Mike Gentile, Site Acquisition
c/o New Cingular Wireless, PCS LLC (AT&T)
Centerline Communications, LLC
95 Ryan Drive, Suite 1
Raynham, MA 02767
Mobile: (508) 844-9813
mgentile@clinellc.com

April 9, 2018

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

RE: Notice of Exempt Modification // Site Number: CT5743
101 Pierce Road, Preston, CT 06365 (Site Name: LTE 2C at PRESTON CT)
N 41.5381750 // W -71.95163056

Dear Ms. Bachman:

New Cingular Wireless, PCS, LLC ("AT&T") currently maintains nine (9) antennas at the 144-foot level of the existing 150-foot monopole tower at 101 Pierce Road, Preston, CT 06365. The tower is owned by Crown Castle, LLC. The property is owned by Panus Farm, LLC. AT&T now intends to add three (3) antennas at the same 144-foot height, replace three (3) of the existing panels with three (3) new antennas for its LTE upgrade. These antennas would be installed at the 144-foot level of the tower. AT&T also intends to install six (6) remote radio units at the 144-foot level of the tower, as well as two (2) DC cables and one (1) fiber cable.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 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 Robert Congdon, First Selectman for the Town of Preston, CT. Please note that copies of this filings are also being sent to Crown Castle, LLC, the tower owner, and Panus Farm, LLC, the property owner. A copy has also been sent to the building/zoning department for the town of Preston, CT.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

Attached to accommodate this filing are construction drawings dated April 10, 2018 by Crown Castle, a structural analysis dated January 19, 2018 by Black & Veatch and an Emissions Analysis Report dated February 28, 2018 by Centerline Communications, LLC.

1. The proposed modifications will not result in an increase in the height of the existing structure.

2. The proposed modifications will not require the extension of the site boundary.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.

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 the proposed loading as shown in the attached structural analysis by Black & Veatch, dated January 19, 2018

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

Sincerely,

_____

Mike Gentile, Site Acquisition
c/o New Cingular Wireless, PCS LLC (AT&T)
Centerline Communications, LLC
95 Ryan Drive, Suite 1
Raynham, MA 02767
Mobile: (508) 844-9813
mgentile@centerlincommunications.com

Attachments

cc: Robert Congdon, First Selectman, Town of Preston, CT - as elected official
Building / Planning and Development, Town of Preston, CT – as permitting jurisdiction
Paul Pedicone, Crown Castle, LLC - as tower owner
Panus Farm, LLC - as property owner

Town of Preston
Property Listing Report

Parcel ID 8-0-PIE1-101

Account 00059300

Property Information

Owner	PANUS FARM LLC
Address	101 PIERCE RD
Mailing Address	60 PIERCE RD PRESTON , CT 06365
Land Use	1010 - Single Fam MDL-01
Land Class	R

Census Tract	7001
Neighborhood	0050
Zoning	R-80
Acreage	198.43
Utilities	Well,Septic
Lot Setting/ Desc	Rural / Low

Photo

No Photo Available

PARCEL VALUATIONS (Assessed value = 70% of Appraised Value)

	Appraised	Assessed
Buildings	58000	40600
Outbuildings	34400	24100
Improvements	92400	64700
Extras	0	0
Land	955000	97600
Total	1047400	162300
Previous		

Construction Details

Year Built	1950
Stories	2
Building Style	Conventional
Building Use	Residential
Building Condition	Below Average
Total Rooms	6
Bedrooms	4 Bedrooms
Full Bathrooms	1
Half Bathrooms	1
Bath Style	Average
Kitchen Style	Average
Roof Style	Gable/Hip
Roof Cover	Asph/F Gls/Cmp

EXTERIOR WALLS:	
Primary	Wood Shingle
Secondary	
INTERIOR WALLS:	
Primary	Plastered
Secondary	Panel
FLOORS:	
Primary	Carpet
Secondary	Vinyl/Asphalt
HEATING/AC:	
Heating Type	Hot Water
Heating Fuel	Gas
AC Type	None

BUILDING AREA:	
Effective Building Area	
Gross Building Area	1326
Total Living Area	1170

SALES HISTORY:	
Sale Date	12/3/2015
Sale Price	
Book/ Page	196/ 38

Report Created On 4/10/2018

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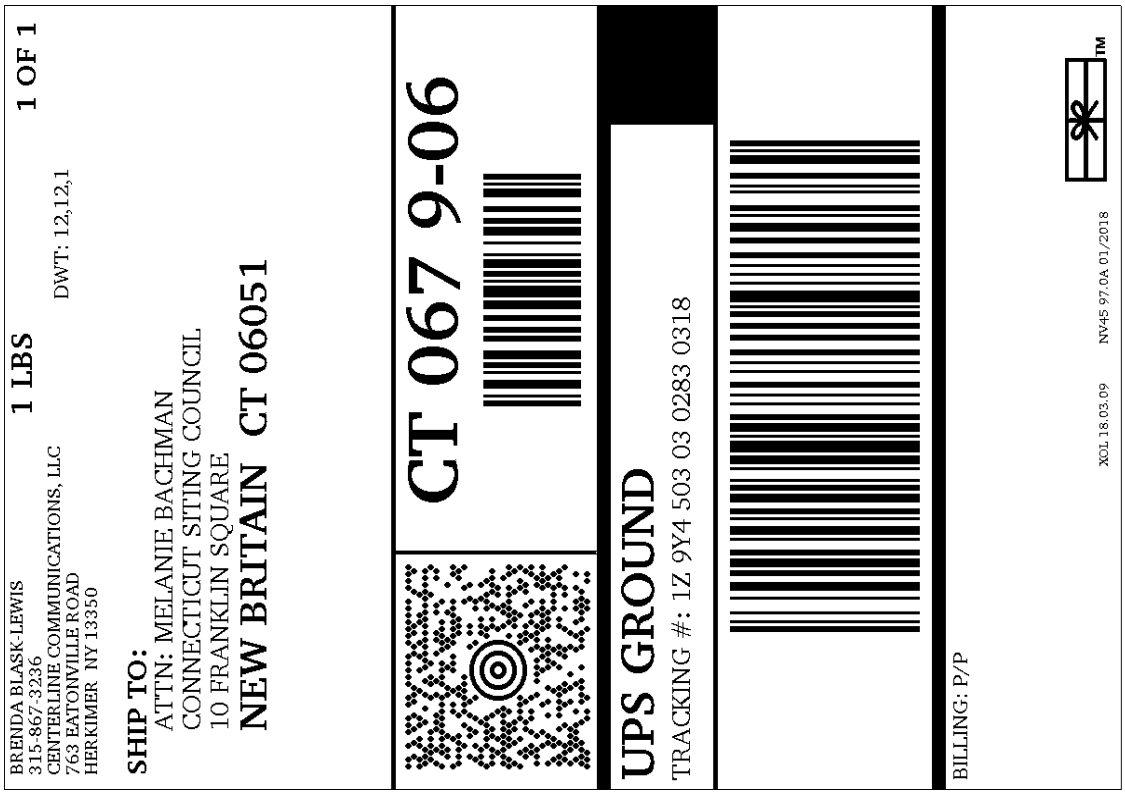

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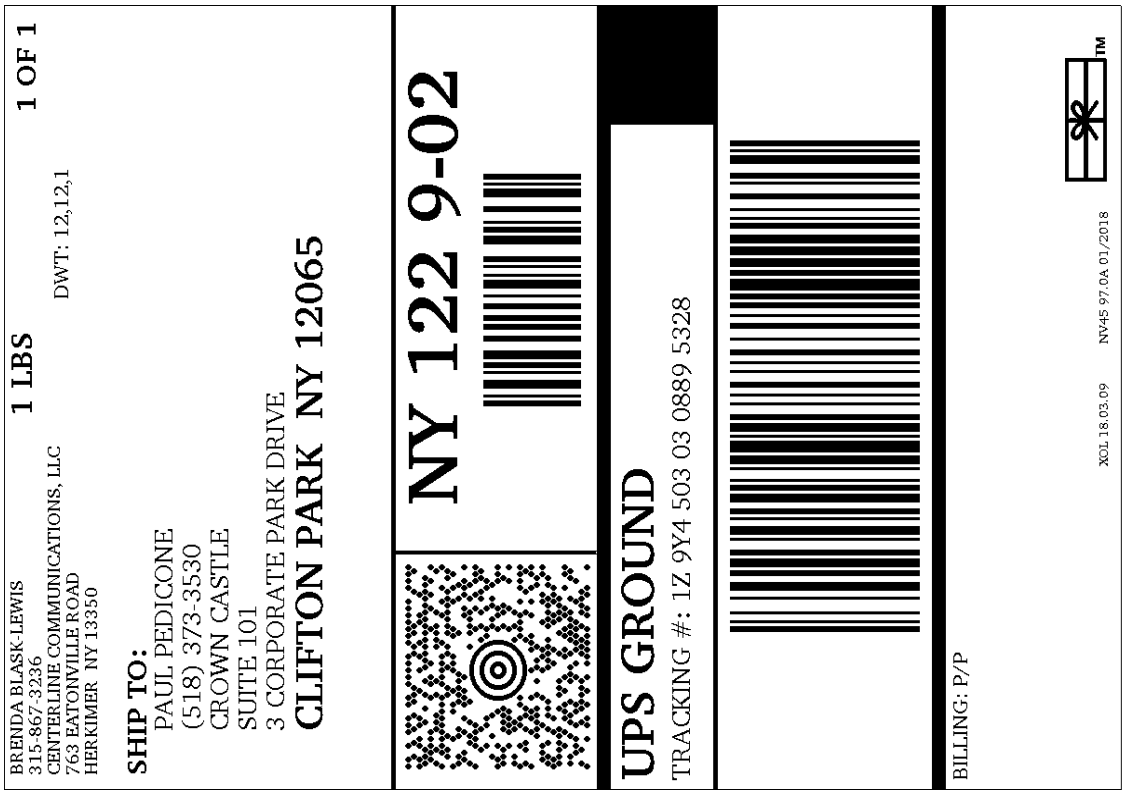

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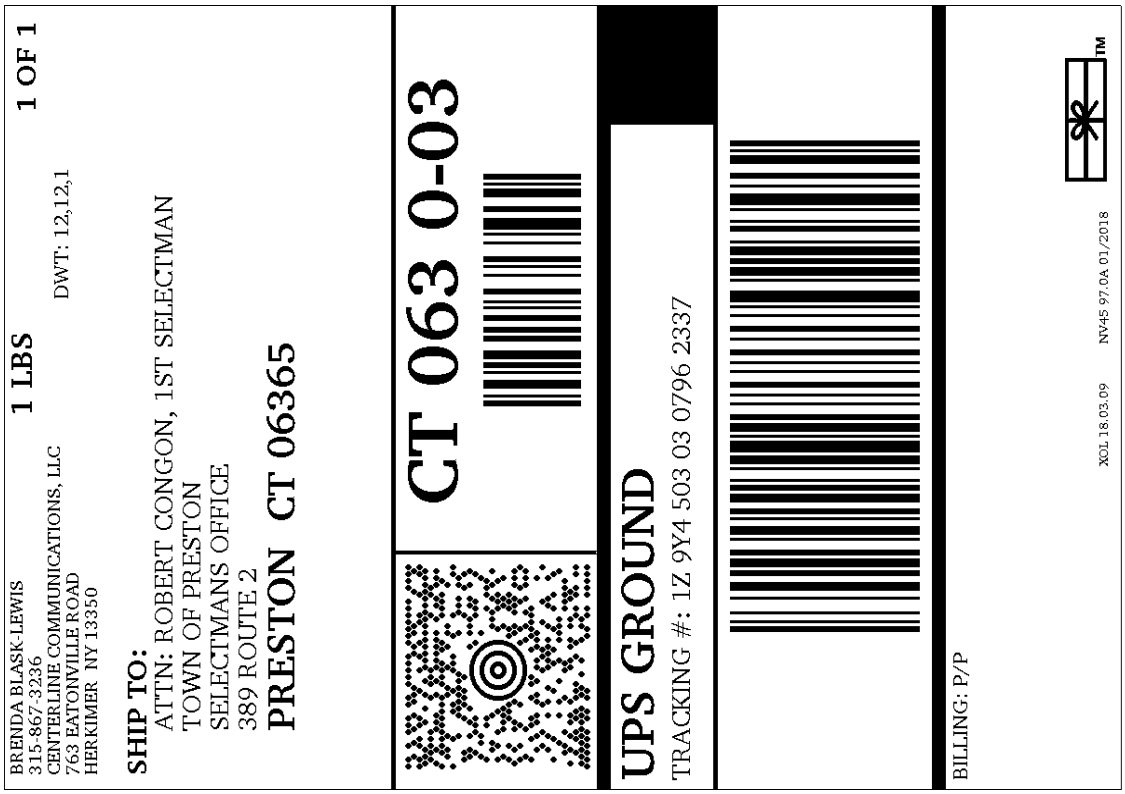

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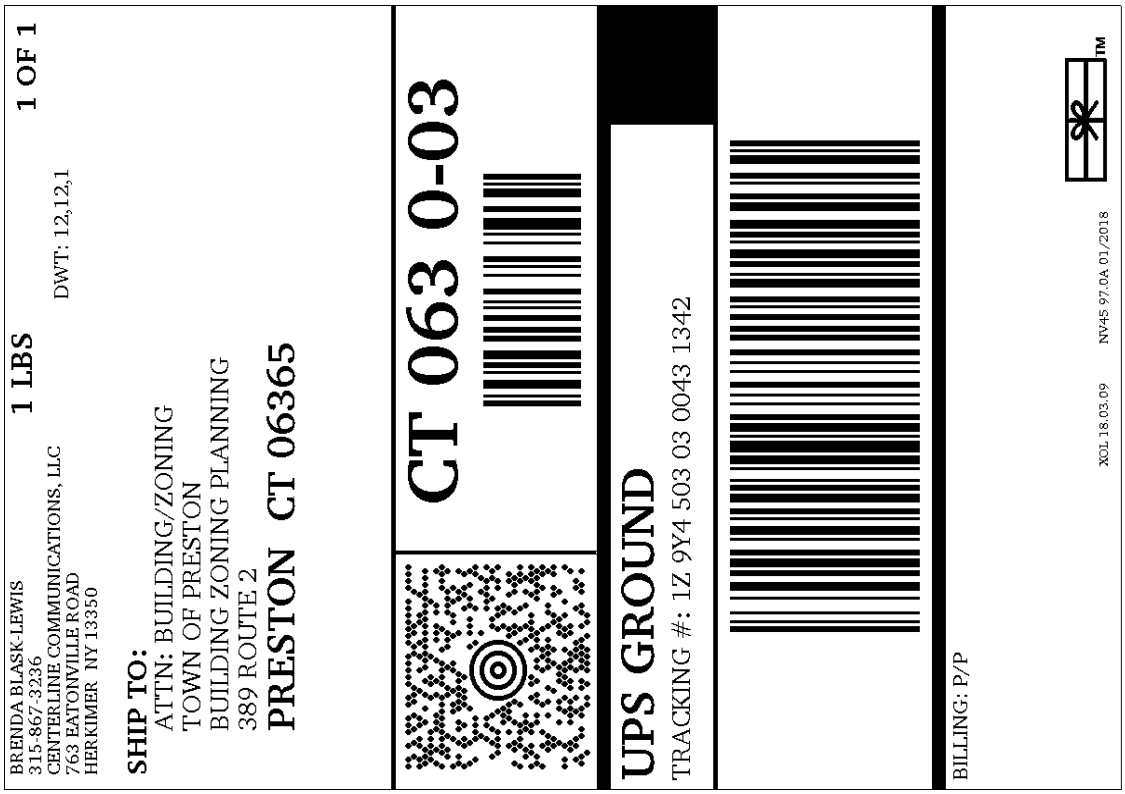

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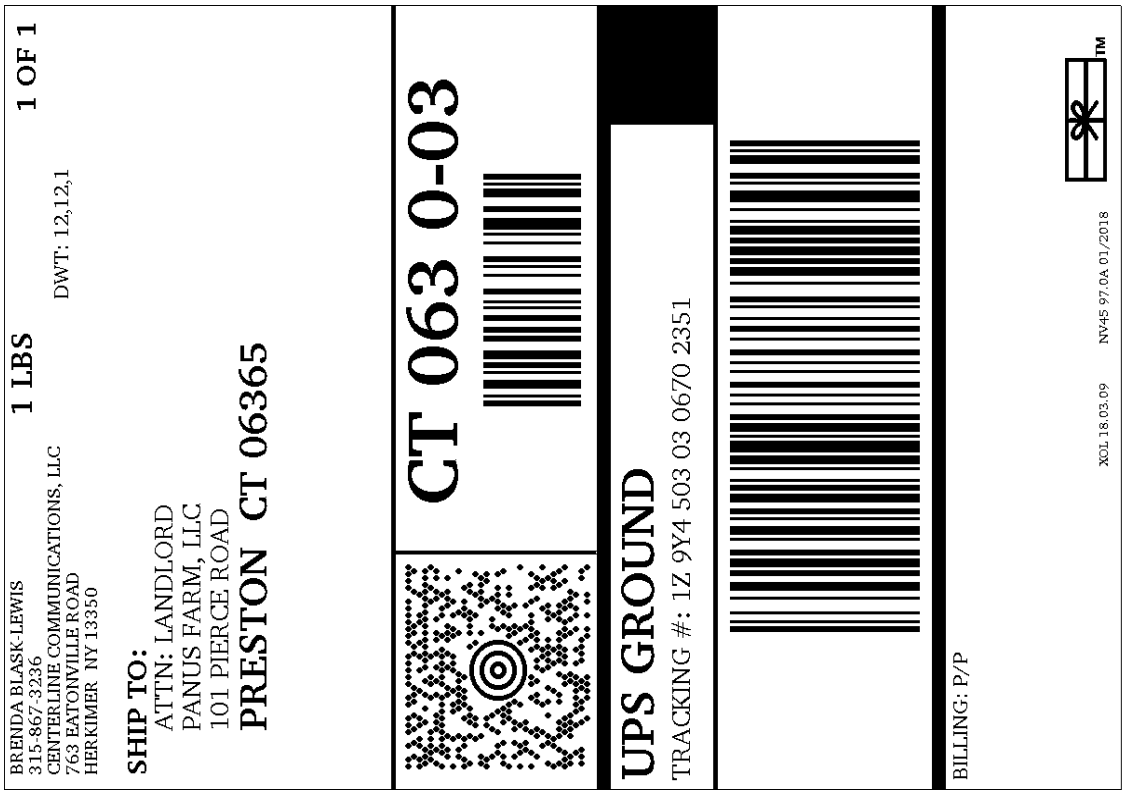


Radio Frequency Emissions Analysis Report

AT&T Existing Facility

Site ID: CT5743
FA#: 10071207

Preston Central
Route 146 & Schetucker Turnpike
Preston, CT 06365

February 28, 2018

Centerline Communications Project Number: 950012-042

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**7.40 %**

February 28, 2018

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

Emissions Analysis for Site: **CT5743 – Preston Central**

Centerline Communications, LLC ("Centerline") was directed to analyze the proposed AT&T facility located at **Route 146 & Schetucker Turnpike, Preston, 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 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ 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 ($\mu W/cm^2$). The general population exposure limits for the 700 and 850 MHz Bands are approximately 467 $\mu W/cm^2$ and 567 $\mu W/cm^2$ respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) bands is 1000 $\mu W/cm^2$. 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 **Route 146 & Schetucker Turnpike, Preston, 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)
UMTS	850 MHz	1	30
UMTS	1900 MHz (PCS)	1	30
LTE	700 MHz (Band 14)	4	40
LTE	700 MHz	2	40
LTE	1900 MHz (PCS)	4	40

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 and 1900 MHz (PCS) 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	Powerwave 7770	140
A	2	Kathrein 800-10966	140
A	3	CCI HPA-65R-BUU-H8	140
B	1	Powerwave 7770	140
B	2	Kathrein 800-10966	140
B	3	CCI HPA-65R-BUU-H8	140
C	1	Powerwave 7770	140
C	2	Kathrein 800-10966	140
C	3	CCI HPA-65R-BUU-H8	140

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	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	2	60	1,070.44	0.28
Antenna A2	Kathrein 800-10966	700 MHz (Band 14)	13.55	4	160	3,623.43	1.55
Antenna A3	CCI HPA-65R-BUU-H8	700 MHz / 1900 MHz (PCS)	13.15 / 14.95	6	240	6,654.03	1.71
						Sector A Composite MPE%	**3.54**
Antenna B1	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	2	60	1,070.44	0.28
Antenna B2	Kathrein 800-10966	700 MHz (Band 14)	13.55	4	160	3,623.43	1.55
Antenna B3	CCI HPA-65R-BUU-H8	700 MHz / 1900 MHz (PCS)	13.15 / 14.95	6	240	6,654.03	1.71
						Sector B Composite MPE%	**3.54**
Antenna C1	Powerwave 7770	850 MHz / 1900 MHz (PCS)	11.4 / 13.4	2	60	1,070.44	0.28
Antenna C2	Kathrein 800-10966	700 MHz (Band 14)	13.55	4	160	3,623.43	1.55
Antenna C3	CCI HPA-65R-BUU-H8	700 MHz / 1900 MHz (PCS)	13.15 / 14.95	6	240	6,654.03	1.71
						Sector C Composite MPE%	**3.54**

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, all three sectors have the same configuration yielding the same results on all three sectors. *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 Sector Value	**3.54 %**
Verizon Wireless	3.51 %
Sprint	0.35 %
Site Total MPE %:	**7.40 %**

Table 4: All Carrier MPE Contributions

AT&T Sector A Total:	3.54 %
AT&T Sector B Total:	3.54 %
AT&T Sector C Total:	3.54 %
Site Total:	7.40 %

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, all three sectors have the same configuration yielding the same results on all three sectors.

AT&T _ Frequency Band / Technology Max Power Values (All Sectors)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
AT&T 850 MHz UMTS (Antenna 1)	1	414.12	140	0.83	850 MHz	567	0.15%
AT&T 1900 MHz (PCS) UMTS (Antenna 1)	1	656.33	140	1.31	1900 MHz (PCS)	1000	0.13%
AT&T 700 MHz LTE – Band 14 (Antenna 2)	4	905.86	140	7.25	700 MHz	467	1.55%
AT&T 700 MHz LTE (Antenna 3)	2	826.15	140	3.31	700 MHz	467	0.71%
AT&T 1900 MHz (PCS) LTE (Antenna 3)	4	1,250.43	140	10.01	1900 MHz (PCS)	1000	1.00%
						Total:	**3.54%**

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:	3.54 %
Sector B:	3.54 %
Sector C:	3.54 %
AT&T Maximum Total (per sector):	3.54 %
Site Total:	7.40 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **7.40 %** 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.

Scott Heffernan
RF Engineering Director
Centerline Communications, LLC
95 Ryan Drive, Suite 1
Raynham, MA 02767

Date: **January 19, 2018**

Charles McGuirt
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277

Black & Veatch Corp.
6800 W 115th St. Suite 2292
Overland Park, KS 66211
(913) 458-8145

Subject:	**Structural Analysis Report**	
Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	CT5743
	Carrier Site Name:	LTE 2C at PRESTON, CT
Crown Castle Designation:	**Crown Castle BU Number:**	876366
	Crown Castle Site Name:	WAPPINGERS FALLS / PRESTON CIT
	Crown Castle JDE Job Number:	470000
	Crown Castle Work Order Number:	1489123
	Crown Castle Application Number:	406270 Rev. 1
Engineering Firm Designation:	**Black & Veatch Corp. Project Number:**	194393
Site Data:	**101 Pierce Road, Preston, New London County, CT** **Latitude *41° 32' 17.46"*, Longitude *-71° 57' 6"*** **149.854 Foot - Monopole Tower**	

Dear Charles McGuirt,

Black & Veatch Corp. is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 1106735, in accordance with application 406270, revision 1.

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

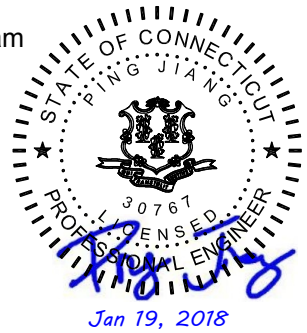
LC7: Existing + Reserved + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 135 mph converted to a nominal 3-second gust wind speed of 105 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category B with a maximum topographic factor, Kzt, of 1.00 and Risk Category II were used in this analysis. Seismic forces have been evaluated based on Site Class D with spectral response factors S_s of 0.167g and S_1 of 0.060g.

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

Structural analysis prepared by: Chariya Wannaklut / Teddy Haile-Mariam

Respectfully submitted by:



Ping Jiang, P.E.
Professional Engineer

tnxTower Report - version 7.0.5.1

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 149.854 ft Monopole tower designed by EEI, in September of 1999. The tower was originally designed for a wind speed of 89.25 mph per TIA/EIA-222-F.

The tower has been modified per reinforcement drawings prepared by PSG Engineering, Ltd., in June of 2008. Reinforcement consists of addition (12) base plate stiffeners. Refer to Post Modification Inspection Report by PSG Engineering, Ltd., in February of 2009. This modification has been considered effective in this analysis.

The tower was later modified per reinforcement drawings prepared by Black & Veatch Corp., in November of 2011. Reinforcement consisted of addition reinforcement plates at elevation 45'-70' and 84'-99', (3) anchor rods, and removal (3) base plate stiffeners. Refer to Modification Inspection Report by Sinnott Gering and Schmitt Towers, Inc. in March of 2016. Those modifications have been considered effective in this analysis.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA-222-G Structural Standard for Antenna Supporting Structures and Antennas using a 3-second gust wind speed of 105 mph with no ice, 50 mph with 0.75 inch ice thickness and 60 mph under service loads, exposure category B with topographic category 1 and crest height of 0 feet. Seismic forces have been evaluated based on Site Class D with spectral response factors S_s of 0.167g and S_1 of 0.060g.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
140.0	140.0	3	cci antennas	HPA-65R-BUU-H8 w/ Mount Pipe	4 1	7/16 2"conduit	1
		3	ericsson	RRUS 32 B2			
		3	ericsson	RRUS 4478 B14			
		3	kathrein	80010966 w/ Mount Pipe			
		6	powerwave technologies	LGP21401			
		6	powerwave technologies	LGP21901			
		2	raycap	DC6-48-60-18-8F			

Notes:
1) See Appendix B for proposed coax configuration
2) (4) 7/16" Coax Routed in (1) 2" flexible conduit

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
150.0	150.0	1	cci tower mounts	Platform Mount [10' LP 712-1]	-	-	1
		3	alcatel lucent	PCS 1900MHz 4x45W-65MHz	4	1-1/4	2
		6	alcatel lucent	RRH2X50-800			
		3	alcatel lucent	TD-RRH8x20-25			
		3	kmw communications	ETCR-654L12H6 w/ Mount Pipe			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
142.0	142.0	1	cci tower mounts	Side Arm Mount [SO 102-3]	-	-	1
		3	ericsson	RRUS 11			
140.0	140.0	1	cci tower mounts	Platform Mount [LP 303-1]	12 2 1	1-1/4 3/8 2"conduit	1,5
		6	powerwave technologies	7770.00 w/ Mount Pipe			
		3	kmw communications	AM-X-CD-17-65-00T-RET w/ Mount Pipe	1	3/8	3
129.3	134.0	3	alcatel lucent	B66A RRH4X45-4R	2	1-5/8	2,4
		3	alcatel lucent	RRH2x60-700			
		3	nokia	B5 4T4R RRH4X40 AIRSCALE			
		1	raycap	RVZDC-6627-PF-48			
	131.0	6	commscope	JAHH-65B-R3B w/ Mount Pipe			
		6	antel	LPA-80063/6CF w/ Mount Pipe	12	1-5/8	1,4
	129.3	1	connect-it wireless	VSK-M Monopole V-Stabilizer Kit [SM 502-3]	-	-	2
74.0	74.0	1	cci tower mounts	Side Arm Mount [SO 701-1]	1	1/2	1
		1	lucent	KS24019-L112A			

Notes:
1) Existing Equipment
2) Reserved Equipment
3) Existing Equipment To Be Removed; Not Considered in This Analysis
4) The addition of the reserved handrail kit will change the MCL from 128' to 129.25', and the mount from a TA 602-3 to a SM 502-3
5) (2) 3/8" Coax Routed in (1) 2" Flexible Conduit

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
150	150	12	decibel	DB980H90E-M	-	-
140	140	12	allgon	ALP9212	-	-
130	130	12	allgon	ALP9212	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Tower Engineering Professionals, Inc.	2194336	CCISITES
4-GEOTECHNICAL REPORTS	DR. Clarence Welti Assoc. Inc	-	EMAIL
4-POST-MODIFICATION	PSG Engineering, Ltd.	2391519	CCISITES

Document	Remarks	Reference	Source
INSPECTION			
4-POST-MODIFICATION INSPECTION	Sinnott Gering and Schmitt Towers, Inc.	6133027	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Tower Engineering Professionals, Inc. (Mapped)	2208798	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	EEI	-	EMAIL
4-TOWER MANUFACTURER DRAWINGS	EEI	-	EMAIL
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	PSG Engineering, Ltd.	2271037	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Black & Veatch Corp.	5971889	CCISITES
4-TOWER STRUCTURAL ANALYSIS REPORTS	Black & Veatch Corp.	7181906	CCISITES
4-EXPOSURE CATAGORY/TOPOGRAPHIC FACTOR	Crown Castle	3269868	CCISITES

3.1) Analysis Method

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

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) This analysis was performed under the assumption that all information provided to Black & Veatch is current and correct. This is to include site data, existing/proposed appurtenance loading, tower/foundation details, and geotechnical data. The existing/proposed loading on the structure is based on CAD level drawings and carrier applications provided by the owner. If any of this information is not current and correct, this report should be considered obsolete and further analysis will be required.
5) The wind loading Exposure Category and Topographic Category for this site have been analyzed and determined by the tower owner. Black & Veatch does not assume any responsibility for its accuracy.

This analysis may be affected if any assumptions are not valid or have been made in error. Black & Veatch Corp. should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

4.1) Wind Results

Table 5 - Section Capacity (Summary)

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
149.85 - 144.85	Pole	TP19.226x18x0.1875	Pole	8.5%	Pass
144.85 - 139.85	Pole	TP20.451x19.226x0.1875	Pole	15.8%	Pass
139.85 - 134.85	Pole	TP21.677x20.451x0.1875	Pole	29.7%	Pass
134.85 - 129.85	Pole	TP22.902x21.677x0.1875	Pole	41.4%	Pass
129.85 - 126.64	Pole	TP24.566x22.902x0.1875	Pole	55.1%	Pass
126.64 - 121.64	Pole	TP24.533x23.316x0.25	Pole	50.8%	Pass
121.64 - 116.64	Pole	TP25.749x24.533x0.25	Pole	59.9%	Pass
116.64 - 111.64	Pole	TP26.966x25.749x0.25	Pole	67.9%	Pass
111.64 - 106.64	Pole	TP28.183x26.966x0.25	Pole	74.8%	Pass
106.64 - 101.64	Pole	TP29.4x28.183x0.25	Pole	80.8%	Pass
101.64 - 97.5	Pole	TP30.407x29.4x0.25	Pole	85.2%	Pass
97.5 - 97.25	Pole	TP30.467x30.407x0.25	Pole	85.4%	Pass
97.25 - 92.25	Pole	TP31.684x30.467x0.25	Pole	90.2%	Pass
92.25 - 87.25	Pole	TP32.901x31.684x0.25	Pole	94.4%	Pass
87.25 - 87.23	Pole	TP34.063x32.901x0.25	Pole	94.4%	Pass
87.23 - 81.47	Pole	TP33.805x32.405x0.3125	Pole	75.8%	Pass
81.47 - 76.47	Pole	TP35.021x33.805x0.3125	Pole	78.1%	Pass
76.47 - 71.47	Pole	TP36.237x35.021x0.3125	Pole	80.1%	Pass
71.47 - 68	Pole	TP37.081x36.237x0.3125	Pole	81.4%	Pass
68 - 67.75	Pole + Reinf.	TP37.142x37.081x0.4875	Reinf. 1 Tension Rupture	80.4%	Pass
67.75 - 62.75	Pole + Reinf.	TP38.358x37.142x0.475	Reinf. 1 Tension Rupture	82.2%	Pass
62.75 - 57.75	Pole + Reinf.	TP39.574x38.358x0.475	Reinf. 1 Tension Rupture	83.8%	Pass
57.75 - 52.75	Pole + Reinf.	TP40.789x39.574x0.4625	Reinf. 1 Tension Rupture	85.3%	Pass
52.75 - 48.8	Pole + Reinf.	TP43.183x40.789x0.4625	Reinf. 1 Tension Rupture	86.3%	Pass
48.8 - 41.9	Pole	TP42.803x41.124x0.375	Pole	72.0%	Pass
41.9 - 36.9	Pole	TP44.02x42.803x0.375	Pole	72.7%	Pass
36.9 - 31.9	Pole	TP45.236x44.02x0.375	Pole	73.4%	Pass
31.9 - 26.9	Pole	TP46.453x45.236x0.375	Pole	74.1%	Pass
26.9 - 21.9	Pole	TP47.67x46.453x0.375	Pole	74.6%	Pass
21.9 - 16.9	Pole	TP48.887x47.67x0.375	Pole	75.2%	Pass
16.9 - 11.9	Pole	TP50.103x48.887x0.375	Pole	75.7%	Pass
11.9 - 6.9	Pole	TP51.32x50.103x0.375	Pole	76.2%	Pass
6.9 - 1.9	Pole	TP52.537x51.32x0.375	Pole	76.7%	Pass
1.9 - 0	Pole	TP53x52.537x0.375	Pole	76.9%	Pass
				Summary	

			Pole	94.4%	Pass
			Reinforcement	86.3%	Pass
			Overall	94.4%	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	75.0	Pass
	Anchor Rod Brackets		83.2	Pass
	Base Plate		79.8	Pass
	Plate Stiffeners		66.0	Pass
	Pole Punching Shear		9.0	Pass
1	Base Foundation	0	89.6	Pass
	Base Foundation Soil Interaction		78.0	Pass

4.2) Seismic Results

Tower and foundation have been analyzed based on the seismic criteria outlined in section 2 of this report. Based on the analysis, seismic loading is not governing the tower and foundation stress. Wind loading is governing the tower and foundation stress.

Structure Rating (max from all components) =	94.4%

Notes:
1) See additional documentation in “Appendix C – Additional Calculations” for calculations supporting the % capacity consumed.

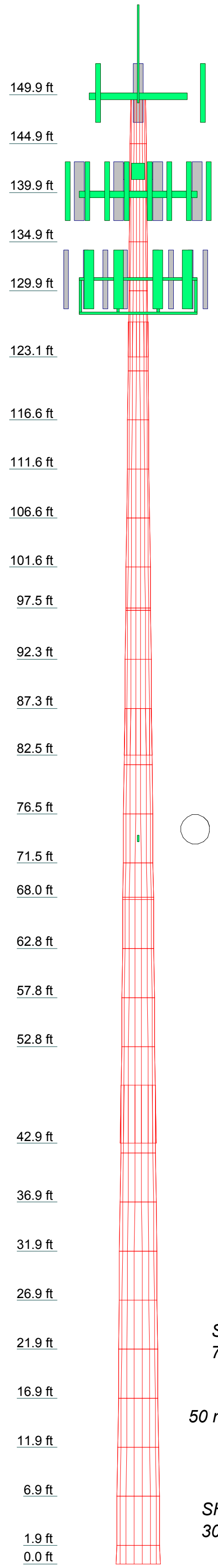
4.3) Recommendations

The tower, its base plate, anchor rods and foundation have sufficient capacity to carry the existing, reserved, and proposed loads. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	5.00	18	0.1875		18.0000	19.2256		0.2
2	5.00	18	0.1875		19.2256	20.4512		0.2
3	5.00	18	0.1875		20.4512	21.6768		0.2
4	5.00	18	0.1875		21.6768	22.9024		0.2
5	5.006.79	18	0.25000.1875	3.57	24.531522.9024	24.5659		0.3
6		18						0.3
7	5.00	18	0.2500		24.5315	25.7494		0.3
8	5.00	18	0.2500		25.7493	26.9660		0.4
9	5.00	18	0.2500		26.9660	28.1828		0.4
10	5.00	18	0.2500		28.1828	29.3996		0.4
11	4.14	18	0.2500		29.3996			0.3
12	5.000.25	18						0.0
13	5.00	18	0.2500			31.6842		0.4
14	5.00	18	0.2500		31.6842	32.9009		0.4
15	4.76	18	0.2500	4.76				0.4
16		18						0.6
17	5.00	18	0.3125			35.0210		0.6
18	5.00	18	0.3125		35.0210	36.2368	A572-65	0.6
19	3.47	18						0.4
20		18						0.0
21	5.00	18	0.4750			38.3579		0.9
22	5.00	18	0.4750		38.3579	39.5736		1.0
23	5.00	18	0.4625		39.5736	40.7893		1.0
24	6.909.85	18	0.4625	5.90	40.7893	43.1834		2.0
25		18						1.2
26	5.00	18	0.3750			44.0197		0.9
27	5.00	18	0.3750		44.0197	45.2364		0.9
28	5.00	18	0.3750		45.2364	46.4531		0.9
29	5.00	18	0.3750		46.4531	47.6699		0.9
30	5.00	18	0.3750		47.6699	48.8866		1.0
31	5.00	18	0.3750		48.8866	50.1033		1.0
32	5.00	18	0.3750		50.1033	51.3200		1.0
33	5.00	18	0.3750		51.3200	52.5368		1.0
34	1.90	18	0.3750		52.5368	53.0050		0.4
								20.9



DESIGNED APPURTENANCE LOADING

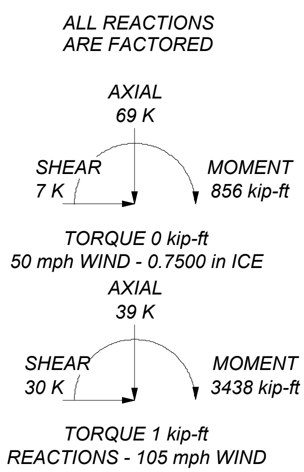
TYPE	ELEVATION	TYPE	ELEVATION
Platform Mount [10' LP 712-1]	150	RRUS 32 B2	140
Transition Ladder	150	RRUS 32 B2	140
8' x 3" Mount Pipe	150	RRUS 4478 B14	140
ETCR-654L12H6 w/ Mount Pipe	150	RRUS 4478 B14	140
ETCR-654L12H6 w/ Mount Pipe	150	RRUS 4478 B14	140
ETCR-654L12H6 w/ Mount Pipe	150	(2) LGP21401	140
TD-RRH8x20-25	150	(2) LGP21401	140
TD-RRH8x20-25	150	(2) LGP21401	140
TD-RRH8x20-25	150	(2) LGP21901	140
(2) RRH2X50-800	150	(2) LGP21901	140
(2) RRH2X50-800	150	(2) LGP21901	140
(2) RRH2X50-800	150	DC6-48-60-18-8F	140
PCS 1900MHz 4x45W-65MHz	150	DC6-48-60-18-8F	140
PCS 1900MHz 4x45W-65MHz	150	LPA-80063/6CF w/ Mount Pipe	129.25
PCS 1900MHz 4x45W-65MHz	150	LPA-80063/6CF w/ Mount Pipe	129.25
(2) 6' x 2" Mount Pipe	150	(2) LPA-80063/6CF w/ Mount Pipe	129.25
(2) 6' x 2" Mount Pipe	150	(2) LPA-80063/6CF w/ Mount Pipe	129.25
(2) 6' x 2" Mount Pipe	150	JAHH-65B-R3B w/ Mount Pipe	129.25
RRUS 11	142	JAHH-65B-R3B w/ Mount Pipe	129.25
RRUS 11	142	JAHH-65B-R3B w/ Mount Pipe	129.25
RRUS 11	142	JAHH-65B-R3B w/ Mount Pipe	129.25
Side Arm Mount [SO 102-3]	142	JAHH-65B-R3B w/ Mount Pipe	129.25
Platform Mount [LP 303-1]	140	JAHH-65B-R3B w/ Mount Pipe	129.25
7770.00 w/ Mount Pipe	140	RRH2x60-700	129.25
7770.00 w/ Mount Pipe	140	RRH2x60-700	129.25
7770.00 w/ Mount Pipe	140	RRH2x60-700	129.25
7770.00 w/ Mount Pipe	140	B66A RRH4X45-4R	129.25
7770.00 w/ Mount Pipe	140	(2) B66A RRH4X45-4R	129.25
7770.00 w/ Mount Pipe	140	B5 4T4R RRH4X40 AIRSCALE	129.25
HPA-65R-BUU-H8 w/ Mount Pipe	140	(2) B5 4T4R RRH4X40 AIRSCALE	129.25
HPA-65R-BUU-H8 w/ Mount Pipe	140	RVZDC-6627-PF-48	129.25
HPA-65R-BUU-H8 w/ Mount Pipe	140	VSK-M Monopole V-Stabilizer Kit [SM 502-3]	129.25
80010966 w/ Mount Pipe	140	KS24019-L112A	74
80010966 w/ Mount Pipe	140	Side Arm Mount [SO 701-1]	74
80010966 w/ Mount Pipe	140		
RRUS 32 B2	140		

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in New London County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 105 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft



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Job: ***WAPPINGERS FALLS / PRESTON CIT (BU# 876366***		
Project: ***194393 (876366.1489123)***		
Client: Crown Castle	Drawn by: TH	App'd:
Code: TIA-222-G	Date: 01/19/18	Scale: NTS
Path:		Dwg No. E-1

Tower Input Data

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

1) Tower is located in New London County, Connecticut.
2) Basic wind speed of 105 mph.
3) Structure Class II.
4) Exposure Category B.
5) Topographic Category 1.
6) Crest Height 0.00 ft.
7) Nominal ice thickness of 0.7500 in.
8) Ice thickness is considered to increase with height.
9) Ice density of 56 pcf.
10) A wind speed of 50 mph is used in combination with ice.
11) Temperature drop of 50 °F.
12) Deflections calculated using a wind speed of 60 mph.
13) A non-linear (P-delta) analysis was used.
14) Pressures are calculated at each section.
15) Stress ratio used in pole design is 1.
16) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs	Distribute Leg Loads As Uniform	Use ASCE 10 X-Brace Ly Rules
Consider Moments - Horizontals	Assume Legs Pinned	Calculate Redundant Bracing Forces
Consider Moments - Diagonals	√ Assume Rigid Index Plate	Ignore Redundant Members in FEA
Use Moment Magnification	√ Use Clear Spans For Wind Area	SR Leg Bolts Resist Compression
√ Use Code Stress Ratios	Use Clear Spans For KL/r	All Leg Panels Have Same Allowable
√ Use Code Safety Factors - Guys	Retension Guys To Initial Tension	Offset Girt At Foundation
Escalate Ice	√ Bypass Mast Stability Checks	√ Consider Feed Line Torque
Always Use Max Kz	√ Use Azimuth Dish Coefficients	Include Angle Block Shear Check
Use Special Wind Profile	√ Project Wind Area of Appurt.	Use TIA-222-G Bracing Resist. Exemption
Include Bolts In Member Capacity	Autocalc Torque Arm Areas	Use TIA-222-G Tension Splice Exemption
Leg Bolts Are At Top Of Section	Add IBC .6D+W Combination	Poles
Secondary Horizontal Braces Leg	Sort Capacity Reports By Component	√ Include Shear-Torsion Interaction
Use Diamond Inner Bracing (4 Sided)	Triangulate Diamond Inner Bracing	Always Use Sub-Critical Flow
SR Members Have Cut Ends	Treat Feed Line Bundles As Cylinder	Use Top Mounted Sockets
SR Members Are Concentric		

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	149.85-144.85	5.00	0.00	18	18.0000	19.2256	0.1875	0.7500	A572-65 (65 ksi)
L2	144.85-139.85	5.00	0.00	18	19.2256	20.4512	0.1875	0.7500	A572-65 (65 ksi)
L3	139.85-134.85	5.00	0.00	18	20.4512	21.6768	0.1875	0.7500	A572-65 (65 ksi)
L4	134.85-129.85	5.00	0.00	18	21.6768	22.9024	0.1875	0.7500	A572-65 (65 ksi)
L5	129.85-123.07	6.79	3.57	18	22.9024	24.5659	0.1875	0.7500	A572-65 (65 ksi)
L6	123.07-121.64	5.00	0.00	18	23.3157	24.5325	0.2500	1.0000	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
L7	121.64-116.64	5.00	0.00	18	24.5325	25.7493	0.2500	1.0000	(65 ksi) A572-65 (65 ksi)
L8	116.64-111.64	5.00	0.00	18	25.7493	26.9660	0.2500	1.0000	A572-65 (65 ksi)
L9	111.64-106.64	5.00	0.00	18	26.9660	28.1828	0.2500	1.0000	A572-65 (65 ksi)
L10	106.64-101.64	5.00	0.00	18	28.1828	29.3996	0.2500	1.0000	A572-65 (65 ksi)
L11	101.64-97.50	4.14	0.00	18	29.3996	30.4066	0.2500	1.0000	A572-65 (65 ksi)
L12	97.50-97.25	0.25	0.00	18	30.4066	30.4674	0.2500	1.0000	A572-65 (65 ksi)
L13	97.25-92.25	5.00	0.00	18	30.4674	31.6842	0.2500	1.0000	A572-65 (65 ksi)
L14	92.25-87.25	5.00	0.00	18	31.6842	32.9009	0.2500	1.0000	A572-65 (65 ksi)
L15	87.25-82.47	4.78	4.76	18	32.9009	34.0632	0.2500	1.0000	A572-65 (65 ksi)
L16	82.47-81.47	5.76	0.00	18	32.4054	33.8053	0.3125	1.2500	A572-65 (65 ksi)
L17	81.47-76.47	5.00	0.00	18	33.8053	35.0210	0.3125	1.2500	A572-65 (65 ksi)
L18	76.47-71.47	5.00	0.00	18	35.0210	36.2368	0.3125	1.2500	A572-65 (65 ksi)
L19	71.47-68.00	3.47	0.00	18	36.2368	37.0814	0.3125	1.2500	A572-65 (65 ksi)
L20	68.00-67.75	0.25	0.00	18	37.0814	37.1422	0.4875	1.9500	A572-65 (65 ksi)
L21	67.75-62.75	5.00	0.00	18	37.1422	38.3579	0.4750	1.9000	A572-65 (65 ksi)
L22	62.75-57.75	5.00	0.00	18	38.3579	39.5736	0.4750	1.9000	A572-65 (65 ksi)
L23	57.75-52.75	5.00	0.00	18	39.5736	40.7893	0.4625	1.8500	A572-65 (65 ksi)
L24	52.75-42.90	9.85	5.90	18	40.7893	43.1834	0.4625	1.8500	A572-65 (65 ksi)
L25	42.90-41.90	6.90	0.00	18	41.1242	42.8029	0.3750	1.5000	A572-65 (65 ksi)
L26	41.90-36.90	5.00	0.00	18	42.8029	44.0197	0.3750	1.5000	A572-65 (65 ksi)
L27	36.90-31.90	5.00	0.00	18	44.0197	45.2364	0.3750	1.5000	A572-65 (65 ksi)
L28	31.90-26.90	5.00	0.00	18	45.2364	46.4531	0.3750	1.5000	A572-65 (65 ksi)
L29	26.90-21.90	5.00	0.00	18	46.4531	47.6699	0.3750	1.5000	A572-65 (65 ksi)
L30	21.90-16.90	5.00	0.00	18	47.6699	48.8866	0.3750	1.5000	A572-65 (65 ksi)
L31	16.90-11.90	5.00	0.00	18	48.8866	50.1033	0.3750	1.5000	A572-65 (65 ksi)
L32	11.90-6.90	5.00	0.00	18	50.1033	51.3200	0.3750	1.5000	A572-65 (65 ksi)
L33	6.90-1.90	5.00	0.00	18	51.3200	52.5368	0.3750	1.5000	A572-65 (65 ksi)
L34	1.90-0.00	1.90		18	52.5368	53.0000	0.3750	1.5000	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	18.2777	10.6007	424.9328	6.3234	9.1440	46.4712	850.4248	5.3013	2.8380	15.136
	19.5222	11.3300	518.8198	6.7585	9.7666	53.1218	1038.3222	5.6661	3.0537	16.286
L2	19.5222	11.3300	518.8198	6.7585	9.7666	53.1218	1038.3222	5.6661	3.0537	16.286

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
	20.7667	12.0594	625.6075	7.1936	10.3892	60.2170	1252.0382	6.0309	3.2694	17.437
L3	20.7667	12.0594	625.6075	7.1936	10.3892	60.2170	1252.0382	6.0309	3.2694	17.437
	22.0112	12.7888	746.1267	7.6287	11.0118	67.7569	1493.2351	6.3956	3.4851	18.587
L4	22.0112	12.7888	746.1267	7.6287	11.0118	67.7569	1493.2351	6.3956	3.4851	18.587
	23.2557	13.5182	881.2077	8.0638	11.6344	75.7414	1763.5750	6.7604	3.7008	19.738
L5	23.2557	13.5182	881.2077	8.0638	11.6344	75.7414	1763.5750	6.7604	3.7008	19.738
	24.9449	14.5082	1089.3345	8.6543	12.4795	87.2901	2180.1023	7.2555	3.9936	21.299
L6	24.5577	18.3027	1230.2313	8.1883	11.8444	103.8661	2462.0814	9.1531	3.6636	14.654
	24.9110	19.2682	1435.3739	8.6203	12.4625	115.1753	2872.6366	9.6359	3.8777	15.511
L7	24.9110	19.2682	1435.3739	8.6203	12.4625	115.1753	2872.6366	9.6359	3.8777	15.511
	26.1465	20.2337	1662.1409	9.0522	13.0806	127.0689	3326.4688	10.1188	4.0919	16.367
L8	26.1465	20.2337	1662.1409	9.0522	13.0806	127.0689	3326.4688	10.1188	4.0919	16.367
	27.3820	21.1992	1911.6157	9.4842	13.6987	139.5467	3825.7467	10.6016	4.3060	17.224
L9	27.3820	21.1992	1911.6157	9.4842	13.6987	139.5467	3825.7467	10.6016	4.3060	17.224
	28.6176	22.1647	2184.8820	9.9161	14.3169	152.6090	4372.6389	11.0844	4.5202	18.081
L10	28.6176	22.1647	2184.8820	9.9161	14.3169	152.6090	4372.6389	11.0844	4.5202	18.081
	29.8531	23.1302	2483.0230	10.3481	14.9350	166.2555	4969.3133	11.5673	4.7343	18.937
L11	29.8531	23.1302	2483.0230	10.3481	14.9350	166.2555	4969.3133	11.5673	4.7343	18.937
	30.8756	23.9292	2749.3506	10.7056	15.4465	177.9914	5502.3189	11.9669	4.9116	19.646
L12	30.8756	23.9292	2749.3506	10.7056	15.4465	177.9914	5502.3189	11.9669	4.9116	19.646
	30.9374	23.9775	2766.0241	10.7272	15.4774	178.7133	5535.6879	11.9910	4.9223	19.689
L13	30.9374	23.9775	2766.0241	10.7272	15.4774	178.7133	5535.6879	11.9910	4.9223	19.689
	32.1730	24.9430	3113.7979	11.1591	16.0956	193.4570	6231.6929	12.4739	5.1364	20.546
L14	32.1730	24.9430	3113.7979	11.1591	16.0956	193.4570	6231.6929	12.4739	5.1364	20.546
	33.4085	25.9085	3489.5650	11.5911	16.7137	208.7850	6983.7216	12.9567	5.3506	21.402
L15	33.4085	25.9085	3489.5650	11.5911	16.7137	208.7850	6983.7216	12.9567	5.3506	21.402
	34.5887	26.8308	3875.6380	12.0037	17.3041	223.9722	7756.3756	13.4179	5.5551	22.22
L16	34.0799	31.8321	4142.0959	11.3930	16.4619	251.6167	8289.6420	15.9191	5.1533	16.491
	34.3268	33.2207	4708.1495	11.8900	17.1731	274.1582	9422.4940	16.6135	5.3997	17.279
L17	34.3268	33.2207	4708.1495	11.8900	17.1731	274.1582	9422.4940	16.6135	5.3997	17.279
	35.5613	34.4265	5239.6675	12.3215	17.7907	294.5173	10486.2296	17.2165	5.6137	17.964
L18	35.5613	34.4265	5239.6675	12.3215	17.7907	294.5173	10486.2296	17.2165	5.6137	17.964
	36.7958	35.6324	5809.7549	12.7531	18.4083	315.6056	11627.1545	17.8196	5.8277	18.649
L19	36.7958	35.6324	5809.7549	12.7531	18.4083	315.6056	11627.1545	17.8196	5.8277	18.649
	37.6535	36.4702	6229.2695	13.0530	18.8374	330.6869	12466.7357	18.2386	5.9763	19.124
L20	37.6535	56.6227	9579.5675	12.9908	18.8374	508.5408	19171.7401	28.3167	5.6683	11.627
	37.7152	56.7167	9627.3846	13.0124	18.8682	510.2428	19267.4371	28.3638	5.6790	11.649
L21	37.7152	55.2813	9390.1287	13.0169	18.8682	497.6684	18792.6132	27.6459	5.7010	12.002
	38.9497	57.1142	10355.4336	13.4484	19.4858	531.4342	20724.4932	28.5625	5.9150	12.453
L22	38.9497	57.1142	10355.4336	13.4484	19.4858	531.4342	20724.4932	28.5625	5.9150	12.453
	40.1841	58.9470	11384.7248	13.8800	20.1034	566.3083	22784.4299	29.4791	6.1290	12.903
L23	40.1841	57.4142	11095.7620	13.8845	20.1034	551.9345	22206.1242	28.7125	6.1510	13.299
	41.4186	59.1988	12162.9416	14.3160	20.7210	586.9867	24341.8875	29.6050	6.3649	13.762
L24	41.4186	59.1988	12162.9416	14.3160	20.7210	586.9867	24341.8875	29.6050	6.3649	13.762
	43.8496	62.7132	14460.2996	15.1659	21.9372	659.1690	28939.6264	31.3626	6.7863	14.673
L25	43.2162	48.5018	10174.9959	14.4660	20.8911	487.0490	20363.3804	24.2555	6.5779	17.541
	43.4632	50.4999	11485.0167	15.0619	21.7439	528.1950	22985.1457	25.2547	6.8733	18.329
L26	43.4632	50.4999	11485.0167	15.0619	21.7439	528.1950	22985.1457	25.2547	6.8733	18.329
	44.6987	51.9481	12501.7069	15.4939	22.3620	559.0605	25019.8639	25.9790	7.0875	18.9
L27	44.6987	51.9481	12501.7069	15.4939	22.3620	559.0605	25019.8639	25.9790	7.0875	18.9

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
	45.9342	53.3963	13576.6946	15.9258	22.9801	590.8025	27171.2538	26.7032	7.3016	19.471
L28	45.9342	53.3963	13576.6946	15.9258	22.9801	590.8025	27171.2538	26.7032	7.3016	19.471
	47.1697	54.8445	14711.6034	16.3577	23.5982	623.4209	29442.5647	27.4275	7.5157	20.042
L29	47.1697	54.8445	14711.6034	16.3577	23.5982	623.4209	29442.5647	27.4275	7.5157	20.042
	48.4052	56.2927	15908.0602	16.7897	24.2163	656.9158	31837.0526	28.1517	7.7299	20.613
L30	48.4052	56.2927	15908.0602	16.7897	24.2163	656.9158	31837.0526	28.1517	7.7299	20.613
	49.6407	57.7409	17167.6883	17.2216	24.8344	691.2871	34357.9662	28.8759	7.9440	21.184
L31	49.6407	57.7409	17167.6883	17.2216	24.8344	691.2871	34357.9662	28.8759	7.9440	21.184
	50.8762	59.1891	18492.1138	17.6535	25.4525	726.5349	37008.5600	29.6002	8.1582	21.755
L32	50.8762	59.1891	18492.1138	17.6535	25.4525	726.5349	37008.5600	29.6002	8.1582	21.755
	52.1117	60.6373	19882.9631	18.0855	26.0706	762.6592	39792.0888	30.3244	8.3723	22.326
L33	52.1117	60.6373	19882.9631	18.0855	26.0706	762.6592	39792.0888	30.3244	8.3723	22.326
	53.3472	62.0855	21341.8592	18.5174	26.6887	799.6598	42711.8005	31.0487	8.5865	22.897
L34	53.3472	62.0855	21341.8592	18.5174	26.6887	799.6598	42711.8005	31.0487	8.5865	22.897
	53.8176	62.6369	21915.5294	18.6819	26.9240	813.9775	43859.8959	31.3244	8.6680	23.115

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 149.85-144.85				1	1	1			
L2 144.85-139.85				1	1	1			
L3 139.85-134.85				1	1	1			
L4 134.85-129.85				1	1	1			
L5 129.85-123.07				1	1	1			
L6 123.07-121.64				1	1	1			
L7 121.64-116.64				1	1	1			
L8 116.64-111.64				1	1	1			
L9 111.64-106.64				1	1	1			
L10 106.64-101.64				1	1	1			
L11 101.64-97.50				1	1	1			
L12 97.50-97.25				1	1	1			
L13 97.25-92.25				1	1	1			
L14 92.25-87.25				1	1	1			
L15 87.25-82.47				1	1	1			
L16 82.47-81.47				1	1	1			
L17 81.47-				1	1	1			

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
76.47									
L18 76.47-71.47				1	1	1			
L19 71.47-68.00				1	1	1			
L20 68.00-67.75				1	1	0.961464			
L21 67.75-62.75				1	1	0.975886			
L22 62.75-57.75				1	1	0.965999			
L23 57.75-52.75				1	1	0.98226			
L24 52.75-42.90				1	1	0.975132			
L25 42.90-41.90				1	1	1			
L26 41.90-36.90				1	1	1			
L27 36.90-31.90				1	1	1			
L28 31.90-26.90				1	1	1			
L29 26.90-21.90				1	1	1			
L30 21.90-16.90				1	1	1			
L31 16.90-11.90				1	1	1			
L32 11.90-6.90				1	1	1			
L33 6.90-1.90				1	1	1			
L34 1.90-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight plf
Safety Line 3/8	B	Surface Ar (CaAa)	149.85 - 10.00	1	1	0.490 0.500	0.3750		0.22
***									
CCI-SFP-060100	A	Surface Af (CaAa)	70.00 - 45.00	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-SFP-060100	B	Surface Af (CaAa)	70.00 - 45.00	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-SFP-060100	C	Surface Af (CaAa)	70.00 - 45.00	1	1	0.000 0.000	6.0000	14.0000	0.00
CCI-SFP-045100	A	Surface Af (CaAa)	99.00 - 84.00	1	1	0.000 0.000	4.5000	11.0000	0.00
***									

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
***								
HB114-1-0813U4-M5J(1-1/4)	C	No	Inside Pole	149.85 - 8.00	3	No Ice 1/2" Ice	0.00 0.00	1.20 1.20

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
						1" Ice	0.00	1.20
HB114-13U3M12-XXXF(1-1/4)	C	No	Inside Pole	149.85 - 8.00	1	No Ice	0.00	0.99
						1/2" Ice	0.00	0.99
						1" Ice	0.00	0.99
***								
LDF6-50A(1-1/4)	A	No	Inside Pole	140.00 - 2.00	12	No Ice	0.00	0.60
						1/2" Ice	0.00	0.60
						1" Ice	0.00	0.60
FB-L98B-002-75000(3/8)	A	No	Inside Pole	140.00 - 2.00	2	No Ice	0.00	0.06
						1/2" Ice	0.00	0.06
						1" Ice	0.00	0.06
2" innerduct conduit	A	No	Inside Pole	140.00 - 2.00	1	No Ice	0.00	0.20
						1/2" Ice	0.00	0.20
						1" Ice	0.00	0.20
WR-VG122ST-BRDA(7/16)	A	No	Inside Pole	140.00 - 2.00	4	No Ice	0.00	0.14
						1/2" Ice	0.00	0.14
						1" Ice	0.00	0.14
2" innerduct conduit	A	No	Inside Pole	140.00 - 2.00	1	No Ice	0.00	0.20
						1/2" Ice	0.00	0.20
						1" Ice	0.00	0.20
***								
AVA7-50(1-5/8)	B	No	Inside Pole	128.00 - 9.00	12	No Ice	0.00	0.70
						1/2" Ice	0.00	0.70
						1" Ice	0.00	0.70
HB158-1-08U8-S8J18(1-5/8)	B	No	Inside Pole	128.00 - 9.00	2	No Ice	0.00	1.30
						1/2" Ice	0.00	1.30
						1" Ice	0.00	1.30
***								
LDF4-50A(1/2)	C	No	Inside Pole	74.00 - 8.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
***								

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	149.85-144.85	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.188	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.02
L2	144.85-139.85	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.188	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.02
L3	139.85-134.85	A	0.000	0.000	0.000	0.000	0.04
		B	0.000	0.000	0.188	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.02
L4	134.85-129.85	A	0.000	0.000	0.000	0.000	0.04
		B	0.000	0.000	0.188	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.02
L5	129.85-123.07	A	0.000	0.000	0.000	0.000	0.06
		B	0.000	0.000	0.254	0.000	0.06
		C	0.000	0.000	0.000	0.000	0.03
L6	123.07-121.64	A	0.000	0.000	0.000	0.000	0.01
		B	0.000	0.000	0.054	0.000	0.02
		C	0.000	0.000	0.000	0.000	0.01
L7	121.64-116.64	A	0.000	0.000	0.000	0.000	0.04
		B	0.000	0.000	0.188	0.000	0.06
		C	0.000	0.000	0.000	0.000	0.02
L8	116.64-111.64	A	0.000	0.000	0.000	0.000	0.04
		B	0.000	0.000	0.188	0.000	0.06
		C	0.000	0.000	0.000	0.000	0.02
L9	111.64-106.64	A	0.000	0.000	0.000	0.000	0.04
		B	0.000	0.000	0.188	0.000	0.06
		C	0.000	0.000	0.000	0.000	0.02
L10	106.64-101.64	A	0.000	0.000	0.000	0.000	0.04

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B	0.000	0.000	0.188	0.000	0.06
		C	0.000	0.000	0.000	0.000	0.02
L11	101.64-97.50	A	0.000	0.000	1.125	0.000	0.03
		B	0.000	0.000	0.155	0.000	0.05
		C	0.000	0.000	0.000	0.000	0.02
L12	97.50-97.25	A	0.000	0.000	0.188	0.000	0.00
		B	0.000	0.000	0.009	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L13	97.25-92.25	A	0.000	0.000	3.750	0.000	0.04
		B	0.000	0.000	0.188	0.000	0.06
		C	0.000	0.000	0.000	0.000	0.02
L14	92.25-87.25	A	0.000	0.000	3.750	0.000	0.04
		B	0.000	0.000	0.188	0.000	0.06
		C	0.000	0.000	0.000	0.000	0.02
L15	87.25-82.47	A	0.000	0.000	2.438	0.000	0.04
		B	0.000	0.000	0.179	0.000	0.05
		C	0.000	0.000	0.000	0.000	0.02
L16	82.47-81.47	A	0.000	0.000	0.000	0.000	0.01
		B	0.000	0.000	0.037	0.000	0.01
		C	0.000	0.000	0.000	0.000	0.00
L17	81.47-76.47	A	0.000	0.000	0.000	0.000	0.04
		B	0.000	0.000	0.188	0.000	0.06
		C	0.000	0.000	0.000	0.000	0.02
L18	76.47-71.47	A	0.000	0.000	0.000	0.000	0.04
		B	0.000	0.000	0.188	0.000	0.06
		C	0.000	0.000	0.000	0.000	0.02
L19	71.47-68.00	A	0.000	0.000	2.000	0.000	0.03
		B	0.000	0.000	2.130	0.000	0.04
		C	0.000	0.000	2.000	0.000	0.02
L20	68.00-67.75	A	0.000	0.000	0.250	0.000	0.00
		B	0.000	0.000	0.259	0.000	0.00
		C	0.000	0.000	0.250	0.000	0.00
L21	67.75-62.75	A	0.000	0.000	5.000	0.000	0.04
		B	0.000	0.000	5.188	0.000	0.06
		C	0.000	0.000	5.000	0.000	0.02
L22	62.75-57.75	A	0.000	0.000	5.000	0.000	0.04
		B	0.000	0.000	5.188	0.000	0.06
		C	0.000	0.000	5.000	0.000	0.02
L23	57.75-52.75	A	0.000	0.000	5.000	0.000	0.04
		B	0.000	0.000	5.188	0.000	0.06
		C	0.000	0.000	5.000	0.000	0.02
L24	52.75-42.90	A	0.000	0.000	7.750	0.000	0.08
		B	0.000	0.000	8.119	0.000	0.11
		C	0.000	0.000	7.750	0.000	0.05
L25	42.90-41.90	A	0.000	0.000	0.000	0.000	0.01
		B	0.000	0.000	0.037	0.000	0.01
		C	0.000	0.000	0.000	0.000	0.00
L26	41.90-36.90	A	0.000	0.000	0.000	0.000	0.04
		B	0.000	0.000	0.188	0.000	0.06
		C	0.000	0.000	0.000	0.000	0.02
L27	36.90-31.90	A	0.000	0.000	0.000	0.000	0.04
		B	0.000	0.000	0.188	0.000	0.06
		C	0.000	0.000	0.000	0.000	0.02
L28	31.90-26.90	A	0.000	0.000	0.000	0.000	0.04
		B	0.000	0.000	0.188	0.000	0.06
		C	0.000	0.000	0.000	0.000	0.02
L29	26.90-21.90	A	0.000	0.000	0.000	0.000	0.04
		B	0.000	0.000	0.188	0.000	0.06
		C	0.000	0.000	0.000	0.000	0.02
L30	21.90-16.90	A	0.000	0.000	0.000	0.000	0.04
		B	0.000	0.000	0.188	0.000	0.06
		C	0.000	0.000	0.000	0.000	0.02
L31	16.90-11.90	A	0.000	0.000	0.000	0.000	0.04
		B	0.000	0.000	0.188	0.000	0.06
		C	0.000	0.000	0.000	0.000	0.02
L32	11.90-6.90	A	0.000	0.000	0.000	0.000	0.04
		B	0.000	0.000	0.071	0.000	0.03
		C	0.000	0.000	0.000	0.000	0.02
L33	6.90-1.90	A	0.000	0.000	0.000	0.000	0.04

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00
L34	1.90-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	0.00

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	149.85-144.85	A	1.742	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	1.930	0.000	0.02
		C		0.000	0.000	0.000	0.000	0.02
L2	144.85-139.85	A	1.736	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	1.924	0.000	0.02
		C		0.000	0.000	0.000	0.000	0.02
L3	139.85-134.85	A	1.730	0.000	0.000	0.000	0.000	0.04
		B		0.000	0.000	1.917	0.000	0.02
		C		0.000	0.000	0.000	0.000	0.02
L4	134.85-129.85	A	1.723	0.000	0.000	0.000	0.000	0.04
		B		0.000	0.000	1.911	0.000	0.02
		C		0.000	0.000	0.000	0.000	0.02
L5	129.85-123.07	A	1.716	0.000	0.000	0.000	0.000	0.06
		B		0.000	0.000	2.583	0.000	0.09
		C		0.000	0.000	0.000	0.000	0.03
L6	123.07-121.64	A	1.710	0.000	0.000	0.000	0.000	0.01
		B		0.000	0.000	0.544	0.000	0.02
		C		0.000	0.000	0.000	0.000	0.01
L7	121.64-116.64	A	1.705	0.000	0.000	0.000	0.000	0.04
		B		0.000	0.000	1.893	0.000	0.08
		C		0.000	0.000	0.000	0.000	0.02
L8	116.64-111.64	A	1.698	0.000	0.000	0.000	0.000	0.04
		B		0.000	0.000	1.886	0.000	0.08
		C		0.000	0.000	0.000	0.000	0.02
L9	111.64-106.64	A	1.691	0.000	0.000	0.000	0.000	0.04
		B		0.000	0.000	1.878	0.000	0.08
		C		0.000	0.000	0.000	0.000	0.02
L10	106.64-101.64	A	1.683	0.000	0.000	0.000	0.000	0.04
		B		0.000	0.000	1.870	0.000	0.08
		C		0.000	0.000	0.000	0.000	0.02
L11	101.64-97.50	A	1.675	0.000	0.000	1.612	0.000	0.05
		B		0.000	0.000	1.542	0.000	0.06
		C		0.000	0.000	0.000	0.000	0.02
L12	97.50-97.25	A	1.671	0.000	0.000	0.269	0.000	0.00
		B		0.000	0.000	0.093	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L13	97.25-92.25	A	1.667	0.000	0.000	5.368	0.000	0.10
		B		0.000	0.000	1.854	0.000	0.08
		C		0.000	0.000	0.000	0.000	0.02
L14	92.25-87.25	A	1.658	0.000	0.000	5.360	0.000	0.10
		B		0.000	0.000	1.845	0.000	0.08
		C		0.000	0.000	0.000	0.000	0.02
L15	87.25-82.47	A	1.649	0.000	0.000	3.479	0.000	0.08
		B		0.000	0.000	1.754	0.000	0.07
		C		0.000	0.000	0.000	0.000	0.02
L16	82.47-81.47	A	1.643	0.000	0.000	0.000	0.000	0.01
		B		0.000	0.000	0.367	0.000	0.02
		C		0.000	0.000	0.000	0.000	0.00
L17	81.47-76.47	A	1.637	0.000	0.000	0.000	0.000	0.04
		B		0.000	0.000	1.824	0.000	0.08
		C		0.000	0.000	0.000	0.000	0.02
L18	76.47-71.47	A	1.626	0.000	0.000	0.000	0.000	0.04
		B		0.000	0.000	1.814	0.000	0.08
		C		0.000	0.000	0.000	0.000	0.02
L19	71.47-68.00	A	1.617	0.000	0.000	2.647	0.000	0.05

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B		0.000	0.000	3.900	0.000	0.08
		C		0.000	0.000	2.647	0.000	0.04
L20	68.00-67.75	A	1.612	0.000	0.000	0.331	0.000	0.01
		B		0.000	0.000	0.421	0.000	0.01
		C		0.000	0.000	0.331	0.000	0.00
L21	67.75-62.75	A	1.606	0.000	0.000	6.606	0.000	0.10
		B		0.000	0.000	8.399	0.000	0.14
		C		0.000	0.000	6.606	0.000	0.09
L22	62.75-57.75	A	1.593	0.000	0.000	6.593	0.000	0.10
		B		0.000	0.000	8.374	0.000	0.14
		C		0.000	0.000	6.593	0.000	0.09
L23	57.75-52.75	A	1.579	0.000	0.000	6.579	0.000	0.10
		B		0.000	0.000	8.346	0.000	0.14
		C		0.000	0.000	6.579	0.000	0.09
L24	52.75-42.90	A	1.557	0.000	0.000	10.163	0.000	0.17
		B		0.000	0.000	13.597	0.000	0.24
		C		0.000	0.000	10.163	0.000	0.14
L25	42.90-41.90	A	1.538	0.000	0.000	0.000	0.000	0.01
		B		0.000	0.000	0.349	0.000	0.01
		C		0.000	0.000	0.000	0.000	0.00
L26	41.90-36.90	A	1.527	0.000	0.000	0.000	0.000	0.04
		B		0.000	0.000	1.714	0.000	0.07
		C		0.000	0.000	0.000	0.000	0.02
L27	36.90-31.90	A	1.506	0.000	0.000	0.000	0.000	0.04
		B		0.000	0.000	1.694	0.000	0.07
		C		0.000	0.000	0.000	0.000	0.02
L28	31.90-26.90	A	1.483	0.000	0.000	0.000	0.000	0.04
		B		0.000	0.000	1.670	0.000	0.07
		C		0.000	0.000	0.000	0.000	0.02
L29	26.90-21.90	A	1.455	0.000	0.000	0.000	0.000	0.04
		B		0.000	0.000	1.643	0.000	0.07
		C		0.000	0.000	0.000	0.000	0.02
L30	21.90-16.90	A	1.422	0.000	0.000	0.000	0.000	0.04
		B		0.000	0.000	1.610	0.000	0.07
		C		0.000	0.000	0.000	0.000	0.02
L31	16.90-11.90	A	1.381	0.000	0.000	0.000	0.000	0.04
		B		0.000	0.000	1.568	0.000	0.07
		C		0.000	0.000	0.000	0.000	0.02
L32	11.90-6.90	A	1.323	0.000	0.000	0.000	0.000	0.04
		B		0.000	0.000	0.575	0.000	0.04
		C		0.000	0.000	0.000	0.000	0.02
L33	6.90-1.90	A	1.226	0.000	0.000	0.000	0.000	0.04
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	0.00
L34	1.90-0.00	A	1.052	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

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	149.85-144.85	0.0481	0.0271	0.3545	0.1997
L2	144.85-139.85	0.0481	0.0271	0.3599	0.2028
L3	139.85-134.85	0.0481	0.0271	0.3648	0.2056
L4	134.85-129.85	0.0481	0.0271	0.3691	0.2080
L5	129.85-123.07	0.0481	0.0271	0.3736	0.2105
L6	123.07-121.64	0.0481	0.0271	0.3758	0.2118
L7	121.64-116.64	0.0481	0.0271	0.3770	0.2124
L8	116.64-111.64	0.0481	0.0271	0.3798	0.2140
L9	111.64-106.64	0.0481	0.0271	0.3823	0.2154
L10	106.64-101.64	0.0481	0.0271	0.3844	0.2166
L11	101.64-97.50	-0.2801	-0.1623	-0.0248	-0.0191
L12	97.50-97.25	-0.7215	-0.4171	-0.5600	-0.3274

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L13	97.25-92.25	-0.7245	-0.4188	-0.5647	-0.3301
L14	92.25-87.25	-0.7300	-0.4220	-0.5732	-0.3350
L15	87.25-82.47	-0.5195	-0.3005	-0.3213	-0.1900
L16	82.47-81.47	0.0482	0.0271	0.3900	0.2198
L17	81.47-76.47	0.0482	0.0271	0.3894	0.2194
L18	76.47-71.47	0.0482	0.0271	0.3898	0.2196
L19	71.47-68.00	0.0311	0.0175	0.2418	0.1363
L20	68.00-67.75	0.0248	0.0140	0.1899	0.1070
L21	67.75-62.75	0.0250	0.0141	0.1913	0.1078
L22	62.75-57.75	0.0254	0.0143	0.1937	0.1092
L23	57.75-52.75	0.0257	0.0145	0.1960	0.1104
L24	52.75-42.90	0.0291	0.0164	0.2217	0.1249
L25	42.90-41.90	0.0482	0.0272	0.3876	0.2184
L26	41.90-36.90	0.0482	0.0272	0.3828	0.2157
L27	36.90-31.90	0.0482	0.0272	0.3802	0.2142
L28	31.90-26.90	0.0482	0.0272	0.3770	0.2124
L29	26.90-21.90	0.0482	0.0272	0.3728	0.2100
L30	21.90-16.90	0.0482	0.0272	0.3673	0.2070
L31	16.90-11.90	0.0482	0.0272	0.3599	0.2028
L32	11.90-6.90	0.0183	0.0103	0.1373	0.0774
L33	6.90-1.90	0.0000	0.0000	0.0000	0.0000
L34	1.90-0.00	0.0000	0.0000	0.0000	0.0000

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	1	Safety Line 3/8	144.85 - 149.85	1.0000	1.0000
L2	1	Safety Line 3/8	139.85 - 144.85	1.0000	1.0000
L3	1	Safety Line 3/8	134.85 - 139.85	1.0000	1.0000
L4	1	Safety Line 3/8	129.85 - 134.85	1.0000	1.0000
L5	1	Safety Line 3/8	123.07 - 129.85	1.0000	1.0000
L7	1	Safety Line 3/8	116.64 - 121.64	1.0000	1.0000
L8	1	Safety Line 3/8	111.64 - 116.64	1.0000	1.0000
L9	1	Safety Line 3/8	106.64 - 111.64	1.0000	1.0000
L10	1	Safety Line 3/8	101.64 - 106.64	1.0000	1.0000
L11	1	Safety Line 3/8	97.50 - 101.64	1.0000	1.0000
L11	24	CCI-SFP-045100	97.50 - 99.00	1.0000	1.0000
L12	1	Safety Line 3/8	97.25 - 97.50	1.0000	1.0000
L12	24	CCI-SFP-045100	97.25 - 97.50	1.0000	1.0000
L13	1	Safety Line 3/8	92.25 - 97.25	1.0000	1.0000
L13	24	CCI-SFP-045100	92.25 - 97.25	1.0000	1.0000
L14	1	Safety Line 3/8	87.25 - 92.25	1.0000	1.0000
L14	24	CCI-SFP-045100	87.25 - 92.25	1.0000	1.0000
L15	1	Safety Line 3/8	82.47 -	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L15	24	CCI-SFP-045100	87.25 84.00 -	1.0000	1.0000
L17	1	Safety Line 3/8	87.25 76.47 -	1.0000	1.0000
L18	1	Safety Line 3/8	81.47 71.47 -	1.0000	1.0000
L19	1	Safety Line 3/8	76.47 68.00 -	1.0000	1.0000
L19	21	CCI-SFP-060100	71.47 68.00 -	1.0000	1.0000
L19	22	CCI-SFP-060100	70.00 68.00 -	1.0000	1.0000
L19	23	CCI-SFP-060100	70.00 68.00 -	1.0000	1.0000
L20	1	Safety Line 3/8	70.00 67.75 -	1.0000	1.0000
L20	21	CCI-SFP-060100	68.00 67.75 -	1.0000	1.0000
L20	22	CCI-SFP-060100	68.00 67.75 -	1.0000	1.0000
L20	23	CCI-SFP-060100	68.00 67.75 -	1.0000	1.0000
L21	1	Safety Line 3/8	68.00 62.75 -	1.0000	1.0000
L21	21	CCI-SFP-060100	67.75 62.75 -	1.0000	1.0000
L21	22	CCI-SFP-060100	67.75 62.75 -	1.0000	1.0000
L21	23	CCI-SFP-060100	67.75 62.75 -	1.0000	1.0000
L22	1	Safety Line 3/8	67.75 57.75 -	1.0000	1.0000
L22	21	CCI-SFP-060100	62.75 57.75 -	1.0000	1.0000
L22	22	CCI-SFP-060100	62.75 57.75 -	1.0000	1.0000
L22	23	CCI-SFP-060100	62.75 57.75 -	1.0000	1.0000
L23	1	Safety Line 3/8	62.75 52.75 -	1.0000	1.0000
L23	21	CCI-SFP-060100	57.75 52.75 -	1.0000	1.0000
L23	22	CCI-SFP-060100	57.75 52.75 -	1.0000	1.0000
L23	23	CCI-SFP-060100	57.75 52.75 -	1.0000	1.0000
L24	1	Safety Line 3/8	57.75 42.90 -	1.0000	1.0000
L24	21	CCI-SFP-060100	52.75 45.00 -	1.0000	1.0000
L24	22	CCI-SFP-060100	52.75 45.00 -	1.0000	1.0000
L24	23	CCI-SFP-060100	52.75 45.00 -	1.0000	1.0000
L26	1	Safety Line 3/8	52.75 36.90 -	1.0000	1.0000
L27	1	Safety Line 3/8	41.90 31.90 -	1.0000	1.0000
L28	1	Safety Line 3/8	36.90 26.90 -	1.0000	1.0000
L29	1	Safety Line 3/8	31.90 21.90 -	1.0000	1.0000
L30	1	Safety Line 3/8	26.90 16.90 -	1.0000	1.0000
L31	1	Safety Line 3/8	21.90 11.90 -	1.0000	1.0000
L32	1	Safety Line 3/8	16.90 10.00 -	1.0000	1.0000
			11.90		

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Platform Mount [10' LP 712-1]	C	None		0.0000	150.00	No Ice 1/2" Ice 1" Ice	20.43 24.94 29.45	20.43 24.94 29.45	1.11 1.37 1.63
Transition Ladder	C	From Leg	2.00 0.00 -2.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	6.00 8.00 10.00	6.00 8.00 10.00	0.16 0.24 0.32
8' x 3" Mount Pipe	C	From Face	4.00 0.00 4.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	2.40 3.19 3.67	2.40 3.19 3.67	0.04 0.06 0.08
ETCR-654L12H6 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	-60.0000	150.00	No Ice 1/2" Ice 1" Ice	13.27 13.88 14.45	6.54 7.71 8.61	0.10 0.19 0.29
ETCR-654L12H6 w/ Mount Pipe	B	From Leg	4.00 -5.00 0.00	-60.0000	150.00	No Ice 1/2" Ice 1" Ice	13.27 13.88 14.45	6.54 7.71 8.61	0.10 0.19 0.29
ETCR-654L12H6 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	-60.0000	150.00	No Ice 1/2" Ice 1" Ice	13.27 13.88 14.45	6.54 7.71 8.61	0.10 0.19 0.29
TD-RRH8x20-25	A	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	4.05 4.30 4.56	1.53 1.71 1.90	0.07 0.10 0.13
TD-RRH8x20-25	B	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	4.05 4.30 4.56	1.53 1.71 1.90	0.07 0.10 0.13
TD-RRH8x20-25	C	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	4.05 4.30 4.56	1.53 1.71 1.90	0.07 0.10 0.13
(2) RRH2X50-800	A	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	1.70 1.86 2.03	1.28 1.43 1.58	0.05 0.07 0.09
(2) RRH2X50-800	B	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	1.70 1.86 2.03	1.28 1.43 1.58	0.05 0.07 0.09
(2) RRH2X50-800	C	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	1.70 1.86 2.03	1.28 1.43 1.58	0.05 0.07 0.09
PCS 1900MHz 4x45W-65MHz	A	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	2.32 2.53 2.74	2.24 2.44 2.65	0.06 0.08 0.11
PCS 1900MHz 4x45W-65MHz	B	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	2.32 2.53 2.74	2.24 2.44 2.65	0.06 0.08 0.11

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
PCS 1900MHz 4x45W-65MHz	C	From Leg	4.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	2.32 2.53 2.74	2.24 2.44 2.65	0.06 0.08 0.11
(2) 6' x 2" Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.02 0.03 0.05
(2) 6' x 2" Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.02 0.03 0.05
(2) 6' x 2" Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	1.43 1.92 2.29	1.43 1.92 2.29	0.02 0.03 0.05
***									
RRUS 11	A	From Face	1.00 0.00 0.00	25.0000	142.00	No Ice 1/2" Ice 1" Ice	2.78 2.99 3.21	1.19 1.33 1.49	0.05 0.07 0.10
RRUS 11	B	From Face	1.00 0.00 0.00	15.0000	142.00	No Ice 1/2" Ice 1" Ice	2.78 2.99 3.21	1.19 1.33 1.49	0.05 0.07 0.10
RRUS 11	C	From Face	1.00 0.00 0.00	25.0000	142.00	No Ice 1/2" Ice 1" Ice	2.78 2.99 3.21	1.19 1.33 1.49	0.05 0.07 0.10
Side Arm Mount [SO 102-3]	C	None		0.0000	142.00	No Ice 1/2" Ice 1" Ice	3.00 3.48 3.96	3.00 3.48 3.96	0.08 0.11 0.14
***									
Platform Mount [LP 303-1]	C	None		0.0000	140.00	No Ice 1/2" Ice 1" Ice	14.66 18.87 23.08	14.66 18.87 23.08	1.25 1.48 1.71
7770.00 w/ Mount Pipe	A	From Leg	4.00 2.00 0.00	-25.0000	140.00	No Ice 1/2" Ice 1" Ice	5.75 6.18 6.61	4.25 5.01 5.71	0.06 0.10 0.16
7770.00 w/ Mount Pipe	A	From Leg	4.00 6.00 0.00	-25.0000	140.00	No Ice 1/2" Ice 1" Ice	5.75 6.18 6.61	4.25 5.01 5.71	0.06 0.10 0.16
7770.00 w/ Mount Pipe	B	From Leg	4.00 2.00 0.00	65.0000	140.00	No Ice 1/2" Ice 1" Ice	5.75 6.18 6.61	4.25 5.01 5.71	0.06 0.10 0.16
7770.00 w/ Mount Pipe	B	From Leg	4.00 6.00 0.00	65.0000	140.00	No Ice 1/2" Ice 1" Ice	5.75 6.18 6.61	4.25 5.01 5.71	0.06 0.10 0.16
7770.00 w/ Mount Pipe	C	From Leg	4.00 2.00 0.00	30.0000	140.00	No Ice 1/2" Ice 1" Ice	5.75 6.18 6.61	4.25 5.01 5.71	0.06 0.10 0.16
7770.00 w/ Mount Pipe	C	From Leg	4.00 6.00 0.00	30.0000	140.00	No Ice 1/2" Ice 1" Ice	5.75 6.18 6.61	4.25 5.01 5.71	0.06 0.10 0.16
HPA-65R-BUU-H8 w/ Mount Pipe	A	From Leg	4.00 -6.00 0.00	-35.0000	140.00	No Ice 1/2" Ice	13.21 13.90 14.59	9.58 11.05 12.50	0.10 0.20 0.30

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice			
HPA-65R-BUU-H8 w/ Mount Pipe	B	From Leg	4.00 -6.00 0.00	-45.0000	140.00	No Ice 1/2" Ice 1" Ice	13.21 13.90 14.59	9.58 11.05 12.50	0.10 0.20 0.30
HPA-65R-BUU-H8 w/ Mount Pipe	C	From Leg	4.00 -6.00 0.00	-35.0000	140.00	No Ice 1/2" Ice 1" Ice	13.21 13.90 14.59	9.58 11.05 12.50	0.10 0.20 0.30
80010966 w/ Mount Pipe	A	From Leg	4.00 -2.00 0.00	-35.0000	140.00	No Ice 1/2" Ice 1" Ice	17.60 18.33 19.07	9.64 11.15 12.70	0.15 0.26 0.39
80010966 w/ Mount Pipe	B	From Leg	4.00 -2.00 0.00	-45.0000	140.00	No Ice 1/2" Ice 1" Ice	17.60 18.33 19.07	9.64 11.15 12.70	0.15 0.26 0.39
80010966 w/ Mount Pipe	C	From Leg	4.00 -2.00 0.00	-35.0000	140.00	No Ice 1/2" Ice 1" Ice	17.60 18.33 19.07	9.64 11.15 12.70	0.15 0.26 0.39
RRUS 32 B2	A	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	2.73 2.95 3.18	1.67 1.86 2.05	0.05 0.07 0.10
RRUS 32 B2	B	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	2.73 2.95 3.18	1.67 1.86 2.05	0.05 0.07 0.10
RRUS 32 B2	C	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	2.73 2.95 3.18	1.67 1.86 2.05	0.05 0.07 0.10
RRUS 4478 B14	A	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	1.84 2.01 2.19	1.06 1.20 1.34	0.06 0.08 0.09
RRUS 4478 B14	B	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	1.84 2.01 2.19	1.06 1.20 1.34	0.06 0.08 0.09
RRUS 4478 B14	C	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	1.84 2.01 2.19	1.06 1.20 1.34	0.06 0.08 0.09
(2) LGP21401	A	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	1.10 1.24 1.38	0.35 0.44 0.54	0.01 0.02 0.03
(2) LGP21401	B	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	1.10 1.24 1.38	0.35 0.44 0.54	0.01 0.02 0.03
(2) LGP21401	C	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	1.10 1.24 1.38	0.35 0.44 0.54	0.01 0.02 0.03
(2) LGP21901	A	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	0.23 0.29 0.36	0.16 0.21 0.28	0.01 0.01 0.01
(2) LGP21901	B	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	0.23 0.29 0.36	0.16 0.21 0.28	0.01 0.01 0.01

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(2) LGP21901	C	From Leg	4.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	0.23 0.29 0.36	0.16 0.21 0.28	0.01 0.01 0.01
DC6-48-60-18-8F	A	From Leg	1.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	0.92 1.46 1.64	0.92 1.46 1.64	0.02 0.04 0.06
DC6-48-60-18-8F	B	From Leg	1.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	0.92 1.46 1.64	0.92 1.46 1.64	0.02 0.04 0.06
***									
LPA-80063/6CF w/ Mount Pipe	A	From Face	4.00 -6.00 1.75	-60.0000	129.25	No Ice 1/2" Ice 1" Ice	9.83 10.40 10.93	10.22 11.38 12.27	0.05 0.14 0.25
LPA-80063/6CF w/ Mount Pipe	A	From Face	4.00 6.00 1.75	0.0000	129.25	No Ice 1/2" Ice 1" Ice	9.83 10.40 10.93	10.22 11.38 12.27	0.05 0.14 0.25
(2) LPA-80063/6CF w/ Mount Pipe	B	From Face	4.00 0.00 1.75	-20.0000	129.25	No Ice 1/2" Ice 1" Ice	9.83 10.40 10.93	10.22 11.38 12.27	0.05 0.14 0.25
(2) LPA-80063/6CF w/ Mount Pipe	C	From Face	4.00 0.00 1.75	-10.0000	129.25	No Ice 1/2" Ice 1" Ice	9.83 10.40 10.93	10.22 11.38 12.27	0.05 0.14 0.25
JAHH-65B-R3B w/ Mount Pipe	A	From Face	4.00 -2.00 1.75	40.0000	129.25	No Ice 1/2" Ice 1" Ice	9.35 9.92 10.46	7.65 8.83 9.73	0.09 0.16 0.25
JAHH-65B-R3B w/ Mount Pipe	A	From Face	4.00 2.00 1.75	40.0000	129.25	No Ice 1/2" Ice 1" Ice	9.35 9.92 10.46	7.65 8.83 9.73	0.09 0.16 0.25
JAHH-65B-R3B w/ Mount Pipe	B	From Face	4.00 -2.00 1.75	20.0000	129.25	No Ice 1/2" Ice 1" Ice	9.35 9.92 10.46	7.65 8.83 9.73	0.09 0.16 0.25
JAHH-65B-R3B w/ Mount Pipe	B	From Face	4.00 2.00 1.75	20.0000	129.25	No Ice 1/2" Ice 1" Ice	9.35 9.92 10.46	7.65 8.83 9.73	0.09 0.16 0.25
JAHH-65B-R3B w/ Mount Pipe	C	From Face	4.00 -2.00 1.75	20.0000	129.25	No Ice 1/2" Ice 1" Ice	9.35 9.92 10.46	7.65 8.83 9.73	0.09 0.16 0.25
JAHH-65B-R3B w/ Mount Pipe	C	From Face	4.00 2.00 1.75	20.0000	129.25	No Ice 1/2" Ice 1" Ice	9.35 9.92 10.46	7.65 8.83 9.73	0.09 0.16 0.25
RRH2x60-700	A	From Face	4.00 0.00 4.75	0.0000	129.25	No Ice 1/2" Ice 1" Ice	3.50 3.76 4.03	1.82 2.05 2.29	0.06 0.08 0.11
RRH2x60-700	B	From Face	4.00 0.00 4.75	0.0000	129.25	No Ice 1/2" Ice 1" Ice	3.50 3.76 4.03	1.82 2.05 2.29	0.06 0.08 0.11
RRH2x60-700	C	From Face	4.00 0.00 4.75	0.0000	129.25	No Ice 1/2" Ice 1" Ice	3.50 3.76 4.03	1.82 2.05 2.29	0.06 0.08 0.11

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
B66A RRH4X45-4R	A	From Face	4.00 0.00 4.75	0.0000	129.25	No Ice 1/2" Ice 1" Ice	2.54 2.75 2.97	1.61 1.79 1.98	0.06 0.08 0.10
(2) B66A RRH4X45-4R	B	From Face	4.00 0.00 4.75	0.0000	129.25	No Ice 1/2" Ice 1" Ice	2.54 2.75 2.97	1.61 1.79 1.98	0.06 0.08 0.10
B5 4T4R RRH4X40 AIRSCALE	A	From Face	4.00 0.00 4.75	0.0000	129.25	No Ice 1/2" Ice 1" Ice	1.32 1.47 1.62	0.75 0.86 0.98	0.05 0.06 0.07
(2) B5 4T4R RRH4X40 AIRSCALE	C	From Face	4.00 0.00 4.75	0.0000	129.25	No Ice 1/2" Ice 1" Ice	1.32 1.47 1.62	0.75 0.86 0.98	0.05 0.06 0.07
RVZDC-6627-PF-48	A	From Face	4.00 0.00 4.75	0.0000	129.25	No Ice 1/2" Ice 1" Ice	3.79 4.04 4.30	2.51 2.73 2.95	0.03 0.06 0.10
VSK-M Monopole V-Stabilizer Kit [SM 502-3] ***	C	None		0.0000	129.25	No Ice 1/2" Ice 1" Ice	33.02 47.36 61.70	33.02 47.36 61.70	1.67 2.22 2.77
KS24019-L112A	C	From Face	3.00 0.00 0.00	-15.0000	74.00	No Ice 1/2" Ice 1" Ice	0.14 0.20 0.26	0.14 0.20 0.26	0.01 0.01 0.01
Side Arm Mount [SO 701-1] ****	C	From Face	0.00 0.00 0.00	0.0000	74.00	No Ice 1/2" Ice 1" Ice	0.85 1.14 1.43	1.67 2.34 3.01	0.07 0.08 0.09

Load Combinations

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

Comb. No.	Description
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	149.854 - 144.854	Pole	Max Tension	26	0.00	-0.00	-0.00
			Max. Compression	26	-7.19	-0.10	0.80
			Max. Mx	20	-2.43	26.70	-0.11
			Max. My	2	-2.43	0.09	26.58
			Max. Vy	20	-5.17	26.70	-0.11
			Max. Vx	2	-5.18	0.09	26.58
			Max. Torque	18			-1.05
L2	144.854 - 139.854	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-17.14	-0.27	0.89
			Max. Mx	20	-5.41	55.14	-0.11
			Max. My	2	-5.38	0.19	55.13
			Max. Vy	20	-12.10	55.14	-0.11
			Max. Vx	2	-12.24	0.19	55.13
			Max. Torque	11			1.18
L3	139.854 - 134.854	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-17.74	-0.29	0.90
			Max. Mx	20	-5.73	116.43	-0.36
			Max. My	2	-5.70	-0.09	117.15
			Max. Vy	20	-12.42	116.43	-0.36
			Max. Vx	2	-12.57	-0.09	117.15
			Max. Torque	11			1.18
L4	134.854 - 129.854	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-18.36	-0.31	0.91
			Max. Mx	20	-6.09	179.35	-0.62
			Max. My	2	-6.06	-0.37	180.80
			Max. Vy	20	-12.75	179.35	-0.62
			Max. Vx	2	-12.90	-0.37	180.80

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	11			1.18
L5	129.854 - 123.068	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-29.14	0.21	1.65
			Max. Mx	20	-9.07	251.76	-0.61
			Max. My	2	-9.03	-0.46	253.69
			Max. Vy	20	-20.35	251.76	-0.61
			Max. Vx	2	-20.52	-0.46	253.69
			Max. Torque	9			1.37
L6	123.068 - 121.638	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-30.36	0.19	1.67
			Max. Mx	20	-9.82	354.49	-0.85
			Max. My	2	-9.78	-0.73	357.23
			Max. Vy	20	-20.74	354.49	-0.85
			Max. Vx	2	-20.90	-0.73	357.23
			Max. Torque	9			1.37
L7	121.638 - 116.638	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-31.21	0.17	1.68
			Max. Mx	20	-10.46	458.99	-1.10
			Max. My	2	-10.42	-0.99	462.55
			Max. Vy	20	-21.08	458.99	-1.10
			Max. Vx	2	-21.24	-0.99	462.55
			Max. Torque	9			1.37
L8	116.638 - 111.638	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-32.09	0.15	1.69
			Max. Mx	20	-11.13	565.18	-1.35
			Max. My	2	-11.10	-1.26	569.57
			Max. Vy	20	-21.42	565.18	-1.35
			Max. Vx	2	-21.58	-1.26	569.57
			Max. Torque	9			1.37
L9	111.638 - 106.638	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-33.00	0.12	1.70
			Max. Mx	20	-11.84	673.07	-1.61
			Max. My	2	-11.80	-1.52	678.28
			Max. Vy	20	-21.76	673.07	-1.61
			Max. Vx	2	-21.92	-1.52	678.28
			Max. Torque	9			1.37
L10	106.638 - 101.638	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-33.95	0.10	1.71
			Max. Mx	20	-12.57	782.66	-1.86
			Max. My	2	-12.54	-1.79	788.69
			Max. Vy	20	-22.10	782.66	-1.86
			Max. Vx	2	-22.26	-1.79	788.69
			Max. Torque	9			1.36
L11	101.638 - 97.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-34.77	0.10	1.71
			Max. Mx	20	-13.20	874.64	-2.07
			Max. My	2	-13.17	-2.01	881.35
			Max. Vy	20	-22.38	874.64	-2.07
			Max. Vx	2	-22.54	-2.01	881.35
			Max. Torque	9			1.36
L12	97.5 - 97.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-34.82	0.10	1.71
			Max. Mx	20	-13.25	880.24	-2.09
			Max. My	2	-13.22	-2.02	886.98
			Max. Vy	20	-22.39	880.24	-2.09
			Max. Vx	2	-22.55	-2.02	886.98
			Max. Torque	9			1.36
L13	97.25 - 92.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-35.88	0.14	1.73
			Max. Mx	20	-14.02	993.02	-2.34
			Max. My	2	-13.99	-2.29	1000.59

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	20	-22.74	993.02	-2.34
			Max. Vx	2	-22.90	-2.29	1000.59
			Max. Torque	9			1.36
L14	92.25 - 87.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.97	0.18	1.76
			Max. Mx	20	-14.83	1107.50	-2.60
			Max. My	2	-14.81	-2.55	1115.88
			Max. Vy	20	-23.08	1107.50	-2.60
			Max. Vx	2	-23.24	-2.55	1115.88
			Max. Torque	9			1.36
L15	87.25 - 82.474	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-36.97	0.18	1.76
			Max. Mx	20	-14.85	1107.92	-2.60
			Max. My	2	-14.83	-2.55	1116.31
			Max. Vy	8	23.07	-1107.48	2.95
			Max. Vx	14	23.25	3.00	-1115.86
			Max. Torque	9			1.36
L16	82.474 - 81.474	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-39.23	0.20	1.76
			Max. Mx	20	-16.35	1242.24	-2.90
			Max. My	2	-16.33	-2.85	1251.57
			Max. Vy	20	-23.58	1242.24	-2.90
			Max. Vx	2	-23.75	-2.85	1251.57
			Max. Torque	9			1.36
L17	81.474 - 76.474	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-40.45	0.17	1.75
			Max. Mx	20	-17.31	1360.99	-3.16
			Max. My	2	-17.29	-3.12	1371.15
			Max. Vy	20	-23.94	1360.99	-3.16
			Max. Vx	2	-24.11	-3.12	1371.15
			Max. Torque	9			1.36
L18	76.474 - 71.474	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-41.84	0.14	1.48
			Max. Mx	20	-18.38	1481.76	-3.55
			Max. My	2	-18.36	-3.38	1492.50
			Max. Vy	20	-24.39	1481.76	-3.55
			Max. Vx	2	-24.51	-3.38	1492.50
			Max. Torque	9			1.36
L19	71.474 - 68	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.81	0.12	1.47
			Max. Mx	20	-19.07	1566.86	-3.73
			Max. My	2	-19.06	-3.56	1578.04
			Max. Vy	20	-24.63	1566.86	-3.73
			Max. Vx	2	-24.76	-3.56	1578.04
			Max. Torque	9			1.23
L20	68 - 67.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-42.90	0.12	1.47
			Max. Mx	20	-19.16	1573.02	-3.74
			Max. My	2	-19.14	-3.57	1584.23
			Max. Vy	20	-24.64	1573.02	-3.74
			Max. Vx	14	24.77	4.01	-1584.07
			Max. Torque	9			1.23
L21	67.75 - 62.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-44.76	0.09	1.45
			Max. Mx	20	-20.49	1697.25	-4.00
			Max. My	2	-20.48	-3.83	1709.11
			Max. Vy	20	-25.06	1697.25	-4.00
			Max. Vx	2	-25.19	-3.83	1709.11
			Max. Torque	9			1.23
L22	62.75 - 57.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-46.66	0.06	1.43
			Max. Mx	20	-21.86	1823.55	-4.26

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	2	-21.85	-4.09	1836.04
			Max. Vy	20	-25.47	1823.55	-4.26
			Max. Vx	2	-25.60	-4.09	1836.04
			Max. Torque	9			1.23
L23	57.75 - 52.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.58	0.03	1.42
			Max. Mx	20	-23.26	1951.88	-4.51
			Max. My	2	-23.25	-4.36	1965.01
			Max. Vy	20	-25.88	1951.88	-4.51
			Max. Vx	2	-26.00	-4.36	1965.01
			Max. Torque	9			1.23
L24	52.75 - 42.9036	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-50.09	0.01	1.40
			Max. Mx	20	-24.38	2054.61	-4.72
			Max. My	2	-24.37	-4.56	2068.24
			Max. Vy	20	-26.19	2054.61	-4.72
			Max. Vx	2	-26.32	-4.56	2068.24
			Max. Torque	9			1.22
L25	42.9036 - 41.9036	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-54.40	-0.03	1.38
			Max. Mx	20	-27.49	2237.43	-5.07
			Max. My	2	-27.48	-4.92	2251.94
			Max. Vy	20	-26.82	2237.43	-5.07
			Max. Vx	2	-26.95	-4.92	2251.94
			Max. Torque	9			1.22
L26	41.9036 - 36.9036	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-56.04	-0.06	1.36
			Max. Mx	20	-28.79	2372.28	-5.33
			Max. My	2	-28.79	-5.18	2387.43
			Max. Vy	20	-27.15	2372.28	-5.33
			Max. Vx	2	-27.28	-5.18	2387.43
			Max. Torque	9			1.22
L27	36.9036 - 31.9036	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-57.70	-0.09	1.35
			Max. Mx	20	-30.13	2508.77	-5.59
			Max. My	2	-30.12	-5.44	2524.55
			Max. Vy	20	-27.47	2508.77	-5.59
			Max. Vx	2	-27.60	-5.44	2524.55
			Max. Torque	9			1.22
L28	31.9036 - 26.9036	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-59.40	-0.12	1.33
			Max. Mx	20	-31.49	2646.83	-5.85
			Max. My	2	-31.49	-5.70	2663.24
			Max. Vy	20	-27.78	2646.83	-5.85
			Max. Vx	2	-27.91	-5.70	2663.24
			Max. Torque	9			1.22
L29	26.9036 - 21.9036	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-61.14	-0.15	1.31
			Max. Mx	20	-32.89	2786.43	-6.10
			Max. My	2	-32.88	-5.95	2803.47
			Max. Vy	20	-28.09	2786.43	-6.10
			Max. Vx	2	-28.22	-5.95	2803.47
			Max. Torque	9			1.22
L30	21.9036 - 16.9036	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-62.90	-0.18	1.30
			Max. Mx	20	-34.31	2927.60	-6.36
			Max. My	2	-34.31	-6.21	2945.26
			Max. Vy	20	-28.41	2927.60	-6.36
			Max. Vx	2	-28.53	-6.21	2945.26
			Max. Torque	9			1.22
L31	16.9036 -	Pole	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
	11.9036						
			Max. Compression	26	-64.68	-0.21	1.28
			Max. Mx	20	-35.77	3070.35	-6.61
			Max. My	2	-35.76	-6.46	3088.63
			Max. Vy	20	-28.73	3070.35	-6.61
			Max. Vx	2	-28.85	-6.46	3088.63
			Max. Torque	9			1.22
L32	11.9036 - 6.90365	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-66.45	-0.22	1.27
			Max. Mx	20	-37.21	3214.71	-6.86
			Max. My	2	-37.21	-6.71	3233.60
			Max. Vy	20	-29.05	3214.71	-6.86
			Max. Vx	2	-29.17	-6.71	3233.60
			Max. Torque	9			1.22
L33	6.90365 - 1.90365	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-68.15	-0.22	1.27
			Max. Mx	20	-38.63	3360.69	-7.11
			Max. My	2	-38.63	-6.96	3380.19
			Max. Vy	20	-29.37	3360.69	-7.11
			Max. Vx	2	-29.50	-6.96	3380.19
			Max. Torque	9			1.22
L34	1.90365 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-68.77	-0.22	1.27
			Max. Mx	20	-39.15	3416.70	-7.21
			Max. My	2	-39.15	-7.05	3436.43
			Max. Vy	20	-29.51	3416.70	-7.21
			Max. Vx	2	-29.63	-7.05	3436.43
			Max. Torque	9			1.22

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	30	68.77	-7.22	-0.00
	Max. H_x	21	29.38	29.48	-0.05
	Max. H_z	3	29.38	-0.05	29.61
	Max. M_x	2	3436.43	-0.05	29.61
	Max. M_z	8	3416.31	-29.48	0.05
	Max. Torsion	9	1.22	-29.48	0.05
	Min. Vert	23	29.38	25.51	14.76
	Min. H_x	9	29.38	-29.48	0.05
	Min. H_z	14	39.17	0.05	-29.61
	Min. M_x	14	-3436.29	0.05	-29.61
	Min. M_z	20	-3416.70	29.48	-0.05
	Min. Torsion	21	-1.21	29.48	-0.05

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	32.64	0.00	0.00	-0.05	0.15	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	39.17	0.05	-29.61	-3436.43	-7.05	0.19
0.9 Dead+1.6 Wind 0 deg - No Ice	29.38	0.05	-29.61	-3396.20	-7.02	0.20
1.2 Dead+1.6 Wind 30 deg - No Ice	39.17	14.79	-25.66	-2979.66	-1714.27	-0.45

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
0.9 Dead+1.6 Wind 30 deg - No Ice	29.38	14.79	-25.66	-2944.78	-1694.28	-0.45
1.2 Dead+1.6 Wind 60 deg - No Ice	39.17	25.56	-14.85	-1724.55	-2962.16	-0.97
0.9 Dead+1.6 Wind 60 deg - No Ice	29.38	25.56	-14.85	-1704.35	-2927.57	-0.97
1.2 Dead+1.6 Wind 90 deg - No Ice	39.17	29.48	-0.05	-7.30	-3416.31	-1.22
0.9 Dead+1.6 Wind 90 deg - No Ice	29.38	29.48	-0.05	-7.19	-3376.42	-1.22
1.2 Dead+1.6 Wind 120 deg - No Ice	39.17	25.51	14.76	1711.92	-2954.96	-1.14
0.9 Dead+1.6 Wind 120 deg - No Ice	29.38	25.51	14.76	1691.91	-2920.46	-1.15
1.2 Dead+1.6 Wind 150 deg - No Ice	39.17	14.70	25.61	2972.35	-1701.73	-0.76
0.9 Dead+1.6 Wind 150 deg - No Ice	29.38	14.70	25.61	2937.59	-1681.90	-0.77
1.2 Dead+1.6 Wind 180 deg - No Ice	39.17	-0.05	29.61	3436.29	7.45	-0.18
0.9 Dead+1.6 Wind 180 deg - No Ice	29.38	-0.05	29.61	3396.11	7.31	-0.19
1.2 Dead+1.6 Wind 210 deg - No Ice	39.17	-14.79	25.66	2979.53	1714.65	0.44
0.9 Dead+1.6 Wind 210 deg - No Ice	29.38	-14.79	25.66	2944.68	1694.55	0.44
1.2 Dead+1.6 Wind 240 deg - No Ice	39.17	-25.56	14.85	1724.44	2962.53	0.95
0.9 Dead+1.6 Wind 240 deg - No Ice	29.38	-25.56	14.85	1704.27	2927.84	0.95
1.2 Dead+1.6 Wind 270 deg - No Ice	39.17	-29.48	0.05	7.21	3416.70	1.21
0.9 Dead+1.6 Wind 270 deg - No Ice	29.38	-29.48	0.05	7.13	3376.70	1.21
1.2 Dead+1.6 Wind 300 deg - No Ice	39.17	-25.51	-14.76	-1712.02	2955.36	1.15
0.9 Dead+1.6 Wind 300 deg - No Ice	29.38	-25.51	-14.76	-1691.98	2920.76	1.15
1.2 Dead+1.6 Wind 330 deg - No Ice	39.17	-14.70	-25.61	-2972.48	1702.15	0.78
0.9 Dead+1.6 Wind 330 deg - No Ice	29.38	-14.70	-25.61	-2937.68	1682.20	0.78
1.2 Dead+1.0 Ice+1.0 Temp	68.77	0.00	-0.00	-1.27	-0.22	0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	68.77	-0.00	-7.20	-854.84	0.03	-0.11
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	68.77	3.61	-6.23	-740.38	-427.84	-0.14
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	68.77	6.25	-3.60	-427.90	-741.13	-0.14
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	68.77	7.22	0.00	-1.15	-855.90	-0.09
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	68.77	6.26	3.60	425.53	-741.39	-0.02
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	68.77	3.61	6.24	737.81	-428.28	0.05
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	68.77	0.00	7.20	852.02	-0.48	0.11
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	68.77	-3.61	6.23	737.56	427.38	0.14
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	68.77	-6.25	3.60	425.09	740.67	0.14
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	68.77	-7.22	-0.00	-1.67	855.44	0.09
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	68.77	-6.26	-3.60	-428.35	740.93	0.02
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	68.77	-3.61	-6.24	-740.63	427.83	-0.05
Dead+Wind 0 deg - Service	32.64	0.01	-5.41	-624.32	-1.16	0.04
Dead+Wind 30 deg - Service	32.64	2.70	-4.69	-541.34	-311.30	-0.08

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 60 deg - Service	32.64	4.67	-2.71	-313.33	-537.98	-0.18
Dead+Wind 90 deg - Service	32.64	5.38	-0.01	-1.38	-620.47	-0.23
Dead+Wind 120 deg - Service	32.64	4.66	2.70	310.93	-536.66	-0.22
Dead+Wind 150 deg - Service	32.64	2.68	4.68	539.91	-309.01	-0.14
Dead+Wind 180 deg - Service	32.64	-0.01	5.41	624.20	1.48	-0.04
Dead+Wind 210 deg - Service	32.64	-2.70	4.69	541.23	311.62	0.08
Dead+Wind 240 deg - Service	32.64	-4.67	2.71	313.21	538.30	0.18
Dead+Wind 270 deg - Service	32.64	-5.38	0.01	1.26	620.79	0.23
Dead+Wind 300 deg - Service	32.64	-4.66	-2.70	-311.05	536.99	0.22
Dead+Wind 330 deg - Service	32.64	-2.68	-4.68	-540.03	309.34	0.15

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-32.64	0.00	0.00	32.64	0.00	0.000%
2	0.05	-39.17	-29.61	-0.05	39.17	29.61	0.000%
3	0.05	-29.38	-29.61	-0.05	29.38	29.61	0.000%
4	14.79	-39.17	-25.66	-14.79	39.17	25.66	0.000%
5	14.79	-29.38	-25.66	-14.79	29.38	25.66	0.000%
6	25.56	-39.17	-14.85	-25.56	39.17	14.85	0.000%
7	25.56	-29.38	-14.85	-25.56	29.38	14.85	0.000%
8	29.48	-39.17	-0.05	-29.48	39.17	0.05	0.000%
9	29.48	-29.38	-0.05	-29.48	29.38	0.05	0.000%
10	25.51	-39.17	14.76	-25.51	39.17	-14.76	0.000%
11	25.51	-29.38	14.76	-25.51	29.38	-14.76	0.000%
12	14.70	-39.17	25.61	-14.70	39.17	-25.61	0.000%
13	14.70	-29.38	25.61	-14.70	29.38	-25.61	0.000%
14	-0.05	-39.17	29.61	0.05	39.17	-29.61	0.000%
15	-0.05	-29.38	29.61	0.05	29.38	-29.61	0.000%
16	-14.79	-39.17	25.66	14.79	39.17	-25.66	0.000%
17	-14.79	-29.38	25.66	14.79	29.38	-25.66	0.000%
18	-25.56	-39.17	14.85	25.56	39.17	-14.85	0.000%
19	-25.56	-29.38	14.85	25.56	29.38	-14.85	0.000%
20	-29.48	-39.17	0.05	29.48	39.17	-0.05	0.000%
21	-29.48	-29.38	0.05	29.48	29.38	-0.05	0.000%
22	-25.51	-39.17	-14.76	25.51	39.17	14.76	0.000%
23	-25.51	-29.38	-14.76	25.51	29.38	14.76	0.000%
24	-14.70	-39.17	-25.61	14.70	39.17	25.61	0.000%
25	-14.70	-29.38	-25.61	14.70	29.38	25.61	0.000%
26	0.00	-68.77	0.00	0.00	68.77	0.00	0.000%
27	-0.00	-68.77	-7.20	0.00	68.77	7.20	0.000%
28	3.61	-68.77	-6.23	-3.61	68.77	6.23	0.000%
29	6.25	-68.77	-3.60	-6.25	68.77	3.60	0.000%
30	7.22	-68.77	0.00	-7.22	68.77	-0.00	0.000%
31	6.26	-68.77	3.60	-6.26	68.77	-3.60	0.000%
32	3.61	-68.77	6.24	-3.61	68.77	-6.24	0.000%
33	0.00	-68.77	7.20	-0.00	68.77	-7.20	0.000%
34	-3.61	-68.77	6.23	3.61	68.77	-6.23	0.000%
35	-6.25	-68.77	3.60	6.25	68.77	-3.60	0.000%
36	-7.22	-68.77	-0.00	7.22	68.77	0.00	0.000%
37	-6.26	-68.77	-3.60	6.26	68.77	3.60	0.000%
38	-3.61	-68.77	-6.24	3.61	68.77	6.24	0.000%
39	0.01	-32.64	-5.41	-0.01	32.64	5.41	0.000%
40	2.70	-32.64	-4.69	-2.70	32.64	4.69	0.000%
41	4.67	-32.64	-2.71	-4.67	32.64	2.71	0.000%
42	5.38	-32.64	-0.01	-5.38	32.64	0.01	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
43	4.66	-32.64	2.70	-4.66	32.64	-2.70	0.000%
44	2.68	-32.64	4.68	-2.68	32.64	-4.68	0.000%
45	-0.01	-32.64	5.41	0.01	32.64	-5.41	0.000%
46	-2.70	-32.64	4.69	2.70	32.64	-4.69	0.000%
47	-4.67	-32.64	2.71	4.67	32.64	-2.71	0.000%
48	-5.38	-32.64	0.01	5.38	32.64	-0.01	0.000%
49	-4.66	-32.64	-2.70	4.66	32.64	2.70	0.000%
50	-2.68	-32.64	-4.68	2.68	32.64	4.68	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	7	0.00000001	0.00006325
3	Yes	6	0.00000001	0.00031385
4	Yes	8	0.00000001	0.00019643
5	Yes	7	0.00000001	0.00078043
6	Yes	8	0.00000001	0.00020150
7	Yes	7	0.00000001	0.00079966
8	Yes	7	0.00000001	0.00016325
9	Yes	6	0.00000001	0.00093099
10	Yes	8	0.00000001	0.00019421
11	Yes	7	0.00000001	0.00076216
12	Yes	8	0.00000001	0.00020249
13	Yes	7	0.00000001	0.00079749
14	Yes	6	0.00000001	0.00078134
15	Yes	6	0.00000001	0.00016950
16	Yes	8	0.00000001	0.00020352
17	Yes	7	0.00000001	0.00078981
18	Yes	8	0.00000001	0.00019587
19	Yes	7	0.00000001	0.00077020
20	Yes	7	0.00000001	0.00011504
21	Yes	6	0.00000001	0.00062610
22	Yes	8	0.00000001	0.00020143
23	Yes	7	0.00000001	0.00080730
24	Yes	8	0.00000001	0.00019640
25	Yes	7	0.00000001	0.00076839
26	Yes	6	0.00000001	0.00022752
27	Yes	9	0.00000001	0.00030508
28	Yes	9	0.00000001	0.00042305
29	Yes	9	0.00000001	0.00042386
30	Yes	9	0.00000001	0.00030443
31	Yes	9	0.00000001	0.00042014
32	Yes	9	0.00000001	0.00041883
33	Yes	9	0.00000001	0.00030211
34	Yes	9	0.00000001	0.00041972
35	Yes	9	0.00000001	0.00041920
36	Yes	9	0.00000001	0.00030604
37	Yes	9	0.00000001	0.00042483
38	Yes	9	0.00000001	0.00042262
39	Yes	6	0.00000001	0.00017699
40	Yes	6	0.00000001	0.00095494
41	Yes	7	0.00000001	0.00005365
42	Yes	6	0.00000001	0.00020972
43	Yes	6	0.00000001	0.00091681
44	Yes	6	0.00000001	0.00099089
45	Yes	6	0.00000001	0.00017461
46	Yes	6	0.00000001	0.00099137
47	Yes	6	0.00000001	0.00093639
48	Yes	6	0.00000001	0.00020528
49	Yes	7	0.00000001	0.00005363
50	Yes	6	0.00000001	0.00093331

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	149.854 - 144.854	23.559	39	1.5371	0.0048
L2	144.854 - 139.854	21.952	39	1.5296	0.0041
L3	139.854 - 134.854	20.359	39	1.5116	0.0036
L4	134.854 - 129.854	18.792	39	1.4793	0.0030
L5	129.854 - 123.068	17.267	39	1.4321	0.0027
L6	126.638 - 121.638	16.315	39	1.3928	0.0024
L7	121.638 - 116.638	14.874	39	1.3517	0.0021
L8	116.638 - 111.638	13.494	39	1.2832	0.0018
L9	111.638 - 106.638	12.190	40	1.2084	0.0016
L10	106.638 - 101.638	10.966	46	1.1296	0.0013
L11	101.638 - 97.5	9.826	46	1.0482	0.0011
L12	97.5 - 97.25	8.947	46	0.9799	0.0010
L13	97.25 - 92.25	8.896	46	0.9758	0.0010
L14	92.25 - 87.25	7.918	46	0.8927	0.0008
L15	87.25 - 82.474	7.026	46	0.8099	0.0007
L16	87.2318 - 81.474	7.023	46	0.8096	0.0007
L17	81.474 - 76.474	6.073	46	0.7601	0.0006
L18	76.474 - 71.474	5.313	46	0.6920	0.0005
L19	71.474 - 68	4.624	46	0.6250	0.0004
L20	68 - 67.75	4.186	46	0.5793	0.0004
L21	67.75 - 62.75	4.155	46	0.5771	0.0004
L22	62.75 - 57.75	3.574	46	0.5341	0.0004
L23	57.75 - 52.75	3.036	46	0.4919	0.0003
L24	52.75 - 42.9036	2.544	46	0.4497	0.0003
L25	48.8021 - 41.9036	2.185	46	0.4171	0.0003
L26	41.9036 - 36.9036	1.606	46	0.3802	0.0002
L27	36.9036 - 31.9036	1.234	46	0.3302	0.0002
L28	31.9036 - 26.9036	0.913	46	0.2816	0.0002
L29	26.9036 - 21.9036	0.644	46	0.2342	0.0001
L30	21.9036 - 16.9036	0.423	46	0.1880	0.0001
L31	16.9036 - 11.9036	0.249	46	0.1431	0.0001
L32	11.9036 - 6.90365	0.122	46	0.0994	0.0000
L33	6.90365 - 1.90365	0.041	46	0.0568	0.0000
L34	1.90365 - 0	0.003	46	0.0153	0.0000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
150.00	Platform Mount [10' LP 712-1]	39	23.559	1.5371	0.0048	21572
142.00	RRUS 11	39	21.041	1.5211	0.0038	14652
140.00	Platform Mount [LP 303-1]	39	20.406	1.5123	0.0036	11862
129.25	LPA-80063/6CF w/ Mount Pipe	39	17.086	1.4246	0.0026	5640
74.00	KS24019-L112A	46	4.963	0.6588	0.0005	4249

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	149.854 - 144.854	129.454	2	8.4589	0.0259
L2	144.854 - 139.854	120.645	2	8.4182	0.0221
L3	139.854 - 134.854	111.909	2	8.3196	0.0193
L4	134.854 - 129.854	103.312	2	8.1423	0.0165
L5	129.854 - 123.068	94.944	2	7.8826	0.0143
L6	126.638 - 121.638	89.721	2	7.6670	0.0127
L7	121.638 - 116.638	81.815	2	7.4416	0.0114
L8	116.638 - 111.638	74.237	2	7.0653	0.0098
L9	111.638 - 106.638	67.069	2	6.6544	0.0084
L10	106.638 - 101.638	60.342	2	6.2209	0.0072
L11	101.638 - 97.5	54.073	2	5.7737	0.0061
L12	97.5 - 97.25	49.241	2	5.3977	0.0054
L13	97.25 - 92.25	48.959	2	5.3750	0.0053
L14	92.25 - 87.25	43.578	2	4.9180	0.0045
L15	87.25 - 82.474	38.674	2	4.4617	0.0037
L16	87.2318 - 81.474	38.657	2	4.4601	0.0037
L17	81.474 - 76.474	33.431	16	4.1875	0.0033
L18	76.474 - 71.474	29.249	16	3.8122	0.0028
L19	71.474 - 68	25.455	16	3.4433	0.0024
L20	68 - 67.75	23.044	16	3.1911	0.0021
L21	67.75 - 62.75	22.877	16	3.1794	0.0021
L22	62.75 - 57.75	19.675	16	2.9419	0.0019
L23	57.75 - 52.75	16.719	16	2.7098	0.0017
L24	52.75 - 42.9036	14.005	16	2.4771	0.0015
L25	48.8021 - 41.9036	12.032	16	2.2973	0.0013
L26	41.9036 - 36.9036	8.841	16	2.0943	0.0012
L27	36.9036 - 31.9036	6.793	16	1.8189	0.0010
L28	31.9036 - 26.9036	5.030	16	1.5507	0.0008
L29	26.9036 - 21.9036	3.543	16	1.2897	0.0007
L30	21.9036 - 16.9036	2.327	16	1.0355	0.0005
L31	16.9036 - 11.9036	1.372	16	0.7881	0.0004
L32	11.9036 - 6.90365	0.674	16	0.5472	0.0003
L33	6.90365 - 1.90365	0.224	16	0.3126	0.0001
L34	1.90365 - 0	0.017	16	0.0843	0.0000

Critical Deflections and Radius of Curvature - Design Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
150.00	Platform Mount [10' LP 712-1]	2	129.454	8.4589	0.0259	4170
142.00	RRUS 11	2	115.645	8.3713	0.0205	2808
140.00	Platform Mount [LP 303-1]	2	112.162	8.3236	0.0195	2261
129.25	LPA-80063/6CF w/ Mount Pipe	2	93.954	7.8415	0.0140	1065
74.00	KS24019-L112A	16	27.323	3.6295	0.0026	778

Compression Checks

Pole Design Data

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
L1	149.854 - 144.854 (1)	TP19.2256x18x0.1875	5.00	0.00	0.0	11.3300	-2.43	838.65	0.003
L2	144.854 - 139.854 (2)	TP20.4512x19.2256x0.1875	5.00	0.00	0.0	12.0594	-5.39	877.96	0.006
L3	139.854 - 134.854 (3)	TP21.6768x20.4512x0.1875	5.00	0.00	0.0	12.7888	-5.70	915.49	0.006
L4	134.854 - 129.854 (4)	TP22.9024x21.6768x0.1875	5.00	0.00	0.0	13.5182	-6.05	951.24	0.006
L5	129.854 - 123.068 (5)	TP24.5659x22.9024x0.1875	6.79	0.00	0.0	13.9874	-9.03	973.29	0.009
L6	123.068 - 121.638 (6)	TP24.5325x23.3157x0.25	5.00	0.00	0.0	19.2682	-9.78	1431.53	0.007
L7	121.638 - 116.638 (7)	TP25.7493x24.5325x0.25	5.00	0.00	0.0	20.2337	-10.42	1495.97	0.007
L8	116.638 - 111.638 (8)	TP26.966x25.7493x0.25	5.00	0.00	0.0	21.1992	-11.09	1548.13	0.007
L9	111.638 - 106.638 (9)	TP28.1828x26.966x0.25	5.00	0.00	0.0	22.1647	-11.80	1598.54	0.007
L10	106.638 - 101.638 (10)	TP29.3996x28.1828x0.25	5.00	0.00	0.0	23.1302	-12.54	1647.20	0.008
L11	101.638 - 97.5 (11)	TP30.4066x29.3996x0.25	4.14	0.00	0.0	23.9292	-13.17	1686.15	0.008
L12	97.5 - 97.25 (12)	TP30.4674x30.4066x0.25	0.25	0.00	0.0	23.9775	-13.22	1688.46	0.008
L13	97.25 - 92.25 (13)	TP31.6842x30.4674x0.25	5.00	0.00	0.0	24.9430	-13.99	1733.83	0.008
L14	92.25 - 87.25 (14)	TP32.9009x31.6842x0.25	5.00	0.00	0.0	25.9085	-14.81	1777.45	0.008
L15	87.25 - 82.474 (15)	TP34.0632x32.9009x0.25	4.78	0.00	0.0	25.9120	-14.83	1777.61	0.008
L16	82.474 - 81.474 (16)	TP33.8053x32.4054x0.3125	5.76	0.00	0.0	33.2207	-16.33	2424.10	0.007
L17	81.474 - 76.474 (17)	TP35.021x33.8053x0.3125	5.00	0.00	0.0	34.4265	-17.29	2487.13	0.007
L18	76.474 - 71.474 (18)	TP36.2368x35.021x0.3125	5.00	0.00	0.0	35.6324	-18.36	2548.42	0.007
L19	71.474 - 68 (19)	TP37.0814x36.2368x0.3125	3.47	0.00	0.0	36.4702	-19.06	2589.98	0.007
L20	68 - 67.75 (20)	TP37.1422x37.0814x0.4875	0.25	0.00	0.0	56.7167	-19.14	4213.77	0.005
L21	67.75 - 62.75 (21)	TP38.3579x37.1422x0.475	5.00	0.00	0.0	57.1142	-20.48	4243.30	0.005
L22	62.75 - 57.75 (22)	TP39.5736x38.3579x0.475	5.00	0.00	0.0	58.9470	-21.85	4379.47	0.005

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L23	57.75 - 52.75 (23)	TP40.7893x39.5736x0.4625	5.00	0.00	0.0	59.1988	-23.24	4398.17	0.005
L24	52.75 - 42.9036 (24)	TP43.1834x40.7893x0.4625	9.85	0.00	0.0	60.6079	-24.37	4502.86	0.005
L25	42.9036 - 41.9036 (25)	TP42.8029x41.1242x0.375	6.90	0.00	0.0	50.4999	-27.48	3628.84	0.008
L26	41.9036 - 36.9036 (26)	TP44.0197x42.8029x0.375	5.00	0.00	0.0	51.9481	-28.78	3701.50	0.008
L27	36.9036 - 31.9036 (27)	TP45.2364x44.0197x0.375	5.00	0.00	0.0	53.3963	-30.12	3772.41	0.008
L28	31.9036 - 26.9036 (28)	TP46.4531x45.2364x0.375	5.00	0.00	0.0	54.8445	-31.49	3841.58	0.008
L29	26.9036 - 21.9036 (29)	TP47.6699x46.4531x0.375	5.00	0.00	0.0	56.2927	-32.88	3908.99	0.008
L30	21.9036 - 16.9036 (30)	TP48.8866x47.6699x0.375	5.00	0.00	0.0	57.7409	-34.31	3974.65	0.009
L31	16.9036 - 11.9036 (31)	TP50.1033x48.8866x0.375	5.00	0.00	0.0	59.1891	-35.76	4038.56	0.009
L32	11.9036 - 6.90365 (32)	TP51.32x50.1033x0.375	5.00	0.00	0.0	60.6373	-37.21	4100.72	0.009
L33	6.90365 - 1.90365 (33)	TP52.5368x51.32x0.375	5.00	0.00	0.0	62.0855	-38.63	4161.13	0.009
L34	1.90365 - 0 (34)	TP53x52.5368x0.375	1.90	0.00	0.0	62.6369	-39.15	4183.67	0.009

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	149.854 - 144.854 (1)	TP19.2256x18x0.1875	26.70	327.67	0.081	0.00	327.67	0.000
L2	144.854 - 139.854 (2)	TP20.4512x19.2256x0.1875	55.15	365.33	0.151	0.00	365.33	0.000
L3	139.854 - 134.854 (3)	TP21.6768x20.4512x0.1875	117.18	404.20	0.290	0.00	404.20	0.000
L4	134.854 - 129.854 (4)	TP22.9024x21.6768x0.1875	180.88	444.14	0.407	0.00	444.14	0.000
L5	129.854 - 123.068 (5)	TP24.5659x22.9024x0.1875	253.69	470.34	0.539	0.00	470.34	0.000
L6	123.068 - 121.638 (6)	TP24.5325x23.3157x0.25	357.23	713.08	0.501	0.00	713.08	0.000
L7	121.638 - 116.638 (7)	TP25.7493x24.5325x0.25	462.57	782.90	0.591	0.00	782.90	0.000
L8	116.638 - 111.638 (8)	TP26.966x25.7493x0.25	569.61	849.23	0.671	0.00	849.23	0.000
L9	111.638 - 106.638 (9)	TP28.1828x26.966x0.25	678.34	917.19	0.740	0.00	917.19	0.000
L10	106.638 - 101.638 (10)	TP29.3996x28.1828x0.25	788.77	986.65	0.799	0.00	986.65	0.000
L11	101.638 - 97.5 (11)	TP30.4066x29.3996x0.25	881.45	1045.17	0.843	0.00	1045.17	0.000
L12	97.5 - 97.25 (12)	TP30.4674x30.4066x0.25	887.08	1048.72	0.846	0.00	1048.72	0.000
L13	97.25 - 92.25 (13)	TP31.6842x30.4674x0.25	1000.71	1120.63	0.893	0.00	1120.63	0.000
L14	92.25 - 87.25 (14)	TP32.9009x31.6842x0.25	1116.03	1193.64	0.935	0.00	1193.64	0.000
L15	87.25 - 82.474 (15)	TP34.0632x32.9009x0.25	1116.45	1193.91	0.935	0.00	1193.91	0.000
L16	82.474 - 81.474 (16)	TP33.8053x32.4054x0.3125	1251.73	1667.10	0.751	0.00	1667.10	0.000
L17	81.474 - 76.474 (17)	TP35.021x33.8053x0.3125	1371.33	1773.11	0.773	0.00	1773.11	0.000
L18	76.474 -	TP36.2368x35.021x0.312	1492.82	1881.01	0.794	0.00	1881.01	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
	71.474 (18)	5						
L19	71.474 - 68 (19)	TP37.0814x36.2368x0.31 25	1578.41	1957.02	0.807	0.00	1957.02	0.000
L20	68 - 67.75 (20)	TP37.1422x37.0814x0.48 75	1584.60	3159.04	0.502	0.00	3159.04	0.000
L21	67.75 - 62.75 (21)	TP38.3579x37.1422x0.47 5	1709.54	3290.24	0.520	0.00	3290.24	0.000
L22	62.75 - 57.75 (22)	TP39.5736x38.3579x0.47 5	1836.54	3506.16	0.524	0.00	3506.16	0.000
L23	57.75 - 52.75 (23)	TP40.7893x39.5736x0.46 25	1965.58	3634.18	0.541	0.00	3634.18	0.000
L24	52.75 - 42.9036 (24)	TP43.1834x40.7893x0.46 25	2068.86	3810.26	0.543	0.00	3810.26	0.000
L25	42.9036 - 41.9036 (25)	TP42.8029x41.1242x0.37 5	2252.65	3162.93	0.712	0.00	3162.93	0.000
L26	41.9036 - 36.9036 (26)	TP44.0197x42.8029x0.37 5	2388.21	3319.60	0.719	0.00	3319.60	0.000
L27	36.9036 - 31.9036 (27)	TP45.2364x44.0197x0.37 5	2525.39	3478.32	0.726	0.00	3478.32	0.000
L28	31.9036 - 26.9036 (28)	TP46.4531x45.2364x0.37 5	2664.14	3638.95	0.732	0.00	3638.95	0.000
L29	26.9036 - 21.9036 (29)	TP47.6699x46.4531x0.37 5	2804.43	3801.38	0.738	0.00	3801.38	0.000
L30	21.9036 - 16.9036 (30)	TP48.8866x47.6699x0.37 5	2946.29	3965.45	0.743	0.00	3965.45	0.000
L31	16.9036 - 11.9036 (31)	TP50.1033x48.8866x0.37 5	3089.73	4131.04	0.748	0.00	4131.04	0.000
L32	11.9036 - 6.90365 (32)	TP51.32x50.1033x0.375	3234.77	4298.02	0.753	0.00	4298.02	0.000
L33	6.90365 - 1.90365 (33)	TP52.5368x51.32x0.375	3381.42	4466.27	0.757	0.00	4466.27	0.000
L34	1.90365 - 0 (34)	TP53x52.5368x0.375	3437.68	4530.63	0.759	0.00	4530.63	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	149.854 - 144.854 (1)	TP19.2256x18x0.1875	5.17	419.33	0.012	0.98	656.15	0.001
L2	144.854 - 139.854 (2)	TP20.4512x19.2256x0.18 75	12.18	438.98	0.028	1.03	731.55	0.001
L3	139.854 - 134.854 (3)	TP21.6768x20.4512x0.18 75	12.58	457.74	0.027	0.19	809.38	0.000
L4	134.854 - 129.854 (4)	TP22.9024x21.6768x0.18 75	12.91	475.62	0.027	0.19	889.37	0.000
L5	129.854 - 123.068 (5)	TP24.5659x22.9024x0.18 75	20.52	486.65	0.042	0.20	941.83	0.000
L6	123.068 - 121.638 (6)	TP24.5325x23.3157x0.25	20.91	715.76	0.029	0.52	1427.90	0.000
L7	121.638 - 116.638 (7)	TP25.7493x24.5325x0.25	21.25	747.98	0.028	0.52	1567.71	0.000
L8	116.638 - 111.638 (8)	TP26.966x25.7493x0.25	21.59	774.06	0.028	0.52	1700.54	0.000
L9	111.638 - 106.638 (9)	TP28.1828x26.966x0.25	21.93	799.27	0.027	0.52	1836.63	0.000
L10	106.638 - 101.638 (10)	TP29.3996x28.1828x0.25	22.27	823.60	0.027	0.52	1975.71	0.000
L11	101.638 - 97.5 (11)	TP30.4066x29.3996x0.25	22.55	843.07	0.027	0.52	2092.88	0.000
L12	97.5 - 97.25 (12)	TP30.4674x30.4066x0.25	22.56	844.23	0.027	0.52	2100.02	0.000
L13	97.25 - 92.25 (13)	TP31.6842x30.4674x0.25	22.91	866.92	0.026	0.52	2244.00	0.000

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L14	92.25 - 87.25 (14)	TP32.9009x31.6842x0.25	23.25	888.73	0.026	0.52	2390.20	0.000
L15	87.25 - 82.474 (15)	TP34.0632x32.9009x0.25	23.24	888.80	0.026	0.52	2390.74	0.000
L16	82.474 - 81.474 (16)	TP33.8053x32.4054x0.3125	23.75	1212.05	0.020	0.52	3338.28	0.000
L17	81.474 - 76.474 (17)	TP35.021x33.8053x0.3125	24.11	1243.57	0.019	0.51	3550.56	0.000
L18	76.474 - 71.474 (18)	TP36.2368x35.021x0.3125	24.53	1274.21	0.019	0.44	3766.62	0.000
L19	71.474 - 68 (19)	TP37.0814x36.2368x0.3125	24.78	1294.99	0.019	0.44	3918.82	0.000
L20	68 - 67.75 (20)	TP37.1422x37.0814x0.4875	24.78	2106.89	0.012	0.44	6325.81	0.000
L21	67.75 - 62.75 (21)	TP38.3579x37.1422x0.475	25.20	2121.65	0.012	0.44	6588.53	0.000
L22	62.75 - 57.75 (22)	TP39.5736x38.3579x0.475	25.61	2189.74	0.012	0.44	7020.89	0.000
L23	57.75 - 52.75 (23)	TP40.7893x39.5736x0.4625	26.02	2199.09	0.012	0.44	7277.25	0.000
L24	52.75 - 42.9036 (24)	TP43.1834x40.7893x0.4625	26.33	2251.43	0.012	0.44	7629.82	0.000
L25	42.9036 - 41.9036 (25)	TP42.8029x41.1242x0.375	26.96	1814.42	0.015	0.44	6333.60	0.000
L26	41.9036 - 36.9036 (26)	TP44.0197x42.8029x0.375	27.29	1850.75	0.015	0.44	6647.32	0.000
L27	36.9036 - 31.9036 (27)	TP45.2364x44.0197x0.375	27.61	1886.21	0.015	0.44	6965.14	0.000
L28	31.9036 - 26.9036 (28)	TP46.4531x45.2364x0.375	27.92	1920.79	0.015	0.44	7286.81	0.000
L29	26.9036 - 21.9036 (29)	TP47.6699x46.4531x0.375	28.23	1954.49	0.014	0.44	7612.05	0.000
L30	21.9036 - 16.9036 (30)	TP48.8866x47.6699x0.375	28.54	1987.32	0.014	0.44	7940.60	0.000
L31	16.9036 - 11.9036 (31)	TP50.1033x48.8866x0.375	28.86	2019.28	0.014	0.44	8272.19	0.000
L32	11.9036 - 6.90365 (32)	TP51.32x50.1033x0.375	29.18	2050.36	0.014	0.44	8606.58	0.000
L33	6.90365 - 1.90365 (33)	TP52.5368x51.32x0.375	29.51	2080.56	0.014	0.44	8943.50	0.000
L34	1.90365 - 0 (34)	TP53x52.5368x0.375	29.65	2091.83	0.014	0.44	9072.33	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	149.854 - 144.854 (1)	0.003	0.081	0.000	0.012	0.001	0.085	1.000	4.8.2
L2	144.854 - 139.854 (2)	0.006	0.151	0.000	0.028	0.001	0.158	1.000	4.8.2
L3	139.854 - 134.854 (3)	0.006	0.290	0.000	0.027	0.000	0.297	1.000	4.8.2
L4	134.854 - 129.854 (4)	0.006	0.407	0.000	0.027	0.000	0.414	1.000	4.8.2
L5	129.854 - 123.068 (5)	0.009	0.539	0.000	0.042	0.000	0.550	1.000	4.8.2
L6	123.068 - 121.638 (6)	0.007	0.501	0.000	0.029	0.000	0.509	1.000	4.8.2
L7	121.638 - 116.638 (7)	0.007	0.591	0.000	0.028	0.000	0.599	1.000	4.8.2
L8	116.638 -	0.007	0.671	0.000	0.028	0.000	0.679	1.000	4.8.2

Section No.	Elevation ft	Ratio P_u / ϕP_n	Ratio M_{ux} / ϕM_{nx}	Ratio M_{uy} / ϕM_{ny}	Ratio V_u / ϕV_n	Ratio T_u / ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	111.638 (8)								
L9	111.638 - 106.638 (9)	0.007	0.740	0.000	0.027	0.000	0.748	1.000	4.8.2
L10	106.638 - 101.638 (10)	0.008	0.799	0.000	0.027	0.000	0.808	1.000	4.8.2
L11	101.638 - 97.5 (11)	0.008	0.843	0.000	0.027	0.000	0.852	1.000	4.8.2
L12	97.5 - 97.25 (12)	0.008	0.846	0.000	0.027	0.000	0.854	1.000	4.8.2
L13	97.25 - 92.25 (13)	0.008	0.893	0.000	0.026	0.000	0.902	1.000	4.8.2
L14	92.25 - 87.25 (14)	0.008	0.935	0.000	0.026	0.000	0.944	1.000	4.8.2
L15	87.25 - 82.474 (15)	0.008	0.935	0.000	0.026	0.000	0.944	1.000	4.8.2
L16	82.474 - 81.474 (16)	0.007	0.751	0.000	0.020	0.000	0.758	1.000	4.8.2
L17	81.474 - 76.474 (17)	0.007	0.773	0.000	0.019	0.000	0.781	1.000	4.8.2
L18	76.474 - 71.474 (18)	0.007	0.794	0.000	0.019	0.000	0.801	1.000	4.8.2
L19	71.474 - 68 (19)	0.007	0.807	0.000	0.019	0.000	0.814	1.000	4.8.2
L20	68 - 67.75 (20)	0.005	0.502	0.000	0.012	0.000	0.506	1.000	4.8.2
L21	67.75 - 62.75 (21)	0.005	0.520	0.000	0.012	0.000	0.525	1.000	4.8.2
L22	62.75 - 57.75 (22)	0.005	0.524	0.000	0.012	0.000	0.529	1.000	4.8.2
L23	57.75 - 52.75 (23)	0.005	0.541	0.000	0.012	0.000	0.546	1.000	4.8.2
L24	52.75 - 42.9036 (24)	0.005	0.543	0.000	0.012	0.000	0.549	1.000	4.8.2
L25	42.9036 - 41.9036 (25)	0.008	0.712	0.000	0.015	0.000	0.720	1.000	4.8.2
L26	41.9036 - 36.9036 (26)	0.008	0.719	0.000	0.015	0.000	0.727	1.000	4.8.2
L27	36.9036 - 31.9036 (27)	0.008	0.726	0.000	0.015	0.000	0.734	1.000	4.8.2
L28	31.9036 - 26.9036 (28)	0.008	0.732	0.000	0.015	0.000	0.741	1.000	4.8.2
L29	26.9036 - 21.9036 (29)	0.008	0.738	0.000	0.014	0.000	0.746	1.000	4.8.2
L30	21.9036 - 16.9036 (30)	0.009	0.743	0.000	0.014	0.000	0.752	1.000	4.8.2
L31	16.9036 - 11.9036 (31)	0.009	0.748	0.000	0.014	0.000	0.757	1.000	4.8.2
L32	11.9036 - 6.90365 (32)	0.009	0.753	0.000	0.014	0.000	0.762	1.000	4.8.2
L33	6.90365 - 1.90365 (33)	0.009	0.757	0.000	0.014	0.000	0.767	1.000	4.8.2
L34	1.90365 - 0 (34)	0.009	0.759	0.000	0.014	0.000	0.768	1.000	4.8.2

Section Capacity Table

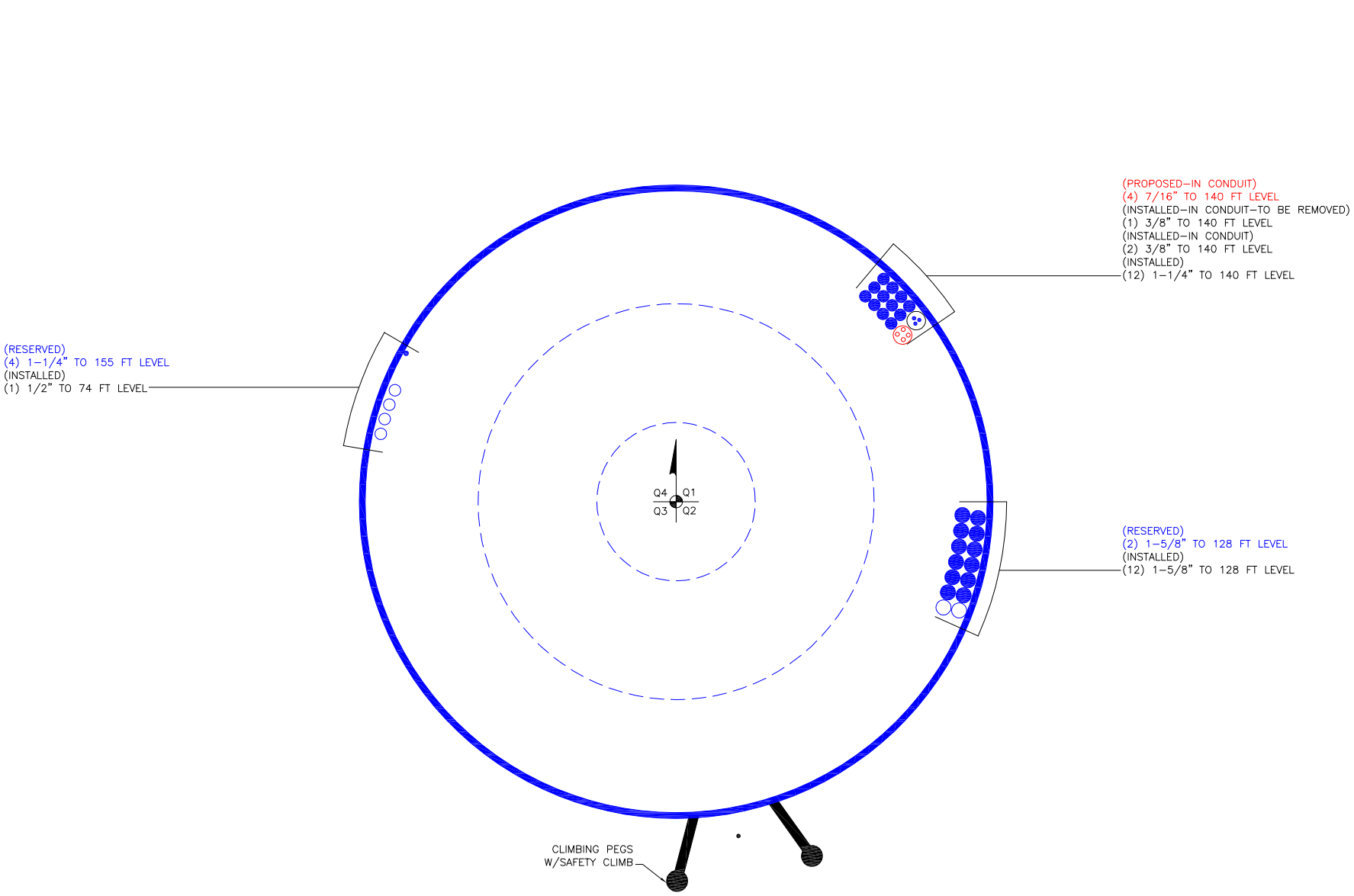
Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	149.854 - 144.854	Pole	TP19.2256x18x0.1875	1	-2.43	838.65	8.5	Pass
L2	144.854 - 139.854	Pole	TP20.4512x19.2256x0.1875	2	-5.39	877.96	15.8	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L3	139.854 - 134.854	Pole	TP21.6768x20.4512x0.1875	3	-5.70	915.49	29.7	Pass
L4	134.854 - 129.854	Pole	TP22.9024x21.6768x0.1875	4	-6.05	951.24	41.4	Pass
L5	129.854 - 123.068	Pole	TP24.5659x22.9024x0.1875	5	-9.03	973.29	55.0	Pass
L6	123.068 - 121.638	Pole	TP24.5325x23.3157x0.25	6	-9.78	1431.53	50.9	Pass
L7	121.638 - 116.638	Pole	TP25.7493x24.5325x0.25	7	-10.42	1495.97	59.9	Pass
L8	116.638 - 111.638	Pole	TP26.966x25.7493x0.25	8	-11.09	1548.13	67.9	Pass
L9	111.638 - 106.638	Pole	TP28.1828x26.966x0.25	9	-11.80	1598.54	74.8	Pass
L10	106.638 - 101.638	Pole	TP29.3996x28.1828x0.25	10	-12.54	1647.20	80.8	Pass
L11	101.638 - 97.5	Pole	TP30.4066x29.3996x0.25	11	-13.17	1686.15	85.2	Pass
L12	97.5 - 97.25	Pole	TP30.4674x30.4066x0.25	12	-13.22	1688.46	85.4	Pass
L13	97.25 - 92.25	Pole	TP31.6842x30.4674x0.25	13	-13.99	1733.83	90.2	Pass
L14	92.25 - 87.25	Pole	TP32.9009x31.6842x0.25	14	-14.81	1777.45	94.4	Pass
L15	87.25 - 82.474	Pole	TP34.0632x32.9009x0.25	15	-14.83	1777.61	94.4	Pass
L16	82.474 - 81.474	Pole	TP33.8053x32.4054x0.3125	16	-16.33	2424.10	75.8	Pass
L17	81.474 - 76.474	Pole	TP35.021x33.8053x0.3125	17	-17.29	2487.13	78.1	Pass
L18	76.474 - 71.474	Pole	TP36.2368x35.021x0.3125	18	-18.36	2548.42	80.1	Pass
L19	71.474 - 68	Pole	TP37.0814x36.2368x0.3125	19	-19.06	2589.98	81.4	Pass
L20	68 - 67.75	Pole	TP37.1422x37.0814x0.4875	20	-19.14	4213.77	50.6	Pass
L21	67.75 - 62.75	Pole	TP38.3579x37.1422x0.475	21	-20.48	4243.30	52.5	Pass
L22	62.75 - 57.75	Pole	TP39.5736x38.3579x0.475	22	-21.85	4379.47	52.9	Pass
L23	57.75 - 52.75	Pole	TP40.7893x39.5736x0.4625	23	-23.24	4398.17	54.6	Pass
L24	52.75 - 42.9036	Pole	TP43.1834x40.7893x0.4625	24	-24.37	4502.86	54.9	Pass
L25	42.9036 - 41.9036	Pole	TP42.8029x41.1242x0.375	25	-27.48	3628.84	72.0	Pass
L26	41.9036 - 36.9036	Pole	TP44.0197x42.8029x0.375	26	-28.78	3701.50	72.7	Pass
L27	36.9036 - 31.9036	Pole	TP45.2364x44.0197x0.375	27	-30.12	3772.41	73.4	Pass
L28	31.9036 - 26.9036	Pole	TP46.4531x45.2364x0.375	28	-31.49	3841.58	74.1	Pass
L29	26.9036 - 21.9036	Pole	TP47.6699x46.4531x0.375	29	-32.88	3908.99	74.6	Pass
L30	21.9036 - 16.9036	Pole	TP48.8866x47.6699x0.375	30	-34.31	3974.65	75.2	Pass
L31	16.9036 - 11.9036	Pole	TP50.1033x48.8866x0.375	31	-35.76	4038.56	75.7	Pass
L32	11.9036 - 6.90365	Pole	TP51.32x50.1033x0.375	32	-37.21	4100.72	76.2	Pass
L33	6.90365 - 1.90365	Pole	TP52.5368x51.32x0.375	33	-38.63	4161.13	76.7	Pass
L34	1.90365 - 0	Pole	TP53x52.5368x0.375	34	-39.15	4183.67	76.8	Pass
							Summary	
						Pole (L15)	94.4	Pass
						RATING =	**94.4**	**Pass**

Note: These values are approximate for more accurate results see CCI pole output in Appendix C.

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 876366 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

CCIpole

per TIA-222- G

Site BU: 876366

Work Order: 1489123

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	149.854167	26.786458	3.570313	18	18	24.5659	0.1875	0.75	A572-65
2	126.638022	44.164063	4.757813	18	23.32	34.0632	0.25	1	A572-65
3	87.231772	44.328125	5.898438	18	32.41	43.1834	0.3125	1.25	A572-65
4	48.802085	48.802085	0	18	41.12	53	0.375	1.5	A572-65

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	47	68	plate	CCI-SFP-060100	3	E						E						E					
2	85.5	97.5	plate	CCI-SFP-045100	3	E						E						E					
3																							
4																							
5																							
6																							
7																							
8																							
9																							
10																							

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Length (in)	Top Termination Length (in)	L_u (in)	Net Area (in^2)	Bolt Hole Size (in)	Reinforcement Material
1	6	1	6	0.5	24.000	24.000	16.000	4.750	1.1875	A572-65
2	4.5	1	4.5	0.5	18.000	18.000	20.000	3.250	1.1875	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	149.854 - 144.854	5		18	18.000	19.226	0.1875	A572-65	1.000
2	144.854 - 139.854	5		18	19.226	20.451	0.1875	A572-65	1.000
3	139.854 - 134.854	5		18	20.451	21.677	0.1875	A572-65	1.000
4	134.854 - 129.854	5		18	21.677	22.902	0.1875	A572-65	1.000
5	129.854 - 126.638	6.786458	3.570313	18	22.902	24.566	0.1875	A572-65	1.000
6	126.638 - 121.638	5		18	23.316	24.533	0.25	A572-65	1.000
7	121.638 - 116.638	5		18	24.533	25.749	0.25	A572-65	1.000
8	116.638 - 111.638	5		18	25.749	26.966	0.25	A572-65	1.000
9	111.638 - 106.638	5		18	26.966	28.183	0.25	A572-65	1.000
10	106.638 - 101.638	5		18	28.183	29.400	0.25	A572-65	1.000
11	101.638 - 97.5	4.138022		18	29.400	30.407	0.25	A572-65	1.000
12	97.5 - 97.25	0.25		18	30.407	30.467	0.25	A572-65	1.000
13	97.25 - 92.25	5		18	30.467	31.684	0.25	A572-65	1.000
14	92.25 - 87.25	5		18	31.684	32.901	0.25	A572-65	1.000
15	87.25 - 87.2318	4.776041	4.757813	18	32.901	34.063	0.25	A572-65	1.000
16	87.2318 - 81.474	5.757813		18	32.405	33.805	0.3125	A572-65	1.000
17	81.474 - 76.474	5		18	33.805	35.021	0.3125	A572-65	1.000
18	76.474 - 71.474	5		18	35.021	36.237	0.3125	A572-65	1.000
19	71.474 - 68	3.473959		18	36.237	37.081	0.3125	A572-65	1.000
20	68 - 67.75	0.25		18	37.081	37.142	0.4875	A572-65	0.961
21	67.75 - 62.75	5		18	37.142	38.358	0.475	A572-65	0.976
22	62.75 - 57.75	5		18	38.358	39.574	0.475	A572-65	0.966
23	57.75 - 52.75	5		18	39.574	40.789	0.4625	A572-65	0.982
24	52.75 - 48.8021	9.846353	5.898438	18	40.789	43.183	0.4625	A572-65	0.975
25	48.8021 - 41.9036	6.898438		18	41.124	42.803	0.375	A572-65	1.000
26	41.9036 - 36.9036	5		18	42.803	44.020	0.375	A572-65	1.000
27	36.9036 - 31.9036	5		18	44.020	45.236	0.375	A572-65	1.000
28	31.9036 - 26.9036	5		18	45.236	46.453	0.375	A572-65	1.000
29	26.9036 - 21.9036	5		18	46.453	47.670	0.375	A572-65	1.000
30	21.9036 - 16.9036	5		18	47.670	48.887	0.375	A572-65	1.000
31	16.9036 - 11.9036	5		18	48.887	50.103	0.375	A572-65	1.000
32	11.9036 - 6.90365	5		18	50.103	51.320	0.375	A572-65	1.000
33	6.90365 - 1.90365	5		18	51.320	52.537	0.375	A572-65	1.000
34	1.90365 - 0	1.903647		18	52.537	53.000	0.375	A572-65	1.000

TNX Section Forces

Increment (ft):	5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	149.8542 - 144.8542	2.43	26.70	5.17
2	144.8542 - 139.8542	5.39	55.15	12.18
3	139.8542 - 134.8542	5.70	117.18	12.58
4	134.8542 - 129.8542	6.05	180.88	12.91
5	129.8542 - 126.638	9.03	253.69	20.52
6	126.638 - 121.638	9.78	357.23	20.90
7	121.638 - 116.638	10.42	462.57	21.25
8	116.638 - 111.638	11.09	569.61	21.59
9	111.638 - 106.638	11.80	678.34	21.93
10	106.638 - 101.638	12.54	788.77	22.27
11	101.638 - 97.5	13.17	881.45	22.55
12	97.5 - 97.25	13.22	887.08	22.56
13	97.25 - 92.25	13.99	######	22.91
14	92.25 - 87.25	14.81	######	23.25
15	87.25 - 87.23177	14.83	######	23.24
16	87.23177 - 81.47396	16.33	######	23.75
17	81.47396 - 76.47396	17.29	######	24.11
18	76.47396 - 71.47396	18.36	######	24.53
19	71.47396 - 68	19.06	######	24.78
20	68 - 67.75	19.14	######	24.78
21	67.75 - 62.75	20.48	######	25.20
22	62.75 - 57.75	21.85	######	25.61
23	57.75 - 52.75	23.24	######	26.02
24	52.75 - 48.80209	24.37	######	26.33
25	48.80209 - 41.90365	27.48	######	26.96
26	41.90365 - 36.90365	28.78	######	27.29
27	36.90365 - 31.90365	30.12	######	27.61
28	31.90365 - 26.90365	31.49	######	27.92
29	26.90365 - 21.90365	32.88	######	28.23
30	21.90365 - 16.90365	34.31	######	28.54
31	16.90365 - 11.90365	35.76	######	28.86
32	11.90365 - 6.903647	37.21	######	29.18
33	6.903647 - 1.903647	38.63	######	29.51
34	1.903647 - 0	39.15	######	29.65

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
149.85 - 144.85	Pole	TP19.226x18x0.1875	Pole	8.5%	Pass
144.85 - 139.85	Pole	TP20.451x19.226x0.1875	Pole	15.8%	Pass
139.85 - 134.85	Pole	TP21.677x20.451x0.1875	Pole	29.7%	Pass
134.85 - 129.85	Pole	TP22.902x21.677x0.1875	Pole	41.4%	Pass
129.85 - 126.64	Pole	TP24.566x22.902x0.1875	Pole	55.1%	Pass
126.64 - 121.64	Pole	TP24.533x23.316x0.25	Pole	50.8%	Pass
121.64 - 116.64	Pole	TP25.749x24.533x0.25	Pole	59.9%	Pass
116.64 - 111.64	Pole	TP26.966x25.749x0.25	Pole	67.9%	Pass
111.64 - 106.64	Pole	TP28.183x26.966x0.25	Pole	74.8%	Pass
106.64 - 101.64	Pole	TP29.4x28.183x0.25	Pole	80.8%	Pass
101.64 - 97.5	Pole	TP30.407x29.4x0.25	Pole	85.2%	Pass
97.5 - 97.25	Pole	TP30.467x30.407x0.25	Pole	85.4%	Pass
97.25 - 92.25	Pole	TP31.684x30.467x0.25	Pole	90.2%	Pass
92.25 - 87.25	Pole	TP32.901x31.684x0.25	Pole	94.4%	Pass
87.25 - 87.23	Pole	TP34.063x32.901x0.25	Pole	94.4%	Pass
87.23 - 81.47	Pole	TP33.805x32.405x0.3125	Pole	75.8%	Pass
81.47 - 76.47	Pole	TP35.021x33.805x0.3125	Pole	78.1%	Pass
76.47 - 71.47	Pole	TP36.237x35.021x0.3125	Pole	80.1%	Pass
71.47 - 68	Pole	TP37.081x36.237x0.3125	Pole	81.4%	Pass
68 - 67.75	Pole + Reinf.	TP37.142x37.081x0.4875	Reinf. 1 Tension Rupture	80.4%	Pass
67.75 - 62.75	Pole + Reinf.	TP38.358x37.142x0.475	Reinf. 1 Tension Rupture	82.2%	Pass
62.75 - 57.75	Pole + Reinf.	TP39.574x38.358x0.475	Reinf. 1 Tension Rupture	83.8%	Pass
57.75 - 52.75	Pole + Reinf.	TP40.789x39.574x0.4625	Reinf. 1 Tension Rupture	85.3%	Pass
52.75 - 48.8	Pole + Reinf.	TP43.183x40.789x0.4625	Reinf. 1 Tension Rupture	86.3%	Pass
48.8 - 41.9	Pole	TP42.803x41.124x0.375	Pole	72.0%	Pass
41.9 - 36.9	Pole	TP44.02x42.803x0.375	Pole	72.7%	Pass
36.9 - 31.9	Pole	TP45.236x44.02x0.375	Pole	73.4%	Pass
31.9 - 26.9	Pole	TP46.453x45.236x0.375	Pole	74.1%	Pass
26.9 - 21.9	Pole	TP47.67x46.453x0.375	Pole	74.6%	Pass
21.9 - 16.9	Pole	TP48.887x47.67x0.375	Pole	75.2%	Pass
16.9 - 11.9	Pole	TP50.103x48.887x0.375	Pole	75.7%	Pass
11.9 - 6.9	Pole	TP51.32x50.103x0.375	Pole	76.2%	Pass
6.9 - 1.9	Pole	TP52.537x51.32x0.375	Pole	76.7%	Pass
1.9 - 0	Pole	TP53x52.537x0.375	Pole	76.9%	Pass
				Summary	
			Pole	94.4%	Pass
			Reinforcement	86.3%	Pass
			Overall	94.4%	Pass

Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity		
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2
149.85 - 144.85	519	n/a	519	11.33	n/a	11.33	8.5%		
144.85 - 139.85	625	n/a	625	12.06	n/a	12.06	15.8%		
139.85 - 134.85	746	n/a	746	12.79	n/a	12.79	29.7%		
134.85 - 129.85	881	n/a	881	13.52	n/a	13.52	41.4%		
129.85 - 126.64	976	n/a	976	13.99	n/a	13.99	55.1%		
126.64 - 121.64	1435	n/a	1435	19.27	n/a	19.27	50.8%		
121.64 - 116.64	1662	n/a	1662	20.23	n/a	20.23	59.9%		
116.64 - 111.64	1911	n/a	1911	21.20	n/a	21.20	67.9%		
111.64 - 106.64	2184	n/a	2184	22.16	n/a	22.16	74.8%		
106.64 - 101.64	2482	n/a	2482	23.13	n/a	23.13	80.8%		
101.64 - 97.5	2748	n/a	2748	23.93	n/a	23.93	85.2%		
97.5 - 97.25	2765	n/a	2765	23.98	n/a	23.98	85.4%		
97.25 - 92.25	3113	n/a	3113	24.94	n/a	24.94	90.2%		
92.25 - 87.25	3488	n/a	3488	25.91	n/a	25.91	94.4%		
87.25 - 87.23	3490	n/a	3490	25.91	n/a	25.91	94.4%		
87.23 - 81.47	4706	n/a	4706	33.22	n/a	33.22	75.8%		
81.47 - 76.47	5238	n/a	5238	34.43	n/a	34.43	78.1%		
76.47 - 71.47	5808	n/a	5808	35.63	n/a	35.63	80.1%		
71.47 - 68	6227	n/a	6227	36.47	n/a	36.47	81.4%		
68 - 67.75	6258	3301	9559	36.53	18.00	54.53	52.6%	80.4%	
67.75 - 62.75	6898	3513	10411	37.73	18.00	55.73	54.4%	82.2%	
62.75 - 57.75	7581	3732	11313	38.94	18.00	56.94	56.1%	83.8%	
57.75 - 52.75	8307	3957	12264	40.15	18.00	58.15	57.7%	85.3%	
52.75 - 48.8	8912	4140	13052	41.10	18.00	59.10	58.9%	86.3%	
48.8 - 41.9	11481	n/a	11481	50.50	n/a	50.50	72.0%		
41.9 - 36.9	12497	n/a	12497	51.95	n/a	51.95	72.7%		
36.9 - 31.9	13572	n/a	13572	53.39	n/a	53.39	73.4%		
31.9 - 26.9	14706	n/a	14706	54.84	n/a	54.84	74.1%		
26.9 - 21.9	15902	n/a	15902	56.29	n/a	56.29	74.6%		
21.9 - 16.9	17161	n/a	17161	57.74	n/a	57.74	75.2%		
16.9 - 11.9	18485	n/a	18485	59.19	n/a	59.19	75.7%		
11.9 - 6.9	19876	n/a	19876	60.64	n/a	60.64	76.2%		
6.9 - 1.9	21334	n/a	21334	62.08	n/a	62.08	76.7%		
1.9 - 0	21908	n/a	21908	62.63	n/a	62.63	76.9%		

Note: Section capacity checked in 5 degree increments.

ANCHOR ROD ANALYSIS

Anchor Rod Information

TIA Code	G
eta Factor	0.5
Number of Bolt Circles	2
Base Plate Type	Circular

Reactions

Moment	3438	kip-ft
Axial	39	kip
Shear	30	kip

	1st BC	2nd BC	
Anchor Rod Quantity	12	3	
Anchor Rod Diameter	2.25	1.75	in
Anchor Rod Material	#18J	A193 B7	ksi
Bolt Circle Diameter	62.5	68.04	in
Base Plate or Bracketed Connection?		Bracket*	

Bolt #	Orientation of Anchor Bolts (Degrees)	
1	0.0	105
2	30.0	225
3	60.0	345
4	90.0	
5	120.0	
6	150.0	
7	180.0	
8	210.0	
9	240.0	
10	270.0	
11	300.0	
12	330.0	

Anchor Rod Results

	1st BC	2nd BC	
Moment on Bolt Group	2915.5	522.5	kip-ft
Axial on Bolt Group	39.0	0.0	kip
Shear on Bolt Group	30.0	0.0	kip
Combined Load per Anchor Rod	194.8	122.9	kip
Anchor Rod Capacity	259.8	189.9	kip
Max Stress Ratio	**75.0%**	**64.7%**	

(it is assumed that all Axial and Shear loads will go to the original anchor rods)

*Bracket Calculations & Results are on the following pages.

ANCHOR ROD BRACKET CALCULATIONS

TIA-222-G Reference

Tower & Foundation Properties			
Monopole Thickness at Base	0.375	in	
Monopole Material	A572 Gr.65		
Yield Stress, Fy	65	ksi	
Ultimate Stress, Fu	80	ksi	
Base Plate Material	A572 Gr.50		
Yield Stress, Fy	50	ksi	
Ultimate Stress, Fu	65	ksi	
Pier Foundation Diameter	7	ft	
Rebar Yield Stress	60	ksi	
Concrete Strength	3000	psi	
Clear Cover	3	in	
Rebar Size	11		
Tie Size	4		
Vertical Rebar Quantity	32		
	2nd BC		
Analysis or Design of Bracket?	Analysis		
Bracket Loading Information			
Moment on Bolt Group	522.5	kip-ft	
Axial Load on Anchor Rod	122.9	kip	
Anchor Rod Capacity	189.9	kip	
Tube Properties			
Tube Section	HSS4x4x0.5		
Length	27	in	AISCM Table 1-12
Gap Between Base Plate and Tube	0	in	
Outside Width/Diameter	4	in	
Thickness	0.5	in	
Area	6.02	in^2	
Moment of Inertia	11.9	in^4	
Radius of Gyration	1.41	in	
Material	A500 Gr.B (Rect)		
Yield Stress	46	ksi	
Ultimate Stress	58	ksi	
Gusset Plate Properties			
Width	6.5	in	
Thickness	1.25	in	
Height of Plate at Pole, L_{plate1}	30	in	
Height of Plate at Tube, L_{plate2}	24	in	
Notch Size	0.75	in	
Material	A572 Gr. 65		
Yield Stress	65	ksi	
Ultimate Stress	80	ksi	
Weld Properties			
Plate to Monopole Weld Size	0.3125	in	
Plate to Tube Weld Size	0.3125	in	
Plate to Base Plate Weld Size	0.25	in	
Electrode	E80		
Material Grade, F_{EXX}	80	ksi	
Anchor Rod Embedment Properties			
Embedment Depth	5.83	ft	
Epoxy Material	Hilti RE 500 SD		
Bond Strength	1.575	ksi	

ANCHOR ROD BRACKET CALCULATIONS

TIA-222-G Reference

Tube Analysis

Bearing Check

ϕ_b =	0.75		
$\phi P_n = \phi_b 1.8 F_y A_g$ =	373.84	kip	AISCM Eq (J7-1)
Stress Ratio	**32.9%**		

Compression Check

ϕ_c =	0.90		
K =	1		
KL/r =	19.15		
$4.71\sqrt{(E/F_y)}$ =	118.26		
$F_e = \pi^2 E/(KL/r)^2$ =	780.56	ksi	AISCM Eq (E3-4)
$F_{cr} = 0.658^{(Fy/Fe)} F_y$ =	44.88	ksi	AISCM Eq (E3-2)
$\phi P_n = \phi_c F_y A_g$ =	249.23	kip	AISCM Eq (J4-6)
Stress Ratio	**49.3%**		

Gusset Plate Analysis

Plate Shear Yielding Check

ϕ_v =	1		
$A_{nv} = A_g = t_{plate} * L_{tube}$ =	30	in^2	
$\phi V_n = \phi_v 0.6 A_g F_y$ =	1170	kip	AISCM Eq (J4-3)
Stress Ratio	**10.5%**		

Plate Shear Rupture Check

ϕ_v =	0.75		
$\phi V_n = \phi_v 0.6 A_{nv} F_u$ =	1080.00	kip	AISCM Eq (J4-4)
Stress Ratio	**11.4%**		

Plate to Monopole Punching Shear Check

ϕ_v =	0.90		
$e = w_{plate} + d_{tube} - t_{tube} - D_b/2$ =	9.13	in	
M = P * e =	1121.28	kip-in	
$f_v = 6M/L_{plate1}^2$ =	7.48	kip/in	
$\phi F_v = \phi_v 0.6 F_{ymp} (2t_{mp})$ =	26.33	kip/in	
Stress Ratio	**28.4%**		

Plate to Tube Punching Shear Check

$e = d_{tube} - t_{tube} - D_b/2$ =	2.63	in	
M = P * e =	322.56	kip-in	
$f_v = 6M/L_{plate2}^2$ =	3.36	kip/in	
$\phi F_v = \phi_v 0.6 F_{ytube} (2t_{tube})$ =	24.84	kip/in	
Stress Ratio	**13.4%**		

Gusset Plate to Monopole Weld Analysis

ϕ_{wg} =	0.75	
$\phi R_{nweld} = \phi_{wg} 0.6 F_{EXX}$ =	36.0	ksi
$\phi R_{nplate} = \phi_{wg} 0.6 F_{uplate}$ =	29.3	ksi
$\phi R_{npole} = \phi_{wg} 0.6 F_{upole}$ =	36.0	ksi
Stress Ratio	**53.9%**	

Gusset Plate to Tube Weld Analysis

ϕ_w =	0.75	
$a = (d_{tube} - t_{tube} - D_b/2)/L_{plate2}$ =	0.10	
C =	1.03	
C_1 =	3.72	
$\phi R_n = \phi_w C C_1 D L_{plate2}$ =	344.84	kip
Stress Ratio	**35.6%**	

ANCHOR ROD BRACKET CALCULATIONS

TIA-222-G Reference

Embedment Depth Analysis

Development Length Calculation — ACI 318-08 Chapter 12

Transverse Reinforcement Index, k_{rt} =	0	
Rebar Location Factor, ψ_t =	1	
Rebar Coating Factor, ψ_e =	1	
Rebar Size Factor, ψs =	1	
Concrete Weight Factor, λ =	1	
Diameter of Rebar, d_b =	1.38	in
Diameter of Tie, d_{tie} =	0.50	in
$BC_{rebar} = D_{pier} - 2c_c - 2d_{tie} - d_b$ =	75.63	in
$S_{rebar} = \pi BC_{rebar} / n$ =	7.42	in
$c_b = c_c + d_{tie} + d_b/2$ =	3.71	in
$l_d = [3/40 (f_y/\lambda\sqrt{f'_c}) \psi_t\psi_e\psi_s/2.5]d_b$ =	45.19	in

Development Length Check

$A = S_{rebar} / 2$ =	3.71	in
$B = BC_{rebar}/2 - BC_{bracket}/2$ =	3.79	in
$G = \sqrt{(A^2 + B^2)}$ =	5.31	in
$l'_d = l_d + G/1.5 + 3in$ =	51.73	in
S_b =	1.58	ksi
ϕ_{bond} =	0.55	
$L_{be} = P_n / (\pi D_b S_b \phi_{bond})$ =	25.80	in
$L_{min1} = L_{be} + 6in$ =	31.80	in
$L_{min2} = l'_d + 0.25L_{be}$ =	58.18	in
Stress Ratio	**83.2%**	

Stiffened or Unstiffened, Ungrouted, Circular Base Plate - Any Rod Material

TIA Rev G Assumption: Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)*(Rod Diameter)

Site Data

BU#:	*876366*
Site Name:	*WAPPINGERS FALLS / PRESTON*
App #:	*406270 Rev 1*
Pole Manufacturer:	*Other*

Reactions		
Mu:	2916	ft-kips
Axial, Pu:	39	kips
Shear, Vu:	30	kips
Eta Factor, η	0.5	TIA G (Fig. 4-4)

If No stiffeners, Criteria:	AISC LRFD	<-Only Applcable to Unstiffened Cases

Anchor Rod Data		
Qty:	12	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	62.5	in

Plate Data		
Diam:	68	in
Thick:	1.75	in
Grade:	50	ksi
Single-Rod B-eff:	13.50	in

Stiffener Data (Welding at both sides)		
Config:	1	*
Weld Type:	Groove	
Groove Depth:	0.3125	in **
Groove Angle:	45	degrees
Fillet H. Weld:	0.3125	<-- Disregard
Fillet V. Weld:	0.25	in
Width:	7.5	in
Height:	23	in
Thick:	0.625	in
Notch:	0	in
Grade:	50	ksi
Weld str.:	80	ksi

Pole Data		
Diam:	51.04	in
Thick:	0.375	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Base Plate Results Flexural Check

Base Plate Stress:	35.9	ksi
Allowable Plate Stress:	45.0	ksi
Base Plate Stress Ratio:	79.8%	**Pass**

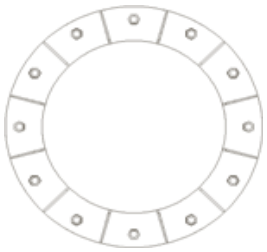
Stiffened
AISC LRFD
φ*Fy
Y.L. Length:
N/A, Roark

Stiffener Results

Horizontal Weld :	55.3%	**Pass**
Vertical Weld:	42.3%	**Pass**
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	16.6%	**Pass**
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	57.3%	**Pass**
Plate Comp. (AISC Bracket):	66.0%	**Pass**

Pole Results

Pole Punching Shear Check:	9.0%	**Pass**



* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

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

Pier and Pad Foundation

BU # :	876366
Site Name:	WAPPINGERS FA
App. Number:	406270 Rev 1

TIA-222 Revision:	G
Tower Type:	Monopole

Block Foundation?: ☐

Superstructure Analysis Reactions

Compression, P_{comp}:	39	kips
Base Shear, Vu_comp:	30	kips
Moment, M_u:	3438	ft-kips
Tower Height, **H**:	150	ft
BP Dist. Above Fdn, bp_{dist}:	3	in

Pier Properties

Pier Shape:	Square	
Pier Diameter, **dpier**:	7.0	ft
Ext. Above Grade, **E**:	0.58	ft
Pier Rebar Size, **Sc**:	8	
Pier Rebar Quantity, **mc**:	30	
Pier Tie/Spiral Size, **St**:	4	
Pier Tie/Spiral Quantity, **mt**:	5	
Pier Reinforcement Type:	Tie	
Pier Clear Cover, cc_{pier}:	3	in

Pad Properties

Depth, **D**:	6.4	ft
Pad Width, **W**:	24.0	ft
Pad Thickness, **T**:	2.5	ft
Pad Rebar Size, **Sp**:	8	
Pad Rebar Quantity, **mp**:	43	
Pad Clear Cover, cc_{pad}:	3	in

Material Properties

Rebar Grade, **Fy**:	60000	psi
Concrete Compressive Strength, **F'c**:	4000	psi
Dry Concrete Density, δ**c**:	150	pcf

Soil Properties

Total Soil Unit Weight, γ:	100	pcf
Ultimate Net Bearing, Qnet:	5	ksf
Cohesion, **Cu**:		ksf
Friction Angle, φ:	34	degrees
SPT Blow Count, N_{blows}:		
Base Friction, μ:		
Neglected Depth, **N**:	3.5	ft
Foundation Bearing on Rock?	No	
Groundwater Depth, **gw**:	6	ft

<--Toggle between Gross and Net

Foundation Analysis Checks

	Capacity	Demand	Rating	Check
Lateral (Sliding) (kips)	218.20	30.00	**13.7%**	**Pass**
Bearing Pressure (ksf)	4.21	2.45	**58.2%**	**Pass**
*Overturning (kip*ft)*	4686.44	3655.60	**78.0%**	**Pass**
*Pier Flexure (Comp.) (kip*ft)*	3989.23	3573.10	**89.6%**	**Pass**
Pier Compression (kip)	31187.52	78.72	**0.3%**	**Pass**
*Pad Flexure (kip*ft)*	3738.96	1594.50	**42.6%**	**Pass**
Pad Shear - 1-way (kips)	696.71	263.06	**37.8%**	**Pass**
Pad Shear - 2-way (ksi)	0.19	0.05	**24.9%**	**Pass**

Soil Rating:	**78.0%**
Structural Rating:	**89.6%**

AT&T SITE NUMBER:	**CT5743**
AT&T SITE NAME:	**LTE 2C AT PRESTON, CT**
AT&T FA CODE:	**10071207**
AT&T PACE NUMBER:	**MRCTB024141**
AT&T PTN NUMBER:	**2051A0B96C**
CROWN CASTLE BU #:	**876366**
SITE ADDRESS:	**101 PIERCE ROAD PRESTON, CT 06365**
COUNTY:	**NEW LONDON**
TOWER HEIGHT:	**155'-0"**
SITE TYPE:	**MONOPOLE**

PROJECT: AT&T LTE 2C/ LTE 3C

SITE INFORMATION

CROWN CASTLE SITE NAME:	WAPPINGERS FALLS / PRESTON CIT
SITE ADDRESS:	101 PIERCE ROAD PRESTON, CT 06365
COUNTY:	NEW LONDON
MAP/PARCEL #:	8-0-PIE1-101
AREA OF CONSTRUCTION:	EXISTING
LATITUDE:	41° 32' 17.46"
LONGITUDE:	-71° 57' 06.00"
LAT/LONG TYPE:	NAD83
GROUND ELEVATION:	260.0 FT.
CURRENT ZONING:	CONNECTICUT SITING COUNCIL
JURISDICTION:	TOWN OF PRESTON
OCCUPANCY CLASSIFICATION:	U
TYPE OF CONSTRUCTION:	VB
A.D.A. COMPLIANCE:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION
PROPERTY OWNER:	PANUS FARM LLC 60 PIERCE RD PRESTON, CT 06365
TOWER OWNER:	GLOBAL SIGNAL ACQUISITIONS II LLC 2000 CORPORATE DRIVE CANONSBURG, PA 15317
CARRIER/APPLICANT:	AT&T MOBILITY ONE AT&T WAY BEDMINSTER, NJ 07921
CROWN CASTLE APPLICATION ID:	406270
ELECTRIC PROVIDER:	NORTHEAST UTILITIES (800) 286-2000
TELCO PROVIDER:	AT&T (866) 620-6900

PROJECT TEAM

CROWN CASTLE A&E FIRM:	CROWN CASTLE USA INC. 2000 CORPORATE DRIVE CANONSBURG, PA 15317 CROWNAE.APPROVAL@CROWNCASTLE.COM
CROWN CASTLE CONTACTS:	3 CORPORATE PARK DRIVE, SUITE 101 CLIFTON PARK, NY 12065 PAUL PEDICONE - PROJECT MANAGER (518) 373-3530 JASON D'AMICO - CONSTRUCTION MANAGER (860) 209-0104 DASHANNA HANLON - PROJECT COORDINATOR DASHANNA.HANLON@CROWNCASTLE.COM (781) 970-0067

DRAWING INDEX

SHEET #	SHEET DESCRIPTION
T-1	TITLE SHEET
T-2	GENERAL NOTES
C-1.1	OVERALL SITE PLAN
C-1.2	DETAILED SHELTER LAYOUT
C-2	TOWER ELEVATION & ANTENNA CONFIGURATIONS
C-3	EQUIPMENT DETAILS AND SCHEDULE
C-4	PLUMBING DIAGRAM
G-1	GROUNDING SCHEMATIC
G-2	GROUNDING DETAILS
G-3	GROUNDING DETAILS

ALL DRAWINGS CONTAINED HEREIN ARE FORMATTED FOR FULL SIZE. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

PROJECT DESCRIPTION

THE PURPOSE OF THIS PROJECT IS TO PROPOSE AN ANTENNA MODIFICATION ON AN EXISTING WIRELESS SITE.

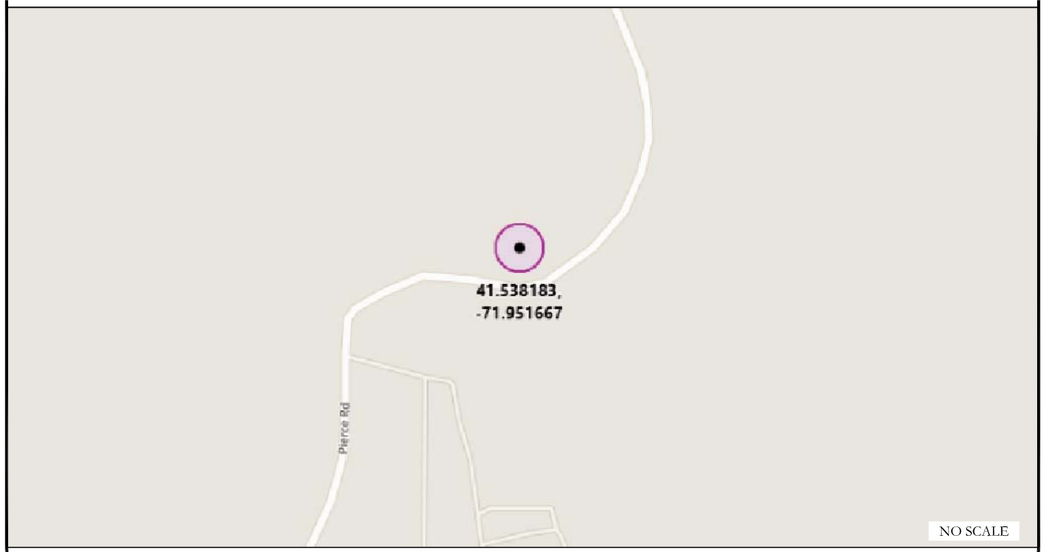
TOWER SCOPE OF WORK
- REMOVE (3) KMW - AM-X-CD-17-65-00T-RET ANTENNAS
- INSTALL (3) 8'-0" LONG 2-3/8" (2-7/8"O.D.) SCH40 GALV. PIPES WITH CROSSOVER KITS
- INSTALL (3) 8'-0" LONG 2-3/8" (2-7/8"O.D.) SCH40 GALV. PIPES
- INSTALL (3) CCI - HPA-65R-BUU-H8 ANTENNAS
- INSTALL (3) ERICSSON - RRUS11 RRU TO NEW CCI ANTENNA - 1 PER SECTOR
- INSTALL (3) KATHREIN - 80010966 ANTENNAS
- INSTALL (3) ERICSSON - RRUS 4478 B14 RRUs
- INSTALL (1) RAYCAP - DC6-48-60-18-8F SQUID
- INSTALL (2) ROSENBERGER LEONI - WR-VG122ST-BRDA (7/16") DC CABLES
- INSTALL (1) ROSENBERGER LEONI - FB-L98B-002-75000 (3/8") FIBER CABLE IN NEW 2" CONDUIT

GROUND SCOPE OF WORK
- NONE

DESIGN PACKAGE BASED ON THE RFDS
REVISION: PRELIMINARY
DATE: 03/04/2018

DESIGN PACKAGE BASED ON THE APPLICATION
ID: 406270
REVISION: 1

LOCATION MAP



NO SCALE

APPLICABLE CODES/REFERENCE DOCUMENTS

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES:

CODE TYPE	CODE
BUILDING	2016 CT STATE BUILDING CODE/2012 IBC W/ CT AMENDMENTS
MECHANICAL	2016 CT STATE BUILDING CODE/2012 IMC W/ CT AMENDMENTS
ELECTRICAL	2016 CT STATE BUILDING CODE/2014 NEC W/ CT AMENDMENTS

REFERENCE DOCUMENTS:

STRUCTURAL ANALYSIS: BY OTHERS

MOUNT ANALYSIS: BY OTHERS

NOTE:
PRIOR TO ACCESSING/ENTERING THE SITE YOU MUST CONTACT THE CROWN NOC AT (800) 788-7011 & CROWN CONSTRUCTION MANAGER

CALL CONNECTICUT ONE CALL
(800) 922-4455 CBYD.COM
CALL 2 WORKING DAYS BEFORE YOU DIG!

AT&T
ONE AT&T WAY
BEDMINSTER, NJ 07921

CENTERLINE COMMUNICATIONS
95 RYAN DRIVE, SUITE 1
RAYNHAM, MA 02767
(844) 748-8878

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

AT&T FA CODE: **10071207**
AT&T SITE NAME: **LTE 2C AT PRESTON, CT**

BU #: **876366**
CROWN CASTLE SITE NAME: **WAPPINGERS FALLS / PRESTON CIT**

101 PIERCE ROAD
PRESTON, CT 06365

EXISTING 155'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	12/06/17	JMM	PRELIMINARY	LMR
B	03/26/18	JMM	PRELIMINARY	LMR

THIS DOCUMENT IS PRELIMINARY IN NATURE AND IS NOT A FINAL, SIGNED AND SEALED DOCUMENT

Andrew Joseph Fandozzi III, P.E.
Professional Engineer License: #30515
Crown Castle USA, Inc. Certificate of Registration #PEC.0001101

SHEET NUMBER: T-1

REVISION: B

SITE WORK GENERAL NOTES:

1. THE SUBCONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
2. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY CONTRACTOR. EXTREME CAUTION SHOULD BE USED BY THE SUBCONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES, SUBCONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING AND EXCAVATION.
3. ALL SITE WORK TO COMPLY WITH QAS-STD-10068 "INSTALLATION STANDARDS FOR CONSTRUCTION ACTIVITIES ON CROWN CASTLE TOWER SITE" AND LATEST VERSION OF TIA 1019 "STANDARD FOR INSTALLATION, ALTERATION, AND MAINTENANCE OF ANTENNA SUPPORTING STRUCTURES AND ANTENNAS."
4. ALL SITE WORK SHALL BE AS INDICATED ON THE STAMPED CONSTRUCTION DRAWINGS AND PROJECT SPECIFICATIONS.
5. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
6. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF CONTRACTOR, OWNER AND/OR LOCAL UTILITIES.
7. THE SUBCONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE.
8. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE BTS EQUIPMENT AND TOWER AREAS.
9. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
10. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
11. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION AS SPECIFIED ON THE PROJECT SPECIFICATIONS.
12. SUBCONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
13. NOTICE TO PROCEED- NO WORK TO COMMENCE PRIOR TO COMPANY'S WRITTEN NOTICE TO PROCEED AND THE ISSUANCE OF A PURCHASE ORDER.
14. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN AND SHALL MEET ANSI/TIA 1019 (LATEST EDITION), OSHA, AND GENERAL INDUSTRY STANDARDS. ALL RIGGING PLANS SHALL ADHERE TO ANSI/TIA-1019 (LATEST EDITION) INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION.

STRUCTURAL STEEL NOTES:

1. ALL STEEL WORK SHALL BE PAINTED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS AND IN ACCORDANCE WITH ASTM A36 UNLESS OTHERWISE NOTED.
2. BOLTED CONNECTIONS SHALL BE ASTM A325 BEARING TYPE (3/4"ø) CONNECTIONS AND SHALL HAVE MINIMUM OF TWO BOLTS UNLESS NOTED OTHERWISE.
3. NON-STRUCTURAL CONNECTIONS FOR STEEL GRATING MAY USE 5/8"ø ASTM A307 BOLTS UNLESS NOTED OTHERWISE.
4. INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHOR, SHALL BE PER MANUFACTURER'S RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO MANUFACTURER'S RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR CONTRACTOR APPROVAL WHEN DRILLING HOLES IN CONCRETE. SPECIAL INSPECTIONS, REQUIRED BY GOVERNING CODES, SHALL BE PERFORMED IN ORDER TO MAINTAIN MANUFACTURER'S MAXIMUM ALLOWABLE LOADS.

CONCRETE AND REINFORCING STEEL NOTES:

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST-IN-PLACE CONCRETE.
2. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS, UNLESS NOTED OTHERWISE. SLAB FOUNDATION DESIGN ASSUMING ALLOWABLE SOIL BEARING PRESSURE OF 2000 PSF.
3. REINFORCING STEEL SHALL CONFORM TO ASTM A615, GRADE 60, DEFORMED UNLESS NOTED OTHERWISE. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A185 WELDED STEEL WIRE FABRIC UNLESS NOTED OTHERWISE. SPLICES SHALL BE CLASS "B" AND ALL HOOKS SHALL BE STANDARD, UNO.
4. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:

   CONCRETE CAST AGAINST EARTH.....3 IN.
   CONCRETE EXPOSED TO EARTH OR WEATHER:
   #6 AND LARGER.....2 IN.
   #5 AND SMALLER & WWF.....1 1/2 IN.
   CONCRETE NOT EXPOSED TO EARTH OR WEATHER OR NOT CAST AGAINST THE GROUND:
   SLAB AND WALLS.....3/4 IN.
   BEAMS AND COLUMNS.....1 1/2 IN.
5. A CHAMFER 3/4" SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNLESS NOTED OTHERWISE. IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

MASONRY NOTES:

1. HOLLOW CONCRETE MASONRY UNITS SHALL MEET A.S.T.M. SPECIFICATION C90, GRADE N. TYPE 1. THE SPECIFIED DESIGN COMPRESSIVE STRENGTH OF CONCRETE MASONRY (F'm) SHALL BE 1500 PSI.
2. MORTAR SHALL MEET THE PROPERTY SPECIFICATION OF A.S.T.M. C270 TYP. "S" MORTAR AND SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 2000 PSI.
3. GROUT SHALL MEET A.S.T.M. SPECIFICATION C475 AND HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 2000 PSI.
4. CONCRETE MASONRY SHALL BE LAID IN RUNNING (COMMON) BOND.
5. WALL SHALL RECEIVE TEMPORARY BRACING. TEMPORARY BRACING SHALL NOT BE REMOVED UNTIL GROUT IS FULLY CURED.

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

CONTRACTOR-	
SUBCONTRACTOR-	GENERAL CONTRACTOR (CONSTRUCTION)
CARRIER-	AT&T
TOWER OWNER-	CROWN CASTLE
OEM-	ORIGINAL EQUIPMENT MANUFACTURER

2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR AND CROWN CASTLE.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
4. DRAWINGS PROVIDED HERE ARE NOT TO SCALE AND ARE INTENDED TO SHOW OUTLINE ONLY.
5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.
7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
8. IF THE SPECIFIED EQUIPMENT CAN NOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CONTRACTOR AND CROWN CASTLE PRIOR TO PROCEEDING WITH ANY SUCH CHANGE OF INSTALLATION.
9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWINGS.
10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION. TRASH AND DEBRIS SHOULD BE REMOVED FROM SITE ON A DAILY BASIS.

ABBREVIATIONS AND SYMBOLS:

ABBREVIATIONS:

AGL	ABOVE GRADE LEVEL
BTS	BASE TRANSCEIVER STATION
(E)	EXISTING
MIN.	MINIMUM
REF	REFERENCE
RF	RADIO FREQUENCY
T.B.D.	TO BE DETERMINED
T.B.R.	TO BE RESOLVED
TYP	TYPICAL
REQ	REQUIRED
EGR	EQUIPMENT GROUND RING
AWG	AMERICAN WIRE GAUGE
MGB	MASTER GROUND BAR
EG	EQUIPMENT GROUND
BCW	BARE COPPER WIRE
SIAD	SMART INTEGRATED ACCESS DEVICE
GEN	GENERATOR
IGR	INTERIOR GROUND RING (HALO)
RBS	RADIO BASE STATION

SYMBOLS:

- SOLID GROUND BUS BAR
- SOLID NEUTRAL BUS BAR
- SUPPLEMENTAL GROUND CONDUCTOR
- 2-POLE THERMAL-MAGNETIC CIRCUIT BREAKER
- SINGLE-POLE THERMAL-MAGNETIC CIRCUIT BREAKER
- CHEMICAL GROUND ROD
- TEST WELL
- DISCONNECT SWITCH
- METER
- EXOTHERMIC WELD (CADWELD) (UNLESS OTHERWISE NOTED)
- MECHANICAL CONNECTION
- GROUNDING WIRE

ELECTRICAL INSTALLATION NOTES:

1. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES/ORDINANCES.
2. CONDUIT ROUTINGS ARE SCHEMATIC. SUBCONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED AND TRIP HAZARDS ARE ELIMINATED.
3. WIRING, RACEWAY AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC. HILTI EPOXY ANCHORS ARE REQUIRED BY CROWN CASTLE.
4. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC.
5. CABLES SHALL NOT BE ROUTED THROUGH LADDER-STYLE CABLE TRAY RUNGS.
6. EACH END OF EVERY POWER, POWER PHASE CONDUCTOR (I.E., HOTS), GROUNDING AND T1 CONDUCTOR AND CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2" PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA.
7. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH PLASTIC TAPE PER COLOR SCHEDULE. ALL EQUIPMENT SHALL BE LABELED WITH THEIR VOLTAGE RATING, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING AND BRANCH CIRCUIT ID NUMBERS (I.E. PANEL BOARD AND CIRCUIT ID'S).
8. PANEL BOARDS (ID NUMBERS) AND INTERNAL CIRCUIT BREAKERS (CIRCUIT ID NUMBERS) SHALL BE CLEARLY LABELED WITH PLASTIC LABELS.
9. ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
10. POWER, CONTROL AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE CONDUCTOR (#14 AWG OR LARGER), 600 V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90° C (WET & DRY) OPERATION LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED UNLESS OTHERWISE SPECIFIED.
11. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE CONDUCTOR (#6 AWG OR LARGER), 600V, OIL RESISTANT THHN OR THWN-2 GREEN INSULATION CLASS B STRANDED COPPER CABLE RATED FOR 90° C (WET AND DRY) OPERATION LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED UNLESS OTHERWISE SPECIFIED.
12. POWER AND CONTROL WIRING, NOT IN TUBING OR CONDUIT, SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (#14 AWG OR LARGER), 600 V, OIL RESISTANT THHN OR THWN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90° C (WET AND DRY) OPERATION WITH OUTER JACKET LISTED OR LABELED FOR THE LOCATION USED UNLESS OTHERWISE SPECIFIED.
13. ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP-STYLE, COMPRESSION WIRE LUGS AND WIRE NUTS BY THOMAS AND BETTS (OR EQUAL). LUGS AND WIRE NUTS SHALL BE RATED FOR OPERATION AT NO LESS THAN 75° C (90° C IF AVAILABLE).
14. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
15. ELECTRICAL METALLIC TUBING (EMT) OR RIGID NONMETALLIC CONDUIT (I.E. RIGID PVC SCHEDULE 40 OR RIGID PVC SCHEDULE 80 FOR LOCATIONS SUBJECT TO PHYSICAL DAMAGE) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
16. ELECTRICAL METALLIC TUBING (EMT), ELECTRICAL NONMETALLIC TUBING (ENT) OR RIGID NONMETALLIC CONDUIT (RIGID PVC, SCHEDULE 40) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
17. SCHEDULE 40 PVC UNDERGROUND ON STRAIGHTS AND SCHEDULE 80 PVC FOR ALL ELBOWS/90s AND ALL APPROVED ABOVE GRADE PVC CONDUIT.
18. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
19. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SET SCREW FITTINGS ARE NOT ACCEPTABLE.
20. CABINETS, BOXES AND WIRE WAYS SHALL BE LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
21. WIREWAYS SHALL BE EPOXY-COATED (GRAY) AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARDS; SHALL BE PANDUIT TYPE E (OR EQUAL); AND RATED NEMA 1 (OR BETTER).
22. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON-PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER. PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED FLUSH TO FINISH GRADE TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHIN ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.
23. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES AND PULL BOXES SHALL BE GALVANIZED OR EPOXY-COATED SHEET STEEL; SHALL MEET OR EXCEED UL 50 AND RATED NEMA 1 (OR BETTER) INDOORS OR NEMA 3R (OR BETTER) OUTDOORS.
24. METAL RECEPTACLE, SWITCH AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED OR NON-CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1; AND RATED NEMA 1 (OR BETTER) INDOORS OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.
25. NONMETALLIC RECEPTACLE, SWITCH AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2; AND RATED NEMA 1 (OR BETTER) INDOORS OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.
26. THE SUBCONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CONTRACTOR BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
27. THE SUBCONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD LIFE AND PROPERTY.
28. INSTALL PLASTIC LABEL ON THE METER CENTER TO SHOW "AT&T".
29. ALL CONDUITS THAT ARE INSTALLED ARE TO HAVE A METERED MULE TAPE PULL CORD INSTALLED.

GREENFIELD GROUNDING NOTES:

1. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION AND AC POWER GES'S) SHALL BE BONDED TOGETHER AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
2. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS, THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
3. THE SUBCONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT AND PROVIDE TESTING RESULTS.
4. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
5. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
6. EACH CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS; #2 AWG SOLID TINNED COPPER FOR OUTDOOR BTS.
7. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED BACK TO BACK CONNECTIONS ON OPPOSITE SIDE OF THE GROUND BUS ARE PERMITTED.
8. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING SHALL BE #2 AWG SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED.
11. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
12. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR AND EXTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS.
13. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
14. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
15. APPROVED ANTIOXIDANT COATINGS (I.E. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
16. ALL EXTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
17. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
18. BOND ALL METALLIC OBJECTS WITHIN 6 FT. OF MAIN GROUND WIRES WITH 1-#2 AWG TIN-PLATED COPPER GROUND CONDUCTOR.
19. GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS, WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G., NONMETALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
20. ALL GROUNDS THAT TRANSITION FROM BELOW GRADE TO ABOVE GRADE MUST BE #2 TINNED SOLID IN 3/4" LIQUID TIGHT CONDUIT FROM 24" BELOW GRADE TO WITHIN 3" TO 6" OF CAD-WELD TERMINATION POINT. THE EXPOSED END OF THE LIQUID TIGHT CONDUIT MUST BE SEALED WITH SILICONE CAULK. (ADD TRANSITIONING GROUND STANDARD DETAIL AS WELL).

NEC INSULATOR COLOR CODE

DESCRIPTION	PHASE/CODE LETTER	WIRE COLOR
240/120 1Ø	LEG 1	BLACK
	LEG 2	RED
AC NEUTRAL	N	WHITE
GROUND (EGC)	G	GREEN
VDC POS	+	*RED-POLARITY MARK AT TERMINATION
VDC NEG	-	*BLACK-POLARITY MARK AT TERMINATION
240V OR 208V, 3Ø	PHASE A	BLACK
	PHASE B	RED(ORG. IF HI LEG)
	PHASE C	BLUE
480V, 3Ø	PHASE A	BROWN
	PHASE B	ORANGE
	PHASE C	YELLOW

* SEE NEC 210.5(C)(1) AND (2)

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CROWN CASTLE
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CLIFTON PARK, NY 12065

AT&T FA CODE: **10071207**
AT&T SITE NAME: **LTE 2C AT PRESTON, CT**

BU #: **876366**
CROWN CASTLE SITE NAME: **WAPPINGERS FALLS / PRESTON CIT**

101 PIERCE ROAD
PRESTON, CT 06365

EXISTING 155'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	12/06/17	JMM	PRELIMINARY	LMR
B	03/26/18	JMM	PRELIMINARY	LMR

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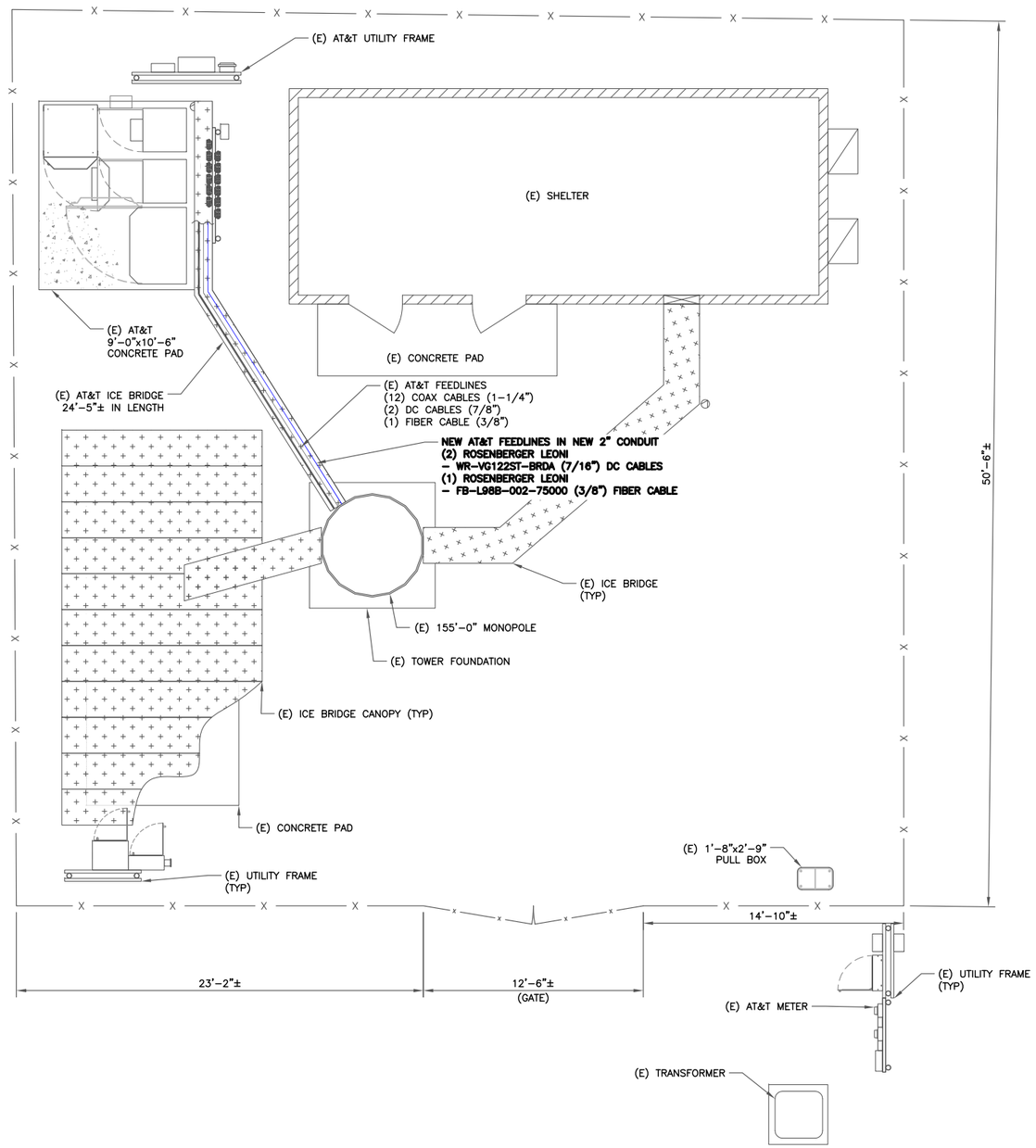
SHEET NUMBER: T-2

REVISION: B



1 OVERALL SITE PLAN

SCALE: 30' 15' 0 30' 1"=30'-0" (FULL SIZE) 1"=60'-0" (11x17)

N

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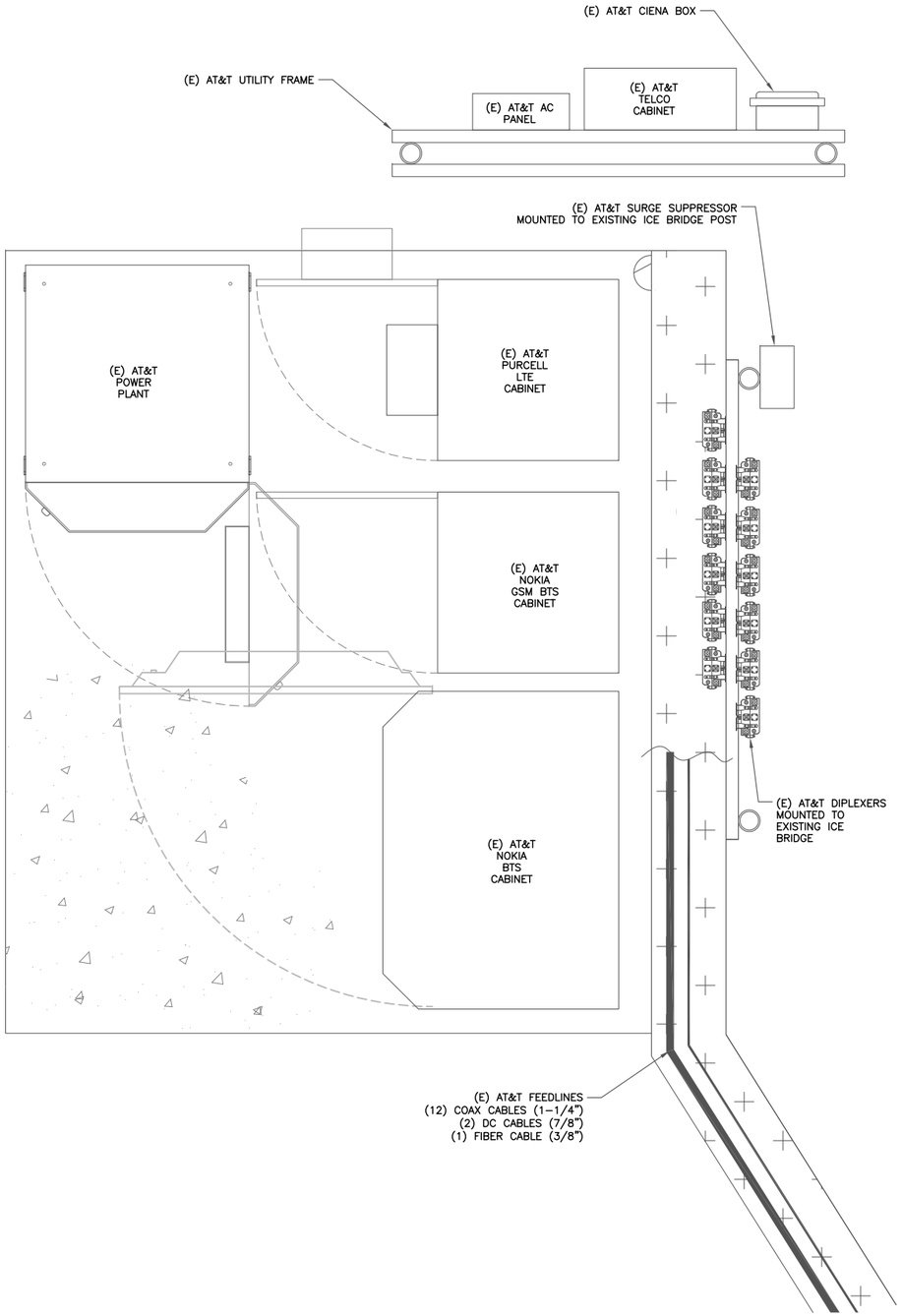
SHEET NUMBER: C-1.1

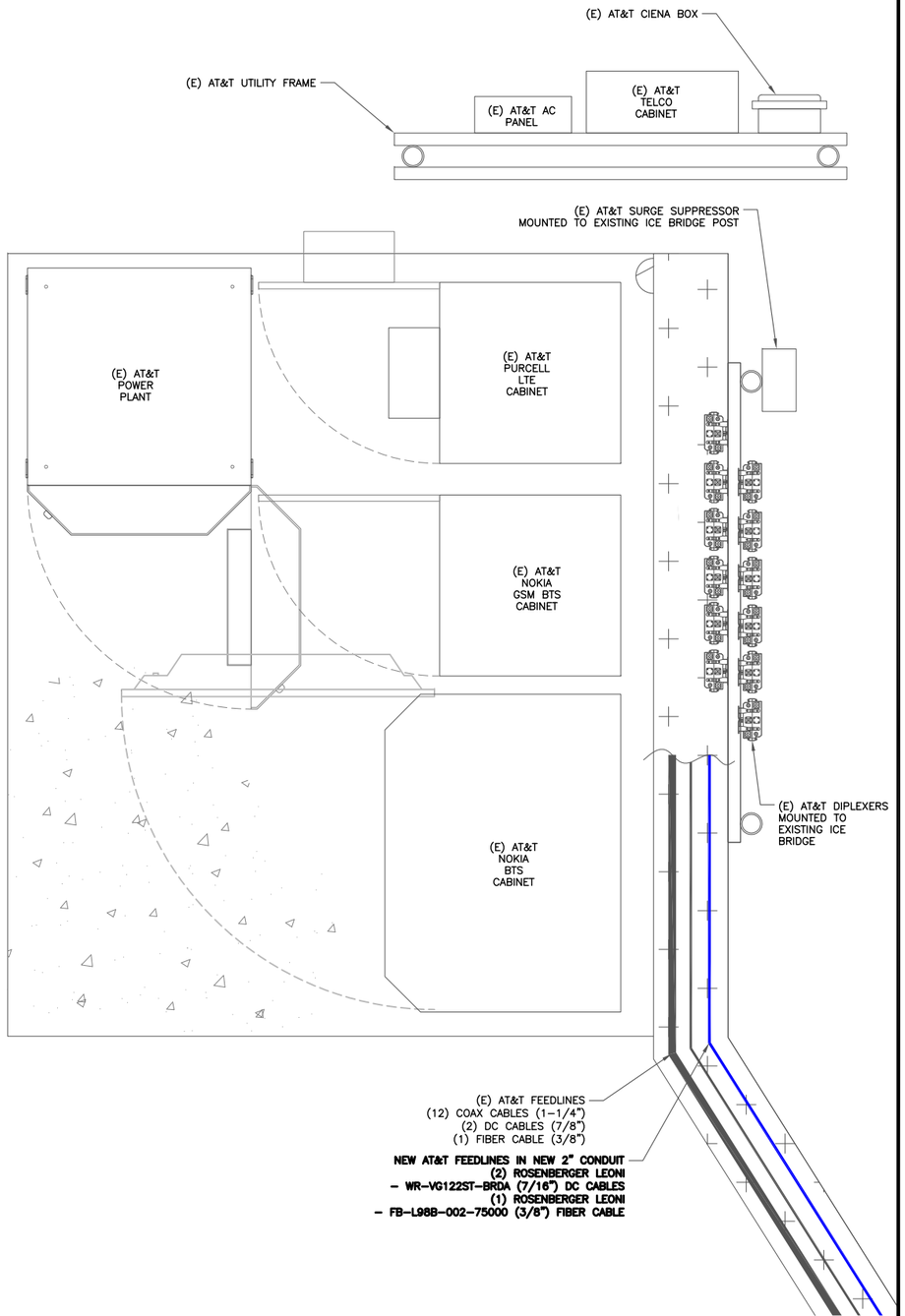
REVISION: B



1 EXISTING EQUIPMENT PLAN

SCALE: 2' 1' 0 2' 1/2"=1'-0" (FULL SIZE) 1/4"=1'-0" (11x17)

N



2 NEW EQUIPMENT PLAN

SCALE: 2' 1' 0 2' 1/2"=1'-0" (FULL SIZE) 1/4"=1'-0" (11x17)

N

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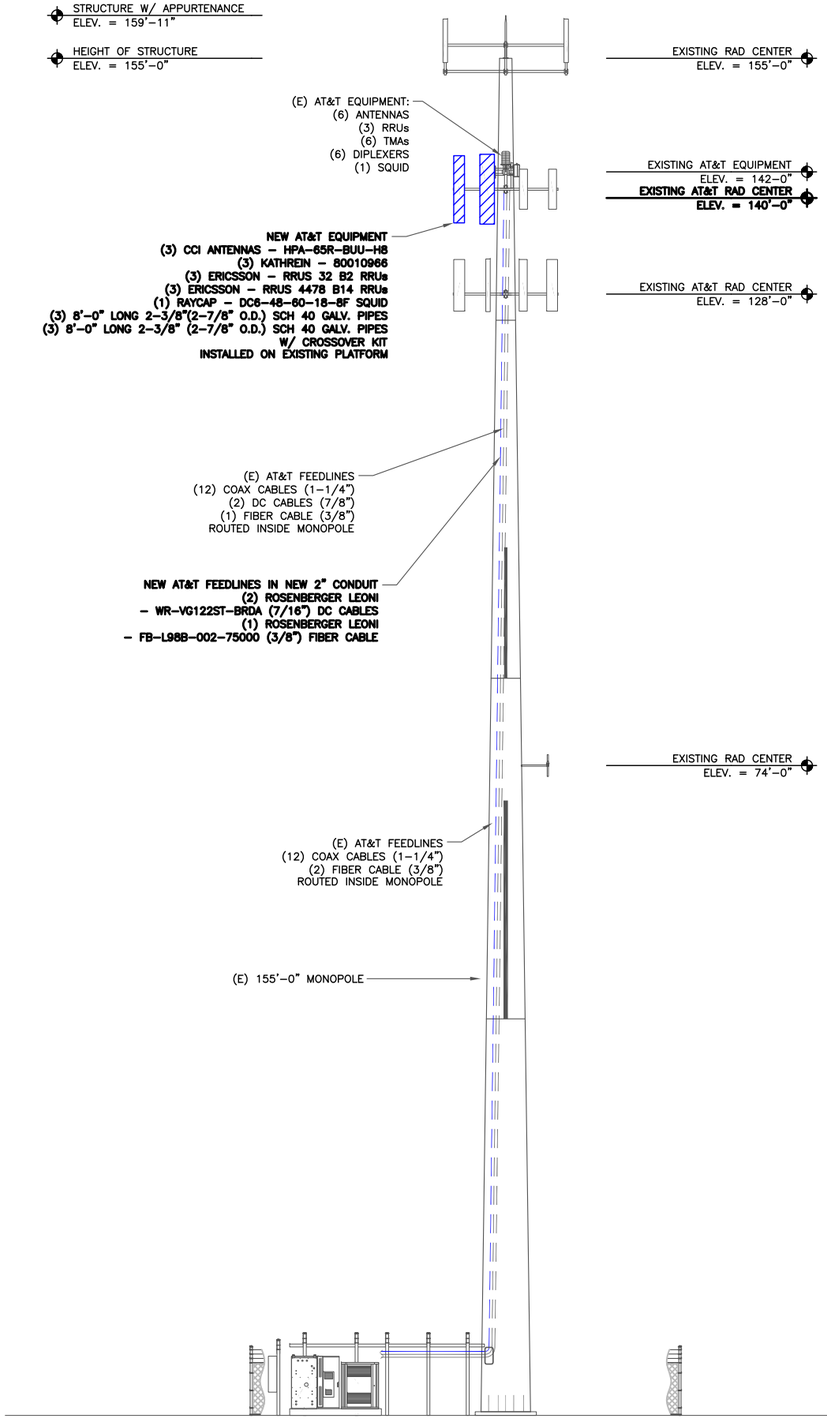
SHEET NUMBER: C-1.2

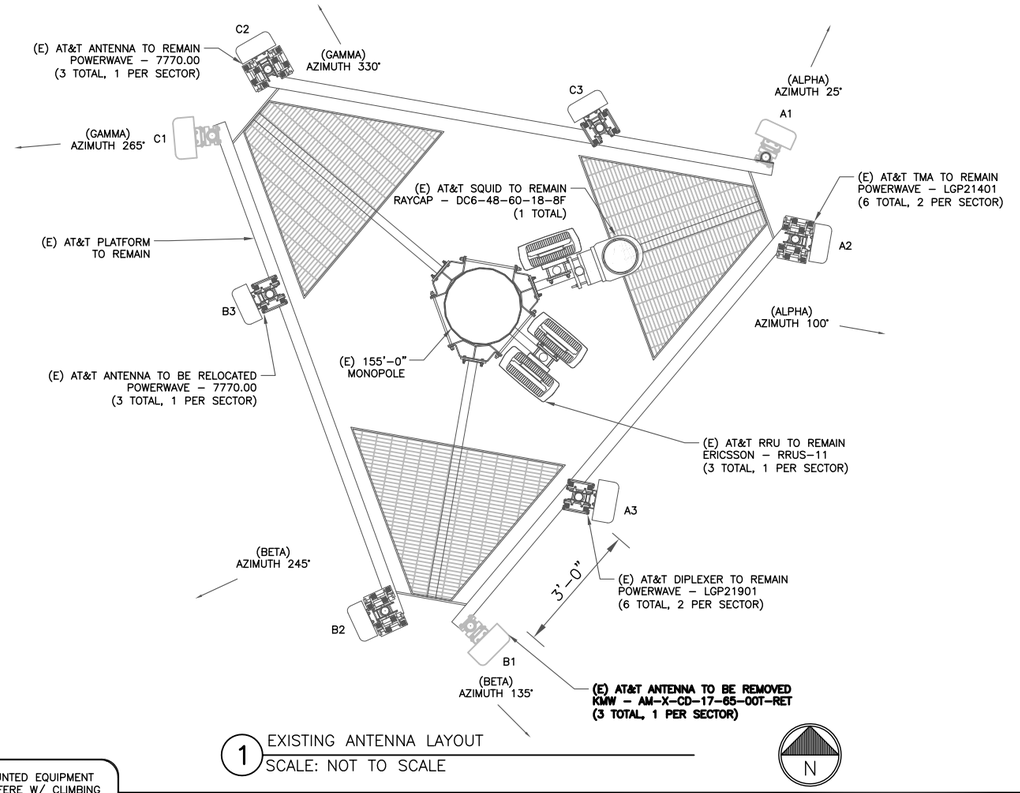
REVISION: B



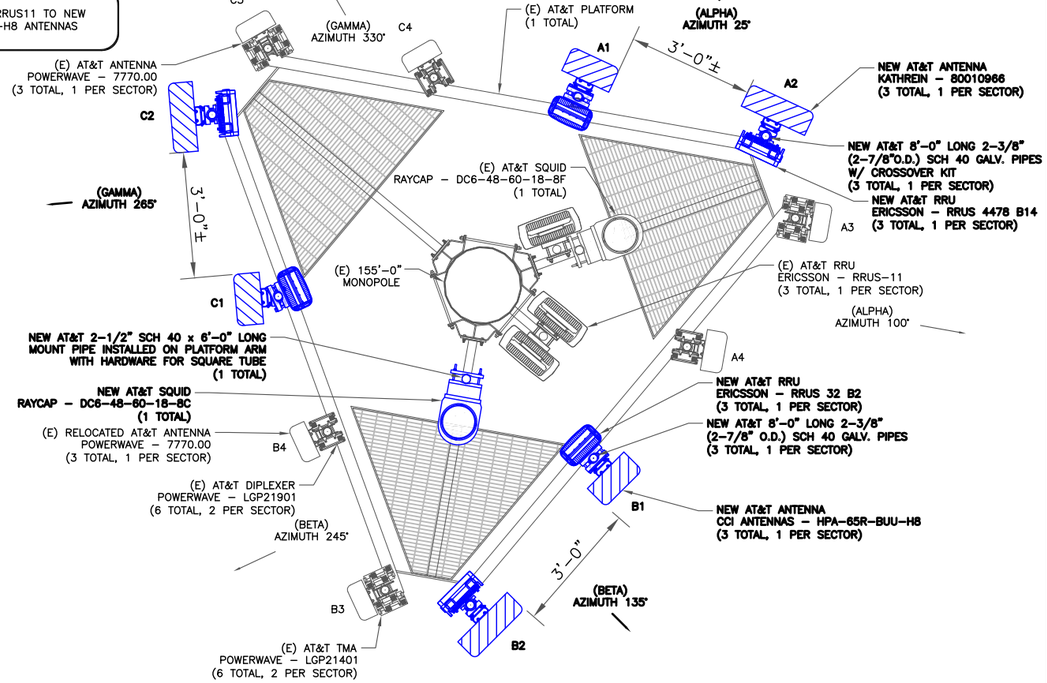
2 NEW ELEVATION / EXISTING ELEVATION
SCALE: NOT TO SCALE

NOTE: DIRECT TOWER MOUNTED EQUIPMENT MUST NOT TRAP OR INTERFERE W/ CLIMBING PEGS/STEPS AND SAFETY CLIMB.

NOTE: RECONNECT (E) RRUS11 TO NEW CCI – HPA-65R-BUU-H8 ANTENNAS



1 EXISTING ANTENNA LAYOUT
SCALE: NOT TO SCALE



2 NEW ANTENNA LAYOUT
SCALE: NOT TO SCALE

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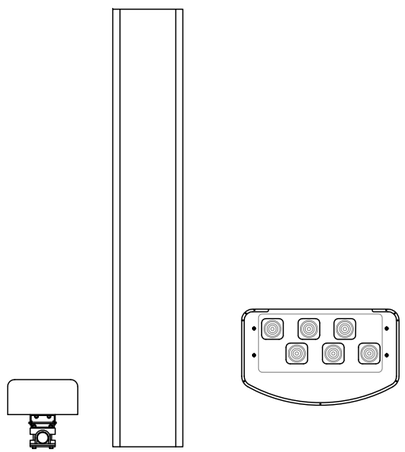
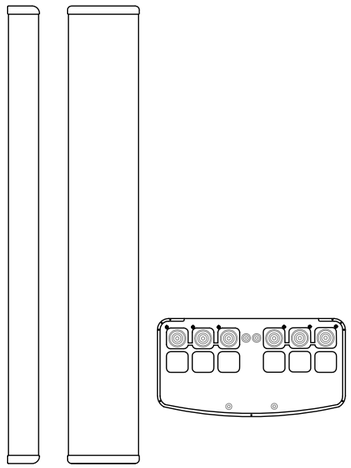


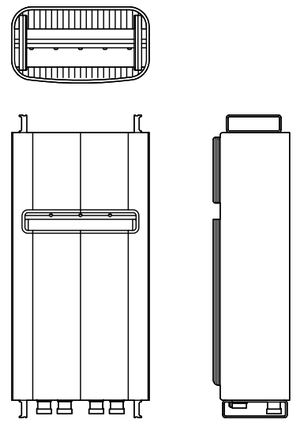
CCI ANTENNAS – HPA-65R-BUU-H8
WEIGHT (WITHOUT MOUNTING HARDWARE): 68.0 LBS
SIZE (HxWxD): 92.40x14.80x7.40 IN.
MOUNTING HARDWARE P/N: BSA-M03
RATED WIND VELOCITY: 150.0 MPH

1 CCI ANTENNAS – HPA-65R-BUU-H8
SCALE: NOT TO SCALE



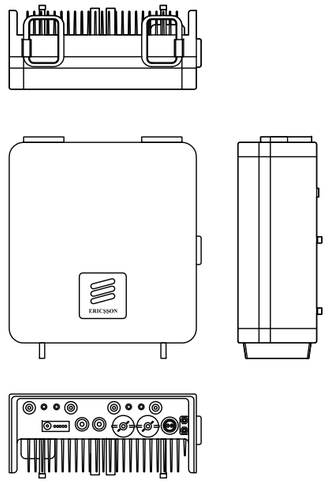
KATHREIN – 800 10866
WEIGHT (WITHOUT MOUNTING HARDWARE): 114.6 LBS
SIZE (HxWxD): 96.0x20.0x6.9 IN.
MOUNTING HARDWARE P/N: 738 546
RATED WIND VELOCITY: 120.0 MPH

2 KATHREIN – 80010966
SCALE: NOT TO SCALE



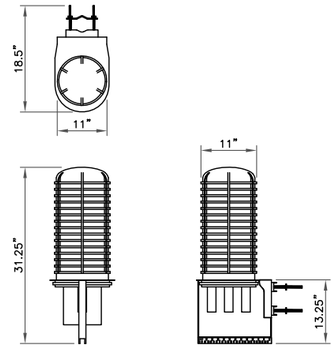
ERICSSON – RRUS 32
WEIGHT (WITHOUT MOUNTING HARDWARE): 60.0 LBS
SIZE (HxWxD): 26.70x12.10x6.70 IN.

3 ERICSSON – RRUS 32
SCALE: NOT TO SCALE



ERICSSON – RADIO 4478
WEIGHT: 60.0 LBS
SIZE (HxWxD): 15.0x13.0x8.0 IN.

4 ERICSSON – RADIO 4478
SCALE: NOT TO SCALE



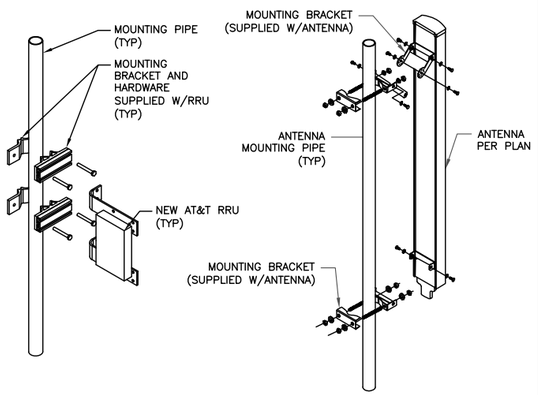
RAYCAP – DC6-48-60-0-8F
SIZE: 11x31.25 IN.
WEIGHT: 32.8 LBS
NOMINAL OPERATING VOLTAGE: 48 VDC
VOLTAGE PROTECTION RATING: 400 V
WIND LOADING: 150 MPH SUSTAINED (105.7 LBS)
WIND LOADING: 195 MPH GUST (213.6 LBS)

CONTRACTOR TO USE "THREAD LUBRICANT" ON MOUNTING BOLTS DURING INSTALLATION

5 RAYCAP – DC6-48-60-0-8F
SCALE: NOT TO SCALE

NOTE:

COMPLY WITH MANUFACTURERS INSTRUCTIONS TO ENSURE THAT ALL RRU'S RECEIVE ELECTRICAL POWER WITHIN 24 HOURS OF BEING REMOVED FROM THE MANUFACTURER'S PACKAGING. DO NOT OPEN RRU PACKAGES IN THE RAIN.



6 ANTENNA MOUNTING DETAIL
SCALE: NOT TO SCALE

FINAL ANTENNA AND COAXIAL CABLE SCHEDULE

	POSITION	ANTENNA TYPE	AZIMUTH	ANTENNA QTY	ANTENNA RAD CENTER	TMA QTY/MODEL NO.	RRU QTY/MODEL NO.	COAX QTY/ SIZE	SURGE PROTECTION	DC (WR-VC86ST-BRD) FIBER CABLES (FB-L98B-002-XXX)	TECH.
ALPHA SECTOR	A1	**CCI ANTENNAS HPA-65R-BUU-H8**	25°	1	140'-0"	–	(1) RRUS 11 (E) **(1) RRUS 32 B2 (P)**	–	(1) RAYCAP DC6-48-60-18-8F (E)	(2) DC CABLES 7/16" (E) (1) FIBER CABLE (3/8") (E)	**LTE**
	A2	**KATHREIN 80010966**	25°	1	140'-0"	–	**(1) RRUS 4478 B14 (P)**	–	**(1) RAYCAP DC6-48-60-18-8F (P)**	**(2) DC CABLES 7/16" (P) (1) FIBER CABLE (3/8") (P)**	**LTE**
	A3	POWERWAVE 7770.00	100°	1	140'-0"	(2) POWERWAVE – LGP21901 (E)	–	–	–	–	GSM
	A4	POWERWAVE 7770.00	100°	1	140'-0"	(2) POWERWAVE – LGP21401 (E)	–	(2) EXISTING 1-1/4"	–	–	UMTS
BETA SECTOR	B1	**CCI ANTENNAS HPA-65R-BUU-H8**	135°	1	140'-0"	–	(1) RRUS 11 (E) **(1) RRUS 32 B2 (P)**	–	–	–	**LTE**
	B2	**KATHREIN 80010966**	135°	1	140'-0"	–	**(1) RRUS 4478 B14 (P)**	–	–	–	**LTE**
	B3	POWERWAVE 7770.00	245°	1	140'-0"	(2) POWERWAVE – LGP21901 (E)	–	–	–	–	GSM
	B4	POWERWAVE 7770.00	245°	1	140'-0"	(2) POWERWAVE – LGP21401 (E)	–	(2) EXISTING 1-1/4"	–	–	LTE
GAMMA SECTOR	C1	**CCI ANTENNAS HPA-65R-BUU-H8**	265°	1	140'-0"	–	(1) RRUS 11 (E) **(1) RRUS 32 B2 (P)**	–	–	–	**LTE**
	C2	**KATHREIN 80010966**	265°	1	140'-0"	–	**(1) RRUS 4478 B14 (P)**	–	–	–	**LTE**
	C3	POWERWAVE 7770.00	330°	1	140'-0"	(2) POWERWAVE – LGP21901 (E)	–	–	–	–	GSM
	C4	POWERWAVE 7770.00	330°	1	140'-0"	(2) POWERWAVE – LGP21401 (E)	–	(2) EXISTING 1-1/4"	–	–	UMTS
			TOTAL	12	N/A	(6) POWERWAVE – LGP21401 (E) (6) POWERWAVE – LGP21901 (E)	(3) RRUS 11 (E) **(3) RRUS 32 B2 (P)** **(3) RRUS 4478 B14 (P)**	(12) EXISTING 1-1/4"	(1) RAYCAP DC6-48-60-18-8F (E) **(1) RAYCAP DC6-48-60-18-8F (P)**	(2) DC CABLES 7/16" (E) (1) FIBER CABLE (3/8") (E) **(2) DC CABLES 7/16" (P) (1) FIBER CABLE (3/8") (P)**	–

7 FINAL ANTENNA AND COAXIAL CABLE SCHEDULE
SCALE: NOT TO SCALE

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BU #: **876366**
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101 PIERCE ROAD
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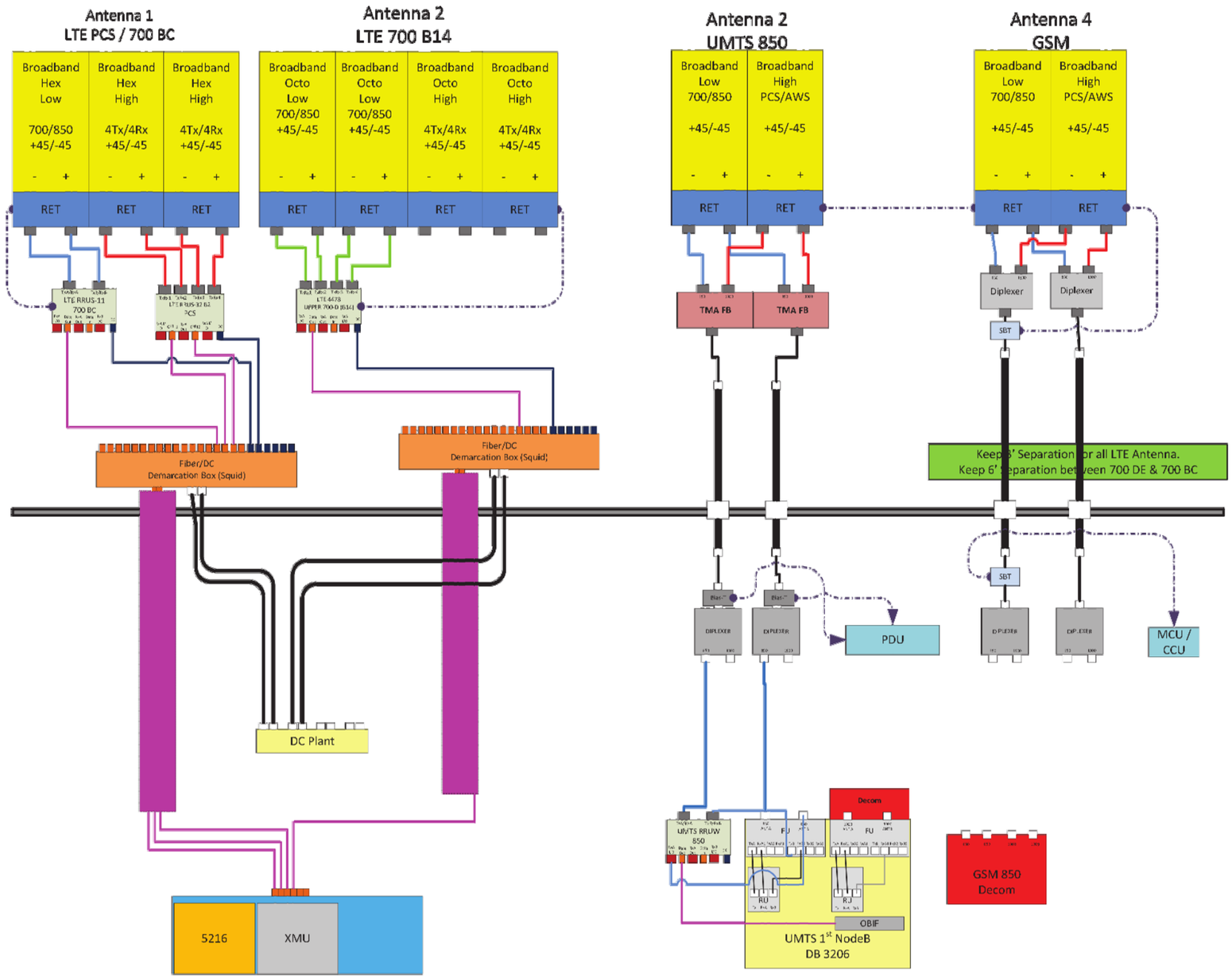
SHEET NUMBER: C-3
REVISION: B

Diagram - Sector	A/1	Diagram File Name - CT5743_A_B_C_B14_PCS_Rev1.vsd					
Atoll Site Name -	CTV5743	Location Name -	PRESTON CENTRAL	Market -	CONNECTICUT	Market Cluster -	NEW ENGLAND
Comments:							



1 PLUMBING DIAGRAM
SCALE: NOT TO SCALE

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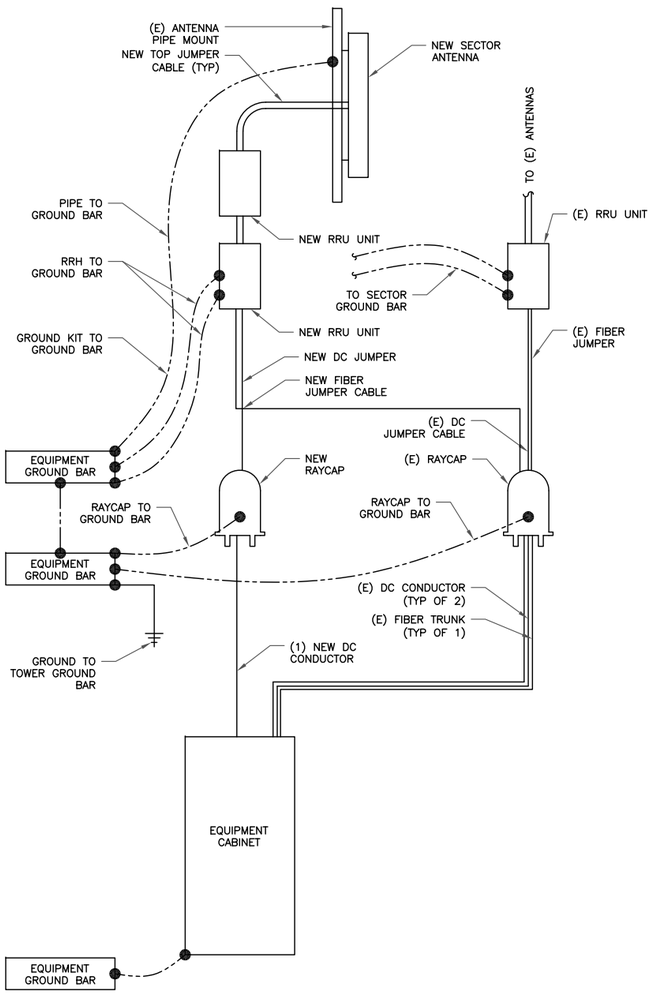
SHEET NUMBER: C-4
REVISION: B



1 GROUNDING SCHEMATIC
SCALE: NOT TO SCALE

2 NOT USED
SCALE: NOT TO SCALE

3 NOT USED
SCALE: NOT TO SCALE

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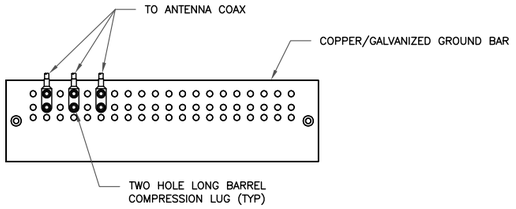
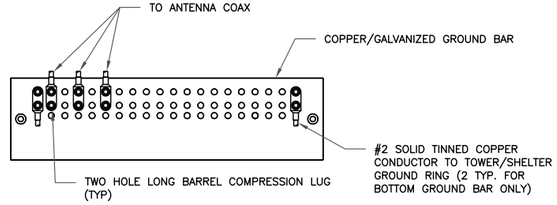
SHEET NUMBER: G-1
REVISION: B



NOTES:

1. DOUBLING UP "OR STACKING" OF CONNECTIONS IS NOT PERMITTED.
2. EXTERIOR ANTIOXIDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
3. GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO TOWER STEEL.

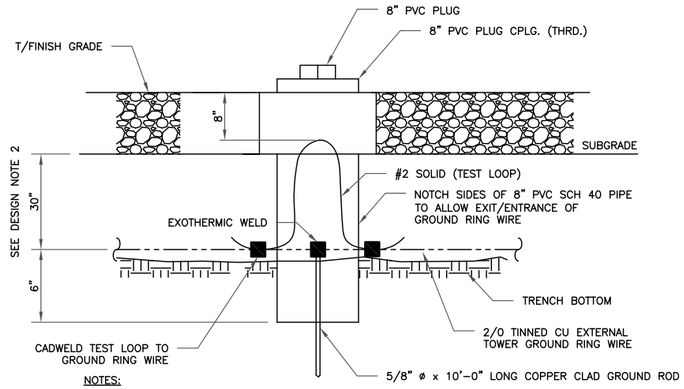
1 ANTENNA GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

1. EXTERIOR ANTIOXIDANT JOINT COMPOUND TO BE USED ON ALL EXTERIOR CONNECTIONS.
2. GROUND BAR SHALL NOT BE ISOLATED FROM TOWER. MOUNT DIRECTLY TO TOWER STEEL (TOWER ONLY).
3. GROUND BAR SHALL BE ISOLATED FROM BUILDING OR SHELTER.

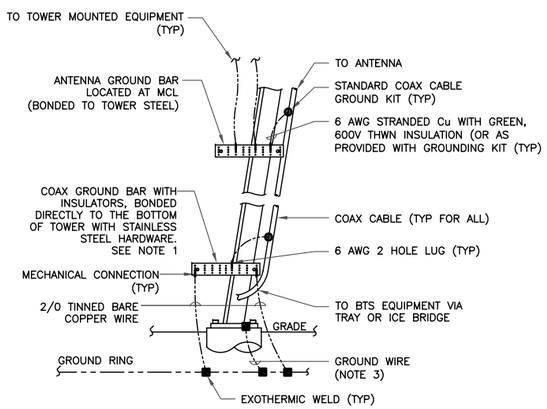
2 TOWER/SHELTER GROUND BAR DETAIL
SCALE: NOT TO SCALE



NOTES:

1. GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 45 DEGREES FROM THE VERTICAL
2. GROUND WIRE SHALL BE MIN. 30" BELOW GRADE OR 6" BELOW FROST LINE. (WHICH EVER IS GREATER) AS PER N.E.C. ARTICLE 250-50(D)

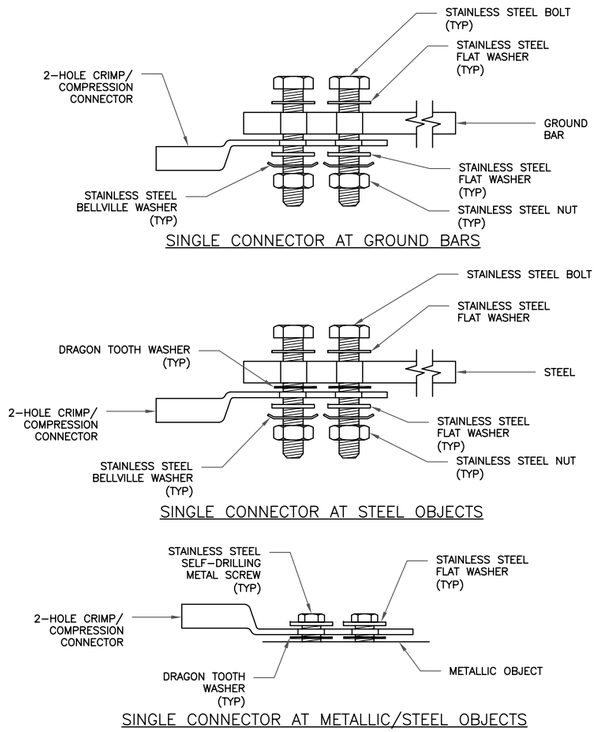
3 INSPECTION WELL DETAIL
SCALE: NOT TO SCALE



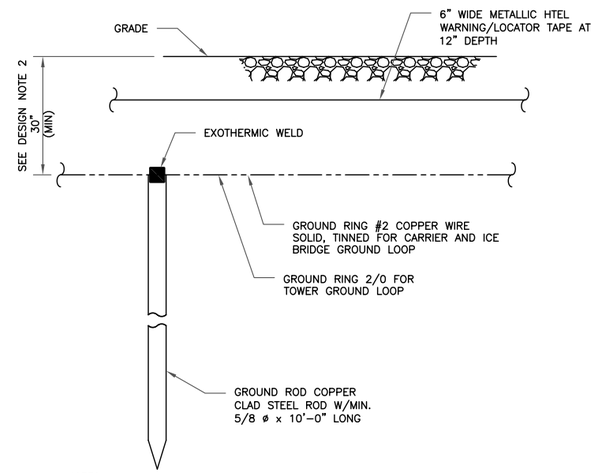
NOTES:

1. NUMBER OF GROUNDING BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, ANTENNA LOCATIONS AND CONNECTION ORIENTATION. COAXIAL CABLES EXCEEDING 200 FEET ON THE TOWER SHALL HAVE GROUND KITS AT THE MIDPOINT. PROVIDE AS REQUIRED.
2. ONLY MECHANICAL CONNECTIONS ARE ALLOWED TO BE MADE TO CROWN CASTLE TOWERS. ALL MECHANICAL CONNECTIONS SHALL BE TREATED WITH AN ANTI-OXIDANT COATING.
3. ALL TOWER GROUNDING SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF THE RECOGNIZED EDITION OF ANSI/TIA 222 AND NFPA 780.

4 TYPICAL ANTENNA CABLE GROUNDING
SCALE: NOT TO SCALE



5 HARDWARE DETAIL FOR EXTERIOR CONNECTIONS
SCALE: NOT TO SCALE



NOTES:

1. GROUND ROD SHALL BE DRIVEN VERTICALLY, NOT TO EXCEED 45 DEGREES FROM THE VERTICAL
2. GROUND WIRE SHALL BE MIN. 30" BELOW GRADE OR 6" BELOW FROST LINE. (WHICH EVER IS GREATER) AS PER N.E.C. ARTICLE 250-50(D)

6 GROUND ROD DETAIL
SCALE: NOT TO SCALE

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PRESTON, CT 06365

EXISTING 155'-0" MONOPOLE

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION	DES./QA
A	12/06/17	JMM	PRELIMINARY	LMR
B	03/26/18	JMM	PRELIMINARY	LMR

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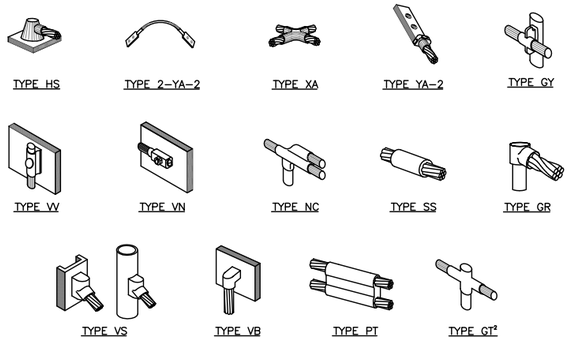
Andrew Joseph Fandozzi III, P.E.
Professional Engineer License: #30515
Crown Castle USA, Inc. Certificate of Registration #PEC.0001101

SHEET NUMBER: G-2
REVISION: B

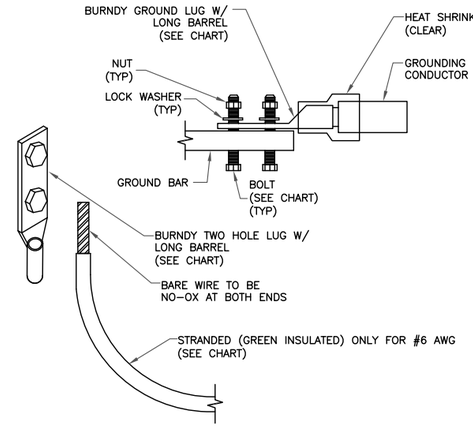


NOTE:

1. ERICO EXOTHERMIC "MOLD TYPES" SHOWN HERE ARE EXAMPLES. CONSULT WITH CONSTRUCTION MANAGER FOR SPECIFIC MOLDS TO BE USED FOR THIS PROJECT.
2. MOLD TYPE ONLY TO BE USED BELOW GRADE WHEN CONNECTING GROUND RING TO GROUND ROD.

1 CADWELD GROUNDING CONNECTIONS
SCALE: NOT TO SCALE

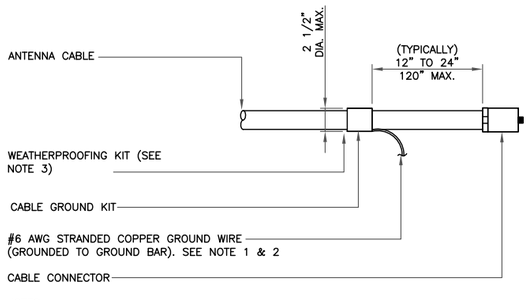
WIRE SIZE	BURNDY LUG	BOLT SIZE
#6 AWG GREEN INSULATED	YA6C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG SOLID TINNED	YA3C-2TC38	3/8" - 16 NC S 2 BOLT
#2 AWG STRANDED	YA2C-2TC38	3/8" - 16 NC S 2 BOLT
#2/0 AWG STRANDED	YA26-2TC38	3/8" - 16 NC S 2 BOLT
#4/0 AWG STRANDED	YA28-2N	1/2" - 16 NC S 2 BOLT



NOTES:

1. ALL GROUNDING LUGS ARE TO BE INSTALLED PER MANUFACTURER'S SPECIFICATIONS. ALL HARDWARE BOLTS, NUTS, LOCK WASHERS SHALL BE STAINLESS STEEL. ALL HARDWARE ARE TO BE AS FOLLOWS: BOLT, FLAT WASHER,GROUND BAR, GROUND LUG, FLAT WASHER AND NUT.

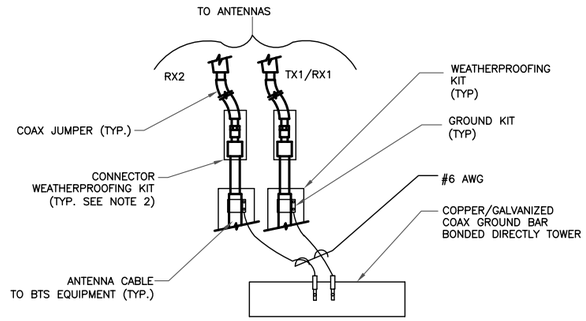
2 MECHANICAL LUG CONNECTION
SCALE: NOT TO SCALE



NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2. GROUNDING KIT SHALL BE TYPE AND PART NUMBER AS SUPPLIED OR RECOMMENDED BY CABLE MANUFACTURER.
3. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT, COLD SHRINK SHALL NOT BE USED.

3 CABLE GROUND KIT CONNECTION
SCALE: NOT TO SCALE

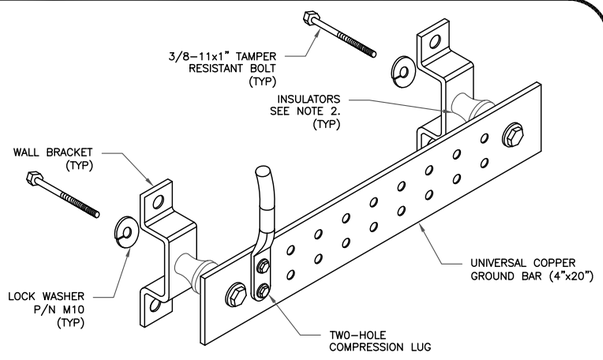


NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO ANTENNA GROUND BAR.
2. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT. COLD SHRINK SHALL NOT BE USED.

4 GROUND CABLE CONNECTION
SCALE: NOT TO SCALE

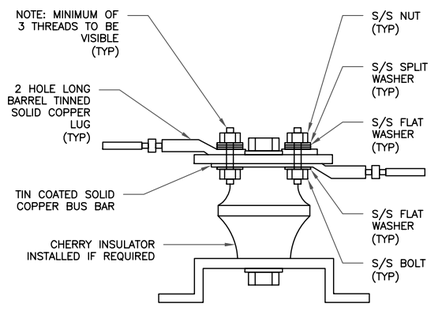
5 GROUNDWIRE INSTALLATION
SCALE: NOT TO SCALE



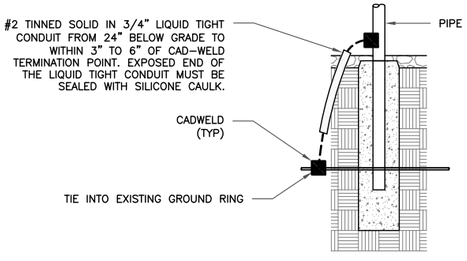
NOTES:

1. DOWN LEAD (HOME RUN) CONDUCTORS ARE NOT TO BE INSTALLED ON CROWN CASTLE TOWER, PER THE GROUNDING DOWN CONDUCTOR POLICY QAS-STD-10091. NO MODIFICATION OR DRILLING TO TOWER STEEL IS ALLOWED IN ANY FORM OR FASHION, CAD-WELDING ON THE TOWER AND/OR IN THE AIR ARE NOT PERMITTED.
2. OMIT INSULATOR WHEN MOUNTING TO TOWER STEEL OR PLATFORM STEEL USE INSULATORS WHEN ATTACHING TO BUILDING OR SHELTERS.

6 GROUND BAR DETAIL
SCALE: NOT TO SCALE



7 LUG DETAIL
SCALE: NOT TO SCALE



8 TRANSITIONING GROUND DETAIL
SCALE: NOT TO SCALE

AT&T
ONE AT&T WAY
BEDMINSTER, NJ 07921

CENTERLINE COMMUNICATIONS
95 RYAN DRIVE, SUITE 1
RAYNHAM, MA 02767
(844) 748-8878

CROWN CASTLE
3 CORPORATE PARK DRIVE, SUITE 101
CLIFTON PARK, NY 12065

AT&T FA CODE: **10071207**
AT&T SITE NAME: **LTE 2C AT PRESTON, CT**

BU #: **876366**
CROWN CASTLE SITE NAME: **WAPPINGERS FALLS / PRESTON CIT**

101 PIERCE ROAD
PRESTON, CT 06365

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