



March 15, 2019

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

Regarding: Notice of Exempt Modification – Antenna Modification
Property Address: 126 Ledge Road; Darien, CT 06820 (the “Property”)
Applicant: AT&T Mobility (“AT&T”), Site # CT2104

Dear Ms. Bachman:

AT&T currently maintains a wireless telecommunications facility on an existing 117-foot monopole at the above-referenced address, latitude 41.07244167°, longitude -73.47815000°. Said monopole is owned by Crown Castle and the underlying property owner is the Town of Darien.

AT&T desires to modify its existing telecommunications facility by adding (3) Remote Radios (RRUs). The centerline height of the existing antennas and ancillary tower-mounted equipment is and will remain at 89 feet.

Please accept this application as notification pursuant to R.C.S.A. §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16-50j-72 (b)(2). In accordance with R.C.S.A. §16-50j-73, a copy of this letter is being sent to the Jayme Stevenson, First Selectman of Darien; Jeremy Ginsberg, as Planning and Zoning Director of the Town of Darien; the Town of Darien having received notice to the First Selectman, as property owner; and the tower owner, Crown Castle.

The planned modifications to AT&T’s facility fall squarely within those activities explicitly provided for in R.C.S.A. §16-50j-72 (b)(2). Specifically:

1. The planned modification will not result in an increase in the height of the existing structure. The added equipment will be installed at the existing height of 89 feet on the 117-foot monopole.
2. The proposed modifications will not involve any changes to AT&T’s ground-space footprint, and therefore will not require an extension of the site boundary.
3. The proposed modification will not increase the noise level at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above Federal Communications Commission (FCC) safety standard. An RF emissions calculation (enclosed) for AT&T’s modified facility is herein provided.

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5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support AT&T's proposed modifications. Please see enclosed structural analysis completed by Paul J Ford & Company, March 5, 2019, and stamped by Joseph Pachicarah Jacobs, March 7, 2019.

For the foregoing reasons, AT&T respectfully requests that the proposed remote-radio head installation be allowed within the exempt modifications under R.C.S.A. §16-50j-72 (b)(2).

Sincerely,

Michelle Scharath

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

Enclosures: Exhibit 1 – Field Card and GIS Map
Exhibit 2 – Construction Drawings
Exhibit 3 – Structural Analysis
Exhibit 4 – RF Emissions Analysis Report Evaluation

cc:

Jayne Stevenson, First Selectman
Town of Darien
Room 202, [Town Hall](#)
2 Renshaw Road
Darien, CT 06820

Crown Castle
Attn: Paul Pedicone
3 Corporate Park Dr, Ste 101
Clifton, NY 12065

Jeremy Ginsberg,
Planning & Zoning Director
Planning and Zoning Office
Room 211, [Town Hall](#)
2 Renshaw Road
Darien, CT 06820

Profile

Parcel: 29014 **Land Use Code:** MUNICIPAL
Alternate ID: 39 20&21
Address: 126 LEDGE ROAD **NBHD:** 1032
Owner: TOWN OF DARIEN **Land Acres:** 20.4
 PUBLIC WORKS GARAGE
Mailing Address: C/O DPW
 2 RENSHAW ROAD
 DARIEN CT 06820

Value Summary:

Appraised Land:	7,330,400	Assessed Land:	5,131,280
Appraised Building:	4,908,900	Assessed Building:	3,436,230
Appraised Total:	12,239,300	Assessed Total:	8,567,510

Primary Residential Card:

Card:	Half Baths:	Fireplace Prefab:
Stories:	HT/AC:	Fireplace OP/ST: /
Use:	Fuel:	Basement Gar.:
Type:	System:	Grade:
Year Built:	Attic:	Cond (CDU):
Year Remodeled:	Basement:	% Complete:
Total Rooms:	RecRm-Not in Liv SF:	Family Room:
Bedrooms:	Finsh Bsmt-In Liv SF:	Ext. Material:
Full Baths:	Square Feet:	

Commercial Card:

Year Built: 1980	Stories: 398 - WAREHOUSE
Eff. Yr. Built: 2010	Gross Flr. Area: 39102
Units: 1	Grade: A-

Land:

Classification	Type:	Acres	SF
UNDEVELOPED	A-ACREAGE	10.4	453024
PRIMARY	A-ACREAGE	10	435600

Other Items:

Code	Description	Year Built	Square Ft.
TT4	TOWER	2016	110
SH3	FINISHED	2007	720
RS3	BRICK/STN	2000	90
PA1	ASPHALT OR	1985	35000

FN1	FENCE CHAIN	1980	4200
TT4	TOWER	2007	117
RG6	GARAGE-1S FIN	2013	1100

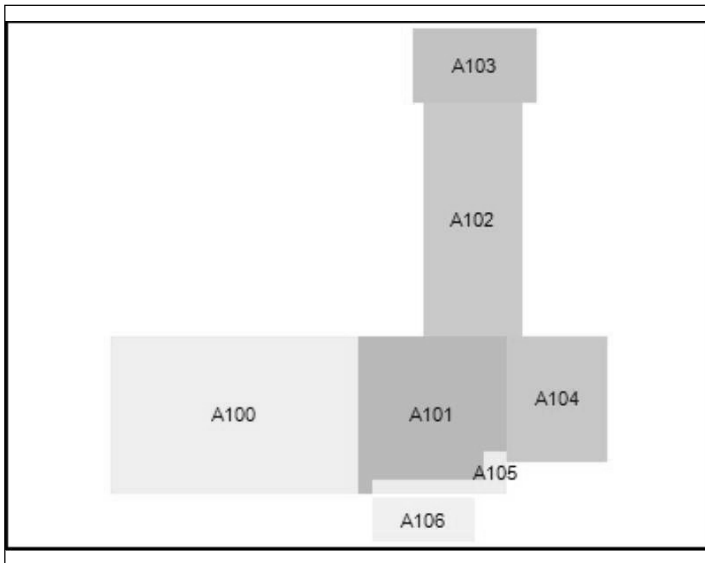
Sales History:

Date	Book-Page	Grantee	Amount
1800-JAN-01	0000--0000	TOWN OF DARIEN	

PHOTO



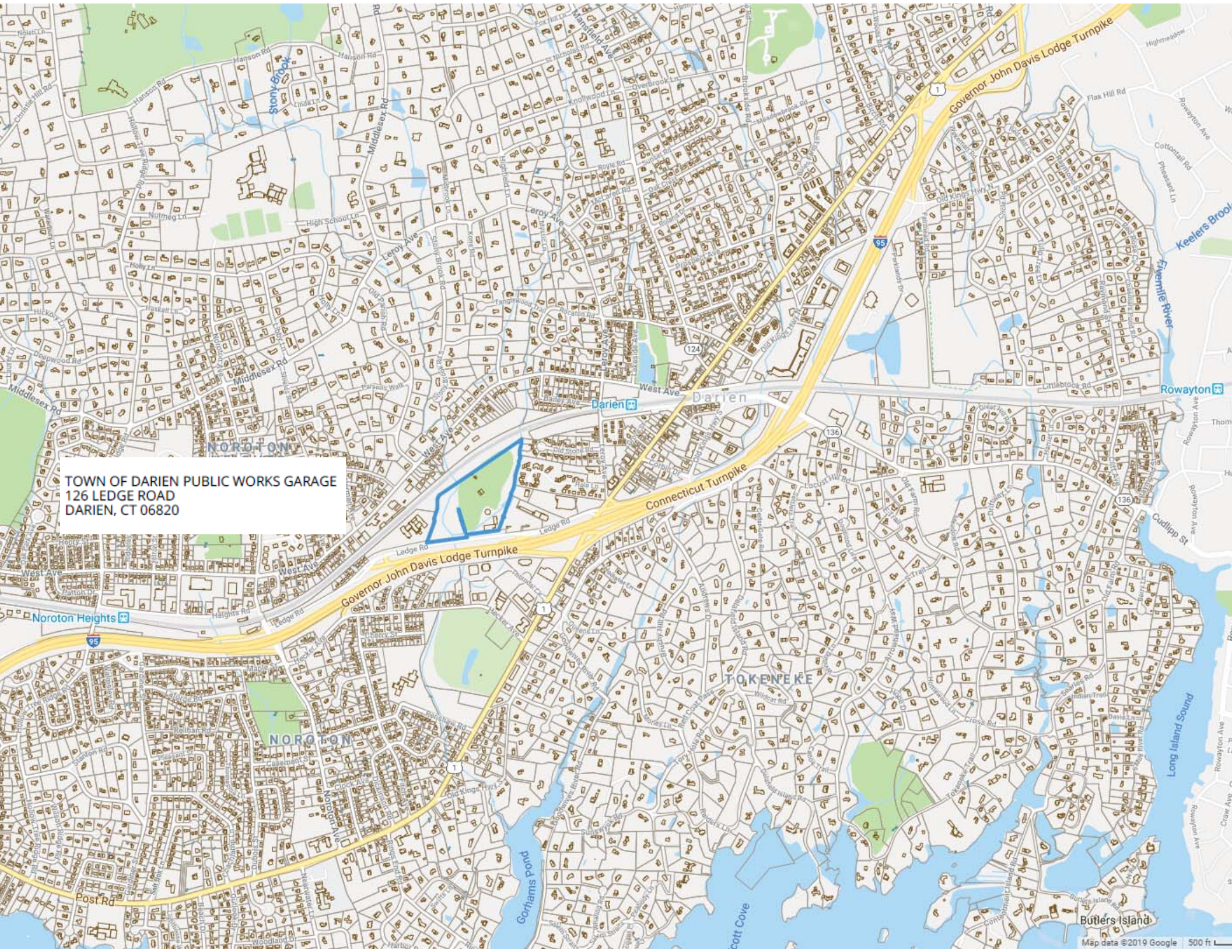
SKETCH



Sketch Legend

- 6 A100 - VB1:1S/B 7770 Sq. Ft.
- 7 A101 - VB1:1S/B 4130 Sq. Ft.
- 8 A102 - VB1:1S/B 4576 Sq. Ft.
- 9 A103 - VB1:1S/B 1815 Sq. Ft.
- 10 A104 - VS1:1S 2520 Sq. Ft.
- 11 CANPY RF/SLB - CP6:CANOPY ROOF/SLAB 490 Sq. Ft.
- 12 CANPY RF-AVG - CP8:CANOPY RF-AVERAGE 920 Sq. Ft.
- 1 AUTO PARTS/S - 047:AUTO PARTS/SERVICE 7770 Sq. Ft.
- 2 AUTO PARTS/S - 047:AUTO PARTS/SERVICE 7770 Sq. Ft.
- 3 AUTO PARTS/S - 047:AUTO PARTS/SERVICE 8706 Sq. Ft.
- 4 MULTI-USE OF - 082:MULTI-USE OFFICE 4130 Sq. Ft.
- 5 AUTO PARTS/S - 047:AUTO PARTS/SERVICE 4576 Sq. Ft.
- 6 AUTO PARTS/S - 047:AUTO PARTS/SERVICE 2520 Sq. Ft.
- 8 AUTO PARTS/S - 047:AUTO PARTS/SERVICE 1815 Sq. Ft.
- 9 AUTO PARTS/S - 047:AUTO PARTS/SERVICE 1815 Sq. Ft.
- 2 FENCE CHAI - FN1:FENCE CHAIN 4200 Sq. Ft.
- 3 BR/ST SHED - RS3:BRICK/STN UTILITY SHED 90 Sq. Ft.
- 4 GAR-1S FIN - RG6:GARAGE-1S FIN 1100 Sq. Ft.
- 5 TOWER CELL - TT4:TOWER CELLULAR 117 Sq. Ft.
- 6 METAL SHED - SH3:FINISHED METAL SHED 720 Sq. Ft.
- 2 OVRHD DR - OD1:OVERHEAD DR-WOOD/MTL 144 Sq. Ft.
- 1 ASPH PAVE - PA1:ASPHALT OR BLACKTOP PAVING 35000 Sq. Ft.
- 1 OVRHD DR - OD1:OVERHEAD DR-WOOD/MTL 196 Sq. Ft.
- 7 TOWER CELL - TT4:TOWER CELLULAR 110 Sq. Ft.

3 OVRHD DR - OD1:OVERHEAD DR-WOOD/MTL 120
Sq. Ft.
4 OVRHD DR - OD1:OVERHEAD DR-WOOD/MTL 160
Sq. Ft.



TOWN OF DARIEN PUBLIC WORKS GARAGE
126 LEDGE ROAD
DARIEN, CT 06820

Date: March 05, 2019

Darcy Tarr
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277

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

Subject: Structural Analysis Report

Carrier Designation: AT&T Mobility Co-Locate
Carrier Site Number: CT2104
Carrier Site Name: DARIEN

Crown Castle Designation: Crown Castle BU Number: 806352
Crown Castle Site Name: BRG 302 943052
Crown Castle JDE Job Number: 557579
Crown Castle Work Order Number: 1704178
Crown Castle Order Number: 478896 Rev. 0

Engineering Firm Designation: Paul J. Ford & Company Project Number: 37519-0798.001.7805

Site Data: 126 Ledge Road, DARIEN, Fairfield County, CT
Latitude 41° 4' 20.75", Longitude -73° 28' 41.4"
117 Foot - Monopole Tower

Dear Darcy Tarr,

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

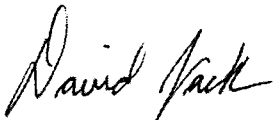
The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC5: Proposed Equipment Configuration

Sufficient Capacity

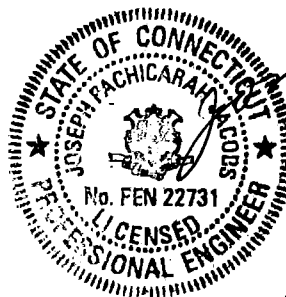
This analysis utilizes an ultimate 3-second gust wind speed of 120 mph as required by the 2018 Connecticut State Building Code and Appendix N. Applicable Standard references and design criteria are listed in Section 2 - Analysis Criteria.

Respectfully submitted by:



David Jack, P.E.
Project Engineer

RMF



MAR 07 2019

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1) INTRODUCTION

This tower is a 117 ft Monopole tower designed by VALMONT.

2) ANALYSIS CRITERIA

TIA-222 Revision:	TIA-222-H
Risk Category:	II
Wind Speed:	120 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	1.5 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
89.0	89.0	2	cci antennas	OPA-65R-LCUU-H6 w/ Mount Pipe	12 2 4	1-1/4 3/8 5/8
		1	cci antennas	OPA-65R-LCUU-H8 w/ Mount Pipe		
		1	cci antennas	TPA-65R-LCUUUU-H8 w/ Mount Pipe		
		6	cci antennas	TPX-070821		
		3	ericsson	RRUS 11		
		3	ericsson	RRUS 32 B2		
		3	ericsson	RRUS 32 B30		
		3	ericsson	RRUS 4426 B66		
		6	powerwave technologies	7020.00		
		3	powerwave tech	7770.00 w/ Mount Pipe		
		6	powerwave tech	LGP21401		
		2	quintel technology	QS66512-2 w/ Mount Pipe		
		2	raycap	DC6-48-60-18-8F		
		1	tower mounts	Miscellaneous [NA 509-3]		
1	tower mounts	Platform Mount [LP 715-1]				

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
117.0	119.0	3	alcatel lucent	TD-RRH8x20-25	3 1	1-1/4 5/8
		9	rfs celwave	ACU-A20-N		
		3	rfs celwave	APXVSP18-C-A20 w/ MP		
		3	rfs celwave	APXVTM14-ALU-I20 w/ MP		
	117.0	1	tower mounts	Stabilizer Bars		
		1	tower mounts	T-Arm Mount [TA 702-3]		

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
115.0	115.0	3	alcatel lucent	800 EXTERNAL NOTCH FILTER	---	---
		3	alcatel lucent	TME-800MHZ RRH		
		3	alcatel lucent	TME-PCS 1900MHz 4x45W-65MHz		
		1	tower mounts	Side Arm Mount [SO 102-3]		
110.0	112.0	3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	13	1-5/8
		3	ericsson	Ericsson Air 21 B4A B12P-B8P 4FT w/ Mount Pipe		
		3	ericsson	KRY 112 144/1		
		3	ericsson	RRUS 11 B12		
	110.0	1	tower mounts	T-Arm Mount [TA 602-3]		
100.0	104.0	1	gps	GPS_A	12 2	7/8 1-5/8
	101.0	3	alcatel lucent	B13 RRH 4X30		
		3	alcatel lucent	B25 RRH4X30		
		3	alcatel lucent	B4 RRH2X60-4R		
		6	andrew	HBXX-6516DS-A2M w/ Mount Pipe		
		6	decibel	DB844G65ZAXY w/ Mount Pipe		
		3	kathrein	800 10735V01 w/ Mount Pipe		
		2	raycap	RRFDC-3315-PF-48		
	6	rfs celwave	FD9R6004/2C-3L			
	100.0	1	tower mounts	Platform Mount [LP 715-1]		
93.0	95.0	1	andrew	VHLP1-23	4	1/2
	94.0	1	andrew	VHLP2-11		
		1	andrew	VHLP800-11		
	93.0	1	tower mounts	Pipe Mount [PM 601-3]		
	92.0	1	andrew	VHLP1-23		
84.0	84.0	3	kathrein	800 10504 w/ Mount Pipe	6	1-5/8
		1	tower mounts	Pipe Mount [PM 601-3]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	FDH, 1307951600, 9/26/13	217769	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	FDH, 1308201500, 6/7/13	3907710	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Valmont, 10844-92, 5/19/92	217772	CCISITES
4-POST-MODIFICATION INSPECTION	Sabre, 11-1114, 12/7/10	2785508	CCISITES
4-POST-MODIFICATION INSPECTION	TEP, 131001.806352, 11/7/13	4069331	CCISITES
4-POST-MODIFICATION INSPECTION	TEP, 25562, 5/12/14	5077215	CCISITES
4-POST-MODIFICATION INSPECTION	GPD, 2007278.24, 03/11/08	2218625	CCISITES
4-POST-MODIFICATION INSPECTION	TEP, 131001.806352, 11/7/2013	6122311	CCISITES
4-POST-MODIFICATION INSPECTION	TEP, 25562, 4/6/2016	6232380	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	GPD, 2007178.68, 2/16/2007	1094732	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	TEP, 102000.39, 11/4/2010	2743848	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	TEP, 127875, 12/10/2012	4062469	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	TEP, 25562.12516, 12/20/2013	4115809	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	PJF, 37515-1078.005.7700, 11/12/2015	5969651	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	PJF, 37516-0051, 2/1/2016	6083070	CCISITES

3.1) Analysis Method

tnxTower (version 8.0.5.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

- 1) Tower and structures were built in accordance with the manufacturer's specifications.
 - 2) The tower and structures have been maintained in accordance with the manufacturer's specification.
 - 3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
 - 4) Monopole was reinforced in conformance with the referenced modification drawings.
- This analysis may be affected if any assumptions are not valid or have been made in error. Paul J. Ford & Company should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
117 - 112	Pole	TP15.489x14.36x0.1875	Pole	10.6%	Pass
112 - 110	Pole	TP15.94x15.489x0.1875	Pole	13.6%	Pass
110 - 105	Pole	TP17.07x15.94x0.1875	Pole	27.2%	Pass
105 - 100	Pole	TP18.2x17.07x0.1875	Pole	37.3%	Pass
100 - 95	Pole	TP19.322x18.2x0.25	Pole	40.6%	Pass
95 - 90	Pole	TP20.444x19.322x0.25	Pole	51.1%	Pass
90 - 85	Pole	TP21.566x20.444x0.25	Pole	65.2%	Pass
85 - 81.88	Pole	TP22.266x21.566x0.25	Pole	73.7%	Pass
81.88 - 81.63	Pole + Reinf.	TP22.323x22.266x0.35	Reinf. 9 Tension Rupture	68.3%	Pass
81.63 - 76.63	Pole + Reinf.	TP23.445x22.323x0.3563	Reinf. 9 Tension Rupture	79.5%	Pass
76.63 - 76.08	Pole + Reinf.	TP23.568x23.445x0.3563	Reinf. 9 Tension Rupture	80.7%	Pass
76.08 - 75.83	Pole + Reinf.	TP23.624x23.568x0.4625	Reinf. 12 Tension Rupture	73.8%	Pass
75.83 - 71	Pole + Reinf.	TP24.708x23.624x0.4563	Reinf. 12 Tension Rupture	82.8%	Pass
71 - 70.75	Pole + Reinf.	TP24.764x24.708x0.675	Reinf. 3 Compression	67.3%	Pass
70.75 - 68.08	Pole + Reinf.	TP25.363x24.764x0.6625	Reinf. 3 Compression	71.1%	Pass
68.08 - 67.83	Pole + Reinf.	TP25.42x25.363x0.7125	Reinf. 3 Compression	62.8%	Pass
67.83 - 63.5	Pole + Reinf.	TP26.391x25.42x0.6875	Reinf. 3 Compression	68.0%	Pass
63.5 - 63.25	Pole + Reinf.	TP26.447x26.391x0.9	Reinf. 3 Compression	54.0%	Pass
63.25 - 58.25	Pole + Reinf.	TP27.57x26.447x0.85	Reinf. 3 Compression	58.6%	Pass
58.25 - 53.25	Pole + Reinf.	TP28.692x27.57x0.825	Reinf. 3 Compression	62.8%	Pass
53.25 - 52	Pole + Reinf.	TP30x28.692x0.825	Reinf. 3 Compression	63.8%	Pass
52 - 46.42	Pole + Reinf.	TP29.741x28.472x0.8438	Reinf. 5 Tension Rupture	67.5%	Pass
46.42 - 41.42	Pole + Reinf.	TP30.879x29.741x0.8188	Reinf. 5 Tension Rupture	70.6%	Pass
41.42 - 38.08	Pole + Reinf.	TP31.638x30.879x0.8063	Reinf. 5 Tension Rupture	72.6%	Pass
38.08 - 37.83	Pole + Reinf.	TP31.695x31.638x0.7563	Reinf. 5 Tension Rupture	77.6%	Pass
37.83 - 35	Pole + Reinf.	TP32.339x31.695x0.7438	Reinf. 5 Tension Rupture	79.2%	Pass
35 - 34.75	Pole + Reinf.	TP32.396x32.339x0.8438	Reinf. 6 Tension Rupture	67.2%	Pass
34.75 - 29.75	Pole + Reinf.	TP33.533x32.396x0.8313	Reinf. 6 Tension Rupture	69.5%	Pass
29.75 - 24.75	Pole + Reinf.	TP34.67x33.533x0.8063	Reinf. 6 Tension Rupture	71.7%	Pass
24.75 - 19.75	Pole + Reinf.	TP35.808x34.67x0.7938	Reinf. 6 Tension Rupture	73.7%	Pass

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
19.75 - 14.75	Pole + Reinf.	TP36.945x35.808x0.7688	Reinf. 6 Tension Rupture	75.6%	Pass
14.75 - 12.5	Pole + Reinf.	TP37.457x36.945x0.7688	Reinf. 6 Tension Rupture	76.3%	Pass
12.5 - 12.25	Pole + Reinf.	TP37.514x37.457x0.7688	Reinf. 4 Tension Rupture	77.3%	Pass
12.25 - 11	Pole + Reinf.	TP37.798x37.514x0.7688	Reinf. 4 Tension Rupture	77.7%	Pass
11 - 10.75	Pole + Reinf.	TP37.855x37.798x0.9688	Reinf. 4 Tension Rupture	62.2%	Pass
10.75 - 5.75	Pole + Reinf.	TP38.992x37.855x0.9438	Reinf. 4 Tension Rupture	63.7%	Pass
5.75 - 2.5	Pole + Reinf.	TP39.731x38.992x0.9438	Reinf. 4 Tension Rupture	64.6%	Pass
2.5 - 2.25	Pole + Reinf.	TP39.788x39.731x0.9688	Reinf. 4 Tension Rupture	60.6%	Pass
2.25 - 0	Pole + Reinf.	TP40.3x39.788x0.9688	Reinf. 4 Tension Rupture	61.2%	Pass
				Summary	
			Pole	73.7%	Pass
			Reinforcement	82.8%	Pass
			Overall	82.8%	Pass

Table 5 - Tower Component Stresses vs. Capacity – LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	61.9	Pass
1	Base Plate	0	37.5	Pass
1	Base Foundation Structural Steel	0	67.6	Pass
1	Base Foundation Soil Interaction	0	44.9	Pass
1	Flange	100	33.7	Pass
1	Flange	110	13.2	Pass

Structure Rating (max from all components) =	82.8%
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Notes:

- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed. All ratings per TIA-222-H section 15.5.

4.1) Recommendations

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

APPENDIX A
TNXTOWER OUTPUT

Tower Input Data

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

- 1) Tower is located in Fairfield County, Connecticut.
- 2) Tower base elevation above sea level: 42.2500 ft.
- 3) Basic wind speed of 120 mph.
- 4) Risk Category II.
- 5) Exposure Category C.
- 6) Simplified Topographic Factor Procedure for wind speed-up calculations is used.
- 7) Topographic Category: 1.
- 8) Crest Height: 0.0000 ft.
- 9) Nominal ice thickness of 1.5000 in.
- 10) Ice thickness is considered to increase with height.
- 11) Ice density of 56.00 pcf.
- 12) A wind speed of 50 mph is used in combination with ice.
- 13) Temperature drop of 50 °F.
- 14) Deflections calculated using a wind speed of 60 mph.
- 15) TIA-222-H ANNEX S.
- 16) A non-linear (P-delta) analysis was used.
- 17) Pressures are calculated at each section.
- 18) Stress ratio used in pole design is 1.05.
- 19) Tower analysis based on target reliabilities in accordance with Annex S.
- 20) Load Modification Factors used: $K_{es}(F_w) = 0.95$, $K_{es}(t_i) = 0.85$.
- 21) 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) SR Members Have Cut Ends SR Members Are Concentric	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 Add IBC .6D+W Combination Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder Ignore KL/ry For 60 Deg. Angle Legs	Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation ✓ Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-H Bracing Resist. Exemption Use TIA-222-H Tension Splice Exemption <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 Pole Without Linear Attachments Pole With Shroud Or No Appurtenances Outside and Inside Corner Radii Are Known
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Tapered Pole Section Geometry

Section	Elevation	Section Length	Splice Length	Number of Sides	Top Diameter	Bottom Diameter	Wall Thickness	Bend Radius	Pole Grade
	ft	ft	ft		in	in	in	in	

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	117.0000-112.0000	5.0000	0.00	12	14.3600	15.4886	0.1875	0.7500	A572-65 (65 ksi)
L2	112.0000-110.0000	2.0000	0.00	12	15.4886	15.9400	0.1875	0.7500	A572-65 (65 ksi)
L3	110.0000-105.0000	5.0000	0.00	12	15.9400	17.0700	0.1875	0.7500	A572-65 (65 ksi)
L4	105.0000-100.0000	5.0000	0.00	12	17.0700	18.2000	0.1875	0.7500	A572-65 (65 ksi)
L5	100.0000-95.0000	5.0000	0.00	12	18.2000	19.3221	0.2500	1.0000	A572-65 (65 ksi)
L6	95.0000-90.0000	5.0000	0.00	12	19.3221	20.4442	0.2500	1.0000	A572-65 (65 ksi)
L7	90.0000-85.0000	5.0000	0.00	12	20.4442	21.5663	0.2500	1.0000	A572-65 (65 ksi)
L8	85.0000-81.8800	3.1200	0.00	12	21.5663	22.2665	0.2500	1.0000	A572-65 (65 ksi)
L9	81.8800-81.6300	0.2500	0.00	12	22.2665	22.3226	0.3500	1.4000	A572-65 (65 ksi)
L10	81.6300-76.6300	5.0000	0.00	12	22.3226	23.4447	0.3563	1.4250	A572-65 (65 ksi)
L11	76.6300-76.0800	0.5500	0.00	12	23.4447	23.5681	0.3563	1.4250	A572-65 (65 ksi)
L12	76.0800-75.8300	0.2500	0.00	12	23.5681	23.6242	0.4625	1.8500	A572-65 (65 ksi)
L13	75.8300-71.0000	4.8300	0.00	12	23.6242	24.7082	0.4562	1.8250	A572-65 (65 ksi)
L14	71.0000-70.7500	0.2500	0.00	12	24.7082	24.7643	0.6750	2.7000	A572-65 (65 ksi)
L15	70.7500-68.0800	2.6700	0.00	12	24.7643	25.3635	0.6625	2.6500	A572-65 (65 ksi)
L16	68.0800-67.8300	0.2500	0.00	12	25.3635	25.4196	0.7125	2.8500	A572-65 (65 ksi)
L17	67.8300-63.5000	4.3300	0.00	12	25.4196	26.3913	0.6875	2.7500	A572-65 (65 ksi)
L18	63.5000-63.2500	0.2500	0.00	12	26.3913	26.4474	0.9000	3.6000	A572-65 (65 ksi)
L19	63.2500-58.2500	5.0000	0.00	12	26.4474	27.5695	0.8500	3.4000	A572-65 (65 ksi)
L20	58.2500-53.2500	5.0000	0.00	12	27.5695	28.6916	0.8250	3.3000	A572-65 (65 ksi)
L21	53.2500-47.4200	5.8300	4.58	12	28.6916	30.0000	0.8250	3.3000	A572-65 (65 ksi)
L22	47.4200-46.4200	5.5800	0.00	12	28.4722	29.7414	0.8438	3.3750	A572-65 (65 ksi)
L23	46.4200-41.4200	5.0000	0.00	12	29.7414	30.8787	0.8187	3.2750	A572-65 (65 ksi)
L24	41.4200-38.0800	3.3400	0.00	12	30.8787	31.6384	0.8063	3.2250	A572-65 (65 ksi)
L25	38.0800-37.8300	0.2500	0.00	12	31.6384	31.6952	0.7562	3.0250	A572-65 (65 ksi)
L26	37.8300-35.0000	2.8300	0.00	12	31.6952	32.3390	0.7438	2.9750	A572-65 (65 ksi)
L27	35.0000-34.7500	0.2500	0.00	12	32.3390	32.3958	0.8438	3.3750	A572-65 (65 ksi)
L28	34.7500-29.7500	5.0000	0.00	12	32.3958	33.5331	0.8313	3.3250	A572-65 (65 ksi)
L29	29.7500-24.7500	5.0000	0.00	12	33.5331	34.6704	0.8063	3.2250	A572-65 (65 ksi)
L30	24.7500-19.7500	5.0000	0.00	12	34.6704	35.8077	0.7937	3.1750	A572-65 (65 ksi)
L31	19.7500-14.7500	5.0000	0.00	12	35.8077	36.9450	0.7688	3.0750	A572-65 (65 ksi)
L32	14.7500-12.5000	2.2500	0.00	12	36.9450	37.4568	0.7688	3.0750	A572-65 (65 ksi)
L33	12.5000-12.2500	0.2500	0.00	12	37.4568	37.5136	0.7688	3.0750	A572-65 (65 ksi)
L34	12.2500-11.0000	1.2500	0.00	12	37.5136	37.7980	0.7688	3.0750	A572-65 (65 ksi)
L35	11.0000-	0.2500	0.00	12	37.7980	37.8548	0.9688	3.8750	A572-65

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L36	10.7500 10.7500- 5.7500	5.0000	0.00	12	37.8548	38.9921	0.9437	3.7750	(65 ksi) A572-65
L37	5.7500-2.5000	3.2500	0.00	12	38.9921	39.7314	0.9437	3.7750	(65 ksi) A572-65
L38	2.5000-2.2500	0.2500	0.00	12	39.7314	39.7882	0.9688	3.8750	(65 ksi) A572-65
L39	2.2500-0.0000	2.2500		12	39.7882	40.3000	0.9688	3.8750	(65 ksi) A572-65

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	14.8004	8.5566	219.3727	5.0738	7.4385	29.4916	444.5085	4.2113	3.3460	17.845
	15.9688	9.2380	276.0632	5.4778	8.0231	34.4086	559.3790	4.5467	3.6484	19.458
L2	15.9688	9.2380	276.0632	5.4778	8.0231	34.4086	559.3790	4.5467	3.6484	19.458
	16.4362	9.5106	301.2254	5.6394	8.2569	36.4816	610.3643	4.6808	3.7694	20.104
L3	16.4362	9.5106	301.2254	5.6394	8.2569	36.4816	610.3643	4.6808	3.7694	20.104
	17.6060	10.1928	370.8116	6.0439	8.8423	41.9363	751.3649	5.0166	4.0723	21.719
L4	17.6060	10.1928	370.8116	6.0439	8.8423	41.9363	751.3649	5.0166	4.0723	21.719
	18.7759	10.8750	450.3655	6.4485	9.4276	47.7710	912.5625	5.3524	4.3751	23.334
L5	18.7538	14.4498	594.2582	6.4261	9.4276	63.0339	1204.1282	7.1117	4.2076	16.83
	19.9155	15.3530	712.8159	6.8278	10.0088	71.2186	1444.3583	7.5563	4.5083	18.033
L6	19.9155	15.3530	712.8159	6.8278	10.0088	71.2186	1444.3583	7.5563	4.5083	18.033
	21.0772	16.2563	846.1780	7.2295	10.5901	79.9028	1714.5860	8.0009	4.8090	19.236
L7	21.0772	16.2563	846.1780	7.2295	10.5901	79.9028	1714.5860	8.0009	4.8090	19.236
	22.2389	17.1596	995.2158	7.6312	11.1713	89.0865	2016.5769	8.4454	5.1098	20.439
L8	22.2389	17.1596	995.2158	7.6312	11.1713	89.0865	2016.5769	8.4454	5.1098	20.439
	22.9638	17.7233	1096.5439	7.8819	11.5340	95.0702	2221.8952	8.7229	5.2974	21.19
L9	22.9285	24.6999	1514.3380	7.8461	11.5340	131.2929	3068.4593	12.1565	5.0294	14.37
	22.9866	24.7631	1525.9976	7.8662	11.5631	131.9713	3092.0849	12.1877	5.0445	14.413
L10	22.9844	25.1981	1551.9225	7.8640	11.5631	134.2133	3144.6158	12.4018	5.0277	14.113
	24.1461	26.4853	1802.1075	8.2657	12.1444	148.3906	3651.5583	13.0353	5.3284	14.957
L11	24.1461	26.4853	1802.1075	8.2657	12.1444	148.3906	3651.5583	13.0353	5.3284	14.957
	24.2738	26.6269	1831.1645	8.3099	12.2083	149.9935	3710.4358	13.1050	5.3615	15.05
L12	24.2364	34.4101	2344.8049	8.2718	12.2083	192.0666	4751.2105	16.9356	5.0768	10.977
	24.2945	34.4936	2361.9274	8.2919	12.2374	193.0097	4785.9052	16.9767	5.0918	11.009
L13	24.2967	34.0367	2331.8962	8.2941	12.2374	190.5556	4725.0538	16.7518	5.1085	11.197
	25.4188	35.6291	2674.7519	8.6822	12.7988	208.9840	5419.7726	17.5356	5.3990	11.834
L14	25.3417	52.2361	3851.0504	8.6039	12.7988	300.8907	7803.2722	25.7090	4.8128	7.13
	25.3998	52.3581	3878.0840	8.6240	12.8279	302.3164	7858.0497	25.7690	4.8278	7.152
L15	25.4042	51.4151	3812.1960	8.6284	12.8279	297.1801	7724.5426	25.3050	4.8613	7.338
	26.0245	52.6934	4103.6515	8.8430	13.1383	312.3430	8315.1104	25.9341	5.0219	7.58
L16	26.0069	56.5555	4386.6145	8.8251	13.1383	333.8803	8888.4703	27.8349	4.8879	6.86
	26.0650	56.6842	4416.6342	8.8451	13.1673	335.4232	8949.2983	27.8983	4.9029	6.881
L17	26.0738	54.7507	4274.6142	8.8541	13.1673	324.6375	8661.5273	26.9466	4.9699	7.229
	27.0798	56.9018	4798.5264	9.2020	13.6707	351.0079	9723.1155	28.0054	5.2304	7.608
L18	27.0048	73.8739	6127.1945	9.1259	13.6707	448.1988	12415.357	36.3585	4.6609	5.179
	27.0629	74.0365	6167.7404	9.1460	13.6998	450.2076	12497.514	36.4385	4.6759	5.195
L19	27.0805	70.0602	5859.3568	9.1639	13.6998	427.6975	11872.645	34.4815	4.8099	5.659
	28.2422	73.1314	6664.1887	9.5656	14.2810	466.6466	13503.453	35.9930	5.1106	6.013
L20	28.2511	71.0468	6486.3560	9.5745	14.2810	454.1942	13143.115	34.9671	5.1776	6.276
	29.4127	74.0277	7337.5186	9.9763	14.8623	493.7012	14867.802	36.4342	5.4784	6.64
L21	29.4127	74.0277	7337.5186	9.9763	14.8623	493.7012	14867.802	36.4342	5.4784	6.64
	30.7673	77.5034	8420.3155	10.4446	15.5400	541.8478	17061.842	38.1448	5.8290	7.065
L22	30.2574	75.0629	7313.4643	9.8910	14.7486	495.8759	14819.061	36.9437	5.3693	6.364

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
	30.4929	78.5112	8368.3929	10.3453	15.4060	543.1894	16956.632	38.6408	5.7094	6.767
L23	30.5017	76.2509	8141.5343	10.3543	15.4060	528.4641	16496.955	37.5284	5.7764	7.055
	31.6791	79.2492	9140.2171	10.7615	15.9952	571.4368	18520.557	39.0041	6.0812	7.427
L24	31.6835	78.0718	9011.9048	10.7659	15.9952	563.4148	18260.562	38.4245	6.1147	7.584
	32.4700	80.0441	9712.3001	11.0379	16.3887	592.6225	19679.753	39.3953	6.3183	7.837
L25	32.4877	75.2018	9154.3794	11.0558	16.3887	558.5794	18549.254	37.0121	6.4523	8.532
	32.5466	75.3403	9205.0420	11.0762	16.4181	560.6630	18651.910	37.0802	6.4676	8.552
L26	32.5510	74.1250	9063.8696	11.0806	16.4181	552.0645	18365.857	36.4821	6.5011	8.741
	33.2174	75.6666	9641.2248	11.3111	16.7516	575.5413	19535.735	37.2408	6.6736	8.973
L27	33.1821	85.5685	10833.999	11.2753	16.7516	646.7450	21952.619	42.1142	6.4056	7.592
	33.2410	85.7230	10892.787	11.2956	16.7810	649.1130	22071.739	42.1903	6.4208	7.61
L28	33.2454	84.4865	10744.171	11.3001	16.7810	640.2569	21770.605	41.5817	6.4543	7.765
	34.4228	87.5306	11947.878	11.7073	17.3702	687.8397	24209.641	43.0799	6.7591	8.131
L29	34.4316	84.9630	11615.142	11.7162	17.3702	668.6840	23535.426	41.8162	6.8261	8.467
	35.6090	87.9156	12868.625	12.1234	17.9593	716.5451	26075.324	43.2694	7.1309	8.845
L30	35.6134	86.5845	12683.146	12.1278	17.9593	706.2173	25699.493	42.6143	7.1644	9.026
	36.7908	89.4913	14003.889	12.5350	18.5484	754.9923	28375.675	44.0449	7.4692	9.41
L31	36.7997	86.7345	13591.894	12.5439	18.5484	732.7804	27540.862	42.6881	7.5362	9.803
	37.9771	89.5498	14958.812	12.9511	19.1375	781.6491	30310.609	44.0737	7.8410	10.2
L32	37.9771	89.5498	14958.812	12.9511	19.1375	781.6491	30310.609	44.0737	7.8410	10.2
	38.5069	90.8166	15602.698	13.1343	19.4026	804.1548	31615.296	44.6972	7.9782	10.378
L33	38.5069	90.8166	15602.698	13.1343	19.4026	804.1548	31615.296	44.6972	7.9782	10.378
	38.5658	90.9574	15675.361	13.1547	19.4321	806.6751	31762.531	44.7664	7.9934	10.398
L34	38.5658	90.9574	15675.361	13.1547	19.4321	806.6751	31762.531	44.7664	7.9934	10.398
	38.8601	91.6612	16042.060	13.2565	19.5793	819.3361	32505.563	45.1128	8.0696	10.497
L35	38.7896	114.8841	19889.808	13.1849	19.5793	1015.8569	40302.144	56.5425	7.5336	7.777
	38.8485	115.0615	19982.081	13.2052	19.6088	1019.0366	40489.115	56.6298	7.5488	7.792
L36	38.8573	112.1681	19506.022	13.2142	19.6088	994.7588	39524.490	55.2057	7.6158	8.07
	40.0347	115.6242	21365.187	13.6213	20.1979	1057.7918	43291.663	56.9067	7.9206	8.393
L37	40.0347	115.6242	21365.187	13.6213	20.1979	1057.7918	43291.663	56.9067	7.9206	8.393
	40.8000	117.8707	22634.851	13.8860	20.5808	1099.8020	45864.345	58.0124	8.1188	8.603
L38	40.7912	120.9151	23189.552	13.8770	20.5808	1126.7544	46988.320	59.5107	8.0518	8.311
	40.8501	121.0925	23291.758	13.8974	20.6103	1130.1030	47195.417	59.5980	8.0670	8.327
L39	40.8501	121.0925	23291.758	13.8974	20.6103	1130.1030	47195.417	59.5980	8.0670	8.327
	41.3799	122.6889	24225.167	14.0806	20.8754	1160.4648	49086.756	60.3838	8.2042	8.469

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
			3				7			

Tower Elevation ft	Gusset Area (per face) ft ²	Gusset Thickness in	Gusset Grade	Adjust. Factor A _r	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontal in	Double Angle Stitch Bolt Spacing Redundants in
L1 117.0000-112.0000				1	1	1			
L2 112.0000-110.0000				1	1	1			
L3 110.0000-105.0000				1	1	1			
L4 105.0000-100.0000				1	1	1			
L5 100.0000-95.0000				1	1	1			
L6 95.0000-90.0000				1	1	1			
L7 90.0000-85.0000				1	1	1			
L8 85.0000-81.8800				1	1	1			
L9 81.8800-81.6300				1	1	1.26348			
L10 81.6300-76.6300				1	1	1.21543			
L11 76.6300-76.0800				1	1	1.2127			
L12 76.0800-75.8300				1	1	1.19873			
L13 75.8300-71.0000				1	1	1.18502			
L14 71.0000-70.7500				1	1	1.06546			
L15 70.7500-68.0800				1	1	1.06784			
L16 68.0800-67.8300				1	1	0.913952			
L17 67.8300-63.5000				1	1	0.924204			
L18 63.5000-63.2500				1	1	0.893525			
L19 63.2500-58.2500				1	1	0.916935			
L20 58.2500-53.2500				1	1	0.918035			
L21 53.2500-47.4200				1	1	0.911906			
L22 47.4200-46.4200				1	1	0.931046			
L23 46.4200-41.4200				1	1	0.93826			
L24 41.4200-38.0800				1	1	0.939449			
L25 38.0800-37.8300				1	1	0.939123			
L26 37.8300-35.0000				1	1	0.94449			
L27 35.0000-34.7500				1	1	0.939563			
L28 34.7500-29.7500				1	1	0.934541			
L29 29.7500-24.7500				1	1	0.944768			
L30 24.7500-19.7500				1	1	0.9422			
L31 19.7500-14.7500				1	1	0.955642			

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_r	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft ²	in					in	in	in
L32 14.7500-12.5000				1	1	0.948549			
L33 12.5000-12.2500				1	1	0.970481			
L34 12.2500-11.0000				1	1	0.966463			
L35 11.0000-10.7500				1	1	0.917329			
L36 10.7500-5.7500				1	1	0.923752			
L37 5.7500-2.5000				1	1	0.913088			
L38 2.5000-2.2500				1	1	0.923428			
L39 2.2500-0.0000				1	1	0.916029			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter r in	Perimeter r in	Weight plf

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		$C_A A_A$ ft ² /ft	Weight plf
LDF6-50A(1-1/4")	C	No	No	Inside Pole	117.0000 - 0.0000	3	No Ice 1/2" Ice 1" Ice 2" Ice	0.0000 0.0000 0.0000 0.0000	0.66 0.66 0.66 0.66
HB058-1-08U1-S2F(5/8")	C	No	No	Inside Pole	117.0000 - 0.0000	1	No Ice 1/2" Ice 1" Ice 2" Ice	0.0000 0.0000 0.0000 0.0000	0.40 0.40 0.40 0.40

LDF7-50A(1-5/8")	C	No	No	Inside Pole	110.0000 - 0.0000	12	No Ice 1/2" Ice 1" Ice 2" Ice	0.0000 0.0000 0.0000 0.0000	0.82 0.82 0.82 0.82
MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	C	No	No	CaAa (Out Of Face)	110.0000 - 0.0000	1	No Ice 1/2" Ice 1" Ice 2" Ice	0.1625 0.2625 0.3625 0.5625	1.07 2.37 4.28 9.93

LDF5-50A(7/8")	C	No	No	Inside Pole	100.0000 - 0.0000	12	No Ice 1/2" Ice 1" Ice 2" Ice	0.0000 0.0000 0.0000 0.0000	0.33 0.33 0.33 0.33
HB158-1-08U8-S8J18(1-5/8)	C	No	No	Inside Pole	100.0000 - 0.0000	2	No Ice 1/2" Ice 1" Ice 2" Ice	0.0000 0.0000 0.0000 0.0000	1.30 1.30 1.30 1.30

7983A(1/2")	C	No	No	CaAa (Out Of Face)	93.0000 - 0.0000	3	No Ice 1/2" Ice 1" Ice	0.0000 0.0000 0.0000	0.08 0.74 2.01

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C _A A _A ft ² /ft	Weight plf
7983A(1/2")	C	No	No	CaAa (Out Of Face)	84.0000 - 0.0000	1	2" Ice	0.0000	6.39
							No Ice	0.0000	0.08
							1/2" Ice	0.0000	0.74
							1" Ice	0.0000	2.01
7983A(1/2")	C	No	No	CaAa (Out Of Face)	93.0000 - 84.0000	1	2" Ice	0.0000	6.39
							No Ice	0.0580	0.08
							1/2" Ice	0.1580	0.74
							1" Ice	0.2580	2.01
							2" Ice	0.4580	6.39

LDF6-50A(1-1/4")	C	No	No	Inside Pole	89.0000 - 0.0000	12	No Ice	0.0000	0.66
							1/2" Ice	0.0000	0.66
							1" Ice	0.0000	0.66
							2" Ice	0.0000	0.66
2" (Nominal) Conduit	C	No	No	Inside Pole	89.0000 - 0.0000	2	No Ice	0.0000	0.72
							1/2" Ice	0.0000	0.72
							1" Ice	0.0000	0.72
							2" Ice	0.0000	0.72
FB-L98-002-XXX(3/8")	C	No	No	Inside Pole	89.0000 - 0.0000	2	No Ice	0.0000	0.06
							1/2" Ice	0.0000	0.06
							1" Ice	0.0000	0.06
							2" Ice	0.0000	0.06
WR-VG82ST-BRDA(5/8)	C	No	No	Inside Pole	89.0000 - 0.0000	4	No Ice	0.0000	0.31
							1/2" Ice	0.0000	0.31
							1" Ice	0.0000	0.31
							2" Ice	0.0000	0.31

AVA7-50(1-5/8)	C	No	No	CaAa (Out Of Face)	84.0000 - 0.0000	2	No Ice	0.2010	0.70
							1/2" Ice	0.3010	2.23
							1" Ice	0.4010	4.38
							2" Ice	0.6010	10.50
AVA7-50(1-5/8)	C	No	No	CaAa (Out Of Face)	84.0000 - 0.0000	4	No Ice	0.0000	0.70
							1/2" Ice	0.0000	2.23
							1" Ice	0.0000	4.38
							2" Ice	0.0000	10.50
**									
1" Flat Reinforcement	C	No	No	CaAa (Out Of Face)	72.5000 - 0.0000	1	No Ice	0.1667	0.00
							1/2" Ice	0.2778	0.00
							1" Ice	0.3889	0.00
							2" Ice	0.6111	0.00
3/4" Flat Reinforcement	C	No	No	CaAa (Out Of Face)	77.0800 - 72.5000	1	No Ice	0.1250	0.00
							1/2" Ice	0.2361	0.00
							1" Ice	0.3472	0.00
							2" Ice	0.5694	0.00

Feed Line/Linear Appurtenances Section Areas

Tower Section n	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L1	117.0000-112.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.01
L2	112.0000-110.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L3	110.0000-105.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.813	0.07
L4	105.0000-100.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00

Tower Sectio n	Tower Elevation ft	Face	A_R	A_F	C_{AA}	C_{AA}	Weight K
			ft ²	ft ²	In Face ft ²	Out Face ft ²	
L5	100.0000- 95.0000	C	0.000	0.000	0.000	0.813	0.07
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L6	95.0000-90.0000	C	0.000	0.000	0.000	0.813	0.10
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L7	90.0000-85.0000	C	0.000	0.000	0.000	0.987	0.10
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L8	85.0000-81.8800	C	0.000	0.000	0.000	1.103	0.14
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L9	81.8800-81.6300	C	0.000	0.000	0.000	1.417	0.10
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L10	81.6300-76.6300	C	0.000	0.000	0.000	0.141	0.01
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L11	76.6300-76.0800	C	0.000	0.000	0.000	2.879	0.17
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L12	76.0800-75.8300	C	0.000	0.000	0.000	0.379	0.02
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L13	75.8300-71.0000	C	0.000	0.000	0.000	0.172	0.01
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L14	71.0000-70.7500	C	0.000	0.000	0.000	3.393	0.17
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L15	70.7500-68.0800	C	0.000	0.000	0.000	0.183	0.01
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L16	68.0800-67.8300	C	0.000	0.000	0.000	1.952	0.09
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L17	67.8300-63.5000	C	0.000	0.000	0.000	0.183	0.01
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L18	63.5000-63.2500	C	0.000	0.000	0.000	3.166	0.15
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L19	63.2500-58.2500	C	0.000	0.000	0.000	0.183	0.01
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L20	58.2500-53.2500	C	0.000	0.000	0.000	3.656	0.17
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L21	53.2500-47.4200	C	0.000	0.000	0.000	3.656	0.17
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L22	47.4200-46.4200	C	0.000	0.000	0.000	4.263	0.20
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L23	46.4200-41.4200	C	0.000	0.000	0.000	0.731	0.03
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L24	41.4200-38.0800	C	0.000	0.000	0.000	3.656	0.17
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L25	38.0800-37.8300	C	0.000	0.000	0.000	2.442	0.11
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L26	37.8300-35.0000	C	0.000	0.000	0.000	0.183	0.01
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L27	35.0000-34.7500	C	0.000	0.000	0.000	2.069	0.10
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00

Tower Section n	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L28	34.7500-29.7500	C	0.000	0.000	0.000	0.183	0.01
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L29	29.7500-24.7500	C	0.000	0.000	0.000	3.656	0.17
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L30	24.7500-19.7500	C	0.000	0.000	0.000	3.656	0.17
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L31	19.7500-14.7500	C	0.000	0.000	0.000	3.656	0.17
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L32	14.7500-12.5000	C	0.000	0.000	0.000	3.656	0.17
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L33	12.5000-12.2500	C	0.000	0.000	0.000	1.645	0.08
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L34	12.2500-11.0000	C	0.000	0.000	0.000	0.183	0.01
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L35	11.0000-10.7500	C	0.000	0.000	0.000	0.914	0.04
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L36	10.7500-5.7500	C	0.000	0.000	0.000	0.183	0.01
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L37	5.7500-2.5000	C	0.000	0.000	0.000	3.656	0.17
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L38	2.5000-2.2500	C	0.000	0.000	0.000	2.376	0.11
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
L39	2.2500-0.0000	C	0.000	0.000	0.000	0.183	0.01
		A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.645	0.08

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section n	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L1	117.0000-112.0000	A	1.444	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.01
L2	112.0000-110.0000	A	1.439	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L3	110.0000-105.0000	A	1.435	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	2.247	0.09
L4	105.0000-100.0000	A	1.428	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	2.240	0.09
L5	100.0000-95.0000	A	1.421	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	2.233	0.13
L6	95.0000-90.0000	A	1.413	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	3.248	0.17
L7	90.0000-85.0000	A	1.406	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	3.914	0.24
L8	85.0000-81.8800	A	1.399	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight K
L9	81.8800-81.6300	C	1.396	0.000	0.000	0.000	3.756	0.24
		A		0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
L10	81.6300-76.6300	C	1.391	0.000	0.000	0.000	0.351	0.02
		A		0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
L11	76.6300-76.0800	C	1.387	0.000	0.000	0.000	7.192	0.45
		A		0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
L12	76.0800-75.8300	C	1.386	0.000	0.000	0.000	1.006	0.05
		A		0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
L13	75.8300-71.0000	C	1.381	0.000	0.000	0.000	0.457	0.02
		A		0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
L14	71.0000-70.7500	C	1.376	0.000	0.000	0.000	8.878	0.44
		A		0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
L15	70.7500-68.0800	C	1.373	0.000	0.000	0.000	0.466	0.02
		A		0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
L16	68.0800-67.8300	C	1.371	0.000	0.000	0.000	4.967	0.24
		A		0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
L17	67.8300-63.5000	C	1.366	0.000	0.000	0.000	0.465	0.02
		A		0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
L18	63.5000-63.2500	C	1.361	0.000	0.000	0.000	8.028	0.39
		A		0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
L19	63.2500-58.2500	C	1.355	0.000	0.000	0.000	0.463	0.02
		A		0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
L20	58.2500-53.2500	C	1.344	0.000	0.000	0.000	9.227	0.44
		A		0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
L21	53.2500-47.4200	C	1.330	0.000	0.000	0.000	9.180	0.44
		A		0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
L22	47.4200-46.4200	C	1.321	0.000	0.000	0.000	10.638	0.51
		A		0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
L23	46.4200-41.4200	C	1.312	0.000	0.000	0.000	1.825	0.09
		A		0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
L24	41.4200-38.0800	C	1.299	0.000	0.000	0.000	9.049	0.43
		A		0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
L25	38.0800-37.8300	C	1.293	0.000	0.000	0.000	6.009	0.28
		A		0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
L26	37.8300-35.0000	C	1.288	0.000	0.000	0.000	0.449	0.02
		A		0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
L27	35.0000-34.7500	C	1.282	0.000	0.000	0.000	5.065	0.24
		A		0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
L28	34.7500-29.7500	C	1.272	0.000	0.000	0.000	0.446	0.02
		A		0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
L29	29.7500-24.7500	C	1.251	0.000	0.000	0.000	8.885	0.42
		A		0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
L30	24.7500-19.7500	C	1.226	0.000	0.000	0.000	8.798	0.41
		A		0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
L31	19.7500-14.7500	C	1.195	0.000	0.000	0.000	8.695	0.40
		A		0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L32	14.7500-12.5000	C		0.000	0.000	0.000	8.568	0.40
		A	1.167	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
L33	12.5000-12.2500	C		0.000	0.000	0.000	3.804	0.17
		A	1.156	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.420	0.02
L34	12.2500-11.0000	A	1.149	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	2.095	0.10
L35	11.0000-10.7500	A	1.141	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.417	0.02
L36	10.7500-5.7500	A	1.110	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	8.218	0.37
L37	5.7500-2.5000	A	1.035	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	5.143	0.23
L38	2.5000-2.2500	A	0.980	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.384	0.02
L39	2.2500-0.0000	A	0.909	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	3.327	0.14

Feed Line Center of Pressure

Section	Elevation ft	CP _x in	CP _z in	CP _x Ice in	CP _z Ice in
L1	117.0000-112.0000	0.0000	0.0000	0.0000	0.0000
L2	112.0000-110.0000	0.0000	0.0000	0.0000	0.0000
L3	110.0000-105.0000	-0.7691	0.4440	-1.3173	0.7605
L4	105.0000-100.0000	-0.7743	0.4470	-1.3404	0.7739
L5	100.0000-95.0000	-0.7797	0.4501	-1.3619	0.7863
L6	95.0000-90.0000	-0.9352	0.5400	-1.8822	1.0867
L7	90.0000-85.0000	-1.0364	0.5984	-2.2044	1.2727
L8	85.0000-81.8800	-1.9265	1.1123	-3.0573	1.7651
L9	81.8800-81.6300	-2.2878	1.3209	-3.4035	1.9650
L10	81.6300-76.6300	-2.3379	1.3498	-3.5014	2.0216
L11	76.6300-76.0800	-2.6930	1.5548	-4.1128	2.3745
L12	76.0800-75.8300	-2.6987	1.5581	-4.1228	2.3803
L13	75.8300-71.0000	-2.7534	1.5897	-4.1816	2.4143
L14	71.0000-70.7500	-2.8586	1.6504	-4.2678	2.4640
L15	70.7500-68.0800	-2.8680	1.6558	-4.2900	2.4768
L16	68.0800-67.8300	-2.8790	1.6622	-4.3138	2.4906
L17	67.8300-63.5000	-2.8929	1.6702	-4.3467	2.5095
L18	63.5000-63.2500	-2.9131	1.6819	-4.3860	2.5323
L19	63.2500-58.2500	-2.9274	1.6901	-4.4203	2.5520
L20	58.2500-53.2500	-2.9553	1.7062	-4.4835	2.5886
L21	53.2500-47.4200	-2.9843	1.7230	-4.5466	2.6250
L22	47.4200-46.4200	-2.9913	1.7270	-4.5648	2.6355
L23	46.4200-41.4200	-3.0059	1.7355	-4.5845	2.6469
L24	41.4200-38.0800	-3.0259	1.7470	-4.6239	2.6696
L25	38.0800-37.8300	-3.0331	1.7512	-4.6381	2.6778
L26	37.8300-35.0000	-3.0400	1.7551	-4.6505	2.6850
L27	35.0000-34.7500	-3.0495	1.7606	-4.6658	2.6938
L28	34.7500-29.7500	-3.0609	1.7672	-4.6845	2.7046
L29	29.7500-24.7500	-3.0816	1.7792	-4.7141	2.7217
L30	24.7500-19.7500	-3.1016	1.7907	-4.7346	2.7335

Section	Elevation	CP _x	CP _z	CP _x	CP _z
	ft	in	in	Ice in	Ice in
L31	19.7500-14.7500	-3.1202	1.8014	-4.7425	2.7381
L32	14.7500-12.5000	-3.1336	1.8092	-4.7379	2.7354
L33	12.5000-12.2500	-3.1381	1.8118	-4.7334	2.7328
L34	12.2500-11.0000	-3.1407	1.8133	-4.7297	2.7307
L35	11.0000-10.7500	-3.1480	1.8175	-4.7311	2.7315
L36	10.7500-5.7500	-3.1565	1.8224	-4.7067	2.7174
L37	5.7500-2.5000	-3.1703	1.8304	-4.6256	2.6706
L38	2.5000-2.2500	-3.1766	1.8340	-4.5504	2.6272
L39	2.2500-0.0000	-3.1806	1.8363	-4.4423	2.5648

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

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
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Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustmen t	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K	
			Horz Lateral ft	Vert ft						
APXVSP18-C-A20 w/ Mount Pipe	A	From Leg	4.0000	0.00	0.00	117.0000	No Ice	8.2619	6.9458	0.08
							1/2"	8.8215	8.1266	0.15
							Ice	9.3462	9.0212	0.23
							1" Ice	10.4181	10.8440	0.41
APXVSP18-C-A20 w/ Mount Pipe	B	From Leg	4.0000	0.00	0.00	117.0000	No Ice	8.2619	6.9458	0.08
							1/2"	8.8215	8.1266	0.15
							Ice	9.3462	9.0212	0.23
							1" Ice	10.4181	10.8440	0.41
APXVSP18-C-A20 w/ Mount Pipe	C	From Leg	4.0000	0.00	0.00	117.0000	No Ice	8.2619	6.9458	0.08
							1/2"	8.8215	8.1266	0.15
							Ice	9.3462	9.0212	0.23
							1" Ice	10.4181	10.8440	0.41
APXVTM14-ALU-I20 w/ Mount Pipe	A	From Leg	4.0000	0.00	0.00	117.0000	No Ice	6.5799	4.9591	0.08
							1/2"	7.0306	5.7544	0.13
							Ice	7.4733	6.4723	0.19
							1" Ice	8.3846	7.9407	0.34
APXVTM14-ALU-I20 w/ Mount Pipe	B	From Leg	4.0000	0.00	0.00	117.0000	No Ice	6.5799	4.9591	0.08
							1/2"	7.0306	5.7544	0.13
							Ice	7.4733	6.4723	0.19
							1" Ice	8.3846	7.9407	0.34
APXVTM14-ALU-I20 w/ Mount Pipe	C	From Leg	4.0000	0.00	0.00	117.0000	No Ice	6.5799	4.9591	0.08
							1/2"	7.0306	5.7544	0.13
							Ice	7.4733	6.4723	0.19
							1" Ice	8.3846	7.9407	0.34
(3) ACU-A20-N	A	From Leg	4.0000	0.00	0.00	117.0000	No Ice	0.0667	0.1167	0.00
							1/2"	0.1037	0.1620	0.00
							Ice	0.1481	0.2148	0.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
(3) ACU-A20-N	B	From Leg	4.0000 0.00 2.00	0.00	117.0000	1" Ice	0.2593	0.3426	0.01
						2" Ice			
						No Ice	0.0667	0.1167	0.00
						1/2" Ice	0.1037	0.1620	0.00
(3) ACU-A20-N	C	From Leg	4.0000 0.00 2.00	0.00	117.0000	1" Ice	0.1481	0.2148	0.00
						2" Ice	0.2593	0.3426	0.01
						No Ice	0.0667	0.1167	0.00
						1/2" Ice	0.1037	0.1620	0.00
TD-RRH8x20-25	A	From Leg	4.0000 0.00 2.00	0.00	117.0000	Ice	0.1481	0.2148	0.00
						1" Ice	0.2593	0.3426	0.01
						2" Ice			
						No Ice	4.0455	1.5345	0.07
TD-RRH8x20-25	B	From Leg	4.0000 0.00 2.00	0.00	117.0000	1/2" Ice	4.2975	1.7142	0.10
						Ice	4.5570	1.9008	0.13
						1" Ice	5.0981	2.2951	0.20
						2" Ice			
TD-RRH8x20-25	C	From Face	4.0000 0.00 2.00	0.00	117.0000	No Ice	4.0455	1.5345	0.07
						1/2" Ice	4.2975	1.7142	0.10
						Ice	4.5570	1.9008	0.13
						1" Ice	5.0981	2.2951	0.20
T-Arm Mount [TA 702-3]	C	None		0.00	117.0000	2" Ice			
						No Ice	5.6400	5.6400	0.34
						1/2" Ice	6.5500	6.5500	0.43
						Ice	7.4600	7.4600	0.52
Stabalizer Bars	C	None		0.00	117.0000	1" Ice	9.2800	9.2800	0.70
						2" Ice			
						No Ice	2.6100	2.6100	0.04
						1/2" Ice	3.7000	3.7000	0.05
**** 800 EXTERNAL NOTCH FILTER	A	From Leg	2.0000 0.00 0.00	0.00	115.0000	Ice	4.7900	4.7900	0.06
						1" Ice	6.9700	6.9700	0.08
						2" Ice			
						No Ice	0.6601	0.3211	0.01
800 EXTERNAL NOTCH FILTER	B	From Leg	2.0000 0.00 0.00	0.00	115.0000	1/2" Ice	0.7627	0.3983	0.02
						Ice	0.8727	0.4830	0.02
						1" Ice	1.1149	0.6744	0.04
						2" Ice			
800 EXTERNAL NOTCH FILTER	C	From Leg	2.0000 0.00 0.00	0.00	115.0000	No Ice	0.6601	0.3211	0.01
						1/2" Ice	0.7627	0.3983	0.02
						Ice	0.8727	0.4830	0.02
						1" Ice	1.1149	0.6744	0.04
TME-PCS 1900MHz 4x45W-65MHz	A	From Leg	2.0000 0.00 0.00	0.00	115.0000	2" Ice			
						No Ice	2.3218	2.2381	0.06
						1/2" Ice	2.5266	2.4407	0.08
						Ice	2.7388	2.6507	0.11
TME-PCS 1900MHz 4x45W-65MHz	B	From Leg	2.0000 0.00 0.00	0.00	115.0000	1" Ice	3.1855	3.0929	0.17
						2" Ice			
						No Ice	2.3218	2.2381	0.06
						1/2" Ice	2.5266	2.4407	0.08
TME-PCS 1900MHz 4x45W-65MHz	C	From Leg	2.0000 0.00	0.00	115.0000	Ice	2.7388	2.6507	0.11
						1" Ice	3.1855	3.0929	0.17
						2" Ice			
						No Ice	2.3218	2.2381	0.06
TME-PCS 1900MHz 4x45W-65MHz	C	From Leg	2.0000 0.00	0.00	115.0000	1/2" Ice	2.5266	2.4407	0.08
						Ice	2.7388	2.6507	0.11

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
			0.00			Ice 2.7388	2.6507	0.11
						1" Ice 3.1855	3.0929	0.17
						2" Ice		
TME-800MHZ RRH	A	From Leg	2.0000	0.00	115.0000	No Ice 2.1342	1.7730	0.05
			0.00			1/2" 2.3195	1.9461	0.07
			0.00			Ice 2.5123	2.1267	0.10
						1" Ice 2.9201	2.5100	0.16
						2" Ice		
TME-800MHZ RRH	B	From Leg	2.0000	0.00	115.0000	No Ice 2.1342	1.7730	0.05
			0.00			1/2" 2.3195	1.9461	0.07
			0.00			Ice 2.5123	2.1267	0.10
						1" Ice 2.9201	2.5100	0.16
						2" Ice		
TME-800MHZ RRH	C	From Leg	2.0000	0.00	115.0000	No Ice 2.1342	1.7730	0.05
			0.00			1/2" 2.3195	1.9461	0.07
			0.00			Ice 2.5123	2.1267	0.10
						1" Ice 2.9201	2.5100	0.16
						2" Ice		
Side Arm Mount [SO 102-3]	C	None		0.00	115.0000	No Ice 3.0000	3.0000	0.08
						1/2" 3.4800	3.4800	0.11
						Ice 3.9600	3.9600	0.14
						1" Ice 4.9200	4.9200	0.20
						2" Ice		

ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	1.0000	0.00	110.0000	No Ice 6.3292	5.6424	0.11
			0.00			1/2" 6.7751	6.4259	0.17
			2.00			Ice 7.2137	7.1313	0.23
						1" Ice 8.1168	8.5907	0.38
						2" Ice		
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	1.0000	0.00	110.0000	No Ice 6.3292	5.6424	0.11
			0.00			1/2" 6.7751	6.4259	0.17
			2.00			Ice 7.2137	7.1313	0.23
						1" Ice 8.1168	8.5907	0.38
						2" Ice		
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	1.0000	0.00	110.0000	No Ice 6.3292	5.6424	0.11
			0.00			1/2" 6.7751	6.4259	0.17
			2.00			Ice 7.2137	7.1313	0.23
						1" Ice 8.1168	8.5907	0.38
						2" Ice		
KRY 112 144/1	A	From Leg	1.0000	0.00	110.0000	No Ice 0.3500	0.1750	0.01
			0.00			1/2" 0.4259	0.2343	0.01
			2.00			Ice 0.5093	0.3009	0.02
						1" Ice 0.6981	0.4565	0.03
						2" Ice		
KRY 112 144/1	B	From Leg	1.0000	0.00	110.0000	No Ice 0.3500	0.1750	0.01
			0.00			1/2" 0.4259	0.2343	0.01
			2.00			Ice 0.5093	0.3009	0.02
						1" Ice 0.6981	0.4565	0.03
						2" Ice		
KRY 112 144/1	B	From Leg	1.0000	0.00	110.0000	No Ice 0.3500	0.1750	0.01
			0.00			1/2" 0.4259	0.2343	0.01
			2.00			Ice 0.5093	0.3009	0.02
						1" Ice 0.6981	0.4565	0.03
						2" Ice		
Ericsson Air 21 B4A B12P-B8P 4FT w/ Mount Pipe	A	From Leg	4.0000	0.00	110.0000	No Ice 7.8625	6.8796	0.16
			0.00			1/2" 8.3076	7.5944	0.23
			2.00			Ice 8.7610	8.3255	0.31
						1" Ice 9.6925	9.8364	0.49
						2" Ice		
Ericsson Air 21 B4A B12P-B8P 4FT w/ Mount Pipe	B	From Leg	4.0000	0.00	110.0000	No Ice 7.8625	6.8796	0.16
			0.00			1/2" 8.3076	7.5944	0.23
			2.00			Ice 8.7610	8.3255	0.31
						1" Ice 9.6925	9.8364	0.49
						2" Ice		
Ericsson Air 21 B4A B12P-	C	From Leg	4.0000	0.00	110.0000	No Ice 7.8625	6.8796	0.16

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
B8P 4FT w/ Mount Pipe			0.00 2.00			1/2" Ice 1" Ice 2" Ice	8.3076 8.7610 9.6925 9.8364	7.5944 8.3255 9.8364 9.8364	0.23 0.31 0.49 0.49
RRUS 11 B12	A	From Leg	4.0000 0.00 2.00	0.00	110.0000	No Ice 1/2" Ice 1" Ice 2" Ice	2.8333 3.0426 3.2593 3.7148	1.1821 1.3299 1.4848 1.8259	0.05 0.07 0.10 0.15
RRUS 11 B12	B	From Leg	4.0000 0.00 2.00	0.00	110.0000	No Ice 1/2" Ice 1" Ice 2" Ice	2.8333 3.0426 3.2593 3.7148	1.1821 1.3299 1.4848 1.8259	0.05 0.07 0.10 0.15
RRUS 11 B12	C	From Leg	4.0000 0.00 2.00	0.00	110.0000	No Ice 1/2" Ice 1" Ice 2" Ice	2.8333 3.0426 3.2593 3.7148	1.1821 1.3299 1.4848 1.8259	0.05 0.07 0.10 0.15
T-Arm Mount [TA 602-3]	C	None		0.00	110.0000	No Ice 1/2" Ice 1" Ice 2" Ice	11.5900 15.4400 19.2900 26.9900	11.5900 15.4400 19.2900 26.9900	0.77 0.99 1.21 1.64
(2) 2.375" OD x 4' Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.00	110.0000	No Ice 1/2" Ice 1" Ice 2" Ice	0.8657 1.1106 1.3648 1.9008	0.8657 1.1106 1.3648 1.9008	0.02 0.03 0.04 0.06
(2) 2.375" OD x 4' Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.00	110.0000	No Ice 1/2" Ice 1" Ice 2" Ice	0.8657 1.1106 1.3648 1.9008	0.8657 1.1106 1.3648 1.9008	0.02 0.03 0.04 0.06
(2) 2.375" OD x 4' Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.00	110.0000	No Ice 1/2" Ice 1" Ice 2" Ice	0.8657 1.1106 1.3648 1.9008	0.8657 1.1106 1.3648 1.9008	0.02 0.03 0.04 0.06

(2) HBXX-6516DS-A2M w/ Mount Pipe	A	From Leg	4.0000 0.00 1.00	0.00	100.0000	No Ice 1/2" Ice 1" Ice 2" Ice	6.6672 7.5501 8.4493 9.8792	5.5365 6.8440 8.1652 10.1139	0.07 0.13 0.19 0.35
(2) HBXX-6516DS-A2M w/ Mount Pipe	B	From Leg	4.0000 0.00 1.00	0.00	100.0000	No Ice 1/2" Ice 1" Ice 2" Ice	6.6672 7.5501 8.4493 9.8792	5.5365 6.8440 8.1652 10.1139	0.07 0.13 0.19 0.35
(2) HBXX-6516DS-A2M w/ Mount Pipe	C	From Leg	4.0000 0.00 1.00	0.00	100.0000	No Ice 1/2" Ice 1" Ice 2" Ice	6.6672 7.5501 8.4493 9.8792	5.5365 6.8440 8.1652 10.1139	0.07 0.13 0.19 0.35
800 10735V01 w/ Mount Pipe	A	From Leg	4.0000 0.00 1.00	0.00	100.0000	No Ice 1/2" Ice 1" Ice 2" Ice	8.8727 9.4550 10.0100 11.1272	5.4888 6.7103 7.6880 9.5633	0.06 0.12 0.19 0.36
800 10735V01 w/ Mount Pipe	B	From Leg	4.0000 0.00 1.00	0.00	100.0000	No Ice 1/2" Ice 1" Ice 2" Ice	8.8727 9.4550 10.0100 11.1272	5.4888 6.7103 7.6880 9.5633	0.06 0.12 0.19 0.36

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Lateral					
800 10735V01 w/ Mount Pipe	C	From Leg	4.0000	0.00	100.0000	No Ice	8.8727	5.4888	0.06
			0.00			1/2"	9.4550	6.7103	0.12
			1.00			Ice	10.0100	7.6880	0.19
						1" Ice	11.1272	9.5633	0.36
						2" Ice			
(2) DB844G65ZAXY w/ Mount Pipe	A	From Leg	4.0000	0.00	100.0000	No Ice	4.5782	4.8023	0.03
			0.00			1/2"	4.9555	5.4160	0.08
			1.00			Ice	5.3404	6.0401	0.13
						1" Ice	6.1369	7.3370	0.26
						2" Ice			
(2) DB844G65ZAXY w/ Mount Pipe	B	From Leg	4.0000	0.00	100.0000	No Ice	4.5782	4.8023	0.03
			0.00			1/2"	4.9555	5.4160	0.08
			1.00			Ice	5.3404	6.0401	0.13
						1" Ice	6.1369	7.3370	0.26
						2" Ice			
(2) DB844G65ZAXY w/ Mount Pipe	C	From Leg	4.0000	0.00	100.0000	No Ice	4.5782	4.8023	0.03
			0.00			1/2"	4.9555	5.4160	0.08
			1.00			Ice	5.3404	6.0401	0.13
						1" Ice	6.1369	7.3370	0.26
						2" Ice			
(2) FD9R6004/2C-3L	A	From Leg	4.0000	0.00	100.0000	No Ice	0.3142	0.0762	0.00
			0.00			1/2"	0.3862	0.1189	0.01
			1.00			Ice	0.4656	0.1685	0.01
						1" Ice	0.6468	0.2940	0.02
						2" Ice			
(2) FD9R6004/2C-3L	B	From Leg	4.0000	0.00	100.0000	No Ice	0.3142	0.0762	0.00
			0.00			1/2"	0.3862	0.1189	0.01
			1.00			Ice	0.4656	0.1685	0.01
						1" Ice	0.6468	0.2940	0.02
						2" Ice			
(2) FD9R6004/2C-3L	C	From Leg	4.0000	0.00	100.0000	No Ice	0.3142	0.0762	0.00
			0.00			1/2"	0.3862	0.1189	0.01
			1.00			Ice	0.4656	0.1685	0.01
						1" Ice	0.6468	0.2940	0.02
						2" Ice			
B4 RRH2X60-4R	A	From Leg	4.0000	0.00	100.0000	No Ice	3.3554	2.0048	0.06
			0.00			1/2"	3.6120	2.2369	0.08
			1.00			Ice	3.8757	2.4759	0.11
						1" Ice	4.4240	2.9750	0.18
						2" Ice			
B4 RRH2X60-4R	B	From Leg	4.0000	0.00	100.0000	No Ice	3.3554	2.0048	0.06
			0.00			1/2"	3.6120	2.2369	0.08
			1.00			Ice	3.8757	2.4759	0.11
						1" Ice	4.4240	2.9750	0.18
						2" Ice			
B4 RRH2X60-4R	C	From Leg	4.0000	0.00	100.0000	No Ice	3.3554	2.0048	0.06
			0.00			1/2"	3.6120	2.2369	0.08
			1.00			Ice	3.8757	2.4759	0.11
						1" Ice	4.4240	2.9750	0.18
						2" Ice			
B13 RRH 4X30	A	From Leg	4.0000	0.00	100.0000	No Ice	2.0552	1.3201	0.06
			0.00			1/2"	2.2405	1.4754	0.07
			1.00			Ice	2.4333	1.6376	0.09
						1" Ice	2.8411	1.9966	0.14
						2" Ice			
B13 RRH 4X30	B	From Leg	4.0000	0.00	100.0000	No Ice	2.0552	1.3201	0.06
			0.00			1/2"	2.2405	1.4754	0.07
			1.00			Ice	2.4333	1.6376	0.09
						1" Ice	2.8411	1.9966	0.14
						2" Ice			
B13 RRH 4X30	C	From Leg	4.0000	0.00	100.0000	No Ice	2.0552	1.3201	0.06
			0.00			1/2"	2.2405	1.4754	0.07
			1.00			Ice	2.4333	1.6376	0.09
						1" Ice	2.8411	1.9966	0.14
						2" Ice			

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Lateral						Vert
			ft	ft	°	ft	ft ²	ft ²	K	
B25 RRH4X30	A	From Leg	4.0000		0.00	100.0000	No Ice	2.2000	1.7417	0.06
			0.00				1/2"	2.3926	1.9204	0.08
			1.00				Ice	2.5926	2.1065	0.10
							1" Ice	3.0148	2.5009	0.16
							2" Ice			
B25 RRH4X30	B	From Leg	4.0000		0.00	100.0000	No Ice	2.2000	1.7417	0.06
			0.00				1/2"	2.3926	1.9204	0.08
			1.00				Ice	2.5926	2.1065	0.10
							1" Ice	3.0148	2.5009	0.16
							2" Ice			
B25 RRH4X30	C	From Leg	4.0000		0.00	100.0000	No Ice	2.2000	1.7417	0.06
			0.00				1/2"	2.3926	1.9204	0.08
			1.00				Ice	2.5926	2.1065	0.10
							1" Ice	3.0148	2.5009	0.16
							2" Ice			
RRFDC-3315-PF-48	A	From Leg	4.0000		0.00	100.0000	No Ice	3.3636	2.1921	0.03
			0.00				1/2"	3.5972	2.3950	0.06
			1.00				Ice	3.8383	2.6056	0.09
							1" Ice	4.3426	3.0491	0.17
							2" Ice			
RRFDC-3315-PF-48	C	From Leg	4.0000		0.00	100.0000	No Ice	3.3636	2.1921	0.03
			0.00				1/2"	3.5972	2.3950	0.06
			1.00				Ice	3.8383	2.6056	0.09
							1" Ice	4.3426	3.0491	0.17
							2" Ice			
GPS_A	C	From Leg	4.0000		0.00	100.0000	No Ice	0.2550	0.2550	0.00
			0.00				1/2"	0.3205	0.3205	0.00
			4.00				Ice	0.3934	0.3934	0.01
							1" Ice	0.5614	0.5614	0.02
							2" Ice			
Platform Mount [LP 715-1]	C	None			0.00	100.0000	No Ice	44.2100	44.2100	1.77
							1/2"	53.9700	53.9700	2.32
							Ice	63.7300	63.7300	2.87
							1" Ice	83.2500	83.2500	3.97
							2" Ice			
***	Pipe Mount [PM 601-3]	C	None		0.00	93.0000	No Ice	4.3900	4.3900	0.20
							1/2"	5.4800	5.4800	0.24
							Ice	6.5700	6.5700	0.28
							1" Ice	8.7500	8.7500	0.36
							2" Ice			
***	7770.00 w/ Mount Pipe	A	From Leg	4.0000	0.00	89.0000	No Ice	5.7460	4.2543	0.06
0.00							1/2"	6.1791	5.0137	0.10
0.00							Ice	6.6067	5.7109	0.16
							1" Ice	7.4880	7.1553	0.29
							2" Ice			
7770.00 w/ Mount Pipe	B	From Leg	4.0000	0.00	89.0000	No Ice	5.7460	4.2543	0.06	
			0.00				1/2"	6.1791	5.0137	0.10
			0.00				Ice	6.6067	5.7109	0.16
							1" Ice	7.4880	7.1553	0.29
							2" Ice			
7770.00 w/ Mount Pipe	C	From Leg	4.0000	0.00	89.0000	No Ice	5.7460	4.2543	0.06	
			0.00				1/2"	6.1791	5.0137	0.10
			0.00				Ice	6.6067	5.7109	0.16
							1" Ice	7.4880	7.1553	0.29
							2" Ice			
RRUS 11	A	From Leg	4.0000	0.00	89.0000	No Ice	2.7908	1.1923	0.05	
			0.00				1/2"	2.9984	1.3395	0.07
			0.00				Ice	3.2134	1.4957	0.10
							1" Ice	3.6656	1.8390	0.15
							2" Ice			
RRUS 11	B	From Leg	4.0000	0.00	89.0000	No Ice	2.7908	1.1923	0.05	
			0.00				1/2"	2.9984	1.3395	0.07
			0.00				Ice	3.2134	1.4957	0.10

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Lateral						ft
RRUS 11	C	From Leg	4.0000	0.00	0.00	89.0000	1" Ice	3.6656	1.8390	0.15
							2" Ice			
							No Ice	2.7908	1.1923	0.05
							1/2" Ice	2.9984	1.3395	0.07
DC6-48-60-18-8F	A	From Leg	4.0000	0.00	0.00	89.0000	1/2" Ice	3.2134	1.4957	0.10
							1" Ice	3.6656	1.8390	0.15
							2" Ice			
							No Ice	1.2117	1.2117	0.03
QS66512-2 w/ Mount Pipe	A	From Leg	4.0000	0.00	0.00	89.0000	1/2" Ice	1.8924	1.8924	0.05
							1" Ice	2.1051	2.1051	0.08
							2" Ice	2.5703	2.5703	0.14
							No Ice	2.6000	5.0000	0.14
QS66512-2 w/ Mount Pipe	B	From Leg	4.0000	0.00	0.00	89.0000	1/2" Ice	9.2903	9.6573	0.21
							1" Ice	9.9098	10.6203	0.30
							2" Ice	11.1763	12.6104	0.49
							No Ice	2.6000	5.0000	0.14
OPA-65R-LCUU-H6 w/ Mount Pipe	A	From Leg	4.0000	0.00	0.00	89.0000	1/2" Ice	9.2903	9.6573	0.21
							1" Ice	9.9098	10.6203	0.30
							2" Ice	11.1763	12.6104	0.49
							No Ice	2.6000	5.0000	0.14
OPA-65R-LCUU-H6 w/ Mount Pipe	B	From Leg	4.0000	0.00	0.00	89.0000	1/2" Ice	9.9098	10.6203	0.30
							1" Ice	11.1763	12.6104	0.49
							2" Ice			
							No Ice	9.8953	7.1792	0.10
TPA-65R-LCUUUU-H8 w/ Mount Pipe	C	From Leg	4.0000	0.00	0.00	89.0000	1/2" Ice	10.4700	8.3621	0.18
							1" Ice	11.0098	9.2588	0.26
							2" Ice	12.1119	11.0860	0.46
							No Ice	9.8953	7.1792	0.10
OPA-65R-LCUU-H8 w/ Mount Pipe	C	From Leg	4.0000	0.00	0.00	89.0000	1/2" Ice	10.4700	8.3621	0.18
							1" Ice	11.0098	9.2588	0.26
							2" Ice	12.1119	11.0860	0.46
							No Ice	13.5353	10.9597	0.11
RRUS 32 B2	A	From Leg	4.0000	0.00	0.00	89.0000	1/2" Ice	14.2380	12.4861	0.22
							1" Ice	14.9495	14.0367	0.33
							2" Ice	16.3081	16.3910	0.59
							No Ice	12.9838	9.3187	0.12
RRUS 32 B2	B	From Leg	4.0000	0.00	0.00	89.0000	1/2" Ice	13.6685	10.7901	0.21
							1" Ice	14.3572	12.2416	0.32
							2" Ice	15.6789	14.4988	0.56
							No Ice	2.7427	1.6681	0.05
RRUS 32 B2	C	From Leg	4.0000	0.00	0.00	89.0000	1/2" Ice	2.9647	1.8552	0.07
							1" Ice	3.1941	2.0493	0.10
							2" Ice	3.6753	2.4585	0.16
							No Ice	2.7427	1.6681	0.05
RRUS 32 B30	A	From Leg	4.0000	0.00	0.00	89.0000	1/2" Ice	2.9647	1.8552	0.07
							1" Ice	3.1941	2.0493	0.10
							2" Ice	3.6753	2.4585	0.16
							No Ice	2.7427	1.6681	0.05
RRUS 32 B30	B	From Leg	4.0000	0.00	0.00	89.0000	1/2" Ice	2.9647	1.8552	0.07
							1" Ice	3.1941	2.0493	0.10
							2" Ice			
							No Ice	2.7427	1.6681	0.05

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
RRUS 32 B30	C	From Leg	4.0000 0.00 0.00	0.00	89.0000	1" Ice	3.6753	2.4585	0.16
						2" Ice			
						No Ice	2.7427	1.6681	0.05
						1/2" Ice	2.9647	1.8552	0.07
(2) TPX-070821	A	From Leg	4.0000 0.00 0.00	0.00	89.0000	1" Ice	3.1941	2.0493	0.10
						2" Ice	3.6753	2.4585	0.16
						No Ice	0.4688	0.1009	0.01
						1/2" Ice	0.5585	0.1471	0.01
(2) TPX-070821	B	From Leg	4.0000 0.00 0.00	0.00	89.0000	Ice	0.6556	0.2020	0.02
						1" Ice	0.8721	0.3340	0.03
						2" Ice			
						No Ice	0.4688	0.1009	0.01
(2) TPX-070821	C	From Leg	4.0000 0.00 0.00	0.00	89.0000	1/2" Ice	0.5585	0.1471	0.01
						Ice	0.6556	0.2020	0.02
						1" Ice	0.8721	0.3340	0.03
						2" Ice			
DC6-48-60-18-8F	A	From Leg	4.0000 0.00 0.00	0.00	89.0000	No Ice	1.2117	1.2117	0.03
						1/2" Ice	1.8924	1.8924	0.05
						Ice	2.1051	2.1051	0.08
						1" Ice	2.5703	2.5703	0.14
RRUS 4426 B66	A	From Leg	4.0000 0.00 0.00	0.00	89.0000	2" Ice			
						No Ice	1.6444	0.7252	0.05
						1/2" Ice	1.8044	0.8421	0.06
						Ice	1.9719	0.9685	0.08
RRUS 4426 B66	B	From Leg	4.0000 0.00 0.00	0.00	89.0000	1" Ice	2.3292	1.2437	0.11
						2" Ice			
						No Ice	1.6444	0.7252	0.05
						1/2" Ice	1.8044	0.8421	0.06
RRUS 4426 B66	C	From Leg	4.0000 0.00 0.00	0.00	89.0000	Ice	1.9719	0.9685	0.08
						1" Ice	2.3292	1.2437	0.11
						2" Ice			
						No Ice	1.6444	0.7252	0.05
(2) LGP21401	A	From Leg	4.0000 0.00 0.00	0.00	89.0000	1/2" Ice	1.8044	0.8421	0.06
						Ice	1.9719	0.9685	0.08
						1" Ice	2.3292	1.2437	0.11
						2" Ice			
(2) LGP21401	B	From Leg	4.0000 0.00 0.00	0.00	89.0000	No Ice	1.1040	0.3471	0.01
						1/2" Ice	1.2388	0.4422	0.02
						Ice	1.3810	0.5444	0.03
						1" Ice	1.6877	0.7696	0.05
(2) LGP21401	C	From Leg	4.0000 0.00 0.00	0.00	89.0000	2" Ice			
						No Ice	1.1040	0.3471	0.01
						1/2" Ice	1.2388	0.4422	0.02
						Ice	1.3810	0.5444	0.03
(2) 7020.00	A	From Leg	4.0000 0.00 0.00	0.00	89.0000	1" Ice	1.6877	0.7696	0.05
						2" Ice			
						No Ice	0.1021	0.1750	0.00
						1/2" Ice	0.1469	0.2393	0.01
(2) 7020.00	B	From Leg	4.0000 0.00 0.00	0.00	89.0000	Ice	0.1991	0.3109	0.01
						1" Ice	0.3258	0.4765	0.02
						2" Ice			
						No Ice	0.1021	0.1750	0.00
(2) 7020.00	B	From Leg	4.0000 0.00 0.00	0.00	89.0000	1/2" Ice	0.1469	0.2393	0.01
						Ice	0.1991	0.3109	0.01
						1" Ice	0.3258	0.4765	0.02

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C _A A _A Front ft ²	C _A A _A Side ft ²	Weight K
						1" Ice 0.3258	0.4765	0.02
(2) 7020.00	C	From Leg	4.0000 0.00 0.00	0.00	89.0000	2" Ice 0.1021 No Ice 0.1469	0.1750 0.2393	0.00 0.01
						Ice 0.1991	0.3109	0.01
						1" Ice 0.3258	0.4765	0.02
Platform Mount [LP 715-1]	C	None		0.00	89.0000	2" Ice 44.2100 No Ice 53.9700	44.2100 53.9700	1.77 2.32
						Ice 63.7300	63.7300	2.87
						1" Ice 83.2500	83.2500	3.97
Miscellaneous [NA 509-3]	C	None		0.00	89.0000	2" Ice 11.8400 No Ice 16.9600	11.8400 16.9600	0.28 0.30
						Ice 22.0800	22.0800	0.32
						1" Ice 32.3200	32.3200	0.36
***						2" Ice		
800 10504 w/ Mount Pipe	A	From Leg	1.0000 0.00 0.00	0.00	84.0000	No Ice 3.5887 1/2" 4.0069	3.1779 3.9053	0.04 0.07
						Ice 4.4217	4.5808	0.11
						1" Ice 5.2585	5.9816	0.21
						2" Ice		
800 10504 w/ Mount Pipe	B	From Leg	1.0000 0.00 0.00	0.00	84.0000	No Ice 3.5887 1/2" 4.0069	3.1779 3.9053	0.04 0.07
						Ice 4.4217	4.5808	0.11
						1" Ice 5.2585	5.9816	0.21
						2" Ice		
800 10504 w/ Mount Pipe	C	From Leg	1.0000 0.00 0.00	0.00	84.0000	No Ice 3.5887 1/2" 4.0069	3.1779 3.9053	0.04 0.07
						Ice 4.4217	4.5808	0.11
						1" Ice 5.2585	5.9816	0.21
						2" Ice		
Pipe Mount [PM 601-3]	C	None		0.00	84.0000	No Ice 4.3900 1/2" 5.4800	4.3900 5.4800	0.20 0.24
						Ice 6.5700	6.5700	0.28
						1" Ice 8.7500	8.7500	0.36
						2" Ice		

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft	Aperture Area ft ²	Weight K
VHLP2-11	A	Paraboloid w/o Radome	From Leg	2.0000 0.00 1.00	48.00		93.0000	2.1750	No Ice 3.7200 1/2" Ice 4.0100 1" Ice 4.3000 2" Ice 4.8800	0.03 0.05 0.07 0.11
VHLP1-23	A	Paraboloid w/o Radome	From Leg	2.0000 0.00 2.00	68.00		93.0000	1.2750	No Ice 1.2800 1/2" Ice 1.4500 1" Ice 1.6200 2" Ice 1.9700	0.01 0.02 0.03 0.04
VHLP800-11	C	Paraboloid w/o Radome	From Leg	2.0000 0.00 1.00	-2.00		93.0000	2.8000	No Ice 6.1600 1/2" Ice 6.5300 1" Ice 6.9000	0.02 0.06 0.09

Description	Face or Leg	Dish Type	Offset Type	Offsets:		Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter	Aperture Area	Weight
				Horz Lateral	Vert						
				ft	ft	°	°	ft	ft	ft ²	K
VHLP1-23	A	Paraboloid w/o Radome	From Leg	2.0000	68.00	93.0000	1.2750	2" Ice	7.6400	0.17	
				0.00	0.00				No Ice	1.2800	0.01
				-1.00	0.00				1/2" Ice	1.4500	0.02
					0.00				1" Ice	1.6200	0.03
								2" Ice	1.9700	0.04	
**											

Tower Pressures - No Ice

$G_H = 1.100$

Section Elevation	z	K _Z	q _Z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face	C _A A _A Out Face
ft	ft		psf	ft ²		ft ²	ft ²	ft ²		ft ²	ft ²
L1 117.0000-112.0000	114.4685	1.302	43.256	6.410	A	0.000	6.410	6.410	100.00	0.000	0.000
					B	0.000	6.410	100.00	0.000	0.000	
					C	0.000	6.410	100.00	0.000	0.000	
L2 112.0000-110.0000	110.9952	1.294	42.976	2.700	A	0.000	2.700	2.700	100.00	0.000	0.000
					B	0.000	2.700	100.00	0.000	0.000	
					C	0.000	2.700	100.00	0.000	0.000	
L3 110.0000-105.0000	107.4715	1.285	42.685	7.092	A	0.000	7.092	7.092	100.00	0.000	0.000
					B	0.000	7.092	100.00	0.000	0.000	
					C	0.000	7.092	100.00	0.000	0.813	
L4 105.0000-100.0000	102.4733	1.272	42.259	7.580	A	0.000	7.580	7.580	100.00	0.000	0.000
					B	0.000	7.580	100.00	0.000	0.000	
					C	0.000	7.580	100.00	0.000	0.813	
L5 100.0000-95.0000	97.4751	1.259	41.817	8.056	A	0.000	8.056	8.056	100.00	0.000	0.000
					B	0.000	8.056	100.00	0.000	0.000	
					C	0.000	8.056	100.00	0.000	0.813	
L6 95.0000-90.0000	92.4765	1.245	41.356	8.540	A	0.000	8.540	8.540	100.00	0.000	0.000
					B	0.000	8.540	100.00	0.000	0.000	
					C	0.000	8.540	100.00	0.000	0.987	
L7 90.0000-85.0000	87.4777	1.23	40.875	9.024	A	0.000	9.024	9.024	100.00	0.000	0.000
					B	0.000	9.024	100.00	0.000	0.000	
					C	0.000	9.024	100.00	0.000	1.103	
L8 85.0000-81.8800	83.4317	1.218	40.469	5.876	A	0.000	5.876	5.876	100.00	0.000	0.000
					B	0.000	5.876	100.00	0.000	0.000	
					C	0.000	5.876	100.00	0.000	1.417	
L9 81.8800-81.6300	81.7549	1.213	40.297	0.478	A	0.000	0.478	0.478	100.00	0.000	0.000
					B	0.000	0.478	100.00	0.000	0.000	
					C	0.000	0.478	100.00	0.000	0.141	
L10 81.6300-76.6300	79.1096	1.205	40.019	9.819	A	0.000	9.819	9.819	100.00	0.000	0.000
					B	0.000	9.819	100.00	0.000	0.000	
					C	0.000	9.819	100.00	0.000	2.879	
L11 76.6300-76.0800	76.3548	1.196	39.721	1.110	A	0.000	1.110	1.110	100.00	0.000	0.000
					B	0.000	1.110	100.00	0.000	0.000	
					C	0.000	1.110	100.00	0.000	0.379	
L12 76.0800-75.8300	75.9550	1.194	39.677	0.506	A	0.000	0.506	0.506	100.00	0.000	0.000
					B	0.000	0.506	100.00	0.000	0.000	
					C	0.000	0.506	100.00	0.000	0.172	
L13 75.8300-71.0000	73.3969	1.186	39.392	10.005	A	0.000	10.005	10.005	100.00	0.000	0.000
					B	0.000	10.005	100.00	0.000	0.000	
					C	0.000	10.005	100.00	0.000	3.393	
L14 71.0000-70.7500	70.8750	1.177	39.103	0.529	A	0.000	0.529	0.529	100.00	0.000	0.000
					B	0.000	0.529	100.00	0.000	0.000	
					C	0.000	0.529	100.00	0.000	0.183	
L15 70.7500-68.0800	69.4097	1.172	38.932	5.721	A	0.000	5.721	5.721	100.00	0.000	0.000
					B	0.000	5.721	100.00	0.000	0.000	
					C	0.000	5.721	100.00	0.000	1.952	
L16 68.0800-67.8300	67.9550	1.167	38.758	0.542	A	0.000	0.542	0.542	100.00	0.000	0.000
					B	0.000	0.542	100.00	0.000	0.000	
					C	0.000	0.542	100.00	0.000	0.183	

Section Elevation	z	K _Z	q _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
ft	ft		psf	ft ²		ft ²	ft ²	ft ²		ft ²	ft ²
L17 67.8300- 63.5000	65.6515	1.158	38.47 8	9.590	A B C	0.000 0.000 0.000	9.590 9.590 9.590	9.590	100.00 100.00 100.00	0.000 0.000 0.000	0.000 0.000 3.166
L18 63.5000- 63.2500	63.3750	1.15	38.19 3	0.563	A B C	0.000 0.000 0.000	0.563 0.563 0.563	0.563	100.00 100.00 100.00	0.000 0.000 0.000	0.000 0.000 0.183
L19 63.2500- 58.2500	60.7327	1.139	37.85 2	11.526	A B C	0.000 0.000 0.000	11.526 11.526 11.526	11.526	100.00 100.00 100.00	0.000 0.000 0.000	0.000 0.000 3.656
L20 58.2500- 53.2500	55.7334	1.119	37.17 4	12.013	A B C	0.000 0.000 0.000	12.013 12.013 12.013	12.013	100.00 100.00 100.00	0.000 0.000 0.000	0.000 0.000 3.656
L21 53.2500- 47.4200	50.3133	1.095	36.38 2	14.619	A B C	0.000 0.000 0.000	14.619 14.619 14.619	14.619	100.00 100.00 100.00	0.000 0.000 0.000	0.000 0.000 4.263
L22 47.4200- 46.4200	46.9194	1.079	35.85 1	2.531	A B C	0.000 0.000 0.000	2.531 2.531 2.531	2.531	100.00 100.00 100.00	0.000 0.000 0.000	0.000 0.000 0.731
L23 46.4200- 41.4200	43.9044	1.064	35.35 3	12.954	A B C	0.000 0.000 0.000	12.954 12.954 12.954	12.954	100.00 100.00 100.00	0.000 0.000 0.000	0.000 0.000 3.656
L24 41.4200- 38.0800	39.7432	1.042	34.62 0	8.928	A B C	0.000 0.000 0.000	8.928 8.928 8.928	8.928	100.00 100.00 100.00	0.000 0.000 0.000	0.000 0.000 2.442
L25 38.0800- 37.8300	37.9550	1.032	34.28 6	0.677	A B C	0.000 0.000 0.000	0.677 0.677 0.677	0.677	100.00 100.00 100.00	0.000 0.000 0.000	0.000 0.000 0.183
L26 37.8300- 35.0000	36.4103	1.023	33.98 7	7.755	A B C	0.000 0.000 0.000	7.755 7.755 7.755	7.755	100.00 100.00 100.00	0.000 0.000 0.000	0.000 0.000 2.069
L27 35.0000- 34.7500	34.8750	1.014	33.68 0	0.692	A B C	0.000 0.000 0.000	0.692 0.692 0.692	0.692	100.00 100.00 100.00	0.000 0.000 0.000	0.000 0.000 0.183
L28 34.7500- 29.7500	32.2356	0.997	33.12 7	14.098	A B C	0.000 0.000 0.000	14.098 14.098 14.098	14.098	100.00 100.00 100.00	0.000 0.000 0.000	0.000 0.000 3.656
L29 29.7500- 24.7500	27.2361	0.962	31.97 2	14.592	A B C	0.000 0.000 0.000	14.592 14.592 14.592	14.592	100.00 100.00 100.00	0.000 0.000 0.000	0.000 0.000 3.656
L30 24.7500- 19.7500	22.2366	0.922	30.63 6	15.084	A B C	0.000 0.000 0.000	15.084 15.084 15.084	15.084	100.00 100.00 100.00	0.000 0.000 0.000	0.000 0.000 3.656
L31 19.7500- 14.7500	17.2370	0.874	29.03 6	15.578	A B C	0.000 0.000 0.000	15.578 15.578 15.578	15.578	100.00 100.00 100.00	0.000 0.000 0.000	0.000 0.000 3.656
L32 14.7500- 12.5000	13.6224	0.85	28.23 6	7.170	A B C	0.000 0.000 0.000	7.170 7.170 7.170	7.170	100.00 100.00 100.00	0.000 0.000 0.000	0.000 0.000 1.645
L33 12.5000- 12.2500	12.3750	0.85	28.23 6	0.803	A B C	0.000 0.000 0.000	0.803 0.803 0.803	0.803	100.00 100.00 100.00	0.000 0.000 0.000	0.000 0.000 0.183
L34 12.2500- 11.0000	11.6242	0.85	28.23 6	4.033	A B C	0.000 0.000 0.000	4.033 4.033 4.033	4.033	100.00 100.00 100.00	0.000 0.000 0.000	0.000 0.000 0.914
L35 11.0000- 10.7500	10.8750	0.85	28.23 6	0.809	A B C	0.000 0.000 0.000	0.809 0.809 0.809	0.809	100.00 100.00 100.00	0.000 0.000 0.000	0.000 0.000 0.183
L36 10.7500- 5.7500	8.2377	0.85	28.23 6	16.436	A B C	0.000 0.000 0.000	16.436 16.436 16.436	16.436	100.00 100.00 100.00	0.000 0.000 0.000	0.000 0.000 3.656
L37 5.7500- 2.5000	4.1199	0.85	28.23 6	10.946	A B C	0.000 0.000 0.000	10.946 10.946 10.946	10.946	100.00 100.00 100.00	0.000 0.000 0.000	0.000 0.000 2.376
L38 2.5000- 2.2500	2.3750	0.85	28.23 6	0.850	A B C	0.000 0.000 0.000	0.850 0.850 0.850	0.850	100.00 100.00 100.00	0.000 0.000 0.000	0.000 0.000 0.183
L39 2.2500- 0.0000	1.1226	0.85	28.23 6	7.709	A B	0.000 0.000	7.709 7.709	7.709	100.00 100.00	0.000 0.000	0.000 0.000

Section Elevation	z	K _Z	q _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face	C _A A _A Out Face
ft	ft		psf	ft ²		ft ²	ft ²	ft ²		ft ²	ft ²
					C	0.000	7.709		100.00	0.000	1.645

Tower Pressure - With Ice

G_H = 1.100

Section Elevation	z	K _Z	q _z	t _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face	C _A A _A Out Face
ft	ft		psf	in	ft ²		ft ²	ft ²	ft ²		ft ²	ft ²
L1 117.0000-112.0000	114.4685	1.302	7.510	1.4439	7.613	A	0.000	7.613	7.613	100.00	0.000	0.000
						B	0.000	7.613		100.00	0.000	0.000
						C	0.000	7.613		100.00	0.000	0.000
L2 112.0000-110.0000	110.9952	1.294	7.461	1.4394	3.180	A	0.000	3.180	3.180	100.00	0.000	0.000
						B	0.000	3.180		100.00	0.000	0.000
						C	0.000	3.180		100.00	0.000	0.000
L3 110.0000-105.0000	107.4715	1.285	7.411	1.4348	8.288	A	0.000	8.288	8.288	100.00	0.000	0.000
						B	0.000	8.288		100.00	0.000	0.000
						C	0.000	8.288		100.00	0.000	2.247
L4 105.0000-100.0000	102.4733	1.272	7.337	1.4280	8.770	A	0.000	8.770	8.770	100.00	0.000	0.000
						B	0.000	8.770		100.00	0.000	0.000
						C	0.000	8.770		100.00	0.000	2.240
L5 100.0000-95.0000	97.4751	1.259	7.260	1.4208	9.240	A	0.000	9.240	9.240	100.00	0.000	0.000
						B	0.000	9.240		100.00	0.000	0.000
						C	0.000	9.240		100.00	0.000	2.233
L6 95.0000-90.0000	92.4765	1.245	7.180	1.4134	9.718	A	0.000	9.718	9.718	100.00	0.000	0.000
						B	0.000	9.718		100.00	0.000	0.000
						C	0.000	9.718		100.00	0.000	3.248
L7 90.0000-85.0000	87.4777	1.23	7.096	1.4056	10.195	A	0.000	10.195	10.195	100.00	0.000	0.000
						B	0.000	10.195		100.00	0.000	0.000
						C	0.000	10.195		100.00	0.000	3.914
L8 85.0000-81.8800	83.4317	1.218	7.026	1.3989	6.604	A	0.000	6.604	6.604	100.00	0.000	0.000
						B	0.000	6.604		100.00	0.000	0.000
						C	0.000	6.604		100.00	0.000	3.756
L9 81.8800-81.6300	81.7549	1.213	6.996	1.3961	0.536	A	0.000	0.536	0.536	100.00	0.000	0.000
						B	0.000	0.536		100.00	0.000	0.000
						C	0.000	0.536		100.00	0.000	0.351
L10 81.6300-76.6300	79.1096	1.205	6.948	1.3915	10.978	A	0.000	10.978	10.978	100.00	0.000	0.000
						B	0.000	10.978		100.00	0.000	0.000
						C	0.000	10.978		100.00	0.000	7.192
L11 76.6300-76.0800	76.3548	1.196	6.896	1.3866	1.237	A	0.000	1.237	1.237	100.00	0.000	0.000
						B	0.000	1.237		100.00	0.000	0.000
						C	0.000	1.237		100.00	0.000	1.006
L12 76.0800-75.8300	75.9550	1.194	6.888	1.3858	0.563	A	0.000	0.563	0.563	100.00	0.000	0.000
						B	0.000	0.563		100.00	0.000	0.000
						C	0.000	0.563		100.00	0.000	0.457
L13 75.8300-71.0000	73.3969	1.186	6.839	1.3811	11.117	A	0.000	11.117	11.117	100.00	0.000	0.000
						B	0.000	11.117		100.00	0.000	0.000
						C	0.000	11.117		100.00	0.000	8.878
L14 71.0000-70.7500	70.8750	1.177	6.789	1.3763	0.586	A	0.000	0.586	0.586	100.00	0.000	0.000
						B	0.000	0.586		100.00	0.000	0.000
						C	0.000	0.586		100.00	0.000	0.466
L15 70.7500-68.0800	69.4097	1.172	6.759	1.3734	6.333	A	0.000	6.333	6.333	100.00	0.000	0.000
						B	0.000	6.333		100.00	0.000	0.000
						C	0.000	6.333		100.00	0.000	4.967
L16 68.0800-67.8300	67.9550	1.167	6.729	1.3705	0.600	A	0.000	0.600	0.600	100.00	0.000	0.000
						B	0.000	0.600		100.00	0.000	0.000
						C	0.000	0.600		100.00	0.000	0.465
L17 67.8300-63.5000	65.6515	1.158	6.680	1.3658	10.575	A	0.000	10.575	10.575	100.00	0.000	0.000
						B	0.000	10.575		100.00	0.000	0.000
						C	0.000	10.575		100.00	0.000	8.028
L18 63.5000-63.2500	63.3750	1.15	6.631	1.3610	0.620	A	0.000	0.620	0.620	100.00	0.000	0.000
						B	0.000	0.620		100.00	0.000	0.000
						C	0.000	0.620		100.00	0.000	0.463
L19 63.2500-	60.7327	1.139	6.572	1.3552	12.655	A	0.000	12.655	12.655	100.00	0.000	0.000

Section Elevation ft	z ft	K _z	q _z psf	t _z in	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
58.2500						B	0.000	12.655		100.00	0.000	0.000
L20 58.2500-53.2500	55.7334	1.119	6.454	1.3436	13.133	C	0.000	12.655		100.00	0.000	9.227
						A	0.000	13.133	13.133	100.00	0.000	0.000
						B	0.000	13.133		100.00	0.000	0.000
						C	0.000	13.133		100.00	0.000	9.180
L21 53.2500-47.4200	50.3133	1.095	6.316	1.3299	15.911	A	0.000	15.911	15.911	100.00	0.000	0.000
						B	0.000	15.911		100.00	0.000	0.000
						C	0.000	15.911		100.00	0.000	10.638
L22 47.4200-46.4200	46.9194	1.079	6.224	1.3207	2.753	A	0.000	2.753	2.753	100.00	0.000	0.000
						B	0.000	2.753		100.00	0.000	0.000
						C	0.000	2.753		100.00	0.000	1.825
L23 46.4200-41.4200	43.9044	1.064	6.138	1.3119	14.048	A	0.000	14.048	14.048	100.00	0.000	0.000
						B	0.000	14.048		100.00	0.000	0.000
						C	0.000	14.048		100.00	0.000	9.049
L24 41.4200-38.0800	39.7432	1.042	6.010	1.2989	9.651	A	0.000	9.651	9.651	100.00	0.000	0.000
						B	0.000	9.651		100.00	0.000	0.000
						C	0.000	9.651		100.00	0.000	6.009
L25 38.0800-37.8300	37.9550	1.032	5.952	1.2930	0.731	A	0.000	0.731	0.731	100.00	0.000	0.000
						B	0.000	0.731		100.00	0.000	0.000
						C	0.000	0.731		100.00	0.000	0.449
L26 37.8300-35.0000	36.4103	1.023	5.901	1.2876	8.363	A	0.000	8.363	8.363	100.00	0.000	0.000
						B	0.000	8.363		100.00	0.000	0.000
						C	0.000	8.363		100.00	0.000	5.065
L27 35.0000-34.7500	34.8750	1.014	5.847	1.2821	0.745	A	0.000	0.745	0.745	100.00	0.000	0.000
						B	0.000	0.745		100.00	0.000	0.000
						C	0.000	0.745		100.00	0.000	0.446
L28 34.7500-29.7500	32.2356	0.997	5.751	1.2720	15.158	A	0.000	15.158	15.158	100.00	0.000	0.000
						B	0.000	15.158		100.00	0.000	0.000
						C	0.000	15.158		100.00	0.000	8.885
L29 29.7500-24.7500	27.2361	0.962	5.551	1.2508	15.634	A	0.000	15.634	15.634	100.00	0.000	0.000
						B	0.000	15.634		100.00	0.000	0.000
						C	0.000	15.634		100.00	0.000	8.798
L30 24.7500-19.7500	22.2366	0.922	5.319	1.2256	16.106	A	0.000	16.106	16.106	100.00	0.000	0.000
						B	0.000	16.106		100.00	0.000	0.000
						C	0.000	16.106		100.00	0.000	8.695
L31 19.7500-14.7500	17.2370	0.874	5.041	1.1948	16.574	A	0.000	16.574	16.574	100.00	0.000	0.000
						B	0.000	16.574		100.00	0.000	0.000
						C	0.000	16.574		100.00	0.000	8.568
L32 14.7500-12.5000	13.6224	0.85	4.902	1.1670	7.608	A	0.000	7.608	7.608	100.00	0.000	0.000
						B	0.000	7.608		100.00	0.000	0.000
						C	0.000	7.608		100.00	0.000	3.804
L33 12.5000-12.2500	12.3750	0.85	4.902	1.1559	0.851	A	0.000	0.851	0.851	100.00	0.000	0.000
						B	0.000	0.851		100.00	0.000	0.000
						C	0.000	0.851		100.00	0.000	0.420
L34 12.2500-11.0000	11.6242	0.85	4.902	1.1487	4.272	A	0.000	4.272	4.272	100.00	0.000	0.000
						B	0.000	4.272		100.00	0.000	0.000
						C	0.000	4.272		100.00	0.000	2.095
L35 11.0000-10.7500	10.8750	0.85	4.902	1.1410	0.856	A	0.000	0.856	0.856	100.00	0.000	0.000
						B	0.000	0.856		100.00	0.000	0.000
						C	0.000	0.856		100.00	0.000	0.417
L36 10.7500-5.7500	8.2377	0.85	4.902	1.1098	17.361	A	0.000	17.361	17.361	100.00	0.000	0.000
						B	0.000	17.361		100.00	0.000	0.000
						C	0.000	17.361		100.00	0.000	8.218
L37 5.7500-2.5000	4.1199	0.85	4.902	1.0355	11.507	A	0.000	11.507	11.507	100.00	0.000	0.000
						B	0.000	11.507		100.00	0.000	0.000
						C	0.000	11.507		100.00	0.000	5.143
L38 2.5000-2.2500	2.3750	0.85	4.902	0.9800	0.891	A	0.000	0.891	0.891	100.00	0.000	0.000
						B	0.000	0.891		100.00	0.000	0.000
						C	0.000	0.891		100.00	0.000	0.384
L39 2.2500-0.0000	1.1226	0.85	4.902	0.9092	8.050	A	0.000	8.050	8.050	100.00	0.000	0.000
						B	0.000	8.050		100.00	0.000	0.000
						C	0.000	8.050		100.00	0.000	3.327

Tower Pressure - Service

$G_H = 1.100$

Section Elevation ft	z ft	K_z	q_z psf	A_G ft ²	Face	A_F ft ²	A_R ft ²	A_{leg} ft ²	Leg %	C_{AA} In Face ft ²	C_{AA} Out Face ft ²
L1 117.0000-112.0000	114.4685	1.302	10.185	6.410	A	0.000	6.410	6.410	100.00	0.000	0.000
					B	0.000	6.410		100.00	0.000	0.000
					C	0.000	6.410		100.00	0.000	0.000
L2 112.0000-110.0000	110.9952	1.294	10.119	2.700	A	0.000	2.700	2.700	100.00	0.000	0.000
					B	0.000	2.700		100.00	0.000	0.000
					C	0.000	2.700		100.00	0.000	0.000
L3 110.0000-105.0000	107.4715	1.285	10.051	7.092	A	0.000	7.092	7.092	100.00	0.000	0.000
					B	0.000	7.092		100.00	0.000	0.000
					C	0.000	7.092		100.00	0.000	0.813
L4 105.0000-100.0000	102.4733	1.272	9.950	7.580	A	0.000	7.580	7.580	100.00	0.000	0.000
					B	0.000	7.580		100.00	0.000	0.000
					C	0.000	7.580		100.00	0.000	0.813
L5 100.0000-95.0000	97.4751	1.259	9.846	8.056	A	0.000	8.056	8.056	100.00	0.000	0.000
					B	0.000	8.056		100.00	0.000	0.000
					C	0.000	8.056		100.00	0.000	0.813
L6 95.0000-90.0000	92.4765	1.245	9.738	8.540	A	0.000	8.540	8.540	100.00	0.000	0.000
					B	0.000	8.540		100.00	0.000	0.000
					C	0.000	8.540		100.00	0.000	0.987
L7 90.0000-85.0000	87.4777	1.23	9.624	9.024	A	0.000	9.024	9.024	100.00	0.000	0.000
					B	0.000	9.024		100.00	0.000	0.000
					C	0.000	9.024		100.00	0.000	1.103
L8 85.0000-81.8800	83.4317	1.218	9.529	5.876	A	0.000	5.876	5.876	100.00	0.000	0.000
					B	0.000	5.876		100.00	0.000	0.000
					C	0.000	5.876		100.00	0.000	1.417
L9 81.8800-81.6300	81.7549	1.213	9.488	0.478	A	0.000	0.478	0.478	100.00	0.000	0.000
					B	0.000	0.478		100.00	0.000	0.000
					C	0.000	0.478		100.00	0.000	0.141
L10 81.6300-76.6300	79.1096	1.205	9.423	9.819	A	0.000	9.819	9.819	100.00	0.000	0.000
					B	0.000	9.819		100.00	0.000	0.000
					C	0.000	9.819		100.00	0.000	2.879
L11 76.6300-76.0800	76.3548	1.196	9.353	1.110	A	0.000	1.110	1.110	100.00	0.000	0.000
					B	0.000	1.110		100.00	0.000	0.000
					C	0.000	1.110		100.00	0.000	0.379
L12 76.0800-75.8300	75.9550	1.194	9.342	0.506	A	0.000	0.506	0.506	100.00	0.000	0.000
					B	0.000	0.506		100.00	0.000	0.000
					C	0.000	0.506		100.00	0.000	0.172
L13 75.8300-71.0000	73.3969	1.186	9.275	10.005	A	0.000	10.005	10.005	100.00	0.000	0.000
					B	0.000	10.005		100.00	0.000	0.000
					C	0.000	10.005		100.00	0.000	3.393
L14 71.0000-70.7500	70.8750	1.177	9.207	0.529	A	0.000	0.529	0.529	100.00	0.000	0.000
					B	0.000	0.529		100.00	0.000	0.000
					C	0.000	0.529		100.00	0.000	0.183
L15 70.7500-68.0800	69.4097	1.172	9.167	5.721	A	0.000	5.721	5.721	100.00	0.000	0.000
					B	0.000	5.721		100.00	0.000	0.000
					C	0.000	5.721		100.00	0.000	1.952
L16 68.0800-67.8300	67.9550	1.167	9.126	0.542	A	0.000	0.542	0.542	100.00	0.000	0.000
					B	0.000	0.542		100.00	0.000	0.000
					C	0.000	0.542		100.00	0.000	0.183
L17 67.8300-63.5000	65.6515	1.158	9.060	9.590	A	0.000	9.590	9.590	100.00	0.000	0.000
					B	0.000	9.590		100.00	0.000	0.000
					C	0.000	9.590		100.00	0.000	3.166
L18 63.5000-63.2500	63.3750	1.15	8.993	0.563	A	0.000	0.563	0.563	100.00	0.000	0.000
					B	0.000	0.563		100.00	0.000	0.000
					C	0.000	0.563		100.00	0.000	0.183
L19 63.2500-58.2500	60.7327	1.139	8.913	11.526	A	0.000	11.526	11.526	100.00	0.000	0.000
					B	0.000	11.526		100.00	0.000	0.000
					C	0.000	11.526		100.00	0.000	3.656
L20 58.2500-53.2500	55.7334	1.119	8.753	12.013	A	0.000	12.013	12.013	100.00	0.000	0.000
					B	0.000	12.013		100.00	0.000	0.000
					C	0.000	12.013		100.00	0.000	3.656
L21 53.2500-47.4200	50.3133	1.095	8.566	14.619	A	0.000	14.619	14.619	100.00	0.000	0.000
					B	0.000	14.619		100.00	0.000	0.000
					C	0.000	14.619		100.00	0.000	4.263
L22 47.4200-46.4200	46.9194	1.079	8.441	2.531	A	0.000	2.531	2.531	100.00	0.000	0.000
					B	0.000	2.531		100.00	0.000	0.000

Section Elevation	z	K _Z	q _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face	C _A A _A Out Face
ft	ft		psf	ft ²		ft ²	ft ²	ft ²		ft ²	ft ²
L23 46.4200-41.4200	43.9044	1.064	8.324	12.954	C	0.000	2.531		100.00	0.000	0.731
					A	0.000	12.954	12.954	100.00	0.000	0.000
					B	0.000	12.954		100.00	0.000	0.000
					C	0.000	12.954		100.00	0.000	3.656
L24 41.4200-38.0800	39.7432	1.042	8.151	8.928	A	0.000	8.928	8.928	100.00	0.000	0.000
					B	0.000	8.928		100.00	0.000	0.000
					C	0.000	8.928		100.00	0.000	2.442
L25 38.0800-37.8300	37.9550	1.032	8.073	0.677	A	0.000	0.677	0.677	100.00	0.000	0.000
					B	0.000	0.677		100.00	0.000	0.000
					C	0.000	0.677		100.00	0.000	0.183
L26 37.8300-35.0000	36.4103	1.023	8.003	7.755	A	0.000	7.755	7.755	100.00	0.000	0.000
					B	0.000	7.755		100.00	0.000	0.000
					C	0.000	7.755		100.00	0.000	2.069
L27 35.0000-34.7500	34.8750	1.014	7.930	0.692	A	0.000	0.692	0.692	100.00	0.000	0.000
					B	0.000	0.692		100.00	0.000	0.000
					C	0.000	0.692		100.00	0.000	0.183
L28 34.7500-29.7500	32.2356	0.997	7.800	14.098	A	0.000	14.098	14.098	100.00	0.000	0.000
					B	0.000	14.098		100.00	0.000	0.000
					C	0.000	14.098		100.00	0.000	3.656
L29 29.7500-24.7500	27.2361	0.962	7.528	14.592	A	0.000	14.592	14.592	100.00	0.000	0.000
					B	0.000	14.592		100.00	0.000	0.000
					C	0.000	14.592		100.00	0.000	3.656
L30 24.7500-19.7500	22.2366	0.922	7.213	15.084	A	0.000	15.084	15.084	100.00	0.000	0.000
					B	0.000	15.084		100.00	0.000	0.000
					C	0.000	15.084		100.00	0.000	3.656
L31 19.7500-14.7500	17.2370	0.874	6.837	15.578	A	0.000	15.578	15.578	100.00	0.000	0.000
					B	0.000	15.578		100.00	0.000	0.000
					C	0.000	15.578		100.00	0.000	3.656
L32 14.7500-12.5000	13.6224	0.85	6.648	7.170	A	0.000	7.170	7.170	100.00	0.000	0.000
					B	0.000	7.170		100.00	0.000	0.000
					C	0.000	7.170		100.00	0.000	1.645
L33 12.5000-12.2500	12.3750	0.85	6.648	0.803	A	0.000	0.803	0.803	100.00	0.000	0.000
					B	0.000	0.803		100.00	0.000	0.000
					C	0.000	0.803		100.00	0.000	0.183
L34 12.2500-11.0000	11.6242	0.85	6.648	4.033	A	0.000	4.033	4.033	100.00	0.000	0.000
					B	0.000	4.033		100.00	0.000	0.000
					C	0.000	4.033		100.00	0.000	0.914
L35 11.0000-10.7500	10.8750	0.85	6.648	0.809	A	0.000	0.809	0.809	100.00	0.000	0.000
					B	0.000	0.809		100.00	0.000	0.000
					C	0.000	0.809		100.00	0.000	0.183
L36 10.7500-5.7500	8.2377	0.85	6.648	16.436	A	0.000	16.436	16.436	100.00	0.000	0.000
					B	0.000	16.436		100.00	0.000	0.000
					C	0.000	16.436		100.00	0.000	3.656
L37 5.7500-2.5000	4.1199	0.85	6.648	10.946	A	0.000	10.946	10.946	100.00	0.000	0.000
					B	0.000	10.946		100.00	0.000	0.000
					C	0.000	10.946		100.00	0.000	2.376
L38 2.5000-2.2500	2.3750	0.85	6.648	0.850	A	0.000	0.850	0.850	100.00	0.000	0.000
					B	0.000	0.850		100.00	0.000	0.000
					C	0.000	0.850		100.00	0.000	0.183
L39 2.2500-0.0000	1.1226	0.85	6.648	7.709	A	0.000	7.709	7.709	100.00	0.000	0.000
					B	0.000	7.709		100.00	0.000	0.000
					C	0.000	7.709		100.00	0.000	1.645

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.0 Wind 0 deg - No Ice
3	0.9 Dead+1.0 Wind 0 deg - No Ice
4	1.2 Dead+1.0 Wind 30 deg - No Ice
5	0.9 Dead+1.0 Wind 30 deg - No Ice
6	1.2 Dead+1.0 Wind 60 deg - No Ice
7	0.9 Dead+1.0 Wind 60 deg - No Ice
8	1.2 Dead+1.0 Wind 90 deg - No Ice

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

Maximum Member Forces

Sectio n No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	117 - 112	Pole	Max Tension	26	0.00	-0.00	0.00
			Max. Compression	26	-4.62	-0.70	-0.40
			Max. Mx	8	-1.64	-21.80	-0.53
			Max. My	14	-1.62	-0.65	-22.92
			Max. Vy	8	3.83	-21.80	-0.53
			Max. Vx	14	4.01	-0.65	-22.92
			Max. Torque	16			0.40
L2	112 - 110	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-4.76	-0.70	-0.40
			Max. Mx	8	-1.71	-29.58	-0.64
			Max. My	14	-1.69	-0.75	-31.07
			Max. Vy	8	3.96	-29.58	-0.64
			Max. Vx	14	4.14	-0.75	-31.07
			Max. Torque	16			0.40
L3	110 - 105	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-9.79	-0.75	-0.41
			Max. Mx	8	-3.97	-67.79	-0.93
			Max. My	14	-3.94	-1.05	-70.17
			Max. Vy	8	7.11	-67.79	-0.93

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L4	105 - 100	Pole	Max. Vx	2	-7.30	0.42	69.78
			Max. Torque	16			0.41
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-10.28	-0.72	-0.43
			Max. Mx	8	-4.26	-104.27	-1.20
			Max. My	14	-4.24	-1.30	-107.58
			Max. Vy	20	-7.49	103.55	0.85
L5	100 - 95	Pole	Max. Vx	2	-7.67	0.70	107.18
			Max. Torque	16			0.40
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-19.83	-0.07	-0.17
			Max. Mx	8	-7.94	-179.31	-1.28
			Max. My	14	-7.91	-1.28	-183.75
			Max. Vy	20	-14.40	178.90	1.07
L6	95 - 90	Pole	Max. Vx	2	-14.61	0.97	183.52
			Max. Torque	16			0.39
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-21.18	0.32	0.09
			Max. Mx	8	-8.70	-255.20	-0.39
			Max. My	2	-8.68	-0.42	260.19
			Max. Vy	20	-15.62	254.94	0.29
L7	90 - 85	Pole	Max. Vx	14	15.71	-0.03	-260.16
			Max. Torque	15			-1.59
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-31.34	1.00	0.78
			Max. Mx	8	-13.31	-359.63	1.46
			Max. My	2	-13.30	-2.80	364.97
			Max. Vy	20	-22.35	359.33	-0.86
L8	85 - 81.88	Pole	Max. Vx	14	22.33	1.98	-364.21
			Max. Torque	15			-2.85
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-32.77	1.13	0.71
			Max. Mx	8	-14.10	-430.92	2.43
			Max. My	2	-14.09	-4.25	436.21
			Max. Vy	20	-23.19	430.68	-1.89
L9	81.88 - 81.63	Pole	Max. Vx	14	23.17	3.39	-435.48
			Max. Torque	15			-2.89
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-32.84	1.15	0.70
			Max. Mx	8	-14.17	-436.72	2.50
			Max. My	2	-14.16	-4.36	442.00
			Max. Vy	20	-23.21	436.48	-1.98
L10	81.63 - 76.63	Pole	Max. Vx	14	23.18	3.51	-441.27
			Max. Torque	15			-2.90
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-34.18	1.43	0.55
			Max. Mx	8	-15.14	-553.85	4.04
			Max. My	2	-15.13	-6.68	559.05
			Max. Vy	20	-23.70	553.73	-3.63
L11	76.63 - 76.08	Pole	Max. Vx	14	23.67	5.77	-558.38
			Max. Torque	15			-3.00
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-34.33	1.46	0.53
			Max. Mx	8	-15.26	-566.88	4.21
			Max. My	2	-15.25	-6.93	572.08
			Max. Vy	20	-23.75	566.77	-3.82
L12	76.08 - 75.83	Pole	Max. Vx	14	23.72	6.02	-571.41
			Max. Torque	15			-3.02
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-34.41	1.48	0.52
			Max. Mx	8	-15.32	-572.82	4.29
			Max. My	2	-15.32	-7.05	578.01
			Max. Vy	20	-23.77	572.71	-3.90
			Max. Vx	14	23.74	6.13	-577.34
			Max. Torque	15			-3.02

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L13	75.83 - 71	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-35.90	1.76	0.37
			Max. Mx	20	-16.43	688.78	-5.50
			Max. My	2	-16.43	-9.28	693.88
			Max. Vy	20	-24.30	688.78	-5.50
			Max. Vx	14	24.27	8.31	-693.27
L14	71 - 70.75	Pole	Max. Torque	15			-3.15
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.00	1.78	0.36
			Max. Mx	20	-16.52	694.86	-5.58
			Max. My	2	-16.52	-9.40	699.95
			Max. Vy	20	-24.32	694.86	-5.58
L15	70.75 - 68.08	Pole	Max. Vx	14	24.29	8.42	-699.34
			Max. Torque	15			-3.15
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.98	1.93	0.27
			Max. Mx	20	-17.26	760.20	-6.47
			Max. My	2	-17.26	-10.64	765.19
L16	68.08 - 67.83	Pole	Max. Vy	20	-24.64	760.20	-6.47
			Max. Vx	14	24.61	9.63	-764.61
			Max. Torque	15			-3.23
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-37.07	1.95	0.26
			Max. Mx	20	-17.34	766.37	-6.55
L17	67.83 - 63.5	Pole	Max. My	2	-17.34	-10.75	771.34
			Max. Vy	20	-24.66	766.37	-6.55
			Max. Vx	14	24.63	9.74	-770.77
			Max. Torque	15			-3.24
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-38.60	2.21	0.11
L18	63.5 - 63.25	Pole	Max. Mx	20	-18.50	874.22	-7.99
			Max. My	2	-18.50	-12.75	879.01
			Max. Vy	20	-25.16	874.22	-7.99
			Max. Vx	14	25.14	11.69	-878.50
			Max. Torque	15			-3.36
			Max Tension	1	0.00	0.00	0.00
L19	63.25 - 58.25	Pole	Max. Compression	26	-38.70	2.24	0.10
			Max. Mx	20	-18.59	880.52	-8.07
			Max. My	2	-18.59	-12.87	885.30
			Max. Vy	20	-25.19	880.52	-8.07
			Max. Vx	14	25.16	11.81	-884.78
			Max. Torque	15			-3.37
L20	58.25 - 53.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-40.76	2.54	-0.07
			Max. Mx	20	-20.20	1007.97	-9.73
			Max. My	2	-20.19	-15.18	1012.54
			Max. Vy	20	-25.79	1007.97	-9.73
			Max. Vx	14	25.77	14.06	-1012.09
L21	53.25 - 47.42	Pole	Max. Torque	15			-3.51
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.84	2.84	-0.25
			Max. Mx	20	-21.84	1138.41	-11.39
			Max. My	2	-21.84	-17.49	1142.77
			Max. Vy	20	-26.39	1138.41	-11.39
L22	47.42 -	Pole	Max. Vx	14	26.36	16.32	-1142.39
			Max. Torque	15			-3.67
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.37	2.91	-0.29
			Max. Mx	20	-22.25	1171.49	-11.80
			Max. My	2	-22.25	-18.07	1175.80
L22	47.42 -	Pole	Max. Vy	20	-26.54	1171.49	-11.80
			Max. Vx	14	26.51	16.88	-1175.43
			Max. Torque	15			-3.70
			Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
	46.42		Max. Compression	26	-47.34	3.26	-0.50
			Max. Mx	20	-25.45	1321.69	-13.66
			Max. My	2	-25.45	-20.65	1325.75
			Max. Vy	20	-27.28	1321.69	-13.66
			Max. Vx	14	27.26	19.40	-1325.45
			Max. Torque	15			-3.88
L23	46.42 - 41.42	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-49.56	3.57	-0.68
			Max. Mx	20	-27.24	1459.51	-15.32
			Max. My	2	-27.24	-22.96	1463.35
			Max. Vy	20	-27.85	1459.51	-15.32
			Max. Vx	14	27.83	21.66	-1463.12
			Max. Torque	15			-4.03
L24	41.42 - 38.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-51.06	3.79	-0.81
			Max. Mx	20	-28.45	1553.15	-16.43
			Max. My	2	-28.45	-24.50	1556.85
			Max. Vy	20	-28.23	1553.15	-16.43
			Max. Vx	14	28.20	23.16	-1556.66
			Max. Torque	15			-4.13
L25	38.08 - 37.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-51.16	3.81	-0.82
			Max. Mx	20	-28.55	1560.21	-16.52
			Max. My	2	-28.55	-24.61	1563.89
			Max. Vy	20	-28.25	1560.21	-16.52
			Max. Vx	14	28.22	23.27	-1563.72
			Max. Torque	15			-4.14
L26	37.83 - 35	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.39	3.98	-0.92
			Max. Mx	20	-29.53	1640.60	-17.45
			Max. My	2	-29.53	-25.91	1644.15
			Max. Vy	20	-28.57	1640.60	-17.45
			Max. Vx	14	28.54	24.55	-1644.01
			Max. Torque	15			-4.23
L27	35 - 34.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-52.51	4.01	-0.93
			Max. Mx	20	-29.64	1647.74	-17.54
			Max. My	2	-29.64	-26.03	1651.29
			Max. Vy	20	-28.58	1647.74	-17.54
			Max. Vx	14	28.55	24.66	-1651.15
			Max. Torque	15			-4.24
L28	34.75 - 29.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-54.88	4.33	-1.13
			Max. Mx	20	-31.57	1792.04	-19.19
			Max. My	2	-31.57	-28.32	1795.35
			Max. Vy	20	-29.14	1792.04	-19.19
			Max. Vx	14	29.11	26.90	-1795.29
			Max. Torque	15			-4.40
L29	29.75 - 24.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-57.27	4.66	-1.32
			Max. Mx	20	-33.55	1939.02	-20.85
			Max. My	14	-33.55	29.14	-1942.12
			Max. Vy	20	-29.67	1939.02	-20.85
			Max. Vx	14	29.64	29.14	-1942.12
			Max. Torque	15			-4.55
L30	24.75 - 19.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-59.68	4.99	-1.51
			Max. Mx	20	-35.55	2088.59	-22.49
			Max. My	14	-35.55	31.37	-2091.53
			Max. Vy	20	-30.17	2088.59	-22.49
			Max. Vx	14	30.14	31.37	-2091.53
			Max. Torque	15			-4.71

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L31	19.75 - 14.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-62.11	5.32	-1.71
			Max. Mx	20	-37.58	2240.60	-24.14
			Max. My	14	-37.58	33.60	-2243.38
			Max. Vy	20	-30.64	2240.60	-24.14
			Max. Vx	14	30.62	33.60	-2243.38
L32	14.75 - 12.5	Pole	Max. Torque	15			-4.86
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-63.21	5.47	-1.80
			Max. Mx	20	-38.51	2309.77	-24.88
			Max. My	14	-38.51	34.60	-2312.48
			Max. Vy	20	-30.85	2309.77	-24.88
L33	12.5 - 12.25	Pole	Max. Vx	14	30.82	34.60	-2312.48
			Max. Torque	15			-4.93
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-63.34	5.49	-1.81
			Max. Mx	20	-38.62	2317.48	-24.96
			Max. My	14	-38.62	34.71	-2320.19
L34	12.25 - 11	Pole	Max. Vy	20	-30.87	2317.48	-24.96
			Max. Vx	14	30.84	34.71	-2320.19
			Max. Torque	15			-4.94
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-63.96	5.56	-1.85
			Max. Mx	20	-39.14	2356.14	-25.37
L35	11 - 10.75	Pole	Max. My	14	-39.14	35.26	-2358.80
			Max. Vy	20	-30.99	2356.14	-25.37
			Max. Vx	14	30.97	35.26	-2358.80
			Max. Torque	15			-4.98
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-64.10	5.58	-1.86
L36	10.75 - 5.75	Pole	Max. Mx	20	-39.28	2363.89	-25.45
			Max. My	14	-39.28	35.37	-2366.55
			Max. Vy	20	-31.00	2363.89	-25.45
			Max. Vx	14	30.98	35.37	-2366.55
			Max. Torque	15			-4.98
			Max Tension	1	0.00	0.00	0.00
L37	5.75 - 2.5	Pole	Max. Compression	26	-66.93	5.89	-2.05
			Max. Mx	20	-41.71	2520.16	-27.08
			Max. My	14	-41.71	37.58	-2522.65
			Max. Vy	20	-31.50	2520.16	-27.08
			Max. Vx	14	31.47	37.58	-2522.65
			Max. Torque	15			-5.14
L38	2.5 - 2.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-68.77	6.08	-2.16
			Max. Mx	20	-43.32	2623.05	-28.14
			Max. My	14	-43.32	39.01	-2625.44
			Max. Vy	20	-31.82	2623.05	-28.14
			Max. Vx	14	31.80	39.01	-2625.44
L39	2.25 - 0	Pole	Max. Torque	15			-5.25
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-68.91	6.10	-2.17
			Max. Mx	20	-43.46	2631.01	-28.22
			Max. My	14	-43.46	39.12	-2633.39
			Max. Vy	20	-31.84	2631.01	-28.22
L39	2.25 - 0	Pole	Max. Vx	14	31.81	39.12	-2633.39
			Max. Torque	15			-5.25
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-70.20	6.21	-2.23
			Max. Mx	20	-44.61	2702.91	-28.96
			Max. My	14	-44.61	40.11	-2705.22
L39	2.25 - 0	Pole	Max. Vy	20	-32.07	2702.91	-28.96
			Max. Vx	14	32.04	40.11	-2705.22
			Max. Torque	15			-5.33

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	70.20	-0.00	0.00
	Max. H _x	21	33.46	32.06	-0.32
	Max. H _z	2	44.62	-0.46	32.03
	Max. M _x	2	2704.82	-0.46	32.03
	Max. M _z	8	2700.99	-32.05	0.30
	Max. Torsion	25	4.37	15.77	27.51
	Min. Vert	9	33.46	-32.05	0.30
	Min. H _x	9	33.46	-32.05	0.30
	Min. H _z	15	33.46	0.43	-32.03
	Min. M _x	14	-2705.22	0.43	-32.03
	Min. M _z	20	-2702.91	32.06	-0.32
	Min. Torsion	15	-5.33	0.43	-32.03

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	37.18	0.00	-0.00	-0.02	0.37	0.00
1.2 Dead+1.0 Wind 0 deg - No Ice	44.62	0.46	-32.03	-2704.82	-41.80	-4.10
0.9 Dead+1.0 Wind 0 deg - No Ice	33.46	0.46	-32.03	-2684.70	-41.62	-4.11
1.2 Dead+1.0 Wind 30 deg - No Ice	44.62	16.28	-27.78	-2345.80	-1373.17	-2.80
0.9 Dead+1.0 Wind 30 deg - No Ice	33.46	16.28	-27.78	-2328.37	-1363.12	-2.80
1.2 Dead+1.0 Wind 60 deg - No Ice	44.62	27.87	-16.19	-1368.16	-2349.35	-1.15
0.9 Dead+1.0 Wind 60 deg - No Ice	33.46	27.87	-16.19	-1358.00	-2332.06	-1.14
1.2 Dead+1.0 Wind 90 deg - No Ice	44.62	32.05	-0.30	-27.31	-2700.99	1.00
0.9 Dead+1.0 Wind 90 deg - No Ice	33.46	32.05	-0.30	-27.11	-2681.11	1.01
1.2 Dead+1.0 Wind 120 deg - No Ice	44.62	27.81	15.59	1313.04	-2345.27	3.08
0.9 Dead+1.0 Wind 120 deg - No Ice	33.46	27.81	15.59	1303.28	-2327.98	3.09
1.2 Dead+1.0 Wind 150 deg - No Ice	44.62	15.70	27.57	2327.33	-1320.21	4.64
0.9 Dead+1.0 Wind 150 deg - No Ice	33.46	15.70	27.57	2310.04	-1310.51	4.64
1.2 Dead+1.0 Wind 180 deg - No Ice	44.62	-0.43	32.03	2705.22	40.11	5.32
0.9 Dead+1.0 Wind 180 deg - No Ice	33.46	-0.43	32.03	2685.13	39.73	5.33
1.2 Dead+1.0 Wind 210 deg - No Ice	44.62	-16.28	27.79	2347.16	1374.11	3.92
0.9 Dead+1.0 Wind 210 deg - No Ice	33.46	-16.28	27.79	2329.74	1363.84	3.92
1.2 Dead+1.0 Wind 240 deg - No Ice	44.62	-27.87	16.21	1370.02	2350.54	1.39
0.9 Dead+1.0 Wind 240 deg - No Ice	33.46	-27.87	16.21	1359.87	2333.03	1.39
1.2 Dead+1.0 Wind 270 deg - No Ice	44.62	-32.06	0.32	28.96	2702.91	-1.13
0.9 Dead+1.0 Wind 270 deg - No Ice	33.46	-32.06	0.32	28.77	2682.78	-1.14
1.2 Dead+1.0 Wind 300 deg - No Ice	44.62	-27.78	-15.62	-1316.27	2343.42	-2.82
0.9 Dead+1.0 Wind 300 deg - No Ice	33.46	-27.78	-15.62	-1306.46	2325.94	-2.83

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+1.0 Wind 330 deg	44.62	-15.77	-27.51	-2321.74	1328.43	-4.36
- No Ice						
0.9 Dead+1.0 Wind 330 deg	33.46	-15.77	-27.51	-2304.46	1318.46	-4.37
- No Ice						
1.2 Dead+1.0 Ice+1.0 Temp	70.20	0.00	-0.00	2.23	6.21	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	70.20	0.08	-8.49	-727.08	-1.20	-1.37
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	70.20	4.28	-7.36	-629.52	-361.02	-0.92
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	70.20	7.36	-4.27	-364.69	-625.23	-0.31
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	70.20	8.48	-0.05	-2.17	-721.15	0.43
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	70.20	7.36	4.17	359.78	-625.51	1.09
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	70.20	4.19	7.33	631.35	-352.02	1.53
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	70.20	-0.08	8.49	731.97	14.17	1.65
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	70.20	-4.29	7.36	634.40	374.55	1.17
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	70.20	-7.37	4.28	369.78	638.56	0.37
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	70.20	-8.49	0.06	7.49	734.62	-0.45
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	70.20	-7.36	-4.17	-355.48	638.41	-1.03
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	70.20	-4.20	-7.31	-625.50	366.69	-1.47
Dead+Wind 0 deg - Service	37.18	0.11	-7.54	-634.30	-9.53	-0.97
Dead+Wind 30 deg - Service	37.18	3.83	-6.54	-550.14	-321.75	-0.66
Dead+Wind 60 deg - Service	37.18	6.56	-3.81	-320.87	-550.68	-0.27
Dead+Wind 90 deg - Service	37.18	7.54	-0.07	-6.43	-633.05	0.23
Dead+Wind 120 deg - Service	37.18	6.55	3.67	307.89	-549.71	0.72
Dead+Wind 150 deg - Service	37.18	3.70	6.49	545.75	-309.32	1.10
Dead+Wind 180 deg - Service	37.18	-0.10	7.54	634.38	9.68	1.27
Dead+Wind 210 deg - Service	37.18	-3.83	6.54	550.41	322.52	0.93
Dead+Wind 240 deg - Service	37.18	-6.56	3.82	321.26	551.50	0.33
Dead+Wind 270 deg - Service	37.18	-7.55	0.08	6.77	634.03	-0.27
Dead+Wind 300 deg - Service	37.18	-6.54	-3.68	-308.69	549.82	-0.67
Dead+Wind 330 deg - Service	37.18	-3.71	-6.48	-544.48	311.80	-1.03

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	0.00	-37.18	0.00	0.00	37.18	0.00	0.000%
2	0.46	-44.62	-32.03	-0.46	44.62	32.03	0.000%
3	0.46	-33.46	-32.03	-0.46	33.46	32.03	0.000%
4	16.28	-44.62	-27.78	-16.28	44.62	27.78	0.000%
5	16.28	-33.46	-27.78	-16.28	33.46	27.78	0.000%
6	27.87	-44.62	-16.19	-27.87	44.62	16.19	0.000%
7	27.87	-33.46	-16.19	-27.87	33.46	16.19	0.000%
8	32.05	-44.62	-0.30	-32.05	44.62	0.30	0.002%
9	32.05	-33.46	-0.30	-32.05	33.46	0.30	0.001%
10	27.81	-44.62	15.59	-27.81	44.62	-15.59	0.000%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
11	27.81	-33.46	15.59	-27.81	33.46	-15.59	0.000%
12	15.70	-44.62	27.57	-15.70	44.62	-27.57	0.000%
13	15.70	-33.46	27.57	-15.70	33.46	-27.57	0.000%
14	-0.43	-44.62	32.03	0.43	44.62	-32.03	0.000%
15	-0.43	-33.46	32.03	0.43	33.46	-32.03	0.000%
16	-16.28	-44.62	27.79	16.28	44.62	-27.79	0.000%
17	-16.28	-33.46	27.79	16.28	33.46	-27.79	0.000%
18	-27.87	-44.62	16.21	27.87	44.62	-16.21	0.000%
19	-27.87	-33.46	16.21	27.87	33.46	-16.21	0.000%
20	-32.06	-44.62	0.32	32.06	44.62	-0.32	0.001%
21	-32.06	-33.46	0.32	32.06	33.46	-0.32	0.000%
22	-27.78	-44.62	-15.62	27.78	44.62	15.62	0.000%
23	-27.78	-33.46	-15.62	27.78	33.46	15.62	0.000%
24	-15.77	-44.62	-27.51	15.77	44.62	27.51	0.000%
25	-15.77	-33.46	-27.51	15.77	33.46	27.51	0.000%
26	0.00	-70.20	0.00	-0.00	70.20	0.00	0.002%
27	0.08	-70.20	-8.49	-0.08	70.20	8.49	0.000%
28	4.28	-70.20	-7.36	-4.28	70.20	7.36	0.000%
29	7.36	-70.20	-4.27	-7.36	70.20	4.27	0.000%
30	8.48	-70.20	-0.05	-8.48	70.20	0.05	0.000%
31	7.36	-70.20	4.17	-7.36	70.20	-4.17	0.000%
32	4.19	-70.20	7.33	-4.19	70.20	-7.33	0.000%
33	-0.08	-70.20	8.49	0.08	70.20	-8.49	0.000%
34	-4.29	-70.20	7.36	4.29	70.20	-7.36	0.000%
35	-7.37	-70.20	4.28	7.37	70.20	-4.28	0.000%
36	-8.49	-70.20	0.06	8.49	70.20	-0.06	0.000%
37	-7.36	-70.20	-4.17	7.36	70.20	4.17	0.000%
38	-4.20	-70.20	-7.31	4.20	70.20	7.31	0.000%
39	0.11	-37.18	-7.54	-0.11	37.18	7.54	0.001%
40	3.83	-37.18	-6.54	-3.83	37.18	6.54	0.000%
41	6.56	-37.18	-3.81	-6.56	37.18	3.81	0.000%
42	7.55	-37.18	-0.07	-7.55	37.18	0.07	0.003%
43	6.55	-37.18	3.67	-6.55	37.18	-3.67	0.000%
44	3.70	-37.18	6.49	-3.70	37.18	-6.49	0.000%
45	-0.10	-37.18	7.54	0.10	37.18	-7.54	0.000%
46	-3.83	-37.18	6.54	3.83	37.18	-6.54	0.000%
47	-6.56	-37.18	3.82	6.56	37.18	-3.82	0.000%
48	-7.55	-37.18	0.08	7.55	37.18	-0.08	0.003%
49	-6.54	-37.18	-3.68	6.54	37.18	3.68	0.000%
50	-3.71	-37.18	-6.48	3.71	37.18	6.48	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	16	0.00000001	0.00005719
3	Yes	15	0.00000001	0.00011970
4	Yes	18	0.00000001	0.00008611
5	Yes	18	0.00000001	0.00006184
6	Yes	18	0.00000001	0.00009151
7	Yes	18	0.00000001	0.00006585
8	Yes	14	0.00000001	0.00009956
9	Yes	14	0.00000001	0.00007079
10	Yes	18	0.00000001	0.00008911
11	Yes	18	0.00000001	0.00006431
12	Yes	18	0.00000001	0.00008012
13	Yes	18	0.00000001	0.00005764
14	Yes	16	0.00000001	0.00014114
15	Yes	16	0.00000001	0.00010810
16	Yes	18	0.00000001	0.00009631
17	Yes	18	0.00000001	0.00006945
18	Yes	18	0.00000001	0.00008680
19	Yes	18	0.00000001	0.00006236
20	Yes	15	0.00000001	0.00007619

21	Yes	15	0.00000001	0.00005833
22	Yes	18	0.00000001	0.00008301
23	Yes	18	0.00000001	0.00005972
24	Yes	18	0.00000001	0.00009170
25	Yes	18	0.00000001	0.00006628
26	Yes	7	0.00000001	0.00001861
27	Yes	17	0.00000001	0.00007234
28	Yes	17	0.00000001	0.00008120
29	Yes	17	0.00000001	0.00008141
30	Yes	17	0.00000001	0.00007116
31	Yes	17	0.00000001	0.00008105
32	Yes	17	0.00000001	0.00008037
33	Yes	17	0.00000001	0.00007279
34	Yes	17	0.00000001	0.00008363
35	Yes	17	0.00000001	0.00008263
36	Yes	17	0.00000001	0.00007245
37	Yes	17	0.00000001	0.00008168
38	Yes	17	0.00000001	0.00008241
39	Yes	13	0.00000001	0.00009968
40	Yes	14	0.00000001	0.00008490
41	Yes	14	0.00000001	0.00010165
42	Yes	12	0.00000001	0.00009377
43	Yes	14	0.00000001	0.00010256
44	Yes	14	0.00000001	0.00007936
45	Yes	14	0.00000001	0.00006411
46	Yes	14	0.00000001	0.00012147
47	Yes	14	0.00000001	0.00008602
48	Yes	12	0.00000001	0.00010096
49	Yes	14	0.00000001	0.00008180
50	Yes	14	0.00000001	0.00011355

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	117 - 112	15.82	40	1.41	0.01
L2	112 - 110	14.35	40	1.39	0.01
L3	110 - 105	13.76	40	1.38	0.01
L4	105 - 100	12.34	40	1.33	0.01
L5	100 - 95	10.98	40	1.26	0.01
L6	95 - 90	9.70	40	1.19	0.01
L7	90 - 85	8.51	40	1.09	0.01
L8	85 - 81.88	7.42	40	0.98	0.00
L9	81.88 - 81.63	6.80	40	0.90	0.00
L10	81.63 - 76.63	6.76	40	0.90	0.00
L11	76.63 - 76.08	5.87	46	0.80	0.00
L12	76.08 - 75.83	5.78	46	0.79	0.00
L13	75.83 - 71	5.74	46	0.78	0.00
L14	71 - 70.75	4.99	47	0.70	0.00
L15	70.75 - 68.08	4.95	47	0.70	0.00
L16	68.08 - 67.83	4.57	47	0.66	0.00
L17	67.83 - 63.5	4.54	47	0.66	0.00
L18	63.5 - 63.25	3.96	47	0.61	0.00
L19	63.25 - 58.25	3.93	47	0.61	0.00
L20	58.25 - 53.25	3.32	47	0.56	0.00
L21	53.25 - 47.42	2.77	47	0.50	0.00
L22	52 - 46.42	2.64	47	0.49	0.00
L23	46.42 - 41.42	2.08	47	0.46	0.00
L24	41.42 - 38.08	1.63	47	0.40	0.00
L25	38.08 - 37.83	1.37	47	0.37	0.00
L26	37.83 - 35	1.35	47	0.36	0.00
L27	35 - 34.75	1.14	47	0.33	0.00
L28	34.75 - 29.75	1.13	47	0.33	0.00
L29	29.75 - 24.75	0.81	47	0.28	0.00
L30	24.75 - 19.75	0.55	47	0.23	0.00
L31	19.75 - 14.75	0.34	47	0.17	0.00
L32	14.75 - 12.5	0.18	47	0.12	0.00
L33	12.5 - 12.25	0.13	47	0.10	0.00
L34	12.25 - 11	0.12	47	0.10	0.00
L35	11 - 10.75	0.10	47	0.09	0.00

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L36	10.75 - 5.75	0.09	47	0.08	0.00
L37	5.75 - 2.5	0.03	47	0.04	0.00
L38	2.5 - 2.25	0.00	47	0.02	0.00
L39	2.25 - 0	0.00	47	0.02	0.00

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
117.0000	APXVSP18-C-A20 w/ Mount Pipe	40	15.82	1.41	0.01	9684
115.0000	800 EXTERNAL NOTCH FILTER	40	15.23	1.41	0.01	9684
110.0000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	40	13.76	1.38	0.01	7233
100.0000	(2) HBXX-6516DS-A2M w/ Mount Pipe	40	10.98	1.26	0.01	3903
95.0000	VHLP1-23	40	9.70	1.19	0.01	3355
94.0000	VHLP2-11	40	9.45	1.17	0.01	3237
93.0000	Pipe Mount [PM 601-3]	40	9.21	1.15	0.01	3119
92.0000	VHLP1-23	40	8.97	1.13	0.01	3002
89.0000	7770.00 w/ Mount Pipe	40	8.28	1.07	0.01	2680
84.0000	800 10504 w/ Mount Pipe	40	7.22	0.95	0.00	2409

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	117 - 112	67.36	4	6.03	0.02
L2	112 - 110	61.11	4	5.95	0.03
L3	110 - 105	58.64	4	5.90	0.03
L4	105 - 100	52.59	16	5.68	0.03
L5	100 - 95	46.82	16	5.38	0.03
L6	95 - 90	41.36	16	5.06	0.03
L7	90 - 85	36.28	16	4.66	0.03
L8	85 - 81.88	31.65	16	4.18	0.02
L9	81.88 - 81.63	29.02	16	3.85	0.02
L10	81.63 - 76.63	28.82	16	3.83	0.02
L11	76.63 - 76.08	25.04	16	3.40	0.01
L12	76.08 - 75.83	24.65	16	3.35	0.01
L13	75.83 - 71	24.48	16	3.34	0.01
L14	71 - 70.75	21.28	16	2.99	0.01
L15	70.75 - 68.08	21.12	16	2.97	0.01
L16	68.08 - 67.83	19.50	16	2.83	0.01
L17	67.83 - 63.5	19.35	16	2.82	0.01
L18	63.5 - 63.25	16.90	16	2.60	0.01
L19	63.25 - 58.25	16.76	16	2.59	0.01
L20	58.25 - 53.25	14.17	16	2.37	0.01
L21	53.25 - 47.42	11.81	18	2.15	0.01
L22	52 - 46.42	11.25	18	2.09	0.01
L23	46.42 - 41.42	8.88	18	1.94	0.01
L24	41.42 - 38.08	6.97	18	1.71	0.01
L25	38.08 - 37.83	5.83	18	1.56	0.00
L26	37.83 - 35	5.75	18	1.55	0.00
L27	35 - 34.75	4.87	18	1.41	0.00
L28	34.75 - 29.75	4.80	18	1.40	0.00
L29	29.75 - 24.75	3.45	18	1.18	0.00
L30	24.75 - 19.75	2.33	18	0.96	0.00
L31	19.75 - 14.75	1.44	18	0.74	0.00
L32	14.75 - 12.5	0.77	18	0.53	0.00
L33	12.5 - 12.25	0.55	18	0.43	0.00
L34	12.25 - 11	0.52	18	0.42	0.00
L35	11 - 10.75	0.42	18	0.37	0.00

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L36	10.75 - 5.75	0.40	18	0.36	0.00
L37	5.75 - 2.5	0.11	18	0.19	0.00
L38	2.5 - 2.25	0.02	18	0.08	0.00
L39	2.25 - 0	0.02	18	0.07	0.00

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
117.0000	APXVSP18-C-A20 w/ Mount Pipe	4	67.36	6.03	0.02	2413
115.0000	800 EXTERNAL NOTCH FILTER	4	64.86	6.00	0.03	2413
110.0000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	4	58.64	5.90	0.03	1783
100.0000	(2) HBXX-6516DS-A2M w/ Mount Pipe	16	46.82	5.38	0.03	937
95.0000	VHLP1-23	16	41.36	5.06	0.03	799
94.0000	VHLP2-11	16	40.31	4.99	0.03	769
93.0000	Pipe Mount [PM 601-3]	16	39.28	4.91	0.03	741
92.0000	VHLP1-23	16	38.26	4.83	0.03	713
89.0000	7770.00 w/ Mount Pipe	16	35.31	4.57	0.02	636
84.0000	800 10504 w/ Mount Pipe	16	30.78	4.07	0.02	571

Compression Checks Pole Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	KI/r	A in ²	P _u K
L1	117 - 112 (1)	TP15.4886x14.36x0.1875	5.0000	0.0000	0.0	9.2380	-1.62
L2	112 - 110 (2)	TP15.94x15.4886x0.1875	2.0000	0.0000	0.0	9.5106	-1.69
L3	110 - 105 (3)	TP17.07x15.94x0.1875	5.0000	0.0000	0.0	10.192	-3.95
L4	105 - 100 (4)	TP18.2x17.07x0.1875	5.0000	0.0000	0.0	10.875	-4.24
L5	100 - 95 (5)	TP19.3221x18.2x0.25	5.0000	0.0000	0.0	15.353	-7.91
L6	95 - 90 (6)	TP20.4442x19.3221x0.25	5.0000	0.0000	0.0	16.256	-8.68
L7	90 - 85 (7)	TP21.5663x20.4442x0.25	5.0000	0.0000	0.0	17.159	-13.30
L8	85 - 81.88 (8)	TP22.2665x21.5663x0.25	3.1200	0.0000	0.0	17.723	-14.09
L9	81.88 - 81.63 (9)	TP22.3226x22.2665x0.35	0.2500	0.0000	0.0	24.763	-14.16
L10	81.63 - 76.63 (10)	TP23.4447x22.3226x0.35	5.0000	0.0000	0.0	26.485	-15.12
L11	76.63 - 76.08 (11)	TP23.5681x23.4447x0.35	0.5500	0.0000	0.0	26.626	-15.24
L12	76.08 - 75.83 (12)	TP23.6242x23.5681x0.46	0.2500	0.0000	0.0	34.493	-15.30
L13	75.83 - 71 (13)	TP24.7082x23.6242x0.45	4.8300	0.0000	0.0	35.629	-16.41
L14	71 - 70.75 (14)	TP24.7643x24.7082x0.67	0.2500	0.0000	0.0	52.358	-16.50
L15	70.75 - 68.08 (15)	TP25.3635x24.7643x0.66	2.6700	0.0000	0.0	52.693	-17.25
L16	68.08 - 67.83 (16)	TP25.4196x25.3635x0.71	0.2500	0.0000	0.0	56.684	-17.33
L17	67.83 - 63.5 (17)	TP26.3913x25.4196x0.68	4.3300	0.0000	0.0	56.901	-18.48
L18	63.5 - 63.25 (18)	TP26.4474x26.3913x0.9	0.2500	0.0000	0.0	74.036	-18.57

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K
L19	63.25 - 58.25 (19)	TP27.5695x26.4474x0.85	5.0000	0.0000	0.0	73.131 4	-20.18
L20	58.25 - 53.25 (20)	TP28.6916x27.5695x0.82 5	5.0000	0.0000	0.0	74.027 7	-21.82
L21	53.25 - 47.42 (21)	TP30x28.6916x0.825	5.8300	0.0000	0.0	74.772 9	-22.24
L22	47.42 - 46.42 (22)	TP29.7414x28.4722x0.84 38	5.5800	0.0000	0.0	78.511 2	-25.44
L23	46.42 - 41.42 (23)	TP30.8787x29.7414x0.81 88	5.0000	0.0000	0.0	79.249 2	-27.23
L24	41.42 - 38.08 (24)	TP31.6384x30.8787x0.80 63	3.3400	0.0000	0.0	80.044 1	-28.44
L25	38.08 - 37.83 (25)	TP31.6952x31.6384x0.75 63	0.2500	0.0000	0.0	75.340 3	-28.54
L26	37.83 - 35 (26)	TP32.339x31.6952x0.743 8	2.8300	0.0000	0.0	75.666 6	-29.52
L27	35 - 34.75 (27)	TP32.3958x32.339x0.843 8	0.2500	0.0000	0.0	85.723 0	-29.63
L28	34.75 - 29.75 (28)	TP33.5331x32.3958x0.83 13	5.0000	0.0000	0.0	87.530 6	-31.57
L29	29.75 - 24.75 (29)	TP34.6704x33.5331x0.80 63	5.0000	0.0000	0.0	87.915 6	-33.54
L30	24.75 - 19.75 (30)	TP35.8077x34.6704x0.79 38	5.0000	0.0000	0.0	89.491 3	-35.54
L31	19.75 - 14.75 (31)	TP36.945x35.8077x0.768 8	5.0000	0.0000	0.0	89.549 8	-37.58
L32	14.75 - 12.5 (32)	TP37.4568x36.945x0.768 8	2.2500	0.0000	0.0	90.816 6	-38.51
L33	12.5 - 12.25 (33)	TP37.5136x37.4568x0.76 88	0.2500	0.0000	0.0	90.957 4	-38.62
L34	12.25 - 11 (34)	TP37.798x37.5136x0.768 8	1.2500	0.0000	0.0	91.661 2	-39.14
L35	11 - 10.75 (35)	TP37.8548x37.798x0.968 8	0.2500	0.0000	0.0	115.06 10	-39.27
L36	10.75 - 5.75 (36)	TP38.9921x37.8548x0.94 38	5.0000	0.0000	0.0	115.62 40	-41.71
L37	5.75 - 2.5 (37)	TP39.7314x38.9921x0.94 38	3.2500	0.0000	0.0	117.87 10	-43.32
L38	2.5 - 2.25 (38)	TP39.7882x39.7314x0.96 88	0.2500	0.0000	0.0	121.09 20	-43.46
L39	2.25 - 0 (39)	TP40.3x39.7882x0.9688	2.2500	0.0000	0.0	122.68 90	-44.61

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft
L1	117 - 112 (1)	TP15.4886x14.36x0.1875	23.06
L2	112 - 110 (2)	TP15.94x15.4886x0.1875	31.21
L3	110 - 105 (3)	TP17.07x15.94x0.1875	70.34
L4	105 - 100 (4)	TP18.2x17.07x0.1875	107.76
L5	100 - 95 (5)	TP19.3221x18.2x0.25	183.76
L6	95 - 90 (6)	TP20.4442x19.3221x0.25	260.16
L7	90 - 85 (7)	TP21.5663x20.4442x0.25	364.98
L8	85 - 81.88 (8)	TP22.2665x21.5663x0.25	436.23
L9	81.88 - 81.63 (9)	TP22.3226x22.2665x0.35	442.02
L10	81.63 - 76.63 (10)	TP23.4447x22.3226x0.35 63	559.27
L11	76.63 - 76.08 (11)	TP23.5681x23.4447x0.35 63	572.39
L12	76.08 - 75.83 (12)	TP23.6242x23.5681x0.46 25	578.36
L13	75.83 - 71	TP24.7082x23.6242x0.45	695.07

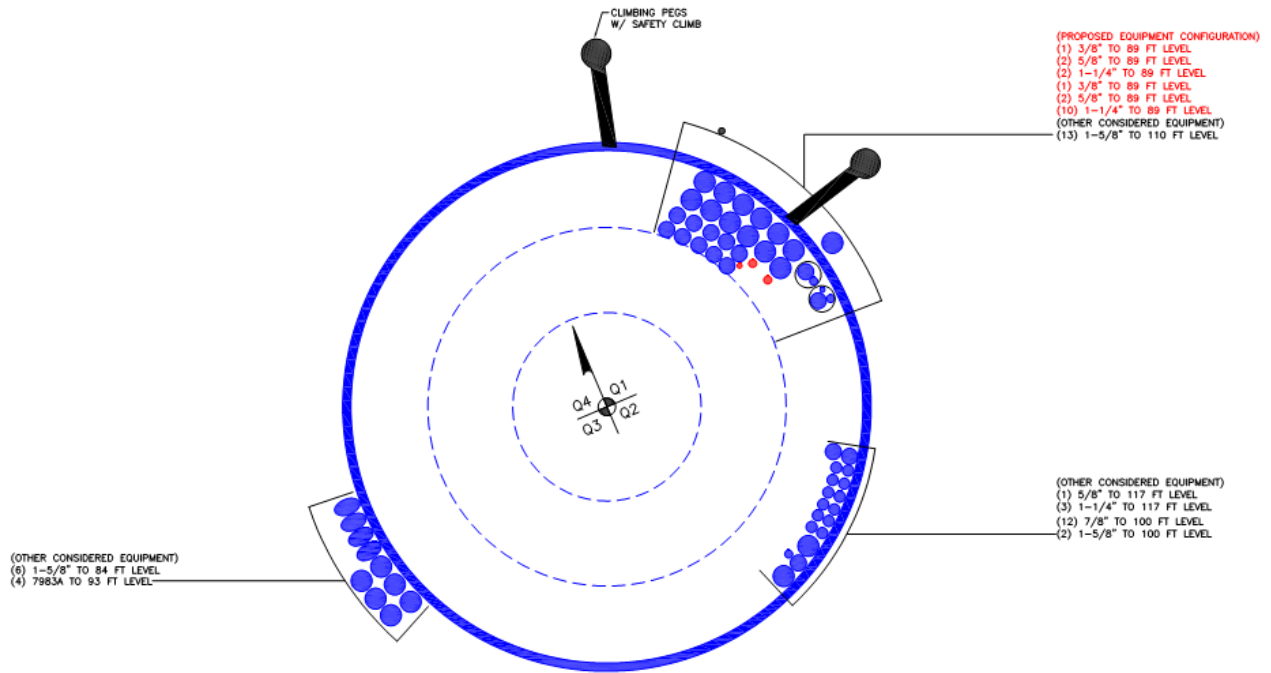
Section No.	Elevation ft	Size	M_{ux} kip-ft
L14	71 - 70.75 (13)	TP24.7643x24.7082x0.67 63	701.18
L15	70.75 - 68.08 (14)	TP25.3635x24.7643x0.66 5	766.88
L16	68.08 - 67.83 (15)	TP25.4196x25.3635x0.71 25	773.07
L17	67.83 - 63.5 (16)	TP26.3913x25.4196x0.68 25	881.49
L18	63.5 - 63.25 (17)	TP26.4474x26.3913x0.9 75	887.83
L19	63.25 - 58.25 (18)	TP27.5695x26.4474x0.85 19	1015.93
L20	58.25 - 53.25 (19)	TP28.6916x27.5695x0.82 20	1147.05
L21	53.25 - 47.42 (20)	TP30x28.6916x0.825 21	1180.33
L22	47.42 - 46.42 (21)	TP29.7414x28.4722x0.84 22	1331.40
L23	46.42 - 41.42 (22)	TP30.8787x29.7414x0.81 23	1470.01
L24	41.42 - 38.08 (23)	TP31.6384x30.8787x0.80 88	1564.18
L25	38.08 - 37.83 (24)	TP31.6952x31.6384x0.75 63	1571.27
L26	37.83 - 35 (25)	TP32.339x31.6952x0.743 8	1652.10
L27	35 - 34.75 (26)	TP32.3958x32.339x0.843 27	1659.28
L28	34.75 - 29.75 (27)	TP33.5331x32.3958x0.83 8	1804.36
L29	29.75 - 24.75 (28)	TP34.6704x33.5331x0.80 13	1952.12
L30	24.75 - 19.75 (29)	TP35.8077x34.6704x0.79 63	2102.58
L31	19.75 - 14.75 (30)	TP36.945x35.8077x0.768 38	2255.55
L32	14.75 - 12.5 (31)	TP37.4568x36.945x0.768 8	2325.15
L33	12.5 - 12.25 (32)	TP37.5136x37.4568x0.76 8	2332.92
L34	12.25 - 11 (33)	TP37.798x37.5136x0.768 88	2371.81
L35	11 - 10.75 (34)	TP37.8548x37.798x0.968 8	2379.61
L36	10.75 - 5.75 (35)	TP38.9921x37.8548x0.94 8	2536.82
L37	5.75 - 2.5 (36)	TP39.7314x38.9921x0.94 38	2640.33
L38	2.5 - 2.25 (37)	TP39.7882x39.7314x0.96 38	2648.33
L39	2.25 - 0 (38)	TP40.3x39.7882x0.9688 88	2720.67

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K
L1	117 - 112 (1)	TP15.4886x14.36x0.1875	4.01
L2	112 - 110 (2)	TP15.94x15.4886x0.1875	4.14
L3	110 - 105 (3)	TP17.07x15.94x0.1875	7.30
L4	105 - 100 (4)	TP18.2x17.07x0.1875	7.68
L5	100 - 95 (5)	TP19.3221x18.2x0.25	14.61
L6	95 - 90 (6)	TP20.4442x19.3221x0.25	15.71
L7	90 - 85 (7)	TP21.5663x20.4442x0.25	22.33

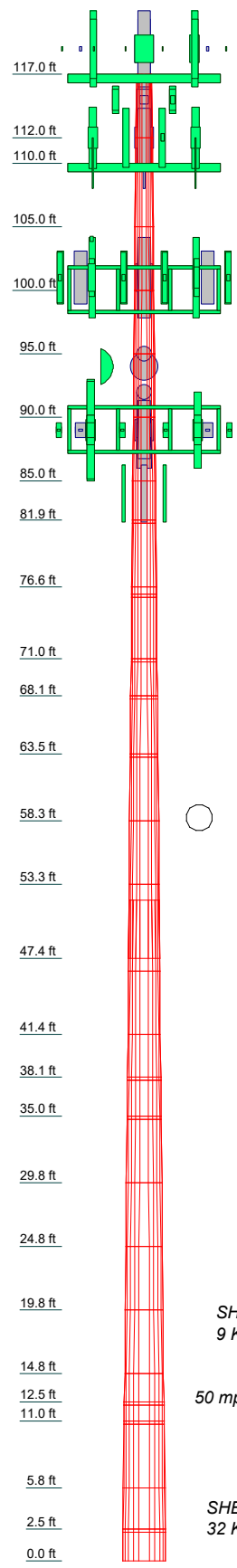
Section No.	Elevation ft	Size	Actual V_u K
L8	85 - 81.88 (8)	TP22.2665x21.5663x0.25	23.17
L9	81.88 - 81.63 (9)	TP22.3226x22.2665x0.35	23.18
L10	81.63 - 76.63 (10)	TP23.4447x22.3226x0.35 63	23.84
L11	76.63 - 76.08 (11)	TP23.5681x23.4447x0.35 63	23.89
L12	76.08 - 75.83 (12)	TP23.6242x23.5681x0.46 25	23.92
L13	75.83 - 71 (13)	TP24.7082x23.6242x0.45 63	24.44
L14	71 - 70.75 (14)	TP24.7643x24.7082x0.67 5	24.47
L15	70.75 - 68.08 (15)	TP25.3635x24.7643x0.66 25	24.78
L16	68.08 - 67.83 (16)	TP25.4196x25.3635x0.71 25	24.81
L17	67.83 - 63.5 (17)	TP26.3913x25.4196x0.68 75	25.31
L18	63.5 - 63.25 (18)	TP26.4474x26.3913x0.9	25.34
L19	63.25 - 58.25 (19)	TP27.5695x26.4474x0.85	25.94
L20	58.25 - 53.25 (20)	TP28.6916x27.5695x0.82 5	26.55
L21	53.25 - 47.42 (21)	TP30x28.6916x0.825	26.70
L22	47.42 - 46.42 (22)	TP29.7414x28.4722x0.84 38	27.44
L23	46.42 - 41.42 (23)	TP30.8787x29.7414x0.81 88	28.01
L24	41.42 - 38.08 (24)	TP31.6384x30.8787x0.80 63	28.39
L25	38.08 - 37.83 (25)	TP31.6952x31.6384x0.75 63	28.41
L26	37.83 - 35 (26)	TP32.339x31.6952x0.743 8	28.72
L27	35 - 34.75 (27)	TP32.3958x32.339x0.843 8	28.74
L28	34.75 - 29.75 (28)	TP33.5331x32.3958x0.83 13	29.29
L29	29.75 - 24.75 (29)	TP34.6704x33.5331x0.80 63	29.82
L30	24.75 - 19.75 (30)	TP35.8077x34.6704x0.79 38	30.36
L31	19.75 - 14.75 (31)	TP36.945x35.8077x0.768 8	30.83
L32	14.75 - 12.5 (32)	TP37.4568x36.945x0.768 8	31.04
L33	12.5 - 12.25 (33)	TP37.5136x37.4568x0.76 88	31.05
L34	12.25 - 11 (34)	TP37.798x37.5136x0.768 8	31.18
L35	11 - 10.75 (35)	TP37.8548x37.798x0.968 8	31.19
L36	10.75 - 5.75 (36)	TP38.9921x37.8548x0.94 38	31.69
L37	5.75 - 2.5 (37)	TP39.7314x38.9921x0.94 38	32.01
L38	2.5 - 2.25 (38)	TP39.7882x39.7314x0.96 88	32.03
L39	2.25 - 0 (39)	TP40.3x39.7882x0.9688	32.26

APPENDIX B
BASE LEVEL DRAWING



APPENDIX C
ADDITIONAL CALCULATIONS

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1		12	0.1875	0.1875	15.9400	15.9400	17.0700	0.2
2		12	0.1875	0.1875	15.9400	15.9400	17.0700	0.1
3		12	0.1875	0.1875	15.9400	15.9400	17.0700	0.2
4		12	0.1875	0.1875	15.9400	15.9400	17.0700	0.2
5		12	0.2500	0.2500	18.2000	18.2000	19.3221	0.3
6		12	0.2500	0.2500	19.3221	19.3221	20.4442	0.3
7		12	0.2500	0.2500	20.4442	20.4442	21.5663	0.3
8		12	0.2500	0.2500	21.5663	21.5663	22.6884	0.2
9		12	0.2500	0.2500	22.6884	22.6884	23.8105	0.0
10		12	0.2500	0.2500	23.8105	23.8105	24.9326	0.5
11		12	0.2500	0.2500	24.9326	24.9326	26.0547	0.0
12		12	0.2500	0.2500	26.0547	26.0547	27.1768	0.0
13		12	0.2500	0.2500	27.1768	27.1768	28.2989	0.7
14		12	0.2500	0.2500	28.2989	28.2989	29.4210	0.0
15		12	0.2500	0.2500	29.4210	29.4210	30.5431	0.0
16		12	0.2500	0.2500	30.5431	30.5431	31.6652	0.0
17		12	0.2500	0.2500	31.6652	31.6652	32.7873	0.8
18		12	0.2500	0.2500	32.7873	32.7873	33.9094	0.0
19		12	0.2500	0.2500	33.9094	33.9094	35.0315	1.1
20		12	0.2500	0.2500	35.0315	35.0315	36.1536	1.1
21		12	0.2500	0.2500	36.1536	36.1536	37.2757	1.4
22		12	0.2500	0.2500	37.2757	37.2757	38.3978	1.4
23		12	0.2500	0.2500	38.3978	38.3978	39.5199	1.4
24		12	0.2500	0.2500	39.5199	39.5199	40.6420	1.2
25		12	0.2500	0.2500	40.6420	40.6420	41.7641	0.8
26		12	0.2500	0.2500	41.7641	41.7641	42.8862	0.0
27		12	0.2500	0.2500	42.8862	42.8862	44.0083	0.0
28		12	0.2500	0.2500	44.0083	44.0083	45.1304	1.4
29		12	0.2500	0.2500	45.1304	45.1304	46.2525	1.4
30		12	0.2500	0.2500	46.2525	46.2525	47.3746	1.4
31		12	0.2500	0.2500	47.3746	47.3746	48.4967	1.4
32		12	0.2500	0.2500	48.4967	48.4967	49.6188	1.4
33		12	0.2500	0.2500	49.6188	49.6188	50.7409	1.8
34		12	0.2500	0.2500	50.7409	50.7409	51.8630	1.8
35		12	0.2500	0.2500	51.8630	51.8630	52.9851	1.2
36		12	0.2500	0.2500	52.9851	52.9851	54.1072	0.0
37		12	0.2500	0.2500	54.1072	54.1072	55.2293	0.0
38		12	0.2500	0.2500	55.2293	55.2293	56.3514	0.0
39		12	0.2500	0.2500	56.3514	56.3514	57.4735	0.0
40		12	0.2500	0.2500	57.4735	57.4735	58.5956	0.0

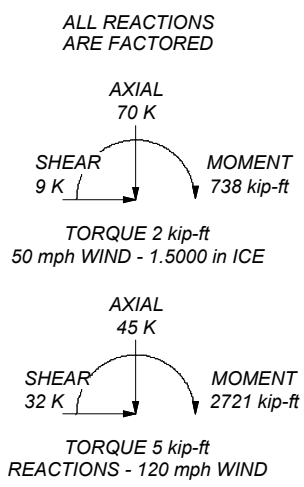


MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-H Standard.
3. Tower designed for a 120 mph basic wind in accordance with the TIA-222-H Standard.
4. Tower is also designed for a 50 mph basic wind with 1.50 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Risk Category II.
7. Topographic Category 1 with Crest Height of 0.0000 ft
8. TIA-222-H ANNEX S



Paul J. Ford & Company 250 E. Broad St., Suite 600 Columbus, OH 43215 Phone: (614) 221-6679 FAX:	Job: 117' Monopole / Darien, CT		
	Project: PJF 37519-0798.001.7805 / BU 806352		
Client: Crown Castle Code: TIA-222-H Path:	Drawn by: djack Date: 03/07/19	App'd: Scale: NTS Dwg No. E-1	

Site BU: 806352
Work Order: _____

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Pole Geometry

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	117	7	0	12	14.36	15.94	0.1875	Auto	A572-65
2	110	10	0	12	15.94	18.2	0.1875	Auto	A572-65
3	100	52.58	4.58	12	18.20	30	0.25	Auto	A572-65
4	52	52	0	12	28.47	40.3	0.34375	Auto	A572-65

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12
1	0	35	plate	MS-600; (1) (1.1875)	3		o				o				o		
2	35	63.5	plate	MS-450; (1) (1.1875)	3		o				o				o		
3	51.5	71	plate	MS-450; (1) (1.1875)	3	o				o				o			
4	0	35	plate	I-045100; (1) (1.1875)	3			o				o				o	
5	35	49	plate	I-040075; (1) (1.1875)	3			o				o				o	
6	12.5	38.08	plate	I-045100; (1) (1.1875)	1				o								
7	2.5	38.08	plate	I-045100; (1) (1.1875)	2								o				o
8	38.08	68.08	plate	I-060100; (1) (1.1875)	3				o				o				o
9	68.08	81.88	plate	I-045100; (1) (1.1875)	3		o						o				o
10	0	12.5	plate	FP 1.25 x 5.25_1	1			c									
11	0	2.5	plate	FP 1.25 x 5.25_1	2								c				c
12	68.08	76.08	plate	I-040075; (1) (1.1875)	3			o				o				o	
13	0	11	plate	FP 1.25 x 4.5_1	3		c				c				c		
14																	

Reinforcement Details

	B (in)	H (in)	Gross Area (in ²)	Pole Face to Centroid (in)	Bottom Termination Length (in)	Top Termination Length (in)	L _u (in)	Net Area (in ²)	Bolt Hole Size (in)	Reinforcement Material
1	6	1	6	0.5	n/a	n/a	16.250	4.750	1.1875	A572-65
2	4.5	1	4.5	0.5	n/a	n/a	12.000	3.250	1.1875	A572-65
3	4.5	1	4.5	0.5	n/a	n/a	21.000	3.250	1.1875	A572-65
4	4.5	1	4.5	0.5	n/a	n/a	19.250	3.250	1.1875	A572-65
5	4	0.75	3	0.375	n/a	n/a	16.000	2.063	1.1875	A572-65
6	4.5	1	4.5	0.5	n/a	n/a	19.250	3.250	1.1875	A572-65
7	4.5	1	4.5	0.5	n/a	n/a	19.250	3.250	1.1875	A572-65
8	6	1	6	0.5	n/a	n/a	16.000	4.750	1.1875	A572-65
9	4.5	1	4.5	0.5	n/a	n/a	19.250	3.250	1.1875	A572-65
10	1.25	5.25	6.5625	2.625	n/a	n/a	0.000	6.563	0.0000	A572-65
11	1.25	5.25	6.5625	2.625	n/a	n/a	0.000	6.563	0.0000	A572-65
12	4	0.75	3	0.375	n/a	n/a	16.000	2.063	1.1875	A572-65
13	1.25	4.5	5.625	2.25	n/a	n/a	0.000	5.625	0.0000	A572-65

TNX Geometry Input

Increment (ft): 5

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	117 - 112	5		12	14.360	15.489	0.1875	A572-65	1.000
2	112 - 110	2	0	12	15.489	15.940	0.1875	A572-65	1.000
3	110 - 105	5		12	15.940	17.070	0.1875	A572-65	1.000
4	105 - 100	5	0	12	17.070	18.200	0.1875	A572-65	1.000
5	100 - 95	5		12	18.200	19.322	0.25	A572-65	1.000
6	95 - 90	5		12	19.322	20.444	0.25	A572-65	1.000
7	90 - 85	5		12	20.444	21.566	0.25	A572-65	1.000
8	85 - 81.88	3.12		12	21.566	22.266	0.25	A572-65	1.000
9	81.88 - 81.63	0.25		12	22.266	22.323	0.35	A572-65	1.263
10	81.63 - 76.63	5		12	22.323	23.445	0.35625	A572-65	1.215
11	76.63 - 76.08	0.55		12	23.445	23.568	0.35625	A572-65	1.213
12	76.08 - 75.83	0.25		12	23.568	23.624	0.4625	A572-65	1.199
13	75.83 - 71	4.83		12	23.624	24.708	0.45625	A572-65	1.185
14	71 - 70.75	0.25		12	24.708	24.764	0.675	A572-65	1.065
15	70.75 - 68.08	2.67		12	24.764	25.363	0.6625	A572-65	1.068
16	68.08 - 67.83	0.25		12	25.363	25.420	0.7125	A572-65	0.914
17	67.83 - 63.5	4.33		12	25.420	26.391	0.6875	A572-65	0.924
18	63.5 - 63.25	0.25		12	26.391	26.447	0.9	A572-65	0.894
19	63.25 - 58.25	5		12	26.447	27.570	0.85	A572-65	0.917
20	58.25 - 53.25	5		12	27.570	28.692	0.825	A572-65	0.918
21	53.25 - 52	5.83	4.58	12	28.692	30.000	0.825	A572-65	0.912
22	52 - 46.42	5.58		12	28.472	29.741	0.84375	A572-65	0.931
23	46.42 - 41.42	5		12	29.741	30.879	0.81875	A572-65	0.938
24	41.42 - 38.08	3.34		12	30.879	31.638	0.80625	A572-65	0.939
25	38.08 - 37.83	0.25		12	31.638	31.695	0.75625	A572-65	0.939
26	37.83 - 35	2.83		12	31.695	32.339	0.74375	A572-65	0.944
27	35 - 34.75	0.25		12	32.339	32.396	0.84375	A572-65	0.940
28	34.75 - 29.75	5		12	32.396	33.533	0.83125	A572-65	0.935
29	29.75 - 24.75	5		12	33.533	34.670	0.80625	A572-65	0.945
30	24.75 - 19.75	5		12	34.670	35.808	0.79375	A572-65	0.942
31	19.75 - 14.75	5		12	35.808	36.945	0.76875	A572-65	0.956
32	14.75 - 12.5	2.25		12	36.945	37.457	0.76875	A572-65	0.949
33	12.5 - 12.25	0.25		12	37.457	37.514	0.76875	A572-65	0.970
34	12.25 - 11	1.25		12	37.514	37.798	0.76875	A572-65	0.966
35	11 - 10.75	0.25		12	37.798	37.855	0.96875	A572-65	0.917
36	10.75 - 5.75	5		12	37.855	38.992	0.94375	A572-65	0.924
37	5.75 - 2.5	3.25		12	38.992	39.731	0.94375	A572-65	0.913
38	2.5 - 2.25	0.25		12	39.731	39.788	0.96875	A572-65	0.923
39	2.25 - 0	2.25		12	39.788	40.300	0.96875	A572-65	0.916

TNX Section Forces

Increment (ft):		TNX Output			
	5	Section Height (ft)	P _u (K)	M _{ux} (kip-ft)	V _u (K)
1	117 - 112	1.62	23.06	4.01	
2	112 - 110	1.69	31.21	4.14	
3	110 - 105	3.95	70.34	7.30	
4	105 - 100	4.24	107.76	7.68	
5	100 - 95	7.91	183.76	14.61	
6	95 - 90	8.68	260.19	15.71	
7	90 - 85	13.30	364.98	22.33	
8	85 - 81.88	14.09	436.23	23.17	
9	81.88 - 81.63	14.16	442.02	23.18	
10	81.63 - 76.63	15.12	559.27	23.84	
11	76.63 - 76.08	15.24	572.39	23.89	
12	76.08 - 75.83	15.30	578.36	23.92	
13	75.83 - 71	16.41	695.07	24.44	
14	71 - 70.75	16.50	701.18	24.47	
15	70.75 - 68.08	17.25	766.88	24.78	
16	68.08 - 67.83	17.33	773.07	24.81	
17	67.83 - 63.5	18.48	881.49	25.31	
18	63.5 - 63.25	18.57	887.82	25.34	
19	63.25 - 58.25	20.18	1015.92	25.94	
20	58.25 - 53.25	21.82	1147.05	26.55	
21	53.25 - 52	22.24	1180.33	26.70	
22	52 - 46.42	25.44	1331.40	27.44	
23	46.42 - 41.42	27.23	1470.01	28.01	
24	41.42 - 38.08	28.44	1564.17	28.39	
25	38.08 - 37.83	28.54	1571.27	28.41	
26	37.83 - 35	29.52	1652.10	28.72	
27	35 - 34.75	29.63	1659.28	28.74	
28	34.75 - 29.75	31.57	1804.36	29.29	
29	29.75 - 24.75	33.54	1952.12	29.82	
30	24.75 - 19.75	35.54	2102.58	30.36	
31	19.75 - 14.75	37.58	2255.55	30.83	
32	14.75 - 12.5	38.51	2325.15	31.04	
33	12.5 - 12.25	38.62	2332.91	31.05	
34	12.25 - 11	39.14	2371.81	31.18	
35	11 - 10.75	39.27	2379.61	31.19	
36	10.75 - 5.75	41.71	2536.82	31.69	
37	5.75 - 2.5	43.32	2640.33	32.01	
38	2.5 - 2.25	43.46	2648.34	32.03	
39	2.25 - 0	44.61	2720.66	32.26	

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
117 - 112	Pole	TP15.489x14.36x0.1875	Pole	10.6%	Pass
112 - 110	Pole	TP15.94x15.489x0.1875	Pole	13.6%	Pass
110 - 105	Pole	TP17.07x15.94x0.1875	Pole	27.2%	Pass
105 - 100	Pole	TP18.2x17.07x0.1875	Pole	37.3%	Pass
100 - 95	Pole	TP19.322x18.2x0.25	Pole	40.6%	Pass
95 - 90	Pole	TP20.444x19.322x0.25	Pole	51.1%	Pass
90 - 85	Pole	TP21.566x20.444x0.25	Pole	65.2%	Pass
85 - 81.88	Pole	TP22.266x21.566x0.25	Pole	73.7%	Pass
81.88 - 81.63	Pole + Reinf.	TP22.323x22.266x0.35	Reinf. 9 Tension Rupture	68.3%	Pass
81.63 - 76.63	Pole + Reinf.	TP23.445x22.323x0.3563	Reinf. 9 Tension Rupture	79.5%	Pass
76.63 - 76.08	Pole + Reinf.	TP23.568x23.445x0.3563	Reinf. 9 Tension Rupture	80.7%	Pass
76.08 - 75.83	Pole + Reinf.	TP23.624x23.568x0.4625	Reinf. 12 Tension Rupture	73.8%	Pass
75.83 - 71	Pole + Reinf.	TP24.708x23.624x0.4563	Reinf. 12 Tension Rupture	82.8%	Pass
71 - 70.75	Pole + Reinf.	TP24.764x24.708x0.675	Reinf. 3 Compression	67.3%	Pass
70.75 - 68.08	Pole + Reinf.	TP25.363x24.764x0.6625	Reinf. 3 Compression	71.1%	Pass
68.08 - 67.83	Pole + Reinf.	TP25.42x25.363x0.7125	Reinf. 3 Compression	62.8%	Pass
67.83 - 63.5	Pole + Reinf.	TP26.391x25.42x0.6875	Reinf. 3 Compression	68.0%	Pass
63.5 - 63.25	Pole + Reinf.	TP26.447x26.391x0.9	Reinf. 3 Compression	54.0%	Pass
63.25 - 58.25	Pole + Reinf.	TP27.57x26.447x0.85	Reinf. 3 Compression	58.6%	Pass
58.25 - 53.25	Pole + Reinf.	TP28.692x27.57x0.825	Reinf. 3 Compression	62.8%	Pass
53.25 - 52	Pole + Reinf.	TP30x28.692x0.825	Reinf. 3 Compression	63.8%	Pass
52 - 46.42	Pole + Reinf.	TP29.741x28.472x0.8438	Reinf. 5 Tension Rupture	67.5%	Pass
46.42 - 41.42	Pole + Reinf.	TP30.879x29.741x0.8188	Reinf. 5 Tension Rupture	70.6%	Pass
41.42 - 38.08	Pole + Reinf.	TP31.638x30.879x0.8063	Reinf. 5 Tension Rupture	72.6%	Pass
38.08 - 37.83	Pole + Reinf.	TP31.695x31.638x0.7563	Reinf. 5 Tension Rupture	77.6%	Pass
37.83 - 35	Pole + Reinf.	TP32.339x31.695x0.7438	Reinf. 5 Tension Rupture	79.2%	Pass
35 - 34.75	Pole + Reinf.	TP32.396x32.339x0.8438	Reinf. 6 Tension Rupture	67.2%	Pass
34.75 - 29.75	Pole + Reinf.	TP33.533x32.396x0.8313	Reinf. 6 Tension Rupture	69.5%	Pass
29.75 - 24.75	Pole + Reinf.	TP34.67x33.533x0.8063	Reinf. 6 Tension Rupture	71.7%	Pass
24.75 - 19.75	Pole + Reinf.	TP35.808x34.67x0.7938	Reinf. 6 Tension Rupture	73.7%	Pass
19.75 - 14.75	Pole + Reinf.	TP36.945x35.808x0.7688	Reinf. 6 Tension Rupture	75.6%	Pass
14.75 - 12.5	Pole + Reinf.	TP37.457x36.945x0.7688	Reinf. 6 Tension Rupture	76.3%	Pass
12.5 - 12.25	Pole + Reinf.	TP37.514x37.457x0.7688	Reinf. 4 Tension Rupture	77.3%	Pass
12.25 - 11	Pole + Reinf.	TP37.798x37.514x0.7688	Reinf. 4 Tension Rupture	77.7%	Pass
11 - 10.75	Pole + Reinf.	TP37.855x37.798x0.9688	Reinf. 4 Tension Rupture	62.2%	Pass
10.75 - 5.75	Pole + Reinf.	TP38.992x37.855x0.9438	Reinf. 4 Tension Rupture	63.7%	Pass
5.75 - 2.5	Pole + Reinf.	TP39.731x38.992x0.9438	Reinf. 4 Tension Rupture	64.6%	Pass
2.5 - 2.25	Pole + Reinf.	TP39.788x39.731x0.9688	Reinf. 4 Tension Rupture	60.6%	Pass
2.25 - 0	Pole + Reinf.	TP40.3x39.788x0.9688	Reinf. 4 Tension Rupture	61.2%	Pass
				Summary	
			Pole	73.7%	Pass
			Reinforcement	82.8%	Pass
			Overall	82.8%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in ⁴)			Area (in ²)			% Capacity*													
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13
117 - 112	276	n/a	276	9.22	n/a	9.22	10.6%													
112 - 110	302	n/a	302	9.50	n/a	9.50	13.6%													
110 - 105	371	n/a	371	10.18	n/a	10.18	27.2%													
105 - 100	451	n/a	451	10.86	n/a	10.86	37.3%													
100 - 95	714	n/a	714	15.33	n/a	15.33	40.6%													
95 - 90	847	n/a	847	16.23	n/a	16.23	51.1%													
90 - 85	997	n/a	997	17.14	n/a	17.14	65.2%													
85 - 81.88	1098	n/a	1098	17.70	n/a	17.70	73.7%													
81.88 - 81.63	1148	415	1563	17.74	13.50	31.24	58.6%								68.3%					
81.63 - 76.63	1332	519	1851	18.64	13.50	32.14	67.5%								79.5%					
76.63 - 76.08	1353	524	1877	18.74	13.50	32.24	68.5%								80.7%					
76.08 - 75.83	1334	1071	2404	18.79	22.50	41.29	52.0%								61.6%				73.8%	
75.83 - 71	1527	1166	2693	19.66	22.50	42.16	59.1%								69.2%				82.8%	
71 - 70.75	1530	2346	3876	19.71	36.00	55.71	40.6%			67.3%					51.6%				60.0%	
70.75 - 68.08	1645	2455	4100	20.19	36.00	56.19	43.4%			71.1%					54.7%				63.5%	
68.08 - 67.83	1641	2788	4429	20.23	31.50	51.73	37.5%			62.8%					56.1%					
67.83 - 63.5	1838	2994	4832	21.01	31.50	52.51	41.2%			68.0%					60.8%					
63.5 - 63.25	1850	4289	6139	21.06	45.00	66.06	32.8%		52.9%	54.0%					48.3%					
63.25 - 58.25	2098	4643	6741	21.96	45.00	66.96	36.2%		57.3%	58.6%					52.3%					
58.25 - 53.25	2367	5011	7378	22.86	45.00	67.86	39.6%		61.5%	62.8%					56.1%					
53.25 - 52	2438	5105	7543	23.09	45.00	68.09	40.4%		62.4%	63.8%					57.0%					
52 - 46.42	3594	4813	8407	32.49	40.50	72.99	37.5%		64.8%			67.5%			59.1%					
46.42 - 41.42	4028	5173	9201	33.75	40.50	74.25	39.8%		67.8%			70.6%			61.9%					
41.42 - 38.08	4336	5421	9756	34.59	40.50	75.09	41.2%		69.6%			72.6%			63.6%					
38.08 - 37.83	4360	4822	9182	34.65	36.00	70.65	44.1%		74.4%			77.6%	74.4%	74.4%						
37.83 - 35	4634	5013	9647	35.36	36.00	71.36	45.4%		76.0%			79.2%	76.0%	76.0%						
35 - 34.75	4658	6325	10984	35.43	45.00	80.43	40.1%	61.3%			67.2%		67.2%	67.2%						
34.75 - 29.75	5172	6760	11932	36.68	45.00	81.68	42.1%	63.5%			69.5%		69.5%	69.5%						
29.75 - 24.75	5722	7209	12931	37.94	45.00	82.94	44.0%	65.5%			71.7%		71.7%	71.7%						
24.75 - 19.75	6310	7672	13982	39.20	45.00	84.20	45.9%	67.3%			73.7%		73.7%	73.7%						
19.75 - 14.75	6937	8151	15087	40.45	45.00	85.45	47.7%	69.0%			75.6%		75.6%	75.6%						
14.75 - 12.5	7232	8371	15602	41.02	45.00	86.02	48.5%	69.7%			76.3%		76.3%	76.3%						
12.5 - 12.25	7271	8455	15725	41.08	47.06	88.15	50.2%	71.0%			77.3%			77.2%				57.3%		
12.25 - 11	7439	8579	16018	41.40	47.06	88.46	50.7%	71.4%			77.7%			77.6%				57.6%		
11 - 10.75	7471	12650	20121	41.46	63.94	105.40	40.6%	57.0%			62.2%			62.1%				47.2%		52.3%
10.75 - 5.75	8171	13378	21549	42.72	63.94	106.66	42.2%	58.5%			63.7%			63.6%				48.4%		53.5%
5.75 - 2.5	8649	13862	22511	43.53	63.94	107.47	43.2%	59.3%			64.6%			64.6%				49.1%		54.2%
2.5 - 2.25	8688	14784	23471	43.60	68.06	111.66	41.1%	58.1%			60.6%							47.5%	49.7%	51.8%
2.25 - 0	9030	15138	24168	44.16	68.06	112.23	41.7%	58.7%			61.2%							48.0%	50.2%	52.3%

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

Monopole Flange Plate Connection

Elevation = 110 ft.

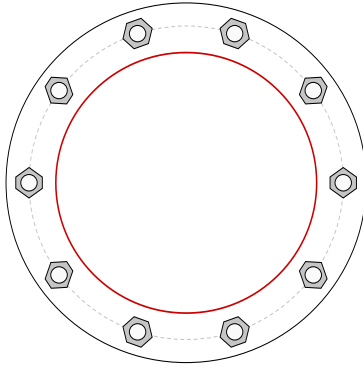


BU #	806352
Site Name	
Order #	
TIA-222 Revision	H

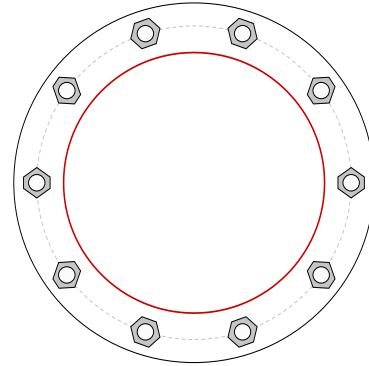
Applied Loads	
Moment (kip-ft)	31.00
Axial Force (kips)	2.00
Shear Force (kips)	4.00

*TIA-222-H Section 15.5 Applied

Top Plate - External



Bottom Plate - External



Connection Properties

Bolt Data

(10) 1" ϕ bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 19.2" BC

Top Plate Data

22" OD x 1.5" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Plate Data

22" OD x 1.5" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Top Stiffener Data

N/A

Bottom Stiffener Data

N/A

Top Pole Data

15.94" x 0.1875" 12-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Bottom Pole Data

15.94" x 0.1875" 12-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	7.54
Allowable (kips)	54.54
Stress Rating:	13.2% Pass

Top Plate Capacity

Max Stress (ksi):	2.91	(Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	8.6%	Pass
Tension Side Stress Rating:	3.1%	Pass

Bottom Plate Capacity

Max Stress (ksi):	2.91	(Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	8.6%	Pass
Tension Side Stress Rating:	3.1%	Pass

Monopole Flange Plate Connection

Elevation = 100 ft.

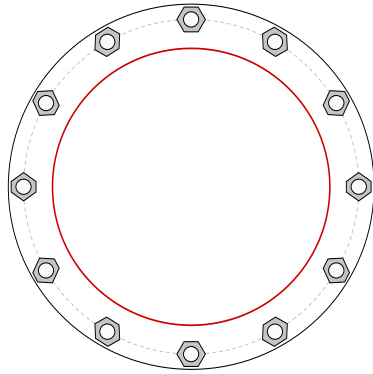


BU #	806352
Site Name	
Order #	
TIA-222 Revision	H

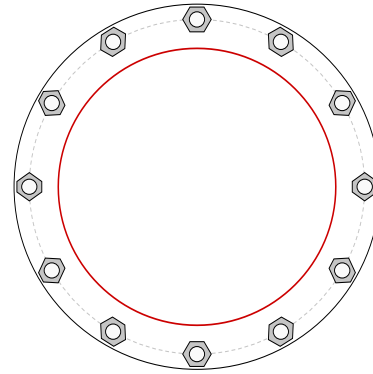
Applied Loads	
Moment (kip-ft)	108.00
Axial Force (kips)	4.00
Shear Force (kips)	8.00

*TIA-222-H Section 15.5 Applied

Top Plate - External



Bottom Plate - External



Connection Properties

Bolt Data

(12) 1" \emptyset bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 22" BC

Top Plate Data

24" OD x 1.5" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Plate Data

24" OD x 1.5" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Top Stiffener Data

N/A

Bottom Stiffener Data

N/A

Top Pole Data

18.2" x 0.1875" 12-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Bottom Pole Data

18.2" x 0.25" 12-sided pole (A572-65; Fy=65 ksi, Fu=80 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	19.29
Allowable (kips)	54.53
Stress Rating:	33.7% Pass

Top Plate Capacity

Max Stress (ksi):	8.46	(Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	24.9%	Pass
Tension Side Stress Rating:	10.3%	Pass

Bottom Plate Capacity

Max Stress (ksi):	8.46	(Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	24.9%	Pass
Tension Side Stress Rating:	10.3%	Pass

v4.5.7 - Effective 2-28-19

Asymmetric Anchor Rod Analysis

Moment = 2721 k-ft TIA Ref. = H η = N/A for Base Plates, Rev. G Sect. 4.9.9 Use An? No for Anchors or Bolts
 Axial = 45.0 kips (+Comp, -Tension) ASIF = N/A Threads = N/A for Flange Plates, Rev. G & H
 Shear = 32.0 kips Max Ratio = 100.0% Grout = 0.00 psi, for Base Plates, Rev. H Sect 4.9.9 (Note)
 Anchor Qty = 18 Location = Base Plate

**** For Post Installed Anchors: Check anchors for embedment, epoxy/grout bond, and capacity based on proof load. ****

Item	Nominal Anchor Dia, in	Spec	Fy, ksi	Fu, ksi	Location, degrees	Anchor Circle, in	Type	Area Override, in ²	lar, in	Area, in ²	Max Net Comp, kips	Max Net Tension, kips	Tension Override, kips	Comp Override, kips	Tension Cap, kips	Comp Cap, kips	Capacity Ratio
1	2.250	#18J A615 Gr 75	75	100	0.00	48.22	Original	0.00	1.00	3.98	145.19	137.69	0.00	0.00	243.75	243.60	56.9%
2	2.250	#18J A615 Gr 75	75	100	30.00	48.22	Original	0.00	1.00	3.98	145.19	137.69	0.00	0.00	243.75	243.60	56.9%
3	2.250	#18J A615 Gr 75	75	100	60.00	48.22	Original	0.00	1.00	3.98	145.19	137.69	0.00	0.00	243.75	243.60	56.9%
4	2.250	#18J A615 Gr 75	75	100	90.00	48.22	Original	0.00	1.00	3.98	145.19	137.69	0.00	0.00	243.75	243.60	56.9%
5	2.250	#18J A615 Gr 75	75	100	120.00	48.22	Original	0.00	1.00	3.98	145.19	137.69	0.00	0.00	243.75	243.60	56.9%
6	2.250	#18J A615 Gr 75	75	100	150.00	48.22	Original	0.00	1.00	3.98	145.19	137.69	0.00	0.00	243.75	243.60	56.9%
7	2.250	#18J A615 Gr 75	75	100	180.00	48.22	Original	0.00	1.00	3.98	145.19	137.69	0.00	0.00	243.75	243.60	56.9%
8	2.250	#18J A615 Gr 75	75	100	210.00	48.22	Original	0.00	1.00	3.98	145.19	137.69	0.00	0.00	243.75	243.60	56.9%
9	2.250	#18J A615 Gr 75	75	100	240.00	48.22	Original	0.00	1.00	3.98	145.19	137.69	0.00	0.00	243.75	243.60	56.9%
10	2.250	#18J A615 Gr 75	75	100	270.00	48.22	Original	0.00	1.00	3.98	145.19	137.69	0.00	0.00	243.75	243.60	56.9%
11	2.250	#18J A615 Gr 75	75	100	300.00	48.22	Original	0.00	1.00	3.98	145.19	137.69	0.00	0.00	243.75	243.60	56.9%
12	2.250	#18J A615 Gr 75	75	100	330.00	48.22	Original	0.00	1.00	3.98	145.19	137.69	0.00	0.00	243.75	243.60	56.9%
13	1.750	A193 Gr B7	105	125	105.00	58.72	Post-Installed	0.00	12.25	2.41	104.09	104.09	0.00	0.00	178.07	160.13	61.9%
14	1.750	A193 Gr B7	105	125	225.00	58.72	Post-Installed	0.00	12.25	2.41	104.09	104.09	0.00	0.00	178.07	160.13	61.9%
15	1.750	A193 Gr B7	105	125	345.00	58.72	Post-Installed	0.00	12.25	2.41	104.09	104.09	0.00	0.00	178.07	160.13	61.9%
16	2.250	A193 Gr B7	105	125	15.00	58.72	Post-Installed	0.00	12.25	3.98	172.07	172.07	0.00	0.00	304.47	299.92	54.6%
17	2.250	A193 Gr B7	105	125	135.00	58.72	Post-Installed	0.00	12.25	3.98	172.07	172.07	0.00	0.00	304.47	299.92	54.6%
18	2.250	A193 Gr B7	105	125	255.00	58.72	Post-Installed	0.00	12.25	3.98	172.07	172.07	0.00	0.00	304.47	299.92	54.6%
										66.90							

Monopole Base Plate Connection

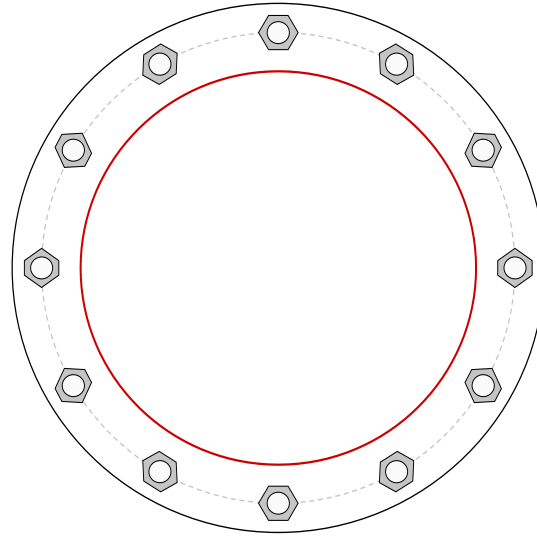


Site Info	
BU #	806352
Site Name	
Order #	

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	1

Applied Loads	
Moment (kip-ft)	1705.00
Axial Force (kips)	45.00
Shear Force (kips)	32.00

*TIA-222-H Section 15.5 Applied



Connection Properties	Analysis Results
-----------------------	------------------

Anchor Rod Data
(12) 2-1/4" ϕ bolts (A615-75 N; $F_y=75$ ksi, $F_u=100$ ksi) on 48.22" BC
Base Plate Data
54.22" OD x 2.5" Plate (A572-60; $F_y=60$ ksi, $F_u=75$ ksi)
Stiffener Data
N/A
Pole Data
40.3" x 0.34375" 12-sided pole (A572-65; $F_y=65$ ksi, $F_u=80$ ksi)

Anchor Rod Summary	<i>(units of kips, kip-in)</i>	
$Pu_c = 145.06$	$\phi Pn_c = 243.75$	Stress Rating
$Vu = 2.67$	$\phi Vn = 73.13$	56.8%
$Mu = n/a$	$\phi Mn = n/a$	Pass
Base Plate Summary		
Max Stress (ksi):	21.28	(Flexural)
Allowable Stress (ksi):	54	
Stress Rating:	37.5%	Pass

Drilled Pier Foundation



BU #: 806352
 Site Name:
 Order Number:
 TIA-222 Revision: H
 Tower Type: Monopole

Applied Loads		
	Comp.	Uplift
Moment (kip-ft)	2721	
Axial Force (kips)	45	
Shear Force (kips)	32	

Material Properties		
Concrete Strength, f _c :	3	ksi
Rebar Strength, F _y :	60	ksi

Pier Design Data		
Depth	16.4	ft
Ext. Above Grade	0.2	ft
Pier Section 1		
<i>From 0.2' above grade to 16.4' below grade</i>		
Pier Diameter	6.5	ft
Rebar Quantity	22	
Rebar Size	10	
Clear Cover to Ties	5	in
Tie Size	5	

Analysis Results		
Soil Lateral Capacity		
	Compression	Uplift
D _{v=0} (ft from TOC)	6.04	-
Soil Safety Factor	2.82	-
Max Moment (kip-ft)	2897.05	-
Rating*	44.9%	-
Soil Vertical Capacity		
	Compression	Uplift
Skin Friction (kips)	569.59	-
End Bearing (kips)	918.34	-
Weight of Concrete (kips)	99.15	-
Total Capacity (kips)	1487.93	-
Axial (kips)	144.15	-
Rating*	9.2%	-
Reinforced Concrete Capacity		
	Compression	Uplift
Critical Depth (ft from TOC)	5.77	-
Critical Moment (kip-ft)	2896.27	-
Critical Moment Capacity	4078.29	-
Rating*	67.6%	-
Soil Interaction Rating*		44.9%
Structural Foundation Rating*		67.6%

Check Limitation	
Apply TIA-222-H Section 15.5:	<input checked="" type="checkbox"/>
N/A	<input type="checkbox"/>

*Rating per TIA-222-H Section 15.5

Soil Profile			
Groundwater Depth	n/a	ft	# of Layers
			4

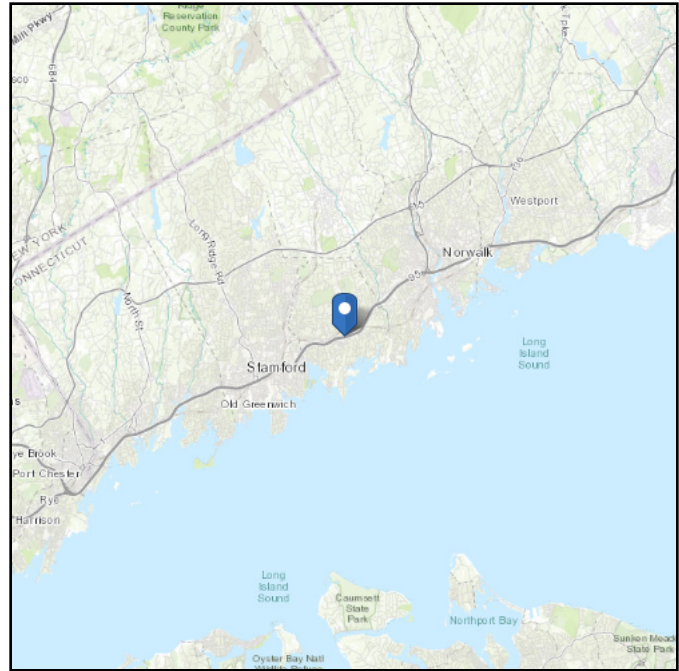
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ _{soil} (pcf)	γ _{concrete} (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	4	4	115	150	0	0	0.000	0.000					Cohesionless
2	4	6	2	120	150	0	39	0.000	0.000	0.42	0.42			Cohesionless
3	6	11	5	135	150	0	45	0.000	0.000	2.15	2.15			Cohesionless
4	11	16.4	5.4	155	150	14	0	6.300	6.300	4.74	4.74	36.9		Cohesive

ASCE 7 Hazards Report

Address:
No Address at This Location

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

Elevation: 42.25 ft (NAVD 88)
Latitude: 41.072
Longitude: -73.4782



Wind

Results:

Wind Speed:	119 Vmph
10-year MRI	76 Vmph
25-year MRI	86 Vmph
50-year MRI	91 Vmph
100-year MRI	98 Vmph

Data Source: ASCE/SEI 7-10, Fig. 26.5-1A and Figs. CC-1–CC-4, incorporating errata of March 12, 2014

Date Accessed: Tue Mar 05 2019

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

Site is in a hurricane-prone region as defined in ASCE/SEI 7-10 Section 26.2. Glazed openings need not be protected against wind-borne debris.

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

Ice

Results:

Ice Thickness: 0.75 in.

Concurrent Temperature: 15 F

Gust Speed: 50 mph

Data Source: Standard ASCE/SEI 7-10, Figs. 10-2 through 10-8

Date Accessed: Tue Mar 05 2019

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

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

The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided "as is" and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

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WIRELESS COMMUNICATIONS FACILITY

CT2104 - LTE 5C AWS/6C 700 UPPER D/5G 850

DARIEN

CROWN CASTLE SITE NO.: 806352

50 LEDGE ROAD

DARIEN, CT 06820

GENERAL NOTES

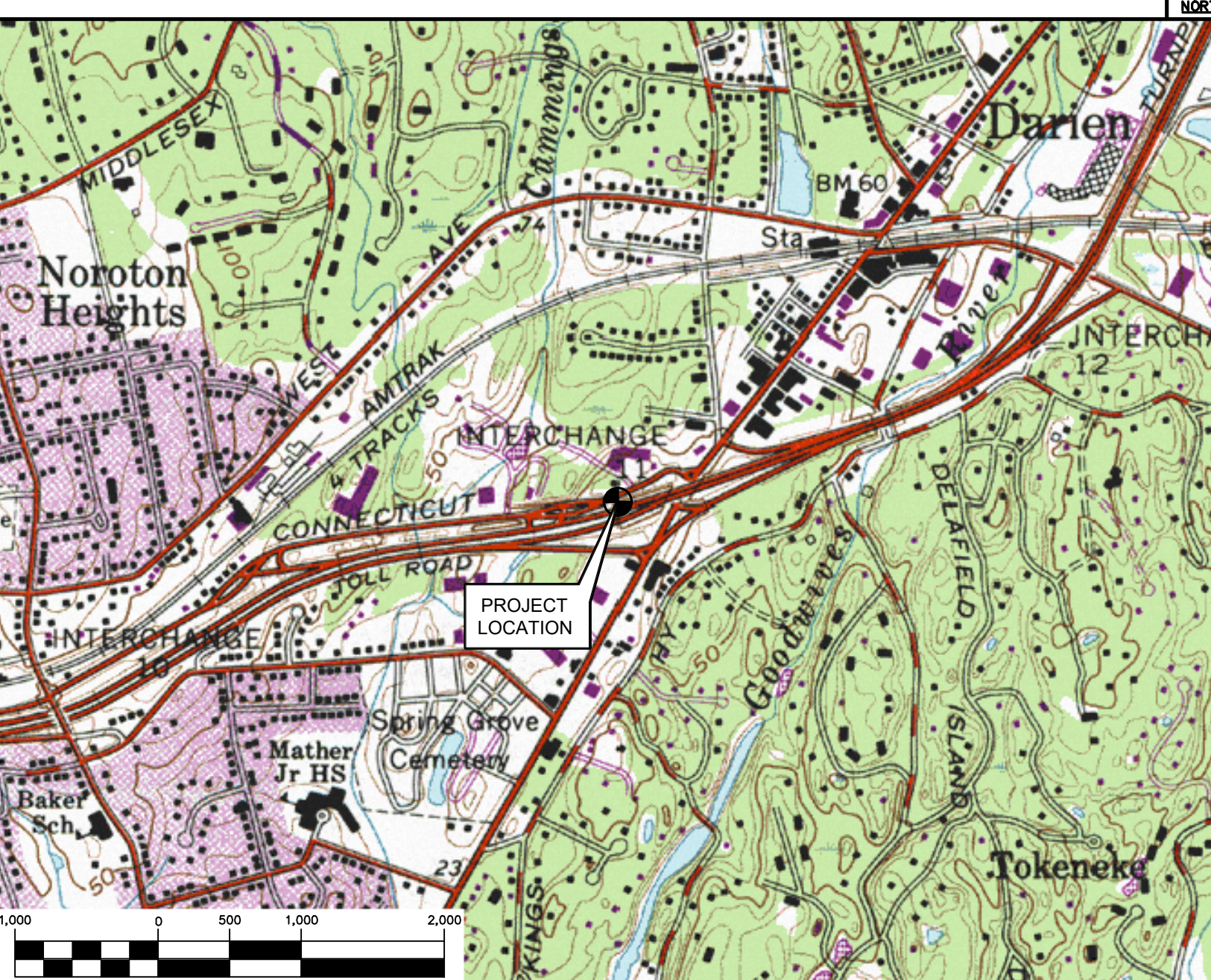
1. ALL WORK SHALL BE IN ACCORDANCE WITH THE 2015 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2018 CONNECTICUT STATE BUILDING CODE, INCLUDING THE TIA-222 REVISION "G" STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND SUPPORTING STRUCTURES, 2018 CONNECTICUT FIRE SAFETY CODE AND, 2017 NATIONAL ELECTRICAL CODE AND LOCAL CODES.
2. THE COMPOUND, TOWER, PRIMARY GROUND RING, ELECTRICAL SERVICE TO THE METER BANK AND TELEPHONE SERVICE TO THE DEMARCATION POINT ARE PROVIDED BY SITE OWNER. AS BUILT FIELD CONDITIONS REGARDING THESE ITEMS SHALL BE CONFIRMED BY THE CONTRACTOR. SHOULD ANY FIELD CONDITIONS PRECLUDE COMPLIANCE WITH THE DRAWINGS, THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER AND SHALL NOT PROCEED WITH ANY AFFECTED WORK.
3. CONTRACTOR SHALL REVIEW ALL DRAWINGS AND SPECIFICATIONS IN THE CONTRACT DOCUMENT SET. CONTRACTOR SHALL COORDINATE ALL WORK SHOWN IN THE SET OF DRAWINGS. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF DRAWINGS TO ALL SUBCONTRACTORS AND ALL RELATED PARTIES. THE SUBCONTRACTORS SHALL EXAMINE ALL THE DRAWINGS AND SPECIFICATIONS FOR THE INFORMATION THAT AFFECTS THEIR WORK.
4. CONTRACTOR SHALL PROVIDE A COMPLETE BUILD-OUT WITH ALL FINISHES, STRUCTURAL, MECHANICAL, AND ELECTRICAL COMPONENTS AND PROVIDE ALL ITEMS AS SHOWN OR INDICATED ON THE DRAWINGS OR IN THE WRITTEN SPECIFICATIONS.
5. CONTRACTOR SHALL FURNISH ALL MATERIAL, LABOR AND EQUIPMENT TO COMPLETE THE WORK AND FURNISH A COMPLETED JOB ALL IN ACCORDANCE WITH LOCAL AND STATE GOVERNING AUTHORITIES AND OTHER AUTHORITIES HAVING LAWFUL JURISDICTION OVER THE WORK.
6. CONTRACTOR SHALL SECURE AND PAY FOR ALL PERMITS AND ALL INSPECTIONS REQUIRED AND SHALL ALSO PAY FEES REQUIRED FOR THE GENERAL CONSTRUCTION, PLUMBING, ELECTRICAL AND HVAC. PERMITS SHALL BE PAID FOR BY THE RESPECTIVE SUBCONTRACTORS.
7. CONTRACTOR SHALL MAINTAIN A CURRENT SET OF DRAWINGS AND SPECIFICATIONS ON SITE AT ALL TIMES AND INSURE DISTRIBUTION OF NEW DRAWINGS TO SUBCONTRACTORS AND OTHER RELEVANT PARTIES AS SOON AS THEY ARE MADE AVAILABLE. ALL OLD DRAWINGS SHALL BE MARKED VOID AND REMOVED FROM THE CONTRACT AREA. THE CONTRACTOR SHALL FURNISH AN "AS-BUILT" SET OF DRAWINGS TO OWNER UPON COMPLETION OF PROJECT.
8. LOCATION OF EQUIPMENT, AND WORK SUPPLIED BY OTHERS THAT IS DIAGRAMMATICALLY INDICATED ON THE DRAWINGS SHALL BE DETERMINED BY THE CONTRACTOR. THE CONTRACTOR SHALL DETERMINE LOCATIONS AND DIMENSIONS SUBJECT TO STRUCTURAL CONDITIONS AND WORK OF THE SUBCONTRACTORS.
9. THE CONTRACTOR IS SOLELY RESPONSIBLE TO DETERMINE CONSTRUCTION PROCEDURE AND SEQUENCE, AND TO ENSURE THE SAFETY OF THE EXISTING STRUCTURES AND ITS COMPONENT PARTS DURING CONSTRUCTION. THIS INCLUDES THE ADDITION OF WHATEVER SHORING, BRACING, UNDERPINNING, ETC. THAT MAY BE NECESSARY. MAINTAIN EXISTING BUILDING'S/PROPERTY'S OPERATIONS, COORDINATE WORK WITH BUILDING/PROPERTY OWNER.
10. DRAWINGS INDICATE THE MINIMUM STANDARDS, BUT IF ANY WORK SHOULD BE INDICATED TO BE SUBSTANDARD TO ANY ORDINANCES, LAWS, CODES, RULES, OR REGULATIONS BEARING ON THE WORK, THE CONTRACTOR SHALL INCLUDE IN HIS WORK AND SHALL EXECUTE THE WORK CORRECTLY IN ACCORDANCE WITH SUCH ORDINANCES, LAWS, CODES, RULES OR REGULATIONS WITH NO INCREASE IN COSTS.
11. ALL UTILITY WORK SHALL BE IN ACCORDANCE WITH LOCAL UTILITY COMPANY REQUIREMENTS AND SPECIFICATIONS.
12. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUBCONTRACTORS FOR ANY CONDITION PER MFR.'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
13. ANY AND ALL ERRORS, DISCREPANCIES, AND 'MISSED' ITEMS ARE TO BE BROUGHT TO THE ATTENTION OF THE AT&T CONSTRUCTION MANAGER DURING THE BIDDING PROCESS BY THE CONTRACTOR. ALL THESE ITEMS ARE TO BE INCLUDED IN THE BID. NO 'EXTRA' WILL BE ALLOWED FOR MISSED ITEMS.
14. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE SAFETY FROM THE TIME THE JOB IS AWARDED UNTIL ALL WORK IS COMPLETE AND ACCEPTED BY THE OWNER.
15. CONTRACTOR TO REVIEW ALL SHOP DRAWINGS AND SUBMIT COPY TO ENGINEER FOR APPROVAL. DRAWINGS MUST BEAR THE CHECKER'S INITIALS BEFORE SUBMITTING TO THE CONSTRUCTION MANAGER FOR REVIEW.
16. THE CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS, ELEVATIONS, ANGLES, AND EXISTING CONDITIONS AT THE SITE, PRIOR TO FABRICATION AND/OR INSTALLATION OF ANY WORK IN THE CONTRACT AREA.
17. COORDINATION, LAYOUT, FURNISHING AND INSTALLATION OF CONDUIT AND ALL APPURTENANCES REQUIRED FOR PROPER INSTALLATION OF ELECTRICAL AND TELECOMMUNICATION SERVICE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
18. ALL EQUIPMENT AND PRODUCTS PURCHASED ARE TO BE REVIEWED BY CONTRACTOR AND ALL APPLICABLE SUB-CONTRACTORS FOR ANY CONDITION PER THE MANUFACTURER'S RECOMMENDATIONS. CONTRACTOR TO SUPPLY THESE ITEMS AT NO COST TO OWNER OR CONSTRUCTION MANAGER.
19. ALL DAMAGE CAUSED TO ANY EXISTING STRUCTURE SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR WILL BE HELD LIABLE FOR ALL REPAIRS REQUIRED FOR EXISTING STRUCTURES IF DAMAGED DURING CONSTRUCTION ACTIVITIES.
20. THE CONTRACTOR SHALL CONTACT "CALL BEFORE YOU DIG" AT LEAST 48 HOURS PRIOR TO ANY EXCAVATIONS AT 1-800-922-4455. ALL UTILITIES SHALL BE IDENTIFIED AND CLEARLY MARKED PRIOR TO ANY EXCAVATION WORK. CONTRACTOR SHALL MAINTAIN AND PROTECT MARKED UTILITIES THROUGHOUT PROJECT COMPLETION.
21. CONTRACTOR SHALL COMPLY WITH OWNERS ENVIRONMENTAL ENGINEER ON ALL METHODS AND PROVISIONS FOR ALL EXCAVATION ACTIVITIES INCLUDING SOIL DISPOSAL. ALL BACKFILL MATERIALS TO BE PROVIDED BY THE CONTRACTOR.

SITE DIRECTIONS

FROM: 500 ENTERPRISE DRIVE ROCKY HILL, CONNECTICUT	TO: 50 LEDGE ROAD DARIEN, CONNECTICUT
1. HEAD NORTHEAST ON ENTERPRISE DR TOWARD CAPITAL BLVD	0.36 MI
2. TURN LEFT ONTO CAPITAL BLVD	0.27 MI
3. TURN LEFT ONTO WEST ST	0.30 MI
4. TURN LEFT TO MERGE ONTO I-91 S TOWARD NEW HAVEN	9.59 MI
5. TAKE EXIT 17 FOR CT-15 S/W CROSS PKWY TOWARD E MAIN ST	30.24 MI
6. MERGE ONTO CT-8 S TOWARD BRIDGEPORT	5.93 MI
7. MERGE ONTO I-95 S/GOVERNOR JOHN DAVIS LODGE TPKE TOWARD NY CITY	17.23 MI
8. TAKE EXIT 11 FOR US-1 TOWARD DARIEN/ROWAYTON	0.18 MI
9. KEEP LEFT TO TAKE RAMP TOWARD NOROTON	0.05 MI
10. MERGE ONTO LEDGE RD	0.24 MI
11. 126 LEDGE RD IS ON THE RIGHT	

VICINITY MAP

SCALE: 1" = 1000'



PROJECT SUMMARY

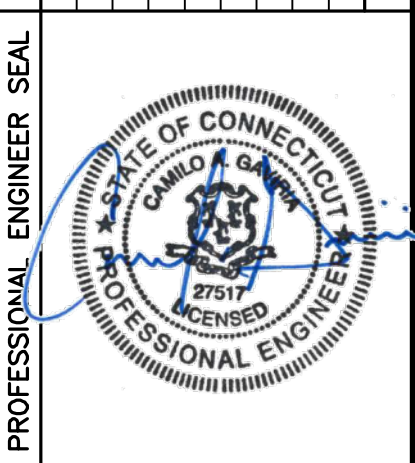
1. THE PROPOSED SCOPE OF WORK CONSISTS OF A MODIFICATION TO THE EXISTING UNMANNED TELECOMMUNICATIONS FACILITY INCLUDING THE FOLLOWING:
 - A. **AT ANTENNA SECTORS:**
 - INSTALL (3) 4426 B66'S, (1) PER SECTOR
 - RELOCATE (9) EXISTING RRU'S
 - INSTALL (6) DUAL SWIVEL MOUNTS, (2) PER SECTOR
 - B. **AT THE EQUIPMENT SHELTER**
 - REMOVE (3) EXISTING RRUS-11'S (LTE 850 MHz)
 - REMOVE (3) EXISTING RRU'S UMTS (UMTS 850 MHz)
 - INSTALL (3) 4478 B5'S
 - INSTALL (2) B14 4478'S
 - ADD 2ND 5216 WITH IDLE
 - ADD LTE RBS 6630

PROJECT INFORMATION

AT&T SITE NUMBER:	CT2104
AT&T SITE NAME:	DARIEN
SITE ADDRESS:	CROWN CASTLE SITE NO.: 806352 50 LEDGE ROAD DARIEN, CT 06820
LESSEE/APPLICANT:	AT&T MOBILITY 500 ENTERPRISE DRIVE, SUITE 3A ROCKY HILL, CT 06867
AT&T PACE ID NUMBER:	PACE JOB 1 - MRCTB030972 PACE JOB 2 - MRCTB031059 PACE JOB 3 - MRCTB032125
AT&T FA LOCATION CODE:	10035058
ENGINEER:	CENTEK ENGINEERING, INC. 63-2 NORTH BRANFORD RD. BRANFORD, CT 06405
PROJECT COORDINATES:	LATITUDE: 41°-04'-20.76996" N LONGITUDE: 73°-28'-41.39796" W GROUND ELEVATION: ±85' AMSL SITE COORDINATES AND GROUND ELEVATION REFERENCED FROM GOOGLE EARTH.

SHEET INDEX

SHT. NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	0
N-1	NOTES, SPECIFICATIONS AND ANTENNA SCHEDULE	0
C-1	PLANS AND ELEVATION	0
C-2	ANTENNA CONFIGURATION DETAILS	0
C-3	DETAILS	0
E-1	SCHEMATIC DIAGRAM AND NOTES	0
E-2	WIRING DIAGRAM	0
E-3	TYPICAL ELECTRICAL DETAILS	0



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 2031 488-8387 Fax
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 Branford, CT 06405
 www.CentekEng.com

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DARIEN
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 50 LEDGE ROAD
 DARIEN, CT 06820

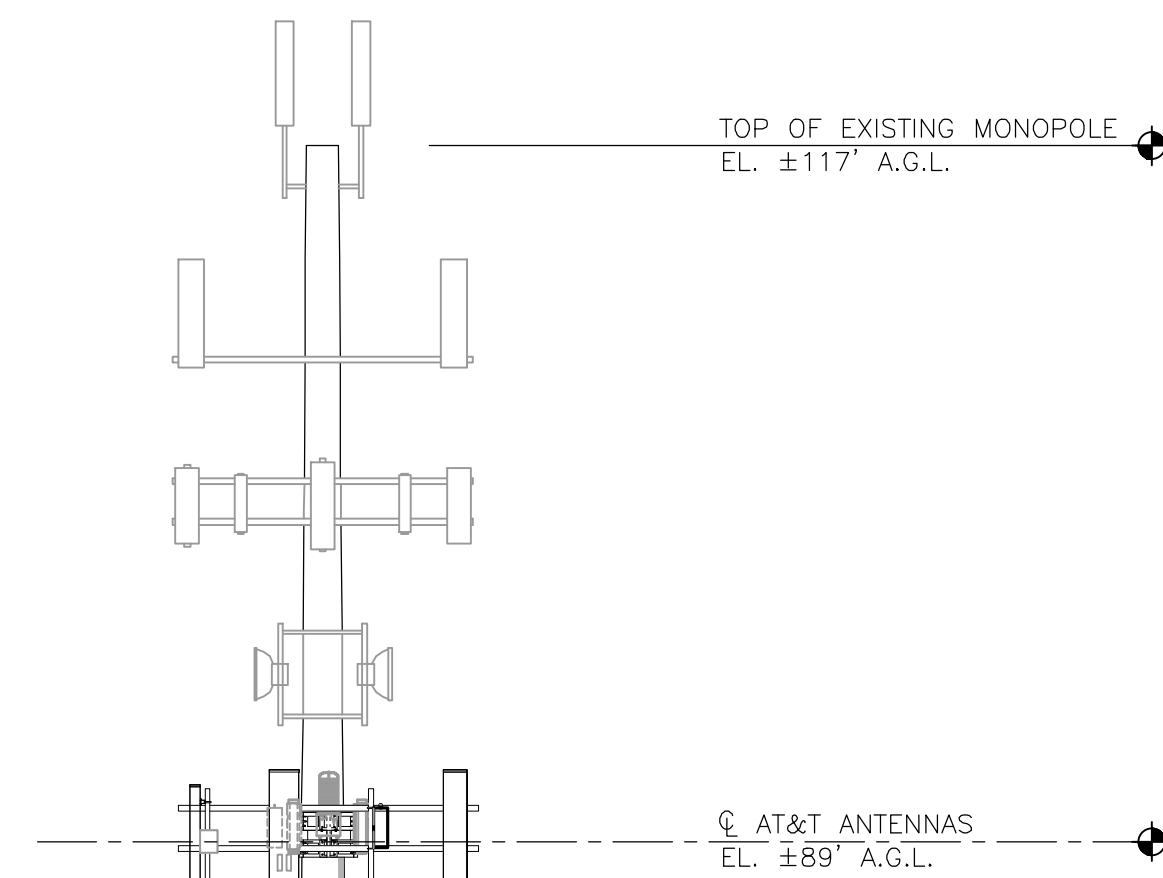
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JOB NO.	18000.66

TITLE SHEET

T-1

Sheet No. 1 of 8

REV.	DATE	BY	CHK'D	DESCRIPTION
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0	09/06/18	KAW	TUR	CONSTRUCTION DRAWINGS

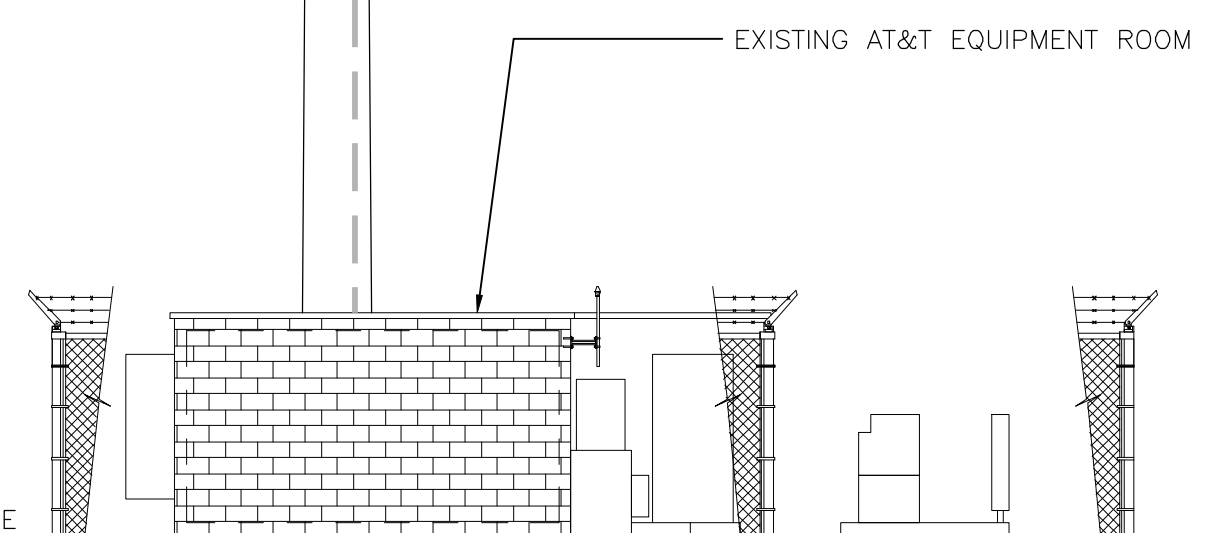


TOWER STRUCTURAL NOTES:

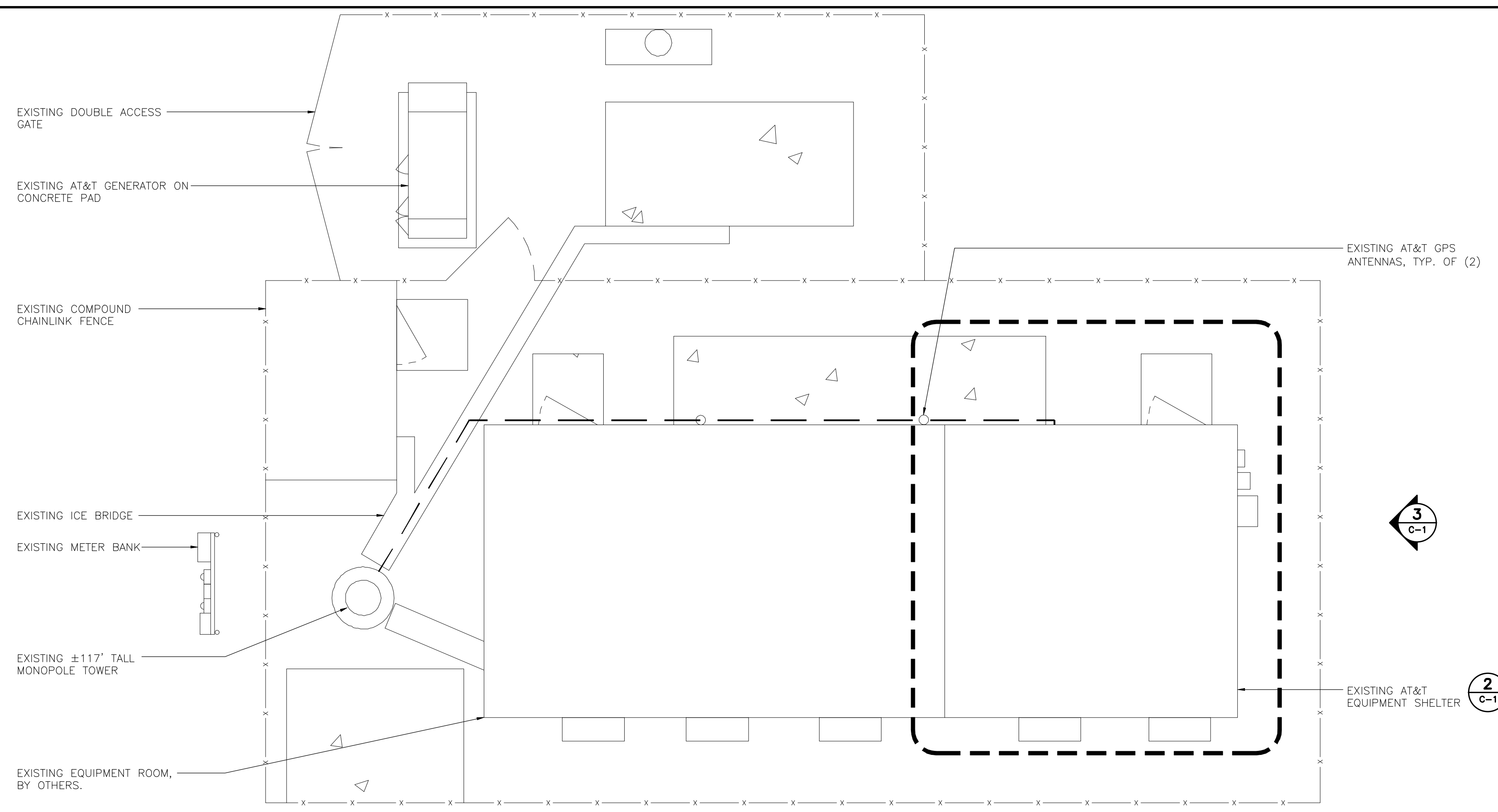
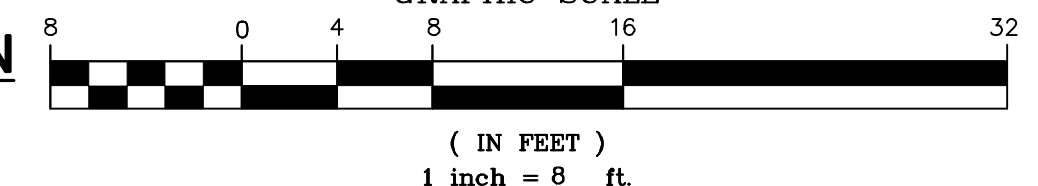
- TOWER STRUCTURAL ANALYSIS SIGNED AND SEALED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF CONNECTICUT TO BE PROVIDED PRIOR TO INSTALLATION OF THE ADDITIONAL TOWER LOADING DEPICTED HEREIN.
- ALL ANTENNAS AND COAX TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE, INC. AND FINAL AT&T RF DATA SHEET.

NOTES:

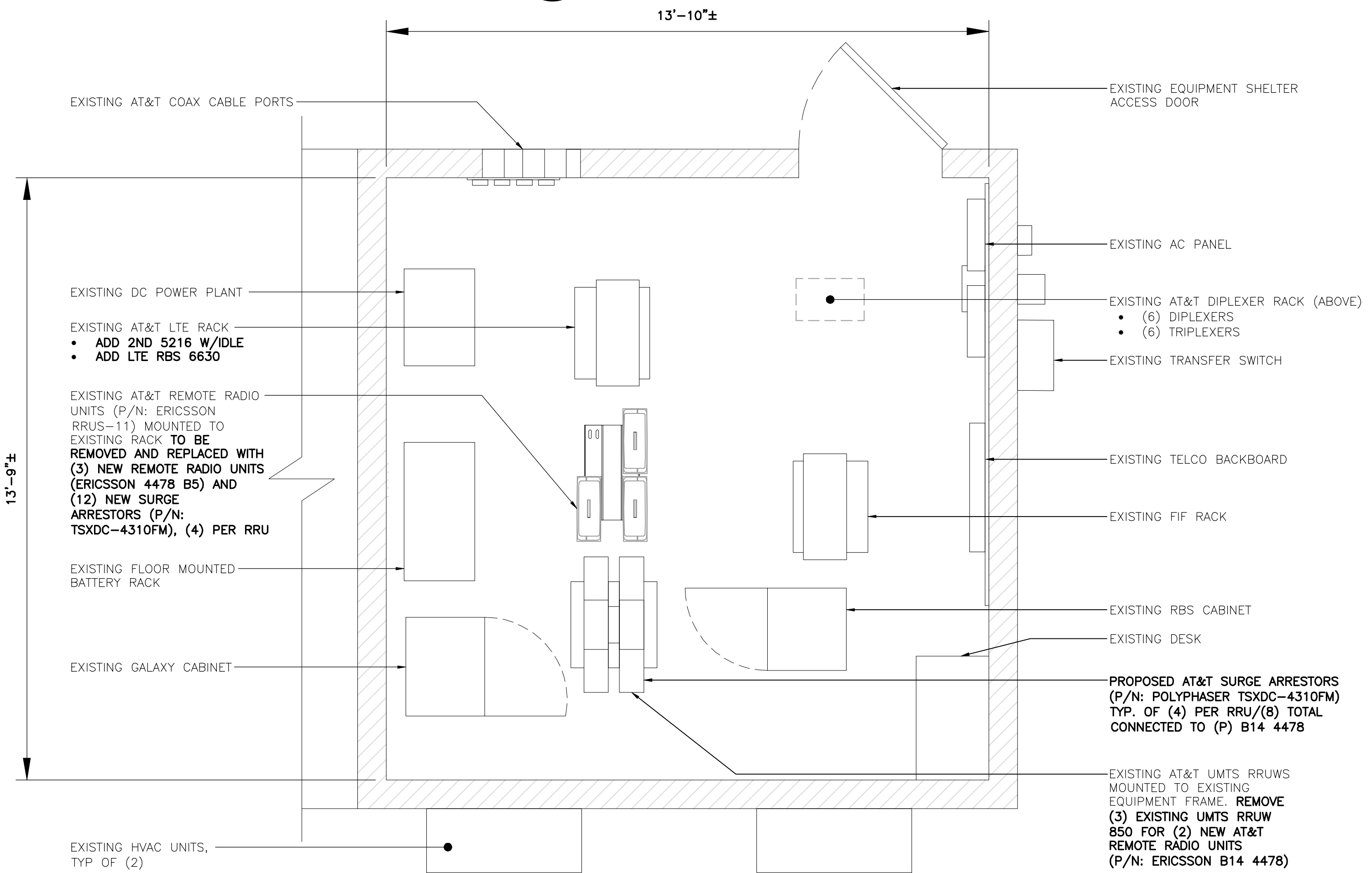
- A.G.L. = ABOVE GRADE LEVEL



3 PROPOSED WEST ELEVATION
SCALE: 1/8" = 1'-0"



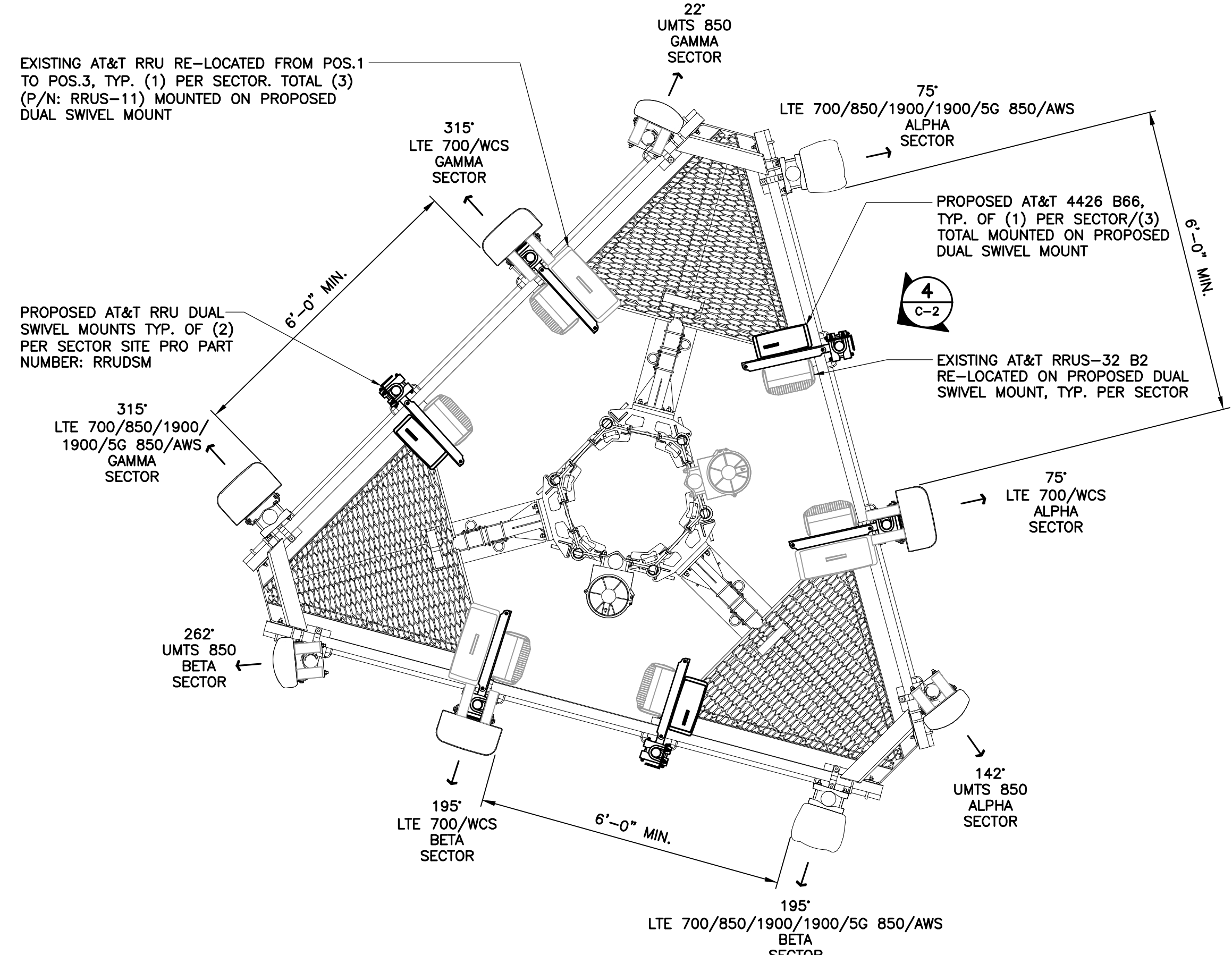
1 COMPOUND PLAN
SCALE: 1/4" = 1'-0"
TRUE NORTH



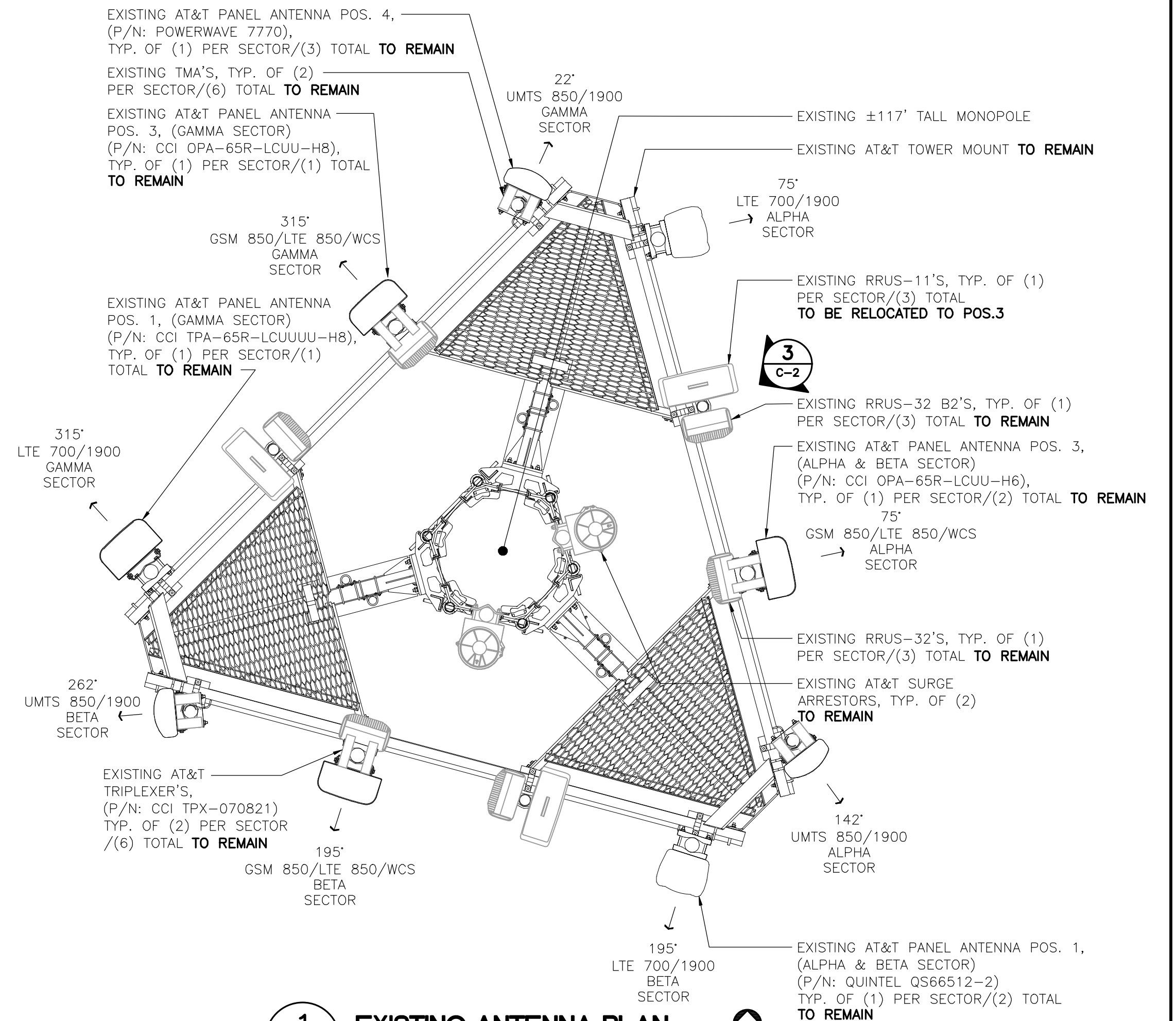
2 PROPOSED EQUIPMENT LAYOUT PLAN
SCALE: 1/2" = 1'-0"
TRUE NORTH

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at&t	EMPIRE telecom
CENTER engineering Centered on Solutions	(203) 488-0380 (203) 488-8387 Fax 65-2 North Branford Road Branford, CT 06405 www.CenterEng.com
AT&T MOBILITY WIRELESS COMMUNICATIONS FACILITY	DARIEN CT2104 - LTE 5C AWS/6C 700 UPPER D/5G 850 50 LEDGE ROAD DARIEN, CT 06820
DATE:	09/06/18
SCALE:	AS NOTED
JOB NO.	18000.66
PLANS AND ELEVATION	
C-1	
Sheet No. 3 of 8	

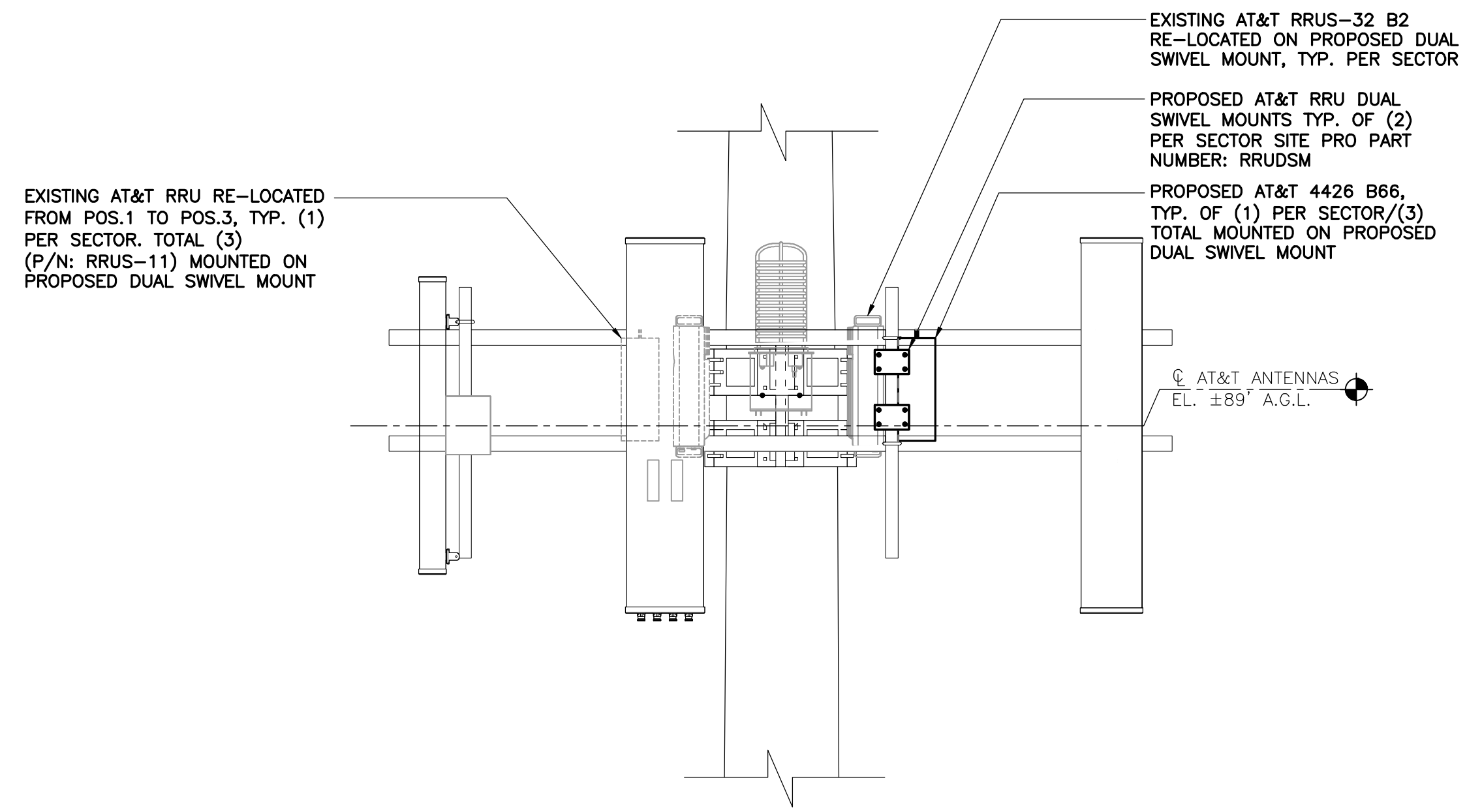
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0	09/06/18	KAW	TJR	CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION



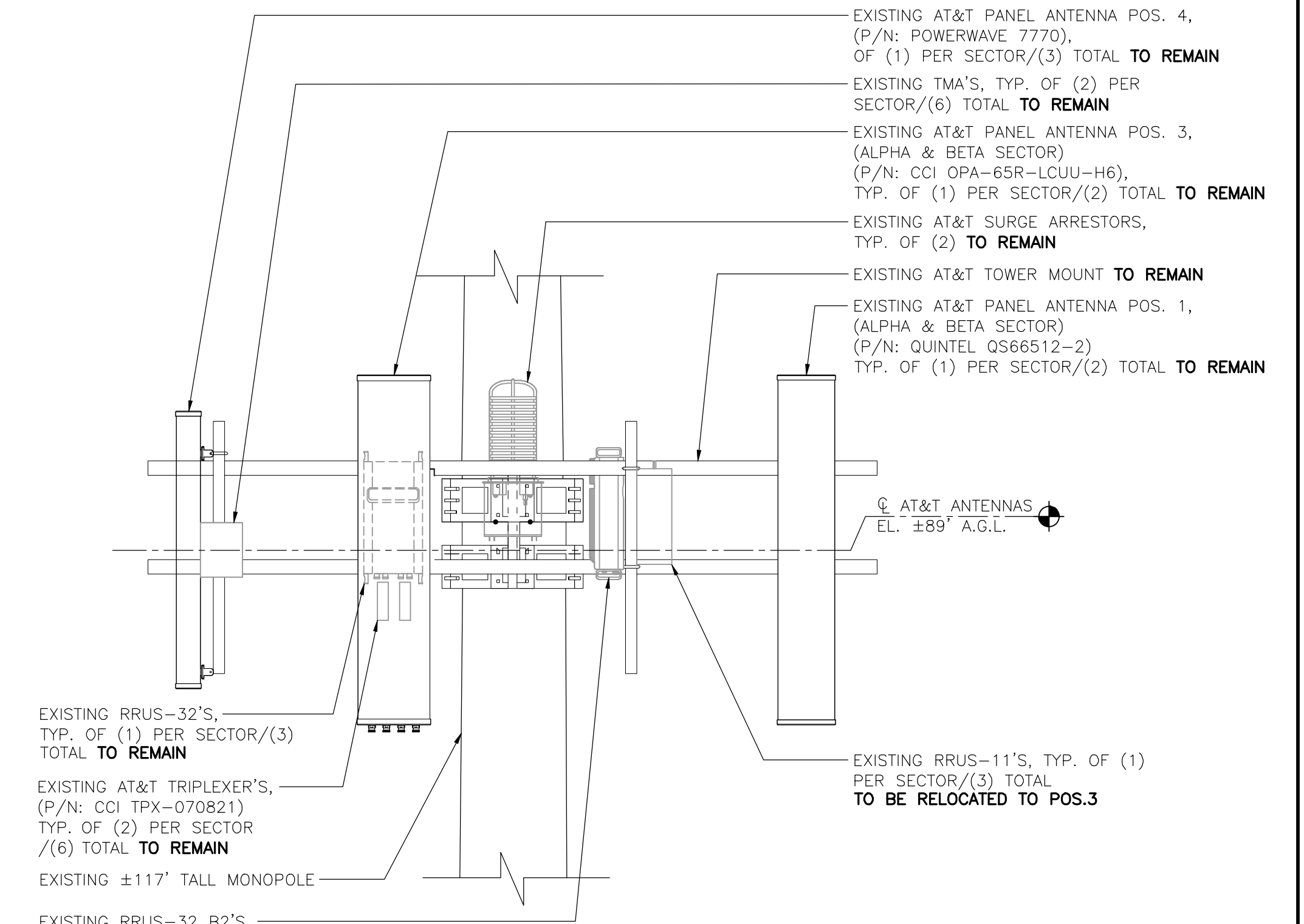
2 PROPOSED ANTENNA PLAN
 SCALE: 1/2" = 1'-0" NORTH



1 EXISTING ANTENNA PLAN
 SCALE: 1/2" = 1'-0" NORTH

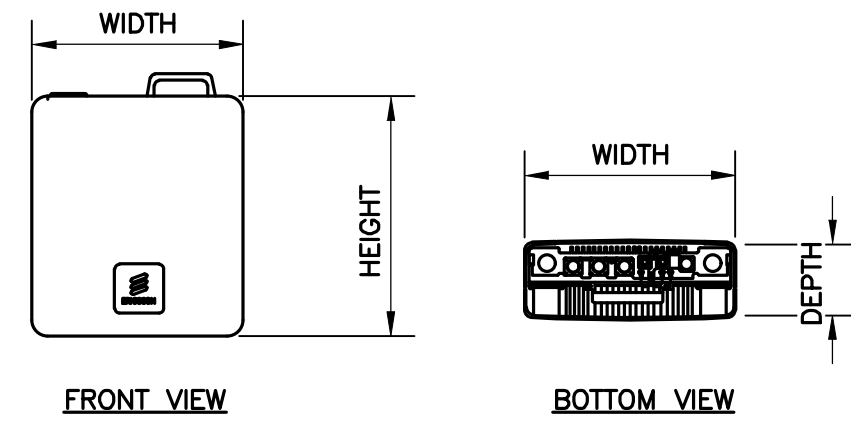


4 PROPOSED ANTENNA ELEVATION
 SCALE: 1/2" = 1'-0"



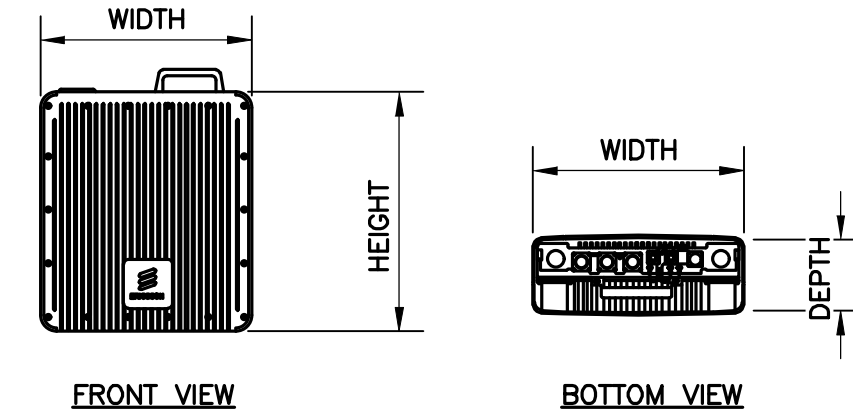
3 EXISTING ANTENNA ELEVATION
 SCALE: 1/2" = 1'-0"

CONSTRUCTION DRAWINGS	ISSUED FOR CONSTRUCTION
CONSTRUCTION DRAWINGS	ISSUED FOR CONSTRUCTION
TUR	TUR
FJP	FJP
03/27/19	09/06/18
1	0
REV.	DATE
DRAWN BY: CHK'D BY:	
(203) 488-0380 (203) 488-8387 Fax 65.2 North Branford Road Branford, CT 06405 www.CentekEng.com	
AT&T MOBILITY WIRELESS COMMUNICATIONS FACILITY DARIEN CT2104 - LTE 5C AWS/6C 700 UPPER D/5G 850 50 LEDGE ROAD DARIEN, CT 06820	
DATE:	09/06/18
SCALE:	AS NOTED
JOB NO.	18000.66
ANTENNA CONFIGURATION DETAILS	
C-2	
Sheet No. 4 of 8	



RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: B14 4478	14.9"L x 13.1"W x 7.3"D	60 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.
NOTES: 1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.			

1 ERICSSON B14 4478 DETAIL
C-3 SCALE: 1" = 1'-0"



RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: 4426 B66	15.0"L x 13.2"W x 5.8"D	48.5 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.
NOTES: 1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.			

2 ERICSSON 4426 B66 DETAIL
C-3 SCALE: 1" = 1'-0"



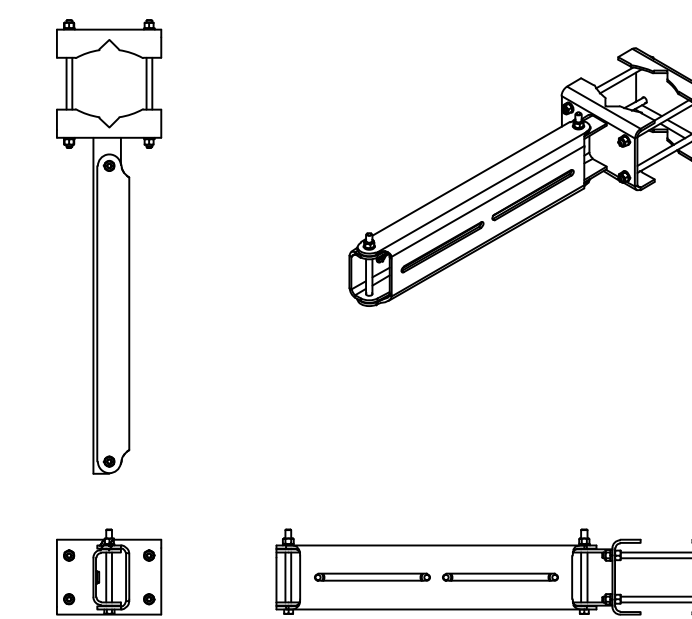
RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: 4478 B5	16.5"L x 13.4"W x 7.7"D	59.9 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.
NOTES: 1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.			

3 ERICSSON 4478 B5 DETAIL
C-3 NOT TO SCALE

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SURGE ARESSTOR		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: POLYPHASER MODEL: TSX-4310FM-P	3.07"H x #1.18"D	XX LBS.
NOTES: 1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.		

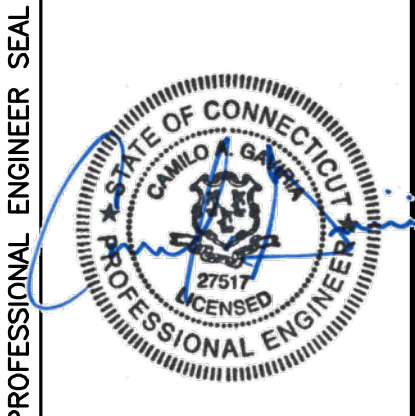
4 POLYPHASER TSX-4310FM-P DETAIL
C-3 SCALE: NOT TO SCALE



RRU DUAL SWIVEL MOUNT		
EQUIPMENT	DIMENSIONS	WEIGHT
MAKE: SITE PRO 1 PART NO.: RRUDSM	27.75"L x 6.5"W x 4.7"D	39.4 LBS.

5 RRH DUAL SWIVEL MOUNT DETAIL
C-3 NOT TO SCALE

REV.	DATE	BY	CHK'D	DESCRIPTION
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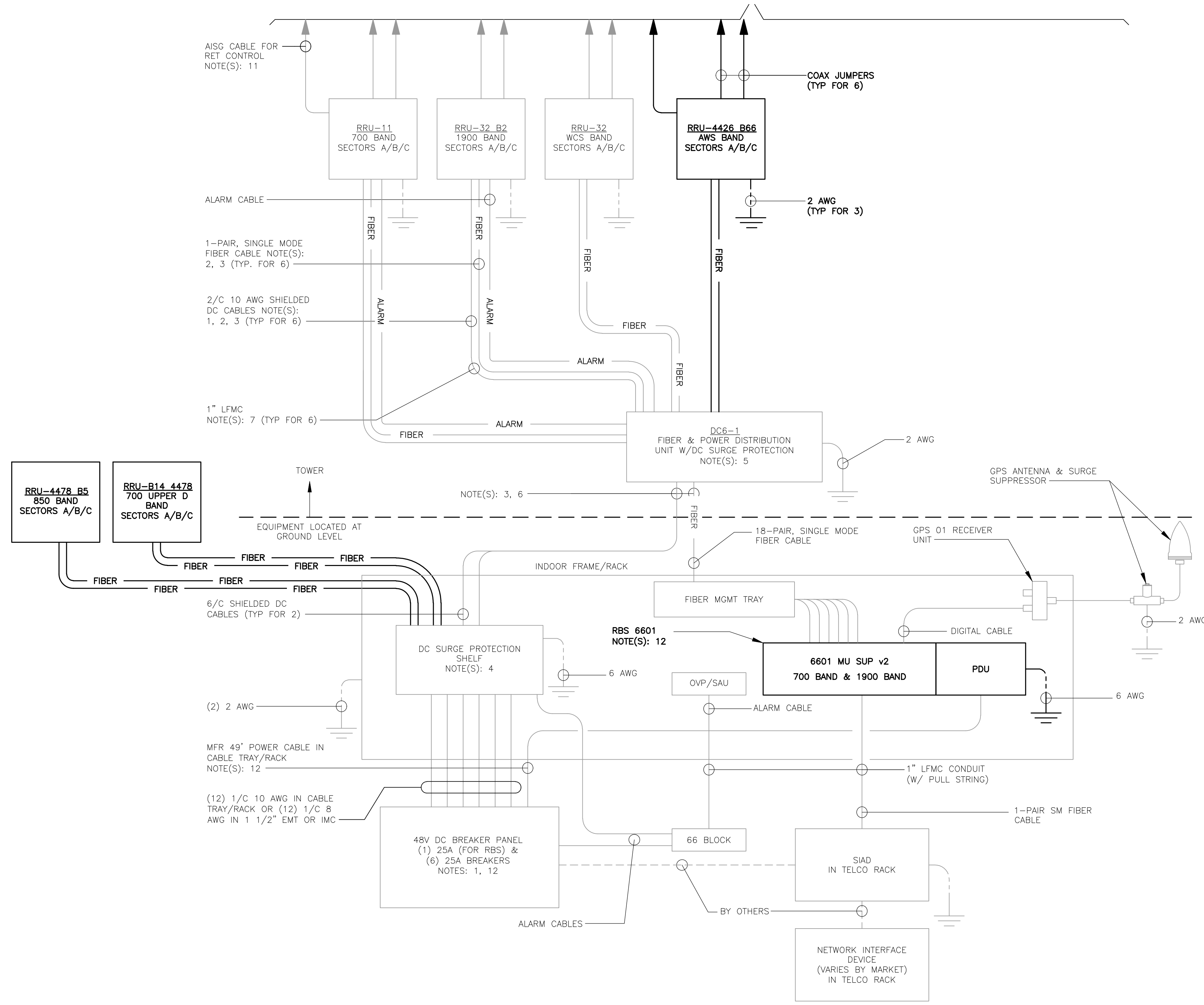


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DATE: 09/06/18
SCALE: AS NOTED
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DETAILS
C-3
Sheet No. 5 of 8



1 SCHEMATIC DIAGRAM
E-1 NOT TO SCALE

SCHEMATIC DIAGRAM NOTES:

- BREAKERS TO BE TAGGED AND LOCKED OUT. A 20A (MIN.) OR 30A (MAX.) BREAKER FOR RRUs MAY BE SUBSTITUTED FOR THE RECOMMENDED 25A BREAKER. SIZE 12 CONDUCTORS MAY BE USED ONLY WITH 20A BREAKERS.
- LEAVE COILED AND PROTECTED UNTIL TERMINATED.
- DC AND FIBER CABLE SHALL BE ROUTED WITH THE EXISTING COAX CABLE.
- DC SURGE PROTECTION SHELF SHALL BE RAYCAP DCx-48-60-RM.
- FIBER & DC DISTRIBUTION BOX W/DC SURGE PROTECTION SHALL BE RAYCAP DC6-48-60-18-8F.
- SUPPORT FIBER & DC POWER CABLES WITH SNAP-IN HANGERS SPACED NO GREATER THAN 3 FEET APART ON TOWER. SUPPORT FIBER AND DC POWER CABLES INSIDE MONOPOLE WITH CABLE HOISTING GRIPS AT 250 FT MAXIMUM INTERVALS. DRESS CABLES TO PREVENT CONTACT WITH ENTRANCE AND EXIT OPENINGS.
- CONDUIT TO BE USED ON A TOWER IF THE RRU IS MORE THAN 10' FROM THE DISTRIBUTION UNITS. MAX CABLE LENGTH IS 16 FEET.
- SINGLE-CONDUCTOR DC POWER CABLES SHALL BE TELCOFLEX® OR KS24194", COPPER, UL LISTED RHH NON-HALOGEN, LOW SMOKE WITH BRAIDED COVER, TYPE TC (1/0 AND LARGER). UNLESS OTHERWISE NOTED, STRANDING SHALL BE CLASS B (TYPE III) FOR CABLES SIZES 14, 12 & 10 AWG AND CLASS I (TYPE IV) FOR SIZES 8 AWG AND LARGER. CABLES SHALL BE COLOR CODED RED FOR +24V, BLUE FOR -48V AND GRAY FOR 24V AND 48V RETURN CONDUCTORS. MULTI-CONDUCTOR DC POWER CABLES SHALL BE COPPER, CLASS B STRANDING WITH FLAME RETARDANT PVC JACKET, TYPE TC, UL LISTED FOR 90°C DRY/75°C WET INSTALLATION.
- GROUNDING WIRES SHALL BE COPPER, GREEN THHN/THWN UL LISTED FOR 90°C DRY/75°C WET INSTALLATION. MINIMUM SIZE IS 6 AWG UNLESS NOTED OTHERWISE.
- FIBER OPTIC CABLES SHALL BE INSTALLED IN FLEXIBLE CONDUIT AS SCOPED BY MARKET.
- RET CONTROL FROM THE RRU IS AN OPTIONAL METHOD OF CONNECTION. REFER TO RF DATA SHEET FOR APPLICABILITY.
- RBS 6601 VARIANT 2 REQUIRES A 25A BREAKER AND 10 AWG (MIN.) CONDUCTORS. REPLACE EXISTING 15A OR 20A BREAKERS AND 12 AWG CONDUCTORS WHEN UPGRADING AN EXISTING RBS 6601 VARIANT 1.

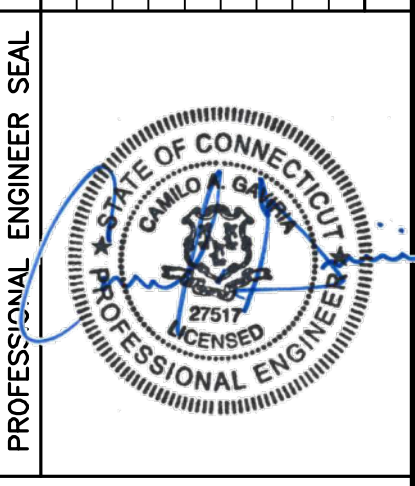
ELECTRICAL NOTES

- PRIOR TO START OF CONSTRUCTION CONTRACTOR SHALL COORDINATE WITH OWNER FOR ALL CONSTRUCTION STANDARDS AND SPECIFICATIONS, AND ALL MANUFACTURER DOCUMENTATION FOR ALL EQUIPMENT TO BE INSTALLED.
- INSTALL ALL EQUIPMENT IN ACCORDANCE WITH LOCAL BUILDING CODE, NATIONAL ELECTRIC CODE, OWNER AND MANUFACTURER'S SPECIFICATIONS.
- CONNECT ALL NEW EQUIPMENT TO EXISTING TELCO AS REQUIRED BY MANUFACTURER.
- MAINTAIN ALL CLEARANCES REQUIRED BY NEC AND EQUIPMENT MANUFACTURER.
- PRIOR TO INSTALLATION CONTRACTOR SHALL MEASURE EXISTING ELECTRICAL LOAD AND VERIFY EXISTING AVAILABLE CAPACITY FOR PROPOSED INSTALLATION. IF INADEQUATE CAPACITY IS AVAILABLE, CONTRACTOR SHALL COORDINATE WITH LOCAL ELECTRIC UTILITY COMPANY TO UPGRADE EXISTING ELECTRIC SERVICE.
- CONTRACTOR SHALL INSPECT EXISTING GROUNDING AND LIGHTNING PROTECTION SYSTEM AND ENSURE THAT IT IS IN COMPLIANCE WITH NEC, AND SITE OWNER'S SPECIFICATIONS. THE RESULTS OF THIS INSPECTION SHALL BE PRESENTED TO OWNERS REPRESENTATIVE, AND ANY DEFICIENCIES SHALL BE CORRECTED.
- ALL TRANSMISSION TOWER SITES CONTAIN AN EXTENSIVE BURIED GROUNDING SYSTEM. ALL GROUNDING WORK MUST BE COORDINATED WITH, AND APPROVED BY, THE TOWER OWNER'S SITE REPRESENTATIVE. ALL OF THE TOWER OWNER'S SPECIFICATIONS MUST BE STRICTLY FOLLOWED.
- PROVIDE AND INSTALL GROUND KITS FOR ALL NEW COAXIAL CABLES AND BOND TO EXISTING OWNERS GROUNDING SYSTEM PER OWNERS SPECIFICATIONS AND NEC.
- ALL CONDUCTORS SHALL BE TYPE THWN (INT. APPLICATION) AND XHHW (EXT. APPLICATION), 75 DEGREE C, 600 VOLT INSULATION, SOFT ANNEALED STRANDED COPPER. #10 AWG AND SMALLER SHALL BE SPLICED USING ACCEPTABLE SOLDERLESS PRESSURE CONNECTORS. #8 AWG AND LARGER SHALL BE SPLICED USING COMPRESSION SPLIT-BOLT TYPE CONNECTORS, #12 AWG SHALL BE THE MINIMUM SIZE CONDUCTOR FOR LINE VOLTAGE BRANCH CIRCUITS. REFER TO PANEL SCHEDULE FOR BRANCH CIRCUIT CONDUCTOR SIZE(S). CONDUCTORS SHALL BE COLOR CODED FOR CONSISTENT PHASE IDENTIFICATION.
- MINIMUM BENDING RADIUS FOR CONDUCTORS SHALL BE 12 TIMES THE LARGEST DIAMETER OF BRANCH CIRCUIT CONDUCTOR.
- THE ENTIRE ELECTRICAL INSTALLATION SHALL BE MADE IN STRICT ACCORDANCE WITH ALL LOCAL, STATE AND NATIONAL CODES AND REGULATIONS WHICH MAY APPLY AND NOTHING IN THE DRAWINGS OR SPECIFICATIONS SHALL BE INTERPRETED AS AN INFRINGEMENT OF SUCH CODES OR REGULATIONS.
- THE ELECTRICAL CONTRACTOR IS TO BE RESPONSIBLE FOR THE COMPLETE INSTALLATION AND COORDINATION OF THE ENTIRE ELECTRICAL SERVICE. ALL ACTIVITIES TO BE COORDINATED THROUGH OWNER'S REPRESENTATIVE, DESIGN ENGINEER AND OTHER AUTHORITIES HAVING JURISDICTION OF TRADES.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND PAY ALL FEES AS MAY BE REQUIRED FOR THE ELECTRICAL WORK AND FOR SCHEDULING OF ALL INSPECTIONS AS MAY BE REQUIRED BY THE LOCAL AUTHORITY.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH THE SITE AND/OR BUILDING OWNER FOR NEW AND/OR DEMOLITION WORK INVOLVED.
- THE CONTRACTOR SHALL GUARANTEE ALL NEW WORK FOR A PERIOD OF ONE YEAR FROM THE ACCEPTANCE DATE BY THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING WARRANTIES FROM ALL EQUIPMENT MANUFACTURERS FOR SUBMISSION TO THE OWNER.
- DRAWINGS INDICATE GENERAL ARRANGEMENT OF WORK INCLUDED IN CONTRACT. CONTRACTOR SHALL WITHOUT EXTRA CHARGE, MAKE MODIFICATIONS TO THE LAYOUT OF THE WORK TO PREVENT CONFLICT WITH WORK OF OTHER TRADES AND FOR THE PROPER INSTALLATION OF WORK. CHECK ALL DRAWINGS AND VISIT JOB SITE TO VERIFY SPACE AND TYPE OF EXISTING CONDITIONS IN WHICH WORK WILL BE DONE, PRIOR TO SUBMITTAL OF BID.
- ALL NON-CURRENT CARRYING PARTS OF THE ELECTRICAL AND TELEPHONE CONDUIT SYSTEMS SHALL BE MECHANICALLY AND ELECTRICALLY CONNECTED TO PROVIDE AN INDEPENDENT RETURN PATH TO THE EQUIPMENT GROUNDING SOURCES.
- GROUNDING SYSTEM WILL BE IN ACCORDANCE WITH THE LATEST ACCEPTABLE EDITION OF THE NATIONAL ELECTRICAL CODE AND REQUIREMENTS PER LOCAL INSPECTOR HAVING JURISDICTION.
- EACH EQUIPMENT GROUND CONDUCTOR SHALL BE SIZED IN ACCORDANCE WITH THE N.E.C. ARTICLE 250-122. (MIN. #12 AWG).
- CONTRACTOR SHALL PROVIDE A CELLULAR GROUNDING SYSTEM WITH THE MAXIMUM AC RESISTANCE TO GROUND OF 5 OHM BETWEEN ANY POINT ON THE GROUNDING SYSTEM AS MEASURED BY 3-POINT GROUNDING TEST. (REFER TO SECTION 16960).

TESTS BY INDEPENDENT ELECTRICAL TESTING FIRM

- CONTRACTOR SHALL RETAIN THE SERVICES OF A LOCAL INDEPENDENT ELECTRICAL TESTING FIRM (WITH MINIMUM 5 YEARS COMMERCIAL EXPERIENCE IN THE ELECTRICAL TESTING INDUSTRY) AS SPECIFIED BY OWNER TO PERFORM:
 - TEST 1: RESISTANCE TO GROUND TEST ON THE CELLULAR GROUNDING SYSTEM. THE TESTING FIRM SHALL INCLUDE THE FOLLOWING INFORMATION WITH THE REPORT:
 - TESTING PROCEDURE INCLUDING THE MAKE AND MODEL OF TEST EQUIPMENT.
 - CERTIFICATION OF TESTING EQUIPMENT CALIBRATION WITHIN SIX (6) MONTHS OF DATE OF TESTING. INCLUDE CERTIFICATION LAB ADDRESS AND TELEPHONE NUMBER.
 - GRAPHICAL DESCRIPTION OF TESTING METHOD ACTUALLY IMPLEMENTED.
- TESTING SHALL BE PERFORMED IN THE PRESENCE AND TO THE SATISFACTION OF OWNERS CONSTRUCTION REPRESENTATIVE. TESTING DATA SHALL BE INITIALED AND DATED BY THE CONSTRUCTION AND INCLUDED WITH THE WRITTEN REPORT/ANALYSIS.
- THE CONTRACTOR SHALL FORWARD SIX (6) COPIES OF THE INDEPENDENT ELECTRICAL TESTING FIRM REPORT/ANALYSIS TO ENGINEER A MINIMUM OF TEN (10) WORKING DAYS PRIOR TO THE JOB TURNOVER.
- CONTRACTOR TO PROVIDE A MINIMUM OF ONE (1) WEEK NOTICE TO OWNER AND ENGINEER FOR ALL TESTS REQUIRING WITNESSING.

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1	03/27/19	FJP	TUR	ISSUED FOR CONSTRUCTION
0	09/06/18	KAW	TUR	ISSUED FOR CONSTRUCTION

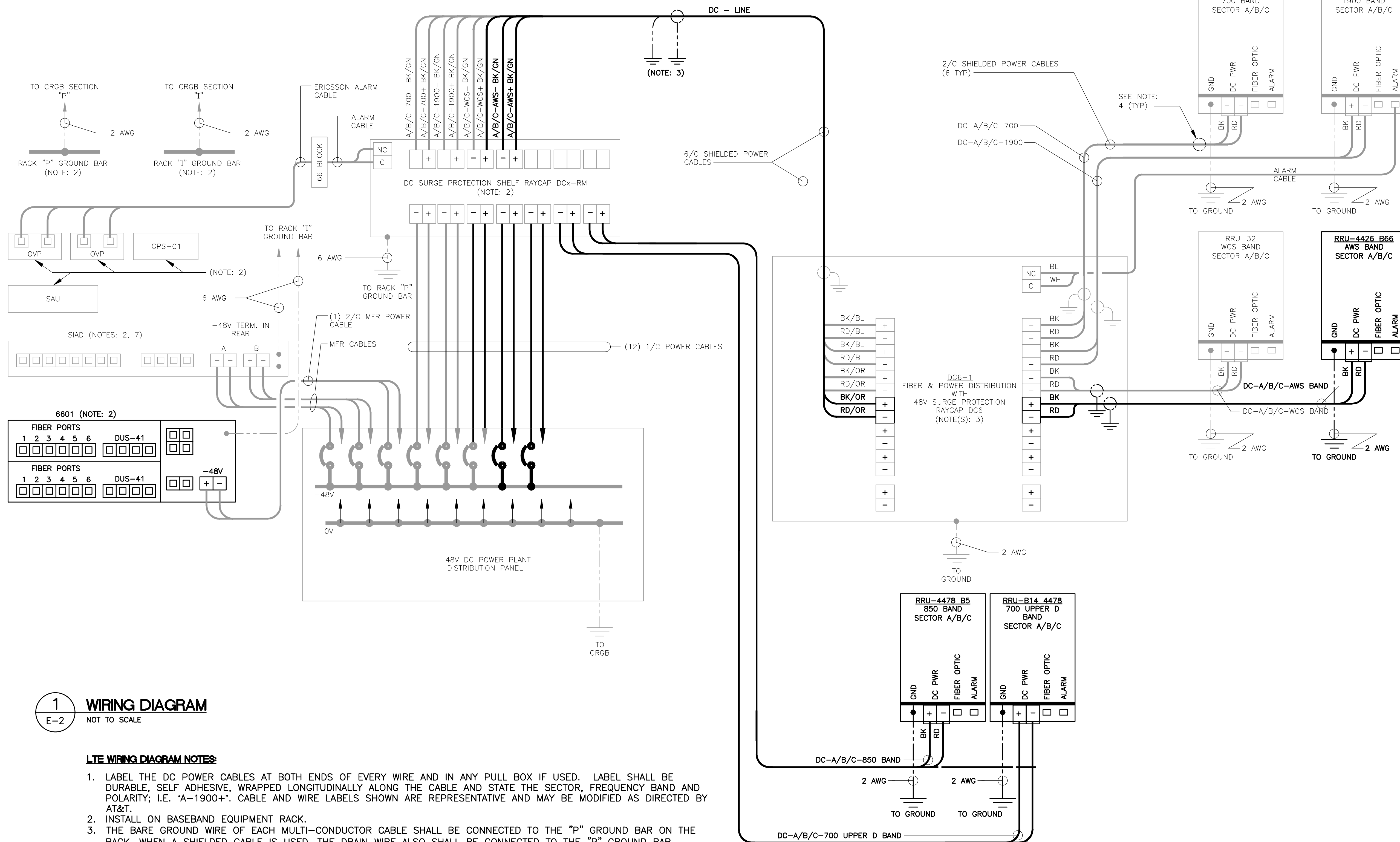


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SCHEMATIC
DIAGRAM
AND NOTES



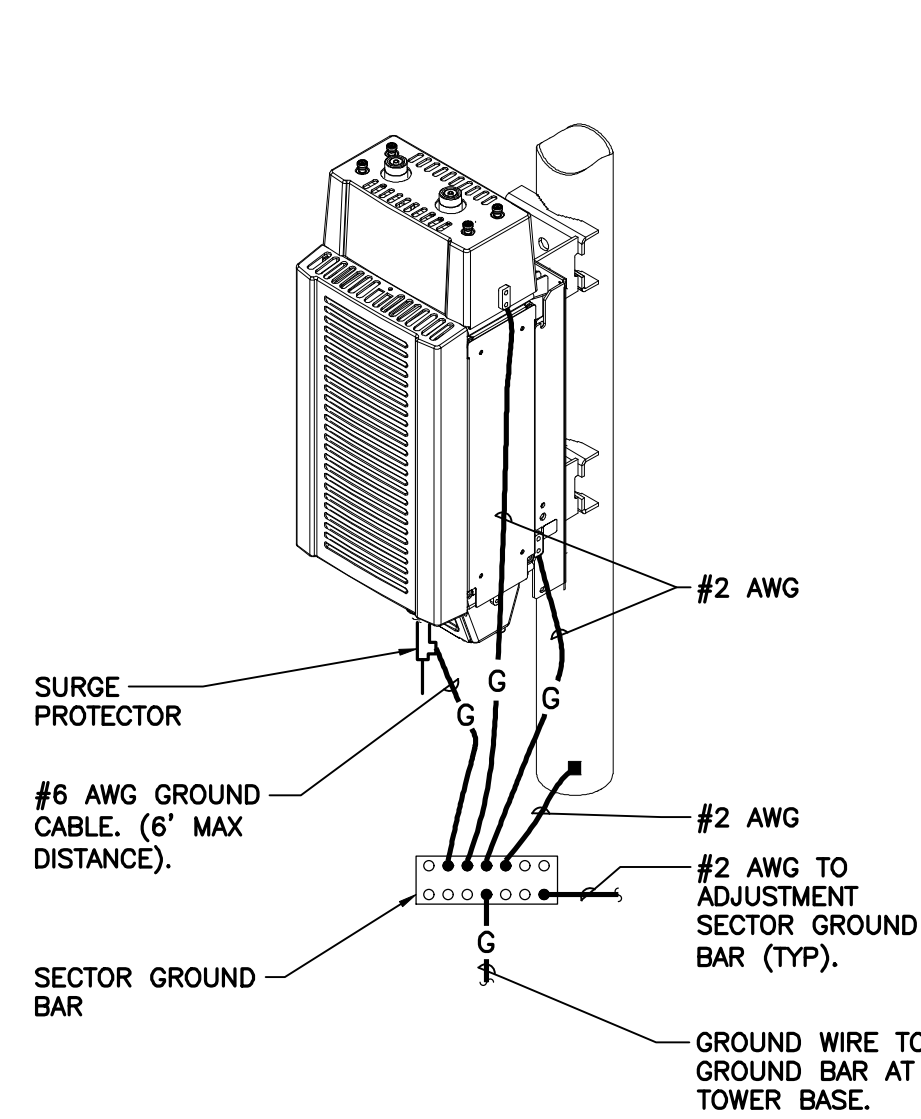
1 WIRING DIAGRAM
E-2 NOT TO SCALE

LTE WIRING DIAGRAM NOTES:

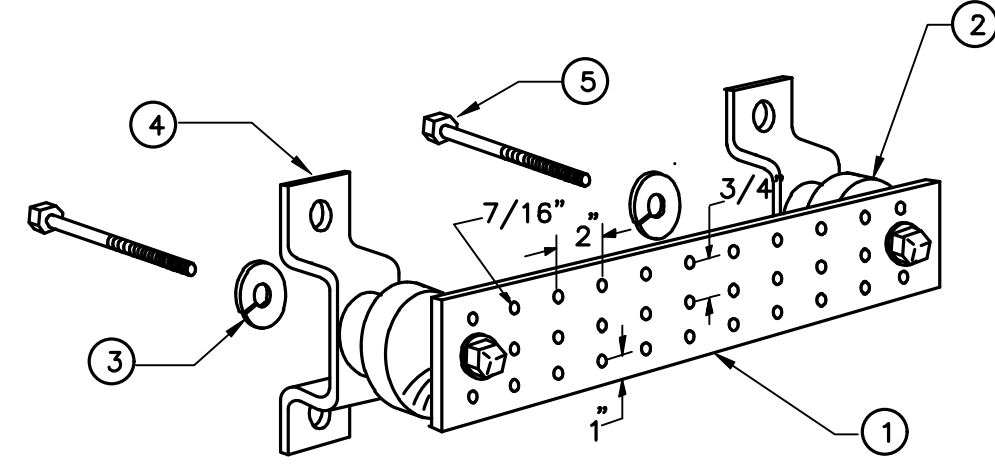
- LABEL THE DC POWER CABLES AT BOTH ENDS OF EVERY WIRE AND IN ANY PULL BOX IF USED. LABEL SHALL BE DURABLE, SELF ADHESIVE, WRAPPED LONGITUDINALLY ALONG THE CABLE AND STATE THE SECTOR, FREQUENCY BAND AND POLARITY; I.E. "A-1900+". CABLE AND WIRE LABELS SHOWN ARE REPRESENTATIVE AND MAY BE MODIFIED AS DIRECTED BY AT&T.
- INSTALL ON BASEBAND EQUIPMENT RACK.
- THE BARE GROUND WIRE OF EACH MULTI-CONDUCTOR CABLE SHALL BE CONNECTED TO THE "P" GROUND BAR ON THE RACK. WHEN A SHIELDED CABLE IS USED, THE DRAIN WIRE ALSO SHALL BE CONNECTED TO THE "P" GROUND BAR.
- CABLE GROUND WIRE AND SHIELD DRAIN WIRE TO BE LEFT UN-TERMINATED AT RRU AND DC POWER PLANT.
- SEE LTE SCHEMATIC DIAGRAM DETAIL 1/E-1 FOR BREAKER RATING.

CT2104 - LTE 5C AWS/6C 700 UPPER D/5G 850 50 LEDGE ROAD DARIEN, CT 06820	
DATE: 09/06/18 SCALE: AS NOTED JOB NO. 18000.66	
WIRING DIAGRAM	
E-2 Sheet No. 7 of 8	

EACH RRH CABINET SHALL BE GROUNDED IN THE FOLLOWING MANNER:
 1. AT TOP OF THE CABINET
 2. AT RIGHT SIDE OF THE CABINET.



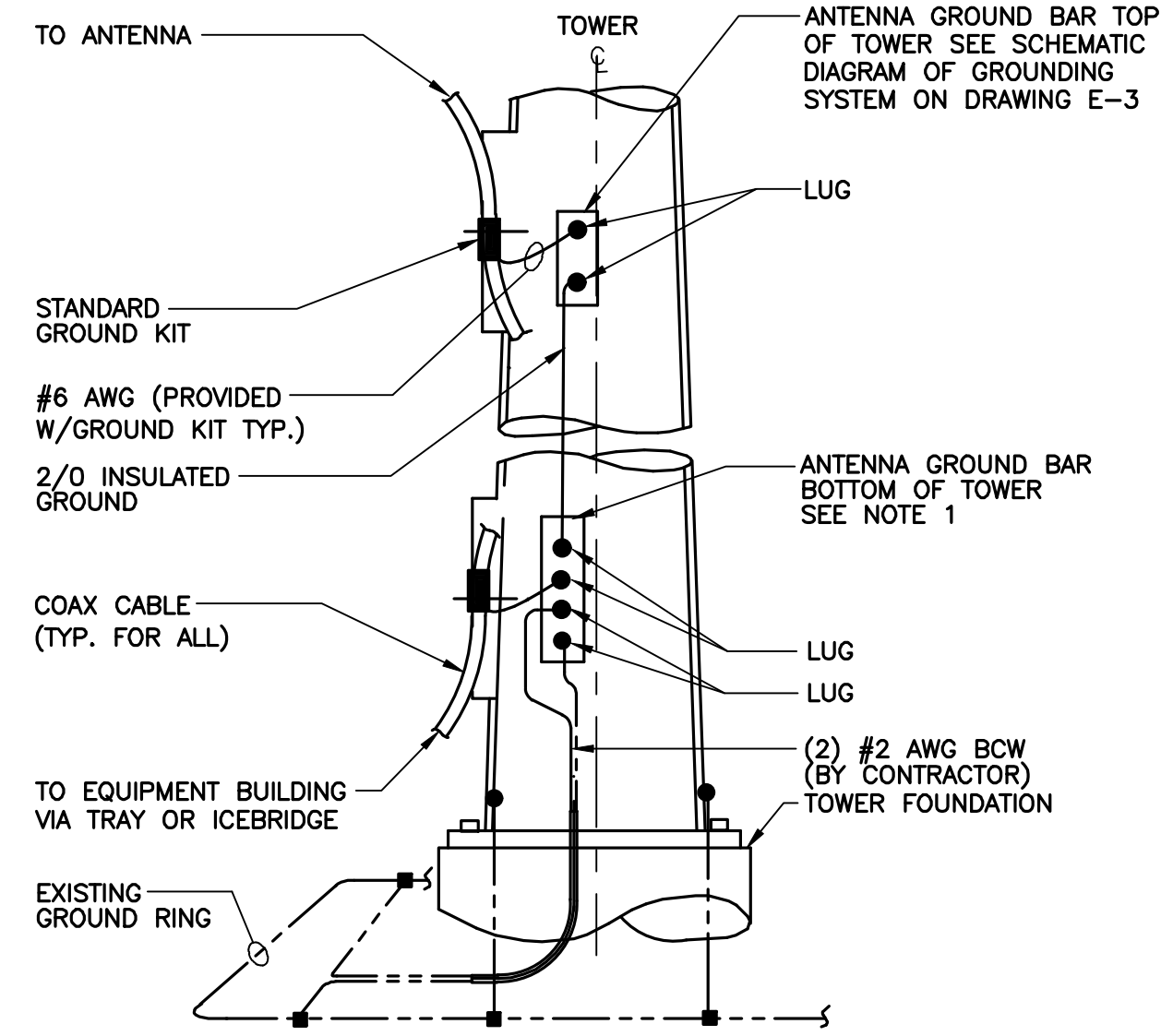
4 RRU POLE MOUNT GROUNING
 E-3 NOT TO SCALE



LEGEND

1. TINNED COPPER GROUND BAR, 1/4" x 4" x 20", NEWTON INSTRUMENT CO. HOLE CENTERS TO MATCH NEMA DOUBLE LUG.
2. INSULATORS, NEWTON INSTRUMENT CAT. NO. 2. 3061-4.
3. 3/8" LOCK WASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015-8.
4. WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT. NO. A-6056.
5. STAINLESS STEEL SECURITY SCREWS.

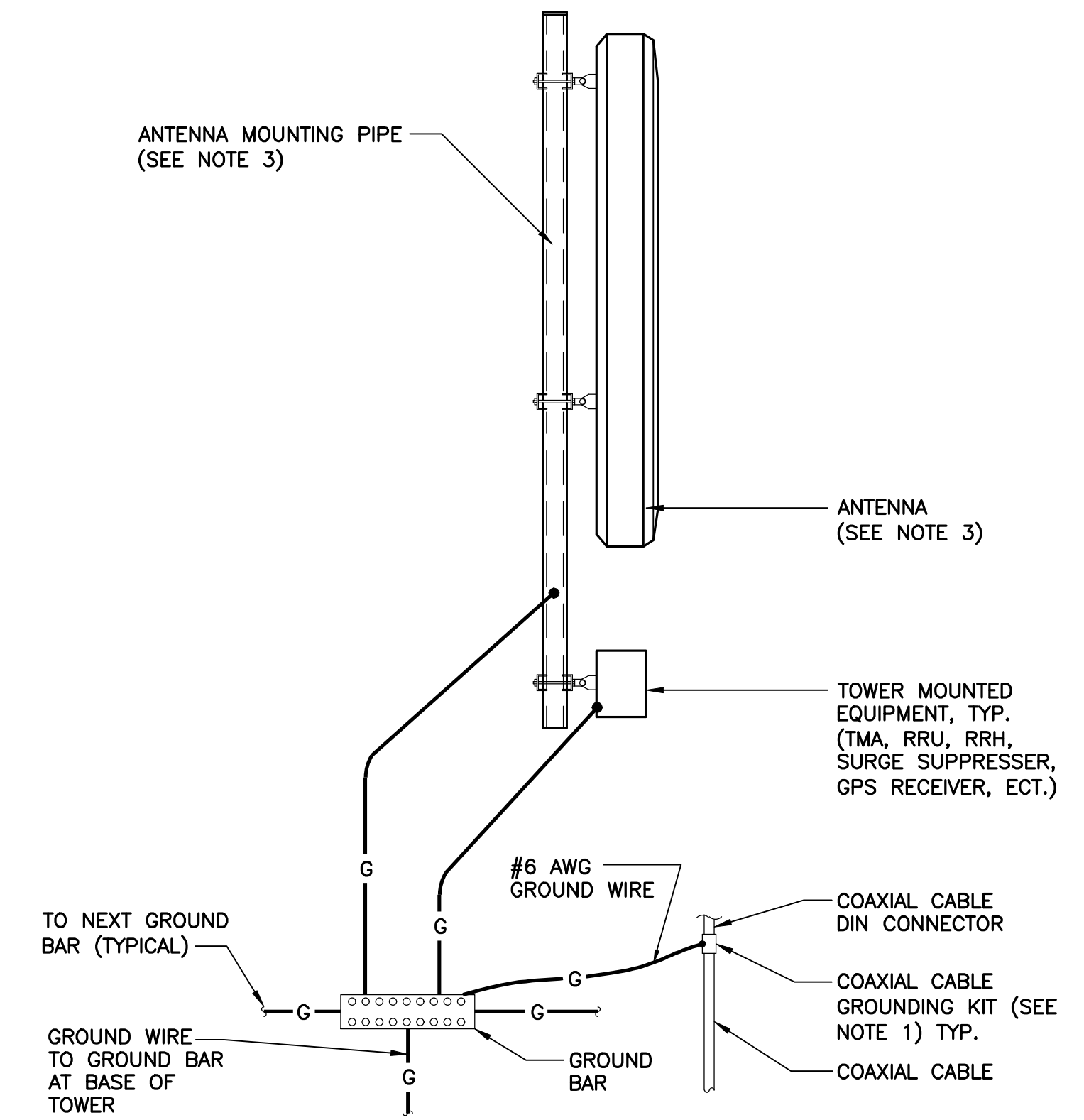
3 GROUND BAR DETAIL
 E-3 NOT TO SCALE



NOTES:

1. NUMBER OF GROUND BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, LOCATION AND CONNECTION ORIENTATION. PROVIDE AS REQUIRED.
2. A SEPARATE GROUND BAR TO BE USED FOR GPS ANTENNA IF REQUIRED.

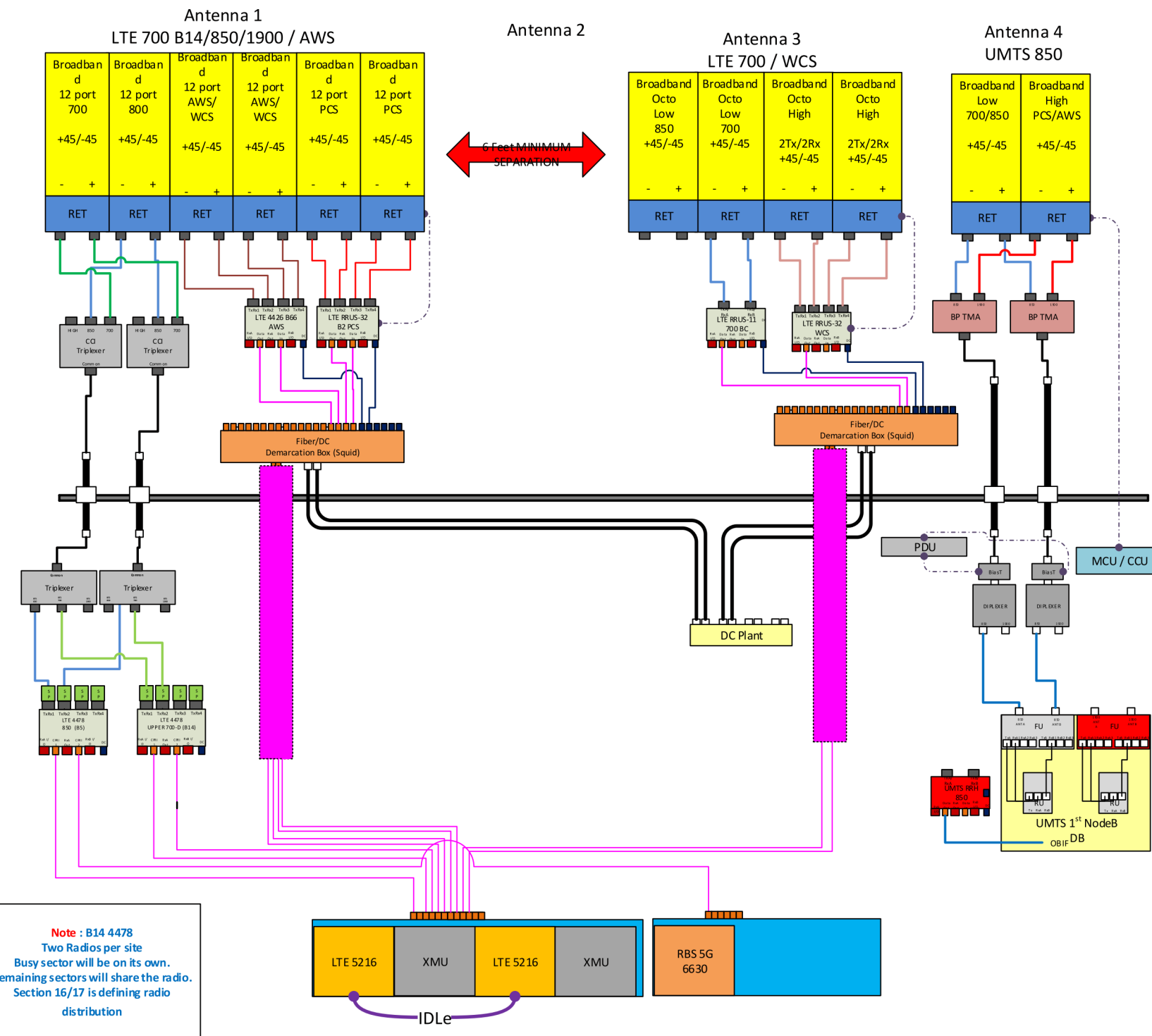
2 ANTENNA CABLE GROUNING - TOWER
 E-3 NOT TO SCALE



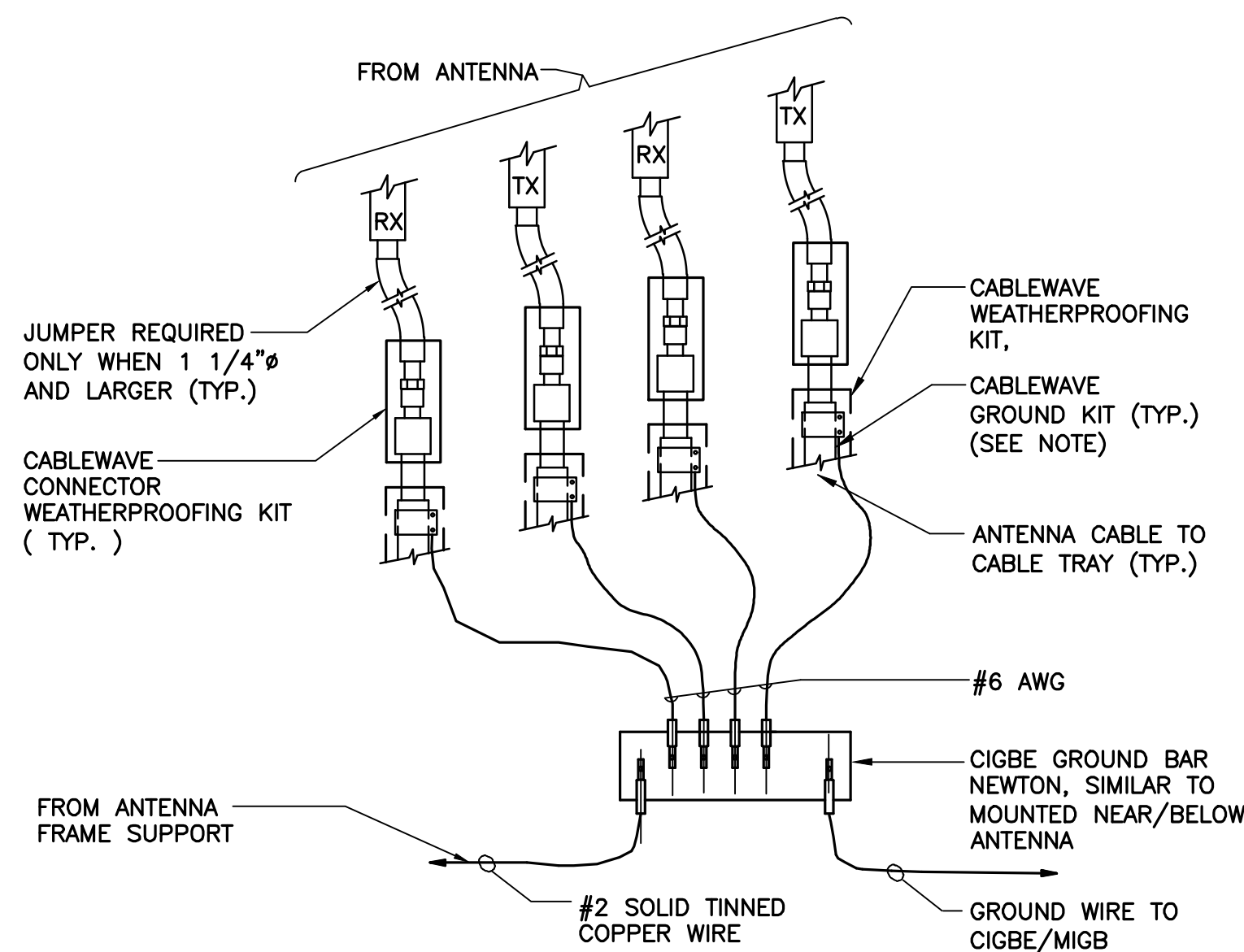
NOTES:

1. BOND COAXIAL CABLE GROUND KITS TO EACH OWNER'S GROUND BAR ALONG ENTIRE COAX RUN FROM ANTENNA TO SHELTER.
2. BOND ALL EQUIPMENT TO GROUND PER NEC AND MANUFACTURERS SPECIFICATIONS.
3. DETAIL IS TYPICAL FOR ALL ANTENNA SECTORS, INCLUDING GPS ANTENNA.

1 TYPICAL ANTENNA GROUNING DETAIL
 E-3 NOT TO SCALE



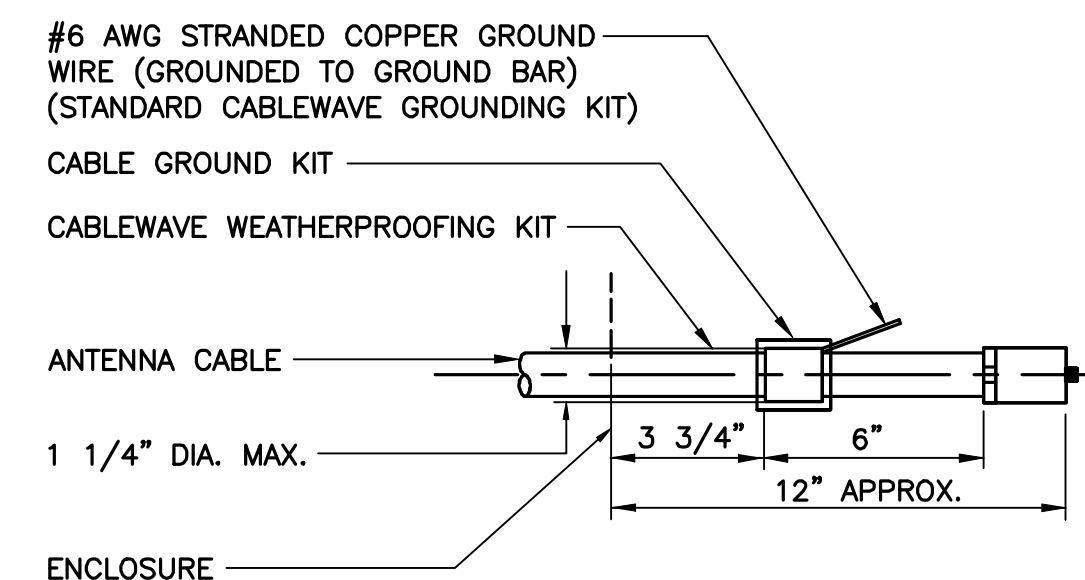
7 RF PLUMBING DIAGRAM
 E-3 NOT TO SCALE



NOTE:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE

6 CONNECTION OF GROUND WIRES TO GROUND BAR
 E-3 NOT TO SCALE



NOTE:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.

5 ANTENNA CABLE GROUNING DETAIL
 E-3 NOT TO SCALE

STATE OF CONNECTICUT
 PROFESSIONAL ENGINEER
 CENTEX engineering
 2031 488-0380
 2031 488-8387 Fax
 65-2 North Branford Road
 Branford, CT 06405
 www.CentexEng.com

AT&T MOBILITY
 WIRELESS COMMUNICATIONS FACILITY
DARIEN
 CT2104 - LTE 5C AWS/6C 700 UPPER D/5G 850
 50 LEDGE ROAD
 DARIEN, CT 06820

DATE: 09/06/18
 SCALE: AS NOTED
 JOB NO. 18000.66

TYPICAL ELECTRICAL DETAILS

E-3
 Sheet No. 8 of 8

CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION
 CONSTRUCTION DRAWINGS - ISSUED FOR CONSTRUCTION
 REV. DATE DRAWN BY/CHK'D BY/DESCRIPTION
 1 03/27/19 FJP
 0 09/06/18 KAW
 TUR TUR
 TUR TUR



Radio Frequency Emissions Analysis Report

AT&T Existing Facility

Site ID: CT2104

FA#: 10035058

Darien
50 Ledge Road
Darien, CT 06820

February 19, 2019

Centerline Communications Project Number: 950006-170

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	30.94 %



February 19, 2019

AT&T Mobility – New England
Attn: John Benedetto, RF Manager
550 Cochituate Road
Suite 550 – 13&14
Framingham, MA 06040

Emissions Analysis for Site: **CT2104 – Darien**

Centerline Communications, LLC (“Centerline”) was directed to analyze the proposed AT&T facility located at **50 Ledge Road, Darien, CT**, for the purpose of determining whether the emissions from the Proposed AT&T 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 population 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 population 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.

Population 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 limits for the 700 and 850 MHz Bands are approximately $467 \mu\text{W}/\text{cm}^2$ and $567 \mu\text{W}/\text{cm}^2$ respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) 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 performed for the proposed AT&T Wireless antenna facility located at **50 Ledge Road, Darien, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T 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.

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. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

All emissions values for additional carriers were taken from the Connecticut Siting Council (CSC) active MPE database. Values in this database are provided by the individual carriers themselves

For each sector the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
LTE	700 MHz (Band 14)	2	40
LTE	850 MHz	2	40
LTE	1900 MHz (PCS)	4	40
5G	850 MHz	2	25
LTE	2100 MHz (AWS)	4	30
UMTS	850 MHz	2	30
LTE	700 MHz	2	40
LTE	2300 MHz (WCS)	2	30

Table 1: Channel Data Table



The following antennas listed in *Table 2* were used in the modeling for transmission in the 700 MHz, 850 MHz, 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. 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.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	Quintel QS66512-2	89
A	2	Powerwave 7770	89
A	3	CCI OPA-65R-LCUU-H6	89
B	1	Quintel QS66512-2	89
B	2	Powerwave 7770	89
B	3	CCI OPA-65R-LCUU-H6	89
C	1	CCI OPA-65R-LCUU-H8	89
C	2	Powerwave 7770	89
C	3	CCI OPA-65R-LCUU-H8	89

Table 2: Antenna Data

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



RESULTS

Per the calculations completed for the proposed AT&T configurations *Table 3* shows resulting emissions power levels and percentages of the FCC’s allowable general population limit.

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	Quintel QS66512-2	700 MHz / 850 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	10.85 / 11.35 / 13.85/14.35	12	490	9,896.72	6.45
Antenna A2	Powerwave 7770	850 MHz	11.4	2	60	828.23	0.76
Antenna A3	CCI OPA-65R-LCUU-H6	700 MHz / 2300 MHz (WCS)	11.65 / 15.45	6	200	5,378.76	3.50
Sector A Composite MPE%							10.72
Antenna B1	Quintel QS66512-2	700 MHz / 850 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	10.85 / 11.35 / 13.85/14.35	12	490	9,896.72	6.45
Antenna B2	Powerwave 7770	850 MHz	11.4	2	60	828.23	0.76
Antenna B3	CCI OPA-65R-LCUU-H6	700 MHz / 2300 MHz (WCS)	11.65 / 15.45	6	200	5,378.76	3.50
Sector B Composite MPE%							10.72
Antenna C1	CCI OPA-65R-LCUU-H8	700 MHz / 850 MHz / 1900 MHz (PCS) / 2100 MHz (AWS)	12.55 / 13.35 / 14.85 / 15.05	12	490	12,977.18	8.75
Antenna C2	Powerwave 7770	850 MHz	11.4	2	60	828.23	0.76
Antenna C3	CCI OPA-65R-LCUU-H8	700 MHz / 2300 MHz (WCS)	12.55 / 14.95	6	200	5,190.39	3.57
Sector C Composite MPE%							13.08

Table 3: AT&T Emissions Levels



The Following table (table 4) shows all additional carriers on site and their MPE% as recorded in the CSC active MPE database for this facility along with the newly calculated maximum AT&T MPE contributions per this report. FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. For this site, the sector with the largest calculated MPE% is Sector C. Table 5 below shows a summary for each AT&T Sector as well as the composite MPE value for the site.

Site Composite MPE%	
Carrier	MPE%
AT&T – Max Per Sector Value (Sector C)	13.08 %
Verizon Wireless	3.98 %
Clearwire	0.39 %
Sprint	5.95 %
MetroPCS	3.95 %
T-Mobile	3.59 %
Site Total MPE %:	30.94 %

Table 4: All Carrier MPE Contributions

AT&T Sector A Total:	10.72 %
AT&T Sector B Total:	10.72 %
AT&T Sector C Total:	13.08 %
Site Total:	30.94 %

Table 5: Site MPE Summary



FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. *Table 6* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated AT&T sector(s). For this site, the sector with the largest calculated MPE% is Sector C.

AT&T _ Frequency Band / Technology Max Power Values (Sector C)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
AT&T 700 MHz LTE (Band 14) - Antenna 1	2	719.55	89	7.51	700 MHz	467	1.61%
AT&T 850 MHz LTE - Antenna 1	2	865.09	89	9.03	850 MHz	567	1.59%
AT&T 1900 MHz (PCS) LTE - Antenna 1	4	1,221.97	89	25.51	1900 MHz (PCS)	1000	2.55%
AT&T 2100 MHz (AWS) LTE - Antenna 1	4	959.67	89	20.03	2100 MHz (AWS)	1000	2.00%
AT&T 850 MHz 5G - Antenna 1	2	540.68	89	5.64	850 MHz	567	1.00%
AT&T 850 MHz UMTS - Antenna 2	2	414.12	89	4.32	850 MHz	567	0.76%
AT&T 700 MHz LTE - Antenna 3	2	719.55	89	7.51	700 MHz	467	1.61%
AT&T 2300 MHz (WCS) LTE - Antenna 3	4	937.82	89	19.58	2300 MHz (WCS)	1000	1.96%
						Total:	13.08%

Table 6: AT&T Maximum Sector MPE Power Values



Summary

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

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

AT&T Sector	Power Density Value (%)
Sector A:	10.72 %
Sector B:	10.72 %
Sector C:	13.08 %
AT&T Maximum Total (Sector C):	13.08 %
Site Total:	30.94 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **30.94 %** of the allowable FCC established general population 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.

A handwritten signature in black ink, appearing to read 'Scott Heffernan', is positioned above the printed name.

Scott Heffernan

RF Engineering Director

Centerline Communications, LLC

95 Ryan Drive, Suite 1

Raynham, MA 02767

Tracking Summary

Tracking Numbers

Tracking Number: 1Z 870 26W 02 9922 276 1
Type: Package
Status: **Delivered**
Delivered On: 03/19/2019
2:33 P.M.
Delivered To: DARIEN, CT, US
Received By: DICEGLIE
Service: UPS 2nd Day Air

Tracking results provided by UPS: 03/25/2019 2:05 P.M. ET

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Track Shipments

Tracking Summary

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Tracking Number:	1Z 870 26W 02 9821 774 2 View package progress
Type:	Package
Status:	Delivered ⓘ
Delivered On:	03/19/2019 2:33 P.M.
Delivered To:	DARIEN, CT, US
Received By:	DICEGLIE
Service:	UPS 2nd Day Air

Tracking results provided by UPS: 03/25/2019 2:02 P.M. ET

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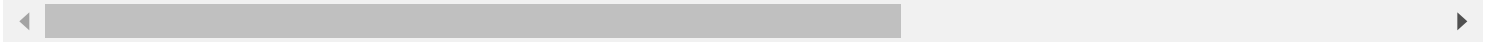
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Tracking Summary

Tracking Numbers

Tracking Number: 1Z 870 26W 02 9786 433 0
Type: Package
Status: **Delivered**
Delivered On: 03/19/2019
10:12 A.M.
Delivered To: CLIFTON PARK, NY, US
Received By: VADNEY
Service: UPS 2nd Day Air

Tracking results provided by UPS: 03/25/2019 1:58 P.M. ET

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