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

VIA ELECTRONIC MAIL

May 6, 2019

Michelle Scharath
Site Acquisition Specialist
Empire Telecom USA, LLC
16 Esquire Road
Billerica, MA 01862

RE: **EM-AT&T-093-190328** – AT&T Mobility, LLC notice of intent to modify an existing telecommunications facility located at 69 Wheeler Street, New Haven, Connecticut.

Dear Ms. Scharath:

The Connecticut Siting Council (Council) is in receipt of your correspondence of May 3, 2019, submitted in response to the Council's April 1, 2019 and April 22, 2019 notifications of an incomplete request for exempt modification with regard to the above-referenced matter.

The submission renders the request for exempt modification complete and the Council will process the request in accordance with the Federal Communications Commission 60-day timeframe.

Thank you for your attention and cooperation.

Sincerely,

Melanie A. Bachman
Executive Director

MAB/IN/emr

Robidoux, Evan

From: Michelle Scharath <mscharath@empiretelecomm.com>
Sent: Friday, May 03, 2019 3:57 PM
To: Robidoux, Evan
Cc: CSC-DL Siting Council; Kristen White; Lauren Groppi
Subject: RE: Council Incomplete Letter for EM-AT&T-093-190328-WheelerSt-NewHaven (CT2037)
Attachments: RESPONSE TO 2nd INCOMPLETE LETTER CT2037.pdf; 10035247.CT2037.SA Pass.Rev 1.190503.pdf

Hi Evan,

Attached please find a response letter to the most recent incomplete letter for the above referenced site. I will also send a copy to Melanie Bachman VIA UPS as well.

If you have any questions please don't hesitate to contact me.

Best,

Michelle Scharath
Site Acquisition Specialist

EMPIRE
telecom
16 Esquire Road | Billerica, MA 01862
Mobile: 978-935-6913
Email: mscharath@empiretelecomm.com
Website: www.EmpireTelecomm.com

From: Robidoux, Evan <Evan.Robidoux@ct.gov>
Sent: Wednesday, April 24, 2019 9:59 AM
To: Michelle Scharath <mscharath@empiretelecomm.com>
Cc: CSC-DL Siting Council <Siting.Council@ct.gov>; Kristen White <kwhite@empiretelecomm.com>
Subject: Council Incomplete Letter for EM-AT&T-093-190328-WheelerSt-NewHaven

Please see the attached correspondence.

Evan Robidoux
Clerk Typist

Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

May 2, 2019

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

Regarding:	EM-AT&T-093-190328-WheelerSt-NewHaven; AT&T Notice of Exempt Modification – Equipment Modifications
Property Address:	69 Wheeler Street., New Haven, CT 06512 (the "Property")
Applicant:	AT&T Mobility ("AT&T", Site # CT2037)

Dear Ms. Bachman:

I am in receipt of the Council's letter dated April 22, 2019, requesting a revision to the Monopole Structural Analysis Report provided with AT&T's request for Exempt Modification at the above-referenced property. Attached please find a revised report by Maser Consulting Connecticut, which takes into account the approved equipment for Sprint at this facility pursuant to the Council's filing number EM-SPRINT-093-180803.

Please accept this letter and the attached revised report to supplement AT&T's notice received on April 22, 2019. If you require anything further for this filing to be deemed complete, please don't hesitate to contact me.

Sincerely,

Michelle Scharath

Michelle Scharath
Site Acquisition Specialist
Empire Telecom USA, LLC
mscharath@empiretelecomm.com

Enclosure: Revised Monopole Structural Analysis Dated May 2, 2019

Engineers Planners Surveyors Landscape Architects Environmental Scientists

MASER CONSULTING
CONNECTICUT

Monopole Structural Analysis

FOR

CT2037 – New Haven Wheeler St

FA # 10035247
69 Wheeler Street
New Haven, CT 06512
New Haven County

4C - MRCTB031769
5C - MRCTB031849

Monopole Utilization: 67.0%
Foundation Utilization: 78.4%

May 2, 2019

Prepared For

AT&T
550 Cochituate Road
Framingham, MA 01701

Prepared By

Maser Consulting Connecticut
331 Newman Springs Road, Suite 203
Red Bank, NJ 07701
T: 732.383.1950

STATE OF CONNECTICUT
PETROS TSOUKALAS
32577
PROFESSIONAL ENGINEER

Petros E. Tsoukalas, P.E.
Geographic Discipline Leader
Connecticut License No. 32557

MC Project No. 18963010A

Objective:

The objective of this report is to determine the structural capacity of the existing modified 98' steel monopole located at the above referenced addressed for the addition of the proposed wireless telecommunications equipment by **AT&T**, together with the existing loading.

Introduction:

Maser Consulting Connecticut has performed limited field observations on May 29, 2018 to verify the existing condition of the structure and to locate and quantify the existing wireless appurtenances where possible, from ground level. Maser Consulting Connecticut has reviewed the following documents in completing this report:

- Previous Structural Analysis Report, prepared by Destek Engineering, dated January 11, 2017
- Previous Tower Modification Drawings, prepared by Bennett & Pless, dated August 26, 2016
- RFDS 2282459 Version 2.00, provided by Empire Telecom, dated June 14, 2018
- Sprint CSC Package, prepared by Cherundolo Consulting dated August 3, 2018, provided by Empire Telecom

It is assumed that all the information in the referenced analysis and drawings is accurate and no other changes have been made to the monopole.

Discrete and Linear Appurtenances:

Maser Consulting Connecticut understands the existing and proposed **AT&T** loading to be as follows:

- (3) Powerwave 7750 Antennas (Existing)
- (2) Commscope SBNHH-1D65A Antennas (1 Existing, **1 Proposed**)
- (4) CCI HPA-65R-BUU-H6 Antennas (2 Existing, **2 Proposed**)
- (3) Quintel QS46512-2 Antennas (Existing)
- **(3) Nokia RRU-4478 B5 (Proposed)**
- **(3) Nokia RRUS-4426 B66 (Proposed)**
- (3) Ericsson RRUS-32 (Existing)
- (3) Ericsson RRUS-32 B2 (Existing)
- (3) Ericsson RRUS-11 (Existing)
- (6) Powerwave LGP 21401 TMAs (Existing)
- (3) DC6-48-60-18C Surge Suppressor (2 Existing, **1 Proposed**)

Monopole Member Information:

See the Material Take-Off sheet in Appendix A for monopole information and loading from other carriers.

Codes, Standards and Loading:

Maser Consulting Connecticut utilized the following codes and standards:

- The 2018 Connecticut State Building Code, Incorporating the 2015 International Building Code
- Structural Standards for Antenna Supporting Structures and Antennas ANSI/TIA-222-G
    - Ultimate Wind Speed – 126 mph (3-Second Gust)
    - Nominal Wind Speed – 98 mph (3-Second Gust)
    - Ice Thickness – 0.75 in
    - Wind Speed with Ice – 50 mph
    - Topographic Category 1
    - Exposure Category C
    - Risk Category – II

Analysis Approach & Assumptions:

The analysis approach used in this structural analysis is based on the premise that if the existing structure is structurally adequate to support the existing and proposed equipment per the aforementioned codes and standards, then the proposed equipment can be installed as intended. Tower Numerics, tnx Tower, a tower and monopole analysis and design program, designed specifically for the telecommunications industry and for all applicable codes and standards was used for this structural analysis.

The following assumptions were considered during this analysis:

- No physical deterioration has occurred in any of the structural components of the monopole.
- The monopole has the same capacity as the day it was erected.
- The proposed modifications per aforementioned Modification Drawings were installed as intended.
- Foundation and Geotechnical Information has been taken from the previous Structural Analysis by Destek Engineering (Job No. 1629163, dated January 11, 2017) and has been assumed accurate.

Calculations:

The calculations are found in Appendix A of this report.

Conclusion:

Maser Consulting Connecticut has determined that the existing 98’ tall structural steel galvanized monopole is **ADEQUATE** to support the existing and proposed loading per the aforementioned codes and standards. It has been calculated that the maximum stress ratio is in the base plate. The monopole and its baseplate are stressed to **67.0%** and **44.8%** respectively. The existing foundation has been determined to be stressed to **78.4%** of its structural capacity. Therefore, the proposed **AT&T** installation **CAN** be installed as intended.

Maser Consulting Connecticut reserves the right to amend this report if additional information about the monopole and foundation is provided. The conclusions reached by Maser Consulting Connecticut in this report are only valid for the discrete and linear appurtenances listed in this report. Any change to the installation will require a revision to this structural analysis.

We appreciate the opportunity to be of service on this project. If you should have any questions or require any additional information, please do not hesitate to call our office.

Sincerely,

Maser Consulting Connecticut.

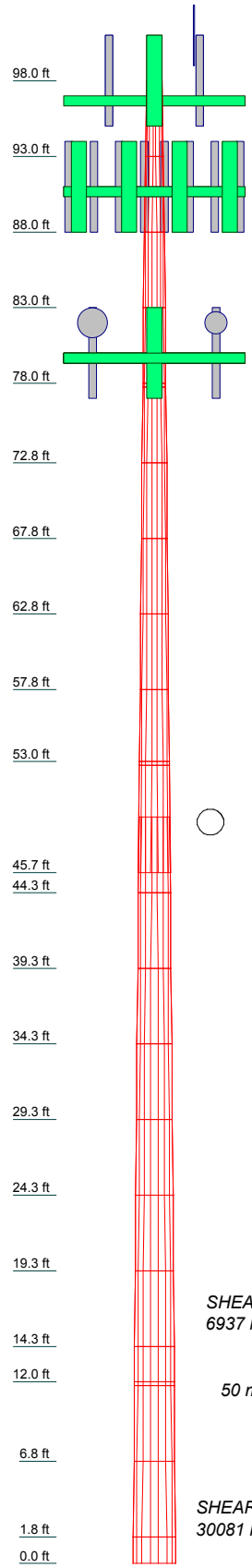
Petros E. Tsoukalas, P.E.
Geographic Discipline Leader

Lauren Luzier
Senior Engineer

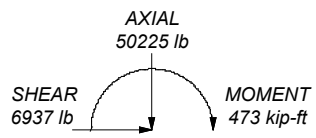
\\maserconsulting.com\luj\Projects\2018\18963000A\18963010A\Structural\Structural Analysis\Rev 1\Word\10035247.CT2037.SA.Rev 1.docx

APPENDIX A

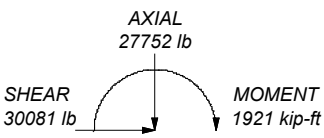
Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Length (ft)	5.00	5.00	5.00	5.00	0.25	5.00	5.00	5.00	5.00	4.75	0.25	7.08	5.00	5.00	5.00	5.00	5.00	5.00	5.00	2.34	0.25	5.00	5.00	1.75
Number of Sides	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Thickness (in)	0.1875	0.1875	0.1875	0.1875	0.1875	0.6500	0.6125	0.5750	0.5500	0.5313	0.7250	0.7000	0.7500	0.7250	0.7000	0.6750	0.6625	0.6375	0.6250	0.6125	0.6000	0.5500	0.5375	0.5375
Socket Length (ft)	3.67																							
Top Dia (in)	12.7500	14.6250	16.5000	17.5229	18.5458	18.5970	19.6199	20.6428	21.6657	22.6886	23.6602	23.7116	24.0342	25.0441	26.0540	27.0639	28.0738	29.0837	30.0937	31.1036	31.6263	32.6366	33.6465	34.0000
Bot Dia (in)	14.6250	16.5000	17.5229	18.5458	18.5970	19.6199	20.6428	21.6657	22.6886	23.7116	23.7762	25.1600	25.0441	26.0540	27.0639	28.0738	29.0837	30.0937	31.1036	31.6263	31.8762	32.6366	33.6465	34.0000
Grade	A572-65																							
Weight (lb)	136.7	155.7	170.3	180.7	23.7	472.8	483.6	494.3	505.0	490.0	36.0	1030.8	799.7	813.7	827.7	841.7	855.7	869.6	883.6	420.2	40.4	809.8	823.6	392.9
																								12458.4



ALL REACTIONS ARE FACTORED



TORQUE 1 kip-ft
50 mph WIND - 0.7500 in ICE



TORQUE 2 kip-ft
REACTIONS - 98 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
APX16DWV-16DWVS (T-Mobile)	98	RRUS 4478 B5 (ATI)	91
APX16DWV-16DWVS (T-Mobile)	98	RRUS 4478 B5 (ATI)	91
APX16DWV-16DWVS (T-Mobile)	98	RRUS 4426 B66 (ATI)	91
APX16PV-16PVL w/ 8' pipe (T-Mobile)	98	RRUS 4426 B66 (ATI)	91
APX16PV-16PVL w/ 8' pipe (T-Mobile)	98	RRUS 4426 B66 (ATI)	91
APX16PV-16PVL w/ 8' pipe (T-Mobile)	98	(2) LGP 21401 (ATI)	91
6'x1/2" Lightning Rod	98	(2) LGP 21401 (ATI)	91
Platform Mount (T-Mobile)	97	(2) LGP 21401 (ATI)	91
7750 w/Mount Pipe (ATI)	91	DC6-48-60-18-8C (ATI)	91
7750 w/Mount Pipe (ATI)	91	DC6-48-60-18-8C (ATI)	91
7750 w/Mount Pipe (ATI)	91	DC6-48-60-18-8C (ATI)	91
(2) SBNH-1D65A with 6' pipe (ATI)	91	1.5' dish (Sprint)	82
(2) HPA-65R-BUU-H6 w/Mount Pipe (ATI)	91	A-ANT-18G-2-C (Sprint)	82
		T-Arm Mount (Sprint)	80
(2) HPA-65R-BUU-H6 w/Mount Pipe (ATI)	91	(2) ODU (Clearwire)	80
		(2) ODU (Clearwire)	80
QS46512-2 w/6' Pipe (ATI)	91	AAHC_MAA (Sprint)	80
QS46512-2 w/6' Pipe (ATI)	91	AAHC_MAA (Sprint)	80
QS46512-2 w/6' Pipe (ATI)	91	AAHC_MAA (Sprint)	80
T-Arm Mount (ATI)	91	RRH 1900-4x45 (Sprint)	80
RRUS 32 (ATI)	91	RRH 1900-4x45 (Sprint)	80
RRUS 32 (ATI)	91	RRH 1900-4x45 (Sprint)	80
RRUS 32 (ATI)	91	NNVV-65B-R4 w/ 8' pipe (Sprint)	80
RRUS-11 (ATI)	91	T-Arm Mount (Sprint)	80
RRUS-11 (ATI)	91	T-Arm Mount (Sprint)	80
RRUS-11 (ATI)	91	(2) RRH 800 MHz (Sprint)	80
RRUS 32 B2 (ATI)	91	(2) RRH 800 MHz (Sprint)	80
RRUS 32 B2 (ATI)	91	(2) RRH 800 MHz (Sprint)	80
RRUS 32 B2 (ATI)	91	NNVV-65B-R4 w/ 8' pipe (Sprint)	80
RRUS 4478 B5 (ATI)	91	NNVV-65B-R4 w/ 8' pipe (Sprint)	80

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

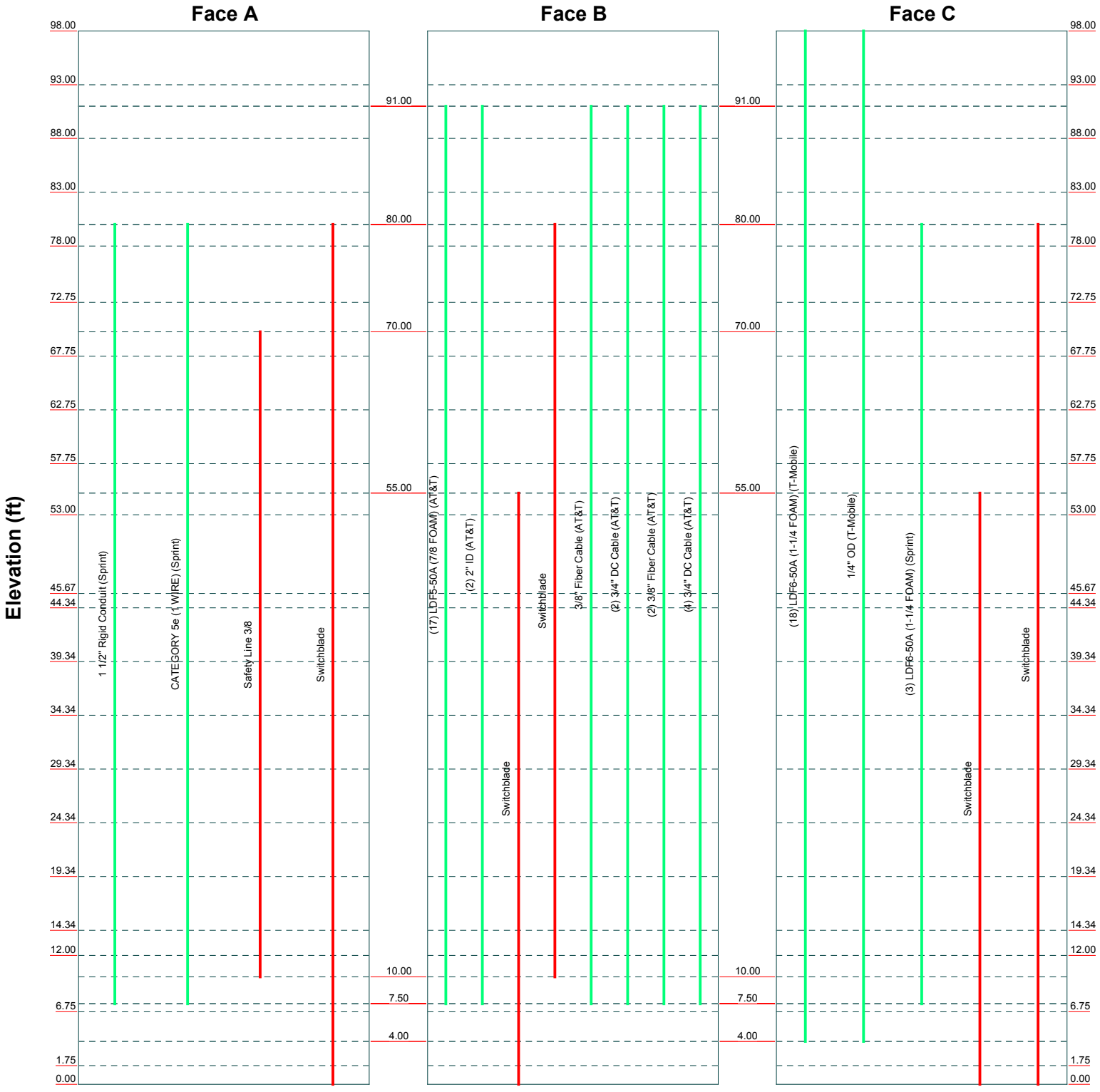
1. Tower designed for Exposure C to the TIA-222-G Standard.
2. Tower designed for a 98 mph basic wind in accordance with the TIA-222-G Standard.
3. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Structure Class II.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. TOWER RATING: 67%

Maser Consulting
2000 Midlantic Drive, Suite 100
Mt. Laurel, NJ
Phone: 856 797-0412
FAX: 856 722-1120

Job: ***18963010A***			
Project: ***CT2037***			
Client: AT&T	Drawn by:	App'd:	
Code: TIA-222-G	Date: 05/02/19	Scale: NTS	
Path:		Dwg No. E-1	

Feed Line Distribution Chart
0' - 98'

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



Maser Consulting
2000 Midlantic Drive, Suite 100
Mt. Laurel, NJ
Phone: 856 797-0412
FAX: 856 722-1120

Job: ***18963010A***			
Project: ***CT2037***			
Client: AT&T	Drawn by:	App'd:	
Code: TIA-222-G	Date: 05/02/19	Scale: NTS	
Path:		Dwg No. E-7	

Maser Consulting
2000 Midlantic Drive, Suite 100
Mt. Laurel, NJ
Phone: 856 797-0412
FAX: 856 722-1120

Tower Input Data

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

ASCE 7-10 Wind Data is used (wind speeds converted to nominal values).
Basic wind speed of 98 mph.
Structure Class II.
Exposure Category C.
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

	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-G Bracing Resist. Exemption
	Include Bolts In Member Capacity		Autocalc Torque Arm Areas		Use TIA-222-G 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*	*Section Length*	*Splice Length*	*Number of Sides*	*Top Diameter*	*Bottom Diameter*	*Wall Thickness*	*Bend Radius*	*Pole Grade*
	ft	*ft*	*ft*		*in*	*in*	*in*	*in*	
L1	98.00-93.00	5.00	0.00	18	12.7500	14.6250	0.1875	0.7500	A572-65

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
									(65 ksi)
L2	93.00-88.00	5.00	0.00	18	14.6250	16.5000	0.1875	0.7500	A572-65 (65 ksi)
L3	88.00-83.00	5.00	0.00	18	16.5000	17.5229	0.1875	0.7500	A572-65 (65 ksi)
L4	83.00-78.00	5.00	0.00	18	17.5229	18.5458	0.1875	0.7500	A572-65 (65 ksi)
L5	78.00-77.75	0.25	0.00	18	18.5458	18.5970	0.6875	2.7500	A572-65 (65 ksi)
L6	77.75-72.75	5.00	0.00	18	18.5970	19.6199	0.6500	2.6000	A572-65 (65 ksi)
L7	72.75-67.75	5.00	0.00	18	19.6199	20.6428	0.6125	2.4500	A572-65 (65 ksi)
L8	67.75-62.75	5.00	0.00	18	20.6428	21.6657	0.5750	2.3000	A572-65 (65 ksi)
L9	62.75-57.75	5.00	0.00	18	21.6657	22.6886	0.5500	2.2000	A572-65 (65 ksi)
L10	57.75-53.00	4.75	0.00	18	22.6886	23.6604	0.5313	2.1250	A572-65 (65 ksi)
L11	53.00-52.75	0.25	0.00	18	23.6604	23.7116	0.7250	2.9000	A572-65 (65 ksi)
L12	52.75-45.67	7.08	3.67	18	23.7116	25.1600	0.7000	2.8000	A572-65 (65 ksi)
L13	45.67-44.34	5.00	0.00	18	24.0342	25.0441	0.7500	3.0000	A572-65 (65 ksi)
L14	44.34-39.34	5.00	0.00	18	25.0441	26.0540	0.7250	2.9000	A572-65 (65 ksi)
L15	39.34-34.34	5.00	0.00	18	26.0540	27.0639	0.7000	2.8000	A572-65 (65 ksi)
L16	34.34-29.34	5.00	0.00	18	27.0639	28.0738	0.6750	2.7000	A572-65 (65 ksi)
L17	29.34-24.34	5.00	0.00	18	28.0738	29.0837	0.6625	2.6500	A572-65 (65 ksi)
L18	24.34-19.34	5.00	0.00	18	29.0837	30.0937	0.6375	2.5500	A572-65 (65 ksi)
L19	19.34-14.34	5.00	0.00	18	30.0937	31.1036	0.6250	2.5000	A572-65 (65 ksi)
L20	14.34-12.00	2.34	0.00	18	31.1036	31.5762	0.6125	2.4500	A572-65 (65 ksi)
L21	12.00-11.75	0.25	0.00	18	31.5762	31.6267	0.5625	2.2500	A572-65 (65 ksi)
L22	11.75-6.75	5.00	0.00	18	31.6267	32.6366	0.5500	2.2000	A572-65 (65 ksi)
L23	6.75-1.75	5.00	0.00	18	32.6366	33.6465	0.5375	2.1500	A572-65 (65 ksi)
L24	1.75-0.00	1.75		18	33.6465	34.0000	0.5375	2.1500	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	12.9178	7.4763	149.0644	4.4597	6.4770	23.0144	298.3249	3.7388	1.9140	10.208
	14.8217	8.5921	226.2672	5.1253	7.4295	30.4552	452.8322	4.2969	2.2440	11.968
L2	14.8217	8.5921	226.2672	5.1253	7.4295	30.4552	452.8322	4.2969	2.2440	11.968
	16.7256	9.7080	326.3677	5.7909	8.3820	38.9367	653.1649	4.8549	2.5740	13.728

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
L3	16.7256	9.7080	326.3677	5.7909	8.3820	38.9367	653.1649	4.8549	2.5740	13.728
	17.7643	10.3167	391.6953	6.1541	8.9016	44.0026	783.9060	5.1593	2.7540	14.688
L4	17.7643	10.3167	391.6953	6.1541	8.9016	44.0026	783.9060	5.1593	2.7540	14.688
	18.8030	10.9255	465.2058	6.5172	9.4213	49.3782	931.0238	5.4638	2.9341	15.648
L5	18.7259	38.9691	1570.1444	6.3397	9.4213	166.6593	3142.3549	19.4883	2.0541	2.988
	18.7778	39.0807	1583.6737	6.3579	9.4473	167.6331	3169.4313	19.5441	2.0631	3.001
L6	18.7836	37.0264	1506.7166	6.3712	9.4473	159.4871	3015.4158	18.5167	2.1291	3.275
	19.8223	39.1368	1779.3125	6.7343	9.9669	178.5221	3560.9663	19.5721	2.3091	3.552
L7	19.8281	36.9518	1686.6229	6.7476	9.9669	169.2223	3375.4651	18.4794	2.3751	3.878
	20.8668	38.9404	1973.8461	7.1108	10.4865	188.2265	3950.2894	19.4739	2.5551	4.172
L8	20.8726	36.6248	1863.4252	7.1241	10.4865	177.6968	3729.3023	18.3159	2.6211	4.558
	21.9112	38.4916	2163.1496	7.4872	11.0062	196.5394	4329.1456	19.2495	2.8012	4.872
L9	21.9151	36.8617	2076.4662	7.4961	11.0062	188.6635	4155.6647	18.4344	2.8452	5.173
	22.9538	38.6474	2393.0937	7.8592	11.5258	207.6288	4789.3363	19.3274	3.0252	5.5
L10	22.9567	37.3615	2317.3890	7.8659	11.5258	201.0605	4637.8273	18.6843	3.0582	5.757
	23.9435	39.0001	2635.8620	8.2109	12.0195	219.2991	5275.1924	19.5038	3.2292	6.079
L11	23.9136	52.7778	3507.5323	8.1421	12.0195	291.8205	7019.6799	26.3939	2.8882	3.984
	23.9655	52.8955	3531.0501	8.1602	12.0455	293.1434	7066.7464	26.4528	2.8972	3.996
L12	23.9694	51.1271	3420.4256	8.1691	12.0455	283.9595	6845.3518	25.5684	2.9412	4.202
	25.4401	54.3452	4107.8235	8.6833	12.7813	321.3937	8221.0521	27.1778	3.1962	4.566
L13	25.0420	55.4280	3796.5444	8.2659	12.2094	310.9535	7598.0843	27.7193	2.9100	3.88
	25.3147	57.8321	4312.2875	8.6244	12.7224	338.9524	8630.2492	28.9215	3.0878	4.117
L14	25.3186	55.9619	4181.4268	8.6333	12.7224	328.6665	8368.3557	27.9863	3.1318	4.32
	26.3441	58.2858	4724.2929	8.9918	13.2354	356.9428	9454.8022	29.1485	3.3095	4.565
L15	26.3479	56.3315	4574.9060	9.0007	13.2354	345.6559	9155.8319	28.1711	3.3535	4.791
	27.3734	58.5754	5143.6608	9.3592	13.7485	374.1260	10294.0897	29.2932	3.5312	5.045
L16	27.3773	56.5369	4974.0821	9.3681	13.7485	361.7917	9954.7091	28.2738	3.5752	5.297
	28.4028	58.7006	5567.2958	9.7266	14.2615	390.3722	11141.9171	29.3559	3.7530	5.56
L17	28.4047	57.6399	5471.6798	9.7310	14.2615	383.6677	10950.5594	28.8254	3.7750	5.698
	29.4302	59.7635	6099.0122	10.0895	14.7745	412.8055	12206.0497	29.8874	3.9527	5.966
L18	29.4341	57.5588	5884.3616	10.0984	14.7745	398.2771	11776.4660	28.7849	3.9967	6.269
	30.4596	59.6023	6533.6042	10.4569	15.2876	427.3799	13075.8054	29.8068	4.1745	6.548
L19	30.4615	58.4584	6413.6524	10.4614	15.2876	419.5336	12835.7441	29.2348	4.1965	6.714
	31.4870	60.4619	7095.9108	10.8199	15.8006	449.0908	14201.1587	30.2367	4.3742	6.999
L20	31.4889	59.2769	6962.5521	10.8243	15.8006	440.6507	13934.2658	29.6441	4.3962	7.178
	31.9688	60.1958	7291.3744	10.9921	16.0407	454.5542	14592.3429	30.1036	4.4794	7.313
L21	31.9765	55.3711	6728.6513	11.0099	16.0407	419.4733	13466.1563	27.6908	4.5674	8.12
	32.0278	55.4613	6761.5713	11.0278	16.0664	420.8526	13532.0396	27.7359	4.5763	8.136
L22	32.0298	54.2506	6619.2984	11.0322	16.0664	411.9972	13247.3066	27.1305	4.5983	8.361
	33.0552	56.0136	7285.8277	11.3907	16.5794	439.4506	14581.2422	28.0121	4.7760	8.684
L23	33.0572	54.7619	7128.5654	11.3952	16.5794	429.9652	14266.5108	27.3862	4.7980	8.927
	34.0827	56.4848	7822.8005	11.7537	17.0924	457.6761	15655.8944	28.2478	4.9758	9.257
L24	34.0827	56.4848	7822.8005	11.7537	17.0924	457.6761	15655.8944	28.2478	4.9758	9.257
	34.4416	57.0879	8076.0313	11.8792	17.2720	467.5794	16162.6893	28.5494	5.0380	9.373

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 98.00-93.00				1	1	1			
L2 93.00-88.00				1	1	1			
L3 88.00-83.00				1	1	1			
L4 83.00-78.00				1	1	1			
L5 78.00-77.75				1	1	0.715195			
L6 77.75-72.75				1	1	0.729726			
L7 72.75-67.75				1	1	0.749039			
L8 67.75-62.75				1	1	0.773588			
L9 62.75-57.75				1	1	0.786221			
L10 57.75-53.00				1	1	0.79394			

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
L11 53.00-52.75				1	1	0.800139			
L12 52.75-45.67				1	1	0.811339			
L13 45.67-44.34				1	1	0.829957			
L14 44.34-39.34				1	1	0.837244			
L15 39.34-34.34				1	1	0.846787			
L16 34.34-29.34				1	1	0.858632			
L17 29.34-24.34				1	1	0.856771			
L18 24.34-19.34				1	1	0.872532			
L19 19.34-14.34				1	1	0.873382			
L20 14.34-12.00				1	1	0.883473			
L21 12.00-11.75				1	1	0.857475			
L22 11.75-6.75				1	1	0.863326			
L23 6.75-1.75				1	1	0.870311			
L24 1.75-0.00				1	1	0.866031			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
Safety Line 3/8	A	No	Surface Ar (CaAa)	70.00 - 10.00	1	1	0.000 0.000	0.3750		0.22
Switchblade	A	No	Surface Af (CaAa)	80.00 - 0.00	1	1	0.500 0.500	3.5000	20.0000	0.00
Switchblade	B	No	Surface Af (CaAa)	55.00 - 0.00	1	1	0.200 0.200	3.5000	20.0000	0.00
Switchblade	B	No	Surface Af (CaAa)	80.00 - 10.00	1	1	0.500 0.500	3.5000	20.0000	0.00
Switchblade	C	No	Surface Af (CaAa)	55.00 - 0.00	1	1	-0.200 -0.200	3.5000	20.0000	0.00
Switchblade	C	No	Surface Af (CaAa)	80.00 - 0.00	1	1	0.500 0.500	3.5000	20.0000	0.00

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
LDF6-50A (1-1/4	C	No	No	Inside Pole	98.00 - 4.00	18	No Ice	0.00	0.66

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
FOAM)							1/2" Ice	0.00	0.66
(T-Mobile)							1" Ice	0.00	0.66
1/4" OD	C	No	No	Inside Pole	98.00 - 4.00	1	No Ice	0.00	0.10
(T-Mobile)							1/2" Ice	0.00	0.10
							1" Ice	0.00	0.10
LDF5-50A (7/8	B	No	No	Inside Pole	91.00 - 7.50	17	No Ice	0.00	0.33
FOAM)							1/2" Ice	0.00	0.33
(AT&T)							1" Ice	0.00	0.33
2" ID	B	No	No	Inside Pole	91.00 - 7.50	2	No Ice	0.00	3.15
(AT&T)							1/2" Ice	0.00	3.15
							1" Ice	0.00	3.15
LDF6-50A (1-1/4	C	No	No	Inside Pole	80.00 - 7.50	3	No Ice	0.00	0.66
FOAM)							1/2" Ice	0.00	0.66
(Sprint)							1" Ice	0.00	0.66
1 1/2" Rigid Conduit	A	No	No	Inside Pole	80.00 - 7.50	1	No Ice	0.00	1.00
(Sprint)							1/2" Ice	0.00	1.00
							1" Ice	0.00	1.00
CATEGORY 5e (1	A	No	No	Inside Pole	80.00 - 7.50	1	No Ice	0.00	0.21
WIRE)							1/2" Ice	0.00	0.21
(Sprint)							1" Ice	0.00	0.21
3/8" Fiber Cable	B	No	No	Inside Pole	91.00 - 7.50	1	No Ice	0.00	0.10
(AT&T)							1/2" Ice	0.00	0.10
							1" Ice	0.00	0.10
3/4" DC Cable	B	No	No	Inside Pole	91.00 - 7.50	2	No Ice	0.00	0.45
(AT&T)							1/2" Ice	0.00	0.45
							1" Ice	0.00	0.45
3/8" Fiber Cable	B	No	No	Inside Pole	91.00 - 7.50	2	No Ice	0.00	0.10
(AT&T)							1/2" Ice	0.00	0.10
							1" Ice	0.00	0.10
3/4" DC Cable	B	No	No	Inside Pole	91.00 - 7.50	4	No Ice	0.00	0.45
(AT&T)							1/2" Ice	0.00	0.45
							1" Ice	0.00	0.45

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 lb
L1	98.00-93.00	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	0.000	59.90
L2	93.00-88.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	44.73
		C	0.000	0.000	0.000	0.000	59.90
L3	88.00-83.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	74.55
		C	0.000	0.000	0.000	0.000	59.90
L4	83.00-78.00	A	0.000	0.000	1.167	0.000	2.42
		B	0.000	0.000	1.167	0.000	74.55
		C	0.000	0.000	1.167	0.000	63.86
L5	78.00-77.75	A	0.000	0.000	0.146	0.000	0.30
		B	0.000	0.000	0.146	0.000	3.73
		C	0.000	0.000	0.146	0.000	3.49
L6	77.75-72.75	A	0.000	0.000	2.917	0.000	6.05

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 lb
		B	0.000	0.000	2.917	0.000	74.55
		C	0.000	0.000	2.917	0.000	69.80
L7	72.75-67.75	A	0.000	0.000	3.001	0.000	6.54
		B	0.000	0.000	2.917	0.000	74.55
		C	0.000	0.000	2.917	0.000	69.80
L8	67.75-62.75	A	0.000	0.000	3.104	0.000	7.15
		B	0.000	0.000	2.917	0.000	74.55
		C	0.000	0.000	2.917	0.000	69.80
L9	62.75-57.75	A	0.000	0.000	3.104	0.000	7.15
		B	0.000	0.000	2.917	0.000	74.55
		C	0.000	0.000	2.917	0.000	69.80
L10	57.75-53.00	A	0.000	0.000	2.949	0.000	6.79
		B	0.000	0.000	3.938	0.000	70.82
		C	0.000	0.000	3.938	0.000	66.31
L11	53.00-52.75	A	0.000	0.000	0.155	0.000	0.36
		B	0.000	0.000	0.292	0.000	3.73
		C	0.000	0.000	0.292	0.000	3.49
L12	52.75-45.67	A	0.000	0.000	4.396	0.000	10.12
		B	0.000	0.000	8.260	0.000	105.56
		C	0.000	0.000	8.260	0.000	98.84
L13	45.67-44.34	A	0.000	0.000	0.826	0.000	1.90
		B	0.000	0.000	1.552	0.000	19.83
		C	0.000	0.000	1.552	0.000	18.57
L14	44.34-39.34	A	0.000	0.000	3.104	0.000	7.15
		B	0.000	0.000	5.833	0.000	74.55
		C	0.000	0.000	5.833	0.000	69.80
L15	39.34-34.34	A	0.000	0.000	3.104	0.000	7.15
		B	0.000	0.000	5.833	0.000	74.55
		C	0.000	0.000	5.833	0.000	69.80
L16	34.34-29.34	A	0.000	0.000	3.104	0.000	7.15
		B	0.000	0.000	5.833	0.000	74.55
		C	0.000	0.000	5.833	0.000	69.80
L17	29.34-24.34	A	0.000	0.000	3.104	0.000	7.15
		B	0.000	0.000	5.833	0.000	74.55
		C	0.000	0.000	5.833	0.000	69.80
L18	24.34-19.34	A	0.000	0.000	3.104	0.000	7.15
		B	0.000	0.000	5.833	0.000	74.55
		C	0.000	0.000	5.833	0.000	69.80
L19	19.34-14.34	A	0.000	0.000	3.104	0.000	7.15
		B	0.000	0.000	5.833	0.000	74.55
		C	0.000	0.000	5.833	0.000	69.80
L20	14.34-12.00	A	0.000	0.000	1.453	0.000	3.35
		B	0.000	0.000	2.730	0.000	34.89
		C	0.000	0.000	2.730	0.000	32.67
L21	12.00-11.75	A	0.000	0.000	0.155	0.000	0.36
		B	0.000	0.000	0.292	0.000	3.73
		C	0.000	0.000	0.292	0.000	3.49
L22	11.75-6.75	A	0.000	0.000	2.982	0.000	5.53
		B	0.000	0.000	3.938	0.000	63.37
		C	0.000	0.000	5.833	0.000	68.31
L23	6.75-1.75	A	0.000	0.000	2.917	0.000	0.00
		B	0.000	0.000	2.917	0.000	0.00
		C	0.000	0.000	5.833	0.000	32.95
L24	1.75-0.00	A	0.000	0.000	1.021	0.000	0.00
		B	0.000	0.000	1.021	0.000	0.00
		C	0.000	0.000	2.042	0.000	0.00

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
L1	98.00-93.00	A	1.668	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	0.000	59.90
L2	93.00-88.00	A	1.659	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	44.73
		C		0.000	0.000	0.000	0.000	59.90
L3	88.00-83.00	A	1.650	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	74.55
		C		0.000	0.000	0.000	0.000	59.90
L4	83.00-78.00	A	1.640	0.000	0.000	1.823	0.000	35.85
		B		0.000	0.000	1.823	0.000	107.98
		C		0.000	0.000	1.823	0.000	97.29
L5	78.00-77.75	A	1.634	0.000	0.000	0.228	0.000	4.46
		B		0.000	0.000	0.228	0.000	7.89
		C		0.000	0.000	0.228	0.000	7.65
L6	77.75-72.75	A	1.629	0.000	0.000	4.546	0.000	88.92
		B		0.000	0.000	4.546	0.000	157.42
		C		0.000	0.000	4.546	0.000	152.67
L7	72.75-67.75	A	1.618	0.000	0.000	5.347	0.000	97.58
		B		0.000	0.000	4.534	0.000	156.72
		C		0.000	0.000	4.534	0.000	151.97
L8	67.75-62.75	A	1.606	0.000	0.000	6.316	0.000	108.01
		B		0.000	0.000	4.522	0.000	155.98
		C		0.000	0.000	4.522	0.000	151.23
L9	62.75-57.75	A	1.593	0.000	0.000	6.290	0.000	106.93
		B		0.000	0.000	4.510	0.000	155.18
		C		0.000	0.000	4.510	0.000	150.43
L10	57.75-53.00	A	1.580	0.000	0.000	5.950	0.000	100.52
		B		0.000	0.000	6.070	0.000	178.55
		C		0.000	0.000	6.070	0.000	174.04
L11	53.00-52.75	A	1.572	0.000	0.000	0.312	0.000	5.26
		B		0.000	0.000	0.449	0.000	11.66
		C		0.000	0.000	0.449	0.000	11.42
L12	52.75-45.67	A	1.561	0.000	0.000	8.816	0.000	147.63
		B		0.000	0.000	12.681	0.000	328.28
		C		0.000	0.000	12.681	0.000	321.56
L13	45.67-44.34	A	1.547	0.000	0.000	1.656	0.000	27.73
		B		0.000	0.000	2.382	0.000	61.67
		C		0.000	0.000	2.382	0.000	60.41
L14	44.34-39.34	A	1.536	0.000	0.000	6.176	0.000	102.18
		B		0.000	0.000	8.905	0.000	228.74
		C		0.000	0.000	8.905	0.000	223.99
L15	39.34-34.34	A	1.517	0.000	0.000	6.137	0.000	100.58
		B		0.000	0.000	8.866	0.000	226.36
		C		0.000	0.000	8.866	0.000	221.61
L16	34.34-29.34	A	1.495	0.000	0.000	6.093	0.000	98.78
		B		0.000	0.000	8.822	0.000	223.68
		C		0.000	0.000	8.822	0.000	218.93
L17	29.34-24.34	A	1.469	0.000	0.000	6.043	0.000	96.73
		B		0.000	0.000	8.772	0.000	220.60
		C		0.000	0.000	8.772	0.000	215.85
L18	24.34-19.34	A	1.439	0.000	0.000	5.983	0.000	94.32
		B		0.000	0.000	8.712	0.000	216.99
		C		0.000	0.000	8.712	0.000	212.24
L19	19.34-14.34	A	1.402	0.000	0.000	5.909	0.000	91.38
		B		0.000	0.000	8.638	0.000	212.56
		C		0.000	0.000	8.638	0.000	207.81
L20	14.34-12.00	A	1.368	0.000	0.000	2.734	0.000	41.52
		B		0.000	0.000	4.011	0.000	97.60
		C		0.000	0.000	4.011	0.000	95.37

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 lb
L21	12.00-11.75	A	1.354	0.000	0.000	0.291	0.000	4.38
		B		0.000	0.000	0.427	0.000	10.34
		C		0.000	0.000	0.427	0.000	10.11
L22	11.75-6.75	A	1.321	0.000	0.000	4.765	0.000	74.51
		B		0.000	0.000	5.720	0.000	150.03
		C		0.000	0.000	8.475	0.000	196.71
L23	6.75-1.75	A	1.222	0.000	0.000	4.138	0.000	58.49
		B		0.000	0.000	4.138	0.000	58.49
		C		0.000	0.000	8.277	0.000	149.93
L24	1.75-0.00	A	1.043	0.000	0.000	1.386	0.000	17.00
		B		0.000	0.000	1.386	0.000	17.00
		C		0.000	0.000	2.772	0.000	34.01

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	98.00-93.00	0.0000	0.0000	0.0000	0.0000
L2	93.00-88.00	0.0000	0.0000	0.0000	0.0000
L3	88.00-83.00	0.0000	0.0000	0.0000	0.0000
L4	83.00-78.00	0.0000	0.0000	0.0000	0.0000
L5	78.00-77.75	0.0000	0.0000	0.0000	0.0000
L6	77.75-72.75	0.0000	0.0000	0.0000	0.0000
L7	72.75-67.75	-0.0400	-0.0231	-0.2790	-0.1611
L8	67.75-62.75	-0.0890	-0.0514	-0.6043	-0.3489
L9	62.75-57.75	-0.0908	-0.0525	-0.6183	-0.3570
L10	57.75-53.00	1.2859	0.7424	0.9508	0.5489
L11	53.00-52.75	2.7598	1.5934	2.6029	1.5028
L12	52.75-45.67	2.7915	1.6117	2.6424	1.5256
L13	45.67-44.34	2.8116	1.6233	2.6668	1.5397
L14	44.34-39.34	2.8375	1.6382	2.7004	1.5591
L15	39.34-34.34	2.8773	1.6612	2.7509	1.5882
L16	34.34-29.34	2.9156	1.6833	2.8001	1.6167
L17	29.34-24.34	2.9527	1.7047	2.8482	1.6444
L18	24.34-19.34	2.9884	1.7253	2.8950	1.6714
L19	19.34-14.34	3.0229	1.7453	2.9407	1.6978
L20	14.34-12.00	3.0476	1.7595	2.9736	1.7168
L21	12.00-11.75	3.0558	1.7642	2.9849	1.7233
L22	11.75-6.75	2.7758	0.3842	3.0373	0.3480
L23	6.75-1.75	2.6287	-0.4439	3.0705	-0.5185
L24	1.75-0.00	2.6469	-0.4496	3.0425	-0.5168

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

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L4	9	Switchblade	78.00 - 80.00	1.0000	1.0000
L4	11	Switchblade	78.00 - 80.00	1.0000	1.0000
L4	13	Switchblade	78.00 - 80.00	1.0000	1.0000
L5	9	Switchblade	77.75 - 78.00	1.0000	1.0000
L5	11	Switchblade	77.75 - 78.00	1.0000	1.0000
L5	13	Switchblade	77.75 - 78.00	1.0000	1.0000
L6	9	Switchblade	72.75 - 77.75	1.0000	1.0000
L6	11	Switchblade	72.75 - 77.75	1.0000	1.0000
L6	13	Switchblade	72.75 - 77.75	1.0000	1.0000
L7	8	Safety Line 3/8	67.75 - 70.00	1.0000	1.0000
L7	9	Switchblade	67.75 - 72.75	1.0000	1.0000
L7	11	Switchblade	67.75 - 72.75	1.0000	1.0000
L7	13	Switchblade	67.75 - 72.75	1.0000	1.0000
L8	8	Safety Line 3/8	62.75 - 67.75	1.0000	1.0000
L8	9	Switchblade	62.75 - 67.75	1.0000	1.0000
L8	11	Switchblade	62.75 - 67.75	1.0000	1.0000
L8	13	Switchblade	62.75 - 67.75	1.0000	1.0000
L9	8	Safety Line 3/8	57.75 - 62.75	1.0000	1.0000
L9	9	Switchblade	57.75 - 62.75	1.0000	1.0000
L9	11	Switchblade	57.75 - 62.75	1.0000	1.0000
L9	13	Switchblade	57.75 - 62.75	1.0000	1.0000
L10	8	Safety Line 3/8	53.00 - 57.75	1.0000	1.0000
L10	9	Switchblade	53.00 - 57.75	1.0000	1.0000
L10	10	Switchblade	53.00 - 55.00	1.0000	1.0000
L10	11	Switchblade	53.00 - 57.75	1.0000	1.0000
L10	12	Switchblade	53.00 - 55.00	1.0000	1.0000
L10	13	Switchblade	53.00 - 57.75	1.0000	1.0000
L11	8	Safety Line 3/8	52.75 - 53.00	1.0000	1.0000
L11	9	Switchblade	52.75 - 53.00	1.0000	1.0000
L11	10	Switchblade	52.75 - 53.00	1.0000	1.0000
L11	11	Switchblade	52.75 - 53.00	1.0000	1.0000
L11	12	Switchblade	52.75 - 53.00	1.0000	1.0000
L11	13	Switchblade	52.75 - 53.00	1.0000	1.0000
L12	8	Safety Line 3/8	45.67 - 52.75	1.0000	1.0000
L12	9	Switchblade	45.67 - 52.75	1.0000	1.0000
L12	10	Switchblade	45.67 - 52.75	1.0000	1.0000
L12	11	Switchblade	45.67 - 52.75	1.0000	1.0000
L12	12	Switchblade	45.67 - 52.75	1.0000	1.0000
L12	13	Switchblade	45.67 - 52.75	1.0000	1.0000
L14	8	Safety Line 3/8	39.34 - 44.34	1.0000	1.0000
L14	9	Switchblade	39.34 - 44.34	1.0000	1.0000
L14	10	Switchblade	39.34 - 44.34	1.0000	1.0000
L14	11	Switchblade	39.34 - 44.34	1.0000	1.0000
L14	12	Switchblade	39.34 - 44.34	1.0000	1.0000
L14	13	Switchblade	39.34 - 44.34	1.0000	1.0000
L15	8	Safety Line 3/8	34.34 - 39.34	1.0000	1.0000
L15	9	Switchblade	34.34 - 39.34	1.0000	1.0000
L15	10	Switchblade	34.34 - 39.34	1.0000	1.0000
L15	11	Switchblade	34.34 - 39.34	1.0000	1.0000
L15	12	Switchblade	34.34 - 39.34	1.0000	1.0000
L15	13	Switchblade	34.34 - 39.34	1.0000	1.0000
L16	8	Safety Line 3/8	29.34 - 34.34	1.0000	1.0000
L16	9	Switchblade	29.34 - 34.34	1.0000	1.0000
L16	10	Switchblade	29.34 - 34.34	1.0000	1.0000
L16	11	Switchblade	29.34 - 34.34	1.0000	1.0000
L16	12	Switchblade	29.34 - 34.34	1.0000	1.0000
L16	13	Switchblade	29.34 - 34.34	1.0000	1.0000
L17	8	Safety Line 3/8	24.34 - 29.34	1.0000	1.0000
L17	9	Switchblade	24.34 - 29.34	1.0000	1.0000
L17	10	Switchblade	24.34 - 29.34	1.0000	1.0000
L17	11	Switchblade	24.34 - 29.34	1.0000	1.0000
L17	12	Switchblade	24.34 - 29.34	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L17	13	Switchblade	24.34 - 29.34	1.0000	1.0000
L18	8	Safety Line 3/8	19.34 - 24.34	1.0000	1.0000
L18	9	Switchblade	19.34 - 24.34	1.0000	1.0000
L18	10	Switchblade	19.34 - 24.34	1.0000	1.0000
L18	11	Switchblade	19.34 - 24.34	1.0000	1.0000
L18	12	Switchblade	19.34 - 24.34	1.0000	1.0000
L18	13	Switchblade	19.34 - 24.34	1.0000	1.0000
L19	8	Safety Line 3/8	14.34 - 19.34	1.0000	1.0000
L19	9	Switchblade	14.34 - 19.34	1.0000	1.0000
L19	10	Switchblade	14.34 - 19.34	1.0000	1.0000
L19	11	Switchblade	14.34 - 19.34	1.0000	1.0000
L19	12	Switchblade	14.34 - 19.34	1.0000	1.0000
L19	13	Switchblade	14.34 - 19.34	1.0000	1.0000
L20	8	Safety Line 3/8	12.00 - 14.34	1.0000	1.0000
L20	9	Switchblade	12.00 - 14.34	1.0000	1.0000
L20	10	Switchblade	12.00 - 14.34	1.0000	1.0000
L20	11	Switchblade	12.00 - 14.34	1.0000	1.0000
L20	12	Switchblade	12.00 - 14.34	1.0000	1.0000
L20	13	Switchblade	12.00 - 14.34	1.0000	1.0000
L21	8	Safety Line 3/8	11.75 - 12.00	1.0000	1.0000
L21	9	Switchblade	11.75 - 12.00	1.0000	1.0000
L21	10	Switchblade	11.75 - 12.00	1.0000	1.0000
L21	11	Switchblade	11.75 - 12.00	1.0000	1.0000
L21	12	Switchblade	11.75 - 12.00	1.0000	1.0000
L21	13	Switchblade	11.75 - 12.00	1.0000	1.0000
L22	8	Safety Line 3/8	10.00 - 11.75	1.0000	1.0000
L22	9	Switchblade	6.75 - 11.75	1.0000	1.0000
L22	10	Switchblade	6.75 - 11.75	1.0000	1.0000
L22	11	Switchblade	10.00 - 11.75	1.0000	1.0000
L22	12	Switchblade	6.75 - 11.75	1.0000	1.0000
L22	13	Switchblade	6.75 - 11.75	1.0000	1.0000
L23	9	Switchblade	1.75 - 6.75	1.0000	1.0000
L23	10	Switchblade	1.75 - 6.75	1.0000	1.0000
L23	12	Switchblade	1.75 - 6.75	1.0000	1.0000
L23	13	Switchblade	1.75 - 6.75	1.0000	1.0000
L24	9	Switchblade	0.00 - 1.75	1.0000	1.0000
L24	10	Switchblade	0.00 - 1.75	1.0000	1.0000
L24	12	Switchblade	0.00 - 1.75	1.0000	1.0000
L24	13	Switchblade	0.00 - 1.75	1.0000	1.0000

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 lb
APX16DWV-16DWVS (T-Mobile)	A	From Centroid-Face	3.50 0.00 0.00	0.0000	98.00	No Ice 1/2" Ice 1" Ice	6.59 6.96 7.34	2.15 2.49 2.84	40.70 74.24 112.65
APX16DWV-16DWVS (T-Mobile)	B	From Centroid-Face	3.50 0.00 0.00	0.0000	98.00	No Ice 1/2" Ice 1" Ice	6.59 6.96 7.34	2.15 2.49 2.84	40.70 74.24 112.65

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 lb
APX16DWV-16DWVS	C	From	3.50	0.0000	98.00	No Ice	6.59	2.15	40.70
(T-Mobile)		Centroid-Fa	0.00			1/2" Ice	6.96	2.49	74.24
		ce	0.00			1" Ice	7.34	2.84	112.65
APX16PV-16PVL w/ 8' pipe	A	From	3.50	0.0000	98.00	No Ice	7.04	3.89	69.20
(T-Mobile)		Centroid-Fa	0.00			1/2" Ice	7.77	5.04	121.86
		ce	0.00			1" Ice	8.43	6.05	181.34
APX16PV-16PVL w/ 8' pipe	B	From	3.50	0.0000	98.00	No Ice	7.04	3.89	69.20
(T-Mobile)		Centroid-Fa	0.00			1/2" Ice	7.77	5.04	121.86
		ce	0.00			1" Ice	8.43	6.05	181.34
APX16PV-16PVL w/ 8' pipe	C	From	3.50	0.0000	98.00	No Ice	7.04	3.89	69.20
(T-Mobile)		Centroid-Fa	0.00			1/2" Ice	7.77	5.04	121.86
		ce	0.00			1" Ice	8.43	6.05	181.34
6'x1/2" Lightning Rod	B	From Face	2.50	0.0000	98.00	No Ice	0.30	0.30	50.00
			0.00			1/2" Ice	0.62	0.62	65.00
			3.00			1" Ice	0.94	0.94	80.00
Platform Mount	A	None		0.0000	97.00	No Ice	28.47	28.47	1122.00
(T-Mobile)						1/2" Ice	33.59	33.59	1513.66
						1" Ice	38.71	38.71	1905.31
AAHC_MAA	A	From Face	4.00	0.0000	80.00	No Ice	4.20	2.07	103.70
(Sprint)			0.00			1/2" Ice	4.46	2.26	136.01
			0.00			1" Ice	4.72	2.46	172.07
AAHC_MAA	B	From Face	4.00	0.0000	80.00	No Ice	4.20	2.07	103.70
(Sprint)			0.00			1/2" Ice	4.46	2.26	136.01
			0.00			1" Ice	4.72	2.46	172.07
AAHC_MAA	C	From Face	4.00	0.0000	80.00	No Ice	4.20	2.07	103.70
(Sprint)			0.00			1/2" Ice	4.46	2.26	136.01
			0.00			1" Ice	4.72	2.46	172.07
RRH 1900-4x45	A	From Face	4.00	0.0000	80.00	No Ice	2.60	2.82	88.00
(Sprint)			0.00			1/2" Ice	2.81	3.04	115.81
			0.00			1" Ice	3.04	3.26	147.11
RRH 1900-4x45	B	From Face	4.00	0.0000	80.00	No Ice	2.60	2.82	88.00
(Sprint)			0.00			1/2" Ice	2.81	3.04	115.81
			0.00			1" Ice	3.04	3.26	147.11
RRH 1900-4x45	C	From Face	4.00	0.0000	80.00	No Ice	2.60	2.82	88.00
(Sprint)			0.00			1/2" Ice	2.81	3.04	115.81
			0.00			1" Ice	3.04	3.26	147.11
NNVV-65B-R4 w/ 8' pipe	A	From Face	4.00	0.0000	80.00	No Ice	16.56	12.15	137.20
(Sprint)			0.00			1/2" Ice	17.26	13.48	269.78
			0.00			1" Ice	17.94	14.66	412.22
NNVV-65B-R4 w/ 8' pipe	B	From Face	4.00	0.0000	80.00	No Ice	16.56	12.15	137.20
(Sprint)			0.00			1/2" Ice	17.26	13.48	269.78
			0.00			1" Ice	17.94	14.66	412.22
NNVV-65B-R4 w/ 8' pipe	C	From Face	4.00	0.0000	80.00	No Ice	16.56	12.15	137.20
(Sprint)			0.00			1/2" Ice	17.26	13.48	269.78
			0.00			1" Ice	17.94	14.66	412.22
T-Arm Mount	C	None		0.0000	80.00	No Ice	11.59	11.59	774.30
(Sprint)						1/2" Ice	15.44	15.44	990.35
						1" Ice	19.29	19.29	1206.41
(2) ODU	A	From Face	3.00	0.0000	80.00	No Ice	1.14	0.43	14.10
(Clearwire)			0.00			1/2" Ice	1.27	0.52	23.28
			2.50			1" Ice	1.41	0.62	34.50
(2) ODU	B	From Face	3.00	0.0000	80.00	No Ice	1.14	0.43	14.10
(Clearwire)			0.00			1/2" Ice	1.27	0.52	23.28
			2.50			1" Ice	1.41	0.62	34.50
7750 w/Mount Pipe	A	From Face	3.00	0.0000	91.00	No Ice	5.84	3.91	60.90
(AT&T)			0.00			1/2" Ice	6.32	4.75	107.25
			0.00			1" Ice	6.77	5.46	160.01

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 lb
7750 w/Mount Pipe	B	From Face	3.00	0.0000	91.00	No Ice	5.84	3.91	60.90
(AT&T)			0.00			1/2" Ice	6.32	4.75	107.25
			0.00			1" Ice	6.77	5.46	160.01
7750 w/Mount Pipe	C	From Face	3.00	0.0000	91.00	No Ice	5.84	3.91	60.90
(AT&T)			0.00			1/2" Ice	6.32	4.75	107.25
			0.00			1" Ice	6.77	5.46	160.01
(2) SBNH-1D65A with 6'	A	From Face	3.00	0.0000	91.00	No Ice	8.69	7.93	75.90
pipe			0.00			1/2" Ice	9.19	8.82	155.36
(AT&T)			0.00			1" Ice	9.67	9.59	242.40
(2) HPA-65R-BUU-H6	B	From Face	3.00	0.0000	91.00	No Ice	10.59	7.75	91.15
w/Mount Pipe			0.00			1/2" Ice	11.14	8.97	171.68
(AT&T)			0.00			1" Ice	11.68	9.91	260.79
(2) HPA-65R-BUU-H6	C	From Face	3.00	0.0000	91.00	No Ice	10.59	7.75	91.15
w/Mount Pipe			0.00			1/2" Ice	11.14	8.97	171.68
(AT&T)			0.00			1" Ice	11.68	9.91	260.79
QS46512-2 w/6' Pipe	A	From Face	3.00	0.0000	91.00	No Ice	5.95	6.51	112.50
(AT&T)			0.00			1/2" Ice	6.44	7.35	173.47
			0.00			1" Ice	6.89	8.07	241.15
QS46512-2 w/6' Pipe	B	From Face	3.00	0.0000	91.00	No Ice	5.95	6.51	112.50
(AT&T)			0.00			1/2" Ice	6.44	7.35	173.47
			0.00			1" Ice	6.89	8.07	241.15
QS46512-2 w/6' Pipe	C	From Face	3.00	0.0000	91.00	No Ice	5.95	6.51	112.50
(AT&T)			0.00			1/2" Ice	6.44	7.35	173.47
			0.00			1" Ice	6.89	8.07	241.15
T-Arm Mount	C	None		0.0000	91.00	No Ice	11.59	11.59	774.30
(AT&T)						1/2" Ice	15.44	15.44	990.35
						1" Ice	19.29	19.29	1206.41
RRUS 32	A	From Face	3.00	0.0000	91.00	No Ice	2.72	1.67	52.90
(AT&T)			0.00			1/2" Ice	2.94	1.86	73.90
			0.00			1" Ice	3.17	2.05	98.09
RRUS 32	B	From Face	3.00	0.0000	91.00	No Ice	2.72	1.67	52.90
(AT&T)			0.00			1/2" Ice	2.94	1.86	73.90
			0.00			1" Ice	3.17	2.05	98.09
RRUS 32	C	From Face	3.00	0.0000	91.00	No Ice	2.72	1.67	52.90
(AT&T)			0.00			1/2" Ice	2.94	1.86	73.90
			0.00			1" Ice	3.17	2.05	98.09
RRUS-11	A	From Face	1.00	0.0000	91.00	No Ice	2.52	1.02	55.00
(AT&T)			0.00			1/2" Ice	2.72	1.16	74.32
			0.00			1" Ice	2.92	1.30	96.56
RRUS-11	B	From Face	1.00	0.0000	91.00	No Ice	2.52	1.02	55.00
(AT&T)			0.00			1/2" Ice	2.72	1.16	74.32
			0.00			1" Ice	2.92	1.30	96.56
RRUS-11	C	From Face	1.00	0.0000	91.00	No Ice	2.52	1.02	55.00
(AT&T)			0.00			1/2" Ice	2.72	1.16	74.32
			0.00			1" Ice	2.92	1.30	96.56
RRUS 32 B2	A	From Face	3.00	0.0000	91.00	No Ice	2.72	1.67	52.90
(AT&T)			0.00			1/2" Ice	2.94	1.86	73.90
			0.00			1" Ice	3.17	2.05	98.09
RRUS 32 B2	B	From Face	3.00	0.0000	91.00	No Ice	2.72	1.67	52.90
(AT&T)			0.00			1/2" Ice	2.94	1.86	73.90
			0.00			1" Ice	3.17	2.05	98.09
RRUS 32 B2	C	From Face	3.00	0.0000	91.00	No Ice	2.72	1.67	52.90
(AT&T)			0.00			1/2" Ice	2.94	1.86	73.90
			0.00			1" Ice	3.17	2.05	98.09
RRUS 4478 B5	A	From Face	3.00	0.0000	91.00	No Ice	1.84	1.06	59.90
(AT&T)			0.00			1/2" Ice	2.01	1.20	75.78
			0.00			1" Ice	2.19	1.34	94.29

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 lb
RRUS 4478 B5	B	From Face	3.00	0.0000	91.00	No Ice	1.84	1.06	59.90
(AT&T)			0.00			1/2" Ice	2.01	1.20	75.78
			0.00			1" Ice	2.19	1.34	94.29
RRUS 4478 B5	C	From Face	3.00	0.0000	91.00	No Ice	1.84	1.06	59.90
(AT&T)			0.00			1/2" Ice	2.01	1.20	75.78
			0.00			1" Ice	2.19	1.34	94.29
RRUS 4426 B66	A	From Face	3.00	0.0000	91.00	No Ice	1.65	0.68	46.00
(AT&T)			0.00			1/2" Ice	1.81	0.79	58.47
			0.00			1" Ice	1.98	0.92	73.32
RRUS 4426 B66	B	From Face	3.00	0.0000	91.00	No Ice	1.65	0.68	46.00
(AT&T)			0.00			1/2" Ice	1.81	0.79	58.47
			0.00			1" Ice	1.98	0.92	73.32
RRUS 4426 B66	C	From Face	3.00	0.0000	91.00	No Ice	1.65	0.68	46.00
(AT&T)			0.00			1/2" Ice	1.81	0.79	58.47
			0.00			1" Ice	1.98	0.92	73.32
(2) LGP 21401	A	From Face	2.50	0.0000	91.00	No Ice	0.82	0.35	17.50
(AT&T)			0.00			1/2" Ice	0.94	0.44	23.31
			0.00			1" Ice	1.06	0.54	30.86
(2) LGP 21401	B	From Face	2.50	0.0000	91.00	No Ice	0.82	0.35	17.50
(AT&T)			0.00			1/2" Ice	0.94	0.44	23.31
			0.00			1" Ice	1.06	0.54	30.86
(2) LGP 21401	C	From Face	2.50	0.0000	91.00	No Ice	0.82	0.35	17.50
(AT&T)			0.00			1/2" Ice	0.94	0.44	23.31
			0.00			1" Ice	1.06	0.54	30.86
DC6-48-60-18-8C	A	From Face	1.00	0.0000	91.00	No Ice	0.55	0.55	26.20
(AT&T)			0.00			1/2" Ice	0.90	0.90	37.21
			0.00			1" Ice	1.04	1.04	50.18
DC6-48-60-18-8C	B	From Face	1.00	0.0000	91.00	No Ice	0.55	0.55	26.20
(AT&T)			0.00			1/2" Ice	0.90	0.90	37.21
			0.00			1" Ice	1.04	1.04	50.18
DC6-48-60-18-8C	C	From Face	1.00	0.0000	91.00	No Ice	0.55	0.55	26.20
(AT&T)			0.00			1/2" Ice	0.90	0.90	37.21
			0.00			1" Ice	1.04	1.04	50.18
T-Arm Mount	A	None		0.0000	80.00	No Ice	11.59	11.59	774.30
(Sprint)						1/2" Ice	15.44	15.44	990.35
						1" Ice	19.29	19.29	1206.41
T-Arm Mount	B	None		0.0000	80.00	No Ice	11.59	11.59	774.30
(Sprint)						1/2" Ice	15.44	15.44	990.35
						1" Ice	19.29	19.29	1206.41
(2) RRH 800 MHz	A	From Face	4.00	0.0000	80.00	No Ice	2.40	2.25	64.00
(Sprint)			0.00			1/2" Ice	2.61	2.46	86.12
			0.00			1" Ice	2.83	2.68	111.30
(2) RRH 800 MHz	B	From Face	4.00	0.0000	80.00	No Ice	2.40	2.25	64.00
(Sprint)			0.00			1/2" Ice	2.61	2.46	86.12
			0.00			1" Ice	2.83	2.68	111.30
(2) RRH 800 MHz	C	From Face	4.00	0.0000	80.00	No Ice	2.40	2.25	64.00
(Sprint)			0.00			1/2" Ice	2.61	2.46	86.12
			0.00			1" Ice	2.83	2.68	111.30

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight lb
1.5' dish (Sprint)	B	Paraboloid w/o Radome	From Face	4.00 0.00 0.00	Worst		82.00	1.50	No Ice 1/2" Ice 1" Ice	1.77 1.97 2.17	10.00 20.11 30.23
A-ANT-18G-2-C (Sprint)	A	Paraboloid w/Shroud (HP)	From Face	4.00 0.00 0.00	Worst		82.00	2.00	No Ice 1/2" Ice 1" Ice	3.14 3.41 3.68	25.00 42.50 60.01

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 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

Comb. No.	Description
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 lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	98 - 93	Pole	Max Tension	26	0.00	0.00	-0.00
			Max. Compression	26	-4582.80	-0.29	0.17
			Max. Mx	8	-1757.66	-14.94	0.09
			Max. My	2	-1746.45	-0.16	14.89
			Max. Vy	8	3370.64	-14.94	0.09
			Max. Vx	2	-3376.47	-0.16	14.89
			Max. Torque	12			0.06
L2	93 - 88	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-13602.75	-0.47	0.08
			Max. Mx	8	-4968.97	-48.93	0.26
			Max. My	2	-4931.42	-0.51	49.02
			Max. Vy	8	9087.45	-48.93	0.26
			Max. Vx	2	-9188.02	-0.51	49.02
			Max. Torque	27			-0.06
L3	88 - 83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-14158.51	-0.47	0.08
			Max. Mx	8	-5358.03	-94.95	0.64
			Max. My	2	-5320.28	-0.89	95.55
			Max. Vy	8	9326.86	-94.95	0.64
			Max. Vx	2	-9428.65	-0.89	95.55
			Max. Torque	27			-0.06
L4	83 - 78	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-24191.40	-0.30	0.58
			Max. Mx	8	-9952.03	-152.96	1.12
			Max. My	2	-9875.57	-1.21	155.03
			Max. Vy	8	14545.57	-152.96	1.12
			Max. Vx	2	-14968.89	-1.21	155.03
			Max. Torque	20			-0.94
L5	78 - 77.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-24251.59	-0.30	0.58
			Max. Mx	8	-9999.45	-156.60	1.14
			Max. My	2	-9922.93	-1.23	158.77
			Max. Vy	8	14576.11	-156.60	1.14
			Max. Vx	2	-15005.85	-1.23	158.77
			Max. Torque	20			-0.94
L6	77.75 - 72.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-25456.51	-0.30	0.58
			Max. Mx	8	-10734.31	-231.36	1.53
			Max. My	2	-10648.10	-1.62	236.00
			Max. Vy	8	15336.69	-231.36	1.53
			Max. Vx	2	-15894.81	-1.62	236.00
			Max. Torque	20			-0.94
L7	72.75 - 67.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-26690.41	-0.29	0.58
			Max. Mx	8	-11500.91	-309.91	1.92
			Max. My	2	-11407.07	-2.01	317.66
			Max. Vy	8	16098.25	-309.91	1.92
			Max. Vx	2	-16782.64	-2.01	317.66

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	20			-0.94
L8	67.75 - 62.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-27954.67	-0.28	0.59
			Max. Mx	8	-12297.16	-392.27	2.31
			Max. My	2	-12197.99	-2.39	403.75
			Max. Vy	8	16860.30	-392.27	2.31
			Max. Vx	2	-17668.68	-2.39	403.75
			Max. Torque	20			-0.95
L9	62.75 - 57.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-29237.25	-0.26	0.60
			Max. Mx	8	-13121.51	-478.43	2.69
			Max. My	2	-13019.47	-2.78	494.26
			Max. Vy	8	17621.29	-478.43	2.69
			Max. Vx	2	-18551.15	-2.78	494.26
			Max. Torque	20			-0.95
L10	57.75 - 53	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-30536.35	-0.30	0.58
			Max. Mx	8	-13924.31	-564.00	3.06
			Max. My	2	-13820.59	-3.14	584.55
			Max. Vy	8	18426.03	-564.00	3.06
			Max. Vx	2	-19486.38	-3.14	584.55
			Max. Torque	20			-0.95
L11	53 - 52.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-30621.63	-0.30	0.58
			Max. Mx	8	-13987.51	-568.61	3.08
			Max. My	2	-13884.51	-3.16	589.42
			Max. Vy	8	18468.31	-568.61	3.08
			Max. Vx	2	-19536.55	-3.16	589.42
			Max. Torque	20			-0.91
L12	52.75 - 45.67	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-31783.55	-0.38	0.53
			Max. Mx	8	-14710.87	-632.70	3.34
			Max. My	2	-14605.20	-3.42	657.34
			Max. Vy	8	19136.98	-632.70	3.34
			Max. Vx	2	-20312.41	-3.42	657.34
			Max. Torque	20			-0.90
L13	45.67 - 44.34	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-34423.73	-0.50	0.46
			Max. Mx	8	-16505.46	-731.01	3.73
			Max. My	2	-16394.74	-3.79	761.94
			Max. Vy	8	20184.76	-731.01	3.73
			Max. Vx	2	-21522.71	-3.79	761.94
			Max. Torque	20			-0.75
L14	44.34 - 39.34	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36242.16	-0.62	0.39
			Max. Mx	8	-17713.54	-834.28	4.12
			Max. My	2	-17604.18	-4.17	872.28
			Max. Vy	8	21145.59	-834.28	4.12
			Max. Vx	2	-22636.65	-4.17	872.28
			Max. Torque	10			0.72
L15	39.34 - 34.34	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-38077.07	-0.74	0.32
			Max. Mx	8	-18948.33	-942.32	4.51
			Max. My	2	-18842.77	-4.54	988.14
			Max. Vy	8	22091.41	-942.32	4.51
			Max. Vx	2	-23730.82	-4.54	988.14
			Max. Torque	2			-0.85
L16	34.34 - 29.34	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-39926.92	-0.87	0.25
			Max. Mx	8	-20212.91	-1055.03	4.89
			Max. My	2	-20113.98	-4.91	1109.40

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	8	23014.87	-1055.03	4.89
			Max. Vx	2	-24797.24	-4.91	1109.40
			Max. Torque	2			-1.11
L17	29.34 - 24.34	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-41789.71	-0.99	0.18
			Max. Mx	8	-21505.67	-1172.28	5.27
			Max. My	2	-21416.04	-5.29	1235.91
			Max. Vy	8	23911.33	-1172.28	5.27
			Max. Vx	2	-25830.63	-5.29	1235.91
			Max. Torque	2			-1.37
L18	24.34 - 19.34	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43662.73	-1.12	0.10
			Max. Mx	8	-22828.18	-1293.93	5.65
			Max. My	2	-22750.73	-5.66	1367.47
			Max. Vy	8	24771.58	-1293.93	5.65
			Max. Vx	2	-26820.78	-5.66	1367.47
			Max. Torque	2			-1.62
L19	19.34 - 14.34	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-45542.01	-1.25	0.03
			Max. Mx	8	-24178.55	-1419.75	6.03
			Max. My	2	-24115.89	-6.03	1503.85
			Max. Vy	8	25586.30	-1419.75	6.03
			Max. Vx	2	-27757.16	-6.03	1503.85
			Max. Torque	2			-1.87
L20	14.34 - 12	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-46424.22	-1.31	-0.00
			Max. Mx	8	-24820.00	-1480.03	6.20
			Max. My	2	-24764.78	-6.20	1569.27
			Max. Vy	8	25961.37	-1480.03	6.20
			Max. Vx	2	-28187.56	-6.20	1569.27
			Max. Torque	2			-1.99
L21	12 - 11.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-46512.85	-1.31	-0.01
			Max. Mx	8	-24895.89	-1486.52	6.22
			Max. My	2	-24843.41	-6.22	1576.32
			Max. Vy	8	25989.44	-1486.52	6.22
			Max. Vx	2	-28220.82	-6.22	1576.32
			Max. Torque	2			-2.00
L22	11.75 - 6.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48205.98	-1.36	-0.07
			Max. Mx	8	-26157.85	-1618.41	6.59
			Max. My	2	-26124.90	-6.59	1719.42
			Max. Vy	8	26786.12	-1618.41	6.59
			Max. Vx	2	-29042.76	-6.59	1719.42
			Max. Torque	2			-2.20
L23	6.75 - 1.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49726.95	-1.37	-0.13
			Max. Mx	8	-27332.96	-1754.23	6.96
			Max. My	2	-27322.73	-6.95	1866.46
			Max. Vy	8	27575.42	-1754.23	6.96
			Max. Vx	2	-29806.12	-6.95	1866.46
			Max. Torque	2			-2.38
L24	1.75 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-50224.95	-1.37	-0.14
			Max. Mx	8	-27725.71	-1802.71	7.09
			Max. My	2	-27721.72	-7.08	1918.83
			Max. Vy	8	27865.41	-1802.71	7.09
			Max. Vx	2	-30087.55	-7.08	1918.83
			Max. Torque	2			-2.44

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Pole	Max. Vert	29	50224.95	-6004.16	3474.08
	Max. H_x	21	20814.36	27838.75	-73.08
	Max. H_z	2	27752.48	-73.08	30059.18
	Max. M_x	2	1918.83	-73.08	30059.18
	Max. M_z	8	1802.71	-27838.75	73.08
	Max. Torsion	14	2.44	73.08	-30059.18
	Min. Vert	11	20814.36	-24094.10	-13896.55
	Min. H_x	8	27752.48	-27838.75	73.08
	Min. H_z	14	27752.48	73.08	-30059.18
	Min. M_x	14	-1918.41	73.08	-30059.18
	Min. M_z	20	-1802.31	27838.75	-73.08
	Min. Torsion	2	-2.44	-73.08	30059.18

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	23127.07	0.00	0.00	-0.16	-0.15	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	27752.48	73.08	-30059.18	-1918.83	-7.08	2.44
0.9 Dead+1.6 Wind 0 deg - No Ice	20814.36	73.08	-30059.18	-1903.85	-6.96	2.43
1.2 Dead+1.6 Wind 30 deg - No Ice	27752.48	14153.17	-24489.43	-1587.17	-917.64	1.79
0.9 Dead+1.6 Wind 30 deg - No Ice	20814.36	14153.17	-24489.43	-1574.67	-910.39	1.78
1.2 Dead+1.6 Wind 60 deg - No Ice	27752.48	26020.05	-15092.87	-965.48	-1660.42	1.49
0.9 Dead+1.6 Wind 60 deg - No Ice	20814.36	26020.05	-15092.87	-957.91	-1647.46	1.49
1.2 Dead+1.6 Wind 90 deg - No Ice	27752.48	27838.75	-73.08	-7.09	-1802.71	-0.02
0.9 Dead+1.6 Wind 90 deg - No Ice	20814.36	27838.75	-73.08	-6.97	-1788.47	-0.02
1.2 Dead+1.6 Wind 120 deg - No Ice	27752.48	24094.10	13896.55	917.90	-1592.49	-0.90
0.9 Dead+1.6 Wind 120 deg - No Ice	20814.36	24094.10	13896.55	910.70	-1579.86	-0.90
1.2 Dead+1.6 Wind 150 deg - No Ice	27752.48	13856.09	24121.03	1562.16	-895.49	-1.62
0.9 Dead+1.6 Wind 150 deg - No Ice	20814.36	13856.09	24121.03	1549.92	-888.40	-1.61
1.2 Dead+1.6 Wind 180 deg - No Ice	27752.48	-73.08	30059.18	1918.41	6.69	-2.44
0.9 Dead+1.6 Wind 180 deg - No Ice	20814.36	-73.08	30059.18	1903.54	6.68	-2.43
1.2 Dead+1.6 Wind 210 deg - No Ice	27752.48	-14153.17	24489.43	1586.75	917.24	-1.78
0.9 Dead+1.6 Wind 210 deg - No Ice	20814.36	-14153.17	24489.43	1574.36	910.10	-1.78

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	kip-ft	kip-ft	kip-ft
1.2 Dead+1.6 Wind 240 deg - No Ice	27752.48	-26020.05	15092.87	965.06	1660.03	-1.49
0.9 Dead+1.6 Wind 240 deg - No Ice	20814.36	-26020.05	15092.87	957.60	1647.17	-1.49
1.2 Dead+1.6 Wind 270 deg - No Ice	27752.48	-27838.75	73.08	6.68	1802.31	0.02
0.9 Dead+1.6 Wind 270 deg - No Ice	20814.36	-27838.75	73.08	6.67	1788.18	0.02
1.2 Dead+1.6 Wind 300 deg - No Ice	27752.48	-24094.10	-13896.55	-918.31	1592.10	0.90
0.9 Dead+1.6 Wind 300 deg - No Ice	20814.36	-24094.10	-13896.55	-911.00	1579.57	0.89
1.2 Dead+1.6 Wind 330 deg - No Ice	27752.48	-13856.09	-24121.03	-1562.58	895.10	1.62
0.9 Dead+1.6 Wind 330 deg - No Ice	20814.36	-13856.09	-24121.03	-1550.23	888.11	1.61
1.2 Dead+1.0 Ice+1.0 Temp	50224.95	0.00	-0.00	0.14	-1.37	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	50224.95	8.93	-6932.69	-471.10	-2.34	0.57
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	50224.95	3389.08	-5865.33	-398.69	-231.95	0.52
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	50224.95	6004.16	-3474.08	-236.25	-409.52	0.32
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	50224.95	6496.26	-8.93	-0.77	-449.95	-0.01
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	50224.95	5786.05	3337.84	230.43	-400.80	-0.25
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	50224.95	3240.39	5625.65	388.53	-224.94	-0.42
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	50224.95	-8.93	6932.69	471.32	-0.58	-0.57
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	50224.95	-3389.08	5865.33	398.91	229.03	-0.52
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	50224.95	-6004.16	3474.08	236.48	406.60	-0.32
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	50224.95	-6496.26	8.93	0.99	447.03	0.01
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	50224.95	-5786.05	-3337.84	-230.21	397.88	0.25
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	50224.95	-3240.39	-5625.65	-388.31	222.02	0.42
Dead+Wind 0 deg - Service	23127.07	15.32	-6300.90	-400.66	-1.60	0.51
Dead+Wind 30 deg - Service	23127.07	2966.74	-5133.39	-331.40	-191.65	0.37
Dead+Wind 60 deg - Service	23127.07	5454.23	-3163.72	-201.66	-346.71	0.31
Dead+Wind 90 deg - Service	23127.07	5835.46	-15.32	-1.61	-376.36	-0.01
Dead+Wind 120 deg - Service	23127.07	5050.52	2912.95	191.45	-332.50	-0.19
Dead+Wind 150 deg - Service	23127.07	2904.47	5056.17	325.91	-187.02	-0.34
Dead+Wind 180 deg - Service	23127.07	-15.32	6300.90	400.32	1.27	-0.51
Dead+Wind 210 deg - Service	23127.07	-2966.74	5133.39	331.05	191.32	-0.37
Dead+Wind 240 deg - Service	23127.07	-5454.23	3163.72	201.32	346.39	-0.31
Dead+Wind 270 deg - Service	23127.07	-5835.46	15.32	1.26	376.04	0.01
Dead+Wind 300 deg - Service	23127.07	-5050.52	-2912.95	-191.79	332.17	0.19
Dead+Wind 330 deg - Service	23127.07	-2904.47	-5056.17	-326.25	186.69	0.34

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
1	0.00	-23127.07	0.00	0.00	23127.07	0.00	0.000%
2	73.08	-27752.48	-30059.17	-73.08	27752.48	30059.18	0.000%
3	73.08	-20814.36	-30059.17	-73.08	20814.36	30059.18	0.000%
4	14153.17	-27752.48	-24489.43	-14153.17	27752.48	24489.43	0.000%
5	14153.17	-20814.36	-24489.43	-14153.17	20814.36	24489.43	0.000%
6	26020.05	-27752.48	-15092.87	-26020.05	27752.48	15092.87	0.000%
7	26020.05	-20814.36	-15092.87	-26020.05	20814.36	15092.87	0.000%
8	27838.75	-27752.48	-73.08	-27838.75	27752.48	73.08	0.000%
9	27838.75	-20814.36	-73.08	-27838.75	20814.36	73.08	0.000%
10	24094.10	-27752.48	13896.55	-24094.10	27752.48	-13896.55	0.000%
11	24094.10	-20814.36	13896.55	-24094.10	20814.36	-13896.55	0.000%
12	13856.09	-27752.48	24121.03	-13856.09	27752.48	-24121.03	0.000%
13	13856.09	-20814.36	24121.03	-13856.09	20814.36	-24121.03	0.000%
14	-73.08	-27752.48	30059.17	73.08	27752.48	-30059.18	0.000%
15	-73.08	-20814.36	30059.17	73.08	20814.36	-30059.18	0.000%
16	-14153.17	-27752.48	24489.43	14153.17	27752.48	-24489.43	0.000%
17	-14153.17	-20814.36	24489.43	14153.17	20814.36	-24489.43	0.000%
18	-26020.05	-27752.48	15092.87	26020.05	27752.48	-15092.87	0.000%
19	-26020.05	-20814.36	15092.87	26020.05	20814.36	-15092.87	0.000%
20	-27838.75	-27752.48	73.08	27838.75	27752.48	-73.08	0.000%
21	-27838.75	-20814.36	73.08	27838.75	20814.36	-73.08	0.000%
22	-24094.10	-27752.48	-13896.55	24094.10	27752.48	13896.55	0.000%
23	-24094.10	-20814.36	-13896.55	24094.10	20814.36	13896.55	0.000%
24	-13856.09	-27752.48	-24121.03	13856.09	27752.48	24121.03	0.000%
25	-13856.09	-20814.36	-24121.03	13856.09	20814.36	24121.03	0.000%
26	0.00	-50224.95	0.00	-0.00	50224.95	0.00	0.000%
27	8.93	-50224.95	-6932.69	-8.93	50224.95	6932.69	0.000%
28	3389.08	-50224.95	-5865.32	-3389.08	50224.95	5865.33	0.000%
29	6004.16	-50224.95	-3474.08	-6004.16	50224.95	3474.08	0.000%
30	6496.26	-50224.95	-8.93	-6496.26	50224.95	8.93	0.000%
31	5786.04	-50224.95	3337.84	-5786.05	50224.95	-3337.84	0.000%
32	3240.39	-50224.95	5625.65	-3240.39	50224.95	-5625.65	0.000%
33	-8.93	-50224.95	6932.69	8.93	50224.95	-6932.69	0.000%
34	-3389.08	-50224.95	5865.32	3389.08	50224.95	-5865.33	0.000%
35	-6004.16	-50224.95	3474.08	6004.16	50224.95	-3474.08	0.000%
36	-6496.26	-50224.95	8.93	6496.26	50224.95	-8.93	0.000%
37	-5786.04	-50224.95	-3337.84	5786.05	50224.95	3337.84	0.000%
38	-3240.39	-50224.95	-5625.65	3240.39	50224.95	5625.65	0.000%
39	15.32	-23127.07	-6300.90	-15.32	23127.07	6300.90	0.000%
40	2966.74	-23127.07	-5133.39	-2966.74	23127.07	5133.39	0.000%
41	5454.23	-23127.07	-3163.72	-5454.23	23127.07	3163.72	0.000%
42	5835.46	-23127.07	-15.32	-5835.46	23127.07	15.32	0.000%
43	5050.52	-23127.07	2912.95	-5050.52	23127.07	-2912.95	0.000%
44	2904.47	-23127.07	5056.17	-2904.47	23127.07	-5056.17	0.000%
45	-15.32	-23127.07	6300.90	15.32	23127.07	-6300.90	0.000%
46	-2966.74	-23127.07	5133.39	2966.74	23127.07	-5133.39	0.000%
47	-5454.23	-23127.07	3163.72	5454.23	23127.07	-3163.72	0.000%
48	-5835.46	-23127.07	15.32	5835.46	23127.07	-15.32	0.000%
49	-5050.52	-23127.07	-2912.95	5050.52	23127.07	2912.95	0.000%
50	-2904.47	-23127.07	-5056.17	2904.47	23127.07	5056.17	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001

2	Yes	5	0.00000001	0.00013504
3	Yes	5	0.00000001	0.00005909
4	Yes	6	0.00000001	0.00009205
5	Yes	6	0.00000001	0.00002828
6	Yes	6	0.00000001	0.00009750
7	Yes	6	0.00000001	0.00002948
8	Yes	5	0.00000001	0.00013365
9	Yes	5	0.00000001	0.00005919
10	Yes	6	0.00000001	0.00009144
11	Yes	6	0.00000001	0.00002792
12	Yes	6	0.00000001	0.00009174
13	Yes	6	0.00000001	0.00002844
14	Yes	5	0.00000001	0.00008830
15	Yes	5	0.00000001	0.00003873
16	Yes	6	0.00000001	0.00009103
17	Yes	6	0.00000001	0.00002795
18	Yes	6	0.00000001	0.00009636
19	Yes	6	0.00000001	0.00002912
20	Yes	5	0.00000001	0.00008398
21	Yes	5	0.00000001	0.00003721
22	Yes	6	0.00000001	0.00009656
23	Yes	6	0.00000001	0.00002967
24	Yes	6	0.00000001	0.00008719
25	Yes	6	0.00000001	0.00002688
26	Yes	4	0.00000001	0.00001992
27	Yes	6	0.00000001	0.00011640
28	Yes	6	0.00000001	0.00014028
29	Yes	6	0.00000001	0.00014429
30	Yes	6	0.00000001	0.00011256
31	Yes	6	0.00000001	0.00014043
32	Yes	6	0.00000001	0.00013702
33	Yes	6	0.00000001	0.00011592
34	Yes	6	0.00000001	0.00013810
35	Yes	6	0.00000001	0.00014253
36	Yes	6	0.00000001	0.00011170
37	Yes	6	0.00000001	0.00014125
38	Yes	6	0.00000001	0.00013536
39	Yes	4	0.00000001	0.00021739
40	Yes	4	0.00000001	0.00096591
41	Yes	5	0.00000001	0.00003654
42	Yes	4	0.00000001	0.00020592
43	Yes	4	0.00000001	0.00090500
44	Yes	4	0.00000001	0.00098942
45	Yes	4	0.00000001	0.00020419
46	Yes	4	0.00000001	0.00093067
47	Yes	5	0.00000001	0.00003509
48	Yes	4	0.00000001	0.00019260
49	Yes	5	0.00000001	0.00003655
50	Yes	4	0.00000001	0.00084463

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
L1	98 - 93	Pole	TP14.625x12.75x0.1875	1	-1746.03	638351.00	8.2	Pass
L2	93 - 88	Pole	TP16.5x14.625x0.1875	2	-4930.41	721254.00	21.2	Pass
L3	88 - 83	Pole	TP17.5229x16.5x0.1875	3	-5339.35	766482.00	36.0	Pass
L4	83 - 78	Pole	TP18.5458x17.5229x0.1875	4	-9872.71	811710.00	52.1	Pass
L5	78 - 77.75	Pole	TP18.597x18.5458x0.6875	5	-9920.09	2903500.00	15.7	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
L6	77.75 - 72.75	Pole	TP19.6199x18.597x0.65	6	-10645.30	2907670.00	21.8	Pass
L7	72.75 - 67.75	Pole	TP20.6428x19.6199x0.6125	7	-11404.40	2893080.00	27.7	Pass
L8	67.75 - 62.75	Pole	TP21.6657x20.6428x0.575	8	-12195.40	2859740.00	33.7	Pass
L9	62.75 - 57.75	Pole	TP22.6886x21.6657x0.55	9	-13017.00	2871310.00	39.0	Pass
L10	57.75 - 53	Pole	TP23.6604x22.6886x0.5313	10	-13818.30	2897510.00	43.6	Pass
L11	53 - 52.75	Pole	TP23.7116x23.6604x0.725	11	-13882.30	3929870.00	32.9	Pass
L12	52.75 - 45.67	Pole	TP25.16x23.7116x0.7	12	-14603.00	3913640.00	35.6	Pass
L13	45.67 - 44.34	Pole	TP25.0441x24.0342x0.75	13	-16392.60	4296640.00	36.7	Pass
L14	44.34 - 39.34	Pole	TP26.054x25.0441x0.725	14	-17602.30	4330350.00	39.9	Pass
L15	39.34 - 34.34	Pole	TP27.0639x26.054x0.7	15	-18841.00	4351860.00	43.2	Pass
L16	34.34 - 29.34	Pole	TP28.0738x27.0639x0.675	16	-20112.40	4361160.00	46.4	Pass
L17	29.34 - 24.34	Pole	TP29.0837x28.0738x0.6625	17	-21414.70	4440130.00	48.9	Pass
L18	24.34 - 19.34	Pole	TP30.0937x29.0837x0.6375	18	-22749.60	4428150.00	52.3	Pass
L19	19.34 - 14.34	Pole	TP31.1036x30.0937x0.625	19	-24115.00	4492010.00	54.7	Pass
L20	14.34 - 12	Pole	TP31.5762x31.1036x0.6125	20	-24764.00	4472250.00	56.4	Pass
L21	12 - 11.75	Pole	TP31.6267x31.5762x0.5625	21	-24842.70	4120490.00	61.2	Pass
L22	11.75 - 6.75	Pole	TP32.6366x31.6267x0.55	22	-26124.50	4161530.00	63.9	Pass
L23	6.75 - 1.75	Pole	TP33.6465x32.6366x0.5375	23	-27322.60	4196540.00	66.6	Pass
L24	1.75 - 0	Pole	TP34x33.6465x0.5375	24	-27721.70	4241340.00	67.0	Pass
							Summary	
						Pole (L24)	67.0	Pass
						RATING =	**67.0**	**Pass**

CCIpole

per TIA-222- G

Site BU: _____

Work Order: _____

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	98	10	0	18	12.75	16.5	0.1875	Auto	A572-65
2	88	42.33	3.67	18	16.50	25.16	0.1875	Auto	A572-65
3	49.34	49.34	0	18	24.03	34	0.25	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	13	14	15	16	17	18
1	0	78	channel	RSB-01 Top	2	1						1											
2	0	53	channel	RSB-01 Top	2											1				1			
3	12	78	channel	RSB-01 Both	1													1					
4																							
5																							
6																							
7																							
8																							
9																							
10																							

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	6.1875	3.5	5.6646	2.0625	n/a	24.000	31.000	5.008	1.2500	A572-65
2	6.1875	3.5	5.6646	2.0625	n/a	24.000	31.000	5.008	1.2500	A572-65
3	6.1875	3.5	5.6646	2.0625	24.000	24.000	31.000	5.008	1.2500	A572-65

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	98 - 93	5		18	12.750	14.625	0.1875	A572-65	1.000
2	93 - 88	5	0	18	14.625	16.500	0.1875	A572-65	1.000
3	88 - 83	5		18	16.500	17.523	0.1875	A572-65	1.000
4	83 - 78	5		18	17.523	18.546	0.1875	A572-65	1.000
5	78 - 77.75	0.25		18	18.546	18.597	0.6875	A572-65	0.715
6	77.75 - 72.75	5		18	18.597	19.620	0.65	A572-65	0.730
7	72.75 - 67.75	5		18	19.620	20.643	0.6125	A572-65	0.749
8	67.75 - 62.75	5		18	20.643	21.666	0.575	A572-65	0.774
9	62.75 - 57.75	5		18	21.666	22.689	0.55	A572-65	0.786
10	57.75 - 53	4.75		18	22.689	23.660	0.53125	A572-65	0.794
11	53 - 52.75	0.25		18	23.660	23.712	0.725	A572-65	0.800
12	52.75 - 49.34	7.08	3.67	18	23.712	25.160	0.7	A572-65	0.811
13	49.34 - 44.34	5		18	24.034	25.044	0.75	A572-65	0.830
14	44.34 - 39.34	5		18	25.044	26.054	0.725	A572-65	0.837
15	39.34 - 34.34	5		18	26.054	27.064	0.7	A572-65	0.847
16	34.34 - 29.34	5		18	27.064	28.074	0.675	A572-65	0.859
17	29.34 - 24.34	5		18	28.074	29.084	0.6625	A572-65	0.857
18	24.34 - 19.34	5		18	29.084	30.094	0.6375	A572-65	0.873
19	19.34 - 14.34	5		18	30.094	31.104	0.625	A572-65	0.873
20	14.34 - 12	2.34		18	31.104	31.576	0.6125	A572-65	0.883
21	12 - 11.75	0.25		18	31.576	31.627	0.5625	A572-65	0.857
22	11.75 - 6.75	5		18	31.627	32.637	0.55	A572-65	0.863
23	6.75 - 1.75	5		18	32.637	33.647	0.5375	A572-65	0.870
24	1.75 - 0	1.75		18	33.647	34.000	0.5375	A572-65	0.866

TNX Section Forces

Increment (ft):	5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	98 - 93	1.71	9.13	2.17
2	93 - 88	5.52	37.19	7.95
3	88 - 83	5.96	77.84	8.20
4	83 - 78	7.11	125.00	10.78
5	78 - 77.75	7.15	127.70	10.82
6	77.75 - 72.75	7.89	183.95	11.69
7	72.75 - 67.75	8.66	244.57	12.57
8	67.75 - 62.75	9.45	309.59	13.45
9	62.75 - 57.75	10.27	379.01	14.33
10	57.75 - 53	11.06	449.25	15.26
11	53 - 52.75	11.12	453.08	15.32
12	52.75 - 49.34	11.85	506.59	16.08
13	49.34 - 44.34	13.65	589.97	17.26
14	44.34 - 39.34	14.85	679.01	18.37
15	39.34 - 34.34	16.08	773.54	19.46
16	34.34 - 29.34	17.33	873.46	20.53
17	29.34 - 24.34	18.62	978.63	21.56
18	24.34 - 19.34	19.93	1088.87	22.56
19	19.34 - 14.34	21.27	1203.96	23.50
20	14.34 - 12	21.91	1259.44	23.94
21	12 - 11.75	21.98	1265.43	23.98
22	11.75 - 6.75	23.23	1387.36	24.81
23	6.75 - 1.75	24.41	1513.47	25.62
24	1.75 - 0	24.76	1558.62	25.97

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
98 - 93	Pole	TP14.625x12.75x0.1875	Pole	5.1%	Pass
93 - 88	Pole	TP16.5x14.625x0.1875	Pole	16.2%	Pass
88 - 83	Pole	TP17.523x16.5x0.1875	Pole	29.4%	Pass
83 - 78	Pole	TP18.546x17.523x0.1875	Pole	41.8%	Pass
78 - 77.75	Pole + Reinf.	TP18.597x18.546x0.6875	Reinf. 3 Bolt-Shaft Bearing	27.8%	Pass
77.75 - 72.75	Pole + Reinf.	TP19.62x18.597x0.65	Reinf. 3 Tension Rupture	32.0%	Pass
72.75 - 67.75	Pole + Reinf.	TP20.643x19.62x0.6125	Reinf. 3 Tension Rupture	39.7%	Pass
67.75 - 62.75	Pole + Reinf.	TP21.666x20.643x0.575	Reinf. 3 Tension Rupture	47.1%	Pass
62.75 - 57.75	Pole + Reinf.	TP22.689x21.666x0.55	Reinf. 3 Tension Rupture	54.2%	Pass
57.75 - 53	Pole + Reinf.	TP23.66x22.689x0.5313	Reinf. 3 Tension Rupture	60.7%	Pass
53 - 52.75	Pole + Reinf.	TP23.712x23.66x0.725	Reinf. 2 Bolt-Shaft Bearing	45.3%	Pass
52.75 - 49.34	Pole + Reinf.	TP25.16x23.712x0.7	Reinf. 1 Tension Yield	44.8%	Pass
49.34 - 44.34	Pole + Reinf.	TP25.044x24.034x0.75	Reinf. 1 Tension Yield	45.3%	Pass
44.34 - 39.34	Pole + Reinf.	TP26.054x25.044x0.725	Reinf. 1 Tension Yield	49.3%	Pass
39.34 - 34.34	Pole + Reinf.	TP27.064x26.054x0.7	Reinf. 1 Tension Yield	53.3%	Pass
34.34 - 29.34	Pole + Reinf.	TP28.074x27.064x0.675	Reinf. 1 Tension Yield	57.1%	Pass
29.34 - 24.34	Pole + Reinf.	TP29.084x28.074x0.6625	Reinf. 1 Tension Yield	60.9%	Pass
24.34 - 19.34	Pole + Reinf.	TP30.094x29.084x0.6375	Reinf. 1 Tension Yield	64.5%	Pass
19.34 - 14.34	Pole + Reinf.	TP31.104x30.094x0.625	Reinf. 1 Tension Yield	68.0%	Pass
14.34 - 12	Pole + Reinf.	TP31.576x31.104x0.6125	Reinf. 1 Tension Yield	69.6%	Pass
12 - 11.75	Pole + Reinf.	TP31.627x31.576x0.5625	Reinf. 1 Tension Yield	71.3%	Pass
11.75 - 6.75	Pole + Reinf.	TP32.637x31.627x0.55	Reinf. 1 Tension Yield	74.6%	Pass
6.75 - 1.75	Pole + Reinf.	TP33.647x32.637x0.5375	Reinf. 1 Tension Yield	77.7%	Pass
1.75 - 0	Pole + Reinf.	TP34x33.647x0.5375	Reinf. 1 Tension Yield	78.8%	Pass
				Summary	
			Pole	63.6%	Pass
			Reinforcement	78.8%	Pass
			Overall	78.8%	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
98 - 93	226	n/a	226	8.59	n/a	8.59	5.1%			
93 - 88	326	n/a	326	9.71	n/a	9.71	16.2%			
88 - 83	392	n/a	392	10.32	n/a	10.32	29.4%			
83 - 78	465	n/a	465	10.93	n/a	10.93	41.8%			
78 - 77.75	469	1119	1588	10.96	16.99	27.95	13.1%	27.8%		27.8%
77.75 - 72.75	552	1220	1771	11.56	16.99	28.56	17.7%	26.3%		32.0%
72.75 - 67.75	643	1325	1968	12.17	16.99	29.17	22.4%	32.7%		39.7%
67.75 - 62.75	745	1435	2180	12.78	16.99	29.78	27.2%	38.7%		47.1%
62.75 - 57.75	856	1549	2405	13.39	16.99	30.38	31.9%	44.6%		54.2%
57.75 - 53	972	1662	2634	13.97	16.99	30.96	36.4%	49.9%		60.7%
53 - 52.75	1028	2555	3582	14.00	28.32	42.32	31.4%	41.6%	45.3%	36.1%
52.75 - 49.34	1116	2686	3802	14.41	28.32	42.74	34.1%	44.8%	34.6%	39.0%
49.34 - 44.34	1575	2820	4395	19.67	28.32	48.00	31.9%	45.3%	35.9%	40.7%
44.34 - 39.34	1774	3018	4791	20.47	28.32	48.80	35.2%	49.3%	39.2%	44.6%
39.34 - 34.34	1988	3223	5210	21.28	28.32	49.60	38.6%	53.3%	42.5%	48.4%
34.34 - 29.34	2219	3434	5653	22.08	28.32	50.40	42.0%	57.1%	45.7%	52.1%
29.34 - 24.34	2467	3653	6120	22.88	28.32	51.20	45.3%	60.9%	48.9%	55.8%
24.34 - 19.34	2733	3878	6611	23.68	28.32	52.00	48.7%	64.5%	52.0%	59.3%
19.34 - 14.34	3017	4110	7128	24.48	28.32	52.80	52.1%	68.0%	55.0%	62.8%
14.34 - 12	3157	4222	7378	24.86	28.32	53.18	53.6%	69.6%	56.3%	64.3%
12 - 11.75	3111	3643	6754	24.90	22.66	47.55	55.7%	71.3%	68.9%	
11.75 - 6.75	3420	3853	7273	25.70	22.66	48.36	59.1%	74.6%	72.1%	
6.75 - 1.75	3749	4068	7818	26.50	22.66	49.16	62.4%	77.7%	75.2%	
1.75 - 0	3869	4145	8015	26.78	22.66	49.44	63.6%	78.8%	76.2%	

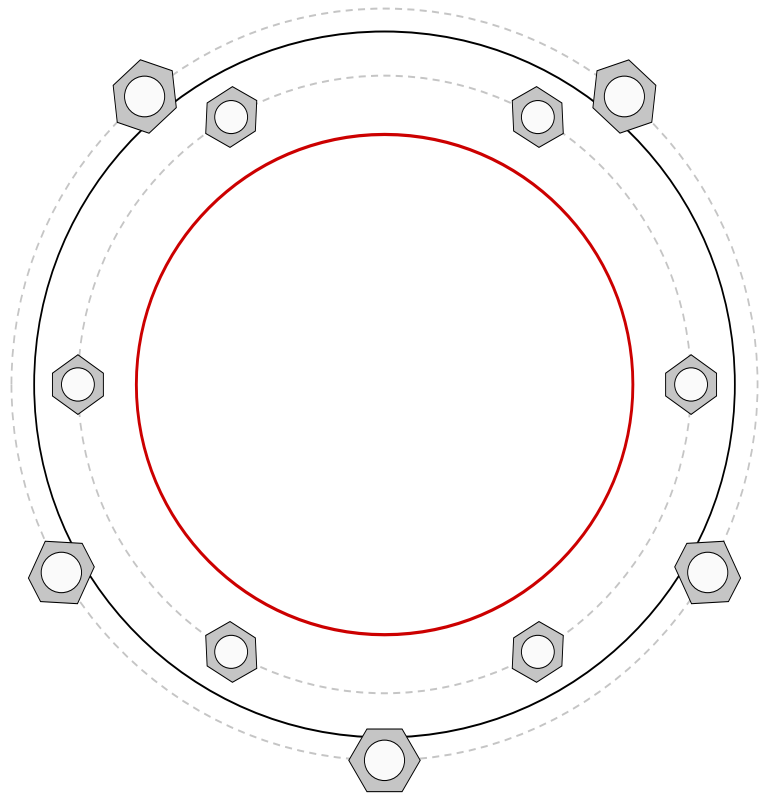
Note: Section capacity checked in 5 degree increments.

Monopole Base Plate Connection

Site Info	
Site Name	CT2037

Analysis Considerations	
TIA-222 Revision	G
Grout Considered:	No
l_{ar} (in)	0
Eta Factor, η	0.5

Applied Loads	
Moment (kip-ft)	1921.00
Axial Force (kips)	27.75
Shear Force (kips)	30.08



Connection Properties

Anchor Rod Data

GROUP 1: (6) 2-1/4" ø bolts (A615-75 N; Fy=75 ksi, Fu=100 ksi) on 42" BC
GROUP 2: (5) 2-3/4" ø bolts (95 N; Fy=95 ksi, Fu=125 ksi) on 51.125" BC
pos. (deg): 50, 130, 210, 270, 330

Base Plate Data

48" OD x 1.5" Plate (A572-60; Fy=60 ksi, Fu=75 ksi)

Stiffener Data

N/A

Pole Data

34" x 0.375" 18-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

Anchor Rod Summary *(units of kips, kip-in)*

GROUP 1:		
Pu_c = 84	ϕPn_t = 260	**Stress Rating**
Vu = 3.04	ϕVn = n/a	**34.6%**
Mu = n/a	ϕMn = n/a	**Pass**
GROUP 2:		
Pu_c = 145.63	ϕPn_t = 493	**Stress Rating**
Vu = 0	ϕVn = n/a	**29.5%**
Mu = n/a	ϕMn = n/a	**Pass**

Base Plate Summary

Max Stress (ksi):	24.2	(Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	**44.8%**	**Pass**

Pier and Pad Foundation

Site Name:	CT2037

TIA-222 Revision:	G
Tower Type:	Monopole

Block Foundation?: ☐

Superstructure Analysis Reactions

Compression, P_{comp}:	27.752	kips
Base Shear, Vu_comp:	30.08	kips
Moment, M_u:	1921	ft-kips
Tower Height, **H**:	98	ft
BP Dist. Above Fdn, bp_{dist}:	3	in

Pier Properties

Pier Shape:	Square	
Pier Diameter, **dpier**:	6	ft
Ext. Above Grade, **E**:	1	ft
Pier Rebar Size, **Sc**:	8	
Pier Rebar Quantity, **mc**:	26	
Pier Tie/Spiral Size, **St**:	3	
Pier Tie/Spiral Quantity, **mt**:	4	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	3	in

Pad Properties

Depth, **D**:	4.25	ft
Pad Width, **W**:	21.63	ft
Pad Thickness, **T**:	3.25	ft
Pad Rebar Size, **Sp**:	8	
Pad Rebar Quantity, **mp**:	23	
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:	100	pcf
Ultimate Gross Bearing, Qult:	6.900	ksf
Cohesion, **Cu**:	0.000	ksf
Friction Angle, φ:	30	degrees
SPT Blow Count, N_{blows}:		
Base Friction, μ:	0.35	
Neglected Depth, **N**:	3.33	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, **gw**:	none	ft

Foundation Analysis Checks

	Capacity	Demand	Rating	Check
Lateral (Sliding) (kips)	89.02	30.08	**33.8%**	**Pass**
Bearing Pressure (ksf)	5.18	2.27	**43.8%**	**Pass**
*Overturning (kip*ft)*	2661.85	2086.44	**78.4%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	2900.40	1981.16	**68.3%**	**Pass**
Pier Compression (kip)	22913.28	40.71	**0.2%**	**Pass**
*Pad Flexure (kip*ft)*	2770.39	919.31	**33.2%**	**Pass**
Pad Shear - 1-way (kips)	849.53	152.64	**18.0%**	**Pass**
Pad Shear - 2-way (Comp) (ksi)	0.190	0.020	**10.6%**	**Pass**

Soil Rating:	**78.4%**
Structural Rating:	**68.3%**

<--Toggle between Gross and Net

Version 3.0.2