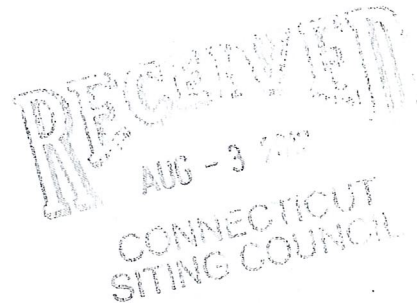


280 Trumbull Street
Hartford, CT 06103-3597
Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
Direct (860) 275-8345

August 2, 2012

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



Re: **EM-VER-003-120217 – 174 Ashford Center Road, Ashford, Connecticut**
EM-VER-133-120229 – Baltic-Hanover Road, Sprague, Connecticut
EM-VER-023-111114A – 14 Canton Springs Road, Canton, Connecticut
EM-VER-023-111114B – 650 Albany Turnpike, Canton, Connecticut
EM-VER-060-120301 – 370 Rockland Road, Guilford, Connecticut
EM-VER-091-120123 – 18 Titicus Mountain Road, New Fairfield, Connecticut
EM-VER-092-120112 – 20 Antolini Road, New Hartford, Connecticut

Completion of Construction Activity

Dear Ms. Roberts:

The purpose of this letter is to notify the Siting Council that construction activity associated with the above-referenced Cellco Partnership d/b/a Verizon Wireless telecommunications facilities has been completed.

If you have any questions or need any additional information regarding this facility please do not hesitate to contact me.

Sincerely,

Kenneth C. Baldwin

Copy to:
Sandy M. Carter



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NEW YORK CITY

ALBANY

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11801779-v1

1000 1st St
New York, NY 10001
Tel: (212) 123-4567

August 1, 1912

Dear Sir:
I have the honor to acknowledge the receipt of your letter of the 28th inst. in relation to the above.

It is our pleasure to inform you that the same has been forwarded to the proper authorities for their consideration. We are sorry that we cannot give you a more definite answer at this time, but we are sure that you will understand the necessity of this procedure.

Very respectfully,
Your obedient servant,

John H. Robinson

The enclosed of this date, showing the State of New York, is for your information. It is our hope that this will be of service to you in your work. We are sure that you will find it of great value.

Sincerely,
John H. Robinson

John H. Robinson

1000 1st St

New York, NY 10001



STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: siting.council@ct.gov

www.ct.gov/csc

March 16, 2012

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

RE: **EM-VER-133-120229** - Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at Baltic-Hanover Road (Route 97), Sprague, Connecticut.

Dear Attorney Baldwin:

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

- Any deviation from the proposed modification as specified in this notice and supporting materials with Council shall render this acknowledgement invalid;
- Any material changes to this modification as proposed shall require the filing of a new notice with the Council;
- Not less than 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;
- The validity of this action shall expire one year from the date of this letter; and
- The applicant may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration;

The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated February 28, 2012. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Thank you for your attention and cooperation.

Very truly yours,

Linda Roberts
Executive Director

LR/CDM/laf

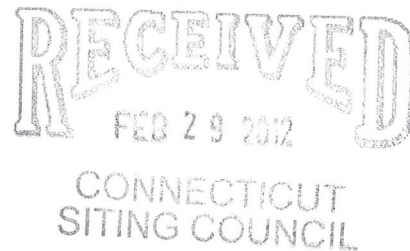
c: The Honorable Catherine A. Osten, First Selectman, Town of Sprague
Joseph Smith, Zoning Enforcement Officer, Town of Sprague



280 Trumbull Street
Hartford, CT 06103-3597
Main (860) 275-8200
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February 28, 2012

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



Re: **Notice of Exempt Modification – Antenna Swap
Baltic-Hanover Road (Route 97), Sprague, Connecticut**

Dear Ms. Roberts:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains twelve (12) wireless telecommunications antennas at the 165-foot level on an existing 175-foot tower at the above-referenced address. The tower is owned by the Town of Sprague. Cellco's use of the tower was approved by the Council in 2007. Cellco now intends to replace six (6) of its existing antennas with three (3) model BXA-171085-8CF PCS antennas and three (3) model BXA-70063-6CF LTE antennas, all at the 165-foot level. Cellco also intends to install six (6) additional coax cables attached to the leg of the lattice tower. Attached behind Tab 1 are the specifications for Cellco's 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 Catherine A. Osten, First Selectman of the Town of Sprague. The Town of Sprague is also the owner of the property on which the tower is located.

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

1. The proposed modifications will not result in an increase in the height of the existing tower. Cellco's replacement antennas will be located at the 165-foot level on the existing 175-foot tower.



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ROBINSON & COLE_{LLP}

Linda Roberts
February 28, 2012
Page 2

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

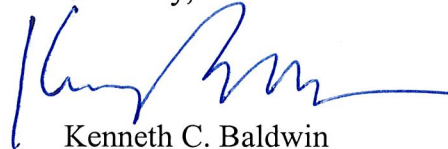
3. The proposed modifications will not increase noise levels at the facility by six decibels or more.

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

Also attached is a Structural Analysis Report confirming that the tower and foundation can support Cellco's proposed modifications. (See Tab 3).

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

Sincerely,



Kenneth C. Baldwin

Enclosures

Copy to:

Catherine A. Osten, Sprague First Selectman
Sandy M. Carter

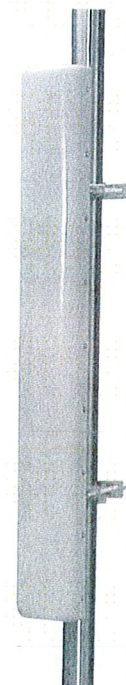


BXA-171085-8CF-EDIN-X

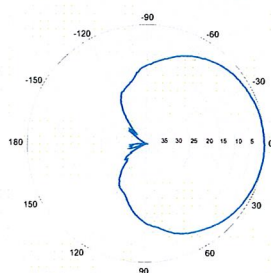
Replace "X" with desired electrical downtilt.

X-Pol | FET Panel | 85° | 16.4 dBi

Electrical Characteristics	1710-2170 MHz		
Frequency bands	1710-1880 MHz	1850-1990 MHz	1920-2170 MHz
Polarization	±45°	±45°	±45°
Horizontal beamwidth	88°	85°	80°
Vertical beamwidth	7°	7°	7°
Gain	13.5 dBd / 15.6 dBi	13.9 dBd / 16.0 dBi	14.3 dBd / 16.4 dBi
Electrical downtilt (X)	0, 2, 4		
Impedance	50Ω		
VSWR	≤1.5:1		
First upper sidelobe	< -17 dB		
Front-to-back isolation	> 30 dB		
In-band isolation	> 28 dB		
IM3 (20W carrier)	< -150 dBc		
Input power	300 W		
Lightning protection	Direct Ground		
Connector(s)	2 Ports / EDIN / Female / Center (Back)		
Operating temperature	-40° to +60° C / -40° to +140° F		
Mechanical Characteristics			
Dimensions Length x Width x Depth	1232 x 154 x 105 mm	48.5 x 6.1 x 4.1 in	
Depth with t-brackets	133 mm	5.2 in	
Weight without mounting brackets	4.8 kg	10.5 lbs	
Survival wind speed	296 km/hr	184 mph	
Wind area	Front: 0.19 m ² Side: 0.14 m ²	Front: 2.0 ft ² Side: 1.5 ft ²	
Wind load @ 161 km/hr (100 mph)	Front: 281 N Side: 223 N	Front: 63 lbf Side: 50 lbf	
Mounting Options	Part Number	Fits Pipe Diameter	Weight
2-Point Mounting Bracket Kit	26799997	50-102 mm 2.0-4.0 in	2.3 kg 5 lbs
2-Point Mounting & Downtilt Bracket Kit	26799999	50-102 mm 2.0-4.0 in	3.6 kg 8 lbs
Concealment Configurations	For concealment configurations, order BXA-171085-8CF-EDIN-X-FP		

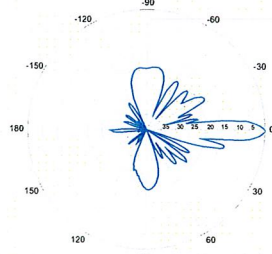


BXA-171085-8CF-EDIN-X



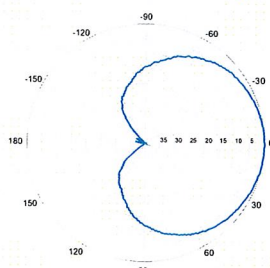
Horizontal | 1710-1880 MHz

BXA-171085-8CF-EDIN-0



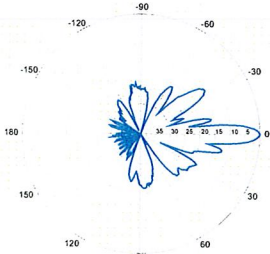
0° | Vertical | 1710-1880 MHz

BXA-171085-8CF-EDIN-X



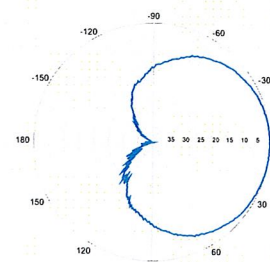
Horizontal | 1850-1990 MHz

BXA-171085-8CF-EDIN-0



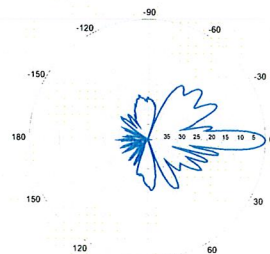
0° | Vertical | 1850-1990 MHz

BXA-171085-8CF-EDIN-X



Horizontal | 1920-2170 MHz

BXA-171085-8CF-EDIN-0



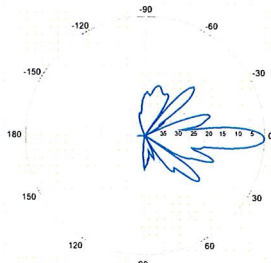
0° | Vertical | 1920-2170 MHz

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

BXA-171085-8CF-EDIN-X

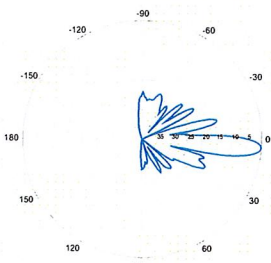
X-Pol | FET Panel | 85° | 16.4 dBi

BXA-171085-8CF-EDIN-2



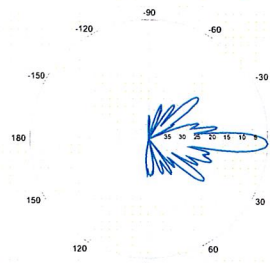
2° | Vertical | 1710-1880 MHz

BXA-171085-8CF-EDIN-4



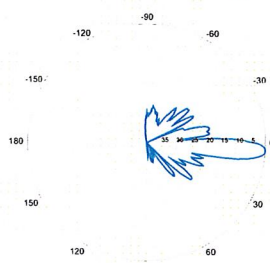
4° | Vertical | 1710-1880 MHz

BXA-171085-8CF-EDIN-2



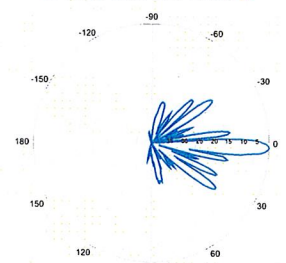
2° | Vertical | 1850-1990 MHz

BXA-171085-8CF-EDIN-4



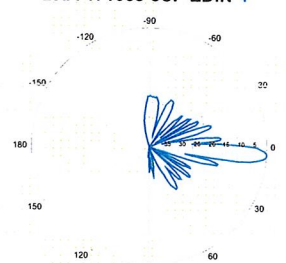
4° | Vertical | 1850-1990 MHz

BXA-171085-8CF-EDIN-2



2° | Vertical | 1920-2170 MHz

BXA-171085-8CF-EDIN-4



4° | Vertical | 1920-2170 MHz

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

BXA-70063-6CF-EDIN-X

X-Pol | FET Panel | 63° | 14.5 dBd

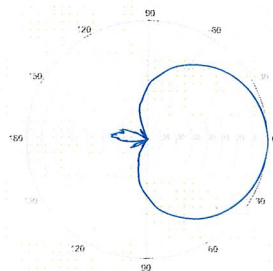
Replace "X" with desired electrical downtilt.

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

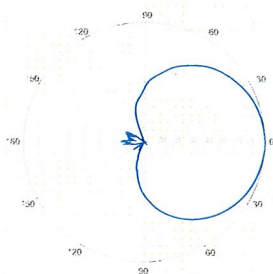


Electrical Characteristics	696-900 MHz			
Frequency bands	696-806 MHz		806-900 MHz	
Polarization	±45°			
Horizontal beamwidth	65°		63°	
Vertical beamwidth	13°		11°	
Gain	14.0 dBd (16.1 dBi)		14.5 dBd (16.6 dBi)	
Electrical downtilt (X)	0, 2, 3, 4, 5, 6, 8, 10			
Impedance	50Ω			
VSWR	≤1.35:1			
Upper sidelobe suppression (0°)	-18.3 dB		-18.2 dB	
Front-to-back ratio (+/-30°)	-33.4 dB		-36.3 dB	
Null fill	5% (-26.02 dB)			
Isolation between ports	< -25 dB			
Input power with EDIN connectors	500 W			
Input power with NE connectors	300 W			
Lightning protection	Direct Ground			
Connector(s)	2 Ports / EDIN or NE / Female / Center (Back)			
Mechanical Characteristics				
Dimensions Length x Width x Depth	1804 x 285 x 132 mm		71.0 x 11.2 x 5.2 in	
Depth with z-brackets	172 mm		6.8 in	
Weight without mounting brackets	7.9 kg		17 lbs	
Survival wind speed	> 201 km/hr		> 125 mph	
Wind area	Front: 0.51 m ²	Side: 0.24 m ²	Front: 5.5 ft ²	Side: 2.6 ft ²
Wind load @ 161 km/hr (100 mph)	Front: 759 N	Side: 391 N	Front: 169 lbf	Side: 89 lbf
Mounting Options	Part Number	Fits Pipe Diameter		Weight
3-Point Mounting & Downtilt Bracket Kit	36210008	40-115 mm	1.57-4.5 in	6.9 kg 15.2 lbs
Concealment Configurations	For concealment configurations, order BXA-70063-6CF-EDIN-X-FP			

BXA-70063-6CF-EDIN-X

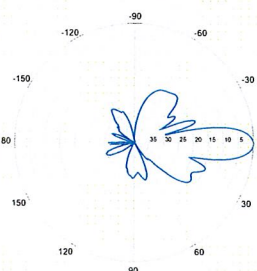


Horizontal | 750 MHz



Horizontal | 850 MHz

BXA-70063-6CF-EDIN-0

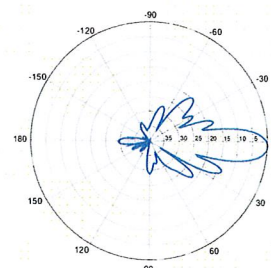


0° | Vertical | 750 MHz

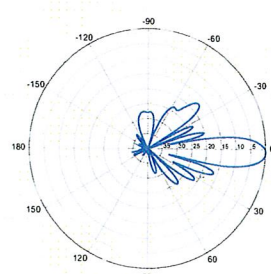


0° | Vertical | 850 MHz

BXA-70063-6CF-EDIN-2



2° | Vertical | 750 MHz



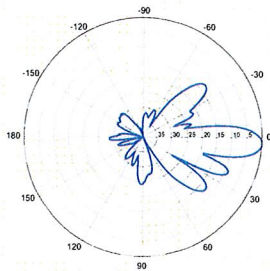
2° | Vertical | 850 MHz

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

BXA-70063-6CF-EDIN-X

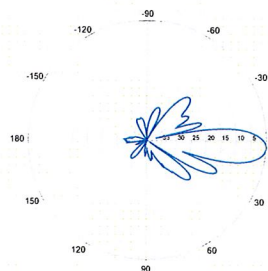
X-Pol | FET Panel | 63° | 14.5 dBd

BXA-70063-6CF-EDIN-3



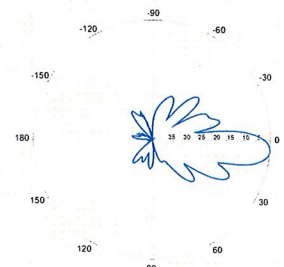
3° | Vertical | 750 MHz

BXA-70063-6CF-EDIN-4

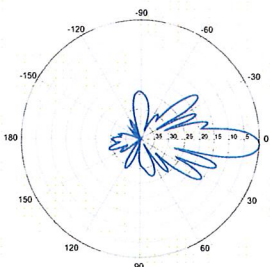


4° | Vertical | 750 MHz

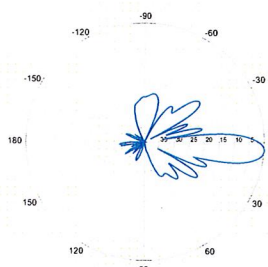
BXA-70063-6CF-EDIN-5



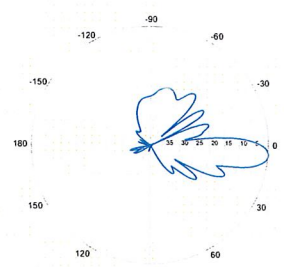
5° | Vertical | 750 MHz



3° | Vertical | 850 MHz

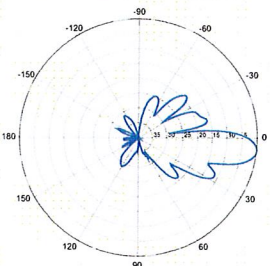


4° | Vertical | 850 MHz



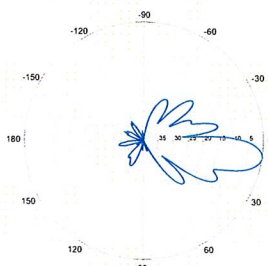
5° | Vertical | 850 MHz

BXA-70063-6CF-EDIN-6



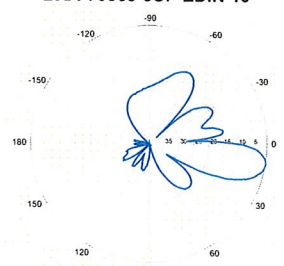
6° | Vertical | 750 MHz

BXA-70063-6CF-EDIN-8

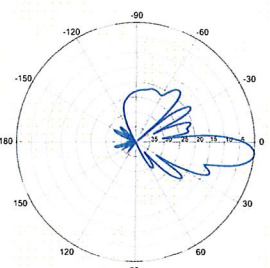


8° | Vertical | 750 MHz

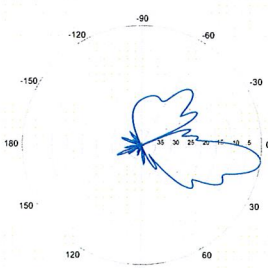
BXA-70063-6CF-EDIN-10



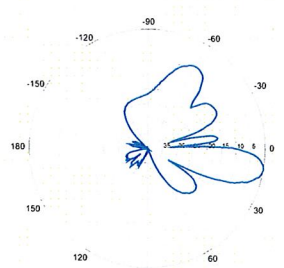
10° | Vertical | 750 MHz



6° | Vertical | 850 MHz



8° | Vertical | 850 MHz



10° | Vertical | 850 MHz

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.

Site Name: Baltic	General	Power	Density			
Tower Height: Verizon @ 165ft						
CARRIER	# OF CHAN.	WATTS ERP	HEIGHT	CALC. POWER DENS	FREQ.	MAX. PERMISS. EXP.
*Cingular/AT&T	2	427	175	0.0100	1930	1.0000
*Cingular/AT&T	4	296	175	0.0139	880	0.5867
*Cingular/AT&T UMITS	1	500	175	0.0059	880	0.5867
Verizon PCS	7	210	165	0.0194	1970	1.0000
Verizon Cellular	9	258	165	0.0307	869	0.5793
Verizon AWS	1	526	165	0.0069	2145	1.0000
Verizon 700	1	765	165	0.0101	698	0.4653
						14.47%
* Source: Siting Council						

Structural Analysis Report

175' Existing Valmont Lattice Tower

*Proposed Verizon Wireless
LTE Antenna Installation*

Verizon Site Ref: Baltic

*Route 97
Sprague, CT*

Centek Project No. 11001.CO35

~~Date: August 4, 2011~~

Rev 1: October 5, 2011



Prepared for:

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

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- TOWER CAPACITY.
- FOUNDATION AND ANCHORS
- CONCLUSION AND RECOMMENDATIONS.

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- STANDARD ENGINEERING CONDITIONS.
- GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM.

SECTION 3 – CALCULATIONS

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- RISATower FEED LINE PLAN.
- RISATower FEED LINE DISTRIBUTION.
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- FOUNDATION ANALYSIS

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- ANTENNA CUT SHEETS.

Introduction

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

The host tower is a 175-ft, three legged, lattice tower originally manufactured by Valmont eng file no. A-122359-1 dated 10/23/06. The tower geometry, structure member sizes and foundation information were taken from the aforementioned tower design documents. Antenna and appurtenance inventory were taken from a Verizon RF data sheet and visual verification from grade by Centek personnel on July 21, 2011.

The tower consists of two (2) vertical sections consisting of solid round pipe legs, diagonal and horizontal bracing conforming to ASTM A572 Gr. 50 and eight (8) vertical sections consisting of truss legs conforming to ASTM A572 GR. 50 with diagonal steel angle bracing conforming to ASTM A36. The vertical tower sections are connected by bolted flange plates with the diagonal and horizontal bracing to pipe legs consisting of bolted connections. The width of the tower face is 5-ft at the top and 20-ft at the bottom.

Verizon Wireless proposes the removal of twelve (12) panel antennas and the installation of twelve (12) panel antennas mounted on three (3) existing T-Frames. Refer to the Antenna and Appurtenance Summary below for a detailed description of the proposed antenna and appurtenance configuration.

Antenna and Appurtenance Summary

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

- UNKNOWN (Existing):
Antenna: One (1) 8' whip antenna pipe mounted with an elevation of ± 175 -ft above grade level.
Coax Cable: One (1) 1-5/8" $\varnothing$ coax cable running on a leg/face of the existing tower as specified in Section 3 of this report.
- AT&T (Existing):
Antennas: Six (6) Powerwave 7770 panel antennas, six (6) TMAs and six (6) diplexers mounted on three (3) 15-ft T-Frames with a RAD center elevation of ± 175 -ft above grade level.
Coax Cables: Twelve (12) 1-5/8" $\varnothing$ coax cables running on a leg/face of the existing tower as specified in Section 3 of this report.
- VERIZON (Existing to Remain):
Antennas: Six (6) Antel LPA-80080/4CF mounted on (3) 15-ft T-Frames with a RAD center elevation of ± 165 -ft above grade level.
Coax Cables: Twelve (12) 1-5/8" $\varnothing$ coax cables running on a leg/face of the existing tower as specified in Section 3 of this report.
- VERIZON (Existing to Remove):
Antennas: Six (6) Antel LPA-185080/8CF panel antennas mounted on (3) 15-ft T-Frames with a RAD center elevation of ± 165 -ft above grade level.

- **VERIZON (Proposed):**
Antennas: Three (3) Antel BXA-70063/6CF panel antennas and three (3) Antel BXA-171085-8CF panel antennas mounted on (3) 15-ft T-Frames with a RAD center elevation of ± 165 -ft above grade level.
Coax Cables: Six (6) 1-5/8" $\varnothing$ coax cables mounted on Valmont Extendable Double T-Line Brackets p/n 802166 at 4-ft on center to leg/face of the existing tower as specified in Section 3 of this report.

Primary Assumptions Used in the Analysis

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

Analysis

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

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

Tower Loading

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

Basic Wind Speed:	New London v = 85 mph (fastest mile)	[Section 16 of TIA/EIA-222-F-96]
	Sprague; v = 105 mph (3 second gust) equivalent to v = 85 mph (fastest mile)	[Appendix K of the 2005 CT Building Code Supplement]
	TIA/EIA and Appendix K wind speeds are equal.	
Load Cases:	<u>Load Case 1</u> ; 85 mph wind speed w/ no ice plus gravity load – used in calculation of tower stresses and rotation. This load case typically controls the design of monopole towers.	[Section 2.3.16 of TIA/EIA-222-F-96]
	<u>Load Case 2</u> ; 74 mph wind speed w/ ½" radial ice plus gravity load – used in calculation of tower stresses. The 74 mph wind speed velocity represents 75% of the wind pressure generated by the 85 mph wind speed. This load case typically controls the design of lattice towers.	[Section 2.3.16 of TIA/EIA-222-F-96]
	<u>Load Case 3</u> ; Seismic – not checked	[Section 1614.5 of State Bldg. Code 2005] does not control in the design of this structure type

Tower Capacity

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

Calculated stresses were found to be within allowable limits. In Load Case 2, per RISATower "Section Capacity Table", this tower was found to be at **40.5%** of its total capacity.

Tower Section	Elevation	Stress Ratio (percentage of capacity)	Result
Diagonal (T9)	20'-0"-40'-0"	39.2%	PASS
Leg (T7)	60'-0"-80'-0"	40.5%	PASS

Foundation and Anchors

The existing foundation consists of a 37.5-ft square x 3.5-ft thick reinforced concrete mat. The base of the tower is connected to the foundation by means of (12) 1.25"Ø, ASTM A687 anchor bolts embedded approximately 2.75-ft into the concrete foundation structure.

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

- The tower base reactions developed from the governing Load Case 1 were used in the verification of the foundation and its anchors:

Reactions	Vector	Proposed Base Reactions
Base	Shear	39 kips
	Compression	76 kips
	Moment	3861 kip-ft
Leg	Shear	23 kips
	Uplift	181 kips
	Compression	248 kips

CEN TEK Engineering, Inc.

Structural Analysis - 175-ft Valmont Lattice Tower
Verizon Wireless LTE Antenna Installation – Baltic
Sprague, CT
Rev 1 ~ October 5, 2011

- The anchor bolts were found to be within allowable limits.

Tower Component	Design Limit	Stress Ratio (percentage of capacity)	Result
Anchor Bolts	Tension	17.3%	PASS

- The foundation was found to be within allowable limits.

Foundation	Design Limit	IBC 2003/2005 CT State Building Code Section 3108.4.2 (FS) ⁽¹⁾	Proposed Loading (FS) ⁽¹⁾	Result
Reinforced Concrete Mat	OM ⁽²⁾	2.0	3.48	PASS

Note 1: FS denotes Factor of Safety

Note 2: OM denotes Overturning Moment.

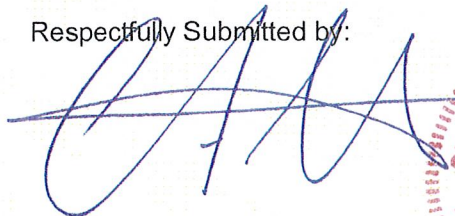
Conclusion

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

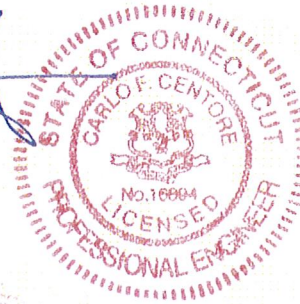
The analysis is based, in part, on the information provided to this office by Verizon Wireless. If the existing conditions are different than the information in this report, Centek Engineering, Inc. must be contacted for resolution of any potential issues.

Please feel free to call with any questions or comments.

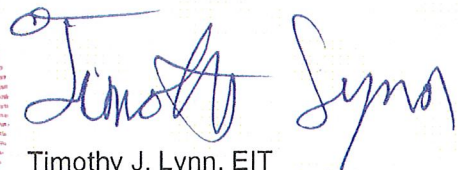
Respectfully Submitted by:



Carlo F. Centore, PE
Principal ~ Structural Engineer



Prepared by:



Timothy J. Lynn, EIT
Structural Engineer

Standard Conditions for Furnishing of
Professional Engineering Services on
Existing Structures

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

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

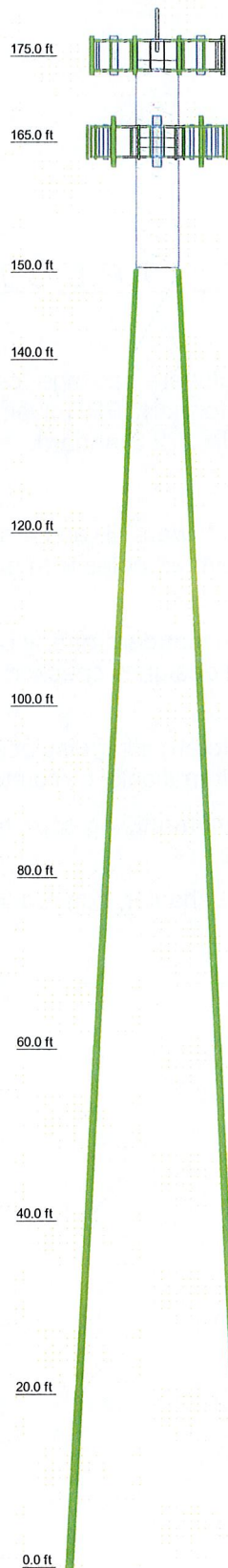
GENERAL DESCRIPTION OF STRUCTURAL ANALYSIS PROGRAM

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

RISATower Features:

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

Section	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	Pind 139284	2.5		2.25		2	1.75	1.5	SR 2 1/4	SR 2
Leg Grade										
Diagonals		2L3 1/2x3 1/2x5/16							SR 1	SR 7/8
Diagonal Grade									A572-50	
Top Girts									SR 1	SR 7/8
Bottom Girts									SR 1	SR 7/8
Face Width (ft)	20	18	16	14	12	10	8	6		
# Panels @ (ft)		3 @ 20				9 @ 10			7 @ 2.292	4 @ 2.25
Weight (K)	40.1	7.5	6.8	6.7	4.8	4.2	3.0	1.3	1.2	0.7



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
8' x 2.5" Dia omni	175	BXA-171085-8CF (Verizon - Proposed)	165
50"x3" Pipe Mount	175	BXA-70063/6CF (Verizon - Proposed)	165
(2) 7770.00 (ATI - Existing)	175	LPA-80080-4CF (Verizon - Existing)	165
(2) TMA (ATI - Existing)	175	LPA-80080-4CF (Verizon - Existing)	165
(2) Diplexer (ATI - Existing)	175	BXA-171085-8CF (Verizon - Proposed)	165
(2) 7770.00 (ATI - Existing)	175	BXA-70063/6CF (Verizon - Proposed)	165
(2) TMA (ATI - Existing)	175	LPA-80080-4CF (Verizon - Existing)	165
(2) Diplexer (ATI - Existing)	175	LPA-80080-4CF (Verizon - Existing)	165
(2) 7770.00 (ATI - Existing)	175	BXA-171085-8CF (Verizon - Proposed)	165
(2) TMA (ATI - Existing)	175	BXA-70063/6CF (Verizon - Proposed)	165
(2) Diplexer (ATI - Existing)	175	LPA-80080-4CF (Verizon - Existing)	165
(2) 7770.00 (ATI - Existing)	175	LPA-80080-4CF (Verizon - Existing)	165
15' T-Frame (ATI - Existing)	175	15' T-Frame (Verizon - Existing)	165
15' T-Frame (ATI - Existing)	175	15' T-Frame (Verizon - Existing)	165
15' T-Frame (ATI - Existing)	175	15' T-Frame (Verizon - Existing)	165
LPA-80080-4CF (Verizon - Existing)	165		

MATERIAL STRENGTH

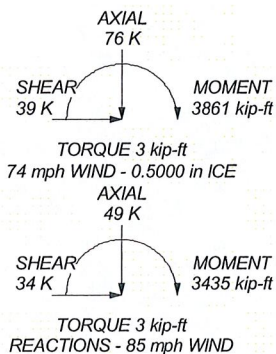
GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

TOWER DESIGN NOTES

1. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
2. Tower is also designed for a 74 mph basic wind with 0.50 in ice.
3. Deflections are based upon a 50 mph wind.
4. TOWER RATING: 40.5%

MAX. CORNER REACTIONS AT BASE:

DOWN: 248 K
UPLIFT: -181 K
SHEAR: 23 K



Centek Engineering Inc.		Job: 11001.CO35 - Baltic - Rev1	
63-2 North Branford Rd.		Project: 175' Lattice Tower - Baltic Hanover Rd, Sprague, CT	
Branford, CT 06405		Client: Verizon Wireless	Drawn by: T.JL
Phone: (203) 488-0580		Code: TIA/EIA-222-F	Date: 10/05/11
FAX: (203) 488-8587		Path: J:\Jobs\1100100 WICO35 - Baltic\Rev (1)\Calc's\ERI Files\175-ft Vermont Lattice Tower.eri	Scale: NTS
			Dwg No. E-1

Feedline Plan

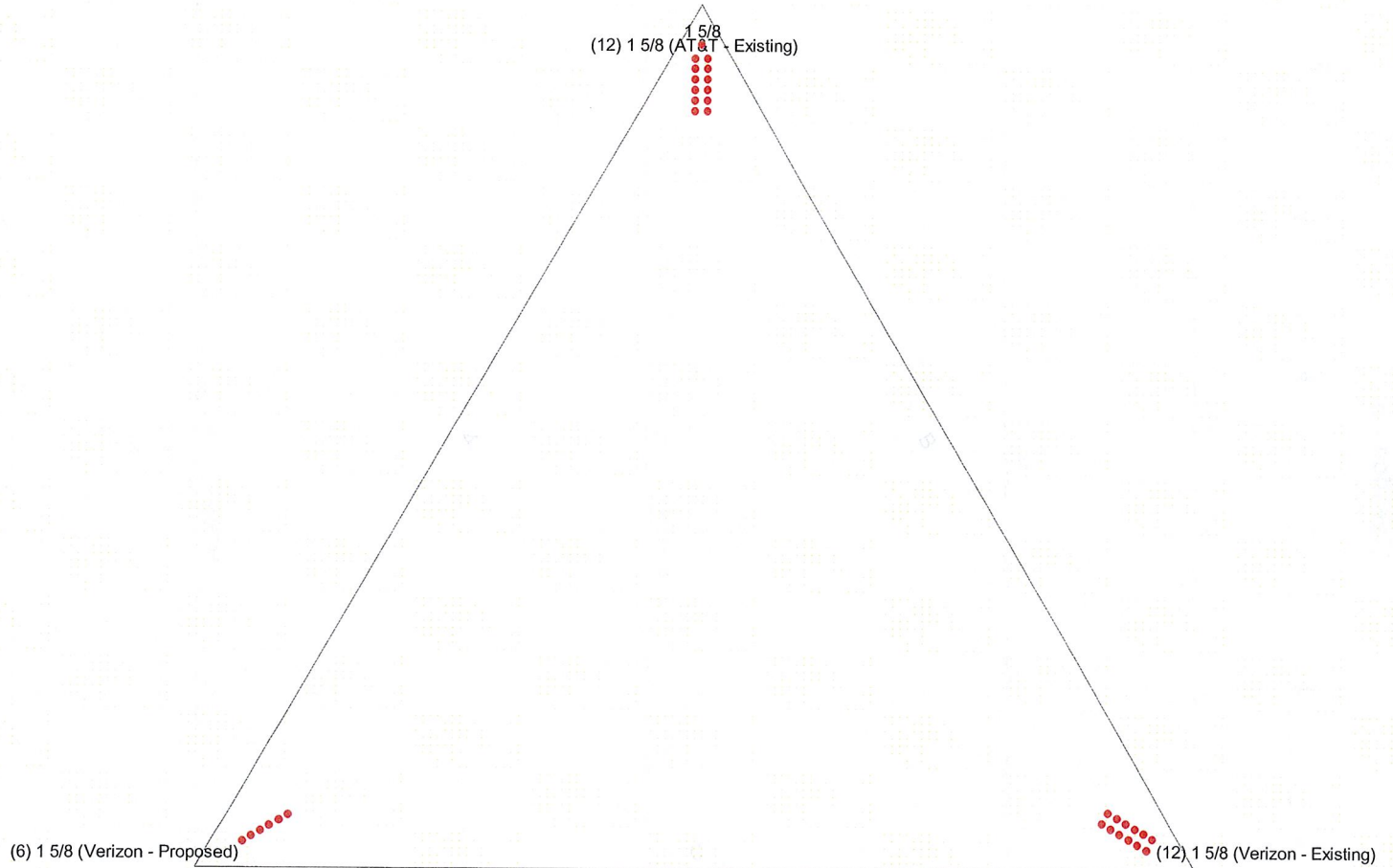
Round

Flat

App In Face

App Out Face

Truss-Leg



Centek Engineering Inc.

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Branford, CT 06405

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Project: **175' Lattice Tower - Baltic Hanover Rd, Sprague, CT**

Client: Verizon Wireless

Drawn by: TJL

App'd:

Code: TIA/EIA-222-F

Date: 10/05/11

Scale: NTS

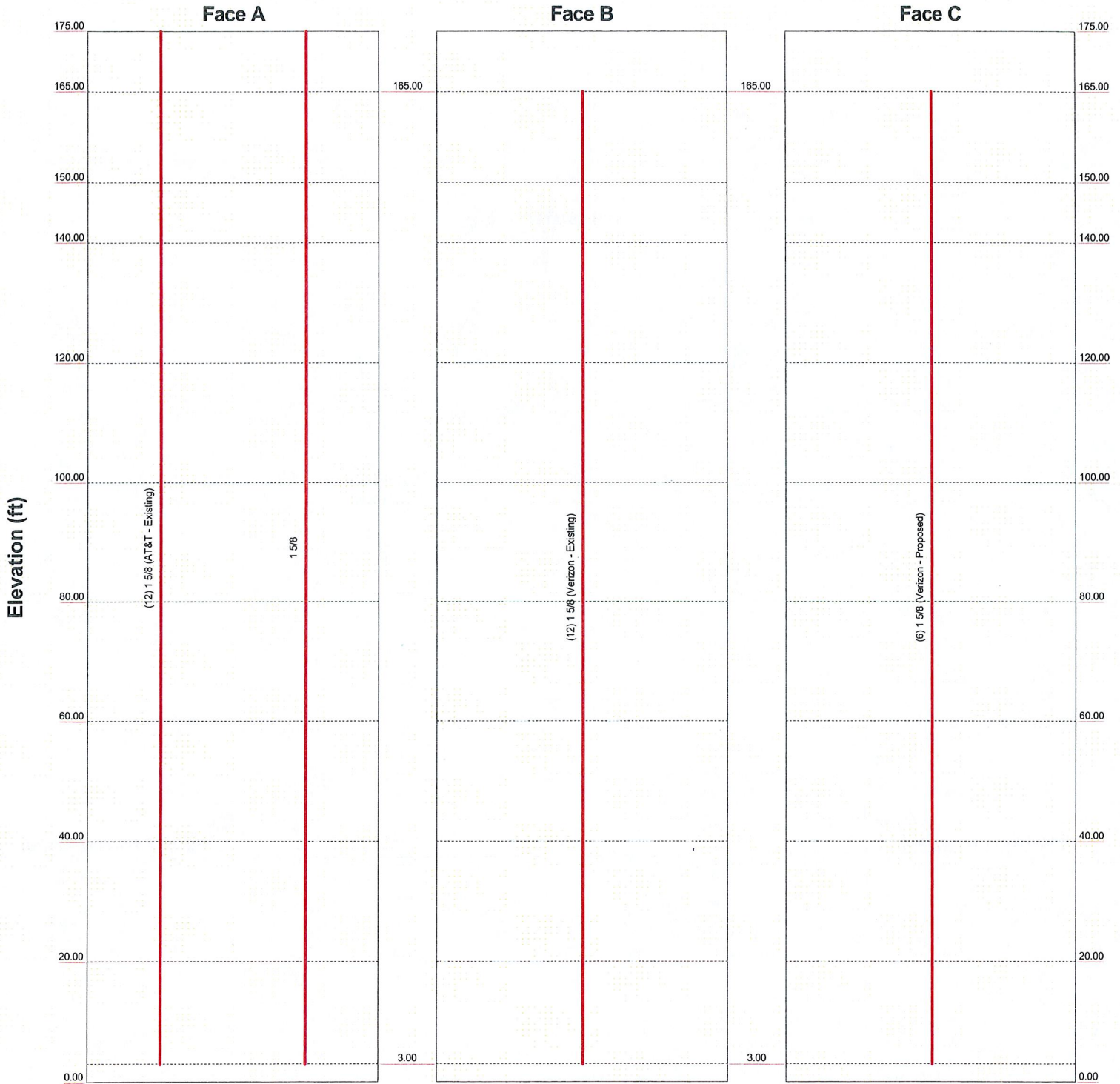
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Dwg No. E-7

Feedline Distribution Chart
0' - 175'

Round Flat App In Face App Out Face Truss Leg



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Phone: (203) 488-0580		Code: TIA/EIA-222-F	Date: 10/05/11
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		Dwg No. E-7	

<i>RISATower</i> Centek Engineering Inc. 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job 11001.CO35 - Baltic - Rev1	Page 1 of 35
	Project 175' Lattice Tower - Baltic Hanover Rd, Sprague, CT	Date 09:31:16 10/05/11
	Client Verizon Wireless	Designed by TJL

Tower Input Data

The main tower is a 3x free standing tower with an overall height of 175.00 ft above the ground line.

The base of the tower is set at an elevation of 0.00 ft above the ground line.

The face width of the tower is 5.00 ft at the top and 20.00 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.

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

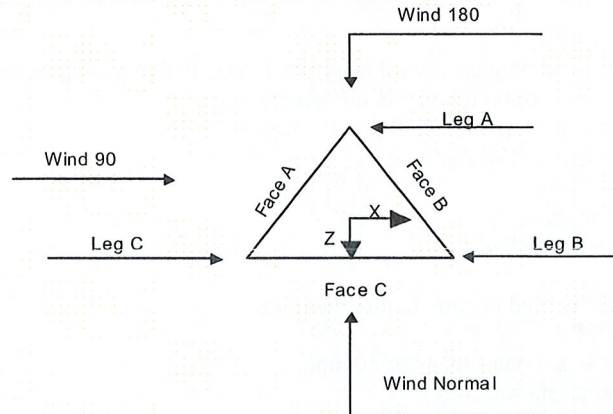
Stress ratio used in tower member design is 1.333.

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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	Client Verizon Wireless	Designed by TJL



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	175.00-165.00			5.00	1	10.00
T2	165.00-150.00			5.00	1	15.00
T3	150.00-140.00			5.00	1	10.00
T4	140.00-120.00			6.00	1	20.00
T5	120.00-100.00			8.00	1	20.00
T6	100.00-80.00			10.00	1	20.00
T7	80.00-60.00			12.00	1	20.00
T8	60.00-40.00			14.00	1	20.00
T9	40.00-20.00			16.00	1	20.00
T10	20.00-0.00			18.00	1	20.00

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	175.00-165.00	2.25	X Brace	No	No	6.0000	6.0000
T2	165.00-150.00	2.29	X Brace	No	No	7.4880	7.4880
T3	150.00-140.00	10.00	X Brace	No	No	0.0000	0.0000
T4	140.00-120.00	10.00	X Brace	No	No	0.0000	0.0000
T5	120.00-100.00	10.00	X Brace	No	No	0.0000	0.0000

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	Client	Verizon Wireless	Designed by	TJL

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
T6	100.00-80.00	10.00	X Brace	No	No	0.0000	0.0000
T7	80.00-60.00	10.00	X Brace	No	No	0.0000	0.0000
T8	60.00-40.00	20.00	X Brace	No	No	0.0000	0.0000
T9	40.00-20.00	20.00	X Brace	No	No	0.0000	0.0000
T10	20.00-0.00	20.00	X Brace	No	No	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 175.00-165.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T2 165.00-150.00	Solid Round	2 1/4	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T3 150.00-140.00	Truss Leg	1.5	A572-50 (50 ksi)	Single Angle	L3x3x5/16	A36 (36 ksi)
T4 140.00-120.00	Truss Leg	1.75	A572-50 (50 ksi)	Single Angle	L3x3x5/16	A36 (36 ksi)
T5 120.00-100.00	Truss Leg	2	A572-50 (50 ksi)	Single Angle	L3x3x5/16	A36 (36 ksi)
T6 100.00-80.00	Truss Leg	2	A572-50 (50 ksi)	Single Angle	L3x3x5/16	A36 (36 ksi)
T7 80.00-60.00	Truss Leg	2.25	A572-50 (50 ksi)	Single Angle	L3x3x5/16	A36 (36 ksi)
T8 60.00-40.00	Truss Leg	2.5	A572-50 (50 ksi)	Double Equal Angle	2L3 1/2x3 1/2x5/16	A36 (36 ksi)
T9 40.00-20.00	Truss Leg	2.5	A572-50 (50 ksi)	Double Equal Angle	2L3 1/2x3 1/2x5/16	A36 (36 ksi)
T10 20.00-0.00	Truss Leg	Pirod 139284	A572-50 (50 ksi)	Double Equal Angle	2L3 1/2x3 1/2x5/16	A36 (36 ksi)

Tower Section Geometry (cont'd)

Tower Elevation	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
ft						
T1 175.00-165.00	Solid Round	7/8	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T2 165.00-150.00	Solid Round	1	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)

Tower Section Geometry (cont'd)

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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 Horizontal
ft	ft ²	in					in	in
T1 175.00-165.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T2 165.00-150.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T3 150.00-140.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T4 140.00-120.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T5 120.00-100.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T6 100.00-80.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T7 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T8 60.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	1	Mid-Pt	36.0000
T9 40.00-20.00	0.00	0.0000	A36 (36 ksi)	1	1	1	Mid-Pt	36.0000
T10 20.00-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1	Mid-Pt	36.0000

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 175.00-165.00	Yes	Yes	1	1	1	1	1	1	1	1
T2 165.00-150.00	Yes	Yes	1	1	1	1	1	1	1	1
T3 150.00-140.00	Yes	Yes	1	1	1	1	1	1	1	1
T4 140.00-120.00	Yes	Yes	1	1	1	1	1	1	1	1
T5 120.00-100.00	Yes	Yes	1	1	1	1	1	1	1	1
T6 100.00-80.00	Yes	Yes	1	1	1	1	1	1	1	1
T7 80.00-60.00	Yes	Yes	1	1	1	1	1	1	1	1
T8 60.00-40.00	Yes	Yes	1	1	1	1	1	1	1	1
T9 40.00-20.00	Yes	Yes	1	1	1	1	1	1	1	1
T10 20.00-0.00	Yes	Yes	1	1	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.

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	Client	Verizon Wireless	Designed by	TJL

Tower Section Geometry (cont'd)

Tower Elevation ft	Truss-Leg K Factors					
	Truss-Legs Used As Leg Members			Truss-Legs Used As Inner Members		
	Leg Panels	X Brace Diagonals	Z Brace Diagonals	Leg Panels	X Brace Diagonals	Z Brace Diagonals
T3 150.00-140.00	1	1	1	1	0.5	0.85
T4 140.00-120.00	1	1	1	1	0.5	0.85
T5 120.00-100.00	1	1	1	1	0.5	0.85
T6 100.00-80.00	1	1	1	1	0.5	0.85
T7 80.00-60.00	1	1	1	1	0.5	0.85
T8 60.00-40.00	1	1	1	1	0.5	0.85
T9 40.00-20.00	1	1	1	1	0.5	0.85
T10 20.00-0.00	1	1	1	1	0.5	0.85

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 175.00-165.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T2 165.00-150.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T3 150.00-140.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T4 140.00-120.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T5 120.00-100.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T6 100.00-80.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T7 80.00-60.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T8 60.00-40.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T9 40.00-20.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
T10 20.00-0.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1

Tower Section Geometry (cont'd)

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Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 175.00-165.00	Sleeve DS	0.7500 A325N	5	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 165.00-150.00	Flange	1.0000 A325N	6	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 150.00-140.00	Flange	1.0000 A325N	6	1.0000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 140.00-120.00	Flange	1.0000 A325N	6	1.0000 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 120.00-100.00	Flange	1.2500 A325N	6	1.2500 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T6 100.00-80.00	Flange	1.2500 A325N	6	1.2500 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T7 80.00-60.00	Flange	1.2500 A325N	6	1.2500 A325N	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T8 60.00-40.00	Flange	1.2500 A325N	12	1.0000 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	0
T9 40.00-20.00	Flange	1.2500 A325N	12	1.0000 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	0
T10 20.00-0.00	Flange	1.2500 A687	12	1.0000 A325N	2	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325X	0	0.6250 A325N	0	0.6250 A325X	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
1 5/8 (AT&T - Existing)	A	No	Ar (Leg)	175.00 - 3.00	0.0000	0.08	12	6	0.5000 1.0000	1.9800		1.04
1 5/8 (Verizon - Existing)	B	No	Ar (Leg)	165.00 - 3.00	0.0000	0.08	12	6	0.5000 1.0000	1.9800		1.04
1 5/8 (Verizon - Proposed)	C	No	Ar (Leg)	165.00 - 3.00	0.0000	0.08	6	6	0.5000 1.0000	1.9800		1.04
1 5/8	A	No	Ar (Leg)	175.00 - 3.00	0.0000	0.04	1	1	0.5000 1.0000	1.9800		1.04

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
T1	175.00-165.00	A	11.550	0.000	0.000	0.000	0.14
		B	11.550	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
T2	165.00-150.00	A	32.175	0.000	0.000	0.000	0.20
		B	32.175	0.000	0.000	0.000	0.19
		C	29.700	0.000	0.000	0.000	0.09
T3	150.00-140.00	A	21.450	0.000	0.000	0.000	0.14

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<i>Tower Section</i>	<i>Tower Elevation ft</i>	<i>Face</i>	<i>A_R</i> <i>ft²</i>	<i>A_F</i> <i>ft²</i>	<i>C_AA_A</i> <i>In Face ft²</i>	<i>C_AA_A</i> <i>Out Face ft²</i>	<i>Weight K</i>
T4	140.00-120.00	B	21.450	0.000	0.000	0.000	0.12
		C	19.800	0.000	0.000	0.000	0.06
		A	42.900	0.000	0.000	0.000	0.27
		B	42.900	0.000	0.000	0.000	0.25
T5	120.00-100.00	C	39.600	0.000	0.000	0.000	0.12
		A	42.900	0.000	0.000	0.000	0.27
		B	42.900	0.000	0.000	0.000	0.25
		C	39.600	0.000	0.000	0.000	0.12
T6	100.00-80.00	A	42.900	0.000	0.000	0.000	0.27
		B	42.900	0.000	0.000	0.000	0.25
		C	39.600	0.000	0.000	0.000	0.12
		A	42.900	0.000	0.000	0.000	0.27
T7	80.00-60.00	B	42.900	0.000	0.000	0.000	0.25
		C	39.600	0.000	0.000	0.000	0.12
		A	42.900	0.000	0.000	0.000	0.27
		B	42.900	0.000	0.000	0.000	0.25
T8	60.00-40.00	C	39.600	0.000	0.000	0.000	0.12
		A	42.900	0.000	0.000	0.000	0.27
		B	42.900	0.000	0.000	0.000	0.25
		C	39.600	0.000	0.000	0.000	0.12
T9	40.00-20.00	A	42.900	0.000	0.000	0.000	0.27
		B	42.900	0.000	0.000	0.000	0.25
		C	39.600	0.000	0.000	0.000	0.12
		A	42.900	0.000	0.000	0.000	0.27
T10	20.00-0.00	B	42.900	0.000	0.000	0.000	0.25
		C	39.600	0.000	0.000	0.000	0.12
		A	36.465	0.000	0.000	0.000	0.23
		B	36.465	0.000	0.000	0.000	0.21
		C	33.660	0.000	0.000	0.000	0.11

Feed Line/Linear Appurtenances Section Areas - With Ice

<i>Tower Section</i>	<i>Tower Elevation ft</i>	<i>Face or Leg</i>	<i>Ice Thickness in</i>	<i>A_R</i> <i>ft²</i>	<i>A_F</i> <i>ft²</i>	<i>C_AA_A</i> <i>In Face ft²</i>	<i>C_AA_A</i> <i>Out Face ft²</i>	<i>Weight K</i>
T1	175.00-165.00	A	0.500	4.967	10.333	0.000	0.000	0.35
		B		4.967	10.333	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
T2	165.00-150.00	A	0.500	11.175	31.000	0.000	0.000	0.52
		B		11.175	31.000	0.000	0.000	0.48
		C		7.450	31.000	0.000	0.000	0.24
T3	150.00-140.00	A	0.500	7.450	20.667	0.000	0.000	0.35
		B		7.450	20.667	0.000	0.000	0.32
		C		4.967	20.667	0.000	0.000	0.16
T4	140.00-120.00	A	0.500	14.900	41.333	0.000	0.000	0.70
		B		14.900	41.333	0.000	0.000	0.65
		C		9.933	41.333	0.000	0.000	0.32
T5	120.00-100.00	A	0.500	14.900	41.333	0.000	0.000	0.70
		B		14.900	41.333	0.000	0.000	0.65
		C		9.933	41.333	0.000	0.000	0.32
T6	100.00-80.00	A	0.500	14.900	41.333	0.000	0.000	0.70
		B		14.900	41.333	0.000	0.000	0.65
		C		9.933	41.333	0.000	0.000	0.32
T7	80.00-60.00	A	0.500	14.900	41.333	0.000	0.000	0.70
		B		14.900	41.333	0.000	0.000	0.65
		C		9.933	41.333	0.000	0.000	0.32
T8	60.00-40.00	A	0.500	14.900	41.333	0.000	0.000	0.70
		B		14.900	41.333	0.000	0.000	0.65
		C		9.933	41.333	0.000	0.000	0.32
T9	40.00-20.00	A	0.500	14.900	41.333	0.000	0.000	0.70
		B		14.900	41.333	0.000	0.000	0.65
		C		9.933	41.333	0.000	0.000	0.32
T10	20.00-0.00	A	0.500	12.665	35.133	0.000	0.000	0.59
		B		12.665	35.133	0.000	0.000	0.55

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Tower Section	Tower Elevation ft	Face or Leg C	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 K
				8.443	35.133	0.000	0.000	0.27

Feed Line Center of Pressure

Section	Elevation ft	CP _X in	CP _Z in	CP _X Ice in	CP _Z Ice in
T1	175.00-165.00	0.0000	-7.8360	0.0000	-5.5483
T2	165.00-150.00	0.0000	-0.6176	0.0000	-0.6536
T3	150.00-140.00	0.0000	-0.4959	0.0000	-0.5302
T4	140.00-120.00	0.0000	-0.6172	0.0000	-0.6600
T5	120.00-100.00	0.0000	-0.7608	0.0000	-0.8124
T6	100.00-80.00	0.0000	-0.9129	0.0000	-0.9758
T7	80.00-60.00	0.0000	-1.0398	0.0000	-1.1113
T8	60.00-40.00	0.0000	-1.1445	0.0000	-1.2527
T9	40.00-20.00	0.0000	-1.2889	0.0000	-1.4113
T10	20.00-0.00	0.0000	-1.2676	0.0000	-1.3857

Discrete Tower Loads

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 K
8' x 2.5" Dia omni	A	From Leg	1.00	0.0000	175.00	No Ice	2.00	0.03
			0.00			1/2" Ice	2.83	0.04
			7.00					
5'0"x3" Pipe Mount	A	From Leg	0.00	0.0000	175.00	No Ice	1.36	0.03
			0.00			1/2" Ice	1.67	0.04
			3.00					
(2) 7770.00 (AT&T - Existing)	A	From Leg	3.00	0.0000	175.00	No Ice	5.88	0.04
			0.00			1/2" Ice	6.31	0.07
			0.00					
(2) TMA (AT&T - Existing)	A	From Leg	4.00	0.0000	175.00	No Ice	1.29	0.01
			0.00			1/2" Ice	1.45	0.02
			0.00					
(2) Diplexer (AT&T - Existing)	A	From Leg	3.00	0.0000	175.00	No Ice	0.27	0.01
			0.00			1/2" Ice	0.34	0.01
			0.00					
(2) 7770.00 (AT&T - Existing)	B	From Leg	3.00	0.0000	175.00	No Ice	5.88	0.04
			0.00			1/2" Ice	6.31	0.07
			0.00					
(2) TMA (AT&T - Existing)	B	From Leg	4.00	0.0000	175.00	No Ice	1.29	0.01
			0.00			1/2" Ice	1.45	0.02
			0.00					
(2) Diplexer (AT&T - Existing)	B	From Leg	3.00	0.0000	175.00	No Ice	0.27	0.01
			0.00			1/2" Ice	0.34	0.01
			0.00					
(2) 7770.00	C	From Leg	3.00	0.0000	175.00	No Ice	5.88	0.04

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front ft²	C _{AA} Side ft²	Weight K	
(AT&T - Existing)			0.00 0.00		1/2" Ice	6.31	3.27	0.07	
(2) TMA (AT&T - Existing)	C	From Leg	4.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice	1.29 1.45	0.36 0.48	0.01 0.02
(2) Diplexer (AT&T - Existing)	C	From Leg	3.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice	0.27 0.34	0.18 0.25	0.01 0.01
15' T-Frame (AT&T - Existing)	A	From Leg	2.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice	15.00 20.60	15.00 20.60	0.50 0.65
15' T-Frame (AT&T - Existing)	B	From Leg	2.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice	15.00 20.60	15.00 20.60	0.50 0.65
15' T-Frame (AT&T - Existing)	C	From Leg	2.00 0.00 0.00	0.0000	175.00	No Ice 1/2" Ice	15.00 20.60	15.00 20.60	0.50 0.65
LPA-80080-4CF (Verizon - Existing)	A	From Leg	3.00 6.00 0.00	0.0000	165.00	No Ice 1/2" Ice	2.62 2.92	6.06 6.45	0.01 0.05
BXA-171085-8CF (Verizon - Proposed)	A	From Leg	3.00 4.00 0.00	0.0000	165.00	No Ice 1/2" Ice	2.94 3.26	2.16 2.46	0.01 0.03
BXA-70063/6CF (Verizon - Proposed)	A	From Leg	3.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice	7.73 8.27	4.16 4.60	0.02 0.06
LPA-80080-4CF (Verizon - Existing)	A	From Leg	3.00 -6.00 0.00	0.0000	165.00	No Ice 1/2" Ice	2.62 2.92	6.06 6.45	0.01 0.05
LPA-80080-4CF (Verizon - Existing)	B	From Leg	3.00 6.00 0.00	0.0000	165.00	No Ice 1/2" Ice	2.62 2.92	6.06 6.45	0.01 0.05
BXA-171085-8CF (Verizon - Proposed)	B	From Leg	3.00 4.00 0.00	0.0000	165.00	No Ice 1/2" Ice	2.94 3.26	2.16 2.46	0.01 0.03
BXA-70063/6CF (Verizon - Proposed)	B	From Leg	3.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice	7.73 8.27	4.16 4.60	0.02 0.06
LPA-80080-4CF (Verizon - Existing)	B	From Leg	3.00 -6.00 0.00	0.0000	165.00	No Ice 1/2" Ice	2.62 2.92	6.06 6.45	0.01 0.05
LPA-80080-4CF (Verizon - Existing)	C	From Leg	3.00 6.00 0.00	0.0000	165.00	No Ice 1/2" Ice	2.62 2.92	6.06 6.45	0.01 0.05
BXA-171085-8CF (Verizon - Proposed)	C	From Leg	3.00 4.00 0.00	0.0000	165.00	No Ice 1/2" Ice	2.94 3.26	2.16 2.46	0.01 0.03
BXA-70063/6CF (Verizon - Proposed)	C	From Leg	3.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice	7.73 8.27	4.16 4.60	0.02 0.06
LPA-80080-4CF (Verizon - Existing)	C	From Leg	3.00 -6.00 0.00	0.0000	165.00	No Ice 1/2" Ice	2.62 2.92	6.06 6.45	0.01 0.05
15' T-Frame (Verizon - Existing)	A	From Leg	2.00 0.00 0.00	0.0000	165.00	No Ice 1/2" Ice	15.00 20.60	15.00 20.60	0.50 0.65
15' T-Frame	B	From Leg	2.00	0.0000	165.00	No Ice	15.00	15.00	0.50

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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 K
(Verizon - Existing)			0.00 0.00			1/2" Ice 20.60	20.60	0.65
15' T-Frame	C	From Leg	2.00	0.0000	165.00	No Ice 15.00	15.00	0.50
(Verizon - Existing)			0.00 0.00			1/2" Ice 20.60	20.60	0.65

Truss-Leg Properties

Section Designation	Area in ²	Area Ice in ²	Self Weight K	Ice Weight K	Equiv. Diameter in	Equiv. Diameter Ice in	Leg Area in ²
1.5	2301.1922	3672.5129	0.56	0.45	7.9903	12.7518	5.3014
1.75	2430.1348	3855.2440	0.69	0.46	8.4380	13.3863	7.2158
2	2600.4148	4117.8473	1.03	0.50	9.0292	14.2981	9.4248
2	2600.4148	4117.8473	1.03	0.50	9.0292	14.2981	9.4248
2.25	2737.4313	4322.7042	1.20	0.51	9.5050	15.0094	11.9282
2.5	3259.4891	4835.3718	1.51	0.64	11.3177	16.7895	14.7262
2.5	3259.4891	4835.3718	1.51	0.64	11.3177	16.7895	14.7262
Pirol 139284	3390.1403	5001.1204	1.72	0.65	11.7713	17.3650	17.8187

Tower Pressures - No Ice

$$G_H = 1.123$$

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 175.00- 165.00	170.00	1.597	30	51.667	A	0.000	18.680	3.333	17.84	0.000	0.000
					B	0.000	18.680		17.84	0.000	0.000
					C	0.000	7.130		46.75	0.000	0.000
T2 165.00- 150.00	157.50	1.563	29	77.813	A	0.000	43.896	5.625	12.81	0.000	0.000
					B	0.000	43.896		12.81	0.000	0.000
					C	0.000	41.421		13.58	0.000	0.000
T3 150.00- 140.00	145.00	1.526	28	66.264	A	5.093	34.789	13.339	33.45	0.000	0.000
					B	5.093	34.789		33.45	0.000	0.000
					C	5.093	33.139		34.89	0.000	0.000
T4 140.00- 120.00	130.00	1.48	27	162.945	A	10.467	71.073	28.173	34.55	0.000	0.000
					B	10.467	71.073		34.55	0.000	0.000
					C	10.467	67.773		36.01	0.000	0.000
T5 120.00- 100.00	110.00	1.411	26	203.362	A	11.964	73.048	30.148	35.46	0.000	0.000
					B	11.964	73.048		35.46	0.000	0.000
					C	11.964	69.748		36.89	0.000	0.000
T6 100.00- 80.00	90.00	1.332	25	243.362	A	13.520	73.048	30.148	34.83	0.000	0.000
					B	13.520	73.048		34.83	0.000	0.000
					C	13.520	69.748		36.21	0.000	0.000

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	Client	Verizon Wireless	Designed by	TJL

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			
T7 80.00-60.00	70.00	1.24	23	283.780	A	15.144	74.636	31.736	35.35	0.000	0.000
					B	15.144	74.636		35.35	0.000	0.000
					C	15.144	71.336		36.70	0.000	0.000
T8 60.00-40.00	50.00	1.126	21	334.209	A	13.373	80.688	37.788	40.17	0.000	0.000
					B	13.373	80.688		40.17	0.000	0.000
					C	13.373	77.388		41.64	0.000	0.000
T9 40.00-20.00	30.00	1	18	374.209	A	13.965	80.688	37.788	39.92	0.000	0.000
					B	13.965	80.688		39.92	0.000	0.000
					C	13.965	77.388		41.37	0.000	0.000
T10 20.00-0.00	10.00	1	18	414.627	A	14.825	75.768	39.303	43.38	0.000	0.000
					B	14.825	75.768		43.38	0.000	0.000
					C	14.825	72.963		44.77	0.000	0.000

Tower Pressure - With Ice

$$G_H = 1.123$$

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 175.00-165.00	170.00	1.597	22	0.5000	52.500	A	10.333	18.102	5.000	17.58	0.000	0.000
						B	10.333	18.102		17.58	0.000	0.000
						C	0.000	13.136		38.06	0.000	0.000
T2 165.00-150.00	157.50	1.563	22	0.5000	79.063	A	31.000	31.492	8.125	13.00	0.000	0.000
						B	31.000	31.492		13.00	0.000	0.000
						C	31.000	27.767		13.83	0.000	0.000
T3 150.00-140.00	145.00	1.526	21	0.5000	67.098	A	25.759	30.436	21.288	37.88	0.000	0.000
						B	25.759	30.436		37.88	0.000	0.000
						C	25.759	27.953		39.63	0.000	0.000
T4 140.00-120.00	130.00	1.48	21	0.5000	164.614	A	51.800	63.084	44.695	38.90	0.000	0.000
						B	51.800	63.084		38.90	0.000	0.000
						C	51.800	58.118		40.66	0.000	0.000
T5 120.00-100.00	110.00	1.411	20	0.5000	205.031	A	53.298	66.628	47.740	39.81	0.000	0.000
						B	53.298	66.628		39.81	0.000	0.000
						C	53.298	61.661		41.53	0.000	0.000
T6 100.00-80.00	90.00	1.332	18	0.5000	245.031	A	54.853	67.146	47.740	39.13	0.000	0.000
						B	54.853	67.146		39.13	0.000	0.000
						C	54.853	62.180		40.79	0.000	0.000
T7 80.00-60.00	70.00	1.24	17	0.5000	285.448	A	56.477	70.063	50.115	39.60	0.000	0.000
						B	56.477	70.063		39.60	0.000	0.000
						C	56.477	65.096		41.22	0.000	0.000
T8 60.00-40.00	50.00	1.126	16	0.5000	335.878	A	54.706	74.779	56.058	43.29	0.000	0.000
						B	54.706	74.779		43.29	0.000	0.000
						C	54.706	69.812		45.02	0.000	0.000
T9 40.00-20.00	30.00	1	14	0.5000	375.878	A	55.298	74.948	56.058	43.04	0.000	0.000
						B	55.298	74.948		43.04	0.000	0.000
						C	55.298	69.981		44.75	0.000	0.000
T10 20.00-0.00	10.00	1	14	0.5000	416.295	A	49.959	74.881	57.980	46.44	0.000	0.000
						B	49.959	74.881		46.44	0.000	0.000
						C	49.959	70.659		48.07	0.000	0.000

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Tower Pressure - Service

$$G_H = 1.123$$

Section Elevation	z	K _z	q _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _{AA} In Face	C _{AA} Out Face
ft	ft		psf	ft ²		ft ²	ft ²	ft ²		ft ²	ft ²
T1 175.00-165.00	170.00	1.597	10	51.667	A	0.000	18.680	3.333	17.84	0.000	0.000
					B	0.000	18.680		17.84	0.000	0.000
					C	0.000	7.130		46.75	0.000	0.000
T2 165.00-150.00	157.50	1.563	10	77.813	A	0.000	43.896	5.625	12.81	0.000	0.000
					B	0.000	43.896		12.81	0.000	0.000
					C	0.000	41.421		13.58	0.000	0.000
T3 150.00-140.00	145.00	1.526	10	66.264	A	5.093	34.789	13.339	33.45	0.000	0.000
					B	5.093	34.789		33.45	0.000	0.000
					C	5.093	33.139		34.89	0.000	0.000
T4 140.00-120.00	130.00	1.48	9	162.945	A	10.467	71.073	28.173	34.55	0.000	0.000
					B	10.467	71.073		34.55	0.000	0.000
					C	10.467	67.773		36.01	0.000	0.000
T5 120.00-100.00	110.00	1.411	9	203.362	A	11.964	73.048	30.148	35.46	0.000	0.000
					B	11.964	73.048		35.46	0.000	0.000
					C	11.964	69.748		36.89	0.000	0.000
T6 100.00-80.00	90.00	1.332	9	243.362	A	13.520	73.048	30.148	34.83	0.000	0.000
					B	13.520	73.048		34.83	0.000	0.000
					C	13.520	69.748		36.21	0.000	0.000
T7 80.00-60.00	70.00	1.24	8	283.780	A	15.144	74.636	31.736	35.35	0.000	0.000
					B	15.144	74.636		35.35	0.000	0.000
					C	15.144	71.336		36.70	0.000	0.000
T8 60.00-40.00	50.00	1.126	7	334.209	A	13.373	80.688	37.788	40.17	0.000	0.000
					B	13.373	80.688		40.17	0.000	0.000
					C	13.373	77.388		41.64	0.000	0.000
T9 40.00-20.00	30.00	1	6	374.209	A	13.965	80.688	37.788	39.92	0.000	0.000
					B	13.965	80.688		39.92	0.000	0.000
					C	13.965	77.388		41.37	0.000	0.000
T10 20.00-0.00	10.00	1	6	414.627	A	14.825	75.768	39.303	43.38	0.000	0.000
					B	14.825	75.768		43.38	0.000	0.000
					C	14.825	72.963		44.77	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	K	K							ft ²	K	plf	
T1 175.00-165.00	0.14	0.65	A	0.362	2.145	0.637	1	1	11.893	0.85	84.63	B
			B	0.362	2.145	0.637	1	1	11.893			
			C	0.138	2.816	0.58	1	1	4.133			
T2 165.00-150.00	0.48	1.22	A	0.564	1.831	0.732	1	1	32.145	1.91	127.33	B
			B	0.564	1.831	0.732	1	1	32.145			
			C	0.532	1.862	0.715	1	1	29.596			
T3 150.00-140.00	0.32	1.26	A	0.602	1.803	0.755	1	1	31.350	1.79	179.16	B
			B	0.602	1.803	0.755	1	1	31.350			
			C	0.577	1.82	0.74	1	1	29.608			
T4 140.00-120.00	0.64	2.96	A	0.5	1.899	0.698	1	1	60.056	3.50	175.25	B
			B	0.5	1.899	0.698	1	1	60.056			
			C	0.48	1.927	0.688	1	1	57.067			
T5 120.00-100.00	0.64	4.09	A	0.418	2.029	0.659	1	1	60.112	3.57	178.67	B
			B	0.418	2.029	0.659	1	1	60.112			

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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	K	K							ft ²	K	plf	
T6 100.00- 80.00	0.64	4.19	C	0.402	2.06	0.652	1	1	57.463	3.57	178.72	B
			A	0.356	2.158	0.635	1	1	59.871			
			B	0.356	2.158	0.635	1	1	59.871			
			C	0.342	2.19	0.63	1	1	57.440			
T7 80.00- 60.00	0.64	4.81	A	0.316	2.253	0.621	1	1	61.497	3.57	178.37	B
			B	0.316	2.253	0.621	1	1	61.497			
			C	0.305	2.283	0.617	1	1	59.184			
			A	0.281	2.347	0.61	1	1	62.624			
T8 60.00- 40.00	0.64	6.67	B	0.281	2.347	0.61	1	1	62.624	3.44	171.82	B
			C	0.272	2.374	0.608	1	1	60.395			
			A	0.253	2.429	0.603	1	1	62.590			
			B	0.253	2.429	0.603	1	1	62.590			
T9 40.00- 20.00	0.64	6.77	C	0.244	2.455	0.6	1	1	60.428	3.16	157.84	B
			A	0.218	2.535	0.594	1	1	59.858			
			B	0.218	2.535	0.594	1	1	59.858			
			C	0.212	2.557	0.593	1	1	58.082			
Sum Weight:	5.36	40.13						OTM	2422.63 kip-ft	28.51		

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	K	K							ft ²	K	plf	
T1 175.00- 165.00	0.14	0.65	A	0.362	2.145	0.637	0.825	1	11.893	0.85	84.63	B
			B	0.362	2.145	0.637	0.825	1	11.893			
			C	0.138	2.816	0.58	0.825	1	4.133			
T2 165.00- 150.00	0.48	1.22	A	0.564	1.831	0.732	0.825	1	32.145	1.91	127.33	B
			B	0.564	1.831	0.732	0.825	1	32.145			
			C	0.532	1.862	0.715	0.825	1	29.596			
T3 150.00- 140.00	0.32	1.26	A	0.602	1.803	0.755	0.825	1	30.459	1.74	174.06	B
			B	0.602	1.803	0.755	0.825	1	30.459			
			C	0.577	1.82	0.74	0.825	1	28.717			
T4 140.00- 120.00	0.64	2.96	A	0.5	1.899	0.698	0.825	1	58.224	3.40	169.90	B
			B	0.5	1.899	0.698	0.825	1	58.224			
			C	0.48	1.927	0.688	0.825	1	55.235			
T5 120.00- 100.00	0.64	4.09	A	0.418	2.029	0.659	0.825	1	58.018	3.45	172.45	B
			B	0.418	2.029	0.659	0.825	1	58.018			
			C	0.402	2.06	0.652	0.825	1	55.369			
T6 100.00- 80.00	0.64	4.19	A	0.356	2.158	0.635	0.825	1	57.505	3.43	171.66	B
			B	0.356	2.158	0.635	0.825	1	57.505			
			C	0.342	2.19	0.63	0.825	1	55.074			
T7 80.00- 60.00	0.64	4.81	A	0.316	2.253	0.621	0.825	1	58.846	3.41	170.69	B
			B	0.316	2.253	0.621	0.825	1	58.846			
			C	0.305	2.283	0.617	0.825	1	56.534			
T8 60.00- 40.00	0.64	6.67	A	0.281	2.347	0.61	0.825	1	60.284	3.31	165.40	B
			B	0.281	2.347	0.61	0.825	1	60.284			
			C	0.272	2.374	0.608	0.825	1	58.054			
T9 40.00- 20.00	0.64	6.77	A	0.253	2.429	0.603	0.825	1	60.146	3.03	151.68	B
			B	0.253	2.429	0.603	0.825	1	60.146			
			C	0.244	2.455	0.6	0.825	1	57.985			
T10 20.00- 0.00	0.55	7.51	A	0.218	2.535	0.594	0.825	1	57.263	3.02	150.75	B
			B	0.218	2.535	0.594	0.825	1	57.263			
			C	0.212	2.557	0.593	0.825	1	55.488			

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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	K	K							ft ²	K	plf	
Sum Weight:	5.36	40.13						OTM	2352.70 kip-ft	27.55		

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	K	K							ft ²	K	plf	
T1 175.00- 165.00	0.14	0.65	A	0.362	2.145	0.637	0.8	1	11.893	0.85	84.63	B
			B	0.362	2.145	0.637	0.8	1	11.893			
			C	0.138	2.816	0.58	0.8	1	4.133			
T2 165.00- 150.00	0.48	1.22	A	0.564	1.831	0.732	0.8	1	32.145	1.91	127.33	B
			B	0.564	1.831	0.732	0.8	1	32.145			
			C	0.532	1.862	0.715	0.8	1	29.596			
T3 150.00- 140.00	0.32	1.26	A	0.602	1.803	0.755	0.8	1	30.331	1.73	173.34	B
			B	0.602	1.803	0.755	0.8	1	30.331			
			C	0.577	1.82	0.74	0.8	1	28.590			
T4 140.00- 120.00	0.64	2.96	A	0.5	1.899	0.698	0.8	1	57.962	3.38	169.14	B
			B	0.5	1.899	0.698	0.8	1	57.962			
			C	0.48	1.927	0.688	0.8	1	54.974			
T5 120.00- 100.00	0.64	4.09	A	0.418	2.029	0.659	0.8	1	57.719	3.43	171.56	B
			B	0.418	2.029	0.659	0.8	1	57.719			
			C	0.402	2.06	0.652	0.8	1	55.070			
T6 100.00- 80.00	0.64	4.19	A	0.356	2.158	0.635	0.8	1	57.167	3.41	170.65	B
			B	0.356	2.158	0.635	0.8	1	57.167			
			C	0.342	2.19	0.63	0.8	1	54.736			
T7 80.00- 60.00	0.64	4.81	A	0.316	2.253	0.621	0.8	1	58.468	3.39	169.59	B
			B	0.316	2.253	0.621	0.8	1	58.468			
			C	0.305	2.283	0.617	0.8	1	56.156			
T8 60.00- 40.00	0.64	6.67	A	0.281	2.347	0.61	0.8	1	59.950	3.29	164.48	B
			B	0.281	2.347	0.61	0.8	1	59.950			
			C	0.272	2.374	0.608	0.8	1	57.720			
T9 40.00- 20.00	0.64	6.77	A	0.253	2.429	0.603	0.8	1	59.797	3.02	150.80	B
			B	0.253	2.429	0.603	0.8	1	59.797			
			C	0.244	2.455	0.6	0.8	1	57.635			
T10 20.00- 0.00	0.55	7.51	A	0.218	2.535	0.594	0.8	1	56.893	3.00	149.78	B
			B	0.218	2.535	0.594	0.8	1	56.893			
			C	0.212	2.557	0.593	0.8	1	55.117			
Sum Weight:	5.36	40.13						OTM	2342.71 kip-ft	27.41		

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	K	K							ft ²	K	plf	
T1 175.00- 165.00	0.14	0.65	A	0.362	2.145	0.637	0.85	1	11.893	0.85	84.63	B
			B	0.362	2.145	0.637	0.85	1	11.893			
			C	0.138	2.816	0.58	0.85	1	4.133			

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	Client	Verizon Wireless	Designed by	TJL

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	K	K							ft ²	K	plf	
T2 165.00-150.00	0.48	1.22	A	0.564	1.831	0.732	0.85	1	32.145	1.91	127.33	B
			B	0.564	1.831	0.732	0.85	1	32.145			
			C	0.532	1.862	0.715	0.85	1	29.596			
T3 150.00-140.00	0.32	1.26	A	0.602	1.803	0.755	0.85	1	30.586	1.75	174.79	B
			B	0.602	1.803	0.755	0.85	1	30.586			
			C	0.577	1.82	0.74	0.85	1	28.844			
T4 140.00-120.00	0.64	2.96	A	0.5	1.899	0.698	0.85	1	58.486	3.41	170.66	B
			B	0.5	1.899	0.698	0.85	1	58.486			
			C	0.48	1.927	0.688	0.85	1	55.497			
T5 120.00-100.00	0.64	4.09	A	0.418	2.029	0.659	0.85	1	58.317	3.47	173.34	B
			B	0.418	2.029	0.659	0.85	1	58.317			
			C	0.402	2.06	0.652	0.85	1	55.669			
T6 100.00-80.00	0.64	4.19	A	0.356	2.158	0.635	0.85	1	57.843	3.45	172.66	B
			B	0.356	2.158	0.635	0.85	1	57.843			
			C	0.342	2.19	0.63	0.85	1	55.412			
T7 80.00-60.00	0.64	4.81	A	0.316	2.253	0.621	0.85	1	59.225	3.44	171.78	B
			B	0.316	2.253	0.621	0.85	1	59.225			
			C	0.305	2.283	0.617	0.85	1	56.913			
T8 60.00-40.00	0.64	6.67	A	0.281	2.347	0.61	0.85	1	60.619	3.33	166.31	B
			B	0.281	2.347	0.61	0.85	1	60.619			
			C	0.272	2.374	0.608	0.85	1	58.389			
T9 40.00-20.00	0.64	6.77	A	0.253	2.429	0.603	0.85	1	60.495	3.05	152.56	B
			B	0.253	2.429	0.603	0.85	1	60.495			
			C	0.244	2.455	0.6	0.85	1	58.334			
T10 20.00-0.00	0.55	7.51	A	0.218	2.535	0.594	0.85	1	57.634	3.03	151.73	B
			B	0.218	2.535	0.594	0.85	1	57.634			
			C	0.212	2.557	0.593	0.85	1	55.859			
Sum Weight:	5.36	40.13						OTM	2362.69 kip-ft	27.69		

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	K	K							ft ²	K	plf	
T1 175.00-165.00	0.35	0.83	A	0.542	1.852	0.72	1	1	23.360	1.08	107.62	B
			B	0.542	1.852	0.72	1	1	23.360			
			C	0.25	2.437	0.602	1	1	7.907			
T2 165.00-150.00	1.25	1.50	A	0.79	1.809	0.889	1	1	58.985	2.60	173.18	B
			B	0.79	1.809	0.889	1	1	58.985			
			C	0.743	1.785	0.852	1	1	54.651			
T3 150.00-140.00	0.83	2.12	A	0.838	1.849	0.928	1	1	53.996	2.37	237.30	B
			B	0.838	1.849	0.928	1	1	53.996			
			C	0.8	1.816	0.897	1	1	50.828			
T4 140.00-120.00	1.66	4.75	A	0.698	1.776	0.818	1	1	103.429	4.23	211.63	B
			B	0.698	1.776	0.818	1	1	103.429			
			C	0.668	1.778	0.797	1	1	98.143			
T5 120.00-100.00	1.66	6.02	A	0.585	1.814	0.744	1	1	102.901	4.10	205.06	B
			B	0.585	1.814	0.744	1	1	102.901			
			C	0.561	1.834	0.73	1	1	98.331			
T6 100.00-80.00	1.66	6.17	A	0.498	1.903	0.696	1	1	101.616	4.01	200.56	B
			B	0.498	1.903	0.696	1	1	101.616			
			C	0.478	1.931	0.686	1	1	97.530			
T7 80.00-60.00	1.66	6.88	A	0.443	1.985	0.67	1	1	103.435	3.96	198.18	B
			B	0.443	1.985	0.67	1	1	103.435			

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	Project	175' Lattice Tower - Baltic Hanover Rd, Sprague, CT	Date	09:31:16 10/05/11
	Client	Verizon Wireless	Designed by	TJL

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	K	K							ft ²	K	plf	
T8 60.00- 40.00	1.66	9.27	C	0.426	2.015	0.663	1	1	99.604	3.78	189.08	B
			A	0.386	2.093	0.646	1	1	102.998			
			B	0.386	2.093	0.646	1	1	102.998			
T9 40.00- 20.00	1.66	9.41	C	0.371	2.125	0.64	1	1	99.392	3.48	174.17	B
			A	0.347	2.18	0.631	1	1	102.608			
			B	0.347	2.18	0.631	1	1	102.608			
T10 20.00- 0.00	1.42	10.23	C	0.333	2.211	0.627	1	1	99.152	3.44	171.81	B
			A	0.3	2.296	0.616	1	1	96.075			
			B	0.3	2.296	0.616	1	1	96.075			
Sum Weight:	13.83	57.18	C	0.29	2.324	0.613	1	1	93.259	33.06		
								OTM	2903.94 kip-ft			

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	K	K							ft ²	K	plf	
T1 175.00- 165.00	0.35	0.83	A	0.542	1.852	0.72	0.825	1	21.552	0.99	99.29	B
			B	0.542	1.852	0.72	0.825	1	21.552			
			C	0.25	2.437	0.602	0.825	1	7.907			
T2 165.00- 150.00	1.25	1.50	A	0.79	1.809	0.889	0.825	1	53.560	2.36	157.25	B
			B	0.79	1.809	0.889	0.825	1	53.560			
			C	0.743	1.785	0.852	0.825	1	49.226			
T3 150.00- 140.00	0.83	2.12	A	0.838	1.849	0.928	0.825	1	49.488	2.17	217.48	B
			B	0.838	1.849	0.928	0.825	1	49.488			
			C	0.8	1.816	0.897	0.825	1	46.320			
T4 140.00- 120.00	1.66	4.75	A	0.698	1.776	0.818	0.825	1	94.364	3.86	193.08	B
			B	0.698	1.776	0.818	0.825	1	94.364			
			C	0.668	1.778	0.797	0.825	1	89.078			
T5 120.00- 100.00	1.66	6.02	A	0.585	1.814	0.744	0.825	1	93.574	3.73	186.47	B
			B	0.585	1.814	0.744	0.825	1	93.574			
			C	0.561	1.834	0.73	0.825	1	89.003			
T6 100.00- 80.00	1.66	6.17	A	0.498	1.903	0.696	0.825	1	92.016	3.63	181.61	B
			B	0.498	1.903	0.696	0.825	1	92.016			
			C	0.478	1.931	0.686	0.825	1	87.930			
T7 80.00- 60.00	1.66	6.88	A	0.443	1.985	0.67	0.825	1	93.552	3.58	179.24	B
			B	0.443	1.985	0.67	0.825	1	93.552			
			C	0.426	2.015	0.663	0.825	1	89.721			
T8 60.00- 40.00	1.66	9.27	A	0.386	2.093	0.646	0.825	1	93.424	3.43	171.50	B
			B	0.386	2.093	0.646	0.825	1	93.424			
			C	0.371	2.125	0.64	0.825	1	89.819			
T9 40.00- 20.00	1.66	9.41	A	0.347	2.18	0.631	0.825	1	92.931	3.15	157.74	B
			B	0.347	2.18	0.631	0.825	1	92.931			
			C	0.333	2.211	0.627	0.825	1	89.475			
T10 20.00- 0.00	1.42	10.23	A	0.3	2.296	0.616	0.825	1	87.332	3.12	156.17	B
			B	0.3	2.296	0.616	0.825	1	87.332			
			C	0.29	2.324	0.613	0.825	1	84.517			
Sum Weight:	13.83	57.18						OTM	2643.13 kip-ft	30.04		

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	Project	175' Lattice Tower - Baltic Hanover Rd, Sprague, CT	Date 09:31:16 10/05/11
	Client	Verizon Wireless	Designed by TJL

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	K	K							ft ²	K	plf	
T1 175.00- 165.00	0.35	0.83	A	0.542	1.852	0.72	0.8	1	21.293	0.98	98.10	B
			B	0.542	1.852	0.72	0.8	1	21.293			
			C	0.25	2.437	0.602	0.8	1	7.907			
T2 165.00- 150.00	1.25	1.50	A	0.79	1.809	0.889	0.8	1	52.785	2.32	154.98	B
			B	0.79	1.809	0.889	0.8	1	52.785			
			C	0.743	1.785	0.852	0.8	1	48.451			
T3 150.00- 140.00	0.83	2.12	A	0.838	1.849	0.928	0.8	1	48.844	2.15	214.65	B
			B	0.838	1.849	0.928	0.8	1	48.844			
			C	0.8	1.816	0.897	0.8	1	45.676			
T4 140.00- 120.00	1.66	4.75	A	0.698	1.776	0.818	0.8	1	93.069	3.81	190.43	B
			B	0.698	1.776	0.818	0.8	1	93.069			
			C	0.668	1.778	0.797	0.8	1	87.783			
T5 120.00- 100.00	1.66	6.02	A	0.585	1.814	0.744	0.8	1	92.241	3.68	183.82	B
			B	0.585	1.814	0.744	0.8	1	92.241			
			C	0.561	1.834	0.73	0.8	1	87.671			
T6 100.00- 80.00	1.66	6.17	A	0.498	1.903	0.696	0.8	1	90.645	3.58	178.90	B
			B	0.498	1.903	0.696	0.8	1	90.645			
			C	0.478	1.931	0.686	0.8	1	86.559			
T7 80.00- 60.00	1.66	6.88	A	0.443	1.985	0.67	0.8	1	92.140	3.53	176.54	B
			B	0.443	1.985	0.67	0.8	1	92.140			
			C	0.426	2.015	0.663	0.8	1	88.309			
T8 60.00- 40.00	1.66	9.27	A	0.386	2.093	0.646	0.8	1	92.057	3.38	168.99	B
			B	0.386	2.093	0.646	0.8	1	92.057			
			C	0.371	2.125	0.64	0.8	1	88.451			
T9 40.00- 20.00	1.66	9.41	A	0.347	2.18	0.631	0.8	1	91.549	3.11	155.39	B
			B	0.347	2.18	0.631	0.8	1	91.549			
			C	0.333	2.211	0.627	0.8	1	88.093			
T10 20.00- 0.00	1.42	10.23	A	0.3	2.296	0.616	0.8	1	86.083	3.08	153.94	B
			B	0.3	2.296	0.616	0.8	1	86.083			
			C	0.29	2.324	0.613	0.8	1	83.268			
Sum Weight:	13.83	57.18						OTM	2605.88 kip-ft	29.61		

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	K	K							ft ²	K	plf	
T1 175.00- 165.00	0.35	0.83	A	0.542	1.852	0.72	0.85	1	21.810	1.00	100.48	B
			B	0.542	1.852	0.72	0.85	1	21.810			
			C	0.25	2.437	0.602	0.85	1	7.907			
T2 165.00- 150.00	1.25	1.50	A	0.79	1.809	0.889	0.85	1	54.335	2.39	159.53	B
			B	0.79	1.809	0.889	0.85	1	54.335			
			C	0.743	1.785	0.852	0.85	1	50.001			
T3 150.00- 140.00	0.83	2.12	A	0.838	1.849	0.928	0.85	1	50.132	2.20	220.31	B
			B	0.838	1.849	0.928	0.85	1	50.132			
			C	0.8	1.816	0.897	0.85	1	46.964			
T4 140.00- 120.00	1.66	4.75	A	0.698	1.776	0.818	0.85	1	95.659	3.91	195.73	B
			B	0.698	1.776	0.818	0.85	1	95.659			
			C	0.668	1.778	0.797	0.85	1	90.373			
T5 120.00- 100.00	1.66	6.02	A	0.585	1.814	0.744	0.85	1	94.906	3.78	189.13	B
			B	0.585	1.814	0.744	0.85	1	94.906			

RISATower Centek Engineering Inc. 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	11001.CO35 - Baltic - Rev1	Page	18 of 35
	Project	175' Lattice Tower - Baltic Hanover Rd, Sprague, CT	Date	09:31:16 10/05/11
	Client	Verizon Wireless	Designed by	TJL

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	K	K							ft ²	K	plf	
T6 100.00- 80.00	1.66	6.17	C	0.561	1.834	0.73	0.85	1	90.336	3.69	184.32	B
			A	0.498	1.903	0.696	0.85	1	93.388			
			B	0.498	1.903	0.696	0.85	1	93.388			
T7 80.00- 60.00	1.66	6.88	C	0.478	1.931	0.686	0.85	1	89.302	3.64	181.95	B
			A	0.443	1.985	0.67	0.85	1	94.964			
			B	0.443	1.985	0.67	0.85	1	94.964			
T8 60.00- 40.00	1.66	9.27	C	0.426	2.015	0.663	0.85	1	91.133	3.48	174.01	B
			A	0.386	2.093	0.646	0.85	1	94.792			
			B	0.386	2.093	0.646	0.85	1	94.792			
T9 40.00- 20.00	1.66	9.41	C	0.371	2.125	0.64	0.85	1	91.186	3.20	160.09	B
			A	0.347	2.18	0.631	0.85	1	94.313			
			B	0.347	2.18	0.631	0.85	1	94.313			
T10 20.00- 0.00	1.42	10.23	C	0.333	2.211	0.627	0.85	1	90.858	3.17	158.41	B
			A	0.3	2.296	0.616	0.85	1	88.581			
			B	0.3	2.296	0.616	0.85	1	88.581			
Sum Weight:	13.83	57.18	C	0.29	2.324	0.613	0.85	1	85.766	30.47		
								OTM	2680.39 kip-ft			

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	K	K							ft ²	K	plf	
T1 175.00- 165.00	0.14	0.65	A	0.362	2.145	0.637	1	1	11.893	0.29	29.28	B
			B	0.362	2.145	0.637	1	1	11.893			
			C	0.138	2.816	0.58	1	1	4.133			
T2 165.00- 150.00	0.48	1.22	A	0.564	1.831	0.732	1	1	32.145	0.66	44.06	B
			B	0.564	1.831	0.732	1	1	32.145			
			C	0.532	1.862	0.715	1	1	29.596			
T3 150.00- 140.00	0.32	1.26	A	0.602	1.803	0.755	1	1	31.350	0.62	61.99	B
			B	0.602	1.803	0.755	1	1	31.350			
			C	0.577	1.82	0.74	1	1	29.608			
T4 140.00- 120.00	0.64	2.96	A	0.5	1.899	0.698	1	1	60.056	1.21	60.64	B
			B	0.5	1.899	0.698	1	1	60.056			
			C	0.48	1.927	0.688	1	1	57.067			
T5 120.00- 100.00	0.64	4.09	A	0.418	2.029	0.659	1	1	60.112	1.24	61.82	B
			B	0.418	2.029	0.659	1	1	60.112			
			C	0.402	2.06	0.652	1	1	57.463			
T6 100.00- 80.00	0.64	4.19	A	0.356	2.158	0.635	1	1	59.871	1.24	61.84	B
			B	0.356	2.158	0.635	1	1	59.871			
			C	0.342	2.19	0.63	1	1	57.440			
T7 80.00- 60.00	0.64	4.81	A	0.316	2.253	0.621	1	1	61.497	1.23	61.72	B
			B	0.316	2.253	0.621	1	1	61.497			
			C	0.305	2.283	0.617	1	1	59.184			
T8 60.00- 40.00	0.64	6.67	A	0.281	2.347	0.61	1	1	62.624	1.19	59.45	B
			B	0.281	2.347	0.61	1	1	62.624			
			C	0.272	2.374	0.608	1	1	60.395			
T9 40.00- 20.00	0.64	6.77	A	0.253	2.429	0.603	1	1	62.590	1.09	54.62	B
			B	0.253	2.429	0.603	1	1	62.590			
			C	0.244	2.455	0.6	1	1	60.428			
T10 20.00- 0.00	0.55	7.51	A	0.218	2.535	0.594	1	1	59.858	1.09	54.53	B
			B	0.218	2.535	0.594	1	1	59.858			
			C	0.212	2.557	0.593	1	1	58.082			

RISATower Centek Engineering Inc. 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	11001.CO35 - Baltic - Rev1	Page	19 of 35
	Project	175' Lattice Tower - Baltic Hanover Rd, Sprague, CT	Date	09:31:16 10/05/11
	Client	Verizon Wireless	Designed by	TJL

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	K	K							ft ²	K	plf	
Sum Weight:	5.36	40.13						OTM	838.28 kip-ft	9.87		

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	K	K							ft ²	K	plf	
T1 175.00- 165.00	0.14	0.65	A	0.362	2.145	0.637	0.825	1	11.893	0.29	29.28	B
			B	0.362	2.145	0.637	0.825	1	11.893			
			C	0.138	2.816	0.58	0.825	1	4.133			
T2 165.00- 150.00	0.48	1.22	A	0.564	1.831	0.732	0.825	1	32.145	0.66	44.06	B
			B	0.564	1.831	0.732	0.825	1	32.145			
			C	0.532	1.862	0.715	0.825	1	29.596			
T3 150.00- 140.00	0.32	1.26	A	0.602	1.803	0.755	0.825	1	30.459	0.60	60.23	B
			B	0.602	1.803	0.755	0.825	1	30.459			
			C	0.577	1.82	0.74	0.825	1	28.717			
T4 140.00- 120.00	0.64	2.96	A	0.5	1.899	0.698	0.825	1	58.224	1.18	58.79	B
			B	0.5	1.899	0.698	0.825	1	58.224			
			C	0.48	1.927	0.688	0.825	1	55.235			
T5 120.00- 100.00	0.64	4.09	A	0.418	2.029	0.659	0.825	1	58.018	1.19	59.67	B
			B	0.418	2.029	0.659	0.825	1	58.018			
			C	0.402	2.06	0.652	0.825	1	55.369			
T6 100.00- 80.00	0.64	4.19	A	0.356	2.158	0.635	0.825	1	57.505	1.19	59.40	B
			B	0.356	2.158	0.635	0.825	1	57.505			
			C	0.342	2.19	0.63	0.825	1	55.074			
T7 80.00- 60.00	0.64	4.81	A	0.316	2.253	0.621	0.825	1	58.846	1.18	59.06	B
			B	0.316	2.253	0.621	0.825	1	58.846			
			C	0.305	2.283	0.617	0.825	1	56.534			
T8 60.00- 40.00	0.64	6.67	A	0.281	2.347	0.61	0.825	1	60.284	1.14	57.23	B
			B	0.281	2.347	0.61	0.825	1	60.284			
			C	0.272	2.374	0.608	0.825	1	58.054			
T9 40.00- 20.00	0.64	6.77	A	0.253	2.429	0.603	0.825	1	60.146	1.05	52.48	B
			B	0.253	2.429	0.603	0.825	1	60.146			
			C	0.244	2.455	0.6	0.825	1	57.985			
T10 20.00- 0.00	0.55	7.51	A	0.218	2.535	0.594	0.825	1	57.263	1.04	52.16	B
			B	0.218	2.535	0.594	0.825	1	57.263			
			C	0.212	2.557	0.593	0.825	1	55.488			
Sum Weight:	5.36	40.13						OTM	814.08 kip-ft	9.53		

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	K	K							ft ²	K	plf	
T1 175.00- 165.00	0.14	0.65	A	0.362	2.145	0.637	0.8	1	11.893	0.29	29.28	B
			B	0.362	2.145	0.637	0.8	1	11.893			
			C	0.138	2.816	0.58	0.8	1	4.133			

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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	K	K							ft ²	K	plf	
T2 165.00- 150.00	0.48	1.22	A	0.564	1.831	0.732	0.8	1	32.145	0.66	44.06	B
			B	0.564	1.831	0.732	0.8	1	32.145			
			C	0.532	1.862	0.715	0.8	1	29.596			
T3 150.00- 140.00	0.32	1.26	A	0.602	1.803	0.755	0.8	1	30.331	0.60	59.98	B
			B	0.602	1.803	0.755	0.8	1	30.331			
			C	0.577	1.82	0.74	0.8	1	28.590			
T4 140.00- 120.00	0.64	2.96	A	0.5	1.899	0.698	0.8	1	57.962	1.17	58.52	B
			B	0.5	1.899	0.698	0.8	1	57.962			
			C	0.48	1.927	0.688	0.8	1	54.974			
T5 120.00- 100.00	0.64	4.09	A	0.418	2.029	0.659	0.8	1	57.719	1.19	59.36	B
			B	0.418	2.029	0.659	0.8	1	57.719			
			C	0.402	2.06	0.652	0.8	1	55.070			
T6 100.00- 80.00	0.64	4.19	A	0.356	2.158	0.635	0.8	1	57.167	1.18	59.05	B
			B	0.356	2.158	0.635	0.8	1	57.167			
			C	0.342	2.19	0.63	0.8	1	54.736			
T7 80.00- 60.00	0.64	4.81	A	0.316	2.253	0.621	0.8	1	58.468	1.17	58.68	B
			B	0.316	2.253	0.621	0.8	1	58.468			
			C	0.305	2.283	0.617	0.8	1	56.156			
T8 60.00- 40.00	0.64	6.67	A	0.281	2.347	0.61	0.8	1	59.950	1.14	56.91	B
			B	0.281	2.347	0.61	0.8	1	59.950			
			C	0.272	2.374	0.608	0.8	1	57.720			
T9 40.00- 20.00	0.64	6.77	A	0.253	2.429	0.603	0.8	1	59.797	1.04	52.18	B
			B	0.253	2.429	0.603	0.8	1	59.797			
			C	0.244	2.455	0.6	0.8	1	57.635			
T10 20.00- 0.00	0.55	7.51	A	0.218	2.535	0.594	0.8	1	56.893	1.04	51.83	B
			B	0.218	2.535	0.594	0.8	1	56.893			
			C	0.212	2.557	0.593	0.8	1	55.117			
Sum Weight:	5.36	40.13						OTM	810.63 kip-ft	9.48		

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	K	K							ft ²	K	plf	
T1 175.00- 165.00	0.14	0.65	A	0.362	2.145	0.637	0.85	1	11.893	0.29	29.28	B
			B	0.362	2.145	0.637	0.85	1	11.893			
			C	0.138	2.816	0.58	0.85	1	4.133			
T2 165.00- 150.00	0.48	1.22	A	0.564	1.831	0.732	0.85	1	32.145	0.66	44.06	B
			B	0.564	1.831	0.732	0.85	1	32.145			
			C	0.532	1.862	0.715	0.85	1	29.596			
T3 150.00- 140.00	0.32	1.26	A	0.602	1.803	0.755	0.85	1	30.586	0.60	60.48	B
			B	0.602	1.803	0.755	0.85	1	30.586			
			C	0.577	1.82	0.74	0.85	1	28.844			
T4 140.00- 120.00	0.64	2.96	A	0.5	1.899	0.698	0.85	1	58.486	1.18	59.05	B
			B	0.5	1.899	0.698	0.85	1	58.486			
			C	0.48	1.927	0.688	0.85	1	55.497			
T5 120.00- 100.00	0.64	4.09	A	0.418	2.029	0.659	0.85	1	58.317	1.20	59.98	B
			B	0.418	2.029	0.659	0.85	1	58.317			
			C	0.402	2.06	0.652	0.85	1	55.669			
T6 100.00- 80.00	0.64	4.19	A	0.356	2.158	0.635	0.85	1	57.843	1.19	59.75	B
			B	0.356	2.158	0.635	0.85	1	57.843			
			C	0.342	2.19	0.63	0.85	1	55.412			
T7 80.00- 60.00	0.64	4.81	A	0.316	2.253	0.621	0.85	1	59.225	1.19	59.44	B
			B	0.316	2.253	0.621	0.85	1	59.225			

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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	K	K							ft ²	K	plf	
T8 60.00- 40.00	0.64	6.67	C	0.305	2.283	0.617	0.85	1	56.913	1.15	57.55	B
			A	0.281	2.347	0.61	0.85	1	60.619			
			B	0.281	2.347	0.61	0.85	1	60.619			
			C	0.272	2.374	0.608	0.85	1	58.389			
T9 40.00- 20.00	0.64	6.77	A	0.253	2.429	0.603	0.85	1	60.495	1.06	52.79	B
			B	0.253	2.429	0.603	0.85	1	60.495			
			C	0.244	2.455	0.6	0.85	1	58.334			
			A	0.218	2.535	0.594	0.85	1	57.634			
T10 20.00- 0.00	0.55	7.51	B	0.218	2.535	0.594	0.85	1	57.634	1.05	52.50	B
			C	0.212	2.557	0.593	0.85	1	55.859			
								OTM	817.54 kip-ft			
Sum Weight:	5.36	40.13								9.58		

Force Totals

Load Case	Vertical Forces	Sum of Forces X	Sum of Forces Z	Sum of Overturning Moments, M _x	Sum of Overturning Moments, M _z	Sum of Torques
	K	K	K	kip-ft	kip-ft	kip-ft
Leg Weight	27.91					
Bracing Weight	12.22					
Total Member Self-Weight	40.13					
Total Weight	49.06			-4.53	-5.08	
Wind 0 deg - No Ice		0.00	-34.40	-3426.45	-5.08	0.00
Wind 30 deg - No Ice		16.79	-29.08	-2916.09	-1686.07	-1.52
Wind 45 deg - No Ice		23.64	-23.64	-2374.74	-2375.29	-2.14
Wind 60 deg - No Ice		28.84	-16.65	-1675.53	-2899.34	-2.61
Wind 90 deg - No Ice		33.57	0.00	-4.53	-3367.06	-3.04
Wind 120 deg - No Ice		29.79	17.20	1706.43	-2968.55	-2.69
Wind 135 deg - No Ice		23.64	23.64	2365.68	-2375.29	-2.14
Wind 150 deg - No Ice		16.79	29.08	2907.03	-1686.07	-1.52
Wind 180 deg - No Ice		0.00	33.30	3337.47	-5.08	0.00
Wind 210 deg - No Ice		-16.79	29.08	2907.03	1675.91	1.52
Wind 225 deg - No Ice		-23.64	23.64	2365.68	2365.13	2.14
Wind 240 deg - No Ice		-29.79	17.20	1706.43	2958.39	2.69
Wind 270 deg - No Ice		-33.57	0.00	-4.53	3356.90	3.04
Wind 300 deg - No Ice		-28.84	-16.65	-1675.53	2889.17	2.61
Wind 315 deg - No Ice		-23.64	-23.64	-2374.74	2365.13	2.14
Wind 330 deg - No Ice		-16.79	-29.08	-2916.09	1675.91	1.52
Member Ice	17.05					
Total Weight Ice	76.15			-11.33	-13.14	
Wind 0 deg - Ice		0.00	-38.54	-3845.94	-13.14	0.00
Wind 30 deg - Ice		17.98	-31.14	-3138.60	-1818.67	-1.65
Wind 45 deg - Ice		25.12	-25.12	-2538.39	-2540.20	-2.31
Wind 60 deg - Ice		30.39	-17.55	-1779.60	-3075.88	-2.79
Wind 90 deg - Ice		35.95	0.00	-11.33	-3624.21	-3.31
Wind 120 deg - Ice		33.37	19.27	1905.98	-3334.01	-3.07
Wind 135 deg - Ice		25.12	25.12	2515.74	-2540.20	-2.31
Wind 150 deg - Ice		17.98	31.14	3115.95	-1818.67	-1.65
Wind 180 deg - Ice		0.00	35.09	3525.22	-13.14	0.00
Wind 210 deg - Ice		-17.98	31.14	3115.95	1792.39	1.65
Wind 225 deg - Ice		-25.12	25.12	2515.74	2513.92	2.31
Wind 240 deg - Ice		-33.37	19.27	1905.98	3307.73	3.07
Wind 270 deg - Ice		-35.95	0.00	-11.33	3597.92	3.31
Wind 300 deg - Ice		-30.39	-17.55	-1779.60	3049.60	2.79
Wind 315 deg - Ice		-25.12	-25.12	-2538.39	2513.92	2.31

<i>RISA</i>Tower Centek Engineering Inc. 63-2 North Branford Rd. Branford, CT 06405 Phone: (203) 488-0580 FAX: (203) 488-8587	Job	11001.CO35 - Baltic - Rev1	Page 22 of 35
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Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Wind 330 deg - Ice		-17.98	-31.14	-3138.60	1792.39	1.65
Total Weight	49.06			-4.53	-5.08	
Wind 0 deg - Service		0.00	-11.90	-1184.26	0.00	0.00
Wind 30 deg - Service		5.81	-10.06	-1007.66	-581.66	-0.53
Wind 45 deg - Service		8.18	-8.18	-820.35	-820.14	-0.74
Wind 60 deg - Service		9.98	-5.76	-578.40	-1001.47	-0.90
Wind 90 deg - Service		11.62	0.00	-0.20	-1163.31	-1.05
Wind 120 deg - Service		10.31	5.95	591.82	-1025.42	-0.93
Wind 135 deg - Service		8.18	8.18	819.94	-820.14	-0.74
Wind 150 deg - Service		5.81	10.06	1007.26	-581.66	-0.53
Wind 180 deg - Service		0.00	11.52	1156.20	0.00	0.00
Wind 210 deg - Service		-5.81	10.06	1007.26	581.66	0.53
Wind 225 deg - Service		-8.18	8.18	819.94	820.14	0.74
Wind 240 deg - Service		-10.31	5.95	591.82	1025.42	0.93
Wind 270 deg - Service		-11.62	0.00	-0.20	1163.31	1.05
Wind 300 deg - Service		-9.98	-5.76	-578.40	1001.47	0.90
Wind 315 deg - Service		-8.18	-8.18	-820.35	820.14	0.74
Wind 330 deg - Service		-5.81	-10.06	-1007.66	581.66	0.53

Load Combinations

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

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Comb. No.	Description
34	Dead+Wind 330 deg+Ice+Temp
35	Dead+Wind 0 deg - Service
36	Dead+Wind 30 deg - Service
37	Dead+Wind 45 deg - Service
38	Dead+Wind 60 deg - Service
39	Dead+Wind 90 deg - Service
40	Dead+Wind 120 deg - Service
41	Dead+Wind 135 deg - Service
42	Dead+Wind 150 deg - Service
43	Dead+Wind 180 deg - Service
44	Dead+Wind 210 deg - Service
45	Dead+Wind 225 deg - Service
46	Dead+Wind 240 deg - Service
47	Dead+Wind 270 deg - Service
48	Dead+Wind 300 deg - Service
49	Dead+Wind 315 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T1	175 - 165	Leg	Max Tension	5	6.73	0.71	-0.46
			Max. Compression	19	-9.03	0.00	-0.13
			Max. Mx	6	-7.36	0.79	0.11
			Max. My	2	-8.55	0.00	-0.85
			Max. Vy	23	1.26	0.15	-0.02
			Max. Vx	19	-1.44	0.00	-0.13
		Diagonal	Max Tension	3	1.82	0.00	0.00
			Max. Compression	9	-1.81	0.00	0.00
			Max. Mx	24	0.15	-0.00	0.00
			Max. My	21	-1.74	-0.00	-0.00
			Max. Vy	24	-0.00	-0.00	0.00
			Max. Vx	22	-0.00	0.00	0.00
		Top Girt	Max Tension	7	0.61	0.00	0.00
			Max. Compression	5	-0.62	0.00	0.00
			Max. Mx	18	-0.01	0.01	0.00
			Max. My	23	-0.01	0.00	-0.00
			Max. Vy	18	-0.01	0.00	0.00
			Max. Vx	23	0.00	0.00	0.00
		Bottom Girt	Max Tension	22	0.67	0.00	0.00
			Max. Compression	19	-0.68	0.00	0.00
			Max. Mx	18	0.01	0.01	0.00
			Max. My	23	0.03	0.00	-0.00
			Max. Vy	18	-0.01	0.00	0.00
			Max. Vx	23	0.00	0.00	0.00
T2	165 - 150	Leg	Max Tension	5	31.36	0.39	-0.24
			Max. Compression	19	-37.15	-0.00	1.97
			Max. Mx	30	-36.51	1.68	-1.03
			Max. My	19	-37.15	-0.00	1.97
			Max. Vy	30	-3.36	1.68	-1.03
			Max. Vx	19	-3.94	-0.00	1.97
		Diagonal	Max Tension	26	3.52	0.00	0.00
			Max. Compression	26	-3.54	0.00	0.00
			Max. Mx	19	0.00	-0.00	-0.00
			Max. My	4	-3.30	-0.00	-0.00
			Max. Vy	19	-0.01	-0.00	-0.00
			Max. Vx	4	-0.00	0.00	0.00

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	Client	Verizon Wireless	Designed by	TJL

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T3	150 - 140	Top Girt	Max Tension	13	1.36	0.00	0.00
			Max. Compression	10	-1.35	0.00	0.00
			Max. Mx	18	0.00	0.01	0.00
			Max. My	24	-0.68	0.00	0.00
			Max. Vy	18	-0.01	0.00	0.00
			Max. Vx	24	-0.00	0.00	0.00
		Bottom Girt	Max Tension	22	0.87	0.00	0.00
			Max. Compression	2	-0.80	0.00	0.00
			Max. Mx	18	0.06	0.01	0.00
			Max. My	23	0.04	0.00	-0.00
			Max. Vy	18	-0.01	0.00	0.00
			Max. Vx	23	0.00	0.00	0.00
		Leg	Max Tension	5	35.52	-1.82	0.05
			Max. Compression	19	-42.01	1.77	0.01
			Max. Mx	22	34.35	-2.09	0.03
			Max. My	20	-3.23	-0.19	-3.73
			Max. Vy	32	0.17	-2.08	-0.04
			Max. Vx	20	0.41	-0.19	-3.73
		Diagonal	Max Tension	22	4.83	0.00	0.00
			Max. Compression	24	-5.78	0.00	0.00
			Max. Mx	22	4.43	0.08	-0.01
			Max. My	20	-4.73	-0.05	0.02
			Max. Vy	22	0.03	0.08	-0.01
			Max. Vx	21	-0.01	0.00	0.00
T4	140 - 120	Leg	Max Tension	22	60.25	-2.78	0.01
			Max. Compression	19	-74.10	2.67	0.01
			Max. Mx	19	-60.34	3.05	0.01
			Max. My	20	-4.37	-0.19	-3.73
			Max. Vy	30	-0.25	3.02	-0.01
			Max. Vx	23	0.28	-0.18	3.72
		Diagonal	Max Tension	28	4.89	0.00	0.00
			Max. Compression	30	-4.95	0.00	0.00
			Max. Mx	19	4.56	0.09	0.01
			Max. My	22	3.63	0.08	0.01
			Max. Vy	19	-0.03	0.09	0.01
			Max. Vx	22	-0.00	0.00	0.00
		Leg	Max Tension	22	82.67	-2.90	0.01
			Max. Compression	19	-103.67	3.06	0.01
			Max. Mx	19	-89.43	3.09	0.01
			Max. My	23	-8.81	-0.05	2.85
			Max. Vy	27	0.17	-2.88	0.01
			Max. Vx	23	-0.14	-0.05	2.85
		Diagonal	Max Tension	28	4.93	0.00	0.00
			Max. Compression	28	-5.10	0.00	0.00
			Max. Mx	19	4.22	0.08	-0.01
			Max. My	23	-2.30	0.03	0.01
			Max. Vy	22	0.03	0.08	0.01
			Max. Vx	23	-0.00	0.00	0.00
T5	120 - 100	Leg	Max Tension	22	103.55	-2.93	0.01
			Max. Compression	19	-131.94	3.08	0.01
			Max. Mx	19	-131.94	3.08	0.01
			Max. My	23	-11.47	0.08	3.49
			Max. Vy	27	-0.16	-2.91	0.01
			Max. Vx	23	-0.16	-0.04	3.24
		Diagonal	Max Tension	28	5.23	0.00	0.00
			Max. Compression	28	-5.41	0.00	0.00
			Max. Mx	19	4.55	0.09	0.01
			Max. My	23	-2.55	0.04	0.01
			Max. Vy	22	0.04	0.09	0.01
			Max. Vx	23	-0.00	0.00	0.00
T6	100 - 80	Leg	Max Tension	22	124.41	-3.94	-0.00
			Max. Compression	22	124.41	-3.94	-0.00
			Max. Mx	22	124.41	-3.94	-0.00
			Max. My	22	124.41	-3.94	-0.00
			Max. Vy	22	124.41	-3.94	-0.00
			Max. Vx	22	124.41	-3.94	-0.00
T7	80 - 60	Leg	Max Tension	22	124.41	-3.94	-0.00
			Max. Compression	22	124.41	-3.94	-0.00
			Max. Mx	22	124.41	-3.94	-0.00
			Max. My	22	124.41	-3.94	-0.00
			Max. Vy	22	124.41	-3.94	-0.00
			Max. Vx	22	124.41	-3.94	-0.00

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T8	60 - 40	Diagonal	Max. Compression	19	-159.98	8.09	0.02
			Max. Mx	19	-159.98	8.09	0.02
			Max. My	23	-14.01	2.21	6.93
			Max. Vy	30	-0.65	8.08	-0.04
			Max. Vx	23	-0.76	2.21	6.93
			Max Tension	28	5.68	0.00	0.00
			Max. Compression	28	-5.66	0.00	0.00
			Max. Mx	21	2.36	0.10	0.01
			Max. My	21	-5.51	0.05	0.02
			Max. Vy	21	0.04	0.10	0.01
			Max. Vx	21	-0.00	0.00	0.00
			Max Tension	22	134.08	-3.22	0.04
		Leg	Max. Compression	19	-179.62	2.52	0.03
			Max. Mx	22	132.16	-12.91	0.02
			Max. My	23	-19.01	-5.46	7.40
			Max. Vy	27	0.79	-12.89	0.03
			Max. Vx	23	-0.28	-5.46	7.40
			Max Tension	33	9.39	0.00	0.00
		Diagonal	Max. Compression	13	-8.54	0.00	0.00
			Max. Mx	22	8.62	-0.33	-0.03
			Max. My	20	-7.18	-0.09	-0.07
			Max. Vy	22	-0.10	-0.33	-0.03
			Max. Vx	20	0.01	0.00	0.00
			Max Tension	22	158.89	-12.91	0.02
T9	40 - 20	Leg	Max. Compression	19	-206.32	14.89	0.04
			Max. Mx	19	-206.32	14.89	0.04
			Max. My	23	-18.84	6.75	12.51
			Max. Vy	27	-0.90	-12.89	0.03
			Max. Vx	23	-0.49	6.75	12.51
			Max Tension	12	7.94	0.00	0.00
		Diagonal	Max. Compression	28	-10.33	0.00	0.00
			Max. Mx	22	3.99	-0.42	-0.05
			Max. My	23	-7.30	-0.32	-0.06
			Max. Vy	22	-0.11	-0.42	-0.05
			Max. Vx	23	0.01	0.00	0.00
			Max Tension	5	167.86	-7.71	0.02
T10	20 - 0	Leg	Max. Compression	19	-236.06	0.00	-0.00
			Max. Mx	19	-233.55	14.89	0.04
			Max. My	23	-25.81	6.75	12.51
			Max. Vy	30	0.94	14.87	-0.01
			Max. Vx	23	0.88	6.75	12.51
			Max Tension	33	11.70	0.00	0.00
		Diagonal	Max. Compression	13	-9.78	0.00	0.00
			Max. Mx	20	10.92	-0.35	0.08
			Max. My	24	8.56	-0.35	-0.08
			Max. Vy	20	-0.12	-0.35	0.08
			Max. Vx	24	0.01	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	30	246.63	20.22	-11.78
	Max. H _x	30	246.63	20.22	-11.78
	Max. H _z	22	-180.57	-20.21	11.75
	Min. Vert	22	-180.57	-20.21	11.75

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Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg B	Min. H _x	22	-180.57	-20.21	11.75
	Min. H _z	30	246.63	20.22	-11.78
	Max. Vert	24	247.95	-20.23	-11.81
	Max. H _x	32	-179.26	20.19	11.72
	Max. H _z	32	-179.26	20.19	11.72
	Min. Vert	32	-179.26	20.19	11.72
Leg A	Min. H _x	24	247.95	-20.23	-11.81
	Min. H _z	24	247.95	-20.23	-11.81
	Max. Vert	19	248.27	0.02	23.43
	Max. H _x	31	26.04	1.23	-1.01
	Max. H _z	19	248.27	0.02	23.43
	Min. Vert	27	-178.93	0.02	-23.34
	Min. H _x	23	26.04	-1.19	-1.01
	Min. H _z	27	-178.93	0.02	-23.34

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
Dead Only	49.06	0.00	0.00	-4.53	-5.08	-0.00
Dead+Wind 0 deg - No Ice	49.06	0.00	-34.40	-3435.37	-5.09	0.01
Dead+Wind 30 deg - No Ice	49.06	16.79	-29.08	-2923.72	-1690.48	-1.51
Dead+Wind 45 deg - No Ice	49.06	23.64	-23.64	-2380.97	-2381.51	-2.14
Dead+Wind 60 deg - No Ice	49.06	28.84	-16.65	-1679.93	-2906.93	-2.62
Dead+Wind 90 deg - No Ice	49.06	33.57	-0.00	-4.55	-3375.86	-3.06
Dead+Wind 120 deg - No Ice	49.06	29.79	17.20	1710.86	-2976.28	-2.71
Dead+Wind 135 deg - No Ice	49.06	23.64	23.64	2371.87	-2381.51	-2.17
Dead+Wind 150 deg - No Ice	49.06	16.79	29.08	2914.63	-1690.48	-1.54
Dead+Wind 180 deg - No Ice	49.06	0.00	33.30	3346.21	-5.09	-0.01
Dead+Wind 210 deg - No Ice	49.06	-16.79	29.08	2914.63	1680.29	1.51
Dead+Wind 225 deg - No Ice	49.06	-23.64	23.64	2371.87	2371.33	2.15
Dead+Wind 240 deg - No Ice	49.06	-29.79	17.20	1710.86	2966.09	2.70
Dead+Wind 270 deg - No Ice	49.06	-33.57	-0.00	-4.56	3365.68	3.06
Dead+Wind 300 deg - No Ice	49.06	-28.84	-16.65	-1679.93	2896.74	2.63
Dead+Wind 315 deg - No Ice	49.06	-23.64	-23.64	-2380.97	2371.32	2.16
Dead+Wind 330 deg - No Ice	49.06	-16.79	-29.08	-2923.72	1680.29	1.54
Dead+Ice+Temp	76.15	0.00	0.00	-11.33	-13.14	-0.00
Dead+Wind 0 deg+Ice+Temp	76.15	0.00	-38.54	-3860.59	-13.19	0.04
Dead+Wind 30 deg+Ice+Temp	76.15	17.98	-31.14	-3150.66	-1825.65	-1.63
Dead+Wind 45 deg+Ice+Temp	76.15	25.12	-25.12	-2548.16	-2549.97	-2.30
Dead+Wind 60 deg+Ice+Temp	76.15	30.39	-17.55	-1786.47	-3087.73	-2.81
Dead+Wind 90 deg+Ice+Temp	76.15	35.95	-0.00	-11.38	-3638.12	-3.36
Dead+Wind 120 deg+Ice+Temp	76.15	33.37	19.27	1913.22	-3346.70	-3.13
Dead+Wind 135 deg+Ice+Temp	76.15	25.12	25.12	2525.40	-2549.97	-2.36
Dead+Wind 150 deg+Ice+Temp	76.15	17.98	31.14	3127.91	-1825.66	-1.69
Dead+Wind 180 deg+Ice+Temp	76.15	-0.00	35.09	3538.80	-13.19	-0.04
Dead+Wind 210 deg+Ice+Temp	76.15	-17.98	31.14	3127.91	1799.28	1.63
Dead+Wind 225 deg+Ice+Temp	76.15	-25.12	25.12	2525.40	2523.58	2.30
Dead+Wind 240 deg+Ice+Temp	76.15	-33.37	19.27	1913.22	3320.32	3.09
Dead+Wind 270 deg+Ice+Temp	76.15	-35.95	0.00	-11.39	3611.74	3.36
Dead+Wind 300 deg+Ice+Temp	76.15	-30.39	-17.55	-1786.48	3061.35	2.84
Dead+Wind 315 deg+Ice+Temp	76.15	-25.12	-25.12	-2548.16	2523.60	2.36
Dead+Wind 330 deg+Ice+Temp	76.15	-17.98	-31.14	-3150.66	1799.28	1.69
Dead+Wind 0 deg - Service	49.06	0.00	-11.90	-1191.75	-5.09	0.00
Dead+Wind 30 deg - Service	49.06	5.81	-10.06	-1014.63	-588.26	-0.52
Dead+Wind 45 deg - Service	49.06	8.18	-8.18	-826.83	-827.33	-0.74

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<i>Load Combination</i>	<i>Vertical K</i>	<i>Shear_x K</i>	<i>Shear_z K</i>	<i>Overturning Moment, M_x kip-ft</i>	<i>Overturning Moment, M_z kip-ft</i>	<i>Torque kip-ft</i>
Dead+Wind 60 deg - Service	49.06	9.98	-5.76	-584.27	-1009.20	-0.91
Dead+Wind 90 deg - Service	49.06	11.62	0.00	-4.54	-1171.44	-1.06
Dead+Wind 120 deg - Service	49.06	10.31	5.95	589.06	-1033.25	-0.94
Dead+Wind 135 deg - Service	49.06	8.18	8.18	817.75	-827.39	-0.75
Dead+Wind 150 deg - Service	49.06	5.81	10.06	1005.54	-588.27	-0.53
Dead+Wind 180 deg - Service	49.06	0.00	11.52	1154.89	-5.09	-0.00
Dead+Wind 210 deg - Service	49.06	-5.81	10.06	1005.54	578.08	0.52
Dead+Wind 225 deg - Service	49.06	-8.18	8.18	817.75	817.20	0.75
Dead+Wind 240 deg - Service	49.06	-10.31	5.95	589.06	1023.06	0.93
Dead+Wind 270 deg - Service	49.06	-11.62	0.00	-4.54	1161.25	1.06
Dead+Wind 300 deg - Service	49.06	-9.98	-5.76	-584.27	999.01	0.91
Dead+Wind 315 deg - Service	49.06	-8.18	-8.18	-826.83	817.15	0.74
Dead+Wind 330 deg - Service	49.06	-5.81	-10.06	-1014.63	578.07	0.53

Solution Summary

<i>Load Comb.</i>	<i>Sum of Applied Forces</i>			<i>Sum of Reactions</i>			<i>% Error</i>
	<i>PX K</i>	<i>PY K</i>	<i>PZ K</i>	<i>PX K</i>	<i>PY K</i>	<i>PZ K</i>	
1	0.00	-49.06	0.00	0.00	49.06	0.00	0.000%
2	0.00	-49.06	-34.40	0.00	49.06	34.40	0.000%
3	16.79	-49.06	-29.08	-16.79	49.06	29.08	0.000%
4	23.64	-49.06	-23.64	-23.64	49.06	23.64	0.000%
5	28.84	-49.06	-16.65	-28.84	49.06	16.65	0.000%
6	33.57	-49.06	0.00	-33.57	49.06	0.00	0.000%
7	29.79	-49.06	17.20	-29.79	49.06	-17.20	0.000%
8	23.64	-49.06	23.64	-23.64	49.06	-23.64	0.000%
9	16.79	-49.06	29.08	-16.79	49.06	-29.08	0.000%
10	0.00	-49.06	33.30	0.00	49.06	-33.30	0.000%
11	-16.79	-49.06	29.08	16.79	49.06	-29.08	0.000%
12	-23.64	-49.06	23.64	23.64	49.06	-23.64	0.000%
13	-29.79	-49.06	17.20	29.79	49.06	-17.20	0.000%
14	-33.57	-49.06	0.00	33.57	49.06	0.00	0.000%
15	-28.84	-49.06	-16.65	28.84	49.06	16.65	0.000%
16	-23.64	-49.06	-23.64	23.64	49.06	23.64	0.000%
17	-16.79	-49.06	-29.08	16.79	49.06	29.08	0.000%
18	0.00	-76.15	0.00	0.00	76.15	0.00	0.000%
19	0.00	-76.15	-38.54	0.00	76.15	38.54	0.000%
20	17.98	-76.15	-31.14	-17.98	76.15	31.14	0.000%
21	25.12	-76.15	-25.12	-25.12	76.15	25.12	0.000%
22	30.39	-76.15	-17.55	-30.39	76.15	17.55	0.000%
23	35.95	-76.15	0.00	-35.95	76.15	0.00	0.000%
24	33.37	-76.15	19.27	-33.37	76.15	-19.27	0.000%
25	25.12	-76.15	25.12	-25.12	76.15	-25.12	0.000%
26	17.98	-76.15	31.14	-17.98	76.15	-31.14	0.000%
27	0.00	-76.15	35.09	0.00	76.15	-35.09	0.000%
28	-17.98	-76.15	31.14	17.98	76.15	-31.14	0.000%
29	-25.12	-76.15	25.12	25.12	76.15	-25.12	0.000%
30	-33.37	-76.15	19.27	33.37	76.15	-19.27	0.000%
31	-35.95	-76.15	0.00	35.95	76.15	-0.00	0.000%
32	-30.39	-76.15	-17.55	30.39	76.15	17.55	0.000%
33	-25.12	-76.15	-25.12	25.12	76.15	25.12	0.000%
34	-17.98	-76.15	-31.14	17.98	76.15	31.14	0.000%
35	0.00	-49.06	-11.90	0.00	49.06	11.90	0.000%
36	5.81	-49.06	-10.06	-5.81	49.06	10.06	0.000%
37	8.18	-49.06	-8.18	-8.18	49.06	8.18	0.000%
38	9.98	-49.06	-5.76	-9.98	49.06	5.76	0.000%
39	11.62	-49.06	0.00	-11.62	49.06	0.00	0.000%

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Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
40	10.31	-49.06	5.95	-10.31	49.06	-5.95	0.000%
41	8.18	-49.06	8.18	-8.18	49.06	-8.18	0.000%
42	5.81	-49.06	10.06	-5.81	49.06	-10.06	0.000%
43	0.00	-49.06	11.52	0.00	49.06	-11.52	0.000%
44	-5.81	-49.06	10.06	5.81	49.06	-10.06	0.000%
45	-8.18	-49.06	8.18	8.18	49.06	-8.18	0.000%
46	-10.31	-49.06	5.95	10.31	49.06	-5.95	0.000%
47	-11.62	-49.06	0.00	11.62	49.06	0.00	0.000%
48	-9.98	-49.06	-5.76	9.98	49.06	5.76	0.000%
49	-8.18	-49.06	-8.18	8.18	49.06	8.18	0.000%
50	-5.81	-49.06	-10.06	5.81	49.06	10.06	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00000001
3	Yes	4	0.00000001	0.00000001
4	Yes	4	0.00000001	0.00000001
5	Yes	4	0.00000001	0.00000001
6	Yes	4	0.00000001	0.00000001
7	Yes	4	0.00000001	0.00000001
8	Yes	4	0.00000001	0.00000001
9	Yes	4	0.00000001	0.00000001
10	Yes	4	0.00000001	0.00000001
11	Yes	4	0.00000001	0.00000001
12	Yes	4	0.00000001	0.00000001
13	Yes	4	0.00000001	0.00000001
14	Yes	4	0.00000001	0.00000001
15	Yes	4	0.00000001	0.00000001
16	Yes	4	0.00000001	0.00000001
17	Yes	4	0.00000001	0.00000001
18	Yes	4	0.00000001	0.00000001
19	Yes	4	0.00000001	0.00000001
20	Yes	4	0.00000001	0.00000001
21	Yes	4	0.00000001	0.00000001
22	Yes	4	0.00000001	0.00000001
23	Yes	4	0.00000001	0.00000001
24	Yes	4	0.00000001	0.00000001
25	Yes	4	0.00000001	0.00000001
26	Yes	4	0.00000001	0.00000001
27	Yes	4	0.00000001	0.00000001
28	Yes	4	0.00000001	0.00000001
29	Yes	4	0.00000001	0.00000001
30	Yes	4	0.00000001	0.00000001
31	Yes	4	0.00000001	0.00000001
32	Yes	4	0.00000001	0.00000001
33	Yes	4	0.00000001	0.00000001
34	Yes	4	0.00000001	0.00000001
35	Yes	4	0.00000001	0.00000001
36	Yes	4	0.00000001	0.00000001
37	Yes	4	0.00000001	0.00000001
38	Yes	4	0.00000001	0.00000001
39	Yes	4	0.00000001	0.00000001
40	Yes	4	0.00000001	0.00000001

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41	Yes	4	0.00000001	0.00000001
42	Yes	4	0.00000001	0.00000001
43	Yes	4	0.00000001	0.00000001
44	Yes	4	0.00000001	0.00000001
45	Yes	4	0.00000001	0.00000001
46	Yes	4	0.00000001	0.00000001
47	Yes	4	0.00000001	0.00000001
48	Yes	4	0.00000001	0.00000001
49	Yes	4	0.00000001	0.00000001
50	Yes	4	0.00000001	0.00000001

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	175 - 165	3.007	35	0.1700	0.0131
T2	165 - 150	2.630	35	0.1671	0.0097
T3	150 - 140	2.092	35	0.1487	0.0053
T4	140 - 120	1.787	35	0.1337	0.0038
T5	120 - 100	1.269	35	0.1074	0.0024
T6	100 - 80	0.852	35	0.0854	0.0016
T7	80 - 60	0.529	35	0.0623	0.0010
T8	60 - 40	0.289	35	0.0436	0.0006
T9	40 - 20	0.127	35	0.0283	0.0003
T10	20 - 0	0.031	35	0.0126	0.0002

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
175.00	8' x 2.5" Dia omni	35	3.007	0.1700	0.0131	504148
165.00	LPA-80080-4CF	35	2.630	0.1671	0.0097	165009

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	175 - 165	9.578	19	0.5310	0.0378
T2	165 - 150	8.407	19	0.5229	0.0282
T3	150 - 140	6.726	19	0.4697	0.0155
T4	140 - 120	5.759	19	0.4252	0.0115
T5	120 - 100	4.102	19	0.3446	0.0073
T6	100 - 80	2.758	19	0.2752	0.0049
T7	80 - 60	1.712	19	0.2013	0.0032
T8	60 - 40	0.937	19	0.1411	0.0018
T9	40 - 20	0.410	19	0.0917	0.0011
T10	20 - 0	0.100	19	0.0409	0.0005

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Critical Deflections and Radius of Curvature - Design Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
175.00	8' x 2.5" Dia omni	19	9.578	0.5310	0.0378	188444
165.00	LPA-80080-4CF	19	8.407	0.5229	0.0282	59761

Bolt Design Data

Section No.	Elevation	Component Type	Bolt Grade	Bolt Size	Number Of Bolts	Maximum Load per Bolt	Allowable Load	Ratio Load Allowable	Allowable Ratio	Criteria
	ft			in		K	K			
T1	175	Leg	A325N	0.7500	5	1.81	18.56	0.097 ✓	1.333	Bolt DS
T2	165	Leg	A325N	1.0000	6	5.23	34.53	0.151 ✓	1.333	Bolt Tension
T3	150	Leg	A325N	1.0000	6	5.92	34.56	0.171 ✓	1.333	Bolt Tension
		Diagonal	A325N	1.0000	1	5.78	16.49	0.351 ✓	1.333	Bolt Shear
T4	140	Leg	A325N	1.0000	6	10.04	34.56	0.291 ✓	1.333	Bolt Tension
		Diagonal	A325N	1.0000	1	4.89	15.86	0.308 ✓	1.333	Member Bearing
T5	120	Leg	A325N	1.2500	6	13.78	54.00	0.255 ✓	1.333	Bolt Tension
		Diagonal	A325N	1.2500	1	4.93	20.39	0.242 ✓	1.333	Member Bearing
T6	100	Leg	A325N	1.2500	6	17.26	54.00	0.320 ✓	1.333	Bolt Tension
		Diagonal	A325N	1.2500	1	5.23	20.39	0.257 ✓	1.333	Member Bearing
T7	80	Leg	A325N	1.2500	6	20.73	54.00	0.384 ✓	1.333	Bolt Tension
		Diagonal	A325N	1.2500	1	5.68	20.39	0.278 ✓	1.333	Member Bearing
T8	60	Leg	A325N	1.2500	12	11.17	54.00	0.207 ✓	1.333	Bolt Tension
		Diagonal	A325N	1.0000	2	4.70	32.99	0.142 ✓	1.333	Bolt Shear
T9	40	Leg	A325N	1.2500	12	13.24	54.00	0.245 ✓	1.333	Bolt Tension
		Diagonal	A325N	1.0000	2	5.16	32.99	0.157 ✓	1.333	Bolt Shear
T10	20	Leg	A687	1.2500	12	13.99	60.75	0.230 ✓	1.333	Bolt Tension
		Diagonal	A325N	1.0000	2	5.85	32.99	0.177 ✓	1.333	Bolt Shear

Compression Checks

Leg 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 K	Allow. P _a K	Ratio P P _a
T1	175 - 165	2	10.00	2.25	54.0 K=1.00	23.715	3.1416	-9.03	74.50	0.121
T2	165 - 150	2 1/4	15.00	2.29	48.9 K=1.00	24.522	3.9761	-37.15	97.50	0.381
T3	150 - 140	1.5	10.02	10.02	37.8 K=1.00	26.132	5.3014	-42.01	138.54	0.303
T4	140 - 120	1.75	20.03	10.02	32.4 K=1.00	26.848	7.2158	-74.09	193.73	0.382
T5	120 - 100	2	20.03	10.02	28.4 K=1.00	27.351	9.4248	-103.67	257.78	0.402
T6	100 - 80	2	20.03	10.02	28.4 K=1.00	27.351	9.4248	-131.94	257.78	0.512
T7	80 - 60	2.25	20.03	10.02	25.2 K=1.00	27.723	11.9282	-159.98	330.69	0.484
T8	60 - 40	2.5	20.03	20.03	32.6 K=1.00	26.826	14.7262	-179.62	395.05	0.455
T9	40 - 20	2.5	20.03	20.03	32.6 K=1.00	26.826	14.7262	-206.32	395.05	0.522
T10	20 - 0	Pirol 139284	20.03	20.03	32.6 K=1.00	26.829	17.8187	-236.06	478.06	0.494

Truss-Leg Diagonal Data

Section No.	Elevation ft	Diagonal Size	L _d ft	Kl/r	F _a ksi	A in ²	Actual V K	Allow. V _a K	Stress Ratio
T3	150 - 140	0.5	1.47	141.2	7.490	0.1963	0.41	1.65	0.248
T4	140 - 120	0.5	1.46	140.0	7.617	0.1963	0.29	1.67	0.170
T5	120 - 100	0.625	1.45	111.1	11.525	0.3068	0.17	3.96	0.043
T6	100 - 80	0.625	1.45	111.1	11.525	0.3068	0.18	3.96	0.046
T7	80 - 60	0.625	1.43	110.2	11.648	0.3068	0.82	4.00	0.206
T8	60 - 40	0.75	1.73	110.5	11.604	0.4418	0.79	7.06	0.113
T9	40 - 20	0.75	1.73	110.5	11.604	0.4418	0.92	7.06	0.130
T10	20 - 0	0.75	1.71	109.5	16.302	0.4418	0.97	9.92	0.097

Diagonal 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 K	Allow. P _a K	Ratio P P _a
T1	175 - 165	7/8	5.48	2.65	109.0 K=0.75	12.562	0.6013	-1.81	7.55	0.240
T2	165 - 150	1	5.50	2.65	95.3 K=0.75	15.777	0.7854	-3.54	12.39	0.286
T3	150 - 140	L3x3x5/16	11.42	5.00	106.4 K=1.04	12.145	1.7800	-5.78	21.62	0.267
T4	140 - 120	L3x3x5/16	12.50	5.65	116.3 K=1.01	10.806	1.7800	-4.95	19.24	0.257
T5	120 - 100	L3x3x5/16	13.80	6.31	128.5 K=1.00	9.047	1.7800	-5.10	16.10	0.317
T6	100 - 80	L3x3x5/16	15.24	7.06	143.9 K=1.00	7.216	1.7800	-5.41	12.84	0.421
T7	80 - 60	L3x3x5/16	16.80	7.86	160.2 K=1.00	5.822	1.7800	-5.59	10.36	0.540
T8	60 - 40	2L3 1/2x3 1/2x5/16	25.01	11.78	128.3 K=0.98	9.073	4.1800	-8.54	37.92	0.225
T9	40 - 20	2L3 1/2x3 1/2x5/16	26.26	12.43	133.8 K=0.97	8.337	4.1800	-10.33	34.85	0.296
T10	20 - 0	2L3 1/2x3 1/2x5/16	27.59	13.12	139.7 K=0.96	7.653	4.1800	-9.78	31.99	0.306

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio P P _a
T1	175 - 165	7/8	5.00	4.83	185.6 K=0.70	4.335	0.6013	-0.62	2.61	0.239
T2	165 - 150	1	5.00	4.81	161.7 K=0.70	5.711	0.7854	-1.35	4.49	0.301

Bottom Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio P P _a
T1	175 - 165	7/8	5.00	4.83	185.6 K=0.70	4.335	0.6013	-0.68	2.61	0.259
T2	165 - 150	1	5.00	4.81	161.7 K=0.70	5.711	0.7854	-0.80	4.49	0.177

Tension Checks

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Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio P P _a
T1	175 - 165	2	10.00	2.25	54.0	32.500	1.5625	6.73	50.78	0.133
T2	165 - 150	2 1/4	15.00	2.29	48.9	30.000	3.9761	31.36	119.28	0.263
T3	150 - 140	1.5	10.02	10.02	37.8	30.000	5.3014	35.52	159.04	0.223
T4	140 - 120	1.75	20.03	10.02	32.4	30.000	7.2158	60.25	216.47	0.278
T5	120 - 100	2	20.03	10.02	28.4	30.000	9.4248	82.67	282.74	0.292
T6	100 - 80	2	20.03	10.02	28.4	30.000	9.4248	103.55	282.74	0.366
T7	80 - 60	2.25	20.03	10.02	25.2	30.000	11.9282	124.41	357.85	0.348
T8	60 - 40	2.5	20.03	20.03	32.6	30.000	14.7262	134.08	441.79	0.303
T9	40 - 20	2.5	20.03	20.03	32.6	30.000	14.7262	158.89	441.79	0.360
T10	20 - 0	Pirolod 139284	20.03	20.03	32.6	30.000	17.8187	167.86	534.56	0.314

Truss-Leg Diagonal Data

Section No.	Elevation ft	Diagonal Size	L _d ft	Kl/r	F _a ksi	A in ²	Actual V K	Allow. V _a K	Stress Ratio
T3	150 - 140	0.5	1.47	141.2	7.490	0.1963	0.41	1.65	0.248
T4	140 - 120	0.5	1.46	140.0	7.617	0.1963	0.29	1.67	0.170
T5	120 - 100	0.625	1.45	111.1	11.525	0.3068	0.17	3.96	0.043
T6	100 - 80	0.625	1.45	111.1	11.525	0.3068	0.18	3.96	0.046
T7	80 - 60	0.625	1.43	110.2	11.648	0.3068	0.82	4.00	0.206
T8	60 - 40	0.75	1.73	110.5	11.604	0.4418	0.79	7.06	0.113
T9	40 - 20	0.75	1.73	110.5	11.604	0.4418	0.92	7.06	0.130
T10	20 - 0	0.75	1.71	109.5	16.302	0.4418	0.97	9.92	0.097

Diagonal 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 K	Allow. P _a K	Ratio $\frac{P}{P_a}$
T1	175 - 165	7/8	5.48	2.65	145.4	30.000	0.6013	1.82	18.04	0.101 ✓
T2	165 - 150	1	5.50	2.65	127.1	30.000	0.7854	3.52	23.56	0.149 ✓
T3	150 - 140	L3x3x5/16	11.42	5.00	67.6	21.600	1.7800	4.83	38.45	0.126 ✓
T4	140 - 120	L3x3x5/16	11.93	5.40	72.8	21.600	1.7800	4.89	38.45	0.127 ✓
T5	120 - 100	L3x3x5/16	13.80	6.31	85.1	21.600	1.7800	4.93	38.45	0.128 ✓
T6	100 - 80	L3x3x5/16	15.24	7.06	94.9	21.600	1.7800	5.23	38.45	0.136 ✓
T7	80 - 60	L3x3x5/16	16.01	7.47	100.3	21.600	1.7800	5.68	38.45	0.148 ✓
T8	60 - 40	2L3 1/2x3 1/2x5/16	25.01	11.78	134.3	21.600	4.1800	9.39	90.29	0.104 ✓
T9	40 - 20	2L3 1/2x3 1/2x5/16	26.26	12.43	141.6	21.600	4.1800	7.94	90.29	0.088 ✓
T10	20 - 0	2L3 1/2x3 1/2x5/16	27.59	13.12	149.3	21.600	4.1800	11.70	90.29	0.130 ✓

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio $\frac{P}{P_a}$
T1	175 - 165	7/8	5.00	4.83	265.1	30.000	0.6013	0.61	18.04	0.034 ✓
T2	165 - 150	1	5.00	4.81	231.0	30.000	0.7854	1.36	23.56	0.058 ✓

Bottom Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio $\frac{P}{P_a}$
T1	175 - 165	7/8	5.00	4.83	265.1	30.000	0.6013	0.67	18.04	0.037 ✓
T2	165 - 150	1	5.00	4.81	231.0	30.000	0.7854	0.87	23.56	0.037 ✓

Section Capacity Table

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Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF*P _{allow} K	% Capacity	Pass Fail
T1	175 - 165	Leg	2	1	6.73	67.69	9.9	Pass
T2	165 - 150	Leg	2 1/4	36	-37.15	129.97	28.6	Pass
T3	150 - 140	Leg	1.5	81	-42.01	184.67	22.7	Pass
T4	140 - 120	Leg	1.75	90	-74.09	258.24	28.7	Pass
T5	120 - 100	Leg	2	105	-103.67	343.62	30.2	Pass
T6	100 - 80	Leg	2	120	-131.94	343.62	38.4	Pass
T7	80 - 60	Leg	2.25	135	-159.98	440.81	36.3	Pass
T8	60 - 40	Leg	2.5	150	-179.62	526.59	34.1	Pass
T9	40 - 20	Leg	2.5	159	-206.32	526.59	39.2	Pass
T10	20 - 0	Leg	Pirol 139284	168	-236.06	637.26	37.0	Pass
T1	175 - 165	Diagonal	7/8	12	-1.81	10.07	18.0	Pass
T2	165 - 150	Diagonal	1	45	-3.54	16.52	21.4	Pass
T3	150 - 140	Diagonal	L3x3x5/16	84	-5.78	28.82	20.1	Pass
							26.3 (b)	
T4	140 - 120	Diagonal	L3x3x5/16	96	-4.95	25.64	19.3	Pass
							23.1 (b)	
T5	120 - 100	Diagonal	L3x3x5/16	111	-5.10	21.47	23.8	Pass
T6	100 - 80	Diagonal	L3x3x5/16	126	-5.41	17.12	31.6	Pass
T7	80 - 60	Diagonal	L3x3x5/16	141	-5.59	13.81	40.5	Pass
T8	60 - 40	Diagonal	2L3 1/2x3 1/2x5/16	156	-8.54	50.55	16.9	Pass
T9	40 - 20	Diagonal	2L3 1/2x3 1/2x5/16	165	-10.33	46.45	22.2	Pass
T10	20 - 0	Diagonal	2L3 1/2x3 1/2x5/16	174	-9.78	42.64	22.9	Pass
T1	175 - 165	Top Girt	7/8	5	-0.62	3.47	17.9	Pass
T2	165 - 150	Top Girt	1	37	-1.35	5.98	22.6	Pass
T1	175 - 165	Bottom Girt	7/8	7	-0.68	3.47	19.5	Pass
T2	165 - 150	Bottom Girt	1	40	-0.80	5.98	13.3	Pass
							Summary	
							Leg (T9)	39.2 Pass
							Diagonal (T7)	40.5 Pass
							Top Girt (T2)	22.6 Pass
							Bottom Girt (T1)	19.5 Pass
							Bolt Checks	28.8 Pass
							RATING =	40.5 Pass

Mat Foundation Analysis:**Input Data:**Tower Data

Overturing Moment =	OM := 3861-ft-kips	(User Input from RISATower)
Shear Force =	S _t := 39-kip	(User Input from RISATower)
Axial Force =	WT _t := 76-kip	(User Input from RISATower)
Max Compression Force =	C _t := 248-kip	(User Input from RISATower)
Max Uplift Force =	U _t := 181-kip	(User Input from RISATower)
Tower Height =	H _t := 175-ft	(User Input)
Tower Width =	W _t := 20-ft	(User Input)
Tower Position on Foundation (1=offset, 2=centered) =	Pos _t := 1	(User Input)

Footing Data:

Overall Depth of Footing =	D _f := 3-ft	(User Input)
Thickness of Footing =	T _f := 3.5-ft	(User Input)
Width of Footing =	W _f := 37.5-ft	(User Input)

Material Properties:

Concrete Compressive Strength =	f _c := 3000-psi	(User Input)
Steel Reinforcement Yield Strength =	f _y := 60000-psi	(User Input)
Internal Friction Angle of Soil =	Φ _s := 30-deg	(User Input)
Allowable Soil Bearing Capacity =	q _s := 4000-psf	(User Input)
Unit Weight of Soil =	γ _{soil} := 120-pcf	(User Input)
Unit Weight of Concrete =	γ _{conc} := 150-pcf	(User Input)
Foundation Bouyancy =	Bouyancy := 0	(User Input) (Yes=1 / No=0)
Depth to Neglect =	n := 0-ft	(User Input)
Cohesion of Clay Type Soil =	c := 0-ksf	(User Input) (Use 0 for Sandy Soil)
Seismic Zone Factor =	Z := 2	(User Input) (UBC-1997 Fig 23-2)
Coefficient of Friction Between Concrete =	μ := 0.45	(User Input)

Pad Reinforcement:

Bar Size =	$BS_{top} := 11$	(User Input)	(Top of Pad)
Bar Diameter =	$d_{btop} := 1.41\text{-in}$	(User Input)	(Top of Pad)
Number of Bars =	$NB_{top} := 44$	(User Input)	(Top of Pad)
Bar Size =	$BS_{bot} := 11$	(User Input)	(Bottom of Pad)
Bar Diameter =	$d_{bbot} := 1.41\text{-in}$	(User Input)	(Bottom of Pad)
Number of Bars =	$NB_{bot} := 44$	(User Input)	(Bottom of Pad)
Clear Cover of Reinforcement =	$Cvr_{pad} := 3.0\text{-in}$	(User Input)	
Reinforcement Location Factor =	$\alpha_{pad} := 1.0$	(User Input)	(ACI-2008 12.2.4)
Coating Factor =	$\beta_{pad} := 1.0$	(User Input)	(ACI-2008 12.2.4)
Concrete Strength Factor =	$\lambda_{pad} := 1.0$	(User Input)	(ACI-2008 12.2.4)
Reinforcement Size Factor =	$\gamma_{pad} := 1.0$	(User Input)	(ACI-2008 12.2.4)

Calculated Factors:

Pad Top Reinforcement Bar Area =	$A_{btop} := \frac{\pi \cdot d_{btop}^2}{4} = 1.561\text{-in}^2$	
Pad Bottom Reinforcement Bar Area =	$A_{bbot} := \frac{\pi \cdot d_{bbot}^2}{4} = 1.561\text{-in}^2$	
Coefficient of Lateral Soil Pressure =	$K_p := \frac{1 + \sin(\Phi_s)}{1 - \sin(\Phi_s)} = 3$	
Load Factor =	$LF := \begin{cases} 1.333 & \text{if } H_t \leq 700\text{-ft} \\ 1.7 & \text{if } H_t \geq 1200\text{-ft} \\ 1.333 + \left(\frac{H_t - 700\text{ft}}{1200\text{ft} - 700\text{ft}} \right) \cdot 0.4 & \text{otherwise} \end{cases}$	= 1.333

Stability of Footing:

Adjusted Concrete Unit Weight =

$$\gamma_c := \text{if}(\text{Bouyancy} = 1, \gamma_{\text{conc}} - 62.4 \text{pcf}, \gamma_{\text{conc}}) = 150 \text{pcf}$$

Adjusted Soil Unit Weight =

$$\gamma_s := \text{if}(\text{Bouyancy} = 1, \gamma_{\text{soil}} - 62.4 \text{pcf}, \gamma_{\text{soil}}) = 120 \text{pcf}$$

Passive Pressure =

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

$$P_{pt} := K_p \cdot \gamma_s \cdot (D_f - T_f) + c \cdot 2 \cdot \sqrt{K_p} = -0.18 \text{ksf}$$

$$P_{top} := \text{if}(n < (D_f - T_f), P_{pt}, P_{pn}) = 0 \text{ksf}$$

$$P_{bot} := K_p \cdot \gamma_s \cdot D_f + c \cdot 2 \cdot \sqrt{K_p} = 1.08 \text{ksf}$$

$$P_{ave} := \frac{P_{top} + P_{bot}}{2} = 0.54 \text{ksf}$$

$$T_p := \text{if}(n < (D_f - T_f), T_f, (D_f - n)) = 3$$

$$A_p := W_f \cdot T_p = 112.5$$

Ultimate Shear =

$$S_u := P_{ave} \cdot A_p = 60.75 \text{kip}$$

Weight of Concrete =

$$W_{T_c} := (W_f^2 \cdot T_f) \cdot \gamma_c = 738.281 \text{kip}$$

Tower Offset =

$$X_{t1} := \left[\frac{W_f}{2} - \frac{(W_t \cdot \cos(30 \text{-deg}))}{2} \right] \quad X_{t2} := \frac{W_f}{2} - \frac{(W_t \cdot \cos(30 \text{-deg}))}{3}$$

$$X_t := \text{if}(\text{Post}, X_{t1}, X_{t2}) = 10.09$$

$$X_{off} := \frac{W_f}{2} - \left[\frac{(W_t \cdot \cos(30 \text{-deg}))}{3} + X_t \right] = 2.887$$

Total Weight =

$$W_{T_{tot}} := W_{T_c} = 738.3 \text{kip}$$

Resisting Moment =

$$M_r := (W_{T_{tot}}) \cdot \frac{W_f}{2} + S_u \cdot \frac{T_f}{3} = 13914 \text{kip-ft}$$

Overturing Moment =

$$M_{ot} := OM + S_t \cdot T_f = 3997.5 \text{kip-ft}$$

Factor of Safety Actual =

$$FS := \frac{M_r}{M_{ot}} = 3.48$$

Factor of Safety Required =

$$FS_{req} := 2$$

$$\text{OverTurning_Moment_Check} := \text{if}(FS \geq FS_{req}, \text{"Okay"}, \text{"No Good"})$$

$$\text{OverTurning_Moment_Check} = \text{"Okay"}$$

Bearing Pressure Caused by Footing:

Total Load =

$$\text{Load}_{\text{tot}} := \text{WT}_c + \text{WT}_t = 814 \cdot \text{kip}$$

Area of the Mat =

$$A_{\text{mat}} := W_f^2 = 1.406 \times 10^3$$

Section Modulus of Mat =

$$S := \frac{W_f^3}{6} = 8789.06 \cdot \text{ft}^3$$

Maximum Pressure in Mat =

$$P_{\text{max}} := \frac{\text{Load}_{\text{tot}}}{A_{\text{mat}}} + \frac{M_{\text{ot}}}{S} = 1.034 \cdot \text{ksf}$$

$$\text{Max_Pressure_Check} := \text{if}(P_{\text{max}} < q_s, \text{"Okay"}, \text{"No Good"})$$

$$\text{Max_Pressure_Check} = \text{"Okay"}$$

Minimum Pressure in Mat =

$$P_{\text{min}} := \frac{\text{Load}_{\text{tot}}}{A_{\text{mat}}} - \frac{M_{\text{ot}}}{S} = 0.124 \cdot \text{ksf}$$

$$\text{Min_Pressure_Check} := \text{if}((P_{\text{min}} \geq 0) \cdot (P_{\text{min}} < q_s), \text{"Okay"}, \text{"No Good"})$$

$$\text{Min_Pressure_Check} = \text{"Okay"}$$

Distance to Resultant of Pressure Distribution =

$$X_p := \frac{\frac{P_{\text{max}}}{P_{\text{max}} - P_{\text{min}}} \cdot \frac{1}{3}}{\frac{W_f}{W_f}} = 14.207$$

Distance to Kern =

$$X_k := \frac{W_f}{6} = 6.25$$

Since Resultant Force is Not in Kern, Area to which Pressure is Applied Must be Reduced.

Eccentricity =

$$e := \frac{M_{\text{ot}}}{\text{WT}_{\text{tot}}} = 5.415$$

Adjusted Soil Pressure =

$$P_a := \frac{2 \cdot \text{WT}_{\text{tot}}}{3 \cdot W_f \left(\frac{W_f}{2} - e \right)} = 0.984 \cdot \text{ksf}$$

$$q_{\text{adj}} := \text{if}(P_{\text{min}} < 0, P_a, P_{\text{max}}) = 1.034 \cdot \text{ksf}$$

$$\text{Pressure_Check} := \text{if}(q_{\text{adj}} < q_s, \text{"Okay"}, \text{"No Good"})$$

$$\text{Pressure_Check} = \text{"Okay"}$$

Steel Reinforcement in Pad:

Required Reinforcement for Bending:

Strength Reduction Factor =

$$\phi_m := .90$$

(ACI-2008 9.3.2.1)

$$M_{nT} := LF \cdot \left[U_t \cdot \left(W_t \cdot \sin(60\text{-deg}) - \frac{d_p}{2} \right) + S_t \cdot (D_f + L_{\text{pag}}) \right] - W_{tT} \cdot X_{\text{off}} = 4116 \cdot \text{ft} \cdot \text{k}$$

$$M_{nS} := -1 \cdot \left[\frac{1}{2} \cdot \left(\frac{W_f}{2} + \frac{W_t}{3} \cdot \cos(30\text{-deg}) - \frac{d_p}{2} \right)^2 \cdot W_t \cdot [\gamma_s \cdot (T_f - T_f)] \right]$$

$$M_{nC} := -1 \cdot \left[\frac{1}{2} \cdot \left(\frac{W_f}{2} + \frac{W_t}{3} \cdot \cos(30\text{-deg}) - \frac{d_p}{2} \right)^2 \cdot W_t \cdot (\gamma_c \cdot T_f) \right]$$

Design Moment =

$$M_n := \frac{M_{nT} + M_{nS} + M_{nC}}{\phi_m} = 1.065 \times 10^3 \cdot \text{kips} \cdot \text{ft}$$

$$\beta := \begin{cases} 0.85 & \text{if } 2500 \cdot \text{psi} \leq f_c \leq 4000 \cdot \text{psi} \\ 0.65 & \text{if } f_c > 8000 \cdot \text{psi} \end{cases} = 0.85$$

$$\left[\left[\left[\frac{f_c}{\text{psi}} - 4000 \right] \right] \cdot 0.5 \right] \text{ otherwise} \quad (\text{ACI-2008} 10.2.7.3)$$

$$b_{\text{eff}} := W_t \cdot \cos(30\text{-deg}) + d_p = 207.846 \cdot \text{in}$$

$$d := T_f - C_{\text{vrpad}} - d_{\text{bbot}} = 37.59 \cdot \text{in}$$

$$A_s := \frac{M_n}{(f_y \cdot d)} = 5.664 \cdot \text{in}^2$$

$$a := \frac{A_s \cdot f_y}{\beta \cdot f_c \cdot b_{\text{eff}}} = 0.641 \cdot \text{in}$$

$$A_s := \frac{M_n}{f_y \cdot \left(d - \frac{a}{2} \right)} = 5.713 \cdot \text{in}^2$$

$$\rho := \frac{A_s}{b_{\text{eff}} \cdot d} = 0.00878 \cdot \text{in}$$

Required Reinforcement for Temperature and Shrinkage:

$$\rho_{sh} := \begin{cases} .0018 & \text{if } f_y \geq 60000 \text{ psi} \\ .0020 & \text{otherwise} \end{cases} = 0.0018 \quad (\text{ACI-2008 7.12.2.1})$$

Check Bottom Bars:

$$A_s := \text{if} \left(\rho \geq \rho_{sh}, A_s, \rho_{sh} \cdot \frac{b_{eff}}{2} \cdot d \right) = 7 \cdot \text{in}^2$$

$$A_{s_{prov}} := A_{bbot} \cdot NB_{bot} = 68.7 \cdot \text{in}^2$$

$$Pad_Reinforcement_Bot := \text{if}(A_{s_{prov}} > A_s, \text{"Okay"}, \text{"No Good"})$$

$$Pad_Reinforcement_Bot = \text{"Okay"}$$

Check top Bars:

$$A_s := \text{if} \left(\rho \geq \rho_{sh}, A_s, \rho_{sh} \cdot \frac{b_{eff}}{2} \cdot d \right) = 7 \cdot \text{in}^2$$

$$A_{s_{prov}} := A_{btop} \cdot NB_{top} = 68.7 \cdot \text{in}^2$$

$$Pad_Reinforcement_Top := \text{if}(A_{s_{prov}} > A_s, \text{"Okay"}, \text{"No Good"})$$

$$Pad_Reinforcement_Top = \text{"Okay"}$$

Development Length Pad Reinforcement:

Bar Spacing =

$$B_{sPad} := \frac{W_f - 2 \cdot C_{vrpad} - NB_{bot} \cdot d_{bbot}}{NB_{bot} - 1} = 8.88 \cdot \text{in}$$

Spacing or Cover Dimension =

$$c := \text{if} \left(C_{vrpad} < \frac{B_{sPad}}{2}, C_{vrpad}, \frac{B_{sPad}}{2} \right) = 3 \cdot \text{in}$$

Transverse Reinforcement Index =

$$k_{tr} := 0 \quad (\text{ACI-2008 12.2.3})$$

$$L_{dbt} := \frac{3 \cdot f_y \alpha_{pad} \beta_{pad} \gamma_{pad} \lambda_{pad}}{40 \cdot \sqrt{f_c \text{ psi}} \cdot \frac{c + k_{tr}}{d_{bbot}}} \cdot d_{bbot} = 54.4 \cdot \text{in}$$

Minimum Development Length =

$$L_{dbmin} := 12 \cdot \text{in} \quad (\text{ACI-2008 12.2.1})$$

$$L_{dbtCheck} := \text{if}(L_{dbt} \geq L_{dbmin}, \text{"Use L.dbt"}, \text{"Use L.dbmin"}) = \text{"Use L.dbt"}$$

Available Length in Pad =

$$L_{Pad} := \frac{W_f}{2} - \frac{W_t}{2} - C_{vrpad} = 102 \cdot \text{in}$$

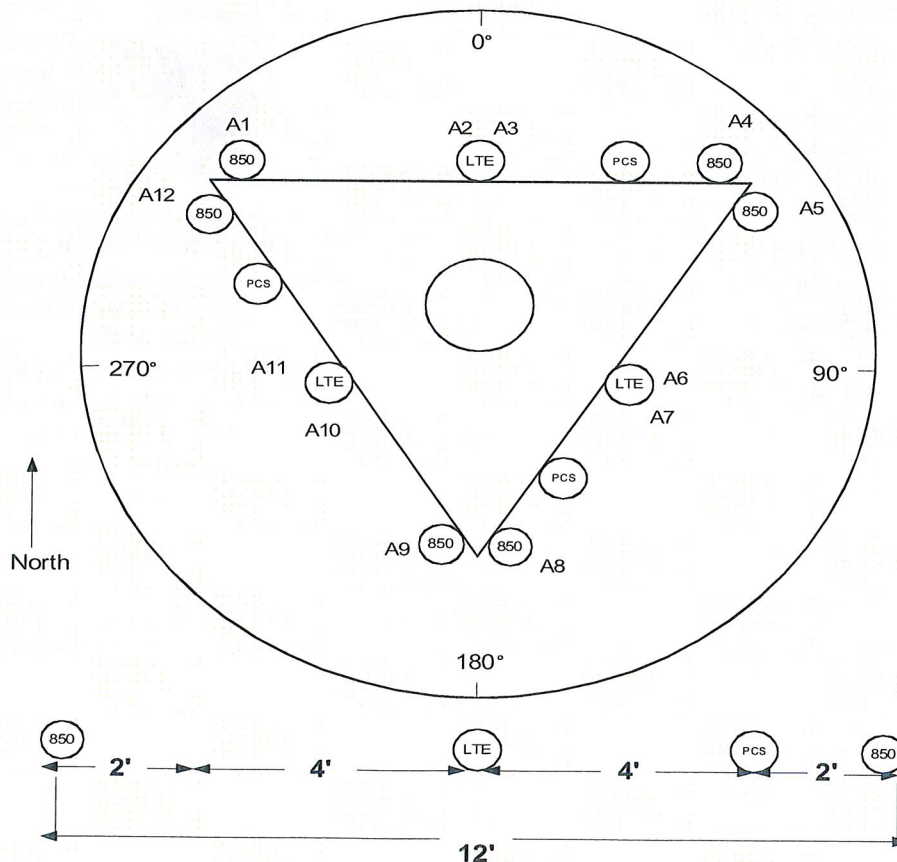
$$L_{pad_Check} := \text{if}(L_{Pad} > L_{dbt}, \text{"Okay"}, \text{"No Good"})$$

$$L_{pad_Check} = \text{"Okay"}$$

SITE NAME		BALTIC CT		ECP - CELL #		2		10	
LATITUDE		41-37-27.00 N		LONGITUDE		72-04-41.00 W			
Additional Comments: adding LTE antenna and 6 cables				SAVE BUTTON					
				STRUCTURE TYPE		Tower			
700 Mhz C - LTE ANTENNA ADD		ALPHA		BETA		GAMMA			
EQUIPMENT TYPE		eNodeB		eNodeB		eNodeB			
ANTENNA TYPE		BXA-70063-6CF-4		BXA-70063-6CF-6		BXA-70063-6CF-6			
QTY OF ANTENNAS PER FACE		1		1		1			
ORIENTATION (DEG)		30		150		270			
DOWN TILT (MECH/DEG)		0		2		0			
RAD CTR (FT AGL)		165		165		165			
TMA - QTY / MODEL									
DIPLEXER - QTY / MODEL									
MCPA BRICKS (QTY)									
850 Cellular - Current Config		ALPHA		BETA		GAMMA			
EQUIPMENT TYPE		Cellular Modcell		Cellular Modcell		Cellular Modcell			
ANTENNA TYPE		LPA-80080/4CF		LPA-80080/4CF		LPA-80080/4CF			
QTY OF ANTENNAS PER FACE		2		2		2			
ORIENTATION (DEG)		0		120		240			
DOWN TILT (MECH/DEG)		0		0		0			
RAD CTR (FT AGL)		165		165		165			
TMA - QTY / MODEL									
DIPLEXER - QTY / MODEL									
DIPLEXER KIT - QTY / MODEL									
MCPA BRICKS (QTY)									
850 Cellular - Future Config		ALPHA		BETA		GAMMA			
EQUIPMENT TYPE		Cellular Modcell		Cellular Modcell		Cellular Modcell			
ANTENNA TYPE		LPA-80080/4CF		LPA-80080/4CF		LPA-80080/4CF			
QTY OF ANTENNAS PER FACE		2		2		2			
ORIENTATION (DEG)		0		120		240			
DOWN TILT (MECH/DEG)		0		5		4			
RAD CTR (FT AGL)		165		165		165			
TMA - QTY / MODEL									
DIPLEXER - QTY / MODEL									
DIPLEXER KIT - QTY / MODEL									
MCPA BRICKS (QTY)									
1900 PCS - Current Config		ALPHA		BETA		GAMMA			
EQUIPMENT TYPE		PCS Modcell		PCS Modcell		PCS Modcell			
ANTENNA TYPE		LPA-185080/8CF 2		LPA-185080/8CF 2		LPA-185080/8CF 2			
QTY OF ANTENNAS PER FACE		2		2		2			
ORIENTATION (DEG)		0		120		240			
DOWN TILT (MECH/DEG)		0		0		0			
RAD CTR (FT AGL)		165		165		165			
TMA - QTY / MODEL									
DIPLEXER - QTY / MODEL									
DIPLEXER KIT - QTY / MODEL									
MCPA BRICKS (QTY)									
1900 PCS - Future Config		ALPHA		BETA		GAMMA			
EQUIPMENT TYPE		PCS Modcell		PCS Modcell		PCS Modcell			
ANTENNA TYPE		BXA-171085-8CF-EDIN_2		BXA-171085-8CF-EDIN_2		BXA-171085-8CF-EDIN_2			
QTY OF ANTENNAS PER FACE		1		1		1			
ORIENTATION (DEG)		0		120		240			
DOWN TILT (MECH/DEG)		0		0		0			
RAD CTR (FT AGL)		165		165		165			
TMA - QTY / MODEL									
DIPLEX WITH CELLULAR CABLE									
MCPA BRICKS (QTY)									

NUMBER OF CABLE'S NEEDED								ESTIMATED CABLE LENGTH				
MAINLINE SIZE		1 5/8"		TOTAL # OF MAINLINES			18	MAINLINE (FT)				
JUMPER SIZE		1/2 "		TOTAL # OF TOP JUMPERS			18	TOP JUMPER (FT)			12	
Equipment Cable Ordering		MAIN CABLE		12		+	6	TOP JUMPER #		12	+	6
TX / RX FREQUENCIES								TX POWER OUTPUT				
Cellular A-Band				PCS F-Band				Cellular (Watts)			20	
TX - 869-880,890-891.5 MHz				TX - 1970-1975				PCS (Watts)			16	
RX - 824-835,845-846.5 MHz				RX - 1890-1895				LTE (Watts)			40	
700 MHz A - Block				700 MHz C - Block				AWS F - Block				
TX - 698 - 704 MHz				TX - 746-757				TX - 2145-2155				
RX - 728 - 734 MHz				RX - 776-787				RX - 1745-1755				
ALPHA				BETA				GAMMA				
Ant.	Freq.	Func.	Color Code	Ant.	Freq.	Func.	Color Code	Ant.	Freq.	Func.	Color Code	
A1	800	Tx1/Rx0	RED	A7	800	Tx2/Rx0	BLUE	A13	800	Tx3/Rx0	GREEN	
A2	1900	Tx1/Rx0	RED/ WHITE	A8	1900	Tx2/Rx0	BLUE/ WHITE	A14	1900	Tx3/Rx0	GREEN/WHITE	
A3	700	Tx1/Rx0	RED/ ORANGE	A9	700	Tx2/Rx0	BLUE/ ORANGE	A15	700	Tx3/Rx0	GREEN/ORANGE	
A4	700	Tx4/Rx1	RED/RED/ ORANGE	A10	700	Tx5/Rx1	BLUE/BLUE/ ORANGE	A16	700	Tx6/Rx1	GREEN/GREEN/ ORANGE	
A5	1900	Tx4/Rx1	RED/RED/ WHITE	A11	1900	Tx5/Rx1	BLUE/BLUE/ WHITE	A17	1900	Tx6/Rx1	GREEN/GREEN/ WHITE	
A6	800	Tx4/Rx1	RED/RED	A12	800	Tx5/Rx1	BLUE/BLUE	A18	800	Tx6/Rx1	GREEN/GREEN	
RF ENGINEER				RF MANAGER				INITIALS		DATE		
Prepared By : Mark Brauer				Steve Weatherbee				MB		9/28/2011		

Site Configuration



Mechanical specifications

Length	1804 mm	71.0 in
Width	285 mm	11.2 in
Depth	114 mm	4.5 in
Depth with z-bracket	154 mm	6.1 in
Weight ⁴⁾	7.9 kg	17.0 lbs
Wind Area Fore/Aft	0.51 m ²	5.5 ft ²
Wind Area Side	0.21 m ²	2.2 ft ²
Max Wind Survivability	>201 km/hr	>125 mph
Wind Load @ 100 mph (161 km/hr)		
Fore/Aft	753 N	169 lbf
Side	351 N	79 lbf

Antenna consisting of aluminum alloy with brass feedlines covered by a UV safe fiber-glass radome.

Mounting & Downtilting

Mounting hardware attaches to pipe diameter $\varnothing 50$ -160 mm; $\varnothing 2.0$ -6.3 in

Mounting Bracket Kit	36210002
Downtilt Bracket Kit	36114003

Electrical specifications

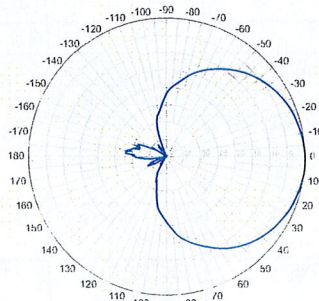
Frequency Range	696-900 MHz
Impedance	50 Ω
Connector ³⁾	NE or E-DIN Female 2 ports / Center
VSWR ¹⁾	$\leq 1.35:1$
Polarization	Slant $\pm 45^\circ$
Isolation Between Ports ¹⁾	< -25 dB
Gain ¹⁾	14.5 dBd 16.5 dBi
Power Rating ²⁾	500 W
Half Power Angle ¹⁾	
Horizontal Beamwidth	63°
Vertical Beamwidth	11°
Electrical downtilt ⁵⁾	0°
Null fill ¹⁾	5%
Lightning protection	Direct ground

Patented Dipole Design: U.S. Patent No. 6,608,600 B2

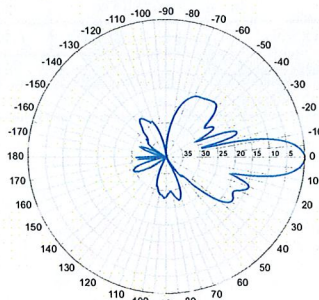
- 1) Typical values.
- 2) Power rating limited by connector only.
- 3) NE indicates an elongated N connector.
E-DIN indicates an elongated DIN connector.
- 4) Antenna weight does not include brackets.
- 5) Add'l downtilts may be available. Check website for details.

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

Radiation-pattern¹⁾
750 MHz

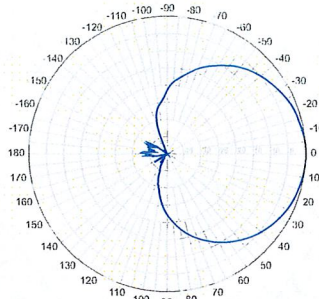


Horizontal

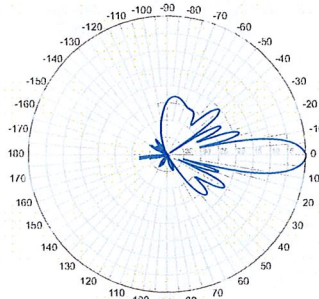


Vertical

850 MHz



Horizontal

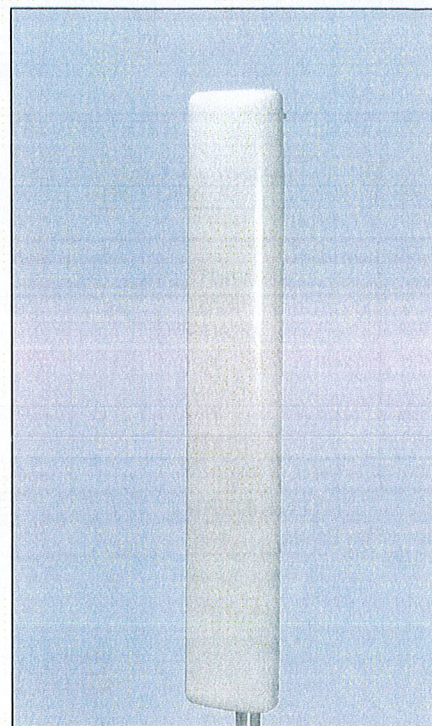


Vertical

696-900 MHz

BXA-70063/6CF

When ordering replace " " with connector type.



Featuring our Exclusive
3T Technology™
Antenna Design:

- Watercut brass feedline assembly for consistent performance.
- Unique feedline design eliminates the need for conventional solder joints in the signal path.
- A non-collinear system with access to every radiating element for broad bandwidth and superior performance.
- Air as insulation for virtually no internal signal loss.

Warranty:

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

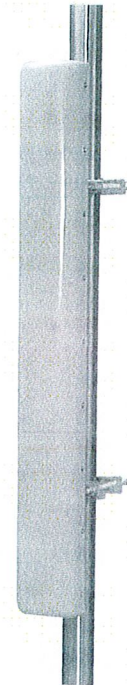
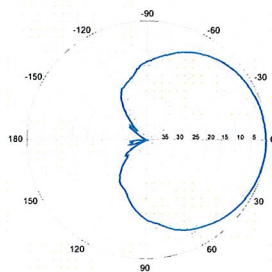
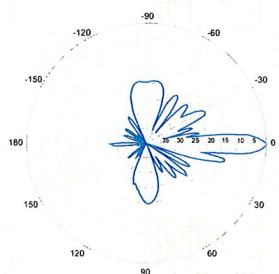
Revision Date: 01/08/09

BXA-171085-8CF-EDIN-X

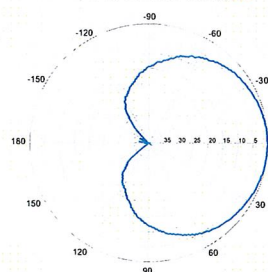
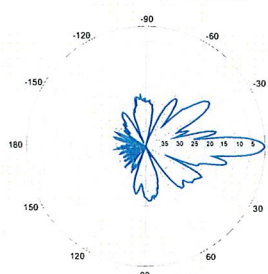
Replace "X" with desired electrical downtilt.

X-Pol | FET Panel | 85° | 16.4 dBi

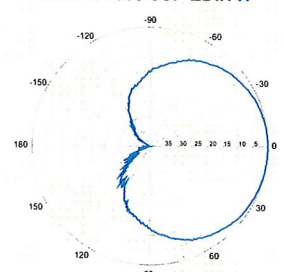
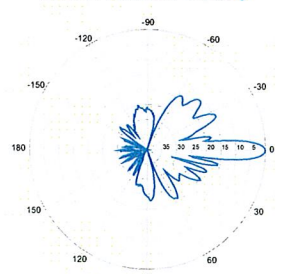
Electrical Characteristics	1710-2170 MHz		
Frequency bands	1710-1880 MHz	1850-1990 MHz	1920-2170 MHz
Polarization	±45°	±45°	±45°
Horizontal beamwidth	88°	85°	80°
Vertical beamwidth	7°	7°	7°
Gain	13.5 dBd / 15.6 dBi	13.9 dBd / 16.0 dBi	14.3 dBd / 16.4 dBi
Electrical downtilt (X)	0, 2, 4		
Impedance	50Ω		
VSWR	≤1.5:1		
First upper sidelobe	< -17 dB		
Front-to-back isolation	> 30 dB		
In-band isolation	> 28 dB		
IM3 (20W carrier)	< -150 dBc		
Input power	300 W		
Lightning protection	Direct Ground		
Connector(s)	2 Ports / EDIN / Female / Center (Back)		
Operating temperature	-40° to +60° C / -40° to +140° F		
Mechanical Characteristics			
Dimensions Length x Width x Depth	1232 x 154 x 105 mm	48.5 x 6.1 x 4.1 in	
Depth with l-brackets	133 mm	5.2 in	
Weight without mounting brackets	4.8 kg	10.5 lbs	
Survival wind speed	296 km/hr	184 mph	
Wind area	Front: 0.19 m ² Side: 0.14 m ²	Front: 2.0 ft ² Side: 1.5 ft ²	
Wind load @ 161 km/hr (100 mph)	Front: 281 N Side: 223 N	Front: 63 lbf Side: 50 lbf	
Mounting Options	Part Number	Fits Pipe Diameter	Weight
2-Point Mounting Bracket Kit	26799997	50-102 mm 2.0-4.0 in	2.3 kg 5 lbs
2-Point Mounting & Downtilt Bracket Kit	26799999	50-102 mm 2.0-4.0 in	3.6 kg 8 lbs
Concealment Configurations	For concealment configurations, order BXA-171085-8CF-EDIN-X-FP		

**BXA-171085-8CF-EDIN-X**Horizontal | 1710-1880 MHz
BXA-171085-8CF-EDIN-0

0° | Vertical | 1710-1880 MHz

BXA-171085-8CF-EDIN-XHorizontal | 1850-1990 MHz
BXA-171085-8CF-EDIN-0

0° | Vertical | 1850-1990 MHz

BXA-171085-8CF-EDIN-XHorizontal | 1920-2170 MHz
BXA-171085-8CF-EDIN-0

0° | Vertical | 1920-2170 MHz

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