Transcend Wireless

10 Industrial Ave,
Suite 3
Mahwah NJ 07430

Phone: 201.684.0055
Fax: 201.684.0066

June 21, 2016

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

Notice of Exempt Modification
1441 Forbes Street, East Hartford, CT, 06118
Latitude- 41.73145100
Longitude- -72.60774900

Dear Ms. Bachman,

T-Mobile currently maintains nine (9) existing antennas at the 87' level of the existing 131' monopole at 1441 Forbes Street in East Hartford, CT (also known as 1455 Forbes Street). The tower is owned by Crown Castle. The property is owned by Mr. Robert D. Handel. T-Mobile now intends to replace three (3) of its existing antennas with three (3) new 1900 MHz antennas. These antennas would be installed at the same 87' level of the tower. T-Mobile also intends to install one new hybrid fiber cable.

This facility was approved by the Council in Petition No. 535 on May 21, 2002. This approval did not include conditions that would be violated by this modification, and this modification complies with the conditions of approval.

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 The Honorable Marcia A. Leclerc, Mayor of the Town of East Hartford, as well as the tower and property owner.

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

1. The proposed modification 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 modification 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.

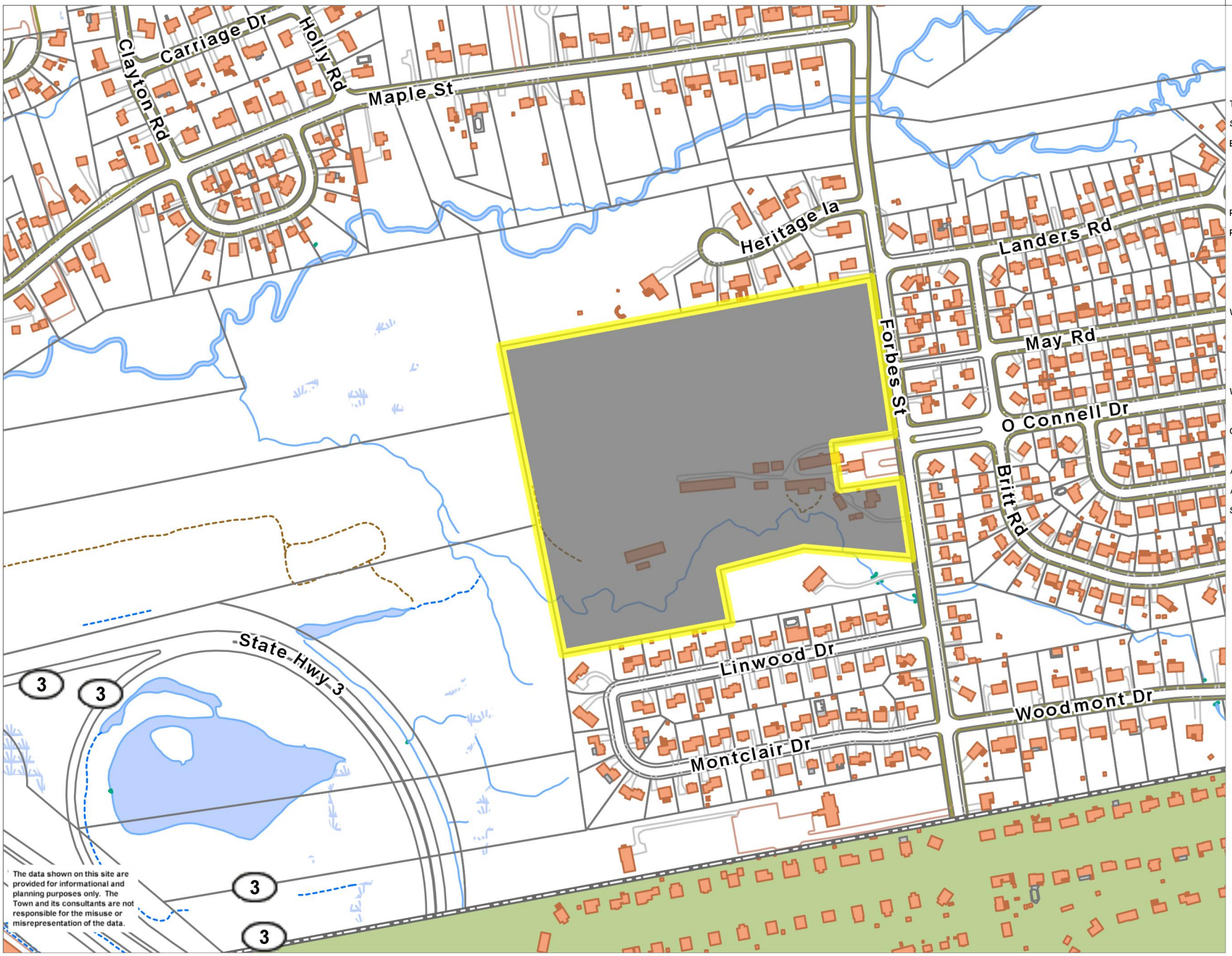
For the foregoing reasons, T-Mobile respectfully submits that the proposed modifications to the above-referenced telecommunications facility constitute an exempt modification under R.C.S.A. 16-50j-72(b)(2).

Sincerely,

Kyle Richers

Kyle Richers
10 Industrial Ave., Suite 3
Mahwah, New Jersey 07430
908-447-4716
krichers@transcendwireless.com

cc: Marcia A. LeClerc- as elected official
Crown Castle- as tower owner
Mr. Robert D. Handel- as property owner



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Printed on 06/20/2016 at 10:16 AM

East Hartford MapsOnline

Town of East Hartford Property Summary Report

1455 FORBES ST

MAP LOT:	41-233	**CAMA PID:**	4723
LOCATION:	1455 FORBES ST		
OWNER NAME:	HANDEL ROBERT D		

OWNER OF RECORD
HANDEL ROBERT D 1473 FORBES ST EAST HARTFORD, CT 06118

LIVING AREA:	720	**ZONING:**	R2	**ACREAGE:**	25.74

SALES HISTORY

OWNER	BOOK / PAGE	SALE DATE	SALE PRICE
HANDEL ROBERT D	3582/ 113	25-Jan-2016	$0.00
HANDEL JESSIE K EST OF C/O ROBERT D HANDEL EXECUTOR	3534/ 329	21-May-2015	$0.00
HANDEL JESSIE K	1874/ 345	03-Jan-2000	$0.00
HANDEL ALBERT P JR EST OF HANDEL JESSIE K EXEC	0/ 0	01-Jan-2000	$0.00
HANDEL ALBERT P JR EST OF HANDEL JESSIE K EXEC	1693/ 161	05-Aug-1997	$0.00

CURRENT PARCEL ASSESSMENT

TOTAL:	$330,170.00	**IMPROVEMENTS:**	$285,940.00	**LAND:**	$44,230.00

ASSESSING HISTORY

FISCAL YEAR	TOTAL VALUE	IMPROVEMENT VALUE	LAND VALUE
2015	$346,650.00	$302,420.00	$44,230.00
2014	$346,650.00	$302,420.00	$44,230.00
2013	$346,650.00	$302,420.00	$44,230.00
2012	$346,650.00	$302,420.00	$44,230.00
2011	$346,650.00	$302,420.00	$44,230.00

Town of East Hartford Property Summary Report

1455 FORBES ST

MAP LOT:	41-233	**CAMA PID:**	4723
LOCATION:	1455 FORBES ST		
OWNER NAME:	HANDEL ROBERT D		

BUILDING # 1

YEAR BUILT	1865	**EXT WALL 1**	Vinyl Siding
STYLE	Colonial	**INT WALLS 1**	Plaster
MODEL	Residential	**HEAT FUEL**	Gas
STORIES	2.0	**HEAT TYPE**	Hot Water
OCCUPANCY	One Family	**AC TYPE**	None
ROOF	Gable	**BEDROOMS**	4
ROOF COVER	Asphalt	**FULL BATHS**	1
FLOOR COVER 1	Hardwood	**HALF BATHS**	1
% BSMT	100	**TOTAL ROOMS**	9
% FIN BSMT	0	**% REC RM**	60
% SEMI FIN BSMT	0	**% ATTIC FINISH**	0
BSMT GARAGE		**FIREPLACES**	0

OUTBUILDINGS

DESCRIPTION	CODE	UNITS
1 Story Barn	BRN1	1x5112 (5112 SF)
Shed	SHD1	1x64 (64 S.F.)
1 Story Barn	BRN1	1x3072 (3072 SF)
Shed	SHD1	1x300 (300 S.F.)
Shed	SHD1	1x561 (561 S.F.)
1 Story Barn	BRN1	1x4928 (4928 SF)
Shed	SHD1	1x600 (600 S.F.)

Town of East Hartford Property Summary Report

1455 FORBES ST

MAP LOT:	41-233	**CAMA PID:**	4723
LOCATION:	1455 FORBES ST		
OWNER NAME:	HANDEL ROBERT D		

BUILDING # 2

YEAR BUILT	1934	**EXT WALL 1**	Vinyl Siding
STYLE	Single Family	**INT WALLS 1**	Plaster
MODEL	Residential	**HEAT FUEL**	Other
STORIES	1.0	**HEAT TYPE**	Other
OCCUPANCY	One Family	**AC TYPE**	None
ROOF	Gable	**BEDROOMS**	1
ROOF COVER	Asphalt	**FULL BATHS**	1
FLOOR COVER 1	Hardwood	**HALF BATHS**	0
% BSMT	0	**TOTAL ROOMS**	4
% FIN BSMT	0	**% REC RM**	0
% SEMI FIN BSMT	0	**% ATTIC FINISH**	0
BSMT GARAGE		**FIREPLACES**	0

OUTBUILDINGS

DESCRIPTION	CODE	UNITS
Shed	SHD1	1x105 (105 S.F.)
1 Story Barn	BRN1	1x840 (840 SF)
Shed	SHD1	1x144 (144 S.F.)
1 Story Barn	BRN1	1x3840 (3840 SF)
Shed	SHD1	1x308 (308 S.F.)
FR/SHED		30 SF

EBI Consulting
environmental | engineering | due diligence

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

T-Mobile Existing Facility

Site ID: CT11186A

East Hartford/ Hills_1
1441 Forbes Street
East Hartford, CT 06118

June 9, 2016

EBI Project Number: 6216002767

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	92.49 %

21 B Street · Burlington, MA 01803 · Tel: (781) 273.2500 · Fax: (781) 273.3311

EBI Consulting
environmental | engineering | due diligence

June 9, 2016

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

Emissions Analysis for Site: **CT11186A – East Hartford/ Hills_1**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **1441 Forbes Street, East Hartford, CT**, for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and 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 public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limit for the 700 MHz Band is approximately 467 $\mu W/cm^2$, and the general population exposure limit for the 1900 MHz (PCS) and 2100 MHz (AWS) 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 done for the proposed T-Mobile Wireless antenna facility located at **1441 Forbes Street, East Hartford, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

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

1) 2 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

2) 2 UMTS channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

3) 2 UMTS channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

4) 2 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

5) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

6) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.

7) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

8) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

9) The antennas used in this modeling are the **Ericsson AIR32 B2A/B66AA & Ericsson AIR21 B2A/B4P** for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the **Commscope LNX-6515DS-VTM** for 700 MHz channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **Ericsson AIR32 B2A/B66AA & Ericsson AIR21 B2A/B4P** have a maximum gain of **15.9 dBd** at their main lobe at 1900 MHz and 2100 MHz. The **Commscope LNX-6515DS-VTM** has a maximum gain of **14.6 dBd** at its main lobe at 700 MHz. 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.

10) The antenna mounting height centerline of the proposed antennas is **87 feet** above ground level (AGL).

11) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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

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T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	Ericsson AIR32 B2A/B66AA	Make / Model:	Ericsson AIR32 B2A/B66AA	Make / Model:	Ericsson AIR32 B2A/B66AA
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	87	Height (AGL):	87	Height (AGL):	87
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	240	Total TX Power(W):	240	Total TX Power(W):	240
ERP (W):	9,337.08	ERP (W):	9,337.08	ERP (W):	9,337.08
Antenna A1 MPE%	5.12	Antenna B1 MPE%	5.12	Antenna C1 MPE%	5.12
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Ericsson AIR21 B2A/B4P	Make / Model:	Ericsson AIR21 B2A/B4P	Make / Model:	Ericsson AIR21 B2A/B4P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	87	Height (AGL):	87	Height (AGL):	87
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	6	Channel Count	6	Channel Count	6
Total TX Power(W):	180	Total TX Power(W):	180	Total TX Power(W):	180
ERP (W):	7,002.81	ERP (W):	7,002.81	ERP (W):	7,002.81
Antenna A2 MPE%	3.84	Antenna B2 MPE%	3.84	Antenna C2 MPE%	3.84
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM
Gain:	14.6 dBd	Gain:	14.6 dBd	Gain:	14.6 dBd
Height (AGL):	87	Height (AGL):	87	Height (AGL):	87
Frequency Bands	700 MHz	Frequency Bands	700 MHz	Frequency Bands	700 MHz
Channel Count	1	Channel Count	1	Channel Count	1
Total TX Power(W):	30	Total TX Power(W):	30	Total TX Power(W):	30
ERP (W):	865.21	ERP (W):	865.21	ERP (W):	865.21
Antenna A3 MPE%	1.02	Antenna B3 MPE%	1.02	Antenna C3 MPE%	1.02

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile (Per Sector Max)	**9.97 %**
Sprint	2.38 %
Clearwire	1.91 %
MetroPCS	7.42 %
AT&T	24.54 %
Verizon Wireless	46.27 %
Site Total MPE %:	**92.49 %**

T-Mobile Sector 1 Total:	9.97 %
T-Mobile Sector 2 Total:	9.97 %
T-Mobile Sector 3 Total:	9.97 %
Site Total:	92.49 %

T-Mobile _Max per sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
T-Mobile 1900 MHz (PCS) LTE	**2**	**2334.27**	**87**	**25.58**	**1900**	**1000**	**2.56 %**
T-Mobile 2100 MHz (AWS) LTE	**2**	**2334.27**	**87**	**25.58**	**2100**	**1000**	**2.56 %**
T-Mobile 1900 MHz (PCS) GSM	**2**	**1167.14**	**87**	**12.79**	**1900**	**1000**	**1.28 %**
T-Mobile 1900 MHz (PCS) UMTS	**2**	**1167.14**	**87**	**12.79**	**1900**	**1000**	**1.28 %**
T-Mobile 2100 MHz (AWS) UMTS	**2**	**1167.14**	**87**	**12.79**	**2100**	**1000**	**1.28 %**
T-Mobile 700 MHz LTE	**1**	**865.21**	**87**	**2.06**	**700**	**467**	**1.02 %**
						Total:	**9.97%**

Summary

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

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

T-Mobile Sector	Power Density Value (%)
Sector 1:	9.97 %
Sector 2:	9.97 %
Sector 3:	9.97 %
T-Mobile Per Sector Maximum:	9.97 %
Site Total:	92.49 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **92.49%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

PJF PAUL J. FORD & COMPANY

Date: **June 01, 2016**

Jay Patton
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277
980.209.8250

Paul J Ford and Company
250 E. Broad Street, Suite 600
Columbus, OH 43215
614.221.6679
stschanen@pjfweb.com

Subject: **Structural Analysis Report**

Carrier Designation:	***T-Mobile* Co-Locate**	
	Carrier Site Number:	CT11186A
	Carrier Site Name:	N/A
Crown Castle Designation:	**Crown Castle BU Number:**	806376
	Crown Castle Site Name:	HRT 100 943239
	Crown Castle JDE Job Number:	375851
	Crown Castle Work Order Number:	1245641
	Crown Castle Application Number:	344129 Rev. 3
Engineering Firm Designation:	**Paul J Ford and Company Project Number:**	37516-0061.005.7805
Site Data:	**1455 FORBES STREET, EAST HARTFORD, Hartford County, CT**	
	Latitude *41° 43' 53.3"*, Longitude *-72° 36' 28"*	
	131 Foot - Monopole Tower	

Dear Jay Patton,

Paul J Ford and Company 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 908767, in accordance with application 344129, revision 3.

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

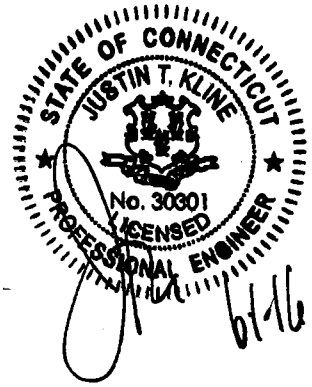
LC7: Existing + Reserved + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

The structural analysis was performed for this tower in accordance with the requirements of the 2005 Connecticut Building Code and the TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 85 mph with no ice, 37.6 mph with 0.75 inch ice thickness and 50 mph under service loads.

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

Respectfully submitted by:

Seth Tschanen, E.I.
Structural Designer



Date: **June 01, 2016**

Jay Patton
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277
980.209.8250

Paul J Ford and Company
250 E. Broad Street, Suite 600
Columbus, OH 43215
614.221.6679
stschanen@pjfweb.com

Subject: **Structural Analysis Report**

Carrier Designation:	***T-Mobile* Co-Locate**	
	Carrier Site Number:	CT11186A
	Carrier Site Name:	N/A
Crown Castle Designation:	**Crown Castle BU Number:**	806376
	Crown Castle Site Name:	HRT 100 943239
	Crown Castle JDE Job Number:	375851
	Crown Castle Work Order Number:	1245641
	Crown Castle Application Number:	344129 Rev. 3
Engineering Firm Designation:	**Paul J Ford and Company Project Number:**	37516-0061.005.7805
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The structural analysis was performed for this tower in accordance with the requirements of the 2005 Connecticut Building Code and the TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 85 mph with no ice, 37.6 mph with 0.75 inch ice thickness and 50 mph under service loads.

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

Respectfully submitted by:

Seth Tschanen, E.I.
Structural Designer

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 131 ft Monopole tower designed by VALMONT in January of 1999. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of the 2005 Connecticut Building Code and the TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 85 mph with no ice, 37.6 mph with 0.75 inch ice thickness and 50 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
87.0	87.0	3	ericsson	AIR -32 B2A/B66AA w/ Mount Pipe	1	7/8	--

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
121.0	121.0	3	ericsson	RRUS-11	1 2 6	3/8 3/4 1 1/4	1
		3	kathrein	800 10121 w/ Mount Pipe			
		3	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe			
		6	powerwave technologies	LGP21401			
		1	raycap	DC6-48-60-18-8F			
		1	tower mounts	T-Arm Mount [TA 601-3]			
107.0	111.0	3	antel	BXA-70063/6CFx4	12	1 5/8	1
		3	antel	BXA-80063/4CF			
		1	rfs celwave	DB-T1-6Z-8AB-0Z			
		3	alcatel lucent	RRH2X60-AWS	2	1 5/8	2
		3	alcatel lucent	RRH2X60-PCS			
		6	andrew	SBNHH-1D65B			
		1	rfs celwave	DB-T1-6Z-8AB-0Z			
	107.0	3	alcatel lucent	RRH2x60-700			
		6	rfs celwave	FD9R6004/2C-3L	--	--	1
		1	tower mounts	Platform Mount (LP 101-1)			
99.0	100.0	3	alcatel lucent	800MHz 2X50W RRH W/FILTER	--	--	1
	99.0	3	alcatel lucent	PCS 1900MHz 4x45W-65MHz			
		1	tower mounts	Side Arm Mount [SO 101-3]			
	98.0	3	alcatel lucent	PCS 1900MHz 4x45W-65MHz			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
97.0	101.0	2	andrew	VHLP2.5-11	3 3 3	5/16 1/2 1 1/4	1
		2	dragonwave	HORIZON COMPACT			
	97.0	3	kathrein	840 10054			
		1	motorola	TIMING 2000			
		3	rfs celwave	APXVSPP18-C-A20			
		3	rfs celwave	IBC1900BB-1			
		3	rfs celwave	IBC1900HG-2A			
		3	samsung	WIMAX DAP HEAD			
		1	tower mounts	Platform Mount (LP 101-1)			
87.0	87.0	1	tower mounts	Site Pro1 RMV12-396 [TA 602-3]	12 1	1 1/4 1 5/8	1
		3	commscope	LNX-6515DS-VTM w/ Mount Pipe			
		3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe			
		3	ericsson	KRY 112 144/1			
		3	ericsson	RRUS 11 B12			
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe	--	--	3

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

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
--	--	--	--	--	--	--

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Dr. Welti, 11/11/91	262381	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Valmont, 10613-91 & 10614-91, 11/30/91	262389	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Valmont, 1/22/91	262386	CCISITES
4-POST-MODIFICATION INSPECTION	TEP, 127151, 2/26/2013	3675451	CCISITES
4-POST-MODIFICATION INSPECTION	TEP, 25676, 6/4/2014	5099148	CCISITES
4-POST-MODIFICATION INSPECTION	ETS, 150936, 10/2/15	5921968	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) Monopole was reinforced in conformance with the referenced modification drawings.

This analysis may be affected if any assumptions are not valid or have been made in error. Paul J Ford and Company should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	131 - 110	Pole	TP15.525x10.525x0.1875	1	-1.64	481.40	27.1	Pass
L2	110 - 90	Pole	TP20.528x15.525x0.25	2	-7.56	848.63	80.2	Pass
L3	90 - 84.5833	Pole	TP21.883x20.528x0.4767	3	-10.10	1248.87	69.9	Pass
L4	84.5833 - 83	Pole	TP22.2791x21.883x0.6243	4	-10.40	1655.17	56.8	Pass
L5	83 - 81	Pole	TP22.7794x22.2791x0.3895	5	-10.69	1401.50	70.5	Pass
L6	81 - 70	Pole	TP25.531x22.7794x0.5101	6	-11.96	1423.83	85.7	Pass
L7	70 - 67.0833	Pole	TP25.7604x23.5102x0.4353	7	-13.63	1778.28	80.9	Pass
L8	67.0833 - 64.0833	Pole	TP26.5107x25.7604x0.4313	8	-14.18	1816.65	83.7	Pass
L9	64.0833 - 61.0833	Pole	TP27.2611x26.5107x0.4752	9	-14.76	1940.17	82.6	Pass
L10	61.0833 - 59.5	Pole	TP27.6571x27.2611x0.6039	10	-15.12	2019.29	82.2	Pass
L11	59.5 - 53.5	Pole	TP29.1578x27.6571x0.699	11	-16.70	2320.75	78.4	Pass
L12	53.5 - 44.5833	Pole	TP31.388x29.1578x0.6831	12	-19.14	2431.66	83.2	Pass
L13	44.5833 - 40.5	Pole	TP32.4093x31.388x0.6692	13	-20.28	2465.96	85.5	Pass
L14	40.5 - 39	Pole	TP32.7844x32.4093x0.6987	14	-20.72	2623.92	81.8	Pass
L15	39 - 31.5	Pole	TP34.0326x32.7844x0.7154	15	-23.04	2791.17	84.0	Pass
L16	31.5 - 25.5	Pole	TP35.5312x34.0326x0.6073	16	-24.74	2889.82	84.7	Pass
L17	25.5 - 23.5	Pole	TP36.0307x35.5312x0.6534	17	-25.35	3054.93	81.6	Pass
L18	23.5 - 18.75	Pole	TP37.217x36.0307x0.5424	18	-26.64	2946.96	87.0	Pass
L19	18.75 - 17.0833	Pole	TP37.6333x37.217x0.6846	19	-27.19	3536.45	73.9	Pass
L20	17.0833 - 13	Pole	TP38.6531x37.6333x0.5929	20	-28.42	3166.70	84.5	Pass
L21	13 - 10.5	Pole	TP39.2775x38.6531x0.7508	21	-28.44	3857.89	69.9	Pass
L22	10.5 - 0	Pole	TP41.9x39.2775x0.5542	22	-29.36	2934.09	92.5	Pass
							Summary	
						Pole (L22)	92.5	Pass
						Rating =	92.5	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	97.1	Pass
1	Base Plate	0	69.9	Pass
1	Base Foundation Steel	0	58.6	Pass
1	Base Foundation Soil Interaction	0	66.9	Pass
1	Flange Connection	110	21.1	Pass

Structure Rating (max from all components) =	97.1%

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

4.1) Recommendations

The monopole and its foundation have sufficient capacity to carry the existing, reserved, and proposed loads. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT

Tower Input Data

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

1) Tower is located in Hartford County, Connecticut.
2) Basic wind speed of 80 mph.
3) Nominal ice thickness of 1.2500 in.
4) Ice thickness is considered to increase with height.
5) Ice density of 56.00 pcf.
6) A wind speed of 38 mph is used in combination with ice.
7) Temperature drop of 50 °F.
8) Deflections calculated using a wind speed of 50 mph.
9) A non-linear (P-delta) analysis was used.
10) Pressures are calculated at each section.
11) Stress ratio used in pole design is 1.333.
12) 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*	*Section Length*	*Splice Length*	*Number of Sides*	*Top Diameter*	*Bottom Diameter*	*Wall Thickness*	*Bend Radius*	*Pole Grade*
	ft	*ft*	*ft*		*in*	*in*	*in*	*in*	
L1	131.0000-110.0000	21.0000	0.00	12	10.5250	15.5250	0.1875	0.7500	A572-65 (65 ksi)
L2	110.0000-90.0000	20.0000	0.00	12	15.5250	20.5280	0.2500	1.0000	A572-65 (65 ksi)
L3	90.0000-84.5833	5.4167	0.00	12	20.5280	21.8830	0.4767	1.9069	Reinf 47.52 ksi (48 ksi)
L4	84.5833-83.0000	1.5833	0.00	12	21.8830	22.2791	0.6243	2.4972	Reinf 47.54 ksi (48 ksi)
L5	83.0000-81.0000	2.0000	0.00	12	22.2791	22.7794	0.3895	1.5578	Reinf 62.41 ksi (62 ksi)
L6	81.0000-70.0000	11.0000	4.00	12	22.7794	25.5310	0.5101	2.0405	Reinf 45.12 ksi (45 ksi)
L7	70.0000-67.0833	6.9167	0.00	12	23.5101	25.7604	0.4353	1.7411	Reinf 62.64 ksi (63 ksi)
L8	67.0833-64.0833	3.0000	0.00	12	25.7604	26.5107	0.4313	1.7250	Reinf 62.72 ksi (63 ksi)
L9	64.0833-61.0833	3.0000	0.00	12	26.5107	27.2611	0.4752	1.9007	Reinf 59.19 ksi (59 ksi)
L10	61.0833-59.5000	1.5833	0.00	12	27.2611	27.6571	0.6039	2.4158	Reinf 47.99 ksi (48 ksi)
L11	59.5000-	6.0000	0.00	12	27.6571	29.1578	0.6990	2.7960	Reinf 45.30 ksi

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
	53.5000								(45 ksi)
L12	53.5000-44.5833	8.9167	0.00	12	29.1578	31.3880	0.6831	2.7322	Reinf 45.02 ksi (45 ksi)
L13	44.5833-40.5000	4.0833	0.00	12	31.3880	32.4093	0.6692	2.6768	Reinf 45.08 ksi (45 ksi)
L14	40.5000-39.0000	1.5000	0.00	12	32.4093	32.7844	0.6987	2.7946	Reinf 45.45 ksi (45 ksi)
L15	39.0000-31.5000	7.5000	0.00	12	32.7844	34.0326	0.7154	2.8616	Reinf 45.47 ksi (45 ksi)
L16	31.5000-25.5000	6.0000	0.00	12	34.0326	35.5311	0.6073	2.4290	Reinf 52.91 ksi (53 ksi)
L17	25.5000-23.5000	2.0000	0.00	12	35.5311	36.0307	0.6534	2.6134	Reinf 51.32 ksi (51 ksi)
L18	23.5000-18.7500	4.7500	0.00	12	36.0307	37.2170	0.5424	2.1698	Reinf 57.52 ksi (58 ksi)
L19	18.7500-17.0833	1.6667	0.00	12	37.2170	37.6333	0.6846	2.7382	Reinf 54.29 ksi (54 ksi)
L20	17.0833-13.0000	4.0833	0.00	12	37.6333	38.6531	0.5929	2.3716	Reinf 54.49 ksi (54 ksi)
L21	13.0000-10.5000	2.5000	0.00	12	38.6531	39.2775	0.7508	3.0032	Reinf 52.64 ksi (53 ksi)
L22	10.5000-0.0000	10.5000		12	39.2775	41.9000	0.5542	2.2167	Reinf 53.09 ksi (53 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	10.8963	6.2413	85.1314	3.7008	5.4520	15.6148	172.4993	3.0718	2.3182	12.364
	16.0727	9.2600	278.0397	5.4908	8.0419	34.5737	563.3838	4.5575	3.6582	19.51
L2	16.0727	12.2964	366.2060	5.4684	8.0419	45.5370	742.0327	6.0519	3.4907	13.963
	21.2521	16.3238	856.7561	7.2595	10.6335	80.5714	1736.0201	8.0341	4.8315	19.326
L3	21.2521	30.7795	1579.5432	7.1784	10.6335	148.5440	3200.5827	15.1487	4.2239	8.86
	22.6549	32.8594	1921.8885	7.6634	11.3354	169.5476	3894.2672	16.1724	4.5870	9.622
L4	22.6549	42.7352	2465.1574	7.6106	11.3354	217.4744	4995.0772	21.0330	4.1915	6.714
	23.0650	43.5314	2605.5216	7.7524	11.5405	225.7710	5279.4932	21.4248	4.2977	6.884
L5	23.0650	27.4502	1678.8311	7.8365	11.5405	145.4724	3401.7670	13.5102	4.9271	12.651
	23.5829	28.0776	1796.5942	8.0156	11.7997	152.2576	3640.3869	13.8189	5.0611	12.996
L6	23.5829	36.5791	2315.4200	7.9724	11.7997	196.2270	4691.6686	18.0031	4.7377	9.288
	26.4316	41.0990	3284.1419	8.9575	13.2251	248.3272	6654.5619	20.2277	5.4752	10.733
L7	25.6867	32.3410	2197.9556	8.2608	12.1783	180.4819	4453.6539	15.9173	5.1342	11.795
	26.6691	35.4949	2905.7220	9.0664	13.3439	217.7570	5887.7806	17.4695	5.7373	13.181
L8	26.6691	35.1726	2880.2570	9.0678	13.3439	215.8487	5836.1815	17.3109	5.7480	13.329
	27.4459	36.2146	3143.8891	9.3365	13.7326	228.9370	6370.3716	17.8237	5.9491	13.795
L9	27.4459	39.8356	3446.6018	9.3207	13.7326	250.9804	6983.7496	19.6059	5.8314	12.272
	28.2227	40.9837	3753.2637	9.5893	14.1212	265.7887	7605.1298	20.1709	6.0325	12.695
L10	28.2227	51.8397	4701.9207	9.5432	14.1212	332.9682	9527.3660	25.5139	5.6874	9.417
	28.6327	52.6099	4914.6000	9.6850	14.3264	343.0459	9958.3120	25.8930	5.7935	9.593
L11	28.6327	60.6767	5628.4056	9.6510	14.3264	392.8705	11404.6757	29.8632	5.5388	7.924
	30.1863	64.0544	6621.6606	10.1882	15.1037	438.4126	13417.2796	31.5256	5.9410	8.499
L12	30.1863	62.6279	6481.4511	10.1939	15.1037	429.1295	13133.1771	30.8235	5.9837	8.76
	32.4952	67.5330	8126.7669	10.9924	16.2590	499.8330	16467.0330	33.2377	6.5814	9.635
L13	32.4952	66.1935	7972.7619	10.9973	16.2590	490.3610	16154.9772	32.5784	6.6185	9.89
	33.5525	68.3942	8794.6991	11.3629	16.7880	523.8683	17820.4447	33.6616	6.8922	10.299
L14	33.5525	71.3389	9156.3225	11.3524	16.7880	545.4089	18553.1917	35.1108	6.8133	9.752
	33.9409	72.1829	9485.1696	11.4867	16.9823	558.5315	19219.5251	35.5262	6.9138	9.896
L15	33.9409	73.8748	9697.3684	11.4807	16.9823	571.0268	19649.4974	36.3590	6.8689	9.601
	35.2331	76.7501	10874.3056	11.9276	17.6289	616.8460	22034.2913	37.7741	7.2034	10.069
L16	35.2331	65.3591	9320.5944	11.9663	17.6289	528.7116	18886.0511	32.1678	7.4933	12.339
	36.7846	68.2894	10631.2500	12.5028	18.4051	577.6241	21541.7948	33.6100	7.8949	13.001
L17	36.7846	73.3766	11393.0824	12.4862	18.4051	619.0165	23085.4738	36.1137	7.7713	11.894
	37.3017	74.4274	11889.6321	12.6651	18.6639	637.0396	24091.6181	36.6309	7.9052	12.099
L18	37.3017	61.9857	9964.2859	12.7048	18.6639	533.8807	20190.3447	30.5075	8.2025	15.121
	38.5299	64.0579	10997.3735	13.1295	19.2784	570.4500	22283.6603	31.5274	8.5204	15.708
L19	38.5299	80.5279	13717.9777	13.0786	19.2784	711.5718	27796.3420	39.6334	8.1395	11.89
	38.9608	81.4455	14192.2707	13.2276	19.4940	728.0311	28757.3882	40.0850	8.2511	12.053
L20	38.9608	70.7152	12383.6858	13.2605	19.4940	635.2548	25092.7048	34.8039	8.4967	14.331

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
	40.0167	72.6622	13434.9946	13.6256	20.0223	671.0009	27222.9415	35.7621	8.7701	14.792
L21	40.0167	91.6330	16802.3200	13.5690	20.0223	839.1794	34046.0557	45.0990	8.3469	11.117
	40.6631	93.1425	17646.4756	13.7926	20.3458	867.3294	35756.5438	45.8419	8.5142	11.34
L22	40.6631	69.1003	13225.4797	13.8630	20.3458	650.0361	26798.4076	34.0090	9.0412	16.315
	43.3781	73.7799	16098.5774	14.8018	21.7042	741.7264	32620.0823	36.3122	9.7440	17.583

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 131.0000-110.0000				1	1	1			
L2 110.0000-90.0000				1	1	1			
L3 90.0000-84.5833				1	1	1			
L4 84.5833-83.0000				1	1	1			
L5 83.0000-81.0000				1	1	1			
L6 81.0000-70.0000				1	1	1			
L7 70.0000-67.0833				1	1	1			
L8 67.0833-64.0833				1	1	1			
L9 64.0833-61.0833				1	1	1			
L10 61.0833-59.5000				1	1	1			
L11 59.5000-53.5000				1	1	1			
L12 53.5000-44.5833				1	1	1			
L13 44.5833-40.5000				1	1	1			
L14 40.5000-39.0000				1	1	1			
L15 39.0000-31.5000				1	1	1			
L16 31.5000-25.5000				1	1	1			
L17 25.5000-23.5000				1	1	1			
L18 23.5000-18.7500				1	1	1			
L19 18.7500-17.0833				1	1	1			
L20 17.0833-13.0000				1	1	1			
L21 13.0000-10.5000				1	1	1			
L22 10.5000-0.0000				1	1	1			

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
***								
LDF6-50A(1-1/4")	C	No	CaAa (Out Of Face)	121.0000 - 0.0000	6	No Ice	0.0000	0.66
						1/2" Ice	0.0000	1.91
						1" Ice	0.0000	3.78
						2" Ice	0.0000	9.33
						4" Ice	0.0000	27.78
FB-L98B-002-75000(	C	No	Inside Pole	121.0000 - 0.0000	1	No Ice	0.0000	0.06

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
3/8")						1/2" Ice	0.0000	0.06
						1" Ice	0.0000	0.06
						2" Ice	0.0000	0.06
						4" Ice	0.0000	0.06
WR-VG86ST-BRD(3/4)	C	No	Inside Pole	121.0000 - 0.0000	2	No Ice	0.0000	0.59
						1/2" Ice	0.0000	0.59
						1" Ice	0.0000	0.59
						2" Ice	0.0000	0.59
						4" Ice	0.0000	0.59
2" (Nominal) Conduit	C	No	CaAa (Out Of Face)	121.0000 - 0.0000	1	No Ice	0.2375	0.72
						1/2" Ice	0.3375	2.48
						1" Ice	0.4375	4.84
						2" Ice	0.6375	11.41
						4" Ice	1.0375	31.87
***								
HJ7-50A(1-5/8")	C	No	Inside Pole	107.0000 - 0.0000	12	No Ice	0.0000	1.04
						1/2" Ice	0.0000	1.04
						1" Ice	0.0000	1.04
						2" Ice	0.0000	1.04
						4" Ice	0.0000	1.04
HB158-1-08U8-S8J18(1-5/8)	C	No	Inside Pole	107.0000 - 0.0000	2	No Ice	0.0000	1.30
						1/2" Ice	0.0000	1.30
						1" Ice	0.0000	1.30
						2" Ice	0.0000	1.30
						4" Ice	0.0000	1.30
***								
ATCB-B01-005(5/16)	C	No	Inside Pole	97.0000 - 0.0000	3	No Ice	0.0000	0.07
						1/2" Ice	0.0000	0.07
						1" Ice	0.0000	0.07
						2" Ice	0.0000	0.07
						4" Ice	0.0000	0.07
FSJ4-50B(1/2")	C	No	Inside Pole	97.0000 - 0.0000	2	No Ice	0.0000	0.14
						1/2" Ice	0.0000	0.14
						1" Ice	0.0000	0.14
						2" Ice	0.0000	0.14
						4" Ice	0.0000	0.14
FSJ4-50B(1/2")	C	No	CaAa (Out Of Face)	97.0000 - 0.0000	1	No Ice	0.0000	0.14
						1/2" Ice	0.0000	0.76
						1" Ice	0.0000	2.00
						2" Ice	0.0000	6.30
						4" Ice	0.0000	22.23
HB114-1-08U4-M5J(1 1/4")	C	No	CaAa (Out Of Face)	97.0000 - 0.0000	3	No Ice	0.0000	1.08
						1/2" Ice	0.0000	2.33
						1" Ice	0.0000	4.18
						2" Ice	0.0000	9.73
						4" Ice	0.0000	28.15
2" (Nominal) Conduit	C	No	CaAa (Out Of Face)	87.0000 - 0.0000	2	No Ice	0.0000	0.72
						1/2" Ice	0.0000	2.48
						1" Ice	0.0000	4.84
						2" Ice	0.0000	11.41
						4" Ice	0.0000	31.87
2" (Nominal) Conduit	C	No	CaAa (Out Of Face)	97.0000 - 87.0000	1	No Ice	0.0000	0.72
						1/2" Ice	0.0000	2.48
						1" Ice	0.0000	4.84
						2" Ice	0.0000	11.41
						4" Ice	0.0000	31.87
2" (Nominal) Conduit	C	No	CaAa (Out Of Face)	97.0000 - 87.0000	1	No Ice	0.2375	0.72
						1/2" Ice	0.3375	2.48
						1" Ice	0.4375	4.84
						2" Ice	0.6375	11.41
						4" Ice	1.0375	31.87
***								
LCF114-50J(1-1/4")	C	No	CaAa (Out Of Face)	87.0000 - 0.0000	9	No Ice	0.0000	0.70
						1/2" Ice	0.0000	1.97
						1" Ice	0.0000	3.85
						2" Ice	0.0000	9.45
						4" Ice	0.0000	27.97
LCF114-50J(1-1/4")	C	No	CaAa (Out Of Face)	87.0000 - 0.0000	3	No Ice	0.1580	0.70
						1/2" Ice	0.2580	1.97

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
						1" Ice	0.3580	3.85
						2" Ice	0.5580	9.45
						4" Ice	0.9580	27.97
MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	C	No	CaAa (Out Of Face)	87.0000 - 0.0000	1	No Ice	0.0000	1.07
						1/2" Ice	0.0000	2.37
						1" Ice	0.0000	4.28
						2" Ice	0.0000	9.93
						4" Ice	0.0000	28.56
MLC Hybrid 6/6(7/8")	C	No	CaAa (Out Of Face)	87.0000 - 0.0000	1	No Ice	0.0000	1.82
						1/2" Ice	0.0000	2.79
						1" Ice	0.0000	4.36
						2" Ice	0.0000	9.35
						4" Ice	0.0000	26.65
***								
1" Flat Reinforcement	C	No	CaAa (Out Of Face)	20.5000 - 0.0000	1	No Ice	0.1667	0.00
						1/2" Ice	0.2778	0.00
						1" Ice	0.3889	0.00
						2" Ice	0.6111	0.00
						4" Ice	1.0556	0.00
3/4" Flat Reinforcement	C	No	CaAa (Out Of Face)	45.8333 - 15.8333	1	No Ice	0.1250	0.00
						1/2" Ice	0.2361	0.00
						1" Ice	0.3472	0.00
						2" Ice	0.5694	0.00
						4" Ice	1.0139	0.00
3/4" Flat Reinforcement	C	No	CaAa (Out Of Face)	68.3333 - 43.3333	1	No Ice	0.1250	0.00
						1/2" Ice	0.2361	0.00
						1" Ice	0.3472	0.00
						2" Ice	0.5694	0.00
						4" Ice	1.0139	0.00
3/4" Flat Reinforcement	C	No	CaAa (Out Of Face)	85.8333 - 65.8333	1	No Ice	0.1250	0.00
						1/2" Ice	0.2361	0.00
						1" Ice	0.3472	0.00
						2" Ice	0.5694	0.00
						4" Ice	1.0139	0.00
***								
1" Flat Reinforcement	C	No	CaAa (Out Of Face)	66.0000 - 0.0000	1	No Ice	0.1667	0.00
						1/2" Ice	0.2778	0.00
						1" Ice	0.3889	0.00
						2" Ice	0.6111	0.00
						4" Ice	1.0556	0.00
1" Flat Reinforcement	C	No	CaAa (Out Of Face)	91.5000 - 81.5000	1	No Ice	0.1667	0.00
						1/2" Ice	0.2778	0.00
						1" Ice	0.3889	0.00
						2" Ice	0.6111	0.00
						4" Ice	1.0556	0.00

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	131.0000-110.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.613	0.07
L2	110.0000-90.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	6.663	0.41
L3	90.0000-84.5833	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	4.204	0.17
L4	84.5833-83.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.588	0.06
L5	83.0000-81.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.923	0.08
L6	81.0000-70.0000	A	0.000	0.000	0.000	0.000	0.00

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	9.202	0.41
L7	70.0000-67.0833	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	2.596	0.11
L8	67.0833-64.0833	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	2.985	0.11
L9	64.0833-61.0833	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	3.010	0.11
L10	61.0833-59.5000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.588	0.06
L11	59.5000-53.5000	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	6.019	0.23
L12	53.5000-44.5833	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	9.101	0.34
L13	44.5833-40.5000	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	4.253	0.15
L14	40.5000-39.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.505	0.06
L15	39.0000-31.5000	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	7.524	0.28
L16	31.5000-25.5000	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	6.019	0.23
L17	25.5000-23.5000	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	2.006	0.08
L18	23.5000-18.7500	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	5.057	0.18
L19	18.7500-17.0833	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.950	0.06
L20	17.0833-13.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	4.423	0.15
L21	13.0000-10.5000	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	2.612	0.09
L22	10.5000-0.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	10.971	0.39

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	131.0000-	A	1.459	0.000	0.000	0.000	0.000	0.00
	110.0000	B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	5.823	0.52
L2	110.0000-90.0000	A	1.427	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	14.844	1.45
L3	90.0000-84.5833	A	1.405	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	10.686	0.74
L4	84.5833-83.0000	A	1.398	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C		0.000	0.000	0.000	4.343	0.29
L5	83.0000-81.0000	A	1.394	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	5.238	0.37
L6	81.0000-70.0000	A	1.380	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	24.722	1.99
L7	70.0000-67.0833	A	1.365	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	7.095	0.53
L8	67.0833-64.0833	A	1.357	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	8.103	0.53
L9	64.0833-61.0833	A	1.350	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	8.049	0.53
L10	61.0833-59.5000	A	1.344	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	4.236	0.28
L11	59.5000-53.5000	A	1.333	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	15.974	1.04
L12	53.5000-44.5833	A	1.311	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	24.009	1.52
L13	44.5833-40.5000	A	1.289	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	11.159	0.68
L14	40.5000-39.0000	A	1.278	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	3.891	0.25
L15	39.0000-31.5000	A	1.260	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	19.282	1.22
L16	31.5000-25.5000	A	1.250	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	15.352	0.97
L17	25.5000-23.5000	A	1.250	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	5.117	0.32
L18	23.5000-18.7500	A	1.250	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	12.932	0.77
L19	18.7500-17.0833	A	1.250	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	5.005	0.27
L20	17.0833-13.0000	A	1.250	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	11.122	0.66
L21	13.0000-10.5000	A	1.250	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	6.501	0.40
L22	10.5000-0.0000	A	1.250	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	27.304	1.69

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	131.0000-110.0000	-0.1582	0.0914	-0.2657	0.1534
L2	110.0000-90.0000	-0.3639	0.2101	-0.6001	0.3465
L3	90.0000-84.5833	-0.7028	0.4058	-1.1446	0.6609
L4	84.5833-83.0000	-0.8434	0.4869	-1.3614	0.7860
L5	83.0000-81.0000	-0.8257	0.4767	-1.3502	0.7796
L6	81.0000-70.0000	-0.7677	0.4432	-1.3087	0.7556

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
L7	70.0000-67.0833	-0.8134	0.4696	-1.3971	0.8066
L8	67.0833-64.0833	-0.8874	0.5123	-1.4969	0.8642
L9	64.0833-61.0833	-0.9001	0.5197	-1.5167	0.8757
L10	61.0833-59.5000	-0.9060	0.5231	-1.5330	0.8851
L11	59.5000-53.5000	-0.9153	0.5284	-1.5589	0.9000
L12	53.5000-44.5833	-0.9445	0.5453	-1.6250	0.9382
L13	44.5833-40.5000	-0.9717	0.5610	-1.6825	0.9714
L14	40.5000-39.0000	-0.9517	0.5495	-1.6571	0.9568
L15	39.0000-31.5000	-0.9580	0.5531	-1.6708	0.9646
L16	31.5000-25.5000	-0.9681	0.5589	-1.7005	0.9818
L17	25.5000-23.5000	-0.9751	0.5630	-1.7240	0.9954
L18	23.5000-18.7500	-1.0259	0.5923	-1.8052	1.0422
L19	18.7500-17.0833	-1.1051	0.6381	-1.9220	1.1097
L20	17.0833-13.0000	-1.0491	0.6057	-1.8397	1.0621
L21	13.0000-10.5000	-1.0269	0.5929	-1.8113	1.0457
L22	10.5000-0.0000	-1.0370	0.5987	-1.8455	1.0655

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
AM-X-CD-16-65-00T-RET w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.00	121.0000	No Ice	8.4975	6.3042	0.07
						1/2" Ice	9.1490	7.4790	0.14
						1" Ice	9.7672	8.3676	0.21
						2" Ice	11.0311	10.1785	0.38
						4" Ice	13.6786	14.0237	0.87
AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.00	121.0000	No Ice	8.4975	6.3042	0.07
						1/2" Ice	9.1490	7.4790	0.14
						1" Ice	9.7672	8.3676	0.21
						2" Ice	11.0311	10.1785	0.38
						4" Ice	13.6786	14.0237	0.87
AM-X-CD-16-65-00T-RET w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.00	121.0000	No Ice	8.4975	6.3042	0.07
						1/2" Ice	9.1490	7.4790	0.14
						1" Ice	9.7672	8.3676	0.21
						2" Ice	11.0311	10.1785	0.38
						4" Ice	13.6786	14.0237	0.87
800 10121 w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.00	121.0000	No Ice	6.0334	4.9479	0.07
						1/2" Ice	6.7136	6.0222	0.12
						1" Ice	7.2991	6.8104	0.18
						2" Ice	8.4999	8.4586	0.32
						4" Ice	11.0444	12.1015	0.73
800 10121 w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.00	121.0000	No Ice	6.0334	4.9479	0.07
						1/2" Ice	6.7136	6.0222	0.12
						1" Ice	7.2991	6.8104	0.18
						2" Ice	8.4999	8.4586	0.32
						4" Ice	11.0444	12.1015	0.73
800 10121 w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.00	121.0000	No Ice	6.0334	4.9479	0.07
						1/2" Ice	6.7136	6.0222	0.12
						1" Ice	7.2991	6.8104	0.18
						2" Ice	8.4999	8.4586	0.32
						4" Ice	11.0444	12.1015	0.73
RRUS-11	A	From Leg	4.0000 0.00 0.00	0.00	121.0000	No Ice	3.2560	1.3790	0.05
						1/2" Ice	3.4982	1.5577	0.07
						1" Ice	3.7490	1.7450	0.09
						2" Ice	4.2766	2.1455	0.15
						4" Ice	5.4355	3.0504	0.31
RRUS-11	B	From Leg	4.0000 0.00 0.00	0.00	121.0000	No Ice	3.2560	1.3790	0.05
						1/2" Ice	3.4982	1.5577	0.07
						1" Ice	3.7490	1.7450	0.09
						2" Ice	4.2766	2.1455	0.15
						4" Ice	5.4355	3.0504	0.31
RRUS-11	C	From Leg	4.0000	0.00	121.0000	No Ice	3.2560	1.3790	0.05

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
			0.00			1/2" Ice	3.4982	1.5577	0.07
			0.00			1" Ice	3.7490	1.7450	0.09
						2" Ice	4.2766	2.1455	0.15
						4" Ice	5.4355	3.0504	0.31
(2) LGP21401	A	From Leg	4.0000	0.00	121.0000	No Ice	1.2880	0.3640	0.01
			0.00			1/2" Ice	1.4453	0.4785	0.02
			0.00			1" Ice	1.6112	0.6017	0.03
						2" Ice	1.9690	0.8739	0.05
						4" Ice	2.7882	1.5220	0.14
(2) LGP21401	B	From Leg	4.0000	0.00	121.0000	No Ice	1.2880	0.3640	0.01
			0.00			1/2" Ice	1.4453	0.4785	0.02
			0.00			1" Ice	1.6112	0.6017	0.03
						2" Ice	1.9690	0.8739	0.05
						4" Ice	2.7882	1.5220	0.14
(2) LGP21401	C	From Leg	4.0000	0.00	121.0000	No Ice	1.2880	0.3640	0.01
			0.00			1/2" Ice	1.4453	0.4785	0.02
			0.00			1" Ice	1.6112	0.6017	0.03
						2" Ice	1.9690	0.8739	0.05
						4" Ice	2.7882	1.5220	0.14
DC6-48-60-18-8F	A	From Leg	4.0000	0.00	121.0000	No Ice	1.4667	1.4667	0.02
			0.00			1/2" Ice	1.6667	1.6667	0.04
			0.00			1" Ice	1.8778	1.8778	0.06
						2" Ice	2.3333	2.3333	0.11
						4" Ice	3.3778	3.3778	0.24
T-Arm Mount [TA 601-3]	C	None		0.00	121.0000	No Ice	10.9000	10.9000	0.73
						1/2" Ice	14.6500	14.6500	0.93
						1" Ice	18.4000	18.4000	1.13
						2" Ice	25.9000	25.9000	1.52
						4" Ice	40.9000	40.9000	2.32
***									
BXA-80063/4CF	A	From Leg	4.0000	0.00	107.0000	No Ice	5.1613	2.2482	0.01
			0.00			1/2" Ice	5.5455	2.5469	0.04
			4.00			1" Ice	5.9382	2.8529	0.07
						2" Ice	6.7497	3.4884	0.15
						4" Ice	8.4764	5.0414	0.36
BXA-80063/4CF	B	From Leg	4.0000	0.00	107.0000	No Ice	5.1613	2.2482	0.01
			0.00			1/2" Ice	5.5455	2.5469	0.04
			4.00			1" Ice	5.9382	2.8529	0.07
						2" Ice	6.7497	3.4884	0.15
						4" Ice	8.4764	5.0414	0.36
BXA-80063/4CF	C	From Leg	4.0000	0.00	107.0000	No Ice	5.1613	2.2482	0.01
			0.00			1/2" Ice	5.5455	2.5469	0.04
			4.00			1" Ice	5.9382	2.8529	0.07
						2" Ice	6.7497	3.4884	0.15
						4" Ice	8.4764	5.0414	0.36
BXA-70063/6CFx4	A	From Leg	4.0000	0.00	107.0000	No Ice	7.7311	3.7554	0.02
			0.00			1/2" Ice	8.2682	4.1889	0.06
			4.00			1" Ice	8.8140	4.6297	0.10
						2" Ice	9.9314	5.5335	0.22
						4" Ice	12.2699	7.4301	0.52
BXA-70063/6CFx4	B	From Leg	4.0000	0.00	107.0000	No Ice	7.7311	3.7554	0.02
			0.00			1/2" Ice	8.2682	4.1889	0.06
			4.00			1" Ice	8.8140	4.6297	0.10
						2" Ice	9.9314	5.5335	0.22
						4" Ice	12.2699	7.4301	0.52
BXA-70063/6CFx4	C	From Leg	4.0000	0.00	107.0000	No Ice	7.7311	3.7554	0.02
			0.00			1/2" Ice	8.2682	4.1889	0.06
			4.00			1" Ice	8.8140	4.6297	0.10
						2" Ice	9.9314	5.5335	0.22
						4" Ice	12.2699	7.4301	0.52
DB-T1-6Z-8AB-0Z	C	From Leg	4.0000	0.00	107.0000	No Ice	5.6000	2.3333	0.04
			0.00			1/2" Ice	5.9154	2.5580	0.08
			4.00			1" Ice	6.2395	2.7914	0.12
						2" Ice	6.9136	3.2840	0.21
						4" Ice	8.3654	4.3728	0.45

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
(2) FD9R6004/2C-3L	A	From Leg	4.0000	0.00	107.0000	No Ice	0.3665	0.0846	0.00
			0.00			1/2" Ice	0.4506	0.1362	0.01
			0.00			1" Ice	0.5433	0.1965	0.01
						2" Ice	0.7546	0.3430	0.02
						4" Ice	1.2808	0.7396	0.06
(2) FD9R6004/2C-3L	B	From Leg	4.0000	0.00	107.0000	No Ice	0.3665	0.0846	0.00
			0.00			1/2" Ice	0.4506	0.1362	0.01
			0.00			1" Ice	0.5433	0.1965	0.01
						2" Ice	0.7546	0.3430	0.02
						4" Ice	1.2808	0.7396	0.06
(2) FD9R6004/2C-3L	C	From Leg	4.0000	0.00	107.0000	No Ice	0.3665	0.0846	0.00
			0.00			1/2" Ice	0.4506	0.1362	0.01
			0.00			1" Ice	0.5433	0.1965	0.01
						2" Ice	0.7546	0.3430	0.02
						4" Ice	1.2808	0.7396	0.06
(2) SBNHH-1D65B	A	From Leg	4.0000	0.00	107.0000	No Ice	8.3994	5.3963	0.04
			0.00			1/2" Ice	8.9514	5.8529	0.09
			4.00			1" Ice	9.5121	6.3169	0.15
						2" Ice	10.6593	7.2671	0.28
						4" Ice	13.0574	9.4206	0.63
(2) SBNHH-1D65B	B	From Leg	4.0000	0.00	107.0000	No Ice	8.3994	5.3963	0.04
			0.00			1/2" Ice	8.9514	5.8529	0.09
			4.00			1" Ice	9.5121	6.3169	0.15
						2" Ice	10.6593	7.2671	0.28
						4" Ice	13.0574	9.4206	0.63
(2) SBNHH-1D65B	C	From Leg	4.0000	0.00	107.0000	No Ice	8.3994	5.3963	0.04
			0.00			1/2" Ice	8.9514	5.8529	0.09
			4.00			1" Ice	9.5121	6.3169	0.15
						2" Ice	10.6593	7.2671	0.28
						4" Ice	13.0574	9.4206	0.63
RRH2X60-AWS	A	From Leg	4.0000	0.00	107.0000	No Ice	2.1904	1.4290	0.04
			0.00			1/2" Ice	2.3976	1.6109	0.06
			4.00			1" Ice	2.6134	1.8015	0.08
						2" Ice	3.0710	2.2085	0.13
						4" Ice	4.0899	3.1263	0.26
RRH2X60-AWS	B	From Leg	4.0000	0.00	107.0000	No Ice	2.1904	1.4290	0.04
			0.00			1/2" Ice	2.3976	1.6109	0.06
			4.00			1" Ice	2.6134	1.8015	0.08
						2" Ice	3.0710	2.2085	0.13
						4" Ice	4.0899	3.1263	0.26
RRH2X60-AWS	C	From Leg	4.0000	0.00	107.0000	No Ice	2.1904	1.4290	0.04
			0.00			1/2" Ice	2.3976	1.6109	0.06
			4.00			1" Ice	2.6134	1.8015	0.08
						2" Ice	3.0710	2.2085	0.13
						4" Ice	4.0899	3.1263	0.26
RRH2x60-700	A	From Leg	4.0000	0.00	107.0000	No Ice	3.9569	1.8157	0.06
			0.00			1/2" Ice	4.2724	2.0752	0.08
			0.00			1" Ice	4.5965	2.3603	0.11
						2" Ice	5.2705	2.9566	0.17
						4" Ice	6.7224	4.2529	0.35
RRH2x60-700	B	From Leg	4.0000	0.00	107.0000	No Ice	3.9569	1.8157	0.06
			0.00			1/2" Ice	4.2724	2.0752	0.08
			0.00			1" Ice	4.5965	2.3603	0.11
						2" Ice	5.2705	2.9566	0.17
						4" Ice	6.7224	4.2529	0.35
RRH2x60-700	C	From Leg	4.0000	0.00	107.0000	No Ice	3.9569	1.8157	0.06
			0.00			1/2" Ice	4.2724	2.0752	0.08
			0.00			1" Ice	4.5965	2.3603	0.11
						2" Ice	5.2705	2.9566	0.17
						4" Ice	6.7224	4.2529	0.35
RRH2X60-PCS	A	From Leg	4.0000	0.00	107.0000	No Ice	2.5667	2.0106	0.06
			0.00			1/2" Ice	2.7914	2.2184	0.08
			4.00			1" Ice	3.0247	2.4349	0.10
						2" Ice	3.5173	2.8938	0.16
						4" Ice	4.6062	3.9152	0.31

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
RRH2X60-PCS	B	From Leg	4.0000 0.00 4.00	0.00	107.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.5667 2.7914 3.0247 3.5173 4.6062	2.0106 2.2184 2.4349 2.8938 3.9152	0.06 0.08 0.10 0.16 0.31
RRH2X60-PCS	C	From Leg	4.0000 0.00 4.00	0.00	107.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.5667 2.7914 3.0247 3.5173 4.6062	2.0106 2.2184 2.4349 2.8938 3.9152	0.06 0.08 0.10 0.16 0.31
DB-T1-6Z-8AB-0Z	B	From Leg	4.0000 0.00 4.00	0.00	107.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.6000 5.9154 6.2395 6.9136 8.3654	2.3333 2.5580 2.7914 3.2840 4.3728	0.04 0.08 0.12 0.21 0.45
Platform Mount (LP 101-1)	C	None		0.00	107.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	36.2100 42.8200 49.4300 62.6500 89.0900	36.2100 42.8200 49.4300 62.6500 89.0900	1.50 2.30 3.10 4.70 7.89
***									
800MHz 2X50W RRH W/FILTER	A	From Leg	4.0000 0.00 1.00	0.00	99.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.4014 2.6131 2.8335 3.3002 4.3372	2.2536 2.4602 2.6753 3.1316 4.1479	0.06 0.09 0.11 0.17 0.34
800MHz 2X50W RRH W/FILTER	B	From Leg	4.0000 0.00 1.00	0.00	99.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.4014 2.6131 2.8335 3.3002 4.3372	2.2536 2.4602 2.6753 3.1316 4.1479	0.06 0.09 0.11 0.17 0.34
800MHz 2X50W RRH W/FILTER	C	From Leg	4.0000 0.00 1.00	0.00	99.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.4014 2.6131 2.8335 3.3002 4.3372	2.2536 2.4602 2.6753 3.1316 4.1479	0.06 0.09 0.11 0.17 0.34
PCS 1900MHz 4x45W-65MHz	A	From Leg	4.0000 0.00 0.00	0.00	99.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.7087 2.9477 3.1953 3.7164 4.8623	2.6111 2.8475 3.0925 3.6084 4.7439	0.06 0.08 0.11 0.17 0.35
PCS 1900MHz 4x45W-65MHz	B	From Leg	4.0000 0.00 0.00	0.00	99.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.7087 2.9477 3.1953 3.7164 4.8623	2.6111 2.8475 3.0925 3.6084 4.7439	0.06 0.08 0.11 0.17 0.35
PCS 1900MHz 4x45W-65MHz	C	From Leg	4.0000 0.00 0.00	0.00	99.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.7087 2.9477 3.1953 3.7164 4.8623	2.6111 2.8475 3.0925 3.6084 4.7439	0.06 0.08 0.11 0.17 0.35
PCS 1900MHz 4x45W-65MHz	A	From Leg	4.0000 0.00 -1.00	0.00	99.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.7087 2.9477 3.1953 3.7164 4.8623	2.6111 2.8475 3.0925 3.6084 4.7439	0.06 0.08 0.11 0.17 0.35
PCS 1900MHz 4x45W-65MHz	B	From Leg	4.0000 0.00 -1.00	0.00	99.0000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.7087 2.9477 3.1953 3.7164 4.8623	2.6111 2.8475 3.0925 3.6084 4.7439	0.06 0.08 0.11 0.17 0.35
PCS 1900MHz 4x45W-65MHz	C	From Leg	4.0000 0.00 -1.00	0.00	99.0000	No Ice 1/2" Ice 1" Ice 2" Ice	2.7087 2.9477 3.1953 3.7164	2.6111 2.8475 3.0925 3.6084	0.06 0.08 0.11 0.17

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
						4" Ice	4.8623	4.7439	0.35
Side Arm Mount [SO 101-3]	C	None		0.00	99.0000	No Ice	7.5000	7.5000	0.25
						1/2" Ice	8.9000	8.9000	0.33
						1" Ice	10.3000	10.3000	0.41
						2" Ice	13.1000	13.1000	0.58
						4" Ice	18.7000	18.7000	0.90
Clearwire									
TIMING 2000	A	From Face	4.0000	0.00	97.0000	No Ice	0.1258	0.1258	0.00
			0.00			1/2" Ice	0.1771	0.1771	0.00
			0.00			1" Ice	0.2370	0.2370	0.01
						2" Ice	0.3827	0.3827	0.01
						4" Ice	0.7778	0.7778	0.05
840 10054	A	From Face	4.0000	0.00	97.0000	No Ice	5.1858	1.3611	0.04
			0.00			1/2" Ice	5.5447	1.6198	0.06
			0.00			1" Ice	5.9122	1.8858	0.09
						2" Ice	6.6731	2.4401	0.16
						4" Ice	8.2987	3.7428	0.35
840 10054	B	From Face	4.0000	0.00	97.0000	No Ice	5.1858	1.3611	0.04
			0.00			1/2" Ice	5.5447	1.6198	0.06
			0.00			1" Ice	5.9122	1.8858	0.09
						2" Ice	6.6731	2.4401	0.16
						4" Ice	8.2987	3.7428	0.35
840 10054	C	From Face	4.0000	0.00	97.0000	No Ice	5.1858	1.3611	0.04
			0.00			1/2" Ice	5.5447	1.6198	0.06
			0.00			1" Ice	5.9122	1.8858	0.09
						2" Ice	6.6731	2.4401	0.16
						4" Ice	8.2987	3.7428	0.35
WIMAX DAP HEAD	A	From Face	4.0000	0.00	97.0000	No Ice	1.8044	0.7778	0.03
			0.00			1/2" Ice	1.9877	0.9182	0.04
			0.00			1" Ice	2.1795	1.0673	0.06
						2" Ice	2.5891	1.3914	0.09
						4" Ice	3.5121	2.1432	0.20
WIMAX DAP HEAD	B	From Face	4.0000	0.00	97.0000	No Ice	1.8044	0.7778	0.03
			0.00			1/2" Ice	1.9877	0.9182	0.04
			0.00			1" Ice	2.1795	1.0673	0.06
						2" Ice	2.5891	1.3914	0.09
						4" Ice	3.5121	2.1432	0.20
WIMAX DAP HEAD	C	From Face	4.0000	0.00	97.0000	No Ice	1.8044	0.7778	0.03
			0.00			1/2" Ice	1.9877	0.9182	0.04
			0.00			1" Ice	2.1795	1.0673	0.06
						2" Ice	2.5891	1.3914	0.09
						4" Ice	3.5121	2.1432	0.20
HORIZON COMPACT	B	From Face	4.0000	0.00	97.0000	No Ice	0.8409	0.4295	0.01
			0.00			1/2" Ice	0.9658	0.5249	0.02
			4.00			1" Ice	1.0993	0.6289	0.03
						2" Ice	1.3922	0.8629	0.05
						4" Ice	2.0819	1.4345	0.12
HORIZON COMPACT	C	From Face	4.0000	0.00	97.0000	No Ice	0.8409	0.4295	0.01
			0.00			1/2" Ice	0.9658	0.5249	0.02
			4.00			1" Ice	1.0993	0.6289	0.03
						2" Ice	1.3922	0.8629	0.05
						4" Ice	2.0819	1.4345	0.12
Sprint									
APXVSPP18-C-A20	A	From Face	4.0000	0.00	97.0000	No Ice	8.2600	5.2833	0.06
			0.00			1/2" Ice	8.8075	5.7360	0.11
			0.00			1" Ice	9.3636	6.1960	0.16
						2" Ice	10.5017	7.1383	0.29
						4" Ice	12.8817	9.2728	0.63
APXVSPP18-C-A20	B	From Face	4.0000	0.00	97.0000	No Ice	8.2600	5.2833	0.06
			0.00			1/2" Ice	8.8075	5.7360	0.11
			0.00			1" Ice	9.3636	6.1960	0.16
						2" Ice	10.5017	7.1383	0.29
						4" Ice	12.8817	9.2728	0.63
APXVSPP18-C-A20	C	From Face	4.0000	0.00	97.0000	No Ice	8.2600	5.2833	0.06
			0.00			1/2" Ice	8.8075	5.7360	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
			0.00			1" Ice	9.3636	6.1960	0.16
						2" Ice	10.5017	7.1383	0.29
						4" Ice	12.8817	9.2728	0.63
IBC1900HG-2A	A	From Face	4.0000	0.00	97.0000	No Ice	1.1270	0.5329	0.02
			0.00			1/2" Ice	1.2726	0.6471	0.03
			0.00			1" Ice	1.4269	0.7699	0.04
						2" Ice	1.7613	1.0415	0.06
						4" Ice	2.5339	1.6883	0.15
IBC1900HG-2A	B	From Face	4.0000	0.00	97.0000	No Ice	1.1270	0.5329	0.02
			0.00			1/2" Ice	1.2726	0.6471	0.03
			0.00			1" Ice	1.4269	0.7699	0.04
						2" Ice	1.7613	1.0415	0.06
						4" Ice	2.5339	1.6883	0.15
IBC1900HG-2A	C	From Face	4.0000	0.00	97.0000	No Ice	1.1270	0.5329	0.02
			0.00			1/2" Ice	1.2726	0.6471	0.03
			0.00			1" Ice	1.4269	0.7699	0.04
						2" Ice	1.7613	1.0415	0.06
						4" Ice	2.5339	1.6883	0.15
IBC1900BB-1	A	From Face	4.0000	0.00	97.0000	No Ice	1.1270	0.5329	0.02
			0.00			1/2" Ice	1.2726	0.6471	0.03
			0.00			1" Ice	1.4269	0.7699	0.04
						2" Ice	1.7613	1.0415	0.06
						4" Ice	2.5339	1.6883	0.15
IBC1900BB-1	B	From Face	4.0000	0.00	97.0000	No Ice	1.1270	0.5329	0.02
			0.00			1/2" Ice	1.2726	0.6471	0.03
			0.00			1" Ice	1.4269	0.7699	0.04
						2" Ice	1.7613	1.0415	0.06
						4" Ice	2.5339	1.6883	0.15
IBC1900BB-1	C	From Face	4.0000	0.00	97.0000	No Ice	1.1270	0.5329	0.02
			0.00			1/2" Ice	1.2726	0.6471	0.03
			0.00			1" Ice	1.4269	0.7699	0.04
						2" Ice	1.7613	1.0415	0.06
						4" Ice	2.5339	1.6883	0.15
Platform Mount (LP 101-1)	C	None		0.00	97.0000	No Ice	36.2100	36.2100	1.50
						1/2" Ice	42.8200	42.8200	2.30
						1" Ice	49.4300	49.4300	3.10
						2" Ice	62.6500	62.6500	4.70
						4" Ice	89.0900	89.0900	7.89
***									
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Face	4.0000	0.00	87.0000	No Ice	6.8253	5.6424	0.11
			0.00			1/2" Ice	7.3471	6.4800	0.17
			0.00			1" Ice	7.8631	7.2567	0.23
						2" Ice	8.9261	8.8640	0.38
						4" Ice	11.1755	12.2932	0.81
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Face	4.0000	0.00	87.0000	No Ice	6.8253	5.6424	0.11
			0.00			1/2" Ice	7.3471	6.4800	0.17
			0.00			1" Ice	7.8631	7.2567	0.23
						2" Ice	8.9261	8.8640	0.38
						4" Ice	11.1755	12.2932	0.81
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Face	4.0000	0.00	87.0000	No Ice	6.8253	5.6424	0.11
			0.00			1/2" Ice	7.3471	6.4800	0.17
			0.00			1" Ice	7.8631	7.2567	0.23
						2" Ice	8.9261	8.8640	0.38
						4" Ice	11.1755	12.2932	0.81
LNX-6515DS-VTM w/ Mount Pipe	A	From Leg	4.0000	0.00	87.0000	No Ice	11.6828	9.8418	0.08
			0.00			1/2" Ice	12.4043	11.3657	0.17
			0.00			1" Ice	13.1351	12.9138	0.27
						2" Ice	14.6007	15.2672	0.51
						4" Ice	17.8748	20.1392	1.15
LNX-6515DS-VTM w/ Mount Pipe	B	From Leg	4.0000	0.00	87.0000	No Ice	11.6828	9.8418	0.08
			0.00			1/2" Ice	12.4043	11.3657	0.17
			0.00			1" Ice	13.1351	12.9138	0.27
						2" Ice	14.6007	15.2672	0.51
						4" Ice	17.8748	20.1392	1.15
LNX-6515DS-VTM w/	C	From Leg	4.0000	0.00	87.0000	No Ice	11.6828	9.8418	0.08

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
Mount Pipe			0.00			1/2" Ice	12.4043	11.3657	0.17
			0.00			1" Ice	13.1351	12.9138	0.27
						2" Ice	14.6007	15.2672	0.51
						4" Ice	17.8748	20.1392	1.15
KRY 112 144/1	A	From Face	4.0000	0.00	87.0000	No Ice	0.4083	0.2042	0.01
			0.00			1/2" Ice	0.4969	0.2733	0.01
			0.00			1" Ice	0.5941	0.3511	0.02
						2" Ice	0.8145	0.5326	0.03
						4" Ice	1.3590	0.9992	0.08
KRY 112 144/1	B	From Face	4.0000	0.00	87.0000	No Ice	0.4083	0.2042	0.01
			0.00			1/2" Ice	0.4969	0.2733	0.01
			0.00			1" Ice	0.5941	0.3511	0.02
						2" Ice	0.8145	0.5326	0.03
						4" Ice	1.3590	0.9992	0.08
KRY 112 144/1	C	From Face	4.0000	0.00	87.0000	No Ice	0.4083	0.2042	0.01
			0.00			1/2" Ice	0.4969	0.2733	0.01
			0.00			1" Ice	0.5941	0.3511	0.02
						2" Ice	0.8145	0.5326	0.03
						4" Ice	1.3590	0.9992	0.08
RRUS 11 B12	A	From Leg	4.0000	0.00	87.0000	No Ice	3.3056	1.3611	0.05
			0.00			1/2" Ice	3.5497	1.5404	0.07
			0.00			1" Ice	3.8025	1.7284	0.10
						2" Ice	4.3340	2.1302	0.15
						4" Ice	5.5006	3.0377	0.31
RRUS 11 B12	B	From Leg	4.0000	0.00	87.0000	No Ice	3.3056	1.3611	0.05
			0.00			1/2" Ice	3.5497	1.5404	0.07
			0.00			1" Ice	3.8025	1.7284	0.10
						2" Ice	4.3340	2.1302	0.15
						4" Ice	5.5006	3.0377	0.31
RRUS 11 B12	C	From Leg	4.0000	0.00	87.0000	No Ice	3.3056	1.3611	0.05
			0.00			1/2" Ice	3.5497	1.5404	0.07
			0.00			1" Ice	3.8025	1.7284	0.10
						2" Ice	4.3340	2.1302	0.15
						4" Ice	5.5006	3.0377	0.31
AIR -32 B2A/B66AA w/ Mount Pipe	A	From Leg	4.0000	0.00	87.0000	No Ice	7.3361	6.1451	0.15
			0.00			1/2" Ice	7.8680	7.0138	0.21
			0.00			1" Ice	8.3931	7.8027	0.28
						2" Ice	9.4742	9.4342	0.44
						4" Ice	11.7594	12.9120	0.89
AIR -32 B2A/B66AA w/ Mount Pipe	B	From Leg	4.0000	0.00	87.0000	No Ice	7.3361	6.1451	0.15
			0.00			1/2" Ice	7.8680	7.0138	0.21
			0.00			1" Ice	8.3931	7.8027	0.28
						2" Ice	9.4742	9.4342	0.44
						4" Ice	11.7594	12.9120	0.89
AIR -32 B2A/B66AA w/ Mount Pipe	C	From Leg	4.0000	0.00	87.0000	No Ice	7.3361	6.1451	0.15
			0.00			1/2" Ice	7.8680	7.0138	0.21
			0.00			1" Ice	8.3931	7.8027	0.28
						2" Ice	9.4742	9.4342	0.44
						4" Ice	11.7594	12.9120	0.89
Site Pro1 RMV12-396 [TA 602-3]	C	None		0.00	87.0000	No Ice	11.5900	11.5900	0.77
						1/2" Ice	15.4400	15.4400	0.99
						1" Ice	19.2900	19.2900	1.21
						2" Ice	26.9900	26.9900	1.64
						4" Ice	42.3900	42.3900	2.50

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
VHLP2.5-11	B	Paraboloid w/Shroud (HP)	From Leg	1.0000 0.00 4.00	0.00		97.0000	2.9167	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.6800 7.0700 7.4600 8.2300 9.7800	0.05 0.08 0.12 0.19 0.34
VHLP2.5-11	C	Paraboloid w/Shroud (HP)	From Leg	1.0000 0.00 4.00	0.00		97.0000	2.9167	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.6800 7.0700 7.4600 8.2300 9.7800	0.05 0.08 0.12 0.19 0.34

Tower Pressures - No Ice

$G_H = 1.690$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1 131.0000-110.0000	119.8282	1.445	23.683	22.794	A	0.000	22.794	22.794	100.00	0.000	0.000
					B	0.000	22.794		100.00	0.000	0.000
					C	0.000	22.794		100.00	0.000	2.613
L2 110.0000-90.0000	99.5374	1.371	22.460	30.044	A	0.000	30.044	30.044	100.00	0.000	0.000
					B	0.000	30.044		100.00	0.000	0.000
					C	0.000	30.044		100.00	0.000	6.663
L3 90.0000-84.5833	87.2628	1.32	21.631	9.572	A	0.000	9.572	9.572	100.00	0.000	0.000
					B	0.000	9.572		100.00	0.000	0.000
					C	0.000	9.572		100.00	0.000	4.204
L4 84.5833-83.0000	83.7893	1.305	21.382	2.913	A	0.000	2.913	2.913	100.00	0.000	0.000
					B	0.000	2.913		100.00	0.000	0.000
					C	0.000	2.913		100.00	0.000	1.588
L5 83.0000-81.0000	81.9963	1.297	21.250	3.755	A	0.000	3.755	3.755	100.00	0.000	0.000
					B	0.000	3.755		100.00	0.000	0.000
					C	0.000	3.755		100.00	0.000	1.923
L6 81.0000-70.0000	75.3956	1.266	20.746	22.142	A	0.000	22.142	22.142	100.00	0.000	0.000
					B	0.000	22.142		100.00	0.000	0.000
					C	0.000	22.142		100.00	0.000	9.202
L7 70.0000-67.0833	68.5325	1.232	20.188	6.146	A	0.000	6.146	6.146	100.00	0.000	0.000
					B	0.000	6.146		100.00	0.000	0.000
					C	0.000	6.146		100.00	0.000	2.596
L8 67.0833-64.0833	65.5761	1.217	19.936	6.534	A	0.000	6.534	6.534	100.00	0.000	0.000
					B	0.000	6.534		100.00	0.000	0.000
					C	0.000	6.534		100.00	0.000	2.985
L9 64.0833-61.0833	62.5763	1.201	19.671	6.721	A	0.000	6.721	6.721	100.00	0.000	0.000
					B	0.000	6.721		100.00	0.000	0.000
					C	0.000	6.721		100.00	0.000	3.010
L10 61.0833-59.5000	60.2897	1.188	19.463	3.623	A	0.000	3.623	3.623	100.00	0.000	0.000
					B	0.000	3.623		100.00	0.000	0.000
					C	0.000	3.623		100.00	0.000	1.588
L11 59.5000-53.5000	56.4736	1.166	19.102	14.204	A	0.000	14.204	14.204	100.00	0.000	0.000
					B	0.000	14.204		100.00	0.000	0.000
					C	0.000	14.204		100.00	0.000	6.019
L12 53.5000-44.5833	48.9869	1.119	18.342	22.495	A	0.000	22.495	22.495	100.00	0.000	0.000
					B	0.000	22.495		100.00	0.000	0.000
					C	0.000	22.495		100.00	0.000	9.101
L13 44.5833-40.5000	42.5308	1.075	17.616	10.854	A	0.000	10.854	10.854	100.00	0.000	0.000
					B	0.000	10.854		100.00	0.000	0.000
					C	0.000	10.854		100.00	0.000	4.253
L14 40.5000-39.0000	39.7486	1.055	17.279	4.075	A	0.000	4.075	4.075	100.00	0.000	0.000
					B	0.000	4.075		100.00	0.000	0.000
					C	0.000	4.075		100.00	0.000	1.505

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L15 39.0000-31.5000	35.2266	1.019	16.693	20.880	A	0.000	20.880	20.880	100.00	0.000	0.000
					B	0.000	20.880		100.00	0.000	0.000
					C	0.000	20.880		100.00	0.000	7.524
L16 31.5000-25.5000	28.4785	1	16.384	17.391	A	0.000	17.391	17.391	100.00	0.000	0.000
					B	0.000	17.391		100.00	0.000	0.000
					C	0.000	17.391		100.00	0.000	6.019
L17 25.5000-23.5000	24.4977	1	16.384	5.963	A	0.000	5.963	5.963	100.00	0.000	0.000
					B	0.000	5.963		100.00	0.000	0.000
					C	0.000	5.963		100.00	0.000	2.006
L18 23.5000-18.7500	21.1122	1	16.384	14.497	A	0.000	14.497	14.497	100.00	0.000	0.000
					B	0.000	14.497		100.00	0.000	0.000
					C	0.000	14.497		100.00	0.000	5.057
L19 18.7500-17.0833	17.9151	1	16.384	5.198	A	0.000	5.198	5.198	100.00	0.000	0.000
					B	0.000	5.198		100.00	0.000	0.000
					C	0.000	5.198		100.00	0.000	1.950
L20 17.0833-13.0000	15.0326	1	16.384	12.979	A	0.000	12.979	12.979	100.00	0.000	0.000
					B	0.000	12.979		100.00	0.000	0.000
					C	0.000	12.979		100.00	0.000	4.423
L21 13.0000-10.5000	11.7467	1	16.384	8.118	A	0.000	8.118	8.118	100.00	0.000	0.000
					B	0.000	8.118		100.00	0.000	0.000
					C	0.000	8.118		100.00	0.000	2.612
L22 10.5000-0.0000	5.1935	1	16.384	35.515	A	0.000	35.515	35.515	100.00	0.000	0.000
					B	0.000	35.515		100.00	0.000	0.000
					C	0.000	35.515		100.00	0.000	10.971

Tower Pressure - With Ice

G_H = 1.690

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 131.0000-110.0000	119.8282	1.445	5.232	1.4592	27.901	A	0.000	27.901	27.901	100.00	0.000	0.000
						B	0.000	27.901		100.00	0.000	0.000
						C	0.000	27.901		100.00	0.000	5.823
L2 110.0000-90.0000	99.5374	1.371	4.961	1.4271	34.801	A	0.000	34.801	34.801	100.00	0.000	0.000
						B	0.000	34.801		100.00	0.000	0.000
						C	0.000	34.801		100.00	0.000	14.844
L3 90.0000-84.5833	87.2628	1.32	4.778	1.4047	10.840	A	0.000	10.840	10.840	100.00	0.000	0.000
						B	0.000	10.840		100.00	0.000	0.000
						C	0.000	10.840		100.00	0.000	10.686
L4 84.5833-83.0000	83.7893	1.305	4.723	1.3979	3.282	A	0.000	3.282	3.282	100.00	0.000	0.000
						B	0.000	3.282		100.00	0.000	0.000
						C	0.000	3.282		100.00	0.000	4.343
L5 83.0000-81.0000	81.9963	1.297	4.694	1.3943	4.220	A	0.000	4.220	4.220	100.00	0.000	0.000
						B	0.000	4.220		100.00	0.000	0.000
						C	0.000	4.220		100.00	0.000	5.238
L6 81.0000-70.0000	75.3956	1.266	4.583	1.3803	24.673	A	0.000	24.673	24.673	100.00	0.000	0.000
						B	0.000	24.673		100.00	0.000	0.000
						C	0.000	24.673		100.00	0.000	24.722
L7 70.0000-67.0833	68.5325	1.232	4.460	1.3646	6.817	A	0.000	6.817	6.817	100.00	0.000	0.000
						B	0.000	6.817		100.00	0.000	0.000
						C	0.000	6.817		100.00	0.000	7.095
L8 67.0833-64.0833	65.5761	1.217	4.404	1.3574	7.213	A	0.000	7.213	7.213	100.00	0.000	0.000
						B	0.000	7.213		100.00	0.000	0.000
						C	0.000	7.213		100.00	0.000	8.103
L9 64.0833-61.0833	62.5763	1.201	4.345	1.3498	7.396	A	0.000	7.396	7.396	100.00	0.000	0.000
						B	0.000	7.396		100.00	0.000	0.000
						C	0.000	7.396		100.00	0.000	8.049
L10 61.0833-59.5000	60.2897	1.188	4.299	1.3437	3.978	A	0.000	3.978	3.978	100.00	0.000	0.000
						B	0.000	3.978		100.00	0.000	0.000
						C	0.000	3.978		100.00	0.000	4.236
L11 59.5000-53.5000	56.4736	1.166	4.220	1.3332	15.537	A	0.000	15.537	15.537	100.00	0.000	0.000
						B	0.000	15.537		100.00	0.000	0.000
						C	0.000	15.537		100.00	0.000	15.974

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L12 53.5000-44.5833	48.9869	1.119	4.052	1.3107	24.442	A	0.000	24.442	24.442	100.00	0.000	0.000
						B	0.000	24.442		100.00	0.000	0.000
						C	0.000	24.442		100.00	0.000	24.009
L13 44.5833-40.5000	42.5308	1.075	3.891	1.2886	11.731	A	0.000	11.731	11.731	100.00	0.000	0.000
						B	0.000	11.731		100.00	0.000	0.000
						C	0.000	11.731		100.00	0.000	11.159
L14 40.5000-39.0000	39.7486	1.055	3.817	1.2782	4.394	A	0.000	4.394	4.394	100.00	0.000	0.000
						B	0.000	4.394		100.00	0.000	0.000
						C	0.000	4.394		100.00	0.000	3.891
L15 39.0000-31.5000	35.2266	1.019	3.687	1.2598	22.455	A	0.000	22.455	22.455	100.00	0.000	0.000
						B	0.000	22.455		100.00	0.000	0.000
						C	0.000	22.455		100.00	0.000	19.282
L16 31.5000-25.5000	28.4785	1	3.619	1.2500	18.641	A	0.000	18.641	18.641	100.00	0.000	0.000
						B	0.000	18.641		100.00	0.000	0.000
						C	0.000	18.641		100.00	0.000	15.352
L17 25.5000-23.5000	24.4977	1	3.619	1.2500	6.380	A	0.000	6.380	6.380	100.00	0.000	0.000
						B	0.000	6.380		100.00	0.000	0.000
						C	0.000	6.380		100.00	0.000	5.117
L18 23.5000-18.7500	21.1122	1	3.619	1.2500	15.487	A	0.000	15.487	15.487	100.00	0.000	0.000
						B	0.000	15.487		100.00	0.000	0.000
						C	0.000	15.487		100.00	0.000	12.932
L19 18.7500-17.0833	17.9151	1	3.619	1.2500	5.545	A	0.000	5.545	5.545	100.00	0.000	0.000
						B	0.000	5.545		100.00	0.000	0.000
						C	0.000	5.545		100.00	0.000	5.005
L20 17.0833-13.0000	15.0326	1	3.619	1.2500	13.830	A	0.000	13.830	13.830	100.00	0.000	0.000
						B	0.000	13.830		100.00	0.000	0.000
						C	0.000	13.830		100.00	0.000	11.122
L21 13.0000-10.5000	11.7467	1	3.619	1.2500	8.639	A	0.000	8.639	8.639	100.00	0.000	0.000
						B	0.000	8.639		100.00	0.000	0.000
						C	0.000	8.639		100.00	0.000	6.501
L22 10.5000-0.0000	5.1935	1	3.619	1.2500	37.703	A	0.000	37.703	37.703	100.00	0.000	0.000
						B	0.000	37.703		100.00	0.000	0.000
						C	0.000	37.703		100.00	0.000	27.304

Tower Pressure - Service

$G_H = 1.690$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 131.0000-110.0000	119.8282	1.445	9.251	22.794	A	0.000	22.794	22.794	100.00	0.000	0.000
					B	0.000	22.794		100.00	0.000	0.000
					C	0.000	22.794		100.00	0.000	2.613
L2 110.0000-90.0000	99.5374	1.371	8.773	30.044	A	0.000	30.044	30.044	100.00	0.000	0.000
					B	0.000	30.044		100.00	0.000	0.000
					C	0.000	30.044		100.00	0.000	6.663
L3 90.0000-84.5833	87.2628	1.32	8.450	9.572	A	0.000	9.572	9.572	100.00	0.000	0.000
					B	0.000	9.572		100.00	0.000	0.000
					C	0.000	9.572		100.00	0.000	4.204
L4 84.5833-83.0000	83.7893	1.305	8.352	2.913	A	0.000	2.913	2.913	100.00	0.000	0.000
					B	0.000	2.913		100.00	0.000	0.000
					C	0.000	2.913		100.00	0.000	1.588
L5 83.0000-81.0000	81.9963	1.297	8.301	3.755	A	0.000	3.755	3.755	100.00	0.000	0.000
					B	0.000	3.755		100.00	0.000	0.000
					C	0.000	3.755		100.00	0.000	1.923
L6 81.0000-70.0000	75.3956	1.266	8.104	22.142	A	0.000	22.142	22.142	100.00	0.000	0.000
					B	0.000	22.142		100.00	0.000	0.000
					C	0.000	22.142		100.00	0.000	9.202
L7 70.0000-67.0833	68.5325	1.232	7.886	6.146	A	0.000	6.146	6.146	100.00	0.000	0.000
					B	0.000	6.146		100.00	0.000	0.000
					C	0.000	6.146		100.00	0.000	2.596
L8 67.0833-64.0833	65.5761	1.217	7.787	6.534	A	0.000	6.534	6.534	100.00	0.000	0.000
					B	0.000	6.534		100.00	0.000	0.000
					C	0.000	6.534		100.00	0.000	2.985

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L9 64.0833-61.0833	62.5763	1.201	7.684	6.721	A	0.000	6.721	6.721	100.00	0.000	0.000
					B	0.000	6.721		100.00	0.000	0.000
					C	0.000	6.721		100.00	0.000	3.010
L10 61.0833-59.5000	60.2897	1.188	7.603	3.623	A	0.000	3.623	3.623	100.00	0.000	0.000
					B	0.000	3.623		100.00	0.000	0.000
					C	0.000	3.623		100.00	0.000	1.588
L11 59.5000-53.5000	56.4736	1.166	7.462	14.204	A	0.000	14.204	14.204	100.00	0.000	0.000
					B	0.000	14.204		100.00	0.000	0.000
					C	0.000	14.204		100.00	0.000	6.019
L12 53.5000-44.5833	48.9869	1.119	7.165	22.495	A	0.000	22.495	22.495	100.00	0.000	0.000
					B	0.000	22.495		100.00	0.000	0.000
					C	0.000	22.495		100.00	0.000	9.101
L13 44.5833-40.5000	42.5308	1.075	6.881	10.854	A	0.000	10.854	10.854	100.00	0.000	0.000
					B	0.000	10.854		100.00	0.000	0.000
					C	0.000	10.854		100.00	0.000	4.253
L14 40.5000-39.0000	39.7486	1.055	6.749	4.075	A	0.000	4.075	4.075	100.00	0.000	0.000
					B	0.000	4.075		100.00	0.000	0.000
					C	0.000	4.075		100.00	0.000	1.505
L15 39.0000-31.5000	35.2266	1.019	6.521	20.880	A	0.000	20.880	20.880	100.00	0.000	0.000
					B	0.000	20.880		100.00	0.000	0.000
					C	0.000	20.880		100.00	0.000	7.524
L16 31.5000-25.5000	28.4785	1	6.400	17.391	A	0.000	17.391	17.391	100.00	0.000	0.000
					B	0.000	17.391		100.00	0.000	0.000
					C	0.000	17.391		100.00	0.000	6.019
L17 25.5000-23.5000	24.4977	1	6.400	5.963	A	0.000	5.963	5.963	100.00	0.000	0.000
					B	0.000	5.963		100.00	0.000	0.000
					C	0.000	5.963		100.00	0.000	2.006
L18 23.5000-18.7500	21.1122	1	6.400	14.497	A	0.000	14.497	14.497	100.00	0.000	0.000
					B	0.000	14.497		100.00	0.000	0.000
					C	0.000	14.497		100.00	0.000	5.057
L19 18.7500-17.0833	17.9151	1	6.400	5.198	A	0.000	5.198	5.198	100.00	0.000	0.000
					B	0.000	5.198		100.00	0.000	0.000
					C	0.000	5.198		100.00	0.000	1.950
L20 17.0833-13.0000	15.0326	1	6.400	12.979	A	0.000	12.979	12.979	100.00	0.000	0.000
					B	0.000	12.979		100.00	0.000	0.000
					C	0.000	12.979		100.00	0.000	4.423
L21 13.0000-10.5000	11.7467	1	6.400	8.118	A	0.000	8.118	8.118	100.00	0.000	0.000
					B	0.000	8.118		100.00	0.000	0.000
					C	0.000	8.118		100.00	0.000	2.612
L22 10.5000-0.0000	5.1935	1	6.400	35.515	A	0.000	35.515	35.515	100.00	0.000	0.000
					B	0.000	35.515		100.00	0.000	0.000
					C	0.000	35.515		100.00	0.000	10.971

Load Combinations

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

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

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	131 - 110	Pole	Max Tension	11	0.00	-0.00	0.00
			Max. Compression	14	-5.24	0.29	0.19
			Max. Mx	11	-1.64	40.00	0.05
			Max. My	2	-1.64	0.03	40.03
			Max. Vy	11	-3.75	40.00	0.05
			Max. Vx	8	3.74	0.03	-39.88
			Max. Torque	5			0.26
L2	110 - 90	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-23.03	1.11	-1.46
			Max. Mx	11	-7.56	276.53	-0.12
			Max. My	8	-7.60	0.16	-272.28
			Max. Vy	11	-15.56	276.53	-0.12
			Max. Vx	2	-15.30	0.01	272.05
			Max. Torque	12			0.50
L3	90 - 84.5833	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-29.40	1.67	-1.80
			Max. Mx	11	-10.10	370.57	-0.09
			Max. My	8	-10.13	0.27	-364.76
			Max. Vy	11	-19.53	370.57	-0.09
			Max. Vx	2	-19.27	0.03	364.61
			Max. Torque	12			0.53
L4	84.5833 - 83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-29.99	1.90	-1.93
			Max. Mx	11	-10.40	401.65	-0.09
			Max. My	8	-10.43	0.30	-395.37
			Max. Vy	11	-19.70	401.65	-0.09
			Max. Vx	2	-19.45	0.05	395.24
			Max. Torque	12			0.54
L5	83 - 81	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-30.63	2.20	-2.11
			Max. Mx	11	-10.69	441.27	-0.08
			Max. My	8	-10.73	0.35	-434.41
			Max. Vy	11	-19.90	441.27	-0.08
			Max. Vx	2	-19.65	0.07	434.30
			Max. Torque	12			0.56
L6	81 - 70	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-33.11	3.29	-2.75
			Max. Mx	11	-11.96	583.08	-0.07
			Max. My	8	-11.99	0.53	-574.16
			Max. Vy	11	-20.60	583.08	-0.07
			Max. Vx	2	-20.34	0.15	574.10
			Max. Torque	12			0.60
L7	70 - 67.0833	Pole	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Compression	14	-36.21	4.39	-3.39
			Max. Mx	11	-13.63	728.30	-0.06
			Max. My	8	-13.66	0.71	-717.34
			Max. Vy	11	-21.34	728.30	-0.06
			Max. Vx	2	-21.09	0.23	717.33
			Max. Torque	12			0.65
L8	67.0833 - 64.0833	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-37.24	4.88	-3.68
			Max. Mx	11	-14.18	792.80	-0.06
			Max. My	2	-14.21	0.27	780.97
			Max. Vy	11	-21.64	792.80	-0.06
			Max. Vx	2	-21.38	0.27	780.97
			Max. Torque	12			0.67
L9	64.0833 - 61.0833	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-38.33	5.38	-3.97
			Max. Mx	11	-14.76	858.20	-0.05
			Max. My	2	-14.79	0.32	845.51
			Max. Vy	11	-21.95	858.20	-0.05
			Max. Vx	2	-21.69	0.32	845.51
			Max. Torque	12			0.70
L10	61.0833 - 59.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-38.96	5.65	-4.13
			Max. Mx	11	-15.12	893.10	-0.05
			Max. My	2	-15.15	0.34	879.95
			Max. Vy	11	-22.12	893.10	-0.05
			Max. Vx	2	-21.86	0.34	879.95
			Max. Torque	12			0.71
L11	59.5 - 53.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-41.58	6.68	-4.73
			Max. Mx	11	-16.70	1027.82	-0.05
			Max. My	2	-16.73	0.43	1012.93
			Max. Vy	11	-22.77	1027.82	-0.05
			Max. Vx	2	-22.51	0.43	1012.93
			Max. Torque	12			0.76
L12	53.5 - 44.5833	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-45.54	8.28	-5.66
			Max. Mx	11	-19.14	1235.23	-0.06
			Max. My	2	-19.15	0.57	1217.73
			Max. Vy	11	-23.73	1235.23	-0.06
			Max. Vx	2	-23.48	0.57	1217.73
			Max. Torque	12			0.84
L13	44.5833 - 40.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-47.37	9.02	-6.09
			Max. Mx	11	-20.28	1333.07	-0.06
			Max. My	2	-20.30	0.64	1314.38
			Max. Vy	11	-24.17	1333.07	-0.06
			Max. Vx	2	-23.91	0.64	1314.38
			Max. Torque	12			0.87
L14	40.5 - 39	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-48.07	9.30	-6.25
			Max. Mx	11	-20.72	1369.46	-0.07
			Max. My	2	-20.74	0.67	1350.32
			Max. Vy	11	-24.33	1369.46	-0.07
			Max. Vx	2	-24.07	0.67	1350.32
			Max. Torque	12			0.89
L15	39 - 31.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-51.62	10.68	-7.05
			Max. Mx	11	-23.04	1554.85	-0.08
			Max. My	2	-23.05	0.81	1533.50
			Max. Vy	11	-25.09	1554.85	-0.08
			Max. Vx	2	-24.83	0.81	1533.50
			Max. Torque	12			0.95
L16	31.5 - 25.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-54.29	11.82	-7.71
			Max. Mx	11	-24.74	1707.19	-0.10
			Max. My	2	-24.75	0.93	1684.07
			Max. Vy	11	-25.67	1707.19	-0.10

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vx	2	-25.41	0.93	1684.07
			Max. Torque	12			1.01
L17	25.5 - 23.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-55.24	12.20	-7.94
			Max. Mx	11	-25.35	1758.76	-0.10
			Max. My	2	-25.36	0.97	1735.04
			Max. Vy	11	-25.87	1758.76	-0.10
			Max. Vx	2	-25.61	0.97	1735.04
			Max. Torque	13			1.03
L18	23.5 - 18.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-57.30	13.14	-8.48
			Max. Mx	11	-26.64	1882.80	-0.12
			Max. My	2	-26.65	1.06	1857.68
			Max. Vy	11	-26.34	1882.80	-0.12
			Max. Vx	2	-26.08	1.06	1857.68
			Max. Torque	13			1.08
L19	18.75 - 17.0833	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-58.13	13.47	-8.67
			Max. Mx	11	-27.19	1926.87	-0.12
			Max. My	2	-27.20	1.10	1901.25
			Max. Vy	11	-26.52	1926.87	-0.12
			Max. Vx	2	-26.26	1.10	1901.25
			Max. Torque	13			1.10
L20	17.0833 - 13	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-60.04	14.28	-9.14
			Max. Mx	11	-28.42	2036.04	-0.14
			Max. My	2	-28.43	1.19	2009.21
			Max. Vy	11	-26.93	2036.04	-0.14
			Max. Vx	2	-26.68	1.19	2009.21
			Max. Torque	13			1.15
L21	13 - 10.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-61.38	14.79	-9.43
			Max. Mx	11	-29.34	2103.75	-0.15
			Max. My	2	-29.34	1.25	2076.17
			Max. Vy	11	-27.20	2103.75	-0.15
			Max. Vx	2	-26.95	1.25	2076.17
			Max. Torque	13			1.18
L22	10.5 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-66.32	17.01	-10.71
			Max. Mx	11	-32.50	2395.16	-0.20
			Max. My	8	-32.50	2.90	-2364.51
			Max. Vy	11	-28.28	2395.16	-0.20
			Max. Vx	2	-28.03	1.49	2364.46
			Max. Torque	13			1.31

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	14	66.32	-0.00	0.00
	Max. H_x	11	32.51	28.27	0.01
	Max. H_z	2	32.51	-0.01	28.02
	Max. M_x	2	2364.46	-0.01	28.02
	Max. M_z	5	2390.77	-28.27	0.03
	Max. Torsion	13	1.31	14.21	24.25
	Min. Vert	11	32.51	28.27	0.01
	Min. H_x	5	32.51	-28.27	0.03
	Min. H_z	8	32.51	0.01	-27.99
	Min. M_x	8	-2364.51	0.01	-27.99
	Min. M_z	11	-2395.16	28.27	0.01
	Min. Torsion	7	-1.24	-14.11	-24.23

Tower Mast Reaction Summary

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 Only	32.51	-0.00	0.00	1.47	2.15	0.00
Dead+Wind 0 deg - No Ice	32.51	0.01	-28.02	-2364.46	1.49	-0.78
Dead+Wind 30 deg - No Ice	32.51	14.22	-24.25	-2046.26	-1203.02	-0.04
Dead+Wind 60 deg - No Ice	32.51	24.52	-13.98	-1178.69	-2074.21	0.49
Dead+Wind 90 deg - No Ice	32.51	28.27	-0.03	-1.21	-2390.77	0.88
Dead+Wind 120 deg - No Ice	32.51	24.50	13.89	1172.54	-2072.32	1.14
Dead+Wind 150 deg - No Ice	32.51	14.11	24.23	2046.78	-1191.76	1.24
Dead+Wind 180 deg - No Ice	32.51	-0.01	27.99	2364.51	2.90	0.78
Dead+Wind 210 deg - No Ice	32.51	-14.12	24.24	2047.48	1197.38	0.12
Dead+Wind 240 deg - No Ice	32.51	-24.51	13.91	1173.75	2077.42	-0.36
Dead+Wind 270 deg - No Ice	32.51	-28.27	-0.01	0.20	2395.16	-0.89
Dead+Wind 300 deg - No Ice	32.51	-24.51	-13.97	-1177.47	2077.90	-1.27
Dead+Wind 330 deg - No Ice	32.51	-14.21	-24.25	-2045.55	1206.19	-1.31
Dead+Ice+Temp	66.32	0.00	-0.00	10.71	17.01	-0.00
Dead+Wind 0 deg+Ice+Temp	66.32	0.00	-8.79	-757.33	16.92	-0.45
Dead+Wind 30 deg+Ice+Temp	66.32	4.45	-7.61	-654.06	-372.77	-0.14
Dead+Wind 60 deg+Ice+Temp	66.32	7.68	-4.39	-372.51	-655.20	0.15
Dead+Wind 90 deg+Ice+Temp	66.32	8.85	-0.01	10.04	-758.00	0.40
Dead+Wind 120 deg+Ice+Temp	66.32	7.67	4.37	391.59	-654.68	0.57
Dead+Wind 150 deg+Ice+Temp	66.32	4.42	7.60	674.94	-369.72	0.62
Dead+Wind 180 deg+Ice+Temp	66.32	-0.00	8.78	778.17	17.31	0.45
Dead+Wind 210 deg+Ice+Temp	66.32	-4.42	7.61	675.13	404.29	0.15
Dead+Wind 240 deg+Ice+Temp	66.32	-7.67	4.37	391.93	689.10	-0.12
Dead+Wind 270 deg+Ice+Temp	66.32	-8.85	-0.00	10.44	792.30	-0.41
Dead+Wind 300 deg+Ice+Temp	66.32	-7.67	-4.39	-372.17	689.23	-0.60
Dead+Wind 330 deg+Ice+Temp	66.32	-4.44	-7.61	-653.86	406.66	-0.64
Dead+Wind 0 deg - Service	32.51	0.00	-10.95	-923.54	1.92	-0.30
Dead+Wind 30 deg - Service	32.51	5.55	-9.47	-799.06	-468.98	-0.02
Dead+Wind 60 deg - Service	32.51	9.58	-5.46	-459.89	-809.58	0.19
Dead+Wind 90 deg - Service	32.51	11.04	-0.01	0.45	-933.43	0.35
Dead+Wind 120 deg - Service	32.51	9.57	5.43	459.33	-808.84	0.45
Dead+Wind 150 deg - Service	32.51	5.51	9.46	801.10	-464.58	0.49
Dead+Wind 180 deg - Service	32.51	-0.00	10.93	925.40	2.48	0.31
Dead+Wind 210 deg - Service	32.51	-5.52	9.47	801.38	469.45	0.04
Dead+Wind 240 deg - Service	32.51	-9.57	5.43	459.80	813.52	-0.14
Dead+Wind 270 deg - Service	32.51	-11.04	-0.00	1.00	937.83	-0.35
Dead+Wind 300 deg - Service	32.51	-9.57	-5.46	-459.42	813.71	-0.50
Dead+Wind 330 deg - Service	32.51	-5.55	-9.47	-798.79	472.90	-0.51

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	-32.51	0.00	0.00	32.51	-0.00	0.000%
2	0.01	-32.51	-28.02	-0.01	32.51	28.02	0.010%
3	14.22	-32.51	-24.25	-14.22	32.51	24.25	0.000%
4	24.52	-32.51	-13.98	-24.52	32.51	13.98	0.000%
5	28.27	-32.51	-0.03	-28.27	32.51	0.03	0.011%
6	24.50	-32.51	13.89	-24.50	32.51	-13.89	0.000%
7	14.11	-32.51	24.23	-14.11	32.51	-24.23	0.000%
8	-0.01	-32.51	28.00	0.01	32.51	-27.99	0.010%
9	-14.12	-32.51	24.24	14.12	32.51	-24.24	0.000%
10	-24.51	-32.51	13.91	24.51	32.51	-13.91	0.000%
11	-28.27	-32.51	-0.01	28.27	32.51	0.01	0.011%
12	-24.51	-32.51	-13.97	24.51	32.51	13.97	0.000%
13	-14.21	-32.51	-24.25	14.21	32.51	24.25	0.000%
14	0.00	-66.32	0.00	-0.00	66.32	0.00	0.001%
15	0.00	-66.32	-8.79	-0.00	66.32	8.79	0.002%
16	4.45	-66.32	-7.61	-4.45	66.32	7.61	0.001%
17	7.68	-66.32	-4.39	-7.68	66.32	4.39	0.001%
18	8.85	-66.32	-0.01	-8.85	66.32	0.01	0.002%
19	7.67	-66.32	4.37	-7.67	66.32	-4.37	0.001%
20	4.42	-66.32	7.60	-4.42	66.32	-7.60	0.001%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
21	-0.00	-66.32	8.79	0.00	66.32	-8.78	0.001%
22	-4.42	-66.32	7.61	4.42	66.32	-7.61	0.001%
23	-7.67	-66.32	4.37	7.67	66.32	-4.37	0.001%
24	-8.85	-66.32	-0.00	8.85	66.32	0.00	0.001%
25	-7.67	-66.32	-4.39	7.67	66.32	4.39	0.001%
26	-4.44	-66.32	-7.61	4.44	66.32	7.61	0.001%
27	0.00	-32.51	-10.95	-0.00	32.51	10.95	0.005%
28	5.55	-32.51	-9.47	-5.55	32.51	9.47	0.003%
29	9.58	-32.51	-5.46	-9.58	32.51	5.46	0.003%
30	11.04	-32.51	-0.01	-11.04	32.51	0.01	0.005%
31	9.57	-32.51	5.43	-9.57	32.51	-5.43	0.003%
32	5.51	-32.51	9.46	-5.51	32.51	-9.46	0.003%
33	-0.00	-32.51	10.94	0.00	32.51	-10.93	0.005%
34	-5.52	-32.51	9.47	5.52	32.51	-9.47	0.003%
35	-9.57	-32.51	5.43	9.57	32.51	-5.43	0.003%
36	-11.04	-32.51	-0.00	11.04	32.51	0.00	0.005%
37	-9.58	-32.51	-5.46	9.57	32.51	5.46	0.003%
38	-5.55	-32.51	-9.47	5.55	32.51	9.47	0.003%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	15	0.00011750	0.00012326
3	Yes	20	0.00000001	0.00009165
4	Yes	20	0.00000001	0.00008958
5	Yes	15	0.00011738	0.00013559
6	Yes	20	0.00000001	0.00009177
7	Yes	20	0.00000001	0.00008872
8	Yes	15	0.00011751	0.00012451
9	Yes	20	0.00000001	0.00009028
10	Yes	20	0.00000001	0.00009148
11	Yes	15	0.00011737	0.00013777
12	Yes	20	0.00000001	0.00008904
13	Yes	20	0.00000001	0.00009298
14	Yes	12	0.00000001	0.00003922
15	Yes	17	0.00012119	0.00014896
16	Yes	18	0.00000001	0.00010213
17	Yes	18	0.00000001	0.00010196
18	Yes	17	0.00012124	0.00014961
19	Yes	18	0.00000001	0.00010565
20	Yes	18	0.00000001	0.00010409
21	Yes	18	0.00000001	0.00008472
22	Yes	18	0.00000001	0.00010941
23	Yes	18	0.00000001	0.00010984
24	Yes	18	0.00000001	0.00008609
25	Yes	18	0.00000001	0.00010588
26	Yes	18	0.00000001	0.00010728
27	Yes	15	0.00012209	0.00006414
28	Yes	16	0.00006232	0.00009766
29	Yes	16	0.00006233	0.00009192
30	Yes	15	0.00012209	0.00006609
31	Yes	16	0.00006233	0.00010122
32	Yes	16	0.00006233	0.00008999
33	Yes	15	0.00012210	0.00006434
34	Yes	16	0.00006232	0.00009471
35	Yes	16	0.00006233	0.00009978
36	Yes	15	0.00012208	0.00006642
37	Yes	16	0.00006232	0.00009043
38	Yes	16	0.00006232	0.00010247

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	131 - 110	33.32	36	2.31	0.00
L2	110 - 90	23.29	36	2.19	0.00
L3	90 - 84.5833	15.00	36	1.69	0.00
L4	84.5833 - 83	13.15	36	1.57	0.00
L5	83 - 81	12.63	36	1.55	0.00
L6	81 - 70	11.99	36	1.49	0.00
L7	74 - 67.0833	9.91	36	1.34	0.00
L8	67.0833 - 64.0833	8.05	36	1.21	0.00
L9	64.0833 - 61.0833	7.31	36	1.12	0.00
L10	61.0833 - 59.5	6.63	36	1.05	0.00
L11	59.5 - 53.5	6.29	36	1.01	0.00
L12	53.5 - 44.5833	5.08	36	0.91	0.00
L13	44.5833 - 40.5	3.53	36	0.76	0.00
L14	40.5 - 39	2.91	36	0.69	0.00
L15	39 - 31.5	2.70	36	0.66	0.00
L16	31.5 - 25.5	1.75	36	0.54	0.00
L17	25.5 - 23.5	1.14	36	0.43	0.00
L18	23.5 - 18.75	0.97	36	0.40	0.00
L19	18.75 - 17.0833	0.61	36	0.31	0.00
L20	17.0833 - 13	0.51	36	0.28	0.00
L21	13 - 10.5	0.30	36	0.21	0.00
L22	10.5 - 0	0.20	36	0.18	0.00

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
121.0000	AM-X-CD-16-65-00T-RET w/ Mount Pipe	36	28.46	2.30	0.00	8698
107.0000	BXA-80063/4CF	36	21.93	2.13	0.00	3392
101.0000	VHLP2.5-11	36	19.31	1.98	0.00	2494
99.0000	800MHz 2X50W RRH W/FILTER	36	18.47	1.93	0.00	2292
97.0000	TIMING 2000	36	17.66	1.87	0.00	2119
87.0000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	36	13.95	1.62	0.00	2416

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	131 - 110	84.97	11	5.89	0.00
L2	110 - 90	59.40	11	5.59	0.01
L3	90 - 84.5833	38.27	11	4.30	0.00
L4	84.5833 - 83	33.55	11	4.02	0.00
L5	83 - 81	32.23	11	3.95	0.00
L6	81 - 70	30.60	11	3.81	0.00
L7	74 - 67.0833	25.30	11	3.42	0.00
L8	67.0833 - 64.0833	20.54	11	3.08	0.00
L9	64.0833 - 61.0833	18.67	11	2.87	0.00
L10	61.0833 - 59.5	16.93	11	2.67	0.00
L11	59.5 - 53.5	16.06	11	2.59	0.00
L12	53.5 - 44.5833	12.98	11	2.32	0.00
L13	44.5833 - 40.5	9.01	11	1.93	0.00
L14	40.5 - 39	7.44	11	1.75	0.00
L15	39 - 31.5	6.90	11	1.69	0.00
L16	31.5 - 25.5	4.48	11	1.39	0.00
L17	25.5 - 23.5	2.91	11	1.11	0.00
L18	23.5 - 18.75	2.47	11	1.02	0.00
L19	18.75 - 17.0833	1.57	11	0.79	0.00

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L20	17.0833 - 13	1.31	11	0.72	0.00
L21	13 - 10.5	0.76	11	0.55	0.00
L22	10.5 - 0	0.50	11	0.46	0.00

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
121.0000	AM-X-CD-16-65-00T-RET w/ Mount Pipe	11	72.60	5.87	0.01	3480
107.0000	BXA-80063/4CF	11	55.94	5.44	0.01	1352
101.0000	VHLP2.5-11	11	49.27	5.06	0.01	992
99.0000	800MHz 2X50W RRH W/FILTER	11	47.14	4.92	0.01	910
97.0000	TIMING 2000	11	45.06	4.78	0.01	841
87.0000	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	11	35.61	4.13	0.00	956

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
L1	131 - 110 (1)	TP15.525x10.525x0.1875	21.0000	0.0000	0.0	39.00	9.2600	-1.64	361.14	0.005
L2	110 - 90 (2)	TP20.528x15.525x0.25	20.0000	0.0000	0.0	39.00	16.3238	-7.56	636.63	0.012
L3	90 - 84.5833 (3)	TP21.883x20.528x0.4767	5.4167	0.0000	0.0	28.51	32.8594	-10.10	936.89	0.011
L4	84.5833 - 83 (4)	TP22.2791x21.883x0.6243	1.5833	0.0000	0.0	28.52	43.5314	-10.40	1241.69	0.008
L5	83 - 81 (5)	TP22.7794x22.2791x0.3895	2.0000	0.0000	0.0	37.45	28.0776	-10.69	1051.39	0.010
L6	81 - 70 (6)	TP25.531x22.7794x0.5101	11.0000	0.0000	0.0	27.07	39.4554	-11.96	1068.14	0.011
L7	70 - 67.0833 (7)	TP25.7604x23.5102x0.4353	6.9167	0.0000	0.0	37.58	35.4949	-13.63	1334.04	0.010
L8	67.0833 - 64.0833 (8)	TP26.5107x25.7604x0.4313	3.0000	0.0000	0.0	37.63	36.2146	-14.18	1362.83	0.010
L9	64.0833 - 61.0833 (9)	TP27.2611x26.5107x0.4752	3.0000	0.0000	0.0	35.51	40.9837	-14.76	1455.49	0.010
L10	61.0833 - 59.5 (10)	TP27.6571x27.2611x0.6039	1.5833	0.0000	0.0	28.79	52.6099	-15.12	1514.85	0.010
L11	59.5 - 53.5 (11)	TP29.1578x27.6571x0.699	6.0000	0.0000	0.0	27.18	64.0544	-16.70	1741.00	0.010
L12	53.5 - 44.5833 (12)	TP31.388x29.1578x0.6831	8.9167	0.0000	0.0	27.01	67.5330	-19.14	1824.20	0.010
L13	44.5833 - 40.5 (13)	TP32.4093x31.388x0.6692	4.0833	0.0000	0.0	27.05	68.3942	-20.28	1849.93	0.011
L14	40.5 - 39 (14)	TP32.7844x32.4093x0.6987	1.5000	0.0000	0.0	27.27	72.1829	-20.72	1968.43	0.011
L15	39 - 31.5 (15)	TP34.0326x32.7844x0.7154	7.5000	0.0000	0.0	27.28	76.7501	-23.04	2093.90	0.011
L16	31.5 - 25.5 (16)	TP35.5312x34.0326x0.6073	6.0000	0.0000	0.0	31.75	68.2894	-24.74	2167.91	0.011
L17	25.5 - 23.5 (17)	TP36.0307x35.5312x0.6534	2.0000	0.0000	0.0	30.79	74.4274	-25.35	2291.77	0.011
L18	23.5 - 18.75 (18)	TP37.217x36.0307x0.5424	4.7500	0.0000	0.0	34.51	64.0579	-26.64	2210.77	0.012
L19	18.75 - 17.0833 (19)	TP37.6333x37.217x0.6846	1.6667	0.0000	0.0	32.57	81.4455	-27.19	2653.00	0.010
L20	17.0833 - 13 (20)	TP38.6531x37.6333x0.5929	4.0833	0.0000	0.0	32.69	72.6622	-28.42	2375.62	0.012
L21	13 - 10.5 (21)	TP39.2775x38.6531x0.7508	2.5000	0.0000	0.0	31.58	91.6330	-28.44	2894.14	0.010
L22	10.5 - 0 (22)	TP41.9x39.2775x0.5542	10.5000	0.0000	0.0	31.85	69.1003	-29.36	2201.12	0.013

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	131 - 110 (1)	TP15.525x10.525x0.1875	40.06	13.90	39.00	0.357	0.00	0.00	39.00	0.000
L2	110 - 90 (2)	TP20.528x15.525x0.25	276.53	41.19	39.00	1.056	0.00	0.00	39.00	0.000
L3	90 - 84.5833 (3)	TP21.883x20.528x0.4767	370.57	26.23	28.51	0.920	0.00	0.00	28.51	0.000
L4	84.5833 - 83 (4)	TP22.2791x21.883x0.6243	401.65	21.35	28.52	0.748	0.00	0.00	28.52	0.000
L5	83 - 81 (5)	TP22.7794x22.2791x0.3895	441.27	34.78	37.45	0.929	0.00	0.00	37.45	0.000
L6	81 - 70 (6)	TP25.531x22.7794x0.5101	583.08	30.60	27.07	1.130	0.00	0.00	27.07	0.000
L7	70 - 67.0833 (7)	TP25.7604x23.5102x0.4353	728.29	40.13	37.58	1.068	0.00	0.00	37.58	0.000
L8	67.0833 - 64.0833 (8)	TP26.5107x25.7604x0.4313	792.80	41.56	37.63	1.104	0.00	0.00	37.63	0.000
L9	64.0833 - 61.0833 (9)	TP27.2611x26.5107x0.4752	858.21	38.75	35.51	1.091	0.00	0.00	35.51	0.000
L10	61.0833 - 59.5 (10)	TP27.6571x27.2611x0.6039	893.10	31.24	28.79	1.085	0.00	0.00	28.79	0.000
L11	59.5 - 53.5 (11)	TP29.1578x27.6571x0.699	1027.82	28.13	27.18	1.035	0.00	0.00	27.18	0.000
L12	53.5 - 44.5833 (12)	TP31.388x29.1578x0.6831	1235.22	29.66	27.01	1.098	0.00	0.00	27.01	0.000
L13	44.5833 - 40.5 (13)	TP32.4093x31.388x0.6692	1333.08	30.54	27.05	1.129	0.00	0.00	27.05	0.000
L14	40.5 - 39 (14)	TP32.7844x32.4093x0.6987	1369.47	29.42	27.27	1.079	0.00	0.00	27.27	0.000
L15	39 - 31.5 (15)	TP34.0326x32.7844x0.7154	1554.85	30.25	27.28	1.109	0.00	0.00	27.28	0.000
L16	31.5 - 25.5 (16)	TP35.5312x34.0326x0.6073	1707.19	35.47	31.75	1.117	0.00	0.00	31.75	0.000
L17	25.5 - 23.5 (17)	TP36.0307x35.5312x0.6534	1758.76	33.13	30.79	1.076	0.00	0.00	30.79	0.000
L18	23.5 - 18.75 (18)	TP37.217x36.0307x0.5424	1882.80	39.61	34.51	1.148	0.00	0.00	34.51	0.000
L19	18.75 - 17.0833 (19)	TP37.6333x37.217x0.6846	1926.87	31.76	32.57	0.975	0.00	0.00	32.57	0.000
L20	17.0833 - 13 (20)	TP38.6531x37.6333x0.5929	2036.04	36.41	32.69	1.114	0.00	0.00	32.69	0.000
L21	13 - 10.5 (21)	TP39.2775x38.6531x0.7508	2036.04	29.11	31.58	0.922	0.00	0.00	31.58	0.000
L22	10.5 - 0 (22)	TP41.9x39.2775x0.5542	2103.75	38.84	31.85	1.219	0.00	0.00	31.85	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	131 - 110 (1)	TP15.525x10.525x0.1875	3.75	0.40	26.00	0.032	0.12	0.02	26.00	0.001
L2	110 - 90 (2)	TP20.528x15.525x0.25	15.56	0.95	26.00	0.074	0.44	0.03	26.00	0.001
L3	90 - 84.5833 (3)	TP21.883x20.528x0.4767	19.53	0.59	19.01	0.064	0.46	0.02	19.01	0.001
L4	84.5833 - 83 (4)	TP22.2791x21.883x0.6243	19.70	0.45	19.02	0.048	0.47	0.01	19.02	0.001
L5	83 - 81 (5)	TP22.7794x22.2791x0.3895	19.90	0.71	24.96	0.058	0.47	0.02	24.96	0.001
L6	81 - 70 (6)	TP25.531x22.7794x0.5101	20.60	0.52	18.05	0.059	0.50	0.01	18.05	0.001
L7	70 - 67.0833 (7)	TP25.7604x23.5102x0.4353	21.34	0.60	25.06	0.049	0.53	0.01	25.06	0.001
L8	67.0833 - 64.0833 (8)	TP26.5107x25.7604x0.4313	21.64	0.60	25.09	0.048	0.54	0.01	25.09	0.001
L9	64.0833 - 61.0833 (9)	TP27.2611x26.5107x0.4752	21.95	0.54	23.68	0.046	0.55	0.01	23.68	0.000
L10	61.0833 - 59.5 (10)	TP27.6571x27.2611x0.6039	22.12	0.42	19.20	0.044	0.56	0.01	19.20	0.000
L11	59.5 - 53.5 (11)	TP29.1578x27.6571x0.699	22.77	0.36	18.12	0.040	0.59	0.01	18.12	0.000
L12	53.5 - 44.5833 (12)	TP31.388x29.1578x0.6831	23.73	0.35	18.01	0.040	0.64	0.01	18.01	0.000
L13	44.5833 - 40.5 (13)	TP32.4093x31.388x0.6692	24.17	0.35	18.03	0.040	0.66	0.01	18.03	0.000
L14	40.5 - 39 (14)	TP32.7844x32.4093x0.6987	24.32	0.34	18.18	0.038	0.67	0.01	18.18	0.000
L15	39 - 31.5 (15)	TP34.0326x32.7844x0.7154	25.09	0.33	18.19	0.037	0.70	0.01	18.19	0.000

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L16	31.5 - 25.5 (16)	TP35.5312x34.0326x0.6073	25.67	0.38	21.16	0.036	0.73	0.01	21.16	0.000
L17	25.5 - 23.5 (17)	TP36.0307x35.5312x0.6534	25.87	0.35	20.53	0.034	0.74	0.01	20.53	0.000
L18	23.5 - 18.75 (18)	TP37.217x36.0307x0.5424	26.34	0.41	23.01	0.036	0.77	0.01	23.01	0.000
L19	18.75 - 17.0833 (19)	TP37.6333x37.217x0.6846	26.52	0.33	21.72	0.030	0.78	0.01	21.72	0.000
L20	17.0833 - 13 (20)	TP38.6531x37.6333x0.5929	26.93	0.37	21.80	0.035	0.81	0.01	21.80	0.000
L21	13 - 10.5 (21)	TP39.2775x38.6531x0.7508	27.06	0.30	21.06	0.028	0.81	0.01	21.06	0.000
L22	10.5 - 0 (22)	TP41.9x39.2775x0.5542	27.31	0.40	21.24	0.038	0.83	0.01	21.24	0.000

Pole Interaction Design Data

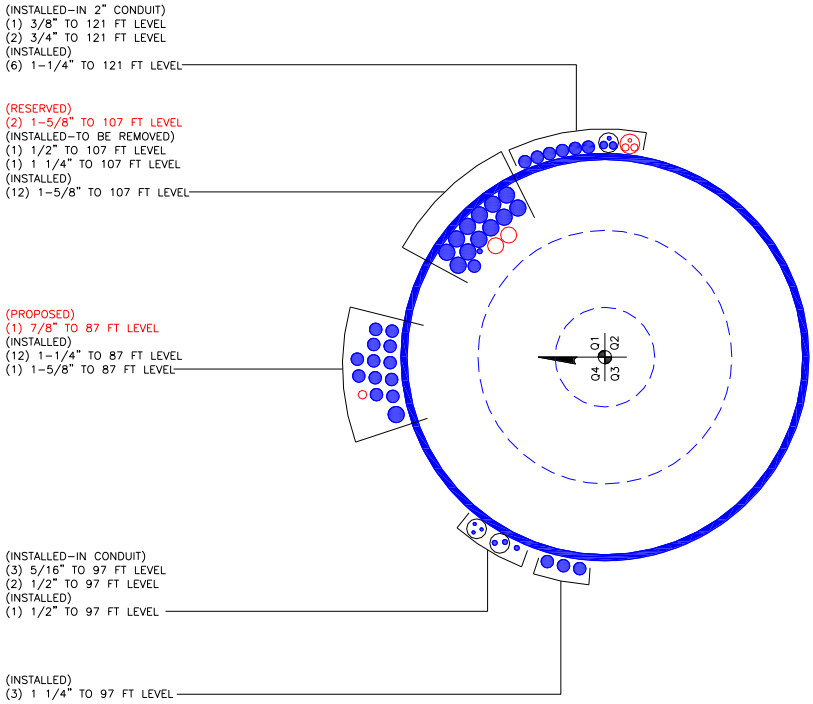
Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	131 - 110 (1)	0.005	0.357	0.000	0.032	0.001	0.361 ✔	1.333	H1-3+VT ✔
L2	110 - 90 (2)	0.012	1.056	0.000	0.074	0.001	1.069 ✔	1.333	H1-3+VT ✔
L3	90 - 84.5833 (3)	0.011	0.920	0.000	0.064	0.001	0.932 ✔	1.333	H1-3+VT ✔
L4	84.5833 - 83 (4)	0.008	0.748	0.000	0.048	0.001	0.757 ✔	1.333	H1-3+VT ✔
L5	83 - 81 (5)	0.010	0.929	0.000	0.058	0.001	0.940 ✔	1.333	H1-3+VT ✔
L6	81 - 70 (6)	0.011	1.130	0.000	0.059	0.001	1.142 ✔	1.333	H1-3+VT ✔
L7	70 - 67.0833 (7)	0.010	1.068	0.000	0.049	0.001	1.079 ✔	1.333	H1-3+VT ✔
L8	67.0833 - 64.0833 (8)	0.010	1.104	0.000	0.048	0.001	1.115 ✔	1.333	H1-3+VT ✔
L9	64.0833 - 61.0833 (9)	0.010	1.091	0.000	0.046	0.000	1.102 ✔	1.333	H1-3+VT ✔
L10	61.0833 - 59.5 (10)	0.010	1.085	0.000	0.044	0.000	1.095 ✔	1.333	H1-3+VT ✔
L11	59.5 - 53.5 (11)	0.010	1.035	0.000	0.040	0.000	1.045 ✔	1.333	H1-3+VT ✔
L12	53.5 - 44.5833 (12)	0.010	1.098	0.000	0.040	0.000	1.109 ✔	1.333	H1-3+VT ✔
L13	44.5833 - 40.5 (13)	0.011	1.129	0.000	0.040	0.000	1.140 ✔	1.333	H1-3+VT ✔
L14	40.5 - 39 (14)	0.011	1.079	0.000	0.038	0.000	1.090 ✔	1.333	H1-3+VT ✔
L15	39 - 31.5 (15)	0.011	1.109	0.000	0.037	0.000	1.120 ✔	1.333	H1-3+VT ✔
L16	31.5 - 25.5 (16)	0.011	1.117	0.000	0.036	0.000	1.129 ✔	1.333	H1-3+VT ✔
L17	25.5 - 23.5 (17)	0.011	1.076	0.000	0.034	0.000	1.087 ✔	1.333	H1-3+VT ✔
L18	23.5 - 18.75 (18)	0.012	1.148	0.000	0.036	0.000	1.160 ✔	1.333	H1-3+VT ✔
L19	18.75 - 17.0833 (19)	0.010	0.975	0.000	0.030	0.000	0.985 ✔	1.333	H1-3+VT ✔
L20	17.0833 - 13 (20)	0.012	1.114	0.000	0.035	0.000	1.126 ✔	1.333	H1-3+VT ✔
L21	13 - 10.5 (21)	0.010	0.922	0.000	0.028	0.000	0.932 ✔	1.333	H1-3+VT ✔
L22	10.5 - 0 (22)	0.013	1.219	0.000	0.038	0.000	1.233 ✔	1.333	H1-3+VT ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
L1	131 - 110	Pole	TP15.525x10.525x0.1875	1	-1.64	481.40	27.1	Pass
L2	110 - 90	Pole	TP20.528x15.525x0.25	2	-7.56	848.63	80.2	Pass
L3	90 - 84.5833	Pole	TP21.883x20.528x0.4767	3	-10.10	1248.87	69.9	Pass
L4	84.5833 - 83	Pole	TP22.2791x21.883x0.6243	4	-10.40	1655.17	56.8	Pass
L5	83 - 81	Pole	TP22.7794x22.2791x0.3895	5	-10.69	1401.50	70.5	Pass
L6	81 - 70	Pole	TP25.531x22.7794x0.5101	6	-11.96	1423.83	85.7	Pass
L7	70 - 67.0833	Pole	TP25.7604x23.5102x0.4353	7	-13.63	1778.28	80.9	Pass
L8	67.0833 - 64.0833	Pole	TP26.5107x25.7604x0.4313	8	-14.18	1816.65	83.7	Pass
L9	64.0833 - 61.0833	Pole	TP27.2611x26.5107x0.4752	9	-14.76	1940.17	82.6	Pass
L10	61.0833 - 59.5	Pole	TP27.6571x27.2611x0.6039	10	-15.12	2019.29	82.2	Pass
L11	59.5 - 53.5	Pole	TP29.1578x27.6571x0.699	11	-16.70	2320.75	78.4	Pass
L12	53.5 - 44.5833	Pole	TP31.388x29.1578x0.6831	12	-19.14	2431.66	83.2	Pass
L13	44.5833 - 40.5	Pole	TP32.4093x31.388x0.6692	13	-20.28	2465.96	85.5	Pass
L14	40.5 - 39	Pole	TP32.7844x32.4093x0.6987	14	-20.72	2623.92	81.8	Pass
L15	39 - 31.5	Pole	TP34.0326x32.7844x0.7154	15	-23.04	2791.17	84.0	Pass
L16	31.5 - 25.5	Pole	TP35.5312x34.0326x0.6073	16	-24.74	2889.82	84.7	Pass
L17	25.5 - 23.5	Pole	TP36.0307x35.5312x0.6534	17	-25.35	3054.93	81.6	Pass
L18	23.5 - 18.75	Pole	TP37.217x36.0307x0.5424	18	-26.64	2946.96	87.0	Pass
L19	18.75 - 17.0833	Pole	TP37.6333x37.217x0.6846	19	-27.19	3536.45	73.9	Pass
L20	17.0833 - 13	Pole	TP38.6531x37.6333x0.5929	20	-28.42	3166.70	84.5	Pass
L21	13 - 10.5	Pole	TP39.2775x38.6531x0.7508	21	-28.44	3857.89	69.9	Pass
L22	10.5 - 0	Pole	TP41.9x39.2775x0.5542	22	-29.36	2934.09	92.5	Pass
							Summary	
						Pole (L22)	92.5	Pass
						RATING =	**92.5**	**Pass**

APPENDIX B

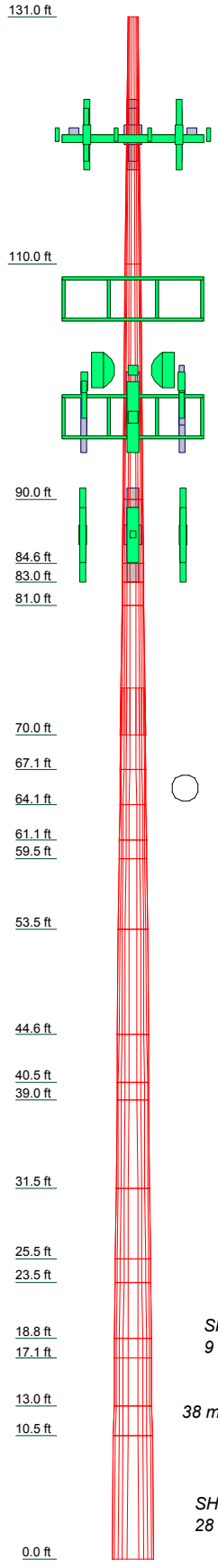
BASE LEVEL DRAWING

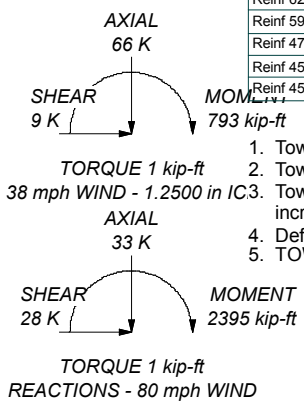


APPENDIX C

ADDITIONAL CALCULATIONS

Section	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Length (ft)	21.0000	20.0000	21.8830	2.0000	2.0000	11.0000	6.9167	3.0000	3.0000	1.5833	6.0000	8.9167	1.5000	1.5000	7.5000	6.0000	2.0000	4.7500	2.6667	4.0833	2.5000	10.5000
Number of Sides	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
Thickness (in)	0.1875	0.2500	0.4767	0.3825	0.3825	0.5101	0.4353	0.4310	0.4752	0.6033	0.6990	0.6831	0.6692	0.6980	0.7154	0.6073	0.6534	0.5424	0.6846	0.5929	0.7508	0.5542
Socket Length (ft)																						
Top Dia (in)	10.5250	15.5250	20.5280	22.2792	22.2792	22.7794	26.5101	25.7606	26.5126	27.2626	27.6572	29.1578	32.4093	32.7844	32.7844	34.0326	34.5531	36.0302	37.2179	37.6333	38.6537	39.2775
Bot Dia (in)	15.5250	20.5280	21.8830	22.2792	22.2792	25.5310	25.7604	26.5105	27.1263	27.6572	29.1578	31.3880	32.4093	32.7844	34.0326	35.5311	36.0302	37.2179	37.6333	38.6537	39.2775	41.9000
Grade	A572-65																					
Weight (K)	0.6	1.0	0.6	0.2	0.2	1.5	0.8	0.4	0.4	0.3	1.3	2.0	0.9	0.4	1.9	1.4	0.5	1.0	0.5	1.0	0.8	2.6





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
AM-X-CD-16-65-00T-RET w/ Mount Pipe	121	PCS 1900MHz 4x45W-65MHz	99
AM-X-CD-16-65-00T-RET w/ Mount Pipe	121	PCS 1900MHz 4x45W-65MHz	99
AM-X-CD-16-65-00T-RET w/ Mount Pipe	121	PCS 1900MHz 4x45W-65MHz	99
800 10121 w/ Mount Pipe	121	Side Arm Mount [SO 101-3]	99
800 10121 w/ Mount Pipe	121	TIMING 2000	97
800 10121 w/ Mount Pipe	121	840 10054	97
RRUS-11	121	840 10054	97
RRUS-11	121	WIMAX DAP HEAD	97
RRUS-11	121	WIMAX DAP HEAD	97
(2) LGP21401	121	WIMAX DAP HEAD	97
(2) LGP21401	121	HORIZON COMPACT	97
(2) LGP21401	121	HORIZON COMPACT	97
DC6-48-60-18-8F	121	APXVSPP18-C-A20	97
T-Arm Mount [TA 601-3]	121	APXVSPP18-C-A20	97
BXA-80063/4CF	107	APXVSPP18-C-A20	97
BXA-80063/4CF	107	IBC1900HG-2A	97
BXA-80063/4CF	107	IBC1900HG-2A	97
BXA-70063/6CFx4	107	IBC1900HG-2A	97
BXA-70063/6CFx4	107	IBC1900BB-1	97
BXA-70063/6CFx4	107	IBC1900BB-1	97
DB-T1-6Z-8AB-0Z	107	IBC1900BB-1	97
(2) FD9R6004/2C-3L	107	Platform Mount (LP 101-1)	97
(2) FD9R6004/2C-3L	107	VHLP2.5-11	97
(2) FD9R6004/2C-3L	107	VHLP2.5-11	97
(2) SBNHH-1D65B	107	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	87
(2) SBNHH-1D65B	107	LNX-6515DS-VTM w/ Mount Pipe	87
(2) SBNHH-1D65B	107	LNX-6515DS-VTM w/ Mount Pipe	87
RRH2X60-AWS	107	LNX-6515DS-VTM w/ Mount Pipe	87
RRH2X60-AWS	107	KRY 112 144/1	87
RRH2X60-AWS	107	KRY 112 144/1	87
RRH2x60-700	107	KRY 112 144/1	87
RRH2x60-700	107	RRUS 11 B12	87
RRH2x60-700	107	RRUS 11 B12	87
RRH2X60-PCS	107	RRUS 11 B12	87
RRH2X60-PCS	107	AIR -32 B2A/B66AA w/ Mount Pipe	87
RRH2X60-PCS	107	AIR -32 B2A/B66AA w/ Mount Pipe	87
DB-T1-6Z-8AB-0Z	107	AIR -32 B2A/B66AA w/ Mount Pipe	87
Platform Mount (LP 101-1)	107	Site Pro1 RMV12-396 [TA 602-3]	87
800MHz 2X50W RRH W/FILTER	99	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	87
800MHz 2X50W RRH W/FILTER	99	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	87
800MHz 2X50W RRH W/FILTER	99		
PCS 1900MHz 4x45W-65MHz	99		
PCS 1900MHz 4x45W-65MHz	99		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi	Reinf 45.08 ksi	45 ksi	57 ksi
Reinf 47.52 ksi	48 ksi	60 ksi	Reinf 45.45 ksi	45 ksi	57 ksi
Reinf 47.54 ksi	48 ksi	60 ksi	Reinf 45.47 ksi	45 ksi	57 ksi
Reinf 62.41 ksi	62 ksi	79 ksi	Reinf 52.91 ksi	53 ksi	67 ksi
Reinf 45.12 ksi	45 ksi	57 ksi	Reinf 51.32 ksi	51 ksi	65 ksi
Reinf 62.64 ksi	63 ksi	79 ksi	Reinf 57.52 ksi	58 ksi	72 ksi
Reinf 62.72 ksi	63 ksi	79 ksi	Reinf 54.29 ksi	54 ksi	68 ksi
Reinf 59.19 ksi	59 ksi	74 ksi	Reinf 54.49 ksi	54 ksi	69 ksi
Reinf 47.99 ksi	48 ksi	60 ksi	Reinf 52.64 ksi	53 ksi	66 ksi
Reinf 45.30 ksi	45 ksi	57 ksi	Reinf 53.09 ksi	53 ksi	67 ksi
Reinf 45.02 ksi	45 ksi	57 ksi			

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 1.25 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 92.5%

Paul J Ford and Company
250 E. Broad Street, Suite 600
Columbus, OH 43215
Phone: 614.221.6679
FAX: 614.448.4105

Job:	131' Monopole / HRT 100 943239		
Project:	37516-0061.004.7805 / BU 806376		
Client: Crown Castle International	Drawn by: Seth Tschanen	App'd:	
Code: TIA/EIA-222-F	Date: 06/01/16	Scale: NTS	
Path: G:\TOWER\375_Crown_Castle\2016\37516-0061_806376_HRT 100 943239\37516-0061.005.7805_SA_1245641\37516-0061.005.7805.eri		Dwg No. E-1	

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

TIA Rev F

Site Data

BU#:	*806376*
Site Name:	*HRT 100 943239*
App #:	
Pole Manufacturer:	*Other*

Reactions		
Moment:	2395	ft-kips
Axial:	33	kips
Shear:	28	kips

Anchor Rod Data		
Qty:	12	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	49.88	in

Plate Data		
Diam:	55.88	in
Thick:	2.5	in
Grade:	60	ksi
Single-Rod B-eff:	11.23	in

Stiffener Data (Welding at both sides)		
Config:	0	*
Weld Type:		
Groove Depth:		in **
Groove Angle:		degrees
Fillet H. Weld:		<-- Disregard
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data		
Diam:	41.9	in
Thick:	0.344	in
Grade:	65	ksi
# of Sides:	12	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

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

Anchor Rod Results

Maximum Rod Tension:	189.3	Kips	Rigid
Allowable Tension:	195.0	Kips	Service, ASD
Anchor Rod Stress Ratio:	97.1%	**Pass**	Fty*ASIF

Base Plate Results

	Flexural Check		Rigid
Base Plate Stress:	41.9	ksi	Service ASD
Allowable Plate Stress:	60.0	ksi	0.75*Fy*ASIF
Base Plate Stress Ratio:	69.9%	**Pass**	Y.L. Length: 27.06

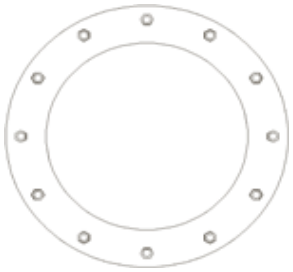
n/a

Stiffener Results

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

Pole Results

Pole Punching Shear Check:	n/a



* 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

Foundation Loads:

Pole weight or tower leg compression =	**33**	(kips)
Horizontal load at top of pier =	**28**	(kips)
Overturning moment at top of pier=	**2395**	(ft-kips)

Design criteria:

Safety factor against overturning =	**1.5**	

Soil Properties:

Soil density =	**115**	(pcf)
Allowable soil bearing =	**5**	(ksf)
Depth to water table =	**12**	(ft)

Dimensions:

Pier shape (round or square)	**R**	("R" or "S")
Pier width =	**6**	(ft)
Pier height above grade =	**0.5**	(ft)
depth to bottom of footing =	**8**	(ft)
Footing thickness =	**3**	(ft)
Footing width =	**22**	(ft)
Footing length =	**22**	(ft)

Concrete:

Concrete strength =	**3**	(ksi)
Rebar strength =	**60**	(ksi)
ultimate load factor =	**1.3**	

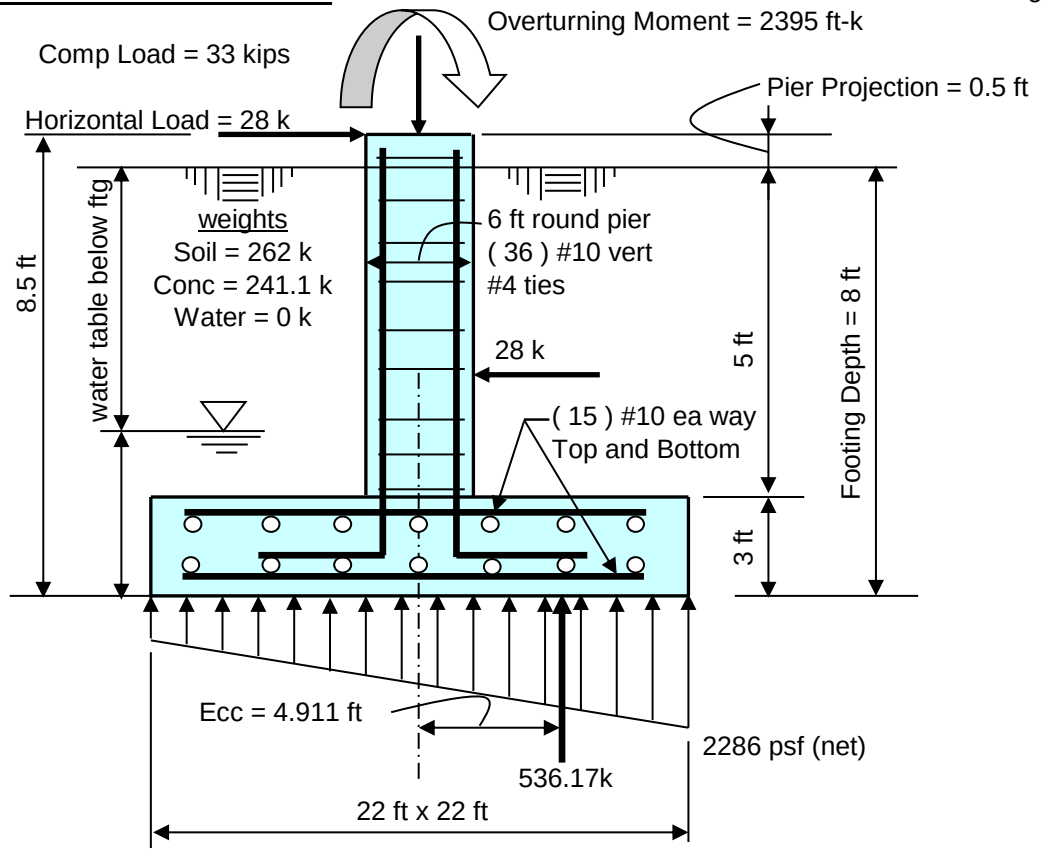
Reinforcing Steel:

	Pad	
minimum cover over rebar =	**3**	inches
size of pad rebar =	**#10**	bar
quantity of pad rebar =	**15**	(ea direction)

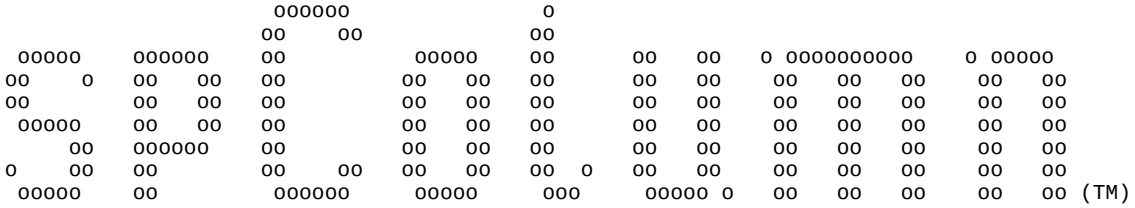
Reinforcing Steel:

	Pier	
size of vert rebar in pier=	**#10**	bar
vertical rebar quantity =	**36**	
size of pier ties =	**#4**	bar
minimum cover over rebar =	**3**	inches

Total volume of concrete = 59.5 cu yd



Summary of analysis results	
Maximum Net Soil Bearing = 2.286 ksf Allowable Net Soil Bearing = 5 ksf **Soil Bearing Stress Ratio = 0.46 Okay**	Ult Bending Shear Capacity = 110 psi Ult Bending Shear Stress = 32 psi **Bending Shear Stress Ratio = 0.29 Okay**
Ftg Overturning Resistance = 5898 ft-kips Overturning Moment = 2633 ft-kips Required Overturning Safety Factor = 1.5 Overturning Safety Factor = 2.24 **Ratio = 0.67 Okay**	Pad Bending Moment Capacity= 2595 ft-k Pad Bending Moment = 1147 ft-k **Bending Moment Stress Ratio = 0.44 OK**



spColumn v5.00 (TM)
Computer program for the Strength Design of Reinforced Concrete Sections

General Information:
==========
File Name: g:\tower\375_crown_castle\2016\37516-...\37516-0061.005.7805 foundation reinforcement.col
Project: 37512-1659
Column: Engineer: DSK
Code: ACI 318-08 Units: English

Run Option: Investigation Slenderness: Not considered
Run Axis: X-axis Column Type: Structural

Material Properties:
==========
Concrete: Standard Steel: Standard
f'c = 3 ksi fy = 60 ksi
Ec = 3122.02 ksi Es = 29000 ksi
fc = 2.55 ksi Eps_yt = 0.00206897 in/in
Eps_u = 0.003 in/in
Beta1 = 0.85

Section:
========
Circular: Diameter = 72 in

Gross section area, Ag = 4071.5 in^2
Ix = 1.31917e+006 in^4 Iy = 1.31917e+006 in^4
rx = 18 in ry = 18 in
Xo = 0 in Yo = 0 in

Reinforcement:
==========
Bar Set: ASTM A615

Size	Diam (in)	Area (in^2)	Size	Diam (in)	Area (in^2)	Size	Diam (in)	Area (in^2)
# 3	0.38	0.11	# 4	0.50	0.20	# 5	0.63	0.31
# 6	0.75	0.44	# 7	0.88	0.60	# 8	1.00	0.79
# 9	1.13	1.00	# 10	1.27	1.27	# 11	1.41	1.56
# 14	1.69	2.25	# 18	2.26	4.00			

Confinement: Tied; #3 ties with #10 bars, #4 with larger bars.
phi(a) = 0.8, phi(b) = 0.9, phi(c) = 0.65

Layout: Circular
Pattern: All Sides Equal (Cover to longitudinal reinforcement)
Total steel area: As = 45.72 in^2 at rho = 1.12%
Minimum clear spacing = 4.37 in

36 #10 Cover = 3 in

Factored Loads and Moments with Corresponding Capacities:
==========

No.	Pu kip	Mux k-ft	PhiMnx k-ft	PhiMn/Mu	NA depth in	Dt depth in	eps_t	Phi
1	33.00	3398.70	5797.22	1.706	15.59	68.37	0.01015	0.900

*** End of output ***

Stiffened or Unstiffened, Exterior Flange Plate - Any Bolt Material TIA Rev F

Site Data

BU#: *806376*
Site Name: *HRT 100 943239*
App #:

Pole Manufacturer:	Other

Bolt Data			
Qty:	10		
Diameter (in.):	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:	75	<-- Disregard	Bolt Fty:
N/A:	55	<-- Disregard	44.00
Circle (in.):	19.45		

Plate Data		
Diam:	21.95	in
Thick, t:	1.375	in
Grade (Fy):	50	ksi
Strength, Fu:	65	ksi
Single-Rod B-eff:	4.99	in

Stiffener Data (Welding at Both Sides)		
Config:	0	*
Weld Type:		
Groove Depth:		in **
Groove Angle:		degrees
Fillet H. Weld:		<-- Disregard
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data		
Diam:	15.53	in
Thick:	0.1875	in
Grade:	65	ksi
# of Sides:	12	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

Reactions		
Moment:	40.02	ft-kips
Axial:	1.64	kips
Shear:	3.75	kips
Elevation:	110	feet

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

Flange Bolt Results | Rigid

Bolt Tension Capacity, **B**:	46.07	kips	Service, ASD
Max Bolt directly applied T:	9.71	Kips	Fty*ASIF
Min. PL "tc" for **B** cap. **w/o** Pry:	1.286	in	
Min PL "treq" for actual **T w/ Pry**:	0.442	in	
Min PL "t1" for actual **T w/o Pry**:	0.591	in	
T allowable w/o Prying:	46.07	kips	α'<0 case
Prying Force, Q:	0.00	kips	
Total Bolt Tension=T+Q:	9.71	kips	
Non-Prying Bolt Stress Ratio, T/B:	21.1%	**Pass**	

Exterior Flange Plate Results Flexural Check | Rigid

Compression Side Plate Stress:	7.7	ksi	Service ASD
Allowable Plate Stress:	50.0	ksi	0.75*Fy*ASIF
Compression Plate Stress Ratio:	15.4%	**Pass**	Comp. Y.L. Length:
No Prying			11.71
Tension Side Stress Ratio, (treq/t)^2:	10.4%	**Pass**	

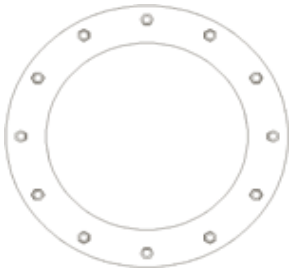
n/a

Stiffener Results

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

Pole Results

Pole Punching Shear Check: n/a



* 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

SITE NUMBER: CT11186A

1441 FORBES STREET
EAST HARTFORD, CT 06118
HARTFORD COUNTY

SITE NAME: EAST HARTFORD/ HILLS_1

RF DESIGN GUIDELINE: 792DB

T-MOBILE TECHNICIAN SITE SAFETY NOTES	
LOCATION	SPECIAL RESTRICTIONS
SECTOR A: ANTENNA/TMA/RRH	ACCESS NOT PERMITTED
SECTOR B: ANTENNA/TMA/RRH	ACCESS NOT PERMITTED
SECTOR C: ANTENNA/TMA/RRH	ACCESS NOT PERMITTED
GPS/LMU:	UNRESTRICTED
RADIO CABINETS:	UNRESTRICTED
PPC DISCONNECT:	UNRESTRICTED
MAIN CIRCUIT D/C:	UNRESTRICTED
NIU/T DEMARC:	UNRESTRICTED
OTHER/SPECIAL:	NONE

GENERAL NOTES

THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF T–MOBILE. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.

THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.

CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE T–MOBILE NORTHEAST, LLC REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

SPECIAL STRUCTURAL NOTES

TOWER OWNER SHALL PROVIDE GLOBAL STRUCTURAL STABILITY ANALYSIS OF EXISTING ANTENNA SUPPORT STRUCTURE. GENERAL CONTRACTOR SCOPE OF WORK SHALL INCLUDE ALL REQUIRED STRUCTURAL MODIFICATIONS, RE–BUNDLING OF COAXIAL CABLES OR OTHER SPECIAL MODIFICATIONS AS OUTLINED THEREIN.

STRUCTURAL DESIGNS AND DETAILS FOR ANTENNA MOUNTS COMPLETED BY HUDSON DESIGN ON BEHALF OF T–MOBILE ARE INCLUSIVE OF THE ENTIRE ANTENNA SUPPORT STRUCTURE (GLOBAL STRUCTURAL STABILITY ANALYSIS BY OTHERS), EXISTING TOWER PLATFORM, EXISTING ANTENNA MOUNTS AND ALL OTHER ASPECTS OF THE STRUCTURE THAT WILL SUPPORT THE T–MOBILE MODERNIZATION EQUIPMENT DEPLOYMENT AS DEPICTED HEREIN.

HUDSON DESIGN ASSUMES THAT THE TOWER IS PROPERLY CONSTRUCTED AND MAINTAINED. ALL STRUCTURAL MEMBERS AND THEIR CONNECTION ARE ASSUMED TO BE IN GOOD CONDITION AND ARE FREE FROM DEFECTS WITH NO DETERIORATION TO ITS MEMBER CAPACITIES

PROJECT SUMMARY

SCOPE OF WORK:	UNMANNED TELECOMMUNICATIONS FACILITY T–MOBILE EQUIPMENT INSTALLATION
ZONING JURISDICTION: (TOWN OF EAST HARTFORD)	BASED ON INFORMATION PROVIDED BY T–MOBILE, THIS TELECOMMUNICATIONS EQUIPMENT DEPLOYMENT IS AN ELIGIBLE FACILITY UNDER THE TAX RELIEF ACT OF 2012, 47 USC 1455(A), AND IS SUBJECT TO AN EXPEDITED ELIGIBLE FACILITIES REQUEST/REVIEW AND ZONING PRE–EMPTION FOR LOCAL DISCRETIONARY PERMITS (VARIANCE, SPECIAL PERMIT, SITE PLAN REVIEW).
SITE ADDRESS:	1441 FORBES STREET EAST HARTFORD, CT 06118
LATITUDE:	42° 43' 53.22" N
LONGITUDE:	72° 36' 27.90" W
JURISDICTION:	NATIONAL, STATE & LOCAL CODES OR ORDINANCES
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY
TOWER OWNER:	CROWN CASTLE INTERNATIONAL 12 GILL STREET, SUITE 5800 WOBURN, MA 01801
SITE ID:	806376
SITE NAME:	HRT 100 943239

APPROVALS

PROJECT MANAGER	DATE
CONSTRUCTION	DATE
RF ENGINEERING	DATE
ZONING / SITE ACQ.	DATE
OPERATIONS	DATE
TOWER OWNER	DATE

DRIVING DIRECTIONS:

HEAD NORTHEAST ON GRIFFIN ROAD SOUTH AND TURN RIGHT ONTO DAY HILL ROAD. USE THE RIGHT LANE TO MERGE ONTO I–91 SOUTH VIA THE RAMP TO HARTFORD. MERGE ONTO I–91 SOUTH. USE THE LEFT LANE TO TAKE EXIT 30 FOR I–84 EAST TOWARD CT–2/EAST HARTFORD/NEW LONDON. MERGE ONTO I–84 EAST. TAKE EXIT 55 FOR CT–2 EAST TOWARD NORWICH/NEW LONDON/I–84 EAST. CONTINUE ONTO CT–2 EAST. TAKE EXIT 5C FOR MAPLE STREET. TURN LEFT ONTO MAPLE STREET. TURN RIGHT ONTO FORBES STREET. DESTINATION WILL BE ON THE RIGHT.

ARRIVE AT 1441 FORBES STREET, EAST HARTFORD, CT 06118.

CALL BEFORE YOU DIG
CALL TOLL FREE 1–800–922–4455 OR CALL 811
UNDERGROUND SERVICE ALERT

DRAWING INDEX

SHEET NO.	DESCRIPTION	REV.
T–1	TITLE SHEET	1
GN–1	GENERAL NOTES	1
A–1	COMPOUND PLAN & EQUIPMENT PLAN	1
A–2	ANTENNA LAYOUT & ELEVATION	1
A–3	DETAILS	1
E–1	GROUNDING DIAGRAM	1

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STATE OF CONNECTICUT
DEREK J. CREASER
No. 29555
LICENSED
PROFESSIONAL ENGINEER

CHECKED BY:	DR
APPROVED BY:	DPH

SUBMITTALS

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EAST HARTFORD, CT 06118
HARTFORD COUNTY

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

GROUNDING NOTES

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.

2. 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.

3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.

4. 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.

5. EACH BTS 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 STRANDED COPPER FOR OUTDOOR BTS.

6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.

7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.

8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO GROUND BAR.

9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.

10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.

11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWS COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.

12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

GENERAL NOTES

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

   CONTRACTOR – TRANSCEND WIRELESS
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – T-MOBILE

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.

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 BE SCALED 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 CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.

9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.

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.

13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.

15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.

16. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF T-MOBILE SITES."

17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.

18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.

19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

20. APPLICABLE BUILDING CODES:
    SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.
    BUILDING CODE: 2003 IBC WITH 2005 CT SUPPLEMENT, + 2009 & 2013 CT AMENDMENTS
    ELECTRICAL CODE: REFER TO ELECTRICAL DRAWINGS
    LIGHTENING CODE: REFER TO ELECTRICAL DRAWINGS

    SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:

    AMERICAN CONCRETE INSTITUTE (ACI) 318; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE;

    AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

    MANUAL OF STEEL CONSTRUCTION, ASD, FOURTEENTH EDITION;

    TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-F, STRUCTURAL STANDARDS FOR STEEL

    EQUIPMENT AND ANTENNA SUPPORTING STRUCTURES; REFER TO ELECTRICAL DRAWINGS FOR SPECIFIC ELECTRICAL STANDARDS.

FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

ABBREVIATIONS

AGL	ABOVE GRADE LEVEL	EQ	EQUAL	REQ	REQUIRED
AWG	AMERICAN WIRE GAUGE	GC	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
BBU	BATTERY BACKUP UNIT	GRC	GALVANIZED RIGID CONDUIT	TBD	TO BE DETERMINED
BTCW	BARE TINNED SOLID COPPER WIRE	MGB	MASTER GROUND BAR	TBR	TO BE REMOVED
BGR	BURIED GROUND RING	MIN	MINIMUM	TBRR	TO BE REMOVED AND REPLACED
BTS	BASE TRANSCEIVER STATION	P	PROPOSED	TYP	TYPICAL
E	EXISTING	NTS	NOT TO SCALE	UG	UNDER GROUND
EGB	EQUIPMENT GROUND BAR	RAD	RADIATION CENTER LINE (ANTENNA)	VIF	VERIFY IN FIELD
EGR	EQUIPMENT GROUND RING	REF	REFERENCE		

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STATE OF CONNECTICUT
DEREK J. CREASER
No. 22055
LICENSED
PROFESSIONAL ENGINEER

CHECKED BY: DR

APPROVED BY: DPH

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SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-1

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NOTE:

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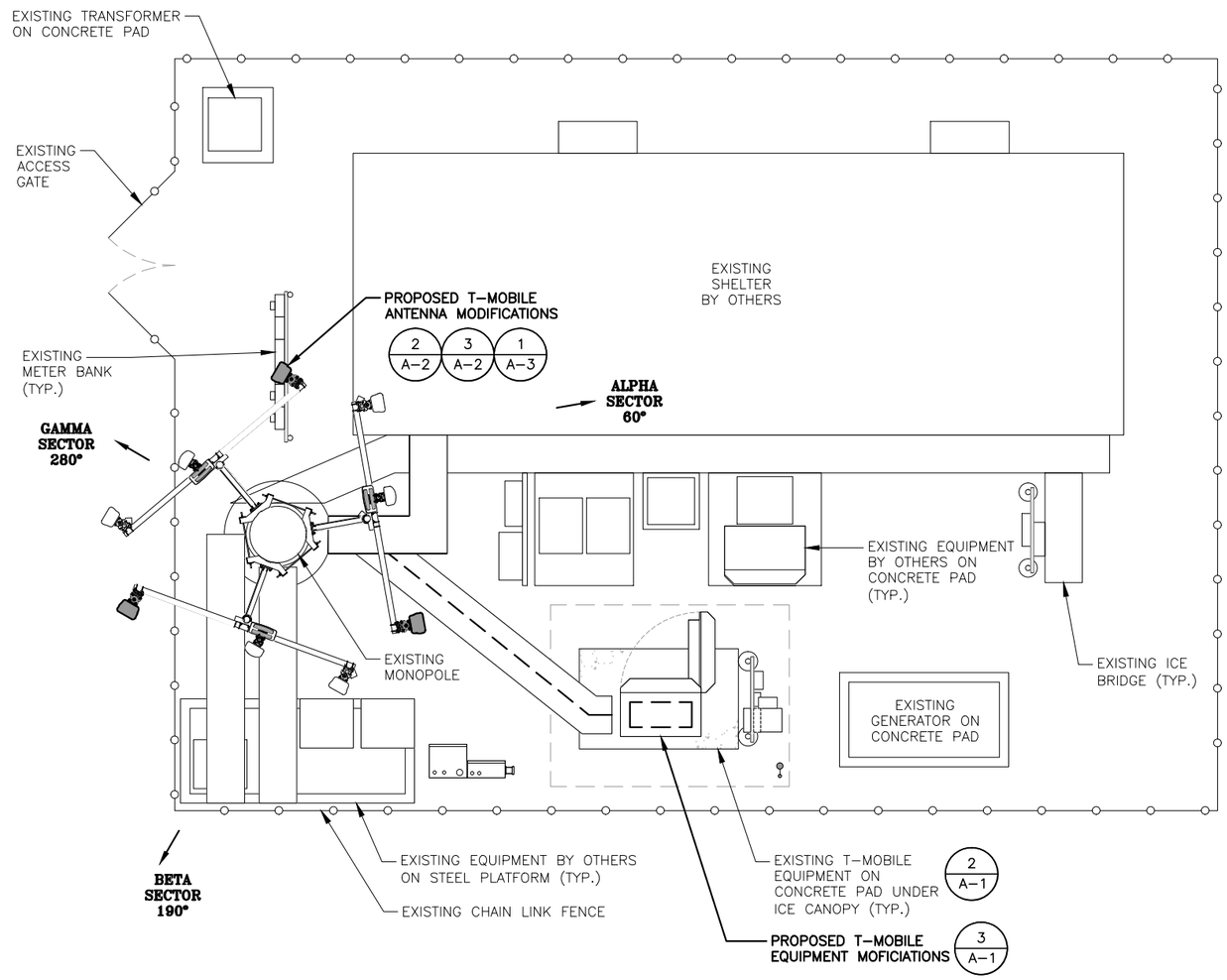
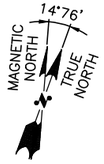
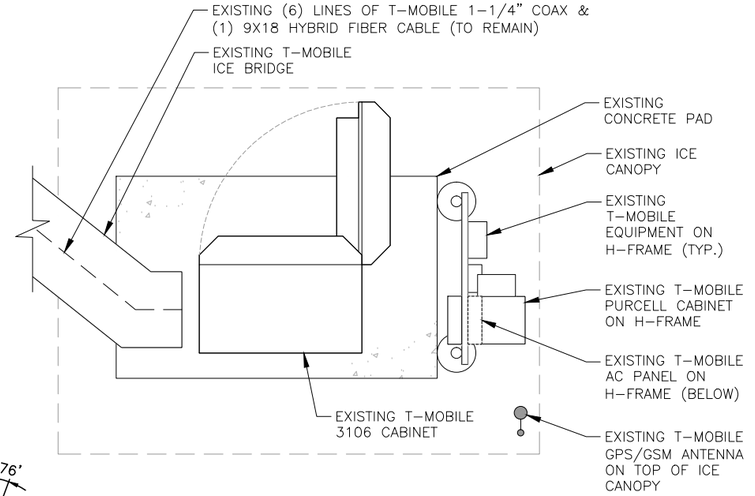
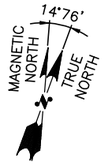




COMPOUND PLAN
1 A-1
22x34 SCALE: 1/4"=1'-0"
11x17 SCALE: 1/8"=1'-0"

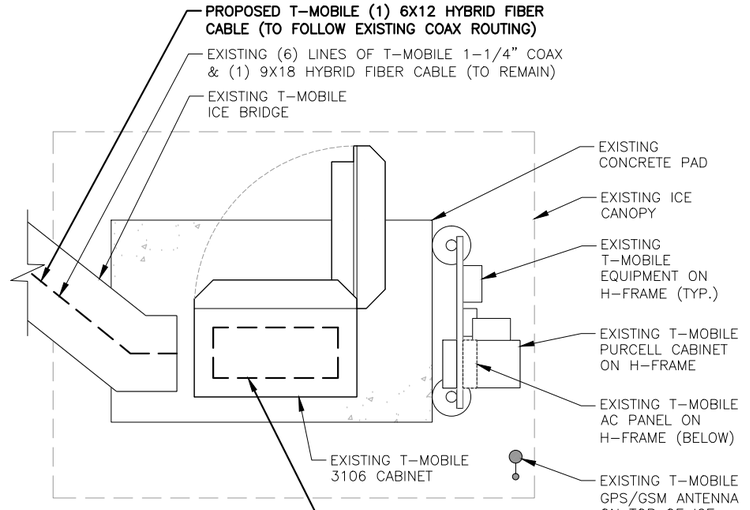
0 2'-0" 4'-0" 8'-0" 12'-0"

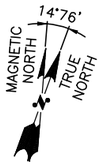




EXISTING EQUIPMENT PLAN
2 A-1
22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"

0 1'-0" 2'-0" 4'-0" 6'-0"





PROPOSED EQUIPMENT PLAN
3 A-1
22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"

0 1'-0" 2'-0" 4'-0" 6'-0"

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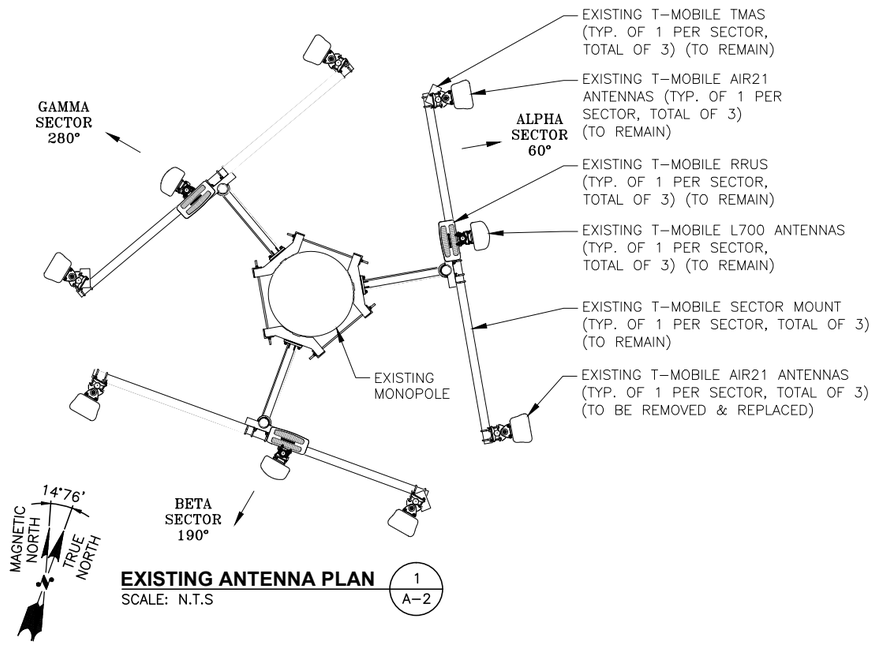
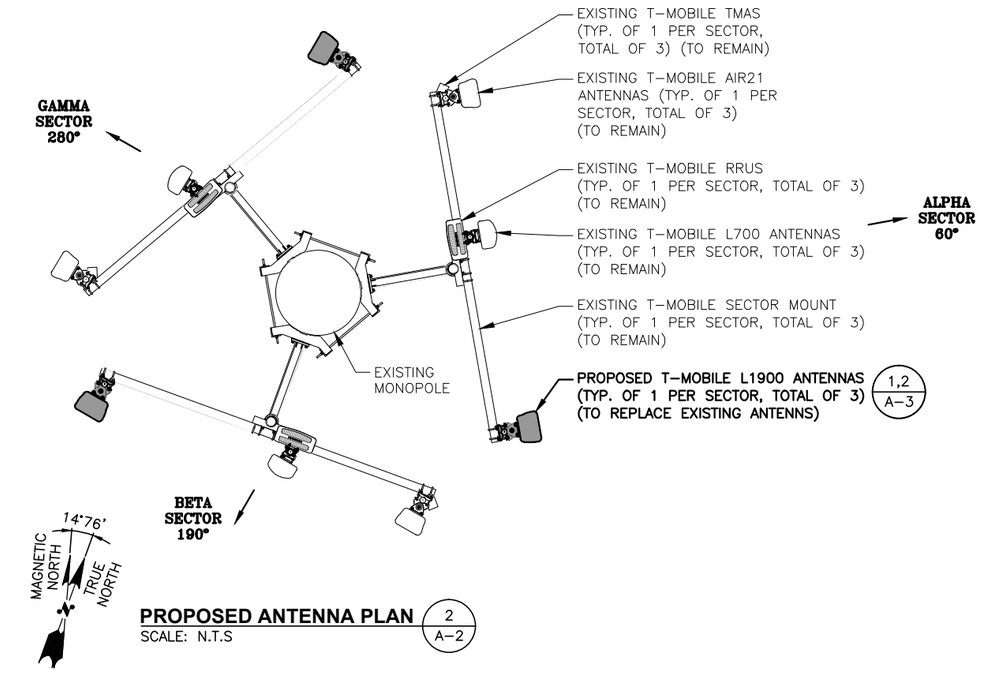
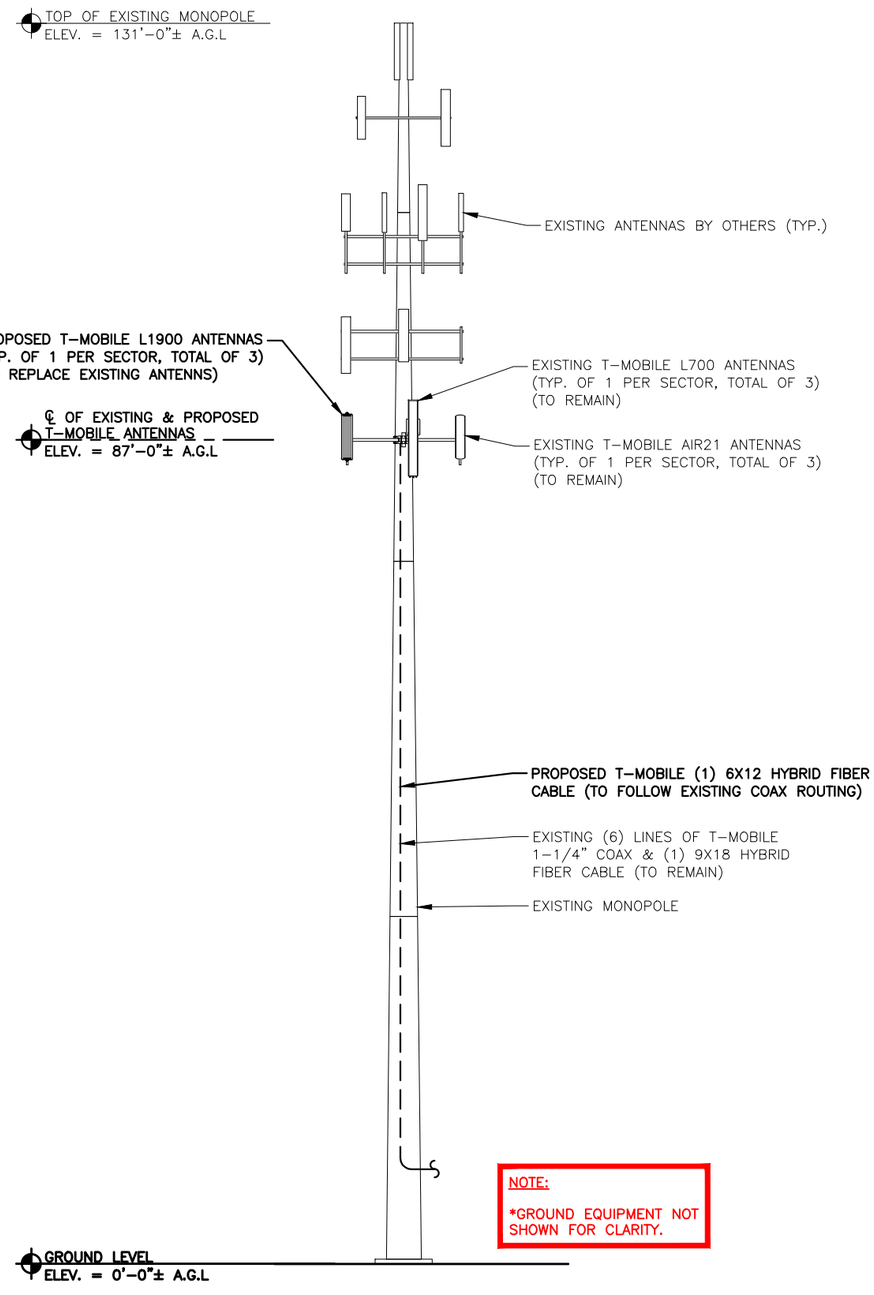


EXISTING ANTENNA PLAN (1 / A-2)
SCALE: N.T.S



PROPOSED ANTENNA PLAN (2 / A-2)
SCALE: N.T.S



NOTE:

*GROUND EQUIPMENT NOT SHOWN FOR CLARITY.

TOWER ELEVATION (3 / A-2)
22x34 SCALE: 1/8"=1'-0"
11x17 SCALE: 1/16"=1'-0"

0 4'-0" 8'-0" 16'-0" 24'-0"

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STATE OF CONNECTICUT
DEREK J. CREASER
No. 29755
LICENSED PROFESSIONAL ENGINEER

CHECKED BY: DR

APPROVED BY: DPH

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	05/11/16	ISSUED FOR PERMITTING	VP
0	05/06/16	ISSUED FOR REVIEW	VP

SITE NUMBER:
CT11186A
CROWN CASTLE SITE ID:
806376
SITE NAME:
EAST HARTFORD/ HILLS_1
SITE ADDRESS:
1441 FORBES STREET
EAST HARTFORD, CT 06118
HARTFORD COUNTY

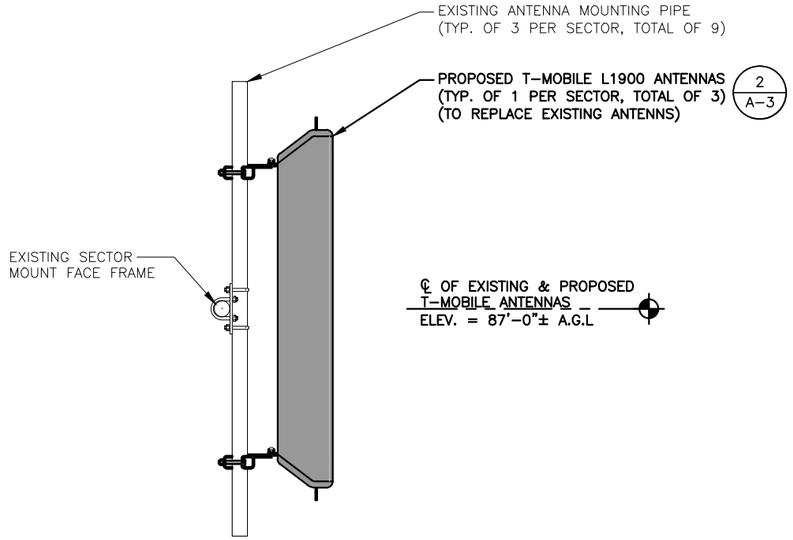
SHEET TITLE
ANTENNA LAYOUT & ELEVATION

SHEET NUMBER
A-2

STRUCTURAL NOTES:
PRIOR TO COMMENCING CONSTRUCTION, GC SHALL REFER TO STRUCTURAL ANALYSIS PROVIDED BY TOWER OWNER TO DETERMINE IF THERE ANY SUPPLEMENTAL OR SPECIAL INSTALLATION REQUIREMENTS, OR RELOCATION ARRANGEMENTS.

NOTE:

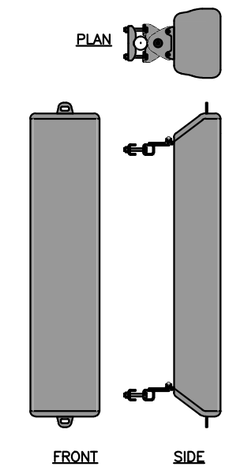
*RF DATA BASED ON PRELIMINARY INFORMATION. REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.



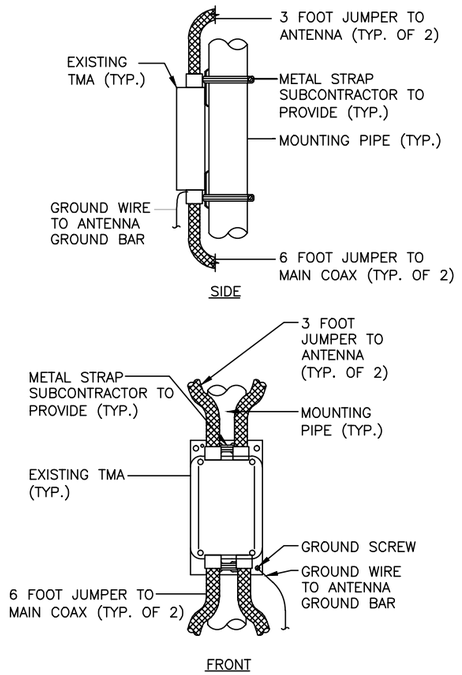
PROPOSED L1900 ANTENNA MOUNT 1 / A-3
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

0 0'-6" 1'-0" 2'-0" 3'-0"

L1900 ANTENNA DIMENSIONS	
MODEL #	**AIR 32 B66Aa/B2a**
MANUF.	ERICSSON
WIDTH	12.9"
DEPTH	8.7"
HEIGHT	56.6"
WEIGHT	132.2 LBS



L1900 ANTENNA DETAIL 2 / A-3
SCALE: N.T.S



TMA MOUNTING DETAIL 3 / A-3
SCALE: N.T.S

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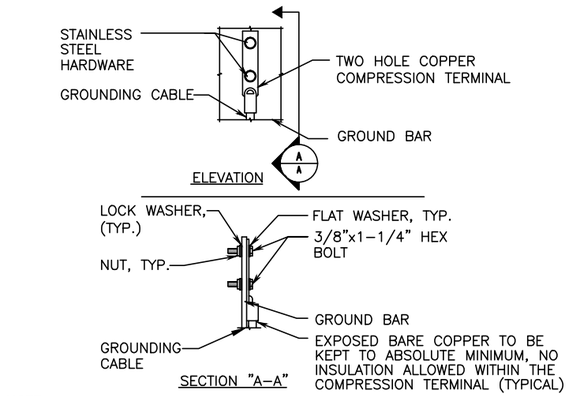
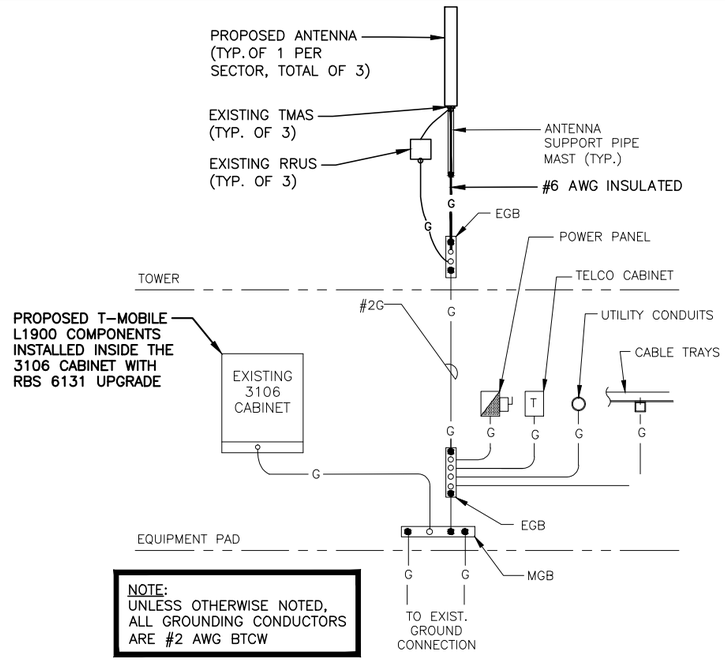
SHEET TITLE
DETAILS

SHEET NUMBER
A-3



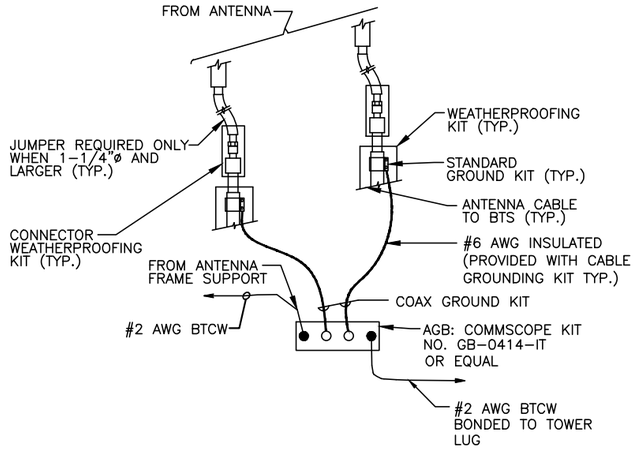
NOTE:
1. "DOUBLING UP" OR "STACKING " OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
3. CADWELD DOWNLEADS FROM UPPER AGB/EGB, LOWER EGB, AND MGB.

TYPICAL GROUND BAR CONNECTION DETAIL 1/E-1
SCALE: N.T.S



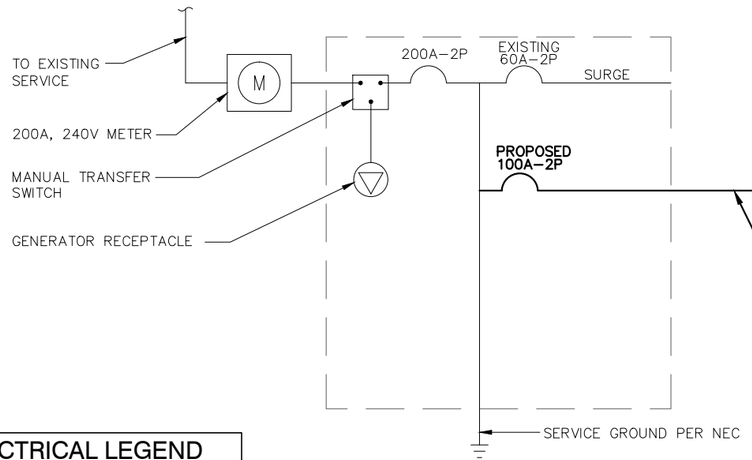
NOTE:
UNLESS OTHERWISE NOTED, ALL GROUNDING CONDUCTORS ARE #2 AWG BTCW

GROUNDING RISER DIAGRAM 2/E-1
SCALE: N.T.S



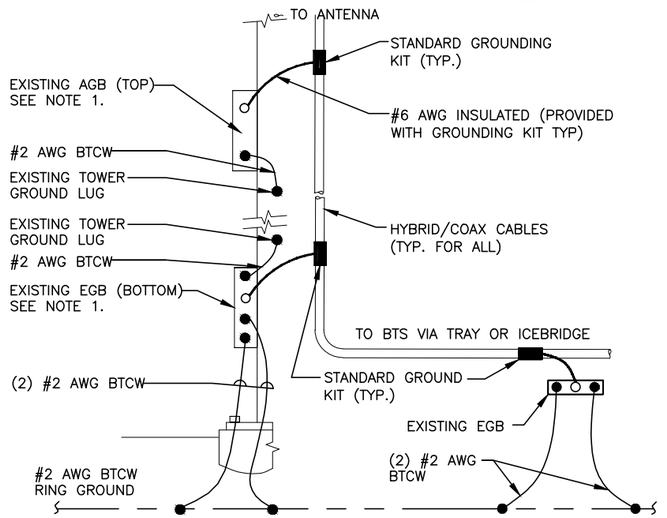
NOTE:
INSTALL CABLE GROUND KIT ABOVE HORIZONTAL BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO AGB/EGB.

TOWER TOP CABLE GROUNDING DETAIL 3/E-1
SCALE: N.T.S



NOTE:
G.C. TO VERIFY THAT THE EXISTING CONDUITS AND WIRE SIZES ARE ADEQUATE FOR THE PROPOSED LOADING AND INCLUDE ELECTRICAL UPGRADES IN THE SCOPE OF WORK AS REQUIRED.

ONE LINE POWER DIAGRAM 4/E-1
SCALE: N.T.S



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

TOWER BOTTOM CABLE GROUNDING DETAIL 5/E-1
SCALE: N.T.S

ELECTRICAL LEGEND

A	AMPERE
V	VOLT
KWH	KILOWATT - HOUR
C	CONDUIT
GRC	GALVANIZED RIGID CONDUIT
BTCW	BARE TINNED (SOLID) COPPER WIRE (#2 AWG, UNLESS NOTES OTHERWISE)
G	GROUND
MGB	GROUND
	MASTER GROUND BAR ○ MECHANICAL CONNECTION ● CADWELD CONNECTION
AGB/EGB	EQUIPMENT GROUND BAR/ANTENNA GROUND BAR
G	GROUND COPPER WIRE, SIZE AS NOTED
	EXPOSED WIRING
	INSULATED GROUNDING CONDUCTOR(#6 AWG STRANDED, UNLESS NOTED OTHERWISE)
	5/8"x8' COPPER CLAD STAINLESS STEEL GROUND ROD
	● EXOTHERMIC (CAD WELD) OR ○ MECHANICAL (COMPRESSION TYPE) CONNECTION
PPC	POWER PROTECTION CABINET
	OMNI-DIRECTIONAL ELECTRONIC MARKER SYSTEM (EMS) BALL

ELECTRICAL & GROUNDING NOTES:

ELECTRICAL & GROUNDING NOTES

1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
2. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
3. THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
4. GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
5. ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
6. RIGID STEEL CONDUITS SHALL BE GROUNDED AT BOTH ENDS.
7. ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THIN INSULATION.
8. RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL ROOM AND PROPOSED CELL SITE POWER PEDESTAL AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
9. RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROPOSED CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON DRAWING A-1. PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
10. ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.
11. GROUNDING SHALL COMPLY WITH NEC ART. 250.
12. GROUND COAXIAL CABLE SHIELDS MINIMUM AT BOTH ENDS USING MANUFACTURERS COAX CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.
13. USE #6 COPPER STRANDED WIRE WITH GREEN COLOR INSULATION FOR ABOVE GRADE GROUNDING (UNLESS OTHERWISE SPECIFIED) AND #2 SOLID TINNED BARE COPPER WIRE FOR BELOW GRADE GROUNDING AS INDICATED ON THE DRAWING.
14. ALL GROUND CONNECTIONS TO BE BURNDY HYGROUND COMPRESSION TYPE CONNECTORS OR CADWELD EXOTHERMIC WELD. DO NOT ALLOW BARE COPPER WIRE TO BE IN CONTACT WITH GALVANIZED STEEL.
15. ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE, EXCEPT AS OTHERWISE INDICATED. GROUNDING LEADS SHOULD NEVER BE BENT AT RIGHT ANGLE. ALWAYS MAKE AT LEAST 12" RADIUS BENDS. #6 WIRE CAN BE BENT AT 6" RADIUS WHEN NECESSARY. BOND ANY METAL OBJECTS WITHIN 7 FEET OF PROPOSED EQUIPMENT OR CABINET TO MASTER GROUND BAR.
16. CONNECTIONS TO MGB SHALL BE ARRANGED IN THREE MAIN GROUPS: SURGE PRODUCERS (COAXIAL CABLE GROUND KITS, TELCO AND POWER PANEL GROUND); (GROUNDING ELECTRODE RING OR BUILDING STEEL); NON-SURGING OBJECTS (EGB GROUND IN BTS UNIT).
17. CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.
18. APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTIONS.
19. BOND ANTENNA MOUNTING BRACKETS, COAXIAL CABLE GROUND KITS, AND ALNA TO EGB PLACED NEAR THE ANTENNA LOCATION.
20. BOND ANTENNA EGB'S AND MGB TO WATER MAIN.
21. TEST COMPLETED GROUND SYSTEM AND RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION.
22. BOND ANY METAL OBJECTS WITHIN 7 FEET OF PROPOSED EQUIPMENT OR CABINET TO MASTER GROUND BAR.
23. VERIFY PROPOSED SERVICE UPGRADE WITH LOCAL UTILITY COMPANY PRIOR TO CONSTRUCTION.

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SHEET TITLE
GROUNDING DIAGRAM

SHEET NUMBER
E-1