



September 11, 2012

VIA OVERNIGHT DELIVERY

Ms. Linda Roberts, Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051



RE: AT&T Mobility – Notice of Exempt Modification
330 Middletown Road, Columbia, CT

Dear Ms. Roberts:

This letter and attachments are submitted on behalf of AT&T Mobility (“AT&T”). AT&T is enhancing the capabilities of its wireless system in Connecticut by implementing LTE technology. In order to do so, AT&T will modify antenna and equipment configurations at a number of existing sites. Please accept this letter and attachments as notification, pursuant to R.C.S.A. Section 16-50j-73, of construction which 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 First Selectman of Columbia.

AT&T plans to modify the existing facility at 330 Middletown Road, Columbia, owned by American Tower (coordinates 41°41’23.50”N, -72°19’30.62”W). Attached are drawings depicting the planned changes, and documentation of the structural sufficiency of the tower to accommodate the revised antenna configuration. Also included is a power density calculation 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. The height of the overall structure will be unaffected. AT&T proposes to add three (3) new antennas, six (6) RRU’s and one (1) surge arrestor. Additionally,

AT&T will install one (1) fiber cable and two (2) DC control cables within a 3" flex conduit inside the existing monopole.

2.The proposed changes will not extend the site boundaries. AT&T will install an additional cabinet adjacent to its existing equipment within the fenced equipment compound. Thus, there will be no effect on the site compound.

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 in the attached power density calculations, AT&T's operations at the site will result in a power density of 1.44%; the combined site operations will result in a total power density of 41.31%.

Please feel free to call me with any questions or concerns regarding this matter. Thank you for your consideration.

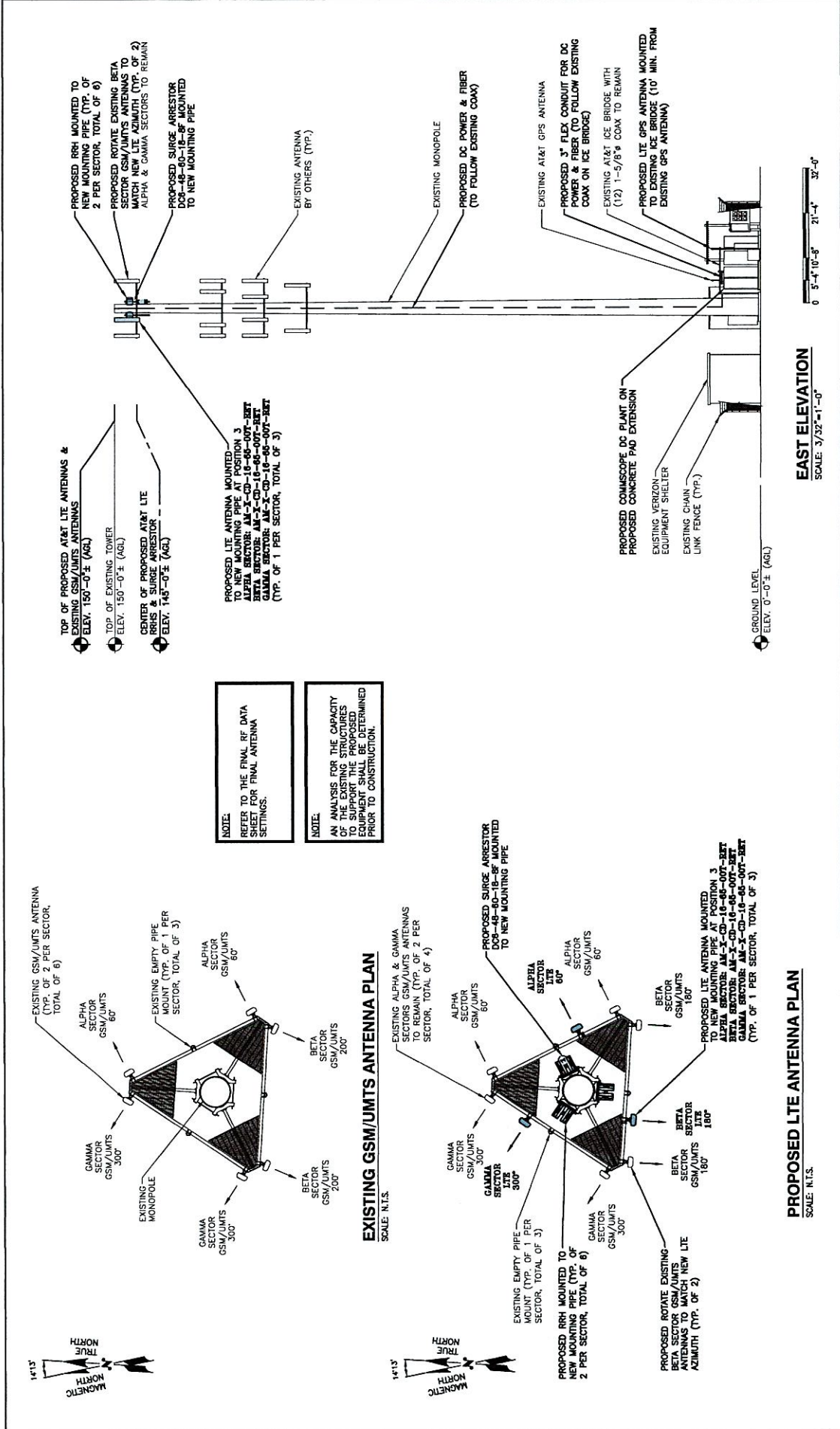
Respectfully submitted,
AT&T Mobility

By: 

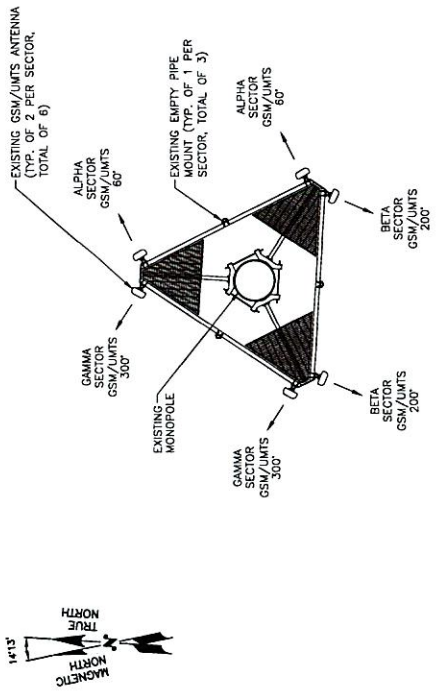
Eric Dahl, Consultant
edahl@comcast.net
860-227-1975

cc: Carmen L. Vance, First Selectman, Town of Columbia

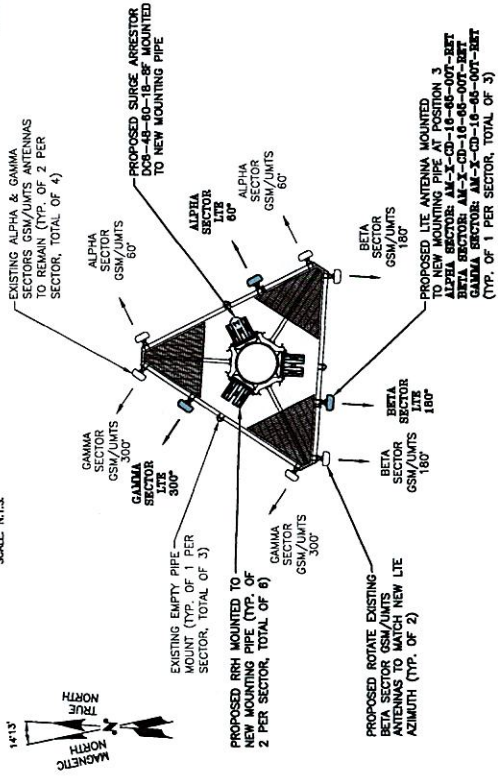
Attachments



EAST ELEVATION
SCALE: 3/32"=1'-0"



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:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES AND EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.



500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

SITE NUMBER: CT5864
SITE NAME: COLUMBIA SOUTHEAST
330 MIDDLETOWN ROAD
COLUMBIA, CT 06327
TOLLAND COUNTY

NO.	DATE	ISSUED FOR REVIEW	REVISIONS	DESIGNED BY: DC	DRAWN BY: RM
0	09/29/13				



a Unit & Global Services company
800 MARSHALL PHELPS ROAD UNIT# 2A
WINDSOR, CT 06095



180 COOPER STREET
N. ANDOVER, MA 01850
TEL: 978 652 8550
FAX: 978 354 5556

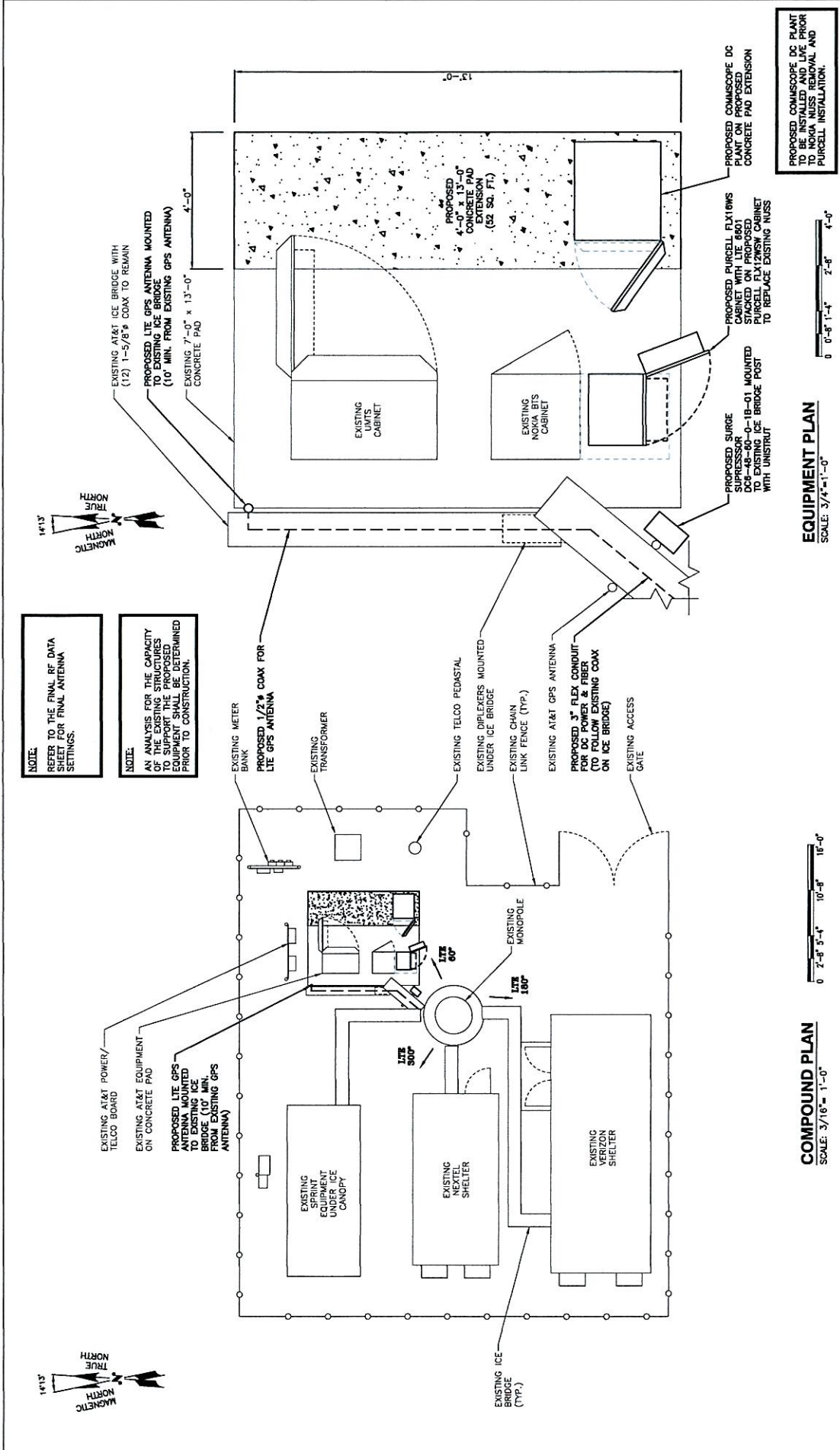
AT&T
ELEVATION & ANTENNA PLAN
(LIE)

JOB NUMBER	5864-01
DRAWING NUMBER	A-2
REV	0

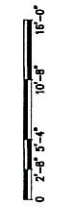


NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.



COMPOUND PLAN
SCALE: 3/16" = 1'-0"



a Unitel Global Services company
800 MARSHALL PHELPS ROAD UNIT# 2A
WINDSOR, CT 06095

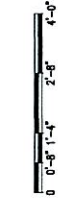
Hudson Design Group
180 SADDLER STREET
MIDDLETOWN, CT 06457
TEL: (878) 822-3633
FAX: (878) 822-5004

SITE NUMBER: CT5864
SITE NAME: COLUMBIA SOUTHEAST
330 MIDDLETOWN ROAD
COLUMBIA, CT 06327
TOLLAND COUNTY

500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06867

NO.	DATE	ISSUED FOR REVIEW	REVISIONS	DESIGNED BY: DC	DRAWN BY: RM
0	09/22/12				
COMPOUND AND EQUIPMENT PLAN					
AT&T					
JOB NUMBER:	5864.01				
DRAWING NUMBER:	A-1				
REV:	0				

EQUIPMENT PLAN
SCALE: 3/4" = 1'-0"



PROPOSED COMSCOPE DC PLANT TO BE INSTALLED AND LVE PRIOR TO NOKIA NUSS REMOVAL AND PURCELL INSTALLATION.



AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure : 148 ft Monopole
ATC Site Name : Columbia Central, CT
ATC Site Number : 302528
Engineering Number : 50373421
Proposed Carrier : AT&T Mobility
Carrier Site Name : AWE - Columbia South East
Carrier Site Number : CT5864 / 10070977
Site Location : 330 Middletown Road
Columbia, CT 06237-1528
41.689864,-72.325186
County : Tolland
Date : August 30, 2012
Max Usage : 92%
Result : Pass

Fabiaye Arinyedokiari, E.I.
Project Engineer



8/30/12



AMERICAN TOWER®
CORPORATION

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Fabiaye Arinyedokiari, E.I.
Project Engineer



Eng. Number 50373421
August 30, 2012

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Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 148 ft monopole to reflect the change in loading by AT&T Mobility.

Supporting Documents

Tower Drawings	Summit Manufacturing, Design #13998, dated May 2, 2001
Foundation Drawing	Summit Manufacturing, Design #13998, dated April 30, 2001
Geotechnical Report	Tectonic Engineering Consultants, Report #1170-C878B, dated January 26, 2001

Analysis

The tower was analyzed using American Tower Corporation's tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/EIA-222.

Basic Wind Speed:	85 mph (Fastest Mile)
Basic Wind Speed w/ Ice:	74 mph (Fastest Mile)w/ 1/2" radial ice concurrent
Code:	ANSI/TIA/EIA-222-F / 2003 IBC , Sec. 1609.1.1, Exception (4) & Sec. 3108.4 w/ 2005 CT Supplement & 2009 CT Amendment

Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact me via email at fabiaye.arinyedokiar@americantower.com or call 972-999-8928.



Existing and Reserved Equipment

Mount Elev. ¹ (ft)	Qty.	Antenna	Mount Type	Coax (in)	Carrier
148.0	6	Powerwave 7770	Low Profile Platform	(12) 1 5/8	AT&T Mobility
	6	Powerwave LGP 21401			
	6	Powerwave LGP 21903			
135.0	3	Antel BXA-171063-8CF-EDIN-X	Low Profile Platform	(12) 1 5/8	Verizon
	3	Antel BXA-70063/6CF			
	6	Antel LPA-80063/4CF			
	6	RFS FD9R6004/2C-3L			
120.0	9	48" x 12" Panel	Low Profile Platform	(12) 1 5/8	Sprint Nextel
	3	72" x 12" Panel			
108.0	6	Decibel DB980H90E-M	Sector Frames	(12) 1 1/4	
58.0	1	GPS	Side Arm	(1) 1/2	
30.0	1	GPS	Side Arm	(1) 1/2	Verizon

Proposed Equipment

Elevation ¹ (ft)		Qty.	Antenna	Mount Type	Coax (in)	Carrier
Mount	RAD					
148.0	150.0	6	Ericsson RRUS-11	On Existing Mounts	(2) 19.7 mm (1) 10 mm (1) 1/2	AT&T Mobility*
		3	KMW AM-X-CD-16-65-00T			
		1	Raycap DC6-48-60-18-8F			

¹Mount elevation is defined as height above bottom of steel structure to the bottom of mount, RAD elevation is defined as center of antenna above ground level (AGL).

Install proposed coax inside the pole shaft.

*Note: The results of this analysis reflect the tower usage with AT&T Mobility's larger MLA loading of (9) 72" x 12" Panels, (3) 36" x 8" Panels and (1) 14" x 9" TTA at the 150' elevation.



Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	81%	Pass
Shaft	92%	Pass
Base Plate	81%	Pass

Foundations

Reaction Component	Original Design Reactions	Analysis Reactions	% of Design
Moment (Kips-Ft)	3,316.0	3051.8	92%
Shear (Kips)	35.0	27.7	79%

The structure base reactions resulting from this analysis are less than those shown on the original structure drawings, therefore no modification or reinforcement of the foundation will be required.

The foundation and connections (anchor bolts and base plate) meet TIA-222-F design standards for strength, and also meet or exceed the design requirements (having the minimum 2.0 factor of safety with respect to wind loads) per section 3108.4.2 of the 2005 CT Supplement & 2009 CT Amendment.

Deflection and Sway*

Antenna Elevation (ft)	Deflection (ft)	Sway (Rotation) (°)
148.0	2.810	1.919

*Deflection and Sway was evaluated considering a design wind speed of 50 mph (Fastest Mile) per ANSI/TIA/EIA-222-F.



Standard Conditions

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessary limited, to:

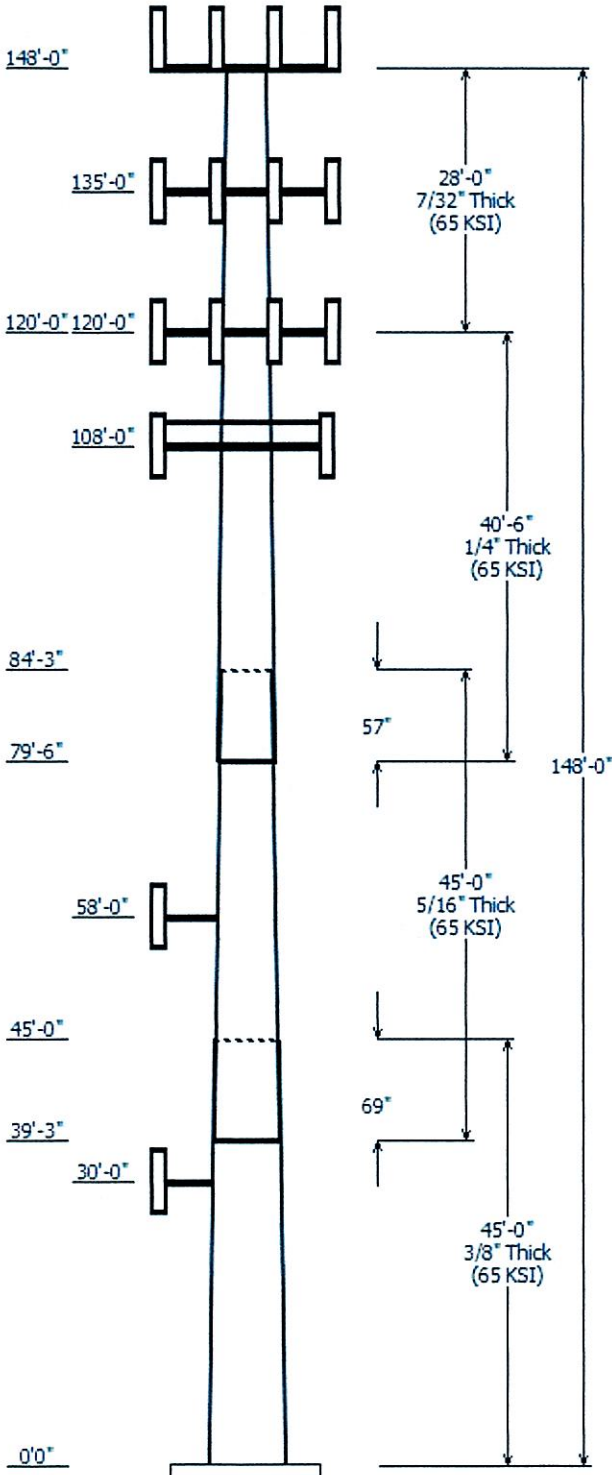
- Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.
- Information from drawings in the possession of American Tower Corporation, or generated by field inspections or measurements of the structure.

It is the responsibility of the client to ensure that the information provided to ATC Engineering Services and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and that their capacity has not significantly changed from the "as new" condition.

Unless explicitly agreed by both the client and American Tower Corporation, all services will be performed in accordance with the current revision of ANSI/TIA -222. The design basic wind speed will be determined based on the minimum basic wind speed as prescribed in ANSI/TIA-222. Although every effort is taken to ensure that the loading considered is adequate to meet the requirements of all applicable regulatory entities, we can provide no assurance to meet any other local and state codes or requirements. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. ATC Engineering Services is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.

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Job Information	
Pole :	302528
Code :	TIA/EIA-222 Rev F
Description :	148' Summit Monopole
Client :	Verizon Wireless
Location :	Columbia Central, CT
Shape :	18 Sides
Height :	148.00 (ft)
Base Elev (ft):	0.00
Taper:	0.18142(in/ft)

Sections Properties								
Shaft Section	Length (ft)	Diameter (in)		Thick (in)	Joint Type	Overlap Length (in)	Steel Taper (in/ft)	Steel Grade (ksi)
		Top	Bottom					
1	45.000	43.56	51.72	0.375		0.000	0.181424	65
2	45.000	37.06	45.23	0.313	Slip Joint	69.000	0.181424	65
3	40.500	31.08	38.42	0.250	Slip Joint	57.000	0.181424	65
4	28.000	26.00	31.08	0.219	Butt Joint	0.000	0.181424	65

Discrete Appurtenance			
Attach Elev (ft)	Force Elev (ft)	Qty	Description
148.000	150.000	6	Ericsson RRUS-11
148.000	150.000	1	Raycap DC6-48-60-18-8F
148.000	150.000	9	72" x 12" Panel
148.000	150.000	6	Powerwave LGP 21903
148.000	150.000	3	36" x 8" x 6" Panel
148.000	150.000	6	Powerwave LGP 21401
148.000	150.000	1	14" x 9" TTA
148.000	150.000	1	Low Profile Platform
135.000	135.000	6	Antel LPA-80063/4CF
135.000	135.000	6	RFS FD9R6004/2C-3L
135.000	135.000	3	Antel BXA-70063/6CF
135.000	135.000	3	Antel BXA-171063-8CF-EDIN-X
135.000	135.000	1	Low Profile Platform
120.000	120.000	9	48" x 12" Panel
120.000	120.000	3	72" x 12" Panel
120.000	120.000	1	Low Profile Platform
108.000	108.000	6	Decibel DB980H90E-M
108.000	108.000	3	Sector Frame
58.000	58.000	1	Side Arm
58.000	58.000	1	GPS
30.000	30.000	1	GPS
30.000	30.000	1	Side Arm

Linear Appurtenance			
Elev (ft) From	To	Description	Exposed To Wind
0.000	30.000	1/2" Coax	No
0.000	58.000	1/2" Coax	No
0.000	108.0	1 1/4" Coax	No
0.000	120.0	1 5/8" Coax	No
0.000	135.0	1 5/8" Coax	No
0.000	148.0	1 5/8" Coax	No
0.000	148.0	1/2" Coax	No
0.000	148.0	10 mm Cable	No
0.000	148.0	19.7 mm Cable	No

Load Cases	
No Ice	85.00 mph Wind with No Ice
Ice	73.61 mph Wind with Ice

Twist/Sway

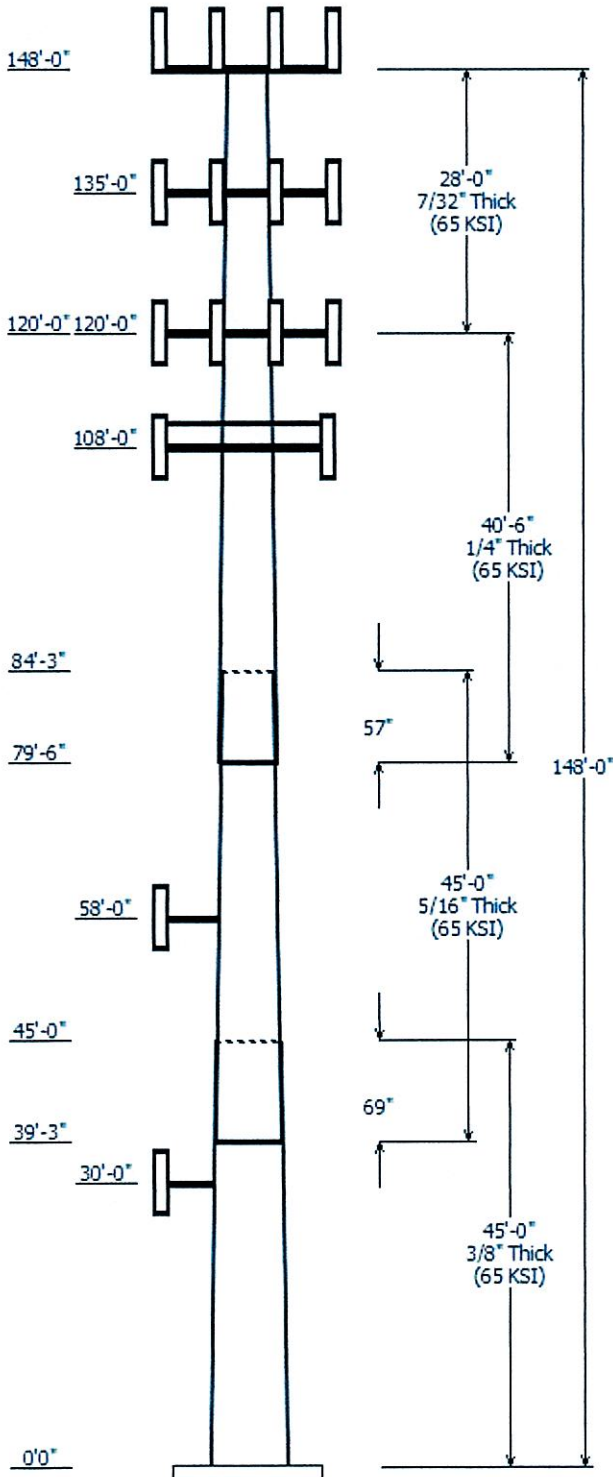
50.00 mph Wind with No Ice

Reactions

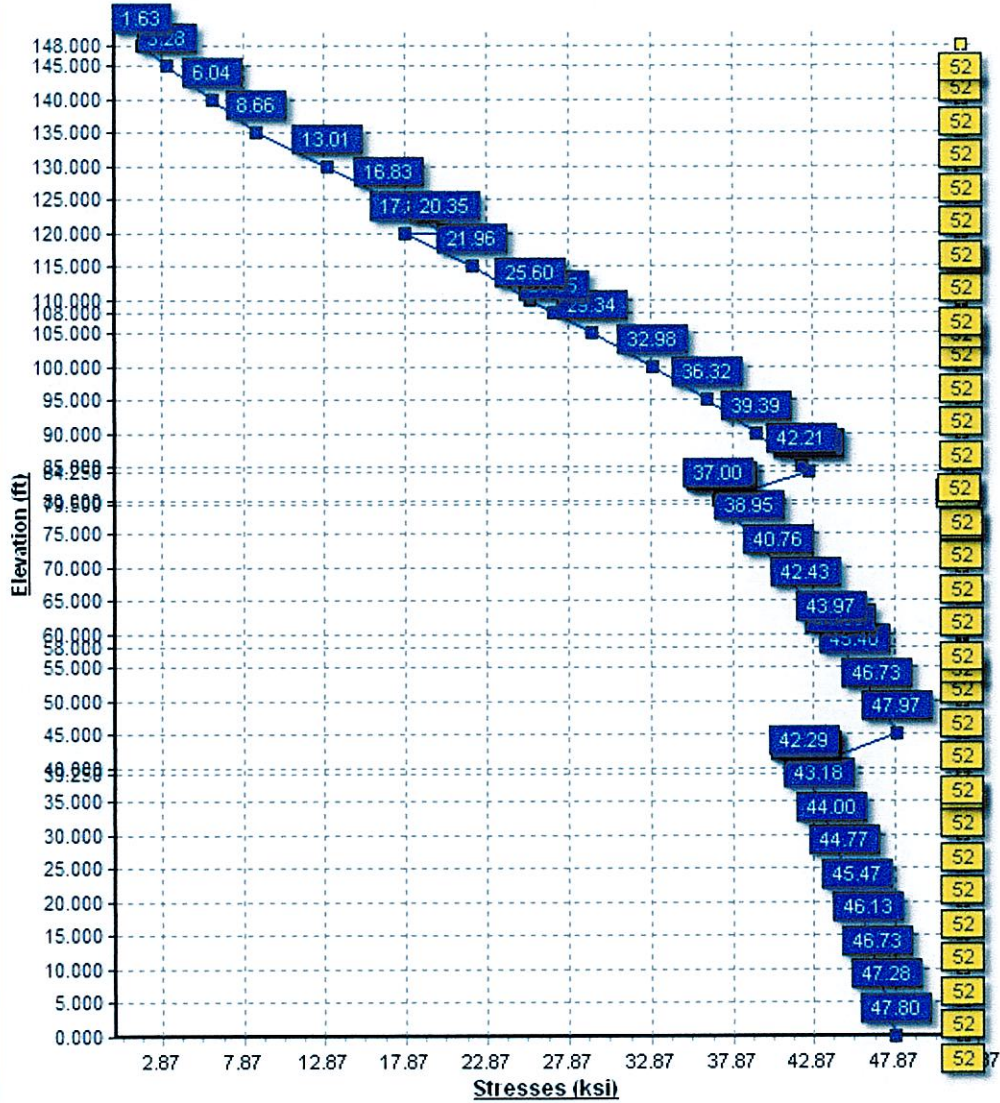
Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
No Ice	3051.83	27.70	32.78
Ice	2599.45	22.98	40.86
Twist/Sway	1057.33	9.59	32.83

Dish Deflections

Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
	0.00	0.000	0.000



Load Case : No Ice
Max Stress 92.3% at 45.0ft



Pole : 302528
 Location : Columbia Central, CT
 Height : 148.0 (ft)
 Base Dia : 51.72 (in)
 Top Dia : 26.00 (in)
 Shape : 18 Sides
 Taper : 0.181424 (in/ft)

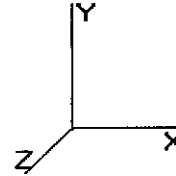
Code: TIA/EIA-222 Rev F

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Base Elev : 0.000 (ft)

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Shaft Section Properties

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Slip Len (in)	Weight (lb)	Bottom				Top				Taper (in/ft)				
							Dia (in)	Elev (ft)	Area (sqin)	Ix (in^4)	Wt Ratio	Dt Ratio	Dia (in)	Elev (ft)		Area (sqin)	Ix (in^4)		
1-18	45.000	0.3750	65		0.00	8,615	51.72	0.00	61.12	20361.7	22.91	137.94	43.56	45.00	51.40	12112.2	19.07	116.16	0.181424
2-18	45.000	0.3125	65	Slip	69.00	6,202	45.23	39.25	44.55	11356.3	24.11	144.74	37.06	84.25	36.45	6221.3	19.50	118.61	0.181424
3-18	40.500	0.2500	65	Slip	57.00	3,773	38.42	79.50	30.29	5578.4	25.69	153.71	31.08	120.00	24.46	2937.6	20.51	124.32	0.181424
4-18	28.000	0.2187	65	Butt	0.00	1,873	31.08	120.00	21.42	2577.7	23.65	142.11	26.00	148.00	17.90	1502.8	19.55	118.88	0.181424
Shaft Weight						20,463													

Discrete Appurtenance Properties

Attach Elev (ft)	Description	Qty	Weight (lb)	No Ice CaAa (sf)	CaAa Factor	Weight (lb)	Ice CaAa (sf)	CaAa Factor	Distance From Face (ft)	Vert Ecc (ft)
148.00	14" x 9" TTA	1	10.00	1.230	1.00	18.36	1.460	1.00	0.000	2.000
148.00	36" x 8" x 6" Panel	3	25.00	2.800	1.00	40.00	3.240	1.00	0.000	2.000
148.00	72" x 12" Panel	9	45.00	8.400	0.78	92.28	9.230	0.78	0.000	2.000
148.00	Ericsson RRUS-11	6	55.00	4.420	0.68	80.70	4.850	0.68	0.000	2.000
148.00	Low Profile Platform	1	1500.00	21.700	1.00	2,250.00	27.200	1.00	0.000	2.000
148.00	Powerwave LGP 21401	6	14.10	1.290	0.67	21.26	1.530	0.67	0.000	2.000
148.00	Powerwave LGP 21903	6	5.50	0.270	0.67	7.90	0.380	0.67	0.000	2.000
148.00	Raycap DC6-48-60-18-8F	1	31.80	1.470	1.00	49.50	1.670	1.00	0.000	2.000
135.00	Antel BXA-171063-8CF-EDIN-X	3	10.00	2.944	0.80	27.08	3.500	0.80	0.000	0.000
135.00	Antel BXA-70063/6CF	3	17.00	7.730	0.74	58.00	8.540	0.74	0.000	0.000
135.00	Antel LPA-80063/4CF	6	20.00	7.000	0.93	72.60	7.620	0.93	0.000	0.000
135.00	Low Profile Platform	1	1500.00	21.700	1.00	2,250.00	27.200	1.00	0.000	0.000
135.00	RFS FD9R6004/2C-3L	6	3.10	0.370	0.67	5.40	0.500	0.67	0.000	0.000
120.00	48" x 12" Panel	9	30.00	5.600	0.76	63.00	6.190	0.76	0.000	0.000
120.00	72" x 12" Panel	3	45.00	8.400	0.78	92.28	9.230	0.78	0.000	0.000
120.00	Low Profile Platform	1	1500.00	21.700	1.00	2,250.00	27.200	1.00	0.000	0.000
108.00	Decibel DB980H90E-M	6	8.50	3.896	0.80	29.47	4.589	0.80	0.000	0.000
108.00	Sector Frame	3	300.00	14.400	0.75	415.00	19.200	0.75	0.000	0.000
58.00	GPS	1	7.00	1.000	1.00	15.00	1.300	1.00	0.000	0.000
58.00	Side Arm	1	100.00	3.000	1.00	150.00	4.000	1.00	0.000	0.000
30.00	GPS	1	7.00	1.000	1.00	15.00	1.300	1.00	0.000	0.000
30.00	Side Arm	1	100.00	3.000	1.00	150.00	4.000	1.00	0.000	0.000
Totals		78	7259.00			11,746.46			Number of Loadings :	22

Linear Appurtenance Properties

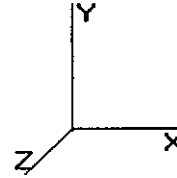
Elev From (ft)	Elev To (ft)	Description	No Ice Weight (lb/ft)	CaAa (sf/ft)	Ice Weight (lb/ft)	CaAa (sf/ft)	Exposed To Wind
0.00	148.00	(12) 1 5/8" Coax	10.00	0.00	10.00	0.00	N
0.00	148.00	(1) 1/2" Coax	0.15	0.00	0.15	0.00	N
0.00	148.00	(1) 10 mm Cable	0.07	0.00	0.07	0.00	N
0.00	148.00	(2) 19.7 mm Cable	1.18	0.00	1.18	0.00	N
0.00	135.00	(12) 1 5/8" Coax	10.00	0.00	10.00	0.00	N
0.00	120.00	(12) 1 5/8" Coax	10.00	0.00	10.00	0.00	N
0.00	108.00	(12) 1 1/4" Coax	8.00	0.00	8.00	0.00	N
0.00	58.00	(1) 1/2" Coax	0.15	0.00	0.15	0.00	N
0.00	30.00	(1) 1/2" Coax	0.15	0.00	0.15	0.00	N
Total Weight			5,114.40 (lb)		5,114.40 (lb)		

Pole : 302528
 Location : Columbia Central, CT
 Height : 148.0 (ft)
 Base Dia : 51.72 (in)
 Top Dia : 26.00 (in)
 Shape : 18 Sides
 Taper : 0.181424 (in/ft)

Code: TIA/EIA-222 Rev F

Base Elev : 0.000 (ft)

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Load Case: No Ice	85.00 mph Wind with No Ice	23 Iterations
Gust Response Factor : 1.69		
Dead Load Factor : 1.00		
Wind Load Factor : 1.00		

Shaft Segment Forces

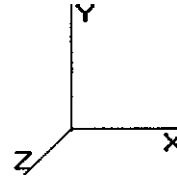
Seg Top Elev (ft)	Description	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		0.00	1.00 18.496	31.25 366.39	0.650	0.000	0.00	0.000	0.00	0.00	0.0	0.0	0.0
5.00		0.00	1.00 18.496	31.25 359.96	0.650	0.000	5.00	21.363	13.89	434.1	0.0	0.0	1,030.7
10.00		0.00	1.00 18.496	31.25 353.54	0.650	0.000	5.00	20.985	13.64	426.4	0.0	0.0	1,012.3
15.00		0.00	1.00 18.496	31.25 347.11	0.650	0.000	5.00	20.607	13.39	418.7	0.0	0.0	993.9
20.00		0.00	1.00 18.496	31.25 340.68	0.650	0.000	5.00	20.229	13.15	411.0	0.0	0.0	975.6
25.00		0.00	1.00 18.496	31.25 334.26	0.650	0.000	5.00	19.852	12.90	403.3	0.0	0.0	957.2
30.00	Appertunance(s)	0.00	1.00 18.496	31.25 327.83	0.650	0.000	5.00	19.474	12.66	395.7	0.0	0.0	938.8
35.00		0.00	1.01 18.810	31.78 324.12	0.650	0.000	5.00	19.096	12.41	394.6	0.0	0.0	920.5
39.25	Bot - Section 2	0.00	1.05 19.436	32.84 323.87	0.650	0.000	4.25	15.934	10.36	340.2	0.0	0.0	767.9
40.00		0.00	1.05 19.541	33.02 323.76	0.650	0.000	0.75	2.823	1.83	60.6	0.0	0.0	247.7
45.00	Top - Section 1	0.00	1.09 20.210	34.15 322.54	0.650	0.000	5.00	18.600	12.09	412.9	0.0	0.0	1,631.7
50.00		0.00	1.12 20.827	35.19 325.31	0.650	0.000	5.00	18.222	11.84	416.9	0.0	0.0	732.7
55.00		0.00	1.15 21.402	36.17 322.85	0.650	0.000	5.00	17.844	11.60	419.5	0.0	0.0	717.4
58.00	Appertunance(s)	0.00	1.17 21.730	36.72 321.14	0.650	0.000	3.00	10.525	6.84	251.2	0.0	0.0	423.1
60.00		0.00	1.18 21.941	37.08 319.89	0.650	0.000	2.00	6.941	4.51	167.3	0.0	0.0	279.0
65.00		0.00	1.21 22.449	37.93 316.50	0.650	0.000	5.00	17.088	11.11	421.4	0.0	0.0	686.8
70.00		0.00	1.24 22.929	38.75 312.71	0.650	0.000	5.00	16.710	10.86	420.9	0.0	0.0	671.5
75.00		0.00	1.26 23.386	39.52 308.58	0.650	0.000	5.00	16.332	10.62	419.6	0.0	0.0	656.2
79.50	Bot - Section 3	0.00	1.28 23.778	40.18 304.60	0.650	0.000	4.50	14.376	9.34	375.5	0.0	0.0	577.5
80.00		0.00	1.28 23.821	40.25 304.15	0.650	0.000	0.50	1.599	1.04	41.8	0.0	0.0	114.9
84.25	Top - Section 2	0.00	1.30 24.176	40.85 300.16	0.650	0.000	4.25	13.441	8.74	357.0	0.0	0.0	965.3
85.00		0.00	1.31 24.237	40.96 303.49	0.650	0.000	0.75	2.344	1.52	62.4	0.0	0.0	75.4
90.00		0.00	1.33 24.636	41.63 298.57	0.650	0.000	5.00	15.407	10.01	416.9	0.0	0.0	495.8
95.00		0.00	1.35 25.020	42.28 293.41	0.650	0.000	5.00	15.029	9.77	413.1	0.0	0.0	483.6
100.00		0.00	1.37 25.389	42.90 288.04	0.650	0.000	5.00	14.651	9.52	408.6	0.0	0.0	471.3
105.00		0.00	1.39 25.745	43.51 282.47	0.650	0.000	5.00	14.273	9.28	403.7	0.0	0.0	459.1
108.00	Appertunance(s)	0.00	1.40 25.953	43.86 279.04	0.650	0.000	3.00	8.382	5.45	239.0	0.0	0.0	269.6
110.00		0.00	1.41 26.090	44.09 276.72	0.650	0.000	2.00	5.513	3.58	158.0	0.0	0.0	177.3
115.00		0.00	1.42 26.423	44.65 270.81	0.650	0.000	5.00	13.517	8.79	392.3	0.0	0.0	434.6
120.00	Top - Section 3	0.00	1.44 26.747	45.20 264.73	0.650	0.000	5.00	13.139	8.54	386.0	0.0	0.0	422.3
125.00		0.00	1.46 27.060	45.73 258.51	0.650	0.000	5.00	12.761	8.29	379.3	0.0	0.0	359.1
130.00		0.00	1.48 27.365	46.24 252.14	0.650	0.000	5.00	12.383	8.05	372.2	0.0	0.0	348.4
135.00	Appertunance(s)	0.00	1.49 27.662	46.74 245.65	0.650	0.000	5.00	12.005	7.80	364.8	0.0	0.0	337.7
140.00		0.00	1.51 27.951	47.23 239.03	0.650	0.000	5.00	11.627	7.56	357.0	0.0	0.0	327.0
145.00		0.00	1.52 28.233	47.71 232.29	0.650	0.000	5.00	11.249	7.31	348.9	0.0	0.0	316.3
148.00	Appertunance(s)	0.00	1.53 28.398	47.99 228.20	0.650	0.000	3.00	6.568	4.27	204.9	0.0	0.0	184.6
Totals:								148.00			11,895.7	0.0	20,462.6

Pole : 302528
 Location : Columbia Central, CT
 Height : 148.0 (ft)
 Base Dia : 51.72 (in)
 Top Dia : 26.00 (in)
 Shape : 18 Sides
 Taper : 0.181424 (in/ft)

Code: TIA/EIA-222 Rev F

Base Elev : 0.000 (ft)

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Load Case: No Ice 85.00 mph Wind with No Ice 23 Iterations

Gust Response Factor : 1.69
 Dead Load Factor : 1.00
 Wind Load Factor : 1.00

Discrete Appurtenance Segment Forces

Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa Factor	Total CaAa (sf)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)	Dead Load (lb)
30.00	GPS	1	18.496	31.258	1.00	1.00	0.000	0.000	31.26	0.00	0.00	7.00
30.00	Side Arm	1	18.496	31.258	1.00	3.00	0.000	0.000	93.77	0.00	0.00	100.00
58.00	GPS	1	21.730	36.723	1.00	1.00	0.000	0.000	36.72	0.00	0.00	7.00
58.00	Side Arm	1	21.730	36.723	1.00	3.00	0.000	0.000	110.17	0.00	0.00	100.00
108.0	Decibel DB980H90E-M	6	25.953	43.861	0.80	18.70	0.000	0.000	820.24	0.00	0.00	51.00
108.0	Sector Frame	3	25.953	43.861	0.75	32.40	0.000	0.000	1,421.11	0.00	0.00	900.00
120.0	48" x 12" Panel	9	26.747	45.202	0.76	38.30	0.000	0.000	1,731.41	0.00	0.00	270.00
120.0	72" x 12" Panel	3	26.747	45.202	0.78	19.65	0.000	0.000	888.36	0.00	0.00	135.00
120.0	Low Profile Platform	1	26.747	45.202	1.00	21.70	0.000	0.000	980.87	0.00	0.00	1,500.00
135.0	Antel BXA-171063-8CF	3	27.662	46.749	0.80	7.07	0.000	0.000	330.31	0.00	0.00	30.00
135.0	Antel BXA-70063/6CF	3	27.662	46.749	0.74	17.16	0.000	0.000	802.24	0.00	0.00	51.00
135.0	Antel LPA-80063/4CF	6	27.662	46.749	0.93	39.06	0.000	0.000	1,826.01	0.00	0.00	120.00
135.0	Low Profile Platform	1	27.662	46.749	1.00	21.70	0.000	0.000	1,014.44	0.00	0.00	1,500.00
135.0	RFS FD9R6004/2C-3L	6	27.662	46.749	0.67	1.49	0.000	0.000	69.53	0.00	0.00	18.60
148.0	14" x 9" TTA	1	28.507	48.177	1.00	1.23	0.000	2.000	59.26	0.00	118.52	10.00
148.0	36" x 8" x 6" Panel	3	28.507	48.177	1.00	8.40	0.000	2.000	404.69	0.00	809.38	75.00
148.0	72" x 12" Panel	9	28.507	48.177	0.78	58.97	0.000	2.000	2,840.93	0.00	5,681.86	405.00
148.0	Ericsson RRUS-11	6	28.507	48.177	0.68	18.03	0.000	2.000	868.81	0.00	1,737.63	330.00
148.0	Low Profile Platform	1	28.507	48.177	1.00	21.70	0.000	2.000	1,045.45	0.00	2,090.89	1,500.00
148.0	Powerwave LGP	6	28.507	48.177	0.67	5.19	0.000	2.000	249.84	0.00	499.68	84.60
148.0	Powerwave LGP	6	28.507	48.177	0.67	1.09	0.000	2.000	52.29	0.00	104.58	33.00
148.0	Raycap DC6-48-60-18-	1	28.507	48.177	1.00	1.47	0.000	2.000	70.82	0.00	141.64	31.80
									15,748.52			7,259.00

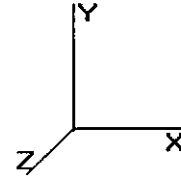
Pole : 302528
 Location : Columbia Central, CT
 Height : 148.0 (ft)
 Base Dia : 51.72 (in)
 Top Dia : 26.00 (in)
 Shape : 18 Sides
 Taper : 0.181424 (in/ft)

Code: TIA/EIA-222 Rev F

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Base Elev : 0.000 (ft)



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Load Case: No Ice 85.00 mph Wind with No Ice 23 Iterations
Gust Response Factor : 1.69
Dead Load Factor : 1.00
Wind Load Factor : 1.00

Applied Segment Forces Summary

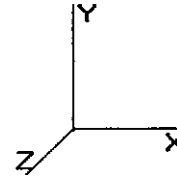
Seg Elev (ft)	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00	0.00	0.00	0.00	0.00
5.00	434.06	1,229.17	0.00	0.00
10.00	426.38	1,210.80	0.00	0.00
15.00	418.70	1,192.43	0.00	0.00
20.00	411.02	1,174.06	0.00	0.00
25.00	403.34	1,155.69	0.00	0.00
30.00	520.69	1,244.32	0.00	0.00
35.00	394.56	1,118.20	0.00	0.00
39.25	340.19	936.03	0.00	0.00
40.00	60.59	277.33	0.00	0.00
45.00	412.93	1,829.50	0.00	0.00
50.00	416.90	930.47	0.00	0.00
55.00	419.53	915.17	0.00	0.00
58.00	398.13	648.75	0.00	0.00
60.00	167.30	357.81	0.00	0.00
65.00	421.39	883.80	0.00	0.00
70.00	420.89	868.49	0.00	0.00
75.00	419.56	853.19	0.00	0.00
79.50	375.50	754.78	0.00	0.00
80.00	41.85	134.58	0.00	0.00
84.25	356.96	1,132.78	0.00	0.00
85.00	62.40	104.98	0.00	0.00
90.00	416.95	692.80	0.00	0.00
95.00	413.05	680.56	0.00	0.00
100.0	408.61	668.31	0.00	0.00
105.0	403.65	656.07	0.00	0.00
108.0	2,480.33	1,338.76	0.00	0.00
110.0	157.99	240.06	0.00	0.00
115.0	392.34	591.57	0.00	0.00
120.0	3,986.67	2,484.33	0.00	0.00
125.0	379.33	466.11	0.00	0.00
130.0	372.24	455.40	0.00	0.00
135.0	4,407.32	2,164.28	0.00	0.00
140.0	357.00	383.97	0.00	0.00
145.0	348.87	373.26	0.00	0.00
148.0	5,796.98	2,688.21	0.00	11,184.17
Totals:	27,644.20	32,836.03	0.00	11,184.17

Pole : 302528
 Location : Columbia Central, CT
 Height : 148.0 (ft)
 Base Dia : 51.72 (in)
 Top Dia : 26.00 (in)
 Shape : 18 Sides
 Taper : 0.181424 (in/ft)

Code: TIA/EIA-222 Rev F

Base Elev : 0.000 (ft)

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Load Case: No Ice	85.00 mph Wind with No Ice	23 Iterations
Gust Response Factor : 1.69		
Dead Load Factor : 1.00		
Wind Load Factor : 1.00		

Calculated Shaft Forces and Deflections

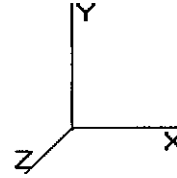
Seg Elev (ft)	Lateral FX (-) (kips)	Axial FY (-) (kips)	Lateral FZ (kips)	Moment MX (ft-kips)	Torsion MY (ft-kips)	Moment MZ (ft-kips)	X Deflect (in)	Z Deflect (in)	Total Deflect (in)	Rotation (deg)
0.00	-27.705	-32.784	0.000	0.000	0.000	-3,051.831	0.000	0.000	0.000	0.000
5.00	-27.383	-31.456	0.000	0.000	0.000	-2,913.311	-0.112	0.000	0.112	-0.208
10.00	-27.061	-30.149	0.000	0.000	0.000	-2,776.398	-0.443	0.000	0.443	-0.418
15.00	-26.738	-28.862	0.000	0.000	0.000	-2,641.095	-0.994	0.000	0.994	-0.629
20.00	-26.414	-27.596	0.000	0.000	0.000	-2,507.408	-1.766	0.000	1.766	-0.841
25.00	-26.090	-26.350	0.000	0.000	0.000	-2,375.339	-2.760	0.000	2.760	-1.053
30.00	-25.637	-25.021	0.000	0.000	0.000	-2,244.892	-3.977	0.000	3.977	-1.266
35.00	-25.298	-23.826	0.000	0.000	0.000	-2,116.708	-5.418	0.000	5.418	-1.479
39.25	-24.975	-22.853	0.000	0.000	0.000	-2,009.193	-6.818	0.000	6.818	-1.661
40.00	-24.955	-22.524	0.000	0.000	0.000	-1,990.462	-7.081	0.000	7.081	-1.694
45.00	-24.561	-20.617	0.000	0.000	0.000	-1,865.688	-8.970	0.000	8.970	-1.907
50.00	-24.190	-19.606	0.000	0.000	0.000	-1,742.883	-11.080	0.000	11.080	-2.119
55.00	-23.797	-18.629	0.000	0.000	0.000	-1,621.936	-13.428	0.000	13.428	-2.360
58.00	-23.410	-17.948	0.000	0.000	0.000	-1,550.544	-14.958	0.000	14.958	-2.505
60.00	-23.278	-17.530	0.000	0.000	0.000	-1,503.725	-16.028	0.000	16.028	-2.602
65.00	-22.883	-16.574	0.000	0.000	0.000	-1,387.335	-18.879	0.000	18.879	-2.837
70.00	-22.481	-15.639	0.000	0.000	0.000	-1,272.921	-21.974	0.000	21.974	-3.069
75.00	-22.069	-14.728	0.000	0.000	0.000	-1,160.519	-25.308	0.000	25.308	-3.296
79.50	-21.677	-13.955	0.000	0.000	0.000	-1,061.207	-28.510	0.000	28.510	-3.496
80.00	-21.652	-13.784	0.000	0.000	0.000	-1,050.369	-28.877	0.000	28.877	-3.518
84.25	-21.248	-12.637	0.000	0.000	0.000	-958.350	-32.092	0.000	32.092	-3.701
85.00	-21.210	-12.484	0.000	0.000	0.000	-942.415	-32.676	0.000	32.676	-3.734
90.00	-20.796	-11.734	0.000	0.000	0.000	-836.368	-36.717	0.000	36.717	-3.980
95.00	-20.379	-11.004	0.000	0.000	0.000	-732.388	-41.009	0.000	41.009	-4.213
100.0	-19.959	-10.295	0.000	0.000	0.000	-630.493	-45.536	0.000	45.536	-4.431
105.0	-19.531	-9.620	0.000	0.000	0.000	-530.698	-50.283	0.000	50.283	-4.633
108.0	-16.963	-8.462	0.000	0.000	0.000	-472.105	-53.229	0.000	53.229	-4.746
110.0	-16.803	-8.201	0.000	0.000	0.000	-438.179	-55.231	0.000	55.231	-4.818
115.0	-16.381	-7.602	0.000	0.000	0.000	-354.166	-60.360	0.000	60.360	-4.979
120.0	-12.204	-5.451	0.000	0.000	0.000	-272.259	-65.646	0.000	65.646	-5.118
125.0	-11.794	-4.998	0.000	0.000	0.000	-211.242	-71.064	0.000	71.064	-5.235
130.0	-11.389	-4.560	0.000	0.000	0.000	-152.274	-76.602	0.000	76.602	-5.345
135.0	-6.801	-2.811	0.000	0.000	0.000	-95.331	-82.239	0.000	82.239	-5.427
140.0	-6.411	-2.458	0.000	0.000	0.000	-61.326	-87.947	0.000	87.947	-5.484
145.0	-6.029	-2.117	0.000	0.000	0.000	-29.271	-93.704	0.000	93.704	-5.520
148.0	-5.797	0.000	0.000	0.000	0.000	-11.184	-97.172	0.000	97.172	-5.531

Pole : 302528
 Location : Columbia Central, CT
 Height : 148.0 (ft)
 Base Dia : 51.72 (in)
 Top Dia : 26.00 (in)
 Shape : 18 Sides
 Taper : 0.181424 (in/ft)

Code: TIA/EIA-222 Rev F

Base Elev : 0.000 (ft)

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Load Case: No Ice 85.00 mph Wind with No Ice 23 Iterations

Gust Response Factor : 1.69
 Dead Load Factor : 1.00
 Wind Load Factor : 1.00

Calculated Stresses

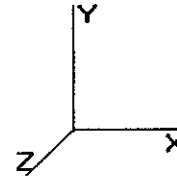
Seg Elev (ft)	Applied Stresses							Allowable Stress (Fb) (ksi)	Stress Ratio	
	Axial (Y) (ksi)	Shear (X) (ksi)	Shear (Z) (ksi)	Torsion (ksi)	Bending (X) (ksi)	Bending (Z) (ksi)	Combined (ksi)			
0.00	0.54	0.91	0.00	0.00	0.00	47.23	47.80	52.0	0.0	0.920
5.00	0.52	0.92	0.00	0.00	0.00	46.73	47.28	52.0	0.0	0.910
10.00	0.51	0.93	0.00	0.00	0.00	46.19	46.73	52.0	0.0	0.899
15.00	0.50	0.93	0.00	0.00	0.00	45.60	46.13	52.0	0.0	0.887
20.00	0.49	0.94	0.00	0.00	0.00	44.96	45.47	52.0	0.0	0.875
25.00	0.47	0.94	0.00	0.00	0.00	44.26	44.77	52.0	0.0	0.861
30.00	0.46	0.95	0.00	0.00	0.00	43.51	44.00	52.0	0.0	0.846
35.00	0.44	0.95	0.00	0.00	0.00	42.70	43.18	52.0	0.0	0.831
39.25	0.43	0.96	0.00	0.00	0.00	41.96	42.43	52.0	0.0	0.816
40.00	0.43	0.96	0.00	0.00	0.00	41.83	42.29	52.0	0.0	0.814
45.00	0.47	1.14	0.00	0.00	0.00	47.46	47.97	52.0	0.0	0.923
50.00	0.46	1.14	0.00	0.00	0.00	46.23	46.73	52.0	0.0	0.899
55.00	0.45	1.15	0.00	0.00	0.00	44.91	45.40	52.0	0.0	0.873
58.00	0.44	1.15	0.00	0.00	0.00	44.07	44.55	52.0	0.0	0.857
60.00	0.43	1.15	0.00	0.00	0.00	43.50	43.97	52.0	0.0	0.846
65.00	0.42	1.16	0.00	0.00	0.00	41.97	42.43	52.0	0.0	0.816
70.00	0.40	1.16	0.00	0.00	0.00	40.31	40.76	52.0	0.0	0.784
75.00	0.39	1.17	0.00	0.00	0.00	38.51	38.95	52.0	0.0	0.749
79.50	0.37	1.17	0.00	0.00	0.00	36.77	37.20	52.0	0.0	0.716
80.00	0.37	1.17	0.00	0.00	0.00	36.57	37.00	52.0	0.0	0.712
84.25	0.43	1.45	0.00	0.00	0.00	42.11	42.61	51.7	0.0	0.823
85.00	0.42	1.45	0.00	0.00	0.00	41.71	42.21	51.8	0.0	0.815
90.00	0.41	1.46	0.00	0.00	0.00	38.90	39.39	52.0	0.0	0.758
95.00	0.39	1.46	0.00	0.00	0.00	35.84	36.32	52.0	0.0	0.699
100.00	0.38	1.47	0.00	0.00	0.00	32.50	32.98	52.0	0.0	0.635
105.00	0.36	1.48	0.00	0.00	0.00	28.86	29.34	52.0	0.0	0.564
108.00	0.32	1.31	0.00	0.00	0.00	26.54	26.95	52.0	0.0	0.519
110.00	0.32	1.31	0.00	0.00	0.00	25.18	25.60	52.0	0.0	0.492
115.00	0.30	1.31	0.00	0.00	0.00	21.54	21.96	52.0	0.0	0.422
120.00	0.22	1.01	0.00	0.00	0.00	17.55	17.86	52.0	0.0	0.344
120.00	0.25	1.15	0.00	0.00	0.00	20.00	20.35	52.0	0.0	0.392
125.00	0.24	1.14	0.00	0.00	0.00	16.48	16.83	52.0	0.0	0.324
130.00	0.23	1.14	0.00	0.00	0.00	12.63	13.01	52.0	0.0	0.250
135.00	0.14	0.70	0.00	0.00	0.00	8.43	8.66	52.0	0.0	0.167
140.00	0.13	0.68	0.00	0.00	0.00	5.79	6.04	52.0	0.0	0.116
145.00	0.12	0.66	0.00	0.00	0.00	2.96	3.28	52.0	0.0	0.063
148.00	0.00	0.65	0.00	0.00	0.00	1.18	1.63	52.0	0.0	0.031

Pole : 302528
 Location : Columbia Central, CT
 Height : 148.0 (ft)
 Base Dia : 51.72 (in)
 Top Dia : 26.00 (in)
 Shape : 18 Sides
 Taper : 0.181424 (in/ft)

Code: TIA/EIA-222 Rev F

Base Elev : 0.000 (ft)

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Load Case: Ice	73.61 mph Wind with Ice	23 Iterations
Gust Response Factor : 1.69		
Dead Load Factor : 1.00		
Wind Load Factor : 1.00		

Shaft Segment Forces

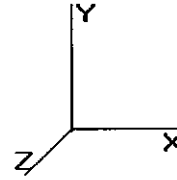
Seg Top Elev (ft)	Description	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		0.00	1.00 13.871	23.44 317.29	0.650	0.500	0.00	0.000	0.00	0.00	0.0	0.0	0.0
5.00		0.00	1.00 13.871	23.44 311.72	0.650	0.500	5.00	21.780	14.16	331.9	158.4	1,189.0	
10.00		0.00	1.00 13.871	23.44 306.16	0.650	0.500	5.00	21.402	13.91	326.1	155.6	1,167.9	
15.00		0.00	1.00 13.871	23.44 300.60	0.650	0.500	5.00	21.024	13.67	320.4	152.8	1,146.7	
20.00		0.00	1.00 13.871	23.44 295.03	0.650	0.500	5.00	20.646	13.42	314.6	150.0	1,125.5	
25.00		0.00	1.00 13.871	23.44 289.47	0.650	0.500	5.00	20.268	13.17	308.8	147.2	1,104.4	
30.00	Appertunance(s)	0.00	1.00 13.871	23.44 283.90	0.650	0.500	5.00	19.890	12.93	303.1	144.4	1,083.2	
35.00		0.00	1.01 14.106	23.84 280.69	0.650	0.500	5.00	19.512	12.68	302.4	141.6	1,062.0	
39.25	Bot - Section 2	0.00	1.05 14.576	24.63 280.47	0.650	0.500	4.25	16.288	10.59	260.8	118.3	886.2	
40.00		0.00	1.05 14.655	24.76 280.37	0.650	0.500	0.75	2.885	1.88	46.4	21.1	268.8	
45.00	Top - Section 1	0.00	1.09 15.156	25.61 279.32	0.650	0.500	5.00	19.017	12.36	316.6	137.9	1,769.6	
50.00		0.00	1.12 15.620	26.39 281.71	0.650	0.500	5.00	18.639	12.12	319.8	135.1	867.8	
55.00		0.00	1.15 16.051	27.12 279.59	0.650	0.500	5.00	18.261	11.87	322.0	132.3	849.7	
58.00	Appertunance(s)	0.00	1.17 16.296	27.54 278.10	0.650	0.500	3.00	10.775	7.00	192.9	78.4	501.5	
60.00		0.00	1.18 16.455	27.80 277.03	0.650	0.500	2.00	7.108	4.62	128.5	51.8	330.8	
65.00		0.00	1.21 16.836	28.45 274.08	0.650	0.500	5.00	17.505	11.38	323.7	126.7	813.5	
70.00		0.00	1.24 17.196	29.06 270.81	0.650	0.500	5.00	17.127	11.13	323.5	123.9	795.4	
75.00		0.00	1.26 17.538	29.63 267.23	0.650	0.500	5.00	16.749	10.89	322.7	121.1	777.3	
79.50	Bot - Section 3	0.00	1.28 17.833	30.13 263.79	0.650	0.500	4.50	14.751	9.59	289.0	106.7	684.2	
80.00		0.00	1.28 17.865	30.19 263.39	0.650	0.500	0.50	1.641	1.07	32.2	12.0	126.9	
84.25	Top - Section 2	0.00	1.30 18.131	30.64 259.94	0.650	0.500	4.25	13.795	8.97	274.8	99.8	1,065.2	
85.00		0.00	1.31 18.177	30.71 262.82	0.650	0.500	0.75	2.406	1.56	48.0	17.6	93.0	
90.00		0.00	1.33 18.476	31.22 258.56	0.650	0.500	5.00	15.823	10.29	321.1	114.2	610.0	
95.00		0.00	1.35 18.764	31.71 254.09	0.650	0.500	5.00	15.445	10.04	318.4	111.4	595.0	
100.00		0.00	1.37 19.041	32.17 249.44	0.650	0.500	5.00	15.067	9.79	315.2	108.6	580.0	
105.00		0.00	1.39 19.308	32.63 244.62	0.650	0.500	5.00	14.689	9.55	311.6	105.8	564.9	
108.00	Appertunance(s)	0.00	1.40 19.464	32.89 241.65	0.650	0.500	3.00	8.632	5.61	184.6	62.5	332.1	
110.00		0.00	1.41 19.566	33.06 239.64	0.650	0.500	2.00	5.679	3.69	122.1	41.2	218.5	
115.00		0.00	1.42 19.816	33.49 234.52	0.650	0.500	5.00	13.934	9.06	303.3	100.2	534.8	
120.00	Top - Section 3	0.00	1.44 20.059	33.89 229.26	0.650	0.500	5.00	13.556	8.81	298.7	97.4	519.8	
125.00		0.00	1.46 20.294	34.29 223.87	0.650	0.500	5.00	13.178	8.57	293.8	94.6	453.8	
130.00		0.00	1.48 20.523	34.68 218.36	0.650	0.500	5.00	12.800	8.32	288.6	91.8	440.2	
135.00	Appertunance(s)	0.00	1.49 20.745	35.05 212.73	0.650	0.500	5.00	12.422	8.07	283.1	89.0	426.7	
140.00		0.00	1.51 20.962	35.42 207.00	0.650	0.500	5.00	12.044	7.83	277.3	86.3	413.2	
145.00		0.00	1.52 21.173	35.78 201.17	0.650	0.500	5.00	11.666	7.58	271.3	83.5	399.7	
148.00	Appertunance(s)	0.00	1.53 21.297	35.99 197.62	0.650	0.500	3.00	6.818	4.43	159.5	49.1	233.7	
Totals:							148.00				9,156.5	3,568.2	24,030.9

Pole : 302528
 Location : Columbia Central, CT
 Height : 148.0 (ft)
 Base Dia : 51.72 (in)
 Top Dia : 26.00 (in)
 Shape : 18 Sides
 Taper : 0.181424 (in/ft)

Code: TIA/EIA-222 Rev F

Base Elev : 0.000 (ft)

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Load Case: Ice 73.61 mph Wind with Ice 23 Iterations

Gust Response Factor : 1.69
 Dead Load Factor : 1.00
 Wind Load Factor : 1.00

Discrete Appurtenance Segment Forces

Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa Factor	Total CaAa (sf)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)	Dead Load (lb)
30.00	GPS	1	13.871	23.442	1.00	1.30	0.000	0.000	30.47	0.00	0.00	15.00
30.00	Side Arm	1	13.871	23.442	1.00	4.00	0.000	0.000	93.77	0.00	0.00	150.00
58.00	GPS	1	16.296	27.541	1.00	1.30	0.000	0.000	35.80	0.00	0.00	15.00
58.00	Side Arm	1	16.296	27.541	1.00	4.00	0.000	0.000	110.16	0.00	0.00	150.00
108.0	Decibel DB980H90E-M	6	19.464	32.894	0.80	22.03	0.000	0.000	724.56	0.00	0.00	176.84
108.0	Sector Frame	3	19.464	32.894	0.75	43.20	0.000	0.000	1,421.01	0.00	0.00	1,245.00
120.0	48" x 12" Panel	9	20.059	33.899	0.76	42.34	0.000	0.000	1,435.28	0.00	0.00	567.00
120.0	72" x 12" Panel	3	20.059	33.899	0.78	21.60	0.000	0.000	732.06	0.00	0.00	276.84
120.0	Low Profile Platform	1	20.059	33.899	1.00	27.20	0.000	0.000	922.05	0.00	0.00	2,250.00
135.0	Antel BXA-171063-8CF	3	20.745	35.059	0.80	8.40	0.000	0.000	294.50	0.00	0.00	81.24
135.0	Antel BXA-70063/6CF	3	20.745	35.059	0.74	18.96	0.000	0.000	664.68	0.00	0.00	174.00
135.0	Antel LPA-80063/4CF	6	20.745	35.059	0.93	42.52	0.000	0.000	1,490.71	0.00	0.00	435.60
135.0	Low Profile Platform	1	20.745	35.059	1.00	27.20	0.000	0.000	953.61	0.00	0.00	2,250.00
135.0	RFS FD9R6004/2C-3L	6	20.745	35.059	0.67	2.01	0.000	0.000	70.47	0.00	0.00	32.40
148.0	14" x 9" TTA	1	21.379	36.131	1.00	1.46	0.000	2.000	52.75	0.00	105.50	18.36
148.0	36" x 8" x 6" Panel	3	21.379	36.131	1.00	9.72	0.000	2.000	351.19	0.00	702.38	120.00
148.0	72" x 12" Panel	9	21.379	36.131	0.78	64.79	0.000	2.000	2,341.08	0.00	4,682.17	830.52
148.0	Ericsson RRUS-11	6	21.379	36.131	0.68	19.79	0.000	2.000	714.96	0.00	1,429.92	484.20
148.0	Low Profile Platform	1	21.379	36.131	1.00	27.20	0.000	2.000	982.76	0.00	1,965.51	2,250.00
148.0	Powerwave LGP	6	21.379	36.131	0.67	6.15	0.000	2.000	222.23	0.00	444.45	127.56
148.0	Powerwave LGP	6	21.379	36.131	0.67	1.53	0.000	2.000	55.19	0.00	110.39	47.40
148.0	Raycap DC6-48-60-18-	1	21.379	36.131	1.00	1.67	0.000	2.000	60.34	0.00	120.68	49.50
									13,759.64			11,746.46

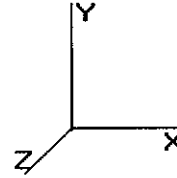
Pole : 302528
 Location : Columbia Central, CT
 Height : 148.0 (ft)
 Base Dia : 51.72 (in)
 Top Dia : 26.00 (in)
 Shape : 18 Sides
 Taper : 0.181424 (in/ft)

Code: TIA/EIA-222 Rev F

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Base Elev : 0.000 (ft)

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Load Case: Ice

73.61 mph Wind with Ice

23 Iterations

Gust Response Factor : 1.69
 Dead Load Factor : 1.00
 Wind Load Factor : 1.00

Applied Segment Forces Summary

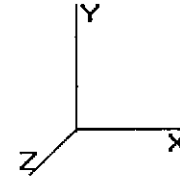
Seg Elev (ft)	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00	0.00	0.00	0.00	0.00
5.00	331.87	1,387.52	0.00	0.00
10.00	326.11	1,366.36	0.00	0.00
15.00	320.35	1,345.19	0.00	0.00
20.00	314.59	1,324.02	0.00	0.00
25.00	308.84	1,302.85	0.00	0.00
30.00	427.32	1,446.68	0.00	0.00
35.00	302.36	1,259.76	0.00	0.00
39.25	260.80	1,054.33	0.00	0.00
40.00	46.45	298.43	0.00	0.00
45.00	316.62	1,967.39	0.00	0.00
50.00	319.81	1,065.57	0.00	0.00
55.00	321.97	1,047.46	0.00	0.00
58.00	338.85	785.12	0.00	0.00
60.00	128.48	409.60	0.00	0.00
65.00	323.73	1,010.50	0.00	0.00
70.00	323.52	992.39	0.00	0.00
75.00	322.68	974.28	0.00	0.00
79.50	288.96	861.50	0.00	0.00
80.00	32.20	146.56	0.00	0.00
84.25	274.75	1,232.63	0.00	0.00
85.00	48.04	122.53	0.00	0.00
90.00	321.15	807.05	0.00	0.00
95.00	318.36	792.00	0.00	0.00
100.0	315.15	776.95	0.00	0.00
105.0	311.56	761.91	0.00	0.00
108.0	2,330.14	1,872.10	0.00	0.00
110.0	122.07	281.28	0.00	0.00
115.0	303.31	691.82	0.00	0.00
120.0	3,388.08	3,770.61	0.00	0.00
125.0	293.77	560.76	0.00	0.00
130.0	288.56	547.24	0.00	0.00
135.0	3,757.04	3,506.97	0.00	0.00
140.0	277.33	470.22	0.00	0.00
145.0	271.33	456.71	0.00	0.00
148.0	4,940.01	4,195.42	0.00	9,561.00
Totals:	22,916.16	40,891.71	0.00	9,561.00

Pole : 302528
 Location : Columbia Central, CT
 Height : 148.0 (ft)
 Base Dia : 51.72 (in)
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 Shape : 18 Sides
 Taper : 0.181424 (in/ft)

Code: TIA/EIA-222 Rev F

Base Elev : 0.000 (ft)

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Load Case: Ice

73.61 mph Wind with Ice

23 Iterations

Gust Response Factor : 1.69
 Dead Load Factor : 1.00
 Wind Load Factor : 1.00

Calculated Shaft Forces and Deflections

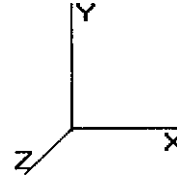
Seg Elev (ft)	Lateral FX (-) (kips)	Axial FY (-) (kips)	Lateral FZ (kips)	Moment MX (ft-kips)	Torsion MY (ft-kips)	Moment MZ (ft-kips)	X Deflect (in)	Z Deflect (in)	Total Deflect (in)	Rotation (deg)
0.00	-22.980	-40.855	0.000	0.000	0.000	-2,599.452	0.000	0.000	0.000	0.000
5.00	-22.769	-39.398	0.000	0.000	0.000	-2,484.553	-0.095	0.000	0.095	-0.178
10.00	-22.555	-37.962	0.000	0.000	0.000	-2,370.711	-0.377	0.000	0.377	-0.357
15.00	-22.340	-36.549	0.000	0.000	0.000	-2,257.937	-0.847	0.000	0.847	-0.537
20.00	-22.122	-35.159	0.000	0.000	0.000	-2,146.239	-1.506	0.000	1.506	-0.718
25.00	-21.903	-33.791	0.000	0.000	0.000	-2,035.630	-2.356	0.000	2.356	-0.900
30.00	-21.554	-32.283	0.000	0.000	0.000	-1,926.118	-3.396	0.000	3.396	-1.082
35.00	-21.317	-30.967	0.000	0.000	0.000	-1,818.352	-4.628	0.000	4.628	-1.265
39.25	-21.080	-29.886	0.000	0.000	0.000	-1,727.756	-5.826	0.000	5.826	-1.422
40.00	-21.081	-29.549	0.000	0.000	0.000	-1,711.947	-6.051	0.000	6.051	-1.450
45.00	-20.799	-27.525	0.000	0.000	0.000	-1,606.545	-7.668	0.000	7.668	-1.633
50.00	-20.538	-26.399	0.000	0.000	0.000	-1,502.552	-9.476	0.000	9.476	-1.816
55.00	-20.254	-25.305	0.000	0.000	0.000	-1,399.866	-11.489	0.000	11.489	-2.023
58.00	-19.931	-24.496	0.000	0.000	0.000	-1,339.105	-12.801	0.000	12.801	-2.149
60.00	-19.848	-24.042	0.000	0.000	0.000	-1,299.244	-13.720	0.000	13.720	-2.232
65.00	-19.565	-22.977	0.000	0.000	0.000	-1,200.005	-16.167	0.000	16.167	-2.436
70.00	-19.274	-21.933	0.000	0.000	0.000	-1,102.184	-18.825	0.000	18.825	-2.636
75.00	-18.972	-20.914	0.000	0.000	0.000	-1,005.818	-21.692	0.000	21.692	-2.833
79.50	-18.673	-20.037	0.000	0.000	0.000	-920.444	-24.445	0.000	24.445	-3.006
80.00	-18.665	-19.863	0.000	0.000	0.000	-911.108	-24.761	0.000	24.761	-3.026
84.25	-18.354	-18.618	0.000	0.000	0.000	-831.784	-27.527	0.000	27.527	-3.185
85.00	-18.339	-18.459	0.000	0.000	0.000	-818.019	-28.029	0.000	28.029	-3.213
90.00	-18.035	-17.606	0.000	0.000	0.000	-726.328	-31.509	0.000	31.509	-3.427
95.00	-17.726	-16.775	0.000	0.000	0.000	-636.154	-35.206	0.000	35.206	-3.629
100.0	-17.412	-15.965	0.000	0.000	0.000	-547.525	-39.108	0.000	39.108	-3.819
105.0	-17.085	-15.185	0.000	0.000	0.000	-460.465	-43.200	0.000	43.200	-3.994
108.0	-14.648	-13.462	0.000	0.000	0.000	-409.211	-45.741	0.000	45.741	-4.092
110.0	-14.529	-13.164	0.000	0.000	0.000	-379.916	-47.467	0.000	47.467	-4.154
115.0	-14.204	-12.464	0.000	0.000	0.000	-307.271	-51.891	0.000	51.891	-4.294
120.0	-10.557	-8.942	0.000	0.000	0.000	-236.251	-56.452	0.000	56.452	-4.415
125.0	-10.235	-8.388	0.000	0.000	0.000	-183.468	-61.128	0.000	61.128	-4.516
130.0	-9.915	-7.851	0.000	0.000	0.000	-132.296	-65.907	0.000	65.907	-4.612
135.0	-5.891	-4.654	0.000	0.000	0.000	-82.722	-70.773	0.000	70.773	-4.683
140.0	-5.579	-4.205	0.000	0.000	0.000	-53.269	-75.700	0.000	75.700	-4.732
145.0	-5.272	-3.770	0.000	0.000	0.000	-25.376	-80.670	0.000	80.670	-4.764
148.0	-4.940	0.000	0.000	0.000	0.000	-9.561	-83.664	0.000	83.664	-4.773

Pole : 302528
 Location : Columbia Central, CT
 Height : 148.0 (ft)
 Base Dia : 51.72 (in)
 Top Dia : 26.00 (in)
 Shape : 18 Sides
 Taper : 0.181424 (in/ft)

Code: TIA/EIA-222 Rev F

Base Elev : 0.000 (ft)

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Load Case: Ice

73.61 mph Wind with Ice

23 Iterations

Gust Response Factor : 1.69
 Dead Load Factor : 1.00
 Wind Load Factor : 1.00

Calculated Stresses

Seg Elev (ft)	Applied Stresses							Allowable Stress (Fb) (ksi)	Stress Ratio	
	Axial (Y) (ksi)	Shear (X) (ksi)	Shear (Z) (ksi)	Torsion (ksi)	Bending (X) (ksi)	Bending (Z) (ksi)	Combined (ksi)			
0.00	0.67	0.76	0.00	0.00	0.00	40.23	40.92	52.0	0.0	0.787
5.00	0.66	0.76	0.00	0.00	0.00	39.85	40.53	52.0	0.0	0.780
10.00	0.64	0.77	0.00	0.00	0.00	39.44	40.11	52.0	0.0	0.772
15.00	0.63	0.78	0.00	0.00	0.00	38.98	39.64	52.0	0.0	0.763
20.00	0.62	0.78	0.00	0.00	0.00	38.48	39.12	52.0	0.0	0.753
25.00	0.61	0.79	0.00	0.00	0.00	37.93	38.56	52.0	0.0	0.742
30.00	0.59	0.80	0.00	0.00	0.00	37.33	37.95	52.0	0.0	0.730
35.00	0.58	0.80	0.00	0.00	0.00	36.68	37.29	52.0	0.0	0.717
39.25	0.57	0.81	0.00	0.00	0.00	36.09	36.68	52.0	0.0	0.706
40.00	0.56	0.81	0.00	0.00	0.00	35.98	36.57	52.0	0.0	0.704
45.00	0.63	0.96	0.00	0.00	0.00	40.87	41.53	52.0	0.0	0.799
50.00	0.62	0.97	0.00	0.00	0.00	39.86	40.51	52.0	0.0	0.779
55.00	0.61	0.98	0.00	0.00	0.00	38.76	39.40	52.0	0.0	0.758
58.00	0.59	0.98	0.00	0.00	0.00	38.06	38.69	52.0	0.0	0.744
60.00	0.59	0.98	0.00	0.00	0.00	37.58	38.21	52.0	0.0	0.735
65.00	0.58	0.99	0.00	0.00	0.00	36.30	36.92	52.0	0.0	0.710
70.00	0.56	1.00	0.00	0.00	0.00	34.90	35.51	52.0	0.0	0.683
75.00	0.55	1.00	0.00	0.00	0.00	33.38	33.97	52.0	0.0	0.654
79.50	0.54	1.01	0.00	0.00	0.00	31.89	32.48	52.0	0.0	0.625
80.00	0.53	1.01	0.00	0.00	0.00	31.72	32.30	52.0	0.0	0.621
84.25	0.63	1.25	0.00	0.00	0.00	36.55	37.24	51.7	0.0	0.720
85.00	0.63	1.25	0.00	0.00	0.00	36.21	36.90	51.8	0.0	0.712
90.00	0.61	1.26	0.00	0.00	0.00	33.78	34.46	52.0	0.0	0.663
95.00	0.60	1.27	0.00	0.00	0.00	31.13	31.80	52.0	0.0	0.612
100.00	0.58	1.28	0.00	0.00	0.00	28.23	28.90	52.0	0.0	0.556
105.00	0.57	1.29	0.00	0.00	0.00	25.04	25.71	52.0	0.0	0.495
108.00	0.51	1.13	0.00	0.00	0.00	23.00	23.59	52.0	0.0	0.454
110.00	0.51	1.13	0.00	0.00	0.00	21.83	22.43	52.0	0.0	0.431
115.00	0.49	1.14	0.00	0.00	0.00	18.69	19.28	52.0	0.0	0.371
120.00	0.37	0.87	0.00	0.00	0.00	15.23	15.67	52.0	0.0	0.301
120.00	0.42	0.99	0.00	0.00	0.00	17.35	17.86	52.0	0.0	0.344
125.00	0.40	0.99	0.00	0.00	0.00	14.31	14.81	52.0	0.0	0.285
130.00	0.39	0.99	0.00	0.00	0.00	10.98	11.49	52.0	0.0	0.221
135.00	0.24	0.61	0.00	0.00	0.00	7.31	7.63	52.0	0.0	0.147
140.00	0.22	0.59	0.00	0.00	0.00	5.03	5.35	52.0	0.0	0.103
145.00	0.21	0.58	0.00	0.00	0.00	2.56	2.95	52.0	0.0	0.057
148.00	0.00	0.56	0.00	0.00	0.00	1.01	1.39	52.0	0.0	0.027

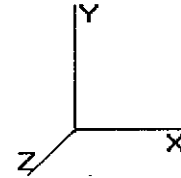
Pole : 302528
 Location : Columbia Central, CT
 Height : 148.0 (ft)
 Base Dia : 51.72 (in)
 Top Dia : 26.00 (in)
 Shape : 18 Sides
 Taper : 0.181424 (in/ft)

Code: TIA/EIA-222 Rev F

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Base Elev : 0.000 (ft)



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Load Case: Twist/Sway 50.00 mph Wind with No Ice 22 Iterations

Gust Response Factor : 1.69
 Dead Load Factor : 1.00
 Wind Load Factor : 1.00

Shaft Segment Forces

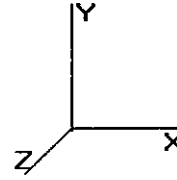
Seg Top Elev (ft)	Description	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)	
0.00		0.00	1.00	6.400	10.81	215.52	0.650	0.000	0.00	0.000	0.00	0.0	0.0	
5.00		0.00	1.00	6.400	10.81	211.74	0.650	0.000	5.00	21.363	13.89	150.2	0.0	1,030.7
10.00		0.00	1.00	6.400	10.81	207.96	0.650	0.000	5.00	20.985	13.64	147.5	0.0	1,012.3
15.00		0.00	1.00	6.400	10.81	204.18	0.650	0.000	5.00	20.607	13.39	144.9	0.0	993.9
20.00		0.00	1.00	6.400	10.81	200.40	0.650	0.000	5.00	20.229	13.15	142.2	0.0	975.6
25.00		0.00	1.00	6.400	10.81	196.62	0.650	0.000	5.00	19.852	12.90	139.6	0.0	957.2
30.00	Appertunance(s)	0.00	1.00	6.400	10.81	192.84	0.650	0.000	5.00	19.474	12.66	136.9	0.0	938.8
35.00		0.00	1.01	6.509	10.99	190.66	0.650	0.000	5.00	19.096	12.41	136.5	0.0	920.5
39.25	Bot - Section 2	0.00	1.05	6.725	11.36	190.51	0.650	0.000	4.25	15.934	10.36	117.7	0.0	767.9
40.00		0.00	1.05	6.762	11.42	190.44	0.650	0.000	0.75	2.823	1.83	21.0	0.0	247.7
45.00	Top - Section 1	0.00	1.09	6.993	11.81	189.73	0.650	0.000	5.00	18.600	12.09	142.9	0.0	1,631.7
50.00		0.00	1.12	7.207	12.17	191.36	0.650	0.000	5.00	18.222	11.84	144.3	0.0	732.7
55.00		0.00	1.15	7.406	12.51	189.91	0.650	0.000	5.00	17.844	11.60	145.2	0.0	717.4
58.00	Appertunance(s)	0.00	1.17	7.519	12.70	188.90	0.650	0.000	3.00	10.525	6.84	86.9	0.0	423.1
60.00		0.00	1.18	7.592	12.83	188.17	0.650	0.000	2.00	6.941	4.51	57.9	0.0	279.0
65.00		0.00	1.21	7.768	13.12	186.17	0.650	0.000	5.00	17.088	11.11	145.8	0.0	686.8
70.00		0.00	1.24	7.934	13.40	183.94	0.650	0.000	5.00	16.710	10.86	145.6	0.0	671.5
75.00		0.00	1.26	8.092	13.67	181.52	0.650	0.000	5.00	16.332	10.62	145.2	0.0	656.2
79.50	Bot - Section 3	0.00	1.28	8.228	13.90	179.18	0.650	0.000	4.50	14.376	9.34	129.9	0.0	577.5
80.00		0.00	1.28	8.242	13.93	178.91	0.650	0.000	0.50	1.599	1.04	14.5	0.0	114.9
84.25	Top - Section 2	0.00	1.30	8.365	14.13	176.56	0.650	0.000	4.25	13.441	8.74	123.5	0.0	965.3
85.00		0.00	1.31	8.387	14.17	178.52	0.650	0.000	0.75	2.344	1.52	21.6	0.0	75.4
90.00		0.00	1.33	8.525	14.40	175.62	0.650	0.000	5.00	15.407	10.01	144.3	0.0	495.8
95.00		0.00	1.35	8.657	14.63	172.59	0.650	0.000	5.00	15.029	9.77	142.9	0.0	483.6
100.0		0.00	1.37	8.785	14.84	169.43	0.650	0.000	5.00	14.651	9.52	141.4	0.0	471.3
105.0		0.00	1.39	8.908	15.05	166.16	0.650	0.000	5.00	14.273	9.28	139.7	0.0	459.1
108.0	Appertunance(s)	0.00	1.40	8.980	15.17	164.14	0.650	0.000	3.00	8.382	5.45	82.7	0.0	269.6
110.0		0.00	1.41	9.028	15.25	162.78	0.650	0.000	2.00	5.513	3.58	54.7	0.0	177.3
115.0		0.00	1.42	9.143	15.45	159.30	0.650	0.000	5.00	13.517	8.79	135.8	0.0	434.6
120.0	Top - Section 3	0.00	1.44	9.255	15.64	155.72	0.650	0.000	5.00	13.139	8.54	133.6	0.0	422.3
125.0		0.00	1.46	9.363	15.82	152.06	0.650	0.000	5.00	12.761	8.29	131.3	0.0	359.1
130.0		0.00	1.48	9.469	16.00	148.32	0.650	0.000	5.00	12.383	8.05	128.8	0.0	348.4
135.0	Appertunance(s)	0.00	1.49	9.572	16.17	144.50	0.650	0.000	5.00	12.005	7.80	126.2	0.0	337.7
140.0		0.00	1.51	9.672	16.34	140.60	0.650	0.000	5.00	11.627	7.56	123.5	0.0	327.0
145.0		0.00	1.52	9.769	16.51	136.64	0.650	0.000	5.00	11.249	7.31	120.7	0.0	316.3
148.0	Appertunance(s)	0.00	1.53	9.826	16.60	134.23	0.650	0.000	3.00	6.568	4.27	70.9	0.0	184.6
Totals:								148.00				4,116.2	0.0	20,462.6

Pole : 302528
 Location : Columbia Central, CT
 Height : 148.0 (ft)
 Base Dia : 51.72 (in)
 Top Dia : 26.00 (in)
 Shape : 18 Sides
 Taper : 0.181424 (in/ft)

Code: TIA/EIA-222 Rev F

Base Elev : 0.000 (ft)

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Load Case: Twist/Sway 50.00 mph Wind with No Ice 22 Iterations

Gust Response Factor : 1.69
 Dead Load Factor : 1.00
 Wind Load Factor : 1.00

Discrete Appurtenance Segment Forces

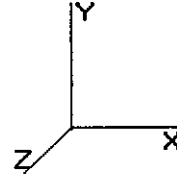
Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa Factor	Total CaAa (sf)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)	Dead Load (lb)
30.00	GPS	1	6.400	10.816	1.00	1.00	0.000	0.000	10.82	0.00	0.00	7.00
30.00	Side Arm	1	6.400	10.816	1.00	3.00	0.000	0.000	32.45	0.00	0.00	100.00
58.00	GPS	1	7.519	12.707	1.00	1.00	0.000	0.000	12.71	0.00	0.00	7.00
58.00	Side Arm	1	7.519	12.707	1.00	3.00	0.000	0.000	38.12	0.00	0.00	100.00
108.0	Decibel DB980H90E-M	6	8.980	15.177	0.80	18.70	0.000	0.000	283.82	0.00	0.00	51.00
108.0	Sector Frame	3	8.980	15.177	0.75	32.40	0.000	0.000	491.73	0.00	0.00	900.00
120.0	48" x 12" Panel	9	9.255	15.641	0.76	38.30	0.000	0.000	599.10	0.00	0.00	270.00
120.0	72" x 12" Panel	3	9.255	15.641	0.78	19.65	0.000	0.000	307.39	0.00	0.00	135.00
120.0	Low Profile Platform	1	9.255	15.641	1.00	21.70	0.000	0.000	339.40	0.00	0.00	1,500.00
135.0	Antel BXA-171063-8CF	3	9.572	16.176	0.80	7.07	0.000	0.000	114.29	0.00	0.00	30.00
135.0	Antel BXA-70063/6CF	3	9.572	16.176	0.74	17.16	0.000	0.000	277.59	0.00	0.00	51.00
135.0	Antel LPA-80063/4CF	6	9.572	16.176	0.93	39.06	0.000	0.000	631.84	0.00	0.00	120.00
135.0	Low Profile Platform	1	9.572	16.176	1.00	21.70	0.000	0.000	351.02	0.00	0.00	1,500.00
135.0	RFS FD9R6004/2C-3L	6	9.572	16.176	0.67	1.49	0.000	0.000	24.06	0.00	0.00	18.60
148.0	14" x 9" TTA	1	9.864	16.670	1.00	1.23	0.000	2.000	20.50	0.00	41.01	10.00
148.0	36" x 8" x 6" Panel	3	9.864	16.670	1.00	8.40	0.000	2.000	140.03	0.00	280.06	75.00
148.0	72" x 12" Panel	9	9.864	16.670	0.78	58.97	0.000	2.000	983.02	0.00	1,966.04	405.00
148.0	Ericsson RRUS-11	6	9.864	16.670	0.68	18.03	0.000	2.000	300.63	0.00	601.25	330.00
148.0	Low Profile Platform	1	9.864	16.670	1.00	21.70	0.000	2.000	361.75	0.00	723.49	1,500.00
148.0	Powerwave LGP	6	9.864	16.670	0.67	5.19	0.000	2.000	86.45	0.00	172.90	84.60
148.0	Powerwave LGP	6	9.864	16.670	0.67	1.09	0.000	2.000	18.09	0.00	36.19	33.00
148.0	Raycap DC6-48-60-18-	1	9.864	16.670	1.00	1.47	0.000	2.000	24.51	0.00	49.01	31.80
									5,449.32			7,259.00

Pole : 302528
 Location : Columbia Central, CT
 Height : 148.0 (ft)
 Base Dia : 51.72 (in)
 Top Dia : 26.00 (in)
 Shape : 18 Sides
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Code: TIA/EIA-222 Rev F

Base Elev : 0.000 (ft)

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Load Case: Twist/Sway

50.00 mph Wind with No Ice

22 Iterations

Gust Response Factor : 1.69
 Dead Load Factor : 1.00
 Wind Load Factor : 1.00

Applied Segment Forces Summary

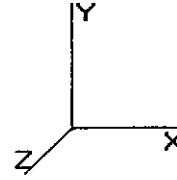
Seg Elev (ft)	Lateral	Axial	Torsion	Moment	
	FX (-) (lb)	FY (-) (lb)	MY (lb-ft)	MZ (lb-ft)	
0.00	0.00	0.00	0.00	0.00	0.00
5.00	150.19	1,229.17	0.00	0.00	0.00
10.00	147.54	1,210.80	0.00	0.00	0.00
15.00	144.88	1,192.43	0.00	0.00	0.00
20.00	142.22	1,174.06	0.00	0.00	0.00
25.00	139.56	1,155.69	0.00	0.00	0.00
30.00	180.17	1,244.32	0.00	0.00	0.00
35.00	136.53	1,118.20	0.00	0.00	0.00
39.25	117.71	936.03	0.00	0.00	0.00
40.00	20.97	277.33	0.00	0.00	0.00
45.00	142.88	1,829.50	0.00	0.00	0.00
50.00	144.26	930.47	0.00	0.00	0.00
55.00	145.16	915.17	0.00	0.00	0.00
58.00	137.76	648.75	0.00	0.00	0.00
60.00	57.89	357.81	0.00	0.00	0.00
65.00	145.81	883.80	0.00	0.00	0.00
70.00	145.64	868.49	0.00	0.00	0.00
75.00	145.18	853.19	0.00	0.00	0.00
79.50	129.93	754.78	0.00	0.00	0.00
80.00	14.48	134.58	0.00	0.00	0.00
84.25	123.51	1,132.78	0.00	0.00	0.00
85.00	21.59	104.98	0.00	0.00	0.00
90.00	144.27	692.80	0.00	0.00	0.00
95.00	142.92	680.56	0.00	0.00	0.00
100.0	141.39	668.31	0.00	0.00	0.00
105.0	139.67	656.07	0.00	0.00	0.00
108.0	858.24	1,338.76	0.00	0.00	0.00
110.0	54.67	240.06	0.00	0.00	0.00
115.0	135.76	591.57	0.00	0.00	0.00
120.0	1,379.47	2,484.33	0.00	0.00	0.00
125.0	131.26	466.11	0.00	0.00	0.00
130.0	128.80	455.40	0.00	0.00	0.00
135.0	1,525.02	2,164.28	0.00	0.00	0.00
140.0	123.53	383.97	0.00	0.00	0.00
145.0	120.72	373.26	0.00	0.00	0.00
148.0	2,005.88	2,688.21	0.00	3,869.96	
Totals:	9,565.47	32,836.03	0.00	3,869.96	

Pole : 302528
 Location : Columbia Central, CT
 Height : 148.0 (ft)
 Base Dia : 51.72 (in)
 Top Dia : 26.00 (in)
 Shape : 18 Sides
 Taper : 0.181424 (in/ft)

Code: TIA/EIA-222 Rev F

Base Elev : 0.000 (ft)

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Load Case: Twist/Sway 50.00 mph Wind with No Ice 22 Iterations
 Gust Response Factor : 1.69
 Dead Load Factor : 1.00
 Wind Load Factor : 1.00

Calculated Shaft Forces and Deflections

Seg Elev (ft)	Lateral FX (-) (kips)	Axial FY (-) (kips)	Lateral FZ (kips)	Moment MX (ft-kips)	Torsion MY (ft-kips)	Moment MZ (ft-kips)	X Deflect (in)	Z Deflect (in)	Total Deflect (in)	Rotation (deg)
0.00	-9.586	-32.830	0.000	0.000	0.000	-1,057.328	0.000	0.000	0.000	0.000
5.00	-9.475	-31.589	0.000	0.000	0.000	-1,009.401	-0.039	0.000	0.039	-0.072
10.00	-9.363	-30.366	0.000	0.000	0.000	-962.029	-0.153	0.000	0.153	-0.145
15.00	-9.252	-29.163	0.000	0.000	0.000	-915.213	-0.344	0.000	0.344	-0.218
20.00	-9.140	-27.978	0.000	0.000	0.000	-868.953	-0.612	0.000	0.612	-0.291
25.00	-9.029	-26.811	0.000	0.000	0.000	-823.252	-0.956	0.000	0.956	-0.365
30.00	-8.873	-25.557	0.000	0.000	0.000	-778.109	-1.378	0.000	1.378	-0.439
35.00	-8.756	-24.429	0.000	0.000	0.000	-733.746	-1.877	0.000	1.877	-0.513
39.25	-8.645	-23.489	0.000	0.000	0.000	-696.533	-2.363	0.000	2.363	-0.576
40.00	-8.638	-23.205	0.000	0.000	0.000	-690.049	-2.454	0.000	2.454	-0.587
45.00	-8.503	-21.366	0.000	0.000	0.000	-646.858	-3.109	0.000	3.109	-0.661
50.00	-8.375	-20.426	0.000	0.000	0.000	-604.344	-3.840	0.000	3.840	-0.734
55.00	-8.241	-19.504	0.000	0.000	0.000	-562.467	-4.654	0.000	4.654	-0.818
58.00	-8.107	-18.851	0.000	0.000	0.000	-537.746	-5.184	0.000	5.184	-0.868
60.00	-8.062	-18.486	0.000	0.000	0.000	-521.532	-5.555	0.000	5.555	-0.902
65.00	-7.927	-17.594	0.000	0.000	0.000	-481.221	-6.544	0.000	6.544	-0.983
70.00	-7.789	-16.717	0.000	0.000	0.000	-441.586	-7.617	0.000	7.617	-1.064
75.00	-7.648	-15.857	0.000	0.000	0.000	-402.641	-8.774	0.000	8.774	-1.143
79.50	-7.513	-15.100	0.000	0.000	0.000	-368.226	-9.884	0.000	9.884	-1.212
80.00	-7.505	-14.961	0.000	0.000	0.000	-364.470	-10.012	0.000	10.012	-1.220
84.25	-7.366	-13.826	0.000	0.000	0.000	-332.575	-11.127	0.000	11.127	-1.283
85.00	-7.353	-13.716	0.000	0.000	0.000	-327.051	-11.330	0.000	11.330	-1.295
90.00	-7.212	-13.016	0.000	0.000	0.000	-290.285	-12.732	0.000	12.732	-1.380
95.00	-7.069	-12.329	0.000	0.000	0.000	-254.226	-14.221	0.000	14.221	-1.461
100.0	-6.925	-11.656	0.000	0.000	0.000	-218.881	-15.792	0.000	15.792	-1.537
105.0	-6.778	-10.998	0.000	0.000	0.000	-184.257	-17.440	0.000	17.440	-1.607
108.0	-5.887	-9.681	0.000	0.000	0.000	-163.923	-18.462	0.000	18.462	-1.646
110.0	-5.833	-9.438	0.000	0.000	0.000	-152.149	-19.157	0.000	19.157	-1.671
115.0	-5.687	-8.846	0.000	0.000	0.000	-122.986	-20.938	0.000	20.938	-1.727
120.0	-4.238	-6.401	0.000	0.000	0.000	-94.549	-22.774	0.000	22.774	-1.775
125.0	-4.096	-5.937	0.000	0.000	0.000	-73.362	-24.655	0.000	24.655	-1.816
130.0	-3.956	-5.484	0.000	0.000	0.000	-52.882	-26.578	0.000	26.578	-1.854
135.0	-2.363	-3.369	0.000	0.000	0.000	-33.103	-28.536	0.000	28.536	-1.882
140.0	-2.227	-2.989	0.000	0.000	0.000	-21.290	-30.519	0.000	30.519	-1.902
145.0	-2.095	-2.620	0.000	0.000	0.000	-10.154	-32.518	0.000	32.518	-1.915
148.0	-2.006	0.000	0.000	0.000	0.000	-3.870	-33.723	0.000	33.723	-1.919

Pole : 302528
 Location : Columbia Central, CT
 Height : 148.0 (ft)
 Base Dia : 51.72 (in)
 Top Dia : 26.00 (in)
 Shape : 18 Sides
 Taper : 0.181424 (in/ft)

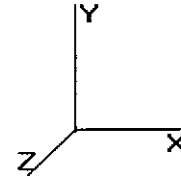
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Base Elev : 0.000 (ft)

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Load Case: Twist/Sway 50.00 mph Wind with No Ice 22 Iterations

Gust Response Factor : 1.69
 Dead Load Factor : 1.00
 Wind Load Factor : 1.00

Calculated Stresses

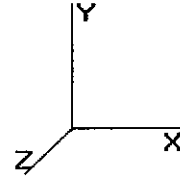
Seg Elev (ft)	Applied Stresses							Combined (ksi)	Allowable Stress (Fb) (ksi)	Stress Ratio
	Axial (Y) (ksi)	Shear (X) (ksi)	Shear (Z) (ksi)	Torsion (ksi)	Bending (X) (ksi)	Bending (Z) (ksi)				
0.00	0.54	0.32	0.00	0.00	0.00	16.36	16.91	52.0	0.0	0.325
5.00	0.53	0.32	0.00	0.00	0.00	16.19	16.73	52.0	0.0	0.322
10.00	0.52	0.32	0.00	0.00	0.00	16.00	16.53	52.0	0.0	0.318
15.00	0.50	0.32	0.00	0.00	0.00	15.80	16.31	52.0	0.0	0.314
20.00	0.49	0.32	0.00	0.00	0.00	15.58	16.08	52.0	0.0	0.309
25.00	0.48	0.33	0.00	0.00	0.00	15.34	15.83	52.0	0.0	0.305
30.00	0.47	0.33	0.00	0.00	0.00	15.08	15.56	52.0	0.0	0.299
35.00	0.46	0.33	0.00	0.00	0.00	14.80	15.27	52.0	0.0	0.294
39.25	0.45	0.33	0.00	0.00	0.00	14.55	15.01	52.0	0.0	0.289
40.00	0.44	0.33	0.00	0.00	0.00	14.50	14.96	52.0	0.0	0.288
45.00	0.49	0.39	0.00	0.00	0.00	16.45	16.96	52.0	0.0	0.326
50.00	0.48	0.40	0.00	0.00	0.00	16.03	16.52	52.0	0.0	0.318
55.00	0.47	0.40	0.00	0.00	0.00	15.57	16.06	52.0	0.0	0.309
58.00	0.46	0.40	0.00	0.00	0.00	15.28	15.76	52.0	0.0	0.303
60.00	0.45	0.40	0.00	0.00	0.00	15.09	15.55	52.0	0.0	0.299
65.00	0.44	0.40	0.00	0.00	0.00	14.56	15.01	52.0	0.0	0.289
70.00	0.43	0.40	0.00	0.00	0.00	13.98	14.43	52.0	0.0	0.278
75.00	0.42	0.40	0.00	0.00	0.00	13.36	13.80	52.0	0.0	0.265
79.50	0.40	0.41	0.00	0.00	0.00	12.76	13.18	52.0	0.0	0.254
80.00	0.40	0.41	0.00	0.00	0.00	12.69	13.11	52.0	0.0	0.252
84.25	0.47	0.50	0.00	0.00	0.00	14.61	15.10	51.7	0.0	0.292
85.00	0.46	0.50	0.00	0.00	0.00	14.48	14.97	51.8	0.0	0.289
90.00	0.45	0.51	0.00	0.00	0.00	13.50	13.98	52.0	0.0	0.269
95.00	0.44	0.51	0.00	0.00	0.00	12.44	12.91	52.0	0.0	0.248
100.00	0.43	0.51	0.00	0.00	0.00	11.28	11.74	52.0	0.0	0.226
105.00	0.41	0.51	0.00	0.00	0.00	10.02	10.47	52.0	0.0	0.201
108.00	0.37	0.45	0.00	0.00	0.00	9.21	9.62	52.0	0.0	0.185
110.00	0.36	0.45	0.00	0.00	0.00	8.74	9.14	52.0	0.0	0.176
115.00	0.35	0.46	0.00	0.00	0.00	7.48	7.87	52.0	0.0	0.151
120.00	0.26	0.35	0.00	0.00	0.00	6.09	6.38	52.0	0.0	0.123
120.00	0.30	0.40	0.00	0.00	0.00	6.95	7.28	52.0	0.0	0.140
125.00	0.29	0.40	0.00	0.00	0.00	5.72	6.05	52.0	0.0	0.116
130.00	0.27	0.40	0.00	0.00	0.00	4.39	4.71	52.0	0.0	0.091
135.00	0.17	0.24	0.00	0.00	0.00	2.93	3.13	52.0	0.0	0.060
140.00	0.16	0.24	0.00	0.00	0.00	2.01	2.21	52.0	0.0	0.042
145.00	0.14	0.23	0.00	0.00	0.00	1.03	1.24	52.0	0.0	0.024
148.00	0.00	0.23	0.00	0.00	0.00	0.41	0.57	52.0	0.0	0.011

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Analysis Summary

Load Case	Reactions						Max Stresses			
	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Combined Stress (ksi)	Allowable Stress (ksi)	Elev (ft)	Stress Ratio
No Ice	27.7	0.00	32.78	0.00	0.00	3051.83	47.97	52.0	45.00	0.923
Ice	23.0	0.00	40.86	0.00	0.00	2599.45	41.53	52.0	45.00	0.799
Twist/Sway	9.6	0.00	32.83	0.00	0.00	1057.33	16.96	52.0	45.00	0.326



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Calculated Radio Frequency Emissions



CT5864

(Columbia Southeast)

330 Middletown Road, Columbia, CT 06237

September 10, 2012

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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 330 Middletown Road in Columbia, CT. The coordinates of the tower are 41° 41' 23.50" N, 72° 19' 30.62" W.

AT&T is proposing the following modifications:

- 1) Install three multi-band antennas (700/850/1900/2100 MHz) antennas for their LTE network (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:

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

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
<i>Cingular UMTS</i>	150	880	1	500	0.0080	0.5867	1.36%
<i>Cingular GSM</i>	150	880	4	296	0.0189	0.5867	3.23%
<i>Cingular GSM</i>	150	1900	2	427	0.0136	1.0000	1.36%
Verizon Cellular	135	869	9	303	0.0538	0.5793	9.29%
Verizon PCS	135	1970	7	278	0.0384	1.0000	3.84%
Verizon AWS	135	2145	1	694	0.0137	1.0000	1.37%
Verizon LTE	135	698	2	795	0.0314	0.4653	6.74%
Nextel	118	851	9	100	0.0232	0.5673	4.10%
Sprint	108	1962.5	11	429	0.1455	1.0000	14.55%
AT&T UMTS	150	880	2	565	0.0018	0.5867	0.31%
AT&T UMTS	150	1900	2	875	0.0028	1.0000	0.28%
AT&T LTE	150	734	1	1313	0.0021	0.4893	0.43%
AT&T GSM	150	880	1	283	0.0005	0.5867	0.08%
AT&T GSM	150	1900	4	525	0.0034	1.0000	0.34%
Total							41.31%

Table 1: Carrier Information^{1 2 3}

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 7/26/2012. Please note that %MPE values listed are rounded to two decimal points. The total %MPE listed is a summation of each unrounded contribution. Therefore, summing each rounded value may not reflect the total value listed in the table.

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.

³ Antenna height listed for AT&T is in reference to the American Tower Structural Analysis dated August 30, 2012.

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 well below the limits for the general public. The highest expected percent of Maximum Permissible Exposure at ground level is **41.31% 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.

A handwritten signature in black ink, appearing to read 'Daniel L. Goulet'.

Daniel L. Goulet
C Squared Systems, LLC

September 10, 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 Exposure⁴

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 Exposure⁵

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)

⁴ 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.

⁵ 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.

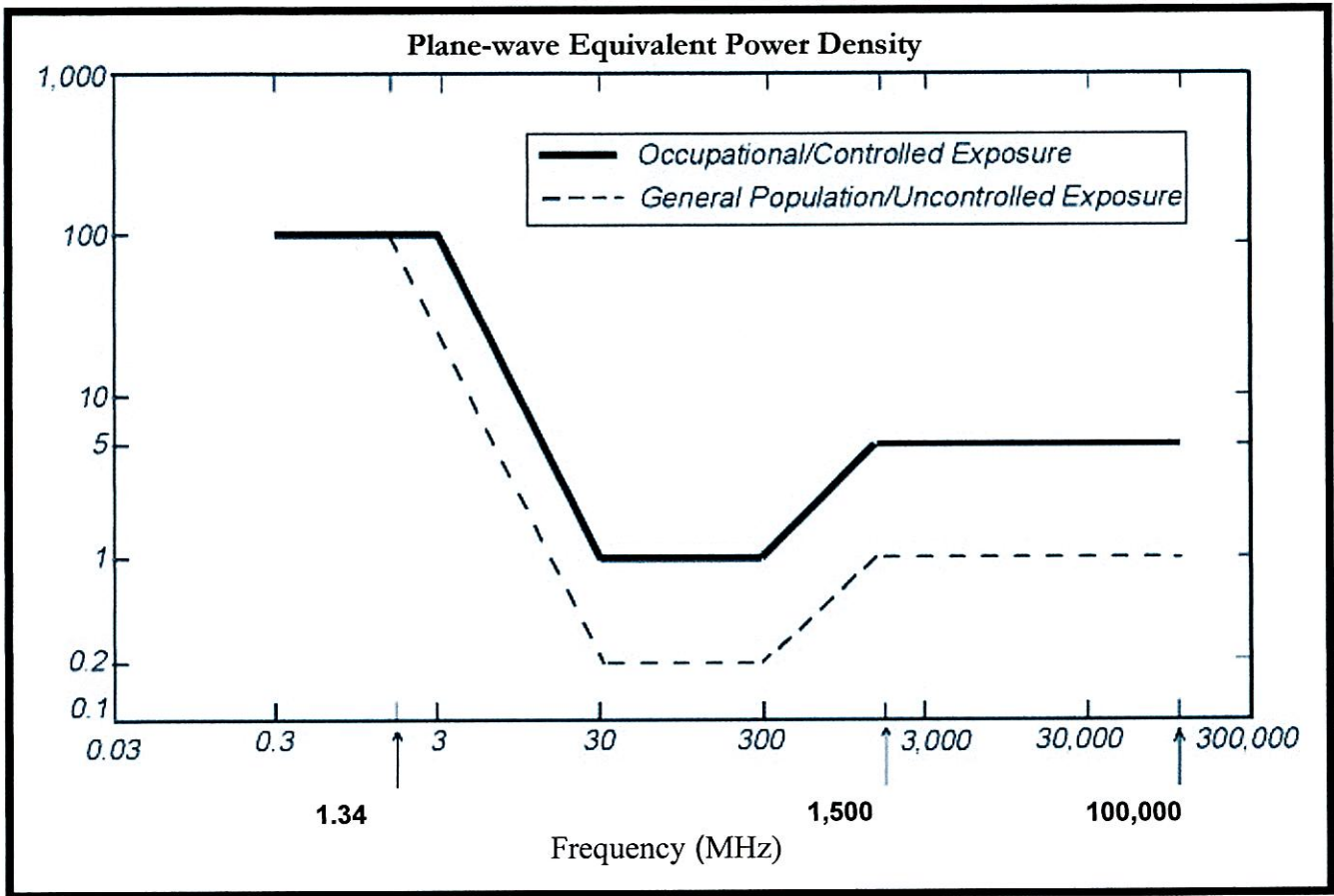
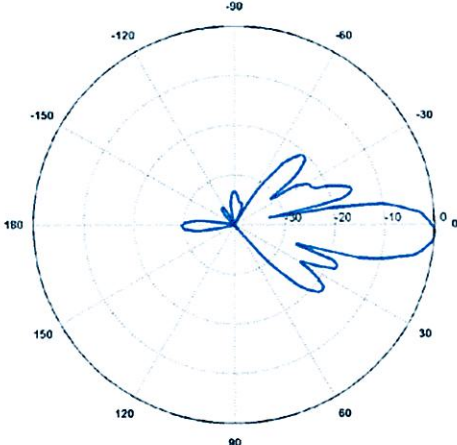
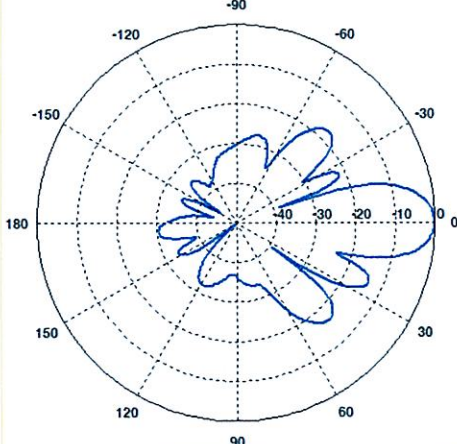
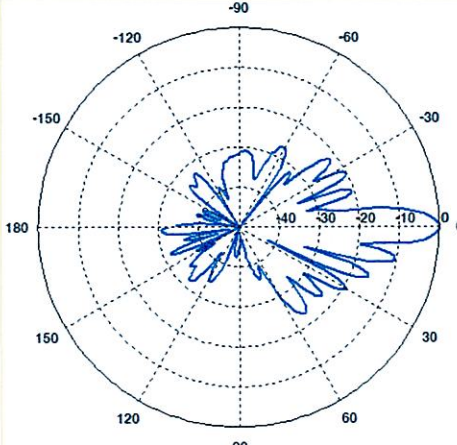


Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

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

<p>700 MHz</p> <p>Manufacturer: KMW Model #: AM-X-CD-16-65-00T-RET Frequency Band: 698-806 MHz Gain: 13.4 dBd Vertical Beamwidth: 12.3° Horizontal Beamwidth: 65° Polarization: Dual Slant $\pm 45^\circ$ Size L x W x D: 72.0" x 11.8" x 5.9"</p>	 <p>A circular radiation pattern plot for a 700 MHz antenna. The plot shows a main lobe pointing towards 0 degrees (right) with a peak gain of approximately -10 dBd. There are several side lobes extending outwards, with the largest being at approximately 180 degrees (left) with a gain of about -25 dBd. The plot includes concentric dashed circles representing gain levels and radial lines for angles from 0 to 180 degrees in 30-degree increments.</p>
<p>850 MHz</p> <p>Manufacturer: Powerwave Model #: 7770.00 Frequency Band: 824-894 MHz Gain: 11.5 dBd Vertical Beamwidth: 15° Horizontal Beamwidth: 82° Polarization: Dual Linear $\pm 45^\circ$ Size L x W x D: 55.0" x 11.0" x 5.0"</p>	 <p>A circular radiation pattern plot for an 850 MHz antenna. The main lobe is centered at 0 degrees (right) with a peak gain of approximately -10 dBd. The pattern is more complex than the 700 MHz version, with multiple side lobes extending in various directions, including a significant lobe at 180 degrees (left) with a gain of about -25 dBd. The plot includes concentric dashed circles and radial lines for angles from 0 to 180 degrees in 30-degree increments.</p>
<p>1900 MHz</p> <p>Manufacturer: Powerwave Model #: 7770.00 Frequency Band: 1850-1900 MHz Gain: 13.4 dBd Vertical Beamwidth: 7° Horizontal Beamwidth: 86° Polarization: Dual Linear $\pm 45^\circ$ Size L x W x D: 55.0" x 11.0" x 5.0"</p>	 <p>A circular radiation pattern plot for a 1900 MHz antenna. The main lobe is centered at 0 degrees (right) with a peak gain of approximately -10 dBd. The pattern shows multiple side lobes, with a prominent one at 180 degrees (left) with a gain of about -25 dBd. The plot includes concentric dashed circles and radial lines for angles from 0 to 180 degrees in 30-degree increments.</p>