



Filed by:

Kri Pelletier, Property Specialist - SBA Communications
134 Flanders Rd., Suite 125, Westborough, MA 01581
508.251.0720 x 3804 - kpelletier@sbsite.com

October 20, 2017

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

Notice of Exempt Modification
500 Highland Avenue
Cheshire, CT 06410
Sprint Site #: NV2.5_CT43XC809
N 41° 30' 40.38"
W -72° 53' 54.69"

RE: EM-SPRINT-025-170918

Dear Ms. Bachman:

We are in receipt of your September 28, 2017 notice of incompleteness letter. Enclosed, per your request, please find a revised Structural Analysis Report, referencing all current existing and future proposed equipment per the 2016 CT State Building Code and Ansi/TIA/EIA-222 Revision G.

Please let me know if you need anything further.

Sincerely,

Kri Pelletier
Property Specialist
SBA COMMUNICATIONS CORPORATION
134 Flanders Rd., Suite 125
Westborough, MA 01581
508.251.0720 x3804 + T
508.366.2610 + F
kpelletier@sbsite.com

Attachments

cc: Michael A. Milone, Town Manager and Representative for the Town as Property Owner / with attachments
Town of Cheshire, 84 South Main Street, Cheshire, CT 06410
William S. Voelker, Town Planner / with attachments
Town of Cheshire, 84 South Main Street, Cheshire, CT 06410

ORIGIN ID:BBFA (508) 614-0389
RICK WOODS
SBA NETWORK SERVICES INC
134 FLANDERS ROAD
SUITE 125
WESTBOROUGH, MA 01581
UNITED STATES US

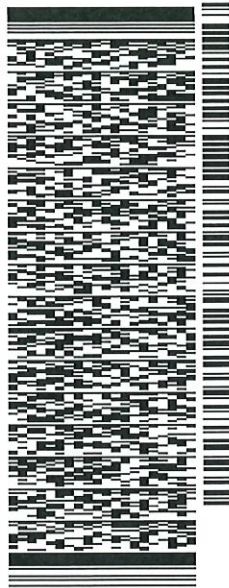
SHIP DATE: 20OCT17
ACT WGT: 1.00 LB
CAD: 105843304/NET3920

BILL SENDER

TO MICHAEL MILONE, TOWN MANAGER
TOWN OF CHESHIRE
84 SOUTH MAIN STREET
CHESHIRE CT 06410

(508) 251-0720 X 3804 REF: 10-56-92009-6089
INV: DEPT:
PO:

549J4J94FC104C



J172117091301uv

TRK# 7705 4780 2024
0201

MON - 23 OCT 10:30A
PRIORITY OVERNIGHT

SEHVNA

06410
CT-US BDL



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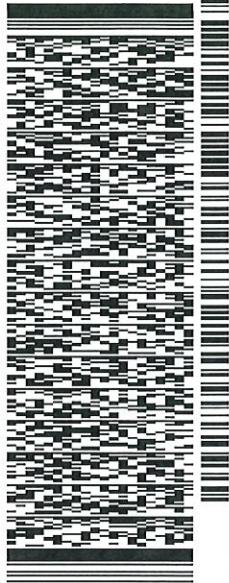
ORIGIN ID:BBFA (508) 614-0389
RICK WOODS
SBA NETWORK SERVICES INC
134 FLANDERS ROAD
SUITE 125
WESTBOROUGH, MA 01581
UNITED STATES US

SHIP DATE: 20OCT17
ACTWGT: 1.00 LB
CAD: 105843304NET3920
BILL SENDER

TO WILLIAM S. VOELKER, TOWN PLANNER
TOWN OF CHESHIRE
84 SOUTH MAIN STREET
CHESHIRE CT 06410

(508) 251-0720 X 3804 REF: 1056920096099
INV. DEPT.
PO.

549J494FC/104C



J172117091301uv

TRK# 7705 4781 7781
0201

MON - 23 OCT 10:30A
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CT-US 06410
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STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

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

E-Mail: siting.council@ct.gov

www.ct.gov/csc

September 28, 2017

Kri Pelletier
SBA Communications
134 Flanders Rd., Suite 125
Westborough, MA 01581

RE: **EM-SPRINT-025-170918** - Sprint notice of intent to modify an existing telecommunications facility located at 500 Highland Avenue, Cheshire, Connecticut.

Dear Mr. Pelletier:

The Connecticut Siting Council (Council) received a notice of intent to modify the above-referenced facility on September 18, 2017.

According to Section 16-50j-71 of the Regulations of Connecticut State Agencies, "...any modification, as defined in Section 16-50j-2a of the Regulations of Connecticut State Agencies, to an existing tower site, except as specified in Sections 16-50j-72 and 16-50j-88 of the Regulations of Connecticut State Agencies, may have a substantial adverse environmental effect."

Staff has reviewed this exempt modification request for completeness and has identified the following deficiency:

1. The structural analysis report is dated July 17, 2014. This does not account for modifications to the facility since 2014 nor the 2016 Connecticut State Building Code.

Therefore, the exempt modification request is incomplete at this time. The Council recommends that SBA Communications provide one copy of a Structural Analysis Report, stamped and signed by a Professional Engineer duly licensed in the State of Connecticut, to the Council referencing all current existing and future proposed equipment, the 2016 Connecticut State Building Code and ANSI/TIA/EIA-222 Revision G standard on or before October 27, 2017. If additional time is needed to gather the requested information, please submit a written request for an extension of time prior to October 27, 2017.

This notice of incompleteness shall have the effect of tolling the Federal Communications Commission (FCC) 60-day timeframe in accordance with Paragraph 217 of the FCC Wireless Infrastructure Report and Order issued on October 21, 2014 (FCC 14-153).

Thank you for your attention to this matter. Should you have any questions, please feel free to contact me at 860-827-2951.

Very truly yours,

Melanie Bachman
Executive Director

MAB/FC

- c: The Honorable Robert Oris, Chairman, Town of Cheshire
Michael A. Milone, Town Manager, Town of Cheshire
William S. Voelker, AICP, Town Planner, Town of Cheshire



STRUCTURAL ANALYSIS REPORT

160' Monopole Tower

500 Highland Avenue
Cheshire, CT 06410

SBA Site Name: Cheshire
SBA Site Number: CT33762-M

Sprint Site Name: Cheshire/Tower Ventures
Sprint Site Number: CT43XC809

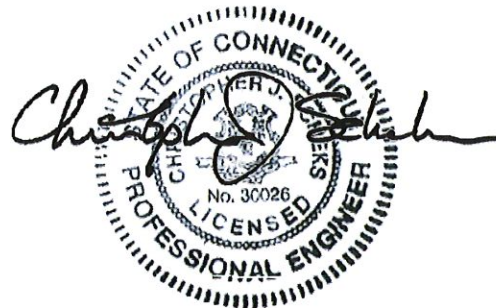
GPD Project Number: 2017778.33762.08

Analysis Results

Tower Components	89.6%	Sufficient
Foundation	69.4%	Sufficient

October 20, 2017

Respectfully submitted by:



10/20/2017

Christopher J. Scheks, P.E.
Connecticut #: 30026

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APPENDICES

1. TNX TOWER OUTPUT
2. ADDITIONAL CALCULATIONS

Executive Summary

The purpose of this analysis is to verify whether the existing monopole tower is structurally capable of carrying the proposed antenna and coax loads as specified by Sprint to SBA. This report was commissioned by Mr. Rick Woods of SBA Site Management.

The existing structure and its foundations have been analyzed using the following requirements:

Governing Code/s	TIA-222-G, 2012 IBC & 2016 CTBC
Wind Speed	105 MPH 3-Second Gust
Wind Speed w/ Ice	50 MPH 3-Second Gust
Radial Ice Thickness	3/4"
Structure Class	III
Exposure Class	B
Topographic Category	1

*Wind speed in nominal form is equivalent to a 135 Ultimate MPH 3-Second Gust.

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 135 mph converted to a nominal 3-second wind speed of 105 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category B and Risk Category III were used in this analysis.

Conclusions & Recommendations

The designs of the tower and its foundation are sufficient for the proposed loading configuration considering the above analysis criteria and will not require modification.

Tower Description

The existing 160' Monopole Tower is located in Cheshire, Connecticut. The tower was originally designed by Sabre in September of 2003. All structural information was obtained from a previous analysis performed by URS. The original design load for the tower was not available at the time of analysis.

Documents Provided:

Document Type	Remarks	Source
Previous Structural Analysis	Hudson Design Group dated 05/06/2013	SBA
Previous Structural Analysis	GPD Job #: 2015778.33762.06, dated 7/23/2015	SBA
Previous Structural Analysis	GPD Job #: 2016778.33762.07, dated 11/17/2015	SBA
Foundation Calculations	URS Corporation Job #: 36917370, dated 10/10/2012	SBA
Construction Drawings	Hudson Design Group, reviewed by SBA 7/10/2014	SBA

Tower Materials:

Structural Components	Material Strength
Pole	ASTM A572 (65 KSI Yield Strength)
Base Plate	ASTM A572 (60 KSI Yield Strength)
Anchor Rods	ASTM A615 (75 KSI Yield Strength)

Tower Loading

The following data shows the major loading that the tower supports. All existing/leased and proposed loading was provided by SBA or taken from the previous analysis.

Existing/Leased Loading

Carrier	Mounting Level (ft)	Center Line Elevation (ft)	# of Antennas	Antenna Manufact.	Antenna/Mount Model	# of Coax	Coax Size (in)	Note	
Town of Cheshire	160	170	1		20' Omni	4	1/2		
		168	2	Decibel	DB224				
		166.17	1		6' Omni				
		160	3		T-Arm				
Sprint	160	162	3	RFS	APXVSP18-C-A20	6 3	1-5/8 Hybriflex		
		160	1		LP Platform				
		158	6		RRH				
T-Mobile	152	149	152	1		LP Platform	18 12	1-5/8 1/2	
			3	Ericsson	AIR21 B2A/B4P				
			3	Ericsson	AIR21 B4A/B2P				
			3	Commscope	LNx-6515DS-VTM				
			3	Ericsson	KRY 112 144				
			3	RFS	ATMAA1412D1A20				
Pocket	141.08	141.08	3	RFS	APXV18-206517S-C	6	1-5/8		
			3		T-Arm				
AT&T	128	128	6	Kathrein	800 10121	12 1 4	1-5/8 10mm 19.7mm		
			2	CCI	OPA-65R-LCUU-H8				
			1	CCI	OPA-65R-LCUU-H6				
			3	Powerwave	TT19-08BP111-001 TMA				
			6	Powerwave	LGP 21401 TMA				
			6	Kathrein	860-10025				
			3	Ericsson	RRUS-11				
			3	Ericsson	RRUS-12				
			3	Ericsson	A2 Module				
			2	Raycap	DC6-48-60-18-8F				
			1	Commscope	MTC3607				
Verizon	122.5	122.5	6	Andrew	SBNHH 1D65B	11 2	1-5/8 1-5/8 Fiber		
			3	Andrew	LNx 6514DS-VTM				
			3	Andrew	HBXX 6517DS-A2M				
			3	ALU	RRH 4x45 AWS				
			3	ALU	RRH 2x60 PCS				
			3	ALU	RRH 2x60 700				
			6	RFS	FD9R6004/2C-3L				
			2		DB-T1-6Z-8AB-0Z				
			1		LP Platform				
Town of Cheshire	89.08	89.08	1		Dipole Antenna	5	1/2		
			1		Collar Mount				
			1		Yagi Antenna				
	83.17	83.17	1		Yagi Antenna				
			1	PCTEL	GPS-TMG-HR-26N				
			1		Collar Mount				
		81.17	1		Yagi Antenna				

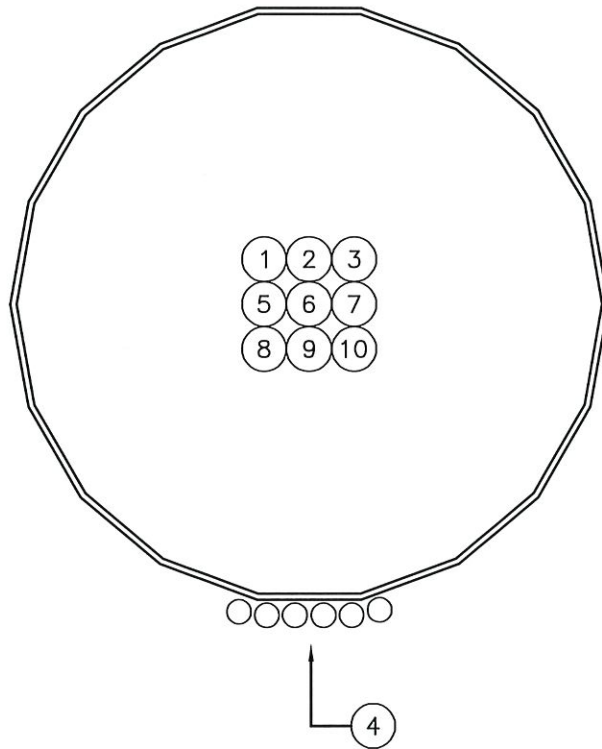
Final Proposed Loading Configuration

Carrier	Mounting Level (ft)	Center Line Elevation (ft)	# of Antennas	Antenna Manufact.	Antenna/Mount Model	# of Coax	Coax Size	Note
Sprint	160	160	1		LP Platform	6	1-1/4	1
		158	3	RFS	APXVSP18-C-A20			
			3	RFS	APXVTM14-C-I20			
			4	RFS	ACU-A20-N			
			3	Alcatel Lucent	1900 MHz RRH			
			3	Alcatel Lucent	800 MHz RRH			
			3	Alcatel Lucent	2500 MHz RRH			
			3	Alcatel Lucent	800 MHz Filter			

Notes:

1) This loading represents the final configuration for Sprint. See the next page for the proposed coax layout.

Proposed Coax Configuration



#	CARRIER	SIZE	QTY.	ELEVATION	NOTES
1	Town of Cheshire	1/2"	4	160'	
2	Sprint	1-1/4" Fiber	6	160'	
3	T-Mobile	1-5/8", 1/2"	18, 12	152'	
4	Pocket	1-5/8"	6	141.08'	
5	AT&T	1-5/8"	12	128'	
6	AT&T	10mm	1	128'	Fiber
7	AT&T	19.7mm	4	128'	DC Cables
8	Verizon	1-5/8"	11	122.5'	
9	Verizon	1-5/8"	2	122.5'	Fiber
10	Town of Cheshire	1/2"	5	89.09'	

Assumptions

This structural analysis is based on the theoretical capacity of the members and is not a condition assessment of the tower. This analysis is from information supplied, and therefore, its results are based on and are as accurate as that supplied data. GPD has made no independent determination, nor is it required to, of its accuracy. The following assumptions were made for this structural analysis.

- 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 the Existing/Reserved Loading and Proposed Loading Tables, and the specified documents.
- 4) All mounts, if applicable, are considered adequate to support the loading. No actual analysis of the mount(s) is performed. This analysis is limited to analyzing the tower only.
- 5) Mount sizes, weights, and manufacturers are best estimates based on photos provided and determined without the benefit of a site visit by GPD.
- 6) The proposed coax shall be installed internal to the monopole.
- 7) All member connections and foundation steel reinforcing are assumed designed to meet or exceed the load carrying capacity of the connected member and surrounding soils respectively unless otherwise specified in this report.
- 8) The existing loads on the tower were modeled from the previous structural analyses.

If any of these assumptions are not valid or have been made in error, this analysis may be affected, and GPD should be allowed to review any new information to determine its effect on the structural integrity of the tower.

Tower Section Results

Capacity Summary of Structural Components

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass/Fail
L1	160 - 146.5	Pole	TP20.91x16.75x0.1875	1	-4.68	865.69	20.5	Pass
L2	146.5 - 95.75	Pole	TP36.16x19.6876x0.25	2	-21.19	1841.20	88.6	Pass
L3	95.75 - 46.75	Pole	TP50.76x34.2745x0.3125	3	-34.39	3077.94	89.6	Pass
L4	46.75 - 0	Pole	TP64.53x48.1321x0.375	4	-54.35	4662.89	78.0	Pass
							Summary	
						Pole (L3)	89.6	Pass
						RATING =	89.6	Pass

Additional Capacities

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
	Anchor Rods	0	79.2	Pass
	Base Plate	0	49.5	Pass
	Tower Base Foundation	0	69.4	Pass

Disclaimer of Warranties

GPD has not performed a site visit to the tower to verify the member sizes or antenna/coax loading. If the existing conditions are not as represented on the tower elevation contained in this report, we should be contacted immediately to evaluate the significance of the discrepancy. This is not a condition assessment of the tower or foundation. This report does not replace a full tower inspection. The tower and foundations are assumed to have been properly fabricated, erected, maintained, in good condition, twist free, and plumb.

The engineering services rendered by GPD in connection with this Structural Analysis are limited to a computer analysis of the tower structure and theoretical capacity of its main structural members. All tower components have been assumed to only resist dead loads when no other loads are applied. No allowance was made for any damaged, bent, missing, loose, or rusted members (above and below ground). No allowance was made for loose bolts or cracked welds.

This analysis is limited to the designated maximum wind and seismic conditions per the governing tower standards and code. Wind forces resulting in tower vibrations near the structure's resonant frequencies were not considered in this analysis and are outside the scope of this analysis. Lateral loading from any dynamic response was not evaluated under a time-domain based fatigue analysis.

GPD does not analyze the fabrication of the structure (including welding). It is not possible to have all the very detailed information needed to perform a thorough analysis of every structural sub-component and connection of an existing tower. GPD provides a limited scope of service in that we cannot verify the adequacy of every weld, plate connection detail, etc. The purpose of this report is to assess the feasibility of adding appurtenances usually accompanied by transmission lines to the structure.

It is the owner's responsibility to determine the amount of ice accumulation in excess of the code specified amount, if any, that should be considered in the structural analysis.

The attached sketches are a schematic representation of the analyzed tower. If any material is fabricated from these sketches, the contractor shall be responsible for field verifying the existing conditions, proper fit, and clearance in the field. Any mentions of structural modifications are reasonable estimates and should not be used as a precise construction document. Precise modification drawings are obtainable from GPD, but are beyond the scope of this report. Miscellaneous items such as antenna mounts, etc., have not been designed or detailed as a part of our work. We recommend that material of adequate size and strength be purchased from a reputable tower manufacturer.

Towers are designed to carry gravity, wind, and ice loads. All members, legs, diagonals, struts, and redundant members provide structural stability to the tower with little redundancy. Absence or removal of a member can trigger catastrophic failure unless a substitute is provided before any removal. Legs carry axial loads and derive their strength from shorter unbraced lengths by the presence of redundant members and their connection to the diagonals with bolts or welds. If the bolts or welds are removed without providing any substitute to the frame, the leg is subjected to a higher unbraced length that immediately reduces its load carrying capacity. If a diagonal is also removed in addition to the connection, the unbraced length of the leg is greatly increased, jeopardizing its load carrying capacity. Failure of one leg can result in a tower collapse because there is no redundancy. Redundant members and diagonals are critical to the stability of the tower.

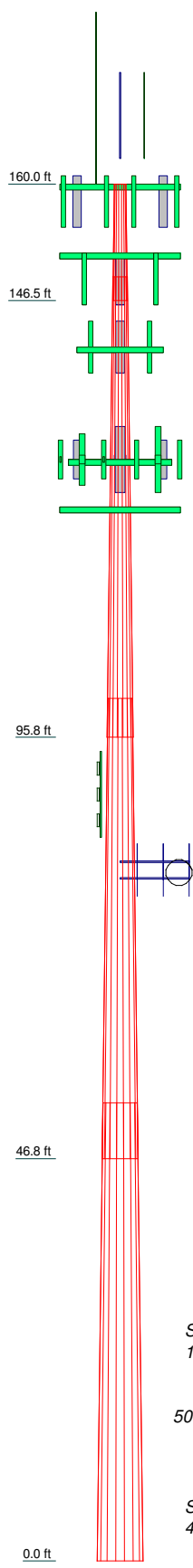
GPD makes no warranties, expressed and/or implied, in connection with this report and disclaims any liability arising from material, fabrication, and erection of this tower. GPD will not be responsible whatsoever for, or on account of, consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this report. The maximum liability of GPD pursuant to this report will be limited to the total fee received for preparation of this report.

TNX TOWER OUTPUT

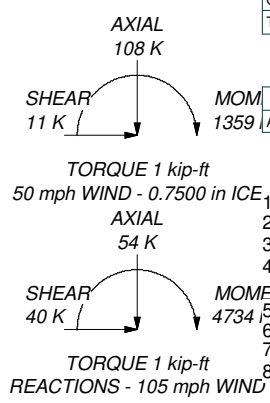
DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
20' Omni (3" Diam)	160	TT19-08BP111-001	128
DB224	160	TT19-08BP111-001	128
DB224	160	(2) LGP21401	128
6' Omni	160	(2) LGP21401	128
MTS 36" Standoff (3)	160	(2) LGP21401	128
APXVSP18-C-A20 w/ Mount Pipe	160	Andrew Collar Mount	128
APXVSP18-C-A20 w/ Mount Pipe	160	Platform Mount [LP 1301-1]	128
APXVSP18-C-A20 w/ Mount Pipe	160	RRUS-11	128
APXVTM14-C-120 w/ Mount Pipe	160	RRUS-11	128
APXVTM14-C-120 w/ Mount Pipe	160	RRUS-11	128
APXVTM14-C-120 w/ Mount Pipe	160	RRUS-12	128
(2) ACU-A20-N	160	RRUS-12	128
ACU-A20-N	160	RRUS-12	128
ACU-A20-N	160	RRUS A2 MODULE	128
1900MHz RRH	160	RRUS A2 MODULE	128
1900MHz RRH	160	RRUS A2 MODULE	128
1900MHz RRH	160	(2) 860-10025 RCU	128
RRH 800 MHz	160	(2) 860-10025 RCU	128
RRH 800 MHz	160	(2) 860-10025 RCU	128
RRH 800 MHz	160	DC6-48-60-18-8F Surge Suppression Unit	128
RRH 2500MHz	160	DC6-48-60-18-8F Surge Suppression Unit	128
RRH 2500MHz	160	DC6-48-60-18-8F Surge Suppression Unit	128
RRH 2500MHz	160	Commscope MTC3607 Platform w/ Reinforcing Kit	128
800 MHz Filter	160	(2) SBNHH-1D65B w/ Mount Pipe	122.5
800 MHz Filter	160	(2) SBNHH-1D65B w/ Mount Pipe	122.5
800 MHz Filter	160	(2) SBNHH-1D65B w/ Mount Pipe	122.5
Sabre 12' LP Platform	160	LNx-6514DS-VTM w/ Mount Pipe	122.5
AIR21 B2A/B4P w/ mount pipe	152	LNx-6514DS-VTM w/ Mount Pipe	122.5
AIR21 B4A/B2P w/ mount pipe	152	LNx-6514DS-VTM w/ Mount Pipe	122.5
LNx-6515DS-VTM w/ mount pipe	152	LNx-6514DS-VTM w/ Mount Pipe	122.5
AIR21 B2A/B4P w/ mount pipe	152	HBXX-6517DS-A2M w/ Mount Pipe	122.5
AIR21 B4A/B2P w/ mount pipe	152	HBXX-6517DS-A2M w/ Mount Pipe	122.5
LNx-6515DS-VTM w/ mount pipe	152	HBXX-6517DS-A2M w/ Mount Pipe	122.5
AIR21 B2A/B4P w/ mount pipe	152	RRH4X45-AWS	122.5
AIR21 B4A/B2P w/ mount pipe	152	RRH4X45-AWS	122.5
LNx-6515DS-VTM w/ mount pipe	152	RRH4X45-AWS	122.5
KRY 112 144/1 (G-Code)	152	RRH2X60-PCS	122.5
ATMAA1412D	152	RRH2X60-PCS	122.5
KRY 112 144/1 (G-Code)	152	RRH2X60-PCS	122.5
ATMAA1412D	152	RRH2x60-700	122.5
KRY 112 144/1 (G-Code)	152	RRH2x60-700	122.5
ATMAA1412D	152	RRH2x60-700	122.5
S11B12	152	(2) FD9R6004/2C-3L	122.5
S11B12	152	(2) FD9R6004/2C-3L	122.5
S11B12	152	(2) FD9R6004/2C-3L	122.5
Sabre 12' LP Platform	152	DB-T1-6Z-8AB-0Z	122.5
APXV18-206517S-C w/ Mount Pipe	141.08	DB-T1-6Z-8AB-0Z	122.5
APXV18-206517S-C w/ Mount Pipe	141.08	MTS 14.5' LP Platform	122.5
APXV18-206517S-C w/ Mount Pipe	141.08	3' Yagi	89.08
MTS 36" Standoff (3)	141.08	3' Yagi	89.08
(2) 800 10121 w/ Mount Pipe	128	Andrew Collar Mount	89.08
(2) 800 10121 w/ Mount Pipe	128	14' Dipole	89.08
(2) 800 10121 w/ Mount Pipe	128	3' Yagi	83.17
OPA-65R-LCUU-H8 w/ Mount Pipe	128	Andrew Collar Mount	83.17
OPA-65R-LCUU-H8 w/ Mount Pipe	128	GPS-TMG-HR-26N	83.17
OPA-65R-LCUU-H6 w/ Mount Pipe	128	3' Yagi	83.17
TT19-08BP111-001	128		

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	13.50	18	0.1875	2.75	16.7500	20.9100		0.5
2	53.50	18	0.2500	4.50	19.6876	36.1600	A572-65	4.0
3	53.50	18	0.3125	6.50	34.2745	50.7800	A572-65	7.6
4	53.25	18	0.3750	48.1321	64.5300			12.1
								24.2



ALL REACTIONS ARE FACTORED



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-G Standard.
3. Tower designed for a 105 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class III.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 89.6%

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	Project: 2017778.33762.08		
	Client: SBA	Drawn by: kdavis	App'd:
	Code: TIA-222-G	Date: 10/20/17	Scale: NTS
	Path: T:\SBA\33762\08_SA Sprint\TNC\CT33762-M Cheshire Sprint 10.20.2017.tnc.dwg		Dwg No. E-1

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Tower Input Data

There is a pole section.

This tower is designed using the TIA-222-G standard.

The following design criteria apply:

Tower is located in New Haven County, Connecticut.

ASCE 7-10 Wind Data is used (wind speeds converted to nominal values).

Basic wind speed of 105 mph.

Structure Class III.

Exposure Category B.

Topographic Category 1.

Crest Height 0.00 ft.

Nominal ice thickness of 0.7500 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

A wind speed of 50 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 60 mph.

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

Pressures are calculated at each section.

Stress ratio used in pole design is 1.

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

Options

<ul style="list-style-type: none"> Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification √ Use Code Stress Ratios √ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric 	<ul style="list-style-type: none"> Distribute Leg Loads As Uniform Assume Legs Pinned √ Assume Rigid Index Plate √ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retention Guys To Initial Tension √ Bypass Mast Stability Checks √ Use Azimuth Dish Coefficients √ Project Wind Area of Appurt. Autocalc Torque Arm Areas Add IBC .6D+W Combination Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder 	<ul style="list-style-type: none"> Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation √ Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-G Bracing Resist. Exemption Use TIA-222-G Tension Splice Exemption <li style="text-align: center;">Poles √ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets
--	--	---

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Component Type	Placement	Total Number	Number Per Row	Start/End Position	Width or Diameter	Perimeter	Weight
			ft				in	in	plf
LDF7-50A (1-5/8 FOAM)	C	Surface Ar (CaAa)	141.08 - 8.00	6	6	0.000 0.000	1.9800		0.82
Step Pegs	B	Surface Ar (CaAa)	160.00 - 0.00	1	1	0.000 0.000	0.8000		2.72

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Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _{AA}		Weight plf
							ft ² /ft	
LDF4-50A (1/2 FOAM)	A	No	Inside Pole	160.00 - 8.00	4	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
LDF6-50A (1-1/4 FOAM)	A	No	Inside Pole	160.00 - 8.00	6	No Ice	0.00	0.66
						1/2" Ice	0.00	0.66
						1" Ice	0.00	0.66
LDF7-50A (1-5/8 FOAM)	A	No	Inside Pole	152.00 - 8.00	18	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
LDF7-50A (1-5/8 FOAM)	A	No	Inside Pole	128.00 - 8.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
10mm Fiber Cable	A	No	Inside Pole	128.00 - 8.00	1	No Ice	0.00	0.10
						1/2" Ice	0.00	0.10
						1" Ice	0.00	0.10
HB158-1-08U8-S8J18 (1-5/8")	A	No	Inside Pole	122.50 - 8.00	2	No Ice	0.00	1.30
						1/2" Ice	0.00	1.30
						1" Ice	0.00	1.30
LDF7-50A (1-5/8 FOAM)	A	No	Inside Pole	122.50 - 8.00	11	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
LDF4-50A (1/2 FOAM)	A	No	Inside Pole	89.08 - 8.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
Safety Line (3/8")	B	No	CaAa (Out Of Face)	160.00 - 0.00	1	No Ice	0.04	0.22
						1/2" Ice	0.14	0.75
						1" Ice	0.24	1.28
LDF4-50A (1/2 FOAM)	A	No	Inside Pole	81.25 - 8.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
LDF4-50A (1/2 FOAM)	A	No	Inside Pole	79.33 - 8.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
LDF4-50A (1/2 FOAM)	A	No	Inside Pole	83.17 - 8.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
LDF4-50A (1/2 FOAM)	A	No	Inside Pole	81.17 - 8.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
19.7mm DC Power Cable	A	No	Inside Pole	128.00 - 8.00	4	No Ice	0.00	0.59
						1/2" Ice	0.00	0.59
						1" Ice	0.00	0.59
LDF4-50A (1/2 FOAM)	C	No	Inside Pole	152.00 - 8.00	12	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15

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Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz Lateral	Vert					
			ft	ft	°	ft	ft ²	ft ²	K
20' Omni (3" Diam)	C	From Leg	2.50	0.0000	160.00	No Ice	6.00	6.00	0.05
			0.00			1/2" Ice	8.03	8.03	0.09
			10.00			1" Ice	10.08	10.08	0.14
DB224	A	From Leg	2.50	0.0000	160.00	No Ice	3.15	3.15	0.03
			0.00			1/2" Ice	5.67	5.67	0.04
			8.00			1" Ice	8.19	8.19	0.05
DB224	B	From Leg	2.50	0.0000	160.00	No Ice	3.15	3.15	0.03
			0.00			1/2" Ice	5.67	5.67	0.04
			8.00			1" Ice	8.19	8.19	0.05
6' Omni	C	From Leg	2.50	0.0000	160.00	No Ice	1.77	1.77	0.03
			0.00			1/2" Ice	2.13	2.13	0.04
			6.17			1" Ice	2.50	2.50	0.06
MTS 36" Standoff (3)	C	None		0.0000	160.00	No Ice	2.64	2.64	0.09
						1/2" Ice	4.10	4.10	0.13
						1" Ice	5.56	5.56	0.17

APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.00	0.0000	160.00	No Ice	8.02	6.71	0.08
			0.00			1/2" Ice	8.48	7.66	0.14
			-2.00			1" Ice	8.94	8.49	0.22
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.00	0.0000	160.00	No Ice	8.02	6.71	0.08
			0.00			1/2" Ice	8.48	7.66	0.14
			-2.00			1" Ice	8.94	8.49	0.22
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.00	0.0000	160.00	No Ice	8.02	6.71	0.08
			0.00			1/2" Ice	8.48	7.66	0.14
			-2.00			1" Ice	8.94	8.49	0.22
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.00	0.0000	160.00	No Ice	6.58	4.96	0.08
			0.00			1/2" Ice	7.03	5.75	0.13
			-2.00			1" Ice	7.47	6.47	0.19
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.00	0.0000	160.00	No Ice	6.58	4.96	0.08
			0.00			1/2" Ice	7.03	5.75	0.13
			-2.00			1" Ice	7.47	6.47	0.19
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.00	0.0000	160.00	No Ice	6.58	4.96	0.08
			0.00			1/2" Ice	7.03	5.75	0.13
			-2.00			1" Ice	7.47	6.47	0.19
(2) ACU-A20-N	A	From Leg	4.00	0.0000	160.00	No Ice	0.07	0.12	0.00
			0.00			1/2" Ice	0.10	0.16	0.00
			-2.00			1" Ice	0.15	0.21	0.00
ACU-A20-N	B	From Leg	4.00	0.0000	160.00	No Ice	0.07	0.12	0.00
			0.00			1/2" Ice	0.10	0.16	0.00
			-2.00			1" Ice	0.15	0.21	0.00
ACU-A20-N	C	From Leg	4.00	0.0000	160.00	No Ice	0.07	0.12	0.00
			0.00			1/2" Ice	0.10	0.16	0.00
			-2.00			1" Ice	0.15	0.21	0.00
1900MHz RRH	A	From Leg	4.00	0.0000	160.00	No Ice	2.94	1.19	0.06
			0.00			1/2" Ice	3.17	1.35	0.08
			-2.00			1" Ice	3.41	1.52	0.11
1900MHz RRH	B	From Leg	4.00	0.0000	160.00	No Ice	2.94	1.19	0.06
			0.00			1/2" Ice	3.17	1.35	0.08
			-2.00			1" Ice	3.41	1.52	0.11
1900MHz RRH	C	From Leg	4.00	0.0000	160.00	No Ice	2.94	1.19	0.06
			0.00			1/2" Ice	3.17	1.35	0.08
			-2.00			1" Ice	3.41	1.52	0.11
RRH 800 MHz	A	From Leg	4.00	0.0000	160.00	No Ice	2.01	1.67	0.05
			0.00			1/2" Ice	2.21	1.86	0.06

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Lateral						
			Vert		°	ft	ft ²	ft ²	K	
			ft	ft						
RRH 800 MHz	B	From Leg	-2.00		0.0000	160.00	1" Ice	2.42	2.06	0.08
			4.00				No Ice	2.01	1.67	0.05
			0.00				1/2" Ice	2.21	1.86	0.06
RRH 800 MHz	C	From Leg	-2.00		0.0000	160.00	1" Ice	2.42	2.06	0.08
			4.00				No Ice	2.01	1.67	0.05
			0.00				1/2" Ice	2.21	1.86	0.06
RRH 2500MHz	A	From Leg	-2.00		0.0000	160.00	1" Ice	2.42	2.06	0.08
			4.00				No Ice	3.76	2.23	0.06
			0.00				1/2" Ice	4.03	2.46	0.08
RRH 2500MHz	B	From Leg	-2.00		0.0000	160.00	1" Ice	4.30	2.69	0.11
			4.00				No Ice	3.76	2.23	0.06
			0.00				1/2" Ice	4.03	2.46	0.08
RRH 2500MHz	C	From Leg	-2.00		0.0000	160.00	1" Ice	4.30	2.69	0.11
			4.00				No Ice	3.76	2.23	0.06
			0.00				1/2" Ice	4.03	2.46	0.08
800 MHz Filter	A	From Leg	-2.00		0.0000	160.00	1" Ice	4.30	2.69	0.11
			4.00				No Ice	0.49	0.48	0.01
			0.00				1/2" Ice	0.60	0.59	0.01
800 MHz Filter	B	From Leg	-2.00		0.0000	160.00	1" Ice	0.71	0.70	0.02
			4.00				No Ice	0.49	0.48	0.01
			0.00				1/2" Ice	0.60	0.59	0.01
800 MHz Filter	C	From Leg	-2.00		0.0000	160.00	1" Ice	0.71	0.70	0.02
			4.00				No Ice	0.49	0.48	0.01
			0.00				1/2" Ice	0.60	0.59	0.01
Sabre 12' LP Platform	A	None	-2.00		0.0000	160.00	1" Ice	0.71	0.70	0.02
							No Ice	28.47	28.47	1.12
							1/2" Ice	33.59	33.59	1.51
						1" Ice	38.71	38.71	1.91	

AIR21 B2A/B4P w/ mount pipe	A	From Leg	4.00		0.0000	152.00	No Ice	6.13	5.50	0.10
			0.00				1/2" Ice	6.52	6.16	0.15
			-3.00				1" Ice	6.92	6.82	0.21
AIR21 B4A/B2P w/ mount pipe	A	From Leg	4.00		0.0000	152.00	No Ice	6.13	5.54	0.10
			0.00				1/2" Ice	6.52	6.20	0.16
			-3.00				1" Ice	6.92	6.87	0.22
LNX-6515DS-VTM w/ mount pipe	A	From Leg	4.00		0.0000	152.00	No Ice	11.43	9.35	0.08
			0.00				1/2" Ice	12.05	10.67	0.16
			-3.00				1" Ice	12.67	11.70	0.25
AIR21 B2A/B4P w/ mount pipe	B	From Leg	4.00		0.0000	152.00	No Ice	6.13	5.50	0.10
			0.00				1/2" Ice	6.52	6.16	0.15
			-3.00				1" Ice	6.92	6.82	0.21
AIR21 B4A/B2P w/ mount pipe	B	From Leg	4.00		0.0000	152.00	No Ice	6.13	5.54	0.10
			0.00				1/2" Ice	6.52	6.20	0.16
			-3.00				1" Ice	6.92	6.87	0.22
LNX-6515DS-VTM w/ mount pipe	B	From Leg	4.00		0.0000	152.00	No Ice	11.43	9.35	0.08
			0.00				1/2" Ice	12.05	10.67	0.16
			-3.00				1" Ice	12.67	11.70	0.25
AIR21 B2A/B4P w/ mount pipe	C	From Leg	4.00		0.0000	152.00	No Ice	6.13	5.50	0.10
			0.00				1/2" Ice	6.52	6.16	0.15
			-3.00				1" Ice	6.92	6.82	0.21
AIR21 B4A/B2P w/ mount pipe	C	From Leg	4.00		0.0000	152.00	No Ice	6.13	5.54	0.10
			0.00				1/2" Ice	6.52	6.20	0.16
			-3.00				1" Ice	6.92	6.87	0.22
LNX-6515DS-VTM w/ mount pipe	C	From Leg	4.00		0.0000	152.00	No Ice	11.43	9.35	0.08
			0.00				1/2" Ice	12.05	10.67	0.16
			-3.00				1" Ice	12.67	11.70	0.25
KRY 112 144/1 (G-Code)	A	From Leg	4.00		0.0000	152.00	No Ice	0.35	0.17	0.01

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Lateral						Vert
			0.00				1/2" Ice	0.42	0.23	0.01
			-3.00				1" Ice	0.49	0.28	0.02
ATMAA1412D	A	From Leg	4.00	0.0000	152.00		No Ice	1.00	0.41	0.02
			0.00				1/2" Ice	1.13	0.50	0.02
			-3.00				1" Ice	1.26	0.59	0.03
KRY 112 144/1 (G-Code)	B	From Leg	4.00	0.0000	152.00		No Ice	0.35	0.17	0.01
			0.00				1/2" Ice	0.42	0.23	0.01
			-3.00				1" Ice	0.49	0.28	0.02
ATMAA1412D	B	From Leg	4.00	0.0000	152.00		No Ice	1.00	0.41	0.02
			0.00				1/2" Ice	1.13	0.50	0.02
			-3.00				1" Ice	1.26	0.59	0.03
KRY 112 144/1 (G-Code)	C	From Leg	4.00	0.0000	152.00		No Ice	0.35	0.17	0.01
			0.00				1/2" Ice	0.42	0.23	0.01
			-3.00				1" Ice	0.49	0.28	0.02
ATMAA1412D	C	From Leg	4.00	0.0000	152.00		No Ice	1.00	0.41	0.02
			0.00				1/2" Ice	1.13	0.50	0.02
			-3.00				1" Ice	1.26	0.59	0.03
S11B12	A	From Leg	4.00	0.0000	152.00		No Ice	3.31	1.36	0.05
			0.00				1/2" Ice	3.55	1.54	0.07
			-3.00				1" Ice	3.80	1.73	0.10
S11B12	B	From Leg	4.00	0.0000	152.00		No Ice	3.31	1.36	0.05
			0.00				1/2" Ice	3.55	1.54	0.07
			-3.00				1" Ice	3.80	1.73	0.10
S11B12	C	From Leg	4.00	0.0000	152.00		No Ice	3.31	1.36	0.05
			0.00				1/2" Ice	3.55	1.54	0.07
			-3.00				1" Ice	3.80	1.73	0.10
Sabre 12' LP Platform	C	None		0.0000	152.00		No Ice	28.47	28.47	1.12
							1/2" Ice	33.59	33.59	1.51
							1" Ice	38.71	38.71	1.91

APXV18-206517S-C w/ Mount Pipe	A	From Leg	3.00	0.0000	141.08		No Ice	5.17	4.46	0.05
			0.00				1/2" Ice	5.62	5.39	0.09
			0.00				1" Ice	6.08	6.20	0.14
APXV18-206517S-C w/ Mount Pipe	B	From Leg	3.00	0.0000	141.08		No Ice	5.17	4.46	0.05
			0.00				1/2" Ice	5.62	5.39	0.09
			0.00				1" Ice	6.08	6.20	0.14
APXV18-206517S-C w/ Mount Pipe	C	From Leg	3.00	0.0000	141.08		No Ice	5.17	4.46	0.05
			0.00				1/2" Ice	5.62	5.39	0.09
			0.00				1" Ice	6.08	6.20	0.14
MTS 36" Standoff (3)	B	None		0.0000	141.08		No Ice	2.64	2.64	0.09
							1/2" Ice	4.10	4.10	0.13
							1" Ice	5.56	5.56	0.17

(2) 800 10121 w/ Mount Pipe	A	From Leg	4.00	0.0000	128.00		No Ice	5.26	4.47	0.06
			0.00				1/2" Ice	5.64	5.13	0.11
			0.00				1" Ice	6.03	5.79	0.16
(2) 800 10121 w/ Mount Pipe	B	From Leg	4.00	0.0000	128.00		No Ice	5.26	4.47	0.06
			0.00				1/2" Ice	5.64	5.13	0.11
			0.00				1" Ice	6.03	5.79	0.16
(2) 800 10121 w/ Mount Pipe	C	From Leg	4.00	0.0000	128.00		No Ice	5.26	4.47	0.06
			0.00				1/2" Ice	5.64	5.13	0.11
			0.00				1" Ice	6.03	5.79	0.16
OPA-65R-LCUU-H8 w/ Mount Pipe	A	From Leg	4.00	0.0000	128.00		No Ice	12.98	9.32	0.12
			0.00				1/2" Ice	13.67	10.79	0.21
			0.00				1" Ice	14.36	12.24	0.32
OPA-65R-LCUU-H8 w/ Mount Pipe	B	From Leg	4.00	0.0000	128.00		No Ice	12.98	9.32	0.12
			0.00				1/2" Ice	13.67	10.79	0.21

tnxTower GPD 520 South Main Street Suite 2531 Akron, Ohio 44311 Phone: (555) 555-1234 FAX: (555) 555-1235	Job		CT33762-M Cheshire, CT				Page		6 of 9
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	Client		SBA				Designed by		kdavis

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Lateral						Vert
OPA-65R-LCUU-H6 w/ Mount Pipe	C	From Leg	0.00		0.0000	128.00	1" Ice	14.36	12.24	0.32
			4.00				No Ice	9.66	7.24	0.11
			0.00				1/2" Ice	10.13	8.06	0.18
			0.00				1" Ice	10.61	8.89	0.27
TT19-08BP111-001	A	From Leg	4.00		0.0000	128.00	No Ice	0.55	0.45	0.02
			0.00				1/2" Ice	0.65	0.53	0.02
			0.00				1" Ice	0.75	0.63	0.03
			4.00				No Ice	0.55	0.45	0.02
TT19-08BP111-001	B	From Leg	0.00		0.0000	128.00	1/2" Ice	0.65	0.53	0.02
			0.00				1" Ice	0.75	0.63	0.03
			4.00				No Ice	0.55	0.45	0.02
			0.00				1/2" Ice	0.65	0.53	0.02
TT19-08BP111-001	C	From Leg	0.00		0.0000	128.00	1" Ice	0.75	0.63	0.03
			4.00				No Ice	0.55	0.45	0.02
			0.00				1/2" Ice	0.65	0.53	0.02
			0.00				1" Ice	0.75	0.63	0.03
(2) LGP21401	A	From Leg	4.00		0.0000	128.00	No Ice	1.10	0.21	0.01
			0.00				1/2" Ice	1.24	0.27	0.02
			0.00				1" Ice	1.38	0.35	0.03
			4.00				No Ice	1.10	0.21	0.01
(2) LGP21401	B	From Leg	0.00		0.0000	128.00	1/2" Ice	1.24	0.27	0.02
			0.00				1" Ice	1.38	0.35	0.03
			4.00				No Ice	1.10	0.21	0.01
			0.00				1/2" Ice	1.24	0.27	0.02
(2) LGP21401	C	From Leg	0.00		0.0000	128.00	1" Ice	1.38	0.35	0.03
			4.00				No Ice	1.10	0.21	0.01
			0.00				1/2" Ice	1.24	0.27	0.02
			0.00				1" Ice	1.38	0.35	0.03
Andrew Collar Mount	C	None			0.0000	128.00	No Ice	2.14	2.14	0.19
							1/2" Ice	2.35	2.35	0.25
							1" Ice	2.57	2.57	0.30
							No Ice	2.14	2.14	0.19
Platform Mount [LP 1301-1]	C	None			0.0000	128.00	1/2" Ice	51.70	51.70	2.26
							1" Ice	62.70	62.70	2.94
							No Ice	51.70	51.70	2.26
							1" Ice	73.70	73.70	3.61

RRUS-11	A	From Leg	1.00		0.0000	128.00	No Ice	2.78	1.19	0.05
			0.00				1/2" Ice	2.99	1.33	0.07
			0.00				1" Ice	3.21	1.49	0.09
			1.00				No Ice	2.78	1.19	0.05
RRUS-11	B	From Leg	0.00		0.0000	128.00	1/2" Ice	2.99	1.33	0.07
			0.00				1" Ice	3.21	1.49	0.09
			1.00				No Ice	2.78	1.19	0.05
			0.00				1/2" Ice	2.99	1.33	0.07
RRUS-11	C	From Leg	0.00		0.0000	128.00	1" Ice	3.21	1.49	0.09
			1.00				No Ice	2.78	1.19	0.05
			0.00				1/2" Ice	2.99	1.33	0.07
			0.00				1" Ice	3.21	1.49	0.09
RRUS-12	A	From Leg	1.00		0.0000	128.00	No Ice	3.15	1.29	0.06
			0.00				1/2" Ice	3.36	1.44	0.08
			0.00				1" Ice	3.59	1.60	0.11
			1.00				No Ice	3.15	1.29	0.06
RRUS-12	B	From Leg	0.00		0.0000	128.00	1/2" Ice	3.36	1.44	0.08
			0.00				1" Ice	3.59	1.60	0.11
			1.00				No Ice	3.15	1.29	0.06
			0.00				1/2" Ice	3.36	1.44	0.08
RRUS-12	C	From Leg	0.00		0.0000	128.00	1" Ice	3.59	1.60	0.11
			1.00				No Ice	3.15	1.29	0.06
			0.00				1/2" Ice	3.36	1.44	0.08
			0.00				1" Ice	3.59	1.60	0.11
RRUS A2 MODULE	A	From Leg	4.00		0.0000	128.00	No Ice	1.60	0.38	0.02
			0.00				1/2" Ice	1.76	0.47	0.03
			0.00				1" Ice	1.92	0.57	0.04
			4.00				No Ice	1.60	0.38	0.02
RRUS A2 MODULE	B	From Leg	0.00		0.0000	128.00	1/2" Ice	1.76	0.47	0.03
			0.00				1" Ice	1.92	0.57	0.04
			4.00				No Ice	1.60	0.38	0.02
			0.00				1/2" Ice	1.76	0.47	0.03
RRUS A2 MODULE	C	From Leg	0.00		0.0000	128.00	1" Ice	1.92	0.57	0.04
			4.00				No Ice	1.60	0.38	0.02
			0.00				1/2" Ice	1.76	0.47	0.03
			0.00				1" Ice	1.92	0.57	0.04
(2) 860-10025 RCU	A	From Leg	4.00		0.0000	128.00	No Ice	0.16	0.13	0.00

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Lateral						
			ft	ft	°	ft	ft ²	ft ²	K	
			0.00				1/2" Ice	0.21	0.19	0.00
			0.00				1" Ice	0.28	0.25	0.01
(2) 860-10025 RCU	B	From Leg	4.00	0.0000	128.00		No Ice	0.16	0.13	0.00
			0.00				1/2" Ice	0.21	0.19	0.00
			0.00				1" Ice	0.28	0.25	0.01
(2) 860-10025 RCU	C	From Leg	4.00	0.0000	128.00		No Ice	0.16	0.13	0.00
			0.00				1/2" Ice	0.21	0.19	0.00
			0.00				1" Ice	0.28	0.25	0.01
DC6-48-60-18-8F Surge Suppression Unit	A	From Leg	1.00	0.0000	128.00		No Ice	0.92	0.92	0.02
			0.00				1/2" Ice	1.46	1.46	0.04
			0.00				1" Ice	1.64	1.64	0.06
DC6-48-60-18-8F Surge Suppression Unit	B	From Leg	1.00	0.0000	128.00		No Ice	0.92	0.92	0.02
			0.00				1/2" Ice	1.46	1.46	0.04
			0.00				1" Ice	1.64	1.64	0.06
Commscope MTC3607 Platform w/ Reinforcing Kit	C	None		0.0000	128.00		No Ice	51.70	51.70	2.26
							1/2" Ice	62.70	62.70	2.94
							1" Ice	73.70	73.70	3.61

(2) SBNHH-1D65B w/ Mount Pipe	A	From Centroid-Le	4.00	0.0000	122.50		No Ice	8.16	6.16	0.06
		g	0.00				1/2" Ice	8.62	6.82	0.12
			0.00				1" Ice	9.09	7.51	0.19
(2) SBNHH-1D65B w/ Mount Pipe	B	From Centroid-Le	4.00	0.0000	122.50		No Ice	8.16	6.16	0.06
		g	0.00				1/2" Ice	8.62	6.82	0.12
			0.00				1" Ice	9.09	7.51	0.19
(2) SBNHH-1D65B w/ Mount Pipe	C	From Centroid-Le	4.00	0.0000	122.50		No Ice	8.16	6.16	0.06
		g	0.00				1/2" Ice	8.62	6.82	0.12
			0.00				1" Ice	9.09	7.51	0.19
LNx-6514DS-VTM w/ Mount Pipe	A	From Centroid-Le	4.00	0.0000	122.50		No Ice	8.17	6.83	0.06
		g	0.00				1/2" Ice	8.63	7.79	0.13
			0.00				1" Ice	9.10	8.62	0.20
LNx-6514DS-VTM w/ Mount Pipe	B	From Centroid-Le	4.00	0.0000	122.50		No Ice	8.17	6.83	0.06
		g	0.00				1/2" Ice	8.63	7.79	0.13
			0.00				1" Ice	9.10	8.62	0.20
LNx-6514DS-VTM w/ Mount Pipe	C	From Centroid-Le	4.00	0.0000	122.50		No Ice	8.17	6.83	0.06
		g	0.00				1/2" Ice	8.63	7.79	0.13
			0.00				1" Ice	9.10	8.62	0.20
HBXX-6517DS-A2M w/ Mount Pipe	A	From Centroid-Le	4.00	0.0000	122.50		No Ice	8.95	7.14	0.07
		g	0.00				1/2" Ice	9.60	8.44	0.14
			0.00				1" Ice	10.23	9.58	0.22
HBXX-6517DS-A2M w/ Mount Pipe	B	From Centroid-Le	4.00	0.0000	122.50		No Ice	8.95	7.14	0.07
		g	0.00				1/2" Ice	9.60	8.44	0.14
			0.00				1" Ice	10.23	9.58	0.22
HBXX-6517DS-A2M w/ Mount Pipe	C	From Centroid-Le	4.00	0.0000	122.50		No Ice	8.95	7.14	0.07
		g	0.00				1/2" Ice	9.60	8.44	0.14
			0.00				1" Ice	10.23	9.58	0.22
RRH4X45-AWS	C	From Centroid-Le	4.00	0.0000	122.50		No Ice	3.10	1.76	0.06
		g	0.00				1/2" Ice	3.36	1.98	0.08
			0.00				1" Ice	3.62	2.21	0.11
RRH4X45-AWS	A	From Centroid-Le	4.00	0.0000	122.50		No Ice	3.10	1.76	0.06
		g	0.00				1/2" Ice	3.36	1.98	0.08
			0.00				1" Ice	3.62	2.21	0.11
RRH4X45-AWS	B	From Centroid-Le	4.00	0.0000	122.50		No Ice	3.10	1.76	0.06
		g	0.00				1/2" Ice	3.36	1.98	0.08
			0.00				1" Ice	3.62	2.21	0.11
RRH2X60-PCS	A	From Centroid-Le	4.00	0.0000	122.50		No Ice	2.20	1.36	0.06
		g	0.00				1/2" Ice	2.39	1.52	0.07
			0.00				1" Ice	2.59	1.68	0.09

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA}		Weight	
			Horz Lateral	Vert			Front	Side		
			ft	ft	°	ft	ft ²	ft ²	K	
RRH2X60-PCS	B	From	4.00		0.0000	122.50	No Ice	2.20	1.36	0.06
		Centroid-Le	0.00				1/2" Ice	2.39	1.52	0.07
		g	0.00				1" Ice	2.59	1.68	0.09
RRH2X60-PCS	C	From	4.00		0.0000	122.50	No Ice	2.20	1.36	0.06
		Centroid-Le	0.00				1/2" Ice	2.39	1.52	0.07
		g	0.00				1" Ice	2.59	1.68	0.09
RRH2x60-700	A	From	4.00		0.0000	122.50	No Ice	3.50	1.82	0.06
		Centroid-Le	0.00				1/2" Ice	3.76	2.05	0.08
		g	0.00				1" Ice	4.03	2.29	0.11
RRH2x60-700	B	From	4.00		0.0000	122.50	No Ice	3.50	1.82	0.06
		Centroid-Le	0.00				1/2" Ice	3.76	2.05	0.08
		g	0.00				1" Ice	4.03	2.29	0.11
RRH2x60-700	C	From	4.00		0.0000	122.50	No Ice	3.50	1.82	0.06
		Centroid-Le	0.00				1/2" Ice	3.76	2.05	0.08
		g	0.00				1" Ice	4.03	2.29	0.11
(2) FD9R6004/2C-3L	A	From	4.00		0.0000	122.50	No Ice	0.31	0.08	0.00
		Centroid-Le	0.00				1/2" Ice	0.39	0.12	0.01
		g	0.00				1" Ice	0.47	0.17	0.01
(2) FD9R6004/2C-3L	B	From	4.00		0.0000	122.50	No Ice	0.31	0.08	0.00
		Centroid-Le	0.00				1/2" Ice	0.39	0.12	0.01
		g	0.00				1" Ice	0.47	0.17	0.01
(2) FD9R6004/2C-3L	C	From	4.00		0.0000	122.50	No Ice	0.31	0.08	0.00
		Centroid-Le	0.00				1/2" Ice	0.39	0.12	0.01
		g	0.00				1" Ice	0.47	0.17	0.01
DB-T1-6Z-8AB-0Z	B	From	4.00		0.0000	122.50	No Ice	4.80	2.00	0.05
		Centroid-Le	0.00				1/2" Ice	5.07	2.19	0.09
		g	0.00				1" Ice	5.35	2.39	0.13
DB-T1-6Z-8AB-0Z	C	From	4.00		0.0000	122.50	No Ice	4.80	2.00	0.05
		Centroid-Le	0.00				1/2" Ice	5.07	2.19	0.09
		g	0.00				1" Ice	5.35	2.39	0.13
MTS 14.5' LP Platform	C	None			0.0000	122.50	No Ice	17.46	17.46	1.35
							1/2" Ice	22.44	22.44	1.62
							1" Ice	27.42	27.42	1.90

3' Yagi	A	From Leg	1.50		0.0000	89.08	No Ice	0.52	0.52	0.02
			0.00				1/2" Ice	0.71	0.71	0.02
			-7.83				1" Ice	0.90	0.90	0.03
3' Yagi	A	From Leg	1.50		0.0000	89.08	No Ice	0.52	0.52	0.02
			0.00				1/2" Ice	0.71	0.71	0.02
			-9.75				1" Ice	0.90	0.90	0.03
3' Yagi	A	From Leg	1.50		0.0000	83.17	No Ice	0.52	0.52	0.02
			0.00				1/2" Ice	0.71	0.71	0.02
			-1.92				1" Ice	0.90	0.90	0.03
Andrew Collar Mount	C	None			0.0000	83.17	No Ice	2.14	2.14	0.19
							1/2" Ice	2.35	2.35	0.25
							1" Ice	2.57	2.57	0.30
Andrew Collar Mount	C	None			0.0000	89.08	No Ice	2.14	2.14	0.19
							1/2" Ice	2.35	2.35	0.25
							1" Ice	2.57	2.57	0.30
14' Dipole	C	From Leg	1.00		0.0000	89.08	No Ice	2.80	2.80	0.03
			0.00				1/2" Ice	4.22	4.22	0.05
			0.00				1" Ice	5.67	5.67	0.08
GPS-TMG-HR-26N	B	From Leg	1.00		0.0000	83.17	No Ice	0.13	0.13	0.00
			0.00				1/2" Ice	0.18	0.18	0.00
			0.00				1" Ice	0.24	0.24	0.01
3' Yagi	A	From Leg	1.50		0.0000	83.17	No Ice	0.52	0.52	0.02

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
			0.00			0.71	0.71	0.02
			-1.92			0.90	0.90	0.03

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
160.00	20' Omni (3" Diam)	43	23.192	1.4228	0.0028	17509
152.00	AIR21 B2A/B4P w/ mount pipe	43	20.821	1.3988	0.0018	11029
141.08	APXV18-206517S-C w/ Mount Pipe	43	17.701	1.3353	0.0009	7140
128.00	(2) 800 10121 w/ Mount Pipe	43	14.228	1.2095	0.0003	5963
122.50	(2) SBNHH-1D65B w/ Mount Pipe	43	12.867	1.1453	0.0003	5576
89.08	3' Yagi	43	6.143	0.7244	0.0003	4673
83.17	3' Yagi	43	5.254	0.6568	0.0003	4828

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	160 - 146.5	Pole	TP20.91x16.75x0.1875	1	-4.68	865.69	20.5	Pass
L2	146.5 - 95.75	Pole	TP36.16x19.6876x0.25	2	-21.19	1841.20	88.6	Pass
L3	95.75 - 46.75	Pole	TP50.76x34.2745x0.3125	3	-34.39	3077.94	89.6	Pass
L4	46.75 - 0	Pole	TP64.53x48.1321x0.375	4	-54.35	4662.89	78.0	Pass
Summary								
Pole (L3)							89.6	Pass
RATING =							89.6	Pass

ADDITIONAL CALCULATIONS



**Anchor Rod and Base Plate Stresses, TIA-222-G-1
CT33762-M ; Cheshire
2017778.33762.08**

Overturing Moment =	4734.40	k*ft
Axial Force =	54.35	k
Shear Force =	40.13	k

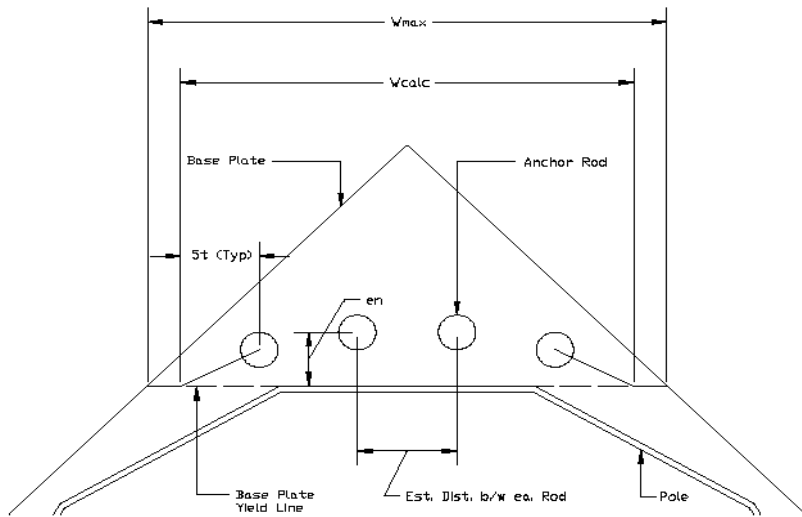
Acceptable Stress Ratio =	105.0%
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Anchor Rods		
Pole Diameter =	64.53	in
Number of Rods =	16	
ϕ =	0.8	
Rod Ultimate Strength (F_u) =	100	ksi
Base Plate Detail Type* =	d	
Rod Circle =	71.651	in
Rod Diameter =	2.25	in
Net Tensile Area =	3.25	in ²
Max Tension on Rod =	194.04	kips
Max Compression on Rod =	200.83	kips
P_u =	200.83	kips
V_u =	2.51	kips
η =	0.50	
$P_u + V_u / \eta$ =	205.85	kips
ϕR_{nt} =	260.00	kips
Anchor Rod Capacity =	79.2%	OK

Base Plate		
Plate Strength (F_y) =	60	ksi
ϕ =	0.9	
Plate Thickness =	3	in
Plate Width =	73	in
Est. Dist. b/w ea. Rod =	6	in
w_{calc} =	47.83	in
w_{max} =	38.71	in
w =	38.71	in
Z =	87.09	in ³
M_u =	2330.00	k-in
ϕM_n =	4702.97	k-in
Base Plate Capacity =	49.5%	OK

(Section 4.9.9, TIA-222-G-1)

***This analysis assumes the clear distance from the top of the concrete to the bottom of the leveling nut is less than the diameter of the anchor rod. Notify GPD Group immediately if existing field conditions do not meet this assumption.**





Mat Foundation Analysis
CT33762-M ; Cheshire
2017778.33762.08

General Info	
Foundation Criteria	GPD
TIA Code	TIA-222-G
Soil Code	AASHTO 2012
Concrete Code	ACI 318-11
Seismic Design Category	B
Tower Height	160 ft
Bearing On	Soil
Foundation Type	Monopole Pad
Pier Type	Round
Reinforcing Known	Yes
Max Bearing Capacity	105%
Max Overturning Capacity	105%

Tower Reactions	
Moment, M	4734.4 k-ft
Axial, P	54.35 k
Shear, V	40.13 k

Pad & Pier Geometry	
Pier Diameter, ϕ	8 ft
Pad Length, L [y]	27 ft
Pad Width, W [x]	27 ft
Pad Thickness, t	5 ft
Depth, D	13.25 ft
Height Above Grade, HG	0 ft
Tower Centroid, X	13.5 ft
Tower Centroid, Y	13.5 ft
Tower Eccentricity	0.0000 ft

Pad & Pier Reinforcing	
Rebar Fy	60 ksi
Concrete F'c	4 ksi
Pier Reinforcing Clear Cover	3 in
Shear Rebar Type	Tie
Shear Rebar Size	# 4
Pad Reinforcing Clear Cover	3 in
Reinforced Top & Bottom?	Yes
Pad Reinforcing Size	# 8
Pad Quantity Per Layer	42
Pier Rebar Size	# 9
Pier Quantity of Rebar	38

Soil Properties	
Soil Type	Granular
Soil Unit Weight	100 pcf
Angle of Friction, ϕ	35
Base Friction Coeff. Provided in Geo?	No
Bearing Type	Gross
Ultimate Bearing	8 ksf
Water Table Depth	0 ft
Frost Depth	3.333 ft

Bearing Summary					
Case	Demand/Limits	Capacity/Availability	Check	Eccentricity	Load Case
Qxmax	2.30 ksf	6.00 ksf	OK, <= 105%	L/5.1	1.2D+1.6W
Qymax	2.30 ksf	6.00 ksf	OK, <= 105%	W/5.1	1.2D+1.6W
Qmax @ 45°	1.72 ksf	6.00 ksf	OK, <= 105%	W/8.5	1.2D+1.6W
Controlling Capacity		38.3%	Pass		

Overturning Summary					
Case	Demand/Limits	Capacity/Availability	Check	Load Case	
Ovtx	3802.5 k-ft	7429.3 k-ft	51.2% OK	0.9D+1.6W	
Ovty	3802.5 k-ft	7429.3 k-ft	51.2% OK	0.9D+1.6W	
Ovtxy	2287.9 k-ft	7429.3 k-ft	30.8% OK	0.9D+1.6W	
Controlling Capacity		51.2%	Pass		

Sliding Summary					
Case	Demand/Limits	Capacity/Availability	Check	Load Case	
Slidingx	40.1 k	352.8 k	11.4% OK	0.9D+1.6W	
Slidingy	40.1 k	352.8 k	11.4% OK	0.9D+1.6W	
Controlling Capacity		11.4%	Pass		

Reinforcement Summary					
Component	Demand/Limits	Capacity/Availability	Check	Load Case	
Pad Flexural Bending	50.4 k-ft	301.9 k-ft	16.7% OK	0.9D+1.6W	
One-Way Shear in Pad	158.0 k	1705.9 k	9.3% OK	0.9D+1.6W	
Two-Way Shear in Pad	584.4 k	5921.4 k	9.9% OK	0.9D+1.6W	
Compression on Pier	97.9 k	31993.0 k	0.3% OK	1.2D+1.6W	
Moment on Pier	5015.4 k-ft	7226.5 k-ft	69.4% OK	1.2D+1.6W	
As Min Pad Met?	2.46 sq. in.	0.16 sq. in.	Yes		
As Min Pier Met?	38.00 sq. in.	36.19 sq. in.	Yes		
Controlling Capacity		69.4%	Pass		

