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April 3, 2015

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

Regarding:	Notice of Exempt Modification – Addition of 3 radio heads previously approved
Property Address:	439-455 Homestead Avenue, Hartford CT")
Applicant:	AT&T Mobility ("AT&T")

Dear Ms. Bachman:

AT&T currently maintains a wireless telecommunications facility on an existing 140' foot self-Monopole ("tower") location on the Property. AT&T's facility consists of nine (9) wireless telecommunications antennas at 117 feet. The tower is controlled by Crown Castle. The Council approved the previous application on May 1, 2012, reference number EM-CING-064-120413. This application (attached) granted AT&T the use of 6 radio heads at this location. The approval expired one year from the issue date. During that time AT&T made the changes to the site per the approval but only installed three (3) of the six (6) radio heads that they received approval. AT&T would now like to install the additional three (3) radio heads that were originally approved under EM-CING-064-120413.

Please accept this application as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72 (b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to the Mayor, and the Town Planner for the City of Hartford. A copy of this letter is also being sent to Crown Castle, the owner of the structure that AT&T is located.

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

1. The planned modifications will not result in an increase in the height of the existing structure. AT&T's additional, previously approved 3 radio heads will be installed at 117 foot level of the 140 foot monopole.
2. The proposed modifications will not involve any changes to ground-mounted equipment and, therefore will not require an extension of the site boundary.
3. The proposed modification will not increase the noise level at the facility by six decibel or more, or to levels that exceed state and local criteria.
4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety

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standard. An RF emissions calculation (attached) for AT&T's modified facility was provided in the application which led to the May 1, 2012 Decision.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The tower and its foundation can support AT&T's proposed modifications. (Please see attached Structural analysis completed by Crown Castle March 20, 2012 and December 21, 2012).

For the foregoing reasons AT&T respectfully requests that the proposed addition of 3 radio heads previously approved be allowed within the exempt modifications under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

David P. Cooper
Director of Site Acquisition
Empire Telecom

CC: Pedro E. Segarra, Mayor, for the City of Hartford
David B. Panagore, Chief Operating Officer, City of Hartford
Roger J. O'Brien, Director of Planning, City of Hartford
Talar Properties LLC (underlying property owner)
Crown Castle

16 Esquire Road, Billerica, MA 01862 Mobile 617-639-4908 Email: Dcooper@empiretelecomm.com

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Date: **December 21, 2012**

Eva Morales
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:	***Verizon Wireless* Co-Locate**	
	Carrier Site Number:	N/A
	Carrier Site Name:	Hartford NW, CT
Crown Castle Designation:	**Crown Castle BU Number:**	806369
	Crown Castle Site Name:	HRT 094 943225
	Crown Castle JDE Job Number:	214506
	Crown Castle Work Order Number:	561543
	Crown Castle Application Number:	172925 Rev. 3
Engineering Firm Designation:	**Crown Castle Project Number:**	561543
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 Eva Morales,

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 561543, in accordance with application 172925, 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.

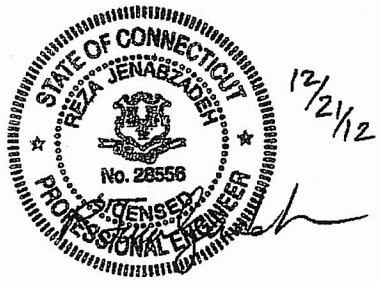
The analysis has been performed in accordance with the TIA/EIA-222-F standard and 2005 CT State Building Code based upon a wind speed of 80 mph fastest mile.

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: Drew Stephens /IS
Respectfully submitted by:

Reza Jenabzadeh, P.E.
Engineer II



12/21/12

tnxTower Report - version 6.0.4.0

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
142.0	142.0	3	amphenol	BXA-80063-4BF-EDIN-X w/ Mount Pipe	13	1-5/8	-
		3	antel	BXA-171063-8BF-EDIN-2 w/ Mount Pipe			
		3	antel	BXA-171063/8CF-EDIN-2 w/ Mount Pipe			
	140.0	3	alcatel lucent	RRH2x40-AWS			
		1	rfs celwave	DB-T1-6Z-8AB-0Z			

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
142.0	142.0	3	antel	BXA-185090/8CF w/ Mount Pipe	12	7/8	3
		6	antel	LPA-80080/4CF w/ Mount Pipe			
		3	antel	BXA-70063/6CF w/ Mount Pipe	-	-	1
		6	rfs celwave	FD9R6004/1C-3L			
		1	tower mounts	Platform Mount (LP 101-1)			
126.0	128.0	3	ericsson	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	1	1-5/8	2
		3	ericsson	ERICSSON AIR 21 B4A B2P w/ Mount Pipe			
		3	rfs celwave	ATMAA1412D-1A20			
	126.0	1	tower mounts	Platform Mount [LP 1001-1]	12	1-5/8	1
115.0	117.0	6	ericsson	RRUS-11	12 2 1	1-5/8 3/4 3/8	1
		1	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe			
		2	powerwave technologies	P65-17-XLH-RR w/ Mount Pipe			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
	116.0	6	powerwave technologies	7770.00 w/ Mount Pipe			
		12	powerwave technologies	LGP21401			
		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	1/2	1
		1	andrew	VHLP2.5-11			
		2	dragonwave	HORIZON COMPACT			
	104.0	1	powerwave technologies	P40-16-XLPP-RR-A w/ Mount Pipe	3	1-1/4	2
		2	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe			
		3	rfs celwave	IBC1900BB-1			
		3	rfs celwave	IBC1900HG-2A			
		3	argus technologies	LLPX310R-V1 w/ Mount Pipe	3	1/4	1
		3	samsung telecommunications	WIMAX DAP HEAD	3	5/16	
	102.0	1	tower mounts	Platform Mount [LP 602-1]			
100.0	100.0	3	alcatel lucent	800MHz 2X50W RRH W/FILTER	-	-	2
		6	alcatel lucent	PCS 1900MHz 4x45W-65MHz			
		1	tower mounts	Collar Mount [SO 102-3]			
94.0	94.0	3	kathrein	742 213	6	1-5/8	1
		1	tower mounts	Pipe Mount [PM 602-3]			
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 This 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	-17.80	1962.96	44.9	Pass
L2	86.8333 - 38	Pole	TP50.56x37.2117x0.4063	2	-30.79	3294.14	63.4	Pass
L3	38 - 0	Pole	TP59.05x48.033x0.5	3	-48.81	4900.57	63.7	Pass
							Summary	
						Pole (L3)	63.7	Pass
						Rating =	63.7	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	68.1	Pass
1	Base Plate	0	31.8	Pass
1	Base Foundation	0	48.6	Pass

Structure Rating (max from all components) =	68.1%

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

4.1) Recommendations

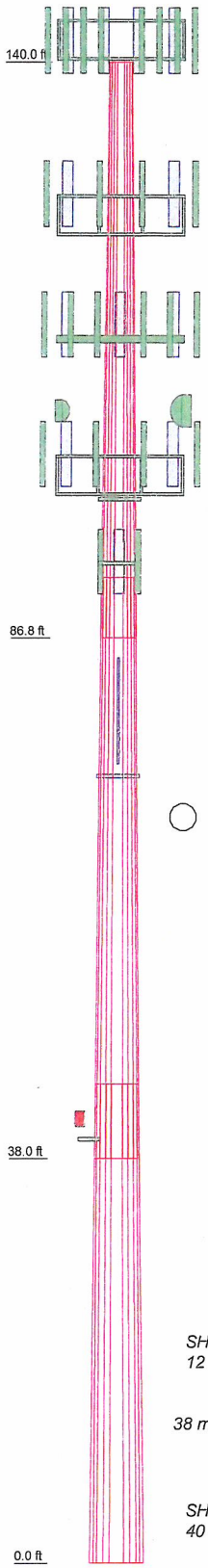
The tower and its foundation have sufficient capacity to carry the existing, reserved, and proposed loads. No modifications are required at this time.

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
Socket 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



AXIAL
78 K

SHEAR
12 K

MOM
1113

TORQUE 1 kip-ft
38 mph WIND - 1.0000 in ICE

AXIAL
49 K

SHEAR
40 K

MOMENT
3664 kip-ft

TORQUE 1 kip-ft
REACTIONS - 80 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
BXA-70063/6CF w/ Mount Pipe	142	AM-X-CD-16-65-00T-RET w/ Mount Pipe	115
BXA-70063/6CF w/ Mount Pipe	142	P65-17-XLH-RR w/ Mount Pipe	115
BXA-70063/6CF w/ Mount Pipe	142	(2) RRUS-11	115
(2) FD9R6004/1C-3L	142	(2) RRUS-11	115
(2) FD9R6004/1C-3L	142	(2) RRUS-11	115
(2) FD9R6004/1C-3L	142	(4) LGP21401	115
BXA-80063-4BF-EDIN-X w/ Mount Pipe	142	(4) LGP21401	115
BXA-80063-4BF-EDIN-X w/ Mount Pipe	142	(4) LGP21401	115
BXA-80063-4BF-EDIN-X w/ Mount Pipe	142	DC6-48-60-18-8F	115
BXA-171063-8BF-EDIN-2 w/ Mount Pipe	142	8'x2" Antenna Mount Pipe	115
BXA-171063-8BF-EDIN-2 w/ Mount Pipe	142	8'x2" Antenna Mount Pipe	115
BXA-171063-8BF-EDIN-2 w/ Mount Pipe	142	8'x2" Antenna Mount Pipe	115
BXA-171063/8CF-EDIN-2 w/ Mount Pipe	142	Platform Mount [LP 712-1]	115
BXA-171063/8CF-EDIN-2 w/ Mount Pipe	142	APXVSPP18-C-A20 w/ Mount Pipe	102
BXA-171063/8CF-EDIN-2 w/ Mount Pipe	142	P40-16-XLPP-RR-A w/ Mount Pipe	102
RRH2x40-AWS	142	APXVSPP18-C-A20 w/ Mount Pipe	102
RRH2x40-AWS	142	IBC1900BB-1	102
RRH2x40-AWS	142	IBC1900BB-1	102
DB-T1-6Z-8AB-0Z	142	IBC1900BB-1	102
Platform Mount (LP 101-1)	142	IBC1900HG-2A	102
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	126	IBC1900HG-2A	102
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	126	IBC1900HG-2A	102
ERICSSON AIR 21 B2A B4P w/ Mount Pipe	126	LLPX310R-V1 w/ Mount Pipe	102
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	126	LLPX310R-V1 w/ Mount Pipe	102
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	126	LLPX310R-V1 w/ Mount Pipe	102
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	126	WIMAX DAP HEAD	102
ATMAA1412D-1A20	126	WIMAX DAP HEAD	102
ATMAA1412D-1A20	126	WIMAX DAP HEAD	102
ATMAA1412D-1A20	126	HORIZON COMPACT	102
(2) 5' x 2" Pipe Mount	126	HORIZON COMPACT	102
(2) 5' x 2" Pipe Mount	126	(2) 5' x 2" Pipe Mount	102
(2) 5' x 2" Pipe Mount	126	(2) 5' x 2" Pipe Mount	102
Platform Mount [LP 1001-1]	126	(2) 5' x 2" Pipe Mount	102
(2) 7770.00 w/ Mount Pipe	115	Platform Mount [LP 602-1]	102
(2) 7770.00 w/ Mount Pipe	115	VHLP2.5-11	102
(2) 7770.00 w/ Mount Pipe	115	VHLP2-180	102
P65-17-XLH-RR w/ Mount Pipe	115	800MHz 2X50W RRH W/FILTER	100
		(2) PCS 1900MHz 4x45W-65MHz	100
		(2) PCS 1900MHz 4x45W-65MHz	100
		(2) PCS 1900MHz 4x45W-65MHz	100
		Collar Mount [SO 102-3]	100
		800MHz 2X50W RRH W/FILTER	100
		800MHz 2X50W RRH W/FILTER	100
		742 213	94
		Pipe Mount [PM 602-3]	94
		742 213	94
		742 213	94
		BCD-87010	74
		Side Arm Mount [SO 701-1]	74
		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: 63.7%

CROWN CASTLE
We Are Solutions

Crown Castle
2000 Corporate Drive
Canonsburg, PA 15317
Phone: (724) 416 2000
FAX:

Job: **BU# 806369**			
Project:			
Client: Crown Castle	Drawn by: DStephens	App'd:	
Code: TIA/EIA-222-F	Date: 12/19/12	Scale: NTS	
Path: R:\SA Models - Letters\Work Area\DStephens\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/t
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	22069.8048	17.0168	24.8811	887.0104	44719.4079	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 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")	B	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
LDF7-50A(1-5/8")	B	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
HB158-1-08U8-S8J18(1-5/8)	B	No	CaAa (Out Of Face)	140' - 0'	0.0000	0	1	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
***										
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
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
***										
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
								2" 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
								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
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
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
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
HB114-1-08U4-M5J(1 1/4")	A	No	CaAa (Out Of Face)	102' - 0'	0.0000	0	1	No Ice	0.15	0.00
								1/2" Ice	0.25	0.00
								1" Ice	0.35	0.00
								2" Ice	0.55	0.01
								4" Ice	0.95	0.03
HB114-1-08U4-M5J(1 1/4")	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	0.03
***										
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	0.00	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
***										
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

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	0.78	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	14.767	0.36
		B	0.000	0.000	0.000	13.408	1.60
		C	0.000	0.000	0.000	3.333	0.35
L2	86'9-31/32"-38'	A	0.000	0.000	0.000	34.989	0.74
		B	0.000	0.000	0.000	29.300	1.66
		C	0.000	0.000	0.000	0.000	0.54
L3	38'-0'	A	0.000	0.000	0.000	27.227	0.57
		B	0.000	0.000	0.000	22.800	1.30
		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	34.376	1.16
		B		0.000	0.000	0.000	29.042	2.05
		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	80.230	3.01
		B		0.000	0.000	0.000	63.231	3.37
		C		0.000	0.000	0.000	0.000	0.54
L3	38'-0'	A	1.000	0.000	0.000	0.000	60.017	2.12
		B		0.000	0.000	0.000	47.393	2.51
		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"	0.2104	-0.1769	0.3794	-0.3605
L2	86'9-31/32"-38'	0.5755	-0.4613	0.9128	-0.8104
L3	38'-0'	0.6040	-0.4842	0.9741	-0.8620

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' / 0'	0.0000	142'	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
							10.47	9.50	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	B	From Leg	4.00 0' 0'	0.0000	142'	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
BXA-70063/6CF w/ Mount Pipe	C	From Leg	4.00 0' 0'	0.0000	142'	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' 0'	0.0000	142'	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' 0'	0.0000	142'	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' 0'	0.0000	142'	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-80063-4BF-EDIN-X w/ Mount Pipe	A	From Leg	4.00 0' 0'	0.0000	142'	No Ice	5.09	3.47	0.03
						1/2" Ice	5.52	4.04	0.07
						1" Ice	5.95	4.64	0.11
						2" Ice	6.86	5.96	0.23
						4" Ice	8.82	8.89	0.55
BXA-80063-4BF-EDIN-X w/ Mount Pipe	B	From Leg	4.00 0' 0'	0.0000	142'	No Ice	5.09	3.47	0.03
						1/2" Ice	5.52	4.04	0.07
						1" Ice	5.95	4.64	0.11
						2" Ice	6.86	5.96	0.23
						4" Ice	8.82	8.89	0.55
BXA-80063-4BF-EDIN-X w/ Mount Pipe	C	From Leg	4.00 0' 0'	0.0000	142'	No Ice	5.09	3.47	0.03
						1/2" Ice	5.52	4.04	0.07
						1" Ice	5.95	4.64	0.11
						2" Ice	6.86	5.96	0.23
						4" Ice	8.82	8.89	0.55
BXA-171063-8BF-EDIN-2 w/ Mount Pipe	A	From Leg	4.00 0' 0'	0.0000	142'	No Ice	3.18	3.35	0.03
						1/2" Ice	3.56	3.97	0.06
						1" Ice	3.96	4.60	0.10
						2" Ice	4.85	5.89	0.19
						4" Ice	6.77	8.89	0.49
BXA-171063-8BF-EDIN-2 w/ Mount Pipe	B	From Leg	4.00 0' 0'	0.0000	142'	No Ice	3.18	3.35	0.03
						1/2" Ice	3.56	3.97	0.06
						1" Ice	3.96	4.60	0.10
						2" Ice	4.85	5.89	0.19
						4" Ice	6.77	8.89	0.49
BXA-171063-8BF-EDIN-2 w/ Mount Pipe	C	From Leg	4.00 0' 0'	0.0000	142'	No Ice	3.18	3.35	0.03
						1/2" Ice	3.56	3.97	0.06
						1" Ice	3.96	4.60	0.10

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	4.85	5.89	0.19
						2" Ice	6.77	8.89	0.49
						4" Ice			
BXA-171063/8CF-EDIN-2 w/ Mount Pipe	A	From Leg	4.00 0' 0'	0.0000	142'	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-171063/8CF-EDIN-2 w/ Mount Pipe	B	From Leg	4.00 0' 0'	0.0000	142'	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-171063/8CF-EDIN-2 w/ Mount Pipe	C	From Leg	4.00 0' 0'	0.0000	142'	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
RRH2x40-AWS	A	From Leg	4.00 0' -2'	0.0000	142'	No Ice	2.52	1.59	0.04
						1/2" Ice	2.75	1.80	0.06
						1" Ice	2.99	2.01	0.08
						2" Ice	3.50	2.46	0.13
						4" Ice	4.61	3.48	0.28
RRH2x40-AWS	B	From Leg	4.00 0' -2'	0.0000	142'	No Ice	2.52	1.59	0.04
						1/2" Ice	2.75	1.80	0.06
						1" Ice	2.99	2.01	0.08
						2" Ice	3.50	2.46	0.13
						4" Ice	4.61	3.48	0.28
RRH2x40-AWS	C	From Leg	4.00 0' -2'	0.0000	142'	No Ice	2.52	1.59	0.04
						1/2" Ice	2.75	1.80	0.06
						1" Ice	2.99	2.01	0.08
						2" Ice	3.50	2.46	0.13
						4" Ice	4.61	3.48	0.28
DB-T1-6Z-8AB-0Z	A	From Leg	4.00 0' -2'	0.0000	142'	No Ice	5.60	2.33	0.04
						1/2" Ice	5.92	2.56	0.08
						1" Ice	6.24	2.79	0.12
						2" Ice	6.91	3.28	0.21
						4" Ice	8.37	4.37	0.45
Platform Mount (LP 101-1)	C	None		0.0000	142'	No Ice	36.21	36.21	1.50
						1/2" Ice	42.82	42.82	2.30
						1" Ice	49.43	49.43	3.10
						2" Ice	62.65	62.65	4.70
						4" Ice	89.09	89.09	7.89
***									
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	C	From Leg	4.00	0.0000	126'	No Ice	6.83	5.64	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
B4P w/ Mount Pipe			0' 2'			1/2" Ice	7.35 7.86	6.48 7.26	0.17 0.23
						1" Ice	8.93	8.86	0.38
						2" Ice	11.18	12.29	0.81
						4" Ice			
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	A	From Leg	4.00 0' 2'	0.0000	126'	No Ice 1/2" Ice	6.83 7.35 7.86	5.64 6.48 7.26	0.11 0.17 0.23
						1" Ice	8.93	8.86	0.38
						2" Ice	11.18	12.29	0.81
						4" Ice			
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	B	From Leg	4.00 0' 2'	0.0000	126'	No Ice 1/2" Ice	6.83 7.35 7.86	5.64 6.48 7.26	0.11 0.17 0.23
						1" Ice	8.93	8.86	0.38
						2" Ice	11.18	12.29	0.81
						4" Ice			
ERICSSON AIR 21 B4A B2P w/ Mount Pipe	C	From Leg	4.00 0' 2'	0.0000	126'	No Ice 1/2" Ice	6.83 7.35 7.86	5.64 6.48 7.26	0.11 0.17 0.23
						1" Ice	8.93	8.86	0.38
						2" Ice	11.18	12.29	0.81
						4" Ice			
ATMAA1412D-1A20	A	From Leg	4.00 0' 2'	0.0000	126'	No Ice 1/2" Ice	0.47 0.57 0.69	1.17 1.31 1.47	0.01 0.02 0.03
						1" Ice	0.95	1.81	0.06
						2" Ice	1.57	2.58	0.14
						4" Ice			
ATMAA1412D-1A20	B	From Leg	4.00 0' 2'	0.0000	126'	No Ice 1/2" Ice	0.47 0.57 0.69	1.17 1.31 1.47	0.01 0.02 0.03
						1" Ice	0.95	1.81	0.06
						2" Ice	1.57	2.58	0.14
						4" Ice			
ATMAA1412D-1A20	C	From Leg	4.00 0' 2'	0.0000	126'	No Ice 1/2" Ice	0.47 0.57 0.69	1.17 1.31 1.47	0.01 0.02 0.03
						1" Ice	0.95	1.81	0.06
						2" Ice	1.57	2.58	0.14
						4" Ice			
(2) 5' x 2" Pipe Mount	A	From Leg	4.00 0' 0'	0.0000	126'	No Ice 1/2" Ice	1.00 1.39 1.70	1.00 1.39 1.70	0.03 0.04 0.05
						1" Ice	2.35	2.35	0.08
						2" Ice	3.78	3.78	0.20
						4" Ice			
(2) 5' x 2" Pipe Mount	B	From Leg	4.00 0' 0'	0.0000	126'	No Ice 1/2" Ice	1.00 1.39 1.70	1.00 1.39 1.70	0.03 0.04 0.05
						1" Ice	2.35	2.35	0.08
						2" Ice	3.78	3.78	0.20
						4" Ice			
(2) 5' x 2" Pipe Mount	C	From Leg	4.00 0' 0'	0.0000	126'	No Ice 1/2" Ice	1.00 1.39 1.70	1.00 1.39 1.70	0.03 0.04 0.05
						1" Ice	2.35	2.35	0.08
						2" Ice	3.78	3.78	0.20
						4" Ice			
Platform Mount [LP 1001-1]	C	None		0.0000	126'	No Ice 1/2" Ice	47.70 59.50 71.30	47.70 59.50 71.30	3.02 3.62 4.22
						1" Ice	94.90	94.90	5.43
						2" Ice	142.10	142.10	7.85
						4" Ice			

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) 7770.00 w/ Mount Pipe	A	From Leg	4.00 0' 1'	0.0000	115'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.12 6.63 7.13 8.16 10.36	4.25 5.01 5.71 7.16 10.41	0.06 0.10 0.16 0.29 0.66
(2) 7770.00 w/ Mount Pipe	B	From Leg	4.00 0' 1'	0.0000	115'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.12 6.63 7.13 8.16 10.36	4.25 5.01 5.71 7.16 10.41	0.06 0.10 0.16 0.29 0.66
(2) 7770.00 w/ Mount Pipe	C	From Leg	4.00 0' 1'	0.0000	115'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.12 6.63 7.13 8.16 10.36	4.25 5.01 5.71 7.16 10.41	0.06 0.10 0.16 0.29 0.66
P65-17-XLH-RR w/ Mount Pipe	A	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
AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Leg	4.00 0' 2'	0.0000	115'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.50 9.15 9.77 11.03 13.68	6.30 7.48 8.37 10.18 14.02	0.07 0.14 0.21 0.38 0.87
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
(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
(4) LGP21401	A	From Leg	4.00 0' 1'	0.0000	115'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.29 1.45 1.61 1.97 2.79	0.23 0.31 0.40 0.61 1.12	0.01 0.02 0.03 0.05 0.14
(4) LGP21401	B	From Leg	4.00 0' 1'	0.0000	115'	No Ice 1/2" Ice 1" Ice	1.29 1.45 1.61 1.97	0.23 0.31 0.40 0.61	0.01 0.02 0.03 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
						2" Ice	2.79	1.12	0.14
						4" Ice			
(4) LGP21401	C	From Leg	4.00 0' 1'	0.0000	115'	No Ice	1.29	0.23	0.01
						1/2" Ice	1.45	0.31	0.02
						1" Ice	1.61	0.40	0.03
						2" Ice	1.97	0.61	0.05
						4" Ice	2.79	1.12	0.14
DC6-48-60-18-8F	A	From Leg	4.00 0' 1'	0.0000	115'	No Ice	1.27	1.27	0.02
						1/2" Ice	1.46	1.46	0.04
						1" Ice	1.66	1.66	0.05
						2" Ice	2.09	2.09	0.10
						4" Ice	3.10	3.10	0.21
8'x2" Antenna Mount Pipe	A	From Leg	4.00 0' 0'	0.0000	115'	No Ice	1.90	1.90	0.03
						1/2" Ice	2.73	2.73	0.04
						1" Ice	3.40	3.40	0.06
						2" Ice	4.40	4.40	0.12
						4" Ice	6.50	6.50	0.30
8'x2" Antenna Mount Pipe	B	From Leg	4.00 0' 0'	0.0000	115'	No Ice	1.90	1.90	0.03
						1/2" Ice	2.73	2.73	0.04
						1" Ice	3.40	3.40	0.06
						2" Ice	4.40	4.40	0.12
						4" Ice	6.50	6.50	0.30
8'x2" Antenna Mount Pipe	C	From Leg	4.00 0' 0'	0.0000	115'	No Ice	1.90	1.90	0.03
						1/2" Ice	2.73	2.73	0.04
						1" Ice	3.40	3.40	0.06
						2" Ice	4.40	4.40	0.12
						4" Ice	6.50	6.50	0.30
Platform Mount [LP 712-1]	C	None		0.0000	115'	No Ice	24.53	24.53	1.34
						1/2" Ice	29.94	29.94	1.65
						1" Ice	35.35	35.35	1.96
						2" Ice	46.17	46.17	2.58
						4" Ice	67.81	67.81	3.82
***									
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.00 0' 2'	0.0000	102'	No Ice	8.50	6.95	0.08
						1/2" Ice	9.15	8.13	0.15
						1" Ice	9.77	9.02	0.22
						2" Ice	11.03	10.84	0.41
						4" Ice	13.68	14.85	0.91
P40-16-XLPP-RR-A w/ Mount Pipe	B	From Leg	4.00 0' 2'	0.0000	102'	No Ice	10.74	4.83	0.07
						1/2" Ice	11.29	5.57	0.14
						1" Ice	11.85	6.27	0.21
						2" Ice	12.99	7.80	0.39
						4" Ice	15.39	11.11	0.86
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.00 0' 2'	0.0000	102'	No Ice	8.50	6.95	0.08
						1/2" Ice	9.15	8.13	0.15
						1" Ice	9.77	9.02	0.22
						2" Ice	11.03	10.84	0.41
						4" Ice	13.68	14.85	0.91
IBC1900BB-1	A	From Leg	4.00 0' 2'	0.0000	102'	No Ice	1.13	0.53	0.02
						1/2" Ice	1.27	0.65	0.03
						1" Ice	1.43	0.77	0.04
						2" Ice	1.76	1.04	0.06
						4" Ice	2.53	1.69	0.15
IBC1900BB-1	B	From Leg	4.00 0'	0.0000	102'	No Ice	1.13	0.53	0.02
						1/2" Ice	1.27	0.65	0.03

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	1.43	0.77	0.04
						1" Ice	1.76	1.04	0.06
						2" Ice	2.53	1.69	0.15
						4" Ice			
IBC1900BB-1	C	From Leg	4.00	0.0000	102'	No Ice	1.13	0.53	0.02
			0'			1/2"	1.27	0.65	0.03
			2'			Ice	1.43	0.77	0.04
						1" Ice	1.76	1.04	0.06
						2" Ice	2.53	1.69	0.15
						4" Ice			
IBC1900HG-2A	A	From Leg	4.00	0.0000	102'	No Ice	1.13	0.53	0.02
			0'			1/2"	1.27	0.65	0.03
			2'			Ice	1.43	0.77	0.04
						1" Ice	1.76	1.04	0.06
						2" Ice	2.53	1.69	0.15
						4" Ice			
IBC1900HG-2A	B	From Leg	4.00	0.0000	102'	No Ice	1.13	0.53	0.02
			0'			1/2"	1.27	0.65	0.03
			2'			Ice	1.43	0.77	0.04
						1" Ice	1.76	1.04	0.06
						2" Ice	2.53	1.69	0.15
						4" Ice			
IBC1900HG-2A	C	From Leg	4.00	0.0000	102'	No Ice	1.13	0.53	0.02
			0'			1/2"	1.27	0.65	0.03
			2'			Ice	1.43	0.77	0.04
						1" Ice	1.76	1.04	0.06
						2" Ice	2.53	1.69	0.15
						4" Ice			
*									
LLPX310R-V1 w/ Mount Pipe	A	From Leg	4.00	0.0000	102'	No Ice	5.07	2.98	0.05
			0'			1/2"	5.48	3.53	0.08
			2'			Ice	5.91	4.09	0.13
						1" Ice	6.79	5.31	0.23
						2" Ice	8.70	8.13	0.54
						4" Ice			
LLPX310R-V1 w/ Mount Pipe	B	From Leg	4.00	0.0000	102'	No Ice	5.07	2.98	0.05
			0'			1/2"	5.48	3.53	0.08
			2'			Ice	5.91	4.09	0.13
						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	0.0000	102'	No Ice	5.07	2.98	0.05
			0'			1/2"	5.48	3.53	0.08
			2'			Ice	5.91	4.09	0.13
						1" Ice	6.79	5.31	0.23
						2" Ice	8.70	8.13	0.54
						4" Ice			
WIMAX DAP HEAD	A	From Leg	4.00	0.0000	102'	No Ice	1.80	0.78	0.03
			0'			1/2"	1.99	0.92	0.04
			2'			Ice	2.18	1.07	0.06
						1" Ice	2.59	1.39	0.09
						2" Ice	3.51	2.14	0.20
						4" Ice			
WIMAX DAP HEAD	B	From Leg	4.00	0.0000	102'	No Ice	1.80	0.78	0.03
			0'			1/2"	1.99	0.92	0.04
			2'			Ice	2.18	1.07	0.06
						1" Ice	2.59	1.39	0.09
						2" Ice	3.51	2.14	0.20
						4" Ice			
WIMAX DAP HEAD	C	From Leg	4.00	0.0000	102'	No Ice	1.80	0.78	0.03
			0'			1/2"	1.99	0.92	0.04
			2'			Ice	2.18	1.07	0.06
						1" Ice	2.59	1.39	0.09
						2" Ice	3.51	2.14	0.20
						4" Ice			

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
HORIZON COMPACT	B	From Leg	4.00 0' 6'	0.0000	102'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.84 0.97 1.10 1.39 2.08	0.43 0.52 0.63 0.86 1.43	0.01 0.02 0.03 0.05 0.12
HORIZON COMPACT	C	From Leg	4.00 0' 6'	0.0000	102'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.84 0.97 1.10 1.39 2.08	0.43 0.52 0.63 0.86 1.43	0.01 0.02 0.03 0.05 0.12
(2) 5' x 2" Pipe Mount	A	From Leg	4.00 0' 2'	0.0000	102'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.00 1.39 1.70 2.35 3.78	1.00 1.39 1.70 2.35 3.78	0.03 0.04 0.05 0.08 0.20
(2) 5' x 2" Pipe Mount	B	From Leg	4.00 0' 2'	0.0000	102'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.00 1.39 1.70 2.35 3.78	1.00 1.39 1.70 2.35 3.78	0.03 0.04 0.05 0.08 0.20
(2) 5' x 2" Pipe Mount	C	From Leg	4.00 0' 2'	0.0000	102'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.00 1.39 1.70 2.35 3.78	1.00 1.39 1.70 2.35 3.78	0.03 0.04 0.05 0.08 0.20
Platform Mount [LP 602-1]	C	None		0.0000	102'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	32.03 38.71 45.39 58.75 85.47	32.03 38.71 45.39 58.75 85.47	1.34 1.80 2.26 3.17 5.00
***									
800MHz 2X50W RRH W/FILTER	A	From Leg	2.00 0' 0'	0.0000	100'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.40 2.61 2.83 3.30 4.34	2.25 2.46 2.68 3.13 4.15	0.06 0.09 0.11 0.17 0.34
800MHz 2X50W RRH W/FILTER	B	From Leg	2.00 0' 0'	0.0000	100'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.40 2.61 2.83 3.30 4.34	2.25 2.46 2.68 3.13 4.15	0.06 0.09 0.11 0.17 0.34
800MHz 2X50W RRH W/FILTER	C	From Leg	2.00 0' 0'	0.0000	100'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.40 2.61 2.83 3.30 4.34	2.25 2.46 2.68 3.13 4.15	0.06 0.09 0.11 0.17 0.34
(2) PCS 1900MHz 4x45W-65MHz	A	From Leg	2.00 0' 0'	0.0000	100'	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.71 2.95 3.20 3.72 4.86	2.61 2.85 3.09 3.61 4.74	0.06 0.08 0.11 0.17 0.35
(2) PCS 1900MHz 4x45W-65MHz	B	From Leg	2.00 0' 0'	0.0000	100'	No Ice 1/2" Ice 1" Ice	2.71 2.95 3.20 3.72	2.61 2.85 3.09 3.61	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
						2" Ice	4.86	4.74	0.35
						4" Ice			
(2) PCS 1900MHz 4x45W-65MHz	C	From Leg	2.00 0' 0'	0.0000	100'	No Ice	2.71	2.61	0.06
						1/2" Ice	2.95	2.85	0.08
						1" Ice	3.20	3.09	0.11
						2" Ice	3.72	3.61	0.17
						4" Ice	4.86	4.74	0.35
Collar Mount [SO 102-3]	C	None		0.0000	100'	No Ice	3.00	3.00	0.08
						1/2" Ice	3.48	3.48	0.11
						1" Ice	3.96	3.96	0.14
						2" Ice	4.92	4.92	0.20
						4" Ice	6.84	6.84	0.32
***									
742 213	A	From Leg	0.50 0' 0'	0.0000	94'	No Ice	5.14	2.87	0.02
						1/2" Ice	5.61	3.48	0.05
						1" Ice	6.09	3.95	0.08
						2" Ice	7.07	4.89	0.16
						4" Ice	9.13	6.88	0.39
742 213	B	From Leg	0.50 0' 0'	0.0000	94'	No Ice	5.14	2.87	0.02
						1/2" Ice	5.61	3.48	0.05
						1" Ice	6.09	3.95	0.08
						2" Ice	7.07	4.89	0.16
						4" Ice	9.13	6.88	0.39
742 213	C	From Leg	0.50 0' 0'	0.0000	94'	No Ice	5.14	2.87	0.02
						1/2" Ice	5.61	3.48	0.05
						1" Ice	6.09	3.95	0.08
						2" Ice	7.07	4.89	0.16
						4" Ice	9.13	6.88	0.39
Pipe Mount [PM 602-3]	C	None		0.0000	94'	No Ice	7.68	7.68	0.28
						1/2" Ice	9.50	9.50	0.35
						1" Ice	11.32	11.32	0.43
						2" Ice	14.96	14.96	0.58
						4" Ice	22.24	22.24	0.87
***									
BCD-87010	A	From Leg	2.00 0' 6'	0.0000	74'	No Ice	2.90	2.90	0.03
						1/2" Ice	4.05	4.05	0.05
						1" Ice	5.21	5.21	0.08
						2" Ice	7.01	7.01	0.16
						4" Ice	9.85	9.85	0.41
Side Arm Mount [SO 701-1]	A	From Leg	1.00 0' 0'	0.0000	74'	No Ice	0.85	1.67	0.07
						1/2" Ice	1.14	2.34	0.08
						1" Ice	1.43	3.01	0.09
						2" Ice	2.01	4.35	0.12
						4" Ice	3.17	7.03	0.18
***									
KS24019-L112A	C	From Leg	2.00 0' 1'	0.0000	40'	No Ice	0.10	0.10	0.01
						1/2" Ice	0.18	0.18	0.01
						1" Ice	0.26	0.26	0.01
						2" Ice	0.42	0.42	0.01
						4" Ice	0.74	0.74	0.02
Side Arm Mount [SO 701-1]	C	From Leg	1.00 0' 0'	0.0000	40'	No Ice	0.85	1.67	0.07
						1/2" Ice	1.14	2.34	0.08
						1" Ice	1.43	3.01	0.09
						2" Ice	2.01	4.35	0.12
						4" Ice	3.17	7.03	0.18

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 ft²	Weight K
VHLP2.5-11	B	Paraboloid w/Shroud (HP)	From Leg	4.00 0' 6'	-20.0000		102'	2.92	No Ice	6.68	0.03
									1/2" Ice	7.07	0.04
									1" Ice	7.46	0.05
									2" Ice	8.23	0.07
									4" Ice	9.78	0.11
VHLP2-180	C	Paraboloid w/Shroud (HP)	From Leg	4.00 0' 6'	10.0000		102'	2.00	No Ice	3.14	0.03
									1/2" Ice	3.41	0.04
									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
			Max. Compression	14	-34.40	-0.15	1.83
			Max. Mx	11	-17.80	655.85	1.12
			Max. My	2	-17.81	0.47	658.56
			Max. Vy	11	-24.88	655.85	1.12
			Max. Vx	8	24.73	-0.91	-657.99
			Max. Torque	4			1.18
L2	86.8333 - 38	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-53.85	-3.00	5.47
			Max. Mx	11	-30.79	2024.73	5.51
			Max. My	2	-30.80	2.47	2020.62
			Max. Vy	11	-32.77	2024.73	5.51
			Max. Vx	8	32.60	-5.37	-2018.60
			Max. Torque	5			1.24
L3	38 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-78.17	-6.00	8.60
			Max. Mx	11	-48.81	3657.74	9.83
			Max. My	2	-48.81	4.81	3646.88
			Max. Vy	11	-39.76	3657.74	9.83
			Max. Vx	8	39.60	-9.91	-3643.92
			Max. Torque	5			1.46

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	17	78.17	-10.16	5.82
	Max. H_x	11	48.83	39.73	0.08
	Max. H_z	2	48.83	0.06	39.57
	Max. M_x	2	3646.88	0.06	39.57
	Max. M_z	5	3655.17	-39.70	-0.06
	Max. Torsion	5	1.46	-39.70	-0.06
	Min. Vert	1	48.83	0.00	0.00
	Min. H_x	5	48.83	-39.70	-0.06
	Min. H_z	8	48.83	-0.09	-39.57
	Min. M_x	8	-3643.92	-0.09	-39.57
	Min. M_z	11	-3657.74	39.73	0.08
	Min. Torsion	11	-1.39	39.73	0.08

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	48.83	0.00	0.00	-1.93	-0.63	0.00
Dead+Wind 0 deg - No Ice	48.83	-0.06	-39.57	-3646.88	4.81	0.28
Dead+Wind 30 deg - No Ice	48.83	19.86	-34.21	-3152.98	-1830.46	-0.31
Dead+Wind 60 deg - No Ice	48.83	34.38	-19.68	-1813.88	-3165.93	-1.21
Dead+Wind 90 deg - No Ice	48.83	39.70	0.06	3.64	-3655.17	-1.46
Dead+Wind 120 deg - No Ice	48.83	34.44	19.80	1820.92	-3171.71	-1.38
Dead+Wind 150 deg - No Ice	48.83	19.97	34.26	3153.98	-1840.13	-0.65
Dead+Wind 180 deg - No Ice	48.83	0.09	39.57	3643.92	-9.91	-0.22
Dead+Wind 210 deg - No Ice	48.83	-19.87	34.17	3145.17	1830.08	0.41
Dead+Wind 240 deg - No Ice	48.83	-34.41	19.67	1809.04	3167.82	1.17
Dead+Wind 270 deg - No Ice	48.83	-39.73	-0.08	-9.83	3657.74	1.39

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 300 deg - No Ice	48.83	-34.49	-19.83	-1828.16	3175.28	1.20
Dead+Wind 330 deg - No Ice	48.83	-20.04	-34.27	-3158.75	1846.25	0.41
Dead+Ice+Temp	78.17	0.00	-0.00	-8.60	-6.00	-0.00
Dead+Wind 0 deg+Ice+Temp	78.17	-0.02	-11.69	-1111.21	-4.33	0.18
Dead+Wind 30 deg+Ice+Temp	78.17	5.87	-10.11	-961.87	-559.46	-0.14
Dead+Wind 60 deg+Ice+Temp	78.17	10.16	-5.82	-556.92	-963.88	-0.52
Dead+Wind 90 deg+Ice+Temp	78.17	11.74	0.02	-6.91	-1112.20	-0.68
Dead+Wind 120 deg+Ice+Temp	78.17	10.18	5.85	542.91	-965.82	-0.67
Dead+Wind 150 deg+Ice+Temp	78.17	5.90	10.13	946.05	-562.64	-0.41
Dead+Wind 180 deg+Ice+Temp	78.17	0.03	11.70	1093.95	-8.88	-0.17
Dead+Wind 210 deg+Ice+Temp	78.17	-5.87	10.10	943.34	547.45	0.16
Dead+Wind 240 deg+Ice+Temp	78.17	-10.17	5.81	539.16	952.44	0.51
Dead+Wind 270 deg+Ice+Temp	78.17	-11.75	-0.03	-11.20	1100.92	0.66
Dead+Wind 300 deg+Ice+Temp	78.17	-10.19	-5.86	-561.28	954.81	0.63
Dead+Wind 330 deg+Ice+Temp	78.17	-5.92	-10.13	-963.77	552.34	0.35
Dead+Wind 0 deg - Service	48.83	-0.02	-15.46	-1426.26	1.49	0.11
Dead+Wind 30 deg - Service	48.83	7.76	-13.36	-1233.26	-715.66	-0.12
Dead+Wind 60 deg - Service	48.83	13.43	-7.69	-709.99	-1237.50	-0.47
Dead+Wind 90 deg - Service	48.83	15.51	0.02	0.22	-1428.68	-0.57
Dead+Wind 120 deg - Service	48.83	13.45	7.73	710.34	-1239.76	-0.54
Dead+Wind 150 deg - Service	48.83	7.80	13.38	1231.25	-719.44	-0.26
Dead+Wind 180 deg - Service	48.83	0.04	15.46	1422.69	-4.26	-0.09
Dead+Wind 210 deg - Service	48.83	-7.76	13.35	1227.80	714.73	0.16
Dead+Wind 240 deg - Service	48.83	-13.44	7.68	705.69	1237.46	0.46
Dead+Wind 270 deg - Service	48.83	-15.52	-0.03	-5.04	1428.91	0.55
Dead+Wind 300 deg - Service	48.83	-13.47	-7.74	-715.57	1240.38	0.47
Dead+Wind 330 deg - Service	48.83	-7.83	-13.39	-1235.52	721.05	0.16

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	-48.83	0.00	0.00	48.83	0.00	0.000%
2	-0.06	-48.83	-39.57	0.06	48.83	39.57	0.000%
3	19.86	-48.83	-34.21	-19.86	48.83	34.21	0.000%
4	34.38	-48.83	-19.68	-34.38	48.83	19.68	0.000%
5	39.70	-48.83	0.06	-39.70	48.83	-0.06	0.000%
6	34.44	-48.83	19.80	-34.44	48.83	-19.80	0.000%
7	19.97	-48.83	34.26	-19.97	48.83	-34.26	0.000%
8	0.09	-48.83	39.57	-0.09	48.83	-39.57	0.000%
9	-19.87	-48.83	34.17	19.87	48.83	-34.17	0.000%
10	-34.41	-48.83	19.67	34.41	48.83	-19.67	0.000%
11	-39.73	-48.83	-0.08	39.73	48.83	0.08	0.000%
12	-34.49	-48.83	-19.83	34.49	48.83	19.83	0.000%
13	-20.04	-48.83	-34.27	20.04	48.83	34.27	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
14	0.00	-78.17	0.00	-0.00	78.17	0.00	0.000%
15	-0.02	-78.17	-11.69	0.02	78.17	11.69	0.000%
16	5.87	-78.17	-10.11	-5.87	78.17	10.11	0.000%
17	10.16	-78.17	-5.82	-10.16	78.17	5.82	0.000%
18	11.74	-78.17	0.02	-11.74	78.17	-0.02	0.000%
19	10.18	-78.17	5.85	-10.18	78.17	-5.85	0.000%
20	5.90	-78.17	10.13	-5.90	78.17	-10.13	0.000%
21	0.03	-78.17	11.70	-0.03	78.17	-11.70	0.000%
22	-5.87	-78.17	10.10	5.87	78.17	-10.10	0.000%
23	-10.17	-78.17	5.81	10.17	78.17	-5.81	0.000%
24	-11.75	-78.17	-0.03	11.75	78.17	0.03	0.000%
25	-10.19	-78.17	-5.86	10.19	78.17	5.86	0.000%
26	-5.92	-78.17	-10.13	5.92	78.17	10.13	0.000%
27	-0.02	-48.83	-15.46	0.02	48.83	15.46	0.000%
28	7.76	-48.83	-13.36	-7.76	48.83	13.36	0.000%
29	13.43	-48.83	-7.69	-13.43	48.83	7.69	0.000%
30	15.51	-48.83	0.02	-15.51	48.83	-0.02	0.000%
31	13.45	-48.83	7.73	-13.45	48.83	-7.73	0.000%
32	7.80	-48.83	13.38	-7.80	48.83	-13.38	0.000%
33	0.04	-48.83	15.46	-0.04	48.83	-15.46	0.000%
34	-7.76	-48.83	13.35	7.76	48.83	-13.35	0.000%
35	-13.44	-48.83	7.68	13.44	48.83	-7.68	0.000%
36	-15.52	-48.83	-0.03	15.52	48.83	0.03	0.000%
37	-13.47	-48.83	-7.74	13.47	48.83	7.74	0.000%
38	-7.83	-48.83	-13.39	7.83	48.83	13.39	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	0.00002786
3	Yes	5	0.00000001	0.00002672
4	Yes	5	0.00000001	0.00002753
5	Yes	4	0.00000001	0.00005572
6	Yes	5	0.00000001	0.00002640
7	Yes	5	0.00000001	0.00002718
8	Yes	4	0.00000001	0.00002676
9	Yes	5	0.00000001	0.00002725
10	Yes	5	0.00000001	0.00002611
11	Yes	4	0.00000001	0.00006057
12	Yes	5	0.00000001	0.00002754
13	Yes	5	0.00000001	0.00002734
14	Yes	4	0.00000001	0.00000689
15	Yes	4	0.00000001	0.00062999
16	Yes	4	0.00000001	0.00068697
17	Yes	4	0.00000001	0.00068774
18	Yes	4	0.00000001	0.00062843
19	Yes	4	0.00000001	0.00067912
20	Yes	4	0.00000001	0.00067853
21	Yes	4	0.00000001	0.00061893
22	Yes	4	0.00000001	0.00067173
23	Yes	4	0.00000001	0.00067166
24	Yes	4	0.00000001	0.00062357
25	Yes	4	0.00000001	0.00068547
26	Yes	4	0.00000001	0.00068581
27	Yes	4	0.00000001	0.00001404
28	Yes	4	0.00000001	0.00009173
29	Yes	4	0.00000001	0.00009825
30	Yes	4	0.00000001	0.00001753
31	Yes	4	0.00000001	0.00008962
32	Yes	4	0.00000001	0.00009432
33	Yes	4	0.00000001	0.00001398
34	Yes	4	0.00000001	0.00009534
35	Yes	4	0.00000001	0.00008817

36	Yes	4	0.00000001	0.00001758
37	Yes	4	0.00000001	0.00009739
38	Yes	4	0.00000001	0.00009518

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	140 - 86.8333	19.812	38	1.1734	0.0016
L2	92.5 - 38	8.997	37	0.9169	0.0006
L3	45 - 0	2.113	37	0.4231	0.0002

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
142'	BXA-70063/6CF w/ Mount Pipe	38	19.812	1.1734	0.0016	58407
126'	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	37	16.426	1.1157	0.0013	20859
115'	(2) 7770.00 w/ Mount Pipe	37	13.841	1.0637	0.0011	11681
108'	VHLP2.5-11	37	12.257	1.0250	0.0009	9125
102'	APXVSPP18-C-A20 w/ Mount Pipe	37	10.949	0.9872	0.0008	7684
100'	800MHz 2X50W RRH W/FILTER	37	10.525	0.9736	0.0008	7300
94'	742 213	37	9.295	0.9290	0.0007	6372
74'	BCD-87010	37	5.704	0.7406	0.0005	5376
40'	KS24019-L112A	37	1.710	0.3712	0.0002	5041

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	140 - 86.8333	50.642	12	2.9988	0.0043
L2	92.5 - 38	23.010	12	2.3451	0.0017
L3	45 - 0	5.407	12	1.0825	0.0006

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
142'	BXA-70063/6CF w/ Mount Pipe	12	50.642	2.9988	0.0043	22966
126'	ERICSSON AIR 21 B2A B4P w/ Mount Pipe	12	41.996	2.8516	0.0034	8201
115'	(2) 7770.00 w/ Mount Pipe	12	35.390	2.7189	0.0028	4591
108'	VHLP2.5-11	12	31.341	2.6206	0.0024	3586
102'	APXVSPP18-C-A20 w/ Mount Pipe	12	28.000	2.5247	0.0021	3019
100'	800MHz 2X50W RRH W/FILTER	12	26.916	2.4899	0.0020	2868
94'	742 213	12	23.770	2.3760	0.0018	2503
74'	BCD-87010	12	14.589	1.8944	0.0012	2108
40'	KS24019-L112A	12	4.375	0.9497	0.0006	1971

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	-17.80	1472.59	0.012
L2	86.8333 - 38 (2)	TP50.56x37.2117x0.4063	54'6"	0'	0.0	39.000	63.3646	-30.79	2471.22	0.012
L3	38 - 0 (3)	TP59.05x48.033x0.5	45'	0'	0.0	39.000	94.2655	-48.81	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	658.92	22.837	39.000	0.586	0.00	0.000	39.000	0.000
L2	86.8333 - 38 (2)	TP50.56x37.2117x0.4063	2028.63	32.457	39.000	0.832	0.00	0.000	39.000	0.000
L3	38 - 0 (3)	TP59.05x48.033x0.5	3663.95	32.605	39.000	0.836	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	24.85	0.658	26.000	0.051	0.63	0.010	26.000	0.000
L2	86.8333 - 38 (2)	TP50.56x37.2117x0.4063	32.81	0.518	26.000	0.040	0.89	0.007	26.000	0.000
L3	38 - 0 (3)	TP59.05x48.033x0.5	39.80	0.422	26.000	0.033	1.20	0.005	26.000	0.000

Pole Interaction Design Data

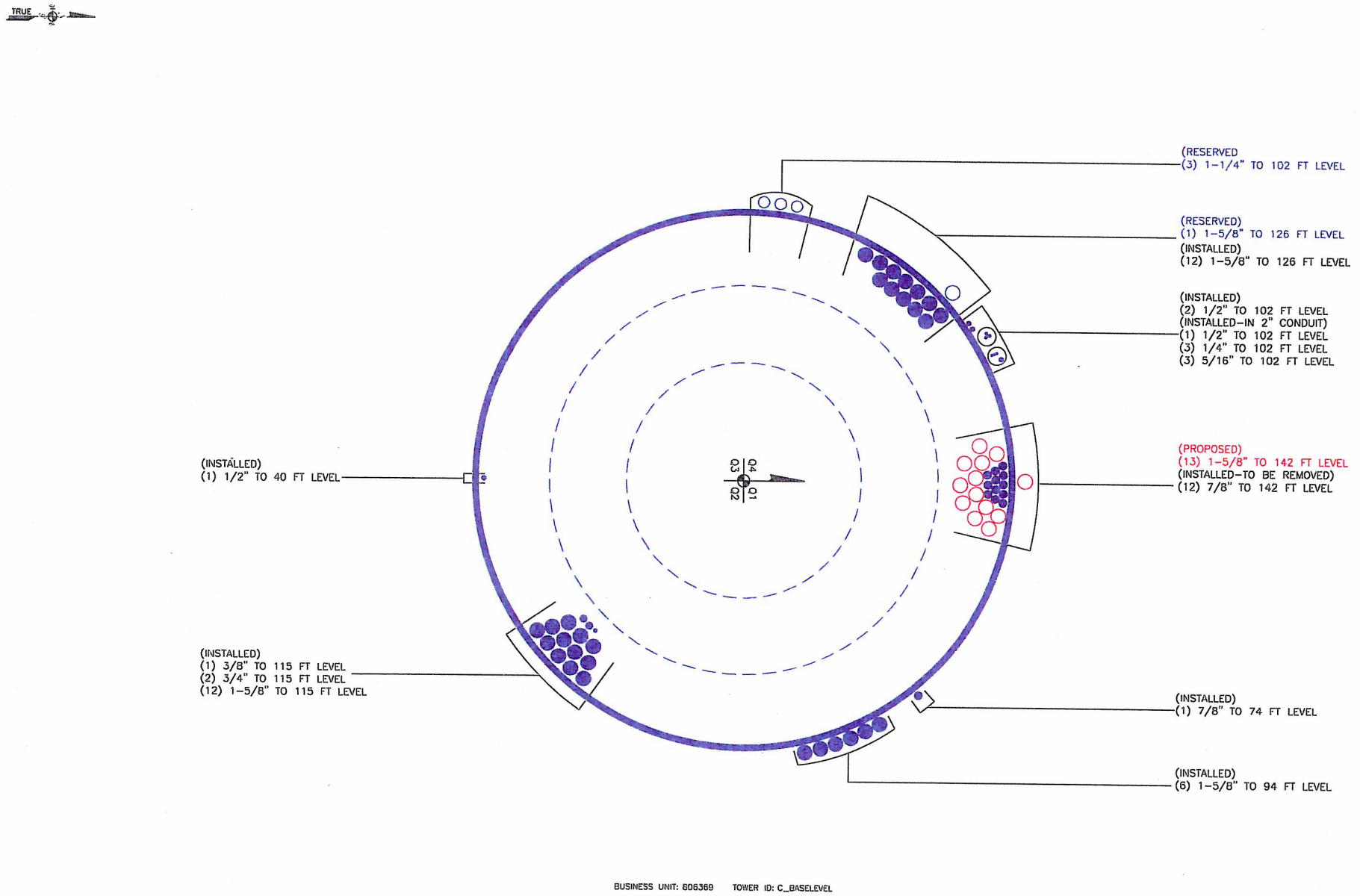
Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	140 - 86.8333 (1)	0.012	0.586	0.000	0.051	0.000	0.598 ✓	1.333	H1-3+VT ✓
L2	86.8333 - 38 (2)	0.012	0.832	0.000	0.040	0.000	0.845 ✓	1.333	H1-3+VT ✓
L3	38 - 0 (3)	0.013	0.836	0.000	0.033	0.000	0.850 ✓	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	-17.80	1962.96	44.9	Pass
L2	86.8333 - 38	Pole	TP50.56x37.2117x0.4063	2	-30.79	3294.14	63.4	Pass
L3	38 - 0	Pole	TP59.05x48.033x0.5	3	-48.81	4900.57	63.7	Pass
							Summary	
						Pole (L3)	63.7	Pass
						RATING =	**63.7**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 806369 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

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

TIA Rev F

Site Data

BU#: *806369*
Site Name: *HRT 094 943225*
App #: *172925 - Rev 3*

Pole Manufacturer:	*Other*

Reactions		
Moment:	3664	ft-kips
Axial:	49	kips
Shear:	40	kips

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	

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

Anchor Rod Results

Maximum Rod Tension:	132.7 Kips	Rigid
Allowable Tension:	195.0 Kips	Service, ASD
Anchor Rod Stress Ratio:	68.1% Pass	Fty*ASIF

Base Plate Results Flexural Check

Base Plate Stress:	19.1 ksi	Rigid
Allowable Plate Stress:	60.0 ksi	Service ASD
Base Plate Stress Ratio:	31.8% Pass	0.75*Fy*ASIF
		Y.L. Length: 27.29

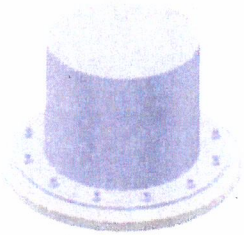
n/a

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: *172925 - Rev 3*

ACI 318 Version:	2002

Design Reactions		
Shear, S:	40.00	kips
Moment, Mt:	3664.00	ft-kips
Tower Weight, Wt:	49.00	kips
Tower Height, H:	140	ft
Base Diameter, BD:	59.1	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:	101	pcf
Clear Cover, cc:	3	in

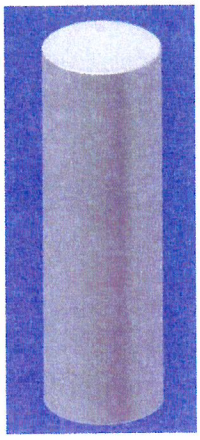
Soil Properties		
Soil Unit Weight, γ:	52	pcf
Allowable Bearing, Bc:	4.500	ksf
Seismic Design Cat, z:	B	

Caisson Analysis		
Depth to Zero Shear:	8.1	ft
Max Factored Moment:	5189.85	ft-kips
Overturning FOS:	6.53	

Depth		Shear		Moment	
0	ft	40.1	kips	3666.1	ft-kips
4.7	ft	40.1	kips	3854.4	ft-kips
9.4	ft	-14.7	kips	3922.3	ft-kips

Design Checks	*Capacity/ Availability*	*Demand/ Limits*	*Check*
Minimum Req'd Dia. 1 (ft):	7.50	3.72	OK
Minimum Req'd Dia. 2 (ft):	7.50	6.42	OK
Bearing (ksf):	4.50	1.11	OK
Rebar Area (in^2):	66.04	21.21	OK
Pier moment capacity (k-ft):	10677.34	5189.85	OK
Rebar spacing (in):	3.80	2 < Bs <18	OK
Development Length (in):	463.33	12.00	OK
Soil moment capacity (FOS):	6.53	2.00	OK

☐ **Assume 0.33% Minimum Steel?**



Bearing: 24.6%

Steel: 48.6%

Soil: 30.6%

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 #: *172925 - Rev 3*

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:	3992.189	ft-kips (* Note)
Max. Service Shaft P:	49	kips
Max Axial Force Type:	Comp.	

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

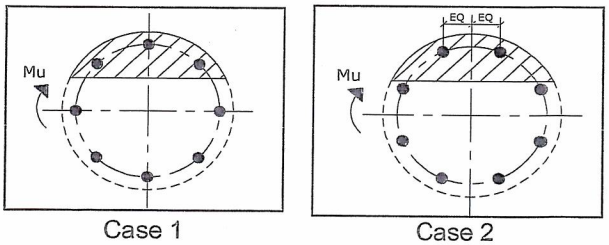
Load Factor	Shaft Factored Loads		
1.30	Mu:	5189.846	ft-kips
1.30	Pu:	63.7	kips

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: **18.75** 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:	63.70	kips
Drilled Shaft Moment Capacity, φMn:	**10677.34**	ft-kips
Drilled Shaft Superimposed Mu:	**5189.85**	ft-kips

(Mu/φMn, Drilled Shaft Flexure CSR:	**48.6%**

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 #: *172925 - Rev 3*

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 2:13:12 PM Friday, December 21, 2012
Crown Castle USA

Project Title: BU# 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
3664.0	49.0	40.00	6.53

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

Calculated Pier Properties

Length (ft)	Weight (kips)	End Bearing Pressure (psf)
47.000	311.459	1109.1

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		88.64	25.43
Clay	25.85	4.15	36.0	1738.0		-432.76	27.93
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	261.6	23939.8	40.1	3666.1
4.70	261.6	25169.6	40.1	3854.4
9.40	-96.1	25612.3	-14.7	3922.3
14.10	-439.6	24342.0	-67.3	3727.7
18.80	-818.4	21404.2	-125.3	3277.8
23.50	-1244.8	16578.2	-190.6	2538.8
28.20	-1228.6	10215.6	-188.2	1564.4
32.90	-707.4	5638.0	-108.3	863.4
37.60	-434.6	3235.5	-66.6	495.5
42.30	-378.2	1325.3	-57.9	203.0
47.00	-321.8	-319.8	-49.3	-49.0

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

5131

May 1, 2012

Jennifer Young Gaudet
HPC Wireless Services
46 Mill Plain Road, Floor 2
Danbury, CT 06811

RE: **EM-CING-064-120413** - New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 439-455 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 less 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 April 12, 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,

Linda Roberts

Linda Roberts
Executive Director

LR/CDM/laf

c: The Honorable Pedro E. Segarra, Mayor, City of Hartford
David B. Panagore, Chief Operating Officer, City of Hartford
Roger J. O'Brien, Director of Planning, City of Hartford
Crown Castle USA, Inc.

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

April 17, 2012

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

RE: **EM-CING-064-120413** - New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 439-455 Homestead Avenue, Hartford, Connecticut.

Dear Mayor Segarra:

The Connecticut Siting Council (Council) received this request to modify an existing telecommunications facility, pursuant to Regulations of Connecticut State Agencies Section 16-50j-72.

If you have any questions or comments regarding this proposal, please call me or inform the Council by May 1, 2012.

Thank you for your cooperation and consideration.

Very truly yours,

Linda Roberts

Linda Roberts
Executive Director

LR/jbw

Enclosure: Notice of Intent

c: David B. Panagore, Chief Operating Officer, City of Hartford
Roger J. O'Brien, Director of Planning, City of Hartford

CSC
CONNECTICUT SITING COUNCIL

EM-CING-064-120413

HPC Wireless Services
46 Mill Plain Rd.
Floor 2
Danbury, CT 06811
P.: 203.797.1112

HPC WIRELESS SERVICES

ORIGINAL

April 12, 2012

RECEIVED
APR 13 2012
CONNECTICUT
SITING COUNCIL

VIA UPS

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

Re: New Cingular Wireless PCS, LLC – exempt modification
439-455 Homestead Ave., Hartford, Connecticut

Dear Ms. Roberts:

This letter and attachments are submitted on behalf of New Cingular Wireless PCS, LLC ("AT&T"). AT&T 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.

AT&T plans to modify the existing wireless communications facility located at 439-455 Homestead Avenue in the City of Hartford (coordinates 41-47-01.6 N, 72-42-13.63 W). The facility is owned by Crown Castle. 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 AT&T'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. AT&T will add three (3) antennas, six (6) RRHs (remote radio heads) and a surge arrestor to its existing platform; the antennas and RRHs will be installed with a 117' centerline. AT&T will also place a DC power and fiber run from the equipment up the tower along the existing coaxial cable run. The proposed modifications will not extend the height of the 140' monopole.

2. The proposed changes will not extend the site boundaries. AT&T will install one additional cabinet on an H-frame adjacent to its existing concrete pad and will add a GPS antenna to the existing ice bridge. These changes 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 C Squared Systems, LLC, AT&T's operations at the site will result in a power density of 27.06%; the combined site operations will result in a total power density of 55.25%

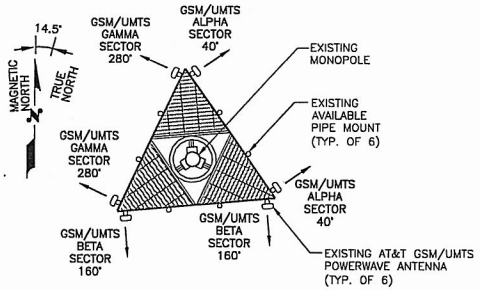
Please feel free to contact me by phone at (860) 798-7454 or by e-mail at jgaudet@hpcwireless.com with questions concerning this matter. Thank you for your consideration.

Respectfully yours,

Jennifer Young Gaudet

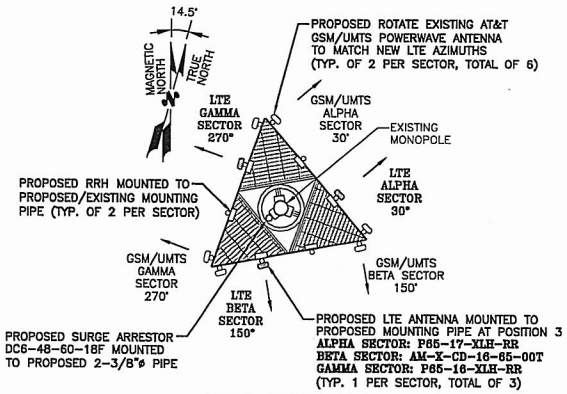
cc: Honorable Pedro Segarra, Mayor City of Hartford
Hudson Associates (underlying property owner)

Attachments



EXISTING GSM/UMTS ANTENNA PLAN

SCALE: N.T.S.



PROPOSED LTE ANTENNA PLAN

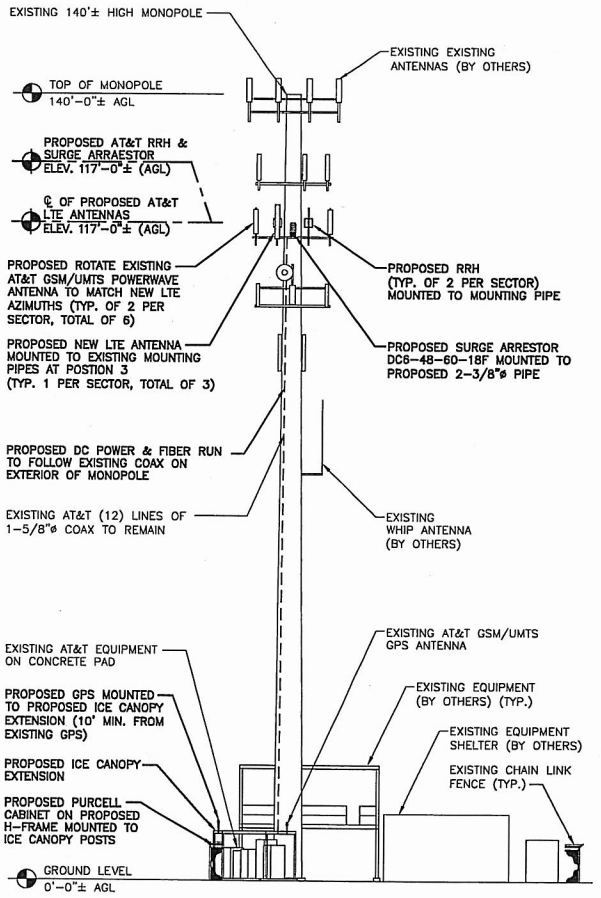
SCALE: N.T.S.

NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:

ALL ANTENNAS AND COAX TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE AND FINAL AT&T RF DATA SHEET.
REFER TO STRUCTURAL ANALYSIS REPORT BY: CROWN CASTLE, DATED: MARCH 20, 2012.



SOUTHEAST ELEVATION

SCALE: 1/16" = 1'-0"

0 8'-0" 16'-0" 32'-0" 48'-0"

Hudson Design Groupllc
1400 OSGOOD STREET
BUILDING 20 NORTH, SUITE 2-101
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

NEXLINK GLOBAL SERVICES
a UniTek GLOBAL SERVICES company
800 MARSHALL PHELPS ROAD UNIT#: 2A
WINDSOR, CT 06095

SITE NUMBER: CT5131
SITE NAME: AWE - NW HARTFORD
CROWN CASTLE ID: 806369
439-455 HOMESTEAD AVENUE
HARTFORD, CT 06112
HARTFORD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK'D	APP'D
3	04/05/12	REVISED PER CROWN'S COMMENTS	HC	DC	DPH
2	03/28/12	CONSTRUCTION REVISED	HC	DC	DPH
1	01/24/12	ISSUED FOR CONSTRUCTION	HC	DC	DPH
0	01/04/12	ISSUED FOR REVIEW	HC	DC	DPH

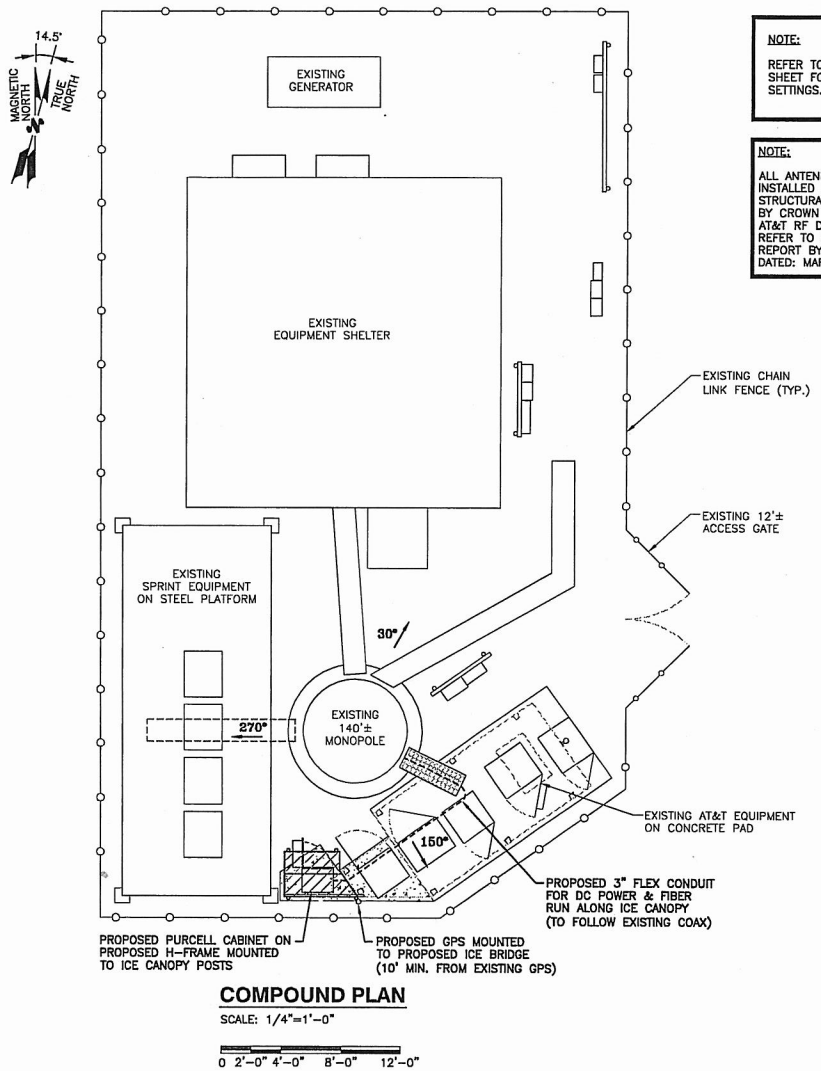
SCALE: NOT SHOWN | DESIGNED BY: DC | DRAWN BY: HC

STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

AT&T

ANTENNA LAYOUT AND ELEVATION (LTE)

JOB NUMBER	DRAWING NUMBER	REV
5131.01	A-3	3



NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:

ALL ANTENNAS AND COAX TO BE INSTALLED IN ACCORDANCE WITH STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE AND FINAL AT&T RF DATA SHEET.
REFER TO STRUCTURAL ANALYSIS REPORT BY: CROWN CASTLE, DATED: MARCH 20, 2012.

COMPOUND PLAN

SCALE: 1/4"=1'-0"

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

Hudson Design Group LLC
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 2-101
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

NEXLINK GLOBAL SERVICES
a UniTek GLOBAL SERVICES company
800 MARSHALL PHELPS ROAD UNIT#: 2A
WINDSOR, CT 06095

SITE NUMBER: CT5131
SITE NAME: AWE - NW HARTFORD
CROWN CASTLE ID: 806369
439-455 HOMESTEAD AVENUE
HARTFORD, CT 06112
HARTFORD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
3	04/05/12	REVISED PER CROWN'S COMMENTS	HC	DC	DPH
2	03/28/12	CONSTRUCTION REVISED	HC	DC	DPH
1	01/24/12	ISSUED FOR CONSTRUCTION	HC	DC	DPH
0	01/04/12	ISSUED FOR REVIEW	HC	DC	DPH

SCALE: NOT SHOWN | DESIGNED BY: DC | DRAWN BY: HC

STATE OF CONNECTICUT — DANIEL P. HAMM — No. 24178 — LICENSED PROFESSIONAL ENGINEER

AT&T

COMPOUND (LTE)

JOB NUMBER	DRAWING NUMBER	REV
5131.01	A-1	3

Date: **March 20, 2012**

Cheryl Schultz
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:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	CT5131
	Carrier Site Name:	AWE-NW HARTFORD
Crown Castle Designation:	**Crown Castle BU Number:**	806369
	Crown Castle Site Name:	HRT 094 943225
	Crown Castle JDE Job Number:	180774
	Crown Castle Work Order Number:	475187
	Crown Castle Application Number:	141082 Rev. 1
Engineering Firm Designation:	**Crown Castle Project Number:**	475187
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 Cheryl Schultz,

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 475187, in accordance with application 141082, 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:

LC5: Existing + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

This analysis has been performed in accordance with the TIA/EIA-222-F standard and local code requirements 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: Tyler Stevens, E.I.T. / GS
Respectfully submitted by:

STATE OF CONNECTICUT
DOUGLAS K. PINEO
No. 21110
PROFESSIONAL ENGINEER

Douglas K. Pineo, P.E.
Manager Structural Design

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
115.0	117.0	1	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe	2 1	3/4 3/8	-
		2	powerwave technologies	P65-17-XLH-RR w/ Mount Pipe			
		1	raycap	DC6-48-60-18-8F			
113.0	115.0	6	ericsson	RRUS-11			
	113.0	1	tower mounts	Side Arm Mount [SO 702-3]			

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	3	antel	BXA-185090/8CF w/ Mount Pipe	12	7/8	1
		3	antel	BXA-70063/6CF w/ Mount Pipe			
		2	antel	LPA-80063/4CF w/ Mount Pipe			
		4	antel	LPA-80080/4CF w/ Mount Pipe			
		6	rfs celwave	FD9R6004/1C-3L			
		1	tower mounts	Platform Mount (LP 101-1)			
126.0	128.0	8	rfs celwave	APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	24	1-5/8	1
		6	siemens	DTMA GSM 1900			
	126.0	1	tower mounts	Platform Mount [LP 1001-1]			
115.0	117.0	6	powerwave technologies	7770.00 w/ Mount Pipe	12	1-5/8	1
	115.0	1	tower mounts	Platform Mount [LP 712-1]			
		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
102.0	108.0	1	andrew	VHLP2-180	6 3 3 3	1-5/8 1/2 5/16 1/4	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

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	TEP	2294838	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	TEP (mapping)	2294380	CCISITES
4-TOWER MANUFACTURER DRAWINGS	TEP (mapping)	2294379	CCISITES
4-TOWER STRUCTURAL ANALYSIS REPORTS	Valmont	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	-15.91	1950.17	45.9	Pass
L2	86.8333 - 39	Pole	TP50.56x36.967x0.4063	2	-28.61	3292.00	65.2	Pass
L3	39 - 0	Pole	TP59.05x48.0016x0.5	3	-46.69	4900.57	66.8	Pass
							Summary	
						Pole (L3)	66.8	Pass
						Rating =	66.8	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	71.6	Pass
1	Base Plate	0	33.4	Pass
1	Base Foundation	0	51.5	Pass

Structure Rating (max from all components) =	71.6%

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

4.1) Recommendations

The tower and its base and anchor foundations have sufficient capacity to carry the existing and proposed loads. No modifications are required at this time.

C Squared Systems, LLC
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Calculated Radio Frequency Emissions

CT5131

(AWE - NW Hartford)

439-455 Homestead Ave, Hartford, CT 06112

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1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed modifications to the existing AT&T antenna arrays mounted on the monopole tower located at 439-455 Homestead Ave in Hartford, CT. The coordinates of the tower are 41-47-1.61 N, 72-42-13.66 W.

AT&T is proposing the following modifications:

1) Install three 700 MHz LTE antennas (one per sector).

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

In 1985, the FCC established rules to regulate radio frequency (RF) exposure from FCC licensed antenna facilities. In 1996, the FCC updated these rules, which were further amended in August 1997 by OET Bulletin 65 Edition 97-01. These new rules include Maximum Permissible Exposure (MPE) limits for transmitters operating between 300 kHz and 100 GHz. The FCC MPE limits are based upon those recommended by the National Council on Radiation Protection and Measurements (NCRP), developed by the Institute of Electrical and Electronics Engineers, Inc., (IEEE) and adopted by the American National Standards Institute (ANSI).

The FCC general population/uncontrolled limits set the maximum exposure to which most people may be subjected. General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

Public exposure to radio frequencies is regulated and enforced in units of milliwatts per square centimeter (mW/cm^2). The general population exposure limits for the various frequency ranges are defined in the attached "FCC Limits for Maximum Permissible Exposure (MPE)" in Attachment B of this report.

Higher exposure limits are permitted under the occupational/controlled exposure category, but only for persons who are exposed as a consequence of their employment and who have been made fully aware of the potential for exposure, and they must be able to exercise control over their exposure. General population/uncontrolled limits are five times more stringent than the levels that are acceptable for occupational, or radio frequency trained individuals. Attachment B contains excerpts from OET Bulletin 65 and defines the Maximum Exposure Limit.

Finally, it should be noted that the MPE limits adopted by the FCC for both general population/uncontrolled exposure and for occupational/controlled exposure incorporate a substantial margin of safety and have been established to be well below levels generally accepted as having the potential to cause adverse health effects.

3. RF Exposure Prediction Methods

The emission field calculation results displayed in the following figures were generated using the following formula as outlined in FCC bulletin OET 65:

$$\text{Power Density} = \left(\frac{1.6^2 \times EIRP}{4\pi \times R^2} \right) \text{x Off Beam Loss}$$

Where:

EIRP = Effective Isotropic Radiated Power

R = Radial Distance = $\sqrt{(H^2 + V^2)}$

H = Horizontal Distance from antenna in meters

V = Vertical Distance from radiation center of antenna in meters

Ground reflection factor of 1.6

Off Beam Loss is determined by the selected antenna pattern

These calculations assume that the antennas are operating at 100 percent capacity and power, and that all channels are transmitting simultaneously. Obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. The calculations assume even terrain in the area of study and do not take into account actual terrain elevations which could attenuate the signal. As a result, the predicted signal levels reported below are much higher than the actual signal levels will be from the finished modifications.

4. Calculation Results

Table 1 below outlines the power density information for the site. Because the proposed AT&T antennas are directional in nature, the majority of the RF power is focused out towards the horizon. As a result, there will be less RF power directed below the antennas relative to the horizon, and consequently lower power density levels around the base of the tower. Please refer to Attachment C for the vertical pattern of the proposed AT&T antennas. The calculated results for AT&T in Table 1 include a nominal 10 dB off-beam pattern loss to account for the lower relative gain below the antennas.

Carrier	Antenna Height (Feet)	Operating Frequency (MHz)	Number of Trans.	ERP Per Transmitter (Watts)	Power Density (mw/cm^2)	Limit	%MPE
Cingular UMTS	*117*	*1945*	*1*	*500*	*0.0131*	*1.0000*	*1.31%*
Cingular	*117*	*880*	*20*	*250*	*0.1313*	*0.5867*	*22.39%*
Cingular	*117*	*1945*	*3*	*427*	*0.0336*	*1.0000*	*3.36%*
Sprint	104	1962.5	11	609	0.2227	1.0000	22.27%
Clearwire	104	2496	2	153	0.0102	1.0000	1.02%
Clearwire	108	11000	1	211	0.0065	1.0000	0.65%
Sensus (CL&P)	74	940.1125	1	200	0.0131	0.6267	2.10%
Pocket	94	2130	3	631	0.0770	1.0000	7.70%
T-Mobile GSM	127	1945	8	193	0.0344	1.0000	3.44%
T-Mobile UMTS	127	2100	2	770	0.0343	1.0000	3.43%
Verizon	137	869	9	269	0.0464	0.5793	8.01%
Verizon	137	1970	3	325	0.0187	1.0000	1.87%
Verizon	137	757	1	626	0.0120	0.5047	2.38%
AT&T UMTS	120	880	2	565	0.0282	0.5867	0.48%
AT&T UMTS	120	1900	2	875	0.0437	1.0000	0.44%
AT&T LTE	120	734	1	1615	0.0403	0.4893	0.82%
AT&T GSM	120	880	1	283	0.0071	0.5867	0.12%
AT&T GSM	120	1900	4	525	0.0524	1.0000	0.52%
						Total	**55.25%**

Table 1: Carrier Information[1][2]

[1] The existing CSC filing for Cingular should be removed and replaced with the updated AT&T technologies and values provided in Table 1. The power density information for carriers other than AT&T was taken directly from the CSC database dated 1/10/2012.

[2] In the case where antenna models are not uniform across all 3 sectors for the same frequency band, the antenna model with the highest gain was used for the calculations to present a worse-case scenario.

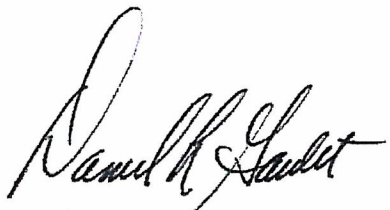
5. Conclusion

The above analysis verifies that emissions from the existing site will be below the maximum power density levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Even when using conservative methods, the cumulative power density from the proposed transmit antennas at the existing facility is below the limits for the general public. The highest expected percent of Maximum Permissible Exposure at ground level is **55.25% of the FCC limit**.

As noted previously, obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. As a result, the predicted signal levels are more conservative (higher) than the actual signal levels will be from the finished modifications.

6. Statement of Certification

I certify to the best of my knowledge that the statements in this report are true and accurate. The calculations follow guidelines set forth in ANSI/IEEE Std. C95.3, ANSI/IEEE Std. C95.1 and FCC OET Bulletin 65 Edition 97-01.



Daniel L. Goulet
C Squared Systems, LLC

April 9, 2012
Date

Attachment A: References

OET Bulletin 65 - Edition 97-01 - August 1997 Federal Communications Commission Office of Engineering & Technology

ANSI C95.1-1982, American National Standard Safety Levels With Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 300 kHz to 100 GHz. IEEE-SA Standards Board

IEEE Std C95.3-1991 (Reaff 1997), IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave. IEEE-SA Standards Board

Attachment B: FCC Limits for Maximum Permissible Exposure (MPE)

(A) Limits for Occupational/Controlled Exposure[3]

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	($900/f^2$)*	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	f/300	6
1500-100,000	-	-	5	6

(B) Limits for General Population/Uncontrolled Exposure[4]

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	f/1500	30
1500-100,000	-	-	1.0	30

f = frequency in MHz * Plane-wave equivalent power density

Table 2: FCC Limits for Maximum Permissible Exposure (MPE)

[3] Occupational/controlled limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure

[4] General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure

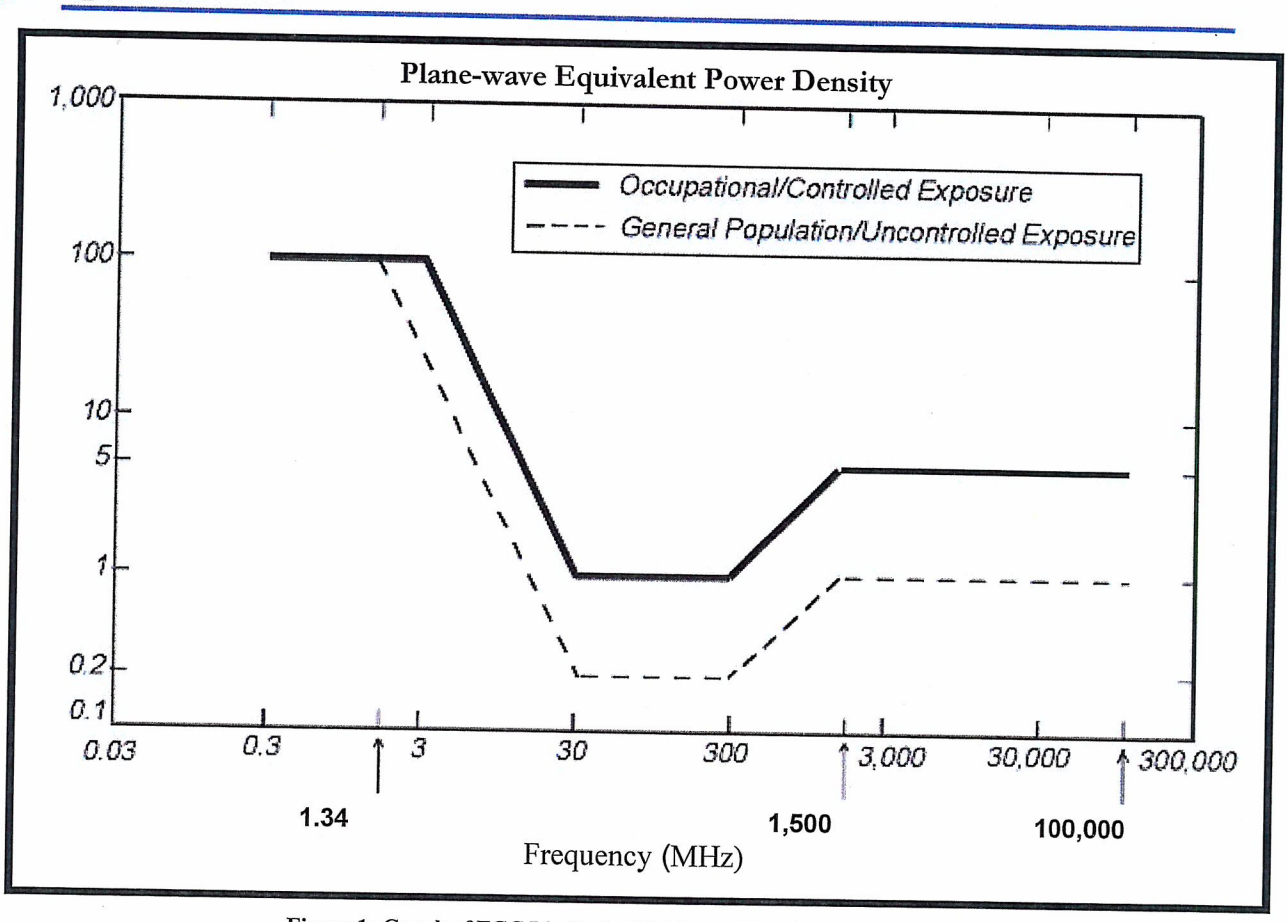
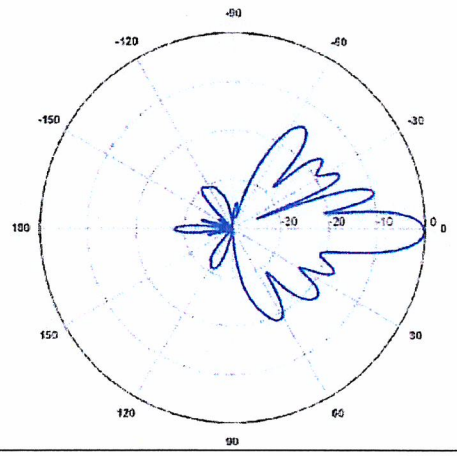


Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

Attachment C: AT&T Antenna Data Sheets and Electrical Patterns

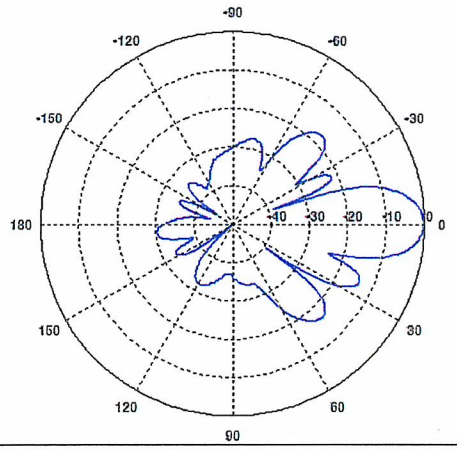
700 MHz

Manufacturer:	Powerwave
Model #:	P65-17-XLH-RR
Frequency Band:	698-806 MHz
Gain:	14.3 dBd
Vertical Beamwidth:	8.4°
Horizontal Beamwidth:	70°
Polarization:	Dual Linear ± 45°
Size L x W x D:	96.0" x 12.0" x 6.0"



850 MHz

Manufacturer:	Powerwave
Model #:	7770.00
Frequency Band:	824-896 MHz
Gain:	11.4 dBd
Vertical Beamwidth:	15°
Horizontal Beamwidth:	85°
Polarization:	Dual Linear ±45°
Size L x W x D:	55.4" x 11.0" x 5.0"



1900 MHz

Manufacturer:	Powerwave
Model #:	7770.00
Frequency Band:	1850-1990 MHz
Gain:	13.4 dBd
Vertical Beamwidth:	7°
Horizontal Beamwidth:	90°
Polarization:	Dual Linear ±45°
Size L x W x D:	55.4" x 11.0" x 5.0"