Pass
T4	222 - 202	Diagonal	SR7/8+L2.5x2.5x0.25	155	-4214.59	50397.26	8.4	Pass
T5	202 - 182	Diagonal	SR7/8+L2.5x2.5x0.25	229	-9318.51	50397.26	18.5	Pass
T6	182 - 162	Diagonal	7/8	283	-2025.49	5413.74	37.4	Pass
T7	162 - 142	Diagonal	7/8	300	-3937.35	5413.74	72.7	Pass
T8	142 - 122	Diagonal	SR7/8+L2.5x2.5x0.25	357	-11681.80	50397.26	23.2	Pass
T9	122 - 102	Diagonal	SR7/8+L2.5x2.5x0.25	423	-4479.30	50397.26	8.9	Pass
T10	102 - 82	Diagonal	7/8	444	-2874.30	5413.74	53.1	Pass
T11	82 - 62	Diagonal	7/8	490	-4021.27	5413.74	74.3	Pass
T12	62 - 42	Diagonal	7/8	565	-2877.51	5413.74	53.2	Pass
T13	42 - 22	Diagonal	7/8	588	-2250.61	5413.74	41.6	Pass
T14	22 - 2	Diagonal	7/8	635	-3569.34	5413.74	65.9	Pass
T1	282 - 262	Secondary Horizontal	L2 1/2x2x3/16	14	-251.86	12914.52	2.0	Pass

tnxTower URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: (860) 529-8882 FAX: (860) 529-3991	Job	280' Guyed Tower	Page	59 of 59
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	Client	Verizon	Designed by	kevin_barker

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF*P _{allow} lb	% Capacity	Pass Fail
						Top (T5)		
						Torque Arm	53.2	Pass
						Bottom (T5)		
						RATING =	96.9	Pass

Program Version 6.0.0.8 - 9/7/2011 File:P:/08/ERI Files/280' Guyed Tower Bolton, CT.eri

FOUNDATION ANALYSIS

Job 280' Guyed Tower - Bolton, CT
 Description Foundation Analysis

Project No. VZ5-120
 Computed by KAB
 Checked by _____

Page 1 of 1
 Sheet of
 Date 07/26/12
 Date _____

Tower Base

Width of Base

$$w_{base} := 5ft$$

Thickness of Base

$$t_{base} := 3.5ft$$

Unit Weight of Concrete

$$\gamma_{conc} := 150pcf$$

Weight of Base

$$Wt_{base} := w_{base}^2 \cdot t_{base} \cdot \gamma_{conc}$$

$$Wt_{base} = 13.13 \cdot kip$$

Compressive force of Tower

$$P_{tower} := 167.2kip$$

Total Downward Force

$$P_{foundation} := P_{tower} + Wt_{base}$$

$$P_{foundation} = 180.33 \cdot kip$$

Bearing Pressure

$$P_{bearing} := \frac{P_{foundation}}{w_{base}^2}$$

$$P_{bearing} = 7.21 \cdot ksf$$

Allowable Bearing Pressure

$$P_{bearing,allow} := 10tsf$$

$$Bearing_{check} := \begin{cases} "OK" & \text{if } P_{bearing} \leq P_{bearing,allow} \\ "NG" & \text{otherwise} \end{cases}$$

$$Bearing_{check} = "OK"$$

Guy Anchors

Six #8 bars in 2 1/4" dia. holes extending 8'6" below foundation

Bond between Rock & Grout = 50 psi

$$Bond_{capacity} := 2.25in \cdot \pi \cdot 50psi$$

$$Bond_{capacity} = 4.24 \cdot \frac{kip}{ft}$$

$$Bond_{capacity} \cdot 8.5ft = 36.05 \cdot kip < F_y \cdot rebar$$

$$Uplift_{resistance} := Bond_{capacity} \cdot 8.5ft \cdot 6$$

$$Uplift_{resistance} = 216.3 \cdot kip$$

$$Uplift_{anchor} := 60.2kip$$

$$Uplift_{check} := \begin{cases} "OK" & \text{if } Uplift_{anchor} \leq Uplift_{resistance} \\ "NG" & \text{otherwise} \end{cases}$$

$$Uplift_{check} = "OK"$$

Each anchor is embedded into rock a minimum of 1'6"

$$Shear_{resistance} := 5tsf \cdot 1.5ft \cdot 5ft$$

$$Shear_{resistance} = 75 \cdot kip$$

$$Shear_{anchor} := 74.2kip$$

$$Shear_{check} := \begin{cases} "OK" & \text{if } Shear_{anchor} \leq Shear_{resistance} \\ "NG" & \text{otherwise} \end{cases}$$

$$Shear_{check} = "OK"$$

2 C6x10.5 Anchor Shafts

$$A_s := 2 \cdot 3.08in^2$$

$$F_y := 36ksi$$

$$Tension := 95.6kip$$

$$\sigma := \frac{Tension}{A_s}$$

$$\sigma = 15.52 \cdot ksi$$

$$\sigma_{check} := \begin{cases} "OK" & \text{if } \sigma \leq F_y \\ "NG" & \text{otherwise} \end{cases}$$

$$\sigma_{check} = "OK"$$