



**Crown Castle**  
3530 Toringdon Way Suite 300  
Charlotte NC 28277

Tel (704) 405-6600

March 10, 2015

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

**RE: T-Mobile-Exempt Modification - Crown Site BU: 803934**  
**T-Mobile Site ID: CT11531C**  
**Located at: 400 Main Street, Somers, CT 06071**

Dear Ms. Bachman:

This letter and exhibits are submitted on behalf of T-Mobile. T-Mobile is making modifications to certain existing sites in its Connecticut system in order to implement their 700MHz technology. Please accept this letter and exhibits as notification, pursuant to § 16-50j-73 of the Regulations of Connecticut State Agencies (“R.C.S.A.”), of construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In compliance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Mrs. Lisa Pellegrini, First Selectman for the Town of Somers and Town of Somers, Property Owner.

T-Mobile plans to modify the existing wireless communications facility owned by Crown Castle and located at **400 Main Street, Somers, CT 06071**. Attached are a compound plan and elevation depicting the planned changes (Exhibit-1), and documentation of the structural sufficiency of the structure to accommodate the revised antenna configuration (Exhibit-2). Also included is a power density table report reflecting the modification to T-Mobile’s operations at the site (Exhibit-3).

The changes to the facility do not constitute a modification as defined in Connecticut General Statutes (“C.G.S.”) § 16-50i(d) because the general physical characteristics of the facility will not be significantly changed. Rather, the planned changes to the facility fall squarely within those activities explicitly provided for in the R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing tower. T-Mobile’s replacement antennas will be located at the same elevation on the existing tower.
2. There will be no proposed modifications to the ground and no extension of boundaries.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more.

4. The operation of the replacement antennas will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) adopted safety standard. A cumulative General Power Density table report for T-Mobile's modified facility is included as Exhibit-3.
5. A Structural Modification Report confirming that the tower and foundation can support T-Mobile's proposed modifications is included as Exhibit-2.

For the foregoing reasons, T-Mobile respectfully submits the proposed modifications to the above-reference telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Jerry Feathers  
Real Estate Specialist

Enclosure

Tab 1: Exhibit-1: Compound plan and elevation depicting the planned changes

Tab 2: Exhibit-2: Structural Modification Report

Tab 3: Exhibit-3: General Power Density Table Report (RF Emissions Analysis Report)

cc: Mrs. Lisa Pellegrini, First Selectman  
600 Main Street  
Somers, CT 06071

cc: Town of Somers c/o Treasurer  
600 Main Street  
Somers, CT 06071









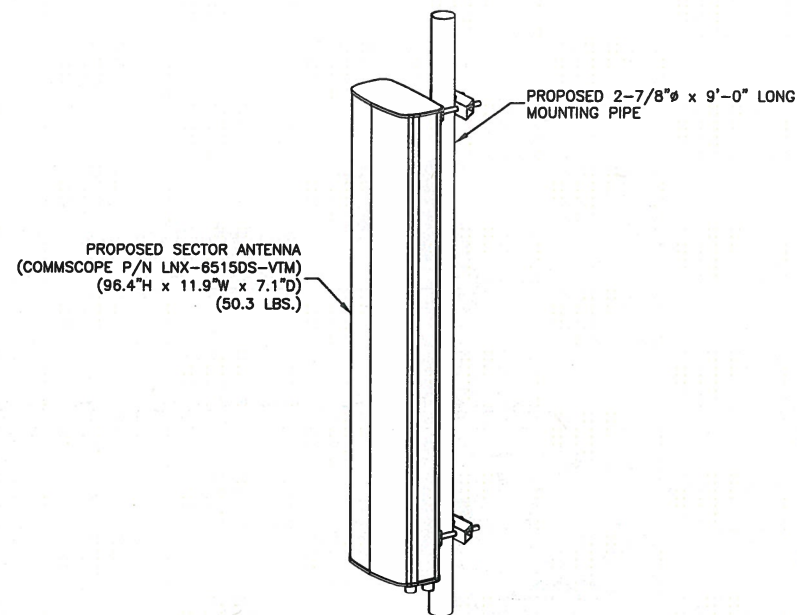












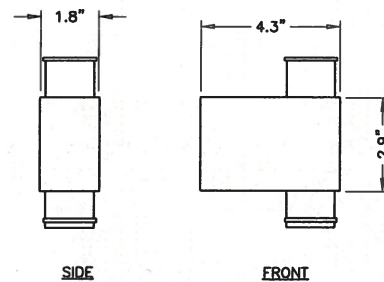
**NOTES:**

1. MOUNT ANTENNAS PER MANUFACTURER'S RECOMMENDATIONS.
2. GROUND ANTENNAS AND MOUNTS PER MANUFACTURER'S RECOMMENDATIONS AND T-MOBILE STANDARDS.
3. CONFIRM REQUIRED ANTENNAS WITH THE LATEST RFDS.

**ISOMETRIC ANTENNA DETAIL**

SCALE: N.T.S.

1



ANDREW ATBT-BOTTOM-24V

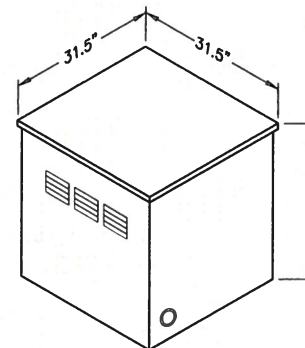
**NOTES:**

1. MOUNT EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS.
2. GROUND EQUIPMENT AND MOUNTS PER MANUFACTURER'S RECOMMENDATIONS AND T-MOBILE STANDARDS.
3. CONFIRM REQUIRED EQUIPMENT WITH THE LATEST RFDS.

**BIAS TEE DETAIL**

SCALE: N.T.S.

2



ALCATEL-LUCENT EZBF BATTERY BACKUP SYSTEM

MATERIAL:	ANCHOR:
CONCRETE	3/8" HILTI KWIK BOLT 3 W/2-1/2" MIN. EMBED.
STRUCTURAL STEEL	1/2" STRUCTURAL BOLTS

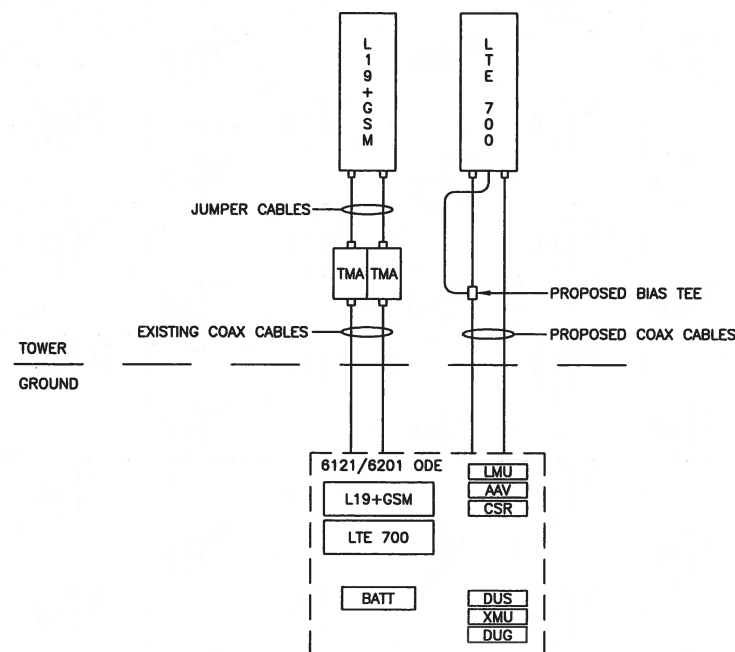
**NOTE:**

1. CONTRACTOR SHALL ANCHOR CABINET IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.

**BBU CABINET DETAIL**

SCALE: N.T.S.

3



**SITE CONFIGURATION 704G**

SCALE: N.T.S.

4

DESIGN CONFIGURATION					
ANTENNAS		COAX		COAX LENGTH	
EXISTING	PROPOSED	EXISTING	PROPOSED		
ALPHA	EMS RR90-17-02DP	EXISTING TO REMAIN	(2) 1-5/8"	219'-0"	
	-	COMMSCOPE LNX-6515DS-VTM	(2) 1-5/8"		
BETA	EMS RR90-17-02DP	EXISTING TO REMAIN	(2) 1-5/8"	219'-0"	
	-	COMMSCOPE LNX-6515DS-VTM	(2) 1-5/8"		
GAMMA	EMS RR90-17-02DP	EXISTING TO REMAIN	(2) 1-5/8"	219'-0"	
	-	COMMSCOPE LNX-6515DS-VTM	(2) 1-5/8"		



T-MOBILE NORTHEAST LLC  
4 SYLVAN WAY  
PARSIPPANY, NJ 07054



CROWN CASTLE  
500 WEST CUMMINGS PARK, SUITE 3600  
WOBURN, MA 01801

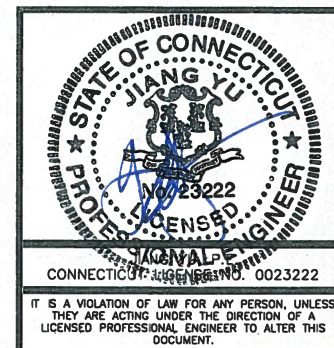
**CT11531C  
CT SOMERS FD CAC**

CONSTRUCTION DRAWINGS

0	03/04/15	ISSUED AS FINAL
A	02/27/15	ISSUED FOR REVIEW



Dewberry Engineers Inc.  
600 PARSIPPANY ROAD  
SUITE 301  
PARSIPPANY, NJ 07054  
PHONE: 973.739.9400  
FAX: 973.739.9710



DRAWN BY: JC

REVIEWED BY: BSH

CHECKED BY: GHN

PROJECT NUMBER: 50066258

JOB NUMBER: 50071477

SITE ADDRESS:

400 MAIN STREET  
SOMERS, CT 06071  
TOLLAND COUNTY

SHEET TITLE

CONSTRUCTION  
DETAILS

SHEET NUMBER

C-3









Date: **February 05, 2015**

Holly Haas  
Crown Castle  
3530 Toringdon Way, Suite 300  
Charlotte, NC 28277

Aero Solutions LLC  
5500 Flatiron Parkway, Suite 100  
Boulder, CO 80301  
(720) 304-6882

**Subject: Structural Analysis Report**

**Carrier Designation:** **T-Mobile Co-Locate**  
**Carrier Site Number:** CT11531C  
**Carrier Site Name:** CT531/Crown - Somers

**Crown Castle Designation:** **Crown Castle BU Number:** 803934  
**Crown Castle Site Name:** CT SOMERS FD CAC  
**Crown Castle JDE Job Number:** 322231  
**Crown Castle Work Order Number:** 1004901  
**Crown Castle Application Number:** 282534 Rev. 1

**Engineering Firm Designation:** **Aero Solutions LLC Project Number:** 003-15-0102

**Site Data:** **400 Main Street, Somers, Tolland County, CT**  
**Latitude 41° 59' 1.48", Longitude -72° 27' 56.87"**  
**187 Foot - Monopole Tower**

Dear Holly Haas,

Aero Solutions LLC 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 753356, in accordance with application 282534, 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:

LC7: Existing + Reserved + Proposed Equipment **Sufficient Capacity**  
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

The analysis has been performed in accordance with the TIA/EIA-222-F standard and local code requirements based upon a wind speed of 85 mph fastest mile.

All modifications and 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 Aero Solutions LLC 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.

Structural analysis prepared by: Sina Erturk

Respectfully submitted by:

Shraddha Dharia, P.E.  
Structural Engineer  
CT PE#: PEN0028187



2.6.2015



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## 1) INTRODUCTION

This tower is a 187 ft Monopole tower designed by Summit in April of 2001. The tower was originally designed for a wind speed of 80 mph per TIA/EIA-222-F.

## 2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 85 mph with no ice, 38 mph with 1 inch ice thickness and 50 mph under service loads.

**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
168.0	169.0	3	commscope	ATBT-BOTTOM-24V	6	1-5/8"	
		3	commscope	LNx-6515DS-VTM w/ Mount Pipe			

**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
188.0	193.0	1	andrew	DB404L-B	3	7/8" 1-1/4"	1
		3	alcatel lucent	TD-RRH8x20-25			
	190.0	3	rfs celwave	APXVSP18-C-A20 w/ Mount Pipe			
		3	rfs celwave	APXVTM14-C-120 w/ Mount Pipe			
	188.0	1	tower mounts	Platform Mount [LP-1201]			
186.0	186.0	3	alcatel lucent	800MHz 2X50W RRH W/FILTER			1
		3	alcatel lucent	PCS 1900MHz 4x45W-65MHz			
		1	crown mounts	Side Arm Mount [SO 102-3]			
181.0	181.0	3	alcatel lucent	RRH2X40-AWS			2
		3	alcatel lucent	RRH2x40 700			
		1	crown mounts	Side Arm Mount [SO 102-3]			
178.0	179.0	3	andrew	LNx-6513DS-A1M w/ Mount Pipe	1	1-5/8"	2
		2	antel	LPA-80063/4CF w/ Mount Pipe	18	1-5/8"	1
		4	antel	LPA-80080-4CF-EDIN-0 w/ Mount Pipe			
		6	kathrein	742 213 w/ Mount Pipe			2
		2	rfs celwave	DB-T1-6Z-8AB-0Z			



Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
	178.0	1	tower mounts	Platform Mount [LP-1201]			1
168.0	169.0	3	ems wireless	RR90-17-02DP w/ Mount Pipe	6	1-5/8"	1
		3	ericsson	KRY 112 71/1			
	168.0	1	tower mounts	Platform Mount [LP-1201]			
160.0	160.0	1	crown mounts	T-Arm Mount [TA 601-3]	1 2 6	3/8" 3/4" 1-5/8"	1
		6	ericsson	RRUS-11			
		3	kathrein	800 10121 w/ Mount Pipe			
		6	powerwave technologies	LGP21401			
		3	powerwave technologies	P65-17-XLH-RR w/ Mount Pipe			
		1	raycap	DC6-48-60-18-8F			
150.0	150.0	3	rfs celwave	APXV18-206517S-C w/ Mount Pipe	6	1-5/8"	1
120.0	125.0	1	sinclair	SD212-SF2P2SNM Dipole	1	7/8"	1
	120.0	1	crown mounts	Side Arm Mount [SO 702-1]			
110.0	110.0	1	sinclair	SD110-SFXPASNM	1	1/2"	1
81.0	82.0	1	telewave	ANT450D3	1	7/8"	1
	81.0	1	crown mounts	Side Arm Mount [SO 309-1]			
48.0	48.0	1	crown mounts	Side Arm Mount [SO 701-1]	1	1/2"	1
		1	lucent	KS24019-L112A			

- Notes:  
 1) Existing Equipment  
 2) Reserved Equipment  
 3) Equipment To Be Removed

**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)
188	188	12	generic	Panel Antennas (CaAa = 75 ft2)		
178	178	12	generic	Panel Antennas (CaAa = 75 ft2)		
168	168	12	generic	Panel Antennas (CaAa = 75 ft2)		
158	158	12	generic	Panel Antennas (CaAa = 75 ft2)		
148	148	12	generic	Panel Antennas (CaAa = 75 ft2)		
138	138	12	generic	Panel Antennas (CaAa = 75		



Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
				ft2)		
128	128	12	generic	Panel Antennas (CaAa = 75 ft2)		

### 3) ANALYSIS PROCEDURE

**Table 4 - Documents Provided**

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	URS Corporation	1095648	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Summit Manufacturing, LLC	1058248	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Summit Manufacturing, LLC/PJF	419873	CCISITES

#### 3.1) Analysis Method

tnxTower (version 6.1.4.1), 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) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA/EIA-222-F.

This analysis may be affected if any assumptions are not valid or have been made in error. Aero Solutions LLC 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	187 - 136	Pole	TP36.201x26x0.25	1	-13.391	1445.905	83.0	Pass
L2	136 - 89.5	Pole	TP45.003x34.801x0.375	2	-23.543	2690.300	91.5	Pass
L3	89.5 - 44.25	Pole	TP53.304x43.103x0.438	3	-37.255	3718.990	95.5	Pass
L4	44.25 - 0	Pole	TP61.28x51.079x0.5	4	-57.380	5014.559	92.9	Pass
							Summary	
						Pole (L3)	95.5	Pass
						Rating =	95.5	Pass



**Table 6 - Tower Component Stresses vs. Capacity – LC7**

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	84.2	Pass
1	Base Plate	0	63.8	Pass
1	Base Foundation Soil Interaction	0	90.3	Pass
<b>Structure Rating (max from all components) =</b>				<b>95.5%</b>

Notes:

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

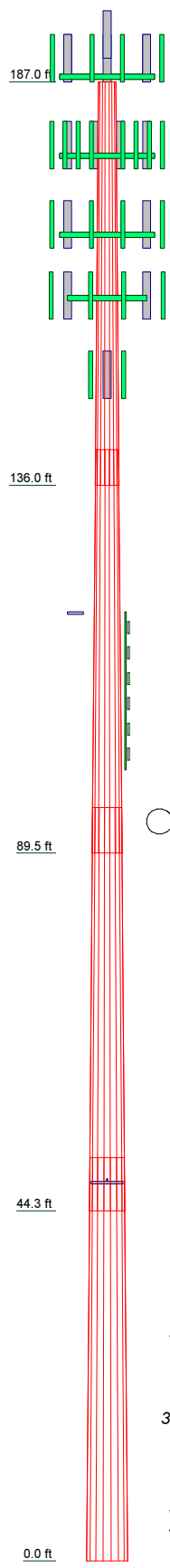
**4.1) Recommendations**

The tower has sufficient capacity to carry the existing, reserved, and proposed loads. No modifications are required at this time.



**APPENDIX A**  
**TNXTOWER OUTPUT**

Section	1	2	3	4	
Length (ft)	51.000	51.000	51.000	51.000	
Number of Sides	18	18	18	18	
Thickness (in)	0.250	0.375	0.438	0.500	
Socket Length (ft)	4.500	5.750	6.750	51.079	
Top Dia (in)	26.000	34.801	43.103	61.280	
Bot Dia (in)	36.201	45.003	53.304		
Grade		A607-65			
Weight (K)	4.2	8.2	11.5	15.3	39.3



### DESIGNED APPURTENANCE LOADING

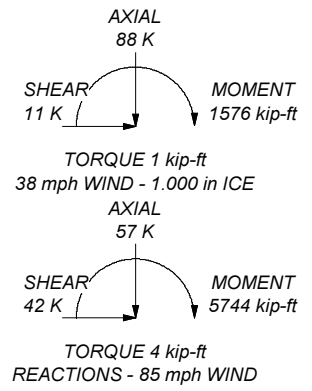
TYPE	ELEVATION	TYPE	ELEVATION
DB404L-B	188	RR90-17-02DP w/ Mount Pipe	168
APXVSP18-C-A20 w/ Mount Pipe	188	KRY 112 71/1	168
APXVSP18-C-A20 w/ Mount Pipe	188	LNx-6515DS-VTM w/ Mount Pipe	168
APXVSP18-C-A20 w/ Mount Pipe	188	ATBT-BOTTOM-24V	168
APXVTM14-C-120 w/ Mount Pipe	188	RR90-17-02DP w/ Mount Pipe	168
APXVTM14-C-120 w/ Mount Pipe	188	KRY 112 71/1	168
APXVTM14-C-120 w/ Mount Pipe	188	LNx-6515DS-VTM w/ Mount Pipe	168
TD-RRH8x20-25	188	ATBT-BOTTOM-24V	168
TD-RRH8x20-25	188	RR90-17-02DP w/ Mount Pipe	168
TD-RRH8x20-25	188	KRY 112 71/1	168
Pipe Mount 2 x 8'	188	LNx-6515DS-VTM w/ Mount Pipe	168
Pipe Mount 2 x 8'	188	ATBT-BOTTOM-24V	168
Pipe Mount 2 x 8'	188	Platform Mount [LP-1201]	168
Platform Mount [LP-1201]	188	6' x 2" Mount Pipe	168
PCS 1900MHz 4x45W-65MHz	186	6' x 2" Mount Pipe	168
PCS 1900MHz 4x45W-65MHz	186	6' x 2" Mount Pipe	168
PCS 1900MHz 4x45W-65MHz	186	800 10121 w/ Mount Pipe	160
800MHz 2X50W RRH W/FILTER	186	800 10121 w/ Mount Pipe	160
800MHz 2X50W RRH W/FILTER	186	800 10121 w/ Mount Pipe	160
800MHz 2X50W RRH W/FILTER	186	P65-17-XLH-RR w/ Mount Pipe	160
Side Arm Mount [SO 102-3]	186	P65-17-XLH-RR w/ Mount Pipe	160
RRH2X40-AWS	181	P65-17-XLH-RR w/ Mount Pipe	160
RRH2X40-AWS	181	(2) RRUS-11	160
RRH2X40-AWS	181	(2) RRUS-11	160
RRH2x40 700	181	(2) RRUS-11	160
RRH2x40 700	181	(2) LGP21401	160
RRH2x40 700	181	(2) LGP21401	160
Side Arm Mount [SO 102-3]	181	(2) LGP21401	160
(2) 742 213 w/ Mount Pipe	178	DC6-48-60-18-8F	160
(2) 742 213 w/ Mount Pipe	178	T-Arm Mount [TA 601-3]	160
(2) 742 213 w/ Mount Pipe	178	APXV18-206517S-C w/ Mount Pipe	150
LNx-6513DS-A1M w/ Mount Pipe	178	APXV18-206517S-C w/ Mount Pipe	150
LNx-6513DS-A1M w/ Mount Pipe	178	APXV18-206517S-C w/ Mount Pipe	150
LNx-6513DS-A1M w/ Mount Pipe	178	SD212-SF2P2SNM Dipole	120
(2) LPA-80080-4CF-EDIN-0 w/ Mount Pipe	178	Side Arm Mount [SO 702-1]	120
(2) LPA-80080-4CF-EDIN-0 w/ Mount Pipe	178	SD110-SFXPASNM	110
(2) LPA-80080-4CF-EDIN-0 w/ Mount Pipe	178	Pipe Mount 2 x 16'	110
(2) LPA-80080-4CF-EDIN-0 w/ Mount Pipe	178	ANT450D3	81
(2) LPA-80063/4CF w/ Mount Pipe	178	Side Arm Mount [SO 309-1]	81
DB-T1-6Z-8AB-0Z	178	KS24019-L112A	48
DB-T1-6Z-8AB-0Z	178	Side Arm Mount [SO 701-1]	48
Platform Mount [LP-1201]	178		

### MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-65	65 ksi	80 ksi			

### TOWER DESIGN NOTES

1. Tower is located in Tolland County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 95.5%



**Aero Solutions LLC**  
 5500 Flatiron Parkway, Suite 100  
 Boulder, CO 80301  
 Phone: (720) 304-6882  
 FAX: (720) 304-6883

Job: <b>BU#803934 CT SOMERS FD CAC</b>		
Project: <b>Existing 187 ft. Monopole</b>		
Client: Crown Castle	Drawn by: Serturk	App'd:
Code: TIA/EIA-222-F	Date: 02/05/15	Scale: NTS
Path: P:\04_CCL_BTE\803934 CT SOMERS FD CAC\03-15-01\2015\Aero Solutions\Working\BISA\803934 CT SOMERS FD CAC.dwg		Dwg No. E-1



## Tower Input Data

There is a pole section.

This tower is designed using the TIA/EIA-222-F standard.

The following design criteria apply:

- 4) Tower is located in Tolland County, Connecticut.
- 5) Basic wind speed of 85 mph.
- 6) Nominal ice thickness of 1.000 in.
- 7) Ice thickness is considered to increase with height.
- 8) Ice density of 56.000 pcf.
- 9) A wind speed of 38 mph is used in combination with ice.
- 10) Temperature drop of 50.000 °F.
- 11) Deflections calculated using a wind speed of 50 mph.
- 12) A non-linear (P-delta) analysis was used.
- 13) Pressures are calculated at each section.
- 14) Stress ratio used in pole design is 1.333.
- 15) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

## Options

Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification ✓ Use Code Stress Ratios ✓ Use Code Safety Factors - Guys ✓ Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) Add IBC .6D+W Combination	Distribute Leg Loads As Uniform Assume Legs Pinned ✓ Assume Rigid Index Plate ✓ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retension Guys To Initial Tension ✓ Bypass Mast Stability Checks ✓ Use Azimuth Dish Coefficients ✓ Project Wind Area of Appurt. Autocalc Torque Arm Areas SR Members Have Cut Ends Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Use TIA-222-G Tension Splice Capacity Exemption	Treat Feedline Bundles As Cylinder Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation ✓ Consider Feedline Torque Include Angle Block Shear Check <div style="text-align: center; background-color: #e0e0e0; padding: 2px;">Poles</div> ✓ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets
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## 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	187.000- 136.000	51.000	4.500	18	26.000	36.201	0.250	1.000	A607-65 (65 ksi)
L2	136.000- 89.500	51.000	5.750	18	34.801	45.003	0.375	1.500	A607-65 (65 ksi)
L3	89.500-44.250	51.000	6.750	18	43.103	53.304	0.438	1.750	A607-65 (65 ksi)
L4	44.250-0.000	51.000		18	51.079	61.280	0.500	2.000	A607-65 (65 ksi)

## Tapered Pole Properties

Section	Tip Dia. in	Area in <sup>2</sup>	I in <sup>4</sup>	r in	C in	I/C in <sup>3</sup>	J in <sup>4</sup>	I/Q in <sup>2</sup>	w in	w/t
---------	----------------	-------------------------	----------------------	---------	---------	------------------------	----------------------	------------------------	---------	-----

Section	Tip Dia. in	Area in <sup>2</sup>	I in <sup>4</sup>	r in	C in	I/C in <sup>3</sup>	J in <sup>4</sup>	I/Q in <sup>2</sup>	w in	w/t
L1	26.401	20.433	1711.654	9.141	13.208	129.592	3425.561	10.218	4.136	16.544
	36.759	28.527	4658.191	12.763	18.390	253.299	9322.512	14.266	5.931	23.726
L2	36.252	40.975	6135.246	12.221	17.679	347.039	12278.566	20.492	5.465	14.573
	45.697	53.118	13365.891	15.843	22.862	584.646	26749.369	26.564	7.261	19.361
L3	44.936	59.246	13625.291	15.146	21.896	622.267	27268.510	29.629	6.816	15.58
	54.126	73.412	25921.737	18.768	27.078	957.284	51877.583	36.713	8.612	19.683
L4	53.238	80.269	25943.042	17.955	25.948	999.807	51920.220	40.142	8.110	16.22
	62.225	96.458	45019.064	21.577	31.130	1446.152	90097.366	48.238	9.905	19.811

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A <sub>r</sub>	Adjust. Factor A <sub>r</sub>	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals
ft	ft <sup>2</sup>	in					in	in
L1 187.000-136.000				1	1	1		
L2 136.000-89.500				1	1	1		
L3 89.500-44.250				1	1	1		
L4 44.250-0.000				1	1	1		

**Feed Line/Linear Appurtenances - Entered As Round Or Flat**

Description	Face or Leg	Allow Shield	Component Type	Placement	Total Number	Number Per Row	Clear Spacing	Width or Diameter	Perimeter	Weight
				ft			in	r in	r in	klf
***										

**Feed Line/Linear Appurtenances - Entered As Area**

Description	Face or Leg	Allow Shield	Component Type	Placement	Total Number	C <sub>A</sub> A <sub>A</sub>	Weight	
				ft		ft <sup>2</sup> /ft	klf	
***								
HB114-1-0813U4-M5J(1 1/4")	A	No	CaAa (Out Of Face)	187.000 - 8.000	1	No Ice	0.154	0.001
						1/2" Ice	0.254	0.002
						1" Ice	0.354	0.004
						2" Ice	0.554	0.010
						4" Ice	0.954	0.028
HB114-1-08U4-M5J(1 1/4")	A	No	Inside Pole	187.000 - 8.000	3	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
***								
LDF7-50A(1-5/8")	C	No	Inside Pole	178.000 - 8.000	12	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
HB158-1-08U8-S8J18(1-5/8)	C	No	CaAa (Out Of Face)	178.000 - 8.000	1	No Ice	0.198	0.001
						1/2" Ice	0.298	0.003
						1" Ice	0.398	0.005
						2" Ice	0.598	0.011
						4" Ice	0.998	0.031
LDF7-50A(1-5/8")	C	No	CaAa (Out Of Face)	178.000 - 8.000	6	No Ice	0.000	0.001
						1/2" Ice	0.000	0.002
						1" Ice	0.000	0.004
						2" Ice	0.000	0.011
						4" Ice	0.000	0.030



Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C <sub>AA</sub> ft <sup>2</sup> /ft	Weight klf
***								
HJ7-50A(1-5/8")	B	No	Inside Pole	168.000 - 8.000	6	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
AVA7-50(1-5/8)	B	No	Inside Pole	168.000 - 8.000	6	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
***								
LDF7-50A(1-5/8")	C	No	Inside Pole	160.000 - 5.000	6	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
FB-L98B-002-75000(3/8")	C	No	Inside Pole	160.000 - 5.000	1	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
WR-VG86ST-BRD(3/4)	C	No	Inside Pole	160.000 - 5.000	2	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
***								
CR 50 1873(1-5/8")	A	No	Inside Pole	150.000 - 8.000	6	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
***								
HCC 78-50J(7/8")	A	No	Inside Pole	120.000 - 8.000	1	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
***								
HCC12-50J(1/2")	B	No	Inside Pole	110.000 - 8.000	1	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
***								
AVA5-50( 7/8")	B	No	CaAa (Out Of Face)	81.000 - 8.000	1	No Ice	0.110	0.000
						1/2" Ice	0.210	0.001
						1" Ice	0.310	0.003
						2" Ice	0.510	0.008
						4" Ice	0.910	0.025
***								
LDF4-50A(1/2")	B	No	CaAa (Out Of Face)	48.000 - 8.000	1	No Ice	0.063	0.000
						1/2" Ice	0.163	0.001
						1" Ice	0.263	0.002
						2" Ice	0.463	0.007
						4" Ice	0.863	0.023
***								

**Feed Line/Linear Appurtenances Section Areas**

Tower Section	Tower Elevation ft	Face	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>AA</sub> In Face ft <sup>2</sup>	C <sub>AA</sub> Out Face ft <sup>2</sup>	Weight K
L1	187.000-136.000	A	0.000	0.000	0.000	7.854	0.296
		B	0.000	0.000	0.000	0.000	0.334

Tower Section	Tower Elevation ft	Face	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> In Face ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Out Face ft <sup>2</sup>	Weight K
L2	136.000-89.500	C	0.000	0.000	0.000	8.316	0.822
		A	0.000	0.000	0.000	7.161	0.454
		B	0.000	0.000	0.000	0.000	0.491
L3	89.500-44.250	C	0.000	0.000	0.000	9.207	1.033
		A	0.000	0.000	0.000	6.968	0.450
		B	0.000	0.000	0.000	4.286	0.495
L4	44.250-0.000	C	0.000	0.000	0.000	8.959	1.005
		A	0.000	0.000	0.000	5.582	0.361
		B	0.000	0.000	0.000	6.278	0.404
		C	0.000	0.000	0.000	7.177	0.823

**Feed Line/Linear Appurtenances Section Areas - With Ice**

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A <sub>R</sub> ft <sup>2</sup>	A <sub>F</sub> ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> In Face ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Out Face ft <sup>2</sup>	Weight K
L1	187.000-136.000	A	1.209	0.000	0.000	0.000	20.185	0.514
		B		0.000	0.000	0.000	0.000	0.334
		C		0.000	0.000	0.000	18.471	2.266
L2	136.000-89.500	A	1.158	0.000	0.000	0.000	18.404	0.652
		B		0.000	0.000	0.000	0.000	0.491
		C		0.000	0.000	0.000	20.450	2.631
L3	89.500-44.250	A	1.088	0.000	0.000	0.000	17.450	0.630
		B		0.000	0.000	0.000	13.667	0.629
		C		0.000	0.000	0.000	19.441	2.463
L4	44.250-0.000	A	1.000	0.000	0.000	0.000	13.472	0.491
		B		0.000	0.000	0.000	22.057	0.599
		C		0.000	0.000	0.000	15.067	1.883

**Feed Line Center of Pressure**

Section	Elevation ft	CP <sub>X</sub> in	CP <sub>Z</sub> in	CP <sub>X</sub> Ice in	CP <sub>Z</sub> Ice in
L1	187.000-136.000	-0.194	-0.094	-0.353	-0.229
L2	136.000-89.500	-0.233	-0.075	-0.437	-0.202
L3	89.500-44.250	-0.119	-0.009	-0.119	-0.019
L4	44.250-0.000	-0.024	0.035	0.158	0.133

**Discrete Tower Loads**

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft	C <sub>A</sub> A <sub>A</sub> Front ft <sup>2</sup>	C <sub>A</sub> A <sub>A</sub> Side ft <sup>2</sup>	Weight K	
** DB404L-B	A	From Leg	2.000 0.000 5.000	0.000	188.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.140 2.052 2.964 4.788 8.436 8.436	1.140 2.052 2.964 4.788 8.436 8.436	0.014 0.018 0.022 0.031 0.048
APXVSP18-C-A20 w/ Mount Pipe	A	From Leg	4.000 0.000 2.000	80.000	188.000	No Ice 1/2" Ice	8.498 9.149 9.767	6.946 8.127 9.021	0.083 0.151 0.227



Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment °	Placement ft	C <sub>AA</sub>		Weight K	
			Horz Lateral ft	Vert ft			Front ft <sup>2</sup>	Side ft <sup>2</sup>		
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.000 0.000 2.000		40.000	188.000	1" Ice	11.031	10.844	0.406
							2" Ice	13.679	14.851	0.909
							4" Ice			
							No Ice	8.498	6.946	0.083
							1/2" Ice	9.149	8.127	0.151
							1" Ice	9.767	9.021	0.227
							2" Ice	11.031	10.844	0.406
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.000 0.000 2.000		30.000	188.000	4" Ice			
							No Ice	8.498	6.946	0.083
							1/2" Ice	9.149	8.127	0.151
							1" Ice	9.767	9.021	0.227
							2" Ice	11.031	10.844	0.406
							2" Ice	13.679	14.851	0.909
							4" Ice			
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.000 0.000 2.000		80.000	188.000	No Ice	7.134	4.959	0.077
							1/2" Ice	7.662	5.754	0.131
							1" Ice	8.183	6.472	0.193
							2" Ice	9.256	8.010	0.338
							4" Ice	11.526	11.412	0.752
							2" Ice	11.526	11.412	0.752
							4" Ice			
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.000 0.000 2.000		40.000	188.000	No Ice	7.134	4.959	0.077
							1/2" Ice	7.662	5.754	0.131
							1" Ice	8.183	6.472	0.193
							2" Ice	9.256	8.010	0.338
							4" Ice	11.526	11.412	0.752
							2" Ice	11.526	11.412	0.752
							4" Ice			
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.000 0.000 2.000		30.000	188.000	No Ice	7.134	4.959	0.077
							1/2" Ice	7.662	5.754	0.131
							1" Ice	8.183	6.472	0.193
							2" Ice	9.256	8.010	0.338
							4" Ice	11.526	11.412	0.752
							2" Ice	11.526	11.412	0.752
							4" Ice			
TD-RRH8x20-25	A	From Leg	4.000 0.000 2.000		80.000	188.000	No Ice	4.720	1.703	0.070
							1/2" Ice	5.014	1.920	0.097
							1" Ice	5.316	2.145	0.128
							2" Ice	5.948	2.622	0.201
							4" Ice	7.314	3.680	0.397
							2" Ice	7.314	3.680	0.397
							4" Ice			
TD-RRH8x20-25	B	From Leg	4.000 0.000 2.000		40.000	188.000	No Ice	4.720	1.703	0.070
							1/2" Ice	5.014	1.920	0.097
							1" Ice	5.316	2.145	0.128
							2" Ice	5.948	2.622	0.201
							4" Ice	7.314	3.680	0.397
							2" Ice	7.314	3.680	0.397
							4" Ice			
TD-RRH8x20-25	C	From Leg	4.000 0.000 2.000		30.000	188.000	No Ice	4.720	1.703	0.070
							1/2" Ice	5.014	1.920	0.097
							1" Ice	5.316	2.145	0.128
							2" Ice	5.948	2.622	0.201
							4" Ice	7.314	3.680	0.397
							2" Ice	7.314	3.680	0.397
							4" Ice			
Pipe Mount 2 x 8'	A	From Leg	4.000 0.000 2.000		0.000	188.000	No Ice	1.900	1.900	0.029
							1/2" Ice	2.728	2.728	0.044
							1" Ice	3.401	3.401	0.063
							2" Ice	4.396	4.396	0.119
							4" Ice	6.498	6.498	0.300
							2" Ice	6.498	6.498	0.300
							4" Ice			
Pipe Mount 2 x 8'	B	From Leg	4.000 0.000 2.000		0.000	188.000	No Ice	1.900	1.900	0.029
							1/2" Ice	2.728	2.728	0.044
							1" Ice	3.401	3.401	0.063
							2" Ice	4.396	4.396	0.119
							4" Ice	6.498	6.498	0.300
							2" Ice	6.498	6.498	0.300
							4" Ice			
Pipe Mount 2 x 8'	C	From Leg	4.000 0.000		0.000	188.000	No Ice	1.900	1.900	0.029
							1/2" Ice	2.728	2.728	0.044
							1" Ice	3.401	3.401	0.063

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AA</sub> Side ft <sup>2</sup>	Weight K
			2.000			Ice	3.401	3.401	0.063
						1" Ice	4.396	4.396	0.119
						2" Ice	6.498	6.498	0.300
						4" Ice			
Platform Mount [LP-1201]	C	None		0.000	188.000	No Ice	23.100	23.100	2.100
						1/2"	26.800	26.800	2.500
						Ice	30.500	30.500	2.900
						1" Ice	37.900	37.900	3.700
						2" Ice	52.700	52.700	5.300
						4" Ice			
** PCS 1900MHz 4x45W-65MHz	A	From Leg	1.000 0.000 0.000	80.000	186.000	No Ice	2.709	2.611	0.060
						1/2"	2.948	2.847	0.083
						Ice	3.195	3.092	0.110
						1" Ice	3.716	3.608	0.173
						2" Ice	4.862	4.744	0.347
						4" Ice			
PCS 1900MHz 4x45W-65MHz	B	From Leg	1.000 0.000 0.000	40.000	186.000	No Ice	2.709	2.611	0.060
						1/2"	2.948	2.847	0.083
						Ice	3.195	3.092	0.110
						1" Ice	3.716	3.608	0.173
						2" Ice	4.862	4.744	0.347
						4" Ice			
PCS 1900MHz 4x45W-65MHz	C	From Leg	1.000 0.000 0.000	30.000	186.000	No Ice	2.709	2.611	0.060
						1/2"	2.948	2.847	0.083
						Ice	3.195	3.092	0.110
						1" Ice	3.716	3.608	0.173
						2" Ice	4.862	4.744	0.347
						4" Ice			
800MHz 2X50W RRH W/FILTER	A	From Leg	1.000 0.000 0.000	80.000	186.000	No Ice	2.401	2.254	0.064
						1/2"	2.613	2.460	0.086
						Ice	2.833	2.675	0.111
						1" Ice	3.300	3.132	0.172
						2" Ice	4.337	4.148	0.338
						4" Ice			
800MHz 2X50W RRH W/FILTER	B	From Leg	1.000 0.000 0.000	40.000	186.000	No Ice	2.401	2.254	0.064
						1/2"	2.613	2.460	0.086
						Ice	2.833	2.675	0.111
						1" Ice	3.300	3.132	0.172
						2" Ice	4.337	4.148	0.338
						4" Ice			
800MHz 2X50W RRH W/FILTER	C	From Leg	1.000 0.000 0.000	30.000	186.000	No Ice	2.401	2.254	0.064
						1/2"	2.613	2.460	0.086
						Ice	2.833	2.675	0.111
						1" Ice	3.300	3.132	0.172
						2" Ice	4.337	4.148	0.338
						4" Ice			
Side Arm Mount [SO 102-3]	C	None		0.000	186.000	No Ice	3.000	3.000	0.081
						1/2"	3.480	3.480	0.111
						Ice	3.960	3.960	0.141
						1" Ice	4.920	4.920	0.201
						2" Ice	6.840	6.840	0.321
						4" Ice			
** RRH2X40-AWS	A	From Leg	1.000 0.000 0.000	30.000	181.000	No Ice	2.522	1.589	0.044
						1/2"	2.753	1.795	0.061
						Ice	2.993	2.010	0.082
						1" Ice	3.499	2.465	0.132
						2" Ice	4.615	3.479	0.275
						4" Ice			
RRH2X40-AWS	B	From Leg	1.000 0.000 0.000	30.000	181.000	No Ice	2.522	1.589	0.044
						1/2"	2.753	1.795	0.061
						Ice	2.993	2.010	0.082
						1" Ice	3.499	2.465	0.132
						2" Ice	4.615	3.479	0.275
						4" Ice			



Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AA</sub> Side ft <sup>2</sup>	Weight K
RRH2X40-AWS	C	From Leg	1.000 0.000 0.000	30.000	181.000	4" Ice	2.522	1.589	0.044
						No Ice	2.753	1.795	0.061
						1/2" Ice	2.993	2.010	0.082
						1" Ice	3.499	2.465	0.132
						2" Ice	4.615	3.479	0.275
RRH2x40 700	A	From Leg	1.000 0.000 0.000	30.000	181.000	4" Ice	2.290	1.206	0.050
						No Ice	2.493	1.363	0.067
						1/2" Ice	2.705	1.529	0.086
						1" Ice	3.155	1.887	0.134
						2" Ice	4.158	2.706	0.271
RRH2x40 700	B	From Leg	1.000 0.000 0.000	30.000	181.000	4" Ice	2.290	1.206	0.050
						No Ice	2.493	1.363	0.067
						1/2" Ice	2.705	1.529	0.086
						1" Ice	3.155	1.887	0.134
						2" Ice	4.158	2.706	0.271
RRH2x40 700	C	From Leg	1.000 0.000 0.000	30.000	181.000	4" Ice	2.290	1.206	0.050
						No Ice	2.493	1.363	0.067
						1/2" Ice	2.705	1.529	0.086
						1" Ice	3.155	1.887	0.134
						2" Ice	4.158	2.706	0.271
Side Arm Mount [SO 102-3]	C	None		0.000	181.000	No Ice	3.000	3.000	0.081
						1/2" Ice	3.480	3.480	0.111
						Ice	3.960	3.960	0.141
						1" Ice	4.920	4.920	0.201
						2" Ice	6.840	6.840	0.321
(2) 742 213 w/ Mount Pipe	A	From Leg	4.000 0.000 1.000	30.000	178.000	No Ice	5.373	4.620	0.049
						1/2" Ice	5.950	6.000	0.094
						Ice	6.501	6.982	0.146
						1" Ice	7.611	8.852	0.277
						2" Ice	9.933	12.794	0.683
(2) 742 213 w/ Mount Pipe	B	From Leg	4.000 0.000 1.000	30.000	178.000	No Ice	5.373	4.620	0.049
						1/2" Ice	5.950	6.000	0.094
						Ice	6.501	6.982	0.146
						1" Ice	7.611	8.852	0.277
						2" Ice	9.933	12.794	0.683
(2) 742 213 w/ Mount Pipe	C	From Leg	4.000 0.000 1.000	30.000	178.000	No Ice	5.373	4.620	0.049
						1/2" Ice	5.950	6.000	0.094
						Ice	6.501	6.982	0.146
						1" Ice	7.611	8.852	0.277
						2" Ice	9.933	12.794	0.683
LNX-6513DS-A1M w/ Mount Pipe	A	From Leg	4.000 0.000 1.000	30.000	178.000	4" Ice	6.566	5.159	0.051
						No Ice	7.076	5.923	0.105
						1/2" Ice	7.582	6.668	0.165
						1" Ice	8.626	8.236	0.308
						2" Ice	10.837	11.586	0.715
LNX-6513DS-A1M w/ Mount Pipe	B	From Leg	4.000 0.000 1.000	30.000	178.000	4" Ice	6.566	5.159	0.051
						No Ice	7.076	5.923	0.105
						1/2" Ice	7.582	6.668	0.165
						1" Ice	8.626	8.236	0.308
						2" Ice	10.837	11.586	0.715
LNX-6513DS-A1M w/ Mount Pipe	C	From Leg	4.000 0.000 1.000	30.000	178.000	No Ice	6.566	5.159	0.051
						1/2" Ice	7.076	5.923	0.105
						Ice	7.582	6.668	0.165

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> <sub>Front</sub>	C <sub>AA</sub> <sub>Side</sub>	Weight
			Horz	Lateral					
						1" Ice	8.626	8.236	0.308
						2" Ice	10.837	11.586	0.715
						4" Ice			
(2) LPA-80080-4CF-EDIN-0 w/ Mount Pipe	A	From Leg	4.000		30.000	No Ice	2.856	7.227	0.030
			0.000			1/2"	3.220	7.922	0.076
			1.000			Ice	3.592	8.634	0.128
						1" Ice	4.450	10.112	0.253
						2" Ice	6.318	13.339	0.613
						4" Ice			
(2) LPA-80080-4CF-EDIN-0 w/ Mount Pipe	B	From Leg	4.000		30.000	No Ice	2.856	7.227	0.030
			0.000			1/2"	3.220	7.922	0.076
			1.000			Ice	3.592	8.634	0.128
						1" Ice	4.450	10.112	0.253
						2" Ice	6.318	13.339	0.613
						4" Ice			
(2) LPA-80063/4CF w/ Mount Pipe	C	From Leg	4.000		30.000	No Ice	7.248	7.260	0.038
			0.000			1/2"	7.719	7.957	0.104
			1.000			Ice	8.200	8.672	0.176
						1" Ice	9.195	10.156	0.344
						2" Ice	11.320	13.391	0.796
						4" Ice			
DB-T1-6Z-8AB-0Z	A	From Leg	4.000		30.000	No Ice	5.600	2.333	0.044
			0.000			1/2"	5.915	2.558	0.080
			1.000			Ice	6.240	2.791	0.120
						1" Ice	6.914	3.284	0.213
						2" Ice	8.365	4.373	0.455
						4" Ice			
DB-T1-6Z-8AB-0Z	C	From Leg	4.000		30.000	No Ice	5.600	2.333	0.044
			0.000			1/2"	5.915	2.558	0.080
			1.000			Ice	6.240	2.791	0.120
						1" Ice	6.914	3.284	0.213
						2" Ice	8.365	4.373	0.455
						4" Ice			
Platform Mount [LP-1201]	C	None			0.000	No Ice	23.100	23.100	2.100
						1/2"	26.800	26.800	2.500
						Ice	30.500	30.500	2.900
						1" Ice	37.900	37.900	3.700
						2" Ice	52.700	52.700	5.300
						4" Ice			
**									
RR90-17-02DP w/ Mount Pipe	A	From Leg	4.000		-30.000	No Ice	4.593	3.319	0.034
			0.000			1/2"	5.088	4.089	0.072
			1.000			Ice	5.578	4.784	0.115
						1" Ice	6.588	6.225	0.224
						2" Ice	8.731	9.308	0.557
						4" Ice			
KRY 112 71/1	A	From Leg	4.000		-30.000	No Ice	0.681	0.450	0.013
			0.000			1/2"	0.802	0.559	0.018
			1.000			Ice	0.932	0.677	0.025
						1" Ice	1.219	0.939	0.044
						2" Ice	1.896	1.566	0.111
						4" Ice			
LNx-6515DS-VTM w/ Mount Pipe	A	From Leg	4.000		-30.000	No Ice	11.683	9.842	0.083
			0.000			1/2"	12.404	11.366	0.173
			1.000			Ice	13.135	12.914	0.273
						1" Ice	14.601	15.267	0.506
						2" Ice	17.875	20.139	1.151
						4" Ice			
ATBT-BOTTOM-24V	A	From Leg	4.000		-30.000	No Ice	0.121	0.075	0.003
			0.000			1/2"	0.172	0.119	0.004
			1.000			Ice	0.232	0.172	0.006
						1" Ice	0.377	0.303	0.013
						2" Ice	0.771	0.668	0.045
						4" Ice			
RR90-17-02DP w/ Mount	B	From Leg	4.000		-30.000	No Ice	4.593	3.319	0.034



Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AA</sub> Side ft <sup>2</sup>	Weight K
Pipe			0.000 1.000			1/2" Ice 5.088 1" Ice 6.588 2" Ice 8.731 4" Ice	4.089 4.784 6.225 9.308	0.072 0.115 0.224 0.557
KRY 112 71/1	B	From Leg	4.000 0.000 1.000	-30.000	168.000	No Ice 1/2" Ice 0.932 1" Ice 1.219 2" Ice 1.896 4" Ice	0.681 0.450 0.559 0.677 0.939 1.566	0.013 0.018 0.025 0.044 0.111
LNx-6515DS-VTM w/ Mount Pipe	B	From Leg	4.000 0.000 1.000	-30.000	168.000	No Ice 1/2" Ice 13.135 1" Ice 14.601 2" Ice 17.875 4" Ice	11.683 9.842 11.366 12.914 15.267 20.139	0.083 0.173 0.273 0.506 1.151
ATBT-BOTTOM-24V	B	From Leg	4.000 0.000 1.000	-30.000	168.000	No Ice 1/2" Ice 0.232 1" Ice 0.377 2" Ice 0.771 4" Ice	0.121 0.075 0.119 0.172 0.303 0.668	0.003 0.004 0.006 0.013 0.045
RR90-17-02DP w/ Mount Pipe	C	From Leg	4.000 0.000 1.000	-30.000	168.000	No Ice 1/2" Ice 5.578 1" Ice 6.588 2" Ice 8.731 4" Ice	4.593 3.319 4.089 4.784 6.225 9.308	0.034 0.072 0.115 0.224 0.557
KRY 112 71/1	C	From Leg	4.000 0.000 1.000	-30.000	168.000	No Ice 1/2" Ice 0.932 1" Ice 1.219 2" Ice 1.896 4" Ice	0.681 0.450 0.559 0.677 0.939 1.566	0.013 0.018 0.025 0.044 0.111
LNx-6515DS-VTM w/ Mount Pipe	C	From Leg	4.000 0.000 1.000	-30.000	168.000	No Ice 1/2" Ice 13.135 1" Ice 14.601 2" Ice 17.875 4" Ice	11.683 9.842 11.366 12.914 15.267 20.139	0.083 0.173 0.273 0.506 1.151
ATBT-BOTTOM-24V	C	From Leg	4.000 0.000 1.000	-30.000	168.000	No Ice 1/2" Ice 0.232 1" Ice 0.377 2" Ice 0.771 4" Ice	0.121 0.075 0.119 0.172 0.303 0.668	0.003 0.004 0.006 0.013 0.045
Platform Mount [LP-1201]	C	None		0.000	168.000	No Ice 1/2" Ice 30.500 1" Ice 37.900 2" Ice 52.700 4" Ice	23.100 23.100 26.800 30.500 37.900 52.700	2.100 2.500 2.900 3.700 5.300
6' x 2" Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	168.000	No Ice 1/2" Ice 2.294 1" Ice 3.060 2" Ice 4.702 4" Ice	1.425 1.425 1.925 2.294 3.060 4.702	0.022 0.033 0.048 0.090 0.231
6' x 2" Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	168.000	No Ice 1/2" Ice 2.294 1" Ice 3.060 2" Ice 4.702 4" Ice	1.425 1.425 1.925 2.294 3.060 4.702	0.022 0.033 0.048 0.090 0.231

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight	
			Horz	Lateral						Vert
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	K	
6' x 2" Mount Pipe	C	From Leg	4.000	0.000	0.000	168.000	No Ice	1.425	1.425	0.022
			0.000				1/2"	1.925	1.925	0.033
			0.000				Ice	2.294	2.294	0.048
							1" Ice	3.060	3.060	0.090
							2" Ice	4.702	4.702	0.231
		4" Ice								
**										
800 10121 w/ Mount Pipe	A	From Leg	4.000	0.000	40.000	160.000	No Ice	5.685	4.600	0.066
			0.000				1/2"	6.182	5.351	0.114
			0.000				Ice	6.676	6.046	0.168
							1" Ice	7.695	7.526	0.298
							2" Ice	9.858	10.832	0.675
		4" Ice								
800 10121 w/ Mount Pipe	B	From Leg	4.000	0.000	30.000	160.000	No Ice	5.685	4.600	0.066
			0.000				1/2"	6.182	5.351	0.114
			0.000				Ice	6.676	6.046	0.168
							1" Ice	7.695	7.526	0.298
							2" Ice	9.858	10.832	0.675
		4" Ice								
800 10121 w/ Mount Pipe	C	From Leg	4.000	0.000	30.000	160.000	No Ice	5.685	4.600	0.066
			0.000				1/2"	6.182	5.351	0.114
			0.000				Ice	6.676	6.046	0.168
							1" Ice	7.695	7.526	0.298
							2" Ice	9.858	10.832	0.675
		4" Ice								
P65-17-XLH-RR w/ Mount Pipe	A	From Leg	4.000	0.000	40.000	160.000	No Ice	11.704	8.938	0.092
			0.000				1/2"	12.424	10.450	0.178
			0.000				Ice	13.153	11.986	0.273
							1" Ice	14.639	14.313	0.498
							2" Ice	17.906	19.144	1.126
		4" Ice								
P65-17-XLH-RR w/ Mount Pipe	B	From Leg	4.000	0.000	30.000	160.000	No Ice	11.704	8.938	0.092
			0.000				1/2"	12.424	10.450	0.178
			0.000				Ice	13.153	11.986	0.273
							1" Ice	14.639	14.313	0.498
							2" Ice	17.906	19.144	1.126
		4" Ice								
P65-17-XLH-RR w/ Mount Pipe	C	From Leg	4.000	0.000	30.000	160.000	No Ice	11.704	8.938	0.092
			0.000				1/2"	12.424	10.450	0.178
			0.000				Ice	13.153	11.986	0.273
							1" Ice	14.639	14.313	0.498
							2" Ice	17.906	19.144	1.126
		4" Ice								
(2) RRUS-11	A	From Leg	4.000	0.000	40.000	160.000	No Ice	3.249	1.373	0.048
			0.000				1/2"	3.491	1.551	0.068
			0.000				Ice	3.741	1.738	0.092
							1" Ice	4.268	2.138	0.150
							2" Ice	5.426	3.042	0.310
		4" Ice								
(2) RRUS-11	B	From Leg	4.000	0.000	30.000	160.000	No Ice	3.249	1.373	0.048
			0.000				1/2"	3.491	1.551	0.068
			0.000				Ice	3.741	1.738	0.092
							1" Ice	4.268	2.138	0.150
							2" Ice	5.426	3.042	0.310
		4" Ice								
(2) RRUS-11	C	From Leg	4.000	0.000	30.000	160.000	No Ice	3.249	1.373	0.048
			0.000				1/2"	3.491	1.551	0.068
			0.000				Ice	3.741	1.738	0.092
							1" Ice	4.268	2.138	0.150
							2" Ice	5.426	3.042	0.310
		4" Ice								
(2) LGP21401	A	From Leg	4.000	0.000	40.000	160.000	No Ice	1.288	0.233	0.014
			0.000				1/2"	1.445	0.313	0.021
			0.000				Ice	1.611	0.403	0.030
							1" Ice	1.969	0.608	0.055

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment °	Placement ft	C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AA</sub> Side ft <sup>2</sup>	Weight K	
			Horz ft	Lateral ft						Vert ft
(2) LGP21401	B	From Leg	4.000	0.000	30.000	160.000	2" Ice	2.788	1.121	0.135
							4" Ice			
							No Ice	1.288	0.233	0.014
							1/2" Ice	1.445	0.313	0.021
							1" Ice	1.611	0.403	0.030
(2) LGP21401	C	From Leg	4.000	0.000	30.000	160.000	2" Ice	2.788	1.121	0.135
							4" Ice			
							No Ice	1.288	0.233	0.014
							1/2" Ice	1.445	0.313	0.021
							1" Ice	1.611	0.403	0.030
DC6-48-60-18-8F	A	From Leg	4.000	0.000	40.000	160.000	2" Ice	2.788	1.121	0.135
							4" Ice			
							No Ice	2.567	2.567	0.019
							1/2" Ice	2.798	2.798	0.041
							1" Ice	3.038	3.038	0.067
T-Arm Mount [TA 601-3]	C	None	0.000	0.000	160.000	2" Ice	4.658	4.658	0.299	
						4" Ice				
						No Ice	10.900	10.900	0.726	
						1/2" Ice	14.650	14.650	0.926	
						1" Ice	18.400	18.400	1.125	
** APXV18-206517S-C w/ Mount Pipe	A	From Leg	1.000	0.000	30.000	150.000	2" Ice	9.919	12.277	0.679
							4" Ice			
							No Ice	5.404	4.700	0.052
							1/2" Ice	5.960	5.860	0.097
							1" Ice	6.481	6.734	0.150
APXV18-206517S-C w/ Mount Pipe	B	From Leg	1.000	0.000	30.000	150.000	2" Ice	9.919	12.277	0.679
							4" Ice			
							No Ice	5.404	4.700	0.052
							1/2" Ice	5.960	5.860	0.097
							1" Ice	6.481	6.734	0.150
APXV18-206517S-C w/ Mount Pipe	C	From Leg	1.000	0.000	30.000	150.000	2" Ice	9.919	12.277	0.679
							4" Ice			
							No Ice	5.404	4.700	0.052
							1/2" Ice	5.960	5.860	0.097
							1" Ice	6.481	6.734	0.150
** SD212-SF2P2SNM Dipole	A	From Leg	6.000	0.000	90.000	120.000	2" Ice	12.510	12.510	0.163
							4" Ice			
							No Ice	4.510	4.510	0.048
							1/2" Ice	5.510	5.510	0.062
							1" Ice	6.510	6.510	0.077
Side Arm Mount [SO 702-1]	A	From Face	3.000	0.000	90.000	120.000	2" Ice	1.000	6.390	0.115
							4" Ice			
							No Ice	1.000	1.430	0.027
							1/2" Ice	1.000	2.050	0.038
							1" Ice	1.000	2.670	0.049
** SD110-SFXPASNM	B	From Leg	1.000	0.000	15.000	110.000	2" Ice	1.000	6.390	0.115
							4" Ice			
							No Ice	4.510	4.510	0.048
							1/2" Ice	5.510	5.510	0.062
							1" Ice	6.510	6.510	0.077



Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight K	
						ft <sup>2</sup>	ft <sup>2</sup>		
Pipe Mount 2 x 16'	B	From Leg	0.500 0.000 0.000	0.000	110.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.808 5.436 7.081 10.421 15.464	3.808 5.436 7.081 10.421 15.464	0.060 0.088 0.127 0.235 0.581
** ANT450D3	A	From Leg	3.000 0.000 1.000	90.000	81.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.592 7.656 9.738 13.950 21.924	5.592 7.656 9.738 13.950 21.924	0.041 0.082 0.135 0.282 0.735
Side Arm Mount [SO 309-1]	A	From Leg	1.000 0.000 0.000	90.000	81.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.820 4.070 5.320 7.820 12.820	2.200 3.160 4.120 6.040 9.880	0.040 0.062 0.084 0.128 0.216
** KS24019-L112A	A	From Leg	3.000 0.000 0.000	0.000	48.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.156 0.225 0.302 0.484 0.951	0.156 0.225 0.302 0.484 0.951	0.005 0.007 0.009 0.018 0.056
Side Arm Mount [SO 701-1]	A	From Leg	1.500 0.000 0.000	0.000	48.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.850 1.140 1.430 2.010 3.170	1.670 2.340 3.010 4.350 7.030	0.065 0.079 0.093 0.121 0.177
**									

## Load Combinations

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

Comb. No.	Description
22	Dead+Wind 210 deg+Ice+Temp
23	Dead+Wind 240 deg+Ice+Temp
24	Dead+Wind 270 deg+Ice+Temp
25	Dead+Wind 300 deg+Ice+Temp
26	Dead+Wind 330 deg+Ice+Temp
27	Dead+Wind 0 deg - Service
28	Dead+Wind 30 deg - Service
29	Dead+Wind 60 deg - Service
30	Dead+Wind 90 deg - Service
31	Dead+Wind 120 deg - Service
32	Dead+Wind 150 deg - Service
33	Dead+Wind 180 deg - Service
34	Dead+Wind 210 deg - Service
35	Dead+Wind 240 deg - Service
36	Dead+Wind 270 deg - Service
37	Dead+Wind 300 deg - Service
38	Dead+Wind 330 deg - Service

### Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	187 - 136	Pole	Max Tension	27	0.000	-0.000	-0.000
			Max. Compression	14	-30.777	3.253	-0.169
			Max. Mx	11	-13.391	854.329	-0.577
			Max. My	2	-13.615	-0.155	807.993
			Max. Vy	11	-26.347	854.329	-0.577
			Max. Vx	2	-25.190	-0.155	807.993
			Max. Torque	6			1.637
L2	136 - 89.5	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-45.191	5.937	-0.822
			Max. Mx	11	-23.543	2177.208	-2.338
			Max. My	2	-23.700	-1.768	2077.851
			Max. Vy	11	-32.136	2177.208	-2.338
			Max. Vx	2	-30.963	-1.768	2077.851
			Max. Torque	11			-3.203
L3	89.5 - 44.25	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-63.243	8.850	-1.212
			Max. Mx	11	-37.255	3720.400	-3.942
			Max. My	2	-37.339	-3.025	3568.182
			Max. Vy	11	-37.300	3720.400	-3.942
			Max. Vx	2	-36.116	-3.025	3568.182
			Max. Torque	11			-4.221
L4	44.25 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-87.969	11.439	-2.372
			Max. Mx	11	-57.380	5744.117	-5.845
			Max. My	2	-57.382	-4.470	5530.621
			Max. Vy	11	-41.821	5744.117	-5.845
			Max. Vx	2	-40.653	-4.470	5530.621
			Max. Torque	11			-4.452

### Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	24	87.969	10.871	-0.004
	Max. H <sub>x</sub>	11	57.411	41.778	-0.037
	Max. H <sub>z</sub>	2	57.411	-0.037	40.612
	Max. M <sub>x</sub>	2	5530.621	-0.037	40.612
	Max. M <sub>z</sub>	5	5740.423	-41.778	0.037
	Max. Torsion	5	4.391	-41.778	0.037

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Min. Vert	1	57.411	0.000	0.000
	Min. H <sub>x</sub>	5	57.411	-41.778	0.037
	Min. H <sub>z</sub>	8	57.411	0.037	-40.612
	Min. M <sub>x</sub>	8	-5529.588	0.037	-40.612
	Min. M <sub>z</sub>	11	-5744.117	41.778	-0.037
	Min. Torsion	11	-4.434	41.778	-0.037

### Tower Mast Reaction Summary

Load Combination	Vertical K	Shear <sub>x</sub> K	Shear <sub>z</sub> K	Overtuning Moment, M <sub>x</sub> kip-ft	Overtuning Moment, M <sub>z</sub> kip-ft	Torque kip-ft
Dead Only	57.411	0.000	0.000	-0.485	1.770	0.000
Dead+Wind 0 deg - No Ice	57.411	0.037	-40.612	-5530.621	-4.470	0.052
Dead+Wind 30 deg - No Ice	57.411	20.922	-35.190	-4792.664	-2875.170	-2.120
Dead+Wind 60 deg - No Ice	57.411	36.200	-20.338	-2770.637	-4974.496	-3.739
Dead+Wind 90 deg - No Ice	57.411	41.778	-0.037	-6.806	-5740.423	-4.391
Dead+Wind 120 deg - No Ice	57.411	36.162	20.274	2758.724	-4968.181	-3.883
Dead+Wind 150 deg - No Ice	57.411	20.857	35.152	4785.362	-2864.206	-2.316
Dead+Wind 180 deg - No Ice	57.411	-0.037	40.612	5529.588	8.184	-0.093
Dead+Wind 210 deg - No Ice	57.411	-20.922	35.190	4791.641	2878.850	2.171
Dead+Wind 240 deg - No Ice	57.411	-36.200	20.338	2769.650	4978.165	3.832
Dead+Wind 270 deg - No Ice	57.411	-41.778	0.037	5.846	5744.117	4.434
Dead+Wind 300 deg - No Ice	57.411	-36.162	-20.274	-2759.694	4971.910	3.834
Dead+Wind 330 deg - No Ice	57.411	-20.857	-35.152	-4786.369	2867.946	2.225
Dead+Ice+Temp	87.969	-0.000	0.000	2.372	11.439	0.000
Dead+Wind 0 deg+Ice+Temp	87.969	0.004	-10.635	-1518.501	10.617	0.041
Dead+Wind 30 deg+Ice+Temp	87.969	5.439	-9.212	-1315.252	-771.207	-0.649
Dead+Wind 60 deg+Ice+Temp	87.969	9.416	-5.321	-758.935	-1343.256	-1.165
Dead+Wind 90 deg+Ice+Temp	87.969	10.871	-0.004	1.378	-1552.256	-1.371
Dead+Wind 120 deg+Ice+Temp	87.969	9.412	5.314	761.965	-1342.215	-1.209
Dead+Wind 150 deg+Ice+Temp	87.969	5.432	9.208	1319.034	-769.408	-0.724
Dead+Wind 180 deg+Ice+Temp	87.969	-0.004	10.635	1523.314	12.688	-0.043
Dead+Wind 210 deg+Ice+Temp	87.969	-5.439	9.212	1320.064	794.502	0.651
Dead+Wind 240 deg+Ice+Temp	87.969	-9.416	5.321	763.754	1366.546	1.169
Dead+Wind 270 deg+Ice+Temp	87.969	-10.871	0.004	3.449	1575.550	1.373
Dead+Wind 300 deg+Ice+Temp	87.969	-9.412	-5.314	-757.137	1365.517	1.209
Dead+Wind 330 deg+Ice+Temp	87.969	-5.432	-9.208	-1314.213	792.715	0.721
Dead+Wind 0 deg - Service	57.411	0.013	-14.053	-1917.448	-0.330	0.022
Dead+Wind 30 deg - Service	57.411	7.239	-12.176	-1661.725	-995.474	-0.748
Dead+Wind 60 deg - Service	57.411	12.526	-7.038	-960.870	-1723.362	-1.319
Dead+Wind 90 deg - Service	57.411	14.456	-0.013	-2.708	-1988.964	-1.541
Dead+Wind 120 deg - Service	57.411	12.513	7.015	956.039	-1721.167	-1.352
Dead+Wind 150 deg - Service	57.411	7.217	12.163	1658.496	-991.673	-0.798
Dead+Wind 180 deg - Service	57.411	-0.013	14.053	1916.409	4.057	-0.027
Dead+Wind 210 deg - Service	57.411	-7.239	12.176	1660.687	999.196	0.753
Dead+Wind 240 deg - Service	57.411	-12.526	7.038	959.836	1727.083	1.330
Dead+Wind 270 deg - Service	57.411	-14.456	0.013	1.678	1992.688	1.546



Load Combination	Vertical K	Shear <sub>x</sub> K	Shear <sub>z</sub> K	Overturning Moment, M <sub>x</sub> kip-ft	Overturning Moment, M <sub>z</sub> kip-ft	Torque kip-ft
Service Dead+Wind 300 deg - Service	57.411	-12.513	-7.015	-957.071	1724.895	1.346
Service Dead+Wind 330 deg - Service	57.411	-7.217	-12.163	-1659.532	995.402	0.788

### Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.000	-57.411	0.000	0.000	57.411	0.000	0.000%
2	0.037	-57.411	-40.612	-0.037	57.411	40.612	0.000%
3	20.922	-57.411	-35.190	-20.922	57.411	35.190	0.000%
4	36.200	-57.411	-20.338	-36.200	57.411	20.338	0.000%
5	41.778	-57.411	-0.037	-41.778	57.411	0.037	0.000%
6	36.162	-57.411	20.274	-36.162	57.411	-20.274	0.000%
7	20.857	-57.411	35.152	-20.857	57.411	-35.152	0.000%
8	-0.037	-57.411	40.612	0.037	57.411	-40.612	0.000%
9	-20.922	-57.411	35.190	20.922	57.411	-35.190	0.000%
10	-36.200	-57.411	20.338	36.200	57.411	-20.338	0.000%
11	-41.778	-57.411	0.037	41.778	57.411	-0.037	0.000%
12	-36.162	-57.411	-20.274	36.162	57.411	20.274	0.000%
13	-20.857	-57.411	-35.152	20.857	57.411	35.152	0.000%
14	0.000	-87.969	0.000	0.000	87.969	-0.000	0.000%
15	0.004	-87.969	-10.635	-0.004	87.969	10.635	0.000%
16	5.439	-87.969	-9.212	-5.439	87.969	9.212	0.000%
17	9.416	-87.969	-5.321	-9.416	87.969	5.321	0.000%
18	10.871	-87.969	-0.004	-10.871	87.969	0.004	0.000%
19	9.412	-87.969	5.314	-9.412	87.969	-5.314	0.000%
20	5.432	-87.969	9.208	-5.432	87.969	-9.208	0.000%
21	-0.004	-87.969	10.635	0.004	87.969	-10.635	0.000%
22	-5.439	-87.969	9.212	5.439	87.969	-9.212	0.000%
23	-9.416	-87.969	5.321	9.416	87.969	-5.321	0.000%
24	-10.871	-87.969	0.004	10.871	87.969	-0.004	0.000%
25	-9.412	-87.969	-5.314	9.412	87.969	5.314	0.000%
26	-5.432	-87.969	-9.208	5.432	87.969	9.208	0.000%
27	0.013	-57.411	-14.053	-0.013	57.411	14.053	0.000%
28	7.239	-57.411	-12.176	-7.239	57.411	12.176	0.000%
29	12.526	-57.411	-7.038	-12.526	57.411	7.038	0.000%
30	14.456	-57.411	-0.013	-14.456	57.411	0.013	0.000%
31	12.513	-57.411	7.015	-12.513	57.411	-7.015	0.000%
32	7.217	-57.411	12.163	-7.217	57.411	-12.163	0.000%
33	-0.013	-57.411	14.053	0.013	57.411	-14.053	0.000%
34	-7.239	-57.411	12.176	7.239	57.411	-12.176	0.000%
35	-12.526	-57.411	7.038	12.526	57.411	-7.038	0.000%
36	-14.456	-57.411	0.013	14.456	57.411	-0.013	0.000%
37	-12.513	-57.411	-7.015	12.513	57.411	7.015	0.000%
38	-7.217	-57.411	-12.163	7.217	57.411	12.163	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	0.00045331
3	Yes	6	0.00000001	0.00006741
4	Yes	6	0.00000001	0.00007102
5	Yes	5	0.00000001	0.00008130
6	Yes	6	0.00000001	0.00006668
7	Yes	6	0.00000001	0.00006925
8	Yes	4	0.00000001	0.00047243

9	Yes	6	0.00000001	0.00006959
10	Yes	6	0.00000001	0.00006691
11	Yes	5	0.00000001	0.00007321
12	Yes	6	0.00000001	0.00007083
13	Yes	6	0.00000001	0.00006732
14	Yes	4	0.00000001	0.00003894
15	Yes	5	0.00000001	0.00042321
16	Yes	5	0.00000001	0.00058941
17	Yes	5	0.00000001	0.00060606
18	Yes	5	0.00000001	0.00043423
19	Yes	5	0.00000001	0.00059405
20	Yes	5	0.00000001	0.00059545
21	Yes	5	0.00000001	0.00042415
22	Yes	5	0.00000001	0.00061214
23	Yes	5	0.00000001	0.00060807
24	Yes	5	0.00000001	0.00044233
25	Yes	5	0.00000001	0.00061727
26	Yes	5	0.00000001	0.00060269
27	Yes	4	0.00000001	0.00012897
28	Yes	5	0.00000001	0.00011510
29	Yes	5	0.00000001	0.00012853
30	Yes	4	0.00000001	0.00032430
31	Yes	5	0.00000001	0.00011360
32	Yes	5	0.00000001	0.00012098
33	Yes	4	0.00000001	0.00012958
34	Yes	5	0.00000001	0.00012262
35	Yes	5	0.00000001	0.00011481
36	Yes	4	0.00000001	0.00031549
37	Yes	5	0.00000001	0.00012820
38	Yes	5	0.00000001	0.00011519

### Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	187 - 136	50.982	36	2.473	0.005
L2	140.5 - 89.5	28.445	36	1.997	0.003
L3	95.25 - 44.25	12.638	36	1.289	0.002
L4	51 - 0	3.549	36	0.638	0.001

### Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
188.000	DB404L-B	36	50.982	2.473	0.005	30374
186.000	PCS 1900MHz 4x45W-65MHz	36	50.469	2.465	0.005	30374
181.000	RRH2X40-AWS	36	47.906	2.421	0.005	25311
178.000	(2) 742 213 w/ Mount Pipe	36	46.373	2.394	0.005	16874
168.000	RR90-17-02DP w/ Mount Pipe	36	41.322	2.302	0.004	7992
160.000	800 10121 w/ Mount Pipe	36	37.385	2.223	0.004	5623
150.000	APXV18-206517S-C w/ Mount Pipe	36	32.662	2.115	0.004	4102
120.000	SD212-SF2P2SNM Dipole	36	20.433	1.693	0.003	3557
110.000	SD110-SFXPASNM	36	17.047	1.531	0.002	3721
81.000	ANT450D3	36	9.015	1.067	0.001	3762
48.000	KS24019-L112A	36	3.173	0.598	0.001	3567

### Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	187 - 136	146.531	11	7.112	0.016
L2	140.5 - 89.5	81.844	11	5.746	0.009
L3	95.25 - 44.25	36.396	11	3.713	0.005
L4	51 - 0	10.226	11	1.839	0.002

### Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
188.000	DB404L-B	11	146.531	7.112	0.016	10851
186.000	PCS 1900MHz 4x45W-65MHz	11	145.059	7.086	0.016	10851
181.000	RRH2X40-AWS	11	137.704	6.961	0.015	9042
178.000	(2) 742 213 w/ Mount Pipe	11	133.305	6.884	0.014	6027
168.000	RR90-17-02DP w/ Mount Pipe	11	118.810	6.622	0.013	2852
160.000	800 10121 w/ Mount Pipe	11	107.512	6.396	0.012	2005
150.000	APXV18-206517S-C w/ Mount Pipe	11	93.953	6.083	0.010	1460
120.000	SD212-SF2P2SNM Dipole	11	58.817	4.874	0.007	1255
110.000	SD110-SFXPASNM	11	49.081	4.407	0.007	1309
81.000	ANT450D3	11	25.965	3.072	0.004	1314
48.000	KS24019-L112A	11	9.144	1.723	0.002	1240

### Compression Checks

### Pole Design Data

Section No.	Elevation ft	Size	L ft	L <sub>u</sub> ft	Kl/r	F <sub>a</sub> ksi	A in <sup>2</sup>	Actual P K	Allow. P <sub>a</sub> K	Ratio P P <sub>a</sub>
L1	187 - 136 (1)	TP36.201x26x0.25	51.000	0.000	0.0	39.000	27.813	-13.391	1084.700	0.012
L2	136 - 89.5 (2)	TP45.003x34.801x0.375	51.000	0.000	0.0	39.000	51.749	-23.543	2018.230	0.012
L3	89.5 - 44.25 (3)	TP53.304x43.103x0.438	51.000	0.000	0.0	39.000	71.537	-37.255	2789.940	0.013
L4	44.25 - 0 (4)	TP61.28x51.079x0.5	51.000	0.000	0.0	39.000	96.458	-57.380	3761.860	0.015

### Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M <sub>x</sub> kip-ft	Actual f <sub>bx</sub> ksi	Allow. F <sub>bx</sub> ksi	Ratio f <sub>bx</sub> F <sub>bx</sub>	Actual M <sub>y</sub> kip-ft	Actual f <sub>by</sub> ksi	Allow. F <sub>by</sub> ksi	Ratio f <sub>by</sub> F <sub>by</sub>
L1	187 - 136 (1)	TP36.201x26x0.25	854.325	42.587	39.000	1.092	0.000	0.000	39.000	0.000
L2	136 - 89.5 (2)	TP45.003x34.801x0.375	2177.208	47.094	39.000	1.208	0.000	0.000	39.000	0.000
L3	89.5 - 44.25 (3)	TP53.304x43.103x0.438	3720.400	49.124	39.000	1.260	0.000	0.000	39.000	0.000
L4	44.25 - 0 (4)	TP61.28x51.079x0.5	5744.117	47.664	39.000	1.222	0.000	0.000	39.000	0.000



### Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual $f_v$ ksi	Allow. $F_v$ ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual $f_{vt}$ ksi	Allow. $F_{vt}$ ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	187 - 136 (1)	TP36.201x26x0.25	26.347	0.947	26.000	0.073	1.498	0.036	26.000	0.001
L2	136 - 89.5 (2)	TP45.003x34.801x0.375	32.136	0.621	26.000	0.048	2.761	0.029	26.000	0.001
L3	89.5 - 44.25 (3)	TP53.304x43.103x0.438	37.300	0.521	26.000	0.040	4.214	0.027	26.000	0.001
L4	44.25 - 0 (4)	TP61.28x51.079x0.5	41.821	0.434	26.000	0.033	4.434	0.018	26.000	0.001

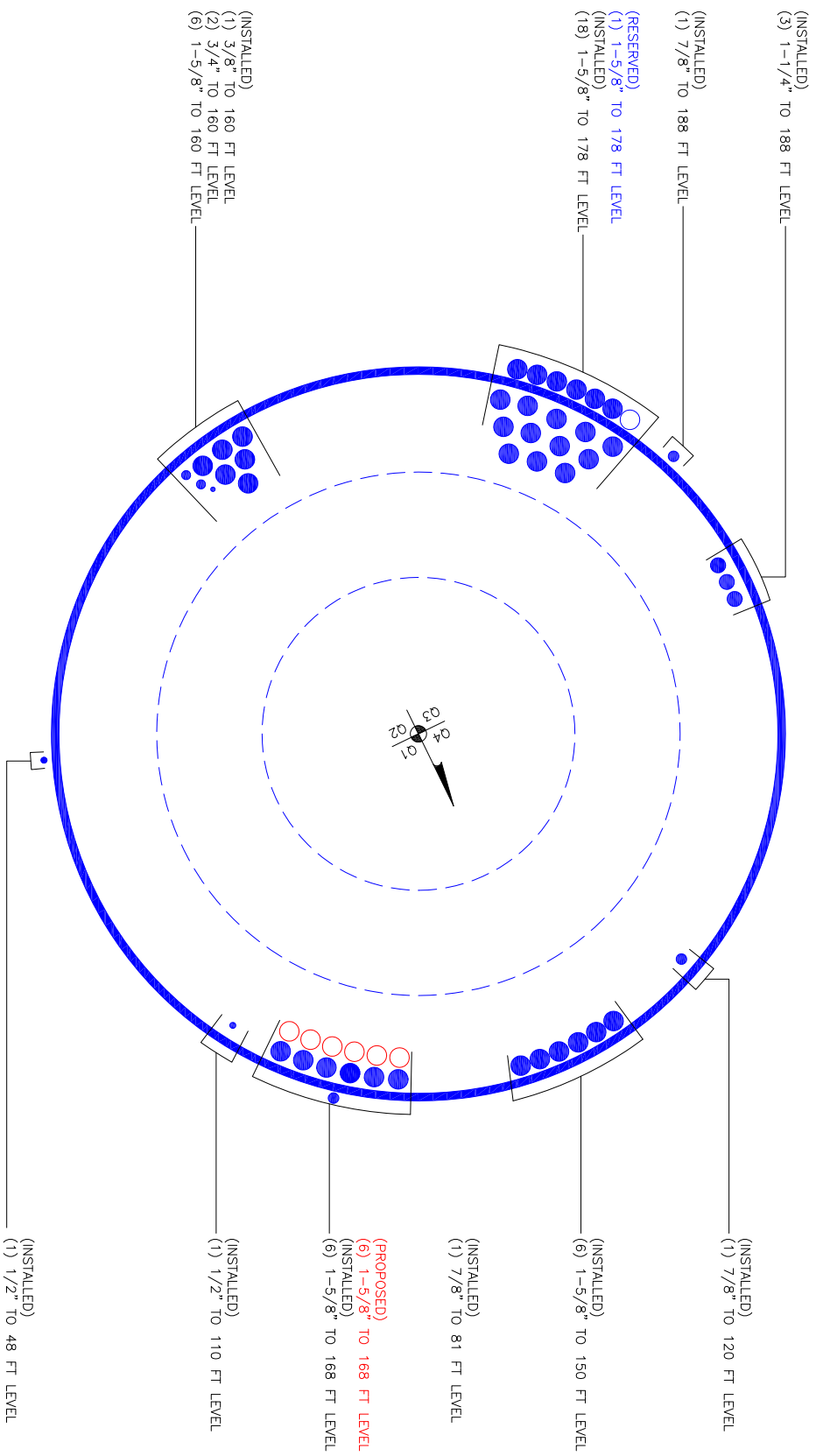
### Pole Interaction Design Data

Section No.	Elevation ft	Ratio P $P_a$	Ratio $f_{bx}$ $F_{bx}$	Ratio $f_{by}$ $F_{by}$	Ratio $f_v$ $F_v$	Ratio $f_{vt}$ $F_{vt}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	187 - 136 (1)	0.012	1.092	0.000	0.073	0.001	1.106	1.333	H1-3+VT ✓
L2	136 - 89.5 (2)	0.012	1.208	0.000	0.048	0.001	1.220	1.333	H1-3+VT ✓
L3	89.5 - 44.25 (3)	0.013	1.260	0.000	0.040	0.001	1.273	1.333	H1-3+VT ✓
L4	44.25 - 0 (4)	0.015	1.222	0.000	0.033	0.001	1.238	1.333	H1-3+VT ✓

### Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF \cdot P_{allow}$ K	% Capacity	Pass Fail
L1	187 - 136	Pole	TP36.201x26x0.25	1	-13.391	1445.905	83.0	Pass
L2	136 - 89.5	Pole	TP45.003x34.801x0.375	2	-23.543	2690.300	91.5	Pass
L3	89.5 - 44.25	Pole	TP53.304x43.103x0.438	3	-37.255	3718.990	95.5	Pass
L4	44.25 - 0	Pole	TP61.28x51.079x0.5	4	-57.380	5014.559	92.9	Pass
Summary								
Pole (L3)							95.5	Pass
<b>RATING =</b>							<b>95.5</b>	<b>Pass</b>

**APPENDIX B**  
**BASE LEVEL DRAWING**



**APPENDIX C**  
**ADDITIONAL CALCULATIONS**



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

- 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#:	803934
Site Name:	CT SOMERS FD CAC
App #:	282534 R1

## Anchor Rod Data

Qty:	24	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, Fy:	75	ksi
Strength, Fu:	100	ksi
Bolt Circle:	69	in
Anchor Spacing:	6	in

## Plate Data

W=Side:	70	in
Thick:	3.25	in
Grade:	55	ksi
Clip Distance:	6	in

## 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

## Pole Data

Diam:	61.28	in
Thick:	0.5	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round

## Stress Increase Factor

ASD ASIF:	1.333
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\*\* Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

## Base Reactions

TIA Revision:	F	
Unfactored Moment, M:	5744.12027	ft-kips
Unfactored Axial, P:	57.3796	kips
Unfactored Shear, V:	41.820917	kips

## Anchor Rod Results

TIA F --> Maximum Rod Tension	164.1 Kips
Allowable Tension:	195.0 Kips
Anchor Rod Stress Ratio:	84.2% <b>Pass</b>

## Base Plate Results

Base Plate Stress:	35.1 ksi
Allowable PL Bending Stress:	55.0 ksi
Base Plate Stress Ratio:	63.8% <b>Pass</b>

## Flexural Check

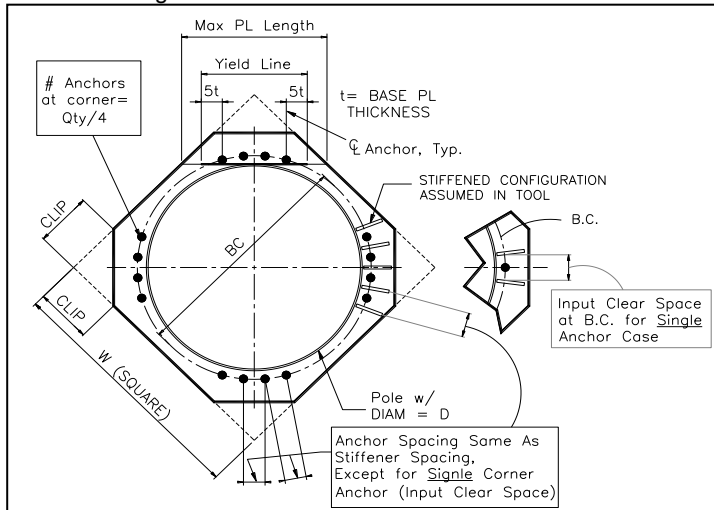
## N/A - Unstiffened

## Stiffener Results

Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, $f_b/F_b + (f_v/F_v)^2$ :	N/A
Plate Tension+Shear, $f_t/F_t + (f_v/F_v)^2$ :	N/A
Plate Comp. (AISC Bracket):	N/A

## Pole Results

Pole Punching Shear Check:	N/A
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**(Bearing and Stability Checks) Tool for TIA Rev F or G - Application (MP, SST with unitbase)**

**Site Data**

BU#: 803934
Site Name: CT SOMERS FD CAC
App #: 282534 R1

Monopole Base Reaction Forces		
TIA Revision:	F	<--Pull Down
Unfactored DL Axial, PD:	57.3796	kips
Unfactored WL Axial, PW:	0	kips
Unfactored WL Shear, V:	41.82092	kips
Unfactored WL Moment, M:	5744.12	ft-kips

Enter Load Factors Below:		
For P (DL)	1.2	<---- Enter Factor
For P,V, and M (WL)	1.35	<---- Enter Factor

Load Factor	Shaft Factored Loads	
1.20	1.2D+1.6W, Pu:	68.85552 kips
0.90	0.9D+1.6W, Pu:	51.64164 kips
1.35	Vu:	56.45824 kips
	Mu:	7754.562 ft-kips

Pad & Pier Data		
Base PL Dist. Above Pier:	0	in
Pier Dist. Above Grade:	6	in
Pad Bearing Depth, D:	4	ft
Pad Thickness, T:	4	ft
Pad Width=Length, L:	31	ft
Pier Cross Section Shape:	Square	<--Pull Down
Enter Pier Side Width:	31	ft
Concrete Density:	150.0	pcf
Pier Cross Section Area:	961.00	ft^2
Pier Height:	0.50	ft
Soil (above pad) Height:	0.00	ft

**1.2D+1.6W Load Combination, Bearing Results:**

<b>(No Soil Wedges)</b> [Reaction+Conc+Soil]	847.27	P1="1.2D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil), M1	7933.35	ft-kips

Orthogonal Direction:

ecc1 = M1/P1 = 9.36 ft  
 Orthogonal qu= 2.23 ksf  
 qu/φ\*qn Ratio= **37.12% Pass**

Diagonal Direction:

ecc2 = (0.707M1)/P1 = 6.62 ft  
 Diagonal qu= 2.69 ksf  
 qu/φ\*qn Ratio= **44.77% Pass**

<-- Press Upon Completing All Input

Soil Parameters		
Unit Weight, γ:	120.0	pcf
Ultimate Bearing Capacity, qn:	8.00	ksf
Strength Reduct. factor, φ:	0.75	
Angle of Friction, Φ:	34.0	degrees
Undrained Shear Strength, Cu:	0.00	ksf
Allowable Bearing: φ*qn:	6.00	ksf
Passive Pres. Coeff., Kp	3.54	

**Overturning Stability Check**

**0.9D+1.6W Load Combination, Bearing Results:**

<b>(w/ Soil Wedges)</b> [Reaction+Conc+Soil]	635.45	P2="0.9D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil) - 0.9(M of Wedge + M of Cohesion), M2	7933.35	ft-kips

Orthogonal ecc3 = M2/P2 = 12.48 ft  
 Ortho Non Bearing Length,NBL= **24.97 ft**  
 Orthogonal qu= 3.40 ksf  
 Diagonal qu= 3.57 ksf

Forces/Moments due to Wind and Lateral Soil		
Minimum of (φ*Ultimate Pad Passive Force, Vu):	56.5	kips
Pad Force Location Above D:	1.33	ft
φ(Passive Pressure Moment):	75.28	ft-kips
Factored O.T. M(WL), "1.6W":	8008.6	ft-kips
Factored OT (MW-Msoil), M1	7933.35	ft-kips

Resistance due to Foundation Gravity		
Soil Wedge Projection grade, a:	0.00	ft
Sum of Soil Wedges Wt:	0.00	kips
Soil Wedges ecc, K1:	0.00	ft
Ftg+Soil above Pad wt:	648.7	kips
Unfactored (Total ftg-soil Wt):	648.68	kips
1.2D. <b>No Soil Wedges.</b>	847.27	kips
0.9D. <b>With Soil Wedges</b>	635.45	kips

Max Reaction Moment (ft-kips) so that qu=φ\*qn = 100% Capacity Rating

Actual M:	5744.12		
M Orthogonal:	6359.41	<b>90.32%</b>	<b>Pass</b>
M Diagonal:	6359.41	<b>90.32%</b>	<b>Pass</b>

Resistance due to Cohesion (Vertical)		
φ*(1/2*Cu)(Total Vert. Planes)	0.00	kips
Cohesion Force Eccentricity, K2	0.00	ft

RADIO FREQUENCY EMISSIONS ANALYSIS REPORT  
EVALUATION OF HUMAN EXPOSURE POTENTIAL  
TO NON-IONIZING EMISSIONS

T-Mobile Existing Facility

Site ID: CT11531C

Crown Somers  
400 Main Street  
Somers, CT 06071

**February 24, 2015**

**EBI Project Number: 6215001230**

Site Compliance Summary	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general public allowable limit:	<b>43.39 %</b>

February 24, 2015

T-Mobile USA  
Attn: Jason Overbey, RF Manager  
35 Griffin Road South  
Bloomfield, CT 06002

Emissions Analysis for Site: **CT11531C – Crown Somers**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **400 Main Street, Somers, CT**, for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The number of  $\mu\text{W}/\text{cm}^2$  calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The general population exposure limit for the 700 MHz Band is  $467 \mu\text{W}/\text{cm}^2$ , and the general population exposure limit for the PCS and AWS bands is  $1000 \mu\text{W}/\text{cm}^2$ . Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.



Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

## **CALCULATIONS**

Calculations were done for the proposed T-Mobile Wireless antenna facility located at **400 Main Street, Somers, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

For all calculations, all equipment was calculated using the following assumptions:

- 1) 2 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel
- 2) 2 UMTS channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 3) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 4) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.
- 5) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

- 6) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 7) The antennas used in this modeling are the **EMS RR90\_17\_02DP** for 1900 MHz (PCS) channels and the **Commscope LNX-6515DS-VTM** for 700 MHz channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **EMS RR90\_17\_02DP** has a maximum gain of **14.4 dBd** at its main lobe. The **Commscope LNX-6515DS-VTM** has a maximum gain of **14.6 dBd** at its main lobe. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 8) The antenna mounting height centerline of the proposed antennas is **169 feet** above ground level (AGL).
- 9) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

All calculations were done with respect to uncontrolled / general public threshold limits.

**T-Mobile Site Inventory and Power Data**

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	EMS RR90_17_02DP	Make / Model:	EMS RR90_17_02DP	Make / Model:	EMS RR90_17_02DP
Gain:	14.4 dBd	Gain:	14.4 dBd	Gain:	14.4 dBd
Height (AGL):	169	Height (AGL):	169	Height (AGL):	169
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	6	Channel Count	6	# PCS Channels:	6
Total TX Power:	240	Total TX Power:	240	# AWS Channels:	240
ERP (W):	6,610.15	ERP (W):	6,610.15	ERP (W):	6,610.15
Antenna A1 MPE%	0.89	Antenna B1 MPE%	0.89	Antenna C1 MPE%	0.89
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Commscope LNX- 6515DS-VTM	Make / Model:	Commscope LNX- 6515DS-VTM	Make / Model:	Commscope LNX- 6515DS-VTM
Gain:	14.6 dBd	Gain:	14.6 dBd	Gain:	14.6 dBd
Height (AGL):	169	Height (AGL):	169	Height (AGL):	169
Frequency Bands	700 Mhz	Frequency Bands	700 Mhz	Frequency Bands	700 Mhz
Channel Count	1	Channel Count	1	Channel Count	1
Total TX Power:	30	Total TX Power:	30	Total TX Power:	30
ERP (W):	865.21	ERP (W):	865.21	ERP (W):	865.21
Antenna A2 MPE%	0.25	Antenna B2 MPE%	0.25	Antenna C2 MPE%	0.25

Site Composite MPE%	
Carrier	MPE%
T-Mobile	<b>3.44</b>
Sprint	1.42 %
MetroPCS	3.03 %
AT&T	14.67 %
Verizon Wireless	15.66 %
Town	5.17 %
<b>Site Total MPE %:</b>	<b>43.39 %</b>

T-Mobile Sector 1 Total:	1.15 %
T-Mobile Sector 2 Total:	1.15 %
T-Mobile Sector 3 Total:	1.15 %
<b>Site Total:</b>	<b>43.39 %</b>

## Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general public exposure to RF Emissions.

The anticipated maximum composite contributions from the T-Mobile facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general public exposure to RF Emissions are shown here:

T-Mobile Sector	Power Density Value (%)
Sector 1:	1.15 %
Sector 2:	1.15 %
Sector 3 :	1.15 %
T-Mobile Total:	3.44 %
Site Total:	43.39 %
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **43.39%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.



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