



Crown Castle
3 Corporate Park Drive, Suite 101
Clifton Park, NY 12065

July 20, 2016

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

RE: Notice of Exempt Modification for AT&T/ LTE 3C Crown Site BU: 800515
AT&T Site ID: CT2158
49 Wig Hill Road, Chester, CT 06412
Latitude: 41° 24' 13.93" Longitude: -72° 28' 20.82"

Dear Ms. Bachman:

AT&T currently maintains nine (9) antennas at the 132-foot level of the existing 150-foot monopole tower at 49 Wig Hill Road in Chester, CT. The tower is owned by Crown Castle. The property is owned by the Hazel Negrell. AT&T now intends to install three (3) Bias-Tees.

This facility was approved by the by the Connecticut Siting Council in Docket No. 181 on May 13, 1998. This approval included the conditions that:

1. The tower shall be constructed as a monopole, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of BAM, Springwich Cellular Limited Partnership (Springwich), Sprint Spectrum L.P. (Sprint), Nextel Communications of the Mid-Atlantic, Inc. (Nextel); and other entities, both public and private, but such tower shall not exceed a height of 150 feet above ground level.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.S.C.A. § 16-50j-73, a copy of this letter is being sent to Ms. Lauren Gister, First-Selectman, Town of Chester, as well as the property owner, and Crown Castle is the tower owner.

1. The proposed modifications will not result in an increase in the height of the existing tower.
2. The proposed modifications will not require the extension of the site boundary.
3. The proposed modification will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

Melanie A. Bachman

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4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communication Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, AT&T respectfully submits that the proposed modifications to the above-reference telecommunications facility constitutes an exempt modification under R.C.S.A. § 16-50j-72(b)(2). Please send approval/rejection letter to Attn: Jeffrey Barbadora.

Sincerely,

Jeffrey Barbadora
Real Estate Specialist
12 Gill Street, Suite 5800, Woburn, MA 01801
781-729-0053
Jeff.Barbadora@crowncastle.com

Attachments:

- Tab 1: Exhibit-1: Compound plan and elevation depicting the planned changes
Tab 2: Exhibit-2: Structural Modification Report
Tab 3: Exhibit-3: General Power Density Table Report (RF Emissions Analysis Report)

cc: Ms. Lauren Gister, First-Selectman
Town of Chester
203 Middlesex Ave
Chester, CT 06412

Hazel Negrell
PO Box 1175
Truro, MA 02666



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Melanie Bachman,
Acting Executive Director

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DOCKET NO. 181 - Cellco Partnership d/b/a Bell Atlantic Mobile application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a cellular telecommunications tower and associated equipment located at 8 Inspiration Lane, or 49 Wig Hill Road in the Town of Chester, Connecticut

Connecticut Siting Council

May 13, 1998

Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, operation, and maintenance of a telecommunications facility at the proposed alternate site in Chester, Connecticut, including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate either alone or cumulatively with other effects when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to Bell Atlantic Mobile (BAM) for the construction, operation, and maintenance of a telecommunications tower, associated equipment, and buildings at the proposed alternate site, on an approximately 18 acre site at 49 Wig Hill Road in the Town of Chester, Connecticut. We deny certification of the proposed prime site, without prejudice, due to the potential effects to the environment associated with the construction of additional future towers that would be required to provide adequate coverage for all carriers along Route 9, with a tower configuration using the proposed prime site.

The facility shall be constructed, operated, and maintained substantially as specified in the Council's record in this matter, and subject to the following conditions:

1. The tower shall be constructed as a monopole, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of BAM, Springwch Cellular Limited Partnership (Springwch), Sprint Spectrum L. P. (Sprint), Nextel Communications of the Mid-Atlantic, Inc. (Nextel); and other entities, both public and private, but such tower shall not exceed a height of 150 feet above ground level (AGL).
2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be submitted to and approved by the Council prior to the commencement of facility construction and shall include: a final site plan(s) for site development to include the location and specifications for the tower foundation, antennas, equipment buildings, emergency generator and fuel tank, security fence, access road, and utility line; construction plans for site clearing, tree trimming, water drainage, and erosion and sedimentation controls consistent with the Connecticut Guidelines for Soil Erosion and Sediment Control, as amended; provisions for the tower finish that may include painting; and provisions for the prevention and containment of spills and/or other discharge into surface water and groundwater bodies.
3. Upon the establishment of any new State or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.
4. The Certificate Holder shall provide the Council a recalculated report of electromagnetic radio frequency power density if and when circumstances in operation cause a change in power density above the levels originally calculated and provided in the application.
5. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.
6. If the facility does not initially provide, or permanently ceases to provide cellular services following completion of construction, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.
7. Any antenna that becomes obsolete and ceases to function shall be removed within 60 days after such antennas become obsolete and ceases to function.
8. Unless otherwise approved by the Council, this Decision and Order shall be void if all construction

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authorized herein is not completed within three years of the effective date of this Decision and Order or within three years after all appeals to this Decision and Order have been resolved.

Pursuant to General Statutes § 16-50p, we hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in The Hartford Courant.

By this Decision and Order, the Council disposes of the legal rights, duties, and privileges of each party named or admitted to the proceeding in accordance with Section 16-50j-17 of the Regulations of Connecticut State Agencies.

The parties and intervenors to this proceeding are:

APPLICANT ITS REPRESENTATIVE

Bell Atlantic Mobile

Kenneth C. Baldwin, Esq.

Brian C. S. Freeman, Esq.

Robinson & Cole

One Commercial Plaza

Hartford, CT 06103-3597

Mr. David S. Malko, P.E.

Jennifer Young Gaudet

Bell Atlantic Mobile

20 Alexander Drive

Wallingford, CT 06492

INTERVENORS ITS REPRESENTATIVE

Springwich Cellular Limited Partnership

Peter J. Tyrrell, Esq.

General Counsel

500 Enterprise Drive

Rocky Hill, CT 06067-3900

Nextel Communications of the Mid-Atlantic, Inc. d/b/a Nextel Communications

Christopher B. Fisher, Esq.

Cuddy, Feder & Worby, Esq.

90 Maple Avenue

White Plains, NY 10601

Sprint Spectrum, L.P. d/b/a Sprint PCS

Elias A. Alexiades

Julie M. Cashin

Hurwitz and Sagarin, P.C.

147 North Broad Street

Milford, CT 06460

I:\siting\dockets\181\d&o.doc

The Assessor's office is responsible for the maintenance of records on the ownership of properties. Assessments are computed at 70% of the estimated market value of real property at the time of the last revaluation which was 2013.



Information on the Property Records for the Municipality of Chester was last updated on 7/20/2016.

Parcel Information

Location:	WIG HILL RD	Property Use:	Vacant Land	Primary Use:	Commercial Vacant Land
Unique ID:	99000300	Map Lot:	8/127-1	Acres:	6.77
490 Acres:		Zone:	C	Volume / Page:	166/ 79
Developers Map / Lot:		Census:			

Value Information

	Appraised Value	70% Assessed Value
Land	864,394	605,070
Buildings	0	0

	Appraised Value	70% Assessed Value
Detached Outbuildings	264,450	185,120
Total	1,128,844	790,190

Owner's Information

Owner's Data

NEGRELLI HAZEL C TRUSTEE
PO BOX 1175
TRURO MA 02666

Detached Outbuildings

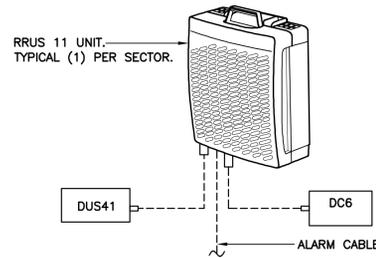
Type:	Year Built:	Length:	Width:	Area:
Fencing	1990			500
Towers	1990			1
Building Utility	1990			300
Building Utility	1990			300
Building Utility	1990			300

Owner History - Sales

Owner Name	Volume	Page	Sale Date	Deed Type	Valid Sale	Sale Price
NEGRELLI HAZEL C TRUSTEE	166	79	06/08/2016	Quit Claim	No	\$0
NEGRELLI HAZEL C	166	45	05/27/2016	Certificate of Devise	No	\$0

Owner Name	Volume	Page	Sale Date	Deed Type	Valid Sale	Sale Price
RAYNER BRUCE A EST	163	71	03/16/2015	Fiduciary Deed	No	\$0
RAYNER MARY C EST	163	70	03/16/2015	Fiduciary Deed	No	\$0
RAYNER BRUCE A & MARY C	159	710	09/30/2013	Warranty Deed	No	\$0

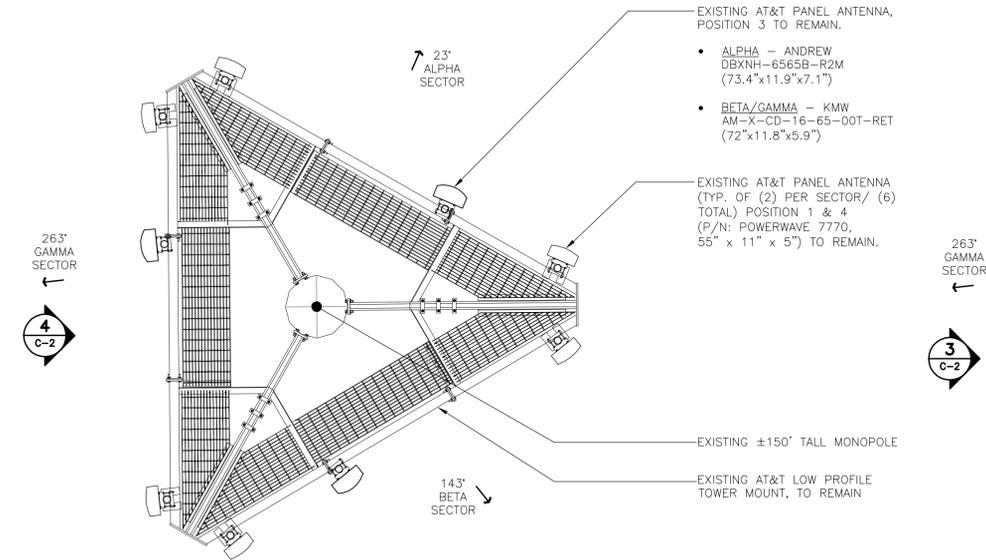
Information Published With Permission From The Assessor



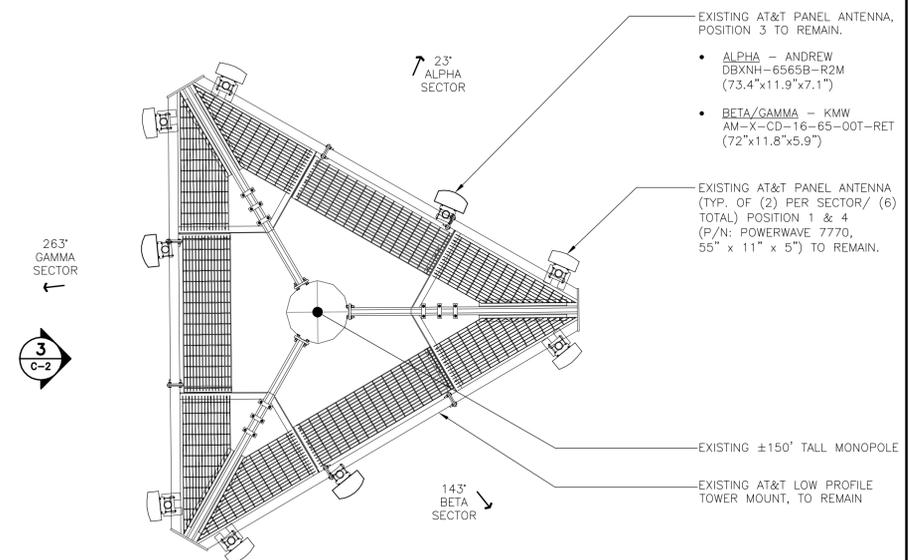
RRU (REMOTE RADIO UNIT)			
EQUIPMENT	DIMENSIONS	WEIGHT	CLEARANCES
MAKE: ERICSSON MODEL: RRUS-11	17.8"L x 17.3"W x 7.2"D	50 LBS.	ABOVE: 16" MIN. BELOW: 12" MIN. FRONT: 36" MIN.

NOTES:
1. CONTRACTOR TO COORDINATE FINAL EQUIPMENT MODEL SELECTION WITH AT&T CONSTRUCTION MANAGER PRIOR TO ORDERING.

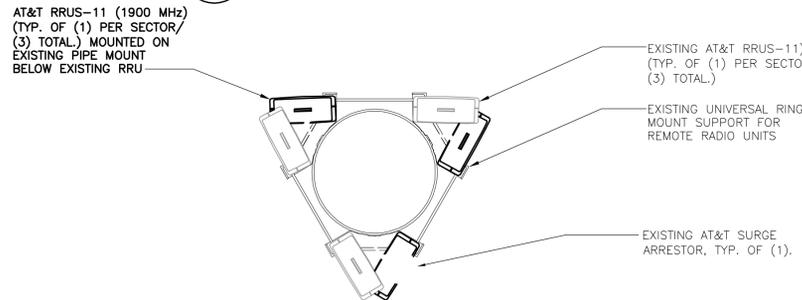
5 ERICSSON RRUS 11 DETAIL
SCALE: 1" = 1'-0"



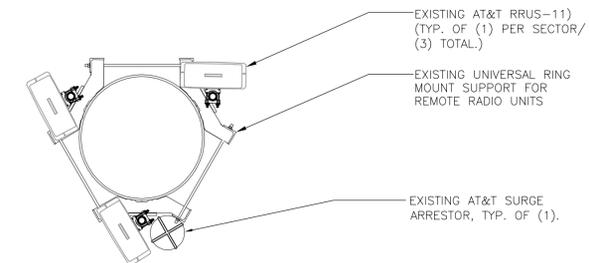
2 PROPOSED ANTENNA PLAN
SCALE: 3/8" = 1'-0"



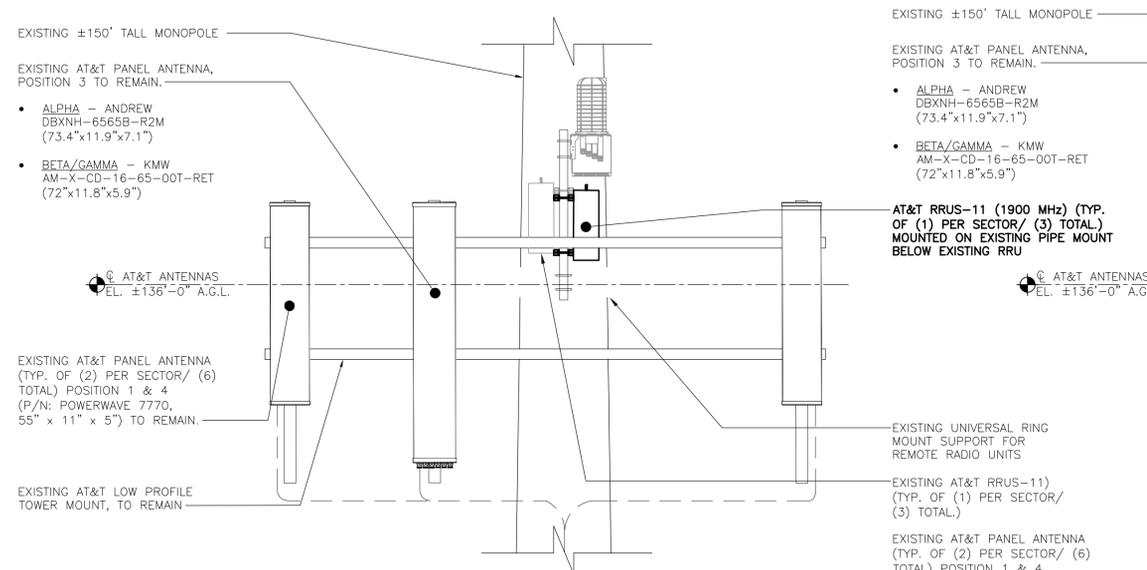
1 EXISTING ANTENNA PLAN
SCALE: 3/8" = 1'-0"



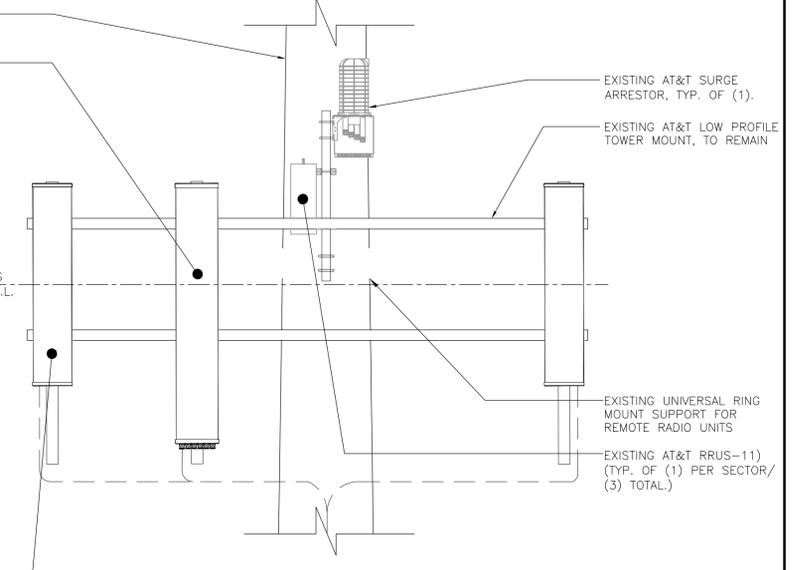
4 PROPOSED MOUNTING DETAIL
SCALE: 1/2" = 1'-0"



4 PROPOSED MOUNTING DETAIL
SCALE: 1/2" = 1'-0"

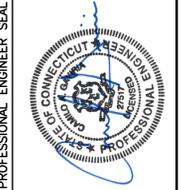


4 PROPOSED ANTENNA PLAN
SCALE: 1/2" = 1'-0"



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

REV.	DATE	BY	DESCRIPTION
0	05/08/16	KAW	DRAWN BY CHK'D BY DESCRIPTION
		CAG	CONSTRUCTION DOCUMENTS - ISSUED FOR CONSTRUCTION



CENTEK engineering
Centered on Solutions
(203) 488-0380
(203) 488-3387 Fax
622 North Branford Road
Branford, CT 06405
www.CentekEng.com

AT&T MOBILITY
WIRELESS COMMUNICATIONS FACILITY
CHESTER WIG HILL ROAD
CT2179- LITE 2C
49 WIG HILL ROAD
CHESTER, CT 06412

DATE: 05/17/16
SCALE: AS NOTED
JOB NO. 16071.06
LTE BWE EQUIPMENT DETAILS AND ELEVATIONS

Date: June 23, 2016

Kevin Morrow
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277



Jacobs Engineering Group, Inc.
5449 Bells Ferry Rd
Acworth, GA 30102
(770) 701-2500

Subject: Structural Analysis Report

Carrier Designation: AT&T Mobility Co-Locate
Carrier Site Number: CTL02179
Carrier Site Name: CHESTER WIG HILL RD

Crown Castle Designation: Crown Castle BU Number: 800515
Crown Castle Site Name: CT CHESTER CAC 800515
Crown Castle JDE Job Number: 383902
Crown Castle Work Order Number: 1256317
Crown Castle Application Number: 352288 Rev. 1

Engineering Firm Designation: Jacobs Engineering Group, Inc. Project Number: 1256317

Site Data: 49 Wig Hill Road, Chester, Middlesex County, CT
Latitude 41°24'13.93", Longitude -72°28'20.82"
150 Foot - Monopole Tower

Dear Kevin Morrow,

Jacobs Engineering Group, Inc. 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 916748, in accordance with application 352288, revision 1.

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

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

The analysis has been performed in accordance with the TIA/EIA-222-F standard and 2005 CT State Building Code based upon a wind speed of 85 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 Jacobs Engineering Group, Inc. 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:

Reviewed By:

Wensen Jiang
Structural Engineer

Matthew Watkins, PE
Engineering Project Manager



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1) INTRODUCTION

This tower is a 150 ft Monopole tower designed by ENGINEERED ENDEAVORS, INC. in August of 1998. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

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

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
132.0	132.0	3	kathrein	782 10253	-	-	-

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
150.0	152.0	6	decibel	DB980H90E-M w/ Mount Pipe	6	1-5/8	1
	150.0	1	tower mounts	Platform Mount [LP 713-1]			
148.0	162.0	1	dbspectra	DS4C06F36D-N	1	7/8	2
	163.0	1	rfs celwave	PD1142-1	4	7/8	1
	159.0	1	decibel	DB636-A			
		1	rfs celwave	PD1142-1			
	148.0	1	tower mounts	Side Arm Mount [SO 702-4]			
139.0	142.0	3	alcatel lucent	RRH2X40-AWS	1	1-5/8	2
		1	rfs celwave	DB-T1-6Z-8AB-0Z			
		3	andrew	HBX-6517DS-VTM w/ Mount Pipe			
		3	andrew	LNx-6514DS-VTM w/ Mount Pipe			
		3	antel	BXA-171085-8BF-EDIN-2 w/ Mount Pipe			
		3	antel	BXA-70063-6CF-2 w/ Mount Pipe			
	139.0	6	rfs celwave	FD9R6004/2C-3L	12 3	1-5/8 13/64	1
		1	tower mounts	Platform Mount [LP 713-1]			
134.0	134.0	6	ericsson	TME-RRUS-11	-	-	1
		1	tower mounts	Side Arm Mount [SO 102-3]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
132.0	142.0	1	decibel	DB810KE-YP	12 1 1 2	1-1/4 7/8 3/8 7/16	1
	132.0	1	andrew	DBXNH-6565B-R2M w/ Mount Pipe			
		2	kmw communications	AM-X-CD-16-65-00T-RET w/ Mount Pipe			
		6	powerwave technologies	7770.00 w/ Mount Pipe			
		6	powerwave technologies	LGP21401			
		8	powerwave technologies	LGP21901			
		1	raycap	DC6-48-60-18-8F			
		1	tower mounts	Platform Mount [LP 713-1]			
116.0	120.0	2	gps	GPS_A	12 2	1-1/4 1/2	3
	118.0	12	allgon	7120.16 w/ Mount Pipe			
	116.0	1	tower mounts	Platform Mount [LP 713-1]			
106.0	108.0	3	commscope	ATBT-BOTTOM-24V	6	1-5/8	1
		3	commscope	LNX-6515DS-VTM w/ Mount Pipe			
		3	ems wireless	RR65-18-02DP w/ Mount Pipe			
	106.0	1	tower mounts	Platform Mount [LP 713-1]			
96.0	96.0	3	rfs celwave	APXV18-206517LS w/ Mount Pipe	6	1-1/4	1
		1	tower mounts	Side Arm Mount [SO 104-3]			
75.0	75.0	1	gps	GPS_RESERVED	1	1/2	1
		1	tower mounts	Side Arm Mount [SO 701-1]			
70.0	70.0	1	kathrein	PR-950	1	WEP65	1
		1	tower mounts	Side Arm Mount [SO 701-1]			

Notes:

- 1) Existing Equipment
- 2) Reserved Equipment
- 3) Abandoned Equipment; 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)
152.0	152.0	12	SWEDCOM	ALP 9212	-	-
142.0	142.0	12	SWEDCOM	ALP 9212		
132.0	132.0	12	SWEDCOM	ALP 9212		
118.0	112.0	12	SWEDCOM	ALP 9212		
108.0	102.0	12	SWEDCOM	ALP 9212		

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Original Tower Drawings	Engineered Endeavors Incorporated	671925	CCISITE
Geotechnical Reports	Dr. Clarence Welti	2301672	CCISITE
Foundation Drawings	Tower Engineering Professionals	671930	CCISITE
Modification Drawings	GPD Associates	1037702	CCISITE
PMI	GPD	1285403	CCISITE

3.1) Analysis Method

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

3.2) Assumptions

- 1) Tower and structures were built in accordance with the manufacturer's specifications.
- 2) The tower and structures have been maintained in accordance with the manufacturer's specification.
- 3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
- 4) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA/EIA-222-F.

This analysis may be affected if any assumptions are not valid or have been made in error. Jacobs Engineering Group, Inc. 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	150 - 122.92	Pole	TP28.83x21x0.1875	1	-7.80	848.86	53.2	Pass
L2	122.92 - 84.26	Pole	TP39.51x27.2493x0.375	2	-18.56	2324.15	66.4	Pass
L3	84.26 - 41.55	Pole	TP50.99x37.1855x0.4375	3	-30.48	3506.36	73.0	Pass
L4	41.55 - 0	Pole	TP62x48.1335x0.5	4	-45.81	4867.49	68.5	Pass
							Summary	
						Pole (L3)	73.0	Pass
						Rating =	73.0	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	61.4	Pass
1	Base Plate	0	82.4	Pass
1	Base Foundation Structure	0	86.9	Pass
1	Base Foundation Soil	0	79.7	Pass

Notes:

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

Structure Rating (max from all components) =	86.9%
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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

DESIGNED APPURTENANCE LOADING

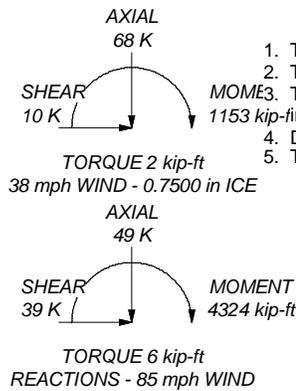
TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod 3/8"x6'	150	782 10253	132
Platform Mount [LP 713-1]	150	782 10253	132
9' Ladder	150	782 10253	132
(2) DB980H90E-M w/ Mount Pipe	150	DBXNH-6565B-R2M w/ Mount Pipe	132
(2) DB980H90E-M w/ Mount Pipe	150	AM-X-CD-16-65-00T-RET w/ Mount Pipe	132
(2) DB980H90E-M w/ Mount Pipe	150	AM-X-CD-16-65-00T-RET w/ Mount Pipe	132
(2) 6' x 2" mount pipe	150	(2) 7770.00 w/ Mount Pipe	132
(2) 6' x 2" mount pipe	150	(2) 7770.00 w/ Mount Pipe	132
(2) 6' x 2" mount pipe	150	(2) 7770.00 w/ Mount Pipe	132
Side Arm Mount [SO 702-4]	148	(2) 7770.00 w/ Mount Pipe	132
PD1142-1	148	(2) LGP21401	132
PD1142-1	148	(2) LGP21401	132
DS4C06F36D-N	148	(2) LGP21401	132
DB636-A	148	(4) LGP21901	132
8' x 2.25" Mount Pipe	148	(2) LGP21901	132
8' x 2.25" Mount Pipe	148	(2) LGP21901	132
8' x 2.25" Mount Pipe	148	DB810KE-YP	132
Platform Mount [LP 713-1]	139	DC6-48-60-18-8F	132
9' Ladder	139	(2) 6' x 2" mount pipe	132
BXA-171085-8BF-EDIN-2 w/ Mount Pipe	139	6' x 2" mount pipe	132
BXA-171085-8BF-EDIN-2 w/ Mount Pipe	139	6' x 2" mount pipe	132
BXA-171085-8BF-EDIN-2 w/ Mount Pipe	139	Platform Mount [LP 713-1]	116
BXA-171085-8BF-EDIN-2 w/ Mount Pipe	139	9' Ladder	116
BXA-70063-6CF-2 w/ Mount Pipe	139	(4) 7120.16 w/ Mount Pipe	116
BXA-70063-6CF-2 w/ Mount Pipe	139	(4) 7120.16 w/ Mount Pipe	116
BXA-70063-6CF-2 w/ Mount Pipe	139	(4) 7120.16 w/ Mount Pipe	116
BXA-70063-6CF-2 w/ Mount Pipe	139	(2) GPS_A	116
HBX-6517DS-VTM w/ Mount Pipe	139	Platform Mount [LP 713-1]	106
HBX-6517DS-VTM w/ Mount Pipe	139	9' Ladder	106
LNx-6514DS-VTM w/ Mount Pipe	139	LNx-6515DS-VTM w/ Mount Pipe	106
LNx-6514DS-VTM w/ Mount Pipe	139	LNx-6515DS-VTM w/ Mount Pipe	106
LNx-6514DS-VTM w/ Mount Pipe	139	LNx-6515DS-VTM w/ Mount Pipe	106
LNx-6514DS-VTM w/ Mount Pipe	139	RR65-18-02DP w/ Mount Pipe	106
LNx-6514DS-VTM w/ Mount Pipe	139	RR65-18-02DP w/ Mount Pipe	106
(2) FD9R6004/2C-3L	139	RR65-18-02DP w/ Mount Pipe	106
(2) FD9R6004/2C-3L	139	ATBT-BOTTOM-24V	106
(2) FD9R6004/2C-3L	139	ATBT-BOTTOM-24V	106
RRH2X40-AWS	139	ATBT-BOTTOM-24V	106
RRH2X40-AWS	139	(2) 6' x 2" mount pipe	106
RRH2X40-AWS	139	(2) 6' x 2" mount pipe	106
DB-T1-6Z-8AB-0Z	139	(2) 6' x 2" mount pipe	106
Side Arm Mount [SO 102-3]	134	Side Arm Mount [SO 104-3]	96
(2) TME-RRUS-11	134	APXV18-206517LS w/ Mount Pipe	96
(2) TME-RRUS-11	134	APXV18-206517LS w/ Mount Pipe	96
(2) TME-RRUS-11	134	APXV18-206517LS w/ Mount Pipe	96
6' x 2" mount pipe	134	GPS_RESERVED	75
6' x 2" mount pipe	134	Side Arm Mount [SO 701-1]	75
6' x 2" mount pipe	134	Side Arm Mount [SO 701-1]	70
Platform Mount [LP 713-1]	132	PR-950	70
9' Ladder	132		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Middlesex County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 73%



Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	27.08	18	0.1875	4.17	21.0000	28.8300	A607-65	1.4
2	42.83	18	0.3750	5.50	27.2493	39.5100	A607-65	5.7
3	48.21	18	0.4375	6.92	37.1855	50.9900	A607-65	9.9
4	48.47	18	0.5000	48.1335	62.0000		A607-65	14.3
								31.3

Jacobs Engineering Group, Inc.

5449 Bells Ferry Rd
 Acworth, GA 30102
 Phone: (770) 701-2500
 FAX: (770) 701-2501

Job: **CT Chester CAC**

Project: **BU 800515 WO 1032989**

Client: CCI	Drawn by: Wensen Jiang	App'd:
Code: TIA/EIA-222-F	Date: 06/23/16	Scale: NTS
Path:		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:

- 5) Tower is located in Middlesex County, Connecticut.
- 6) Basic wind speed of 85 mph.
- 7) Nominal ice thickness of 0.7500 in.
- 8) Ice thickness is considered to increase with height.
- 9) Ice density of 56 pcf.
- 10) A wind speed of 38 mph is used in combination with ice.
- 11) Temperature drop of 50 °F.
- 12) Deflections calculated using a wind speed of 50 mph.
- 13) A non-linear (P-delta) analysis was used.
- 14) Pressures are calculated at each section.
- 15) Stress ratio used in pole design is 1.333.
- 16) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification ✓ Use Code Stress Ratios ✓ Use Code Safety Factors - Guys ✓ Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric	Distribute Leg Loads As Uniform Assume Legs Pinned ✓ Assume Rigid Index Plate ✓ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retension Guys To Initial Tension ✓ Bypass Mast Stability Checks ✓ Use Azimuth Dish Coefficients ✓ Project Wind Area of Appurt. Autocalc Torque Arm Areas Add IBC .6D+W Combination Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder	Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation ✓ Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-G Bracing Resist. Exemption Use TIA-222-G Tension Splice Exemption <div style="text-align: center; background-color: #e0e0e0; padding: 2px;">Poles</div> ✓ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets
--	--	---

Tapered Pole Section Geometry

Section	Elevation <small>ft</small>	Section Length <small>ft</small>	Splice Length <small>ft</small>	Number of Sides	Top Diameter <small>in</small>	Bottom Diameter <small>in</small>	Wall Thickness <small>in</small>	Bend Radius <small>in</small>	Pole Grade
L1	150.00-122.92	27.08	4.17	18	21.0000	28.8300	0.1875	0.7500	A607-65 (65 ksi)
L2	122.92-84.26	42.83	5.50	18	27.2493	39.5100	0.3750	1.5000	A607-65 (65 ksi)
L3	84.26-41.55	48.21	6.92	18	37.1855	50.9900	0.4375	1.7500	A607-65 (65 ksi)
L4	41.55-0.00	48.47		18	48.1335	62.0000	0.5000	2.0000	A607-65 (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	I/Q in ²	w in	w/t
L1	21.3240	12.3860	677.8263	7.3884	10.6680	63.5383	1356.5444	6.1942	3.3660	17.952
	29.2747	17.0459	1766.7635	10.1681	14.6456	120.6341	3535.8517	8.5246	4.7441	25.302
L2	28.8818	31.9871	2918.6754	9.5404	13.8426	210.8469	5841.1912	15.9966	4.1359	11.029
	40.1195	46.5804	9013.0474	13.8929	20.0711	449.0564	18037.954	23.2946	6.2938	16.783
L3	39.3584	51.0293	8706.1285	13.0456	18.8903	460.8793	17423.712	25.5195	5.7747	13.199
	51.7766	70.1985	22664.719	17.9461	25.9029	874.9870	45359.261	35.1059	8.2042	18.753
L4	50.8863	75.5944	21669.684	16.9099	24.4518	886.2193	43367.881	37.8044	7.5915	15.183
	62.9564	97.6005	46637.979	21.8325	31.4960	1480.7588	93337.325	48.8095	10.0320	20.064

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A _r	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft ²	in					in	in	in
L1 150.00-122.92				1	1	1			
L2 122.92-84.26				1	1	1			
L3 84.26-41.55				1	1	1			
L4 41.55-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Section	Component Type	Placement	Total Number	Number Per Row	Start/End Position	Width or Diameter	Perimeter	Weight
			ft				in	in	plf
Safety Line 3/8	B	Surface Ar (CaAa)	150.00 - 8.00	1	1	0.000 0.000	0.8000		0.22
LCF78-50A(7/8")	A	Surface Ar (CaAa)	132.00 - 8.00	1	1	0.300 0.300	1.0900		0.34
FLC 12-50J(1/2")	B	Surface Ar (CaAa)	75.00 - 8.00	1	1	0.300 0.300	0.6400		0.17
WEP65(ELLIPTICAL)	B	Surface Ar (CaAa)	70.00 - 8.00	1	1	-0.400 -0.400	2.0300		0.53

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement	Total Number		C _A A _A	Weight
				ft			ft ² /ft	plf
2" Flex Conduit	A	No	Inside Pole	132.00 - 8.00	1	No Ice	0.00	0.32
						1/2" Ice	0.00	0.32
						1" Ice	0.00	0.32
						2" Ice	0.00	0.32
						4" Ice	0.00	0.32
LDF7-50A(1-5/8")	C	No	Inside Pole	150.00 - 8.00	6	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82
HJ5-50(7/8")	A	No	Inside Pole	148.00 - 8.00	4	No Ice	0.00	0.54
						1/2" Ice	0.00	0.54
						1" Ice	0.00	0.54
						2" Ice	0.00	0.54
						4" Ice	0.00	0.54
HJ5-50(7/8")	A	No	Inside Pole	148.00 - 8.00	1	No Ice	0.00	0.54

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C_{AA} ft^2/ft	Weight plf
HJ7-50A(1-5/8")	B	No	Inside Pole	139.00 - 8.00	12	1/2" Ice	0.54
						1" Ice	0.54
						2" Ice	0.54
						4" Ice	0.54
						No Ice	1.04
						1/2" Ice	1.04
						1" Ice	1.04
						2" Ice	1.04
						4" Ice	1.04
						No Ice	0.02
						1/2" Ice	0.02
						1" Ice	0.02
CATEGORY 5e(13/64")	B	No	Inside Pole	139.00 - 8.00	3	2" Ice	0.02
						4" Ice	0.02
						No Ice	0.02
						1/2" Ice	0.02
						1" Ice	0.02
						2" Ice	0.02
						4" Ice	0.02
						No Ice	0.02
						1/2" Ice	0.02
						1" Ice	0.02
						2" Ice	0.02
						HB158-1-08U8-S&J18(1-5/8)	B
No Ice	1.30						
1/2" Ice	1.30						
1" Ice	1.30						
2" Ice	1.30						
4" Ice	1.30						
No Ice	0.70						
1/2" Ice	0.70						
1" Ice	0.70						
2" Ice	0.70						
4" Ice	0.70						
LCF114-50J(1-1/4")	A	No	Inside Pole	132.00 - 8.00	12		
						1/2" Ice	0.06
						1" Ice	0.06
						2" Ice	0.06
						4" Ice	0.06
						No Ice	0.14
						1/2" Ice	0.14
						1" Ice	0.14
						2" Ice	0.14
						4" Ice	0.14
						No Ice	0.15
						FB-L98B-002-75000(3/8")	A
1" Ice	0.15						
2" Ice	0.15						
4" Ice	0.15						
No Ice	0.55						
1/2" Ice	0.55						
1" Ice	0.55						
2" Ice	0.55						
4" Ice	0.55						
No Ice	0.82						
1/2" Ice	0.82						
1" Ice	0.82						
WR-VG122ST-BRDA(7/16)	A	No	Inside Pole	132.00 - 8.00	2	2" Ice	0.82
						4" Ice	0.82
						No Ice	0.66
						1/2" Ice	0.66
						1" Ice	0.66
						2" Ice	0.66
						4" Ice	0.66
						No Ice	0.66
						1/2" Ice	0.66
						1" Ice	0.66
						2" Ice	0.66
						4" Ice	0.66
LDF4-50A(1/2")	A	No	Inside Pole	116.00 - 8.00	2	No Ice	0.66
						1/2" Ice	0.66
						1" Ice	0.66
						2" Ice	0.66
						4" Ice	0.66
						No Ice	0.66
						1/2" Ice	0.66
						1" Ice	0.66
						2" Ice	0.66
						4" Ice	0.66
						No Ice	0.66
						1/2" Ice	0.66
1" Ice	0.66						
CR 1480 PE(1-1/4")	A	No	Inside Pole	116.00 - 8.00	12	2" Ice	0.66
						4" Ice	0.66
						No Ice	0.66
						1/2" Ice	0.66
						1" Ice	0.66
						2" Ice	0.66
						4" Ice	0.66
						No Ice	0.66
						1/2" Ice	0.66
						1" Ice	0.66
						2" Ice	0.66
						4" Ice	0.66
LDF7-50A(1-5/8")	B	No	Inside Pole	106.00 - 8.00	6	No Ice	0.66
						1/2" Ice	0.66
						1" Ice	0.66
						2" Ice	0.66
						4" Ice	0.66
						No Ice	0.66
						1/2" Ice	0.66
						1" Ice	0.66
						2" Ice	0.66
						4" Ice	0.66
						No Ice	0.66
						1/2" Ice	0.66
1" Ice	0.66						
LDF6-50A(1-1/4")	B	No	Inside Pole	96.00 - 8.00	6	2" Ice	0.66
						4" Ice	0.66
						No Ice	0.66
						1/2" Ice	0.66
						1" Ice	0.66
						2" Ice	0.66
						4" Ice	0.66
						No Ice	0.66
						1/2" Ice	0.66
						1" Ice	0.66
						2" Ice	0.66
						4" Ice	0.66

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_{AA} In Face ft^2	C_{AA} Out Face ft^2	Weight K
L1	150.00-122.92	A	0.000	0.000	0.990	0.000	0.15
		B	0.000	0.000	2.166	0.000	0.23
		C	0.000	0.000	0.000	0.000	0.13
L2	122.92-84.26	A	0.000	0.000	4.214	0.000	0.69
		B	0.000	0.000	3.093	0.000	0.70
		C	0.000	0.000	0.000	0.000	0.19

Tower Sectio n	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
L3	84.26-41.55	A	0.000	0.000	4.655	0.000	0.81
		B	0.000	0.000	11.333	0.000	1.00
		C	0.000	0.000	0.000	0.000	0.21
L4	41.55-0.00	A	0.000	0.000	3.657	0.000	0.64
		B	0.000	0.000	11.642	0.000	0.79
		C	0.000	0.000	0.000	0.000	0.17

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Sectio n	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
L1	150.00-122.92	A	0.889	0.000	0.000	2.604	0.000	0.17
		B		0.000	0.000	6.980	0.000	0.28
		C		0.000	0.000	0.000	0.000	0.13
L2	122.92-84.26	A	0.860	0.000	0.000	11.086	0.000	0.77
		B		0.000	0.000	9.964	0.000	0.77
		C		0.000	0.000	0.000	0.000	0.19
L3	84.26-41.55	A	0.810	0.000	0.000	11.998	0.000	0.90
		B		0.000	0.000	29.317	0.000	1.21
		C		0.000	0.000	0.000	0.000	0.21
L4	41.55-0.00	A	0.750	0.000	0.000	9.090	0.000	0.70
		B		0.000	0.000	27.941	0.000	0.99
		C		0.000	0.000	0.000	0.000	0.17

Feed Line Center of Pressure

Section	Elevation ft	CP _X in	CP _Z in	CP _X Ice in	CP _Z Ice in
L1	150.00-122.92	0.0773	-0.1131	0.2240	-0.2825
L2	122.92-84.26	0.0354	-0.2021	0.1303	-0.4848
L3	84.26-41.55	0.1470	-0.3838	0.4088	-0.7371
L4	41.55-0.00	0.1465	-0.3753	0.3951	-0.7018

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
Lightning Rod 3/8"x6'	C	None		0.0000	150.00	No Ice	0.23	0.03	
						1/2" Ice	0.84	0.03	
						1" Ice	1.46	0.04	
						2" Ice	2.38	0.06	
						3" Ice	3.99	0.17	
						4" Ice	3.99	0.17	
150 Platform Mount [LP 713-1]	C	None		0.0000	150.00	No Ice	31.27	1.51	
						1/2" Ice	39.68	1.93	
						1" Ice	48.09	2.35	
						2" Ice	64.91	3.19	
						3" Ice	98.55	4.86	
						4" Ice	98.55	4.86	
9' Ladder	A	From Leg	4.00	0.0000	150.00	No Ice	4.50	2.25	0.08

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} _{Front}	C _{AA} _{Side}	Weight	
			Horz	Lateral						Vert
			ft	ft	°	ft	ft ²	ft ²	K	
			0.00			1/2"	5.50	2.75	0.12	
			0.00			Ice	6.50	3.25	0.17	
						1" Ice	8.50	4.25	0.26	
						2" Ice	12.50	6.25	0.44	
						4" Ice				
(2) DB980H90E-M w/ Mount Pipe	A	From Leg	4.00		0.0000	150.00	No Ice	4.04	3.62	0.03
			0.00				1/2"	4.50	4.48	0.07
			2.00				Ice	4.95	5.22	0.11
							1" Ice	5.87	6.74	0.22
							2" Ice	7.75	10.00	0.55
							4" Ice			
(2) DB980H90E-M w/ Mount Pipe	B	From Leg	4.00		0.0000	150.00	No Ice	4.04	3.62	0.03
			0.00				1/2"	4.50	4.48	0.07
			2.00				Ice	4.95	5.22	0.11
							1" Ice	5.87	6.74	0.22
							2" Ice	7.75	10.00	0.55
							4" Ice			
(2) DB980H90E-M w/ Mount Pipe	C	From Leg	4.00		0.0000	150.00	No Ice	4.04	3.62	0.03
			0.00				1/2"	4.50	4.48	0.07
			2.00				Ice	4.95	5.22	0.11
							1" Ice	5.87	6.74	0.22
							2" Ice	7.75	10.00	0.55
							4" Ice			
(2) 6' x 2" mount pipe	A	From Leg	4.00		0.0000	150.00	No Ice	1.44	1.44	0.02
			0.00				1/2"	1.93	1.93	0.03
			0.00				Ice	2.30	2.30	0.05
							1" Ice	3.07	3.07	0.09
							2" Ice	4.71	4.71	0.23
							4" Ice			
(2) 6' x 2" mount pipe	B	From Leg	4.00		0.0000	150.00	No Ice	1.44	1.44	0.02
			0.00				1/2"	1.93	1.93	0.03
			0.00				Ice	2.30	2.30	0.05
							1" Ice	3.07	3.07	0.09
							2" Ice	4.71	4.71	0.23
							4" Ice			
(2) 6' x 2" mount pipe	C	From Leg	4.00		0.0000	150.00	No Ice	1.44	1.44	0.02
			0.00				1/2"	1.93	1.93	0.03
			0.00				Ice	2.30	2.30	0.05
							1" Ice	3.07	3.07	0.09
							2" Ice	4.71	4.71	0.23
							4" Ice			
148										
Side Arm Mount [SO 702-4]	C	None			0.0000	148.00	No Ice	4.86	4.86	0.11
							1/2"	6.60	6.60	0.15
							Ice	8.34	8.34	0.20
							1" Ice	11.82	11.82	0.28
							2" Ice	18.78	18.78	0.46
							4" Ice			
PD1142-1	B	From Leg	4.00		0.0000	148.00	No Ice	1.32	1.32	0.01
			0.00				1/2"	3.21	3.21	0.02
			15.00				Ice	5.12	5.12	0.05
							1" Ice	8.99	8.99	0.14
							2" Ice	16.94	16.94	0.46
							4" Ice			
PD1142-1	C	From Leg	4.00		0.0000	148.00	No Ice	1.32	1.32	0.01
			0.00				1/2"	3.21	3.21	0.02
			11.00				Ice	5.12	5.12	0.05
							1" Ice	8.99	8.99	0.14
							2" Ice	16.94	16.94	0.46
							4" Ice			
DS4C06F36D-N	B	From Leg	4.00		0.0000	148.00	No Ice	5.50	5.50	0.07
			0.00				1/2"	7.37	7.37	0.11
			14.00				Ice	9.25	9.25	0.16
							1" Ice	13.07	13.07	0.30
							2" Ice	19.25	19.25	0.72

Description	Face or Leg	Offset Type	Offsets:			Azimuth Adjustment	Placement	C _{AA} _{Front}	C _{AA} _{Side}	Weight	
			Horz	Lateral	Vert						ft
			ft	ft	ft	°	ft	ft ²	ft ²	K	
DB636-A	A	From Leg	4.00			0.0000	148.00	4" Ice			
			0.00					No Ice	2.78	2.78	0.03
			11.00					1/2"	3.96	3.96	0.05
								Ice	5.16	5.16	0.08
								1" Ice	7.24	7.24	0.16
8' x 2.25" Mount Pipe	B	From Leg	4.00			0.0000	148.00	2" Ice	10.16	10.16	0.41
			0.00					4" Ice			
			4.00					No Ice	3.00	3.00	0.05
								1/2"	3.92	3.92	0.06
								Ice	4.84	4.84	0.09
8' x 2.25" Mount Pipe	B	From Leg	4.00			0.0000	148.00	1" Ice	6.18	6.18	0.16
			0.00					2" Ice	8.60	8.60	0.38
			4.00					4" Ice			
								No Ice	3.00	3.00	0.05
								1/2"	3.92	3.92	0.06
8' x 2.25" Mount Pipe	C	From Leg	4.00			0.0000	148.00	Ice	4.84	4.84	0.09
			0.00					1" Ice	6.18	6.18	0.16
			4.00					2" Ice	8.60	8.60	0.38
								4" Ice			
								No Ice	3.00	3.00	0.05
8' x 2.25" Mount Pipe	A	From Leg	4.00			0.0000	148.00	1/2"	3.92	3.92	0.06
			0.00					Ice	4.84	4.84	0.09
			4.00					1" Ice	6.18	6.18	0.16
								2" Ice	8.60	8.60	0.38
								4" Ice			
****139*** Platform Mount [LP 713-1]	C	None				0.0000	139.00	No Ice	31.27	31.27	1.51
								1/2"	39.68	39.68	1.93
								Ice	48.09	48.09	2.35
								1" Ice	64.91	64.91	3.19
								2" Ice	98.55	98.55	4.86
9' Ladder	A	From Leg	4.00			0.0000	139.00	4" Ice			
			0.00					No Ice	4.50	2.25	0.08
			0.00					1/2"	5.50	2.75	0.12
								Ice	6.50	3.25	0.17
								1" Ice	8.50	4.25	0.26
BXA-171085-8BF-EDIN-2 w/ Mount Pipe	A	From Leg	4.00			0.0000	139.00	2" Ice	12.50	6.25	0.44
			0.00					4" Ice			
			3.00					No Ice	3.18	3.35	0.03
								1/2"	3.56	3.97	0.06
								Ice	3.93	4.60	0.10
BXA-171085-8BF-EDIN-2 w/ Mount Pipe	B	From Leg	4.00			0.0000	139.00	1" Ice	4.69	5.89	0.19
			0.00					2" Ice	6.32	8.64	0.49
			3.00					4" Ice			
								No Ice	3.18	3.35	0.03
								1/2"	3.56	3.97	0.06
BXA-171085-8BF-EDIN-2 w/ Mount Pipe	C	From Leg	4.00			0.0000	139.00	Ice	3.93	4.60	0.10
			0.00					1" Ice	4.69	5.89	0.19
			3.00					2" Ice	6.32	8.64	0.49
								4" Ice			
								No Ice	3.18	3.35	0.03
BXA-70063-6CF-2 w/ Mount Pipe	A	From Leg	4.00			0.0000	139.00	1/2"	3.56	3.97	0.06
			0.00					Ice	3.93	4.60	0.10
			3.00					1" Ice	4.69	5.89	0.19
								2" Ice	6.32	8.64	0.49
								4" Ice			
								No Ice	7.81	5.80	0.04
								1/2"	8.36	6.95	0.10
							Ice	8.87	7.82	0.17	

Description	Face or Leg	Offset Type	Offsets:			Azimuth Adjustment	Placement	C _{AA} _{Front}	C _{AA} _{Side}	Weight
			Horz	Lateral	Vert					
			ft	ft	ft	°	ft	ft ²	ft ²	K
							1" Ice	9.93	9.60	0.34
							2" Ice	12.14	13.37	0.80
							4" Ice			
BXA-70063-6CF-2 w/ Mount Pipe	B	From Leg	4.00	0.0000	139.00		No Ice	7.81	5.80	0.04
			0.00				1/2"	8.36	6.95	0.10
			3.00				Ice	8.87	7.82	0.17
							1" Ice	9.93	9.60	0.34
							2" Ice	12.14	13.37	0.80
							4" Ice			
BXA-70063-6CF-2 w/ Mount Pipe	C	From Leg	4.00	0.0000	139.00		No Ice	7.81	5.80	0.04
			0.00				1/2"	8.36	6.95	0.10
			3.00				Ice	8.87	7.82	0.17
							1" Ice	9.93	9.60	0.34
							2" Ice	12.14	13.37	0.80
							4" Ice			
HBX-6517DS-VTM w/ Mount Pipe	A	From Leg	4.00	0.0000	139.00		No Ice	5.54	5.02	0.05
			0.00				1/2"	6.11	6.22	0.09
			3.00				Ice	6.65	7.17	0.15
							1" Ice	7.75	9.01	0.28
							2" Ice	10.03	12.90	0.69
							4" Ice			
HBX-6517DS-VTM w/ Mount Pipe	B	From Leg	4.00	0.0000	139.00		No Ice	5.54	5.02	0.05
			0.00				1/2"	6.11	6.22	0.09
			3.00				Ice	6.65	7.17	0.15
							1" Ice	7.75	9.01	0.28
							2" Ice	10.03	12.90	0.69
							4" Ice			
HBX-6517DS-VTM w/ Mount Pipe	C	From Leg	4.00	0.0000	139.00		No Ice	5.54	5.02	0.05
			0.00				1/2"	6.11	6.22	0.09
			3.00				Ice	6.65	7.17	0.15
							1" Ice	7.75	9.01	0.28
							2" Ice	10.03	12.90	0.69
							4" Ice			
LNX-6514DS-VTM w/ Mount Pipe	A	From Leg	4.00	0.0000	139.00		No Ice	8.32	7.00	0.06
			0.00				1/2"	8.88	8.19	0.13
			3.00				Ice	9.40	9.08	0.20
							1" Ice	10.47	10.90	0.38
							2" Ice	12.72	14.69	0.89
							4" Ice			
LNX-6514DS-VTM w/ Mount Pipe	B	From Leg	4.00	0.0000	139.00		No Ice	8.32	7.00	0.06
			0.00				1/2"	8.88	8.19	0.13
			3.00				Ice	9.40	9.08	0.20
							1" Ice	10.47	10.90	0.38
							2" Ice	12.72	14.69	0.89
							4" Ice			
LNX-6514DS-VTM w/ Mount Pipe	C	From Leg	4.00	0.0000	139.00		No Ice	8.32	7.00	0.06
			0.00				1/2"	8.88	8.19	0.13
			3.00				Ice	9.40	9.08	0.20
							1" Ice	10.47	10.90	0.38
							2" Ice	12.72	14.69	0.89
							4" Ice			
(2) FD9R6004/2C-3L	A	From Leg	4.00	0.0000	139.00		No Ice	0.31	0.08	0.00
			0.00				1/2"	0.39	0.12	0.01
			0.00				Ice	0.47	0.17	0.01
							1" Ice	0.65	0.29	0.02
							2" Ice	1.10	0.63	0.06
							4" Ice			
(2) FD9R6004/2C-3L	B	From Leg	4.00	0.0000	139.00		No Ice	0.31	0.08	0.00
			0.00				1/2"	0.39	0.12	0.01
			0.00				Ice	0.47	0.17	0.01
							1" Ice	0.65	0.29	0.02
							2" Ice	1.10	0.63	0.06
							4" Ice			
(2) FD9R6004/2C-3L	C	From Leg	4.00	0.0000	139.00		No Ice	0.31	0.08	0.00
			0.00				1/2"	0.39	0.12	0.01

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} _{Front}	C _{AA} _{Side}	Weight
			Horz	Lateral					
				0.00					
						Ice	0.47	0.17	0.01
						1" Ice	0.65	0.29	0.02
						2" Ice	1.10	0.63	0.06
						4" Ice			
RRH2X40-AWS	A	From Leg	4.00	0.0000	139.00	No Ice	2.16	1.42	0.04
			0.00			1/2"	2.36	1.59	0.06
			3.00			Ice	2.57	1.77	0.08
						1" Ice	3.00	2.14	0.13
						2" Ice	3.96	2.98	0.28
						4" Ice			
RRH2X40-AWS	B	From Leg	4.00	0.0000	139.00	No Ice	2.16	1.42	0.04
			0.00			1/2"	2.36	1.59	0.06
			3.00			Ice	2.57	1.77	0.08
						1" Ice	3.00	2.14	0.13
						2" Ice	3.96	2.98	0.28
						4" Ice			
RRH2X40-AWS	C	From Leg	4.00	0.0000	139.00	No Ice	2.16	1.42	0.04
			0.00			1/2"	2.36	1.59	0.06
			3.00			Ice	2.57	1.77	0.08
						1" Ice	3.00	2.14	0.13
						2" Ice	3.96	2.98	0.28
						4" Ice			
DB-T1-6Z-8AB-0Z	A	From Leg	4.00	0.0000	139.00	No Ice	4.80	2.00	0.04
			0.00			1/2"	5.07	2.19	0.08
			3.00			Ice	5.35	2.39	0.12
						1" Ice	5.93	2.81	0.21
						2" Ice	7.17	3.75	0.45
						4" Ice			
134 Side Arm Mount [SO 102-3]	C	None		0.0000	134.00	No Ice	3.00	3.00	0.08
						1/2"	3.48	3.48	0.11
						Ice	3.96	3.96	0.14
						1" Ice	4.92	4.92	0.20
						2" Ice	6.84	6.84	0.32
						4" Ice			
(2) TME-RRUS-11	A	From Leg	2.00	0.0000	134.00	No Ice	2.85	1.53	0.05
			0.00			1/2"	3.08	1.81	0.08
			0.00			Ice	3.32	2.10	0.11
						1" Ice	3.82	2.75	0.19
						2" Ice	4.95	4.25	0.40
						4" Ice			
(2) TME-RRUS-11	B	From Leg	2.00	0.0000	134.00	No Ice	2.85	1.53	0.05
			0.00			1/2"	3.08	1.81	0.08
			0.00			Ice	3.32	2.10	0.11
						1" Ice	3.82	2.75	0.19
						2" Ice	4.95	4.25	0.40
						4" Ice			
(2) TME-RRUS-11	C	From Leg	2.00	0.0000	134.00	No Ice	2.85	1.53	0.05
			0.00			1/2"	3.08	1.81	0.08
			0.00			Ice	3.32	2.10	0.11
						1" Ice	3.82	2.75	0.19
						2" Ice	4.95	4.25	0.40
						4" Ice			
6' x 2" mount pipe	A	From Leg	2.00	0.0000	134.00	No Ice	1.44	1.44	0.02
			0.00			1/2"	1.93	1.93	0.03
			0.00			Ice	2.30	2.30	0.05
						1" Ice	3.07	3.07	0.09
						2" Ice	4.71	4.71	0.23
						4" Ice			
6' x 2" mount pipe	B	From Leg	2.00	0.0000	134.00	No Ice	1.44	1.44	0.02
			0.00			1/2"	1.93	1.93	0.03
			0.00			Ice	2.30	2.30	0.05
						1" Ice	3.07	3.07	0.09
						2" Ice	4.71	4.71	0.23
						4" Ice			

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
6' x 2" mount pipe	C	From Leg	2.00	0.0000	134.00	No Ice	1.44	1.44	0.02
			0.00			1/2"	1.93	1.93	0.03
			0.00			Ice	2.30	2.30	0.05
						1" Ice	3.07	3.07	0.09
						2" Ice	4.71	4.71	0.23
					4" Ice				
132 Platform Mount [LP 713-1]	C	None		0.0000	132.00	No Ice	31.27	31.27	1.51
						1/2"	39.68	39.68	1.93
						Ice	48.09	48.09	2.35
						1" Ice	64.91	64.91	3.19
						2" Ice	98.55	98.55	4.86
						4" Ice			
9' Ladder	A	From Leg	4.00	0.0000	132.00	No Ice	4.50	2.25	0.08
			0.00			1/2"	5.50	2.75	0.12
			0.00			Ice	6.50	3.25	0.17
						1" Ice	8.50	4.25	0.26
						2" Ice	12.50	6.25	0.44
					4" Ice				
782 10253	A	From Leg	4.00	0.0000	132.00	No Ice	0.11	0.06	0.00
			0.00			1/2"	0.15	0.10	0.00
			0.00			Ice	0.20	0.14	0.01
						1" Ice	0.33	0.25	0.01
						2" Ice	0.67	0.56	0.04
					4" Ice				
782 10253	B	From Leg	4.00	0.0000	132.00	No Ice	0.11	0.06	0.00
			0.00			1/2"	0.15	0.10	0.00
			0.00			Ice	0.20	0.14	0.01
						1" Ice	0.33	0.25	0.01
						2" Ice	0.67	0.56	0.04
					4" Ice				
782 10253	C	From Leg	4.00	0.0000	132.00	No Ice	0.11	0.06	0.00
			0.00			1/2"	0.15	0.10	0.00
			0.00			Ice	0.20	0.14	0.01
						1" Ice	0.33	0.25	0.01
						2" Ice	0.67	0.56	0.04
					4" Ice				
DBXNH-6565B-R2M w/ Mount Pipe	A	From Leg	4.00	0.0000	132.00	No Ice	8.51	7.16	0.08
			0.00			1/2"	9.07	8.36	0.15
			0.00			Ice	9.61	9.29	0.23
						1" Ice	10.70	11.14	0.41
						2" Ice	12.97	15.00	0.92
					4" Ice				
AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Leg	4.00	0.0000	132.00	No Ice	8.26	6.30	0.07
			0.00			1/2"	8.82	7.48	0.14
			0.00			Ice	9.35	8.37	0.21
						1" Ice	10.42	10.18	0.38
						2" Ice	12.66	13.99	0.87
					4" Ice				
AM-X-CD-16-65-00T-RET w/ Mount Pipe	C	From Leg	4.00	0.0000	132.00	No Ice	8.26	6.30	0.07
			0.00			1/2"	8.82	7.48	0.14
			0.00			Ice	9.35	8.37	0.21
						1" Ice	10.42	10.18	0.38
						2" Ice	12.66	13.99	0.87
					4" Ice				
(2) 7770.00 w/ Mount Pipe	A	From Leg	4.00	0.0000	132.00	No Ice	5.75	4.25	0.06
			0.00			1/2"	6.18	5.01	0.10
			0.00			Ice	6.61	5.71	0.16
						1" Ice	7.49	7.16	0.29
						2" Ice	9.35	10.19	0.66
					4" Ice				
(2) 7770.00 w/ Mount Pipe	B	From Leg	4.00	0.0000	132.00	No Ice	5.75	4.25	0.06
			0.00			1/2"	6.18	5.01	0.10
			0.00			Ice	6.61	5.71	0.16
						1" Ice	7.49	7.16	0.29
						2" Ice	9.35	10.19	0.66
					4" Ice				

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
						2" Ice	9.35	10.19	0.66
(2) 7770.00 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	132.00	4" Ice	5.75	4.25	0.06
						No Ice	6.18	5.01	0.10
						1/2" Ice	6.61	5.71	0.16
						1" Ice	7.49	7.16	0.29
						2" Ice	9.35	10.19	0.66
(2) LGP21401	A	From Leg	4.00 0.00 0.00	0.0000	132.00	4" Ice	1.10	0.21	0.01
						No Ice	1.24	0.27	0.02
						1/2" Ice	1.38	0.35	0.03
						1" Ice	1.69	0.52	0.05
						2" Ice	2.39	0.96	0.14
(2) LGP21401	B	From Leg	4.00 0.00 0.00	0.0000	132.00	4" Ice	1.10	0.21	0.01
						No Ice	1.24	0.27	0.02
						1/2" Ice	1.38	0.35	0.03
						1" Ice	1.69	0.52	0.05
						2" Ice	2.39	0.96	0.14
(2) LGP21401	C	From Leg	4.00 0.00 0.00	0.0000	132.00	4" Ice	1.10	0.21	0.01
						No Ice	1.24	0.27	0.02
						1/2" Ice	1.38	0.35	0.03
						1" Ice	1.69	0.52	0.05
						2" Ice	2.39	0.96	0.14
(4) LGP21901	A	From Leg	4.00 0.00 0.00	0.0000	132.00	4" Ice	0.23	0.16	0.01
						No Ice	0.29	0.21	0.01
						1/2" Ice	0.36	0.28	0.01
						1" Ice	0.53	0.42	0.02
						2" Ice	0.94	0.81	0.07
(2) LGP21901	B	From Leg	4.00 0.00 0.00	0.0000	132.00	4" Ice	0.23	0.16	0.01
						No Ice	0.29	0.21	0.01
						1/2" Ice	0.36	0.28	0.01
						1" Ice	0.53	0.42	0.02
						2" Ice	0.94	0.81	0.07
(2) LGP21901	C	From Leg	4.00 0.00 0.00	0.0000	132.00	4" Ice	0.23	0.16	0.01
						No Ice	0.29	0.21	0.01
						1/2" Ice	0.36	0.28	0.01
						1" Ice	0.53	0.42	0.02
						2" Ice	0.94	0.81	0.07
DB810KE-YP	A	From Leg	4.00 0.00 10.00	0.0000	132.00	4" Ice	4.37	4.37	0.04
						No Ice	5.86	5.86	0.07
						1/2" Ice	7.37	7.37	0.11
						1" Ice	10.43	10.43	0.22
						2" Ice	14.16	14.16	0.56
DC6-48-60-18-8F	B	From Leg	4.00 0.00 0.00	0.0000	132.00	4" Ice	0.92	0.92	0.03
						No Ice	1.46	1.46	0.05
						1/2" Ice	1.64	1.64	0.07
						1" Ice	2.04	2.04	0.12
						2" Ice	2.96	2.96	0.25
(2) 6' x 2" mount pipe	A	From Leg	4.00 0.00 0.00	0.0000	132.00	4" Ice	1.44	1.44	0.02
						No Ice	1.93	1.93	0.03
						1/2" Ice	2.30	2.30	0.05
						1" Ice	3.07	3.07	0.09
						2" Ice	4.71	4.71	0.23
6' x 2" mount pipe	B	From Leg	4.00 0.00 0.00	0.0000	132.00	4" Ice	1.44	1.44	0.02
						No Ice	1.93	1.93	0.03
						1/2" Ice	2.30	2.30	0.05

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} _{Front}	C _{AA} _{Side}	Weight	
			Horz	Lateral						Vert
			ft	ft						
6' x 2" mount pipe	C	From Leg	4.00	0.00	0.0000	132.00	1" Ice	3.07	3.07	0.09
							2" Ice	4.71	4.71	0.23
							4" Ice			
							No Ice	1.44	1.44	0.02
							1/2" Ice	1.93	1.93	0.03
							Ice	2.30	2.30	0.05
							1" Ice	3.07	3.07	0.09
116 Platform Mount [LP 713-1]	C	None	4.00	0.00	0.0000	116.00	2" Ice	4.71	4.71	0.23
							4" Ice			
							No Ice	31.27	31.27	1.51
							1/2" Ice	39.68	39.68	1.93
							Ice	48.09	48.09	2.35
							1" Ice	64.91	64.91	3.19
							2" Ice	98.55	98.55	4.86
9' Ladder	B	From Leg	4.00	0.00	0.0000	116.00	4" Ice			
							No Ice	4.50	2.25	0.08
							1/2" Ice	5.50	2.75	0.12
							Ice	6.50	3.25	0.17
							1" Ice	8.50	4.25	0.26
							2" Ice	12.50	6.25	0.44
							4" Ice			
(4) 7120.16 w/ Mount Pipe	A	From Leg	4.00	0.00	0.0000	116.00	No Ice	3.52	5.95	0.03
							1/2" Ice	3.92	6.66	0.08
							Ice	4.32	7.33	0.13
							1" Ice	5.13	8.73	0.26
							2" Ice	6.83	11.72	0.62
							4" Ice			
							No Ice	3.52	5.95	0.03
(4) 7120.16 w/ Mount Pipe	B	From Leg	4.00	0.00	0.0000	116.00	1/2" Ice	3.92	6.66	0.08
							Ice	4.32	7.33	0.13
							1" Ice	5.13	8.73	0.26
							2" Ice	6.83	11.72	0.62
							4" Ice			
							No Ice	3.52	5.95	0.03
							1/2" Ice	3.92	6.66	0.08
(4) 7120.16 w/ Mount Pipe	C	From Leg	4.00	0.00	0.0000	116.00	Ice	4.32	7.33	0.13
							1" Ice	5.13	8.73	0.26
							2" Ice	6.83	11.72	0.62
							4" Ice			
							No Ice	3.52	5.95	0.03
							1/2" Ice	3.92	6.66	0.08
							Ice	4.32	7.33	0.13
(2) GPS_A	A	From Leg	4.00	0.00	0.0000	116.00	1" Ice	5.13	8.73	0.26
							2" Ice	6.83	11.72	0.62
							4" Ice			
							No Ice	0.26	0.26	0.00
							1/2" Ice	0.32	0.32	0.00
							Ice	0.39	0.39	0.01
							1" Ice	0.56	0.56	0.02
106 Platform Mount [LP 713-1]	C	None	4.00	0.00	0.0000	106.00	2" Ice	0.99	0.99	0.08
							4" Ice			
							No Ice	31.27	31.27	1.51
							1/2" Ice	39.68	39.68	1.93
							Ice	48.09	48.09	2.35
							1" Ice	64.91	64.91	3.19
							2" Ice	98.55	98.55	4.86
9' Ladder	A	From Leg	4.00	0.00	0.0000	106.00	4" Ice			
							No Ice	4.50	2.25	0.08
							1/2" Ice	5.50	2.75	0.12
							Ice	6.50	3.25	0.17
							1" Ice	8.50	4.25	0.26
							2" Ice	12.50	6.25	0.44
							4" Ice			
LNx-6515DS-VTM w/ Mount Pipe	A	From Leg	4.00	0.00	0.0000	106.00	No Ice	11.68	9.84	0.08
							1/2" Ice	12.40	11.37	0.17
							Ice	13.14	12.91	0.27
							1" Ice	14.51	15.27	0.51
							2" Ice	17.28	20.14	1.15
							4" Ice			
							No Ice	11.68	9.84	0.08

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
LNX-6515DS-VTM w/ Mount Pipe	B	From Leg	4.00	0.0000	106.00	No Ice	11.68	9.84	0.08
			0.00			1/2"	12.40	11.37	0.17
			2.00			Ice	13.14	12.91	0.27
						1" Ice	14.51	15.27	0.51
						2" Ice	17.28	20.14	1.15
						4" Ice			
LNX-6515DS-VTM w/ Mount Pipe	C	From Leg	4.00	0.0000	106.00	No Ice	11.68	9.84	0.08
			0.00			1/2"	12.40	11.37	0.17
			2.00			Ice	13.14	12.91	0.27
						1" Ice	14.51	15.27	0.51
						2" Ice	17.28	20.14	1.15
						4" Ice			
RR65-18-02DP w/ Mount Pipe	A	From Leg	4.00	0.0000	106.00	No Ice	4.59	3.32	0.03
			0.00			1/2"	5.02	4.09	0.07
			2.00			Ice	5.44	4.78	0.12
						1" Ice	6.30	6.23	0.22
						2" Ice	8.12	9.31	0.56
						4" Ice			
RR65-18-02DP w/ Mount Pipe	B	From Leg	4.00	0.0000	106.00	No Ice	4.59	3.32	0.03
			0.00			1/2"	5.02	4.09	0.07
			2.00			Ice	5.44	4.78	0.12
						1" Ice	6.30	6.23	0.22
						2" Ice	8.12	9.31	0.56
						4" Ice			
RR65-18-02DP w/ Mount Pipe	C	From Leg	4.00	0.0000	106.00	No Ice	4.59	3.32	0.03
			0.00			1/2"	5.02	4.09	0.07
			2.00			Ice	5.44	4.78	0.12
						1" Ice	6.30	6.23	0.22
						2" Ice	8.12	9.31	0.56
						4" Ice			
ATBT-BOTTOM-24V	A	From Leg	4.00	0.0000	106.00	No Ice	0.10	0.06	0.00
			0.00			1/2"	0.15	0.10	0.00
			2.00			Ice	0.20	0.15	0.01
						1" Ice	0.32	0.26	0.01
						2" Ice	0.66	0.57	0.04
						4" Ice			
ATBT-BOTTOM-24V	B	From Leg	4.00	0.0000	106.00	No Ice	0.10	0.06	0.00
			0.00			1/2"	0.15	0.10	0.00
			2.00			Ice	0.20	0.15	0.01
						1" Ice	0.32	0.26	0.01
						2" Ice	0.66	0.57	0.04
						4" Ice			
ATBT-BOTTOM-24V	C	From Leg	4.00	0.0000	106.00	No Ice	0.10	0.06	0.00
			0.00			1/2"	0.15	0.10	0.00
			2.00			Ice	0.20	0.15	0.01
						1" Ice	0.32	0.26	0.01
						2" Ice	0.66	0.57	0.04
						4" Ice			
(2) 6' x 2" mount pipe	A	From Leg	4.00	0.0000	106.00	No Ice	1.44	1.44	0.02
			0.00			1/2"	1.93	1.93	0.03
			0.00			Ice	2.30	2.30	0.05
						1" Ice	3.07	3.07	0.09
						2" Ice	4.71	4.71	0.23
						4" Ice			
(2) 6' x 2" mount pipe	B	From Leg	4.00	0.0000	106.00	No Ice	1.44	1.44	0.02
			0.00			1/2"	1.93	1.93	0.03
			0.00			Ice	2.30	2.30	0.05
						1" Ice	3.07	3.07	0.09
						2" Ice	4.71	4.71	0.23
						4" Ice			
(2) 6' x 2" mount pipe	C	From Leg	4.00	0.0000	106.00	No Ice	1.44	1.44	0.02
			0.00			1/2"	1.93	1.93	0.03
			0.00			Ice	2.30	2.30	0.05
						1" Ice	3.07	3.07	0.09
						2" Ice	4.71	4.71	0.23
						4" Ice			

Description	Face or Leg	Offset Type	Offsets:			Azimuth Adjustment	Placement	C _A A _A Front	C _A A _A Side	Weight	
			Horz	Lateral	Vert						ft
						4" Ice					
96 Side Arm Mount [SO 104-3]	C	None				0.0000	96.00	No Ice	3.30	3.30	0.29
								1/2" Ice	4.13	4.13	0.32
								Ice	4.96	4.96	0.46
								1" Ice	6.62	6.62	0.63
								2" Ice	9.94	9.94	0.98
								4" Ice			
APXV18-206517LS w/ Mount Pipe	A	From Leg	4.00			0.0000	96.00	No Ice	5.29	4.67	0.05
			0.00					1/2" Ice	5.84	5.82	0.10
			0.00					Ice	6.36	6.69	0.15
								1" Ice	7.42	8.46	0.28
								2" Ice	9.60	12.21	0.67
								4" Ice			
APXV18-206517LS w/ Mount Pipe	B	From Leg	4.00			0.0000	96.00	No Ice	5.29	4.67	0.05
			0.00					1/2" Ice	5.84	5.82	0.10
			0.00					Ice	6.36	6.69	0.15
								1" Ice	7.42	8.46	0.28
								2" Ice	9.60	12.21	0.67
								4" Ice			
APXV18-206517LS w/ Mount Pipe	C	From Leg	4.00			0.0000	96.00	No Ice	5.29	4.67	0.05
			0.00					1/2" Ice	5.84	5.82	0.10
			0.00					Ice	6.36	6.69	0.15
								1" Ice	7.42	8.46	0.28
								2" Ice	9.60	12.21	0.67
								4" Ice			
75 GPS_RESERVED	C	From Face	4.00			0.0000	75.00	No Ice	0.00	0.00	0.00
			0.00					1/2" Ice	0.00	0.00	0.00
			0.00					Ice	0.00	0.00	0.00
								1" Ice	0.00	0.00	0.00
								2" Ice	0.00	0.00	0.00
								4" Ice			
Side Arm Mount [SO 701-1]	C	From Face	4.00			0.0000	75.00	No Ice	0.85	1.67	0.07
			0.00					1/2" Ice	1.14	2.34	0.08
			0.00					Ice	1.43	3.01	0.09
								1" Ice	2.01	4.35	0.12
								2" Ice	3.17	7.03	0.18
								4" Ice			
70 Side Arm Mount [SO 701-1]	B	From Face	4.00			0.0000	70.00	No Ice	0.85	1.67	0.07
			0.00					1/2" Ice	1.14	2.34	0.08
			0.00					Ice	1.43	3.01	0.09
								1" Ice	2.01	4.35	0.12
								2" Ice	3.17	7.03	0.18
								4" Ice			

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets:			3 dB Beam Width	Elevation	Outside Diameter	Aperture Area	Weight	
				Horz	Lateral	Vert						ft
PR-950	B	Grid	From Face	2.90			-15.0000	70.00	5.67	No Ice	25.22	0.04
				-0.78						1/2" Ice	25.97	0.17
				0.00						1" Ice	26.71	0.30
										2" Ice	28.21	0.57
										4" Ice	31.20	1.10

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	150 - 122.92	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-16.33	-1.35	3.34
			Max. Mx	5	-7.86	-242.76	1.34
			Max. My	2	-7.80	-0.56	249.85
			Max. Vy	5	17.63	-242.76	1.34
			Max. Vx	2	-18.07	-0.56	249.85
			Max. Torque	12			-3.62
L2	122.92 - 84.26	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-32.88	-2.19	4.17
			Max. Mx	5	-18.61	-1150.88	0.55
			Max. My	2	-18.56	0.16	1174.69
			Max. Vy	5	29.87	-1150.88	0.55
			Max. Vx	2	-30.36	0.16	1174.69
			Max. Torque	12			-4.22
L3	84.26 - 41.55	Pole	Max Tension	1	0.00	0.00	0.00

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L4	41.55 - 0	Pole	Max. Compression	14	-46.77	-3.77	5.12
			Max. Mx	5	-30.50	-2479.98	0.31
			Max. My	2	-30.48	-0.07	2523.10
			Max. Vy	11	-34.45	2477.28	3.45
			Max. Vx	8	34.92	-3.21	-2519.91
			Max. Torque	6			5.84
			Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-67.77	-4.04	5.67
			Max. Mx	5	-49.11	-4258.04	1.74
			Max. My	2	-49.11	-1.44	4323.93
			Max. Vy	11	-38.93	4256.06	2.74
			Max. Vx	8	39.39	-2.44	-4321.34
			Max. Torque	6			6.01

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	15	67.77	0.01	10.10
	Max. H _x	11	49.13	38.91	-0.02
	Max. H _z	2	49.13	-0.03	39.35
	Max. M _x	2	4323.93	-0.03	39.35
	Max. M _z	5	4258.04	-38.89	0.03
	Max. Torsion	6	6.01	-33.64	-19.60
	Min. Vert	1	49.13	0.00	0.00
	Min. H _x	5	49.13	-38.89	0.03
	Min. H _z	8	49.13	0.02	-39.37
	Min. M _x	8	-4321.34	0.02	-39.37
	Min. M _z	11	-4256.06	38.91	-0.02
	Min. Torsion	12	-5.98	33.58	19.63

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overtuning Moment, M _x kip-ft	Overtuning Moment, M _z kip-ft	Torque kip-ft
Dead Only	49.13	0.00	0.00	-1.81	-1.53	-0.00
Dead+Wind 0 deg - No Ice	49.13	0.03	-39.35	-4323.93	-1.44	4.41
Dead+Wind 30 deg - No Ice	49.13	19.49	-34.16	-3749.25	-2131.09	1.60
Dead+Wind 60 deg - No Ice	49.13	33.76	-19.72	-2164.27	-3692.10	-2.10
Dead+Wind 90 deg - No Ice	49.13	38.89	-0.03	-1.74	-4258.04	-4.82
Dead+Wind 120 deg - No Ice	49.13	33.64	19.60	2155.59	-3685.70	-6.01
Dead+Wind 150 deg - No Ice	49.13	19.40	33.98	3734.91	-2128.61	-5.78
Dead+Wind 180 deg - No Ice	49.13	-0.02	39.37	4321.34	-2.44	-4.50
Dead+Wind 210 deg - No Ice	49.13	-19.44	34.13	3743.99	2124.52	-1.68
Dead+Wind 240 deg - No Ice	49.13	-33.73	19.67	2157.10	3687.44	2.22
Dead+Wind 270 deg - No Ice	49.13	-38.91	0.02	-2.74	4256.06	4.91
Dead+Wind 300 deg - No Ice	49.13	-33.58	-19.63	-2161.79	3678.37	5.98
Dead+Wind 330 deg - No Ice	49.13	-19.37	-34.04	-3742.85	2123.01	5.87
Dead+Ice+Temp	67.77	0.00	-0.00	-5.67	-4.04	-0.00
Dead+Wind 0 deg+Ice+Temp	67.77	-0.01	-10.10	-1153.33	-3.01	1.57
Dead+Wind 30 deg+Ice+Temp	67.77	5.00	-8.77	-1001.52	-569.86	0.69
Dead+Wind 60 deg+Ice+Temp	67.77	8.67	-5.06	-580.04	-985.10	-0.57
Dead+Wind 90 deg+Ice+Temp	67.77	9.98	0.01	-4.68	-1134.63	-1.51
Dead+Wind 120 deg+Ice+Temp	67.77	8.65	4.99	564.21	-983.87	-1.79

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 150 deg+Ice+Temp	67.77	4.84	8.84	995.33	-559.38	-1.83
Dead+Wind 180 deg+Ice+Temp	67.77	-0.21	10.19	1148.84	10.14	-1.06
Dead+Wind 210 deg+Ice+Temp	67.77	-5.13	8.83	993.68	570.78	-0.38
Dead+Wind 240 deg+Ice+Temp	67.77	-8.72	5.19	577.63	980.60	0.15
Dead+Wind 270 deg+Ice+Temp	67.77	-10.08	0.21	8.47	1133.47	0.79
Dead+Wind 300 deg+Ice+Temp	67.77	-8.74	-4.90	-569.57	982.24	1.65
Dead+Wind 330 deg+Ice+Temp	67.77	-4.93	-8.75	-1000.29	557.36	1.85
Dead+Wind 0 deg - Service	49.13	0.01	-13.62	-1498.47	-1.53	1.53
Dead+Wind 30 deg - Service	49.13	6.74	-11.82	-1299.47	-738.96	0.56
Dead+Wind 60 deg - Service	49.13	11.68	-6.82	-750.63	-1279.47	-0.73
Dead+Wind 90 deg - Service	49.13	13.46	-0.01	-1.83	-1475.42	-1.67
Dead+Wind 120 deg - Service	49.13	11.64	6.78	745.17	-1277.25	-2.09
Dead+Wind 150 deg - Service	49.13	6.71	11.76	1292.05	-738.10	-2.01
Dead+Wind 180 deg - Service	49.13	-0.01	13.62	1495.12	-1.88	-1.57
Dead+Wind 210 deg - Service	49.13	-6.73	11.81	1295.19	734.62	-0.58
Dead+Wind 240 deg - Service	49.13	-11.67	6.81	745.69	1275.79	0.77
Dead+Wind 270 deg - Service	49.13	-13.46	0.01	-2.18	1472.67	1.71
Dead+Wind 300 deg - Service	49.13	-11.62	-6.79	-749.78	1272.65	2.08
Dead+Wind 330 deg - Service	49.13	-6.70	-11.78	-1297.26	734.09	2.04

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-49.13	0.00	0.00	49.13	0.00	0.000%
2	0.03	-49.13	-39.35	-0.03	49.13	39.35	0.000%
3	19.49	-49.13	-34.16	-19.49	49.13	34.16	0.000%
4	33.76	-49.13	-19.72	-33.76	49.13	19.72	0.000%
5	38.89	-49.13	-0.03	-38.89	49.13	0.03	0.000%
6	33.64	-49.13	19.60	-33.64	49.13	-19.60	0.000%
7	19.40	-49.13	33.98	-19.40	49.13	-33.98	0.000%
8	-0.02	-49.13	39.37	0.02	49.13	-39.37	0.000%
9	-19.44	-49.13	34.13	19.44	49.13	-34.13	0.000%
10	-33.73	-49.13	19.67	33.73	49.13	-19.67	0.000%
11	-38.91	-49.13	0.02	38.91	49.13	-0.02	0.000%
12	-33.58	-49.13	-19.63	33.58	49.13	19.63	0.000%
13	-19.37	-49.13	-34.04	19.37	49.13	34.04	0.000%
14	0.00	-67.77	0.00	-0.00	67.77	0.00	0.000%
15	-0.01	-67.77	-10.10	0.01	67.77	10.10	0.000%
16	5.00	-67.77	-8.77	-5.00	67.77	8.77	0.000%
17	8.67	-67.77	-5.06	-8.67	67.77	5.06	0.000%
18	9.98	-67.77	0.01	-9.98	67.77	-0.01	0.000%
19	8.65	-67.77	4.99	-8.65	67.77	-4.99	0.000%
20	4.84	-67.77	8.84	-4.84	67.77	-8.84	0.000%
21	-0.21	-67.77	10.19	0.21	67.77	-10.19	0.000%
22	-5.13	-67.77	8.83	5.13	67.77	-8.83	0.000%
23	-8.72	-67.77	5.19	8.72	67.77	-5.19	0.000%
24	-10.08	-67.77	0.21	10.08	67.77	-0.21	0.000%
25	-8.74	-67.77	-4.90	8.74	67.77	4.90	0.000%
26	-4.93	-67.77	-8.75	4.93	67.77	8.75	0.000%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
27	0.01	-49.13	-13.62	-0.01	49.13	13.62	0.000%
28	6.74	-49.13	-11.82	-6.74	49.13	11.82	0.000%
29	11.68	-49.13	-6.82	-11.68	49.13	6.82	0.000%
30	13.46	-49.13	-0.01	-13.46	49.13	0.01	0.000%
31	11.64	-49.13	6.78	-11.64	49.13	-6.78	0.000%
32	6.71	-49.13	11.76	-6.71	49.13	-11.76	0.000%
33	-0.01	-49.13	13.62	0.01	49.13	-13.62	0.000%
34	-6.73	-49.13	11.81	6.73	49.13	-11.81	0.000%
35	-11.67	-49.13	6.81	11.67	49.13	-6.81	0.000%
36	-13.46	-49.13	0.01	13.46	49.13	-0.01	0.000%
37	-11.62	-49.13	-6.79	11.62	49.13	6.79	0.000%
38	-6.70	-49.13	-11.78	6.70	49.13	11.78	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00001654
3	Yes	6	0.00000001	0.00000372
4	Yes	6	0.00000001	0.00000376
5	Yes	5	0.00000001	0.00001914
6	Yes	6	0.00000001	0.00000330
7	Yes	6	0.00000001	0.00000405
8	Yes	5	0.00000001	0.00001704
9	Yes	6	0.00000001	0.00000353
10	Yes	6	0.00000001	0.00000347
11	Yes	5	0.00000001	0.00001964
12	Yes	6	0.00000001	0.00000405
13	Yes	6	0.00000001	0.00000331
14	Yes	4	0.00000001	0.00001263
15	Yes	5	0.00000001	0.00005713
16	Yes	5	0.00000001	0.00006887
17	Yes	5	0.00000001	0.00006834
18	Yes	5	0.00000001	0.00005597
19	Yes	5	0.00000001	0.00006622
20	Yes	5	0.00000001	0.00006875
21	Yes	5	0.00000001	0.00005603
22	Yes	5	0.00000001	0.00006632
23	Yes	5	0.00000001	0.00006599
24	Yes	5	0.00000001	0.00005523
25	Yes	5	0.00000001	0.00006866
26	Yes	5	0.00000001	0.00006706
27	Yes	5	0.00000001	0.00000342
28	Yes	5	0.00000001	0.00001126
29	Yes	5	0.00000001	0.00001153
30	Yes	5	0.00000001	0.00000387
31	Yes	5	0.00000001	0.00000930
32	Yes	5	0.00000001	0.00001344
33	Yes	5	0.00000001	0.00000345
34	Yes	5	0.00000001	0.00001002
35	Yes	5	0.00000001	0.00000970
36	Yes	5	0.00000001	0.00000390
37	Yes	5	0.00000001	0.00001343
38	Yes	5	0.00000001	0.00000928

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	150 - 122.92 (1)	TP28.83x21x0.1875	27.08	0.00	0.0	39.000	16.3283	-7.80	636.80	0.012
L2	122.92 - 84.26 (2)	TP39.51x27.2493x0.375	42.83	0.00	0.0	39.000	44.7064	-18.56	1743.55	0.011
L3	84.26 - 41.55 (3)	TP50.99x37.1855x0.4375	48.21	0.00	0.0	39.000	67.4469	-30.48	2630.43	0.012
L4	41.55 - 0 (4)	TP62x48.1335x0.5	48.47	0.00	0.0	39.000	93.6291	-45.81	3651.53	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	150 - 122.92 (1)	TP28.83x21x0.1875	249.85	27.094	39.000	0.695	0.00	0.000	39.000	0.000
L2	122.92 - 84.26 (2)	TP39.51x27.2493x0.375	1174.69	34.091	39.000	0.874	0.00	0.000	39.000	0.000
L3	84.26 - 41.55 (3)	TP50.99x37.1855x0.4375	2523.10	37.497	39.000	0.961	0.00	0.000	39.000	0.000
L4	41.55 - 0 (4)	TP62x48.1335x0.5	3983.29	35.089	39.000	0.900	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	150 - 122.92 (1)	TP28.83x21x0.1875	18.07	1.107	26.000	0.085	1.95	0.103	26.000	0.004
L2	122.92 - 84.26 (2)	TP39.51x27.2493x0.375	30.36	0.679	26.000	0.053	2.41	0.034	26.000	0.001
L3	84.26 - 41.55 (3)	TP50.99x37.1855x0.4375	34.90	0.518	26.000	0.040	4.35	0.031	26.000	0.001
L4	41.55 - 0 (4)	TP62x48.1335x0.5	38.76	0.414	26.000	0.032	4.40	0.019	26.000	0.001

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	150 - 122.92 (1)	0.012	0.695	0.000	0.085	0.004	0.709	1.333	H1-3+VT ✓
L2	122.92 - 84.26 (2)	0.011	0.874	0.000	0.053	0.001	0.886	1.333	H1-3+VT ✓
L3	84.26 - 41.55 (3)	0.012	0.961	0.000	0.040	0.001	0.973	1.333	H1-3+VT ✓
L4	41.55 - 0 (4)	0.013	0.900	0.000	0.032	0.001	0.913	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	150 - 122.92	Pole	TP28.83x21x0.1875	1	-7.80	848.86	53.2	Pass	
L2	122.92 - 84.26	Pole	TP39.51x27.2493x0.375	2	-18.56	2324.15	66.4	Pass	
L3	84.26 - 41.55	Pole	TP50.99x37.1855x0.4375	3	-30.48	3506.36	73.0	Pass	
L4	41.55 - 0	Pole	TP62x48.1335x0.5	4	-45.81	4867.49	68.5	Pass	
							Summary		
							Pole (L3)	73.0	Pass
							RATING =	73.0	Pass

APPENDIX B
BASE LEVEL DRAWING

APPENDIX C
ADDITIONAL CALCULATIONS

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

TIA Rev F

Site Data

BU#: 800515
Site Name: CY Chester CAC
App #: 352288 Rev. 1
Pole Manufacturer: Other

Reactions		
Moment:	4324	ft-kips
Axial:	49	kips
Shear:	39	kips

Anchor Rod Data

Qty:	24	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	71	in

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

Anchor Rod Results

Maximum Rod Tension: 119.8 Kips
 Allowable Tension: 195.0 Kips
 Anchor Rod Stress Ratio: 61.4% **Pass**

Rigid
Service, ASD
Fty*ASIF

Plate Data

Diam:	77	in
Thick:	2.25	in
Grade:	60	ksi
Single-Rod B-eff:	8.20	in

Base Plate Results

Base Plate Stress: 49.4 ksi
 Allowable Plate Stress: 60.0 ksi
 Base Plate Stress Ratio: 82.4% **Pass**

Flexural Check

Rigid
Service ASD
0.75*Fy*ASIF
Y.L. Length: 34.60

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

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

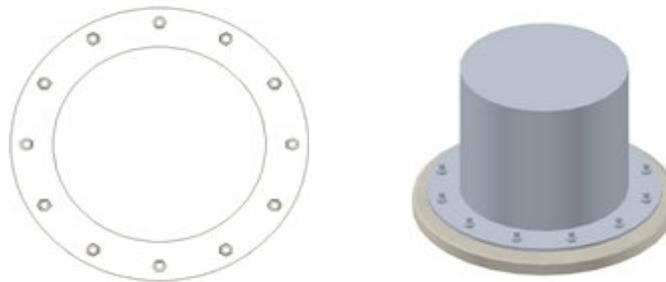
Pole Punching Shear Check: n/a

Pole Data

Diam:	62	in
Thick:	0.5	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor

ASIF:	1.333
-------	-------



* 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

(Bearing and Stability Checks) Tool for TIA Rev F or G - Application (MP, SST with unitbase)

Site Data

BU#: 800515
Site Name: CT Chester CAC
App #: 352288 Rev. 1

Monopole Base Reaction Forces		
TIA Revision:	F	<--Pull Down
Unfactored DL Axial, PD:	49	kips
Unfactored WL Axial, PW:	0	kips
Unfactored WL Shear, V:	39	kips
Unfactored WL Moment, M:	4324	ft-kips

Enter Load Factors Below:		
For P (DL)	1.2	<---- Enter Factor
For P,V, and M (WL)	1.35	<---- Enter Factor

Load Factor	Shaft Factored Loads		
1.20	1.2D+1.6W, Pu:	58.8	kips
0.90	0.9D+1.6W, Pu:	44.1	kips
1.35	Vu:	52.65	kips
	Mu:	5837.4	ft-kips

Pad & Pier Data		
Base PL Dist. Above Pier:	0	in
Pier Dist. Above Grade:	6	in
Pad Bearing Depth, D:	5.17	ft
Pad Thickness, T:	3	ft
Pad Width=Length, L:	28	ft
Pier Cross Section Shape:	Round	<--Pull Down
Enter Pier Diameter:	7.5	ft
Concrete Density:	150.0	pcf
Pier Cross Section Area:	44.18	ft^2
Pier Height:	2.67	ft
Soil (above pad) Height:	2.17	ft

1.2D+1.6W Load Combination, Bearing Results:

(No Soil Wedges) [Reaction+Conc+Soil]	715.31	P1="1.2D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil), M1	6067.71	ft-kips

Orthogonal Direction:

ecc1 = M1/P1 = 8.48 ft
 Orthogonal qu= 2.32 ksf
 qu/φ*qn Ratio= **7.72% Pass**

Diagonal Direction:

ecc2 = (0.707M1)/P1 = 6.00 ft
 Diagonal qu= 2.79 ksf
 qu/φ*qn Ratio= **9.31% Pass**

<-- Press Upon Completing All Input

Soil Parameters		
Unit Weight, γ:	110.0	pcf
Ultimate Bearing Capacity, qn:	40.00	ksf
Strength Reduct. factor, φ:	0.75	
Angle of Friction, Φ:	30.0	degrees
Undrained Shear Strength, Cu:	0.00	ksf
Allowable Bearing: φ*qn:	30.00	ksf
Passive Pres. Coeff., Kp	3.00	

Overturning Stability Check

0.9D+1.6W Load Combination, Bearing Results:

Forces/Moments due to Wind and Lateral Soil		
Minimum of (φ*Ultimate Pad Passive Force, Vu):	52.7	kips
Pad Force Location Above D:	1.30	ft
φ(Passive Pressure Moment):	68.22	ft-kips
Factored O.T. M(WL), "1.6W":	6135.9	ft-kips
Factored OT (MW-Msoil), M1	6067.71	ft-kips

(w/ Soil Wedges) [Reaction+Conc+Soil]	546.38	P2="0.9D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil) - 0.9(M of Wedge + M of Cohesion), M2	5992.22	ft-kips

Resistance due to Foundation Gravity		
Soil Wedge Projection grade, a:	1.25	ft
Sum of Soil Wedges Wt:	11.00	kips
Soil Wedges ecc, K1:	7.63	ft
Ftg+Soil above Pad wt:	547.1	kips
Unfactored (Total ftg-soil Wt):	558.08	kips
1.2D. No Soil Wedges.	715.31	kips
0.9D. With Soil Wedges	546.38	kips

Orthogonal ecc3 = M2/P2 = 10.97 ft
 Ortho Non Bearing Length,NBL= **21.93 ft**
 Orthogonal qu= 3.22 ksf
 Diagonal qu= 3.50 ksf

Resistance due to Cohesion (Vertical)		
φ*(1/2*Cu)(Total Vert. Planes)	0.00	kips
Cohesion Force Eccentricity, K2	0.00	ft

Max Reaction Moment (ft-kips) so that qu=φ*qn = 100% Capacity Rating			
Actual M:	4324.00		
M Orthogonal:	5422.74	79.74%	Pass
M Diagonal:	5422.74	79.74%	Pass

Project Name:	CT Chester CAC
Project Number:	800515
Job Number:	1256317
Date:	6/23/2016



Created On:	6/3/2014
Checked By:	DW
Revised On:	3/4/2015
Revision No.:	1.6

Monopole Pad & Pier Foundation

Foundation Parameters

Load	
Code	F
Axial	49 kips
Shear	39 kips
Moment	4324 k-ft
Soil Unit Weight	110 pcf
Friction Angle	30
Cohesion	0 psf

Material	
Concrete Strength (F'c)	3000 psi
Concrete Density	150 pcf
Rebar Tensile (Fy)	60 ksi
Clear Cover	3 in

Pad	
Thickness	3 ft
Bearing Depth	5.167 ft
Width	28 ft
Rebar Size	8
Rebar Quantity	49

Pier	
Pier type	Circle
Diameter	7.5 ft
Height above Grade	0.5 ft
Rebar Size	8
Rebar Quantity	51
Tie Size	4
Tie C/C Spacing	12 in

Structural Checks

Pad Beam Shear Capacity	869.6 kips
Pad Beam Shear	344.2 kips
Pad Beam Shear Check	39.6% Pass

Pad Bending Moment Capacity	5251.0 k-ft
Pad Bending Moment	2632.5 k-ft
Pad Bending Moment Check	50.1% Pass

Punching Shear Capacity	1975.7 kips
Punching Shear	451.7 kips
Punching Shear Check	22.9% Pass

Pad-Pier Bearing Capacity	21089.1 kips
Pad-Pier Bearing	715.0 kips
Pad-Pier Bearing Check	3.4% Pass

Pier Beam Shear Capacity	519.9 kips
Pier Beam Shear	52.7 kips
Pier Beam Shear Check	10.1% Pass

Pier Bending Moment Capacity	6871.2 k-ft
Pier Bending Moment	5969.8 k-ft
Pier Bending Moment Check	86.9% Pass



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

AT&T Existing Facility

Site ID: CT2179

Chester Wig Hill Road
49 Wig Hill Road
Chester, CT 06412

July 8, 2016

EBI Project Number: 6216003137

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	10.72 %



July 8, 2016

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

Emissions Analysis for Site: **CT2179 – Chester Wig Hill Road**

EBI Consulting was directed to analyze the proposed AT&T facility located at **49 Wig Hill Road, Chester, CT**, for the purpose of determining whether the emissions from the Proposed AT&T Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The number of $\mu\text{W}/\text{cm}^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The general population exposure limits for the 700 and 850 MHz Bands are approximately $467 \mu\text{W}/\text{cm}^2$ and $567 \mu\text{W}/\text{cm}^2$ respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) bands is $1000 \mu\text{W}/\text{cm}^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.



Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed AT&T Wireless antenna facility located at **49 Wig Hill Road, Chester, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

- 1) 2 UMTS channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 2) 2 UMTS channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 3) 2 LTE channels (700 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 4) 2 LTE channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 5) 2 GSM channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.



- 6) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 7) For the following calculations the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 8) The antennas used in this modeling are the **Powerwave 7770, Commscope DBXNH-6565B-R2M and the KMW AM-X-CD-16-65-00T-RET** for transmission in the 700 MHz, 850 MHz and 1900 MHz (PCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 9) The antenna mounting height centerlines of the proposed antennas are **132 feet** above ground level (AGL) for **Sector A**, **132 feet** above ground level (AGL) for **Sector B** and **132 feet** above ground level (AGL) for Sector C.
- 10) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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



AT&T Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Powerwave 7770	Make / Model:	Powerwave 7770	Make / Model:	Powerwave 7770
Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd
Height (AGL):	132 feet	Height (AGL):	132 feet	Height (AGL):	132 feet
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts
ERP (W):	2,140.89	ERP (W):	2,140.89	ERP (W):	2,140.89
Antenna A1 MPE%	0.63 %	Antenna B1 MPE%	0.63 %	Antenna C1 MPE%	0.63 %
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Commscope DBXNH-6565B-R2M	Make / Model:	KMW AM-X-CD-16-65-00T-RET	Make / Model:	KMW AM-X-CD-16-65-00T-RET
Gain:	13.1 / 17 dBd	Gain:	13.35 / 15.25 dBd	Gain:	13.35 / 15.25 dBd
Height (AGL):	132 feet	Height (AGL):	132 feet	Height (AGL):	132 feet
Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts
ERP (W):	8,464.33	ERP (W):	6,614.85	ERP (W):	6,614.85
Antenna A2 MPE%	2.55 %	Antenna B2 MPE%	2.17 %	Antenna C2 MPE%	2.17 %
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	Powerwave 7770	Make / Model:	Powerwave 7770	Make / Model:	Powerwave 7770
Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd
Height (AGL):	132 feet	Height (AGL):	132 feet	Height (AGL):	132 feet
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts
ERP (W):	2,140.89	ERP (W):	2,140.89	ERP (W):	2,140.89
Antenna A3 MPE%	0.63 %	Antenna B3 MPE%	0.63 %	Antenna C3 MPE%	0.63 %

Site Composite MPE%	
Carrier	MPE%
AT&T – Max per sector	3.81 %
T-Mobile	4.18 %
Verizon Wireless	2.32 %
Sprint	0.00 %
VSECI	0.41 %
Site Total MPE %:	10.72 %

AT&T Sector A Total:	3.81 %
AT&T Sector B Total:	3.42 %
AT&T Sector C Total:	3.42 %
Site Total:	10.72 %

AT&T _ Max Values Per Sector (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
AT&T 850 MHz UMTS	2	414.12	132	1.88	850 MHz	567	0.33 %
AT&T 1900 MHz (PCS) UMTS	2	656.33	132	2.97	1900 MHz (PCS)	1000	0.30 %
AT&T 700 MHz LTE	2	1,225.04	132	5.55	700 MHz	467	1.19 %
AT&T 1900 MHz (PCS) LTE	2	3,007.12	132	13.62	1900 MHz (PCS)	1000	1.36 %
AT&T 850 MHz GSM	2	414.12	132	1.88	850 MHz	567	0.33 %
AT&T 1900 MHz (PCS) GSM	2	656.33	132	2.97	1900 MHz (PCS)	1000	0.30 %
						Total:	3.81 %



Summary

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

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

AT&T Sector	Power Density Value (%)
Sector A:	3.81 %
Sector B:	3.42 %
Sector C:	3.42 %
AT&T Maximum Total (per sector):	3.81 %
Site Total:	10.72 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **10.72 %** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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