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

Internet: ct.gov/csc

Daniel F. Caruso
Chairman

September 8, 2010

Kenneth C. Baldwin
Robinson & Cole LLP
280 Trumbull Street
Hartford, CT 06103-3597

RE: **EM-VER-158-100819-** Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 880 Post Road East, Westport, 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.

The proposed modifications are to be implemented as specified here and in your notice dated August 19, 2010, including the placement of all necessary equipment and shelters within the tower compound. 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. Any deviation from this format may result in the Council implementing enforcement proceedings pursuant to General Statutes § 16-50u including, without limitation, imposition of expenses resulting from such failure and of civil penalties in an amount not less than one thousand dollars per day for each day of construction or operation in material violation.

Thank you for your attention and cooperation.

Very truly yours,

Linda Roberts

Linda Roberts
Executive Director

LR/CDM/laf

c: The Honorable Gordon F. Joseloff, First Selectman, Town of Westport
Laurence Bradley, Director, Planning & Zoning, Town of Westport
Brian Benito, Bureau of Police Support Telecommunications, Dept. of Public Safety

STATE OF CONNECTICUT

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

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Daniel F. Caruso
Chairman

August 26, 2010

The Honorable Gordon F. Joseloff
First Selectman
Town of Westport
Town Hall
110 Myrtle Avenue
Westport, CT 06880

RE: **EM-VER-158-100819-** Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 880 Post Road East, Westport, Connecticut.

Dear First Selectman Joseloff:

The Connecticut Siting Council (Council) received this request to modify an existing telecommunications facility, pursuant to Regulations of Connecticut State Agencies Section 16-50j-72.

If you have any questions or comments regarding this proposal, please call me or inform the Council by September 9, 2010

Thank you for your cooperation and consideration.

Very truly yours,

Melanie Bachman
Acting Executive Director

MB/jbw

Enclosure: Notice of Intent

c: Laurence Bradley, Director, Planning & Zoning, Town of Westport

ROBINSON & COLE

EM-VER-158-100819

KENNETH C. BALDWIN

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

ORIGINAL

August 19, 2010

Via Hand Delivery

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

Re: **Notice of Exempt Modification – Antenna Swap**
880 Post Road East, Westport, Connecticut

Dear Ms. Roberts:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains twelve (12) wireless telecommunications antennas at the 155-foot level of the existing 180-foot tower at the above-referenced address. The tower and property are owned by the Connecticut Department of Public Safety (State Police). The Council approved Cellco's use of this tower in 1990. Cellco now intends to modify its installation by replacing ten (10) of its twelve (12) antennas with four (4) model DB844G65ZAXY cellular antennas; three (3) model MG D3-800T0 PCS antennas; two (2) model LNX6512DS-T4M LTE antennas; and one (1) model P65-16-XL-2 LTE antenna, all at the same 155-foot level on the tower. Cellco also intends to install six (6) antenna cable diplexers on its antenna platform. Attached behind Tab 1 are the specifications for the proposed replacement antennas.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Gordon F. Joseloff, First Selectman for the Town of Westport. A copy of this letter is also being sent to the Connecticut Department of Public Safety, 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 any increase in the height of the existing tower. Cellco's antennas will be located at the same 155-foot level on the existing tower.

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

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

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 behind Tab 3 is a Detailed Structural Analysis and Evaluation confirming that the tower and its foundation can support Cellco's proposed antenna modification.

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:
Gordon F. Joseloff, Westport First Selectman
Connecticut State Police
Sandy M. Carter

Product Specifications

ANDREW®
A CommScope Company

DB844G65ZAXY

Directed Dipole™ Antenna, 806–960 MHz, 65° horizontal beamwidth, fixed electrical tilt

- Excellent azimuth roll-off, reducing sector-to-sector interference and soft hand-offs
- Air dielectric feed system with no screws, rivets, solder, or welding in dipole feed point
- Low profile for ease of zoning approval
- Excellent upper sidelobe suppression

CHARACTERISTICS

General Specifications

Antenna Type	Directed Dipole™
Brand	Directed Dipole™
Operating Frequency Band	806 – 960 MHz

Electrical Specifications

Frequency Band, MHz	**806–896**	**870–960**
Beamwidth, Horizontal, degrees	65	65
Gain, dBd	13.5	13.8
Gain, dBi	15.6	15.9
Beamwidth, Vertical, degrees	15.0	15.0
Beam Tilt, degrees	0	0
Upper Sidelobe Suppression (USLS), typical, dB	15	15
Null Fill, dB	20	20
Front-to-Back Ratio at 180°, dB	40	40
VSWR | Return Loss, db	1.33:1 | 17.0	1.33:1 | 17.0
Intermodulation Products, 3rd Order, 2 x 20 W, dBc	-150	-150
Input Power, maximum, watts	500	500
Polarization	Vertical	Vertical
Impedance, ohms	50	50
Lightning Protection	dc Ground	dc Ground

Product Specifications

DB844G65ZAXY

ANDREW®
A CommScope Company

Mechanical Specifications

Color	Light gray
Connector Interface	7-16 DIN Female
Connector Location	Back
Connector Quantity	1
Wind Loading, maximum	235.8 N @ 100 mph 53.0 lbf @ 100 mph
Wind Speed, maximum	241.4 km/h | 150.0 mph

Dimensions

Depth	203.2 mm | 8.0 in
Length	1219.2 mm | 48.0 in
Width	254.0 mm | 10.0 in
Net Weight	5.4 kg | 12.0 lb

Regulatory Compliance/Certifications

Agency
RoHS 2002/95/EC
China RoHS SJ/T 11364-2006

Classification
Compliant by Exemption
Above Maximum Concentration Value (MCV)

INCLUDED PRODUCTS

DB5083
Downtilt Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members

DB380
Pipe Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members

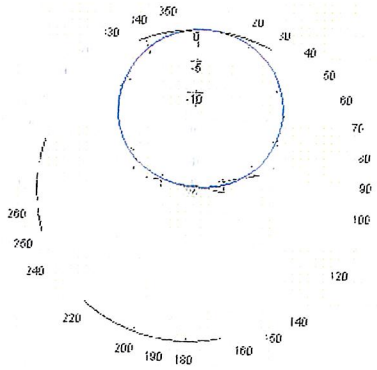
DB382NS
Side Offset Bracket for 4.5 in (114.3 mm) OD round members

Product Specifications

DB844G65ZAXY

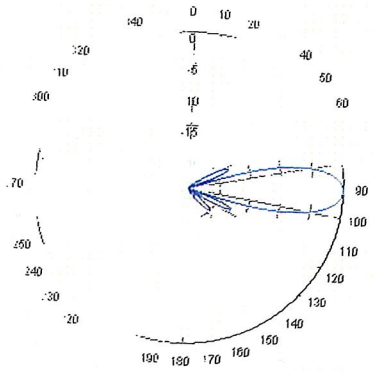
ANDREW®
A CommScope Company

Horizontal Pattern

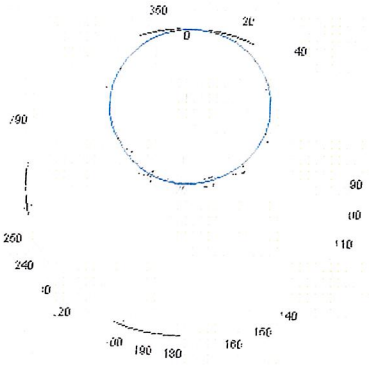


Freq: 850 MHz, Tilt: 0°

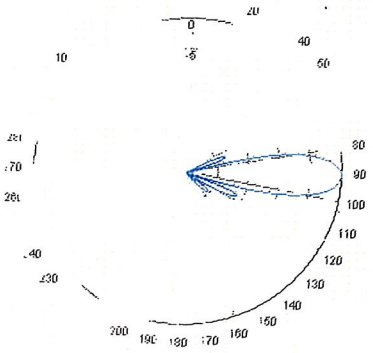
Vertical Pattern



Freq: 850 MHz, Tilt: 0°



Freq: 935 MHz, Tilt: 0°



Freq: 935 MHz, Tilt: 0°

SINGLE-BAND PANEL ANTENNA

BROADBAND 1700-2170 MHZ

MGD3-800TX

1710-1880	1850-1990	1920-2170
H66° V7.2°	H64° V6.6°	H63° V6.3°
Fixed Tilt 0°2,°4,°6,°	Fixed Tilt 0°2,°4,°6,°	Fixed Tilt 0°2,°4,°6,°

ELECTRICAL SPECIFICATIONS

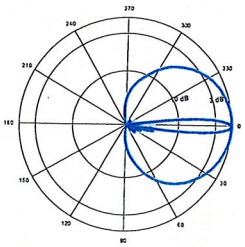
BROADBAND 1710-2170 MHz

Antenna Model	MGD3-800TX		
Polarization	± 45°		
Frequency	1710 - 1880	1850 - 1990	1920 - 2170
Horizontal Beamwidth	66°	64°	63°
Vertical Beamwidth	7.2°	6.6°	6.3°
Gain (dBi)	17.9	18	18.5
Vertical Electrical Tilt	FIXED 0°, 2°, 4°, 6°	FIXED 0°, 2°, 4°, 6°	FIXED 0°, 2°, 4°, 6°
Upper Sidelobe Suppression for the 1st lobe above main beam (dB)	20	20	20
Front-to-Back Ratio /Cpol @ ± 20° (dB)	> 30	> 30	> 30
VSWR	< 1.4 : 1	< 1.4 : 1	< 1.4 : 1
Cross Polar Ratio @ ± 60° (dB)	> 10	> 10	> 10
Isolation Between Ports (dB)	> 30	> 30	> 30
Maximum Power Per Input (W)	250		
Intermodulation (dBc)	< - 150		
Impedance (Ω)	50		

MECHANICAL SPECIFICATIONS

Connectors	2 X 7/16 Female
Connector Position	Bottom
Survival Wind Speed mph (km/h)	124 (200)
Front Windload lbs (N) @ 160 km/h	83 (370)
Lateral Windload lbs (N) @ 160 km/h	38 (170)
Radome Color	Grey, paintable
Temperature Range F (°C)	-67° to 140° (-55° to +60°)
Humidity	100%
Antenna Weight lbs (kg)	15.43 (7)
Antenna Dimension in (mm) H X W X D	53 X 6.29 X 3.54 (1340 X 160 X 90)

H&V Pattern



RYMSA Telecom Group (Headquarters)

RYMSA TELECOM GROUP

www.rymsawireless.com

RYMSA México:

RYMSA Wireless U.S.A.

Product Specifications

ANDREW®
A CommScope Company

LNX-6512DS-T4M

DualPol® Antenna, 698–896 MHz, 65° horizontal beamwidth, fixed electrical tilt

- Continuous wideband operation
- Great solution to maximize network coverage and capacity
- Excellent gain, VSWR, front-to-back ratio, and PIM specifications for robust network performance
- Patented DualPol® technology
- Ideal choice for site collocations and tough zoning restrictions

CHARACTERISTICS

General Specifications

Antenna Type	DualPol®
Brand	DualPol®
Operating Frequency Band	698 – 896 MHz

Electrical Specifications

Frequency Band, MHz	**698–806**	**806–896**
Beamwidth, Horizontal, degrees	65	65
Gain, dBd	12.4	13.3
Gain, dBi	14.5	15.4
Beamwidth, Vertical, degrees	18.7	16.2
Beam Tilt, degrees	4	4
Upper Sidelobe Suppression (USLS), typical, dB	20	20
Front-to-Back Ratio at 180°, dB	30	32
Isolation, dB	30	30
VSWR | Return Loss, db	1.35:1 | 16.5	1.35:1 | 16.5
Intermodulation Products, 3rd Order, 2 x 20 W, dBc	-150	-150
Input Power, maximum, watts	500	500
Polarization	±45°	±45°
Impedance, ohms	50	50
Lightning Protection	dc Ground	dc Ground

Product Specifications

LNX-6512DS-T4M

ANDREW®
A CommScope Company

Mechanical Specifications

Color	Light gray
Connector Interface	7-16 DIN Female
Connector Location	Bottom
Connector Quantity	2
Wind Loading, maximum	379.8 N @ 150 km/h 85.4 lbf @ 150 km/h
Wind Speed, maximum	241.0 km/h | 149.8 mph

Dimensions

Depth	181.0 mm | 7.1 in
Length	1232.0 mm | 48.5 in
Width	301.0 mm | 11.9 in
Net Weight	12.3 kg | 27.1 lb

Regulatory Compliance/Certifications

Agency
RoHS 2002/95/EC
China RoHS SJ/T 11364-2006

Classification
Compliant by Exemption
Above Maximum Concentration Value (MCV)

INCLUDED PRODUCTS

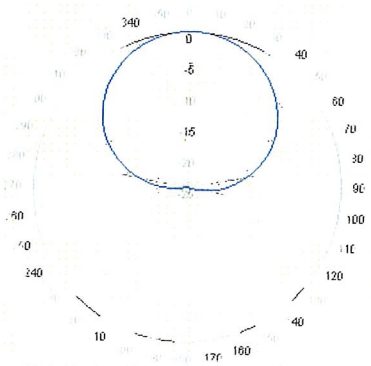
MTG-L-STD
Downtilt Mounting Kit for panel Antennas

Product Specifications

LNX-6512DS-T4M

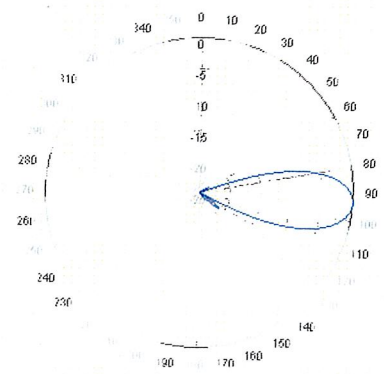
ANDREW®
A CommScope Company

Horizontal Pattern

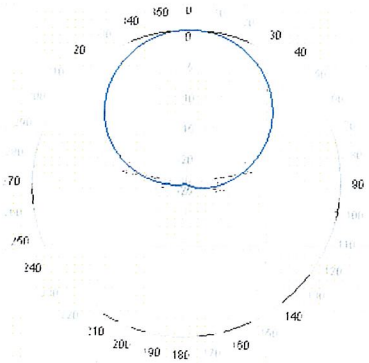


Freq: 750, Tilt:4

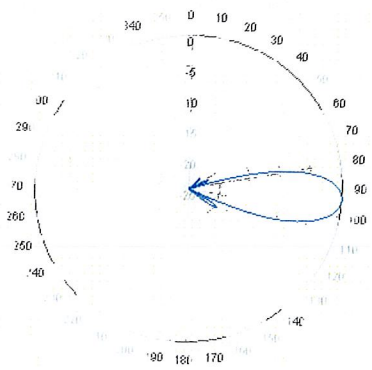
Vertical Pattern



Freq: 750, Tilt:4



Freq: 850, Tilt:4



Freq: 850, Tilt:4

P65-16-XL-2 : Very Low Broadband Antennas

POLARIZATION: Dual linear ±45°
FREQUENCY (MHz): 698-894
HORIZONTAL BEAM WIDTH (°): 65
GAIN (dBi/dBd): 16.0/13.9
TILT: 2
LENGTH: 72"

ELECTRICAL SPECIFICATIONS*

Frequency range (MHz)	698-894	
Frequency band (MHz)	698-806	806-894
Gain (dBi/dBd)	15.5/13.4	16.0/13.9
Polarization		
Nominal Impedance (Ω)		
VSWR		
Horizontal beam width, -3 dB (°)	68	65
Vertical beam width, -3 dB (°)	10.5	9.5
Electrical down tilt (°)		
Side lobe suppression, vertical 1st upper (dB)	> 15	> 15
Isolation between inputs (dB)	> 30	> 30
Tracking, horizontal plane ±60° (dB)	< 2	< 2
First null fill (dB)	-	-
Vertical beam squint (°)	< 0.5	< 0.5
Front to back ratio (dB)	> 30	> 30
Front to back ratio, total power (dB)	> 25	> 25
Cross polar discrimination (XPD) 0° (dB)	> 15	> 15
Cross polar discrimination (XPD) ±60° (dB)	> 10	> 10
Far field coupling		
IM3, 2xTx@43dBm (dBc)	-153	
IM7, 2xTx@43dBm (dBc)		
Power handling, average per input (W)		
Power handling, average total (W)		

MECHANICAL SPECIFICATIONS*

Connector	2 X 7/16 DIN Female
Connector position	Bottom
Dimensions, HxWxD, mm (ft)	72" x 12" x 5" (1829 x 305 x 125)
Mounting	Pre-mounted Tilt Brackets
Weight, with brackets, kg (lbs)	44 (20)
Weight, without brackets, kg (lbs)	33 (15)
Wind load, frontal/lateral/rear side 42 m/s Cd=1.6 (N)	1380
Maximum operational wind speed, m/s (mph)	100 (45)
Survival wind speed, m/s (mph)	125 (55)
Lightning protection	DC Ground
Radome material	PVC
Radome colour	Light Grey
Package size, HxWxD, mm (ft)	82" x 16" x 10" (2082 x 400 x 255)
Shipping weight, kg (lbs)	55 (25)
RET	N/A
Brackets	7256.00, 7454.00, 2210.00

*All specifications subject to change without notice. Please contact your Powerwave representative for complete performance data.

ANTENNA PATTERNS*

For detailed patterns visit http://www.powerwave.com/rpa/.

	General	Power	Density					
Site Name: Westport								
Tower Height: Verizon @ 155Ft.								
CARRIER	# OF CHAN.	WATTS ERP	HEIGHT	CALC. POWER DENS	FREQ.	MAX. PERMISS. EXP.	FRACTION MPE	Total
*SNET	10	40	150	0.0064	825	0.5500	1.16%	
*Cingular GSM	2	296	133	0.0120	880	0.5867	2.05%	
*Cingular GSM	1	427	133	0.0087	1930	1.0000	0.87%	
*T-Mobile GSM	8	179	125	0.0330	1945	1.0000	3.30%	
*T-Mobile UMTS	2	750	125	0.0345	2100	1.0000	3.45%	
*State Police	1	330	180	0.0037	42.04	0.2000	1.83%	
*State Police	1	50.7	169	0.0006	954.4	0.6363	0.10%	
Verizon	**3**	**387**	**155**	**0.0174**	**970**	**1.0000**	**1.74%**	
Verizon	**9**	**296**	**155**	**0.0399**	**869**	**0.5793**	**6.88%**	
Verizon	**1**	**649**	**155**	**0.0097**	**757**	**0.4973**	**1.95%**	
								23.33%
* Source: Siting Council								

DETAILED STRUCTURAL ANALYSIS AND EVALUATION OF 180' EXISTING SELF SUPPORTING LATTICE TOWER FOR PROPOSED ANTENNA MODIFICATION

Connecticut State Police Tower
880 Post Road East
Westport, Connecticut

prepared for

Verizon Wireless
99 East River Drive
East Hartford, Connecticut 06108

prepared by

URS CORPORATION
500 Enterprise Drive, Suite 3B
ROCKY HILL, CT 06067
TEL. 860-529-8882

36931187.00000
VZ5-040

May 5, 2010

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY

This report summarizes the structural analysis of the 180' self-supporting lattice tower located at 880 Post Road East in Westport, Connecticut. The analysis was conducted in accordance with the 2005 Connecticut State Building Code and the TIA/EIA-222-F standard for wind velocity of 90 mph concurrent with ½" ice design wind load. The antenna loading considered in the analysis consists of all existing and proposed antennas, transmission lines, and ancillary items as outlined in the Analysis Methodology and Loading Condition Section of this report. The proposed Verizon Wireless modification is as follows:

Antenna and Mount	Carrier	Antenna Center Elevation
Install: (1) P65-15-XL-2 (2) LNX-6512DS-T4M (4) DB844G65ZAXY (3) MG D3-800T0 (6) Diplexers	**Verizon Wireless**	**@ 155'**

Note: Two existing DB844H90-XY to remain. Proposed antennas to use existing (12) 1-5/8" dia. coax.

The results of the analysis indicate that the tower structure is in compliance with the proposed loading conditions. The tower and its foundation are considered structurally adequate with the TIA/EIA-222-F wind load classification specified above and all existing and proposed antenna loading.

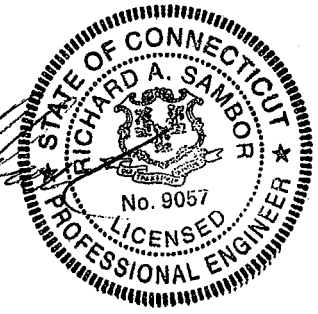
This analysis is based on:

1) The tower structure's theoretical capacity not including any assessment of the condition of the tower.
2) Original tower report prepared by Rohn Industries, Inc., engineering file 26263DL and drawing C910693 dated February 1, 1991.
3) Soil investigation and foundation capacity report prepared by Dr. Clarence Welti, P.E., P.C., dated October 10, 2002.
4) Visual verification of appurtenances and coaxial cables from site visit performed from grade by URS Corporation in May 2010.
5) Antenna and mount configuration as specified on the following page of this report.

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

If you should have any questions, please call.

Sincerely,
URS Corporation AES



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

RAS/kab

2. INTRODUCTION

The subject tower is located at 880 Post Road East in Westport, Connecticut. The structure is a 180' self-supporting lattice tower manufactured by Rohn Industries Incorporated.

The inventory is summarized in the table below:

Antenna Type	***Carrier***	***Mount***	***Antenna Centerline Elevation***	***Cable***
(1) Yagi Antenna	Unknown (existing)	Leg Mount	@ 180'	(1) 7/8"
(1) RFS PA6-85 dish	CSP (existing)	Leg Mount	@ 177'	(1) EW63
(2) PD1142	CSP (existing)	Standoff Mount	@ 175'	(2) 7/8"
(2) Scala AP11-850 antennas	CSP (existing)	Standoff Mount	@ 175'	(2) 1 5/8"
(1) PAR6-85 dish	*Verizon Wireless (reserved)*	*leg mounted*	*@ 170'*	*(1) 7/8" coaxial cable*
(1) P6-F9 dish	*CSP (reserved)*	*leg mounted*	*@ 169'*	*(1) 7/8" coaxial cable*
(1) Yagi Antenna	Unknown (existing)	Leg Mount	@ 167'	(1) 7/8"
(1) Scala AP11-850 antennas	CSP (existing)	Standoff Mount	@ 165'	(1) 7/8"
(2) OGT9-806 antennas	*CSP (reserved)*	*standoff mount*	*@ 160'*	*(2) 1 5/8" coaxial cables*
(1) DB222 antenna	*CSP (reserved)*	*leg mounted*	*@ 160'*	*(1) 7/8" coaxial cable*
(1) DB536 antenna	*CSP (reserved)*	*standoff mount*	*@ 160'*	*(1) 7/8" coaxial cable*
(2) DB844H90-XY	Verizon (existing)	(3) T-Frames	@ 155'	(12) 1 5/8"
(1) P65-15-XL-2 (2) LNX-6512DS-T4M (4) DB844G65ZAXY (3) MG D3-800T0 (6) Diplexers	**Verizon (proposed)**	***Same as Above***	**@ 155'**	***Same as Above***
(2) ALP110-11 antenna	Cingular Wireless (existing)	T-Frame	@ 132'	(4) 1 5/8"
(7) ALP110-11 antenna	*Cingular Wireless (reserved)*	*Same as Above*	*@ 132'*	*Same as Above*
(3) D65-18-XXDPL2Q antennas	T-Mobile (existing)	leg mounted	@ 125'	(12) 1 5/8"
(1) GPS Antenna	Unknown (existing)	Leg Mounted	@ 60'	(1) 1/2"

The inventory listed above includes reserved capacity for Cingular Wireless, Connecticut State Police, and Verizon Wireless. The reserved capacity includes antennas, mounts and coaxial cables.

This structural analysis of the communications tower was performed by URS Corporation, AES (URS) for Verizon Wireless. The purpose of this analysis was to analyze the existing tower for its existing and proposed antenna loads. This analysis was conducted to evaluate twist (rotation), sway (deflection) and stress on the tower, and the effect of forces to the foundation of the tower resulting from existing and proposed antenna arrangements.

3. ANALYSIS METHODOLOGY AND LOADING CONDITIONS

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

The analysis was conducted using RISA Tower 5.3.1.0. Two load conditions were evaluated as shown below which were compared to allowable stresses according to AISC and TIA/EIA.

Load Condition 1 = 90 mph (fastest mile) Wind Load + Tower Dead Load
Load Condition 2 = 90 mph (fastest mile) Wind Load (with ice) + Ice Load + Tower Dead Load

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

4. FINDINGS AND EVALUATION

The combined axial and bending stresses on the tower structure were evaluated to compare with the allowable stress in accordance with AISC. The analysis indicates that the tower legs, diagonal members and horizontal members have sufficient capacity to carry the loads applied. The foundation reactions were below the allowable values in the foundation capacity report. The tower top twist and sway values were compared with the allowable values per the Connecticut State Police and found to be acceptable.

Tower Base Reactions:

Description	Original	Revised Reactions (Geotech 10/10/2002)	Current
Pier Compression (kips)	319.9	374	344
Pier Uplift (kips)	276.7	324	302
Overall Overturning (kip-ft)	7010.3	---	7744
Overall Shear (kips)	61.5	---	75
Shear per Leg (kips)	---	48	45

Tower Component Stress vs. Capacity Summary:

Component / (Section No.)	Controlling Component/ Elevation	Stress (% capacity)	Pass/Fail	Comments:
Tower Leg (T9)	ROHN 8 EHS / 20'-30'	86.5	**Pass**	
Diagonal (T4)	ROHN 2.5 EH / 100'-120'	92.3	**Pass**	
Top Girt (T9)	ROHN 2.5 STD / 20'-30'	93.6	**Pass**	
Anchor Bolts	Tension	57	**Pass**	

Tower Twist & Sway at Top:

Description	Current	Allowable
Tower Twist (degrees)	0.177	0.750
Tower Sway (degrees)	0.527	0.750

5. CONCLUSIONS

The results of the analysis indicate that the tower superstructure steel stresses are within the allowable limits. Also, the loading to the tower foundation is less than the design reactions utilized in the *Evaluation of Existing Foundation for Increased Design Loads*, prepared by Dr. Clarence Welti, P.E., P.C, signed and sealed October 10, 2002. Therefore, the overall tower structure is deemed structurally adequate with the wind load classification specified above and the proposed antenna loading.

Limitations/Assumptions:

This report is based on the following:

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

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

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

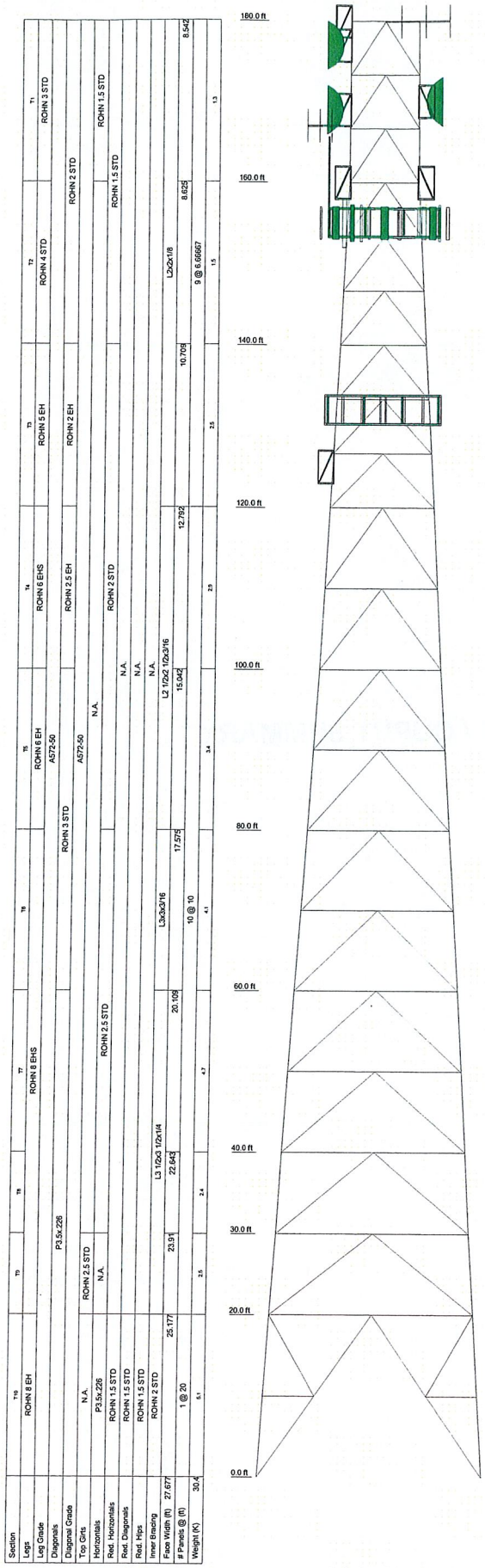
URS hereby states that this document represents the entire report and that it assumes no liability for any factual changes that may occur after the date of this report. All representations, recommendations, and conclusions are based upon information contained and set forth herein. If you are aware of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

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

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

6.) DRAWINGS AND DATA

RISA TOWER INPUT / OUPUT SUMMARY



Section	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	ROHN 8 EH			ROHN 8 EHS		ROHN 6 EH	ROHN 6 EHS	ROHN 5 EH	ROHN 4 STD	ROHN 3 STD
Leg Grade	A572-50									
Diagonals	P3.5x.226									
Diagonal Grade	A572-50									
Top Girts	N.A.	ROHN 2.5 STD								
Horizontals	P3.5x.226	N.A.								
Red. Horizontals	ROHN 1.5 STD			ROHN 2.5 STD						
Red. Diagonals	ROHN 1.5 STD									
Red. Hips	ROHN 1.5 STD									
Inner Bracing	ROHN 2 STD		L3 1/2x3 1/2x1/4		L3x3x3/16		L2 1/2x2 1/2x3/16		L2x2x1/8	
Face Width (ft)	27.677	25.177	22.643		20.109		17.575		15.042	12.792
# Panels @ (ft)	1 @ 20		2.5	2.4	4.7	10 @ 10	4.1	3.4	2.5	1.5
Weight (K)	30.4	6.1	2.5	2.4	4.7	10 @ 10	4.1	3.4	2.5	1.5

Section	T1
Legs	ROHN 8 EHS
Leg Grade	
Diagonals	
Diagonal Grade	
Top Girts	
Horizontals	
Red. Horizontals	
Red. Diagonals	
Red. Hips	
Inner Bracing	
Face Width (ft)	8.542
# Panels @ (ft)	9 @ 6.66667
Weight (K)	1.3

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Standoff (State Police)	180	LNX-6512DS-T4M (Verizon)	155
Standoff (State Police (R))	180	DB844H90-XY w/Mount Pipe (Verizon)	155
3' Yagi (Unknown)	180	DB844G65ZAXY w/Mount Pipe (Verizon)	155
Valmont Single Dish Standoff (1) (State Police)	177	DB844G65ZAXY w/Mount Pipe (Verizon)	155
PA6-85 (State Police)	177	DB844H90-XY w/Mount Pipe (Verizon)	155
PD1142 (State Police)	175	DB844G65ZAXY w/Mount Pipe (Verizon)	155
PD1142 (State Police)	175	DB844G65ZAXY w/Mount Pipe (Verizon)	155
AP11-850 (State Police)	175	Rymsa MG D3-800Tx (Verizon)	155
AP11-850 (State Police)	175	Rymsa MG D3-800Tx (Verizon)	155
Valmont Single Dish Standoff (1) (Verizon (R))	170	Rymsa MG D3-800Tx (Verizon)	155
PAR6-105 (Verizon Wireless)	170	(2) Diplexer (Verizon)	155
Valmont Single Dish Standoff (1) (State Police (R))	169	(2) Diplexer (Verizon)	155
P6-F9 (State Police)	169	(2) Diplexer (Verizon)	155
3' Yagi (Unknown)	167	(3) ALP110-11 (Cingular)	132
AP11-850 (State Police)	165	Pirod 15' T-Frame Sector Mount (1) (Cingular)	132
Standoff (State Police)	160	(3) ALP110-11 (Cingular)	132
Standoff (State Police (R))	160	Pirod 15' T-Frame Sector Mount (1) (Cingular)	132
Standoff (State Police (R))	160	(6) TMA (shielded) (Cingular)	132
Standoff (State Police (R))	160	(6) TMA (shielded) (Cingular)	132
Standoff (State Police (R))	160	(6) TMA (shielded) (Cingular)	132
OGT9-806 (State Police (R))	160	Pirod 15' T-Frame Sector Mount (1) (Cingular)	132
OGT9-806 (State Police (R))	160	(3) ALP110-11 (Cingular)	132
DB536 (State Police (R))	160	Standoff (State Police (R))	125
DB222 (State Police (R))	160	DR65-18-XXDPL2Q (T-Mobile)	125
Pirod 15' T-Frame Sector Mount (1) (Verizon)	155	(2) TMA (shielded) (T-Mobile)	125
Pirod 15' T-Frame Sector Mount (1) (Verizon)	155	(2) TMA (shielded) (T-Mobile)	125
Pirod 15' T-Frame Sector Mount (1) (Verizon)	155	(2) TMA (shielded) (T-Mobile)	125
P65-15-XL-2 (Verizon)	155	DR65-18-XXDPL2Q (T-Mobile)	125
LNX-6512DS-T4M (Verizon)	155	DR65-18-XXDPL2Q (T-Mobile)	125
		GPS (GPS)	60

MATERIAL STRENGTH

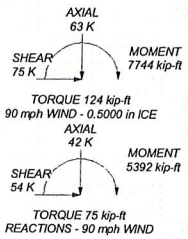
GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi			

TOWER DESIGN NOTES

1. Tower designed for a 90 mph basic wind in accordance with the TIA/EIA-222-F Standard.
2. Tower is also designed for a 90 mph basic wind with 0.50 in ice.
3. Deflections are based upon a 50 mph wind.
4. TOWER RATING: 93.6%

△

MAX. CORNER REACTIONS AT BASE:
DOWN: 344 K
UPLIFT: -302 K
SHEAR: 45 K



TORQUE 124 kip-ft
90 mph WIND - 0.5000 in ICE

TORQUE 75 kip-ft
REACTIONS - 90 mph WIND

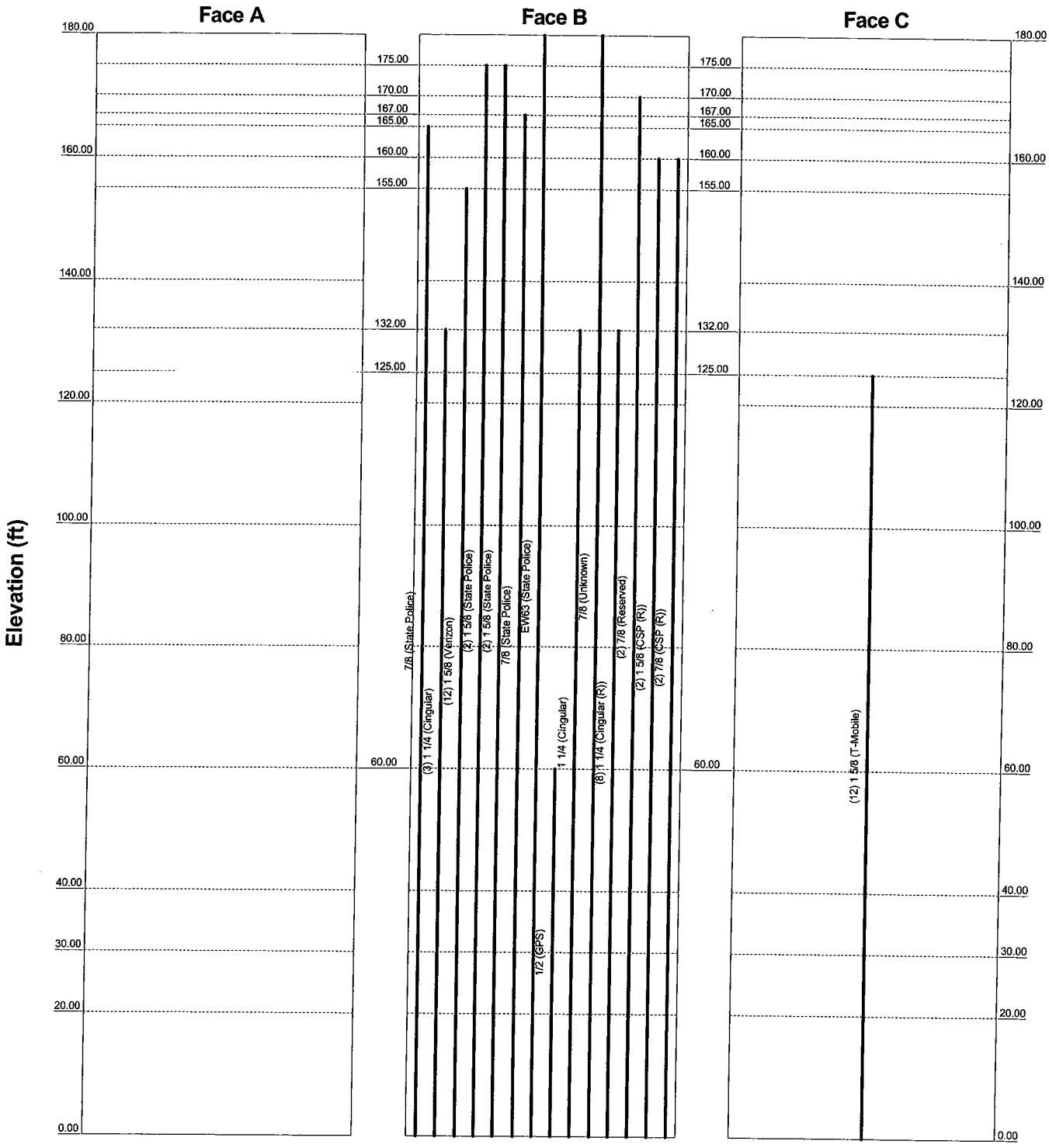
URS Corporation
500 Enterprise Drive, Suite 3B
Rocky Hill, CT 06067
Phone: (860) 529-8882
FAX: (860) 529-3991

Job:	**180' CSP Lattice Tower**		
Project:	**Westport, Connecticut**		
Client: VZ5-040	Drawn by: Kevin Barker	App'd:	
Code: TIA/EIA-222-F	Date: 05/05/10	Scale: NTS	
Path: P:\05\ERI Files\180' Self-Supported Lattice Tower.en		Dwg No. E-1	

RISA TOWER FEEDLINE DISTRIBUTION

Feedline Distribution Chart
0' - 180'

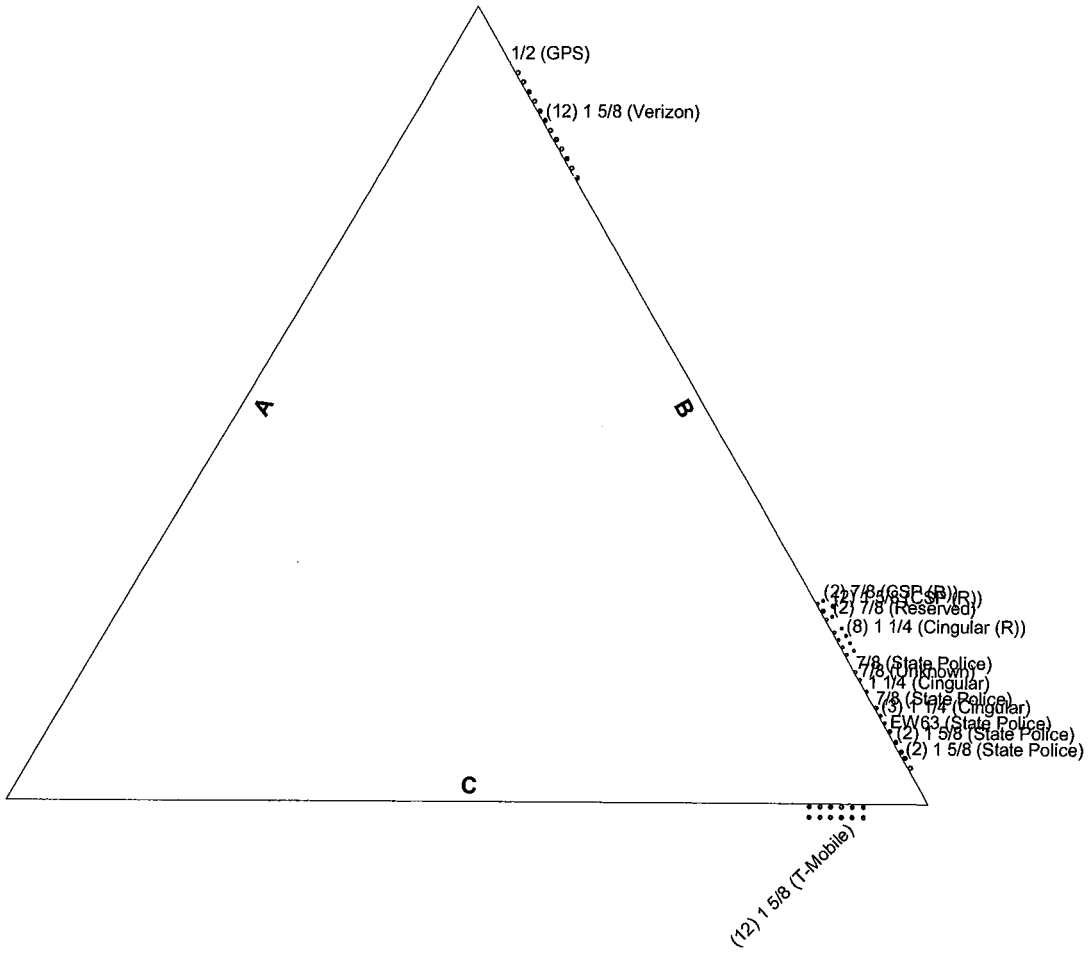
Round — Flat — App In Face — App Out Face — Truss Leg



URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: (860) 529-8882 FAX: (860) 529-3991	Job: **180' CSP Lattice Tower**		
	Project: **Westport, Connecticut**		
	Client: VZ5-040	Drawn by: Kevin Barker	App'd:
	Code: TIA/EIA-222-F	Date: 05/05/10	Scale: NTS
	Path: P:\08\ERI Files\180' Self-Supported Lattice Tower.eri		Dwg No. E-7

RISA TOWER FEEDLINE PLAN

Feedline Plan



URS Corporation 500 Enterprise Drive, Suite 3B Rocky Hill, CT 06067 Phone: (860) 529-8882 FAX: (860) 529-3991	Job: ***180' CSP Lattice Tower***		
	Project: ***Westport, Connecticut***		
	Client: VZ5-040	Drawn by: Kevin Barker	App'd:
	Code: TIA/EIA-222-F	Date: 05/05/10	Scale: NTS
	Path: P:\08\ERI Files\180' Self-Supported Lattice Tower.eri		Dwg No. E-7

DETAILED OUTPUT

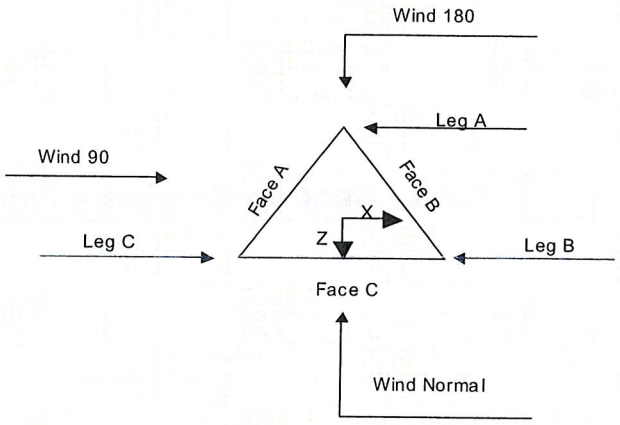
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 180.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 8.54 ft at the top and 27.68 ft at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

Basic wind speed of 90 mph.
Nominal ice thickness of 0.5000 in.
Ice density of 56 pcf.
A wind speed of 90 mph is used in combination with ice.
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		



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	180.00-160.00			8.54	1	20.00
T2	160.00-140.00			8.63	1	20.00
T3	140.00-120.00			10.71	1	20.00
T4	120.00-100.00			12.79	1	20.00
T5	100.00-80.00			15.04	1	20.00
T6	80.00-60.00			17.58	1	20.00
T7	60.00-40.00			20.11	1	20.00
T8	40.00-30.00			22.64	1	10.00
T9	30.00-20.00			23.91	1	10.00
T10	20.00-0.00			25.18	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	180.00-160.00	6.67	K Brace Down	No	Yes	0.0000	0.0000
T2	160.00-140.00	6.67	K Brace Down	No	Yes	0.0000	0.0000
T3	140.00-120.00	6.67	K Brace Down	No	Yes	0.0000	0.0000
T4	120.00-100.00	10.00	K Brace Down	No	Yes	0.0000	0.0000
T5	100.00-80.00	10.00	K Brace Down	No	Yes	0.0000	0.0000

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T6	80.00-60.00	10.00	K Brace Down	No	Yes	0.0000	0.0000
T7	60.00-40.00	10.00	K Brace Down	No	Yes	0.0000	0.0000
T8	40.00-30.00	10.00	K Brace Down	No	Yes	0.0000	0.0000
T9	30.00-20.00	10.00	K Brace Down	No	Yes	0.0000	0.0000
T10	20.00-0.00	20.00	K1 Down	No	Yes	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 180.00-160.00	Pipe	ROHN 3 STD	A572-50 (50 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T2 160.00-140.00	Pipe	ROHN 4 STD	A572-50 (50 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T3 140.00-120.00	Pipe	ROHN 5 EH	A572-50 (50 ksi)	Pipe	ROHN 2 EH	A572-50 (50 ksi)
T4 120.00-100.00	Pipe	ROHN 6 EHS	A572-50 (50 ksi)	Pipe	ROHN 2.5 EH	A572-50 (50 ksi)
T5 100.00-80.00	Pipe	ROHN 6 EH	A572-50 (50 ksi)	Pipe	ROHN 3 STD	A572-50 (50 ksi)
T6 80.00-60.00	Pipe	ROHN 8 EHS	A572-50 (50 ksi)	Pipe	ROHN 3 STD	A572-50 (50 ksi)
T7 60.00-40.00	Pipe	ROHN 8 EHS	A572-50 (50 ksi)	Pipe	P3.5x.226	A572-50 (50 ksi)
T8 40.00-30.00	Pipe	ROHN 8 EHS	A572-50 (50 ksi)	Pipe	P3.5x.226	A572-50 (50 ksi)
T9 30.00-20.00	Pipe	ROHN 8 EHS	A572-50 (50 ksi)	Pipe	P3.5x.226	A572-50 (50 ksi)
T10 20.00-0.00	Pipe	ROHN 8 EH	A572-50 (50 ksi)	Pipe	P3.5x.226	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T9 30.00-20.00	Pipe	ROHN 2.5 STD	A36 (36 ksi)	Single Angle		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 180.00-160.00	None	Flat Bar		A36	Pipe	ROHN 1.5 STD	A572-50

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T2 160.00-140.00	None	Flat Bar		(36 ksi) A36 (36 ksi)	Pipe	ROHN 1.5 STD	(50 ksi) A572-50 (50 ksi)
T3 140.00-120.00	None	Flat Bar		A36 (36 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T4 120.00-100.00	None	Single Angle		A36 (36 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T5 100.00-80.00	None	Flat Bar		A36 (36 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)
T6 80.00-60.00	None	Flat Bar		A36 (36 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)
T7 60.00-40.00	None	Single Angle		A36 (36 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)
T8 40.00-30.00	None	Flat Bar		A36 (36 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)
T9 30.00-20.00	None	Flat Bar		A36 (36 ksi)	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)
T10 20.00-0.00	None	Flat Bar		A36 (36 ksi)	Pipe	P3.5x.226	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T1 180.00-160.00	Solid Round		A36 (36 ksi)	Single Angle	L2x2x1/8	A36 (36 ksi)
T2 160.00-140.00	Solid Round		A36 (36 ksi)	Single Angle	L2x2x1/8	A36 (36 ksi)
T3 140.00-120.00	Solid Round		A36 (36 ksi)	Single Angle	L2x2x1/8	A36 (36 ksi)
T4 120.00-100.00	Single Angle		A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T5 100.00-80.00	Solid Round		A36 (36 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T6 80.00-60.00	Solid Round		A36 (36 ksi)	Single Angle	L3x3x3/16	A36 (36 ksi)
T7 60.00-40.00	Single Angle		A36 (36 ksi)	Single Angle	L3 1/2x3 1/2x1/4	A572-50 (50 ksi)
T8 40.00-30.00	Solid Round		A36 (36 ksi)	Single Angle	L3 1/2x3 1/2x1/4	A572-50 (50 ksi)
T9 30.00-20.00	Solid Round		A36 (36 ksi)	Single Angle	L3 1/2x3 1/2x1/4	A572-50 (50 ksi)
T10 20.00-0.00	Solid Round		A36 (36 ksi)	Pipe	ROHN 2 STD	A572-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Redundant Bracing Grade		Redundant Type	Redundant Size	K Factor
T10 20.00-0.00	A572-50 (50 ksi)	Horizontal (1)	Pipe	ROHN 1.5 STD	0.8
		Diagonal (1)	Pipe	ROHN 1.5 STD	0.8
		Hip (1)	Pipe	ROHN 1.5 STD	0.8

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft²	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
T1 180.00-160.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T2 160.00-140.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T3 140.00-120.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T4 120.00-100.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T5 100.00-80.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T6 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T7 60.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T8 40.00-30.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T9 30.00-20.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T10 20.00-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X	X Brace Diags Y	K Brace Diags X	K Brace Diags Y	Single Diags X	Single Diags Y	Girts X	Girts Y	Horiz. X	Horiz. Y	Sec. Horiz. X	Sec. Horiz. Y	Inner Brace X	Inner Brace Y
T1 180.00-160.00	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
T2 160.00-140.00	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
T3 140.00-120.00	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
T4 120.00-100.00	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
T5 100.00-80.00	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
T6 80.00-60.00	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
T7 60.00-	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	Legs	K Factors[1] X Brace Diags X	K Factors[1] X Brace Diags Y	K Factors[1] Single Diags X	K Factors[1] Single Diags Y	K Factors[1] Girts X	K Factors[1] Girts Y	K Factors[1] Horiz. X	K Factors[1] Horiz. Y	K Factors[1] Sec. Horiz. X	K Factors[1] Sec. Horiz. Y	K Factors[1] Inner Brace X	K Factors[1] Inner Brace Y
40.00				1	1	1	1	1	1	1	1	1	1	1	1
T8 40.00-30.00	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T9 30.00-20.00	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1
T10 20.00-0.00	Yes	Yes	1	1	1	1	1	1	1	1	1	1	1	1	1

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

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Net Width Deduct in	Leg U	Diagonal Net Width Deduct in	Diagonal U	Top Girt Net Width Deduct in	Top Girt U	Bottom Girt Net Width Deduct in	Bottom Girt U	Mid Girt Net Width Deduct in	Mid Girt U	Long Horizontal Net Width Deduct in	Long Horizontal U	Short Horizontal Net Width Deduct in	Short Horizontal U
T1 180.00-160.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 160.00-140.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 140.00-120.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 120.00-100.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 100.00-80.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 80.00-60.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 60.00-40.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 40.00-30.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 30.00-20.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 20.00-0.00	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation	Connection Offsets Diagonal Vert. Top	Diagonal Horiz. Top	Diagonal Vert. Bot.	Diagonal Horiz. Bot.	K-Bracing Vert. Top	K-Bracing Horiz. Top	K-Bracing Vert. Bot.	K-Bracing Horiz. Bot.
ft	in	in	in	in	in	in	in	in
T1 180.00-160.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T2 160.00-140.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T3 140.00-120.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000

Tower Elevation	Connection Offsets							
	Diagonal				K-Bracing			
	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.	Vert. Top	Horiz. Top	Vert. Bot.	Horiz. Bot.
ft	in	in	in	in	in	in	in	in
T4 120.00-100.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T5 100.00-80.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T6 80.00-60.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T7 60.00-40.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T8 40.00-30.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T9 30.00-20.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000
T10 20.00-0.00	0.0000	3.0000	0.0000	3.0000	0.0000	0.0000	0.0000	0.0000

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
7/8 (State Police)	B	Yes	Ar (CfAe)	165.00 - 0.00	0.0000	0.335	1	1	1.1100	1.1100		0.54
1 1/4 (Cingular)	B	Yes	Ar (CfAe)	132.00 - 0.00	0.0000	0.39	3	3	1.5500	1.5500		0.66
1 5/8 (Verizon)	B	Yes	Ar (CfAe)	155.00 - 0.00	0.0000	-0.35	12	12	1.9800	1.9800		1.04
1 5/8 (T-Mobile)	C	Yes	Ar (CfAe)	125.00 - 0.00	0.0000	-0.4	12	6	1.9800	1.9800		1.04
1 5/8 (State Police)	B	Yes	Ar (CfAe)	175.00 - 0.00	0.0000	0.43	2	2	1.9800	1.9800		1.04
1 5/8 (State Police)	B	Yes	Ar (CfAe)	175.00 - 0.00	0.0000	0.45	2	2	1.9800	1.9800		1.04
7/8 (State Police)	B	Yes	Ar (CfAe)	167.00 - 0.00	0.0000	0.38	1	1	1.1100	1.1100		0.54
EW63 (State Police)	B	Yes	Ar (CfAe)	180.00 - 0.00	0.0000	0.41	1	1	1.5742	1.5742		0.51
1/2 (GPS)	B	Yes	Ar (CfAe)	60.00 - 0.00	0.0000	-0.43	1	1	0.5800	0.5800		0.25
1 1/4 (Cingular)	B	Yes	Ar (CfAe)	132.00 - 0.00	0.0000	0.36	1	1	1.5500	1.5500		0.66
7/8 (Unknown)	B	Yes	Ar (CfAe)	180.00 - 0.00	0.0000	0.345	1	1	1.1100	1.1100		0.54
1 1/4 (Cingular (R))	B	Yes	Ar (CfAe)	132.00 - 0.00	0.0000	0.3	8	4	1.5500	1.5500		0.66
7/8 (Reserved)	B	Yes	Ar (CfAe)	170.00 - 0.00	0.0000	0.27	2	1	1.1100	1.1100		0.54
1 5/8 (CSP (R))	B	Yes	Ar (CfAe)	160.00 - 0.00	0.0000	0.26	2	1	1.9800	1.9800		1.04
7/8 (CSP (R))	B	Yes	Ar (CfAe)	160.00 - 0.00	0.0000	0.25	2	1	1.1100	1.1100		0.54

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	180.00-160.00	A	0.000	0.000	0.000	0.000	0.00
		B	16.409	0.000	0.000	0.000	0.10
		C	0.000	0.000	0.000	0.000	0.00
T2	160.00-140.00	A	0.000	0.000	0.000	0.000	0.00
		B	58.074	0.000	0.000	0.000	0.40
		C	0.000	0.000	0.000	0.000	0.00
T3	140.00-120.00	A	0.000	0.000	0.000	0.000	0.00
		B	80.374	0.000	0.000	0.000	0.56
		C	4.950	0.000	0.000	0.000	0.06
T4	120.00-100.00	A	0.000	0.000	0.000	0.000	0.00
		B	88.640	0.000	0.000	0.000	0.62
		C	19.800	0.000	0.000	0.000	0.25
T5	100.00-80.00	A	0.000	0.000	0.000	0.000	0.00
		B	88.640	0.000	0.000	0.000	0.62
		C	19.800	0.000	0.000	0.000	0.25
T6	80.00-60.00	A	0.000	0.000	0.000	0.000	0.00
		B	88.640	0.000	0.000	0.000	0.62
		C	19.800	0.000	0.000	0.000	0.25
T7	60.00-40.00	A	0.000	0.000	0.000	0.000	0.00
		B	89.607	0.000	0.000	0.000	0.62
		C	19.800	0.000	0.000	0.000	0.25
T8	40.00-30.00	A	0.000	0.000	0.000	0.000	0.00
		B	44.804	0.000	0.000	0.000	0.31
		C	9.900	0.000	0.000	0.000	0.12
T9	30.00-20.00	A	0.000	0.000	0.000	0.000	0.00
		B	44.804	0.000	0.000	0.000	0.31
		C	9.900	0.000	0.000	0.000	0.12
T10	20.00-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	89.607	0.000	0.000	0.000	0.62
		C	19.800	0.000	0.000	0.000	0.25

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	180.00-160.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		26.575	0.000	0.000	0.000	0.27
		C		0.000	0.000	0.000	0.000	0.00
T2	160.00-140.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		91.407	0.000	0.000	0.000	1.02
		C		0.000	0.000	0.000	0.000	0.00
T3	140.00-120.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		126.707	0.000	0.000	0.000	1.44
		C		7.450	0.000	0.000	0.000	0.15
T4	120.00-100.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		140.307	0.000	0.000	0.000	1.63
		C		29.800	0.000	0.000	0.000	0.61
T5	100.00-80.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		140.307	0.000	0.000	0.000	1.63
		C		29.800	0.000	0.000	0.000	0.61
T6	80.00-60.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		140.307	0.000	0.000	0.000	1.63
		C		29.800	0.000	0.000	0.000	0.61
T7	60.00-40.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		142.940	0.000	0.000	0.000	1.65
		C		29.800	0.000	0.000	0.000	0.61
T8	40.00-30.00	A	0.500	0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B		71.470	0.000	0.000	0.000	0.82
		C		14.900	0.000	0.000	0.000	0.31
T9	30.00-20.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		71.470	0.000	0.000	0.000	0.82
		C		14.900	0.000	0.000	0.000	0.31
T10	20.00-0.00	A	0.500	0.000	0.000	0.000	0.000	0.00
		B		142.940	0.000	0.000	0.000	1.65
		C		29.800	0.000	0.000	0.000	0.61

Feed Line Shielding

Section	Elevation ft	Face	A_R ft^2	A_R Ice ft^2	A_F ft^2	A_F Ice ft^2
T1	180.00-160.00	A	0.000	0.000	0.000	0.000
		B	1.289	3.032	0.000	0.000
		C	0.000	0.000	0.000	0.000
T2	160.00-140.00	A	0.000	0.000	0.000	0.000
		B	4.256	9.747	0.000	0.000
		C	0.000	0.000	0.000	0.000
T3	140.00-120.00	A	0.000	0.000	0.000	0.000
		B	5.941	13.310	0.000	0.000
		C	0.366	0.783	0.000	0.000
T4	120.00-100.00	A	0.000	0.000	0.000	0.000
		B	5.378	11.676	0.000	0.000
		C	1.201	2.480	0.000	0.000
T5	100.00-80.00	A	0.000	0.000	0.000	0.000
		B	5.756	12.090	0.000	0.000
		C	1.286	2.568	0.000	0.000
T6	80.00-60.00	A	0.000	0.000	0.000	0.000
		B	5.831	12.075	0.000	0.000
		C	1.302	2.565	0.000	0.000
T7	60.00-40.00	A	0.000	0.000	0.000	0.000
		B	6.184	12.665	0.000	0.000
		C	1.366	2.640	0.000	0.000
T8	40.00-30.00	A	0.000	0.000	0.000	0.000
		B	3.020	6.190	0.000	0.000
		C	0.667	1.290	0.000	0.000
T9	30.00-20.00	A	0.000	0.000	0.000	0.000
		B	2.980	6.110	0.000	0.000
		C	0.659	1.274	0.000	0.000
T10	20.00-0.00	A	0.000	0.000	0.000	0.000
		B	6.261	13.431	0.000	0.000
		C	1.384	2.800	0.000	0.000

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	180.00-160.00	8.0822	3.5985	8.9128	3.9134
T2	160.00-140.00	11.6382	-6.7285	12.9129	-6.6765

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
T3	140.00-120.00	16.5585	-6.5857	18.5205	-6.4997
T4	120.00-100.00	23.4629	-2.6676	26.4846	-2.3535
T5	100.00-80.00	25.8174	-2.9468	29.4444	-2.6254
T6	80.00-60.00	26.3205	-3.0135	30.8181	-2.7552
T7	60.00-40.00	28.1683	-3.6639	33.1429	-3.8369
T8	40.00-30.00	30.0593	-3.9151	35.3905	-4.1017
T9	30.00-20.00	31.2720	-4.0762	36.8334	-4.2718
T10	20.00-0.00	34.1863	-4.4607	39.8895	-4.6302

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
OGT9-806	A	From Leg	3.00	0.0000	0.0000	160.00	No Ice	2.15	2.15	0.02
(State Police (R))			0.00				1/2" Ice	3.25	3.25	0.03
			0.00							
OGT9-806	A	From Leg	3.00	0.0000	0.0000	160.00	No Ice	2.15	2.15	0.02
(State Police (R))			0.00				1/2" Ice	3.25	3.25	0.03
			0.00							
AP11-850	B	From Leg	3.00	0.0000	0.0000	175.00	No Ice	4.96	2.25	0.01
(State Police)			0.00				1/2" Ice	5.36	2.57	0.04
			0.00							
AP11-850	B	From Leg	3.00	0.0000	0.0000	165.00	No Ice	4.96	2.25	0.01
(State Police)			0.00				1/2" Ice	5.36	2.57	0.04
			0.00							
DB222	C	From Leg	3.00	0.0000	0.0000	160.00	No Ice	1.60	1.60	0.02
(State Police (R))			0.00				1/2" Ice	2.88	2.88	0.02
			0.00							
DB536	C	From Leg	3.00	0.0000	0.0000	160.00	No Ice	2.83	2.83	0.02
(State Police (R))			0.00				1/2" Ice	3.99	3.99	0.04
			0.00							
PD1142	B	From Leg	3.00	0.0000	0.0000	175.00	No Ice	1.35	1.35	0.03
(State Police)			0.00				1/2" Ice	3.16	3.16	0.04
			0.00							
PD1142	C	From Leg	3.00	0.0000	0.0000	175.00	No Ice	1.35	1.35	0.03
(State Police)			0.00				1/2" Ice	3.16	3.16	0.04
			0.00							
(3) ALP110-11	A	From Face	3.00	0.0000	0.0000	132.00	No Ice	3.28	3.28	0.00
(Cingular)			0.00				1/2" Ice	3.61	3.61	0.03
			0.00							
(3) ALP110-11	B	From Face	3.00	0.0000	0.0000	132.00	No Ice	3.28	3.28	0.00
(Cingular)			0.00				1/2" Ice	3.61	3.61	0.03
			0.00							
(3) ALP110-11	C	From Face	3.00	0.0000	0.0000	132.00	No Ice	3.28	3.28	0.00
(Cingular)			0.00				1/2" Ice	3.61	3.61	0.03
			0.00							
DR65-18-XXDPL2Q	A	From Face	3.00	0.0000	0.0000	125.00	No Ice	6.30	2.42	0.02
(T-Mobile)			0.00				1/2" Ice	6.73	2.76	0.06
			0.00							
DR65-18-XXDPL2Q	B	From Face	3.00	0.0000	0.0000	125.00	No Ice	6.30	2.42	0.02
(T-Mobile)			0.00				1/2" Ice	6.73	2.76	0.06

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00						
DR65-18-XXDPL2Q	C	From Face	3.00	0.0000	125.00	No Ice	6.30	2.42	0.02
(T-Mobile)			0.00			1/2" Ice	6.73	2.76	0.06
			0.00						
Pirod 15' T-Frame Sector	A	From Face	1.00	0.0000	155.00	No Ice	15.00	15.00	0.50
Mount (1)			0.00			1/2" Ice	20.60	20.60	0.65
(Verizon)			0.00						
Pirod 15' T-Frame Sector	B	From Face	1.00	0.0000	155.00	No Ice	15.00	15.00	0.50
Mount (1)			0.00			1/2" Ice	20.60	20.60	0.65
(Verizon)			0.00						
Pirod 15' T-Frame Sector	C	From Face	1.00	0.0000	155.00	No Ice	15.00	15.00	0.50
Mount (1)			0.00			1/2" Ice	20.60	20.60	0.65
(Verizon)			0.00						
Pirod 15' T-Frame Sector	A	From Face	1.00	0.0000	132.00	No Ice	15.00	15.00	0.50
Mount (1)			0.00			1/2" Ice	20.60	20.60	0.65
(Cingular)			0.00						
Pirod 15' T-Frame Sector	B	From Face	1.00	0.0000	132.00	No Ice	15.00	15.00	0.50
Mount (1)			0.00			1/2" Ice	20.60	20.60	0.65
(Cingular)			0.00						
Pirod 15' T-Frame Sector	C	From Face	1.00	0.0000	132.00	No Ice	15.00	15.00	0.50
Mount (1)			0.00			1/2" Ice	20.60	20.60	0.65
(Cingular)			0.00						
Standoff	A	From Leg	1.00	0.0000	160.00	No Ice	0.52	0.52	0.02
(State Police)			0.00			1/2" Ice	0.79	0.79	0.02
			0.00						
Standoff	A	From Leg	1.00	0.0000	160.00	No Ice	0.52	0.52	0.02
(State Police (R))			0.00			1/2" Ice	0.79	0.79	0.02
			0.00						
Standoff	B	From Leg	1.00	0.0000	160.00	No Ice	0.52	0.52	0.02
(State Police (R))			0.00			1/2" Ice	0.79	0.79	0.02
			0.00						
Standoff	B	From Leg	1.00	0.0000	160.00	No Ice	0.52	0.52	0.02
(State Police (R))			0.00			1/2" Ice	0.79	0.79	0.02
			0.00						
Standoff	C	From Leg	1.00	0.0000	160.00	No Ice	0.52	0.52	0.02
(State Police (R))			0.00			1/2" Ice	0.79	0.79	0.02
			0.00						
Standoff	A	From Leg	1.00	0.0000	180.00	No Ice	0.52	0.52	0.02
(State Police)			0.00			1/2" Ice	0.79	0.79	0.02
			0.00						
Standoff	C	From Leg	1.00	0.0000	180.00	No Ice	0.52	0.52	0.02
(State Police (R))			0.00			1/2" Ice	0.79	0.79	0.02
			0.00						
Standoff	C	From Leg	1.00	0.0000	125.00	No Ice	0.52	0.52	0.02
(State Police (R))			0.00			1/2" Ice	0.79	0.79	0.02
			0.00						
Valmont Single Dish Standoff	B	From Leg	1.00	0.0000	170.00	No Ice	2.64	2.64	0.04
(1)			0.00			1/2" Ice	3.69	3.69	0.05
(Verizon (R))			0.00						
Valmont Single Dish Standoff	C	From Leg	1.00	0.0000	177.00	No Ice	2.64	2.64	0.04
(1)			0.00			1/2" Ice	3.69	3.69	0.05
(State Police)			0.00						
Valmont Single Dish Standoff	C	From Leg	1.00	0.0000	169.00	No Ice	2.64	2.64	0.04
(1)			0.00			1/2" Ice	3.69	3.69	0.05
(State Police (R))			0.00						
GPS	C	From Face	3.00	0.0000	60.00	No Ice	0.44	0.44	0.00
(GPS)			0.00			1/2" Ice	0.62	0.62	0.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00						
P65-15-XL-2	A	From Face	3.00	0.0000	155.00	No Ice	8.54	5.99	0.07
(Verizon)			0.00			1/2" Ice	9.13	6.89	0.13
			0.00						
LNX-6512DS-T4M	B	From Face	3.00	0.0000	155.00	No Ice	5.61	3.35	0.03
(Verizon)			0.00			1/2" Ice	6.01	3.71	0.06
			0.00						
LNX-6512DS-T4M	C	From Face	3.00	0.0000	155.00	No Ice	5.61	3.35	0.03
(Verizon)			0.00			1/2" Ice	6.01	3.71	0.06
			0.00						
DB844H90-XY w/Mount Pipe	A	From Face	3.00	0.0000	155.00	No Ice	3.58	5.63	0.04
(Verizon)			-6.00			1/2" Ice	4.20	6.73	0.08
			0.00						
DB844G65ZAXY w/Mount Pipe	B	From Face	3.00	0.0000	155.00	No Ice	5.38	5.40	0.04
(Verizon)			-6.00			1/2" Ice	6.07	6.49	0.09
			0.00						
DB844G65ZAXY w/Mount Pipe	C	From Face	3.00	0.0000	155.00	No Ice	5.38	5.40	0.04
(Verizon)			-6.00			1/2" Ice	6.07	6.49	0.09
			0.00						
DB844H90-XY w/Mount Pipe	A	From Face	3.00	0.0000	155.00	No Ice	3.58	5.63	0.04
(Verizon)			6.00			1/2" Ice	4.20	6.73	0.08
			0.00						
DB844G65ZAXY w/Mount Pipe	B	From Face	3.00	0.0000	155.00	No Ice	5.38	5.40	0.04
(Verizon)			6.00			1/2" Ice	6.07	6.49	0.09
			0.00						
DB844G65ZAXY w/Mount Pipe	C	From Face	3.00	0.0000	155.00	No Ice	5.38	5.40	0.04
(Verizon)			6.00			1/2" Ice	6.07	6.49	0.09
			0.00						
Rymsa MG D3-800Tx	A	From Face	3.00	0.0000	155.00	No Ice	3.57	3.43	0.03
(Verizon)			4.00			1/2" Ice	3.94	4.07	0.06
			0.00						
Rymsa MG D3-800Tx	B	From Face	3.00	0.0000	155.00	No Ice	3.57	3.43	0.03
(Verizon)			4.00			1/2" Ice	3.94	4.07	0.06
			0.00						
Rymsa MG D3-800Tx	C	From Face	3.00	0.0000	155.00	No Ice	3.57	3.43	0.03
(Verizon)			4.00			1/2" Ice	3.94	4.07	0.06
			0.00						
AP11-850	A	From Leg	3.00	0.0000	175.00	No Ice	4.96	2.25	0.01
(State Police)			0.00			1/2" Ice	5.36	2.57	0.04
			0.00						
3' Yagi	A	From Leg	1.50	0.0000	180.00	No Ice	2.08	2.08	0.03
(Unknown)			0.00			1/2" Ice	3.79	3.79	0.05
			0.00						
3' Yagi	C	From Leg	1.50	0.0000	167.00	No Ice	2.08	2.08	0.03
(Unknown)			0.00			1/2" Ice	3.79	3.79	0.05
			0.00						
(2) Diplexer	A	From Leg	3.00	0.0000	155.00	No Ice	0.52	0.14	0.02
(Verizon)			0.00			1/2" Ice	0.62	0.20	0.02
			0.00						
(2) Diplexer	B	From Leg	3.00	0.0000	155.00	No Ice	0.52	0.14	0.02
(Verizon)			0.00			1/2" Ice	0.62	0.20	0.02
			0.00						
(2) Diplexer	C	From Leg	3.00	0.0000	155.00	No Ice	0.52	0.14	0.02
(Verizon)			0.00			1/2" Ice	0.62	0.20	0.02
			0.00						
(6) TMA (shielded)	A	From Face	3.00	0.0000	132.00	No Ice	0.00	0.00	0.01
(Cingular)			0.00			1/2" Ice	0.00	0.00	0.01

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00						
(6) TMA (shielded)	B	From Face	3.00	0.0000	132.00	No Ice	0.00	0.00	0.01
(Cingular)			0.00			1/2" Ice	0.00	0.00	0.01
			0.00						
(6) TMA (shielded)	C	From Face	3.00	0.0000	132.00	No Ice	0.00	0.00	0.01
(Cingular)			0.00			1/2" Ice	0.00	0.00	0.01
			0.00						
(2) TMA (shielded)	A	From Face	3.00	0.0000	125.00	No Ice	0.00	0.00	0.01
(T-Mobile)			0.00			1/2" Ice	0.00	0.00	0.01
			0.00						
(2) TMA (shielded)	B	From Face	3.00	0.0000	125.00	No Ice	0.00	0.00	0.01
(T-Mobile)			0.00			1/2" Ice	0.00	0.00	0.01
			0.00						
(2) TMA (shielded)	C	From Face	3.00	0.0000	125.00	No Ice	0.00	0.00	0.01
(T-Mobile)			0.00			1/2" Ice	0.00	0.00	0.01
			0.00						

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
PA6-85	C	Paraboloid w/o	From	1.00	Worst		177.00	6.00	No Ice	28.27	0.23
(State Police)		Radome	Leg	0.00					1/2" Ice	29.07	0.27
				0.00							
P6-F9	C	Grid	From	1.00	Worst		169.00	6.00	No Ice	28.27	0.20
(State Police)			Leg	0.00					1/2" Ice	29.07	0.24
				0.00							
PAR6-105	B	Grid	From	1.00	Worst		170.00	6.00	No Ice	28.27	0.20
(Verizon Wireless)			Leg	0.00					1/2" Ice	29.07	0.24
				0.00							

Tower Pressures - No Ice

$G_H = 1.121$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
T1 180.00-160.00	170.00	1.597	33	177.503	A	0.000	24.699	11.667	47.24	0.000	0.000
					B	0.000	39.819		29.30	0.000	0.000
					C	0.000	24.699		47.24	0.000	0.000
T2 160.00-140.00	150.00	1.541	32	200.850	A	0.000	28.825	15.027	52.13	0.000	0.000
					B	0.000	82.643		18.18	0.000	0.000

Section Elevation ft	z ft	K_z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T3 140.00-120.00	130.00	1.48	31	244.294	C	0.000	28.825		52.13	0.000	0.000
					A	0.000	35.375	18.577	52.51	0.000	0.000
					B	0.000	109.807		16.92	0.000	0.000
T4 120.00-100.00	110.00	1.411	29	289.399	C	0.000	39.959		46.49	0.000	0.000
					A	0.000	38.601	22.130	57.33	0.000	0.000
					B	0.000	121.864		18.16	0.000	0.000
T5 100.00-80.00	90.00	1.332	28	337.234	C	0.000	57.200		38.69	0.000	0.000
					A	0.000	42.928	22.142	51.58	0.000	0.000
					B	0.000	125.813		17.60	0.000	0.000
T6 80.00-60.00	70.00	1.24	26	391.244	C	0.000	61.443		36.04	0.000	0.000
					A	0.000	52.938	28.827	54.45	0.000	0.000
					B	0.000	135.748		21.24	0.000	0.000
T7 60.00-40.00	50.00	1.126	23	441.924	C	0.000	71.436		40.35	0.000	0.000
					A	0.000	57.608	28.827	50.04	0.000	0.000
					B	0.000	141.031		20.44	0.000	0.000
T8 40.00-30.00	35.00	1.017	21	239.967	C	0.000	76.042		37.91	0.000	0.000
					A	0.000	29.747	14.413	48.45	0.000	0.000
					B	0.000	71.531		20.15	0.000	0.000
T9 30.00-20.00	25.00	1	21	252.637	C	0.000	38.980		36.98	0.000	0.000
					A	0.000	30.385	14.413	47.44	0.000	0.000
					B	0.000	72.208		19.96	0.000	0.000
T10 20.00-0.00	10.00	1	21	542.943	C	0.000	39.626		36.37	0.000	0.000
					A	0.000	59.065	28.825	48.80	0.000	0.000
					B	0.000	142.411		20.24	0.000	0.000
					C	0.000	77.482		37.20	0.000	0.000

Tower Pressure - With Ice

$G_H = 1.121$

Section Elevation ft	z ft	K_z	q_z psf	t_z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1 180.00-160.00	170.00	1.597	33	0.5000	179.170	A	0.000	33.933	15.000	44.20	0.000	0.000
						B	0.000	57.477		26.10	0.000	0.000
						C	0.000	33.933		44.20	0.000	0.000
T2 160.00-140.00	150.00	1.541	32	0.5000	202.519	A	0.000	38.423	18.366	47.80	0.000	0.000
						B	0.000	120.083		15.29	0.000	0.000
						C	0.000	38.423		47.80	0.000	0.000
T3 140.00-120.00	130.00	1.48	31	0.5000	245.963	A	0.000	45.787	21.916	47.87	0.000	0.000
						B	0.000	159.184		13.77	0.000	0.000
						C	0.000	52.455		41.78	0.000	0.000
T4 120.00-100.00	110.00	1.411	29	0.5000	291.068	A	0.000	48.043	25.470	53.02	0.000	0.000
						B	0.000	176.674		14.42	0.000	0.000
						C	0.000	75.363		33.80	0.000	0.000
T5 100.00-80.00	90.00	1.332	28	0.5000	338.904	A	0.000	53.020	25.485	48.07	0.000	0.000
						B	0.000	181.237		14.06	0.000	0.000
						C	0.000	80.252		31.76	0.000	0.000
T6 80.00-60.00	70.00	1.24	26	0.5000	392.914	A	0.000	63.692	32.169	50.51	0.000	0.000
						B	0.000	191.924		16.76	0.000	0.000
						C	0.000	90.928		35.38	0.000	0.000
T7 60.00-40.00	50.00	1.126	23	0.5000	443.594	A	0.000	69.084	32.169	46.56	0.000	0.000
						B	0.000	199.359		16.14	0.000	0.000
						C	0.000	96.244		33.42	0.000	0.000
T8 40.00-30.00	35.00	1.017	21	0.5000	240.802	A	0.000	35.766	16.085	44.97	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
						B	0.000	101.046		15.92	0.000	0.000
						C	0.000	49.375		32.58	0.000	0.000
T9 30.00-20.00	25.00	1	21	0.5000	253.472	A	0.000	36.592	16.085	43.96	0.000	0.000
						B	0.000	101.952		15.78	0.000	0.000
						C	0.000	50.218		32.03	0.000	0.000
T10 20.00-0.00	10.00	1	21	0.5000	544.613	A	0.000	71.705	32.167	44.86	0.000	0.000
						B	0.000	201.215		15.99	0.000	0.000
						C	0.000	98.705		32.59	0.000	0.000

Tower Pressure - Service

$G_H = 1.121$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
T1 180.00-160.00	170.00	1.597	10	177.503	A	0.000	24.699	11.667	47.24	0.000	0.000
					B	0.000	39.819		29.30	0.000	0.000
					C	0.000	24.699		47.24	0.000	0.000
T2 160.00-140.00	150.00	1.541	10	200.850	A	0.000	28.825	15.027	52.13	0.000	0.000
					B	0.000	82.643		18.18	0.000	0.000
					C	0.000	28.825		52.13	0.000	0.000
T3 140.00-120.00	130.00	1.48	9	244.294	A	0.000	35.375	18.577	52.51	0.000	0.000
					B	0.000	109.807		16.92	0.000	0.000
					C	0.000	39.959		46.49	0.000	0.000
T4 120.00-100.00	110.00	1.411	9	289.399	A	0.000	38.601	22.130	57.33	0.000	0.000
					B	0.000	121.864		18.16	0.000	0.000
					C	0.000	57.200		38.69	0.000	0.000
T5 100.00-80.00	90.00	1.332	9	337.234	A	0.000	42.928	22.142	51.58	0.000	0.000
					B	0.000	125.813		17.60	0.000	0.000
					C	0.000	61.443		36.04	0.000	0.000
T6 80.00-60.00	70.00	1.24	8	391.244	A	0.000	52.938	28.827	54.45	0.000	0.000
					B	0.000	135.748		21.24	0.000	0.000
					C	0.000	71.436		40.35	0.000	0.000
T7 60.00-40.00	50.00	1.126	7	441.924	A	0.000	57.608	28.827	50.04	0.000	0.000
					B	0.000	141.031		20.44	0.000	0.000
					C	0.000	76.042		37.91	0.000	0.000
T8 40.00-30.00	35.00	1.017	7	239.967	A	0.000	29.747	14.413	48.45	0.000	0.000
					B	0.000	71.531		20.15	0.000	0.000
					C	0.000	38.980		36.98	0.000	0.000
T9 30.00-20.00	25.00	1	6	252.637	A	0.000	30.385	14.413	47.44	0.000	0.000
					B	0.000	72.208		19.96	0.000	0.000
					C	0.000	39.626		36.37	0.000	0.000
T10 20.00-0.00	10.00	1	6	542.943	A	0.000	59.065	28.825	48.80	0.000	0.000
					B	0.000	142.411		20.24	0.000	0.000
					C	0.000	77.482		37.20	0.000	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T1 180.00-160.00	0.10	1.25	A	0.139	2.812	0.58	1	1	14.322	2.22	110.81	B
			B	0.224	2.517	0.596	1	1	23.719			
			C	0.139	2.812	0.58	1	1	14.322			
T2 160.00-140.00	0.40	1.50	A	0.144	2.796	0.581	1	1	16.733	3.97	198.37	B
			B	0.411	2.042	0.656	1	1	54.242			
			C	0.144	2.796	0.581	1	1	16.733			
T3 140.00-120.00	0.62	2.52	A	0.145	2.791	0.581	1	1	20.542	5.02	250.88	B
			B	0.449	1.974	0.673	1	1	73.905			
			C	0.164	2.722	0.584	1	1	23.322			
T4 120.00-100.00	0.87	2.93	A	0.133	2.834	0.579	1	1	22.353	5.34	267.00	B
			B	0.421	2.024	0.66	1	1	80.483			
			C	0.198	2.604	0.59	1	1	33.743			
T5 100.00-80.00	0.87	3.40	A	0.127	2.857	0.578	1	1	24.824	5.29	264.61	B
			B	0.373	2.12	0.641	1	1	80.644			
			C	0.182	2.657	0.587	1	1	36.063			
T6 80.00-60.00	0.87	4.10	A	0.135	2.826	0.579	1	1	30.669	5.38	269.01	B
			B	0.347	2.179	0.631	1	1	85.711			
			C	0.183	2.655	0.587	1	1	41.933			
T7 60.00-40.00	0.87	4.70	A	0.13	2.845	0.579	1	1	33.336	5.16	257.84	B
			B	0.319	2.246	0.622	1	1	87.713			
			C	0.172	2.692	0.585	1	1	44.492			
T8 40.00-30.00	0.44	2.44	A	0.124	2.87	0.578	1	1	17.189	2.39	239.39	B
			B	0.298	2.301	0.615	1	1	44.014			
			C	0.162	2.726	0.583	1	1	22.743			
T9 30.00-20.00	0.44	2.50	A	0.12	2.884	0.577	1	1	17.543	2.40	239.64	B
			B	0.286	2.334	0.612	1	1	44.167			
			C	0.157	2.746	0.583	1	1	23.084			
T10 20.00-0.00	0.87	5.11	A	0.109	2.929	0.576	1	1	34.024	4.81	240.45	B
			B	0.262	2.401	0.605	1	1	86.171			
			C	0.143	2.799	0.58	1	1	44.969			
Sum Weight:	6.34	30.44						OTM	3514.08 kip-ft	41.97		

Tower Forces - No Ice - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T1 180.00-160.00	0.10	1.25	A	0.139	2.812	0.58	0.825	1	14.322	2.22	110.81	B
			B	0.224	2.517	0.596	0.825	1	23.719			
			C	0.139	2.812	0.58	0.825	1	14.322			
T2 160.00-140.00	0.40	1.50	A	0.144	2.796	0.581	0.825	1	16.733	3.97	198.37	B
			B	0.411	2.042	0.656	0.825	1	54.242			
			C	0.144	2.796	0.581	0.825	1	16.733			
T3 140.00-120.00	0.62	2.52	A	0.145	2.791	0.581	0.825	1	20.542	5.02	250.88	B
			B	0.449	1.974	0.673	0.825	1	73.905			
			C	0.164	2.722	0.584	0.825	1	23.322			
T4 120.00-100.00	0.87	2.93	A	0.133	2.834	0.579	0.825	1	22.353	5.34	267.00	B
			B	0.421	2.024	0.66	0.825	1	80.483			
			C	0.198	2.604	0.59	0.825	1	33.743			
T5 100.00-80.00	0.87	3.40	A	0.127	2.857	0.578	0.825	1	24.824	5.29	264.61	B
			B	0.373	2.12	0.641	0.825	1	80.644			
			C	0.182	2.657	0.587	0.825	1	36.063			
T6 80.00-60.00	0.87	4.10	A	0.135	2.826	0.579	0.825	1	30.669	5.38	269.01	B
			B	0.347	2.179	0.631	0.825	1	85.711			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
			C	0.183	2.655	0.587	0.825	1	41.933			
T7 60.00-40.00	0.87	4.70	A	0.13	2.845	0.579	0.825	1	33.336	5.16	257.84	B
			B	0.319	2.246	0.622	0.825	1	87.713			
			C	0.172	2.692	0.585	0.825	1	44.492			
T8 40.00-30.00	0.44	2.44	A	0.124	2.87	0.578	0.825	1	17.189	2.39	239.39	B
			B	0.298	2.301	0.615	0.825	1	44.014			
			C	0.162	2.726	0.583	0.825	1	22.743			
T9 30.00-20.00	0.44	2.50	A	0.12	2.884	0.577	0.825	1	17.543	2.40	239.64	B
			B	0.286	2.334	0.612	0.825	1	44.167			
			C	0.157	2.746	0.583	0.825	1	23.084			
T10 20.00-0.00	0.87	5.11	A	0.109	2.929	0.576	0.825	1	34.024	4.81	240.45	B
			B	0.262	2.401	0.605	0.825	1	86.171			
			C	0.143	2.799	0.58	0.825	1	44.969			
Sum Weight:	6.34	30.44						OTM	3514.08 kip-ft	41.97		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1 180.00-160.00	0.10	1.25	A	0.139	2.812	0.58	0.8	1	14.322	2.22	110.81	B
			B	0.224	2.517	0.596	0.8	1	23.719			
			C	0.139	2.812	0.58	0.8	1	14.322			
T2 160.00-140.00	0.40	1.50	A	0.144	2.796	0.581	0.8	1	16.733	3.97	198.37	B
			B	0.411	2.042	0.656	0.8	1	54.242			
			C	0.144	2.796	0.581	0.8	1	16.733			
T3 140.00-120.00	0.62	2.52	A	0.145	2.791	0.581	0.8	1	20.542	5.02	250.88	B
			B	0.449	1.974	0.673	0.8	1	73.905			
			C	0.164	2.722	0.584	0.8	1	23.322			
T4 120.00-100.00	0.87	2.93	A	0.133	2.834	0.579	0.8	1	22.353	5.34	267.00	B
			B	0.421	2.024	0.66	0.8	1	80.483			
			C	0.198	2.604	0.59	0.8	1	33.743			
T5 100.00-80.00	0.87	3.40	A	0.127	2.857	0.578	0.8	1	24.824	5.29	264.61	B
			B	0.373	2.12	0.641	0.8	1	80.644			
			C	0.182	2.657	0.587	0.8	1	36.063			
T6 80.00-60.00	0.87	4.10	A	0.135	2.826	0.579	0.8	1	30.669	5.38	269.01	B
			B	0.347	2.179	0.631	0.8	1	85.711			
			C	0.183	2.655	0.587	0.8	1	41.933			
T7 60.00-40.00	0.87	4.70	A	0.13	2.845	0.579	0.8	1	33.336	5.16	257.84	B
			B	0.319	2.246	0.622	0.8	1	87.713			
			C	0.172	2.692	0.585	0.8	1	44.492			
T8 40.00-30.00	0.44	2.44	A	0.124	2.87	0.578	0.8	1	17.189	2.39	239.39	B
			B	0.298	2.301	0.615	0.8	1	44.014			
			C	0.162	2.726	0.583	0.8	1	22.743			
T9 30.00-20.00	0.44	2.50	A	0.12	2.884	0.577	0.8	1	17.543	2.40	239.64	B
			B	0.286	2.334	0.612	0.8	1	44.167			
			C	0.157	2.746	0.583	0.8	1	23.084			
T10 20.00-0.00	0.87	5.11	A	0.109	2.929	0.576	0.8	1	34.024	4.81	240.45	B
			B	0.262	2.401	0.605	0.8	1	86.171			
			C	0.143	2.799	0.58	0.8	1	44.969			
Sum Weight:	6.34	30.44						OTM	3514.08 kip-ft	41.97		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T1 180.00-160.00	0.10	1.25	A	0.139	2.812	0.58	0.85	1	14.322	2.22	110.81	B
			B	0.224	2.517	0.596	0.85	1	23.719			
			C	0.139	2.812	0.58	0.85	1	14.322			
T2 160.00-140.00	0.40	1.50	A	0.144	2.796	0.581	0.85	1	16.733	3.97	198.37	B
			B	0.411	2.042	0.656	0.85	1	54.242			
			C	0.144	2.796	0.581	0.85	1	16.733			
T3 140.00-120.00	0.62	2.52	A	0.145	2.791	0.581	0.85	1	20.542	5.02	250.88	B
			B	0.449	1.974	0.673	0.85	1	73.905			
			C	0.164	2.722	0.584	0.85	1	23.322			
T4 120.00-100.00	0.87	2.93	A	0.133	2.834	0.579	0.85	1	22.353	5.34	267.00	B
			B	0.421	2.024	0.66	0.85	1	80.483			
			C	0.198	2.604	0.59	0.85	1	33.743			
T5 100.00-80.00	0.87	3.40	A	0.127	2.857	0.578	0.85	1	24.824	5.29	264.61	B
			B	0.373	2.12	0.641	0.85	1	80.644			
			C	0.182	2.657	0.587	0.85	1	36.063			
T6 80.00-60.00	0.87	4.10	A	0.135	2.826	0.579	0.85	1	30.669	5.38	269.01	B
			B	0.347	2.179	0.631	0.85	1	85.711			
			C	0.183	2.655	0.587	0.85	1	41.933			
T7 60.00-40.00	0.87	4.70	A	0.13	2.845	0.579	0.85	1	33.336	5.16	257.84	B
			B	0.319	2.246	0.622	0.85	1	87.713			
			C	0.172	2.692	0.585	0.85	1	44.492			
T8 40.00-30.00	0.44	2.44	A	0.124	2.87	0.578	0.85	1	17.189	2.39	239.39	B
			B	0.298	2.301	0.615	0.85	1	44.014			
			C	0.162	2.726	0.583	0.85	1	22.743			
T9 30.00-20.00	0.44	2.50	A	0.12	2.884	0.577	0.85	1	17.543	2.40	239.64	B
			B	0.286	2.334	0.612	0.85	1	44.167			
			C	0.157	2.746	0.583	0.85	1	23.084			
T10 20.00-0.00	0.87	5.11	A	0.109	2.929	0.576	0.85	1	34.024	4.81	240.45	B
			B	0.262	2.401	0.605	0.85	1	86.171			
			C	0.143	2.799	0.58	0.85	1	44.969			
Sum Weight:	6.34	30.44						OTM	3514.08 kip-ft	41.97		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T1 180.00-160.00	0.27	1.84	A	0.189	2.632	0.588	1	1	19.963	2.98	148.92	B
			B	0.321	2.242	0.622	1	1	35.778			
			C	0.189	2.632	0.588	1	1	19.963			
T2 160.00-140.00	1.02	2.15	A	0.19	2.631	0.588	1	1	22.606	5.83	291.47	B
			B	0.593	1.809	0.749	1	1	89.979			
			C	0.19	2.631	0.588	1	1	22.606			
T3 140.00-120.00	1.60	3.31	A	0.186	2.643	0.588	1	1	26.908	7.65	382.26	B
			B	0.647	1.782	0.784	1	1	124.739			
			C	0.213	2.552	0.593	1	1	31.116			
T4 120.00-100.00	2.24	3.73	A	0.165	2.717	0.584	1	1	28.052	7.90	395.06	B
			B	0.607	1.8	0.758	1	1	133.901			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
			C	0.259	2.411	0.604	1	1	45.533			
T5 100.00-80.00	2.24	4.32	A	0.156	2.748	0.582	1	1	30.883	7.47	373.31	B
			B	0.535	1.859	0.716	1	1	129.739			
			C	0.237	2.478	0.599	1	1	48.039			
T6 80.00-60.00	2.24	5.21	A	0.162	2.727	0.583	1	1	37.158	7.33	366.33	B
			B	0.488	1.915	0.692	1	1	132.751			
			C	0.231	2.494	0.597	1	1	54.312			
T7 60.00-40.00	2.26	5.97	A	0.156	2.75	0.582	1	1	40.233	6.93	346.67	B
			B	0.449	1.974	0.673	1	1	134.171			
			C	0.217	2.54	0.594	1	1	57.170			
T8 40.00-30.00	1.13	3.11	A	0.149	2.777	0.581	1	1	20.789	3.19	319.34	B
			B	0.42	2.026	0.66	1	1	66.671			
			C	0.205	2.579	0.591	1	1	29.203			
T9 30.00-20.00	1.13	3.19	A	0.144	2.792	0.581	1	1	21.246	3.18	318.45	B
			B	0.402	2.06	0.653	1	1	66.524			
			C	0.198	2.602	0.59	1	1	29.630			
T10 20.00-0.00	2.26	6.31	A	0.132	2.84	0.579	1	1	41.506	6.36	318.22	B
			B	0.369	2.128	0.64	1	1	128.700			
			C	0.181	2.66	0.587	1	1	57.915			
Sum Weight:	16.38	39.14						OTM	5030.25 kip-ft	58.82		

Tower Forces - With Ice - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1 180.00-160.00	0.27	1.84	A	0.189	2.632	0.588	0.825	1	19.963	2.98	148.92	B
			B	0.321	2.242	0.622	0.825	1	35.778			
			C	0.189	2.632	0.588	0.825	1	19.963			
T2 160.00-140.00	1.02	2.15	A	0.19	2.631	0.588	0.825	1	22.606	5.83	291.47	B
			B	0.593	1.809	0.749	0.825	1	89.979			
			C	0.19	2.631	0.588	0.825	1	22.606			
T3 140.00-120.00	1.60	3.31	A	0.186	2.643	0.588	0.825	1	26.908	7.65	382.26	B
			B	0.647	1.782	0.784	0.825	1	124.739			
			C	0.213	2.552	0.593	0.825	1	31.116			
T4 120.00-100.00	2.24	3.73	A	0.165	2.717	0.584	0.825	1	28.052	7.90	395.06	B
			B	0.607	1.8	0.758	0.825	1	133.901			
			C	0.259	2.411	0.604	0.825	1	45.533			
T5 100.00-80.00	2.24	4.32	A	0.156	2.748	0.582	0.825	1	30.883	7.47	373.31	B
			B	0.535	1.859	0.716	0.825	1	129.739			
			C	0.237	2.478	0.599	0.825	1	48.039			
T6 80.00-60.00	2.24	5.21	A	0.162	2.727	0.583	0.825	1	37.158	7.33	366.33	B
			B	0.488	1.915	0.692	0.825	1	132.751			
			C	0.231	2.494	0.597	0.825	1	54.312			
T7 60.00-40.00	2.26	5.97	A	0.156	2.75	0.582	0.825	1	40.233	6.93	346.67	B
			B	0.449	1.974	0.673	0.825	1	134.171			
			C	0.217	2.54	0.594	0.825	1	57.170			
T8 40.00-30.00	1.13	3.11	A	0.149	2.777	0.581	0.825	1	20.789	3.19	319.34	B
			B	0.42	2.026	0.66	0.825	1	66.671			
			C	0.205	2.579	0.591	0.825	1	29.203			
T9 30.00-20.00	1.13	3.19	A	0.144	2.792	0.581	0.825	1	21.246	3.18	318.45	B
			B	0.402	2.06	0.653	0.825	1	66.524			
			C	0.198	2.602	0.59	0.825	1	29.630			
T10 20.00-	2.26	6.31	A	0.132	2.84	0.579	0.825	1	41.506	6.36	318.22	B

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
0.00			B	0.369	2.128	0.64	0.825	1	128.700			
			C	0.181	2.66	0.587	0.825	1	57.915			
Sum Weight:	16.38	39.14						OTM	5030.25 kip-ft	58.82		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1 180.00-160.00	0.27	1.84	A	0.189	2.632	0.588	0.8	1	19.963	2.98	148.92	B
			B	0.321	2.242	0.622	0.8	1	35.778			
			C	0.189	2.632	0.588	0.8	1	19.963			
T2 160.00-140.00	1.02	2.15	A	0.19	2.631	0.588	0.8	1	22.606	5.83	291.47	B
			B	0.593	1.809	0.749	0.8	1	89.979			
			C	0.19	2.631	0.588	0.8	1	22.606			
T3 140.00-120.00	1.60	3.31	A	0.186	2.643	0.588	0.8	1	26.908	7.65	382.26	B
			B	0.647	1.782	0.784	0.8	1	124.739			
			C	0.213	2.552	0.593	0.8	1	31.116			
T4 120.00-100.00	2.24	3.73	A	0.165	2.717	0.584	0.8	1	28.052	7.90	395.06	B
			B	0.607	1.8	0.758	0.8	1	133.901			
			C	0.259	2.411	0.604	0.8	1	45.533			
T5 100.00-80.00	2.24	4.32	A	0.156	2.748	0.582	0.8	1	30.883	7.47	373.31	B
			B	0.535	1.859	0.716	0.8	1	129.739			
			C	0.237	2.478	0.599	0.8	1	48.039			
T6 80.00-60.00	2.24	5.21	A	0.162	2.727	0.583	0.8	1	37.158	7.33	366.33	B
			B	0.488	1.915	0.692	0.8	1	132.751			
			C	0.231	2.494	0.597	0.8	1	54.312			
T7 60.00-40.00	2.26	5.97	A	0.156	2.75	0.582	0.8	1	40.233	6.93	346.67	B
			B	0.449	1.974	0.673	0.8	1	134.171			
			C	0.217	2.54	0.594	0.8	1	57.170			
T8 40.00-30.00	1.13	3.11	A	0.149	2.777	0.581	0.8	1	20.789	3.19	319.34	B
			B	0.42	2.026	0.66	0.8	1	66.671			
			C	0.205	2.579	0.591	0.8	1	29.203			
T9 30.00-20.00	1.13	3.19	A	0.144	2.792	0.581	0.8	1	21.246	3.18	318.45	B
			B	0.402	2.06	0.653	0.8	1	66.524			
			C	0.198	2.602	0.59	0.8	1	29.630			
T10 20.00-0.00	2.26	6.31	A	0.132	2.84	0.579	0.8	1	41.506	6.36	318.22	B
			B	0.369	2.128	0.64	0.8	1	128.700			
			C	0.181	2.66	0.587	0.8	1	57.915			
Sum Weight:	16.38	39.14						OTM	5030.25 kip-ft	58.82		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1 180.00-	0.27	1.84	A	0.189	2.632	0.588	0.85	1	19.963	2.98	148.92	B

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
160.00			B	0.321	2.242	0.622	0.85	1	35.778			
			C	0.189	2.632	0.588	0.85	1	19.963			
T2 160.00-140.00	1.02	2.15	A	0.19	2.631	0.588	0.85	1	22.606	5.83	291.47	B
			B	0.593	1.809	0.749	0.85	1	89.979			
			C	0.19	2.631	0.588	0.85	1	22.606			
T3 140.00-120.00	1.60	3.31	A	0.186	2.643	0.588	0.85	1	26.908	7.65	382.26	B
			B	0.647	1.782	0.784	0.85	1	124.739			
			C	0.213	2.552	0.593	0.85	1	31.116			
T4 120.00-100.00	2.24	3.73	A	0.165	2.717	0.584	0.85	1	28.052	7.90	395.06	B
			B	0.607	1.8	0.758	0.85	1	133.901			
			C	0.259	2.411	0.604	0.85	1	45.533			
T5 100.00-80.00	2.24	4.32	A	0.156	2.748	0.582	0.85	1	30.883	7.47	373.31	B
			B	0.535	1.859	0.716	0.85	1	129.739			
			C	0.237	2.478	0.599	0.85	1	48.039			
T6 80.00-60.00	2.24	5.21	A	0.162	2.727	0.583	0.85	1	37.158	7.33	366.33	B
			B	0.488	1.915	0.692	0.85	1	132.751			
			C	0.231	2.494	0.597	0.85	1	54.312			
T7 60.00-40.00	2.26	5.97	A	0.156	2.75	0.582	0.85	1	40.233	6.93	346.67	B
			B	0.449	1.974	0.673	0.85	1	134.171			
			C	0.217	2.54	0.594	0.85	1	57.170			
T8 40.00-30.00	1.13	3.11	A	0.149	2.777	0.581	0.85	1	20.789	3.19	319.34	B
			B	0.42	2.026	0.66	0.85	1	66.671			
			C	0.205	2.579	0.591	0.85	1	29.203			
T9 30.00-20.00	1.13	3.19	A	0.144	2.792	0.581	0.85	1	21.246	3.18	318.45	B
			B	0.402	2.06	0.653	0.85	1	66.524			
			C	0.198	2.602	0.59	0.85	1	29.630			
T10 20.00-0.00	2.26	6.31	A	0.132	2.84	0.579	0.85	1	41.506	6.36	318.22	B
			B	0.369	2.128	0.64	0.85	1	128.700			
			C	0.181	2.66	0.587	0.85	1	57.915			
Sum Weight:	16.38	39.14						OTM	5030.25 kip-ft	58.82		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1 180.00-160.00	0.10	1.25	A	0.139	2.812	0.58	1	1	14.322	0.68	34.20	B
			B	0.224	2.517	0.596	1	1	23.719			
			C	0.139	2.812	0.58	1	1	14.322			
T2 160.00-140.00	0.40	1.50	A	0.144	2.796	0.581	1	1	16.733	1.22	61.22	B
			B	0.411	2.042	0.656	1	1	54.242			
			C	0.144	2.796	0.581	1	1	16.733			
T3 140.00-120.00	0.62	2.52	A	0.145	2.791	0.581	1	1	20.542	1.55	77.43	B
			B	0.449	1.974	0.673	1	1	73.905			
			C	0.164	2.722	0.584	1	1	23.322			
T4 120.00-100.00	0.87	2.93	A	0.133	2.834	0.579	1	1	22.353	1.65	82.41	B
			B	0.421	2.024	0.66	1	1	80.483			
			C	0.198	2.604	0.59	1	1	33.743			
T5 100.00-80.00	0.87	3.40	A	0.127	2.857	0.578	1	1	24.824	1.63	81.67	B
			B	0.373	2.12	0.641	1	1	80.644			
			C	0.182	2.657	0.587	1	1	36.063			
T6 80.00-60.00	0.87	4.10	A	0.135	2.826	0.579	1	1	30.669	1.66	83.03	B
			B	0.347	2.179	0.631	1	1	85.711			
			C	0.183	2.655	0.587	1	1	41.933			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T7 60.00-40.00	0.87	4.70	A	0.13	2.845	0.579	1	1	33.336	1.59	79.58	B
			B	0.319	2.246	0.622	1	1	87.713			
			C	0.172	2.692	0.585	1	1	44.492			
T8 40.00-30.00	0.44	2.44	A	0.124	2.87	0.578	1	1	17.189	0.74	73.89	B
			B	0.298	2.301	0.615	1	1	44.014			
			C	0.162	2.726	0.583	1	1	22.743			
T9 30.00-20.00	0.44	2.50	A	0.12	2.884	0.577	1	1	17.543	0.74	73.96	B
			B	0.286	2.334	0.612	1	1	44.167			
			C	0.157	2.746	0.583	1	1	23.084			
T10 20.00-0.00	0.87	5.11	A	0.109	2.929	0.576	1	1	34.024	1.48	74.21	B
			B	0.262	2.401	0.605	1	1	86.171			
			C	0.143	2.799	0.58	1	1	44.969			
Sum Weight:	6.34	30.44						OTM	1084.59 kip-ft	12.95		

Tower Forces - Service - Wind 45 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T1 180.00-160.00	0.10	1.25	A	0.139	2.812	0.58	0.825	1	14.322	0.68	34.20	B
			B	0.224	2.517	0.596	0.825	1	23.719			
			C	0.139	2.812	0.58	0.825	1	14.322			
T2 160.00-140.00	0.40	1.50	A	0.144	2.796	0.581	0.825	1	16.733	1.22	61.22	B
			B	0.411	2.042	0.656	0.825	1	54.242			
			C	0.144	2.796	0.581	0.825	1	16.733			
T3 140.00-120.00	0.62	2.52	A	0.145	2.791	0.581	0.825	1	20.542	1.55	77.43	B
			B	0.449	1.974	0.673	0.825	1	73.905			
			C	0.164	2.722	0.584	0.825	1	23.322			
T4 120.00-100.00	0.87	2.93	A	0.133	2.834	0.579	0.825	1	22.353	1.65	82.41	B
			B	0.421	2.024	0.66	0.825	1	80.483			
			C	0.198	2.604	0.59	0.825	1	33.743			
T5 100.00-80.00	0.87	3.40	A	0.127	2.857	0.578	0.825	1	24.824	1.63	81.67	B
			B	0.373	2.12	0.641	0.825	1	80.644			
			C	0.182	2.657	0.587	0.825	1	36.063			
T6 80.00-60.00	0.87	4.10	A	0.135	2.826	0.579	0.825	1	30.669	1.66	83.03	B
			B	0.347	2.179	0.631	0.825	1	85.711			
			C	0.183	2.655	0.587	0.825	1	41.933			
T7 60.00-40.00	0.87	4.70	A	0.13	2.845	0.579	0.825	1	33.336	1.59	79.58	B
			B	0.319	2.246	0.622	0.825	1	87.713			
			C	0.172	2.692	0.585	0.825	1	44.492			
T8 40.00-30.00	0.44	2.44	A	0.124	2.87	0.578	0.825	1	17.189	0.74	73.89	B
			B	0.298	2.301	0.615	0.825	1	44.014			
			C	0.162	2.726	0.583	0.825	1	22.743			
T9 30.00-20.00	0.44	2.50	A	0.12	2.884	0.577	0.825	1	17.543	0.74	73.96	B
			B	0.286	2.334	0.612	0.825	1	44.167			
			C	0.157	2.746	0.583	0.825	1	23.084			
T10 20.00-0.00	0.87	5.11	A	0.109	2.929	0.576	0.825	1	34.024	1.48	74.21	B
			B	0.262	2.401	0.605	0.825	1	86.171			
			C	0.143	2.799	0.58	0.825	1	44.969			
Sum Weight:	6.34	30.44						OTM	1084.59 kip-ft	12.95		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T1 180.00-160.00	0.10	1.25	A	0.139	2.812	0.58	0.8	1	14.322	0.68	34.20	B
			B	0.224	2.517	0.596	0.8	1	23.719			
			C	0.139	2.812	0.58	0.8	1	14.322			
T2 160.00-140.00	0.40	1.50	A	0.144	2.796	0.581	0.8	1	16.733	1.22	61.22	B
			B	0.411	2.042	0.656	0.8	1	54.242			
			C	0.144	2.796	0.581	0.8	1	16.733			
T3 140.00-120.00	0.62	2.52	A	0.145	2.791	0.581	0.8	1	20.542	1.55	77.43	B
			B	0.449	1.974	0.673	0.8	1	73.905			
			C	0.164	2.722	0.584	0.8	1	23.322			
T4 120.00-100.00	0.87	2.93	A	0.133	2.834	0.579	0.8	1	22.353	1.65	82.41	B
			B	0.421	2.024	0.66	0.8	1	80.483			
			C	0.198	2.604	0.59	0.8	1	33.743			
T5 100.00-80.00	0.87	3.40	A	0.127	2.857	0.578	0.8	1	24.824	1.63	81.67	B
			B	0.373	2.12	0.641	0.8	1	80.644			
			C	0.182	2.657	0.587	0.8	1	36.063			
T6 80.00-60.00	0.87	4.10	A	0.135	2.826	0.579	0.8	1	30.669	1.66	83.03	B
			B	0.347	2.179	0.631	0.8	1	85.711			
			C	0.183	2.655	0.587	0.8	1	41.933			
T7 60.00-40.00	0.87	4.70	A	0.13	2.845	0.579	0.8	1	33.336	1.59	79.58	B
			B	0.319	2.246	0.622	0.8	1	87.713			
			C	0.172	2.692	0.585	0.8	1	44.492			
T8 40.00-30.00	0.44	2.44	A	0.124	2.87	0.578	0.8	1	17.189	0.74	73.89	B
			B	0.298	2.301	0.615	0.8	1	44.014			
			C	0.162	2.726	0.583	0.8	1	22.743			
T9 30.00-20.00	0.44	2.50	A	0.12	2.884	0.577	0.8	1	17.543	0.74	73.96	B
			B	0.286	2.334	0.612	0.8	1	44.167			
			C	0.157	2.746	0.583	0.8	1	23.084			
T10 20.00-0.00	0.87	5.11	A	0.109	2.929	0.576	0.8	1	34.024	1.48	74.21	B
			B	0.262	2.401	0.605	0.8	1	86.171			
			C	0.143	2.799	0.58	0.8	1	44.969			
Sum Weight:	6.34	30.44						OTM	1084.59 kip-ft	12.95		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft^2	F K	w plf	Ctrl. Face
T1 180.00-160.00	0.10	1.25	A	0.139	2.812	0.58	0.85	1	14.322	0.68	34.20	B
			B	0.224	2.517	0.596	0.85	1	23.719			
			C	0.139	2.812	0.58	0.85	1	14.322			
T2 160.00-140.00	0.40	1.50	A	0.144	2.796	0.581	0.85	1	16.733	1.22	61.22	B
			B	0.411	2.042	0.656	0.85	1	54.242			
			C	0.144	2.796	0.581	0.85	1	16.733			
T3 140.00-120.00	0.62	2.52	A	0.145	2.791	0.581	0.85	1	20.542	1.55	77.43	B
			B	0.449	1.974	0.673	0.85	1	73.905			
			C	0.164	2.722	0.584	0.85	1	23.322			
T4 120.00-100.00	0.87	2.93	A	0.133	2.834	0.579	0.85	1	22.353	1.65	82.41	B
			B	0.421	2.024	0.66	0.85	1	80.483			
			C	0.198	2.604	0.59	0.85	1	33.743			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	R_R	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
T5 100.00-80.00	0.87	3.40	A	0.127	2.857	0.578	0.85	1	24.824	1.63	81.67	B
			B	0.373	2.12	0.641	0.85	1	80.644			
			C	0.182	2.657	0.587	0.85	1	36.063			
T6 80.00-60.00	0.87	4.10	A	0.135	2.826	0.579	0.85	1	30.669	1.66	83.03	B
			B	0.347	2.179	0.631	0.85	1	85.711			
			C	0.183	2.655	0.587	0.85	1	41.933			
T7 60.00-40.00	0.87	4.70	A	0.13	2.845	0.579	0.85	1	33.336	1.59	79.58	B
			B	0.319	2.246	0.622	0.85	1	87.713			
			C	0.172	2.692	0.585	0.85	1	44.492			
T8 40.00-30.00	0.44	2.44	A	0.124	2.87	0.578	0.85	1	17.189	0.74	73.89	B
			B	0.298	2.301	0.615	0.85	1	44.014			
			C	0.162	2.726	0.583	0.85	1	22.743			
T9 30.00-20.00	0.44	2.50	A	0.12	2.884	0.577	0.85	1	17.543	0.74	73.96	B
			B	0.286	2.334	0.612	0.85	1	44.167			
			C	0.157	2.746	0.583	0.85	1	23.084			
T10 20.00-0.00	0.87	5.11	A	0.109	2.929	0.576	0.85	1	34.024	1.48	74.21	B
			B	0.262	2.401	0.605	0.85	1	86.171			
			C	0.143	2.799	0.58	0.85	1	44.969			
Sum Weight:	6.34	30.44						OTM	1084.59 kip-ft	12.95		

Force Totals

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
Leg Weight	14.03					
Bracing Weight	16.41					
Total Member Self-Weight	30.44			3.13	-35.03	
Total Weight	41.71			3.13	-35.03	
Wind 0 deg - No Ice		0.00	-53.82	-5346.06	-35.03	74.61
Wind 30 deg - No Ice		26.91	-46.61	-4629.40	-2709.62	62.60
Wind 45 deg - No Ice		38.05	-38.05	-3779.32	-3817.48	49.91
Wind 60 deg - No Ice		46.61	-26.91	-2671.46	-4667.56	33.81
Wind 90 deg - No Ice		53.82	0.00	3.13	-5384.22	-4.03
Wind 120 deg - No Ice		46.61	26.91	2677.72	-4667.56	-40.80
Wind 135 deg - No Ice		38.05	38.05	3785.58	-3817.48	-55.61
Wind 150 deg - No Ice		26.91	46.61	4635.66	-2709.62	-66.63
Wind 180 deg - No Ice		0.00	53.82	5352.32	-35.03	-74.61
Wind 210 deg - No Ice		-26.91	46.61	4635.66	2639.56	-62.60
Wind 225 deg - No Ice		-38.05	38.05	3785.58	3747.42	-49.91
Wind 240 deg - No Ice		-46.61	26.91	2677.72	4597.50	-33.81
Wind 270 deg - No Ice		-53.82	0.00	3.13	5314.16	4.03
Wind 300 deg - No Ice		-46.61	-26.91	-2671.46	4597.50	40.80
Wind 315 deg - No Ice		-38.05	-38.05	-3779.32	3747.42	55.61
Wind 330 deg - No Ice		-26.91	-46.61	-4629.40	2639.56	66.63
Member Ice	8.70					
Total Weight Ice	62.69			6.84	-94.90	
Wind 0 deg - Ice		0.00	-75.44	-7624.76	-94.90	123.71
Wind 30 deg - Ice		37.72	-65.33	-6602.32	-3910.69	106.35
Wind 45 deg - Ice		53.34	-53.34	-5389.51	-5491.25	86.36
Wind 60 deg - Ice		65.33	-37.72	-3808.96	-6704.05	60.49
Wind 90 deg - Ice		75.44	0.00	6.84	-7726.49	-1.58
Wind 120 deg - Ice		65.33	37.72	3822.64	-6704.05	-63.22
Wind 135 deg - Ice		53.34	53.34	5403.20	-5491.25	-88.59

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 150 deg - Ice		37.72	65.33	6616.00	-3910.69	-107.93
Wind 180 deg - Ice		0.00	75.44	7638.44	-94.90	-123.71
Wind 210 deg - Ice		-37.72	65.33	6616.00	3720.90	-106.35
Wind 225 deg - Ice		-53.34	53.34	5403.20	5301.46	-86.36
Wind 240 deg - Ice		-65.33	37.72	3822.64	6514.26	-60.49
Wind 270 deg - Ice		-75.44	0.00	6.84	7536.70	1.58
Wind 300 deg - Ice		-65.33	-37.72	-3808.96	6514.26	63.22
Wind 315 deg - Ice		-53.34	-53.34	-5389.51	5301.46	88.59
Wind 330 deg - Ice		-37.72	-65.33	-6602.32	3720.90	107.93
Total Weight	41.71			3.13	-35.03	
Wind 0 deg - Service		0.00	-16.61	-1648.91	1.99	23.03
Wind 30 deg - Service		8.30	-14.38	-1427.72	-823.51	19.32
Wind 45 deg - Service		11.74	-11.74	-1165.35	-1165.44	15.40
Wind 60 deg - Service		14.38	-8.30	-823.42	-1427.81	10.44
Wind 90 deg - Service		16.61	0.00	2.07	-1649.00	-1.24
Wind 120 deg - Service		14.38	8.30	827.56	-1427.81	-12.59
Wind 135 deg - Service		11.74	11.74	1169.49	-1165.44	-17.16
Wind 150 deg - Service		8.30	14.38	1431.86	-823.51	-20.56
Wind 180 deg - Service		0.00	16.61	1653.05	1.99	-23.03
Wind 210 deg - Service		-8.30	14.38	1431.86	827.48	-19.32
Wind 225 deg - Service		-11.74	11.74	1169.49	1169.41	-15.40
Wind 240 deg - Service		-14.38	8.30	827.56	1431.78	-10.44
Wind 270 deg - Service		-16.61	0.00	2.07	1652.97	1.24
Wind 300 deg - Service		-14.38	-8.30	-823.42	1431.78	12.59
Wind 315 deg - Service		-11.74	-11.74	-1165.35	1169.41	17.16
Wind 330 deg - Service		-8.30	-14.38	-1427.72	827.48	20.56

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
19	Dead+Wind 0 deg+Ice
20	Dead+Wind 30 deg+Ice
21	Dead+Wind 45 deg+Ice
22	Dead+Wind 60 deg+Ice
23	Dead+Wind 90 deg+Ice
24	Dead+Wind 120 deg+Ice
25	Dead+Wind 135 deg+Ice

Comb. No.	Description
26	Dead+Wind 150 deg+Ice
27	Dead+Wind 180 deg+Ice
28	Dead+Wind 210 deg+Ice
29	Dead+Wind 225 deg+Ice
30	Dead+Wind 240 deg+Ice
31	Dead+Wind 270 deg+Ice
32	Dead+Wind 300 deg+Ice
33	Dead+Wind 315 deg+Ice
34	Dead+Wind 330 deg+Ice
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	180 - 160	Leg	Max Tension	27	6.32	-0.70	0.13
			Max. Compression	30	-7.99	0.35	-0.04
			Max. Mx	32	-0.19	-1.31	0.63
			Max. My	17	-0.39	-0.00	-1.92
			Max. Vy	22	0.86	-0.70	-0.40
			Max. Vx	25	1.20	-0.18	-0.86
		Diagonal	Max Tension	23	8.25	0.00	0.00
			Max. Compression	23	-8.35	0.00	0.00
			Max. Mx	23	8.25	0.02	0.00
			Max. My	22	-0.73	0.00	-0.00
			Max. Vy	23	-0.01	0.00	0.00
			Max. Vx	22	0.00	0.00	0.00
		Horizontal	Max Tension	23	4.52	-0.01	-0.00
			Max. Compression	23	-4.47	-0.01	-0.00
			Max. Mx	27	-1.07	-0.02	-0.01
			Max. My	32	-1.97	-0.01	-0.01
			Max. Vy	27	-0.01	-0.02	-0.01
			Max. Vx	32	0.00	-0.01	-0.01
		Top Girt	Max Tension	27	0.82	-0.01	0.00
			Max. Compression	19	-0.82	-0.01	-0.00
			Max. Mx	32	-0.05	-0.01	-0.00
			Max. My	27	0.04	-0.01	-0.00
			Max. Vy	32	-0.01	-0.01	-0.00
			Max. Vx	27	0.00	-0.01	-0.00
		Inner Bracing	Max Tension	23	0.08	0.00	0.00
			Max. Compression	23	-0.08	0.00	0.00
			Max. Mx	18	-0.00	-0.01	0.00
			Max. My	22	0.06	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	18	0.01	0.00	0.00
			Max. Vx	22	-0.00	0.00	0.00
T2	160 - 140	Leg	Max Tension	27	34.87	-0.20	0.07
			Max. Compression	24	-40.76	0.58	0.03
			Max. Mx	27	13.54	1.46	0.04
			Max. My	23	-1.91	-0.04	-1.48
			Max. Vy	27	1.78	-1.37	0.04
			Max. Vx	23	-1.76	-0.04	1.31
		Diagonal	Max Tension	31	10.97	0.00	0.00
			Max. Compression	31	-11.08	0.00	0.00
			Max. Mx	23	10.35	0.03	0.00
			Max. My	27	0.54	0.00	0.00
			Max. Vy	23	-0.01	0.00	0.00
			Max. Vx	22	0.00	0.00	0.00
		Horizontal	Max Tension	31	6.59	-0.01	0.00
			Max. Compression	31	-6.62	-0.01	0.00
			Max. Mx	27	-0.41	-0.02	-0.01
			Max. My	32	-2.30	-0.02	-0.01
			Max. Vy	27	-0.02	-0.02	-0.01
			Max. Vx	32	0.00	-0.02	-0.01
		Inner Bracing	Max Tension	31	0.11	0.00	0.00
			Max. Compression	31	-0.11	0.00	0.00
			Max. Mx	18	-0.00	-0.01	0.00
			Max. My	22	0.09	0.00	0.00
			Max. Vy	18	0.01	0.00	0.00
			Max. Vx	27	0.00	0.00	0.00
T3	140 - 120	Leg	Max Tension	22	71.60	-0.89	-0.00
			Max. Compression	24	-82.31	1.31	0.10
			Max. Mx	32	70.40	-1.34	-0.10
			Max. My	20	-6.13	-0.01	-1.46
			Max. Vy	32	-1.37	-1.08	-0.08
			Max. Vx	20	-1.38	-0.03	-1.04
		Diagonal	Max Tension	31	12.58	0.00	0.00
			Max. Compression	31	-12.75	0.00	0.00
			Max. Mx	23	12.53	0.05	0.00
			Max. My	27	-0.03	0.00	0.00
			Max. Vy	23	-0.02	0.00	0.00
			Max. Vx	27	-0.00	0.00	0.00
		Horizontal	Max Tension	31	8.76	-0.03	-0.00
			Max. Compression	31	-8.74	-0.03	-0.00
			Max. Mx	22	-1.27	-0.04	-0.02
			Max. My	32	-1.44	-0.04	-0.02
			Max. Vy	22	-0.02	-0.04	-0.02
			Max. Vx	32	0.00	-0.04	-0.02
		Inner Bracing	Max Tension	31	0.15	0.00	0.00
			Max. Compression	31	-0.15	0.00	0.00
			Max. Mx	18	-0.00	-0.02	0.00
			Max. My	22	0.13	0.00	0.00
			Max. Vy	18	-0.01	0.00	0.00
			Max. Vx	22	0.00	0.00	0.00
T4	120 - 100	Leg	Max Tension	22	107.25	-1.50	-0.12
			Max. Compression	24	-121.33	1.47	0.14
			Max. Mx	32	84.29	-1.62	-0.17
			Max. My	20	-7.17	-0.03	-1.85
			Max. Vy	32	0.71	-1.62	-0.17
			Max. Vx	20	0.85	-0.03	-1.85
		Diagonal	Max Tension	34	16.62	0.00	0.00
			Max. Compression	34	-16.89	0.00	0.00
			Max. Mx	23	16.09	0.12	0.00
			Max. My	27	-1.17	0.00	0.00
			Max. Vy	23	-0.04	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	27	-0.00	0.00	0.00
		Horizontal	Max Tension	34	10.01	-0.04	-0.00
			Max. Compression	34	-10.06	-0.04	-0.00
			Max. Mx	22	-1.55	-0.06	-0.02
			Max. My	32	-0.81	-0.05	-0.02
			Max. Vy	22	-0.03	-0.06	-0.02
			Max. Vx	32	0.00	-0.05	-0.02
		Inner Bracing	Max Tension	34	0.17	0.00	0.00
			Max. Compression	34	-0.17	0.00	0.00
			Max. Mx	18	0.00	-0.03	0.00
			Max. My	22	0.15	0.00	0.00
			Max. Vy	18	0.02	0.00	0.00
			Max. Vx	22	-0.00	0.00	0.00
T5	100 - 80	Leg	Max Tension	22	147.39	-1.77	-0.13
			Max. Compression	24	-165.86	1.73	0.14
			Max. Mx	32	143.81	-1.80	-0.15
			Max. My	20	-11.27	-0.03	-2.03
			Max. Vy	32	0.68	-1.80	-0.15
			Max. Vx	20	0.80	-0.03	-2.03
		Diagonal	Max Tension	34	16.63	0.00	0.00
			Max. Compression	34	-16.95	0.00	0.00
			Max. Mx	23	15.17	0.15	0.00
			Max. My	27	-2.10	0.00	0.00
			Max. Vy	23	-0.04	0.00	0.00
			Max. Vx	27	-0.00	0.00	0.00
		Horizontal	Max Tension	34	11.02	-0.05	-0.00
			Max. Compression	34	-11.07	-0.05	-0.00
			Max. Mx	22	-1.61	-0.07	-0.02
			Max. My	32	-0.65	-0.06	-0.02
			Max. Vy	22	-0.03	-0.07	-0.02
			Max. Vx	32	0.00	-0.06	-0.02
		Inner Bracing	Max Tension	34	0.19	0.00	0.00
			Max. Compression	34	-0.19	0.00	0.00
			Max. Mx	18	0.00	-0.04	0.00
			Max. My	22	0.16	0.00	0.00
			Max. Vy	18	0.02	0.00	0.00
			Max. Vx	22	-0.00	0.00	0.00
T6	80 - 60	Leg	Max Tension	22	184.19	-2.18	-0.12
			Max. Compression	24	-207.56	2.14	0.13
			Max. Mx	32	179.64	-2.20	-0.14
			Max. My	20	-14.20	-0.03	-2.38
			Max. Vy	32	0.66	-2.20	-0.14
			Max. Vx	28	-0.76	-0.03	2.36
		Diagonal	Max Tension	34	17.43	0.00	0.00
			Max. Compression	34	-17.86	0.00	0.00
			Max. Mx	26	17.29	0.18	0.00
			Max. My	27	-2.69	0.00	0.00
			Max. Vy	26	-0.05	0.00	0.00
			Max. Vx	27	-0.00	0.00	0.00
		Horizontal	Max Tension	34	12.46	-0.09	-0.00
			Max. Compression	34	-12.47	-0.09	-0.00
			Max. Mx	22	-1.70	-0.13	-0.02
			Max. My	32	0.06	-0.12	-0.02
			Max. Vy	22	-0.05	-0.13	-0.02
			Max. Vx	32	0.00	-0.12	-0.02
		Inner Bracing	Max Tension	34	0.22	0.00	0.00
			Max. Compression	34	-0.22	0.00	0.00
			Max. Mx	18	0.00	-0.07	0.00
			Max. My	22	0.17	0.00	0.00
			Max. Vy	18	0.03	0.00	0.00
			Max. Vx	22	-0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
T7	60 - 40	Leg	Max Tension	22	219.54	-1.84	-0.08
			Max. Compression	24	-248.23	1.74	0.10
			Max. Mx	32	197.68	-2.20	-0.14
			Max. My	20	-14.94	-0.03	-2.38
			Max. Vy	32	-0.63	-2.20	-0.14
			Max. Vx	28	0.72	-0.03	2.36
		Diagonal	Max Tension	34	18.16	0.00	0.00
			Max. Compression	34	-18.75	0.00	0.00
			Max. Mx	26	18.00	0.25	0.00
			Max. My	27	-3.10	0.00	0.00
			Max. Vy	26	0.07	0.00	0.00
			Max. Vx	27	-0.00	0.00	0.00
		Horizontal	Max Tension	34	13.81	-0.12	-0.00
			Max. Compression	34	-13.75	-0.12	-0.00
			Max. Mx	22	-1.67	-0.15	-0.02
			Max. My	32	0.36	-0.14	-0.02
			Max. Vy	22	-0.06	-0.15	-0.02
			Max. Vx	32	0.00	-0.14	-0.02
		Inner Bracing	Max Tension	34	0.24	0.00	0.00
			Max. Compression	34	-0.24	0.00	0.00
			Max. Mx	18	-0.01	-0.13	0.00
			Max. My	22	0.18	0.00	0.00
			Max. Vy	18	0.05	0.00	0.00
			Max. Vx	22	-0.00	0.00	0.00
T8	40 - 30	Leg	Max Tension	22	236.66	-2.53	-0.01
			Max. Compression	24	-268.18	2.73	0.01
			Max. Mx	24	-268.18	2.73	0.01
			Max. My	20	-18.13	-0.05	-2.19
			Max. Vy	32	0.62	-2.51	-0.03
			Max. Vx	20	-0.72	-0.05	-2.19
		Diagonal	Max Tension	34	18.48	0.00	0.00
			Max. Compression	34	-19.12	0.00	0.00
			Max. Mx	26	18.30	0.28	0.00
			Max. My	27	-3.41	0.00	0.00
			Max. Vy	26	-0.07	0.00	0.00
			Max. Vx	27	-0.00	0.00	0.00
		Horizontal	Max Tension	34	14.40	-0.13	-0.00
			Max. Compression	34	-14.33	-0.13	-0.00
			Max. Mx	22	-1.83	-0.16	-0.02
			Max. My	32	0.60	-0.16	-0.02
			Max. Vy	22	-0.06	-0.16	-0.02
			Max. Vx	27	0.00	-0.16	-0.02
		Inner Bracing	Max Tension	34	0.25	0.00	0.00
			Max. Compression	34	-0.25	0.00	0.00
			Max. Mx	18	-0.01	-0.14	0.00
			Max. My	22	0.20	0.00	0.00
			Max. Vy	18	0.05	0.00	0.00
			Max. Vx	22	-0.00	0.00	0.00
T9	30 - 20	Leg	Max Tension	22	253.37	0.46	-0.32
			Max. Compression	24	-287.75	-1.60	0.38
			Max. Mx	24	-286.91	2.73	0.01
			Max. My	20	-20.51	-0.53	-5.54
			Max. Vy	30	0.94	2.70	-0.02
			Max. Vx	20	1.05	-0.53	-5.54
		Diagonal	Max Tension	34	18.63	0.00	0.00
			Max. Compression	34	-19.32	0.00	0.00
			Max. Mx	26	18.46	0.30	0.00
			Max. My	27	-3.41	0.00	0.00
			Max. Vy	26	-0.07	0.00	0.00
			Max. Vx	27	-0.00	0.00	0.00
		Top Girt	Max Tension	34	14.89	-0.14	-0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	34	-14.72	-0.14	-0.00
			Max. Mx	22	-1.08	-0.18	-0.02
			Max. My	32	1.38	-0.17	-0.02
			Max. Vy	22	-0.06	-0.18	-0.02
			Max. Vx	27	0.00	-0.18	-0.02
		Inner Bracing	Max Tension	34	0.25	0.00	0.00
			Max. Compression	34	-0.25	0.00	0.00
			Max. Mx	18	-0.01	-0.16	0.00
			Max. My	22	0.21	0.00	0.00
			Max. Vy	18	0.05	0.00	0.00
			Max. Vx	22	-0.00	0.00	0.00
T10	20 - 0	Leg	Max Tension	22	266.64	0.46	-0.31
			Max. Compression	24	-306.39	0.00	-0.00
			Max. Mx	24	-305.45	8.25	-0.45
			Max. My	20	-21.60	-0.53	-5.54
			Max. Vy	24	-1.48	8.25	-0.45
			Max. Vx	20	-1.48	-0.53	-5.54
		Diagonal	Max Tension	34	29.73	-0.20	0.02
			Max. Compression	34	-30.36	0.00	0.00
			Max. Mx	26	9.57	-0.31	0.08
			Max. My	26	-28.70	0.01	-0.22
			Max. Vy	26	0.07	-0.31	0.08
			Max. Vx	26	-0.02	0.00	0.00
		Horizontal	Max Tension	34	16.18	-0.25	-0.00
			Max. Compression	34	-16.45	-0.25	0.00
			Max. Mx	22	0.07	-0.39	-0.05
			Max. My	30	0.36	-0.12	0.05
			Max. Vy	22	0.11	-0.39	-0.05
			Max. Vx	30	-0.00	-0.12	0.05
		Redund Horz 1 Bracing	Max Tension	24	5.32	0.00	0.00
			Max. Compression	24	-5.32	0.00	0.00
			Max. Mx	18	0.40	0.02	0.00
			Max. Vy	18	-0.01	0.00	0.00
		Redund Diag 1 Bracing	Max Tension	24	4.86	0.00	0.00
			Max. Compression	24	-4.86	0.00	0.00
			Max. Mx	19	4.79	0.03	0.00
			Max. My	26	1.52	0.00	0.00
			Max. Vy	19	-0.01	0.00	0.00
			Max. Vx	26	-0.00	0.00	0.00
		Redund Hip 1 Bracing	Max Tension	1	0.00	0.00	0.00
			Max. Compression	22	-0.04	0.00	0.00
			Max. Mx	18	-0.01	0.02	0.00
			Max. Vy	18	-0.01	0.00	0.00
		Inner Bracing	Max Tension	34	0.28	0.00	0.00
			Max. Compression	34	-0.28	0.00	0.00
			Max. Mx	18	0.00	0.11	0.00
			Max. My	24	0.24	0.00	0.00
			Max. Vy	18	0.03	0.00	0.00
			Max. Vx	24	0.00	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Leg C	Max. Vert	30	336.74	39.27	-21.21
	Max. H_x	30	336.74	39.27	-21.21
	Max. H_z	21	-290.66	-34.78	20.19
	Min. Vert	22	-301.53	-36.75	19.76
	Min. H_x	22	-301.53	-36.75	19.76
	Min. H_z	29	325.86	37.39	-21.57
Leg B	Max. Vert	24	343.61	-38.08	-23.50
	Max. H_x	32	-294.66	35.36	21.94
	Max. H_z	33	-283.79	32.86	23.32
	Min. Vert	32	-294.66	35.36	21.94
	Min. H_x	24	343.61	-38.08	-23.50
	Min. H_z	25	332.73	-35.66	-24.76
Leg A	Max. Vert	19	339.75	2.58	44.66
	Max. H_x	32	180.18	7.44	23.24
	Max. H_z	19	339.75	2.58	44.66
	Min. Vert	27	-298.53	-2.58	-41.66
	Min. H_x	24	-138.96	-7.56	-19.92
	Min. H_z	27	-298.53	-2.58	-41.66

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	41.71	0.00	0.00	3.13	-35.03	0.00
Dead+Wind 0 deg - No Ice	41.71	0.00	-53.82	-5354.22	-35.16	74.67
Dead+Wind 30 deg - No Ice	41.71	26.91	-46.61	-4636.43	-2713.81	62.68
Dead+Wind 45 deg - No Ice	41.71	38.05	-38.05	-3785.12	-3823.27	49.99
Dead+Wind 60 deg - No Ice	41.71	46.61	-26.91	-2675.50	-4674.69	33.86
Dead+Wind 90 deg - No Ice	41.71	53.82	0.00	3.14	-5392.41	-4.04
Dead+Wind 120 deg - No Ice	41.71	46.61	26.91	2681.78	-4674.68	-40.82
Dead+Wind 135 deg - No Ice	41.71	38.05	38.05	3791.32	-3823.32	-55.63
Dead+Wind 150 deg - No Ice	41.71	26.91	46.60	4642.71	-2713.80	-66.66
Dead+Wind 180 deg - No Ice	41.71	-0.00	53.82	5360.50	-35.15	-74.67
Dead+Wind 210 deg - No Ice	41.71	-26.91	46.61	4642.79	2643.53	-62.68
Dead+Wind 225 deg - No Ice	41.71	-38.05	38.05	3791.41	3753.09	-49.98
Dead+Wind 240 deg - No Ice	41.71	-46.61	26.91	2681.86	4604.50	-33.86
Dead+Wind 270 deg - No Ice	41.71	-53.82	0.00	3.14	5322.27	4.04
Dead+Wind 300 deg - No Ice	41.71	-46.61	-26.91	-2675.56	4604.49	40.83
Dead+Wind 315 deg - No Ice	41.71	-38.05	-38.05	-3785.13	3753.11	55.61
Dead+Wind 330 deg - No Ice	41.71	-26.91	-46.61	-4636.51	2643.54	66.66
Dead+Ice	62.69	0.00	0.00	6.83	-94.90	0.00
Dead+Wind 0 deg+Ice	62.68	0.00	-75.44	-7642.55	-95.30	123.93
Dead+Wind 30 deg+Ice	62.68	37.72	-65.33	-6617.64	-3919.92	106.68
Dead+Wind 45 deg+Ice	62.68	53.34	-53.34	-5401.95	-5503.96	86.64
Dead+Wind 60 deg+Ice	62.68	65.33	-37.72	-3817.75	-6719.65	60.65
Dead+Wind 90 deg+Ice	62.68	75.44	0.00	6.87	-7744.39	-1.65
Dead+Wind 120 deg+Ice	62.68	65.33	37.72	3831.48	-6719.61	-63.32
Dead+Wind 135 deg+Ice	62.68	53.34	53.34	5415.70	-5504.02	-88.67
Dead+Wind 150 deg+Ice	62.68	37.72	65.33	6631.36	-3919.84	-108.02
Dead+Wind 180 deg+Ice	62.68	-0.00	75.44	7656.29	-95.28	-123.95
Dead+Wind 210 deg+Ice	62.68	-37.72	65.33	6631.56	3729.41	-106.68
Dead+Wind 225 deg+Ice	62.69	-53.34	53.34	5415.95	5313.69	-86.63
Dead+Wind 240 deg+Ice	62.68	-65.33	37.72	3831.70	6529.36	-60.64
Dead+Wind 270 deg+Ice	62.68	-75.44	0.00	6.89	7554.24	1.65
Dead+Wind 300 deg+Ice	62.68	-65.33	-37.72	-3817.91	6529.39	63.34
Dead+Wind 315 deg+Ice	62.68	-53.34	-53.34	-5402.19	5313.74	88.65

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 330 deg+Ice	62.68	-37.72	-65.33	-6617.79	3729.44	108.02
Dead+Wind 0 deg - Service	41.71	0.00	-16.61	-1650.38	-35.08	23.05
Dead+Wind 30 deg - Service	41.71	8.30	-14.38	-1428.88	-861.83	19.35
Dead+Wind 45 deg - Service	41.71	11.74	-11.74	-1166.09	-1204.29	15.43
Dead+Wind 60 deg - Service	41.71	14.38	-8.30	-823.61	-1467.08	10.45
Dead+Wind 90 deg - Service	41.71	16.61	0.00	3.14	-1688.58	-1.24
Dead+Wind 120 deg - Service	41.71	14.38	8.30	829.89	-1467.05	-12.60
Dead+Wind 135 deg - Service	41.71	11.74	11.74	1172.35	-1204.28	-17.18
Dead+Wind 150 deg - Service	41.71	8.30	14.38	1435.11	-861.83	-20.58
Dead+Wind 180 deg - Service	41.71	0.00	16.61	1656.67	-35.12	-23.05
Dead+Wind 210 deg - Service	41.71	-8.30	14.38	1435.13	791.77	-19.35
Dead+Wind 225 deg - Service	41.71	-11.74	11.74	1172.38	1134.19	-15.42
Dead+Wind 240 deg - Service	41.71	-14.38	8.30	829.95	1396.94	-10.45
Dead+Wind 270 deg - Service	41.71	-16.61	0.00	3.14	1618.43	1.24
Dead+Wind 300 deg - Service	41.71	-14.38	-8.30	-823.65	1396.92	12.60
Dead+Wind 315 deg - Service	41.71	-11.74	-11.74	-1166.08	1134.13	17.18
Dead+Wind 330 deg - Service	41.71	-8.30	-14.38	-1428.85	791.67	20.58

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-41.71	0.00	0.00	41.71	0.00	0.000%
2	0.00	-41.71	-53.82	-0.00	41.71	53.82	0.001%
3	26.91	-41.71	-46.61	-26.91	41.71	46.61	0.000%
4	38.05	-41.71	-38.05	-38.05	41.71	38.05	0.000%
5	46.61	-41.71	-26.91	-46.61	41.71	26.91	0.000%
6	53.82	-41.71	0.00	-53.82	41.71	-0.00	0.001%
7	46.61	-41.71	26.91	-46.61	41.71	-26.91	0.001%
8	38.05	-41.71	38.05	-38.05	41.71	-38.05	0.001%
9	26.91	-41.71	46.61	-26.91	41.71	-46.60	0.001%
10	0.00	-41.71	53.82	0.00	41.71	-53.82	0.001%
11	-26.91	-41.71	46.61	26.91	41.71	-46.61	0.000%
12	-38.05	-41.71	38.05	38.05	41.71	-38.05	0.000%
13	-46.61	-41.71	26.91	46.61	41.71	-26.91	0.001%
14	-53.82	-41.71	0.00	53.82	41.71	-0.00	0.001%
15	-46.61	-41.71	-26.91	46.61	41.71	26.91	0.000%
16	-38.05	-41.71	-38.05	38.05	41.71	38.05	0.003%
17	-26.91	-41.71	-46.61	26.91	41.71	46.61	0.001%
18	0.00	-62.69	0.00	-0.00	62.69	0.00	0.000%
19	0.00	-62.69	-75.44	-0.00	62.68	75.44	0.005%
20	37.72	-62.69	-65.33	-37.72	62.68	65.33	0.001%
21	53.34	-62.69	-53.34	-53.34	62.68	53.34	0.002%
22	65.33	-62.69	-37.72	-65.33	62.68	37.72	0.002%
23	75.44	-62.69	0.00	-75.44	62.68	-0.00	0.003%
24	65.33	-62.69	37.72	-65.33	62.68	-37.72	0.003%
25	53.34	-62.69	53.34	-53.34	62.68	-53.34	0.005%
26	37.72	-62.69	65.33	-37.72	62.68	-65.33	0.005%
27	0.00	-62.69	75.44	0.00	62.68	-75.44	0.003%
28	-37.72	-62.69	65.33	37.72	62.68	-65.33	0.001%
29	-53.34	-62.69	53.34	53.34	62.69	-53.34	0.001%
30	-65.33	-62.69	37.72	65.33	62.68	-37.72	0.002%
31	-75.44	-62.69	0.00	75.44	62.68	-0.00	0.003%
32	-65.33	-62.69	-37.72	65.33	62.68	37.72	0.002%
33	-53.34	-62.69	-53.34	53.34	62.68	53.34	0.005%
34	-37.72	-62.69	-65.33	37.72	62.68	65.33	0.005%
35	0.00	-41.71	-16.61	-0.00	41.71	16.61	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
36	8.30	-41.71	-14.38	-8.30	41.71	14.38	0.000%
37	11.74	-41.71	-11.74	-11.74	41.71	11.74	0.000%
38	14.38	-41.71	-8.30	-14.38	41.71	8.30	0.000%
39	16.61	-41.71	0.00	-16.61	41.71	-0.00	0.000%
40	14.38	-41.71	8.30	-14.38	41.71	-8.30	0.000%
41	11.74	-41.71	11.74	-11.74	41.71	-11.74	0.000%
42	8.30	-41.71	14.38	-8.30	41.71	-14.38	0.000%
43	0.00	-41.71	16.61	-0.00	41.71	-16.61	0.000%
44	-8.30	-41.71	14.38	8.30	41.71	-14.38	0.000%
45	-11.74	-41.71	11.74	11.74	41.71	-11.74	0.000%
46	-14.38	-41.71	8.30	14.38	41.71	-8.30	0.000%
47	-16.61	-41.71	0.00	16.61	41.71	-0.00	0.000%
48	-14.38	-41.71	-8.30	14.38	41.71	8.30	0.000%
49	-11.74	-41.71	-11.74	11.74	41.71	11.74	0.000%
50	-8.30	-41.71	-14.38	8.30	41.71	14.38	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	0.00000272
3	Yes	4	0.00000001	0.00000130
4	Yes	4	0.00000001	0.00000170
5	Yes	4	0.00000001	0.00000254
6	Yes	4	0.00000001	0.00000290
7	Yes	4	0.00000001	0.00000187
8	Yes	4	0.00000001	0.00000412
9	Yes	4	0.00000001	0.00000559
10	Yes	4	0.00000001	0.00000335
11	Yes	4	0.00000001	0.00000131
12	Yes	4	0.00000001	0.00000115
13	Yes	4	0.00000001	0.00000173
14	Yes	4	0.00000001	0.00000293
15	Yes	4	0.00000001	0.00000257
16	Yes	4	0.00021024	0.00000606
17	Yes	4	0.00000001	0.00000561
18	Yes	4	0.00000001	0.00000001
19	Yes	4	0.00042141	0.00000870
20	Yes	4	0.00000001	0.00000262
21	Yes	4	0.00000001	0.00000414
22	Yes	4	0.00016822	0.00000726
23	Yes	4	0.00036600	0.00000805
24	Yes	4	0.00021501	0.00000538
25	Yes	4	0.00052521	0.00001203
26	Yes	4	0.00061844	0.00001653
27	Yes	4	0.00030333	0.00001021
28	Yes	4	0.00000001	0.00000266
29	Yes	4	0.00000001	0.00000281
30	Yes	4	0.00021596	0.00000527
31	Yes	4	0.00038480	0.00000821
32	Yes	4	0.00017828	0.00000750
33	Yes	4	0.00052180	0.00001415
34	Yes	4	0.00063334	0.00001665
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
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	180 - 160	2.597	40	0.1131	0.0252
T2	160 - 140	2.114	39	0.1108	0.0217
T3	140 - 120	1.639	39	0.1004	0.0223
T4	120 - 100	1.213	39	0.0890	0.0228
T5	100 - 80	0.852	39	0.0736	0.0204
T6	80 - 60	0.554	39	0.0586	0.0164
T7	60 - 40	0.319	39	0.0442	0.0123
T8	40 - 30	0.149	39	0.0286	0.0084
T9	30 - 20	0.088	47	0.0205	0.0064
T10	20 - 0	0.044	47	0.0123	0.0043

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
180.00	Standoff	40	2.597	0.1131	0.0252	Inf
177.00	PA6-85	39	2.524	0.1131	0.0243	Inf
175.00	AP11-850	39	2.476	0.1130	0.0240	Inf
170.00	PAR6-105	39	2.355	0.1127	0.0231	Inf
169.00	P6-F9	39	2.331	0.1126	0.0229	Inf
167.00	3' Yagi	39	2.283	0.1124	0.0226	Inf
165.00	AP11-850	39	2.235	0.1120	0.0221	938229
160.00	OGT9-806	39	2.114	0.1108	0.0217	562770
155.00	Pirod 15' T-Frame Sector Mount (1)	39	1.993	0.1087	0.0215	255662
132.00	(3) ALP110-11	39	1.461	0.0960	0.0231	78798
125.00	DR65-18-XXDPL2Q	39	1.314	0.0921	0.0231	72805
60.00	GPS	39	0.319	0.0442	0.0123	73352

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 160	12.072	23	0.5269	0.1766
T2	160 - 140	9.809	23	0.5176	0.1560
T3	140 - 120	7.592	23	0.4676	0.1411
T4	120 - 100	5.608	23	0.4132	0.1341
T5	100 - 80	3.934	23	0.3410	0.1166
T6	80 - 60	2.552	23	0.2711	0.0919
T7	60 - 40	1.466	23	0.2040	0.0680
T8	40 - 30	0.682	23	0.1320	0.0460
T9	30 - 20	0.401	32	0.0947	0.0346
T10	20 - 0	0.197	32	0.0569	0.0235

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
180.00	Standoff	23	12.072	0.5269	0.1766	Inf
177.00	PA6-85	23	11.733	0.5271	0.1730	Inf
175.00	AP11-850	23	11.506	0.5272	0.1705	Inf
170.00	PAR6-105	23	10.941	0.5263	0.1652	Inf
169.00	P6-F9	23	10.827	0.5260	0.1644	961153
167.00	3' Yagi	23	10.601	0.5249	0.1629	813286
165.00	AP11-850	23	10.375	0.5235	0.1612	704846
160.00	OGT9-806	23	9.809	0.5176	0.1560	250806
155.00	Pirod 15' T-Frame Sector Mount (1)	23	9.244	0.5080	0.1518	65424
132.00	(3) ALP110-11	23	6.763	0.4466	0.1401	16447
125.00	DR65-18-XXDPL2Q	23	6.076	0.4279	0.1372	15420
60.00	GPS	23	1.466	0.2040	0.0680	15736

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	180 - 160	ROHN 3 STD	20.00	6.67	68.8 K=1.00	21.168	2.2285	-7.99	47.17	0.169 ✓
T2	160 - 140	ROHN 4 STD	20.04	6.68	53.1 K=1.00	23.861	3.1741	-40.76	75.74	0.538 ✓
T3	140 - 120	ROHN 5 EH	20.04	6.68	43.6 K=1.00	25.320	6.1120	-82.31	154.75	0.532 ✓
T4	120 - 100	ROHN 6 EHS	20.04	10.02	54.0 K=1.00	23.709	6.7133	-121.33	159.16	0.762 ✓
T5	100 - 80	ROHN 6 EH	20.05	10.03	54.8 K=1.00	23.582	8.4049	-165.86	198.21	0.837 ✓
T6	80 - 60	ROHN 8 EHS	20.05	10.03	41.2 K=1.00	25.661	9.7193	-207.56	249.41	0.832 ✓

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T7	60 - 40	ROHN 8 EHS	20.05	10.03	41.2 K=1.00	25.661	9.7193	-248.23	249.41	0.995 ✓
T8	40 - 30	ROHN 8 EHS	10.03	10.03	41.2 K=1.00	25.661	9.7193	-268.18	249.41	1.075 ✓
T9	30 - 20	ROHN 8 EHS	10.03	10.03	41.2 K=1.00	25.661	9.7193	-287.75	249.41	1.154 ✓
T10	20 - 0	ROHN 8 EH	20.05	10.03	41.8 K=1.00	25.576	12.7627	-306.39	326.43	0.939 ✓

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	180 - 160	ROHN 2 STD	7.94	7.67	117.0 K=1.00	10.918	1.0745	-8.35	11.73	0.711 ✓
T2	160 - 140	ROHN 2 STD	8.34	8.04	122.6 K=1.00	9.938	1.0745	-11.08	10.68	1.038 ✓
T3	140 - 120	ROHN 2 EH	9.24	8.91	139.4 K=1.00	7.681	1.4773	-12.75	11.35	1.124 ✓
T4	120 - 100	ROHN 2.5 EH	12.52	12.06	156.6 K=1.00	6.090	2.2535	-16.89	13.72	1.230 ✓
T5	100 - 80	ROHN 3 STD	13.32	12.90	133.0 K=1.00	8.438	2.2285	-16.95	18.80	0.901 ✓
T6	80 - 60	ROHN 3 STD	14.19	13.68	141.1 K=1.00	7.504	2.2285	-17.86	16.72	1.068 ✓
T7	60 - 40	P3.5x.226	15.11	14.63	131.3 K=1.00	8.656	2.6795	-18.75	23.20	0.808 ✓
T8	40 - 30	P3.5x.226	15.59	15.12	135.8 K=1.00	8.103	2.6795	-19.12	21.71	0.880 ✓
T9	30 - 20	P3.5x.226	16.08	15.62	140.2 K=1.00	7.592	2.6795	-19.32	20.34	0.950 ✓
T10	20 - 0	P3.5x.226	24.33	12.17	109.2 K=1.00	12.519	2.6795	-30.36	33.55	0.905 ✓

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	180 - 160	ROHN 1.5 STD	8.60	4.15	80.0 K=1.00	19.004	0.7995	-4.47	15.19	0.294 ✓
T2	160 - 140	ROHN 1.5 STD	10.01	4.82	92.9 K=1.00	16.309	0.7995	-6.49	13.04	0.498 ✓
T3	140 - 120	ROHN 2 STD	12.10	5.82	88.7 K=1.00	17.220	1.0745	-8.74	18.50	0.472 ✓
T4	120 - 100	ROHN 2 STD	13.92	6.68	101.9	14.269	1.0745	-10.06	15.33	0.656

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 $\frac{P}{P_a}$
T5	100 - 80	ROHN 2 STD	16.31	7.88	120.1 K=1.00	10.352	1.0745	-11.07	11.12	0.995 ✓
T6	80 - 60	ROHN 2.5 STD	18.84	9.06	114.8 K=1.00	11.336	1.7040	-12.47	19.32	0.646 ✓
T7	60 - 40	ROHN 2.5 STD	21.38	10.33	130.8 K=1.00	8.725	1.7040	-13.75	14.87	0.925 ✓
T8	40 - 30	ROHN 2.5 STD	22.64	10.96	138.8 K=1.00	7.746	1.7040	-14.33	13.20	1.086 ✓
T10	20 - 0	P3.5x.226	25.18	12.23	109.8 K=1.00	12.390	2.6795	-16.45	33.20	0.496 ✓

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	180 - 160	ROHN 1.5 STD	8.54	4.13	79.5 K=1.00	19.110	0.7995	-0.82	15.28	0.053 ✓
T9	30 - 20	ROHN 2.5 STD	23.91	11.60	146.9 K=1.00	6.923	1.7040	-14.72	11.80	1.248 ✓

Redundant Horizontal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T10	20 - 0	ROHN 1.5 STD	6.29	5.93	91.5 K=0.80	16.611	0.7995	-5.32	13.28	0.400 ✓

Redundant Diagonal (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T10	20 - 0	ROHN 1.5 STD	11.50	10.77	166.1 K=0.80	5.412	0.7995	-4.86	4.33	1.123 ✓

Redundant Hip (1) Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T10	20 - 0	ROHN 1.5 STD	6.29	6.29	97.1 K=0.80	15.381	0.7995	-0.04	12.30	0.003 ✓

Inner Bracing Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	180 - 160	L2x2x1/8	4.30	4.30	129.8 K=1.00	8.869	0.4844	-0.08	4.30	0.018 ✓
T2	160 - 140	L2x2x1/8	5.01	5.01	151.1 K=1.00	6.537	0.4844	-0.11	3.17	0.036 ✓
T3	140 - 120	L2x2x1/8	6.05	6.05	182.6 K=1.00	4.479	0.4844	-0.15	2.17	0.070 ✓
T4	120 - 100	L2 1/2x2 1/2x3/16	6.96	6.96	168.7 K=1.00	5.248	0.9020	-0.17	4.73	0.037 ✓
T5	100 - 80	L2 1/2x2 1/2x3/16	8.15	8.15	197.7 K=1.00	3.821	0.9020	-0.19	3.45	0.056 ✓
T6	80 - 60	L3x3x3/16	9.42	9.42	189.7 K=1.00	4.150	1.0900	-0.22	4.52	0.048 ✓
T7	60 - 40	L3 1/2x3 1/2x1/4	10.69	10.69	184.8 K=1.00	4.372	1.6900	-0.24	7.39	0.032 ✓
T8	40 - 30	L3 1/2x3 1/2x1/4	11.32	11.32	195.8 K=1.00	3.897	1.6900	-0.25	6.59	0.038 ✓
T9	30 - 20	L3 1/2x3 1/2x1/4	11.96	11.96	206.7 K=1.00	3.495	1.6900	-0.25	5.91	0.043 ✓
T10	20 - 0	ROHN 2 STD	12.59	12.59	191.9 K=1.00	4.054	1.0745	-0.28	4.36	0.065 ✓

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	180 - 160	ROHN 3 STD	20.00	6.67	68.8	30.000	2.2285	6.32	66.85	0.095 ✓
T2	160 - 140	ROHN 4 STD	20.04	6.68	53.1	30.000	3.1741	34.87	95.22	0.366 ✓
T3	140 - 120	ROHN 5 EH	20.04	6.68	43.6	30.000	6.1120	71.60	183.36	0.391 ✓
T4	120 - 100	ROHN 6 EHS	20.04	10.02	54.0	30.000	6.7133	107.25	201.40	0.533 ✓
T5	100 - 80	ROHN 6 EH	20.05	10.03	54.8	30.000	8.4049	147.39	252.15	0.585 ✓

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 $\frac{P}{P_a}$
T6	80 - 60	ROHN 8 EHS	20.05	10.03	41.2	30.000	9.7193	184.19	291.58	0.632
T7	60 - 40	ROHN 8 EHS	20.05	10.03	41.2	30.000	9.7193	219.54	291.58	0.753
T8	40 - 30	ROHN 8 EHS	10.03	10.03	41.2	30.000	9.7193	236.66	291.58	0.812
T9	30 - 20	ROHN 8 EHS	10.03	10.03	41.2	30.000	9.7193	253.37	291.58	0.869
T10	20 - 0	ROHN 8 EH	20.05	10.03	41.8	30.000	12.7627	266.64	382.88	0.696

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	180 - 160	ROHN 2 STD	7.94	7.67	117.0	30.000	1.0745	8.25	32.24	0.256
T2	160 - 140	ROHN 2 STD	8.34	8.04	122.6	30.000	1.0745	10.97	32.24	0.340
T3	140 - 120	ROHN 2 EH	9.24	8.91	139.4	30.000	1.4773	12.58	44.32	0.284
T4	120 - 100	ROHN 2.5 EH	12.52	12.06	156.6	30.000	2.2535	16.62	67.61	0.246
T5	100 - 80	ROHN 3 STD	13.32	12.90	133.0	30.000	2.2285	16.63	66.85	0.249
T6	80 - 60	ROHN 3 STD	14.19	13.68	141.1	30.000	2.2285	17.43	66.85	0.261
T7	60 - 40	P3.5x.226	15.11	14.63	131.3	30.000	2.6795	18.16	80.39	0.226
T8	40 - 30	P3.5x.226	15.59	15.12	135.8	30.000	2.6795	18.48	80.39	0.230
T9	30 - 20	P3.5x.226	16.08	15.62	140.2	30.000	2.6795	18.63	80.39	0.232
T10	20 - 0	P3.5x.226	24.33	12.17	109.2	30.000	2.6795	29.73	80.39	0.370

Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	180 - 160	ROHN 1.5 STD	8.60	4.15	80.0	30.000	0.7995	4.52	23.98	0.189
T2	160 - 140	ROHN 1.5 STD	9.32	4.47	86.2	30.000	0.7995	6.59	23.98	0.275

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T3	140 - 120	ROHN 2 STD	12.10	5.82	88.7	30.000	1.0745	8.76	32.24	0.272 ✓
T4	120 - 100	ROHN 2 STD	13.92	6.68	101.9	30.000	1.0745	10.01	32.24	0.310 ✓
T5	100 - 80	ROHN 2 STD	16.31	7.88	120.1	30.000	1.0745	11.02	32.24	0.342 ✓
T6	80 - 60	ROHN 2.5 STD	18.84	9.06	114.8	30.000	1.7040	12.46	51.12	0.244 ✓
T7	60 - 40	ROHN 2.5 STD	21.38	10.33	130.8	30.000	1.7040	13.81	51.12	0.270 ✓
T8	40 - 30	ROHN 2.5 STD	22.64	10.96	138.8	30.000	1.7040	14.40	51.12	0.282 ✓
T10	20 - 0	P3.5x.226	25.18	12.23	109.8	30.000	2.6795	16.18	80.39	0.201 ✓

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	180 - 160	ROHN 1.5 STD	8.54	4.13	79.5	30.000	0.7995	0.82	23.98	0.034 ✓
T9	30 - 20	ROHN 2.5 STD	23.91	11.60	146.9	21.600	1.7040	14.89	36.81	0.405 ✓

Redundant Horizontal (1) 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 $\frac{P}{P_a}$
T10	20 - 0	ROHN 1.5 STD	6.29	5.93	114.4	30.000	0.7995	5.32	23.98	0.222 ✓

Redundant Diagonal (1) 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 $\frac{P}{P_a}$
T10	20 - 0	ROHN 1.5 STD	11.50	10.77	207.6	30.000	0.7995	4.86	23.98	0.203 ✓

Inner Bracing 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	180 - 160	L2x2x1/8	4.30	4.30	82.4	21.600	0.4844	0.08	10.46	0.007 ✓
T2	160 - 140	L2x2x1/8	4.66	4.66	89.3	21.600	0.4844	0.11	10.46	0.011 ✓
T3	140 - 120	L2x2x1/8	6.05	6.05	115.9	21.600	0.4844	0.15	10.46	0.014 ✓
T4	120 - 100	L2 1/2x2 1/2x3/16	6.96	6.96	107.3	21.600	0.9020	0.17	19.48	0.009 ✓
T5	100 - 80	L2 1/2x2 1/2x3/16	8.15	8.15	125.8	21.600	0.9020	0.19	19.48	0.010 ✓
T6	80 - 60	L3x3x3/16	9.42	9.42	120.4	21.600	1.0900	0.22	23.54	0.009 ✓
T7	60 - 40	L3 1/2x3 1/2x1/4	10.69	10.69	117.7	30.000	1.6900	0.24	50.70	0.005 ✓
T8	40 - 30	L3 1/2x3 1/2x1/4	11.32	11.32	124.6	30.000	1.6900	0.25	50.70	0.005 ✓
T9	30 - 20	L3 1/2x3 1/2x1/4	11.96	11.96	131.6	30.000	1.6900	0.25	50.70	0.005 ✓
T10	20 - 0	ROHN 2 STD	12.59	12.59	191.9	30.000	1.0745	0.28	32.24	0.009 ✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
T1	180 - 160	Leg	ROHN 3 STD	1	-7.99	62.88	12.7	Pass
		Diagonal	ROHN 2 STD	9	-8.35	15.64	53.4	Pass
		Horizontal	ROHN 1.5 STD	7	-4.47	20.25	22.1	Pass
		Top Girt	ROHN 1.5 STD	6	-0.82	20.37	4.0	Pass
		Inner Bracing	L2x2x1/8	16	-0.08	5.73	1.4	Pass
T2	160 - 140	Leg	ROHN 4 STD	41	-40.76	100.96	40.4	Pass
		Diagonal	ROHN 2 STD	56	-11.08	14.23	77.8	Pass
		Horizontal	ROHN 1.5 STD	43	-6.49	17.38	37.4	Pass
		Inner Bracing	L2x2x1/8	52	-0.11	4.22	2.7	Pass
T3	140 - 120	Leg	ROHN 5 EH	80	-82.31	206.29	39.9	Pass
		Diagonal	ROHN 2 EH	83	-12.75	15.13	84.3	Pass
		Horizontal	ROHN 2 STD	82	-8.74	24.67	35.4	Pass
		Inner Bracing	L2x2x1/8	91	-0.15	2.89	5.2	Pass
T4	120 - 100	Leg	ROHN 6 EHS	119	-121.33	212.17	57.2	Pass
		Diagonal	ROHN 2.5 EH	126	-16.89	18.30	92.3	Pass
		Horizontal	ROHN 2 STD	124	-10.06	20.44	49.2	Pass
		Inner Bracing	L2 1/2x2 1/2x3/16	130	-0.17	6.31	2.8	Pass
T5	100 - 80	Leg	ROHN 6 EH	146	-165.86	264.21	62.8	Pass
		Diagonal	ROHN 3 STD	153	-16.95	25.07	67.6	Pass
		Horizontal	ROHN 2 STD	151	-11.07	14.83	74.7	Pass
		Inner Bracing	L2 1/2x2 1/2x3/16	157	-0.19	4.59	4.2	Pass
T6	80 - 60	Leg	ROHN 8 EHS	173	-207.56	332.46	62.4	Pass
		Diagonal	ROHN 3 STD	180	-17.86	22.29	80.1	Pass
		Horizontal	ROHN 2.5 STD	178	-12.47	25.75	48.4	Pass
		Inner Bracing	L3x3x3/16	185	-0.22	6.03	3.6	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	SF*P_{allow} K	% Capacity	Pass Fail
T7	60 - 40	Leg	ROHN 8 EHS	200	-248.23	332.46	74.7	Pass
		Diagonal	P3.5x.226	207	-18.75	30.92	60.6	Pass
		Horizontal	ROHN 2.5 STD	205	-13.75	19.82	69.4	Pass
		Inner Bracing	L3 1/2x3 1/2x1/4	211	-0.24	9.85	2.4	Pass
T8	40 - 30	Leg	ROHN 8 EHS	227	-268.18	332.46	80.7	Pass
		Diagonal	P3.5x.226	234	-19.12	28.94	66.0	Pass
		Horizontal	ROHN 2.5 STD	232	-14.33	17.60	81.4	Pass
		Inner Bracing	L3 1/2x3 1/2x1/4	238	-0.25	8.78	2.8	Pass
T9	30 - 20	Leg	ROHN 8 EHS	242	-287.75	332.46	86.5	Pass
		Diagonal	P3.5x.226	250	-19.32	27.12	71.2	Pass
		Top Girt	ROHN 2.5 STD	245	-14.72	15.73	93.6	Pass
		Inner Bracing	L3 1/2x3 1/2x1/4	254	-0.25	7.87	3.2	Pass
T10	20 - 0	Leg	ROHN 8 EH	257	-306.39	435.13	70.4	Pass
		Diagonal	P3.5x.226	270	-30.36	44.72	67.9	Pass
		Horizontal	P3.5x.226	266	-16.45	44.25	37.2	Pass
		Redund Horz 1 Bracing	ROHN 1.5 STD	264	-5.32	17.70	30.0	Pass
		Redund Diag 1 Bracing	ROHN 1.5 STD	265	-4.86	5.77	84.2	Pass
		Redund Hip 1 Bracing	ROHN 1.5 STD	282	-0.04	16.39	0.2	Pass
		Inner Bracing	ROHN 2 STD	283	-0.28	5.81	4.9	Pass
							Summary	
						Leg (T9)	86.5	Pass
						Diagonal (T4)	92.3	Pass
						Horizontal (T8)	81.4	Pass
						Top Girt (T9)	93.6	Pass
						Redund Horz 1 Bracing (T10)	30.0	Pass
						Redund Diag 1 Bracing (T10)	84.2	Pass
						Redund Hip 1 Bracing (T10)	0.2	Pass
						Inner Bracing (T3)	5.2	Pass
						RATING =	**93.6**	**Pass**

ANCHOR BOLT EVALUATION

URS

Job	180' Rohn SSMW Tower - Westport, CT	Project No.	VZ5-040	Page	of
Description	Anchor Bolt Analysis	Computed by	KAB	Sheet 1	of 3
		Checked by		Date 05/05/10	
				Date	

ANCHOR BOLT ANALYSIS

Input Data

Max Pier Reactions:

Uplift:	Uplift := 302·kips	*user input*
Shear:	Shear := 45·kips	*user input*
Compression:	Compression := 344·kips	*user input*

Anchor Bolt Data:

Use ASTM A354 Gr. BC

Number of Anchor Bolts = N	N := 10	*user input*	
Bolt Ultimate Strength:	F_u := 125·ksi	*user input*	
Bolt Yield Strength:	Fy := 109·ksi	*user input*	
Bolt Modulus:	E := 29000·ksi	*user input*	
Thickness of Anchor Bolts	D := 1.0in	*user input*	
Threads per Inch:	n := 8	*user input*	
Coefficient of Friction:	μ := 0.55	*user input*	(for baseplate with grout ASCE 10-97)

Anchor Bolt Area:

Gross Area of Bolt:

$$A_g := \frac{\pi}{4}\cdot D^2 \qquad A_g = 0.785\cdot in^2$$

Net Area of Bolt:

$$A_n := \frac{\pi}{4}\cdot\left(D - \frac{0.9743\cdot in}{n}\right)^2 \qquad A_n = 0.606\cdot in^2$$

Check Tensile Forces:

Maximum Tensile Force (Gross Area):

$$AllowableTension := 1.333\cdot\left(0.33\cdot A_g\cdot F_u\right) \qquad AllowableTension = 43.2\cdot kips$$

Note: 1.333 increase allowed per TIA/EIA

Maximum Tensile Force (Net Area):

$$F_{net.area} := 1.333\cdot\left(0.60\cdot A_n\cdot Fy\right) \qquad F_{net.area} = 52.8\cdot kips$$

Note: 1.333 increase allowed per TIA/EIA

Applied Tension:

$$MaxTension := \frac{Uplift}{N} \qquad MaxTension = 30.2\cdot kips$$

Check Stresses:

$$\frac{MaxTension}{F_{net.area}} = 0.57$$

$$Condition1 := if\left(\frac{MaxTension}{F_{net.area}} \le 1.00, "OK", "Overstressed"\right)$$

Condition1 = "OK"

URS

Job	180' Rohn SSMW Tower - Westport, CT	Project No.	VZ5-040	Page	of
Description	Anchor Bolt Analysis	Computed by	KAB	Sheet 3	of 3
		Checked by		Date 05/05/10	
				Date	

Check Anchor Bolt Area:

Based on the ASCE 10-97 Design of Latticed Steel Transmission Structures

Required Area:

$$A_{s1} := \frac{Uplift}{Fy} + \frac{Shear}{\mu \cdot 0.85 \cdot Fy} \qquad A_{s1} = 3.7 \cdot in^2$$

$$A_{s2} := \left| \frac{Shear - (0.3 \cdot Compression)}{\mu \cdot 0.85 \cdot Fy} \right| \qquad A_{s2} = 1.1 \cdot in^2$$

Provided Area:

$$A_{sprovided} := A_n \cdot N \qquad A_{sprovided} = 6.1 \cdot in^2$$

$$Condition2 := if\left(\frac{A_{s1}}{A_{sprovided}} \le 1.00, "OK", "Overstressed" \right) \qquad \frac{A_{s1}}{A_{sprovided}} = 0.60$$

Condition2 = "OK"

$$Condition3 := if\left(\frac{A_{s2}}{A_{sprovided}} \le 1.00, "OK", "Overstressed" \right) \qquad \frac{A_{s2}}{A_{sprovided}} = 0.19$$

Condition3 = "OK"

FOUNDATION ANALYSIS
(PERFORMED BY DR. CLARENCE WELTI, P.E., P.C.)

DR. CLARENCE WELTI, P.E., P.C.

GEOTECHNICAL ENGINEERING

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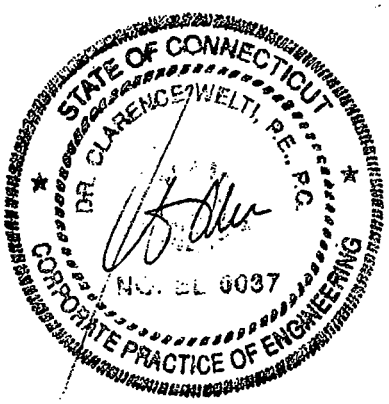


October 10, 2002

Mr. Mohsen Sahirad
URS Corporation
500 Enterprise Drive; Suite 3B
Rocky Hill, CT 06067

Re: Telecommunications Tower; 880 Post Road; Westport, CT ; Evaluation of Existing Foundation for Increased Design Loads

Dear Mohsen:

1.0 Herewith are boring data pertaining to the above. Two borings were drilled to a maximum depth of 12 feet. One boring was drilled 10 feet into bedrock and the second boring was drilled to the top of bedrock. The two borings are shown on the attached photo. Boring B-1 was about 11 feet from the tower leg and boring B-2 was about 15 feet from the tower leg. Considering that the rock outcrops at the third leg, the two borings define rock sufficiently to permit a reasonable interpolation of rock at the actual leg foundations. The former police station site is undergoing environmental remediation. *The borings were drilled by Clarence Welti Associates, Inc. and sampling was conducted by this firm solely to obtain indications of subsurface conditions as part of a geotechnical exploration program. No services were performed to evaluate subsurface environmental conditions.*

2.0 The purpose of this study is to assess the capability of tower legs to receive the proposed revised loadings. The load summary, including initial and revised design loadings is as follows:

Loading Type	Original Reaction	Revised Reactions
Uplift	276.7 kips	324 kips
Download	319.9 kips	374 kips
Shear	41.0 kips	48 kips

3.0 The initial boring data (1990 data from Test Craig Laboratories) indicated bedrock over the entire site. It is understood that there is information indicating that two of the legs were placed in earth instead of rock. The recent boring tends to belie this. The analyses for uplift (which is the only critical item on the above reaction schedule) have been done for both earth and rock. The reference for both analyses is FHWA-1F-025 Publication "Drilled Shafts: Construction Procedures and Design Methods".

3.0.1 The tower legs were each placed on 4.5 feet diameter shafts installed 27 feet deep into either earth or rock. The design uplift was and is based on an effective length of 21 feet.

3.1 Regarding the shaft in earth analysis there were no deep blow counts in the borings, since rock was encountered within 2 feet of grade. It is however reasonable to assume the N value (blows per 12" on split spoon) will be about 60 in the till overlying rock. Using the procedure indicated on the attached calculations the ultimate uplift capacity would be 831 kips. Design capacity would be ½ of this value or 415 kips. In reviewing the reference you cited (Foundation Engineering by Das, 4th edition) a similar ultimate load capacity can also be found if one assumes an angle of internal friction of about 40° (which would be typical for N = 60) and a δ/ϕ ratio of 1.0 (relative density of soil ≥ 85+%).

3.2 Regarding the shaft in rock the friction is defined in the attached calculations. The ultimate uplift of the shaft placed the Straits Schist rock formation would be about 10 kips/sf. With a factor of safety of 3 (using 3 kips/sf) the allowable loading would be 888 kips.

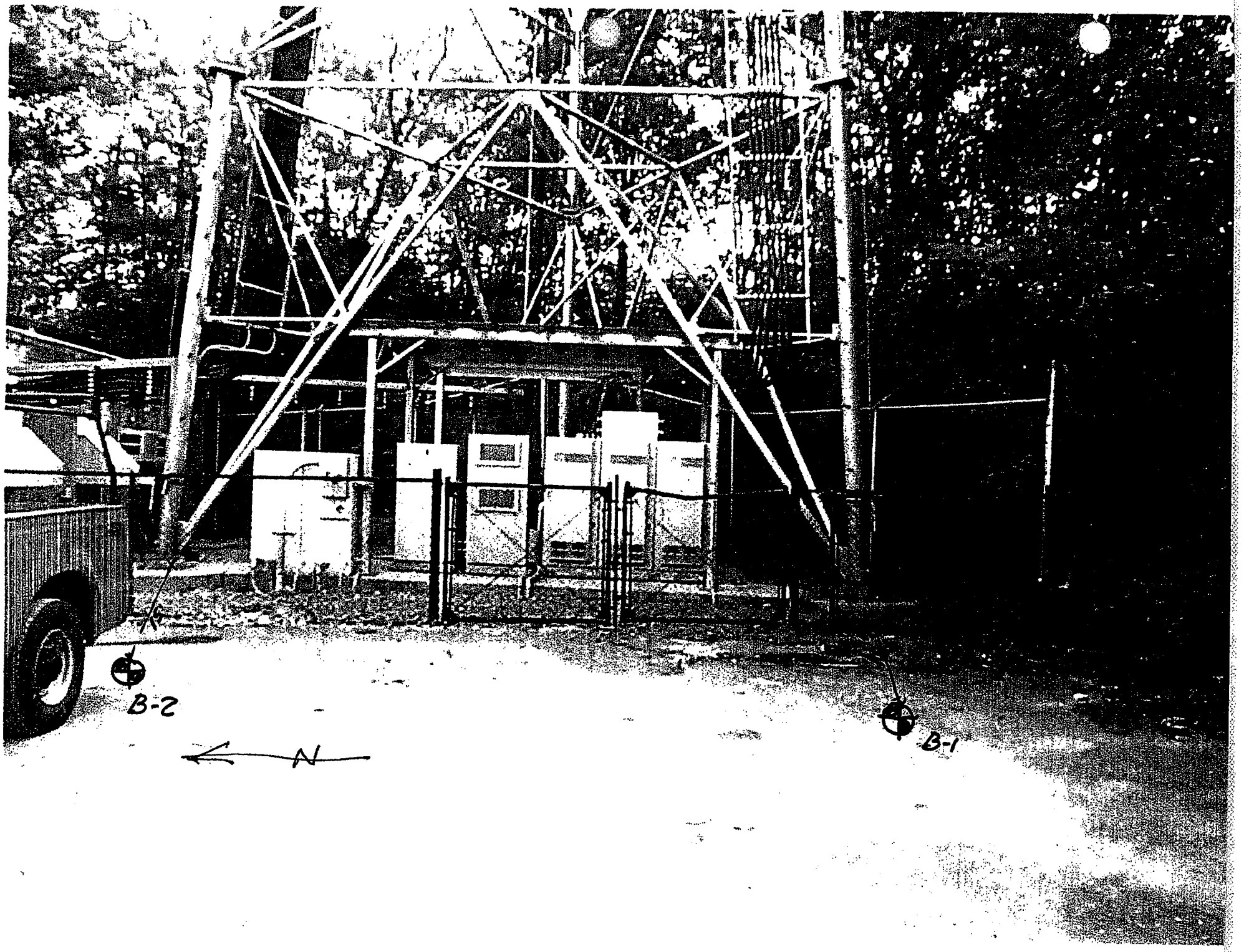
4.0 In summary it is believed that the shafts are in rock. The rock is a Schist with steep foliation and may have been drilled with only moderate effort. If the actual shaft are in earth there would have to have been a deep depression between the rock outcrop (which was cut down about 5 feet at the east leg) and the boring locations west of the two west legs, which indicated rock at 2 feet below grade similar to the original borings on the site. If there was a depression in the rock, the soil would be glacial till similar to what is being excavated to the northwest of the site at the old State Police Station. The analyses included herewith indicate that with either rock or till overburden the shafts have adequate capacity for the revised loading.

If you have any questions, please call me.

Very truly yours.

Clarence Welti, PhD, P. E.
Pres. Dr. Clarence Welti, P. E., P.C.

A:\urstoweranalysis9/04/02


B-2
B-1
N

CLARENCE WELTI ASSOC., INC. P.O. BOX 397 GLASTONBURY, CONN 06033	CLIENT URS CORPORATION	PROJECT NAME CELL TOWER SITE LOCATION 880 POST ROAD WESTPORT, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	NX
SIZE I.D.	3.75"		1.5"	2.0"
HAMMER WT.			140lbs	
HAMMER FALL			30"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV.

HOLE NO. **B-1**

GROUND WATER OBSERVATIONS
AT 2.0 FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 10/7/02
FINISH DATE 10/7/02

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0	1	4-13-20-60	0.00'-1.50'		ASPHALT .10 BR. FINE-CRS. SAND AND FINE GRAVEL - FILL .80 GRAY ROCK FRAGMENTS, LITTLE SILT AND FINE SAND 1.5 GRAY ROCK FRAGMENTS 2.0 CORED ROCK - RUN #1 2.0' - 7.0' RECOVERED 50" RUN #2 7.0' - 12.0' RECOVERED 60"	
5						
10						
15						
20						
25						
30						
35					BOTTOM OF BORING @ 12.0' 12.0 NOTE: BORING WAS DRILLED 11.0' WEST OF TOWER LEG	

LEGEND: COL. A:

SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON

PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: BROMLEY
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **B-1**

CLARENCE WELTI ASSOC., INC. P.O. BOX 397 GLASTONBURY, CONN 06033	CLIENT URS CORPORATION	PROJECT NAME CELL TOWER SITE LOCATION 880 POST ROAD WESTPORT, CT

	AUGER	CASING	SAMPLER	CORE BAR.
TYPE	HSA		SS	
SIZE I.D.	3.75"		1.5"	
HAMMER WT.			140lbs	
HAMMER FALL			30"	

OFFSET
LINE & STA.
N. COORDINATE
E. COORDINATE

SURFACE ELEV.

HOLE NO. **B-2**

GROUND WATER OBSERVATIONS
AT none FT. AFTER 0 HOURS
AT FT. AFTER HOURS

START DATE 10/7/02
FINISH DATE 10/7/02

DEPTH	SAMPLE NO.	SAMPLE BLOWS/6"	SAMPLE DEPTH	A	STRATUM DESCRIPTION + REMARKS	ELEV.
0	1	1-8-12-60	0.00'-1.50'		DARK BR. FINE-CRS. SAND, SOME FINE-MED. GRAVEL, TRACE SILT - FILL (1.0)	
					BR./GRAY ROCK FRAGMENTS, SILT AND FINE SAND (1.5)	
					GRAY ROCK FRAGMENTS (2.0)	
					AUGER REFUSAL @ 2.0'	
					NOTE: BORING WAS DRILLED 15'WEST OF TOWER LEG	
5						
10						
15						
20						
25						
30						
35						

LEGEND: COL. A:
SAMPLE TYPE: D=DRY A=AUGER C=CORE U=UNDISTURBED PISTON S=SPLIT SPOON
PROPORTIONS USED: TRACE=0-10% LITTLE=10-20% SOME=20-35% AND=35-50%

DRILLER: BROMLEY
INSPECTOR:

SHEET 1 OF 1 | HOLE NO. **B-2**

DR. CLARENCE WELTI, PE, PC
P.O. BOX 397
GLASTONBURY, CONNECTICUT 06033 • (860) 633-4623

CLIENT URS
PROJECT Communication Tower Neal Post
SUBJECT Assessment of Capacity
BY CW DATE 10/ /02 SHEET NO.

CWA

Reference: Drilled Shafts Construction Procedures & Design Methods PUBLICATION NO FHWA-IF-99-025

Material: "Intermediate Geo-material" N > 50 B/12"
(IGM)

(1) $f_{max} = \sigma_{v1} K_{oi} \tan \phi_i'$

σ_{v1} = Vertical effective stress at mid-height of layer 1 ≈ 1.8 ksf

K_{oi} = design value of earth pressure coefficient at rest

ϕ_i = design value of angle of friction for the layer i

(2) $\phi_1 = \tan^{-1}\left[\left(\frac{N_{60}\ (\text{LAYER 1})}{12.3 + 20.3 \times \frac{\sigma_{v1}}{p_a}}\right)^{0.34}\right]$ p_a 2 ksf ≈ 14.7 psi

N_{60} (LAYER 1) = 60

$= \tan^{-1}\left[\left(\frac{60}{12.3 + 20.3 \times \frac{1.8}{2}}\right)^{.34}\right] = \tan^{-1}(1.96)^{.34} = 51.5°$

(3) $K_{oi} = (1 - \sin \phi_1')\left[\frac{0.2\, p_a\, N_{60}\ (\text{layer 1})}{\sigma_{v1}}\right]^{\sin \phi}$

$= (1 - .78)\left[\frac{0.2 \times 2 \times 60}{1.8}\right]^{.78} = 1.65$

$f_{max} = (\text{from (1)}) = 3.73 \text{ ksf} \times 0.75 = 2.8 \text{ ksf}$ ultimate

$21' \times 4.5' \times \pi \times 2.8 = 831$ KIPS ULTIMATE UPLIFT CAPACITY

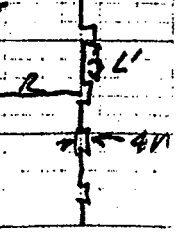
FOR SHAFT IN ROCK

$f_{max} = 0.8\left[\frac{4R}{R}\left(\frac{L'}{L}\right)\right]^{0.45} q_u$

f_{max}: 5.37 TSF = 10.78 ksf

q_u = 5200 psi × 333 TSF

L = 21'
4R = 05' L' = 0.2'



$21' \times \pi \times 4.5' = 296$ SF
Assume 1/3 for f_{all} = 3 ksf. Q = 888 KIP