October 18, 2016

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Subject:	**Structural Analysis Report**	
Carrier Designation:	***T-Mobile* Co-Locate**	
	Carrier Site Number:	CT11367A
Crown Castle Designation:	**Crown Castle BU Number:**	876376
	Crown Castle Site Name:	Scoville Hill / Harwinton Rod
	Crown Castle JDE Job Number:	402687
	Crown Castle Work Order Number:	1313187
	Crown Castle Application Number:	365895 Rev. 1
Engineering Firm Designation:	**B+T Group Project Number:**	83609.006.01
Site Data:	**123 Campville Hill Rd., Harwinton, Litchfield County, CT**	
	Latitude *41° 44' 12.4"*, Longitude *-73° 5' 49.4"*	
	177 Foot - Monopole Tower	

Dear Charles McGuirt,

B+T Group is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 957978, in accordance with application 365895, revision 1.

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

LC5: Existing + Proposed Equipment **Sufficient Capacity**
Note: See Table 1 and Table 2 for the proposed and existing/reserved loading, respectively.

This analysis has been performed in accordance with the 2012 International Building Code based upon an ultimate 3-second gust wind speed of 120 mph converted to a nominal 3-second gust wind speed of 93 mph per section 1609.3.1 as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category B with a topographic category II was used in this analysis.

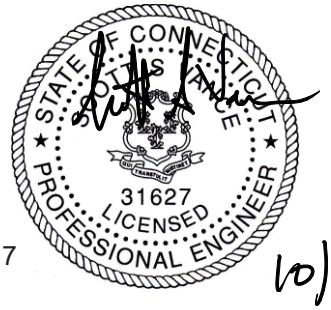
All equipment proposed in this report shall be installed in accordance with the attached drawings for the determined available structural capacity to be effective.

We at *B+T Group* appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully submitted by:
B+T Engineering, Inc.

Brandon Sevier, E.I.
Project Engineer

Scott S. Vance, P.E.
Engineer of Record
COA: PEC.0001564 Expires: 2/10/2017



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1) INTRODUCTION

This tower is a 177 ft. Monopole tower designed by Summit in August of 2000. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-F.The tower has been modified by several times, those modification were incorporated in this analysis.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA-222-G Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a 3-second gust wind speed of 93 mph with no ice, 50 mph with 0.75 inch ice thickness and 60 mph under service loads, exposure category B with topographic category 1 and crest height of 0 feet.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
167.0	169.0	3	Commscope	LNX-6515DS-A1M	6	1-5/8	--
		3	RFS Celwave	APXV18-206516S-C-A20			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
177.0	177.0	3	Alcatel Lucent	1900MHz RRH (65MHz)	3	1-1/4	1
		3	Alcatel Lucent	800 External Notch Filter			
		3	Alcatel Lucent	800MHZ RRH			
		9	RFS Celwave	ACU-A20-N			
		3	RFS Celwave	APXVSPP18-C-A20			
		1	--	Platform Mount [LP 712-1]			
167.0	169.0	**3**	**Ems Wireless**	**RR90-17-02DP**	**--**	**--**	**3**
		3	**Ericsson**	**KRY 112 75/1**			
		3	Ericsson	KRY 112 75/1	6	1-5/8	1
	167.0	1	--	T-Arm Mount [TA 602-3]			
154.0	156.0	1	Antel	BXA-171063-8BF-EDIN-2	12	1-5/8	1
		2	Antel	BXA-171085-8BF-EDIN-2			
		3	Antel	BXA-70063-6CF-2			
		2	Antel	LPA-80063/6CF			
		4	Antel	LPA-80080/6CF			
	154.0	6	RFS Celwave	FD9R6004/2C-3L			
		1	--	Platform Mount [LP 303-1]			
137.0	139.0	12	Decibel	DB844H90	12	1-1/4	1
	137.0	1	--	Platform Mount [LP 712-1]			
127.0	129.0	3	Ericsson	RRUS 11 B12	12 2 1	1-5/8 5/8 3/8	1
		1	Kathrein	800 10764			
		6	Kathrein	AP14/17-880/1940/065D/ADT/XXP			
		1	KMW Comm.	AM-X-CD-14-65-00T-RET			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
		1	KMW Comm.	AM-X-CD-16-65-00T-RET			
		6	Powerwave	LGP 17201			
		1	Raycap	DC6-48-60-18-8F			
	127.0	1	--	Platform Mount [LP 303-1]			
117.0	117.0	3	RFS Celwave	APXV18-206517S-C	6	1-5/8	1
79.0	80.0	1	Spectracom	8225	1	1/2	1
	79.0	1	--	Side Arm Mount [SO 701-1]			

Notes:
1) Existing Equipment
2) Abandoned Equipment; Considered in This Analysis
3) Equipment To Be Removed; Not Considered in This Analysis

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
177	177	1	--	14' Low Profile Platform	--	--
		12	DAPA	48000		
167	167	1	--	14' Clamp On Low Profile Platform	--	--
		12	DAPA	48000		
157	157	1	--	14' Clamp On Low Profile Platform	--	--
		12	DAPA	48000		
75	75	1	--	GPS Antenna W/ Mount	--	--

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Online Application	T-Mobile Co-locate Rev # 1	365895	CCI Sites
Tower Manufacturing Drawings	Summit Manufacturing LLC, Job No: 10633	1613568	CCI Sites
Tower Modification Drawing	Semaan Engineering Solutions, Inc, Site ID CT33XC111	1595751	CCI Sites
Tower Modification Drawing	Hutter Trankina Engineering, Project No:04073	1634507	CCI Sites
Post Modification Inspection	GLOBAL SIGNAL SITE No: 3017696	2176310	CCI Sites
Tower Modification Drawing	B&T Engineering, Inc Project No: 80185	2461486	CCI Sites
Post Modification Inspection	B&T Engineering, Inc Project No: 80185	2461484	CCI Sites
Tower Modification Drawing	TEP Project No: 131001.876376	3384748	CCI Sites
Post Modification Inspection	TEP Project No: 131001.876376	3841069	CCI Sites
Foundation Drawings	Summit Manufacturing LLC, Job No: 10633	1613623	CCI Sites
Geotech Report	Criscuolo Shepard Associates File No.99900.24	1531965	CCI Sites
Antenna Configuration	Crown CAD Package	Date:08/25/2016	CCI Sites

3.1) Analysis Method

tnxTower (version 7.0.5.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) Mount areas and weights are assumed based on photographs provided.

This analysis may be affected if any assumptions are not valid or have been made in error. B+T Group should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	177 - 129.75	Pole	TP30.268x22x0.219	1	-11.369	1385.780	44.0	Pass
L2	129.75 - 118.583	Pole	TP31.785x29.174x0.25	2	-16.335	1737.500	54.9	Pass
L3	118.583 - 108	Pole	TP33.636x31.785x0.382	3	-18.747	2000.850	60.3	Pass
L4	108 - 106.417	Pole	TP33.913x33.636x0.38	4	-19.100	2011.220	61.8	Pass
L5	106.417 - 84	Pole	TP37.836x33.913x0.716	5	-24.829	2391.530	70.6	Pass
L6	84 - 80	Pole	TP38.036x36.505x0.766	6	-29.311	2636.780	73.2	Pass
L7	80 - 60	Pole	TP41.536x38.036x0.767	7	-37.265	3031.070	79.8	Pass
L8	60 - 39.25	Pole	TP45.167x41.536x0.73	8	-43.455	3828.950	72.5	Pass
L9	39.25 - 20	Pole	TP47.91x43.536x0.752	9	-57.003	4329.930	78.7	Pass
L10	20 - 0	Pole	TP51.41x47.91x0.762	10	-67.108	4783.290	80.2	Pass
							Summary	
						Pole (L10)	80.2	Pass
						RATING =	80.2	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	Base	70.6	Pass
1	Base Plate	Base	64.8	Pass
1	Base Foundation (Structural)	Base	59.9	Pass
1	Base Foundation (Soil Interaction)	Base	97.5	Pass

Structure Rating (max from all components) =	97.5%

Notes:
1) See additional documentation in “Appendix C – Additional Calculations” for calculations supporting the % capacity consumed.
2) Capacities up to 100% are considered acceptable based on analysis methods used.

4.1) Recommendations

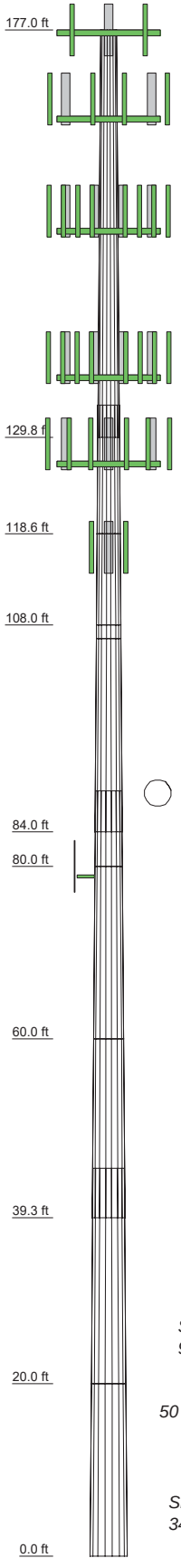
The tower and its foundation have sufficient capacity to carry the final load configuration. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT

Section	1	2	3	4	5	6	7	8	9	10
Length (ft)	47.250	14.917	10.583	1.583	22.417	8.750	20.000	20.750	25.000	20.000
Number of Sides	18	18	18	18	18	18	18	18	18	18
Thickness (in)	0.219	0.250	0.382	0.380	0.716	0.766	0.767	0.730	0.752	0.762
Socket Length (ft)	3.750				4.750			5.750		
Top Dia (in)	22.000	29.174	31.785	33.636	33.913	36.505	38.036	41.536	43.536	47.910
Bot Dia (in)	30.268	31.785	33.636	33.913	37.836	38.036	41.536	45.167	47.910	51.410
Grade	A607-65			43.46038ksi	43.46527ksi	25.361806ksi	25.469943ksi	26.723198ksi	33.280406ksi	34.176164ksi 33.635605ksi
Weight (K)	2.9	1.2	1.4	0.2	4.9	2.2	5.4	6.0	8.0	7.1

Total Weight (K) 39.4



ALL REACTIONS ARE FACTORED

AXIAL 109 K

SHEAR 9 K

MOMENT 1137 kip-ft

TORQUE 0 kip-ft

50 mph WIND - 0.750 in ICE

AXIAL 67 K

SHEAR 34 K

MOMENT 3896 kip-ft

TORQUE 2 kip-ft

REACTIONS - 93 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
APXVSPP18-C-A20 w/ Mount Pipe (E)	177	BXA-171063-8BF-EDIN-2 w/ Mount Pipe (E)	154
APXVSPP18-C-A20 w/ Mount Pipe (E)	177	BXA-171085-8BF-EDIN-2 w/ Mount Pipe (E)	154
APXVSPP18-C-A20 w/ Mount Pipe (E)	177	BXA-171085-8BF-EDIN-2 w/ Mount Pipe (E)	154
(3) ACU-A20-N (E)	177	(2) FD9R6004/2C-3L (E)	154
(3) ACU-A20-N (E)	177	(2) FD9R6004/2C-3L (E)	154
(3) ACU-A20-N (E)	177	(2) FD9R6004/2C-3L (E)	154
1900MHz RRH (65MHz) (E)	177	Platform Mount [LP 303-1] (E)	154
1900MHz RRH (65MHz) (E)	177	(4) DB844H90 w/ Mount Pipe (AB)	137
1900MHz RRH (65MHz) (E)	177	(4) DB844H90 w/ Mount Pipe (AB)	137
800MHZ RRH (E)	177	(4) DB844H90 w/ Mount Pipe (AB)	137
800MHZ RRH (E)	177	Platform Mount [LP 712-1] (AB)	137
800MHZ RRH (E)	177	(2) AP14/17-880/1940/065D/ADT/XXP w/ Mount Pipe (E)	127
800 EXTERNAL NOTCH FILTER (E)	177	(2) AP14/17-880/1940/065D/ADT/XXP w/ Mount Pipe (E)	127
800 EXTERNAL NOTCH FILTER (E)	177	(2) AP14/17-880/1940/065D/ADT/XXP w/ Mount Pipe (E)	127
800 EXTERNAL NOTCH FILTER (E)	177	AM-X-CD-14-65-00T-RET w/ Mount Pipe (E)	127
6' x 2' Mount Pipe (E)	177	AM-X-CD-16-65-00T-RET w/ Mount Pipe (E)	127
6' x 2' Mount Pipe (E)	177	800 10764 w/ Mount Pipe (E)	127
6' x 2' Mount Pipe (E)	177	(2) LGP 17201 (E)	127
Platform Mount [LP 712-1] (E)	177	(2) LGP 17201 (E)	127
APXV18-206516S-C-A20 w/ Mount Pipe (P)	167	(2) LGP 17201 (E)	127
APXV18-206516S-C-A20 w/ Mount Pipe (P)	167	(2) LGP 17201 (E)	127
APXV18-206516S-C-A20 w/ Mount Pipe (P)	167	RRUS 11 B12 (E)	127
LNX-6515DS-A1M w/ Mount Pipe (P)	167	RRUS 11 B12 (E)	127
LNX-6515DS-A1M w/ Mount Pipe (P)	167	RRUS 11 B12 (E)	127
LNX-6515DS-A1M w/ Mount Pipe (P)	167	DC6-48-60-18-8F (E)	127
KRY 112 75/1 (E)	167	Platform Mount [LP 303-1] (E)	127
KRY 112 75/1 (E)	167	APXV18-206517S-C w/ Mount Pipe (E)	117
KRY 112 75/1 (E)	167	APXV18-206517S-C w/ Mount Pipe (E)	117
(2) 6' x 2" Mount Pipe (E)	167	APXV18-206517S-C w/ Mount Pipe (E)	117
(2) 6' x 2" Mount Pipe (E)	167	8225 (E)	79
(2) 6' x 2" Mount Pipe (E)	167	Side Arm Mount [SO 701-1] (E)	79
T-Arm Mount [TA 602-3] (E)	167		
(2) LPA-80063/6CF w/ Mount Pipe (E)	154		
(2) LPA-80080/6CF w/ Mount Pipe (E)	154		
(2) LPA-80080/6CF w/ Mount Pipe (E)	154		
BXA-70063-6CF-2 w/ Mount Pipe (E)	154		
BXA-70063-6CF-2 w/ Mount Pipe (E)	154		
BXA-70063-6CF-2 w/ Mount Pipe (E)	154		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-65	65 ksi	80 ksi	26.723198ksi	27 ksi	42 ksi
43.46038ksi	43 ksi	58 ksi	33.280406ksi	33 ksi	48 ksi
43.46527ksi	43 ksi	58 ksi	33.635605ksi	34 ksi	49 ksi
25.361806ksi	25 ksi	40 ksi	34.176164ksi	34 ksi	49 ksi
25.469943ksi	25 ksi	40 ksi			

TOWER DESIGN NOTES

1. Tower is located in Litchfield County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 93 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 II.
7. Topographic Category 1 with Crest Height of 0.000 ft
8. TOWER RATING: 80.2%

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Job: 83609.006.01 - Scoville Hill/Harwinton Rod, CT (BU# 87637		
Project:		
Client: Crown Castle	Drawn by: bsevier	App'd:
Code: TIA-222-G	Date: 10/18/16	Scale: NTS
Path: S:\Projects\Crown Castle\83000\83609_876376_Scoville\Engineering\RISA\83609_006_01_Scoville Hill Harwinton Rod_CT_ASeri		Dwg No. E-1

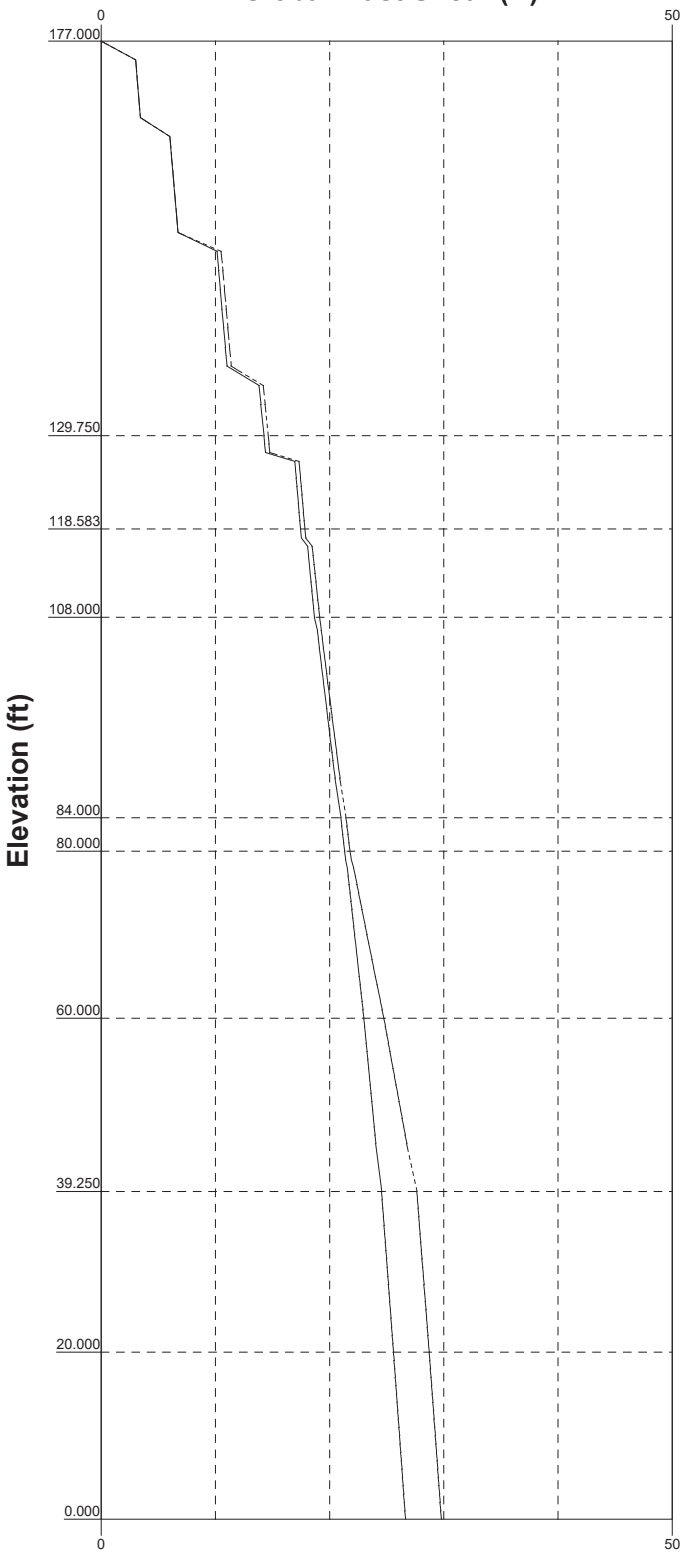
TIA-222-G - 93 mph/50 mph 0.750 in Ice Exposure B

Vx Vz

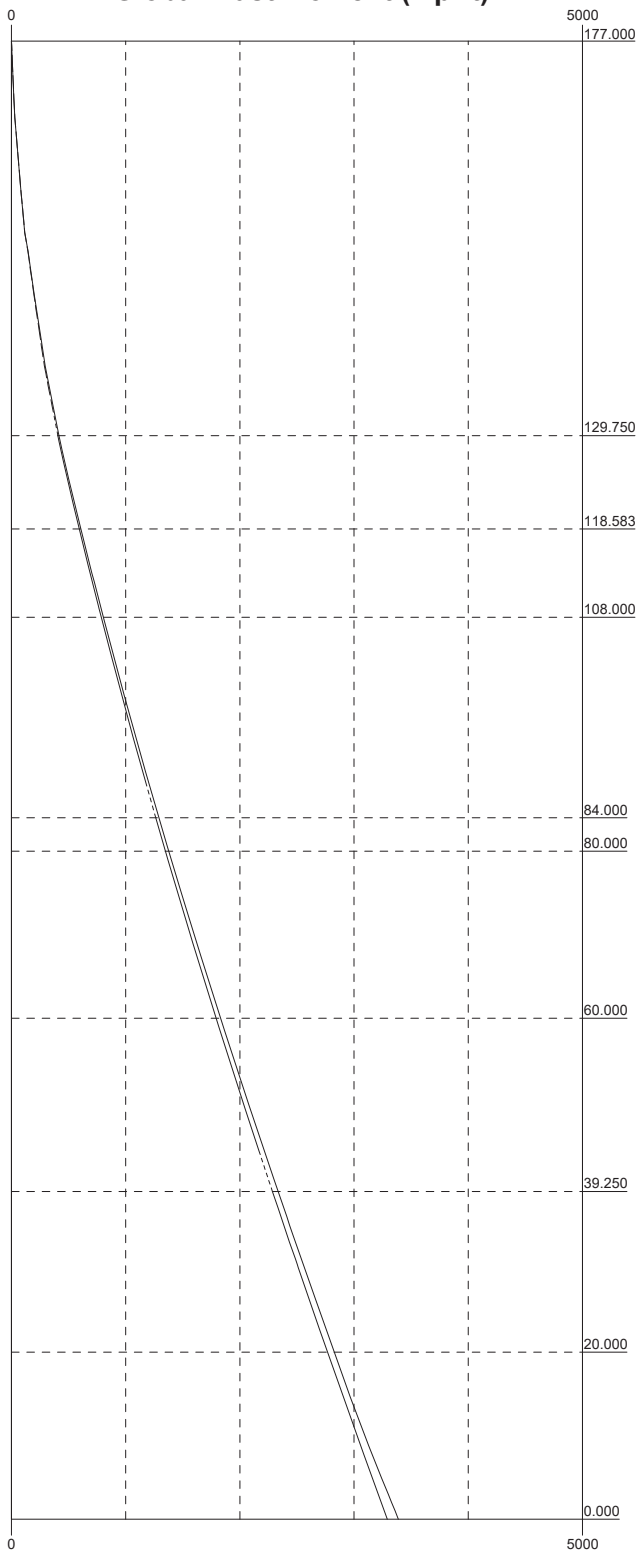
Maximum Values

Mx Mz

Global Mast Shear (K)



Global Mast Moment (kip-ft)



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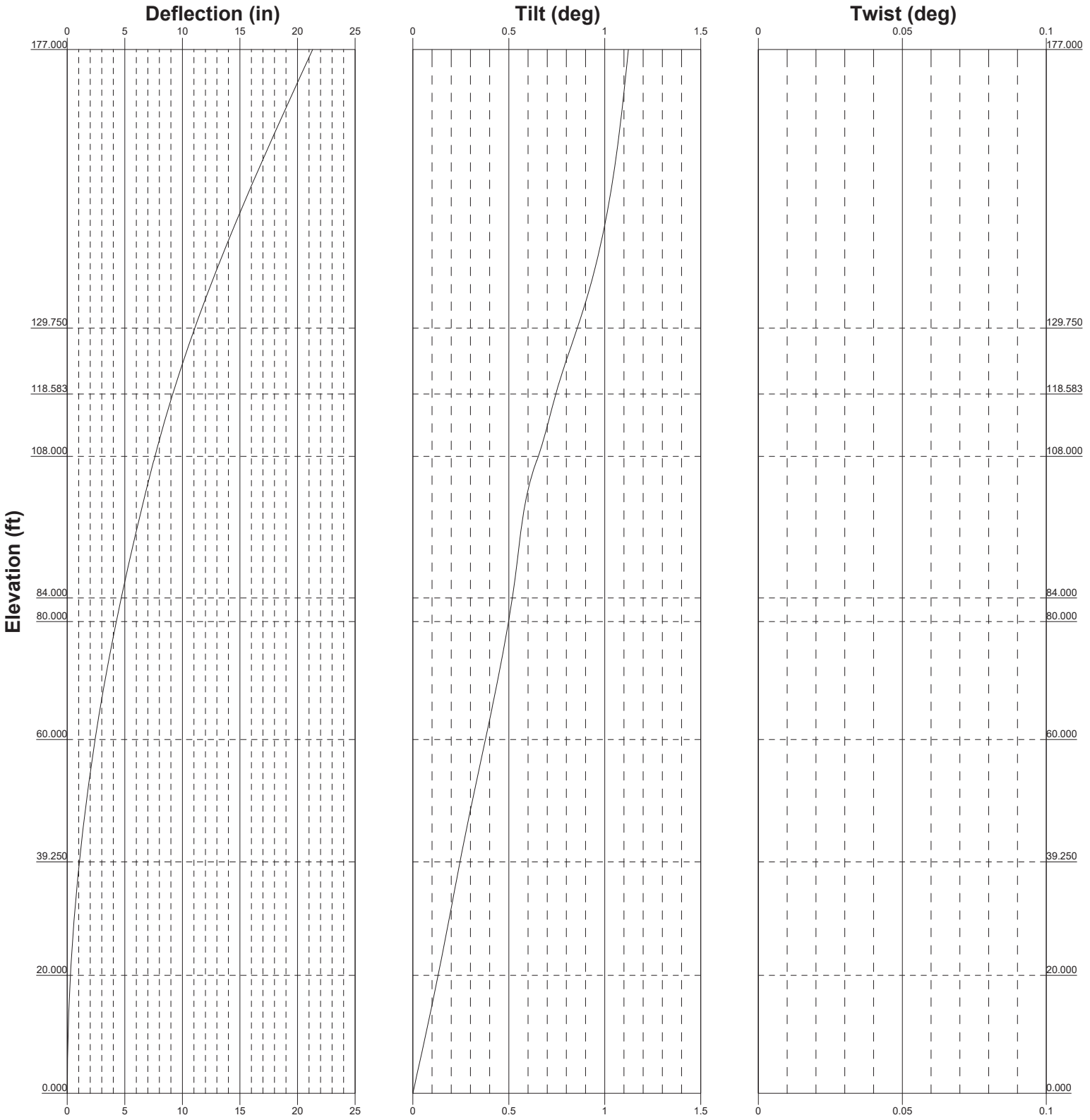
Code: TIA-222-G	Date: 10/18/16	Scale: NTS
Path: S:\Projects\Crown Castle\83000\83609_876376_Scoville\Engineering\RISA\83609_006_01_Scoville Hill Harwinton Rod_CT_ASeri		Dwg No. E-4

TIA-222-G - Service - 60 mph

Maximum Values



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Project:		
Client: Crown Castle	Drawn by: bsevier	App'd:
Code: TIA-222-G	Date: 10/18/16	Scale: NTS
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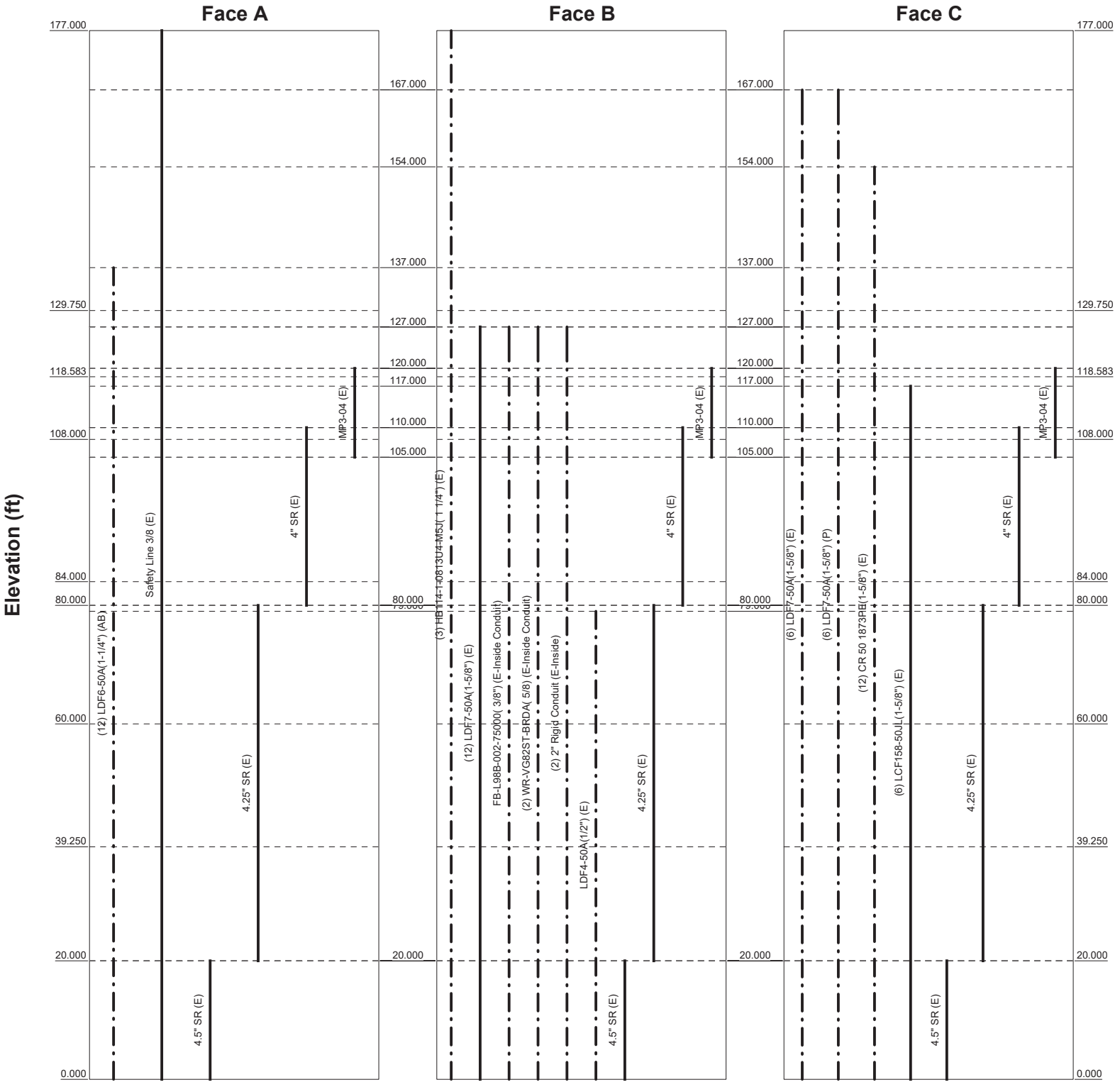
Feed Line Distribution Chart

0' - 177'

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



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Project:		
Client: Crown Castle	Drawn by: bsevier	App'd:
Code: TIA-222-G	Date: 10/18/16	Scale: NTS
Path: S:\Projects\Crown Castle\83000\83609_876376_Scoville\Engineering\RISA\83609_006_01_Scoville Hill Harwinton Rod_CT_ASeri		Dwg No. E-7

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 Litchfield County, Connecticut.
Basic wind speed of 93 mph.
Structure Class II.
Exposure Category B.
Topographic Category 1.
Crest Height 0.000 ft.
Nominal ice thickness of 0.750 in.
Ice thickness is considered to increase with height.
Ice density of 56.000 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50.000 °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				

Tapered Pole Section Geometry

Section	*Elevation* *ft*	*Section Length* *ft*	*Splice Length* *ft*	*Number of Sides*	*Top Diameter* *in*	*Bottom Diameter* *in*	*Wall Thickness* *in*	*Bend Radius* *in*	*Pole Grade*
L1	177.000-129.750	47.250	3.750	18	22.000	30.268	0.219	0.875	A607-65 (65 ksi)
L2	129.750-118.583	14.917	0.000	18	29.174	31.785	0.250	1.000	A607-65 (65 ksi)

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
L3	118.583-108.000	10.583	0.000	18	31.785	33.636	0.382	1.526	43.46038ksi (43 ksi)
L4	108.000-106.417	1.583	0.000	18	33.636	33.913	0.380	1.521	43.46527ksi (43 ksi)
L5	106.417-84.000	22.417	4.750	18	33.913	37.836	0.716	2.865	25.361806ksi (25 ksi)
L6	84.000-80.000	8.750	0.000	18	36.505	38.036	0.766	3.063	25.469943ksi (25 ksi)
L7	80.000-60.000	20.000	0.000	18	38.036	41.536	0.767	3.067	26.723198ksi (27 ksi)
L8	60.000-39.250	20.750	5.750	18	41.536	45.167	0.730	2.921	33.280406ksi (33 ksi)
L9	39.250-20.000	25.000	0.000	18	43.536	47.910	0.752	3.010	33.635605ksi (34 ksi)
L10	20.000-0.000	20.000		18	47.910	51.410	0.762	3.047	34.176164ksi (34 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	22.339	15.123	906.444	7.732	11.176	81.106	1814.080	7.563	3.487	15.941
	30.735	20.864	2380.090	10.667	15.376	154.791	4763.311	10.434	4.942	22.593
L2	30.291	22.951	2425.903	10.268	14.821	163.685	4854.998	11.478	4.695	18.779
	32.275	25.023	3143.720	11.195	16.147	194.699	6291.578	12.514	5.154	20.616
L3	32.275	38.036	4738.797	11.148	16.147	293.487	9483.829	19.021	4.922	12.899
	34.155	40.279	5627.557	11.805	17.087	329.342	11262.518	20.143	5.248	13.753
L4	34.155	40.148	5609.784	11.806	17.087	328.302	11226.949	20.078	5.251	13.804
	34.437	40.483	5751.131	11.904	17.228	333.825	11509.830	20.245	5.299	13.933
L5	34.437	75.471	10507.961	11.785	17.228	609.935	21029.749	37.743	4.708	6.573
	38.420	84.389	14690.330	13.178	19.221	764.298	29399.991	42.202	5.399	7.537
L6	37.912	86.852	14015.475	12.687	18.544	755.777	28049.391	43.434	5.077	6.631
	38.623	90.573	15895.172	13.231	19.322	822.634	31811.260	45.295	5.347	6.983
L7	38.623	90.715	15919.015	13.231	19.322	823.868	31858.976	45.366	5.345	6.969
	42.177	99.234	20838.116	14.473	21.100	987.578	41703.651	49.626	5.961	7.773
L8	42.177	94.574	19895.225	14.486	21.100	942.891	39816.628	47.296	6.025	8.251
	45.864	102.989	25693.017	15.775	22.945	1119.773	51419.841	51.504	6.664	9.127
L9	45.229	102.177	23628.828	15.188	22.116	1068.396	47288.748	51.098	6.338	8.423
	48.649	112.625	31643.284	16.741	24.338	1300.135	63328.204	56.323	7.108	9.446
L10	48.649	113.989	32013.798	16.738	24.338	1315.359	64069.721	57.005	7.092	9.31
	52.203	122.449	39684.785	17.980	26.116	1519.542	79421.789	61.236	7.708	10.119

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 177.000-129.750				1	1	1			
L2 129.750-118.583				1	1	1			
L3 118.583-108.000				1	1	0.966072			
L4				1	1	0.966635			

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
108.000-106.417									
L5				1	1	0.811272			
106.417-84.000									
L6				1	1	0.830059			
84.000-80.000									
L7				1	1	0.841674			
80.000-60.000									
L8				1	1	0.855671			
60.000-39.250									
L9				1	1	0.880976			
39.250-20.000									
L10				1	1	0.886497			
20.000-0.000									

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight klf
*******									
LDF7-50A(1-5/8")	B	Surface Ar	127.000 - 0.000	12	6	0.220	1.980		0.001
(E)		(CaAa)				0.470			
*******									
LCF158-50JL(1-5/8")	C	Surface Ar	117.000 - 0.000	6	6	0.030	1.980		0.001
(E)		(CaAa)				0.300			
*******									
Safety Line 3/8	A	Surface Ar	177.000 - 0.000	1	1	0.000	0.375		0.000
(E)		(CaAa)				0.000			
*******									
4.5" SR	A	Surface Ar	20.000 - 0.000	1	1	0.000	4.500		0.000
(E)		(CaAa)				0.000			
4.5" SR	B	Surface Ar	20.000 - 0.000	1	1	0.000	4.500		0.000
(E)		(CaAa)				0.000			
4.5" SR	C	Surface Ar	20.000 - 0.000	1	1	0.000	4.500		0.000
(E)		(CaAa)				0.000			
4.25" SR	A	Surface Ar	80.000 - 20.000	1	1	0.000	4.250		0.000
(E)		(CaAa)				0.000			
4.25" SR	B	Surface Ar	80.000 - 20.000	1	1	0.000	4.250		0.000
(E)		(CaAa)				0.000			
4.25" SR	C	Surface Ar	80.000 - 20.000	1	1	0.000	4.250		0.000
(E)		(CaAa)				0.000			
4" SR	A	Surface Ar	110.000 - 80.000	1	1	0.000	4.000		0.000
(E)		(CaAa)				0.000			
4" SR	B	Surface Ar	110.000 - 80.000	1	1	0.000	4.000		0.000
(E)		(CaAa)				0.000			
4" SR	C	Surface Ar	110.000 - 80.000	1	1	0.000	4.000		0.000
(E)		(CaAa)				0.000			
MP3-04	A	Surface Af	120.000 - 105.000	1	1	0.000	4.780	12.780	0.000
(E)		(CaAa)				0.000			
MP3-04	B	Surface Af	120.000 - 105.000	1	1	0.000	4.780	12.780	0.000
(E)		(CaAa)				0.000			
MP3-04	C	Surface Af	120.000 - 105.000	1	1	0.000	4.780	12.780	0.000
(E)		(CaAa)				0.000			

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
HB114-1-0813U4-M5J(1 1/4") (E)	B	No	Inside Pole	177.000 - 0.000	3	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.001 0.001 0.001
*******								
LDF7-50A(1-5/8") (E)	C	No	Inside Pole	167.000 - 0.000	6	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.001 0.001 0.001
LDF7-50A(1-5/8") (P)	C	No	Inside Pole	167.000 - 0.000	6	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.001 0.001 0.001
*******								
CR 50 1873PE(1-5/8") (E)	C	No	Inside Pole	154.000 - 0.000	12	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.001 0.001 0.001
*******								
LDF6-50A(1-1/4") (AB)	A	No	Inside Pole	137.000 - 0.000	12	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.001 0.001 0.001
FB-L98B-002-75000(3/8") (E-Inside Conduit)	B	No	Inside Pole	127.000 - 0.000	1	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.000 0.000 0.000
WR-VG82ST-BRDA(5/8) (E-Inside Conduit)	B	No	Inside Pole	127.000 - 0.000	2	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.000 0.000 0.000
2" Rigid Conduit (E-Inside)	B	No	Inside Pole	127.000 - 0.000	2	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.003 0.003 0.003
*******								
LDF4-50A(1/2") (E)	B	No	Inside Pole	79.000 - 0.000	1	No Ice 1/2" Ice 1" Ice	0.000 0.000 0.000	0.000 0.000 0.000

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	177.000-129.750	A	0.000	0.000	1.772	0.000	0.068
		B	0.000	0.000	0.000	0.000	0.170
		C	0.000	0.000	0.000	0.000	0.608
L2	129.750-118.583	A	0.000	0.000	1.548	0.000	0.091
		B	0.000	0.000	11.128	0.000	0.176
		C	0.000	0.000	1.129	0.000	0.221
L3	118.583-108.000	A	0.000	0.000	9.628	0.000	0.086
		B	0.000	0.000	21.804	0.000	0.209
		C	0.000	0.000	19.923	0.000	0.238
L4	108.000-106.417	A	0.000	0.000	1.954	0.000	0.013
		B	0.000	0.000	3.775	0.000	0.031
		C	0.000	0.000	3.775	0.000	0.036
L5	106.417-84.000	A	0.000	0.000	10.936	0.000	0.182
		B	0.000	0.000	36.727	0.000	0.442
		C	0.000	0.000	36.727	0.000	0.514

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L6	84.000-80.000	A	0.000	0.000	1.750	0.000	0.033
		B	0.000	0.000	6.352	0.000	0.079
		C	0.000	0.000	6.352	0.000	0.092
L7	80.000-60.000	A	0.000	0.000	9.250	0.000	0.163
		B	0.000	0.000	32.260	0.000	0.397
		C	0.000	0.000	32.260	0.000	0.458
L8	60.000-39.250	A	0.000	0.000	9.597	0.000	0.169
		B	0.000	0.000	33.470	0.000	0.412
		C	0.000	0.000	33.470	0.000	0.476
L9	39.250-20.000	A	0.000	0.000	8.903	0.000	0.157
		B	0.000	0.000	31.050	0.000	0.382
		C	0.000	0.000	31.050	0.000	0.441
L10	20.000-0.000	A	0.000	0.000	9.750	0.000	0.163
		B	0.000	0.000	32.760	0.000	0.397
		C	0.000	0.000	32.760	0.000	0.458

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	177.000-129.750	A	1.748	0.000	0.000	18.290	0.000	0.282
		B		0.000	0.000	0.000	0.000	0.170
		C		0.000	0.000	0.000	0.000	0.608
L2	129.750-118.583	A	1.712	0.000	0.000	5.923	0.000	0.160
		B		0.000	0.000	17.777	0.000	0.466
		C		0.000	0.000	1.600	0.000	0.240
L3	118.583-108.000	A	1.697	0.000	0.000	17.319	0.000	0.289
		B		0.000	0.000	33.536	0.000	0.698
		C		0.000	0.000	30.514	0.000	0.596
L4	108.000-106.417	A	1.688	0.000	0.000	3.532	0.000	0.058
		B		0.000	0.000	5.957	0.000	0.119
		C		0.000	0.000	5.957	0.000	0.110
L5	106.417-84.000	A	1.667	0.000	0.000	26.338	0.000	0.552
		B		0.000	0.000	60.656	0.000	1.410
		C		0.000	0.000	60.656	0.000	1.281
L6	84.000-80.000	A	1.643	0.000	0.000	4.418	0.000	0.095
		B		0.000	0.000	10.541	0.000	0.249
		C		0.000	0.000	10.541	0.000	0.225
L7	80.000-60.000	A	1.617	0.000	0.000	22.184	0.000	0.473
		B		0.000	0.000	52.751	0.000	1.230
		C		0.000	0.000	52.751	0.000	1.114
L8	60.000-39.250	A	1.562	0.000	0.000	22.562	0.000	0.476
		B		0.000	0.000	54.218	0.000	1.248
		C		0.000	0.000	54.218	0.000	1.130
L9	39.250-20.000	A	1.483	0.000	0.000	20.931	0.000	0.441
		B		0.000	0.000	50.298	0.000	1.157
		C		0.000	0.000	50.298	0.000	1.048
L10	20.000-0.000	A	1.330	0.000	0.000	20.387	0.000	0.408
		B		0.000	0.000	50.667	0.000	1.097
		C		0.000	0.000	50.667	0.000	0.993

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L1	177.000-129.750	-0.048	-0.028	-0.384	-0.222
L2	129.750-118.583	0.988	0.187	0.888	0.093
L3	118.583-108.000	0.502	0.677	0.418	0.637
L4	108.000-106.417	0.414	0.682	0.332	0.634
L5	106.417-84.000	0.567	0.940	0.441	0.849
L6	84.000-80.000	0.591	0.985	0.462	0.894
L7	80.000-60.000	0.597	0.999	0.476	0.923
L8	60.000-39.250	0.617	1.039	0.503	0.978
L9	39.250-20.000	0.632	1.069	0.520	1.018
L10	20.000-0.000	0.642	1.091	0.556	1.074

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	19	Safety Line 3/8	129.75 - 177.00	1.0000	1.0000
L1	10	LDF7-50A(1-5/8")	129.75 - 127.00	1.0000	1.0000
L1	30	MP3-04	129.75 - 120.00	1.0000	1.0000
L1	31	MP3-04	129.75 - 120.00	1.0000	1.0000
L1	32	MP3-04	129.75 - 120.00	1.0000	1.0000
L3	10	LDF7-50A(1-5/8")	108.00 - 118.58	1.0000	1.0000
L3	15	LCF158-50JL(1-5/8")	108.00 - 117.00	1.0000	1.0000
L3	19	Safety Line 3/8	108.00 - 118.58	1.0000	1.0000
L3	27	4" SR	108.00 - 110.00	1.0000	1.0000
L3	28	4" SR	108.00 - 110.00	1.0000	1.0000
L3	29	4" SR	108.00 - 110.00	1.0000	1.0000
L3	30	MP3-04	108.00 - 118.58	1.0000	1.0000
L3	31	MP3-04	108.00 - 118.58	1.0000	1.0000
L3	32	MP3-04	108.00 - 118.58	1.0000	1.0000
L4	10	LDF7-50A(1-5/8")	106.42 - 108.00	1.0000	1.0000
L4	15	LCF158-50JL(1-5/8")	106.42 - 108.00	1.0000	1.0000
L4	19	Safety Line 3/8	106.42 - 108.00	1.0000	1.0000
L4	27	4" SR	106.42 - 108.00	1.0000	1.0000
L4	28	4" SR	106.42 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
			108.00		
L4	29	4" SR	106.42 - 108.00	1.0000	1.0000
L4	30	MP3-04	106.42 - 108.00	1.0000	1.0000
L4	31	MP3-04	106.42 - 108.00	1.0000	1.0000
L4	32	MP3-04	106.42 - 108.00	1.0000	1.0000
L5	10	LDF7-50A(1-5/8")	84.00 - 106.42	1.0000	1.0000
L5	15	LCF158-50JL(1-5/8")	84.00 - 106.42	1.0000	1.0000
L5	19	Safety Line 3/8	84.00 - 106.42	1.0000	1.0000
L5	27	4" SR	84.00 - 106.42	1.0000	1.0000
L5	28	4" SR	84.00 - 106.42	1.0000	1.0000
L5	29	4" SR	84.00 - 106.42	1.0000	1.0000
L5	30	MP3-04	105.00 - 106.42	1.0000	1.0000
L5	31	MP3-04	105.00 - 106.42	1.0000	1.0000
L5	32	MP3-04	105.00 - 106.42	1.0000	1.0000
L7	10	LDF7-50A(1-5/8")	60.00 - 80.00	1.0000	1.0000
L7	15	LCF158-50JL(1-5/8")	60.00 - 80.00	1.0000	1.0000
L7	19	Safety Line 3/8	60.00 - 80.00	1.0000	1.0000
L7	24	4.25" SR	60.00 - 80.00	1.0000	1.0000
L7	25	4.25" SR	60.00 - 80.00	1.0000	1.0000
L7	26	4.25" SR	60.00 - 80.00	1.0000	1.0000
L8	10	LDF7-50A(1-5/8")	39.25 - 60.00	1.0000	1.0000
L8	15	LCF158-50JL(1-5/8")	39.25 - 60.00	1.0000	1.0000
L8	19	Safety Line 3/8	39.25 - 60.00	1.0000	1.0000
L8	24	4.25" SR	39.25 - 60.00	1.0000	1.0000
L8	25	4.25" SR	39.25 - 60.00	1.0000	1.0000
L8	26	4.25" SR	39.25 - 60.00	1.0000	1.0000
L10	10	LDF7-50A(1-5/8")	0.00 - 20.00	1.0000	1.0000
L10	15	LCF158-50JL(1-5/8")	0.00 - 20.00	1.0000	1.0000
L10	19	Safety Line 3/8	0.00 - 20.00	1.0000	1.0000
L10	21	4.5" SR	0.00 - 20.00	1.0000	1.0000
L10	22	4.5" SR	0.00 - 20.00	1.0000	1.0000
L10	23	4.5" SR	0.00 - 20.00	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
APXVSPP18-C-A20 w/ Mount Pipe (E)	A	From Leg	4.000 0.000 0.000	0.000	177.000	No Ice 1/2" Ice 1" Ice	8.262 8.822 9.346	6.946 8.127 9.021	0.083 0.151 0.227
APXVSPP18-C-A20 w/ Mount Pipe (E)	B	From Leg	4.000 0.000 0.000	0.000	177.000	No Ice 1/2" Ice 1" Ice	8.262 8.822 9.346	6.946 8.127 9.021	0.083 0.151 0.227
APXVSPP18-C-A20 w/ Mount Pipe (E)	C	From Leg	4.000 0.000 0.000	0.000	177.000	No Ice 1/2" Ice 1" Ice	8.262 8.822 9.346	6.946 8.127 9.021	0.083 0.151 0.227

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(3) ACU-A20-N	A	From Leg	2.000		0.000	177.000	No Ice	0.067	0.117	0.001
(E)			0.000				1/2" Ice	0.104	0.162	0.002
			0.000				1" Ice	0.148	0.215	0.004
(3) ACU-A20-N	B	From Leg	2.000		0.000	177.000	No Ice	0.067	0.117	0.001
(E)			0.000				1/2" Ice	0.104	0.162	0.002
			0.000				1" Ice	0.148	0.215	0.004
(3) ACU-A20-N	C	From Leg	2.000		0.000	177.000	No Ice	0.067	0.117	0.001
(E)			0.000				1/2" Ice	0.104	0.162	0.002
			0.000				1" Ice	0.148	0.215	0.004
1900MHz RRH (65MHz)	A	From Leg	2.000		0.000	177.000	No Ice	2.313	2.375	0.060
(E)			0.000				1/2" Ice	2.517	2.581	0.084
			0.000				1" Ice	2.728	2.794	0.111
1900MHz RRH (65MHz)	B	From Leg	2.000		0.000	177.000	No Ice	2.313	2.375	0.060
(E)			0.000				1/2" Ice	2.517	2.581	0.084
			0.000				1" Ice	2.728	2.794	0.111
1900MHz RRH (65MHz)	C	From Leg	2.000		0.000	177.000	No Ice	2.313	2.375	0.060
(E)			0.000				1/2" Ice	2.517	2.581	0.084
			0.000				1" Ice	2.728	2.794	0.111
800MHZ RRH	A	From Leg	2.000		0.000	177.000	No Ice	2.134	1.773	0.053
(E)			0.000				1/2" Ice	2.320	1.946	0.074
			0.000				1" Ice	2.512	2.127	0.098
800MHZ RRH	B	From Leg	2.000		0.000	177.000	No Ice	2.134	1.773	0.053
(E)			0.000				1/2" Ice	2.320	1.946	0.074
			0.000				1" Ice	2.512	2.127	0.098
800MHZ RRH	C	From Leg	2.000		0.000	177.000	No Ice	2.134	1.773	0.053
(E)			0.000				1/2" Ice	2.320	1.946	0.074
			0.000				1" Ice	2.512	2.127	0.098
800 EXTERNAL NOTCH FILTER	A	From Leg	2.000		0.000	177.000	No Ice	0.660	0.321	0.011
			0.000				1/2" Ice	0.763	0.398	0.017
(E)			0.000				1" Ice	0.873	0.483	0.024
800 EXTERNAL NOTCH FILTER	B	From Leg	2.000		0.000	177.000	No Ice	0.660	0.321	0.011
			0.000				1/2" Ice	0.763	0.398	0.017
(E)			0.000				1" Ice	0.873	0.483	0.024
800 EXTERNAL NOTCH FILTER	C	From Leg	2.000		0.000	177.000	No Ice	0.660	0.321	0.011
			0.000				1/2" Ice	0.763	0.398	0.017
(E)			0.000				1" Ice	0.873	0.483	0.024
6' x 2' Mount Pipe	A	From Leg	2.000		0.000	177.000	No Ice	1.425	1.425	0.022
(E)			0.000				1/2" Ice	1.925	1.925	0.033
			0.000				1" Ice	2.294	2.294	0.048
6' x 2' Mount Pipe	B	From Leg	2.000		0.000	177.000	No Ice	1.425	1.425	0.022
(E)			0.000				1/2" Ice	1.925	1.925	0.033
			0.000				1" Ice	2.294	2.294	0.048
6' x 2' Mount Pipe	C	From Leg	2.000		0.000	177.000	No Ice	1.425	1.425	0.022
(E)			0.000				1/2" Ice	1.925	1.925	0.033
			0.000				1" Ice	2.294	2.294	0.048
Platform Mount [LP 712-1]	C	None			0.000	177.000	No Ice	24.530	24.530	1.335
(E)							1/2" Ice	29.940	29.940	1.646
							1" Ice	35.350	35.350	1.956
*******										
APXV18-206516S-C-A20 w/ Mount Pipe	A	From Leg	4.000		0.000	167.000	No Ice	3.859	3.296	0.039
			0.000				1/2" Ice	4.274	4.004	0.073
(P)			2.000				1" Ice	4.674	4.672	0.113
APXV18-206516S-C-A20 w/ Mount Pipe	B	From Leg	4.000		0.000	167.000	No Ice	3.859	3.296	0.039
			0.000				1/2" Ice	4.274	4.004	0.073
(P)			2.000				1" Ice	4.674	4.672	0.113
APXV18-206516S-C-A20 w/ Mount Pipe	C	From Leg	4.000		0.000	167.000	No Ice	3.859	3.296	0.039
			0.000				1/2" Ice	4.274	4.004	0.073

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(P)			2.000			1" Ice	4.674	4.672	0.113
LNX-6515DS-A1M w/ Mount Pipe	A	From Leg	4.000 0.000	0.000	167.000	No Ice 1/2" Ice	11.683 12.404	9.842 11.366	0.083 0.173
(P)			2.000			1" Ice	13.135	12.914	0.273
LNX-6515DS-A1M w/ Mount Pipe	B	From Leg	4.000 0.000	0.000	167.000	No Ice 1/2" Ice	11.683 12.404	9.842 11.366	0.083 0.173
(P)			2.000			1" Ice	13.135	12.914	0.273
LNX-6515DS-A1M w/ Mount Pipe	C	From Leg	4.000 0.000	0.000	167.000	No Ice 1/2" Ice	11.683 12.404	9.842 11.366	0.083 0.173
(P)			2.000			1" Ice	13.135	12.914	0.273
KRY 112 75/1	A	From Leg	4.000	0.000	167.000	No Ice	1.104	0.424	0.025
(E)			0.000 2.000			1/2" Ice 1" Ice	1.235 1.374	0.515 0.614	0.034 0.044
KRY 112 75/1	B	From Leg	4.000	0.000	167.000	No Ice	1.104	0.424	0.025
(E)			0.000 2.000			1/2" Ice 1" Ice	1.235 1.374	0.515 0.614	0.034 0.044
KRY 112 75/1	C	From Leg	4.000	0.000	167.000	No Ice	1.104	0.424	0.025
(E)			0.000 2.000			1/2" Ice 1" Ice	1.235 1.374	0.515 0.614	0.034 0.044
(2) 6' x 2" Mount Pipe	A	From Leg	4.000	0.000	167.000	No Ice	1.425	1.425	0.022
(E)			0.000 0.000			1/2" Ice 1" Ice	1.925 2.294	1.925 2.294	0.033 0.048
(2) 6' x 2" Mount Pipe	B	From Leg	4.000	0.000	167.000	No Ice	1.425	1.425	0.022
(E)			0.000 0.000			1/2" Ice 1" Ice	1.925 2.294	1.925 2.294	0.033 0.048
(2) 6' x 2" Mount Pipe	C	From Leg	4.000	0.000	167.000	No Ice	1.425	1.425	0.022
(E)			0.000 0.000			1/2" Ice 1" Ice	1.925 2.294	1.925 2.294	0.033 0.048
T-Arm Mount [TA 602-3]	C	None		0.000	167.000	No Ice	11.590	11.590	0.774
(E)						1/2" Ice 1" Ice	15.440 19.290	15.440 19.290	0.990 1.206
*******									
(2) LPA-80063/6CF w/ Mount Pipe	A	From Leg	4.000 0.000	0.000	154.000	No Ice 1/2" Ice	9.831 10.400	10.215 11.384	0.052 0.145
(E)			2.000			1" Ice	10.933	12.269	0.246
(2) LPA-80080/6CF w/ Mount Pipe	B	From Leg	4.000 0.000	0.000	154.000	No Ice 1/2" Ice	4.564 5.105	10.259 11.427	0.046 0.113
(E)			2.000			1" Ice	5.612	12.312	0.187
(2) LPA-80080/6CF w/ Mount Pipe	C	From Leg	4.000 0.000	0.000	154.000	No Ice 1/2" Ice	4.564 5.105	10.259 11.427	0.046 0.113
(E)			2.000			1" Ice	5.612	12.312	0.187
BXA-70063-6CF-2 w/ Mount Pipe	A	From Leg	4.000 0.000	0.000	154.000	No Ice 1/2" Ice	7.806 8.357	5.801 6.953	0.042 0.103
(E)			2.000			1" Ice	8.872	7.819	0.171
BXA-70063-6CF-2 w/ Mount Pipe	B	From Leg	4.000 0.000	0.000	154.000	No Ice 1/2" Ice	7.806 8.357	5.801 6.953	0.042 0.103
(E)			2.000			1" Ice	8.872	7.819	0.171
BXA-70063-6CF-2 w/ Mount Pipe	C	From Leg	4.000 0.000	0.000	154.000	No Ice 1/2" Ice	7.806 8.357	5.801 6.953	0.042 0.103
(E)			2.000			1" Ice	8.872	7.819	0.171
BXA-171063-8BF-EDIN-2 w/ Mount Pipe	A	From Leg	4.000 0.000	0.000	154.000	No Ice 1/2" Ice	3.179 3.555	3.353 3.971	0.029 0.061
(E)			2.000			1" Ice	3.930	4.595	0.099
BXA-171085-8BF-EDIN-2 w/ Mount Pipe	B	From Leg	4.000 0.000	0.000	154.000	No Ice 1/2" Ice	3.179 3.555	3.353 3.971	0.029 0.061
(E)			2.000			1" Ice	3.930	4.595	0.099
BXA-171085-8BF-EDIN-2	C	From Leg	4.000	0.000	154.000	No Ice	3.179	3.353	0.029

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
w/ Mount Pipe			0.000			1/2" Ice	3.555	3.971	0.061
(E)			2.000			1" Ice	3.930	4.595	0.099
(2) FD9R6004/2C-3L	A	From Leg	4.000	0.000	154.000	No Ice	0.314	0.076	0.003
(E)			0.000			1/2" Ice	0.386	0.119	0.005
			0.000			1" Ice	0.466	0.169	0.009
(2) FD9R6004/2C-3L	B	From Leg	4.000	0.000	154.000	No Ice	0.314	0.076	0.003
(E)			0.000			1/2" Ice	0.386	0.119	0.005
			0.000			1" Ice	0.466	0.169	0.009
(2) FD9R6004/2C-3L	C	From Leg	4.000	0.000	154.000	No Ice	0.314	0.076	0.003
(E)			0.000			1/2" Ice	0.386	0.119	0.005
			0.000			1" Ice	0.466	0.169	0.009
Platform Mount [LP 303-1]	C	None		0.000	154.000	No Ice	14.660	14.660	1.250
(E)						1/2" Ice	18.870	18.870	1.481
						1" Ice	23.080	23.080	1.713
*******									
(4) DB844H90 w/ Mount Pipe	A	From Leg	4.000	0.000	137.000	No Ice	3.299	4.802	0.028
			0.000			1/2" Ice	3.667	5.416	0.068
(AB)			2.000			1" Ice	4.035	6.040	0.113
(4) DB844H90 w/ Mount Pipe	B	From Leg	4.000	0.000	137.000	No Ice	3.299	4.802	0.028
			0.000			1/2" Ice	3.667	5.416	0.068
(AB)			2.000			1" Ice	4.035	6.040	0.113
(4) DB844H90 w/ Mount Pipe	C	From Leg	4.000	0.000	137.000	No Ice	3.299	4.802	0.028
			0.000			1/2" Ice	3.667	5.416	0.068
(AB)			2.000			1" Ice	4.035	6.040	0.113
Platform Mount [LP 712-1]	C	None		0.000	137.000	No Ice	24.530	24.530	1.335
(AB)						1/2" Ice	29.940	29.940	1.646
						1" Ice	35.350	35.350	1.956
*******									
(2)	A	From Leg	4.000	0.000	127.000	No Ice	5.051	3.750	0.056
AP14/17-880/1940/065D/AD			0.000			1/2" Ice	5.452	4.421	0.098
T/XXP w/ Mount Pipe			2.000			1" Ice	5.855	5.074	0.146
(E)									
(2)	B	From Leg	4.000	0.000	127.000	No Ice	5.051	3.750	0.056
AP14/17-880/1940/065D/AD			0.000			1/2" Ice	5.452	4.421	0.098
T/XXP w/ Mount Pipe			2.000			1" Ice	5.855	5.074	0.146
(E)									
(2)	C	From Leg	4.000	0.000	127.000	No Ice	5.051	3.750	0.056
AP14/17-880/1940/065D/AD			0.000			1/2" Ice	5.452	4.421	0.098
T/XXP w/ Mount Pipe			2.000			1" Ice	5.855	5.074	0.146
(E)									
AM-X-CD-14-65-00T-RET	A	From Leg	4.000	0.000	127.000	No Ice	5.232	4.015	0.035
w/ Mount Pipe			0.000			1/2" Ice	5.618	4.633	0.080
(E)			2.000			1" Ice	6.012	5.257	0.131
AM-X-CD-16-65-00T-RET	B	From Leg	4.000	0.000	127.000	No Ice	8.262	6.304	0.074
w/ Mount Pipe			0.000			1/2" Ice	8.822	7.479	0.139
(E)			2.000			1" Ice	9.346	8.368	0.212
800 10764 w/ Mount Pipe	C	From Leg	4.000	0.000	127.000	No Ice	5.712	4.294	0.064
(E)			0.000			1/2" Ice	6.127	4.992	0.112
			2.000			1" Ice	6.543	5.662	0.166
(2) LGP 17201	A	From Leg	4.000	0.000	127.000	No Ice	1.668	0.467	0.031
(E)			0.000			1/2" Ice	1.829	0.568	0.042
			2.000			1" Ice	1.997	0.675	0.055
(2) LGP 17201	B	From Leg	4.000	0.000	127.000	No Ice	1.668	0.467	0.031
(E)			0.000			1/2" Ice	1.829	0.568	0.042
			2.000			1" Ice	1.997	0.675	0.055
(2) LGP 17201	C	From Leg	4.000	0.000	127.000	No Ice	1.668	0.467	0.031
(E)			0.000			1/2" Ice	1.829	0.568	0.042

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			2.000			1" Ice	1.997	0.675	0.055
RRUS 11 B12	A	From Leg	4.000	0.000	127.000	No Ice	2.833	1.182	0.051
(E)			0.000			1/2" Ice	3.043	1.330	0.072
			2.000			1" Ice	3.259	1.485	0.095
RRUS 11 B12	B	From Leg	4.000	0.000	127.000	No Ice	2.833	1.182	0.051
(E)			0.000			1/2" Ice	3.043	1.330	0.072
			2.000			1" Ice	3.259	1.485	0.095
RRUS 11 B12	C	From Leg	4.000	0.000	127.000	No Ice	2.833	1.182	0.051
(E)			0.000			1/2" Ice	3.043	1.330	0.072
			2.000			1" Ice	3.259	1.485	0.095
DC6-48-60-18-8F	B	From Leg	2.000	0.000	127.000	No Ice	0.917	0.917	0.019
(E)			0.000			1/2" Ice	1.458	1.458	0.037
			2.000			1" Ice	1.643	1.643	0.057
Platform Mount [LP 303-1]	C	None		0.000	127.000	No Ice	14.660	14.660	1.250
(E)						1/2" Ice	18.870	18.870	1.481
						1" Ice	23.080	23.080	1.713
*******									
APXV18-206517S-C w/	A	From Leg	1.000	0.000	117.000	No Ice	5.404	4.700	0.052
Mount Pipe			0.000			1/2" Ice	5.960	5.860	0.097
(E)			0.000			1" Ice	6.481	6.734	0.150
APXV18-206517S-C w/	B	From Leg	1.000	0.000	117.000	No Ice	5.404	4.700	0.052
Mount Pipe			0.000			1/2" Ice	5.960	5.860	0.097
(E)			0.000			1" Ice	6.481	6.734	0.150
APXV18-206517S-C w/	C	From Leg	1.000	0.000	117.000	No Ice	5.404	4.700	0.052
Mount Pipe			0.000			1/2" Ice	5.960	5.860	0.097
(E)			0.000			1" Ice	6.481	6.734	0.150
********									
8225	C	From Leg	3.000	0.000	79.000	No Ice	0.894	0.894	0.001
(E)			0.000			1/2" Ice	1.060	1.060	0.009
			1.000			1" Ice	1.230	1.230	0.018
Side Arm Mount [SO 701-1]	C	From Leg	1.500	0.000	79.000	No Ice	0.850	1.670	0.065
(E)			0.000			1/2" Ice	1.140	2.340	0.079
			0.000			1" Ice	1.430	3.010	0.093
********									

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

Comb. No.	Description
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
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	177 - 129.75	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-27.711	0.123	1.139
			Max. Mx	20	-11.412	352.824	0.073
			Max. My	2	-11.369	0.001	361.244
			Max. Vy	8	13.987	-352.821	0.060
			Max. Vx	14	14.355	-0.012	-361.098
			Max. Torque	11			-0.025
L2	129.75 - 118.583	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-37.447	-1.026	0.445
			Max. Mx	8	-16.374	-593.742	-0.294
			Max. My	14	-16.335	-0.342	-607.568
			Max. Vy	8	17.458	-593.742	-0.294
			Max. Vx	14	17.844	-0.342	-607.568
			Max. Torque	17			0.469

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L3	118.583 - 108	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-42.290	-1.594	-0.009
			Max. Mx	8	-18.901	-786.810	-0.465
			Max. My	14	-18.863	-0.602	-805.006
			Max. Vy	8	18.681	-786.810	-0.465
			Max. Vx	14	19.138	-0.602	-805.006
			Max. Torque	17			0.618
L4	108 - 106.417	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-42.961	-1.678	-0.087
			Max. Mx	8	-19.254	-816.595	-0.491
			Max. My	14	-19.222	-0.641	-835.411
			Max. Vy	8	18.937	-816.595	-0.491
			Max. Vx	14	19.278	-0.641	-835.411
			Max. Torque	17			0.645
L5	106.417 - 84	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-51.685	-2.643	-0.994
			Max. Mx	8	-25.037	-1164.905	-0.804
			Max. My	14	-25.006	-1.093	-1190.329
			Max. Vy	8	20.485	-1164.905	-0.804
			Max. Vx	14	20.909	-1.093	-1190.329
			Max. Torque	17			1.060
L6	84 - 80	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-58.039	-3.101	-1.432
			Max. Mx	8	-29.541	-1348.121	-0.961
			Max. My	14	-29.511	-1.321	-1377.377
			Max. Vy	8	21.324	-1348.121	-0.961
			Max. Vx	14	21.793	-1.321	-1377.377
			Max. Torque	17			1.276
L7	80 - 60	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-69.400	-3.732	-2.759
			Max. Mx	8	-37.505	-1792.072	-1.683
			Max. My	14	-37.480	-1.896	-1831.211
			Max. Vy	8	23.011	-1792.072	-1.683
			Max. Vx	16	24.759	972.122	-1717.535
			Max. Torque	17			1.609
L8	60 - 39.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-78.030	-4.612	-3.593
			Max. Mx	8	-43.667	-2145.228	-2.157
			Max. My	14	-43.649	-2.511	-2191.611
			Max. Vy	8	24.057	-2145.228	-2.157
			Max. Vx	16	26.765	1191.863	-2103.927
			Max. Torque	17			1.969
L9	39.25 - 20	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-96.109	-6.146	-5.048
			Max. Mx	8	-57.116	-2768.012	-2.953
			Max. My	14	-57.107	-3.553	-2826.567
			Max. Vy	8	25.605	-2768.012	-2.953
			Max. Vx	16	28.730	1589.913	-2803.002
			Max. Torque	17			2.113
L10	20 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	26	-109.042	-7.388	-6.169
			Max. Mx	8	-67.111	-3290.878	-3.600
			Max. My	16	-67.108	1923.433	-3388.296
			Max. Vy	8	26.657	-3290.878	-3.600
			Max. Vx	16	29.794	1923.433	-3388.296
			Max. Torque	17			2.113

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	109.042	-0.000	-0.000
	Max. H_x	20	67.116	26.643	0.020
	Max. H_z	5	50.337	-17.006	29.779
	Max. M_x	4	3385.031	-17.006	29.779
	Max. M_z	8	3290.878	-26.643	-0.020
	Max. Torsion	17	2.112	17.006	-29.779
	Min. Vert	19	50.337	22.022	-12.879
	Min. H_x	8	67.116	-26.643	-0.020
	Min. H_z	17	50.337	17.006	-29.779
	Min. M_x	16	-3388.296	17.006	-29.779
	Min. M_z	20	-3285.991	26.643	0.020
	Min. Torsion	5	-2.079	-17.006	29.779

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	55.930	0.000	0.000	1.317	-1.972	0.000
1.2 Dead+1.6 Wind 0 deg - No Ice	67.116	-0.020	-27.081	-3355.307	-0.479	0.085
0.9 Dead+1.6 Wind 0 deg - No Ice	50.337	-0.020	-27.081	-3322.748	0.133	0.087
1.2 Dead+1.6 Wind 30 deg - No Ice	67.116	17.006	-29.779	-3385.031	-1928.312	2.076
0.9 Dead+1.6 Wind 30 deg - No Ice	50.337	17.006	-29.779	-3353.880	-1909.774	2.079
1.2 Dead+1.6 Wind 60 deg - No Ice	67.116	22.022	-12.879	-1625.903	-2774.391	0.397
0.9 Dead+1.6 Wind 60 deg - No Ice	50.337	22.022	-12.879	-1610.158	-2746.280	0.399
1.2 Dead+1.6 Wind 90 deg - No Ice	67.116	26.643	0.020	3.600	-3290.878	0.446
0.9 Dead+1.6 Wind 90 deg - No Ice	50.337	26.643	0.020	3.165	-3257.969	0.447
1.2 Dead+1.6 Wind 120 deg - No Ice	67.116	22.104	12.949	1636.094	-2782.448	0.344
0.9 Dead+1.6 Wind 120 deg - No Ice	50.337	22.104	12.949	1619.458	-2754.279	0.343
1.2 Dead+1.6 Wind 150 deg - No Ice	67.116	13.393	23.484	2906.482	-1652.406	0.156
0.9 Dead+1.6 Wind 150 deg - No Ice	50.337	13.393	23.484	2877.517	-1635.596	0.154
1.2 Dead+1.6 Wind 180 deg - No Ice	67.116	0.020	27.081	3358.576	-4.410	-0.085
0.9 Dead+1.6 Wind 180 deg - No Ice	50.337	0.020	27.081	3325.177	-3.768	-0.087
1.2 Dead+1.6 Wind 210 deg - No Ice	67.116	-17.006	29.779	3388.296	1923.433	-2.110
0.9 Dead+1.6 Wind 210 deg - No Ice	50.337	-17.006	29.779	3356.306	1906.146	-2.112
1.2 Dead+1.6 Wind 240 deg - No Ice	67.116	-22.022	12.879	1629.174	2769.503	-0.429
0.9 Dead+1.6 Wind 240 deg -	50.337	-22.022	12.879	1612.588	2742.645	-0.431

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
No Ice						
1.2 Dead+1.6 Wind 270 deg - No Ice	67.116	-26.643	-0.020	-0.331	3285.991	-0.447
0.9 Dead+1.6 Wind 270 deg - No Ice	50.337	-26.643	-0.020	-0.736	3254.335	-0.448
1.2 Dead+1.6 Wind 300 deg - No Ice	67.116	-22.104	-12.949	-1632.826	2777.560	-0.312
0.9 Dead+1.6 Wind 300 deg - No Ice	50.337	-22.104	-12.949	-1617.029	2750.645	-0.312
1.2 Dead+1.6 Wind 330 deg - No Ice	67.116	-13.393	-23.484	-2903.215	1647.517	-0.124
0.9 Dead+1.6 Wind 330 deg - No Ice	50.337	-13.393	-23.484	-2875.088	1631.961	-0.122
1.2 Dead+1.0 Ice+1.0 Temp	109.042	0.000	0.000	6.169	-7.388	-0.000
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	109.042	-0.005	-8.998	-1102.222	-7.236	0.001
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	109.042	4.695	-8.198	-979.098	-570.621	0.400
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	109.042	7.074	-4.117	-519.048	-908.203	0.103
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	109.042	8.588	0.005	6.831	-1086.676	0.124
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	109.042	7.243	4.220	541.890	-924.742	0.104
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	109.042	4.470	7.799	966.907	-556.703	0.060
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	109.042	0.005	8.998	1115.012	-8.108	-0.001
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	109.042	-4.695	8.198	991.888	555.280	-0.402
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	109.042	-7.074	4.117	531.839	892.861	-0.105
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	109.042	-8.588	-0.005	5.959	1071.335	-0.124
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	109.042	-7.243	-4.220	-529.101	909.400	-0.102
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	109.042	-4.470	-7.799	-954.118	541.360	-0.058
Dead+Wind 0 deg - Service	55.930	-0.005	-6.303	-775.406	-1.572	0.020
Dead+Wind 30 deg - Service	55.930	3.958	-6.932	-782.575	-447.826	0.067
Dead+Wind 60 deg - Service	55.930	5.126	-2.998	-375.201	-643.369	0.096
Dead+Wind 90 deg - Service	55.930	6.202	0.005	1.811	-762.919	0.100
Dead+Wind 120 deg - Service	55.930	5.145	3.014	379.518	-645.237	0.077
Dead+Wind 150 deg - Service	55.930	3.117	5.466	673.501	-383.812	0.033
Dead+Wind 180 deg - Service	55.930	0.005	6.303	778.118	-2.483	-0.020
Dead+Wind 210 deg - Service	55.930	-3.958	6.932	785.287	443.770	-0.068
Dead+Wind 240 deg - Service	55.930	-5.126	2.998	377.914	639.313	-0.098
Dead+Wind 270 deg - Service	55.930	-6.202	-0.005	0.901	758.864	-0.100
Dead+Wind 300 deg - Service	55.930	-5.145	-3.014	-376.806	641.182	-0.076
Dead+Wind 330 deg - Service	55.930	-3.117	-5.466	-670.789	379.756	-0.032

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.000	-55.930	0.000	0.000	55.930	0.000	0.000%
2	-0.020	-67.116	-27.081	0.020	67.116	27.081	0.000%
3	-0.020	-50.337	-27.081	0.020	50.337	27.081	0.000%
4	17.006	-67.116	-29.779	-17.006	67.116	29.779	0.000%
5	17.006	-50.337	-29.779	-17.006	50.337	29.779	0.000%
6	22.022	-67.116	-12.879	-22.022	67.116	12.879	0.000%
7	22.022	-50.337	-12.879	-22.022	50.337	12.879	0.000%
8	26.643	-67.116	0.020	-26.643	67.116	-0.020	0.000%
9	26.643	-50.337	0.020	-26.643	50.337	-0.020	0.000%
10	22.104	-67.116	12.949	-22.104	67.116	-12.949	0.000%
11	22.104	-50.337	12.949	-22.104	50.337	-12.949	0.000%
12	13.393	-67.116	23.484	-13.393	67.116	-23.484	0.000%
13	13.393	-50.337	23.484	-13.393	50.337	-23.484	0.000%
14	0.020	-67.116	27.081	-0.020	67.116	-27.081	0.000%
15	0.020	-50.337	27.081	-0.020	50.337	-27.081	0.000%
16	-17.006	-67.116	29.779	17.006	67.116	-29.779	0.000%
17	-17.006	-50.337	29.779	17.006	50.337	-29.779	0.000%
18	-22.022	-67.116	12.879	22.022	67.116	-12.879	0.000%
19	-22.022	-50.337	12.879	22.022	50.337	-12.879	0.000%
20	-26.643	-67.116	-0.020	26.643	67.116	0.020	0.000%
21	-26.643	-50.337	-0.020	26.643	50.337	0.020	0.000%
22	-22.104	-67.116	-12.949	22.104	67.116	12.949	0.000%
23	-22.104	-50.337	-12.949	22.104	50.337	12.949	0.000%
24	-13.393	-67.116	-23.484	13.393	67.116	23.484	0.000%
25	-13.393	-50.337	-23.484	13.393	50.337	23.484	0.000%
26	0.000	-109.042	0.000	-0.000	109.042	-0.000	0.000%
27	-0.005	-109.042	-8.998	0.005	109.042	8.998	0.000%
28	4.695	-109.042	-8.198	-4.695	109.042	8.198	0.000%
29	7.074	-109.042	-4.117	-7.074	109.042	4.117	0.000%
30	8.588	-109.042	0.005	-8.588	109.042	-0.005	0.000%
31	7.243	-109.042	4.220	-7.243	109.042	-4.220	0.000%
32	4.470	-109.042	7.799	-4.470	109.042	-7.799	0.000%
33	0.005	-109.042	8.998	-0.005	109.042	-8.998	0.000%
34	-4.695	-109.042	8.198	4.695	109.042	-8.198	0.000%
35	-7.074	-109.042	4.117	7.074	109.042	-4.117	0.000%
36	-8.588	-109.042	-0.005	8.588	109.042	0.005	0.000%
37	-7.243	-109.042	-4.220	7.243	109.042	4.220	0.000%
38	-4.470	-109.042	-7.799	4.470	109.042	7.799	0.000%
39	-0.005	-55.930	-6.303	0.005	55.930	6.303	0.000%
40	3.958	-55.930	-6.932	-3.958	55.930	6.932	0.000%
41	5.126	-55.930	-2.998	-5.126	55.930	2.998	0.000%
42	6.202	-55.930	0.005	-6.202	55.930	-0.005	0.000%
43	5.145	-55.930	3.014	-5.145	55.930	-3.014	0.000%
44	3.117	-55.930	5.466	-3.117	55.930	-5.466	0.000%
45	0.005	-55.930	6.303	-0.005	55.930	-6.303	0.000%
46	-3.958	-55.930	6.932	3.958	55.930	-6.932	0.000%
47	-5.126	-55.930	2.998	5.126	55.930	-2.998	0.000%
48	-6.202	-55.930	-0.005	6.202	55.930	0.005	0.000%
49	-5.145	-55.930	-3.014	5.145	55.930	3.014	0.000%
50	-3.117	-55.930	-5.466	3.117	55.930	5.466	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00048602
3	Yes	4	0.00000001	0.00025362
4	Yes	6	0.00000001	0.00004874
5	Yes	5	0.00000001	0.00051451
6	Yes	5	0.00000001	0.00080902
7	Yes	5	0.00000001	0.00039535
8	Yes	4	0.00000001	0.00057645
9	Yes	4	0.00000001	0.00033291
10	Yes	5	0.00000001	0.00082713
11	Yes	5	0.00000001	0.00040413
12	Yes	5	0.00000001	0.00085742
13	Yes	5	0.00000001	0.00041639
14	Yes	4	0.00000001	0.00050079
15	Yes	4	0.00000001	0.00026580
16	Yes	6	0.00000001	0.00004589
17	Yes	5	0.00000001	0.00048409
18	Yes	5	0.00000001	0.00082344
19	Yes	5	0.00000001	0.00040290
20	Yes	4	0.00000001	0.00055054
21	Yes	4	0.00000001	0.00031243
22	Yes	5	0.00000001	0.00081482
23	Yes	5	0.00000001	0.00039832
24	Yes	5	0.00000001	0.00085515
25	Yes	5	0.00000001	0.00041585
26	Yes	4	0.00000001	0.00005729
27	Yes	6	0.00000001	0.00011380
28	Yes	6	0.00000001	0.00013059
29	Yes	6	0.00000001	0.00012305
30	Yes	6	0.00000001	0.00011277
31	Yes	6	0.00000001	0.00012544
32	Yes	6	0.00000001	0.00012862
33	Yes	6	0.00000001	0.00011442
34	Yes	6	0.00000001	0.00012969
35	Yes	6	0.00000001	0.00012238
36	Yes	6	0.00000001	0.00011142
37	Yes	6	0.00000001	0.00012326
38	Yes	6	0.00000001	0.00012664
39	Yes	4	0.00000001	0.00008944
40	Yes	4	0.00000001	0.00038621
41	Yes	4	0.00000001	0.00027941
42	Yes	4	0.00000001	0.00008917
43	Yes	4	0.00000001	0.00029312
44	Yes	4	0.00000001	0.00030178
45	Yes	4	0.00000001	0.00008977
46	Yes	4	0.00000001	0.00037182
47	Yes	4	0.00000001	0.00029204
48	Yes	4	0.00000001	0.00008867
49	Yes	4	0.00000001	0.00028135
50	Yes	4	0.00000001	0.00029863

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	177 - 129.75	21.316	46	1.120	0.000
L2	133.5 - 118.583	11.766	46	0.896	0.000
L3	118.583 - 108	9.168	46	0.746	0.000
L4	108 - 106.417	7.616	46	0.652	0.000
L5	106.417 - 84	7.403	46	0.637	0.000
L6	88.75 - 80	5.225	46	0.538	0.000
L7	80 - 60	4.267	46	0.501	0.000
L8	60 - 39.25	2.424	46	0.379	0.000
L9	45 - 20	1.389	46	0.280	0.000
L10	20 - 0	0.273	46	0.131	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
177.000	APXVSPP18-C-A20 w/ Mount Pipe	46	21.316	1.120	0.000	51077
167.000	APXV18-206516S-C-A20 w/ Mount Pipe	46	18.981	1.088	0.000	25538
154.000	(2) LPA-80063/6CF w/ Mount Pipe	46	16.022	1.036	0.000	11103
137.000	(4) DB844H90 w/ Mount Pipe	46	12.443	0.927	0.000	6386
127.000	(2) AP14/17-880/1940/065D/ADT/XXP w/ Mount Pipe	46	10.575	0.831	0.000	5590
117.000	APXV18-206517S-C w/ Mount Pipe	46	8.921	0.732	0.000	5470
79.000	8225	46	4.163	0.496	0.000	10250

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	177 - 129.75	92.124	16	4.850	0.004
L2	133.5 - 118.583	50.861	16	3.877	0.004
L3	118.583 - 108	39.631	16	3.229	0.003
L4	108 - 106.417	32.923	16	2.820	0.003
L5	106.417 - 84	32.000	16	2.755	0.003
L6	88.75 - 80	22.587	16	2.328	0.002
L7	80 - 60	18.445	16	2.165	0.002
L8	60 - 39.25	10.475	16	1.637	0.001
L9	45 - 20	6.001	16	1.210	0.001
L10	20 - 0	1.181	16	0.566	0.000

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
177.000	APXVSPP18-C-A20 w/ Mount Pipe	16	92.124	4.850	0.004	11935
167.000	APXV18-206516S-C-A20 w/ Mount Pipe	16	82.034	4.711	0.004	5967
154.000	(2) LPA-80063/6CF w/ Mount Pipe	16	69.250	4.483	0.004	2592
137.000	(4) DB844H90 w/ Mount Pipe	16	53.787	4.010	0.004	1488
127.000	(2) AP14/17-880/1940/065D/ADT/XXP w/ Mount Pipe	16	45.713	3.597	0.004	1300
117.000	APXV18-206517S-C w/ Mount Pipe	16	38.563	3.166	0.003	1271
79.000	8225	16	17.995	2.144	0.002	2376

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	177 - 129.75 (1)	TP30.268x22x0.219	47.250	0.000	0.0	20.408	-11.369	1385.780	0.008
L2	129.75 - 118.583 (2)	TP31.785x29.174x0.25	14.917	0.000	0.0	25.023	-16.335	1737.500	0.009
L3	118.583 - 108 (3)	TP33.636x31.785x0.382	10.583	0.000	0.0	40.279	-18.747	2000.850	0.009
L4	108 - 106.417 (4)	TP33.913x33.636x0.38	1.583	0.000	0.0	40.483	-19.100	2011.220	0.009
L5	106.417 - 84 (5)	TP37.836x33.913x0.716	22.417	0.000	0.0	82.499	-24.829	2391.530	0.010
L6	84 - 80 (6)	TP38.036x36.505x0.766	8.750	0.000	0.0	90.573	-29.311	2636.780	0.011
L7	80 - 60 (7)	TP41.536x38.036x0.767	20.000	0.000	0.0	99.234	-37.265	3031.070	0.012
L8	60 - 39.25 (8)	TP45.167x41.536x0.73	20.750	0.000	0.0	100.657	-43.455	3828.950	0.011
L9	39.25 - 20 (9)	TP47.91x43.536x0.752	25.000	0.000	0.0	112.625	-57.003	4329.930	0.013
L10	20 - 0 (10)	TP51.41x47.91x0.762	20.000	0.000	0.0	122.449	-67.108	4783.290	0.014

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	177 - 129.75 (1)	TP30.268x22x0.219	361.244	837.933	0.431	0.000	837.933	0.000
L2	129.75 - 118.583 (2)	TP31.785x29.174x0.25	607.568	1126.608	0.539	0.000	1126.608	0.000
L3	118.583 - 108 (3)	TP33.636x31.785x0.382	808.262	1363.342	0.593	0.000	1363.342	0.000
L4	108 - 106.417 (4)	TP33.913x33.636x0.38	840.167	1382.058	0.608	0.000	1382.058	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L5	106.417 - 84 (5)	TP37.836x33.913x0.716	1225.783	1763.800	0.695	0.000	1763.800	0.000
L6	84 - 80 (6)	TP38.036x36.505x0.766	1437.867	1995.717	0.720	0.000	1995.717	0.000
L7	80 - 60 (7)	TP41.536x38.036x0.767	1973.567	2513.767	0.785	0.000	2513.767	0.000
L8	60 - 39.25 (8)	TP45.167x41.536x0.73	2418.067	3389.433	0.713	0.000	3389.433	0.000
L9	39.25 - 20 (9)	TP47.91x43.536x0.752	3222.525	4165.358	0.774	0.000	4165.358	0.000
L10	20 - 0 (10)	TP51.41x47.91x0.762	3896.167	4946.533	0.788	0.000	4946.533	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	177 - 129.75 (1)	TP30.268x22x0.219	14.355	692.888	0.021	0.000	1677.917	0.000
L2	129.75 - 118.583 (2)	TP31.785x29.174x0.25	17.844	868.749	0.021	0.367	2255.975	0.000
L3	118.583 - 108 (3)	TP33.636x31.785x0.382	20.024	1000.420	0.020	0.616	2730.025	0.000
L4	108 - 106.417 (4)	TP33.913x33.636x0.38	20.304	1005.610	0.020	0.643	2767.492	0.000
L5	106.417 - 84 (5)	TP37.836x33.913x0.716	23.397	1195.760	0.020	1.059	3531.917	0.000
L6	84 - 80 (6)	TP38.036x36.505x0.766	25.036	1318.390	0.019	1.275	3996.317	0.000
L7	80 - 60 (7)	TP41.536x38.036x0.767	28.490	1515.530	0.019	1.607	5033.675	0.000
L8	60 - 39.25 (8)	TP45.167x41.536x0.73	30.808	1914.480	0.016	1.967	6787.158	0.000
L9	39.25 - 20 (9)	TP47.91x43.536x0.752	33.079	2164.960	0.015	2.110	8340.917	0.000
L10	20 - 0 (10)	TP51.41x47.91x0.762	34.310	2391.640	0.014	2.110	9905.167	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	177 - 129.75 (1)	0.008	0.431	0.000	0.021	0.000	0.440 ✔	1.000	4.8.2 ✔
L2	129.75 - 118.583 (2)	0.009	0.539	0.000	0.021	0.000	0.549 ✔	1.000	4.8.2 ✔
L3	118.583 - 108 (3)	0.009	0.593	0.000	0.020	0.000	0.603 ✔	1.000	4.8.2 ✔
L4	108 - 106.417 (4)	0.009	0.608	0.000	0.020	0.000	0.618 ✔	1.000	4.8.2 ✔
L5	106.417 - 84 (5)	0.010	0.695	0.000	0.020	0.000	0.706 ✔	1.000	4.8.2 ✔
L6	84 - 80 (6)	0.011	0.720	0.000	0.019	0.000	0.732 ✔	1.000	4.8.2 ✔
L7	80 - 60 (7)	0.012	0.785	0.000	0.019	0.000	0.798 ✔	1.000	4.8.2 ✔

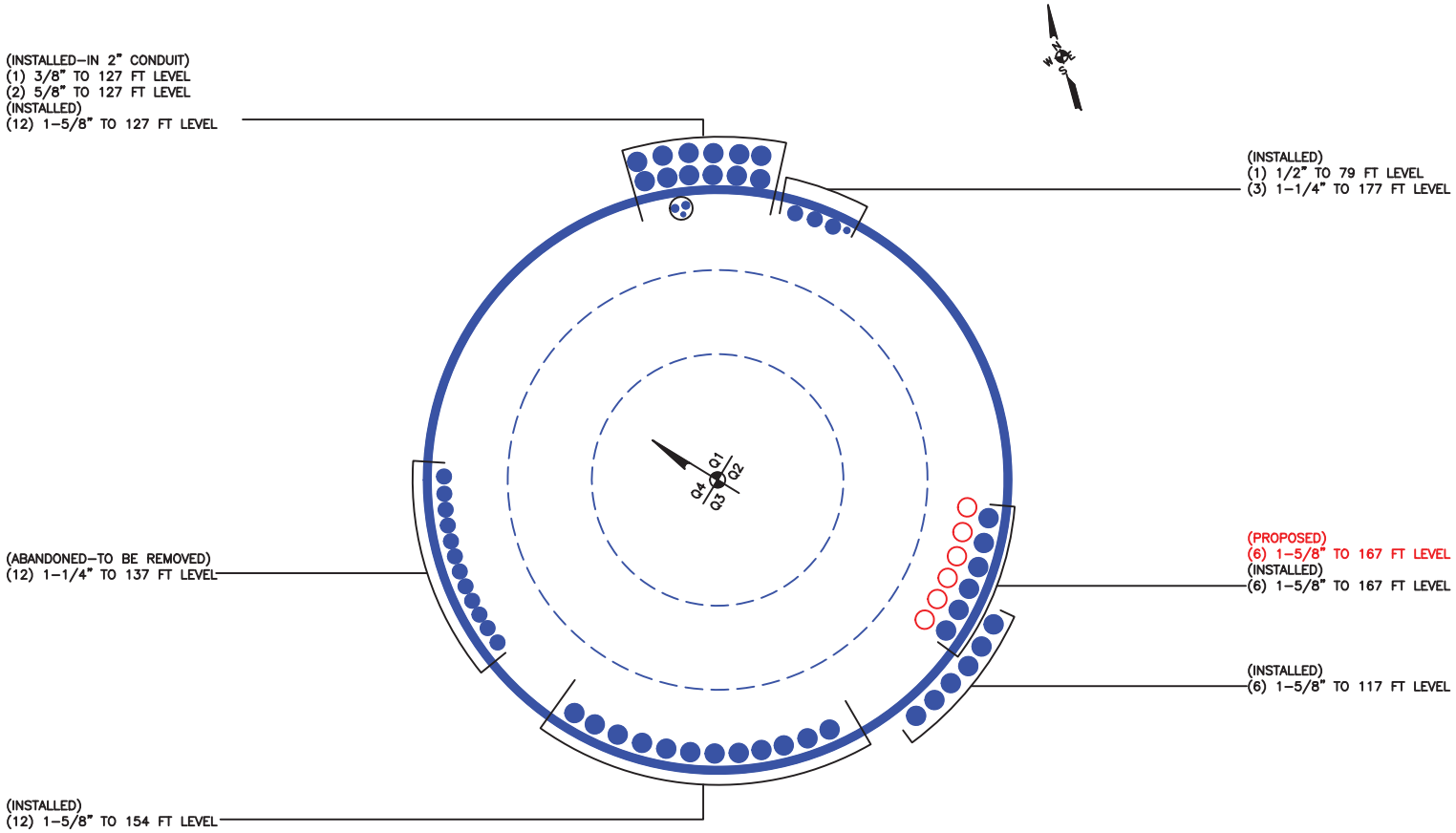
Section No.	Elevation ft	Ratio P_u / ϕP_n	Ratio M_{ux} / ϕM_{nx}	Ratio M_{uy} / ϕM_{ny}	Ratio V_u / ϕV_n	Ratio T_u / ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L8	60 - 39.25 (8)	0.011	0.713	0.000	0.016	0.000	0.725 ✔	1.000	4.8.2 ✔
L9	39.25 - 20 (9)	0.013	0.774	0.000	0.015	0.000	0.787 ✔	1.000	4.8.2 ✔
L10	20 - 0 (10)	0.014	0.788	0.000	0.014	0.000	0.802 ✔	1.000	4.8.2 ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	177 - 129.75	Pole	TP30.268x22x0.219	1	-11.369	1385.780	44.0	Pass
L2	129.75 - 118.583	Pole	TP31.785x29.174x0.25	2	-16.335	1737.500	54.9	Pass
L3	118.583 - 108	Pole	TP33.636x31.785x0.382	3	-18.747	2000.850	60.3	Pass
L4	108 - 106.417	Pole	TP33.913x33.636x0.38	4	-19.100	2011.220	61.8	Pass
L5	106.417 - 84	Pole	TP37.836x33.913x0.716	5	-24.829	2391.530	70.6	Pass
L6	84 - 80	Pole	TP38.036x36.505x0.766	6	-29.311	2636.780	73.2	Pass
L7	80 - 60	Pole	TP41.536x38.036x0.767	7	-37.265	3031.070	79.8	Pass
L8	60 - 39.25	Pole	TP45.167x41.536x0.73	8	-43.455	3828.950	72.5	Pass
L9	39.25 - 20	Pole	TP47.91x43.536x0.752	9	-57.003	4329.930	78.7	Pass
L10	20 - 0	Pole	TP51.41x47.91x0.762	10	-67.108	4783.290	80.2	Pass
							Summary	
						Pole (L10)	80.2	Pass
						RATING =	**80.2**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



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APPENDIX C

ADDITIONAL CALCULATIONS

Reinforcement 1

Bottom	Top	QTY	Type	Position	Gap	Ten/Comp
0	20	3	4-1/2" SR	F	0	T&C
20	60	3	4-1/4" SR Lu=33"	F	0	T&C
60	80	3	4-1/4" SR Lu=66"	F	0	T&C
80	108	3	4" SR	F	0	T&C
106.417	118.583	3	MP304	F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C

Reinforcement 2

Bottom	Top	QTY	Type	Position	Gap	Ten/Comp
0				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C

Reinforcement 3

Bottom	Top	QTY	Type	Position	Gap	Ten/Comp
0				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C
				F	0	T&C

Bottom Elevation	Top Elevation	Original Thickness	Original Yield Stress	Original Ultimate Stress	Reinforced Shaft Capacity	Reinf. 1 QTY	Reinf. 1 Type	Rein. 1 Capacity	Reinf. 2 QTY	Reinf. 2 Type	Rein. 2 Capacity	Reinf. 3 QTY	Reinf. 3 Type	Rein. 3 Capacity	Control Stress Ratio	Top Height	Section Length	Lap Splice	# of Sides	Top Diameter	Bottom Diameter	Equivalent Shaft Thickness	Equivalent Shaft Fy	Equivalent Weight Mult.		Bottom Elevation Failure	Top Elevation Failure	Section Failure %
129.7500	177.0000	0.2188	65	80	43.9%										**43.9%**	177.0000	47.2500	3.7500	18	22.0000	30.2680	0.2188	65.0	1.00	1			
118.5830	133.5000	0.2500	65	80	54.9%										**54.9%**	133.5000	14.9170	0.0000	18	29.1743	31.7845	0.2500	65.0	1.00	2			
108.0000	118.5830	0.2500	65	80	50.8%	3	MP304	60.3%							**60.3%**	118.5830	10.5830	0.0000	18	31.7845	33.6364	0.3816	42.1	0.97	3			
106.4170	108.0000	0.2500	65	80	52.0%	3	MP304	61.8%							**61.8%**	108.0000	1.5830	0.0000	18	33.6364	33.9134	0.3804	42.1	0.97	4			
84.0000	106.4170	0.2500	65	80	35.4%	3	4" SR	70.6%							**70.6%**	106.4170	22.4170	4.7500	18	33.9134	37.8360	0.7163	24.6	0.81	5			
80.0000	88.7500	0.3125	65	80	36.6%	3	4" SR	73.2%							**73.2%**	88.7500	8.7500	0.0000	18	36.5048	38.0360	0.7656	24.7	0.83	6			
60.0000	80.0000	0.3125	65	80	41.9%	3	1/4" SR Lu=6	79.8%							**79.8%**	80.0000	20.0000	0.0000	18	38.0360	41.5359	0.7669	25.9	0.84	7			
39.2500	60.0000	0.3125	65	80	47.4%	3	1/4" SR Lu=3	72.5%							**72.5%**	60.0000	20.7500	5.7500	18	41.5359	45.1670	0.7302	32.3	0.86	8			
20.0000	45.0000	0.3750	65	80	51.8%	3	1/4" SR Lu=3	78.7%							**78.7%**	45.0000	25.0000	0.0000	18	43.5358	47.9104	0.7524	32.6	0.88	9			
0.0000	20.0000	0.3750	65	80	53.7%	3	4-1/2" SR	80.2%							**80.2%**	20.0000	20.0000	0.0000	18	47.9104	51.4100	0.7617	33.1	0.89	10			
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Section	Loads					Pole									
Section	Elevation (ft)	Moment (ft-kip)	Compression (kip)	Shear (kip)	Torsion (kip-ft)	Number of Sides	OD (in)	Thickness (in)	Yield Strength (ksi)	Flat Width (in)	Area (in^2)	Moment of Inertia (in^4)	Percent of Composite Moment of Inertia	Angle Offset to Pole Flat	Distance to Extreme Fiber (in)
Section	*Elevation*	*Moment*	*Compression*	*Shear*	*Torsion*	*PoleSides*	*PoleOD*	*PoleT*	*PoleFy*	*PoleW*	*PoleA*	*PoleI*	*PoleIPer*	*PoleCPoint*	*PoleC*
1	177	0.0	2.4	2.7	0.0	18	22.0000	0.2188	65	3.49	15.1	905	100%	TRUE	11.15
2	133.5	361.2	11.4	14.4	0.0	18	29.6118	0.2188	65	4.84	20.4	2225	100%	TRUE	15.02
3	129.75	415.6	12.1	14.6	0.0	18	30.2680	0.4688	65	4.51	44.3	4965	100%	TRUE	15.33
4	118.583	607.5	16.3	17.8	0.4	18	31.7845	0.2500	65	5.16	25.0	3140	100%	TRUE	16.12
5	108	808.3	18.7	20.0	0.6	18	33.6364	0.2500	65	5.49	26.5	3727	66%	0	16.82
6	106.417	840.2	19.1	20.3	0.6	18	33.9134	0.2500	65	5.54	26.7	3820	66%	0	16.96
7	88.75	1225.8	24.8	23.4	1.1	18	37.0048	0.2500	65	6.08	29.1	4973	36%	0	18.50
8	84	1339.1	27.8	24.3	1.2	18	37.8360	0.5625	65	5.68	66.5	11660	56%	0	18.92
9	80	1437.9	29.3	25.0	1.3	18	38.0360	0.3125	65	6.16	37.4	6719	42%	0	19.02
10	60	1973.6	37.3	28.5	1.6	18	41.5359	0.3125	65	6.77	40.9	8769	42%	0	20.77
11	45	2418.1	43.5	30.8	2.0	18	44.1608	0.3125	65	7.24	43.5	10554	44%	0	22.08
12	39.25	2598.1	48.0	31.8	2.1	18	45.1670	0.6875	65	6.75	96.9	24217	63%	0	22.58
13	20	3222.5	57.0	33.1	2.1	18	47.9104	0.3750	65	7.79	56.5	16134	51%	0	23.96
14	0	3896.2	67.1	34.3	2.1	18	51.4100	0.3750	65	8.40	60.7	19967	50%	0	25.71

Section	Unreinforced Pole - Rev. G															
Section	Section Modulus (in^3)	Torsion Constant (in^4)	Effective Yield Stress (ksi)	Nominal Bending Moment Strength (ft-kip)	Strength Resistance Factor	Design Bending Moment Strength (ft-kip)	Nominal Compressive Strength (kip)	Strength Resistance Factor	Design Compressive Strength (kip)	Nominal Shear Strength (kip)	Strength Resistance Factor	Design Shear Strength (kip)	Nominal Torsion Shear Strength (kip-ft)	Strength Resistance Factor	Design Torsion Shear Strength (kip-ft)	**Stress Ratio**
Section	*PoleS*	*PoleJ*	*PoleFye*	*PoleMn*	*PolePhiF*	*PolePhiMn*	*PolePn*	*PolePhiC*	*PolePhiPn*	*PoleVn*	*PolePhiV*	*PolePhiVn*	*PoleVtn*	*PolePhiVt*	*PolepPhiVt*	***PoleSRG***
1	81	1795	82.6	558.4	0.9	502.5	1247.2	0.9	1122.5	623.6	0.9	561.2	13285.8	0.9	11957.2	**0.002**
2	148	4410	75.4	931.0	0.9	837.9	1537.7	0.9	1383.9	768.8	0.9	691.9	22143.6	0.9	19929.2	**0.440**
3	324	9852	82.6	2227.8	0.9	2005.0	3654.5	0.9	3289.1	1827.3	0.9	1644.5	53048.8	0.9	47743.9	**0.211**
4	195	6224	77.1	1251.9	0.9	1126.7	1928.0	0.9	1735.2	964.0	0.9	867.6	29777.0	0.9	26799.3	**0.549**
5	222	7386	65.0	1200.3	0.9	1080.2	1720.7	0.9	1548.7	860.4	0.9	774.3	28547.7	0.9	25693.0	**0.761**
6	225	7572	65.0	1220.4	0.9	1098.3	1735.0	0.9	1561.5	867.5	0.9	780.8	29025.1	0.9	26122.5	**0.778**
7	269	9855	65.0	1455.8	0.9	1310.2	1894.5	0.9	1705.0	947.2	0.9	852.5	34620.8	0.9	31158.7	**0.951**
8	616	23136	65.0	3338.6	0.9	3004.7	4319.4	0.9	3887.5	2159.7	0.9	1943.7	79493.2	0.9	71543.9	**0.453**
9	353	13320	65.0	1913.8	0.9	1722.4	2430.2	0.9	2187.2	1215.1	0.9	1093.6	45524.7	0.9	40972.2	**0.849**
10	422	17381	65.0	2287.2	0.9	2058.4	2655.8	0.9	2390.2	1327.9	0.9	1195.1	54399.2	0.9	48959.3	**0.975**
11	478	20916	65.0	2589.0	0.9	2330.1	2825.0	0.9	2542.5	1412.5	0.9	1271.3	61573.4	0.9	55416.0	**1.055**
12	1072	48054	65.0	5808.5	0.9	5227.6	6299.7	0.9	5669.8	3149.9	0.9	2834.9	138308.8	0.9	124477.9	**0.506**
13	674	31980	65.0	3648.2	0.9	3283.4	3674.8	0.9	3307.4	1837.4	0.9	1653.7	86775.3	0.9	78097.7	**0.999**
14	777	39575	65.0	4207.6	0.9	3786.8	3945.6	0.9	3551.0	1972.8	0.9	1775.5	100072.9	0.9	90065.6	**1.048**
																1.055

Section	Reinforced Pole					Rev. G				
Section	Moment in Pole when Reinforced	Bending Stress (ksi)	Axial Stress (ksi)	Shear Stress (ksi)	Torsion Shear Stress (ksi)	Allowable Bending Stress (ksi)	Allowable Compressive Stress (ksi)	Allowable Shear Stress (ksi)	Allowable Torsion Shear Stress (ksi)	**Reinforced Pole Stress Ratio**
Section	*PoleMome*	*RPoleFbAc*	*RPoleFaAc*	*RPoleFvAc*	*RPoleFvtAc*	*PoleFbG*	*PoleFpG*	*PoleFvG*	*PoleFvtG*	***RPoleSRG***
1	0.0	0.0	0.16	0.00	0.00	74.3	74.3	74.3	74.3	**0.002**
2	361.2	29.3	0.56	0.00	0.00	67.9	67.9	67.9	67.9	**0.439**
3	415.6	15.4	0.27	0.00	0.00	74.3	74.3	74.3	74.3	**0.211**
4	607.5	37.4	0.65	0.00	0.00	69.4	69.4	69.4	69.4	**0.549**
5	535.3	29.0	0.71	0.00	0.00	58.5	58.5	58.5	58.5	**0.508**
6	558.1	29.7	0.72	0.00	0.00	58.5	58.5	58.5	58.5	**0.520**
7	444.1	19.8	0.85	0.00	0.00	58.5	58.5	58.5	58.5	**0.354**
8	752.4	14.6	0.42	0.00	0.00	58.5	58.5	58.5	58.5	**0.258**
9	607.8	20.6	0.78	0.00	0.00	58.5	58.5	58.5	58.5	**0.366**
10	830.5	23.6	0.91	0.00	0.00	58.5	58.5	58.5	58.5	**0.419**
11	1063.9	26.7	1.00	0.00	0.00	58.5	58.5	58.5	58.5	**0.474**
12	1647.4	18.4	0.50	0.00	0.00	58.5	58.5	58.5	58.5	**0.324**
13	1643.1	29.3	1.01	0.00	0.00	58.5	58.5	58.5	58.5	**0.518**
14	1960.3	30.3	1.11	0.00	0.00	58.5	58.5	58.5	58.5	**0.537**
										0.549

Section	Reinforcement 1							
Section	Qty	**Model**	Position (F-Flat, C-Corner)	Gap Between Pole and Back of Rein. (in)	Tension only or Tension & Comp.	Total Moment of Inertia (in^4)	Axial Force (kip)	**Stress Ratio**
Section	*Rein1Qty*	***Rein1Model***	*Rein1Pos*	*Rein1Gap*	*Rein1TC*	*Rein1ITotal*	*Rein1P*	***Rein1SR***
1								
2								
3								
4								
5	3	**MP304**	F	0	T&C	1901	124.1	**0.603**
6	3	**MP304**	F	0	T&C	1931	127.3	**0.618**
7	3	**4" SR**	F	0	T&C	8753	290.2	**0.706**
8	3	**4" SR**	F	0	T&C	9093	213.7	**0.520**
9	3	**4" SR**	F	0	T&C	9176	301.0	**0.732**
10	3	**4-1/4" SR Lu=66"**	F	0	T&C	12069	384.0	**0.798**
11	3	**4-1/4" SR Lu=33"**	F	0	T&C	13433	431.2	**0.725**
12	3	**4-1/4" SR Lu=33"**	F	0	T&C	13976	296.8	**0.499**
13	3	**4-1/4" SR Lu=33"**	F	0	T&C	15509	468.0	**0.787**
14	3	**4-1/2" SR**	F	0	T&C	19718	538.7	**0.802**
								0.802

Section	Composite							
Section	Centroid Offset (in)	Area (in^2)	Moment of Inertia (in^4)	**Controlling Stress Ratio**	**Thickness (in)**	**Weight Multiplier**	**Derated Yield Stress (ksi)**	**% Error in Derated Yield Stress**
Section	*CompYBar*	*CompA*	*CompI*	***CompSR***	***EPoleT***	***EPoleWM***	***EDPoleFy***	***EDPoleSRCheck***
1	0.000	15.1	905	**0.002**	**0.2188**	**1.00**	**65.0**	**1.1%**
2	0.000	20.4	2225	**0.439**	**0.2188**	**1.00**	**65.0**	**0.1%**
3	0.000	44.3	4965	**0.211**	**0.4688**	**1.00**	**65.0**	**0.1%**
4	0.000	25.0	3140	**0.549**	**0.2500**	**1.00**	**65.0**	**0.1%**
5	0.000	38.9	5628	**0.603**	**0.3816**	**0.97**	**42.1**	**3.2%**
6	0.000	39.1	5751	**0.618**	**0.3804**	**0.97**	**42.1**	**3.2%**
7	0.000	66.8	13726	**0.706**	**0.7163**	**0.81**	**24.6**	**3.0%**
8	0.000	104.2	20753	**0.520**	**1.0387**	**0.86**	**24.7**	**3.0%**
9	0.000	75.1	15895	**0.732**	**0.7656**	**0.83**	**24.7**	**3.0%**
10	0.000	83.4	20838	**0.798**	**0.7669**	**0.84**	**25.9**	**3.0%**
11	0.000	86.0	23987	**0.725**	**0.7302**	**0.86**	**32.3**	**3.1%**
12	0.000	139.5	38193	**0.499**	**1.1141**	**0.90**	**32.4**	**3.1%**
13	0.000	99.1	31643	**0.787**	**0.7524**	**0.88**	**32.6**	**3.2%**
14	0.000	108.4	39685	**0.802**	**0.7617**	**0.89**	**33.1**	**3.3%**
				0.802				

Rein1

Bottom	Top	Qty	Model	Position	T or T&C
0	20	3	4-1/2" SR	F	T&C
20	60	3	' SR Lu=33"	F	T&C
60	80	3	' SR Lu=66"	F	T&C
80	108	3	4" SR	F	T&C
106.417	118.583	3	MP304	F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C

Flats (Used for relative orientation only. Actual flat numbers may vary.)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
			1						1						1		
			1						1						1		
			1						1						1		
			1						1						1		
1						1						1					

Rein2

Bottom	Top	Qty	Model	Position	T or T&C
0				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C

Rein3

Bottom	Top	Qty	Model	Position	T or T&C
0				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C

Reinforcement Capacity

AeroSolutions LLC
Optimizing Your Tower Infrastructure
5500 Flatirons Parkway, Suite 100
Boulder, CO 80301
720-304-6882

Dimensions and Properties														Compression				Axial				
																		ASD-9			LRFD	
Model	Weight (lb/ft)	Area (in^2)	Moment of Inertia (in^4)	Moment of Inertia (in^4)	Centroid from Mating Edge (in)	Centroid from Bolt Hole Center (in)	Web Thickness (in)	Width (in)	Flange Width (in)	Flange Thickness (in)	Hole Diameter (in)	Yield Stress (ksi)	Ultimate Stress (ksi)	Slender. Ratio Coefficient	Unbraced Length (in)	Slender. Ratio Coefficient	Unbraced Length (in)	Allowable Axial (kip)	Allowable Axial w/ increase (kip)	Governing Axial	Design Axial Strength (kip)	Governing Axial
Model	*Wt*	*A*	*Ix*	*Iy*	*Y*	*X*	*Tw*	*W*	*Wf*	*Tf*	*Dh*	*Fy*	*Fu*	*Kx*	*Lx*	*Ky*	*Ly*	*PAll*	*Pall.inc*	*Ptype.ASD*	*phiPn*	*Ptype.LRFD*
MP304	14.1	4.13	0.91	11.86	0.61	0	0.43	4.78	1.61	0.84	1.21875	65	80	0.80	18	1.00	18	137.3	183.1	Rupture	**206.0**	Rupture
4-1/2" SR	54.1	15.90	20.13	20.13	3	0	0	4.5				50	65	0.80	33	1.00	33	433.2	577.5	Compress.	672.1	Compress.
4-1/4" SR Lu=33"	48.3	14.19	16.0	16.0	3.0	0	0	4.25				50	65	0.80	33	1.00	33	383.3	511.1	Compress.	594.9	Compress.
4-1/4" SR Lu=66"	48.3	14.19	16.0	16.0	3.0	0	0	4.25				50	65	0.80	66	1.00	66	317.1	422.8	Compress.	481.5	Compress.
4" SR	42.8	12.57	12.6	12.6	3	0	0	4				50	65	0.80	66	1.00	66	272.3	363.0	Compress.	411.2	Compress.

Anchor Rod Information for TIA/EIA-222-F and TIA-222-G-2

Site Information	
ID:	876376
Name:	SCOVILLE HILL - HARWINTON ROD
App. #:	365895 Revision # 1

AeroSolutions LLC
Optimizing Your Tower Infrastructure

Base Reactions		
Moment:	3896	ft-kip
Axial:	67	kip
Shear:	34	kip
Base Plate Type:	Square	

Design Information	
TIA Code:	G
ASIF:	1.000
Failure:	100%
eta Factor:	0.50

Original Anchor Rod Data

Quantity:	16	
Diameter:	2.25	in
Material:	A615 GR 75	
Bolt Circle:	58.0	in
Bolt Spacing:	6	in
Bolt Group Area:	63.62	in^2
Bolt Group MOIx:	26751	in^4

Reactions Seen by Original AR Group

Moment:	3385.2	kip-ft
Axial:	67.1	kip
Shear:	34.3	kip

Original AR Capacity Check

Combined Load:	183.6	kip
Allowable load:	259.8	kip
AR Capacity:	70.7%	Pass

First Added Anchor Rod Data

Quantity:	3	
Diameter:	1.75	in
Material:	A772	
Bolt Circle:	66.9	in
Bolt Group Area:	7.22	in^2
Bolt Group MOIx:	4038	in^4

Reactions Seen by First Added AR Group

Moment:	511.0	kip-ft
Axial:	0.0	kip
Shear:	0.0	kip

First Added AR Capacity Check

Combined Load:	121.5	kip
Allowable load:	227.9	kip
AR Capacity:	53.3%	Pass

Second Added Anchor Rod Data

Quantity:		
Diameter:		in
Material:		
Bolt Circle:		in
Bolt Group Area:	0.00	in^2
Bolt Group MOIx:	0	in^4

Reactions Seen by Second Added AR Group

Moment:	0.0	kip-ft
Axial:	0.0	kip
Shear:	0.0	kip

Second Added AR Capacity Check

Combined Load:	0.0	kip
Allowable load:	0.0	kip
AR Capacity:	0.0%	

Third Added Anchor Rod Data

Quantity:		
Diameter:		in
Material:		
Bolt Circle:		in
Bolt Group Area:	0.00	in^2
Bolt Group MOIx:	0	in^4

Reactions Seen by Second Added AR Group

Moment:	0.0	kip-ft
Axial:	0.0	kip
Shear:	0.0	kip

Second Added AR Capacity Check

Combined Load:	0.0	kip
Allowable load:	0.0	kip
AR Capacity:	0.0%	

Rev.4.1

Square, Stiffened / Unstiffened Base Plate, Any Rod Material - Rev. F /G

Assumptions: 1) Rod groups at corners. Total # rods divisible by 4. Maximum total # of rods = 48 (12 per Corner).
2) Rod Spacing = Straight Center-to-Center distance between any (2) adjacent rods (same corner)
3) Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)*(Rod Diameter)

Site Data

BU#: *876376*
Site Name: *SCOVILLE HILL - HARWI*
App #: *365895 Revision # 1*

Base Reactions		
TIA Revision:	G	
Factored Moment, Mu:	3385.1722	ft-kips
Factored Axial, Pu:	67.1078	kips
Factored Shear, Vu:	34.309435	kips

Anchor Rod Data		
Eta Factor, η	0.5	TIA G (Fig. 4-4)
Qty:	16	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, Fy:	75	ksi
Strength, Fu:	100	ksi
Bolt Circle:	58	in
Anchor Spacing:	6	in

Anchor Rod Results

TIA G --> Max Rod (Cu+ Vu/η):	183.6	Kips
Axial Design Strength, Φ*Fu*Anet:	260.0	Kips
Anchor Rod Stress Ratio:	70.6%	**Pass**

Plate Data		
W=Side:	57	in
Thick:	2.75	in
Grade:	55	ksi
Clip Distance:	12	in

Base Plate Results Flexural Check

Base Plate Stress:	32.1	ksi
PL Design Bending Strength, Φ*Fy:	49.5	ksi
Base Plate Stress Ratio:	64.8%	**Pass**

PL Ref. Data	
Yield Line (in):	29.20
Max PL Length:	29.20

Stiffener Data (Welding at both sides)

Configuration:	Unstiffened	
Weld Type:		**
Groove Depth:		in **
Groove Angle:		degrees
Fillet H. Weld:		<-- Disregard
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

N/A - Unstiffened

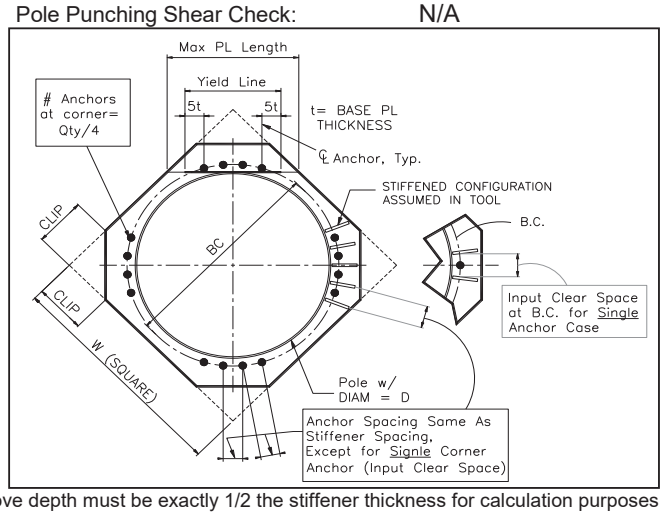
Stiffener Results

Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	N/A
Plate Comp. (AISC Bracket):	N/A

Pole Results

Pole Punching Shear Check: N/A

Pole Data		
Diam:	51.41	in
Thick:	0.375	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round



** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

PROJECT	**876376 - Scoville Hill/Harwinton Rod, CT**				
SUBJECT	**Foundation Analysis**				
DATE	**10/18/16**	PAGE	1	OF	1

B+T GRP
1717 S. Boulder, Suite 300
Tulsa, OK 74119
(918) 587-4630

Monopole Pad & Pier Foundation Analysis

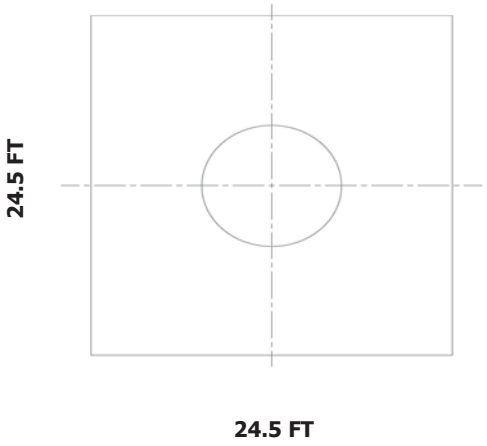
Rev. Type: G

Design Loads:

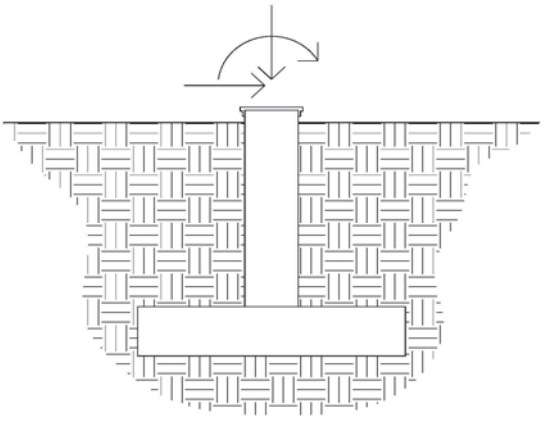
	Input factored loads	
Shear:	34.0	kips
Moment:	3,896.0	ft-kips
Tower Height:	177.0	ft
Tower Weight:	67.0	kips

Pad & Pier Dimensions / Properties:

Pole Diameter at Base:	51.41	in
Bearing Depth:	3.5	ft
Pad Width:	24.5	ft
Neglected Depth:	3.3	ft
Thickness:	4.0	ft
BP Dist. Above Pier:	3.0	in
Clear Cover:	3.0	in
Pad Rebar Size:	9	
Pad Rebar Quanity:	26	
Rebar Yield Strength:	60000	psi
Concrete Strength:	3000	psi
Concrete Unit Weight:	0.15	kcf



Elevation Overview



Soil Data:

	Allowable Values	
Soil Unit Weight:	0.125	kcf
Ult. Bearing Capacity:	40.000	ksf
Angle of Friction:	30.000	deg
Cohesion:	0.000	ksf
Passive Pressure:	0.000	ksf
Base Friction:	0.700	

** Notes:

Summary of Results

Overturning	97.5%
Shear Capacity	16.6%
Bearing	10.4%
Pad Shear - 1-way	36.4%
Pad Shear - 2-way	6.6%
Pad Moment Capacity	59.9%

Please Reply To:
Sam Simons
35 Griffin Road South
Bloomfield, CT 06002
203-482-5156
Sam.Simons@T-Mobile.com

March 22, 2017

Attorney Melanie Bachman Connecticut
Siting Council
10 Franklin Square
New Britain, CT 06501

EM-T-MOBILE-066-160930
T-Mobile Site ID CT11367A
123 Campville Hill Road, Harwinton CT
Notice of Compliance with Conditions and Construction Completion

Dear Attorney Bachman:

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

1. Prior to commencement of installation, T-Mobile shall provide one copy of the Structural Analysis Report to the Council referencing Revision G of the Structural Standards for Steel Antenna Towers and Antenna Supporting Structures as adopted by the Connecticut State Building Code effective October 1, 2016;
2. Removal of equipment at the 137 foot level in accordance with the Structural Analysis Report prepared by B+T Group dated September 2, 2016 and stamped by Chad Tuttle or subsequent Structural Analysis Report in accordance with Revision G as stated in the condition above;
3. Within 45 days following completion of equipment installation, T-Mobile shall provide documentation certified by a Professional Engineer that its installation complied with the recommendations of the structural analysis;
4. Any deviation from the proposed modification as specified in this notice and supporting materials with the Council shall render this acknowledgement invalid;
5. Any material changes to this modification as proposed shall require the filing of a new notice with the Council;
6. Within 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;
7. Any nonfunctioning antenna and associated antenna mounting equipment on this facility owned and operated by T-Mobile shall be removed within 60 days of the date the antenna ceased to function;
8. The validity of this action shall expire one year from the date of this letter; and
9. The applicant may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration.

The attached PE Closeout Letter dated October 24, 2016 provides evidence of compliance with the conditions outlined by the Council.
In addition, T-Mobile hereby notifies the Council that construction of the acknowledged modifications were complete as of December 22, 2016.

Sincerely,

Samuel Simons, Engineering Development - Connecticut

cc: Mark Richard, Engineering and Operations

Statement of Special Inspections

Project: *CT11367A – SCOVILLE HILL / HARWINTON ROD*

Location: *123 Campville Hill Road, Harwinton, CT 06791*

Owner: *Crown Castle*

Design Professional in Responsible Charge: *Jiang Yu, P.E.*

This *Statement of Special Inspections* is submitted as a condition for permit issuance in accordance with the Special Inspection and Structural Testing requirements of the Building Code. It includes a schedule of Special Inspection services applicable to this project as well as the name of the Special Inspection Coordinator and the identity of other approved agencies to be retained for conducting these inspections and tests. This *Statement of Special Inspections* encompass the following disciplines:

☒ Structural ☐ Mechanical/Electrical/Plumbing

☐ Architectural ☐ Other: _____

The Special Inspection Coordinator shall keep records of all inspections and shall furnish inspection reports to the Building Official and the Registered Design Professional in Responsible Charge. Discovered discrepancies shall be brought to the immediate attention of the Contractor for correction. If such discrepancies are not corrected, the discrepancies shall be brought to the attention of the Building Official and the Registered Design Professional in Responsible Charge. The Special Inspection program does not relieve the Contractor of his or her responsibilities.

Interim reports shall be submitted to the Building Official and the Registered Design Professional in Responsible Charge.

A *Final Report of Special Inspections* documenting completion of all required Special Inspections, testing and correction of any discrepancies noted in the inspections shall be submitted prior to issuance of a Certificate of Use and Occupancy.

Job site safety and means and methods of construction are solely the responsibility of the Contractor.

Interim Report Frequency: *N/A, Final Inspection Only* or ☐ per attached schedule.

Prepared by:

Jiang Yu, P.E.
(type or print name)

Signature 1/26/17
Date

Design Professional Seal

Owner's Authorization:

Signature Date

Building Official's Acceptance:

Signature Date

Schedule of Inspection and Testing Agencies

This Statement of Special Inspections / Quality Assurance Plan includes the following building systems:

- ☐ Soils and Foundations
- ☐ Cast-in-Place Concrete
- ☐ Precast Concrete
- ☐ Masonry
- ☒ Structural Steel
- ☐ Cold-Formed Steel Framing
- ☐ Spray Fire Resistant Material
- ☐ Wood Construction
- ☐ Exterior Insulation and Finish System
- ☐ Mechanical & Electrical Systems
- ☐ Architectural Systems
- ☐ Special Cases

Special Inspection Agencies	Firm	Address, Telephone, e-mail
1. **Special Inspection Coordinator**	*Dewberry Engineers Inc.* *Jiang Yu, P.E.*	*600 Parsippany Road, Suite 301* *Parsippany, NJ 07054* *Phone: (973) 576-9631* *E-mail: jjyu@dewberry.com*
2. Inspector	*Dewberry Engineers Inc.*	*600 Parsippany Road, Suite 301* *Parsippany, NJ 07054* *Phone: (973) 739-9400*
3. Inspector		
4. Testing Agency		
5. Testing Agency		
6. Other		

Note: The inspectors and testing agencies shall be engaged by the Owner or the Owner's Agent, and not by the Contractor or Subcontractor whose work is to be inspected or tested. Any conflict of interest must be disclosed to the Building Official, prior to commencing work.

Quality Assurance Plan

Quality Assurance for Seismic Resistance

Seismic Design Category	*N/A*
Quality Assurance Plan Required (Y/N)	*N*

Description of seismic force resisting system and designated seismic systems:
Not required per section 1705 of 2016 Connecticut State Building Code.

Quality Assurance for Wind Requirements

Basic Wind Speed (3 second gust)	*100 mph*
Wind Exposure Category	*N/A*
Quality Assurance Plan Required (Y/N)	*N*

Description of wind force resisting system and designated wind resisting components:
Not required per section 1705 of 2016 Connecticut State Building Code.

Statement of Responsibility

Each contractor responsible for the construction or fabrication of a system or component designated above must submit a Statement of Responsibility.

Qualifications of Inspectors and Testing Technicians

The qualifications of all personnel performing Special Inspection and testing activities are subject to the approval of the Building Official. The credentials of all Inspectors and testing technicians shall be provided if requested.

Key for Minimum Qualifications of Inspection Agents:

When the Registered Design Professional in Responsible Charge deems it appropriate that the individual performing a stipulated test or inspection have a specific certification or license as indicated below, such designation shall appear below the *Agency Number* on the Schedule.

PE/SE	Structural Engineer – a licensed SE or PE specializing in the design of building structures
PE/GE	Geotechnical Engineer – a licensed PE specializing in soil mechanics and foundations
EIT	Engineer-In-Training – a graduate engineer who has passed the Fundamentals of Engineering examination

American Concrete Institute (ACI) Certification

ACI-CFTT	Concrete Field Testing Technician – Grade 1
ACI-CCI	Concrete Construction Inspector
ACI-LTT	Laboratory Testing Technician – Grade 1&2
ACI-STT	Strength Testing Technician

American Welding Society (AWS) Certification

AWS-CWI	Certified Welding Inspector
AWS/AISC-SSI	Certified Structural Steel Inspector

American Society of Non-Destructive Testing (ASNT) Certification

ASNT	Non-Destructive Testing Technician – Level II or III.

International Code Council (ICC) Certification

ICC-SMSI	Structural Masonry Special Inspector
ICC-SWSI	Structural Steel and Welding Special Inspector
ICC-SFSI	Spray-Applied Fireproofing Special Inspector
ICC-PCSI	Prestressed Concrete Special Inspector
ICC-RCSI	Reinforced Concrete Special Inspector

National Institute for Certification in Engineering Technologies (NICET)

NICET-CT	Concrete Technician – Levels I, II, III & IV
NICET-ST	Soils Technician - Levels I, II, III & IV
NICET-GET	Geotechnical Engineering Technician - Levels I, II, III & IV

Exterior Design Institute (EDI) Certification

EDI-EIFS	EIFS Third Party Inspector

Other

_____ _____

Structural Steel

Item	Agency # (Qualif.)	Scope
1. Fabricator Certification/ Quality Control Procedures ☒ Fabricator Exempt		*N/A*
2. Material Certification		*N/A*
3. Open Web Steel Joists		*N/A*
4. Bolting	*2* *AWS/AISC-SSI ICC-SWSI*	*Where applicable, review installation and tightening of bolts. Observe that bolts exposed to moisture are stainless steel or galvanized in conformance to ASTM-A123..*
5. Welding	*2* *AWS-CWI*	*If applicable, visually review welds. Review size and length of fillet welds. If applicable, perform ultrasonic examinations on full-penetration groove welds.*
6. Shear Connectors		*N/A*
7. Structural Details	*1 & 2 PE/SE AWS/AISC-SSI ICC-SWSI*	*Review steel mounting structures for compliance to the structural drawings, including bracing, member configuration, and connection details. Observe that structural members exposed to moisture are stainless steel or galvanized in conformance to ASTM-A123.*
8. Metal Deck		*N/A*
9. Other:		*N/A*

Dewberry

Dewberry Engineers Inc.
600 Parsippany Road, Suite 301
Parsippany, NJ 07054

973.739.9400
973.739.9710 fax
www.dewberry.com

January 26, 2017

Town of Harwinton Building Department
PO Box 66
100 Bentley Drive
Harwinton, CT 06791

RE: T-Mobile installation on an existing tower at 123 Campville Hill Road, Harwinton, CT

Dear Building Inspector,

Dewberry Engineers Inc. (Dewberry) was provided with photographic evidence from the contractor of the installed antennas and equipment during construction from December 19, 2016 to December 23, 2016.

Based on information provided by the contractor, it is our professional opinion that the project was completed and constructed in conformance with the approved plans and specifications and is in compliance with the Connecticut State Building Codes. If you have any questions, please do not hesitate to contact Dewberry Engineers Inc.

Sincerely,
Dewberry Engineers Inc.

STATE OF CONNECTICUT
JIANG YU
No. 23222
LICENSED
PROFESSIONAL ENGINEER

Jiang Yu, PE
Structural Engineer