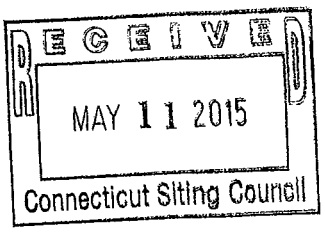
·T· · ·Mobile·



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

May 5, 2015

Attorney Melanie Bachman
Acting Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06501

Re: EM-T-MOBILE-064-121119
T-Mobile Site ID CT11161D
439 Homestead Avenue, Hartford CT
Notice of Construction Completion

Dear Attorney Bachman:

The Connecticut Siting Council ("Council") acknowledged the above referenced T-Mobile Northeast LLC ("T-Mobile") notice of exempt modification on December 14, 2012. T-Mobile hereby notifies the Council that construction of the acknowledged modifications were complete as of November 6, 2013.

Please don't hesitate to contact me with any questions.

Sincerely,

Sam Simons

Samuel Simons, T-Mobile

cc: Mark Richard, T-Mobile

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

December 14, 2012

Jennifer Young Gaudet
HPC Development LLC
46 Mill Plain Road, 2nd Floor
Danbury, CT 06811

RE: **EM-T-MOBILE-064-121119** - T-Mobile Northeast LLC, notice of intent to modify an existing telecommunications facility located at 439 Homestead Avenue, Hartford, Connecticut.

Dear Ms. Gaudet:

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

- Any deviation from the proposed modification as specified in this notice and supporting materials with Council shall render this acknowledgement invalid;
- Any material changes to this modification as proposed shall require the filing of a new notice with the Council;
- Not more than 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;
- The validity of this action shall expire one year from the date of this letter; and
- The applicant may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration;

The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated November 16, 2012. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Thank you for your attention and cooperation.

Very truly yours,

L Roberts

Linda Roberts
Executive Director

LR/CDM/jbw

c: The Honorable Pedro E. Segarra, Mayor, City of Hartford
Sandra Kee Borges, Acting Chief Operating Officer, City of Hartford
Crown Castle

CSC
CONNECTICUT SITING COUNCIL

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL
Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

November 29, 2012

The Honorable Pedro E. Segarra
Mayor
City of Hartford
Municipal Building
550 Main Street
Hartford, CT 06103

RE: **EM-T-MOBILE-064-121119** - T-Mobile Northeast LLC, notice of intent to modify an existing telecommunications facility located at 439 Homestead Avenue, Hartford, Connecticut.

Dear Mayor Segarra:

The Connecticut Siting Council (Council) received a request to modify an existing telecommunications facility, pursuant to Regulations of Connecticut State Agencies Section 16-50j-72, a copy of which has already been provided to you.

If you have any questions or comments regarding the proposal, please call me or inform the Council by December 13, 2012.

Thank you for your cooperation and consideration.

Very truly yours,

LRoberts

Linda Roberts
Executive Director

LR/jbw

c: Sandra Kee Borges, Acting Chief Operating Officer, City of Hartford

CSC
CONNECTICUT SITING COUNCIL

EM-T-MOBILE-064-121119

Wireless Services
Plain Rd.
, CT, 06811
P.: 203.797.1112

HPC
WIRELESS SERVICES

ORIGINAL

November 16, 2012

RECEIVED
NOV 19 2012
CONNECTICUT
SITING COUNCIL

VIA OVERNIGHT COURIER

Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051
Attn: Ms. Linda Roberts, Executive Director

Re: T-Mobile Northeast LLC – exempt modification
439 Homestead Avenue, Hartford, Connecticut

Dear Ms. Roberts:

This letter and attachments are submitted on behalf of T-Mobile Northeast LLC ("T-Mobile"). T-Mobile is making modifications to certain existing sites in its Connecticut system in order to implement LTE technology. Please accept this letter and attachments as notification, pursuant to R.C.S.A. Section 16-50j-73, of construction that constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2). In compliance with R.C.S.A. Section 16-50j-73, a copy of this letter and attachments is being sent to the Mayor of the City of Hartford.

T-Mobile plans to modify the existing wireless communications facility owned by Crown Castle and located at 439 Homestead Avenue in the City of Hartford (coordinates 41°-44'-35.5" N, 72°-40'-03.1" W). Attached are a compound plan and elevation depicting the planned changes, and documentation of the structural sufficiency of the structure to accommodate the revised antenna configuration. Also included is a power density report reflecting the modification to T-Mobile's operations at the site.

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

1. T-Mobile will replace six (6) of its nine (9) existing panel antennas with six (6) new antennas at a center line of approximately 128'. T-Mobile will also remove three (3)

of six (6) TMAs and relocate the other three (3) on the platform. A hybrid cable will be run from the equipment to the antennas along the existing coaxial cable run. The proposed modifications will not extend the height of the approximately 140' structure.

2. T-Mobile will add a related cabinet on its existing concrete pad. This change will be within the existing compound and will have no effect on the site boundaries.

3. The proposed changes will not increase the noise level at the existing facility by six decibels or more. The incremental effect of the proposed changes will be negligible.

4. The changes to the facility will not increase the calculated "worst case" power density for the combined operations at the site to a level at or above the applicable standard for uncontrolled environments as calculated for a mixed frequency site. As indicated on the attached report prepared by EBI Consulting, T-Mobile's operations at the site will result in a power density of approximately 0.700%; the combined site operations will result in a total power density of approximately 49.080%.

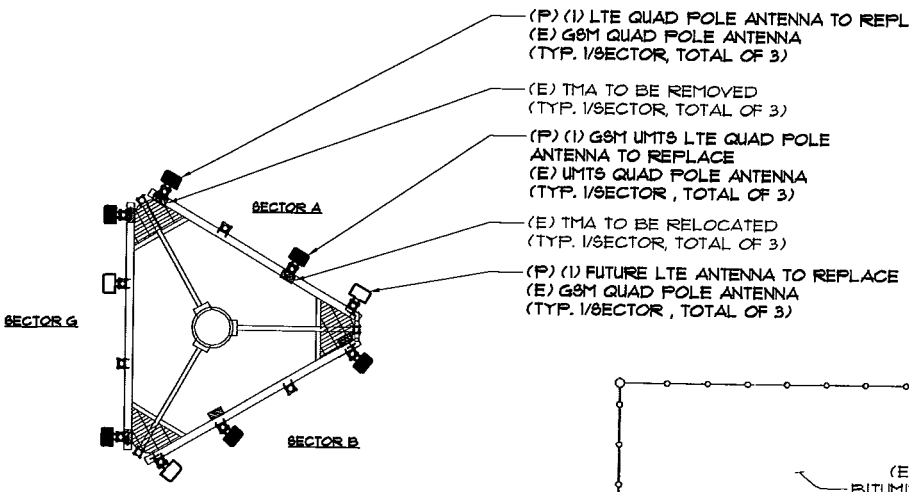
Please feel free to contact me by phone at (860) 798-7454 or by e-mail at jgaudet@hpcwireless.com with questions concerning this matter. Thank you for your consideration.

Respectfully yours,

Jennifer Young Gaudet (JBB)

Jennifer Young Gaudet

cc: Honorable Pedro E. Segarra, Mayor, City of Hartford
Talar Properties LLC (underlying property owner)



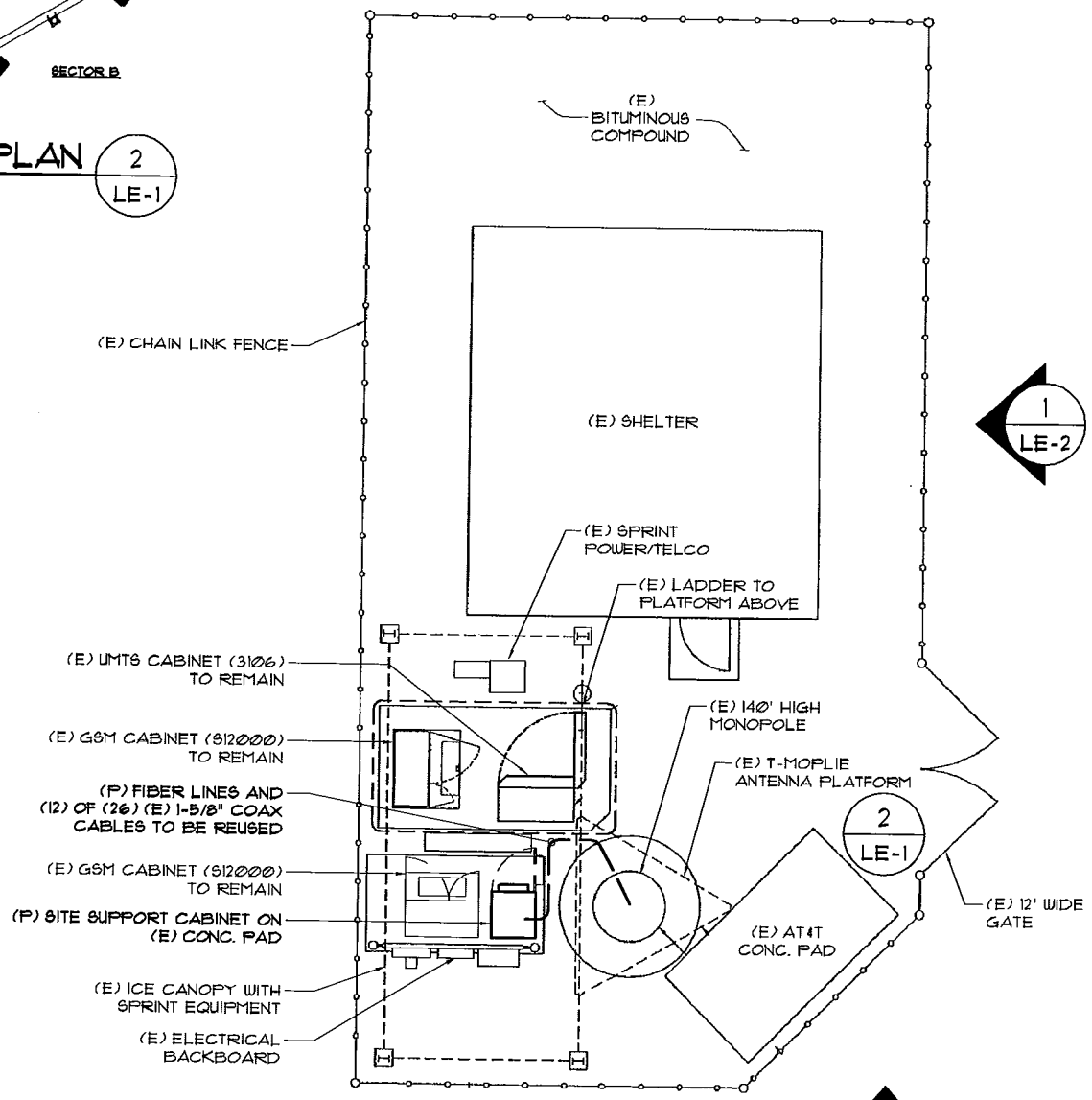
ANTENNA PLAN

N.T.S.

2 / LE-1

14°1'

MAGNETIC TRUE



ALL EQUIPMENT LOCATIONS ARE APPROXIMATE AND ARE SUBJECT TO APPROVAL BY LESSEE/LICENSEE'S STRUCTURAL & RF ENGINEERS. LOCATIONS OF POWER & TELEPHONE FACILITIES ARE SUBJECT TO APPROVAL BY UTILITY COMPANIES.

SITE PLAN

N.T.S.

1 / LE-1

1 / LE-2

Configuration **2C**

SUBMITTALS	
LE REV A	04.09.12
LE REV 0	11.06.12

ATLANTIS GROUP
1340 Centre Street
Suite 203
Newton, MA 02459
Office: 617-965-0789
Fax: 617-213-5056

LEASE EXHIBIT

SITE NUMBER:
CT11161D

SITE NAME:
CT161/JN OF ALBANY_1

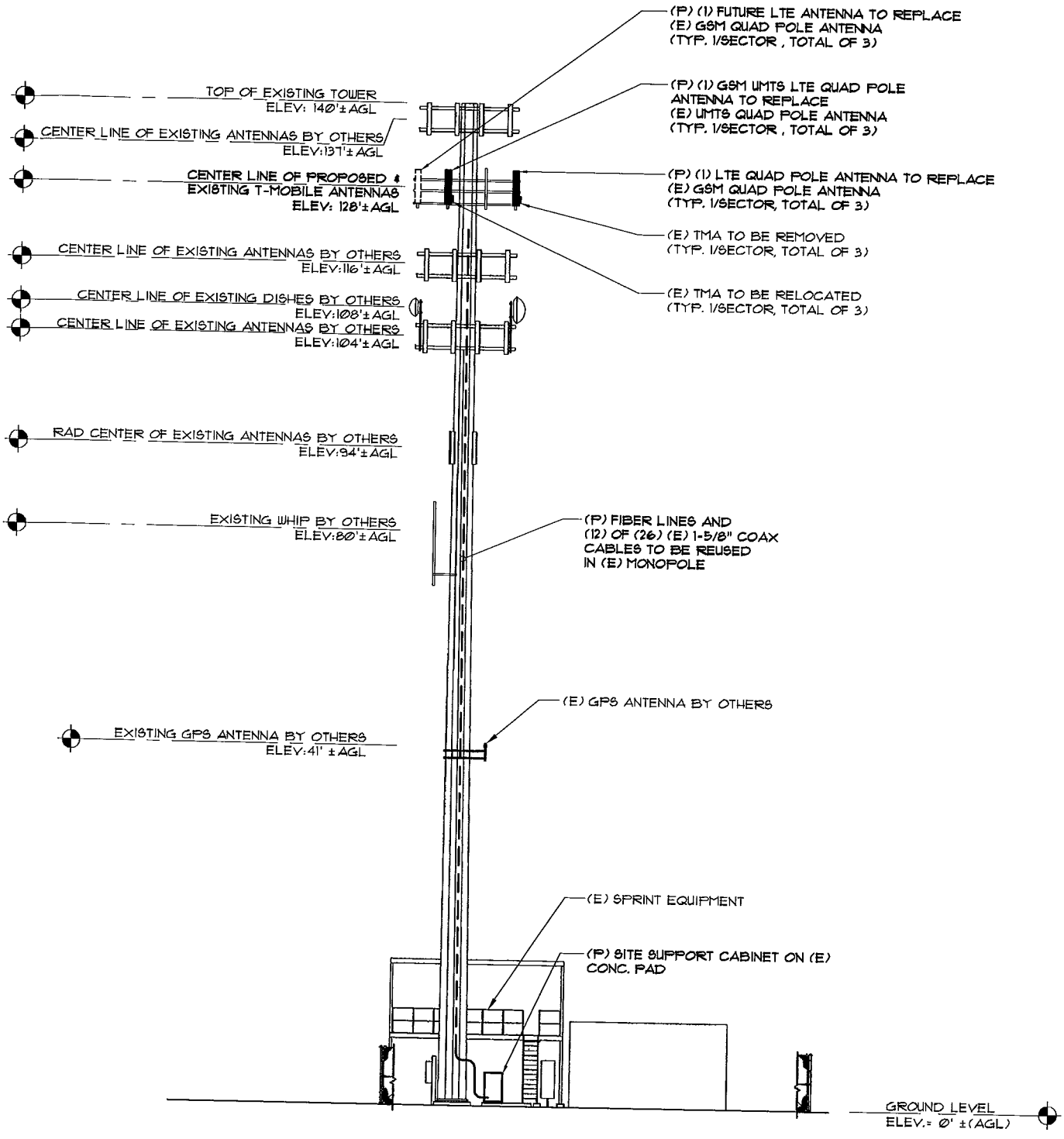
SITE ADDRESS:
439 HOMESTEAD AVENUE
HARTFORD, CT 06112

NORTHEAST TOWERS
199 BRICKYARD ROAD
FARMINGTON, CT 06032
OFFICE: (860) 677-1999

FOR

T-MOBILE NORTHEAST, LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860) 692-7100
FAX: (860) 692-7159

DRAWN BY: MB | CHECKED BY: SM



ELEVATION

N.T.S

1 / LE-2

Configuration **2C**

SUBMITTALS	
LE REV A	04.09.12
LE REV 0	11.06.12

ATLANTIS GROUP
1340 Centre Street
Suite 203
Newton, MA 02459
Office: 617-965-0789
Fax: 617-213-5056

LEASE EXHIBIT

SITE NUMBER:
CT11161D

SITE NAME:
CT161/JN OF ALBANY_1

SITE ADDRESS:
439 HOMESTEAD AVENUE
HARTFORD, CT 06112

NORTHEAST TOWERS
199 BRICKYARD ROAD
FARMINGTON, CT 06032
OFFICE: (860) 677-1999

FOR

T-MOBILE NORTHEAST, LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860) 692-7100
FAX: (860) 692-7159

DRAWN BY: MB | CHECKED BY: SM

Date: **October 15, 2012**

Sean Tucker
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277

Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317
(724) 416-2000

Subject: **Structural Analysis Report**

Carrier Designation:	***T-Mobile* Co-Locate**	
	Carrier Site Number:	CT11161D
	Carrier Site Name:	CT11161D
Crown Castle Designation:	**Crown Castle BU Number:**	806369
	Crown Castle Site Name:	HRT 094 943225
	Crown Castle Work Order Number:	540160
	Crown Castle Application Number:	162479 Rev. 1
Engineering Firm Designation:	**Crown Castle Project Number:**	540160
Site Data:	**439-455 HOMESTEAD AVE, HARTFORD, Hartford County, CT** **Latitude *41° 47' 1.61"*, Longitude *-72° 42' 13.66"*** **140 Foot - Monopole Tower**	

Dear Sean Tucker,

Crown Castle 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 540160, in accordance with application 162479, revision 1.

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

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

The analysis has been performed in accordance with the TIA/EIA-222-F standard and 2005 CT State Building Code based upon a wind speed of 80 mph fastest mile.

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

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

Structural analysis prepared by: Jesse J. Fresch, EIT / SLS

Respectfully submitted by:

Jamal A. Huwel, P.E.
Manager Engineering

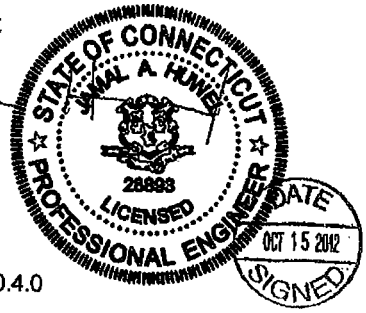


TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 140 ft Monopole tower designed by VALMONT in August of 1999. The tower was originally designed for a wind speed of 125 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 80 mph with no ice, 37.6 mph with 1 inch ice thickness and 50 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
126.0	128.0	3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	1	1-5/8	-
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe			
		3	rfs celwave	ATMAA1412D-1A20			

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
140.0	140.0	1	tower mounts	Platform Mount (LP 101-1)	12	7/8	1
	137.0	3	antel	BXA-70063/6CF w/ Mount Pipe			
		6	rfs celwave	FD9R6004/1C-3L			
		3	antel	BXA-171063/8CFx2 w/ Mount Pipe	-	-	2
		4	antel	LPA-80063/4CF w/ Mount Pipe			
		2	swedcom	SC-E 6014 rev2 w/ Mount Pipe			
126.0	128.0	8	rfs celwave	APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	14	1-5/8	3
		6	siemens	DTMA GSM 1900			
	126.0	1	tower mounts	Platform Mount [LP 1001-1]	12	1-5/8	1
115.0	117.0	6	ericsson	RRUS-11	1 2 12	3/8 3/4 1-5/8	1
		1	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe			
		2	powerwave technologies	P65-17-XLH-RR w/ Mount Pipe			
	116.0	6	powerwave technologies	7770.00 w/ Mount Pipe			
		12	powerwave technologies	LGP21401			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
		1	raycap	DC6-48-60-18-8F			
	115.0	1	tower mounts	Platform Mount [LP 712-1]			
102.0	108.0	1	andrew	VHLP2-180	3 3 3 6	1/2 1/4 5/16 1-5/8	1
		1	andrew	VHLP2.5-11			
		2	dragonwave	HORIZON COMPACT			
	104.0	3	argus technologies	LLPX310R-V1 w/ Mount Pipe			
		6	decibel	950F40T4E-M w/ Mount Pipe			
		3	samsung telecommunications	WIMAX DAP HEAD			
	102.0	1	tower mounts	Platform Mount [LP 602-1]			
94.0	94.0	3	kathrein	742 213 w/ Mount Pipe	6	1-5/8	1
		1	tower mounts	Side Arm Mount [SO 102-3]			
74.0	80.0	1	antel	BCD-87010	1	7/8	1
	74.0	1	tower mounts	Side Arm Mount [SO 701-1]			
40.0	41.0	1	lucent	KS24019-L112A	1	1/2	1
	40.0	1	tower mounts	Side Arm Mount [SO 701-1]			

Notes:
1) Existing Equipment
2) Reserved Equipment
3) Equipment to be Removed, Not Considered in Analysis

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
137	137	12	swedcom	ALP 9212-N	-	-
124	124	6	rfs celwave	APN199015	-	-
114	114	9	allgon	7184.15	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Tower Engineering Professionals	2294838	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Tower Engineering Professionals (Mapping)	2294380	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Tower Engineering Professionals (Mapping)	2294379	CCISITES
4-TOWER STRUCTURAL ANALYSIS REPORTS	Valmont Industries, Inc.	823121	CCISITES

3.1) Analysis Method

tnxTower (version 6.0.4.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA/EIA-222-F.
5) The existing base plate grout was not considered in this analysis.

This analysis may be affected if any assumptions are not valid or have been made in error. Crown Castle 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	140 - 86.8333	Pole	TP39.223x26.216x0.3125	1	-16.17	1962.96	43.3	Pass
L2	86.8333 - 38	Pole	TP50.56x37.2117x0.4063	2	-28.69	3294.14	60.7	Pass
L3	38 - 0	Pole	TP59.05x48.033x0.5	3	-46.22	4900.57	60.9	Pass
							Summary	
						Pole (L3)	60.9	Pass
						Rating =	60.9	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	65.1	Pass
1	Base Plate	0	30.4	Pass
1	Base Foundation	0	46.5	Pass

Structure Rating (max from all components) =	65.1%

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

4.1) Recommendations

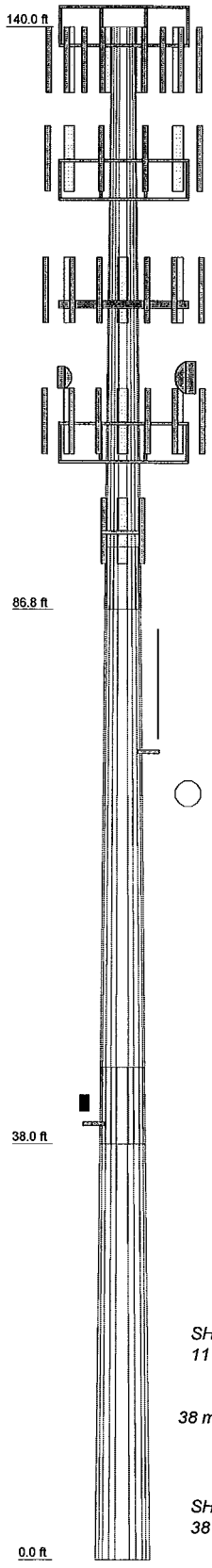
The tower and its foundation have sufficient capacity to carry the existing, reserved, and proposed loads. No modifications are required at this time.

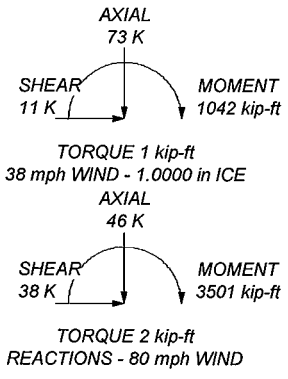
APPENDIX A

TNXTOWER OUTPUT

Section	1	2	3
Length (ft)	53'2-1/32"	54'6"	45'
Number of Sides	12	12	12
Thickness (in)	0.3125	0.4063	0.5000
Sockel Length (ft)	5'8-1/32"	7'	
Top Dia (in)	26.2160	37.2117	48.0330
Bot Dia (in)	39.2230	50.5600	59.0500
Grade		A572-65	
Weight (K)	5.9	10.5	13.1

29.5





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
BXA-70063/6CF w/ Mount Pipe	140	(4) LGP21401	115
BXA-70063/6CF w/ Mount Pipe	140	(4) LGP21401	115
BXA-70063/6CF w/ Mount Pipe	140	P65-17-XLH-RR w/ Mount Pipe	115
(2) FD9R6004/1C-3L	140	AM-X-CD-16-65-00T-RET w/ Mount Pipe	115
(2) FD9R6004/1C-3L	140		
(2) FD9R6004/1C-3L	140	P65-17-XLH-RR w/ Mount Pipe	115
BXA-171063/8CFx2 w/ Mount Pipe	140	DC6-48-60-18-8F	115
BXA-171063/8CFx2 w/ Mount Pipe	140	(2) RRUS-11	115
BXA-171063/8CFx2 w/ Mount Pipe	140	(2) RRUS-11	115
(2) LPA-80063/4CF w/ Mount Pipe	140	(2) RRUS-11	115
(2) LPA-80063/4CF w/ Mount Pipe	140	8'x2" Antenna Mount Pipe	115
(2) SC-E 6014 rev2 w/ Mount Pipe	140	8'x2" Antenna Mount Pipe	115
Platform Mount (LP 101-1)	140	8'x2" Antenna Mount Pipe	115
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	126	Platform Mount [LP 712-1]	115
		LLPX310R-V1 w/ Mount Pipe	102
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	126	LLPX310R-V1 w/ Mount Pipe	102
		LLPX310R-V1 w/ Mount Pipe	102
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	126	(2) 950F40T4E-M w/ Mount Pipe	102
		(2) 950F40T4E-M w/ Mount Pipe	102
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	126	(2) 950F40T4E-M w/ Mount Pipe	102
		WIMAX DAP HEAD	102
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	126	WIMAX DAP HEAD	102
		WIMAX DAP HEAD	102
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	126	HORIZON COMPACT	102
ATMAA1412D-1A20	126	HORIZON COMPACT	102
ATMAA1412D-1A20	126	Platform Mount [LP 602-1]	102
ATMAA1412D-1A20	126	VHLP2.5-11	102
(2) 6' x 2" Mount Pipe	126	VHLP2-180	102
(2) 6' x 2" Mount Pipe	126	742 213 w/ Mount Pipe	94
(2) 6' x 2" Mount Pipe	126	Side Arm Mount [SO 102-3]	94
Platform Mount [LP 1001-1]	126	742 213 w/ Mount Pipe	94
(2) 7770.00 w/ Mount Pipe	115	742 213 w/ Mount Pipe	94
(2) 7770.00 w/ Mount Pipe	115	BCD-87010	74
(2) 7770.00 w/ Mount Pipe	115	Side Arm Mount [SO 701-1]	74
(4) LGP21401	115	KS24019-L112A	40
		Side Arm Mount [SO 701-1]	40

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 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 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 60.9%

CROWN CASTLE
We Are Solutions
Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317
Phone: (724) 416-2000
FAX: (724) 416-4425

Job: **BU# 806369**			
Project:			
Client: Crown Castle	Drawn by: Jesse Fresch	App'd:	
Code: TIA/EIA-222-F	Date: 10/15/12	Scale: NTS	
Path: R:\SA Models - Letters\Work Area\JFresch\806369\806369.eri		Dwg No. E-1	

Tower Input Data

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

4) Tower is located in Hartford County, Connecticut.
5) Basic wind speed of 80 mph.
6) Nominal ice thickness of 1.0000 in.
7) Ice thickness is considered to increase with height.
8) Ice density of 56.00 pcf.
9) A wind speed of 38 mph is used in combination with ice.
10) Temperature drop of 50 °F.
11) Deflections calculated using a wind speed of 50 mph.
12) A non-linear (P-delta) analysis was used.
13) Pressures are calculated at each section.
14) Stress ratio used in pole design is 1.333.
15) Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	140'-86'9-31/32"	53'2-1/32"	5'8-1/32"	12	26.2160	39.2230	0.3125	1.2500	A572-65 (65 ksi)
L2	86'9-31/32"-38'	54'6"	7'	12	37.2117	50.5600	0.4063	1.6250	A572-65 (65 ksi)
L3	38'-0'	45'		12	48.0330	59.0500	0.5000	2.0000	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/ft
L1	27.1408	26.0654	2232.3752	9.2735	13.5799	164.3883	4523.3974	12.8286	6.1884	19.803
	40.6066	39.1537	7566.4519	13.9300	20.3175	372.4103	15331.683 0	19.2703	9.6743	30.958

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
L2	39.9612	48.1461	8324.7399	13.1763	19.2756	431.8786	16868.1799	23.6960	8.8840	21.868
	52.3436	65.6074	21064.2222	17.9550	26.1901	804.2825	42681.8251	32.2900	12.4613	30.674
L3	51.5017	76.5282	22069.8046	17.0168	24.8811	887.0104	44719.4076	37.6648	11.5329	23.066
	61.1331	94.2655	41247.0150	20.9609	30.5879	1348.4749	83577.6350	46.3946	14.4854	28.971

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
L1 140'-86'9-31/32"				1	1	1		
L2 86'9-31/32"-38'				1	1	1		
L3 38'-0'				1	1	1		

Feed Line/Linear Appurtenances - Entered As Round Or Flat

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

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#		C_AA_A ft^2/ft	Weight klf
HJ5-50A(7/8")	A	No	Inside Pole	140' - 0'	0.0000	0	12	No Ice	0.00	0.00
								1/2" Ice	0.00	0.00
								1" Ice	0.00	0.00
								2" Ice	0.00	0.00
								4" Ice	0.00	0.00
*										
MLE Hybrid 9Power/18Fiber RL 2(1 5/8)	A	No	CaAa (Out Of Face)	126' - 0'	0.0000	0	1	No Ice	0.16	0.00
								1/2" Ice	0.26	0.00
								1" Ice	0.36	0.00
								2" Ice	0.56	0.01
								4" Ice	0.96	0.03
FLC 158-50J(1-5/8")	A	No	Inside Pole	126' - 0'	0.0000	0	4	No Ice	0.00	0.00
								1/2" Ice	0.00	0.00
								1" Ice	0.00	0.00
								2" Ice	0.00	0.00
								4" Ice	0.00	0.00
LCF158-50JA-A0(1 5/8")	A	No	Inside Pole	126' - 0'	0.0000	0	8	No Ice	0.00	0.00
								1/2" Ice	0.00	0.00
								1" Ice	0.00	0.00
								2" Ice	0.00	0.00
								4" Ice	0.00	0.00
*										
LDF7-50A(1-5/8")	C	No	Inside Pole	115' - 0'	0.0000	0	12	No Ice	0.00	0.00
								1/2" Ice	0.00	0.00
								1" Ice	0.00	0.00
								2" Ice	0.00	0.00
								4" Ice	0.00	0.00
FB-L98B-002-75000(3/8")	C	No	Inside Pole	115' - 0'	0.0000	0	1	No Ice	0.00	0.00
								1/2" Ice	0.00	0.00
								1" Ice	0.00	0.00

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#		C_AA_A ft^2/ft	Weight klf
								2" Ice	0.00	0.00
								4" Ice	0.00	0.00
WR-VG86ST-BRD(3/4)	C	No	Inside Pole	115' - 0'	0.0000	0	2	No Ice	0.00	0.00
								1/2" Ice	0.00	0.00
								1" Ice	0.00	0.00
								2" Ice	0.00	0.00
								4" Ice	0.00	0.00
*										
FSJ4-50B(1/2")	A	No	CaAa (Out Of Face)	102' - 0'	0.0000	0	2	No Ice	0.00	0.00
								1/2" Ice	0.00	0.00
								1" Ice	0.00	0.00
								2" Ice	0.00	0.01
								4" Ice	0.00	0.02
FSJ4-50B(1/2")	A	No	CaAa (Out Of Face)	102' - 0'	0.0000	0	1	No Ice	0.00	0.00
								1/2" Ice	0.00	0.00
								1" Ice	0.00	0.00
								2" Ice	0.00	0.01
								4" Ice	0.00	0.02
ATCB-B01-005(5/16)	A	No	CaAa (Out Of Face)	102' - 0'	0.0000	0	3	No Ice	0.00	0.00
								1/2" Ice	0.00	0.00
								1" Ice	0.00	0.00
								2" Ice	0.00	0.01
								4" Ice	0.00	0.02
LDF1-50A(1/4")	A	No	CaAa (Out Of Face)	102' - 0'	0.0000	0	3	No Ice	0.00	0.00
								1/2" Ice	0.00	0.00
								1" Ice	0.00	0.00
								2" Ice	0.00	0.01
								4" Ice	0.00	0.02
LDF7-50A(1-5/8")	A	No	Inside Pole	102' - 0'	0.0000	0	6	No Ice	0.00	0.00
								1/2" Ice	0.00	0.00
								1" Ice	0.00	0.00
								2" Ice	0.00	0.00
								4" Ice	0.00	0.00
2" Rigid Conduit	A	No	CaAa (Out Of Face)	102' - 0'	0.0000	0	2	No Ice	0.20	0.00
								1/2" Ice	0.30	0.00
								1" Ice	0.40	0.01
								2" Ice	0.60	0.01
								4" Ice	1.00	0.03
*										
AVA7-50(1-5/8)	B	No	CaAa (Out Of Face)	94' - 0'	0.0000	0	2	No Ice	0.20	0.00
								1/2" Ice	0.30	0.00
								1" Ice	0.40	0.00
								2" Ice	0.60	0.01
								4" Ice	1.00	0.03
AVA7-50(1-5/8)	B	No	CaAa (Out Of Face)	94' - 0'	0.0000	0	4	No Ice	0.00	0.00
								1/2" Ice	0.00	0.00
								1" Ice	0.00	0.00
								2" Ice	0.00	0.01
								4" Ice	0.00	0.03
*										
LDF5-50A(7/8")	B	No	CaAa (Out Of Face)	74' - 0'	0.0000	0	1	No Ice	0.11	0.00
								1/2" Ice	0.21	0.00
								1" Ice	0.31	0.00
								2" Ice	0.51	0.01
								4" Ice	0.91	0.03
*										
LDF4-50A(1/2")	C	No	Inside Pole	40' - 0'	0.0000	0	1	No Ice	0.00	0.00
								1/2" Ice	0.00	0.00
								1" Ice	0.00	0.00
								2" Ice	0.00	0.00
								4" Ice	0.00	0.00
*										
Thin Flat Bar Climbing Ladder	C	No	CaAa (Out Of Face)	115' - 105'	30.0000	0	1	No Ice	0.33	0.00
								1/2" Ice	0.44	0.01
								1" Ice	0.56	0.01
								2" Ice	0.78	0.01
								4" Ice	1.22	0.02
*										

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	140'-86'9-31/32"	A	0.000	0.000	0.000	12.432	1.37
		B	0.000	0.000	0.000	2.881	0.03
		C	0.000	0.000	0.000	3.333	0.35
L2	86'9-31/32"-38'	A	0.000	0.000	0.000	27.469	1.72
		B	0.000	0.000	0.000	23.555	0.22
		C	0.000	0.000	0.000	0.000	0.54
L3	38'-0'	A	0.000	0.000	0.000	21.375	1.34
		B	0.000	0.000	0.000	19.418	0.17
		C	0.000	0.000	0.000	0.000	0.43

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	140'-86'9-31/32"	A	1.158	0.000	0.000	0.000	28.528	1.99
		B		0.000	0.000	0.000	6.201	0.23
		C		0.000	0.000	0.000	5.907	0.39
L2	86'9-31/32"-38'	A	1.079	0.000	0.000	0.000	61.399	3.41
		B		0.000	0.000	0.000	54.514	1.70
		C		0.000	0.000	0.000	0.000	0.54
L3	38'-0'	A	1.000	0.000	0.000	0.000	45.968	2.49
		B		0.000	0.000	0.000	44.011	1.23
		C		0.000	0.000	0.000	0.000	0.43

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	140'-86'9-31/32"	-0.0009	-0.2557	0.0219	-0.5123
L2	86'9-31/32"-38'	0.4919	-0.3745	0.8644	-0.6163
L3	38'-0'	0.5367	-0.3723	0.9632	-0.6056

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
BXA-70063/6CF w/ Mount Pipe	A	From Leg	4.00 0' -3'	0.0000	140'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.98 8.62 9.23 10.47 13.08	5.70 6.85 7.71 9.50 13.26	0.04 0.10 0.17 0.33 0.80
BXA-70063/6CF w/ Mount Pipe	B	From Leg	4.00 0' -3'	0.0000	140'	No Ice 1/2" Ice 1" Ice	7.98 8.62 9.23 10.47	5.70 6.85 7.71 9.50	0.04 0.10 0.17 0.33

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	13.08	13.26	0.80
						4" Ice			
BXA-70063/6CF w/ Mount Pipe	C	From Leg	4.00 0' -3'	0.0000	140'	No Ice	7.98	5.70	0.04
						1/2" Ice	8.62	6.85	0.10
						1" Ice	9.23	7.71	0.17
						2" Ice	10.47	9.50	0.33
						4" Ice	13.08	13.26	0.80
(2) FD9R6004/1C-3L	A	From Leg	4.00 0' -3'	0.0000	140'	No Ice	0.37	0.08	0.00
						1/2" Ice	0.45	0.14	0.01
						1" Ice	0.54	0.20	0.01
						2" Ice	0.75	0.34	0.02
						4" Ice	1.28	0.74	0.06
(2) FD9R6004/1C-3L	B	From Leg	4.00 0' -3'	0.0000	140'	No Ice	0.37	0.08	0.00
						1/2" Ice	0.45	0.14	0.01
						1" Ice	0.54	0.20	0.01
						2" Ice	0.75	0.34	0.02
						4" Ice	1.28	0.74	0.06
(2) FD9R6004/1C-3L	C	From Leg	4.00 0' -3'	0.0000	140'	No Ice	0.37	0.08	0.00
						1/2" Ice	0.45	0.14	0.01
						1" Ice	0.54	0.20	0.01
						2" Ice	0.75	0.34	0.02
						4" Ice	1.28	0.74	0.06
BXA-171063/8CFx2 w/ Mount Pipe	A	From Leg	4.00 0' -3'	0.0000	140'	No Ice	3.14	3.51	0.03
						1/2" Ice	3.52	4.13	0.06
						1" Ice	3.92	4.76	0.10
						2" Ice	4.80	6.06	0.20
						4" Ice	6.71	9.09	0.49
BXA-171063/8CFx2 w/ Mount Pipe	B	From Leg	4.00 0' -3'	0.0000	140'	No Ice	3.14	3.51	0.03
						1/2" Ice	3.52	4.13	0.06
						1" Ice	3.92	4.76	0.10
						2" Ice	4.80	6.06	0.20
						4" Ice	6.71	9.09	0.49
BXA-171063/8CFx2 w/ Mount Pipe	C	From Leg	4.00 0' -3'	0.0000	140'	No Ice	3.14	3.51	0.03
						1/2" Ice	3.52	4.13	0.06
						1" Ice	3.92	4.76	0.10
						2" Ice	4.80	6.06	0.20
						4" Ice	6.71	9.09	0.49
(2) LPA-80063/4CF w/ Mount Pipe	A	From Leg	4.00 0' -3'	0.0000	140'	No Ice	7.25	7.26	0.04
						1/2" Ice	7.72	7.96	0.10
						1" Ice	8.20	8.67	0.18
						2" Ice	9.19	10.16	0.34
						4" Ice	11.32	13.39	0.80
(2) LPA-80063/4CF w/ Mount Pipe	B	From Leg	4.00 0' -3'	0.0000	140'	No Ice	7.25	7.26	0.04
						1/2" Ice	7.72	7.96	0.10
						1" Ice	8.20	8.67	0.18
						2" Ice	9.19	10.16	0.34
						4" Ice	11.32	13.39	0.80
(2) SC-E 6014 rev2 w/ Mount Pipe	C	From Leg	4.00 0' -3'	0.0000	140'	No Ice	3.78	4.40	0.03
						1/2" Ice	4.18	5.01	0.07
						1" Ice	4.59	5.64	0.11
						2" Ice	5.44	6.96	0.22
						4" Ice	7.29	9.90	0.54
Platform Mount (LP 101-1)	C	None		0.0000	140'	No Ice	36.21	36.21	1.50
						1/2" Ice	42.82	42.82	2.30
						Ice	49.43	49.43	3.10

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice	62.65	62.65	4.70
						2" Ice	89.09	89.09	7.89
						4" Ice			
*									
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	A	From Leg	4.00 0' 2'	0.0000	126'	No Ice	6.83	5.64	0.11
						1/2" Ice	7.35	6.48	0.17
						1" Ice	7.86	7.26	0.23
						2" Ice	8.93	8.86	0.38
						4" Ice	11.18	12.29	0.81
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	B	From Leg	4.00 0' 2'	0.0000	126'	No Ice	6.83	5.64	0.11
						1/2" Ice	7.35	6.48	0.17
						1" Ice	7.86	7.26	0.23
						2" Ice	8.93	8.86	0.38
						4" Ice	11.18	12.29	0.81
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	C	From Leg	4.00 0' 2'	0.0000	126'	No Ice	6.83	5.64	0.11
						1/2" Ice	7.35	6.48	0.17
						1" Ice	7.86	7.26	0.23
						2" Ice	8.93	8.86	0.38
						4" Ice	11.18	12.29	0.81
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	4.00 0' 2'	0.0000	126'	No Ice	6.83	5.64	0.11
						1/2" Ice	7.35	6.48	0.17
						1" Ice	7.86	7.26	0.23
						2" Ice	8.93	8.86	0.38
						4" Ice	11.18	12.29	0.81
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	4.00 0' 2'	0.0000	126'	No Ice	6.83	5.64	0.11
						1/2" Ice	7.35	6.48	0.17
						1" Ice	7.86	7.26	0.23
						2" Ice	8.93	8.86	0.38
						4" Ice	11.18	12.29	0.81
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	4.00 0' 2'	0.0000	126'	No Ice	6.83	5.64	0.11
						1/2" Ice	7.35	6.48	0.17
						1" Ice	7.86	7.26	0.23
						2" Ice	8.93	8.86	0.38
						4" Ice	11.18	12.29	0.81
ATMAA1412D-1A20	A	From Leg	4.00 0' 2'	0.0000	126'	No Ice	0.47	1.17	0.01
						1/2" Ice	0.57	1.31	0.02
						1" Ice	0.69	1.47	0.03
						2" Ice	0.95	1.81	0.06
						4" Ice	1.57	2.58	0.14
ATMAA1412D-1A20	B	From Leg	4.00 0' 2'	0.0000	126'	No Ice	0.47	1.17	0.01
						1/2" Ice	0.57	1.31	0.02
						1" Ice	0.69	1.47	0.03
						2" Ice	0.95	1.81	0.06
						4" Ice	1.57	2.58	0.14
ATMAA1412D-1A20	C	From Leg	4.00 0' 2'	0.0000	126'	No Ice	0.47	1.17	0.01
						1/2" Ice	0.57	1.31	0.02
						1" Ice	0.69	1.47	0.03
						2" Ice	0.95	1.81	0.06
						4" Ice	1.57	2.58	0.14
(2) 6' x 2" Mount Pipe	A	From Leg	4.00 0' 0'	0.0000	126'	No Ice	1.43	1.43	0.02
						1/2" Ice	1.92	1.92	0.03
						1" Ice	2.29	2.29	0.05
						2" Ice	3.06	3.06	0.09
						4" Ice	4.70	4.70	0.23
(2) 6' x 2" Mount Pipe	B	From Leg	4.00	0.0000	126'	No Ice	1.43	1.43	0.02

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0'			1/2"	1.92	1.92	0.03
			0'			Ice	2.29	2.29	0.05
						1" Ice	3.06	3.06	0.09
						2" Ice	4.70	4.70	0.23
						4" Ice			
(2) 6' x 2" Mount Pipe	C	From Leg	4.00	0.0000	126'	No Ice	1.43	1.43	0.02
			0'			1/2"	1.92	1.92	0.03
			0'			Ice	2.29	2.29	0.05
						1" Ice	3.06	3.06	0.09
						2" Ice	4.70	4.70	0.23
						4" Ice			
Platform Mount [LP 1001-1]	C	None		0.0000	126'	No Ice	47.70	47.70	3.02
						1/2"	59.50	59.50	3.62
						Ice	71.30	71.30	4.22
						1" Ice	94.90	94.90	5.43
						2" Ice	142.10	142.10	7.85
*						4" Ice			
(2) 7770.00 w/ Mount Pipe	A	From Leg	4.00	0.0000	115'	No Ice	6.12	4.25	0.06
			0'			1/2"	6.63	5.01	0.10
			1'			Ice	7.13	5.71	0.16
						1" Ice	8.16	7.16	0.29
						2" Ice	10.36	10.41	0.66
						4" Ice			
(2) 7770.00 w/ Mount Pipe	B	From Leg	4.00	0.0000	115'	No Ice	6.12	4.25	0.06
			0'			1/2"	6.63	5.01	0.10
			1'			Ice	7.13	5.71	0.16
						1" Ice	8.16	7.16	0.29
						2" Ice	10.36	10.41	0.66
						4" Ice			
(2) 7770.00 w/ Mount Pipe	C	From Leg	4.00	0.0000	115'	No Ice	6.12	4.25	0.06
			0'			1/2"	6.63	5.01	0.10
			1'			Ice	7.13	5.71	0.16
						1" Ice	8.16	7.16	0.29
						2" Ice	10.36	10.41	0.66
						4" Ice			
(4) LGP21401	A	From Leg	4.00	0.0000	115'	No Ice	1.29	0.23	0.01
			0'			1/2"	1.45	0.31	0.02
			1'			Ice	1.61	0.40	0.03
						1" Ice	1.97	0.61	0.05
						2" Ice	2.79	1.12	0.14
						4" Ice			
(4) LGP21401	B	From Leg	4.00	0.0000	115'	No Ice	1.29	0.23	0.01
			0'			1/2"	1.45	0.31	0.02
			1'			Ice	1.61	0.40	0.03
						1" Ice	1.97	0.61	0.05
						2" Ice	2.79	1.12	0.14
						4" Ice			
(4) LGP21401	C	From Leg	4.00	0.0000	115'	No Ice	1.29	0.23	0.01
			0'			1/2"	1.45	0.31	0.02
			1'			Ice	1.61	0.40	0.03
						1" Ice	1.97	0.61	0.05
						2" Ice	2.79	1.12	0.14
						4" Ice			
P65-17-XLH-RR w/ Mount Pipe	A	From Leg	4.00	0.0000	115'	No Ice	11.70	8.94	0.09
			0'			1/2"	12.42	10.45	0.17
			2'			Ice	13.15	11.99	0.27
						1" Ice	14.64	14.31	0.50
						2" Ice	17.91	19.14	1.13
						4" Ice			
AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Leg	4.00	0.0000	115'	No Ice	8.50	6.30	0.07
			0'			1/2"	9.15	7.48	0.14
			2'			Ice	9.77	8.37	0.21
						1" Ice	11.03	10.18	0.38
						2" Ice	13.68	14.02	0.87

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						4" Ice			
P65-17-XLH-RR w/ Mount Pipe	C	From Leg	4.00 0' 2'	0.0000	115'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	11.70 12.42 13.15 14.64 17.91	8.94 10.45 11.99 14.31 19.14	0.09 0.17 0.27 0.50 1.13
DC6-48-60-18-8F	A	From Leg	4.00 0' 1'	0.0000	115'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.27 1.46 1.66 2.09 3.10	1.27 1.46 1.66 2.09 3.10	0.02 0.04 0.05 0.10 0.21
(2) RRUS-11	A	From Leg	4.00 0' 2'	0.0000	115'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.25 3.49 3.74 4.27 5.43	1.37 1.55 1.74 2.14 3.04	0.05 0.07 0.09 0.15 0.31
(2) RRUS-11	B	From Leg	4.00 0' 2'	0.0000	115'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.25 3.49 3.74 4.27 5.43	1.37 1.55 1.74 2.14 3.04	0.05 0.07 0.09 0.15 0.31
(2) RRUS-11	C	From Leg	4.00 0' 2'	0.0000	115'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.25 3.49 3.74 4.27 5.43	1.37 1.55 1.74 2.14 3.04	0.05 0.07 0.09 0.15 0.31
8'x2" Antenna Mount Pipe	A	From Leg	4.00 0' 0'	0.0000	115'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.90 2.73 3.40 4.40 6.50	1.90 2.73 3.40 4.40 6.50	0.03 0.04 0.06 0.12 0.30
8'x2" Antenna Mount Pipe	B	From Leg	4.00 0' 0'	0.0000	115'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.90 2.73 3.40 4.40 6.50	1.90 2.73 3.40 4.40 6.50	0.03 0.04 0.06 0.12 0.30
8'x2" Antenna Mount Pipe	C	From Leg	4.00 0' 0'	0.0000	115'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.90 2.73 3.40 4.40 6.50	1.90 2.73 3.40 4.40 6.50	0.03 0.04 0.06 0.12 0.30
Platform Mount [LP 712-1]	C	None		0.0000	115'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	24.53 29.94 35.35 46.17 67.81	24.53 29.94 35.35 46.17 67.81	1.34 1.65 1.96 2.58 3.82
*									
LLPX310R-V1 w/ Mount Pipe	A	From Leg	4.00 0' 2'	0.0000	102'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.07 5.48 5.91 6.79 8.70	2.98 3.53 4.09 5.31 8.13	0.05 0.08 0.13 0.23 0.54
LLPX310R-V1 w/ Mount Pipe	B	From Leg	4.00 0' 2'	0.0000	102'	No Ice 1/2" Ice	5.07 5.48 5.91	2.98 3.53 4.09	0.05 0.08 0.13

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice	6.79	5.31	0.23
						2" Ice	8.70	8.13	0.54
						4" Ice			
LLPX310R-V1 w/ Mount Pipe	C	From Leg	4.00 0' 2'	0.0000	102'	No Ice	5.07	2.98	0.05
						1/2" Ice	5.48	3.53	0.08
						1" Ice	5.91	4.09	0.13
						2" Ice	6.79	5.31	0.23
						4" Ice	8.70	8.13	0.54
(2) 950F40T4E-M w/ Mount Pipe	A	From Leg	4.00 0' 2'	0.0000	102'	No Ice	7.24	6.15	0.04
						1/2" Ice	7.79	7.04	0.10
						1" Ice	8.33	7.86	0.17
						2" Ice	9.45	9.56	0.33
						4" Ice	11.79	13.17	0.78
(2) 950F40T4E-M w/ Mount Pipe	B	From Leg	4.00 0' 2'	0.0000	102'	No Ice	7.24	6.15	0.04
						1/2" Ice	7.79	7.04	0.10
						1" Ice	8.33	7.86	0.17
						2" Ice	9.45	9.56	0.33
						4" Ice	11.79	13.17	0.78
(2) 950F40T4E-M w/ Mount Pipe	C	From Leg	4.00 0' 2'	0.0000	102'	No Ice	7.24	6.15	0.04
						1/2" Ice	7.79	7.04	0.10
						1" Ice	8.33	7.86	0.17
						2" Ice	9.45	9.56	0.33
						4" Ice	11.79	13.17	0.78
WIMAX DAP HEAD	A	From Leg	4.00 0' 2'	0.0000	102'	No Ice	1.80	0.78	0.03
						1/2" Ice	1.99	0.92	0.04
						1" Ice	2.18	1.07	0.06
						2" Ice	2.59	1.39	0.09
						4" Ice	3.51	2.14	0.20
WIMAX DAP HEAD	B	From Leg	4.00 0' 2'	0.0000	102'	No Ice	1.80	0.78	0.03
						1/2" Ice	1.99	0.92	0.04
						1" Ice	2.18	1.07	0.06
						2" Ice	2.59	1.39	0.09
						4" Ice	3.51	2.14	0.20
WIMAX DAP HEAD	C	From Leg	4.00 0' 2'	0.0000	102'	No Ice	1.80	0.78	0.03
						1/2" Ice	1.99	0.92	0.04
						1" Ice	2.18	1.07	0.06
						2" Ice	2.59	1.39	0.09
						4" Ice	3.51	2.14	0.20
HORIZON COMPACT	B	From Leg	4.00 0' 6'	0.0000	102'	No Ice	0.84	0.43	0.01
						1/2" Ice	0.97	0.52	0.02
						1" Ice	1.10	0.63	0.03
						2" Ice	1.39	0.86	0.05
						4" Ice	2.08	1.43	0.12
HORIZON COMPACT	C	From Leg	4.00 0' 6'	0.0000	102'	No Ice	0.84	0.43	0.01
						1/2" Ice	0.97	0.52	0.02
						1" Ice	1.10	0.63	0.03
						2" Ice	1.39	0.86	0.05
						4" Ice	2.08	1.43	0.12
Platform Mount [LP 602-1]	C	None		0.0000	102'	No Ice	32.03	32.03	1.34
						1/2" Ice	38.71	38.71	1.80
						1" Ice	45.39	45.39	2.26
						2" Ice	58.75	58.75	3.17
						4" Ice	85.47	85.47	5.00
*									
742 213 w/ Mount Pipe	A	From Leg	0.50	0.0000	94'	No Ice	5.37	4.62	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'			1/2"	5.95	6.00	0.09
			0'			Ice	6.50	6.98	0.14
						1" Ice	7.61	8.85	0.28
						2" Ice	9.93	12.79	0.68
						4" Ice			
742 213 w/ Mount Pipe	B	From Leg	0.50	0.0000	94'	No Ice	5.37	4.62	0.05
			0'			1/2"	5.95	6.00	0.09
			0'			Ice	6.50	6.98	0.14
						1" Ice	7.61	8.85	0.28
						2" Ice	9.93	12.79	0.68
						4" Ice			
742 213 w/ Mount Pipe	C	From Leg	0.50	0.0000	94'	No Ice	5.37	4.62	0.05
			0'			1/2"	5.95	6.00	0.09
			0'			Ice	6.50	6.98	0.14
						1" Ice	7.61	8.85	0.28
						2" Ice	9.93	12.79	0.68
						4" Ice			
Side Arm Mount [SO 102-3]	C	None		0.0000	94'	No Ice	3.00	3.00	0.08
						1/2"	3.48	3.48	0.11
						Ice	3.96	3.96	0.14
						1" Ice	4.92	4.92	0.20
						2" Ice	6.84	6.84	0.32
						4" Ice			
*									
BCD-87010	B	From Leg	2.00	0.0000	74'	No Ice	2.90	2.90	0.03
			0'			1/2"	4.05	4.05	0.05
			6'			Ice	5.21	5.21	0.08
						1" Ice	7.01	7.01	0.16
						2" Ice	9.85	9.85	0.41
						4" Ice			
Side Arm Mount [SO 701-1]	B	From Leg	1.00	0.0000	74'	No Ice	0.85	1.67	0.07
			0'			1/2"	1.14	2.34	0.08
			0'			Ice	1.43	3.01	0.09
						1" Ice	2.01	4.35	0.12
						2" Ice	3.17	7.03	0.18
						4" Ice			
*									
KS24019-L112A	C	From Leg	2.00	0.0000	40'	No Ice	0.10	0.10	0.01
			0'			1/2"	0.18	0.18	0.01
			1'			Ice	0.26	0.26	0.01
						1" Ice	0.42	0.42	0.01
						2" Ice	0.74	0.74	0.02
						4" Ice			
Side Arm Mount [SO 701-1]	C	From Leg	1.00	0.0000	40'	No Ice	0.85	1.67	0.07
			0'			1/2"	1.14	2.34	0.08
			0'			Ice	1.43	3.01	0.09
						1" Ice	2.01	4.35	0.12
						2" Ice	3.17	7.03	0.18
						4" Ice			
*									

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	From	4.00	-20.0000		102'	2.92	No Ice	6.68	0.03

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
		w/Shroud (HP)	Leg	0'					1/2" Ice	7.07	0.04
				6'					1" Ice	7.46	0.05
									2" Ice	8.23	0.07
									4" Ice	9.78	0.11
VHLP2-180	C	Paraboloid	From	4.00	10.0000		102'	2.00	No Ice	3.14	0.03
		w/Shroud (HP)	Leg	0'					1/2" Ice	3.41	0.04
				6'					1" Ice	3.67	0.06
									2" Ice	4.21	0.09
									4" Ice	5.28	0.16
*											

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 60 deg - No Ice
5	Dead+Wind 90 deg - No Ice
6	Dead+Wind 120 deg - No Ice
7	Dead+Wind 150 deg - No Ice
8	Dead+Wind 180 deg - No Ice
9	Dead+Wind 210 deg - No Ice
10	Dead+Wind 240 deg - No Ice
11	Dead+Wind 270 deg - No Ice
12	Dead+Wind 300 deg - No Ice
13	Dead+Wind 330 deg - No Ice
14	Dead+Ice+Temp
15	Dead+Wind 0 deg+Ice+Temp
16	Dead+Wind 30 deg+Ice+Temp
17	Dead+Wind 60 deg+Ice+Temp
18	Dead+Wind 90 deg+Ice+Temp
19	Dead+Wind 120 deg+Ice+Temp
20	Dead+Wind 150 deg+Ice+Temp
21	Dead+Wind 180 deg+Ice+Temp
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	140 - 86.8333	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	-31.99	-0.49	1.25
			Max. Mx	11	-16.17	635.50	1.00
			Max. My	2	-16.19	0.54	633.58
			Max. Vy	11	-23.79	635.50	1.00
			Max. Vx	8	23.61	-1.06	-633.44
			Max. Torque	6			1.36
L2	86.8333 - 38	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-50.24	-3.36	2.98
			Max. Mx	11	-28.69	1941.93	1.92
			Max. My	2	-28.69	-0.47	1932.55
			Max. Vy	11	-31.26	1941.93	1.92
			Max. Vx	8	31.10	-2.86	-1932.26
			Max. Torque	2			-1.76
L3	38 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-73.47	-5.90	4.99
			Max. Mx	11	-46.22	3500.76	3.10
			Max. My	2	-46.22	-0.89	3484.91
			Max. Vy	11	-37.98	3500.76	3.10
			Max. Vx	8	37.84	-4.42	-3484.21
			Max. Torque	2			-1.94

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	17	73.47	-9.51	5.46
	Max. H_x	11	46.24	37.97	0.02
	Max. H_z	2	46.24	-0.00	37.81
	Max. M_x	2	3484.91	-0.00	37.81
	Max. M_z	5	3498.41	-37.93	0.00
	Max. Torsion	8	1.88	-0.03	-37.82
	Min. Vert	1	46.24	0.00	0.00
	Min. H_x	5	46.24	-37.93	0.00
	Min. H_z	8	46.24	-0.03	-37.82
	Min. M_x	8	-3484.21	-0.03	-37.82
	Min. M_z	11	-3500.76	37.97	0.02
	Min. Torsion	2	-1.94	-0.00	37.81

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	46.24	0.00	0.00	-0.83	-0.74	0.00
Dead+Wind 0 deg - No Ice	46.24	0.00	-37.81	-3484.91	-0.88	1.94
Dead+Wind 30 deg - No Ice	46.24	19.03	-32.72	-3015.36	-1756.97	1.65
Dead+Wind 60 deg - No Ice	46.24	32.88	-18.86	-1737.17	-3032.98	0.52
Dead+Wind 90 deg - No Ice	46.24	37.93	-0.00	-0.82	-3498.41	-0.42
Dead+Wind 120 deg - No Ice	46.24	32.88	18.86	1736.80	-3033.17	-1.31
Dead+Wind 150 deg - No Ice	46.24	19.03	32.71	3013.03	-1756.96	-1.57
Dead+Wind 180 deg - No Ice	46.24	0.03	37.82	3484.21	-4.42	-1.88
Dead+Wind 210 deg - No Ice	46.24	-19.04	32.69	3009.81	1756.37	-1.54
Dead+Wind 240 deg - No Ice	46.24	-32.91	18.85	1734.59	3034.64	-0.56
Dead+Wind 270 deg - No Ice	46.24	-37.97	-0.02	-3.10	3500.76	0.36
Dead+Wind 300 deg - No Ice	46.24	-32.92	-18.89	-1741.76	3036.51	1.13
Dead+Wind 330 deg - No Ice	46.24	-19.10	-32.72	-3015.54	1762.85	1.33
Dead+Ice+Temp	73.47	0.00	-0.00	-4.99	-5.90	0.00
Dead+Wind 0 deg+Ice+Temp	73.47	-0.00	-10.94	-1037.03	-5.99	0.65
Dead+Wind 30	73.47	5.50	-9.47	-897.99	-525.74	0.51

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
deg+Ice+Temp						
Dead+Wind 60 deg+Ice+Temp	73.47	9.51	-5.46	-519.49	-903.81	0.13
Dead+Wind 90 deg+Ice+Temp	73.47	10.97	0.00	-4.99	-1041.86	-0.20
Dead+Wind 120 deg+Ice+Temp	73.47	9.51	5.46	509.78	-904.06	-0.49
Dead+Wind 150 deg+Ice+Temp	73.47	5.50	9.47	887.70	-525.99	-0.58
Dead+Wind 180 deg+Ice+Temp	73.47	0.01	10.94	1026.99	-7.14	-0.64
Dead+Wind 210 deg+Ice+Temp	73.47	-5.50	9.46	886.69	513.80	-0.48
Dead+Wind 240 deg+Ice+Temp	73.47	-9.51	5.45	508.96	892.44	-0.14
Dead+Wind 270 deg+Ice+Temp	73.47	-10.98	-0.01	-5.88	1030.67	0.19
Dead+Wind 300 deg+Ice+Temp	73.47	-9.52	-5.47	-520.91	893.12	0.45
Dead+Wind 330 deg+Ice+Temp	73.47	-5.52	-9.47	-898.19	515.75	0.52
Dead+Wind 0 deg - Service	46.24	0.00	-14.77	-1362.24	-0.80	0.76
Dead+Wind 30 deg - Service	46.24	7.44	-12.78	-1178.77	-687.00	0.64
Dead+Wind 60 deg - Service	46.24	12.84	-7.37	-679.31	-1185.60	0.20
Dead+Wind 90 deg - Service	46.24	14.82	-0.00	-0.83	-1367.47	-0.16
Dead+Wind 120 deg - Service	46.24	12.84	7.37	678.14	-1185.67	-0.51
Dead+Wind 150 deg - Service	46.24	7.43	12.78	1176.83	-686.99	-0.62
Dead+Wind 180 deg - Service	46.24	0.01	14.77	1360.94	-2.18	-0.74
Dead+Wind 210 deg - Service	46.24	-7.44	12.77	1175.57	685.84	-0.60
Dead+Wind 240 deg - Service	46.24	-12.85	7.36	677.28	1185.33	-0.22
Dead+Wind 270 deg - Service	46.24	-14.83	-0.01	-1.73	1367.47	0.14
Dead+Wind 300 deg - Service	46.24	-12.86	-7.38	-681.11	1186.06	0.44
Dead+Wind 330 deg - Service	46.24	-7.46	-12.78	-1178.84	688.38	0.52

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-46.24	0.00	0.00	46.24	0.00	0.000%
2	0.00	-46.24	-37.81	-0.00	46.24	37.81	0.000%
3	19.03	-46.24	-32.72	-19.03	46.24	32.72	0.000%
4	32.88	-46.24	-18.86	-32.88	46.24	18.86	0.000%
5	37.93	-46.24	-0.00	-37.93	46.24	0.00	0.000%
6	32.88	-46.24	18.86	-32.88	46.24	-18.86	0.000%
7	19.03	-46.24	32.71	-19.03	46.24	-32.71	0.000%
8	0.03	-46.24	37.82	-0.03	46.24	-37.82	0.000%
9	-19.04	-46.24	32.69	19.04	46.24	-32.69	0.000%
10	-32.91	-46.24	18.85	32.91	46.24	-18.85	0.000%
11	-37.97	-46.24	-0.02	37.97	46.24	0.02	0.000%
12	-32.92	-46.24	-18.89	32.92	46.24	18.89	0.000%
13	-19.10	-46.24	-32.72	19.10	46.24	32.72	0.000%
14	0.00	-73.47	0.00	-0.00	73.47	0.00	0.000%
15	-0.00	-73.47	-10.94	0.00	73.47	10.94	0.000%
16	5.50	-73.47	-9.47	-5.50	73.47	9.47	0.000%
17	9.51	-73.47	-5.46	-9.51	73.47	5.46	0.000%
18	10.97	-73.47	0.00	-10.97	73.47	-0.00	0.000%
19	9.51	-73.47	5.46	-9.51	73.47	-5.46	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
20	5.50	-73.47	9.47	-5.50	73.47	-9.47	0.000%
21	0.01	-73.47	10.94	-0.01	73.47	-10.94	0.000%
22	-5.50	-73.47	9.46	5.50	73.47	-9.46	0.000%
23	-9.51	-73.47	5.45	9.51	73.47	-5.45	0.000%
24	-10.98	-73.47	-0.01	10.98	73.47	0.01	0.000%
25	-9.52	-73.47	-5.47	9.52	73.47	5.47	0.000%
26	-5.52	-73.47	-9.47	5.52	73.47	9.47	0.000%
27	0.00	-46.24	-14.77	-0.00	46.24	14.77	0.000%
28	7.44	-46.24	-12.78	-7.44	46.24	12.78	0.000%
29	12.84	-46.24	-7.37	-12.84	46.24	7.37	0.000%
30	14.82	-46.24	-0.00	-14.82	46.24	0.00	0.000%
31	12.84	-46.24	7.37	-12.84	46.24	-7.37	0.000%
32	7.43	-46.24	12.78	-7.43	46.24	-12.78	0.000%
33	0.01	-46.24	14.77	-0.01	46.24	-14.77	0.000%
34	-7.44	-46.24	12.77	7.44	46.24	-12.77	0.000%
35	-12.85	-46.24	7.36	12.85	46.24	-7.36	0.000%
36	-14.83	-46.24	-0.01	14.83	46.24	0.01	0.000%
37	-12.86	-46.24	-7.38	12.86	46.24	7.38	0.000%
38	-7.46	-46.24	-12.78	7.46	46.24	12.78	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00007228
3	Yes	4	0.00000001	0.00087851
4	Yes	4	0.00000001	0.00083591
5	Yes	4	0.00000001	0.00002999
6	Yes	4	0.00000001	0.00082090
7	Yes	4	0.00000001	0.00087693
8	Yes	4	0.00000001	0.00007232
9	Yes	4	0.00000001	0.00082035
10	Yes	4	0.00000001	0.00085134
11	Yes	4	0.00000001	0.00002933
12	Yes	4	0.00000001	0.00086994
13	Yes	4	0.00000001	0.00083099
14	Yes	4	0.00000001	0.00000001
15	Yes	4	0.00000001	0.00056302
16	Yes	4	0.00000001	0.00061070
17	Yes	4	0.00000001	0.00061014
18	Yes	4	0.00000001	0.00056485
19	Yes	4	0.00000001	0.00060549
20	Yes	4	0.00000001	0.00060496
21	Yes	4	0.00000001	0.00055688
22	Yes	4	0.00000001	0.00059798
23	Yes	4	0.00000001	0.00059974
24	Yes	4	0.00000001	0.00055916
25	Yes	4	0.00000001	0.00060645
26	Yes	4	0.00000001	0.00060583
27	Yes	4	0.00000001	0.00001846
28	Yes	4	0.00000001	0.00008285
29	Yes	4	0.00000001	0.00007490
30	Yes	4	0.00000001	0.00001237
31	Yes	4	0.00000001	0.00007217
32	Yes	4	0.00000001	0.00008241
33	Yes	4	0.00000001	0.00001825
34	Yes	4	0.00000001	0.00007189
35	Yes	4	0.00000001	0.00007771
36	Yes	4	0.00000001	0.00001224
37	Yes	4	0.00000001	0.00008105
38	Yes	4	0.00000001	0.00007328

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	140 - 86.8333	18.949	37	1.1123	0.0028
L2	92.5 - 38	8.605	37	0.8783	0.0010
L3	45 - 0	2.019	37	0.4044	0.0003

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
140'	BXA-70063/6CF w/ Mount Pipe	37	18.949	1.1123	0.0028	61426
126'	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	37	15.713	1.0614	0.0022	21937
115'	(2) 7770.00 w/ Mount Pipe	37	13.239	1.0147	0.0018	12284
108'	VHLP2.5-11	37	11.724	0.9794	0.0015	9597
102'	LLPX310R-V1 w/ Mount Pipe	37	10.473	0.9445	0.0013	8081
94'	742 213 w/ Mount Pipe	37	8.890	0.8897	0.0011	6701
74'	BCD-87010	37	5.454	0.7098	0.0007	5628
40'	KS24019-L112A	37	1.633	0.3545	0.0003	5263

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	140 - 86.8333	48.469	12	2.8458	0.0072
L2	92.5 - 38	22.020	11	2.2474	0.0027
L3	45 - 0	5.168	11	1.0349	0.0009

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
140'	BXA-70063/6CF w/ Mount Pipe	12	48.469	2.8458	0.0072	24130
126'	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	12	40.193	2.7158	0.0057	8617
115'	(2) 7770.00 w/ Mount Pipe	11	33.870	2.5964	0.0045	4824
108'	VHLP2.5-11	11	29.995	2.5061	0.0039	3768
102'	LLPX310R-V1 w/ Mount Pipe	11	26.796	2.4167	0.0034	3172
94'	742 213 w/ Mount Pipe	11	22.748	2.2767	0.0028	2630
74'	BCD-87010	11	13.959	1.8163	0.0017	2205
40'	KS24019-L112A	11	4.180	0.9074	0.0008	2057

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	140 - 86.8333 (1)	TP39.223x26.216x0.3125	53'2-1/32"	0'	0.0	39.000	37.7587	-16.17	1472.59	0.011
L2	86.8333 - 38 (2)	TP50.56x37.2117x0.4063	54'6"	0'	0.0	39.000	63.3646	-28.69	2471.22	0.012
L3	38 - 0 (3)	TP59.05x48.033x0.5	45'	0'	0.0	39.000	94.2655	-46.22	3676.35	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	140 - 86.8333 (1)	TP39.223x26.216x0.3125	636.06	22.044	39.000	0.565	0.00	0.000	39.000	0.000
L2	86.8333 - 38 (2)	TP50.56x37.2117x0.4063	1941.93	31.070	39.000	0.797	0.00	0.000	39.000	0.000
L3	38 - 0 (3)	TP59.05x48.033x0.5	3500.76	31.153	39.000	0.799	0.00	0.000	39.000	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	140 - 86.8333 (1)	TP39.223x26.216x0.3125	23.77	0.630	26.000	0.049	0.58	0.010	26.000	0.000
L2	86.8333 - 38 (2)	TP50.56x37.2117x0.4063	31.24	0.493	26.000	0.039	0.91	0.007	26.000	0.000
L3	38 - 0 (3)	TP59.05x48.033x0.5	37.98	0.403	26.000	0.031	0.36	0.001	26.000	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	140 - 86.8333 (1)	0.011	0.565	0.000	0.049	0.000	0.577 ✔	1.333	H1-3+VT ✔
L2	86.8333 - 38 (2)	0.012	0.797	0.000	0.039	0.000	0.809 ✔	1.333	H1-3+VT ✔
L3	38 - 0 (3)	0.013	0.799	0.000	0.031	0.000	0.812 ✔	1.333	H1-3+VT ✔

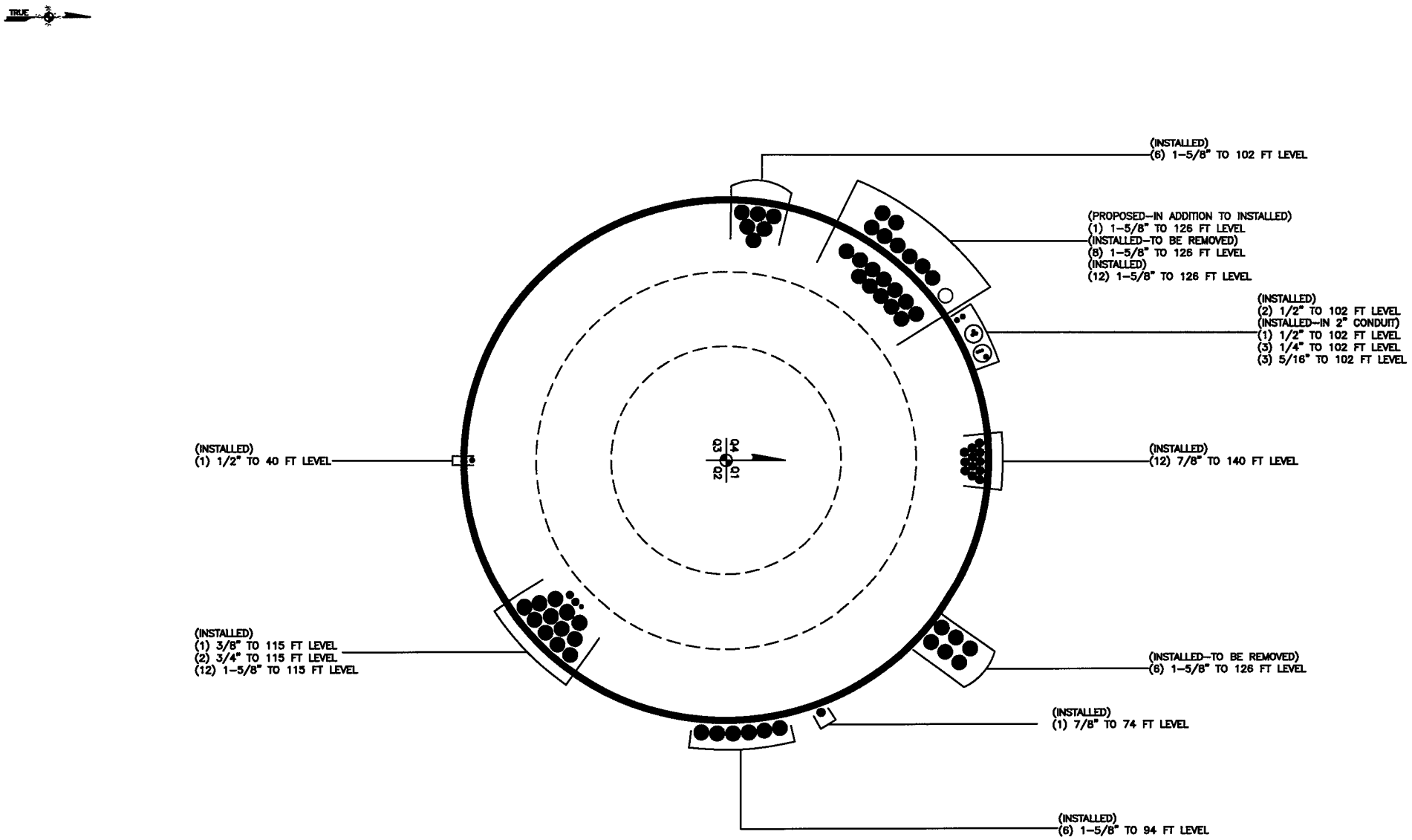
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
L1	140 - 86.8333	Pole	TP39.223x26.216x0.3125	1	-16.17	1962.96	43.3	Pass
L2	86.8333 - 38	Pole	TP50.56x37.2117x0.4063	2	-28.69	3294.14	60.7	Pass
L3	38 - 0	Pole	TP59.05x48.033x0.5	3	-46.22	4900.57	60.9	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
							Summary	
						Pole (L3)	60.9	Pass
						RATING =	**60.9**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 806369 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

Moment Capacity of Drilled Concrete Shaft (Caisson) for TIA Rev F or G

Note: Shaft assumed to have ties, not spiral, transverse reinforcing

Site Data

BU#: *806369*
Site Name: *HRT 094 943225*
App #: *162479 rev1*

Enter Load Factors Below:		
For M (WL)	1.3	<---- Enter Factor
For P (DL)	1.3	<---- Enter Factor

Pier Properties

Concrete:

Pier Diameter =	7.5	ft
Concrete Area =	6361.7	in^2

Reinforcement:

Clear Cover to **Tie**=	3.00	in
Horiz. **Tie** Bar Size=	3	
Vert. Cage Diameter =	6.83	ft
Vert. Cage Diameter =	81.98	in
Vertical Bar Size =	10	
Bar Diameter =	1.27	in
Bar Area =	1.27	in^2
Number of Bars =	52	
As Total=	66.04	in^2
A s/ Aconc, Rho:	0.0104	1.04%

ACI 10.5 , ACI 21.10.4, and IBC 1810.
Min As for Flexural, Tension Controlled, Shafts:
(3)*(Sqrt(f'c)/Fy: 0.0027
200 / Fy: 0.0033

Minimum Rho Check:

Actual Req'd Min. Rho:	0.33%	Flexural
Provided Rho:	1.04%	OK

Ref. Shaft Max Axial Capacities, ϕ Max(Pn or Tn):		
Max Pu = (φ=0.65) Pn.		
Pn per ACI 318 (10-2)	10408.53	kips
at Mu=(ϕ=0.65)Mn=	6794.66	ft-kips
Max Tu, (φ=0.9) Tn =	3566.16	kips
at Mu=ϕ=(0.90)Mn=	0.00	ft-kips

Maximum Shaft Superimposed Forces

TIA Revision:	F	
Max. Service Shaft M:	3813.172	ft-kips (* **Note**)
Max. Service Shaft P:	46	kips
Max Axial Force Type:	Comp.	

(*) **Note**: Max Shaft Superimposed Moment does not necessarily equal to the shaft top reaction moment

Load Factor	**Shaft Factored Loads**		
1.30	Mu:	4957.124	ft-kips
1.30	Pu:	59.8	kips

Material Properties

Concrete Comp. strength, f'c =	3000	psi
Reinforcement yield strength, Fy =	60	ksi
Reinforcing Modulus of Elasticity, E =	29000	ksi
Reinforcement yield strain =	0.00207	
Limiting compressive strain =	0.003	

ACI 318 Code

Select Analysis ACI Code= 2002

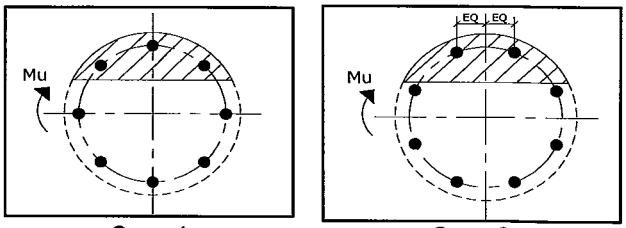
Seismic Properties

Seismic Design Category = B
Seismic Risk = **Low**

Solve (Run) <-- Press Upon Completing All Input

Results:

Governing Orientation Case: **1**



Case 1 Case 2

Dist. From Edge to Neutral Axis: **18.73** in
Extreme Steel Strain, εt: **0.0108**
εt > 0.0050, Tension Controlled
Reduction Factor,φ: **0.900**

Output Note: Negative Pu=Tension

For Axial Compression, φ Pn = Pu:	59.80	kips
Drilled Shaft Moment Capacity, φMn:	**10668.46**	ft-kips
Drilled Shaft Superimposed Mu:	**4957.12**	ft-kips

(Mu/φMn, Drilled Shaft Flexure CSR:	**46.5%**

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

TIA Rev F

Site Data

BU#: *806369*
Site Name: *HRT 094 943225*
App #: *162479 rev1*

Pole Manufacturer:	*Other*

Reactions		
Moment:	3501	ft-kips
Axial:	46	kips
Shear:	38	kips

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

Anchor Rod Data		
Qty:	20	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	65.05	in

Plate Data		
Diam:	71.05	in
Thick:	3	in
Grade:	60	ksi
Single-Rod B-eff:	9.49	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:	59.05	in
Thick:	0.5	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	

Anchor Rod Results

Maximum Rod Tension:	126.9 Kips	Rigid
Allowable Tension:	195.0 Kips	Service, ASD
Anchor Rod Stress Ratio:	65.1% Pass	Fty*ASIF

Base Plate Results

	Flexural Check	
Base Plate Stress:	18.2 ksi	Rigid
Allowable Plate Stress:	60.0 ksi	Service ASD
Base Plate Stress Ratio:	30.4% Pass	0.75*Fy*ASIF
		Y.L. Length: 27.29

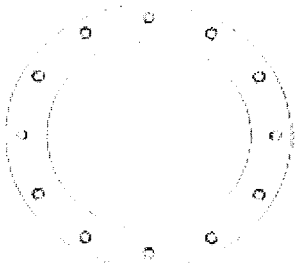
n/a

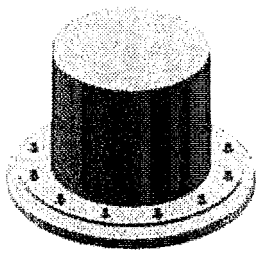
Stiffener Results

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

Monopole Drilled Pier

Checks capacity of a single drilled shaft foundation for a monopole

BU#: 806369
Site Name: *HRT 094 943225*
App Number: *162479 rev1*

CROWN CASTLE

ACI 318 Version:	2002

Design Reactions		
Shear, **S**:	38.00	kips
Moment, **Mt**:	3501.00	ft-kips
Tower Weight, **Wt**:	46.00	kips
Tower Height, **H**:	140	ft
Base Diameter, **BD**:	59.05	in

Foundation Dimensions		
Caisson Diameter, **CD**:	7.5	ft
Ext. Above Grade, **E**:	0.0	ft
Depth Below Grade, **L**:	47.0	ft
Neglected Depth, **N**:	5.0	ft
Rebar Size, **Sp**:	10	
Rebar Quantity, **mp**:	52	
Tie Size, **tp**:	3	

Material Properties		
Rebar Tensile, **Fy**:	60	ksi
Concrete Strength, **F'c**:	3000	psi
Concrete Density, **δx**:	100.9	pcf
Clear Cover, **cc**:	3	in

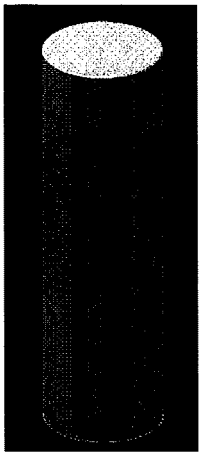
Soil Properties		
Soil Unit Weight, **γ**:	51.1	pcf
Allowable Bearing, **Bc**:	4.500	ksf
Seismic Design Cat, **z**:	B	

Caisson Analysis		
Depth to Zero Shear:	8.1	ft
Max Factored Moment:	4957.12	ft-kips
Overturning FOS:	6.84	

Depth		Shear		Moment	
0	ft	38.1	kips	3503.6	ft-kips
4.7	ft	38.1	kips	3682.7	ft-kips
9.4	ft	-14.2	kips	3746.8	ft-kips

Design Checks	*Capacity/ Availability*	*Demand/ Limits*	*Check*
Minimum Req'd Dia. 1 (ft):	7.50	3.61	OK
Minimum Req'd Dia. 2 (ft):	7.50	6.42	OK
Bearing (ksf):	4.50	1.04	OK
Rebar Area (in²):	66.04	21.21	OK
Pier moment capacity (k-ft):	10668.46	4957.12	OK
Rebar spacing (in):	3.80	2 < Bs <18	OK
Development Length (in):	463.51	12.00	OK
Soil moment capacity (FOS):	6.84	2.00	OK

☐ **Assume 0.33% Minimum Steel?**



Bearing: 23.1%

Steel: 46.5%

Soil: 29.2%

Equivalent Silty Soil Parameter Tool

Note:
This tool determines the equivalent soil parameters for silty soil (having both cohesion and angle of friction), according to the CCI Foundations ongoing discussions (2010), Criteria Item DS-7 . The equivalent parameters results are to be input in the PLS-Caisson Software to account for the combined resistance of the granular and cohesive parameters simultaneously present in silty and similar soils

Site Data

BU#: *806369*
Site Name: *HRT 094 943225*
App #: *162479 rev1*

Neglect Top Layer: Y Y/N
# of Layers: 8

Input the data in the "shaded" columns. If soil layer is submerged, then enter the saturated density (buoyant unit weight)

Layer:	Layer Thickness (ft)	From (ft)	To (ft)	Unit Weight of Soil (pcf)	Cohesion (psf)	Internal Friction Angle (deg)	K_p	Depth to Mid-Layer (ft)	Overburden (psf)	Sand Resistance (ksf)	Clay Resistance (ksf)	P_p total (ksf)	Equivalent Parameters for PLS Caisson Input: Equivalent Cohesion (psf)	Equivalent K_p
1	2	0	2	105			0.000	1	105	0.000	0.00	0.000	**0**	**0.00**
2	3	2	5	100			0.000	3.5	360	0.000	0.00	0.000	**0**	**0.00**
3	5	5	10	100	500	30	3.000	7.5	760	6.840	4.00	10.840	**1355**	**4.75**
4	5	10	15	36	100	27	2.663	12.5	1100	8.788	0.80	9.588	**1198**	**2.91**
5	5	15	20	36	100	27	2.663	17.5	1280	10.226	0.80	11.026	**1378**	**2.87**
6	5	20	25	36	100	27	2.663	22.5	1460	11.664	0.80	12.464	**1558**	**2.85**
7	5	25	30	36	100	27	2.663	27.5	1640	13.102	0.80	13.902	**1738**	**2.83**
8	5	30	35	36	100	27	2.663	32.5	1820	14.540	0.80	15.340	**1917**	**2.81**

Calculation Notes:
1- Sand Resistance = 3 * Kp * Overburden ----> (Per equations used in PLS-Caisson Software)
2- Cohesion Resistance = 8 * C ----------> (Per equations used in PLS-Caisson Software, Full 8CD approach)
3- Total Resistance = Sand Resistance + Cohesion Resistance
4- Equivalent Kp= Total / Overburden / 3
5- Equivalent C= Total / 8

CAISSON Version 10.40 11:21:38 AM Monday, October 15, 2012
Crown Castle USA

Project Title: 806369
Project Notes:

Calculation Method: Full 8CD

******* I N P U T D A T A

Pier Properties

Diameter (ft)	Distance of Top of Pier above Ground (ft)	Concrete Strength (ksi)	Steel Yield Strength (ksi)
7.50	0.00	3.00	60.00

Soil Properties

Layer	Type	Thickness (ft)	Depth at Top of Layer (ft)	Density (lbs/ft^3)	CU (psf)	KP	PHI (deg)
1	Clay	2.00	0.00	105.0			
2	Clay	3.00	2.00	100.0			
3	Clay	5.00	5.00	100.0	1355.0		
4	Clay	5.00	10.00	36.0	1198.0		
5	Clay	5.00	15.00	36.0	1378.0		
6	Clay	5.00	20.00	36.0	1558.0		
7	Clay	5.00	25.00	36.0	1738.0		
8	Clay	5.00	30.00	36.0	1917.0		
9	Clay	10.00	35.00	41.0	200.0		
10	Sand	2.00	45.00	41.0		3.255	32.00

Design (Factored) Loads at Top of Pier

Moment (ft-k)	Axial Load (kips)	Shear Load (kips)	Additional Safety Factor Against Soil Failure
3501.0	46.0	38.00	6.84

******* R E S U L T S

Calculated Pier Properties

Length (ft)	Weight (kips)	End Bearing Pressure (psf)
47.000	311.459	1041.2

Ultimate Resisting Forces Along Pier

Type	Distance of Top of Layer to Top of Pier (ft)	Thickness (ft)	Density (lbs/ft^3)	CU (psf)	KP	Force (kips)	Arm (ft)
Clay	0.00	2.00	105.0			0.00	1.00
Clay	2.00	3.00	100.0			0.00	3.50
Clay	5.00	5.00	100.0	1355.0		406.50	7.50
Clay	10.00	5.00	36.0	1198.0		359.40	12.50
Clay	15.00	5.00	36.0	1378.0		413.40	17.50
Clay	20.00	5.00	36.0	1558.0		467.40	22.50
Clay	25.00	0.85	36.0	1738.0		88.16	25.42
Clay	25.85	4.15	36.0	1738.0		-433.24	27.92
Clay	30.00	5.00	36.0	1917.0		-575.10	32.50
Clay	35.00	10.00	41.0	200.0		-120.00	40.00
Sand	45.00	2.00	41.0		3.255	-345.83	46.01

Shear and Moments Along Pier

Distance below Top of Pier (ft)	Shear (with Safety Factor) (kips)	Moment (with Safety Factor) (ft-k)	Shear (without Safety Factor) (kips)	Moment (without Safety Factor) (ft-k)
0.00	260.7	23964.6	38.1	3503.6
4.70	260.7	25189.8	38.1	3682.7
9.40	-97.0	25628.1	-14.2	3746.8
14.10	-440.5	24353.2	-64.4	3560.4
18.80	-819.4	21410.9	-119.8	3130.3
23.50	-1245.8	16580.4	-182.1	2424.0
28.20	-1228.6	10215.6	-179.6	1493.5
32.90	-707.4	5638.0	-103.4	824.3
37.60	-434.6	3235.5	-63.5	473.0
42.30	-378.2	1325.3	-55.3	193.8
47.00	-321.8	-319.8	-47.1	-46.8

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: CT11161D

JN of Albany_1
439 Homestead Avenue
Hartford, CT 06118

November 06, 2012

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

EBI Consulting
environmental | engineering | due diligence

November 06, 2012

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

Re: Emissions Values for Site CT11161D – JN of Albany_1

EBI Consulting was directed to analyze the proposed T-Mobile facility located at 439 Homestead Avenue, 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 μW/cm2 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 (μW/cm2). The general population exposure limit for the cellular band is 567 μW/cm2, and the general population exposure limit for the PCS band is 1000 μW/cm2. 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 439 Homestead Avenue, 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, the actual antenna pattern gain value in the direction of the sample area was used. For this report the sample point is 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 (1935.000 MHz—to 1945.000 MHz) were considered for each sector of the proposed installation.
2) 2 UMTS channels (2110.000 MHz to 2120.000 MHz / 2140.000 MHz to 2145.000 MHz) were considered for each sector of the proposed installation
3) 2 LTE channels (2110.000 MHz to 2120.000 MHz / 2140.000 MHz to 2145.000 MHz) were considered for each sector of the proposed installation
4) 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.
5) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The actual gain in this direction was used per the manufactures supplied specifications.
6) The antenna used in this modeling is the Ericsson AIR21 for LTE, UMTS and GSM. This is based on feedback from the carrier with regards to anticipated antenna selection. This antenna has a 15.6 dBd gain value at its main lobe. Actual antenna gain values were used for all calculations as per the manufacturers specifications

7) The antenna mounting height centerline of the proposed antennas is **126 feet** above ground level (AGL)
8) 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 calculation were done with respect to uncontrolled / general public threshold limits

Site ID	CT11161D - JN of Albany_1
Site Addresss	439 Homestead Avenue, Hartford, CT 06112
Site Type	Monopole

Sector 1

Antenna Number	Antenna Make	Antenna Model	Status	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
1a	Ericsson	AIR21 B4A/B2P	Active	AWS - 2100 MHz	LTE	60	2	120	-3.95	128	122	None	0	0	48.326044	1.16726	0.11673%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	128	122	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	128	122	1-5/8"	0	0	24.163022	0.58363	0.05836%
2B	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	128	122	1-5/8"	0	0	24.163022	0.58363	0.05836%
														Sector total Power Density Value:		0.233%	

Sector 2

Antenna Number	Antenna Make	Antenna Model	Status	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
1a	Ericsson	AIR21 B4A/B2P	Active	AWS - 2100 MHz	LTE	60	2	120	-3.95	128	122	None	0	0	48.326044	1.16726	0.11673%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	128	122	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	128	122	1-5/8"	0	0	24.163022	0.58363	0.05836%
2B	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	128	122	1-5/8"	0	0	24.163022	0.58363	0.05836%
														Sector total Power Density Value:		0.233%	

Sector 3

Antenna Number	Antenna Make	Antenna Model	Status	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBd)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
1a	Ericsson	AIR21 B4A/B2P	Active	AWS - 2100 MHz	LTE	60	2	120	-3.95	128	122	None	0	0	48.326044	1.16726	0.11673%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-			0	-3.95	128	122	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	128	122	1-5/8"	0	0	24.163022	0.58363	0.05836%
2B	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	128	122	1-5/8"	0	0	24.163022	0.58363	0.05836%
														Sector total Power Density Value:		0.233%	

Site Composite MPE %	
Carrier	MPE %
T-Mobile	0.700%
Sprint	22.270%
Clearwire	1.670%
Sensus (CL&P)	2.100%
Pocket	7.700%
Verizon Wireless	12.250%
AT&T	2.390%
Total Site MPE %	**49.080%**

Summary

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

The anticipated Maximum Composite contributions from the T-Mobile facility are **0.724% (0.241% from each sector)** of the allowable FCC established general public limit considering all three sectors simultaneously sampled at the ground level.

The anticipated composite MPE value for this site assuming all carriers present is **49.104%** 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