Crown Castle
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065

December 12, 2018

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

RE: **Notice of Exempt Modification for Sprint Crown Site BU: 876317**
Verizon Site ID: Waterbury S CT - 20678
150 Mattatuck Heights Road, Waterbury, New Haven County, CT 06705
Latitude: 41° 32′ 16.3″/ **Longitude:** -72° 59′ 6.1″

Dear Ms. Bachman:

Verizon currently maintains (12) antennas at the 110-foot level of the existing 133-foot monopole at 150 Mattatuck Heights Road, Waterbury, Connecticut 06705. The tower is owned by Global Signal Acquisitions (Crown Castle) and the property is owned by Waterbury Twin LLC & 150 MH LLC. Verizon intends to replace (6) antennas, install (6) RRHs, add (1) line, install (1) OVP box, and add (3) diplexers at the 110-foot level.

Please be advised I have included an email from Margaret Rice from the City of Waterbury indicating that they no longer have the original zoning approval on file, as well as, an email from my colleague indicated same. Please use both emails to replace the zoning approval requirement.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 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.S.C.A. § 16-50j-73, a copy of this letter is being sent to The Honorable Neil M. O'Leary, Mayor for the City of Waterbury, James A. Sequin, AICP, City Planner, City of Waterbury, the owner and tower owner.

1. The proposed modifications will not result in an increase in the height of the existing tower.

2. The proposed modifications will not require the extension of the site boundary.

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

4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communication Commission safety standard.

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

6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, Verizon respectfully submits that the proposed modifications to the above-reference telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Please send approval/rejection letter to Attn: Anne Marie Zsamba.

Sincerely,

Anne Marie Zsamba, Esq.
Real Estate Specialist
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065
(201) 236-9224
annemarie.zsamba@crowncastle.com

Attachments:

Tab A: Exhibit-1: Compound Plan and Elevation Depicting the Planned Changes
Tab B: Exhibit-2: Structural Modification Report
Tab C: Exhibit-3: General Power Density Table Report (RF Emissions Analysis Report)

cc: The Honorable Neil M. O'Leary, Mayor
City Hall Building
235 Grand Street, 2nd Floor
Waterbury, CT 06702

James A. Sequin, AICP
City Hall Building
235 Grand Street, 2nd Floor
Waterbury, CT 06702

Waterbury Twin LLC & 150 MH LLC
12 Iselin Terrace
Larchmont, NY 10538

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Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com.FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery,misdelivery,or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim.Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental,consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss.Maximum for items of extraordinary value is $1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

15654

CROWN CASTLE - ETA PROPERTY
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

32-61/1110

DATE 12/12/18

PAY TO THE ORDER OF Connecticut Siting Council

$ 625.00

Six hundred twenty five dollars & xx/100 DOLLARS

Security Features Included. Details on Back.

VALID FOR 180 DAYS

CHASE
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www.Chase.com

FOR VZW zoning 876317 457776 528413 20678

⑈015654⑈ ⑆111000614⑆ 464638118⑈

Myl, Kimberly

From: Myl, Kimberly
Sent: Tuesday, May 17, 2016 3:38 PM
To: 'siting.council@ct.gov'
Subject: 150 Mattatuck Heights - Existing Telecommunications Tower Original Zoning Approval

To Whom It May Concern:

Please be advised both the township (email below) and Crown Castle as the tower owner, do not have the original zoning resolution on file. Please use this email as notification to waive this requirement as we will include this and the email from the township within our submission.

Please let me know if you have any questions or need additional information. Thank you in advance.

KIMBERLY MYL
Real Estate Specialist
T: (201) 236-9069 | M: (201) 993-3697

CROWN CASTLE
1200 MacArthur Blvd, Suite 200
Mahwah, NJ 07430

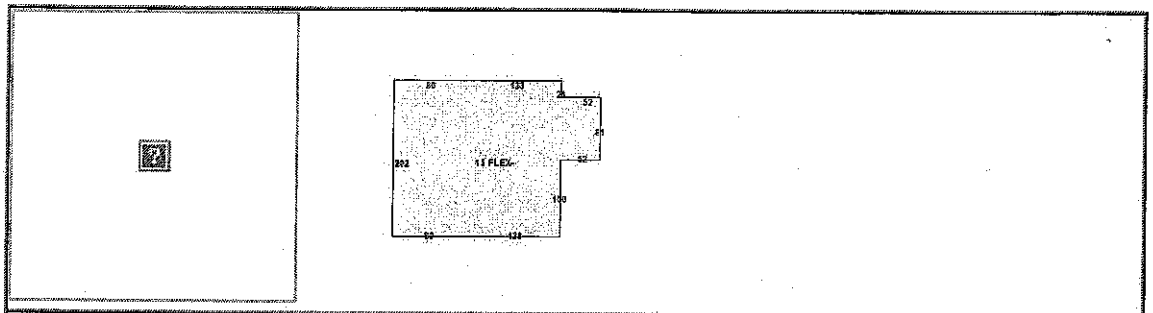
From: Margaret Rice [mailto:mrice@waterburyct.org]
Sent: Tuesday, May 17, 2016 1:03 PM
To: Myl, Kimberly
Subject: RE: 150 Mattatuck Heights - Existing Telecommunications Tower Original Zoning Approval

Hi Kimberly,

I checked our records and City Clerk's office and could not find anything. I then contacted the Town Clerk and I was told that there might be something on the Land Records and that you would need to contact the Town Clerk for them to do a Title Search. They're phone number is (203) 574-6806.

Cissie
Administrative Support Specialist III
203)574-6817 Ext.7296

Location: 150 MATTATUCK HEIGHTS **Owner:** WATERBURY TWIN LLC & 150 MH LLC



Property Information:

Map Block Lot:	0424-0141-0001	**Acres:**	7.02
Primary Use:	Industrial - Flex	**Zone:**	IP
Neighborhood:	85000-Industrial Park	**Vol/Page:**	4647
Mailing Address:	WATERBURY TWIN LLC & 150 MH LLC 12 ISELIN TERRACE LARCHMONT NY 10538		

Property Values:

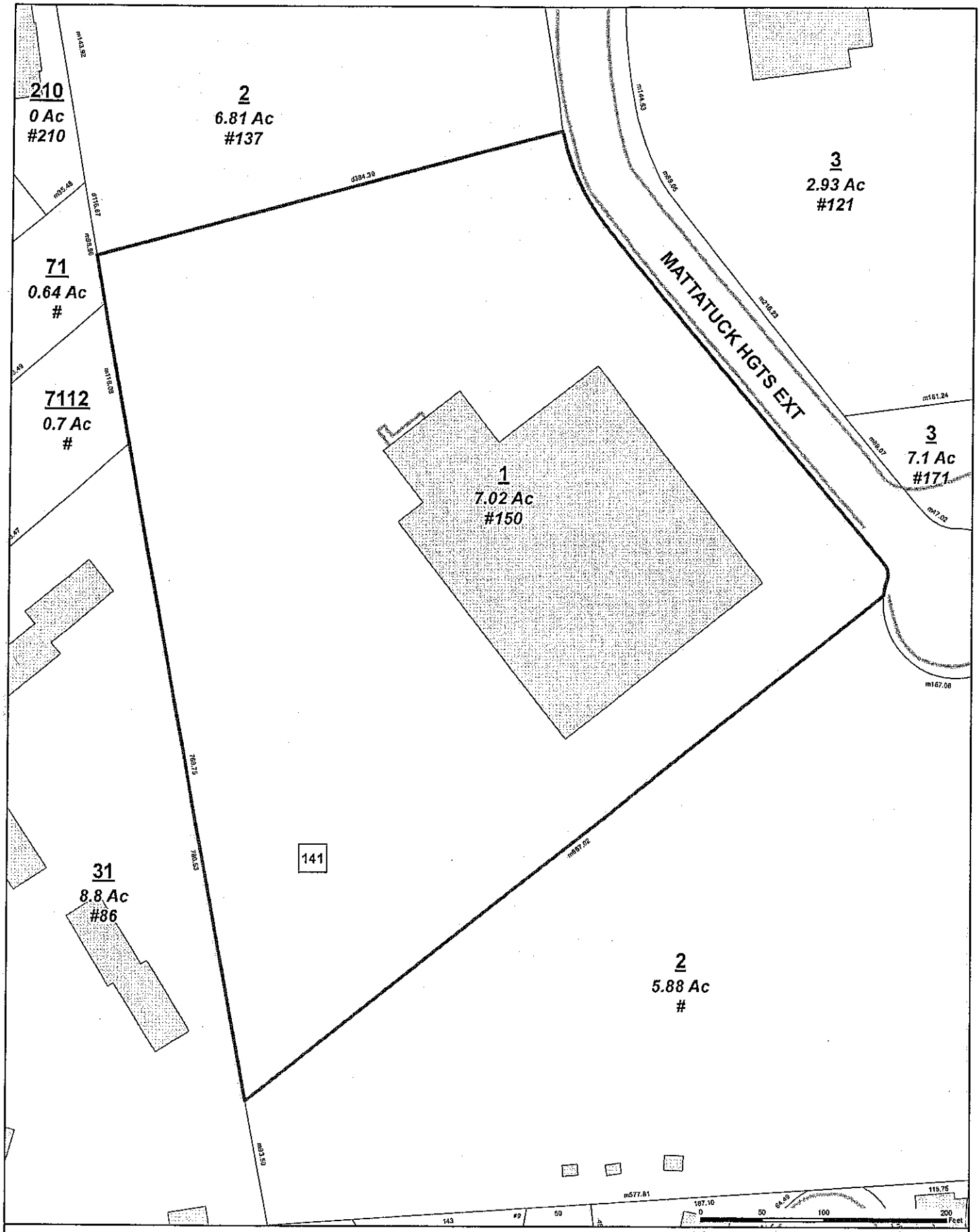
	Appraised Value	Assessed Value (70%)
Building	1619053	1133340
Land	287048	200930
OutBuilding	66320	46420
Total	1972421	1380690

Building Information:

Bldg Style:		**Living Area:**	48248sq.ft
Construction:	Average	**Year Built:**	1988
Exterior Wall:	Brick Solid	**Stories:**	1
Roof Cover:		**Heating:**	Space Heater
Condition:	Average	**Heat Fuel:**	
Rooms:	0	**Bedrooms:**	0
Full Baths:	0	**Half Baths:**	0

Outbuilding Information:

Type	Area (sq.ft)	Year Built	Condition
Tanks Tanks	1sq.ft	1996	Average
Concrete Paving	390sq.ft	1996	Average
Concrete Paving	40sq.ft	1988	Average
Concrete Paving	40sq.ft	1988	Average



City of Waterbury
Public Works Department

MBL: 0424-0141-0001

ADDRESS: 150 MATTATUCK HEIGHTS

N

ORIGIN ID:GFLA (518) 373-3523
ANNE MARIE ZSAMBA
CROWN CASTLE
3 CORPORATE PARK DRIVE
SUITE 101
CLIFTON PARK, NY 12065
UNITED STATES US

SHIP DATE: 12DEC18
ACTWGT: 1.50 LB
CAD: 104924194/INET4040

BILL SENDER

TO

WATERBURY TWIN LLC & 15 MH LLC
12 ISELIN TERRACE

LARCHMONT NY 10538
(201) 236-9224
INV:
PO:
REF: 1734.7680
DEPT:

552J2/E4AF/DCA5

J1821180815O1uv

FedEx Express

ER AXBA

TRK# 0201 **7739 5533 6634**

THU - 13 DEC 10:30A
PRIORITY OVERNIGHT

10538
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NY-US

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verizon

WATERBURY S CT
150 MATTATUCK HEIGHTS ROAD
WATERBURY, CT 06705

PROJECT SUMMARY

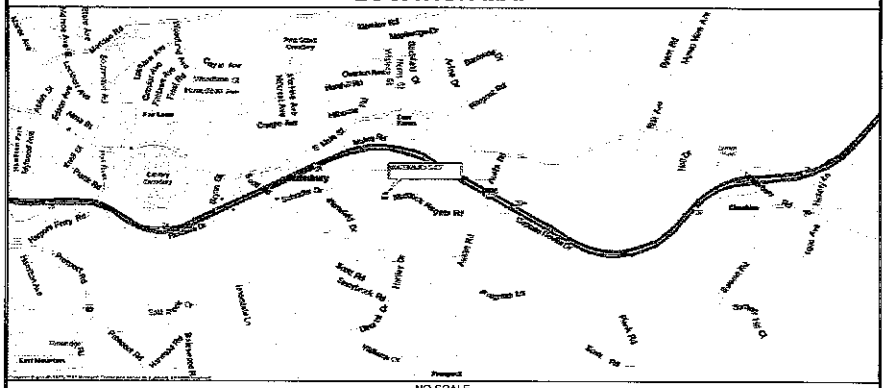
SITE NAME:	WATERBURY S CT
SITE ADDRESS:	150 MATTATUCK HEIGHTS ROAD WATERBURY, CT 06705
TOWER OWNER:	CROWN CASTLE 2000 CORPORATE DR CANONSBURG, PA 15317
BU NUMBER:	876317
MAP NUMBER:	424
LOT NUMBER:	1
CUSTOMER/APPLICANT:	VERIZON WIRELESS 20 ALEXANDER DRIVE, 2ND FLOOR WALLINGFORD, CT 06492
CONTACT:	JIM O'DONNELL (203) 741-7338
NAD83	
LATITUDE:	41° 32' 16.30" N
LONGITUDE:	72° 59' 6.10" W
ELEVATION:	560'
CURRENT ZONING:	IP
A&E FIRM:	B+T GROUP 1717 S. BOULDER, SUITE 300 TULSA, OK 74119 STEVE THORNHILL (918) 587-4630
OCCUPANCY TYPE:	UNMANNED
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION.

CODE COMPLIANCE

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES:

CODE TYPE	CODE
BUILDING	CT BLDG CODE 2018
STRUCTURAL	CT BLDG CODE 2018
MECHANICAL	CT BLDG CODE 2018
ELECTRICAL	NEC 2014

LOCATION MAP



NO SCALE

DRIVING DIRECTIONS

DEPART SCHOEPHOESTER RD, WINDSOR LOCKS, CT 06096 ON CT-75 [TURNPIKE RD] (SOUTH), BEAR RIGHT (SOUTH-WEST) ONTO CT-75 [POQUONOCK AVE], TAKE RAMP (RIGHT) ONTO CT-20 [BRADLEY FIELD CONNECTOR] CT-20 E / I-91 / HARTFORD / SPRINGFIELD, TAKE RAMP (RIGHT) ONTO I-91 [RICHARD P HORAN MEMORIAL HWY] I-91 S / HARTFORD AT EXIT 32A-32B, TURN RIGHT ONTO RAMP I-84 W / TRUMBULL ST / WATERBURY, TAKE RAMP (LEFT) ONTO I-84 [US-6] I-84 W / WATERBURY AT EXIT 25A, TURN RIGHT ONTO RAMPAUSTIN RD, TURN LEFT (SOUTH) ONTO AUSTIN RD, TURN RIGHT (WEST) ONTO CAPTAIN NEVILLE DR, THEN IMMEDIATELY TURN LEFT (WEST) ONTO MATTATUCK HEIGHTS RD, ARRIVE 150 MATTATUCK HEIGHTS RD, WATERBURY, CT 06705 [150 MATTATUCK HEIGHTS RD, WATERBURY, CT 06705]

DRAWING INDEX

SHEET #	SHEET DESCRIPTION	REV. #
T-1	TITLE SHEET	2
A-1	COMPOUND PLAN AND TOWER ELEVATION	2
A-2	EQUIPMENT DETAILS	2

A/E DOCUMENT REVIEW STATUS

TITLE	SIGNATURE	DATE
OWNER:		
R.F. ENGINEER:		
CONSTRUCTION MGR.:		
LEASING & ZONING:		
VERIZON WIRELESS:		

THE FOLLOWING PARTIES HEREBY APPROVE AND ACCEPT THESE DOCUMENTS AND AUTHORIZE THE CONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREIN. ALL DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT AND MAY IMPOSE CHANGES OR MODIFICATIONS.

DO NOT SCALE DRAWINGS

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR 11x17. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

CALL CONNECTICUT ONE CALL
(800) 922-4455
CALL 3 WORKING DAYS
BEFORE YOU DIG!

811

B+T GRP

verizon
400 FRIBERG PARKWAY
WESTBOROUGH, MA 01581
PH: (508) 330-3300

WATERBURY S CT
150 MATTATUCK HEIGHTS ROAD
WATERBURY, CT 06705
EXISTING MONOPOLE

PROJECT NO:	79982.001.01
CHECKED BY:	RPS

ISSUED FOR:

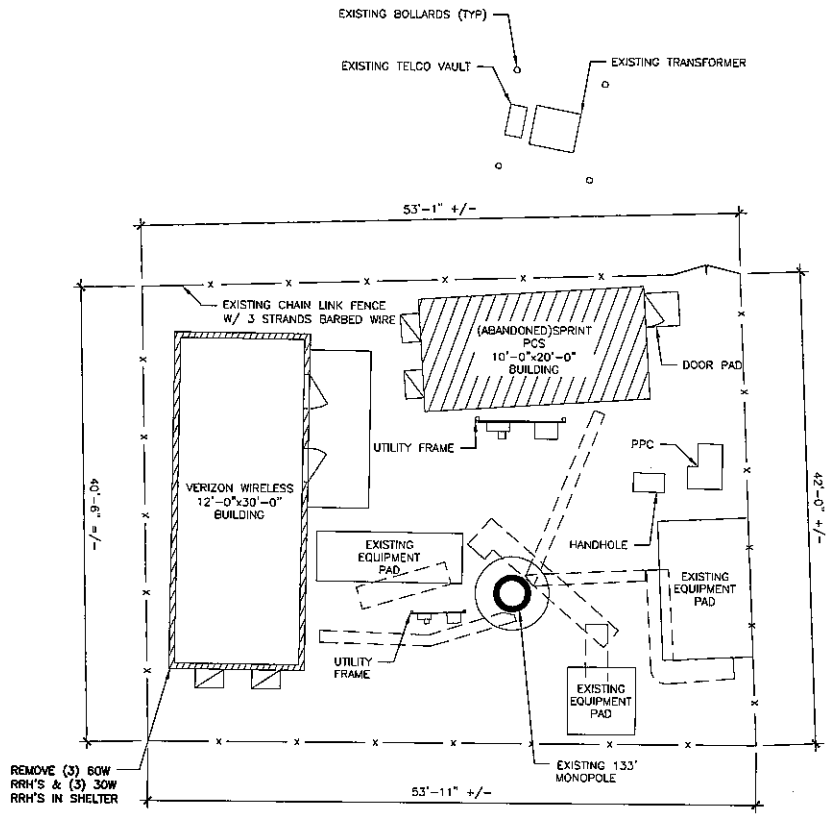
REV	DATE	DRWN	DESCRIPTION
A	9/11/18	STH	PRELIMINARY REVIEW
0	11/1/18	STH	CONSTRUCTION
1	11/13/18	JJD	UPDATED RFDS
2	12/3/18	GDH	CONSTRUCTION

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/19

STATE OF CONNECTICUT
31627
LICENSED PROFESSIONAL ENGINEER
12/3/18

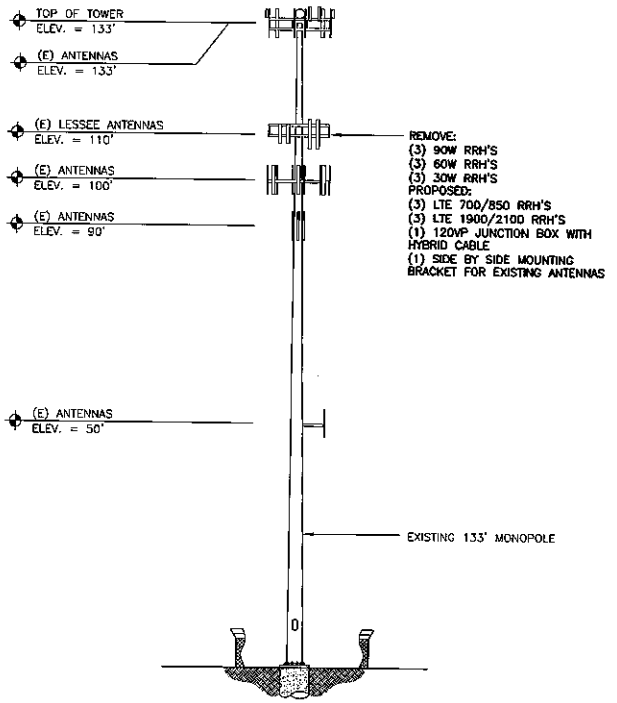
SHEET NUMBER: T-1
REVISION: 2

NOTES:
1. CONTRACTOR TO VERIFY EXACT COAX AND ANTENNA INSTALLATION AND ANTENNA HEIGHT WITH LATEST RF DATA SHEETS PRIOR TO INSTALLATION.
2. STRUCTURAL ANALYSIS DONE BY OTHERS.
3. VERIZON SHALL PROVIDE A STRUCTURAL ANALYSIS OF THE TOWER PREPARED BY A LICENSED STATE STRUCTURAL ENGINEER CERTIFYING THAT THE EXISTING TOWER AND PROPOSED IMPROVEMENTS HAVE SUFFICIENT CAPACITY TO SUPPORT ALL NEW WORK THAT WILL BE DONE IN COMPLIANCE WITH THE CURRENT EDITION OF BUILDING CODES AND EIA/TIA CRITERIA. THE CONTRACTOR IS RESPONSIBLE TO CONFIRM THAT ANY AND ALL IMPROVEMENTS REQUIRED BY THE STRUCTURAL ANALYSIS CERTIFICATION ARE PROPERLY INSTALLED PRIOR TO THE ADDITION OF ANTENNAS, SUPPORTS AND APPURTENANCES PROPOSED ON THESE DRAWING OTHERWISE NOTED IN THE STRUCTURAL ANALYSIS.CAP AND WEATHERPROFF UNUSED ANTENNA PORTS.
4. ESTIMATED HYBRIFLEX CABLE LENGTH: 115' (EACH RUN)



1 COMPOUND PLAN
SCALE: 0' 4' 8' 16' 32'

N



2 FINAL TOWER ELEVATION
SCALE: 0' 4' 8' 16' 32'

B+T GRP

verizon

400 FRIBERG PARKWAY
WESTBOROUGH, MA 01581
PH: (508) 330-3300

WATERBURY S CT

150 MATTATUCK HEIGHTS ROAD
WATERBURY, CT 06705

EXISTING MONOPOLE

PROJECT NO:	79982.001.01
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B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/19

STATE OF CONNECTICUT * 31627 * LICENSED PROFESSIONAL ENGINEER
12/3/18

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

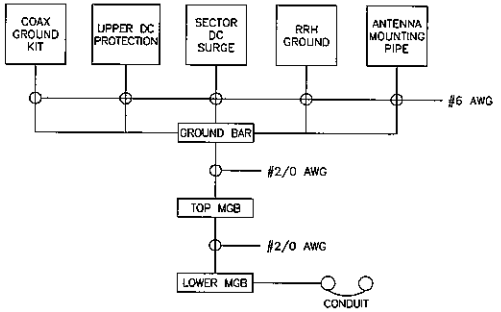
SHEET NUMBER: A-1
REVISION: 2

79982_670317_Waterbury.dwg - Sheet:A-1 - User: thayes - Dec 03, 2018 - 4:09pm

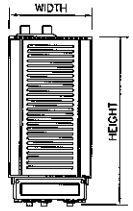
NOTE:
1. INSTALL ALL EQUIPMENT, MOUNTING BRACKETS AND HARDWARE ACCORDING WITH MANUFACTURE'S RECOMMENDATIONS.
2. GROUND DISTRIBUTION BOXES, MOUNTING PIPES AND RRHs IN ACCORDANCE WITH MANUFACTURE'S RECOMMENDATIONS.
3. INSTALLED EQUIPMENT AND MOUNTING BRACKETS SHALL NOT INTERFERE WITH CLIMBING ACCESS NOR ANT INSTALLED SAFETY DEVICES.
4. EQUIPMENT TO BE INSTALLED AT VERIZON'S RAD. CENTER IN ACCORDANCE WITH TOWER STRUCTURAL ANALYSIS (ANALYSIS BY OTHERS).

REMOTE RADIO HEAD DIMENSIONS (INCHES)				
MODEL	HEIGHT	WIDTH	DEPTH	WEIGHT
RFV01U-D1A	15.0"	15.0"	10.0"	84.4 LBS
RFV01U-D2A	15.0"	15.0"	8.1"	70.3 LBS

NOT AVAILABLE AT TIME OF ISSUE



NOTE:
1. BOND ANTENNA GROUNDING KIT CABLES TO TOP CIBE.
2. BOND ANTENNA GROUNDING KIT CABLE TO BOTTOM CIBE.
3. TYPICAL FOR ALL SECTORS.

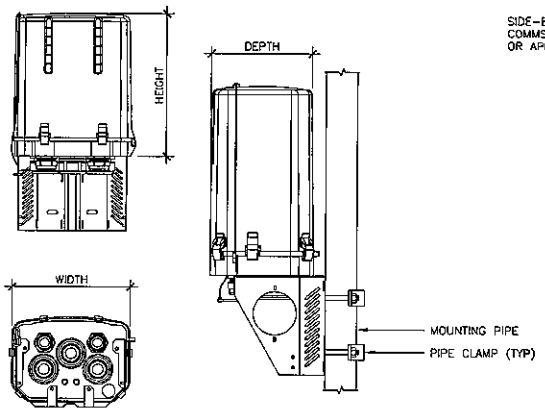


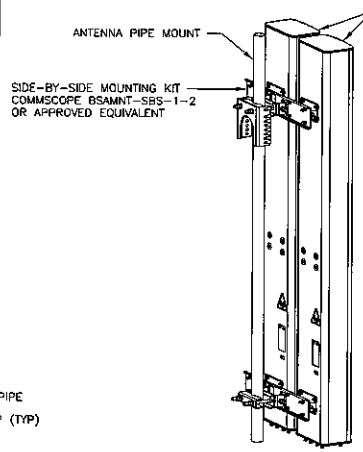
1 ANTENNA SYSTEM LAYOUT
SCALE: N.T.S.

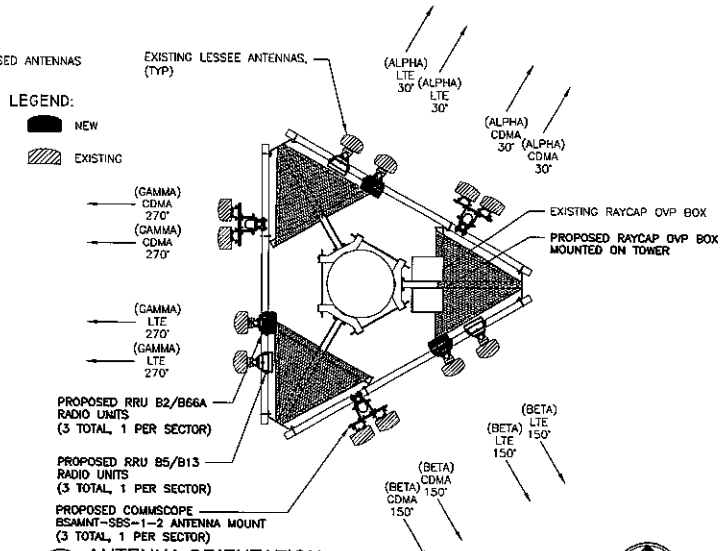
2 GROUNDING SCHEMATIC DIAGRAM
SCALE: N.T.S.

3 RRH SPECIFICATIONS
SCALE: N.T.S.

DC SURGE SUPPRESSION DIMENSIONS (INCHES)				
MODEL	HEIGHT	WIDTH	DEPTH	WEIGHT
RVZDC-6627-PF-48	28.93"	15.73"	10.31"	32 LBS







4 RAYCAP SPECIFICATIONS
SCALE: N.T.S.

5 ANTENNA MOUNTING DETAIL
SCALE: N.T.S.

6 ANTENNA ORIENTATION
SCALE: 0 1' 4' 8' 16'

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verizon

400 FRIBERG PARKWAY
WESTBOROUGH, MA 01581
PHE (508) 330-3300

WATERBURY S CT

150 MATTATUCK HEIGHTS ROAD
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SHEET NUMBER: A-2
REVISION: 2

PAUL J. FORD & COMPANY

Date: **September 10, 2018**

James Klein
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277

Paul J. Ford and Company
250 East Broad St., Suite 600
Columbus, OH 43215
(614) 221-6679

Subject:	**Structural Analysis Report**	
Carrier Designation:	***Verizon Wireless* Co-Locate**	
	Carrier Site Number:	20678
	Carrier Site Name:	Waterbury S CT
Crown Castle Designation:	**Crown Castle BU Number:**	876317
	Crown Castle Site Name:	Waterbury
	Crown Castle JDE Job Number:	528413
	Crown Castle Work Order Number:	1626812
	Crown Castle Order Number:	457776 Rev. 0
Engineering Firm Designation:	**Paul J. Ford and Company Project Number:**	37518-3068.001.7805
Site Data:	**150 Mattatuck Heights, Waterbury, New Haven County, CT** **Latitude *41° 32' 16.3"*, Longitude *-72° 59' 6.1"*** **133 Foot - Monopole Tower**	

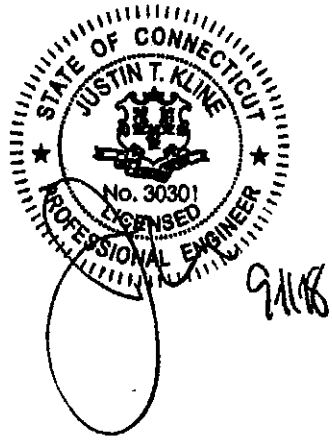
Dear James Klein,

Paul J. Ford and Company is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above-mentioned tower.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC7: Proposed Equipment Configuration **Sufficient Capacity**

This analysis has been performed in accordance with the ANSI/TIA-222-H Standard. This analysis utilizes an ultimate 3-second gust wind speed of 125 mph from the 2016 Connecticut State Building Code per section 1609.3 and Appendix N. Risk Category II, Exposure Category B and Topographic Category 1 with a maximum Topographic Factor, Kzt, of 1.0 were used in this analysis.



9/11/18

Respectfully submitted by:

Michael Timas, EI
Structural Designer RMF

tnxTower Report - version 8.0.4.0

PAUL J. FORD & COMPANY

Date: **September 10, 2018**

James Klein
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277

Paul J. Ford and Company
250 East Broad St., Suite 600
Columbus, OH 43215
(614) 221-6679

Subject:	**Structural Analysis Report**	
Carrier Designation:	***Verizon Wireless* Co-Locate**	
	Carrier Site Number:	20678
	Carrier Site Name:	Waterbury S CT
Crown Castle Designation:	**Crown Castle BU Number:**	876317
	Crown Castle Site Name:	Waterbury
	Crown Castle JDE Job Number:	528413
	Crown Castle Work Order Number:	1626812
	Crown Castle Order Number:	457776 Rev. 0
Engineering Firm Designation:	**Paul J. Ford and Company Project Number:**	37518-3068.001.7805
Site Data:	**150 Mattatuck Heights, Waterbury, New Haven County, CT** **Latitude *41° 32' 16.3"*, Longitude *-72° 59' 6.1"*** **133 Foot - Monopole Tower**	

Dear James Klein,

Paul J. Ford and Company is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above-mentioned tower.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC7: Proposed Equipment Configuration **Sufficient Capacity**

This analysis has been performed in accordance with the ANSI/TIA-222-H Standard. This analysis utilizes an ultimate 3-second gust wind speed of 125 mph from the 2016 Connecticut State Building Code per section 1609.3 and Appendix N. Risk Category II, Exposure Category B and Topographic Category 1 with a maximum Topographic Factor, Kzt, of 1.0 were used in this analysis.

Respectfully submitted by:

Michael Timas, EI
Structural Designer

tnxTower Report - version 8.0.4.0

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 133-ft Monopole tower designed by Valmont.

2) ANALYSIS CRITERIA

Building Code:	2016 Connecticut State Building Code
TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	125 mph
Exposure Category:	B
Topographic Factor:	1
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 – Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
110.0	113.0	1	trimble	BULLET III	1 1 7	1-1/4 1/2 1-5/8
	110.0	6	andrew	SBNHH-1D65B w/ Pipe		
		6	antel	BXA-80063/4CF w/ Pipe		
		1	raycap	RVZDC-6627-PF-48		
		3	samsung telecom	RFV01U-D1A		
		3	samsung telecom	RFV01U-D2A		
		1	rfs celwave	DB-T1-6Z-8AB-0Z		
		1	tower mounts	Platform Mount [LP 602-1]		

Table 2 - Other Equipment Considered

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
133.0	135.0	1	andrew	VHLP2-18	3 1 3	7983A 1-1/2 1-1/4
		2	andrew	VHLP2-23		
	133.0	1	tower mounts	Platform Mount [LP 602-1]		
	130.0	6	alcatel lucent	1900MHz RRH (65MHz)		
		3	alcatel lucent	800 EXTERNAL NOTCH FILTER		
		3	alcatel lucent	800MHZ RRH		
		3	nokia	AAHC w/ Mount Pipe		
		4	rfs celwave	APXVSPP18-C-A20 w/ Pipe		
		4	rfs celwave	IBC1900HB-2		
		2	rfs celwave	PD2DE-700/2700		
100.0	100.0	3	ericsson	AIR 32 B2A B66AA w/ Mount Pipe	2 5 6 1	1-1/2 7/8 1-1/4 1-5/8
		3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe		
		3	ericsson	RADIO 4449 B12/B71		
		3	rfs celwave	APXVAARR24_43-U-NA20 w/ Mount Pipe		
		3	rfs celwave	ATMAA1412D-1A20		
		1	tower mounts	Platform Mount [LP 303-1]		
90.0	90.0	3	rfs celwave	APXV18-206517S-C	6	1-5/8
		1	tower mounts	Pipe Mount [PM 601-3]		
50.0	51.0	1	lucent	KS24019-L112A	1	1/2
	50.0	1	tower mounts	Side Arm Mount [SO 701-3]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	FDH, 15THXT1600, 12/21/2015	1529737	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Semaan, 17232-98, 04/22/1998	1630930	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Valmont, 18701-99, 07/09/1999	1530953	CCISITES
4-POST-MODIFICATION INSPECTION	Verical Solutions, 080884.06, 01/08/2009	2381112	CCISITES
4-POST-MODIFICATION INSPECTION	TEP, 128430, 03/24/2013	3770745	CCISITES

3.1) Analysis Method

tnxTower (version 8.0.4.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) Monopole was reinforced in conformance with the referenced modification drawings.

This analysis may be affected if any assumptions are not valid or have been made in error. Paul J. Ford and Company should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
L1	133 - 128	Pole	TP14.48x13.48x0.19	Pole	10.0%	Pass
L2	128 - 123	Pole	TP15.479x14.48x0.19	Pole	19.9%	Pass
L3	123 - 118	Pole	TP16.479x15.479x0.19	Pole	28.3%	Pass
L4	118 - 113	Pole	TP17.478x16.479x0.19	Pole	35.6%	Pass
L5	113 - 108	Pole	TP18.478x17.478x0.19	Pole	45.2%	Pass
L6	108 - 105.25	Pole	TP19.027x18.478x0.19	Pole	52.0%	Pass
L7	105.25 - 105	Pole + Reinf.	TP19.077x19.027x0.4588	Reinf. 11 Compression	33.9%	Pass
L8	105 - 100	Pole + Reinf.	TP20.077x19.077x0.44	Reinf. 11 Compression	41.5%	Pass
L9	100 - 98.5	Pole + Reinf.	TP20.377x20.077x0.44	Reinf. 11 Compression	44.9%	Pass
L10	98.5 - 98.25	Pole + Reinf.	TP20.427x20.377x0.715	Reinf. 6 Compression	41.0%	Pass
L11	98.25 - 95	Pole + Reinf.	TP21.81x20.427x0.69	Reinf. 6 Compression	47.1%	Pass
L12	95 - 90	Pole + Reinf.	TP21.699x20.7x0.7375	Reinf. 6 Compression	52.1%	Pass
L13	90 - 89.25	Pole + Reinf.	TP21.849x21.699x0.7375	Reinf. 6 Compression	53.3%	Pass
L14	89.25 - 89	Pole + Reinf.	TP21.899x21.849x0.875	Reinf. 5 Tension Rupture	33.3%	Pass
L15	89 - 87.75	Pole + Reinf.	TP22.149x21.899x0.875	Reinf. 5 Tension Rupture	34.5%	Pass
L16	87.75 - 87.5	Pole + Reinf.	TP22.198x22.149x0.6125	Reinf. 5 Tension Rupture	47.4%	Pass
L17	87.5 - 82.5	Pole + Reinf.	TP23.197x22.198x0.5875	Reinf. 5 Tension Rupture	53.3%	Pass
L18	82.5 - 77.5	Pole + Reinf.	TP24.196x23.197x0.575	Reinf. 5 Tension Rupture	58.8%	Pass
L19	77.5 - 77.25	Pole + Reinf.	TP24.246x24.196x0.8	Reinf. 5 Tension Rupture	43.8%	Pass
L20	77.25 - 72.25	Pole + Reinf.	TP25.245x24.246x0.7625	Reinf. 5 Tension Rupture	47.7%	Pass
L21	72.25 - 67.25	Pole + Reinf.	TP26.244x25.245x0.7375	Reinf. 5 Tension Rupture	51.3%	Pass
L22	67.25 - 62.25	Pole + Reinf.	TP27.243x26.244x0.7125	Reinf. 5 Tension Rupture	54.6%	Pass
L23	62.25 - 62	Pole + Reinf.	TP27.293x27.243x0.7125	Reinf. 5 Tension Rupture	54.8%	Pass
L24	62 - 61.75	Pole + Reinf.	TP27.343x27.293x0.7125	Reinf. 5 Tension Rupture	54.9%	Pass
L25	61.75 - 59.5	Pole + Reinf.	TP27.793x27.343x0.7	Reinf. 5 Tension Rupture	56.4%	Pass
L26	59.5 - 59.25	Pole + Reinf.	TP27.843x27.793x0.7625	Reinf. 4 Tension Rupture	49.8%	Pass
L27	59.25 - 54.25	Pole + Reinf.	TP28.842x27.843x0.75	Reinf. 4 Tension Rupture	52.5%	Pass
L28	54.25 - 50	Pole + Reinf.	TP30.64x28.842x0.725	Reinf. 4 Tension Rupture	54.7%	Pass
L29	50 - 45	Pole + Reinf.	TP30.191x29.19x0.785	Reinf. 4 Tension Rupture	53.8%	Pass
L30	45 - 40	Pole + Reinf.	TP31.192x30.191x0.76	Reinf. 4 Tension Rupture	55.8%	Pass
L31	40 - 39.5	Pole + Reinf.	TP31.292x31.192x0.76	Reinf. 4 Tension Rupture	56.0%	Pass
L32	39.5 - 39.25	Pole + Reinf.	TP31.342x31.292x0.76	Reinf. 4 Tension Rupture	56.0%	Pass
L33	39.25 - 34.5	Pole + Reinf.	TP32.293x31.342x0.7475	Reinf. 4 Tension Rupture	57.8%	Pass
L34	34.5 - 34.25	Pole + Reinf.	TP32.343x32.293x0.71	Reinf. 4 Tension Rupture	62.2%	Pass
L35	34.25 - 29.75	Pole + Reinf.	TP33.244x32.343x0.6975	Reinf. 4 Tension Rupture	63.8%	Pass
L36	29.75 - 29.5	Pole + Reinf.	TP33.294x33.244x0.71	Reinf. 3 Tension Rupture	62.4%	Pass
L37	29.5 - 24.5	Pole + Reinf.	TP34.295x33.294x0.685	Reinf. 3 Tension Rupture	64.0%	Pass
L38	24.5 - 19.5	Pole + Reinf.	TP35.296x34.295x0.6725	Reinf. 3 Tension Rupture	65.5%	Pass
L39	19.5 - 14.5	Pole + Reinf.	TP36.297x35.296x0.66	Reinf. 3 Tension Rupture	66.9%	Pass
L40	14.5 - 12.92	Pole + Reinf.	TP36.613x36.297x0.66	Reinf. 3 Tension Rupture	67.4%	Pass
L41	12.92 - 12.67	Pole + Reinf.	TP36.663x36.613x0.735	Reinf. 3 Tension Rupture	63.0%	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
L42	12.67 - 12	Pole + Reinf.	TP36.798x36.663x0.735	Reinf. 3 Tension Rupture	63.2%	Pass
L43	12 - 11.75	Pole + Reinf.	TP36.848x36.798x0.635	Reinf. 3 Tension Rupture	71.3%	Pass
L44	11.75 - 6.75	Pole + Reinf.	TP37.849x36.848x0.6225	Reinf. 3 Tension Rupture	72.6%	Pass
L45	6.75 - 1.75	Pole + Reinf.	TP38.85x37.849x0.61	Reinf. 3 Tension Rupture	73.7%	Pass
L46	1.75 - 0	Pole + Reinf.	TP39.2x38.85x0.61	Reinf. 3 Tension Rupture	74.1%	Pass
					Summary	
				Pole	58.2%	Pass
				Reinforcement	74.1%	Pass
				Overall	**74.1%**	**Pass**

Table 5 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	62.6	Pass
1	Base Plate	0	44.7	Pass
1	Base Foundation – Structural Steel	0	10.1	Pass
1	Base Foundation – Soil Interaction	0	60.9	Pass

Structure Rating (max from all components) =	74.1%

Notes:

- All Structural rating are per TIA-222-H Section 15.5

1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

4.1) Recommendations

The monopole and its foundation have sufficient capacity to carry the proposed loading configuration. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT

Tower Input Data

The tower is a monopole.
This tower is designed using the TIA-222-H standard.
The following design criteria apply:

1) Tower is located in New Haven County, Connecticut.
2) Tower base elevation above sea level: 660 ft.
3) Basic wind speed of 125 mph.
4) Risk Category II.
5) Exposure Category B.
6) Simplified Topographic Factor Procedure for wind speed-up calculations is used.
7) Topographic Category: 1.
8) Crest Height 0.00 ft.
9) Nominal ice thickness of 1.27 in.
10) Ice thickness is considered to increase with height.
11) Ice density of 56 pcf.
12) A wind speed of 50 mph is used in combination with ice.
13) Temperature drop of 50 °F.
14) TIA-222-H Annex S
15) Deflections calculated using a wind speed of 60 mph.
16) A non-linear (P-delta) analysis was used.
17) Pressures are calculated at each section.
18) Stress ratio used in pole design is 1.05.
19) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs	Distribute Leg Loads As Uniform	Use ASCE 10 X-Brace Ly Rules
Consider Moments - Horizontals	Assume Legs Pinned	Calculate Redundant Bracing Forces
Consider Moments - Diagonals	√ Assume Rigid Index Plate	Ignore Redundant Members in FEA
Use Moment Magnification	√ Use Clear Spans For Wind Area	SR Leg Bolts Resist Compression
Use Code Stress Ratios	Use Clear Spans For KL/r	All Leg Panels Have Same Allowable
√ Use Code Safety Factors - Guys	Retension Guys To Initial Tension	Offset Girt At Foundation
Escalate Ice	√ Bypass Mast Stability Checks	√ Consider Feed Line Torque
Always Use Max Kz	√ Use Azimuth Dish Coefficients	Include Angle Block Shear Check
Use Special Wind Profile	√ Project Wind Area of Appurt.	Use TIA-222-H Bracing Resist. Exemption
Include Bolts In Member Capacity	Autocalc Torque Arm Areas	Use TIA-222-H Tension Splice Exemption
Leg Bolts Are At Top Of Section	Add IBC .6D+W Combination	Poles
Secondary Horizontal Braces Leg	Sort Capacity Reports By Component	√ Include Shear-Torsion Interaction
Use Diamond Inner Bracing (4 Sided)	Triangulate Diamond Inner Bracing	Always Use Sub-Critical Flow
SR Members Have Cut Ends	Treat Feed Line Bundles As Cylinder	Use Top Mounted Sockets
SR Members Are Concentric	Ignore KL/ry For 60 Deg. Angle Legs	Pole Without Linear Attachments
		Pole With Shroud Or No Appurtenances
		Outside and Inside Corner Radii Are Known

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	133.00-128.00	5.00	0.00	12	13.48	14.48	0.19	0.76	A572-65 (65 ksi)
L2	128.00-123.00	5.00	0.00	12	14.48	15.48	0.19	0.76	A572-65 (65 ksi)
L3	123.00-118.00	5.00	0.00	12	15.48	16.48	0.19	0.76	A572-65 (65 ksi)
L4	118.00-113.00	5.00	0.00	12	16.48	17.48	0.19	0.76	A572-65 (65 ksi)
L5	113.00-108.00	5.00	0.00	12	17.48	18.48	0.19	0.76	A572-65 (65 ksi)
L6	108.00-105.25	2.75	0.00	12	18.48	19.03	0.19	0.76	A572-65 (65 ksi)
L7	105.25-105.00	0.25	0.00	12	19.03	19.08	0.46	1.84	A572-65 (65 ksi)
L8	105.00-100.00	5.00	0.00	12	19.08	20.08	0.44	1.76	A572-65 (65 ksi)
L9	100.00-98.50	1.50	0.00	12	20.08	20.38	0.44	1.76	A572-65 (65 ksi)
L10	98.50-98.25	0.25	0.00	12	20.38	20.43	0.71	2.86	A572-65 (65 ksi)
L11	98.25-91.33	6.92	3.67	12	20.43	21.81	0.69	2.76	A572-65 (65 ksi)
L12	91.33-90.00	5.00	0.00	12	20.70	21.70	0.74	2.95	A572-65 (65 ksi)
L13	90.00-89.25	0.75	0.00	12	21.70	21.85	0.74	2.95	A572-65 (65 ksi)
L14	89.25-89.00	0.25	0.00	12	21.85	21.90	0.88	3.50	A572-65 (65 ksi)
L15	89.00-87.75	1.25	0.00	12	21.90	22.15	0.88	3.50	A572-65 (65 ksi)
L16	87.75-87.50	0.25	0.00	12	22.15	22.20	0.61	2.45	A572-65 (65 ksi)
L17	87.50-82.50	5.00	0.00	12	22.20	23.20	0.59	2.35	A572-65 (65 ksi)
L18	82.50-77.50	5.00	0.00	12	23.20	24.20	0.57	2.30	A572-65 (65 ksi)
L19	77.50-77.25	0.25	0.00	12	24.20	24.25	0.80	3.20	A572-65 (65 ksi)
L20	77.25-72.25	5.00	0.00	12	24.25	25.25	0.76	3.05	A572-65 (65 ksi)
L21	72.25-67.25	5.00	0.00	12	25.25	26.24	0.74	2.95	A572-65 (65 ksi)
L22	67.25-62.25	5.00	0.00	12	26.24	27.24	0.71	2.85	A572-65 (65 ksi)
L23	62.25-62.00	0.25	0.00	12	27.24	27.29	0.71	2.85	A572-65 (65 ksi)
L24	62.00-61.75	0.25	0.00	12	27.29	27.34	0.71	2.85	A572-65 (65 ksi)
L25	61.75-59.50	2.25	0.00	12	27.34	27.79	0.70	2.80	A572-65 (65 ksi)
L26	59.50-59.25	0.25	0.00	12	27.79	27.84	0.76	3.05	A572-65 (65 ksi)
L27	59.25-54.25	5.00	0.00	12	27.84	28.84	0.75	3.00	A572-65 (65 ksi)
L28	54.25-45.25	9.00	4.75	12	28.84	30.64	0.72	2.90	A572-65 (65 ksi)
L29	45.25-45.00	5.00	0.00	12	29.19	30.19	0.79	3.14	A572-65 (65 ksi)
L30	45.00-40.00	5.00	0.00	12	30.19	31.19	0.76	3.04	A572-65 (65 ksi)
L31	40.00-39.50	0.50	0.00	12	31.19	31.29	0.76	3.04	A572-65 (65 ksi)
L32	39.50-39.25	0.25	0.00	12	31.29	31.34	0.76	3.04	A572-65 (65 ksi)
L33	39.25-34.50	4.75	0.00	12	31.34	32.29	0.75	2.99	A572-65 (65 ksi)
L34	34.50-34.25	0.25	0.00	12	32.29	32.34	0.71	2.84	A572-65 (65 ksi)
L35	34.25-29.75	4.50	0.00	12	32.34	33.24	0.70	2.79	A572-65 (65 ksi)
L36	29.75-29.50	0.25	0.00	12	33.24	33.29	0.71	2.84	A572-65 (65 ksi)
L37	29.50-24.50	5.00	0.00	12	33.29	34.30	0.69	2.74	A572-65 (65 ksi)
L38	24.50-19.50	5.00	0.00	12	34.30	35.30	0.67	2.69	A572-65 (65 ksi)
L39	19.50-14.50	5.00	0.00	12	35.30	36.30	0.66	2.64	A572-65 (65 ksi)
L40	14.50-12.92	1.58	0.00	12	36.30	36.61	0.66	2.64	A572-65 (65 ksi)
L41	12.92-12.67	0.25	0.00	12	36.61	36.66	0.73	2.94	A572-65 (65 ksi)
L42	12.67-12.00	0.67	0.00	12	36.66	36.80	0.73	2.94	A572-65 (65 ksi)
L43	12.00-11.75	0.25	0.00	12	36.80	36.85	0.64	2.54	A572-65 (65 ksi)
L44	11.75-6.75	5.00	0.00	12	36.85	37.85	0.62	2.49	A572-65 (65 ksi)
L45	6.75-1.75	5.00	0.00	12	37.85	38.85	0.61	2.44	A572-65 (65 ksi)
L46	1.75-0.00	1.75		12	38.85	39.20	0.61	2.44	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	13.89	8.13	183.30	4.76	6.98	26.25	371.42	4.00	3.10	16.334
	14.92	8.74	227.85	5.12	7.50	30.38	461.69	4.30	3.37	17.744
L2	14.92	8.74	227.85	5.12	7.50	30.38	461.69	4.30	3.37	17.744
	15.96	9.35	279.08	5.47	8.02	34.81	565.50	4.60	3.64	19.154
L3	15.96	9.35	279.08	5.47	8.02	34.81	565.50	4.60	3.64	19.154
	16.99	9.97	337.48	5.83	8.54	39.54	683.82	4.90	3.91	20.563
L4	16.99	9.97	337.48	5.83	8.54	39.54	683.82	4.90	3.91	20.563
	18.03	10.58	403.49	6.19	9.05	44.57	817.59	5.21	4.17	21.973
L5	18.03	10.58	403.49	6.19	9.05	44.57	817.59	5.21	4.17	21.973
	19.06	11.19	477.60	6.55	9.57	49.90	967.75	5.51	4.44	23.383
L6	19.06	11.19	477.60	6.55	9.57	49.90	967.75	5.51	4.44	23.383
	19.63	11.52	521.98	6.74	9.86	52.96	1057.67	5.67	4.59	24.159
L7	19.54	27.43	1207.13	6.65	9.86	122.47	2445.97	13.50	3.87	8.436
	19.59	27.50	1216.90	6.67	9.88	123.14	2465.78	13.54	3.88	8.465
L8	19.60	26.41	1170.70	6.67	9.88	118.47	2372.15	13.00	3.93	8.94
	20.63	27.82	1369.33	7.03	10.40	131.67	2774.64	13.69	4.20	9.549
L9	20.63	27.82	1369.33	7.03	10.40	131.67	2774.64	13.69	4.20	9.549
	20.94	28.25	1433.02	7.14	10.56	135.77	2903.70	13.90	4.28	9.731
L10	20.84	45.27	2233.63	7.04	10.56	211.62	4525.93	22.28	3.54	4.958
	20.90	45.38	2250.70	7.06	10.58	212.71	4560.53	22.34	3.56	4.976
L11	20.90	43.85	2180.28	7.07	10.58	206.06	4417.84	21.58	3.63	5.254
	22.34	46.92	2671.61	7.56	11.30	236.48	5413.40	23.09	4.00	5.791
L12	21.93	47.41	2411.29	7.15	10.72	224.88	4885.92	23.33	3.57	4.842
	22.20	49.78	2791.71	7.50	11.24	248.37	5656.77	24.50	3.84	5.205
L13	22.20	49.78	2791.71	7.50	11.24	248.37	5656.77	24.50	3.84	5.205
	22.36	50.13	2852.01	7.56	11.32	252.00	5778.95	24.67	3.88	5.26
L14	22.31	59.09	3318.06	7.51	11.32	293.17	6723.29	29.08	3.51	4.012
	22.36	59.23	3341.82	7.53	11.34	294.60	6771.43	29.15	3.52	4.027
L15	22.36	59.23	3341.82	7.53	11.34	294.60	6771.43	29.15	3.52	4.027
	22.62	59.94	3462.34	7.62	11.47	301.78	7015.63	29.50	3.59	4.104
L16	22.71	42.47	2514.47	7.71	11.47	219.16	5094.99	20.90	4.29	7.011
	22.77	42.57	2532.00	7.73	11.50	220.20	5130.52	20.95	4.31	7.033
L17	22.77	40.88	2437.10	7.74	11.50	211.94	4938.23	20.12	4.37	7.446
	23.81	42.77	2790.94	8.09	12.02	232.26	5655.20	21.05	4.64	7.902
L18	23.81	41.89	2736.09	8.10	12.02	227.70	5544.06	20.61	4.68	8.132
	24.85	43.74	3114.81	8.46	12.53	248.51	6311.44	21.53	4.94	8.598
L19	24.77	60.27	4210.98	8.38	12.53	335.97	8532.59	29.66	4.34	5.426
	24.82	60.40	4238.01	8.39	12.56	337.43	8587.36	29.73	4.35	5.443
L20	24.83	57.66	4058.77	8.41	12.56	323.16	8224.16	28.38	4.45	5.842
	25.87	60.11	4599.09	8.76	13.08	351.69	9319.00	29.59	4.72	6.193
L21	25.88	58.20	4461.94	8.77	13.08	341.20	9041.10	28.64	4.79	6.494
	26.91	60.57	5030.12	9.13	13.59	370.01	10192.38	29.81	5.06	6.857
L22	26.92	58.58	4873.91	9.14	13.59	358.52	9875.86	28.83	5.12	7.192
	27.95	60.87	5468.69	9.50	14.11	387.52	11081.05	29.96	5.39	7.567
L23	27.95	60.87	5468.69	9.50	14.11	387.52	11081.05	29.96	5.39	7.567
	28.00	60.98	5499.64	9.52	14.14	389.00	11143.76	30.01	5.41	7.586
L24	28.00	60.98	5499.64	9.52	14.14	389.00	11143.76	30.01	5.41	7.586
	28.06	61.10	5530.70	9.53	14.16	390.48	11206.70	30.07	5.42	7.605
L25	28.06	60.05	5441.33	9.54	14.16	384.17	11025.60	29.56	5.45	7.789
	28.53	61.07	5721.43	9.70	14.40	397.41	11593.17	30.06	5.57	7.961
L26	28.50	66.37	6189.24	9.68	14.40	429.91	12541.08	32.66	5.40	7.089
	28.56	66.49	6223.62	9.69	14.42	431.52	12610.73	32.72	5.42	7.106
L27	28.56	65.43	6130.07	9.70	14.42	425.03	12421.18	32.20	5.45	7.269
	29.59	67.84	6833.48	10.06	14.94	457.39	13846.49	33.39	5.72	7.626
L28	29.60	65.64	6623.35	10.07	14.94	443.33	13420.71	32.31	5.79	7.982
	31.47	69.84	7977.13	10.71	15.87	502.61	16163.83	34.37	6.27	8.646
L29	30.93	71.80	7394.28	10.17	15.12	489.03	14982.81	35.34	5.72	7.286
	30.98	74.33	8203.88	10.53	15.64	524.58	16623.29	36.58	5.99	7.627
L30	30.99	72.02	7962.89	10.54	15.64	509.17	16134.96	35.45	6.05	7.966
	32.02	74.47	8803.33	10.89	16.16	544.85	17837.93	36.65	6.32	8.319
L31	32.02	74.47	8803.33	10.89	16.16	544.85	17837.93	36.65	6.32	8.319
	32.13	74.72	8890.48	10.93	16.21	548.48	18014.53	36.77	6.35	8.355
L32	32.13	74.72	8890.48	10.93	16.21	548.48	18014.53	36.77	6.35	8.355
	32.18	74.84	8934.28	10.95	16.24	550.30	18103.27	36.83	6.36	8.372
L33	32.18	73.64	8798.11	10.95	16.24	541.91	17827.36	36.24	6.40	8.557
	33.17	75.93	9644.27	11.29	16.73	576.54	19541.91	37.37	6.65	8.898
L34	33.18	72.21	9193.15	11.31	16.73	549.57	18627.82	35.54	6.75	9.51

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
	33.23	72.32	9236.93	11.32	16.75	551.33	18716.52	35.59	6.77	9.528
L35	33.24	71.07	9085.07	11.33	16.75	542.27	18408.81	34.98	6.80	9.747
	34.17	73.10	9883.28	11.65	17.22	573.93	20026.20	35.98	7.04	10.093
L36	34.17	74.38	10048.81	11.65	17.22	583.54	20361.61	36.61	7.01	9.868
	34.22	74.49	10095.26	11.67	17.25	585.36	20455.73	36.66	7.02	9.887
L37	34.23	71.93	9762.23	11.67	17.25	566.05	19780.92	35.40	7.09	10.346
	35.26	74.13	10689.12	12.03	17.76	601.70	21659.05	36.49	7.36	10.738
L38	35.27	72.81	10505.77	12.04	17.76	591.38	21287.54	35.83	7.39	10.987
	36.30	74.98	11472.31	12.40	18.28	627.47	23246.01	36.90	7.66	11.386
L39	36.31	73.61	11271.27	12.40	18.28	616.48	22838.64	36.23	7.69	11.652
	37.34	75.74	12277.02	12.76	18.80	652.97	24876.56	37.27	7.96	12.059
L40	37.34	75.74	12277.02	12.76	18.80	652.97	24876.56	37.27	7.96	12.059
	37.67	76.41	12606.84	12.87	18.97	664.72	25544.88	37.61	8.04	12.187
L41	37.65	84.91	13951.76	12.84	18.97	735.63	28270.04	41.79	7.84	10.67
	37.70	85.03	14010.23	12.86	18.99	737.70	28388.52	41.85	7.86	10.688
L42	37.70	85.03	14010.23	12.86	18.99	737.70	28388.52	41.85	7.86	10.688
	37.84	85.35	14167.73	12.91	19.06	743.28	28707.66	42.01	7.89	10.737
L43	37.87	73.94	12342.25	12.95	19.06	647.51	25008.75	36.39	8.16	12.85
	37.92	74.04	12393.57	12.96	19.09	649.32	25112.74	36.44	8.17	12.871
L44	37.93	72.61	12162.19	12.97	19.09	637.19	24643.89	35.74	8.21	13.184
	38.96	74.62	13198.53	13.33	19.61	673.20	26743.80	36.72	8.48	13.615
L45	38.97	73.14	12946.53	13.33	19.61	660.35	26233.18	36.00	8.51	13.949
	40.00	75.11	14018.88	13.69	20.12	696.62	28406.06	36.97	8.78	14.388
L46	40.00	75.11	14018.88	13.69	20.12	696.62	28406.06	36.97	8.78	14.388
	40.37	75.80	14407.74	13.82	20.31	709.55	29194.00	37.31	8.87	14.542

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 133.00-128.00				1	1	1			
L2 128.00-123.00				1	1	1			
L3 123.00-118.00				1	1	1			
L4 118.00-113.00				1	1	1			
L5 113.00-108.00				1	1	1			
L6 108.00-105.25				1	1	1			
L7 105.25-105.00				1	1	0.911709			
L8 105.00-100.00				1	1	0.923248			
L9 100.00-98.50				1	1	0.915857			
L10 98.50-98.25				1	1	0.870681			
L11 98.25-91.33				1	1	0.881143			
L12 91.33-90.00				1	1	0.891935			
L13 90.00-89.25				1	1	0.88801			
L14 89.25-89.00				1	1	0.871134			
L15 89.00-87.75				1	1	0.864261			
L16 87.75-87.50				1	1	0.900174			
L17 87.50-82.50				1	1	0.914778			
L18 82.50-77.50				1	1	0.913029			
L19 77.50-77.25				1	1	0.885643			

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L20 77.25-72.25				1	1	0.903239			
L21 72.25-67.25				1	1	0.909643			
L22 67.25-62.25				1	1	0.918432			
L23 62.25-62.00				1	1	0.917365			
L24 62.00-61.75				1	1	0.916303			
L25 61.75-59.50				1	1	0.922686			
L26 59.50-59.25				1	1	0.911594			
L27 59.25-54.25				1	1	0.905271			
L28 54.25-45.25				1	1	0.918334			
L29 45.25-45.00				1	1	0.917884			
L30 45.00-40.00				1	1	0.929531			
L31 40.00-39.50				1	1	0.927821			
L32 39.50-39.25				1	1	0.987184			
L33 39.25-34.50				1	1	0.985539			
L34 34.50-34.25				1	1	0.973099			
L35 34.25-29.75				1	1	0.975041			
L36 29.75-29.50				1	1	0.970045			
L37 29.50-24.50				1	1	0.988233			
L38 24.50-19.50				1	1	0.990464			
L39 19.50-14.50				1	1	0.993714			
L40 14.50-12.92				1	1	0.989104			
L41 12.92-12.67				1	1	0.990589			
L42 12.67-12.00				1	1	0.988473			
L43 12.00-11.75				1	1	0.957487			
L44 11.75-6.75				1	1	0.963513			
L45 6.75-1.75				1	1	0.9705			
L46 1.75-0.00				1	1	0.966303			

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
MLC6C-06C-008R-008R(1-1/2)	C	No	No	Inside Pole	133.00 - 0.00	1	No Ice	0.00	1.52
							1/2" Ice	0.00	1.52
							1" Ice	0.00	1.52
							2" Ice	0.00	1.52
7983A(ELLIPTICAL)	C	No	No	CaAa (Out Of Face)	0.00 - 133.00	1	No Ice	0.06	0.08
							1/2" Ice	0.16	0.74
							1" Ice	0.26	2.01
							2" Ice	0.46	6.37
7983A(ELLIPTICAL)	C	No	No	CaAa (Out Of Face)	133.00 - 0.00	2	No Ice	0.00	0.08
							1/2" Ice	0.00	0.74
							1" Ice	0.00	2.01
							2" Ice	0.00	6.37
HB114-1-0813U4-M5J(1-1/4")	C	No	No	Inside Pole	133.00 - 0.00	3	No Ice	0.00	1.20
							1/2" Ice	0.00	1.20
							1" Ice	0.00	1.20
							2" Ice	0.00	1.20
**********									
HB114-U6S12-XXX-LI(1-1/4)	C	No	No	Inside Pole	110.00 - 0.00	1	No Ice	0.00	1.70
							1/2" Ice	0.00	1.70
							1" Ice	0.00	1.70
							2" Ice	0.00	1.70
LDF4-50A(1/2")	C	No	No	Inside Pole	110.00 - 0.00	1	No Ice	0.00	0.15
							1/2" Ice	0.00	0.15
							1" Ice	0.00	0.15
							2" Ice	0.00	0.15
LDF7-50A(1-5/8")	C	No	No	Inside Pole	110.00 - 0.00	7	No Ice	0.00	0.82
							1/2" Ice	0.00	0.82
							1" Ice	0.00	0.82
							2" Ice	0.00	0.82
**********									
MLC HYBRID 6X12 6AWGX6(1-1/2)	C	No	No	Inside Pole	100.00 - 0.00	1	No Ice	0.00	0.59
							1/2" Ice	0.00	0.59
							1" Ice	0.00	0.59
							2" Ice	0.00	0.59
MLE Hybrid 9Power/18Fiber RL 2(1-5/8")	C	No	No	CaAa (Out Of Face)	100.00 - 0.00	1	No Ice	0.16	1.07
							1/2" Ice	0.26	2.37
							1" Ice	0.36	4.28
							2" Ice	0.56	9.93
LDF5-50A(7/8")	C	No	No	Inside Pole	100.00 - 0.00	5	No Ice	0.00	0.33
							1/2" Ice	0.00	0.33
							1" Ice	0.00	0.33
							2" Ice	0.00	0.33
LDF6-50A(1-1/4")	C	No	No	Inside Pole	100.00 - 0.00	6	No Ice	0.00	0.66
							1/2" Ice	0.00	0.66
							1" Ice	0.00	0.66
							2" Ice	0.00	0.66
MLC HYBRID 6X12 6AWGX6(1-1/2)	C	No	No	Inside Pole	100.00 - 0.00	1	No Ice	0.00	0.59
							1/2" Ice	0.00	0.59
							1" Ice	0.00	0.59
							2" Ice	0.00	0.59
**********									
LCF158-50JL(1-5/8)	C	No	No	Inside Pole	90.00 - 0.00	4	No Ice	0.00	0.52
							1/2" Ice	0.00	0.52
							1" Ice	0.00	0.52
							2" Ice	0.00	0.52
LCF158-50JL(1-5/8)	C	No	No	CaAa (Out Of Face)	90.00 - 0.00	2	No Ice	0.00	0.52
							1/2" Ice	0.00	2.03
							1" Ice	0.00	4.16
							2" Ice	0.00	10.24
**********									
LDF4-50A(1/2")	C	No	No	Inside Pole	50.00 - 0.00	1	No Ice	0.00	0.15

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
							1/2" Ice	0.00	0.15
							1" Ice	0.00	0.15
							2" Ice	0.00	0.15
**********									
1 1/4" Flat Reinforcement	C	No	No	CaAa (Out Of Face)	100.00 - 0.00	1	No Ice	0.21	0.00
							1/2" Ice	0.32	0.00
							1" Ice	0.43	0.00
							2" Ice	0.65	0.00
3/4" Flat Reinforcement	C	No	No	CaAa (Out Of Face)	108.00 - 10.00	1	No Ice	0.13	0.00
							1/2" Ice	0.24	0.00
							1" Ice	0.35	0.00
							2" Ice	0.57	0.00
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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
L1	133.00-128.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.286	0.03
L2	128.00-123.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.286	0.03
L3	123.00-118.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.286	0.03
L4	118.00-113.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.286	0.03
L5	113.00-108.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.286	0.04
L6	108.00-105.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.501	0.04
L7	105.25-105.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.046	0.00
L8	105.00-100.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.912	0.06
L9	100.00-98.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.744	0.03
L10	98.50-98.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.124	0.01
L11	98.25-91.33	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	3.431	0.14
L12	91.33-90.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.659	0.03
L13	90.00-89.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.372	0.02
L14	89.25-89.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.124	0.01
L15	89.00-87.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.620	0.03
L16	87.75-87.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.124	0.01
L17	87.50-82.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.479	0.12
L18	82.50-77.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.479	0.12
L19	77.50-77.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.124	0.01
L20	77.25-72.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.479	0.12
L21	72.25-67.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.479	0.12
L22	67.25-62.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.479	0.12

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
L23	62.25-62.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.124	0.01
L24	62.00-61.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.124	0.01
L25	61.75-59.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.116	0.05
L26	59.50-59.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.124	0.01
L27	59.25-54.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.479	0.12
L28	54.25-45.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	4.463	0.22
L29	45.25-45.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.124	0.01
L30	45.00-40.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.479	0.12
L31	40.00-39.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.248	0.01
L32	39.50-39.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.124	0.01
L33	39.25-34.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.355	0.11
L34	34.50-34.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.124	0.01
L35	34.25-29.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.231	0.11
L36	29.75-29.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.124	0.01
L37	29.50-24.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.479	0.12
L38	24.50-19.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.479	0.12
L39	19.50-14.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.479	0.12
L40	14.50-12.92	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.783	0.04
L41	12.92-12.67	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.124	0.01
L42	12.67-12.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.332	0.02
L43	12.00-11.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.124	0.01
L44	11.75-6.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.073	0.12
L45	6.75-1.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.854	0.12

Tower Section	Tower Elevation ft	Face	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight K
L46	1.75-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.649	0.04

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight K
L1	133.00-128.00	A	1.463	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.749	0.09
L2	128.00-123.00	A	1.457	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.744	0.09
L3	123.00-118.00	A	1.451	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.738	0.09
L4	118.00-113.00	A	1.445	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.732	0.08
L5	113.00-108.00	A	1.439	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.725	0.10
L6	108.00-105.25	A	1.434	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	2.166	0.07
L7	105.25-105.00	A	1.432	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.197	0.01
L8	105.00-100.00	A	1.428	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	3.926	0.12
L9	100.00-98.50	A	1.423	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	2.120	0.06
L10	98.50-98.25	A	1.422	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.353	0.01
L11	98.25-91.33	A	1.417	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	9.750	0.26
L12	91.33-90.00	A	1.411	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.874	0.05
L13	90.00-89.25	A	1.409	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.053	0.04
L14	89.25-89.00	A	1.408	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.351	0.01
L15	89.00-87.75	A	1.407	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.753	0.07
L16	87.75-87.50	A	1.406	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.350	0.01
L17	87.50-82.50	A	1.401	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	6.995	0.26
L18	82.50-77.50	A	1.393	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	6.968	0.26
L19	77.50-77.25	A	1.388	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.348	0.01
L20	77.25-72.25	A	1.384	0.000	0.000	0.000	0.000	0.00
		B		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
		C		0.000	0.000	0.000	6.937	0.26
L21	72.25-67.25	A	1.374	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	6.907	0.26
L22	67.25-62.25	A	1.364	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	6.874	0.26
L23	62.25-62.00	A	1.358	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.343	0.01
L24	62.00-61.75	A	1.358	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.343	0.01
L25	61.75-59.50	A	1.355	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	3.080	0.12
L26	59.50-59.25	A	1.352	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.342	0.01
L27	59.25-54.25	A	1.346	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	6.816	0.25
L28	54.25-45.25	A	1.328	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	12.167	0.45
L29	45.25-45.00	A	1.316	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.338	0.01
L30	45.00-40.00	A	1.308	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	6.693	0.25
L31	40.00-39.50	A	1.299	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.666	0.02
L32	39.50-39.25	A	1.298	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.333	0.01
L33	39.25-34.50	A	1.289	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	6.302	0.23
L34	34.50-34.25	A	1.280	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.330	0.01
L35	34.25-29.75	A	1.271	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	5.917	0.22
L36	29.75-29.50	A	1.261	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.327	0.01
L37	29.50-24.50	A	1.250	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	6.506	0.24
L38	24.50-19.50	A	1.224	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	6.424	0.24
L39	19.50-14.50	A	1.193	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	6.324	0.23
L40	14.50-12.92	A	1.168	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.972	0.07
L41	12.92-12.67	A	1.160	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.311	0.01
L42	12.67-12.00	A	1.156	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.831	0.03
L43	12.00-11.75	A	1.151	0.000	0.000	0.000	0.000	0.00
		B		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
		C		0.000	0.000	0.000	0.309	0.01
L44	11.75-6.75	A	1.123	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	4.879	0.22
L45	6.75-1.75	A	1.038	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	4.046	0.21
L46	1.75-0.00	A	0.887	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.304	0.07

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	133.00-128.00	-0.29	0.17	-1.02	0.59
L2	128.00-123.00	-0.29	0.17	-1.04	0.60
L3	123.00-118.00	-0.29	0.17	-1.05	0.61
L4	118.00-113.00	-0.29	0.17	-1.07	0.62
L5	113.00-108.00	-0.29	0.17	-1.08	0.62
L6	108.00-105.25	-0.86	0.50	-2.13	1.23
L7	105.25-105.00	-0.87	0.50	-2.14	1.24
L8	105.00-100.00	-0.87	0.50	-2.16	1.25
L9	100.00-98.50	-2.03	1.17	-3.28	1.89
L10	98.50-98.25	-2.04	1.18	-3.30	1.90
L11	98.25-91.33	-2.05	1.19	-3.34	1.93
L12	91.33-90.00	-2.06	1.19	-3.37	1.95
L13	90.00-89.25	-2.07	1.19	-3.38	1.95
L14	89.25-89.00	-2.07	1.20	-3.39	1.96
L15	89.00-87.75	-2.08	1.20	-3.40	1.96
L16	87.75-87.50	-2.07	1.20	-3.40	1.96
L17	87.50-82.50	-2.08	1.20	-3.43	1.98
L18	82.50-77.50	-2.10	1.21	-3.48	2.01
L19	77.50-77.25	-2.12	1.22	-3.52	2.03
L20	77.25-72.25	-2.12	1.23	-3.54	2.04
L21	72.25-67.25	-2.14	1.23	-3.58	2.07
L22	67.25-62.25	-2.15	1.24	-3.63	2.09
L23	62.25-62.00	-2.16	1.25	-3.65	2.10
L24	62.00-61.75	-2.16	1.25	-3.65	2.11
L25	61.75-59.50	-2.16	1.25	-3.66	2.11
L26	59.50-59.25	-2.17	1.25	-3.67	2.12
L27	59.25-54.25	-2.17	1.26	-3.68	2.13
L28	54.25-45.25	-2.19	1.27	-3.73	2.15
L29	45.25-45.00	-2.20	1.27	-3.75	2.16
L30	45.00-40.00	-2.20	1.27	-3.74	2.16
L31	40.00-39.50	-2.21	1.28	-3.76	2.17
L32	39.50-39.25	-2.21	1.28	-3.76	2.17
L33	39.25-34.50	-2.22	1.28	-3.77	2.17
L34	34.50-34.25	-2.22	1.28	-3.77	2.18
L35	34.25-29.75	-2.23	1.28	-3.78	2.18
L36	29.75-29.50	-2.23	1.29	-3.79	2.19
L37	29.50-24.50	-2.23	1.29	-3.79	2.19
L38	24.50-19.50	-2.24	1.30	-3.79	2.19
L39	19.50-14.50	-2.25	1.30	-3.78	2.18
L40	14.50-12.92	-2.26	1.30	-3.77	2.17
L41	12.92-12.67	-2.26	1.31	-3.76	2.17
L42	12.67-12.00	-2.26	1.31	-3.76	2.17
L43	12.00-11.75	-2.26	1.31	-3.75	2.17
L44	11.75-6.75	-1.94	1.12	-3.12	1.80
L45	6.75-1.75	-1.76	1.02	-2.71	1.56
L46	1.75-0.00	-1.76	1.02	-2.55	1.47

Note: For pole sections, center of pressure calculations do not consider feed line shielding.

Discrete Tower Loads

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
AAHC w/ Mount Pipe	A	From Leg	4.00 0.00 -3.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.41 4.73 5.06 5.74	2.69 3.08 3.49 4.36	0.12 0.16 0.20 0.31
AAHC w/ Mount Pipe	B	From Leg	4.00 0.00 -3.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.41 4.73 5.06 5.74	2.69 3.08 3.49 4.36	0.12 0.16 0.20 0.31
AAHC w/ Mount Pipe	C	From Leg	4.00 0.00 -3.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.41 4.73 5.06 5.74	2.69 3.08 3.49 4.36	0.12 0.16 0.20 0.31
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.00 0.00 -3.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.26 8.82 9.35 10.42	6.95 8.13 9.02 10.84	0.08 0.15 0.23 0.41
(2) APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.00 0.00 -3.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.26 8.82 9.35 10.42	6.95 8.13 9.02 10.84	0.08 0.15 0.23 0.41
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.00 0.00 -3.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.26 8.82 9.35 10.42	6.95 8.13 9.02 10.84	0.08 0.15 0.23 0.41
(2) IBC1900HB-2	A	From Leg	4.00 0.00 -3.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.13 1.27 1.42 1.75	0.71 0.84 0.97 1.25	0.04 0.05 0.06 0.09
IBC1900HB-2	B	From Leg	4.00 0.00 -3.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.13 1.27 1.42 1.75	0.71 0.84 0.97 1.25	0.04 0.05 0.06 0.09
IBC1900HB-2	C	From Leg	4.00 0.00 -3.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.13 1.27 1.42 1.75	0.71 0.84 0.97 1.25	0.04 0.05 0.06 0.09
(2) 800 EXTERNAL NOTCH FILTER	A	From Leg	4.00 0.00 -3.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.66 0.76 0.87 1.11	0.32 0.40 0.48 0.67	0.01 0.02 0.02 0.04
800 EXTERNAL NOTCH FILTER	B	From Leg	4.00 0.00 -3.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.66 0.76 0.87 1.11	0.32 0.40 0.48 0.67	0.01 0.02 0.02 0.04
(2) 800MHZ RRH	A	From Leg	4.00 0.00 -3.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.13 2.32 2.51 2.92	1.77 1.95 2.13 2.51	0.05 0.07 0.10 0.16
800MHZ RRH	B	From Leg	4.00 0.00	0.0000	133.00	No Ice	2.13 2.32	1.77 1.95	0.05 0.07

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			-3.00			1/2" Ice	2.51	2.13	0.10
						1" Ice	2.92	2.51	0.16
						2" Ice			
(4) 1900MHz RRH (65MHz)	A	From Leg	4.00 0.00 -3.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.32 2.53 2.74 3.19	2.24 2.44 2.65 3.09	0.06 0.08 0.11 0.17
(2) 1900MHz RRH (65MHz)	B	From Leg	4.00 0.00 -3.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.32 2.53 2.74 3.19	2.24 2.44 2.65 3.09	0.06 0.08 0.11 0.17
PD2DE-700/2700	B	From Leg	4.00 0.00 -3.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.11 0.18 0.25 0.41	0.11 0.18 0.25 0.41	0.00 0.00 0.00 0.01
PD2DE-700/2700	C	From Leg	4.00 0.00 -3.00	0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.11 0.18 0.25 0.41	0.11 0.18 0.25 0.41	0.00 0.00 0.00 0.01
Platform Mount [LP 602-1]	C	None		0.0000	133.00	No Ice 1/2" Ice 1" Ice 2" Ice	32.03 38.71 45.39 58.75	32.03 38.71 45.39 58.75	1.34 1.80 2.26 3.17
**********									
(2) SBNHH-1D65B w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.42 8.96 9.48 10.55	7.42 8.45 9.35 11.18	0.08 0.15 0.23 0.42
(2) SBNHH-1D65B w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.42 8.96 9.48 10.55	7.42 8.45 9.35 11.18	0.08 0.15 0.23 0.42
(2) SBNHH-1D65B w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	8.42 8.96 9.48 10.55	7.42 8.45 9.35 11.18	0.08 0.15 0.23 0.42
BXA-80063/4CF w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.95 5.32 5.71 6.51	3.42 4.02 4.64 5.92	0.03 0.07 0.12 0.23
BXA-80063/4CF w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.95 5.32 5.71 6.51	3.42 4.02 4.64 5.92	0.03 0.07 0.12 0.23
BXA-80063/4CF w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.95 5.32 5.71 6.51	3.42 4.02 4.64 5.92	0.03 0.07 0.12 0.23
(2) RFV01U-D2A	A	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.01 1.14 1.28 1.59	0.07 0.09 0.11 0.15

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
RFV01U-D2A	B	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.01 1.14 1.28 1.59	0.07 0.09 0.11 0.15
RFV01U-D1A	B	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.25 1.39 1.54 1.86	0.08 0.10 0.12 0.18
(2) RFV01U-D1A	C	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.88 2.05 2.22 2.60	1.25 1.39 1.54 1.86	0.08 0.10 0.12 0.18
RVZDC-6627-PF-48	C	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	3.79 4.04 4.30 4.84	2.51 2.73 2.95 3.42	0.03 0.06 0.10 0.18
BXA-80063/4CF w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.95 5.32 5.71 6.51	3.42 4.02 4.64 5.92	0.03 0.07 0.12 0.23
BXA-80063/4CF w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.95 5.32 5.71 6.51	3.42 4.02 4.64 5.92	0.03 0.07 0.12 0.23
BXA-80063/4CF w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.95 5.32 5.71 6.51	3.42 4.02 4.64 5.92	0.03 0.07 0.12 0.23
BULLET III	C	From Leg	4.00 0.00 3.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.07 0.10 0.14 0.25	0.07 0.10 0.14 0.25	0.00 0.00 0.00 0.01
DB-T1-6Z-8AB-0Z	A	From Leg	4.00 0.00 0.00	0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.80 5.07 5.35 5.93	2.00 2.19 2.39 2.81	0.04 0.08 0.12 0.21
Platform Mount [LP 602-1]	C	None		0.0000	110.00	No Ice 1/2" Ice 1" Ice 2" Ice	32.03 38.71 45.39 58.75	32.03 38.71 45.39 58.75	1.34 1.80 2.26 3.17
**********									
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	20.48 21.23 21.99 23.44	11.02 12.55 14.10 16.45	0.16 0.30 0.44 0.78
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	20.48 21.23 21.99 23.44	11.02 12.55 14.10 16.45	0.16 0.30 0.44 0.78
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice	20.48 21.23 21.99 23.44	11.02 12.55 14.10 16.45	0.16 0.30 0.44 0.78

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
						2" Ice			
RADIO 4449 B12/B71	A	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.65 1.81 1.98 2.34	1.16 1.30 1.45 1.76	0.07 0.09 0.11 0.16
RADIO 4449 B12/B71	B	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.65 1.81 1.98 2.34	1.16 1.30 1.45 1.76	0.07 0.09 0.11 0.16
RADIO 4449 B12/B71	C	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.65 1.81 1.98 2.34	1.16 1.30 1.45 1.76	0.07 0.09 0.11 0.16
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.33 6.78 7.21 8.12	5.64 6.43 7.13 8.59	0.11 0.17 0.23 0.38
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.33 6.78 7.21 8.12	5.64 6.43 7.13 8.59	0.11 0.17 0.23 0.38
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	6.33 6.78 7.21 8.12	5.64 6.43 7.13 8.59	0.11 0.17 0.23 0.38
AIR 32 B2A B66AA w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.09 7.56 8.02 8.97	6.37 7.23 7.97 9.51	0.16 0.23 0.30 0.46
AIR 32 B2A B66AA w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.09 7.56 8.02 8.97	6.37 7.23 7.97 9.51	0.16 0.23 0.30 0.46
AIR 32 B2A B66AA w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	7.09 7.56 8.02 8.97	6.37 7.23 7.97 9.51	0.16 0.23 0.30 0.46
ATMAA1412D-1A20	A	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.00 1.13 1.26 1.55	0.41 0.50 0.59 0.81	0.01 0.02 0.03 0.06
ATMAA1412D-1A20	B	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.00 1.13 1.26 1.55	0.41 0.50 0.59 0.81	0.01 0.02 0.03 0.06
ATMAA1412D-1A20	C	From Leg	4.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.00 1.13 1.26 1.55	0.41 0.50 0.59 0.81	0.01 0.02 0.03 0.06
Platform Mount [LP 303-1]	C	None		0.0000	100.00	No Ice 1/2" Ice 1" Ice	14.66 18.87 23.08 31.50	14.66 18.87 23.08 31.50	1.25 1.48 1.71 2.18

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
**********						2" Ice			
APXV18-206517S-C	A	From Leg	1.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.17 5.62 6.08 7.02	3.04 3.47 3.91 4.81	0.03 0.05 0.09 0.17
APXV18-206517S-C	B	From Leg	1.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.17 5.62 6.08 7.02	3.04 3.47 3.91 4.81	0.03 0.05 0.09 0.17
APXV18-206517S-C	C	From Leg	1.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice	5.17 5.62 6.08 7.02	3.04 3.47 3.91 4.81	0.03 0.05 0.09 0.17
Pipe Mount [PM 601-3]	C	None		0.0000	90.00	No Ice 1/2" Ice 1" Ice 2" Ice	4.39 5.48 6.57 8.75	4.39 5.48 6.57 8.75	0.20 0.24 0.28 0.36
**********									
KS24019-L112A	C	From Leg	1.00 0.00 1.00	0.0000	50.00	No Ice 1/2" Ice 1" Ice 2" Ice	0.14 0.20 0.26 0.41	0.14 0.20 0.26 0.41	0.01 0.01 0.01 0.02
Side Arm Mount [SO 701-3]	C	None		0.0000	50.00	No Ice 1/2" Ice 1" Ice 2" Ice	2.83 3.92 5.01 7.19	2.83 3.92 5.01 7.19	0.20 0.24 0.28 0.36
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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
VHLP2-23	A	Paraboloid w/o Radome	From Leg	4.00 0.00 2.00	0.0000		133.00	2.17	No Ice 1/2" Ice 1" Ice 2" Ice	3.72 4.01 4.30 4.88	0.03 0.05 0.07 0.11
VHLP2-23	B	Paraboloid w/o Radome	From Leg	4.00 0.00 2.00	0.0000		133.00	2.17	No Ice 1/2" Ice 1" Ice 2" Ice	3.72 4.01 4.30 4.88	0.03 0.05 0.07 0.11
VHLP2-18	C	Paraboloid w/o Radome	From Leg	4.00 0.00 2.00	0.0000		133.00	2.17	No Ice 1/2" Ice 1" Ice 2" Ice	3.72 4.01 4.30 4.88	0.03 0.05 0.07 0.11
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Tower Pressures - No Ice

$G_H = 1.100$

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
L1 133.00-128.00	130.47	1.066	38	6.002	A	0.000	6.002	6.002	100.00	0.000	0.000
					B	0.000	6.002		100.00	0.000	0.000
					C	0.000	6.002		100.00	0.000	0.286
L2 128.00-123.00	125.47	1.054	38	6.434	A	0.000	6.434	6.434	100.00	0.000	0.000
					B	0.000	6.434		100.00	0.000	0.000
					C	0.000	6.434		100.00	0.000	0.286
L3 123.00-118.00	120.47	1.042	38	6.865	A	0.000	6.865	6.865	100.00	0.000	0.000
					B	0.000	6.865		100.00	0.000	0.000
					C	0.000	6.865		100.00	0.000	0.286
L4 118.00-113.00	115.48	1.03	37	7.296	A	0.000	7.296	7.296	100.00	0.000	0.000
					B	0.000	7.296		100.00	0.000	0.000
					C	0.000	7.296		100.00	0.000	0.286
L5 113.00-108.00	110.48	1.017	37	7.727	A	0.000	7.727	7.727	100.00	0.000	0.000
					B	0.000	7.727		100.00	0.000	0.000
					C	0.000	7.727		100.00	0.000	0.286
L6 108.00-105.25	106.62	1.006	36	4.434	A	0.000	4.434	4.434	100.00	0.000	0.000
					B	0.000	4.434		100.00	0.000	0.000
					C	0.000	4.434		100.00	0.000	0.501
L7 105.25-105.00	105.12	1.002	36	0.408	A	0.000	0.408	0.408	100.00	0.000	0.000
					B	0.000	0.408		100.00	0.000	0.000
					C	0.000	0.408		100.00	0.000	0.046
L8 105.00-100.00	102.48	0.995	36	8.380	A	0.000	8.380	8.380	100.00	0.000	0.000
					B	0.000	8.380		100.00	0.000	0.000
					C	0.000	8.380		100.00	0.000	0.912
L9 100.00-98.50	99.25	0.986	36	2.598	A	0.000	2.598	2.598	100.00	0.000	0.000
					B	0.000	2.598		100.00	0.000	0.000
					C	0.000	2.598		100.00	0.000	0.744
L10 98.50-98.25	98.37	0.984	36	0.435	A	0.000	0.435	0.435	100.00	0.000	0.000
					B	0.000	0.435		100.00	0.000	0.000
					C	0.000	0.435		100.00	0.000	0.124
L11 98.25-91.33	94.75	0.973	35	12.467	A	0.000	12.467	12.467	100.00	0.000	0.000
					B	0.000	12.467		100.00	0.000	0.000
					C	0.000	12.467		100.00	0.000	3.431
L12 91.33-90.00	90.66	0.961	35	2.446	A	0.000	2.446	2.446	100.00	0.000	0.000
					B	0.000	2.446		100.00	0.000	0.000
					C	0.000	2.446		100.00	0.000	0.659
L13 90.00-89.25	89.62	0.958	35	1.393	A	0.000	1.393	1.393	100.00	0.000	0.000
					B	0.000	1.393		100.00	0.000	0.000
					C	0.000	1.393		100.00	0.000	0.372
L14 89.25-89.00	89.12	0.956	35	0.465	A	0.000	0.465	0.465	100.00	0.000	0.000
					B	0.000	0.465		100.00	0.000	0.000
					C	0.000	0.465		100.00	0.000	0.124
L15 89.00-87.75	88.37	0.954	34	2.343	A	0.000	2.343	2.343	100.00	0.000	0.000
					B	0.000	2.343		100.00	0.000	0.000
					C	0.000	2.343		100.00	0.000	0.620
L16 87.75-87.50	87.62	0.952	34	0.474	A	0.000	0.474	0.474	100.00	0.000	0.000
					B	0.000	0.474		100.00	0.000	0.000
					C	0.000	0.474		100.00	0.000	0.124
L17 87.50-82.50	84.98	0.943	34	9.705	A	0.000	9.705	9.705	100.00	0.000	0.000
					B	0.000	9.705		100.00	0.000	0.000
					C	0.000	9.705		100.00	0.000	2.479
L18 82.50-77.50	79.98	0.927	33	10.138	A	0.000	10.138	10.138	100.00	0.000	0.000
					B	0.000	10.138		100.00	0.000	0.000
					C	0.000	10.138		100.00	0.000	2.479
L19 77.50-77.25	77.37	0.918	33	0.517	A	0.000	0.517	0.517	100.00	0.000	0.000
					B	0.000	0.517		100.00	0.000	0.000
					C	0.000	0.517		100.00	0.000	0.124
L20 77.25-72.25	74.73	0.909	33	10.562	A	0.000	10.562	10.562	100.00	0.000	0.000
					B	0.000	10.562		100.00	0.000	0.000
					C	0.000	10.562		100.00	0.000	2.479
L21 72.25-67.25	69.73	0.892	32	10.997	A	0.000	10.997	10.997	100.00	0.000	0.000
					B	0.000	10.997		100.00	0.000	0.000
					C	0.000	10.997		100.00	0.000	2.479

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
L22 67.25-62.25	64.73	0.873	32	11.432	A	0.000	11.432	11.432	100.00	0.000	0.000
					B	0.000	11.432		100.00	0.000	0.000
					C	0.000	11.432		100.00	0.000	2.479
L23 62.25-62.00	62.12	0.863	31	0.583	A	0.000	0.583	0.583	100.00	0.000	0.000
					B	0.000	0.583		100.00	0.000	0.000
					C	0.000	0.583		100.00	0.000	0.124
L24 62.00-61.75	61.87	0.862	31	0.584	A	0.000	0.584	0.584	100.00	0.000	0.000
					B	0.000	0.584		100.00	0.000	0.000
					C	0.000	0.584		100.00	0.000	0.124
L25 61.75-59.50	60.62	0.857	31	5.305	A	0.000	5.305	5.305	100.00	0.000	0.000
					B	0.000	5.305		100.00	0.000	0.000
					C	0.000	5.305		100.00	0.000	1.116
L26 59.50-59.25	59.37	0.851	31	0.594	A	0.000	0.594	0.594	100.00	0.000	0.000
					B	0.000	0.594		100.00	0.000	0.000
					C	0.000	0.594		100.00	0.000	0.124
L27 59.25-54.25	56.74	0.84	30	12.116	A	0.000	12.116	12.116	100.00	0.000	0.000
					B	0.000	12.116		100.00	0.000	0.000
					C	0.000	12.116		100.00	0.000	2.479
L28 54.25-45.25	49.70	0.809	29	22.901	A	0.000	22.901	22.901	100.00	0.000	0.000
					B	0.000	22.901		100.00	0.000	0.000
					C	0.000	22.901		100.00	0.000	4.463
L29 45.25-45.00	45.12	0.787	28	0.645	A	0.000	0.645	0.645	100.00	0.000	0.000
					B	0.000	0.645		100.00	0.000	0.000
					C	0.000	0.645		100.00	0.000	0.124
L30 45.00-40.00	42.49	0.774	28	13.128	A	0.000	13.128	13.128	100.00	0.000	0.000
					B	0.000	13.128		100.00	0.000	0.000
					C	0.000	13.128		100.00	0.000	2.479
L31 40.00-39.50	39.75	0.759	27	1.337	A	0.000	1.337	1.337	100.00	0.000	0.000
					B	0.000	1.337		100.00	0.000	0.000
					C	0.000	1.337		100.00	0.000	0.248
L32 39.50-39.25	39.37	0.757	27	0.670	A	0.000	0.670	0.670	100.00	0.000	0.000
					B	0.000	0.670		100.00	0.000	0.000
					C	0.000	0.670		100.00	0.000	0.124
L33 39.25-34.50	36.86	0.743	27	12.934	A	0.000	12.934	12.934	100.00	0.000	0.000
					B	0.000	12.934		100.00	0.000	0.000
					C	0.000	12.934		100.00	0.000	2.355
L34 34.50-34.25	34.37	0.728	26	0.692	A	0.000	0.692	0.692	100.00	0.000	0.000
					B	0.000	0.692		100.00	0.000	0.000
					C	0.000	0.692		100.00	0.000	0.124
L35 34.25-29.75	31.99	0.714	26	12.639	A	0.000	12.639	12.639	100.00	0.000	0.000
					B	0.000	12.639		100.00	0.000	0.000
					C	0.000	12.639		100.00	0.000	2.231
L36 29.75-29.50	29.62	0.7	25	0.712	A	0.000	0.712	0.712	100.00	0.000	0.000
					B	0.000	0.712		100.00	0.000	0.000
					C	0.000	0.712		100.00	0.000	0.124
L37 29.50-24.50	26.99	0.7	25	14.477	A	0.000	14.477	14.477	100.00	0.000	0.000
					B	0.000	14.477		100.00	0.000	0.000
					C	0.000	14.477		100.00	0.000	2.479
L38 24.50-19.50	21.99	0.7	25	14.911	A	0.000	14.911	14.911	100.00	0.000	0.000
					B	0.000	14.911		100.00	0.000	0.000
					C	0.000	14.911		100.00	0.000	2.479
L39 19.50-14.50	16.99	0.7	25	15.344	A	0.000	15.344	15.344	100.00	0.000	0.000
					B	0.000	15.344		100.00	0.000	0.000
					C	0.000	15.344		100.00	0.000	2.479
L40 14.50-12.92	13.71	0.7	25	4.939	A	0.000	4.939	4.939	100.00	0.000	0.000
					B	0.000	4.939		100.00	0.000	0.000
					C	0.000	4.939		100.00	0.000	0.783
L41 12.92-12.67	12.79	0.7	25	0.785	A	0.000	0.785	0.785	100.00	0.000	0.000
					B	0.000	0.785		100.00	0.000	0.000
					C	0.000	0.785		100.00	0.000	0.124
L42 12.67-12.00	12.33	0.7	25	2.109	A	0.000	2.109	2.109	100.00	0.000	0.000
					B	0.000	2.109		100.00	0.000	0.000
					C	0.000	2.109		100.00	0.000	0.332
L43 12.00-11.75	11.87	0.7	25	0.790	A	0.000	0.790	0.790	100.00	0.000	0.000
					B	0.000	0.790		100.00	0.000	0.000
					C	0.000	0.790		100.00	0.000	0.124
L44 11.75-6.75	9.24	0.7	25	16.019	A	0.000	16.019	16.019	100.00	0.000	0.000
					B	0.000	16.019		100.00	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
					C	0.000	16.019		100.00	0.000	2.073
L45 6.75-1.75	4.24	0.7	25	16.453	A	0.000	16.453	16.453	100.00	0.000	0.000
					B	0.000	16.453		100.00	0.000	0.000
					C	0.000	16.453		100.00	0.000	1.854
L46 1.75-0.00	0.87	0.7	25	5.861	A	0.000	5.861	5.861	100.00	0.000	0.000
					B	0.000	5.861		100.00	0.000	0.000
					C	0.000	5.861		100.00	0.000	0.649

Tower Pressure - With Ice

G_H = 1.100

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
L1 133.00-128.00	130.47	1.066	6	1.46	7.222	A	0.000	7.222	7.222	100.00	0.000	0.000
						B	0.000	7.222		100.00	0.000	0.000
						C	0.000	7.222		100.00	0.000	1.749
L2 128.00-123.00	125.47	1.054	6	1.46	7.648	A	0.000	7.648	7.648	100.00	0.000	0.000
						B	0.000	7.648		100.00	0.000	0.000
						C	0.000	7.648		100.00	0.000	1.744
L3 123.00-118.00	120.47	1.042	6	1.45	8.074	A	0.000	8.074	8.074	100.00	0.000	0.000
						B	0.000	8.074		100.00	0.000	0.000
						C	0.000	8.074		100.00	0.000	1.738
L4 118.00-113.00	115.48	1.03	6	1.45	8.500	A	0.000	8.500	8.500	100.00	0.000	0.000
						B	0.000	8.500		100.00	0.000	0.000
						C	0.000	8.500		100.00	0.000	1.732
L5 113.00-108.00	110.48	1.017	6	1.44	8.926	A	0.000	8.926	8.926	100.00	0.000	0.000
						B	0.000	8.926		100.00	0.000	0.000
						C	0.000	8.926		100.00	0.000	1.725
L6 108.00-105.25	106.62	1.006	6	1.43	5.091	A	0.000	5.091	5.091	100.00	0.000	0.000
						B	0.000	5.091		100.00	0.000	0.000
						C	0.000	5.091		100.00	0.000	2.166
L7 105.25-105.00	105.12	1.002	6	1.43	0.467	A	0.000	0.467	0.467	100.00	0.000	0.000
						B	0.000	0.467		100.00	0.000	0.000
						C	0.000	0.467		100.00	0.000	0.197
L8 105.00-100.00	102.48	0.995	6	1.43	9.570	A	0.000	9.570	9.570	100.00	0.000	0.000
						B	0.000	9.570		100.00	0.000	0.000
						C	0.000	9.570		100.00	0.000	3.926
L9 100.00-98.50	99.25	0.986	6	1.42	2.954	A	0.000	2.954	2.954	100.00	0.000	0.000
						B	0.000	2.954		100.00	0.000	0.000
						C	0.000	2.954		100.00	0.000	2.120
L10 98.50-98.25	98.37	0.984	6	1.42	0.494	A	0.000	0.494	0.494	100.00	0.000	0.000
						B	0.000	0.494		100.00	0.000	0.000
						C	0.000	0.494		100.00	0.000	0.353
L11 98.25-91.33	94.75	0.973	6	1.42	14.102	A	0.000	14.102	14.102	100.00	0.000	0.000
						B	0.000	14.102		100.00	0.000	0.000
						C	0.000	14.102		100.00	0.000	9.750
L12 91.33-90.00	90.66	0.961	6	1.41	2.760	A	0.000	2.760	2.760	100.00	0.000	0.000
						B	0.000	2.760		100.00	0.000	0.000
						C	0.000	2.760		100.00	0.000	1.874
L13 90.00-89.25	89.62	0.958	6	1.41	1.569	A	0.000	1.569	1.569	100.00	0.000	0.000
						B	0.000	1.569		100.00	0.000	0.000
						C	0.000	1.569		100.00	0.000	1.053
L14 89.25-89.00	89.12	0.956	6	1.41	0.524	A	0.000	0.524	0.524	100.00	0.000	0.000
						B	0.000	0.524		100.00	0.000	0.000
						C	0.000	0.524		100.00	0.000	0.351
L15 89.00-87.75	88.37	0.954	6	1.41	2.636	A	0.000	2.636	2.636	100.00	0.000	0.000
						B	0.000	2.636		100.00	0.000	0.000
						C	0.000	2.636		100.00	0.000	1.753
L16 87.75-87.50	87.62	0.952	5	1.41	0.532	A	0.000	0.532	0.532	100.00	0.000	0.000
						B	0.000	0.532		100.00	0.000	0.000
						C	0.000	0.532		100.00	0.000	0.350
L17 87.50-82.50	84.98	0.943	5	1.40	10.873	A	0.000	10.873	10.873	100.00	0.000	0.000
						B	0.000	10.873		100.00	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
						C	0.000	10.873		100.00	0.000	6.995
L18 82.50-77.50	79.98	0.927	5	1.39	11.298	A	0.000	11.298	11.298	100.00	0.000	0.000
						B	0.000	11.298		100.00	0.000	0.000
						C	0.000	11.298		100.00	0.000	6.968
L19 77.50-77.25	77.37	0.918	5	1.39	0.574	A	0.000	0.574	0.574	100.00	0.000	0.000
						B	0.000	0.574		100.00	0.000	0.000
						C	0.000	0.574		100.00	0.000	0.348
L20 77.25-72.25	74.73	0.909	5	1.38	11.715	A	0.000	11.715	11.715	100.00	0.000	0.000
						B	0.000	11.715		100.00	0.000	0.000
						C	0.000	11.715		100.00	0.000	6.937
L21 72.25-67.25	69.73	0.892	5	1.37	12.142	A	0.000	12.142	12.142	100.00	0.000	0.000
						B	0.000	12.142		100.00	0.000	0.000
						C	0.000	12.142		100.00	0.000	6.907
L22 67.25-62.25	64.73	0.873	5	1.36	12.568	A	0.000	12.568	12.568	100.00	0.000	0.000
						B	0.000	12.568		100.00	0.000	0.000
						C	0.000	12.568		100.00	0.000	6.874
L23 62.25-62.00	62.12	0.863	5	1.36	0.639	A	0.000	0.639	0.639	100.00	0.000	0.000
						B	0.000	0.639		100.00	0.000	0.000
						C	0.000	0.639		100.00	0.000	0.343
L24 62.00-61.75	61.87	0.862	5	1.36	0.641	A	0.000	0.641	0.641	100.00	0.000	0.000
						B	0.000	0.641		100.00	0.000	0.000
						C	0.000	0.641		100.00	0.000	0.343
L25 61.75-59.50	60.62	0.857	5	1.35	5.813	A	0.000	5.813	5.813	100.00	0.000	0.000
						B	0.000	5.813		100.00	0.000	0.000
						C	0.000	5.813		100.00	0.000	3.080
L26 59.50-59.25	59.37	0.851	5	1.35	0.651	A	0.000	0.651	0.651	100.00	0.000	0.000
						B	0.000	0.651		100.00	0.000	0.000
						C	0.000	0.651		100.00	0.000	0.342
L27 59.25-54.25	56.74	0.84	5	1.35	13.237	A	0.000	13.237	13.237	100.00	0.000	0.000
						B	0.000	13.237		100.00	0.000	0.000
						C	0.000	13.237		100.00	0.000	6.816
L28 54.25-45.25	49.70	0.809	5	1.33	24.893	A	0.000	24.893	24.893	100.00	0.000	0.000
						B	0.000	24.893		100.00	0.000	0.000
						C	0.000	24.893		100.00	0.000	12.167
L29 45.25-45.00	45.12	0.787	5	1.32	0.700	A	0.000	0.700	0.700	100.00	0.000	0.000
						B	0.000	0.700		100.00	0.000	0.000
						C	0.000	0.700		100.00	0.000	0.338
L30 45.00-40.00	42.49	0.774	4	1.31	14.217	A	0.000	14.217	14.217	100.00	0.000	0.000
						B	0.000	14.217		100.00	0.000	0.000
						C	0.000	14.217		100.00	0.000	6.693
L31 40.00-39.50	39.75	0.759	4	1.30	1.445	A	0.000	1.445	1.445	100.00	0.000	0.000
						B	0.000	1.445		100.00	0.000	0.000
						C	0.000	1.445		100.00	0.000	0.666
L32 39.50-39.25	39.37	0.757	4	1.30	0.724	A	0.000	0.724	0.724	100.00	0.000	0.000
						B	0.000	0.724		100.00	0.000	0.000
						C	0.000	0.724		100.00	0.000	0.333
L33 39.25-34.50	36.86	0.743	4	1.29	13.955	A	0.000	13.955	13.955	100.00	0.000	0.000
						B	0.000	13.955		100.00	0.000	0.000
						C	0.000	13.955		100.00	0.000	6.302
L34 34.50-34.25	34.37	0.728	4	1.28	0.745	A	0.000	0.745	0.745	100.00	0.000	0.000
						B	0.000	0.745		100.00	0.000	0.000
						C	0.000	0.745		100.00	0.000	0.330
L35 34.25-29.75	31.99	0.714	4	1.27	13.592	A	0.000	13.592	13.592	100.00	0.000	0.000
						B	0.000	13.592		100.00	0.000	0.000
						C	0.000	13.592		100.00	0.000	5.917
L36 29.75-29.50	29.62	0.7	4	1.26	0.765	A	0.000	0.765	0.765	100.00	0.000	0.000
						B	0.000	0.765		100.00	0.000	0.000
						C	0.000	0.765		100.00	0.000	0.327
L37 29.50-24.50	26.99	0.7	4	1.25	15.518	A	0.000	15.518	15.518	100.00	0.000	0.000
						B	0.000	15.518		100.00	0.000	0.000
						C	0.000	15.518		100.00	0.000	6.506
L38 24.50-19.50	21.99	0.7	4	1.22	15.931	A	0.000	15.931	15.931	100.00	0.000	0.000
						B	0.000	15.931		100.00	0.000	0.000
						C	0.000	15.931		100.00	0.000	6.424
L39 19.50-14.50	16.99	0.7	4	1.19	16.339	A	0.000	16.339	16.339	100.00	0.000	0.000
						B	0.000	16.339		100.00	0.000	0.000
						C	0.000	16.339		100.00	0.000	6.324

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
L40 14.50-12.92	13.71	0.7	4	1.17	5.246	A	0.000	5.246	5.246	100.00	0.000	0.000
						B	0.000	5.246		100.00	0.000	0.000
						C	0.000	5.246		100.00	0.000	1.972
L41 12.92-12.67	12.79	0.7	4	1.16	0.833	A	0.000	0.833	0.833	100.00	0.000	0.000
						B	0.000	0.833		100.00	0.000	0.000
						C	0.000	0.833		100.00	0.000	0.311
L42 12.67-12.00	12.33	0.7	4	1.16	2.238	A	0.000	2.238	2.238	100.00	0.000	0.000
						B	0.000	2.238		100.00	0.000	0.000
						C	0.000	2.238		100.00	0.000	0.831
L43 12.00-11.75	11.87	0.7	4	1.15	0.837	A	0.000	0.837	0.837	100.00	0.000	0.000
						B	0.000	0.837		100.00	0.000	0.000
						C	0.000	0.837		100.00	0.000	0.309
L44 11.75-6.75	9.24	0.7	4	1.12	16.955	A	0.000	16.955	16.955	100.00	0.000	0.000
						B	0.000	16.955		100.00	0.000	0.000
						C	0.000	16.955		100.00	0.000	4.879
L45 6.75-1.75	4.24	0.7	4	1.04	17.318	A	0.000	17.318	17.318	100.00	0.000	0.000
						B	0.000	17.318		100.00	0.000	0.000
						C	0.000	17.318		100.00	0.000	4.046
L46 1.75-0.00	0.87	0.7	4	0.89	6.119	A	0.000	6.119	6.119	100.00	0.000	0.000
						B	0.000	6.119		100.00	0.000	0.000
						C	0.000	6.119		100.00	0.000	1.304

Tower Pressure - Service

$G_H = 1.100$

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
L1 133.00-128.00	130.47	1.066	8	6.002	A	0.000	6.002	6.002	100.00	0.000	0.000
					B	0.000	6.002		100.00	0.000	0.000
					C	0.000	6.002		100.00	0.000	0.286
L2 128.00-123.00	125.47	1.054	8	6.434	A	0.000	6.434	6.434	100.00	0.000	0.000
					B	0.000	6.434		100.00	0.000	0.000
					C	0.000	6.434		100.00	0.000	0.286
L3 123.00-118.00	120.47	1.042	8	6.865	A	0.000	6.865	6.865	100.00	0.000	0.000
					B	0.000	6.865		100.00	0.000	0.000
					C	0.000	6.865		100.00	0.000	0.286
L4 118.00-113.00	115.48	1.03	8	7.296	A	0.000	7.296	7.296	100.00	0.000	0.000
					B	0.000	7.296		100.00	0.000	0.000
					C	0.000	7.296		100.00	0.000	0.286
L5 113.00-108.00	110.48	1.017	8	7.727	A	0.000	7.727	7.727	100.00	0.000	0.000
					B	0.000	7.727		100.00	0.000	0.000
					C	0.000	7.727		100.00	0.000	0.286
L6 108.00-105.25	106.62	1.006	7	4.434	A	0.000	4.434	4.434	100.00	0.000	0.000
					B	0.000	4.434		100.00	0.000	0.000
					C	0.000	4.434		100.00	0.000	0.501
L7 105.25-105.00	105.12	1.002	7	0.408	A	0.000	0.408	0.408	100.00	0.000	0.000
					B	0.000	0.408		100.00	0.000	0.000
					C	0.000	0.408		100.00	0.000	0.046
L8 105.00-100.00	102.48	0.995	7	8.380	A	0.000	8.380	8.380	100.00	0.000	0.000
					B	0.000	8.380		100.00	0.000	0.000
					C	0.000	8.380		100.00	0.000	0.912
L9 100.00-98.50	99.25	0.986	7	2.598	A	0.000	2.598	2.598	100.00	0.000	0.000
					B	0.000	2.598		100.00	0.000	0.000
					C	0.000	2.598		100.00	0.000	0.744
L10 98.50-98.25	98.37	0.984	7	0.435	A	0.000	0.435	0.435	100.00	0.000	0.000
					B	0.000	0.435		100.00	0.000	0.000
					C	0.000	0.435		100.00	0.000	0.124
L11 98.25-91.33	94.75	0.973	7	12.467	A	0.000	12.467	12.467	100.00	0.000	0.000
					B	0.000	12.467		100.00	0.000	0.000
					C	0.000	12.467		100.00	0.000	3.431
L12 91.33-90.00	90.66	0.961	7	2.446	A	0.000	2.446	2.446	100.00	0.000	0.000
					B	0.000	2.446		100.00	0.000	0.000
					C	0.000	2.446		100.00	0.000	0.659

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
L13 90.00-89.25	89.62	0.958	7	1.393	A	0.000	1.393	1.393	100.00	0.000	0.000
					B	0.000	1.393		100.00	0.000	0.000
					C	0.000	1.393		100.00	0.000	0.372
L14 89.25-89.00	89.12	0.956	7	0.465	A	0.000	0.465	0.465	100.00	0.000	0.000
					B	0.000	0.465		100.00	0.000	0.000
					C	0.000	0.465		100.00	0.000	0.124
L15 89.00-87.75	88.37	0.954	7	2.343	A	0.000	2.343	2.343	100.00	0.000	0.000
					B	0.000	2.343		100.00	0.000	0.000
					C	0.000	2.343		100.00	0.000	0.620
L16 87.75-87.50	87.62	0.952	7	0.474	A	0.000	0.474	0.474	100.00	0.000	0.000
					B	0.000	0.474		100.00	0.000	0.000
					C	0.000	0.474		100.00	0.000	0.124
L17 87.50-82.50	84.98	0.943	7	9.705	A	0.000	9.705	9.705	100.00	0.000	0.000
					B	0.000	9.705		100.00	0.000	0.000
					C	0.000	9.705		100.00	0.000	2.479
L18 82.50-77.50	79.98	0.927	7	10.138	A	0.000	10.138	10.138	100.00	0.000	0.000
					B	0.000	10.138		100.00	0.000	0.000
					C	0.000	10.138		100.00	0.000	2.479
L19 77.50-77.25	77.37	0.918	7	0.517	A	0.000	0.517	0.517	100.00	0.000	0.000
					B	0.000	0.517		100.00	0.000	0.000
					C	0.000	0.517		100.00	0.000	0.124
L20 77.25-72.25	74.73	0.909	7	10.562	A	0.000	10.562	10.562	100.00	0.000	0.000
					B	0.000	10.562		100.00	0.000	0.000
					C	0.000	10.562		100.00	0.000	2.479
L21 72.25-67.25	69.73	0.892	7	10.997	A	0.000	10.997	10.997	100.00	0.000	0.000
					B	0.000	10.997		100.00	0.000	0.000
					C	0.000	10.997		100.00	0.000	2.479
L22 67.25-62.25	64.73	0.873	6	11.432	A	0.000	11.432	11.432	100.00	0.000	0.000
					B	0.000	11.432		100.00	0.000	0.000
					C	0.000	11.432		100.00	0.000	2.479
L23 62.25-62.00	62.12	0.863	6	0.583	A	0.000	0.583	0.583	100.00	0.000	0.000
					B	0.000	0.583		100.00	0.000	0.000
					C	0.000	0.583		100.00	0.000	0.124
L24 62.00-61.75	61.87	0.862	6	0.584	A	0.000	0.584	0.584	100.00	0.000	0.000
					B	0.000	0.584		100.00	0.000	0.000
					C	0.000	0.584		100.00	0.000	0.124
L25 61.75-59.50	60.62	0.857	6	5.305	A	0.000	5.305	5.305	100.00	0.000	0.000
					B	0.000	5.305		100.00	0.000	0.000
					C	0.000	5.305		100.00	0.000	1.116
L26 59.50-59.25	59.37	0.851	6	0.594	A	0.000	0.594	0.594	100.00	0.000	0.000
					B	0.000	0.594		100.00	0.000	0.000
					C	0.000	0.594		100.00	0.000	0.124
L27 59.25-54.25	56.74	0.84	6	12.116	A	0.000	12.116	12.116	100.00	0.000	0.000
					B	0.000	12.116		100.00	0.000	0.000
					C	0.000	12.116		100.00	0.000	2.479
L28 54.25-45.25	49.70	0.809	6	22.901	A	0.000	22.901	22.901	100.00	0.000	0.000
					B	0.000	22.901		100.00	0.000	0.000
					C	0.000	22.901		100.00	0.000	4.463
L29 45.25-45.00	45.12	0.787	6	0.645	A	0.000	0.645	0.645	100.00	0.000	0.000
					B	0.000	0.645		100.00	0.000	0.000
					C	0.000	0.645		100.00	0.000	0.124
L30 45.00-40.00	42.49	0.774	6	13.128	A	0.000	13.128	13.128	100.00	0.000	0.000
					B	0.000	13.128		100.00	0.000	0.000
					C	0.000	13.128		100.00	0.000	2.479
L31 40.00-39.50	39.75	0.759	6	1.337	A	0.000	1.337	1.337	100.00	0.000	0.000
					B	0.000	1.337		100.00	0.000	0.000
					C	0.000	1.337		100.00	0.000	0.248
L32 39.50-39.25	39.37	0.757	6	0.670	A	0.000	0.670	0.670	100.00	0.000	0.000
					B	0.000	0.670		100.00	0.000	0.000
					C	0.000	0.670		100.00	0.000	0.124
L33 39.25-34.50	36.86	0.743	6	12.934	A	0.000	12.934	12.934	100.00	0.000	0.000
					B	0.000	12.934		100.00	0.000	0.000
					C	0.000	12.934		100.00	0.000	2.355
L34 34.50-34.25	34.37	0.728	5	0.692	A	0.000	0.692	0.692	100.00	0.000	0.000
					B	0.000	0.692		100.00	0.000	0.000
					C	0.000	0.692		100.00	0.000	0.124
L35 34.25-29.75	31.99	0.714	5	12.639	A	0.000	12.639	12.639	100.00	0.000	0.000
					B	0.000	12.639		100.00	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
					C	0.000	12.639		100.00	0.000	2.231
L36 29.75-29.50	29.62	0.7	5	0.712	A	0.000	0.712	0.712	100.00	0.000	0.000
					B	0.000	0.712		100.00	0.000	0.000
					C	0.000	0.712		100.00	0.000	0.124
L37 29.50-24.50	26.99	0.7	5	14.477	A	0.000	14.477	14.477	100.00	0.000	0.000
					B	0.000	14.477		100.00	0.000	0.000
					C	0.000	14.477		100.00	0.000	2.479
L38 24.50-19.50	21.99	0.7	5	14.911	A	0.000	14.911	14.911	100.00	0.000	0.000
					B	0.000	14.911		100.00	0.000	0.000
					C	0.000	14.911		100.00	0.000	2.479
L39 19.50-14.50	16.99	0.7	5	15.344	A	0.000	15.344	15.344	100.00	0.000	0.000
					B	0.000	15.344		100.00	0.000	0.000
					C	0.000	15.344		100.00	0.000	2.479
L40 14.50-12.92	13.71	0.7	5	4.939	A	0.000	4.939	4.939	100.00	0.000	0.000
					B	0.000	4.939		100.00	0.000	0.000
					C	0.000	4.939		100.00	0.000	0.783
L41 12.92-12.67	12.79	0.7	5	0.785	A	0.000	0.785	0.785	100.00	0.000	0.000
					B	0.000	0.785		100.00	0.000	0.000
					C	0.000	0.785		100.00	0.000	0.124
L42 12.67-12.00	12.33	0.7	5	2.109	A	0.000	2.109	2.109	100.00	0.000	0.000
					B	0.000	2.109		100.00	0.000	0.000
					C	0.000	2.109		100.00	0.000	0.332
L43 12.00-11.75	11.87	0.7	5	0.790	A	0.000	0.790	0.790	100.00	0.000	0.000
					B	0.000	0.790		100.00	0.000	0.000
					C	0.000	0.790		100.00	0.000	0.124
L44 11.75-6.75	9.24	0.7	5	16.019	A	0.000	16.019	16.019	100.00	0.000	0.000
					B	0.000	16.019		100.00	0.000	0.000
					C	0.000	16.019		100.00	0.000	2.073
L45 6.75-1.75	4.24	0.7	5	16.453	A	0.000	16.453	16.453	100.00	0.000	0.000
					B	0.000	16.453		100.00	0.000	0.000
					C	0.000	16.453		100.00	0.000	1.854
L46 1.75-0.00	0.87	0.7	5	5.861	A	0.000	5.861	5.861	100.00	0.000	0.000
					B	0.000	5.861		100.00	0.000	0.000
					C	0.000	5.861		100.00	0.000	0.649

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice
9	0.9 Dead+1.0 Wind 90 deg - No Ice
10	1.2 Dead+1.0 Wind 120 deg - No Ice
11	0.9 Dead+1.0 Wind 120 deg - No Ice
12	1.2 Dead+1.0 Wind 150 deg - No Ice
13	0.9 Dead+1.0 Wind 150 deg - No Ice
14	1.2 Dead+1.0 Wind 180 deg - No Ice
15	0.9 Dead+1.0 Wind 180 deg - No Ice
16	1.2 Dead+1.0 Wind 210 deg - No Ice
17	0.9 Dead+1.0 Wind 210 deg - No Ice
18	1.2 Dead+1.0 Wind 240 deg - No Ice
19	0.9 Dead+1.0 Wind 240 deg - No Ice
20	1.2 Dead+1.0 Wind 270 deg - No Ice
21	0.9 Dead+1.0 Wind 270 deg - No Ice
22	1.2 Dead+1.0 Wind 300 deg - No Ice
23	0.9 Dead+1.0 Wind 300 deg - No Ice
24	1.2 Dead+1.0 Wind 330 deg - No Ice
25	0.9 Dead+1.0 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	133 - 128	Pole	Max Tension	1	0.00	0.00	-0.00
			Max. Compression	26	-7.53	-3.17	2.86
			Max. Mx	8	-3.14	-17.72	2.16
			Max. My	2	-3.11	-0.98	18.70
			Max. Vy	8	4.73	-17.72	2.16
			Max. Vx	2	-4.87	-0.98	18.70
			Max. Torque	24			-2.44
L2	128 - 123	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-7.95	-3.18	2.88
			Max. Mx	8	-3.34	-42.06	2.62
			Max. My	2	-3.32	-0.82	43.72
			Max. Vy	8	5.01	-42.06	2.62
			Max. Vx	2	-5.14	-0.82	43.72
			Max. Torque	24			-2.43
L3	123 - 118	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-8.40	-3.17	2.90
			Max. Mx	8	-3.57	-67.77	3.08
			Max. My	2	-3.55	-0.66	70.11
			Max. Vy	8	5.29	-67.77	3.08
			Max. Vx	2	-5.42	-0.66	70.11
			Max. Torque	24			-2.42
L4	118 - 113	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-8.87	-3.16	2.91
			Max. Mx	8	-3.81	-94.91	3.53
			Max. My	2	-3.79	-0.49	97.93
			Max. Vy	8	5.57	-94.91	3.53
			Max. Vx	2	-5.71	-0.49	97.93
			Max. Torque	24			-2.41
L5	113 - 108	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-16.54	-2.44	3.21
			Max. Mx	8	-6.80	-131.77	4.06
			Max. My	2	-6.77	-0.18	135.89
			Max. Vy	8	10.10	-131.77	4.06
			Max. Vx	2	-10.32	-0.18	135.89
			Max. Torque	24			-2.41
L6	108 - 105.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-16.84	-2.43	3.21
			Max. Mx	8	-6.99	-159.76	4.35
			Max. My	2	-6.96	-0.13	164.48
			Max. Vy	8	10.27	-159.76	4.35
			Max. Vx	2	-10.49	-0.13	164.48
			Max. Torque	24			-2.09
L7	105.25 - 105	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-16.88	-2.43	3.21
			Max. Mx	8	-7.03	-162.33	4.38
			Max. My	2	-7.00	-0.12	167.10
			Max. Vy	8	10.28	-162.33	4.38
			Max. Vx	2	-10.50	-0.12	167.10
			Max. Torque	24			-2.08
L8	105 - 100	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-17.72	-2.40	3.21
			Max. Mx	8	-7.63	-214.62	4.91
			Max. My	2	-7.60	-0.02	220.48
			Max. Vy	8	10.64	-214.62	4.91
			Max. Vx	2	-10.86	-0.02	220.48
			Max. Torque	24			-2.08
L9	100 - 98.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-24.72	-2.39	3.21
			Max. Mx	8	-10.92	-236.07	5.07
			Max. My	2	-10.88	0.01	242.27
			Max. Vy	8	14.37	-236.07	5.07
			Max. Vx	2	-14.59	0.01	242.27
			Max. Torque	24			-2.05
L10	98.5 - 98.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-24.78	-2.39	3.21
			Max. Mx	8	-10.97	-239.67	5.10

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	2	-10.94	0.01	245.92
			Max. Vy	8	14.39	-239.67	5.10
			Max. Vx	2	-14.61	0.01	245.92
			Max. Torque	24			-2.02
L11	98.25 - 91.33	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-25.57	-2.35	3.20
			Max. Mx	8	-11.58	-286.90	5.45
			Max. My	2	-11.55	0.08	293.87
			Max. Vy	8	14.68	-286.90	5.45
			Max. Vx	2	-14.91	0.08	293.87
			Max. Torque	24			-2.02
L12	91.33 - 90	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-27.62	-2.29	3.19
			Max. Mx	8	-13.19	-361.61	5.99
			Max. My	2	-13.16	0.19	369.70
			Max. Vy	8	15.20	-361.61	5.99
			Max. Vx	2	-15.42	0.19	369.70
			Max. Torque	24			-1.89
L13	90 - 89.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-28.55	-2.28	3.18
			Max. Mx	8	-13.66	-373.44	6.07
			Max. My	2	-13.63	0.20	381.70
			Max. Vy	8	15.82	-373.44	6.07
			Max. Vx	2	-16.04	0.20	381.70
			Max. Torque	24			-1.87
L14	89.25 - 89	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-28.63	-2.27	3.18
			Max. Mx	8	-13.72	-377.40	6.09
			Max. My	2	-13.69	0.21	385.71
			Max. Vy	8	15.84	-377.40	6.09
			Max. Vx	2	-16.06	0.21	385.71
			Max. Torque	24			-1.85
L15	89 - 87.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-29.02	-2.24	3.16
			Max. Mx	8	-14.02	-397.27	6.23
			Max. My	2	-13.99	0.24	405.85
			Max. Vy	8	15.96	-397.27	6.23
			Max. Vx	2	-16.18	0.24	405.85
			Max. Torque	24			-1.85
L16	87.75 - 87.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-29.08	-2.24	3.16
			Max. Mx	8	-14.07	-401.26	6.25
			Max. My	2	-14.04	0.24	409.90
			Max. Vy	8	15.98	-401.26	6.25
			Max. Vx	2	-16.20	0.24	409.90
			Max. Torque	24			-1.82
L17	87.5 - 82.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-30.36	-2.12	3.11
			Max. Mx	8	-15.03	-482.20	6.79
			Max. My	2	-15.00	0.35	491.96
			Max. Vy	8	16.41	-482.20	6.79
			Max. Vx	2	-16.64	0.35	491.96
			Max. Torque	24			-1.82
L18	82.5 - 77.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-31.66	-1.99	3.05
			Max. Mx	8	-16.02	-565.30	7.32
			Max. My	2	-15.99	0.47	576.18
			Max. Vy	8	16.85	-565.30	7.32
			Max. Vx	2	-17.07	0.47	576.18
			Max. Torque	24			-1.72
L19	77.5 - 77.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-31.74	-1.99	3.05
			Max. Mx	8	-16.09	-569.51	7.35
			Max. My	2	-16.06	0.47	580.45
			Max. Vy	8	16.86	-569.51	7.35
			Max. Vx	2	-17.09	0.47	580.45
			Max. Torque	24			-1.62

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L20	77.25 - 72.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-33.34	-1.86	2.99
			Max. Mx	8	-17.35	-654.94	7.88
			Max. My	2	-17.32	0.59	666.99
			Max. Vy	8	17.32	-654.94	7.88
			Max. Vx	2	-17.55	0.59	666.99
			Max. Torque	24			-1.62
L21	72.25 - 67.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-34.96	-1.72	2.92
			Max. Mx	8	-18.63	-742.64	8.41
			Max. My	2	-18.61	0.71	755.81
			Max. Vy	8	17.78	-742.64	8.41
			Max. Vx	2	-18.00	0.71	755.81
			Max. Torque	10			1.53
L22	67.25 - 62.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.60	-1.57	2.83
			Max. Mx	8	-19.94	-832.59	8.93
			Max. My	2	-19.92	0.83	846.88
			Max. Vy	8	18.22	-832.59	8.93
			Max. Vx	2	-18.45	0.83	846.88
			Max. Torque	10			1.44
L23	62.25 - 62	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.68	-1.56	2.83
			Max. Mx	8	-20.02	-837.15	8.96
			Max. My	2	-19.99	0.83	851.49
			Max. Vy	8	18.24	-837.15	8.96
			Max. Vx	2	-18.46	0.83	851.49
			Max. Torque	10			1.35
L24	62 - 61.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.77	-1.56	2.83
			Max. Mx	8	-20.08	-841.71	8.99
			Max. My	2	-20.06	0.84	856.11
			Max. Vy	8	18.26	-841.71	8.99
			Max. Vx	2	-18.49	0.84	856.11
			Max. Torque	10			1.34
L25	61.75 - 59.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37.52	-1.49	2.78
			Max. Mx	8	-20.68	-883.01	9.22
			Max. My	2	-20.66	0.89	897.91
			Max. Vy	8	18.47	-883.01	9.22
			Max. Vx	2	-18.69	0.89	897.91
			Max. Torque	10			1.34
L26	59.5 - 59.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37.61	-1.48	2.78
			Max. Mx	8	-20.75	-887.62	9.25
			Max. My	2	-20.73	0.90	902.58
			Max. Vy	8	18.48	-887.62	9.25
			Max. Vx	2	-18.71	0.90	902.58
			Max. Torque	10			1.30
L27	59.25 - 54.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-39.37	-1.33	2.69
			Max. Mx	8	-22.17	-981.11	9.77
			Max. My	2	-22.15	1.02	997.18
			Max. Vy	8	18.93	-981.11	9.77
			Max. Vx	2	-19.15	1.02	997.18
			Max. Torque	10			1.29
L28	54.25 - 45.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-40.88	-1.19	2.61
			Max. Mx	8	-23.40	-1062.29	10.21
			Max. My	2	-23.38	1.12	1079.30
			Max. Vy	8	19.29	-1062.29	10.21
			Max. Vx	2	-19.51	1.12	1079.30
			Max. Torque	10			1.20
L29	45.25 - 45	Pole	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	26	-44.61	-1.01	2.51
			Max. Mx	8	-26.40	-1160.51	10.73
			Max. My	2	-26.38	1.25	1178.64
			Max. Vy	8	19.91	-1160.51	10.73
			Max. Vx	2	-20.13	1.25	1178.64
			Max. Torque	10			1.02
L30	45 - 40	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-46.54	-0.85	2.42
			Max. Mx	8	-27.98	-1261.03	11.25
			Max. My	2	-27.97	1.38	1280.27
			Max. Vy	8	20.32	-1261.03	11.25
			Max. Vx	2	-20.54	1.38	1280.27
			Max. Torque	10			1.02
L31	40 - 39.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-46.74	-0.84	2.41
			Max. Mx	8	-28.15	-1271.20	11.30
			Max. My	2	-28.14	1.39	1290.55
			Max. Vy	8	20.36	-1271.20	11.30
			Max. Vx	2	-20.58	1.39	1290.55
			Max. Torque	10			0.93
L32	39.5 - 39.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-46.84	-0.83	2.40
			Max. Mx	8	-28.24	-1276.29	11.32
			Max. My	2	-28.22	1.40	1295.69
			Max. Vy	8	20.38	-1276.29	11.32
			Max. Vx	2	-20.60	1.40	1295.69
			Max. Torque	10			0.92
L33	39.25 - 34.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.78	-0.68	2.31
			Max. Mx	8	-29.85	-1373.92	11.81
			Max. My	2	-29.84	1.51	1394.38
			Max. Vy	8	20.76	-1373.92	11.81
			Max. Vx	2	-20.98	1.51	1394.38
			Max. Torque	10			0.91
L34	34.5 - 34.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.88	-0.67	2.31
			Max. Mx	8	-29.94	-1379.11	11.84
			Max. My	2	-29.93	1.52	1399.63
			Max. Vy	8	20.77	-1379.11	11.84
			Max. Vx	2	-20.99	1.52	1399.63
			Max. Torque	10			0.83
L35	34.25 - 29.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-50.65	-0.52	2.22
			Max. Mx	8	-31.42	-1473.28	12.30
			Max. My	2	-31.41	1.63	1494.79
			Max. Vy	8	21.11	-1473.28	12.30
			Max. Vx	2	-21.33	1.63	1494.79
			Max. Torque	10			0.82
L36	29.75 - 29.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-50.75	-0.51	2.22
			Max. Mx	8	-31.51	-1478.56	12.32
			Max. My	2	-31.50	1.64	1500.12
			Max. Vy	8	21.12	-1478.56	12.32
			Max. Vx	2	-21.34	1.64	1500.12
			Max. Torque	10			0.74
L37	29.5 - 24.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.77	-0.35	2.12
			Max. Mx	8	-33.19	-1585.01	12.83
			Max. My	2	-33.18	1.76	1607.67
			Max. Vy	8	21.49	-1585.01	12.83
			Max. Vx	2	-21.70	1.76	1607.67
			Max. Torque	10			0.74
L38	24.5 - 19.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-54.80	-0.19	2.03
			Max. Mx	8	-34.90	-1693.26	13.33
			Max. My	2	-34.90	1.89	1717.01
			Max. Vy	8	21.85	-1693.26	13.33
			Max. Vx	2	-22.06	1.89	1717.01

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	10			0.65
L39	19.5 - 14.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-56.84	-0.02	1.94
			Max. Mx	8	-36.64	-1803.31	13.83
			Max. My	2	-36.63	2.01	1828.15
			Max. Vy	8	22.21	-1803.31	13.83
			Max. Vx	2	-22.42	2.01	1828.15
			Max. Torque	8			0.56
L40	14.5 - 12.92	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-57.50	0.03	1.91
			Max. Mx	8	-37.19	-1838.47	13.99
			Max. My	2	-37.18	2.05	1863.64
			Max. Vy	8	22.33	-1838.47	13.99
			Max. Vx	2	-22.54	2.05	1863.64
			Max. Torque	8			0.50
L41	12.92 - 12.67	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-57.61	0.03	1.90
			Max. Mx	8	-37.30	-1844.04	14.01
			Max. My	2	-37.29	2.06	1869.27
			Max. Vy	8	22.33	-1844.04	14.01
			Max. Vx	2	-22.55	2.06	1869.27
			Max. Torque	8			0.48
L42	12.67 - 12	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-57.91	0.06	1.89
			Max. Mx	8	-37.55	-1859.02	14.08
			Max. My	2	-37.55	2.07	1884.39
			Max. Vy	8	22.39	-1859.02	14.08
			Max. Vx	2	-22.60	2.07	1884.39
			Max. Torque	8			0.48
L43	12 - 11.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-58.01	0.06	1.88
			Max. Mx	8	-37.64	-1864.61	14.10
			Max. My	2	-37.63	2.08	1890.04
			Max. Vy	8	22.40	-1864.61	14.10
			Max. Vx	2	-22.61	2.08	1890.04
			Max. Torque	8			0.47
L44	11.75 - 6.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-59.97	0.22	1.79
			Max. Mx	8	-39.31	-1977.43	14.59
			Max. My	2	-39.30	2.20	2003.92
			Max. Vy	8	22.75	-1977.43	14.59
			Max. Vx	2	-22.97	2.20	2003.92
			Max. Torque	8			0.47
L45	6.75 - 1.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-61.93	0.36	1.71
			Max. Mx	8	-41.00	-2091.94	15.08
			Max. My	2	-41.00	2.33	2119.50
			Max. Vy	8	23.09	-2091.94	15.08
			Max. Vx	2	-23.30	2.33	2119.50
			Max. Torque	32			-0.51
L46	1.75 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-62.60	0.40	1.69
			Max. Mx	8	-41.60	-2132.42	15.24
			Max. My	2	-41.60	2.37	2160.35
			Max. Vy	8	23.22	-2132.42	15.24
			Max. Vx	2	-23.43	2.37	2160.35
			Max. Torque	32			-0.52

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	62.60	0.00	-0.00
	Max. H_x	20	41.61	23.19	0.14
	Max. H_z	2	41.61	0.02	23.40
	Max. M_x	2	2160.35	0.02	23.40
	Max. M_z	8	2132.42	-23.19	0.10
	Max. Torsion	38	0.52	2.85	4.92
	Min. Vert	3	31.21	0.02	23.40
	Min. H_x	8	41.61	-23.19	0.10
	Min. H_z	15	31.21	-0.02	-23.35
	Min. M_x	14	-2150.27	-0.02	-23.35
	Min. M_z	20	-2130.80	23.19	0.14
	Min. Torsion	32	-0.52	-2.81	-4.94

Tower Mast Reaction Summary

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 Only	34.68	-0.00	0.00	-1.10	-0.59	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	41.61	-0.02	-23.40	-2160.35	2.37	-0.13
0.9 Dead+1.0 Wind 0 deg - No Ice	31.21	-0.02	-23.40	-2136.92	2.55	-0.16
1.2 Dead+1.0 Wind 30 deg - No Ice	41.61	11.68	-20.12	-1850.01	-1078.53	-0.23
0.9 Dead+1.0 Wind 30 deg - No Ice	31.21	11.68	-20.12	-1829.96	-1066.82	-0.23
1.2 Dead+1.0 Wind 60 deg - No Ice	41.61	20.11	-11.66	-1074.66	-1850.22	-0.34
0.9 Dead+1.0 Wind 60 deg - No Ice	31.21	20.11	-11.66	-1062.83	-1830.32	-0.32
1.2 Dead+1.0 Wind 90 deg - No Ice	41.61	23.19	-0.10	-15.24	-2132.42	-0.36
0.9 Dead+1.0 Wind 90 deg - No Ice	31.21	23.19	-0.10	-14.66	-2109.52	-0.32
1.2 Dead+1.0 Wind 120 deg - No Ice	41.61	20.18	11.72	1080.74	-1859.54	-0.20
0.9 Dead+1.0 Wind 120 deg - No Ice	31.21	20.18	11.72	1069.59	-1839.51	-0.16
1.2 Dead+1.0 Wind 150 deg - No Ice	41.61	11.51	20.26	1867.14	-1054.69	0.02
0.9 Dead+1.0 Wind 150 deg - No Ice	31.21	11.51	20.26	1847.62	-1043.29	0.06
1.2 Dead+1.0 Wind 180 deg - No Ice	41.61	0.02	23.35	2150.27	-3.98	0.15
0.9 Dead+1.0 Wind 180 deg - No Ice	31.21	0.02	23.35	2127.77	-3.72	0.18
1.2 Dead+1.0 Wind 210 deg - No Ice	41.61	-11.48	20.24	1863.98	1047.58	0.23
0.9 Dead+1.0 Wind 210 deg - No Ice	31.21	-11.48	20.24	1844.50	1036.70	0.24
1.2 Dead+1.0 Wind 240 deg - No Ice	41.61	-20.16	11.68	1075.23	1854.76	0.34
0.9 Dead+1.0 Wind 240 deg - No Ice	31.21	-20.16	11.68	1064.16	1835.21	0.32
1.2 Dead+1.0 Wind 270 deg - No Ice	41.61	-23.19	-0.14	-21.60	2130.80	0.35
0.9 Dead+1.0 Wind 270 deg - No Ice	31.21	-23.19	-0.14	-20.93	2108.34	0.30
1.2 Dead+1.0 Wind 300 deg - No Ice	41.61	-20.13	-11.70	-1080.15	1851.76	0.19
0.9 Dead+1.0 Wind 300 deg - No Ice	31.21	-20.13	-11.70	-1068.25	1832.26	0.14
1.2 Dead+1.0 Wind 330 deg - No Ice	41.61	-11.72	-20.14	-1853.17	1082.41	-0.01
0.9 Dead+1.0 Wind 330 deg - No Ice	31.21	-11.72	-20.14	-1833.08	1071.06	-0.05
1.2 Dead+1.0 Ice+1.0 Temp	62.60	-0.00	0.00	-1.69	0.40	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	62.60	-0.00	-5.71	-537.46	0.44	-0.48
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	62.60	2.85	-4.92	-461.62	-267.43	-0.31
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	62.60	4.91	-2.85	-268.84	-459.32	-0.07
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	62.60	5.67	-0.02	-5.24	-529.29	0.19
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	62.60	4.92	2.85	266.08	-460.67	0.41
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	62.60	2.81	4.94	461.56	-261.49	0.52
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	62.60	0.00	5.70	532.37	0.31	0.48
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	62.60	-2.81	4.94	461.50	262.12	0.31
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	62.60	-4.92	2.85	265.96	461.35	0.07
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	62.60	-5.67	-0.02	-5.38	530.04	-0.19
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	62.60	-4.91	-2.85	-268.96	460.14	-0.41
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	62.60	-2.85	-4.92	-461.68	268.30	-0.52
Dead+Wind 0 deg - Service	34.68	-0.00	-4.83	-443.62	-0.02	-0.03
Dead+Wind 30 deg - Service	34.68	2.41	-4.15	-380.04	-221.52	-0.05
Dead+Wind 60 deg - Service	34.68	4.15	-2.40	-221.15	-379.66	-0.07
Dead+Wind 90 deg - Service	34.68	4.78	-0.02	-4.04	-437.46	-0.06
Dead+Wind 120 deg - Service	34.68	4.16	2.42	220.55	-381.58	-0.04
Dead+Wind 150 deg - Service	34.68	2.37	4.18	381.71	-216.64	-0.00
Dead+Wind 180 deg - Service	34.68	0.00	4.81	439.71	-1.32	0.03
Dead+Wind 210 deg - Service	34.68	-2.37	4.17	381.06	214.18	0.05
Dead+Wind 240 deg - Service	34.68	-4.16	2.41	219.43	379.59	0.07
Dead+Wind 270 deg - Service	34.68	-4.78	-0.03	-5.34	436.13	0.06
Dead+Wind 300 deg - Service	34.68	-4.15	-2.41	-222.27	378.98	0.04
Dead+Wind 330 deg - Service	34.68	-2.42	-4.15	-380.69	221.31	0.00

Solution Summary

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
1	0.00	-34.68	0.00	0.00	34.68	-0.00	0.002%
2	-0.02	-41.61	-23.40	0.02	41.61	23.40	0.001%
3	-0.02	-31.21	-23.40	0.02	31.21	23.40	0.002%
4	11.68	-41.61	-20.12	-11.68	41.61	20.12	0.000%
5	11.68	-31.21	-20.12	-11.68	31.21	20.12	0.000%
6	20.11	-41.61	-11.66	-20.11	41.61	11.66	0.000%
7	20.11	-31.21	-11.66	-20.11	31.21	11.66	0.000%
8	23.20	-41.61	-0.10	-23.19	41.61	0.10	0.000%
9	23.20	-31.21	-0.10	-23.19	31.21	0.10	0.001%
10	20.18	-41.61	11.72	-20.18	41.61	-11.72	0.000%
11	20.18	-31.21	11.72	-20.18	31.21	-11.72	0.000%
12	11.51	-41.61	20.26	-11.51	41.61	-20.26	0.000%
13	11.51	-31.21	20.26	-11.51	31.21	-20.26	0.000%
14	0.02	-41.61	23.35	-0.02	41.61	-23.35	0.001%
15	0.02	-31.21	23.35	-0.02	31.21	-23.35	0.001%
16	-11.48	-41.61	20.24	11.48	41.61	-20.24	0.000%
17	-11.48	-31.21	20.24	11.48	31.21	-20.24	0.000%
18	-20.16	-41.61	11.68	20.16	41.61	-11.68	0.000%
19	-20.16	-31.21	11.68	20.16	31.21	-11.68	0.000%
20	-23.20	-41.61	-0.14	23.19	41.61	0.14	0.000%
21	-23.20	-31.21	-0.14	23.19	31.21	0.14	0.001%
22	-20.13	-41.61	-11.70	20.13	41.61	11.70	0.000%
23	-20.13	-31.21	-11.70	20.13	31.21	11.70	0.000%
24	-11.72	-41.61	-20.14	11.72	41.61	20.14	0.000%
25	-11.72	-31.21	-20.14	11.72	31.21	20.14	0.000%
26	0.00	-62.60	0.00	0.00	62.60	-0.00	0.000%
27	-0.00	-62.60	-5.71	0.00	62.60	5.71	0.000%
28	2.85	-62.60	-4.92	-2.85	62.60	4.92	0.000%
29	4.91	-62.60	-2.85	-4.91	62.60	2.85	0.000%
30	5.67	-62.60	-0.02	-5.67	62.60	0.02	0.000%
31	4.92	-62.60	2.85	-4.92	62.60	-2.85	0.000%
32	2.81	-62.60	4.94	-2.81	62.60	-4.94	0.000%
33	0.00	-62.60	5.70	-0.00	62.60	-5.70	0.000%
34	-2.81	-62.60	4.94	2.81	62.60	-4.94	0.000%
35	-4.92	-62.60	2.85	4.92	62.60	-2.85	0.000%
36	-5.67	-62.60	-0.02	5.67	62.60	0.02	0.000%
37	-4.91	-62.60	-2.85	4.91	62.60	2.85	0.000%
38	-2.85	-62.60	-4.92	2.85	62.60	4.92	0.000%
39	-0.00	-34.68	-4.83	0.00	34.68	4.83	0.002%
40	2.41	-34.68	-4.15	-2.41	34.68	4.15	0.001%
41	4.15	-34.68	-2.40	-4.15	34.68	2.40	0.001%
42	4.78	-34.68	-0.02	-4.78	34.68	0.02	0.002%
43	4.16	-34.68	2.42	-4.16	34.68	-2.42	0.001%
44	2.37	-34.68	4.18	-2.37	34.68	-4.18	0.001%
45	0.00	-34.68	4.82	-0.00	34.68	-4.81	0.002%
46	-2.37	-34.68	4.17	2.37	34.68	-4.17	0.001%
47	-4.16	-34.68	2.41	4.16	34.68	-2.41	0.001%
48	-4.78	-34.68	-0.03	4.78	34.68	0.03	0.002%
49	-4.15	-34.68	-2.41	4.15	34.68	2.41	0.001%
50	-2.42	-34.68	-4.15	2.42	34.68	4.15	0.001%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00001134
2	Yes	19	0.00000001	0.00009782
3	Yes	18	0.00000001	0.00014575
4	Yes	23	0.00000001	0.00014573
5	Yes	23	0.00000001	0.00010691
6	Yes	23	0.00000001	0.00014526
7	Yes	23	0.00000001	0.00010654
8	Yes	20	0.00000001	0.00007741
9	Yes	19	0.00000001	0.00011546
10	Yes	23	0.00000001	0.00014213
11	Yes	23	0.00000001	0.00010440
12	Yes	23	0.00000001	0.00014654
13	Yes	23	0.00000001	0.00010765
14	Yes	19	0.00000001	0.00011270
15	Yes	19	0.00000001	0.00008610
16	Yes	23	0.00000001	0.00013884
17	Yes	23	0.00000001	0.00010215
18	Yes	23	0.00000001	0.00014268
19	Yes	23	0.00000001	0.00010497
20	Yes	20	0.00000001	0.00008558
21	Yes	19	0.00000001	0.00012802
22	Yes	23	0.00000001	0.00014919
23	Yes	23	0.00000001	0.00010953
24	Yes	23	0.00000001	0.00014177
25	Yes	23	0.00000001	0.00010409
26	Yes	14	0.00000001	0.00011508
27	Yes	21	0.00000001	0.00011184
28	Yes	21	0.00000001	0.00012687
29	Yes	21	0.00000001	0.00012680
30	Yes	21	0.00000001	0.00010977
31	Yes	21	0.00000001	0.00012434
32	Yes	21	0.00000001	0.00012285
33	Yes	21	0.00000001	0.00010788
34	Yes	21	0.00000001	0.00012103
35	Yes	21	0.00000001	0.00012184
36	Yes	21	0.00000001	0.00010741
37	Yes	21	0.00000001	0.00012450
38	Yes	21	0.00000001	0.00012521
39	Yes	16	0.00000001	0.00004966
40	Yes	17	0.00000001	0.00010192
41	Yes	17	0.00000001	0.00010184
42	Yes	16	0.00000001	0.00005228
43	Yes	17	0.00000001	0.00008976
44	Yes	17	0.00000001	0.00010803
45	Yes	16	0.00000001	0.00004936
46	Yes	17	0.00000001	0.00008983
47	Yes	17	0.00000001	0.00009224
48	Yes	16	0.00000001	0.00005258
49	Yes	17	0.00000001	0.00011032
50	Yes	17	0.00000001	0.00009046

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	133 - 128	16.237	39	1.2026	0.0183
L2	128 - 123	14.983	39	1.1870	0.0140
L3	123 - 118	13.760	39	1.1463	0.0105
L4	118 - 113	12.589	39	1.0884	0.0076
L5	113 - 108	11.485	39	1.0189	0.0052
L6	108 - 105.25	10.458	39	0.9404	0.0033
L7	105.25 - 105	9.930	39	0.8907	0.0025
L8	105 - 100	9.884	39	0.8887	0.0025
L9	100 - 98.5	8.977	39	0.8432	0.0018
L10	98.5 - 98.25	8.714	39	0.8288	0.0017
L11	98.25 - 91.33	8.671	39	0.8272	0.0017
L12	95 - 90	8.115	39	0.8045	0.0015
L13	90 - 89.25	7.283	39	0.7805	0.0013
L14	89.25 - 89	7.161	39	0.7747	0.0013
L15	89 - 87.75	7.120	39	0.7730	0.0012
L16	87.75 - 87.5	6.919	39	0.7646	0.0012
L17	87.5 - 82.5	6.879	39	0.7622	0.0012
L18	82.5 - 77.5	6.107	39	0.7114	0.0009
L19	77.5 - 77.25	5.390	39	0.6578	0.0007
L20	77.25 - 72.25	5.356	39	0.6558	0.0007
L21	72.25 - 67.25	4.691	39	0.6135	0.0006
L22	67.25 - 62.25	4.072	39	0.5696	0.0005
L23	62.25 - 62	3.499	39	0.5242	0.0004
L24	62 - 61.75	3.472	39	0.5220	0.0004
L25	61.75 - 59.5	3.444	39	0.5197	0.0004
L26	59.5 - 59.25	3.204	39	0.4990	0.0003
L27	59.25 - 54.25	3.178	39	0.4969	0.0003
L28	54.25 - 45.25	2.680	39	0.4540	0.0003
L29	50 - 45	2.293	39	0.4168	0.0002
L30	45 - 40	1.867	39	0.3944	0.0002
L31	40 - 39.5	1.477	39	0.3515	0.0002
L32	39.5 - 39.25	1.440	39	0.3473	0.0001
L33	39.25 - 34.5	1.422	39	0.3452	0.0001
L34	34.5 - 34.25	1.099	39	0.3047	0.0001
L35	34.25 - 29.75	1.083	39	0.3025	0.0001
L36	29.75 - 29.5	0.817	39	0.2623	0.0001
L37	29.5 - 24.5	0.803	39	0.2602	0.0001
L38	24.5 - 19.5	0.554	39	0.2158	0.0001
L39	19.5 - 14.5	0.352	39	0.1716	0.0000
L40	14.5 - 12.92	0.195	39	0.1276	0.0000
L41	12.92 - 12.67	0.155	39	0.1141	0.0000
L42	12.67 - 12	0.149	39	0.1121	0.0000
L43	12 - 11.75	0.134	39	0.1070	0.0000
L44	11.75 - 6.75	0.128	39	0.1047	0.0000
L45	6.75 - 1.75	0.042	39	0.0599	0.0000
L46	1.75 - 0	0.003	39	0.0152	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
135.00	VHLP2-23	39	16.237	1.2026	0.0183	9513
133.00	AAHC w/ Mount Pipe	39	16.237	1.2026	0.0183	9513
110.00	(2) SBNHH-1D65B w/ Mount Pipe	39	10.859	0.9761	0.0041	3566
100.00	APXVAARR24_43-U-NA20 w/ Mount Pipe	39	8.977	0.8432	0.0018	6551
90.00	APXV18-206517S-C	39	7.283	0.7805	0.0013	8422
50.00	KS24019-L112A	39	2.293	0.4168	0.0002	8861

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	133 - 128	78.608	2	5.7268	0.0901
L2	128 - 123	72.630	2	5.6826	0.0693
L3	123 - 118	66.770	2	5.5094	0.0522
L4	118 - 113	61.140	2	5.2479	0.0381
L5	113 - 108	55.815	2	4.9259	0.0262
L6	108 - 105.25	50.850	2	4.5574	0.0166
L7	105.25 - 105	48.294	2	4.3224	0.0123
L8	105 - 100	48.069	2	4.3127	0.0122
L9	100 - 98.5	43.667	2	4.0959	0.0092
L10	98.5 - 98.25	42.392	2	4.0270	0.0084
L11	98.25 - 91.33	42.182	2	4.0192	0.0083
L12	95 - 90	39.485	2	3.9104	0.0072
L13	90 - 89.25	35.443	2	3.7947	0.0064
L14	89.25 - 89	34.849	2	3.7666	0.0062
L15	89 - 87.75	34.652	2	3.7585	0.0061
L16	87.75 - 87.5	33.674	2	3.7178	0.0059
L17	87.5 - 82.5	33.480	2	3.7064	0.0058
L18	82.5 - 77.5	29.729	2	3.4609	0.0046
L19	77.5 - 77.25	26.242	2	3.2012	0.0036
L20	77.25 - 72.25	26.075	2	3.1915	0.0036
L21	72.25 - 67.25	22.841	2	2.9864	0.0029
L22	67.25 - 62.25	19.827	2	2.7731	0.0024
L23	62.25 - 62	17.039	2	2.5526	0.0019
L24	62 - 61.75	16.906	2	2.5416	0.0019
L25	61.75 - 59.5	16.773	2	2.5306	0.0019
L26	59.5 - 59.25	15.604	2	2.4300	0.0017
L27	59.25 - 54.25	15.478	2	2.4197	0.0017
L28	54.25 - 45.25	13.054	2	2.2111	0.0013
L29	50 - 45	11.167	2	2.0300	0.0011
L30	45 - 40	9.095	2	1.9208	0.0009
L31	40 - 39.5	7.194	2	1.7121	0.0007
L32	39.5 - 39.25	7.015	2	1.6915	0.0007
L33	39.25 - 34.5	6.927	2	1.6812	0.0007
L34	34.5 - 34.25	5.353	2	1.4840	0.0006
L35	34.25 - 29.75	5.276	2	1.4733	0.0006
L36	29.75 - 29.5	3.980	2	1.2778	0.0005
L37	29.5 - 24.5	3.913	2	1.2673	0.0004
L38	24.5 - 19.5	2.699	2	1.0510	0.0003
L39	19.5 - 14.5	1.712	2	0.8357	0.0002
L40	14.5 - 12.92	0.949	2	0.6215	0.0002
L41	12.92 - 12.67	0.755	2	0.5556	0.0002
L42	12.67 - 12	0.726	2	0.5462	0.0002
L43	12 - 11.75	0.651	2	0.5209	0.0002
L44	11.75 - 6.75	0.624	2	0.5101	0.0002
L45	6.75 - 1.75	0.205	2	0.2916	0.0001
L46	1.75 - 0	0.014	2	0.0739	0.0000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
135.00	VHLP2-23	2	78.608	5.7268	0.0901	2592
133.00	AAHC w/ Mount Pipe	2	78.608	5.7268	0.0901	2592
110.00	(2) SBNHH-1D65B w/ Mount Pipe	2	52.789	4.7257	0.0204	768
100.00	APXVAARR24_43-U-NA20 w/ Mount Pipe	2	43.667	4.0959	0.0092	1384
90.00	APXV18-206517S-C	2	35.443	3.7947	0.0064	1760
50.00	KS24019-L112A	2	11.167	2.0300	0.0011	1826

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	133 - 128 (1)	TP14.48x13.48x0.19	5.00	0.00	0.0	8.74	-3.11	-	-
L2	128 - 123 (2)	TP15.48x14.48x0.19	5.00	0.00	0.0	9.35	-3.32	-	-
L3	123 - 118 (3)	TP16.48x15.48x0.19	5.00	0.00	0.0	9.97	-3.55	-	-
L4	118 - 113 (4)	TP17.48x16.48x0.19	5.00	0.00	0.0	10.58	-3.79	-	-
L5	113 - 108 (5)	TP18.48x17.48x0.19	5.00	0.00	0.0	11.19	-6.77	-	-
L6	108 - 105.25 (6)	TP19.03x18.48x0.19	2.75	0.00	0.0	11.52	-6.96	-	-
L7	105.25 - 105 (7)	TP19.08x19.03x0.46	0.25	0.00	0.0	27.50	-7.00	-	-
L8	105 - 100 (8)	TP20.08x19.08x0.44	5.00	0.00	0.0	27.82	-7.60	-	-
L9	100 - 98.5 (9)	TP20.38x20.08x0.44	1.50	0.00	0.0	28.25	-10.88	-	-
L10	98.5 - 98.25 (10)	TP20.43x20.38x0.72	0.25	0.00	0.0	45.38	-10.94	-	-
L11	98.25 - 91.33 (11)	TP21.81x20.43x0.69	6.92	0.00	0.0	45.29	-11.55	-	-
L12	91.33 - 90 (12)	TP21.7x20.7x0.74	5.00	0.00	0.0	49.78	-13.16	-	-
L13	90 - 89.25 (13)	TP21.85x21.7x0.74	0.75	0.00	0.0	50.13	-13.63	-	-
L14	89.25 - 89 (14)	TP21.9x21.85x0.88	0.25	0.00	0.0	59.23	-13.69	-	-
L15	89 - 87.75 (15)	TP22.15x21.9x0.88	1.25	0.00	0.0	59.94	-13.99	-	-
L16	87.75 - 87.5 (16)	TP22.2x22.15x0.61	0.25	0.00	0.0	42.57	-14.04	-	-
L17	87.5 - 82.5 (17)	TP23.2x22.2x0.59	5.00	0.00	0.0	42.77	-15.00	-	-
L18	82.5 - 77.5 (18)	TP24.2x23.2x0.58	5.00	0.00	0.0	43.74	-15.99	-	-
L19	77.5 - 77.25 (19)	TP24.25x24.2x0.8	0.25	0.00	0.0	60.40	-16.06	-	-
L20	77.25 - 72.25 (20)	TP25.25x24.25x0.76	5.00	0.00	0.0	60.11	-17.32	-	-
L21	72.25 - 67.25 (21)	TP26.24x25.25x0.74	5.00	0.00	0.0	60.57	-18.61	-	-
L22	67.25 - 62.25 (22)	TP27.24x26.24x0.71	5.00	0.00	0.0	60.87	-19.92	-	-
L23	62.25 - 62 (23)	TP27.29x27.24x0.71	0.25	0.00	0.0	60.98	-19.99	-	-
L24	62 - 61.75 (24)	TP27.34x27.29x0.71	0.25	0.00	0.0	61.10	-20.06	-	-
L25	61.75 - 59.5 (25)	TP27.79x27.34x0.7	2.25	0.00	0.0	61.07	-20.66	-	-
L26	59.5 - 59.25 (26)	TP27.84x27.79x0.76	0.25	0.00	0.0	66.49	-20.73	-	-
L27	59.25 - 54.25 (27)	TP28.84x27.84x0.75	5.00	0.00	0.0	67.84	-22.15	-	-
L28	54.25 - 45.25 (28)	TP30.64x28.84x0.73	9.00	0.00	0.0	67.62	-23.38	-	-
L29	45.25 - 45 (29)	TP30.19x29.19x0.79	5.00	0.00	0.0	74.33	-26.38	-	-
L30	45 - 40 (30)	TP31.19x30.19x0.76	5.00	0.00	0.0	74.47	-27.97	-	-
L31	40 - 39.5 (31)	TP31.29x31.19x0.76	0.50	0.00	0.0	74.72	-28.14	-	-
L32	39.5 - 39.25 (32)	TP31.34x31.29x0.76	0.25	0.00	0.0	74.84	-28.22	-	-
L33	39.25 - 34.5 (33)	TP32.29x31.34x0.75	4.75	0.00	0.0	75.93	-29.84	-	-
L34	34.5 - 34.25 (34)	TP32.34x32.29x0.71	0.25	0.00	0.0	72.32	-29.93	-	-
L35	34.25 - 29.75 (35)	TP33.24x32.34x0.7	4.50	0.00	0.0	73.10	-31.41	-	-
L36	29.75 - 29.5 (36)	TP33.29x33.24x0.71	0.25	0.00	0.0	74.49	-31.50	-	-
L37	29.5 - 24.5 (37)	TP34.3x33.29x0.69	5.00	0.00	0.0	74.13	-33.18	-	-
L38	24.5 - 19.5 (38)	TP35.3x34.3x0.67	5.00	0.00	0.0	74.98	-34.90	-	-
L39	19.5 - 14.5 (39)	TP36.3x35.3x0.66	5.00	0.00	0.0	75.74	-36.63	-	-
L40	14.5 - 12.92 (40)	TP36.61x36.3x0.66	1.58	0.00	0.0	76.41	-37.18	-	-
L41	12.92 - 12.67 (41)	TP36.66x36.61x0.74	0.25	0.00	0.0	85.03	-37.29	-	-
L42	12.67 - 12 (42)	TP36.8x36.66x0.74	0.67	0.00	0.0	85.35	-37.55	-	-
L43	12 - 11.75 (43)	TP36.85x36.8x0.64	0.25	0.00	0.0	74.04	-37.63	-	-
L44	11.75 - 6.75 (44)	TP37.85x36.85x0.62	5.00	0.00	0.0	74.62	-39.30	-	-
L45	6.75 - 1.75 (45)	TP38.85x37.85x0.61	5.00	0.00	0.0	75.11	-41.00	-	-
L46	1.75 - 0 (46)	TP39.2x38.85x0.61	1.75	0.00	0.0	75.80	-41.60	-	-

Pole Bending Design Data

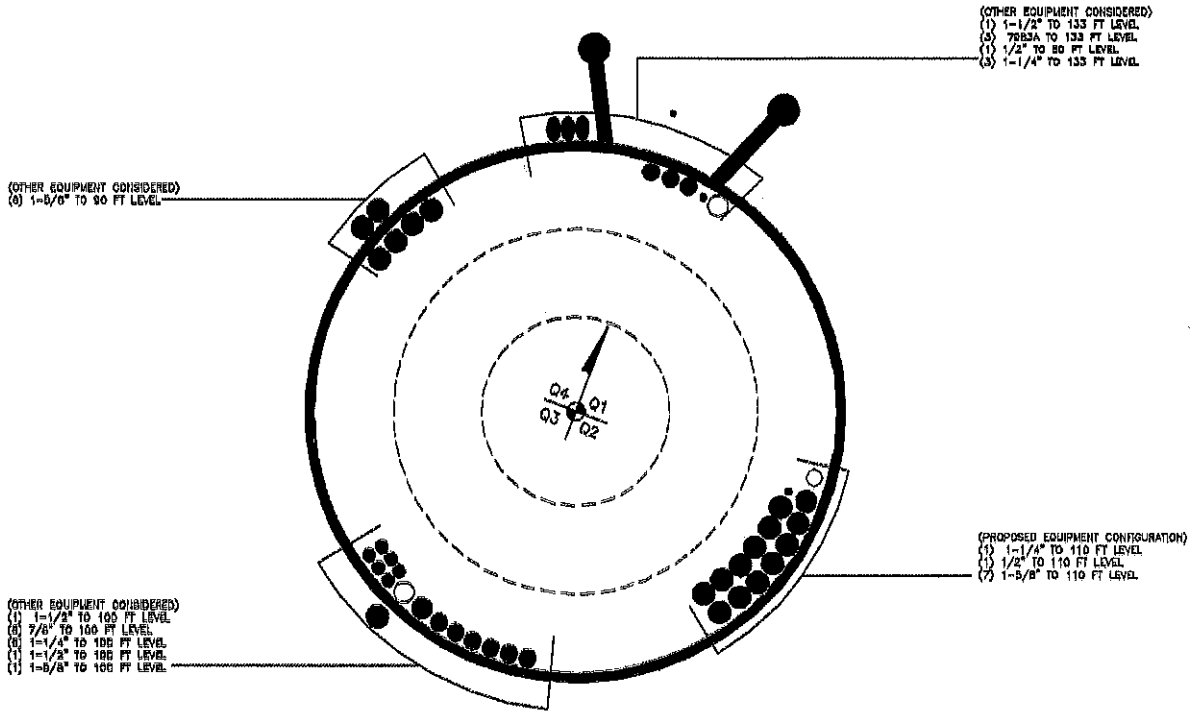
Section No.	Elevation	Size	M_{ux}	ϕM_{nx}	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy}	ϕM_{ny}	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
	ft		kip-ft	kip-ft		kip-ft	kip-ft	
L1	133 - 128 (1)	TP14.48x13.48x0.19	18.73	-	-	-	-	-
L2	128 - 123 (2)	TP15.48x14.48x0.19	43.73	-	-	-	-	-
L3	123 - 118 (3)	TP16.48x15.48x0.19	70.12	-	-	-	-	-
L4	118 - 113 (4)	TP17.48x16.48x0.19	97.93	-	-	-	-	-
L5	113 - 108 (5)	TP18.48x17.48x0.19	135.89	-	-	-	-	-
L6	108 - 105.25 (6)	TP19.03x18.48x0.19	164.48	-	-	-	-	-
L7	105.25 - 105 (7)	TP19.08x19.03x0.46	167.10	-	-	-	-	-
L8	105 - 100 (8)	TP20.08x19.08x0.44	220.48	-	-	-	-	-
L9	100 - 98.5 (9)	TP20.38x20.08x0.44	242.27	-	-	-	-	-
L10	98.5 - 98.25 (10)	TP20.43x20.38x0.72	245.92	-	-	-	-	-
L11	98.25 - 91.33 (11)	TP21.81x20.43x0.69	293.87	-	-	-	-	-
L12	91.33 - 90 (12)	TP21.7x20.7x0.74	369.70	-	-	-	-	-
L13	90 - 89.25 (13)	TP21.85x21.7x0.74	381.70	-	-	-	-	-
L14	89.25 - 89 (14)	TP21.9x21.85x0.88	385.71	-	-	-	-	-
L15	89 - 87.75 (15)	TP22.15x21.9x0.88	405.85	-	-	-	-	-
L16	87.75 - 87.5 (16)	TP22.2x22.15x0.61	409.90	-	-	-	-	-
L17	87.5 - 82.5 (17)	TP23.2x22.2x0.59	491.96	-	-	-	-	-
L18	82.5 - 77.5 (18)	TP24.2x23.2x0.58	576.18	-	-	-	-	-
L19	77.5 - 77.25 (19)	TP24.25x24.2x0.8	580.45	-	-	-	-	-
L20	77.25 - 72.25 (20)	TP25.25x24.25x0.76	666.99	-	-	-	-	-
L21	72.25 - 67.25 (21)	TP26.24x25.25x0.74	755.81	-	-	-	-	-
L22	67.25 - 62.25 (22)	TP27.24x26.24x0.71	846.88	-	-	-	-	-
L23	62.25 - 62 (23)	TP27.29x27.24x0.71	851.49	-	-	-	-	-
L24	62 - 61.75 (24)	TP27.34x27.29x0.71	856.11	-	-	-	-	-
L25	61.75 - 59.5 (25)	TP27.79x27.34x0.7	897.91	-	-	-	-	-
L26	59.5 - 59.25 (26)	TP27.84x27.79x0.76	902.58	-	-	-	-	-
L27	59.25 - 54.25 (27)	TP28.84x27.84x0.75	997.18	-	-	-	-	-
L28	54.25 - 45.25 (28)	TP30.64x28.84x0.73	1079.31	-	-	-	-	-
L29	45.25 - 45 (29)	TP30.19x29.19x0.79	1178.64	-	-	-	-	-
L30	45 - 40 (30)	TP31.19x30.19x0.76	1280.28	-	-	-	-	-
L31	40 - 39.5 (31)	TP31.29x31.19x0.76	1290.55	-	-	-	-	-
L32	39.5 - 39.25 (32)	TP31.34x31.29x0.76	1295.69	-	-	-	-	-
L33	39.25 - 34.5 (33)	TP32.29x31.34x0.75	1394.38	-	-	-	-	-
L34	34.5 - 34.25 (34)	TP32.34x32.29x0.71	1399.63	-	-	-	-	-
L35	34.25 - 29.75 (35)	TP33.24x32.34x0.7	1494.79	-	-	-	-	-
L36	29.75 - 29.5 (36)	TP33.29x33.24x0.71	1500.12	-	-	-	-	-
L37	29.5 - 24.5 (37)	TP34.3x33.29x0.69	1607.67	-	-	-	-	-
L38	24.5 - 19.5 (38)	TP35.3x34.3x0.67	1717.02	-	-	-	-	-
L39	19.5 - 14.5 (39)	TP36.3x35.3x0.66	1828.15	-	-	-	-	-
L40	14.5 - 12.92 (40)	TP36.61x36.3x0.66	1863.64	-	-	-	-	-
L41	12.92 - 12.67 (41)	TP36.66x36.61x0.74	1869.28	-	-	-	-	-
L42	12.67 - 12 (42)	TP36.8x36.66x0.74	1884.39	-	-	-	-	-
L43	12 - 11.75 (43)	TP36.85x36.8x0.64	1890.04	-	-	-	-	-
L44	11.75 - 6.75 (44)	TP37.85x36.85x0.62	2003.93	-	-	-	-	-
L45	6.75 - 1.75 (45)	TP38.85x37.85x0.61	2119.50	-	-	-	-	-
L46	1.75 - 0 (46)	TP39.2x38.85x0.61	2160.35	-	-	-	-	-

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	133 - 128 (1)	TP14.48x13.48x0.19	4.87	-	-	-	-	-
L2	128 - 123 (2)	TP15.48x14.48x0.19	5.14	-	-	-	-	-
L3	123 - 118 (3)	TP16.48x15.48x0.19	5.42	-	-	-	-	-
L4	118 - 113 (4)	TP17.48x16.48x0.19	5.71	-	-	-	-	-
L5	113 - 108 (5)	TP18.48x17.48x0.19	10.32	-	-	-	-	-
L6	108 - 105.25 (6)	TP19.03x18.48x0.19	10.49	-	-	-	-	-
L7	105.25 - 105 (7)	TP19.08x19.03x0.46	10.50	-	-	-	-	-
L8	105 - 100 (8)	TP20.08x19.08x0.44	10.86	-	-	-	-	-
L9	100 - 98.5 (9)	TP20.38x20.08x0.44	14.59	-	-	-	-	-
L10	98.5 - 98.25 (10)	TP20.43x20.38x0.72	14.61	-	-	-	-	-
L11	98.25 - 91.33 (11)	TP21.81x20.43x0.69	14.91	-	-	-	-	-
L12	91.33 - 90 (12)	TP21.7x20.7x0.74	15.42	-	-	-	-	-
L13	90 - 89.25 (13)	TP21.85x21.7x0.74	16.04	-	-	-	-	-
L14	89.25 - 89 (14)	TP21.9x21.85x0.88	16.06	-	-	-	-	-
L15	89 - 87.75 (15)	TP22.15x21.9x0.88	16.18	-	-	-	-	-
L16	87.75 - 87.5 (16)	TP22.2x22.15x0.61	16.20	-	-	-	-	-
L17	87.5 - 82.5 (17)	TP23.2x22.2x0.59	16.64	-	-	-	-	-
L18	82.5 - 77.5 (18)	TP24.2x23.2x0.58	17.07	-	-	-	-	-
L19	77.5 - 77.25 (19)	TP24.25x24.2x0.8	17.09	-	-	-	-	-
L20	77.25 - 72.25 (20)	TP25.25x24.25x0.76	17.55	-	-	-	-	-
L21	72.25 - 67.25 (21)	TP26.24x25.25x0.74	18.00	-	-	-	-	-
L22	67.25 - 62.25 (22)	TP27.24x26.24x0.71	18.45	-	-	-	-	-
L23	62.25 - 62 (23)	TP27.29x27.24x0.71	18.46	-	-	-	-	-
L24	62 - 61.75 (24)	TP27.34x27.29x0.71	18.49	-	-	-	-	-
L25	61.75 - 59.5 (25)	TP27.79x27.34x0.7	18.69	-	-	-	-	-
L26	59.5 - 59.25 (26)	TP27.84x27.79x0.76	18.71	-	-	-	-	-
L27	59.25 - 54.25 (27)	TP28.84x27.84x0.75	19.15	-	-	-	-	-
L28	54.25 - 45.25 (28)	TP30.64x28.84x0.73	19.51	-	-	-	-	-
L29	45.25 - 45 (29)	TP30.19x29.19x0.79	20.13	-	-	-	-	-
L30	45 - 40 (30)	TP31.19x30.19x0.76	20.54	-	-	-	-	-
L31	40 - 39.5 (31)	TP31.29x31.19x0.76	20.58	-	-	-	-	-
L32	39.5 - 39.25 (32)	TP31.34x31.29x0.76	20.60	-	-	-	-	-
L33	39.25 - 34.5 (33)	TP32.29x31.34x0.75	20.98	-	-	-	-	-
L34	34.5 - 34.25 (34)	TP32.34x32.29x0.71	20.99	-	-	-	-	-
L35	34.25 - 29.75 (35)	TP33.24x32.34x0.7	21.33	-	-	-	-	-
L36	29.75 - 29.5 (36)	TP33.29x33.24x0.71	21.34	-	-	-	-	-
L37	29.5 - 24.5 (37)	TP34.3x33.29x0.69	21.70	-	-	-	-	-
L38	24.5 - 19.5 (38)	TP35.3x34.3x0.67	22.06	-	-	-	-	-
L39	19.5 - 14.5 (39)	TP36.3x35.3x0.66	22.42	-	-	-	-	-
L40	14.5 - 12.92 (40)	TP36.61x36.3x0.66	22.54	-	-	-	-	-
L41	12.92 - 12.67 (41)	TP36.66x36.61x0.74	22.55	-	-	-	-	-
L42	12.67 - 12 (42)	TP36.8x36.66x0.74	22.60	-	-	-	-	-
L43	12 - 11.75 (43)	TP36.85x36.8x0.64	22.61	-	-	-	-	-
L44	11.75 - 6.75 (44)	TP37.85x36.85x0.62	22.97	-	-	-	-	-
L45	6.75 - 1.75 (45)	TP38.85x37.85x0.61	23.30	-	-	-	-	-
L46	1.75 - 0 (46)	TP39.2x38.85x0.61	23.43	-	-	-	-	-

APPENDIX B

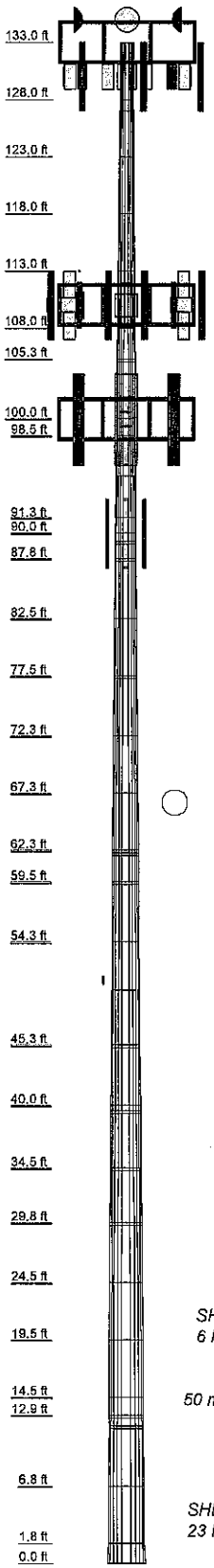
BASE LEVEL DRAWING



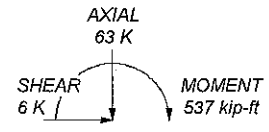
APPENDIX C

ADDITIONAL CALCULATIONS

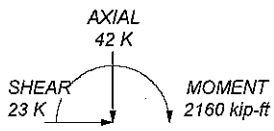
Section	1	2	3	4	5	6	8	9	11	12	17	18	20	21	22	25	27	28	29	30	33	34	35	36	37	38	39	40	44	45	46
Length (ft)	5.00	5.00	5.00	5.00	5.00	2.75	5.00	0.25	5.00	0.25	5.00	5.00	5.00	5.00	5.00	0.25	5.00	9.00	0.25	5.00	0.25	4.75	0.25	4.50	5.00	5.00	5.00	0.25	5.00	5.00	1.75
Number of Sides	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Thickness (in)	0.19	0.19	0.19	0.19	0.19	0.19	0.44	0.44	0.69	0.69	0.59	0.57	0.76	0.74	0.71	0.71	0.75	0.72	0.79	0.76	0.75	0.75	0.75	0.700	0.69	0.67	0.66	0.66	0.62	0.61	0.61
Socket Length (ft)									3.67									4.75													
Top Dia (in)	13.48	14.48	15.48	16.48	17.48	18.48	19.08	19.68	20.43	20.68	21.81	22.20	23.20	24.29	25.25	25.65	26.24	27.84	28.19	28.79	29.39	30.19	30.59	31.19	31.79	32.39	32.99	33.29	33.89	34.49	38.86
Bot Dia (in)	14.48	15.48	16.48	17.48	18.48	19.08	20.08	20.68	21.81	22.20	23.20	24.20	25.28	26.24	27.24	27.64	28.84	30.64	31.19	31.79	32.39	33.19	33.59	34.19	34.79	35.39	35.99	36.29	36.89	37.49	39.20
Grade	A572-65																														
Weight (K)	0.1	0.2	0.2	0.2	0.2	0.1	0.4	0.0	0.9	0.0	0.7	0.7	0.9	0.9	0.9	0.0	1.0	1.9	0.1	1.2	0.1	1.2	0.1	1.1	1.2	1.2	1.3	0.4	1.2	1.2	23.50.4



ALL REACTIONS ARE FACTORED



TORQUE 1 kip-ft
50 mph WIND - 1.27 in ICE



TORQUE 0 kip-ft
REACTIONS - 125 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
AAHC w/ Mount Pipe	133	DB-T1-6Z-8AB-0Z	110
AAHC w/ Mount Pipe	133	Platform Mount [LP 602-1]	110
AAHC w/ Mount Pipe	133	(2) SBNHH-1D65B w/ Mount Pipe	110
APXVSPP18-C-A20 w/ Mount Pipe	133	(2) SBNHH-1D65B w/ Mount Pipe	110
(2) APXVSPP18-C-A20 w/ Mount Pipe	133	(2) SBNHH-1D65B w/ Mount Pipe	110
APXVSPP18-C-A20 w/ Mount Pipe	133	RADIO 4449 B12/B71	100
(2) IBC1900HB-2	133	RADIO 4449 B12/B71	100
IBC1900HB-2	133	RADIO 4449 B12/B71	100
IBC1900HB-2	133	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	100
(2) 800 EXTERNAL NOTCH FILTER	133		
800 EXTERNAL NOTCH FILTER	133	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	100
(2) 800MHZ RRH	133		
800MHZ RRH	133	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	100
(4) 1900MHz RRH (65MHz)	133		
(2) 1900MHz RRH (65MHz)	133	AIR 32 B2A B66AA w/ Mount Pipe	100
PD2DE-700/2700	133	AIR 32 B2A B66AA w/ Mount Pipe	100
PD2DE-700/2700	133	AIR 32 B2A B66AA w/ Mount Pipe	100
Platform Mount [LP 602-1]	133	ATMAA1412D-1A20	100
VHLP2-23	133	ATMAA1412D-1A20	100
VHLP2-23	133	ATMAA1412D-1A20	100
VHLP2-18	133	Platform Mount [LP 303-1]	100
BXA-80063/4CF w/ Mount Pipe	110	APXVAARR24_43-U-NA20 w/ Mount Pipe	100
BXA-80063/4CF w/ Mount Pipe	110	APXVAARR24_43-U-NA20 w/ Mount Pipe	100
BXA-80063/4CF w/ Mount Pipe	110		
(2) RFV01U-D2A	110	APXVAARR24_43-U-NA20 w/ Mount Pipe	100
RFV01U-D2A	110		
RFV01U-D1A	110	Pipe Mount [PM 601-3]	90
(2) RFV01U-D1A	110	APXV18-206517S-C	90
RVZDC-6627-PF-48	110	APXV18-206517S-C	90
BXA-80063/4CF w/ Mount Pipe	110	APXV18-206517S-C	90
BXA-80063/4CF w/ Mount Pipe	110	Side Arm Mount [SO 701-3]	50
BXA-80063/4CF w/ Mount Pipe	110	KS24019-L112A	50
BULLET III	110		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-H Standard.
3. Tower designed for a 125 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.27 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TIA-222-H Annex S

PJF *Paul J. Ford and Company*
250 East Broad St., Suite 600
Columbus, OH 43215
Phone: (614) 221-6679
FAX:

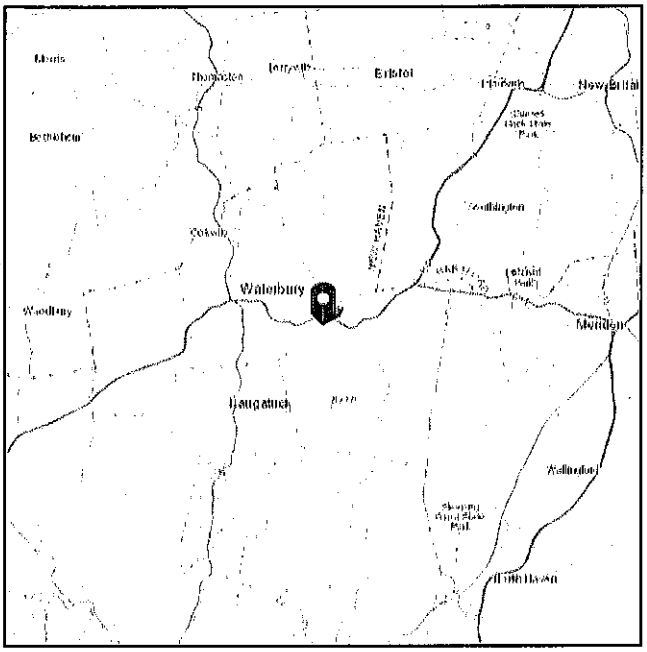
Job: *133' Monopole | Waterbury, CT*
Project: *37518-3068.001.7805 | BU 876317*
Client: Crown Castle International | Drawn by: mtimas | App'd:
Code: TIA-222-H | Date: 09/11/18 | Scale: NTS
Path: G:\TOWER\375 Crown Castle\2018\37518-3068_876317 Waterbury\37518-3068.001.7805_BA_165841\Wind\37518-3068.001.7805_CCIsite.eri | Dwg No. E-

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-10
Risk Category: II
Soil Class: D - Stiff Soil

Elevation: 660.21 ft (NAVD 88)
Latitude: 41.537861
Longitude: -72.985028



Wind

Results:

Wind Speed:	121 Vmph
10-year MRI	76 Vmph
25-year MRI	86 Vmph
50-year MRI	92 Vmph
100-year MRI	99 Vmph
Data Source:	ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, incorporating errata of March 12, 2014
Date Accessed:	Mon Sep 10 2018

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-10 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

Mountainous terrain, gorges, ocean promontories, and special wind regions should be examined for unusual wind conditions.

ASCE
AMERICAN SOCIETY OF CIVIL ENGINEERS

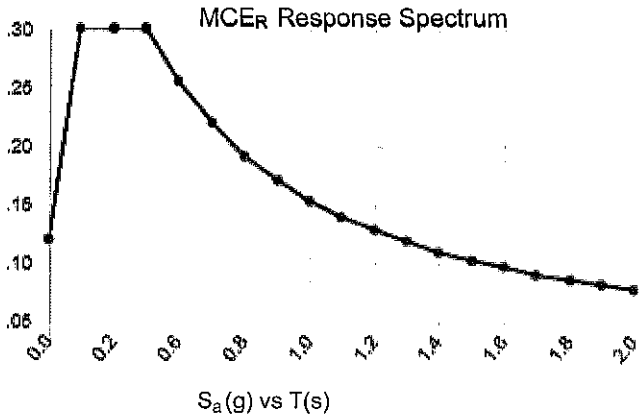
Seismic

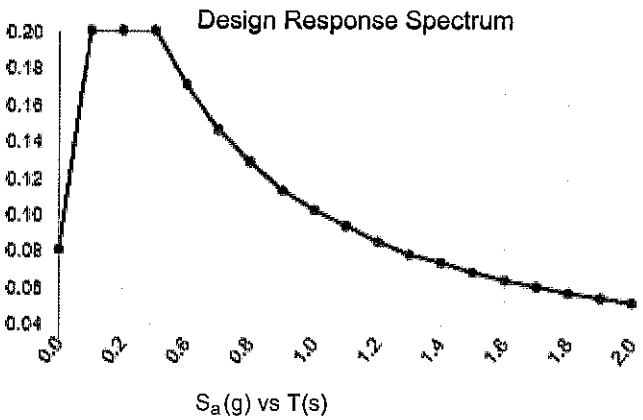
Site Soil Class: D - Stiff Soil

Results:

S_S :	0.188	S_{DS} :	0.200
S_1 :	0.064	S_{D1} :	0.102
F_a :	1.600	T_L :	6.000
F_v :	2.400	PGA :	0.097
S_{MS} :	0.300	PGA_M :	0.155
S_{M1} :	0.153	F_{PGA} :	1.600
		I_e :	1

Seismic Design Category B





Data Accessed: Mon Sep 10 2018

Date Source: USGS Seismic Design Maps based on ASCE/SEI 7-10, incorporating Supplement 1 and errata of March 31, 2013, and ASCE/SEI 7-10 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-10 Ch. 21 are available from USGS.

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Ice

Results:

Ice Thickness:	0.75 in.
Concurrent Temperature:	15 F
Gust Speed:	50 mph
Data Source:	Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8
Date Accessed:	Mon Sep 10 2018

Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 50-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

CCIpole

per TIA-222- H

Site BU: 876317

Work Order: _____

CROWN CASTLE

Pole Geometry

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	133	41.67	3.67	12	13.48	21.81	0.19	Auto	A572-65
2	95	49.75	4.75	12	20.70	30.64	0.25	Auto	A572-65
3	50	50	0	12	29.19	39.2	0.31	Auto	A572-65

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12
1	0	12.92	plate	.875 x 1.25; (1) (1.187	2							o		o			
2	12.92	29.75	plate	.875 x 1.25; (1) (1.187	1								o				
3	0	29.75	plate	.875 x 1.25; (1) (1.187	2				o								o
4	29.75	59.5	plate	.625 x 1.25; (1) (1.187	3				o				o				o
5	59.5	89.25	plate	5.5 x 1.25; (1) (1.1875	3				o				o				o
6	89.25	98.5	plate	.625 x 1.25; (1) (1.187	3				o				o				o
7	12	39.5	plate	I-045100; (1) (1.1875)	1	o											
8	12	34.5	plate	I-045100; (1) (1.1875)	2						o				o		
9	34.5	62	plate	I-045100; (1) (1.1875)	3			o				o				o	
10	62	77.5	plate	I-045100; (1) (1.1875)	3		o				o				o		
11	87.75	105.25	plate	I-045100; (1) (1.1875)	3		o				o				o		
12																	

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Length (in)	Top Termination Length (in)	L_u (in)	Net Area (in^2)	Bolt Hole Size (in)	Reinforcement Material
1	6.875	1.25	8.59375	0.625	n/a	42.000	15.000	7.031	1.1875	A572-65
2	6.875	1.25	8.59375	0.625	42.000	n/a	15.000	7.031	1.1875	A572-65
3	6.875	1.25	8.59375	0.625	n/a	n/a	15.000	7.031	1.1875	A572-65
4	6.625	1.25	8.28125	0.625	n/a	n/a	18.000	6.719	1.1875	A572-65
5	5.5	1.25	6.875	0.625	n/a	n/a	18.000	5.313	1.1875	A572-65
6	3.625	1.25	4.53125	0.625	n/a	n/a	24.000	2.969	1.1875	A572-65
7	4.5	1	4.5	0.5	21.000	21.000	15.000	3.250	1.1875	A514-GR100
8	4.5	1	4.5	0.5	21.000	21.000	15.000	3.250	1.1875	A514-GR100
9	4.5	1	4.5	0.5	21.000	21.000	15.000	3.250	1.1875	A514-GR100
10	4.5	1	4.5	0.5	21.000	21.000	15.000	3.250	1.1875	A514-GR100
11	4.5	1	4.5	0.5	n/a	n/a	15.000	3.250	1.1875	A514-GR100

TNX Geometry Input

Increment (ft): 5

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	133 - 128	5		12	13.480	14.480	0.19	A572-65	1.000
2	128 - 123	5		12	14.480	15.479	0.19	A572-65	1.000
3	123 - 118	5		12	15.479	16.479	0.19	A572-65	1.000
4	118 - 113	5		12	16.479	17.478	0.19	A572-65	1.000
5	113 - 108	5		12	17.478	18.478	0.19	A572-65	1.000
6	108 - 105.25	2.75		12	18.478	19.027	0.19	A572-65	1.000
7	105.25 - 105	0.25		12	19.027	19.077	0.45875	A572-65	0.912
8	105 - 100	5		12	19.077	20.077	0.44	A572-65	0.923
9	100 - 98.5	1.5		12	20.077	20.377	0.44	A572-65	0.916
10	98.5 - 98.25	0.25		12	20.377	20.427	0.715	A572-65	0.871
11	98.25 - 95	6.92	3.67	12	20.427	21.810	0.69	A572-65	0.881
12	95 - 90	5		12	20.700	21.699	0.7375	A572-65	0.892
13	90 - 89.25	0.75		12	21.699	21.849	0.7375	A572-65	0.888
14	89.25 - 89	0.25		12	21.849	21.899	0.875	A572-65	0.871
15	89 - 87.75	1.25		12	21.899	22.149	0.875	A572-65	0.864
16	87.75 - 87.5	0.25		12	22.149	22.198	0.6125	A572-65	0.900
17	87.5 - 82.5	5		12	22.198	23.197	0.5875	A572-65	0.915
18	82.5 - 77.5	5		12	23.197	24.196	0.575	A572-65	0.913
19	77.5 - 77.25	0.25		12	24.196	24.246	0.8	A572-65	0.886
20	77.25 - 72.25	5		12	24.246	25.245	0.7625	A572-65	0.903
21	72.25 - 67.25	5		12	25.245	26.244	0.7375	A572-65	0.910
22	67.25 - 62.25	5		12	26.244	27.243	0.7125	A572-65	0.918
23	62.25 - 62	0.25		12	27.243	27.293	0.7125	A572-65	0.917
24	62 - 61.75	0.25		12	27.293	27.343	0.7125	A572-65	0.916
25	61.75 - 59.5	2.25		12	27.343	27.793	0.7	A572-65	0.923
26	59.5 - 59.25	0.25		12	27.793	27.843	0.7625	A572-65	0.912
27	59.25 - 54.25	5		12	27.843	28.842	0.75	A572-65	0.905
28	54.25 - 50	9	4.75	12	28.842	30.640	0.725	A572-65	0.918
29	50 - 45	5		12	29.190	30.191	0.785	A572-65	0.918
30	45 - 40	5		12	30.191	31.192	0.76	A572-65	0.930
31	40 - 39.5	0.5		12	31.192	31.292	0.76	A572-65	0.928
32	39.5 - 39.25	0.25		12	31.292	31.342	0.76	A572-65	0.987
33	39.25 - 34.5	4.75		12	31.342	32.293	0.7475	A572-65	0.986
34	34.5 - 34.25	0.25		12	32.293	32.343	0.71	A572-65	0.973
35	34.25 - 29.75	4.5		12	32.343	33.244	0.6975	A572-65	0.975
36	29.75 - 29.5	0.25		12	33.244	33.294	0.71	A572-65	0.970
37	29.5 - 24.5	5		12	33.294	34.295	0.685	A572-65	0.988
38	24.5 - 19.5	5		12	34.295	35.296	0.6725	A572-65	0.990
39	19.5 - 14.5	5		12	35.296	36.297	0.66	A572-65	0.994
40	14.5 - 12.92	1.58		12	36.297	36.613	0.66	A572-65	0.989
41	12.92 - 12.67	0.25		12	36.613	36.663	0.735	A572-65	0.991
42	12.67 - 12	0.67		12	36.663	36.798	0.735	A572-65	0.988
43	12 - 11.75	0.25		12	36.798	36.848	0.635	A572-65	0.957
44	11.75 - 6.75	5		12	36.848	37.849	0.6225	A572-65	0.964
45	6.75 - 1.75	5		12	37.849	38.850	0.61	A572-65	0.970
46	1.75 - 0	1.75		12	38.850	39.200	0.61	A572-65	0.966

TNX Section Forces

Increment (ft): 5

	Section Height (ft)	TNX Output P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	133 - 128	3.11	18.73	4.87
2	128 - 123	3.32	43.73	5.14
3	123 - 118	3.55	70.12	5.42
4	118 - 113	3.79	97.93	5.71
5	113 - 108	6.77	135.89	10.32
6	108 - 105.25	6.96	164.48	10.49
7	105.25 - 105	7.00	167.10	10.50
8	105 - 100	7.60	220.48	10.86
9	100 - 98.5	10.88	242.27	14.59
10	98.5 - 98.25	10.94	245.92	14.61
11	98.25 - 95	11.55	293.87	14.91
12	95 - 90	13.16	369.70	15.42
13	90 - 89.25	13.63	381.70	16.04
14	89.25 - 89	13.69	385.71	16.06
15	89 - 87.75	13.99	405.85	16.18
16	87.75 - 87.5	14.04	409.90	16.20
17	87.5 - 82.5	15.00	491.96	16.64
18	82.5 - 77.5	15.99	576.18	17.07
19	77.5 - 77.25	16.06	580.45	17.09
20	77.25 - 72.25	17.32	666.99	17.55
21	72.25 - 67.25	18.61	755.81	18.00
22	67.25 - 62.25	19.92	846.88	18.45
23	62.25 - 62	19.99	851.49	18.46
24	62 - 61.75	20.06	856.11	18.49
25	61.75 - 59.5	20.66	897.91	18.69
26	59.5 - 59.25	20.73	902.58	18.71
27	59.25 - 54.25	22.15	997.18	19.15
28	54.25 - 50	23.38	1079.31	19.51
29	50 - 45	26.38	1178.64	20.13
30	45 - 40	27.97	1280.27	20.54
31	40 - 39.5	28.14	1290.55	20.58
32	39.5 - 39.25	28.22	1295.69	20.60
33	39.25 - 34.5	29.84	1394.38	20.98
34	34.5 - 34.25	29.93	1399.63	20.99
35	34.25 - 29.75	31.41	1494.79	21.33
36	29.75 - 29.5	31.50	1500.12	21.34
37	29.5 - 24.5	33.18	1607.67	21.70
38	24.5 - 19.5	34.90	1717.01	22.06
39	19.5 - 14.5	36.63	1828.15	22.42
40	14.5 - 12.92	37.18	1863.64	22.54
41	12.92 - 12.67	37.29	1869.27	22.55
42	12.67 - 12	37.55	1884.39	22.60
43	12 - 11.75	37.63	1890.04	22.61
44	11.75 - 6.75	39.30	2003.92	22.97
45	6.75 - 1.75	41.00	2119.50	23.30
46	1.75 - 0	41.60	2160.35	23.43

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
133 - 128	Pole	TP14.48x13.48x0.19	Pole	10.0%	Pass
128 - 123	Pole	TP15.479x14.48x0.19	Pole	19.9%	Pass
123 - 118	Pole	TP16.479x15.479x0.19	Pole	28.3%	Pass
118 - 113	Pole	TP17.478x16.479x0.19	Pole	35.6%	Pass
113 - 108	Pole	TP18.478x17.478x0.19	Pole	45.2%	Pass
108 - 105.25	Pole	TP19.027x18.478x0.19	Pole	52.0%	Pass
105.25 - 105	Pole + Reinf.	TP19.077x19.027x0.4588	Reinf. 11 Compression	33.9%	Pass
105 - 100	Pole + Reinf.	TP20.077x19.077x0.44	Reinf. 11 Compression	41.5%	Pass
100 - 98.5	Pole + Reinf.	TP20.377x20.077x0.44	Reinf. 11 Compression	44.9%	Pass
98.5 - 98.25	Pole + Reinf.	TP20.427x20.377x0.715	Reinf. 6 Compression	41.0%	Pass
98.25 - 95	Pole + Reinf.	TP21.81x20.427x0.69	Reinf. 6 Compression	47.1%	Pass
95 - 90	Pole + Reinf.	TP21.699x20.7x0.7375	Reinf. 6 Compression	52.1%	Pass
90 - 89.25	Pole + Reinf.	TP21.849x21.699x0.7375	Reinf. 6 Compression	53.3%	Pass
89.25 - 89	Pole + Reinf.	TP21.899x21.849x0.875	Reinf. 5 Tension Rupture	33.3%	Pass
89 - 87.75	Pole + Reinf.	TP22.149x21.899x0.875	Reinf. 5 Tension Rupture	34.5%	Pass
87.75 - 87.5	Pole + Reinf.	TP22.198x22.149x0.6125	Reinf. 5 Tension Rupture	47.4%	Pass
87.5 - 82.5	Pole + Reinf.	TP23.197x22.198x0.5875	Reinf. 5 Tension Rupture	53.3%	Pass
82.5 - 77.5	Pole + Reinf.	TP24.196x23.197x0.575	Reinf. 5 Tension Rupture	58.8%	Pass
77.5 - 77.25	Pole + Reinf.	TP24.246x24.196x0.8	Reinf. 5 Tension Rupture	43.8%	Pass
77.25 - 72.25	Pole + Reinf.	TP25.245x24.246x0.7625	Reinf. 5 Tension Rupture	47.7%	Pass
72.25 - 67.25	Pole + Reinf.	TP26.244x25.245x0.7375	Reinf. 5 Tension Rupture	51.3%	Pass
67.25 - 62.25	Pole + Reinf.	TP27.243x26.244x0.7125	Reinf. 5 Tension Rupture	54.6%	Pass
62.25 - 62	Pole + Reinf.	TP27.293x27.243x0.7125	Reinf. 5 Tension Rupture	54.8%	Pass
62 - 61.75	Pole + Reinf.	TP27.343x27.293x0.7125	Reinf. 5 Tension Rupture	54.9%	Pass
61.75 - 59.5	Pole + Reinf.	TP27.793x27.343x0.7	Reinf. 5 Tension Rupture	56.4%	Pass
59.5 - 59.25	Pole + Reinf.	TP27.843x27.793x0.7625	Reinf. 4 Tension Rupture	49.8%	Pass
59.25 - 54.25	Pole + Reinf.	TP28.842x27.843x0.75	Reinf. 4 Tension Rupture	52.5%	Pass
54.25 - 50	Pole + Reinf.	TP30.64x28.842x0.725	Reinf. 4 Tension Rupture	54.7%	Pass
50 - 45	Pole + Reinf.	TP30.191x29.19x0.785	Reinf. 4 Tension Rupture	53.8%	Pass
45 - 40	Pole + Reinf.	TP31.192x30.191x0.76	Reinf. 4 Tension Rupture	55.8%	Pass
40 - 39.5	Pole + Reinf.	TP31.292x31.192x0.76	Reinf. 4 Tension Rupture	56.0%	Pass
39.5 - 39.25	Pole + Reinf.	TP31.342x31.292x0.76	Reinf. 4 Tension Rupture	56.0%	Pass
39.25 - 34.5	Pole + Reinf.	TP32.293x31.342x0.7475	Reinf. 4 Tension Rupture	57.8%	Pass
34.5 - 34.25	Pole + Reinf.	TP32.343x32.293x0.71	Reinf. 4 Tension Rupture	62.2%	Pass
34.25 - 29.75	Pole + Reinf.	TP33.244x32.343x0.6975	Reinf. 4 Tension Rupture	63.8%	Pass
29.75 - 29.5	Pole + Reinf.	TP33.294x33.244x0.71	Reinf. 3 Tension Rupture	62.4%	Pass
29.5 - 24.5	Pole + Reinf.	TP34.295x33.294x0.685	Reinf. 3 Tension Rupture	64.0%	Pass
24.5 - 19.5	Pole + Reinf.	TP35.296x34.295x0.6725	Reinf. 3 Tension Rupture	65.5%	Pass
19.5 - 14.5	Pole + Reinf.	TP36.297x35.296x0.66	Reinf. 3 Tension Rupture	66.9%	Pass
14.5 - 12.92	Pole + Reinf.	TP36.613x36.297x0.66	Reinf. 3 Tension Rupture	67.4%	Pass
12.92 - 12.67	Pole + Reinf.	TP36.663x36.613x0.735	Reinf. 3 Tension Rupture	63.0%	Pass
12.67 - 12	Pole + Reinf.	TP36.798x36.663x0.735	Reinf. 3 Tension Rupture	63.2%	Pass
12 - 11.75	Pole + Reinf.	TP36.848x36.798x0.635	Reinf. 3 Tension Rupture	71.3%	Pass
11.75 - 6.75	Pole + Reinf.	TP37.849x36.848x0.6225	Reinf. 3 Tension Rupture	72.6%	Pass
6.75 - 1.75	Pole + Reinf.	TP38.85x37.849x0.61	Reinf. 3 Tension Rupture	73.7%	Pass
1.75 - 0	Pole + Reinf.	TP39.2x38.85x0.61	Reinf. 3 Tension Rupture	74.1%	Pass
				Summary	
			Pole	58.2%	Pass
			Reinforcement	74.1%	Pass
			Overall	74.1%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity*										
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11
133 - 128	228	n/a	228	8.73	n/a	8.73	10.0%											
128 - 123	279	n/a	279	9.34	n/a	9.34	19.9%											
123 - 118	338	n/a	338	9.95	n/a	9.95	28.3%											
118 - 113	404	n/a	404	10.56	n/a	10.56	35.6%											
113 - 108	478	n/a	478	11.17	n/a	11.17	45.2%											
108 - 105.25	523	n/a	523	11.51	n/a	11.51	52.0%											
105.25 - 105	527	692	1219	11.54	13.50	25.04	22.1%											33.9%
105 - 100	615	762	1377	12.15	13.50	25.65	27.6%											41.5%
100 - 98.5	643	783	1426	12.33	13.50	25.83	30.1%											44.9%
98.5 - 98.25	648	1593	2241	12.36	27.09	39.46	19.6%						41.0%					29.1%
98.25 - 95	712	1690	2402	12.76	27.09	39.85	22.8%						47.1%					33.4%
95 - 90	1015	1785	2800	17.24	27.09	44.34	23.1%						52.1%					37.0%
90 - 89.25	1037	1808	2845	17.36	27.09	44.46	23.6%						53.3%					37.8%
89.25 - 89	1044	2306	3350	17.40	34.13	51.53	20.3%					33.3%						32.5%
89 - 87.75	1080	2355	3436	17.60	34.13	51.73	21.2%					34.5%						33.7%
87.75 - 87.5	1088	1445	2533	17.64	20.63	38.27	29.0%					47.4%						
87.5 - 82.5	1243	1568	2812	18.45	20.63	39.07	33.2%					53.3%						
82.5 - 77.5	1413	1697	3110	19.25	20.63	39.87	37.2%					58.8%						
77.5 - 77.25	1422	2791	4213	19.29	34.13	53.41	27.7%					43.8%					33.8%	
77.25 - 72.25	1607	3012	4618	20.09	34.13	54.22	30.7%					47.7%					36.9%	
72.25 - 67.25	1807	3241	5048	20.90	34.13	55.02	33.6%					51.3%					39.7%	
67.25 - 62.25	2024	3478	5502	21.70	34.13	55.82	36.4%					54.6%					42.3%	
62.25 - 62	2035	3491	5526	21.74	34.13	55.86	36.5%					54.8%					42.4%	
62 - 61.75	2046	3503	5549	21.78	34.13	55.90	36.7%					54.9%				42.5%		
61.75 - 59.5	2150	3613	5763	22.14	34.13	56.27	37.9%					56.4%				43.6%		
59.5 - 59.25	2161	4091	6253	22.18	38.34	60.52	35.2%				49.8%					40.5%		
59.25 - 54.25	2405	4374	6779	22.98	38.34	61.33	37.8%				52.5%					42.7%		
54.25 - 50	2626	4622	7247	23.67	38.34	62.01	39.9%				54.7%					44.4%		
50 - 45	3404	4771	8175	29.78	38.34	68.13	36.2%				53.8%					43.7%		
45 - 40	3758	5076	8834	30.78	38.34	69.13	38.0%				55.8%					45.4%		
40 - 39.5	3794	5107	8902	30.88	38.34	69.23	38.2%				56.0%					45.5%		
39.5 - 39.25	3813	5139	8952	30.93	42.84	73.78	39.1%				56.0%			38.2%		43.3%		
39.25 - 34.5	4174	5440	9614	31.88	42.84	74.72	40.9%				57.8%			39.5%		44.7%		
34.5 - 34.25	4202	5012	9215	31.93	38.34	70.27	44.0%				62.2%			45.8%	47.5%			
34.25 - 29.75	4567	5282	9849	32.83	38.34	71.17	45.7%				63.8%			47.6%	48.8%			
29.75 - 29.5	4587	5443	10030	32.88	39.28	72.16	45.1%		59.8%	62.4%				46.4%	48.2%			
29.5 - 24.5	5017	5760	10778	33.88	39.28	73.16	48.9%		61.4%	64.0%				47.7%	49.5%			
24.5 - 19.5	5474	6086	11560	34.87	39.28	74.15	48.7%		62.9%	65.5%				48.9%	50.7%			
19.5 - 14.5	5957	6422	12378	35.87	39.28	75.15	50.4%		64.3%	66.9%				50.0%	51.8%			
14.5 - 12.92	6115	6530	12644	36.19	39.28	75.47	50.9%		64.7%	67.4%				50.4%	52.2%			
12.92 - 12.67	6199	7813	14012	36.24	47.88	84.11	48.7%	55.6%		63.0%				48.8%	45.0%			
12.67 - 12	6268	7868	14136	36.37	47.88	84.24	48.9%	55.7%		63.2%				49.0%	45.1%			
12 - 11.75	6257	6205	12463	36.42	34.38	70.79	54.1%	63.4%		71.3%								
11.75 - 6.75	6785	6533	13318	37.42	34.38	71.79	55.9%	64.6%		72.6%								
6.75 - 1.75	7341	6869	14210	38.42	34.38	72.79	57.6%	65.8%		73.7%								
1.75 - 0	7543	6989	14532	38.76	34.38	73.14	58.2%	66.2%		74.1%								

Note: Section capacity checked in 5 degree increments.
Rating per TIA-222-H Section 15.5.

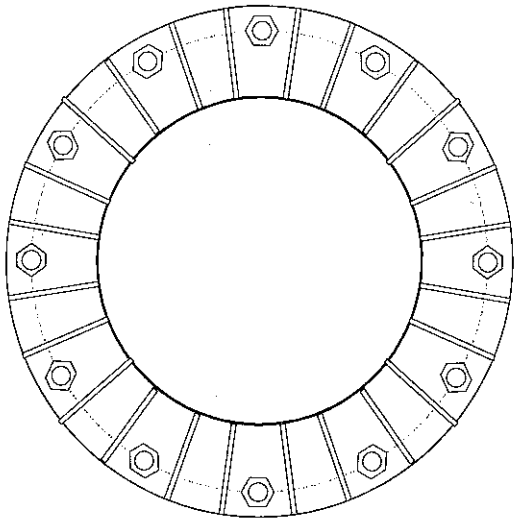
Monopole Base Plate Connection

CROWN CASTLE

Site Info	
BU #	876317
Site Name	Waterbury
Order #	1626812

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	0.5

Applied Loads	
Moment (kip-ft)	2160.35
Axial Force (kips)	41.60
Shear Force (kips)	23.43



Connection Properties

Anchor Rod Data

(12) 2-1/4" ø bolts (A615-75 X; Fy=75 ksi, Fu=100 ksi) on 55.16" BC

Base Plate Data

61.16" OD x 2.5" Plate (A572-60; Fy=60 ksi, Fu=75 ksi)

Stiffener Data

(24) 21.5"H x 11"W x 0.625"T, Notch: 0.75"
plate: Fy= 50 ksi ; weld: Fy= 80 ksi
horiz. weld: 0.3125" groove, 45° dbl bevel, 0.5" fillet
vert. weld: 0.3125" fillet

Pole Data

39.2" x 0.3125" 12-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

Anchor Rod Summary		*(units of kips, kip-in)*
Pu = 160.02	ϕPn = 243.75	**Stress Rating**
Vu = 1.95	ϕVn = 73.13	**62.6%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary		
Max Stress (ksi):	13.94	(Roark's Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	**24.6%**	**Pass**

Stiffener Summary		
Horizontal Weld:	**26.2%**	**Pass**
Vertical Weld:	**27.3%**	**Pass**
Plate Flexure+Shear:	**13.0%**	**Pass**
Plate Tension+Shear:	**26.9%**	**Pass**
Plate Compression:	**44.7%**	**Pass**

Pole Summary		
Punching Shear:	**11.0%**	**Pass**

Pier and Pad Foundation

BU # :	876317
Site Name:	Waterbury
App. Number:	

TIA-222 Revision:	H
Tower Type:	Monopole

Block Foundation?:	☑

Superstructure Analysis Reactions		
Compression, P_{comp}:	41.6	kips
Base Shear, Vu_comp:	23.43	kips
Moment, M_u:	2160.35	ft-kips
Tower Height, **H**:	133	ft
BP Dist. Above Fdn, bp_{dist}:	0	in
Bolt Circle / Bearing Plate Width, **BC**:	55.16	in

Foundation Analysis Checks				
	Capacity	**Demand**	**Rating***	**Check**
Lateral (Sliding) (kips)	283.60	23.43	**7.9%**	**Pass**
Bearing Pressure (ksf)	22.50	2.84	**12.6%**	**Pass**
*Overturning (kip*ft)*	3809.67	2318.50	**60.9%**	**Pass**
*Pad Flexure (kip*ft)*	9014.86	958.45	**10.1%**	**Pass**
Pad Shear - 1-way (kips)	1732.56	57.13	**3.1%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.190	0.001	**0.5%**	**Pass**
*Flexural 2-way (Comp) (kip*ft)*	9014.86	0.00	**0.0%**	**Pass**

**Rating per TIA-222-H Section 15.5*

Soil Rating*:	**60.9%**
Structural Rating*:	**10.1%**

Pad Properties		
Depth, **D**:	6.75	ft
Pad Width, **W**:	20	ft
Pad Thickness, **T**:	6.75	ft
Pad Rebar Size, **Sp**:	10	
Pad Rebar Quantity, **mp**:	21	
Pad Clear Cover, cc_{pad}:	3	in

Material Properties		
Rebar Grade, **Fy**:	60000	psi
Concrete Compressive Strength, **F'c**:	4000	psi
Dry Concrete Density, δ**c**:	150	pcf

Soil Properties		
Total Soil Unit Weight, γ:	130	pcf
Ultimate Gross Bearing, Qult:	30.000	ksf
Cohesion, **Cu**:	0.000	ksf
Friction Angle, φ:	37	degrees
SPT Blow Count, N_{blows}:		
Base Friction, μ:	0.5	
Neglected Depth, **N**:	3.33	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, **gw**:	11.5	ft

<--Toggle between Gross and Net

Site Name: Waterbury S, CT
Cumulative Power Density

Operator	Operating Frequency	Number of Trans.	ERP Per Trans	Total ERP	Distance to Target	Calculated Power Density	Maximum Permissable Exposure*	Fraction of MPE
	(MHz)		(watts)	(watts)	(feet)	(mW/cm^2)	(mW/cm^2)	(%)
VZW PCS	1970	1	5000	5000	110	0.1486	1.0	14.86%
VZW Cellular LTE	869	1	3050	3050	110	0.0906	0.579333333	15.65%
VZW Cellular	869	3	389	1167	110	0.0347	0.579333333	5.99%
VZW AWS	2145	1	5800	5800	110	0.1724	1.0	17.24%
VZW 700	746	1	2200	2200	110	0.0654	0.497333333	13.15%

Total Percentage of Maximum Permissible Exposure 66.88%

*Guidelines adopted by the FCC on August 1, 1996, 47 CFR Section 1.13101 based on NCRP Report 86, 1986 and generally on ANSI/IEEE C95.1-1992

MHz = Megahertz
mW/cm^2 = milliwatts per square centimeter
ERP = Effective Radiated Power

Absolute worst case maximum values used, including the following assumptions:
1. closest accessible point is distance from antenna to base of pole;
2. continuous transmission from all available channels at full power for indefinite time period; and,
3. all RF energy is assumed to be directed solely to the base of the pole.