EM-AT&T-032-120921

ORIGINAL

September 20, 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
138 Main Street, Coventry, 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 Town Manager of Coventry.

AT&T plans to modify the existing facility at 138 Main Street, Coventry, owned by Pelletier Builders, Inc. (coordinates 41°45'8.9"N, -72°16'8.7"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 monopole.

2.The proposed changes will not extend the site boundaries. AT&T will install additional equipment in its existing equipment shelter. 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 3.97%; the combined site operations will result in a total power density of 50.52%.

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: _____

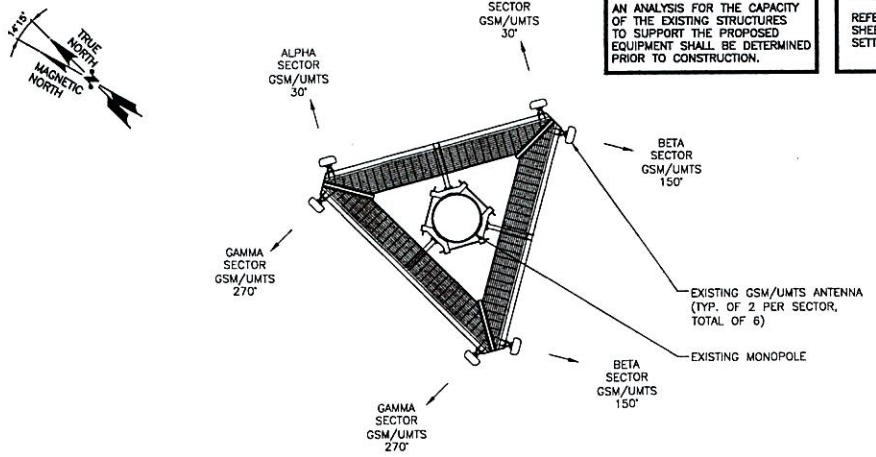
Eric Dahl, Consultant
edahl@comcast.net
860-227-1975

cc: John Elsesser, Town Manager, Town of Coventry

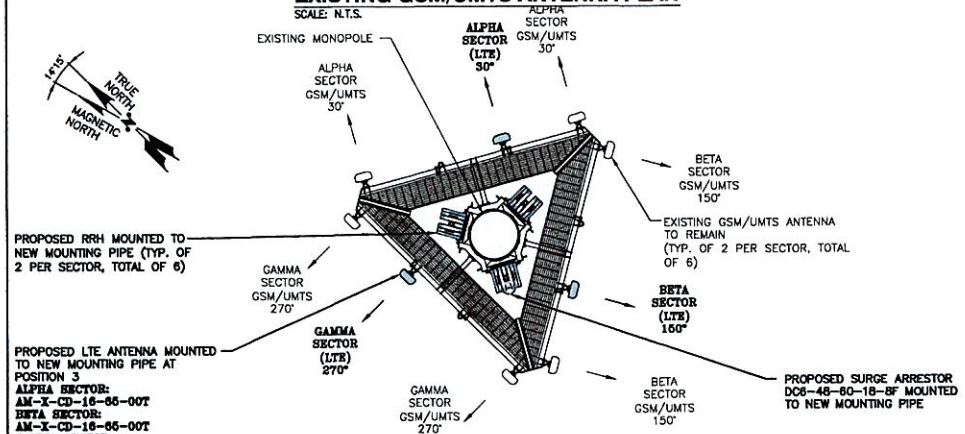
Attachments

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

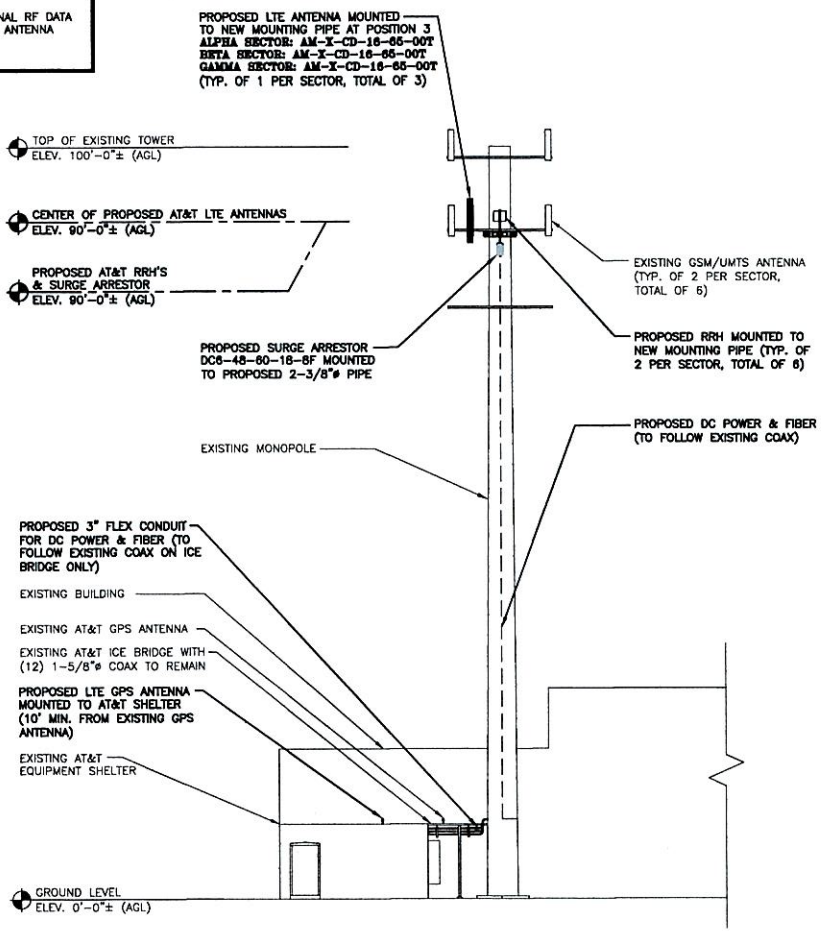
NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.



EXISTING GSM/UMTS ANTENNA PLAN
SCALE: N.T.S.



PROPOSED LTE ANTENNA PLAN
SCALE: N.T.S.



NORTHEAST ELEVATION
SCALE: 1/8"=1'-0"

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

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

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

SITE NUMBER: CT1182
SITE NAME: 1840 CONVENTRY

138 MAIN STREET
COVENTRY, CT 06238
TOLLAND COUNTY

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

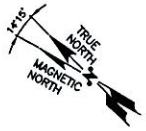
NO.	DATE	REVISIONS	BY	CHK	APP'D
0	07/27/12	ISSUED FOR REVIEW	RS	DC	DPH

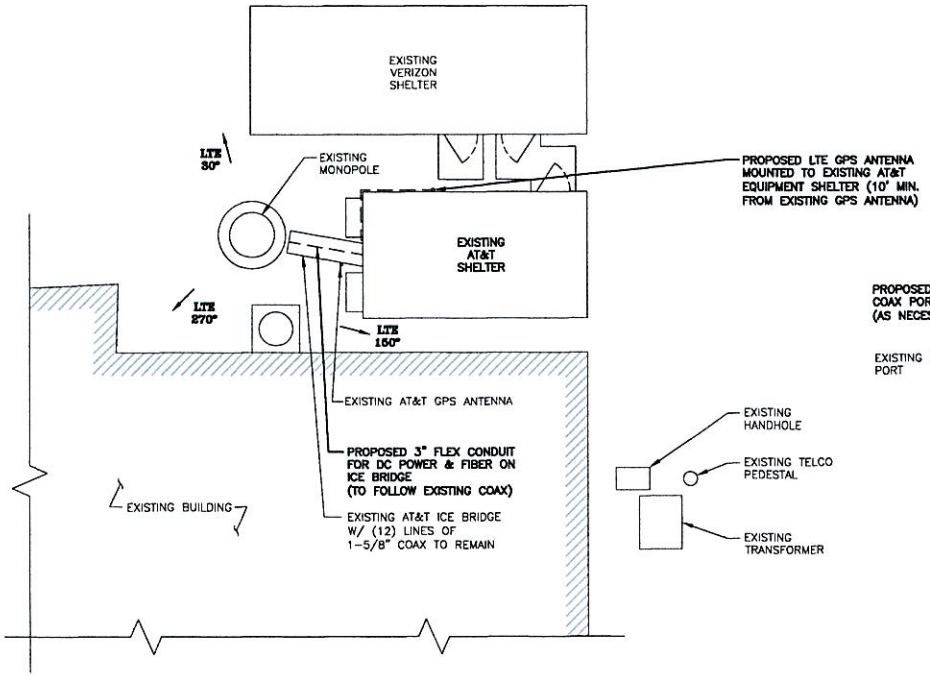
SCALE: AS SHOWN | DESIGNED BY: DC | DRAWN BY: RS

AT&T

ANTENNA PLAN & ELEVATION (LTE)

JOB NUMBER	DRAWING NUMBER	REV
1182.01	A-2	0





COMPOUND PLAN

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

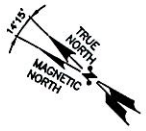
0 5'-4" 10'-8" 21'-4" 32'-0"

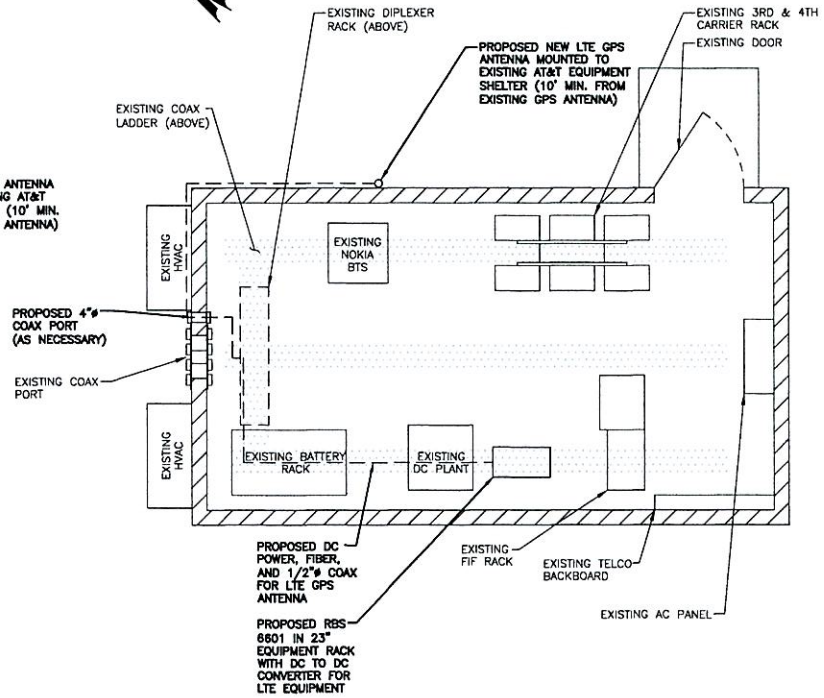
NOTE:

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.





EQUIPMENT PLAN

SCALE: 1/2"=1'-0"

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

Hudson Design Group LLC
1600 OSGOOD STREET
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138 MAIN STREET
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500 ENTERPRISE DRIVE, SUITE 3A
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NO.	DATE	REVISIONS	BY	CHK	APP'D
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SCALE: AS SHOWN | DESIGNED BY: DC | DRAWN BY: RS

AT&T

COMPOUND PLAN & EQUIPMENT PLAN (LTE)

JOB NUMBER	DRAWING NUMBER	REV
1182.01	A-1	0

STRUCTURAL ANALYSIS REPORT

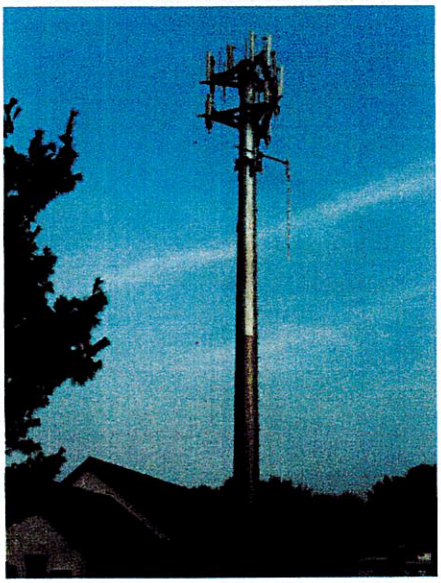
For

CT1182

1840 COVENTRY

138 MAIN STREET
COVENTRY, CT 06238

Antennas Mounted to the Monopole



Prepared for:

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

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

Dated: September 13, 2012

STATE OF CONNECTICUT
GI KAI WANG
No. 28220
LICENSED
PROFESSIONAL ENGINEER
9/13/12

Prepared by:

Hudson Design Group LLC

1600 Osgood Street Building 20 North, Suite 2-101
North Andover, MA 01845
Phone: (978) 557-5553
www.hudsondesigngroupllc.com

SCOPE OF WORK:

Hudson Design Group LLC (HDG) has been authorized by AT&T to conduct a structural evaluation of the 101' monopole supporting the proposed AT&T antennas located at elevation 90' above the ground level.

This report represents this office's findings, conclusions and recommendations pertaining to the support of AT&T's existing and proposed antennas listed below.

Structural design calculations of the existing monopole prepared by Engineered Endeavors Inc., dated January 6, 2009 was available and obtained for our use. This office conducted an on-site visual survey and tower mapping on August, 23, 2012 to record dimensional properties of the existing monopole and its appurtenances. Attendees included Nick Bestor (HDG – Associate), Bradley Loeb (HDG – Associate) and Nick Marshall (HDG - Associate).

CONCLUSION SUMMARY:

Based on our evaluation, we have determined that the existing monopole, base plate, anchor bolts and foundation **are in conformance** with the ANSI/TIA-222-F Standard for the loading considered under the criteria listed in this report. The monopole structure is rated at **32.1%** - (Pole Section L3 from El.0' to El.46.17' Controlling).

APPURTENANCES CONFIGURATION:

Tenant	Appurtenances	Elev.	Mount
	(6) SC-E 6016 Antennas	100.4'	Low Profile Platform
	(3) BXA-70063-6CF Antennas	100.4'	Low Profile Platform
AT&T	(6) Powerwave 7770 Antennas	90'	Low Profile Platform
AT&T	(6) LGP 21400 TMA	90'	Low Profile Platform
AT&T	(6) LGP 21900	90'	Low Profile Platform
AT&T	(3) DAS-HY-DFDM	90'	Low Profile Platform
AT&T	***(3) AM-X-CD-16-65 Antennas***	90'	Low Profile Platform
AT&T	***(6) RRHs***	90'	Ring Mount
AT&T	***Surge Arrestor DC6-48-60-18-8F***	87'	Ring Mount
	8' Omni	87'	12' T-Frame
	Grid Dish	80.5'	Ring Mount
	20' Dipole	70.2'	12' T-Frame

Proposed AT&T Appurtenances shown in Bold.

AT&T EXISTING/PROPOSED COAX CABLES:

Tenant	Coax Cables	Elev.	Mount
AT&T	(12) 1 5/8" Cables	90'	Inside Monopole
AT&T	(12) 1/2" Cables	90'	Inside Monopole
AT&T	***Fiber Cable***	90'	Inside Monopole
AT&T	***(2) DC Power Cables***	90'	Inside Monopole

Proposed AT&T Coax Cables shown in Bold.

ANALYSIS RESULTS SUMMARY:

Component	Max. Stress Ratio	Elev. of Component (ft)	Pass/Fail	Comments
Pole Section-L1	3.8 %	91.25 – 101.25	PASS	
Pole Section-L2	23.6 %	46.17 – 91.25	PASS	
Pole Section-L3	**32.1 %**	0 – 46.17	PASS	**Controlling**
Base Plate	29.2 %	0	PASS	

Hudson Design Group LLC

DESIGN CRITERIA:

1. EIA/TIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures

   County: Tolland
   Wind Load: 85 mph (fastest mile)
   105 mph (3 second gust)
   Nominal Ice Thickness: 1/2 inch

2. Approximate height above grade to proposed antennas: 90'

***Calculations and referenced documents are attached.**

ASSUMPTIONS:

1. The material strength of the monopole, base plate, anchor bolts and foundation are as indicated in the structural design calculations prepared by Engineered Endeavors Inc., dated January 6, 2009.

2. The monopole and foundation are properly constructed and maintained. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.

3. The appurtenances configuration is as stated in this report. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer requirements.

4. The support mounts and platforms are not analyzed and are considered adequate to support the loading. The analysis is limited to the primary support structure itself.

5. All prior structural modification, if any, are assumed to be as per the data supplied (if available), and installed properly.

Hudson Design Group LLC

SUPPORT RECOMMENDATIONS:

HDG recommends that the proposed antennas be mounted on the existing steel platform supported by the monopole; the proposed RRHs and surge arrestor be mounted on the proposed mount pipes.

Reference HDG's Latest Construction Drawings for all component and connection requirements (attached).

Hudson Design Group LLC

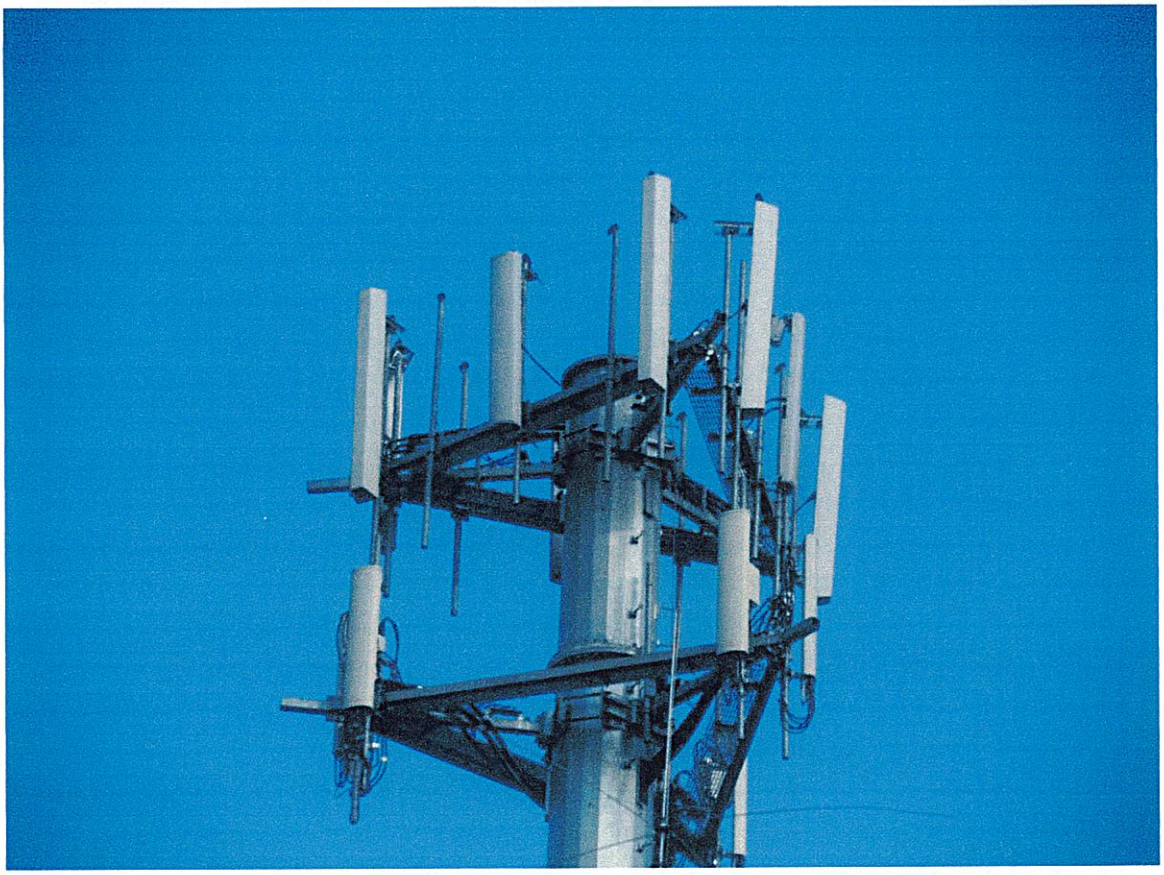
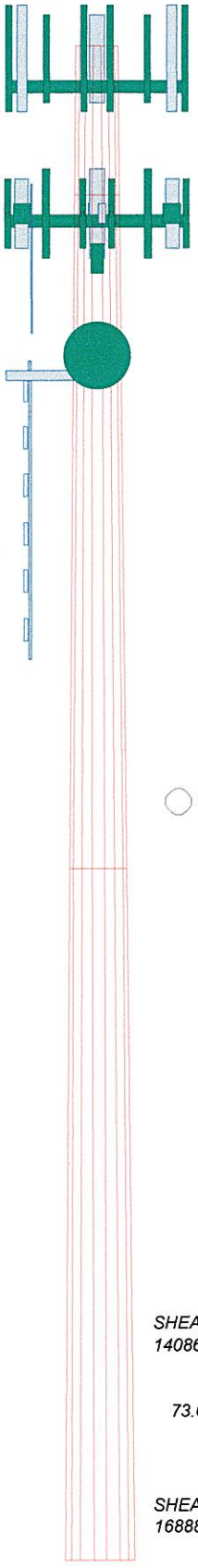


Photo 1: Photo illustrating the monopole with Appurtenances shown.

Hudson Design Group LLC

CALCULATIONS

Length (ft)	Number of Sides	Thickness (in)	Top Dia (in)	Bot Dia (in)	Grade	Weight (lb)
10.00	18	0.2500	33.0800	35.2900		916.3
45.08	18	0.3125	35.2900	46.3200	A572-65	6161.0
46.17	18	0.3750	46.3200	55.2600		9427.4
						16504.7



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(2) SC-E 6016 w/mount pipe	100.4	DAS-HY-DFDM (ATT - existing)	90
BXA-70063-6CF-EDIN w/mount pipe	100.4	DAS-HY-DFDM (ATT - existing)	90
(2) SC-E 6016 w/mount pipe	100.4	DAS-HY-DFDM (ATT - existing)	90
BXA-70063-6CF-EDIN w/mount pipe	100.4	KMW AM-X-CD-16-65-00T-RET w/mount pipe (ATT - proposed)	90
(2) SC-E 6016 w/mount pipe	100.4		
BXA-70063-6CF-EDIN w/mount pipe	100.4	KMW AM-X-CD-16-65-00T-RET w/mount pipe (ATT - proposed)	90
12' Low Profile Platform	98.5		
(2) Powerwave 7770 w/mount pipe (ATT - existing)	90	KMW AM-X-CD-16-65-00T-RET w/mount pipe (ATT - proposed)	90
(2) Powerwave 7770 w/mount pipe (ATT - existing)	90	(2) Ericsson RRU (ATT - proposed)	90
(2) Powerwave 7770 w/mount pipe (ATT - existing)	90	(2) Ericsson RRU (ATT - proposed)	90
(2) Powerwave TMA LGP21400 (ATT - existing)	90	(2) Ericsson RRU (ATT - proposed)	90
(2) Powerwave TMA LGP21400 (ATT - existing)	90	12' Low Profile Platform (ATT - existing)	89.5
(2) Powerwave TMA LGP21400 (ATT - existing)	90	Ring Mount (ATT - proposed)	88.5
(2) Powerwave LGP21900 (ATT - existing)	90	Surge Arrestor (DC6-48-60-18-8F) (ATT - proposed)	87
(2) Powerwave LGP21900 (ATT - existing)	90	Omni 1"x8'	87
(2) Powerwave LGP21900 (ATT - existing)	90	Kathrein PR-950	80.5
		Ring Mount	79.5
		PiROD 12' Lightweight T-Frame	79.5
		20' Dipole	70.2

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Tolland County, Connecticut.
2. Tower designed for a 85.0 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 73.6 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 50.0 mph wind.
5. TOWER RATING: 32.1%

AXIAL
28806 lb

SHEAR
14086 lb

MOMENT
1028666 lb-ft

TORQUE 3541 lb-ft
73.6 mph WIND - 0.5000 in ICE

AXIAL
23654 lb

SHEAR
16888 lb

MOMENT
1206590 lb-ft

TORQUE 2962 lb-ft
REACTIONS - 85.0 mph WIND

Hudson Design Group, LLC
1600 Osgood Street, Building 20 North, Suite 2-101
North Andover, MA 01845
Phone: (978) 557-5553
FAX: (978) 226-5586

Job: *CT 1182 Coventry, CT*			
Project: *101 ft Monopole*			
Client: AT&T	Drawn by: kw	App'd:	
Code: TIA/EIA-222-F	Date: 09/13/12	Scale:	
Path: C:\Users\kwang\Documents\Hudson\AAA\CT 1182 - MP (AT&T)\CT1182\CT 1182.eri		Dwg N	

Tower Input Data

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

Tower is located in Tolland County, Connecticut.
Basic wind speed of 85.0 mph.
Nominal ice thickness of 0.5000 in.
Ice density of 56.0 pcf.
A wind speed of 73.6 mph is used in combination with ice.
Temperature drop of 50.0 °F.
Deflections calculated using a wind speed of 50.0 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.333.
Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	101.25-91.25	10.00	0.00	18	33.0800	35.2900	0.2500	1.0000	A572-65 (65 ksi)
L2	91.25-46.17	45.08	0.00	18	35.2900	46.3200	0.3125	1.2500	A572-65 (65 ksi)
L3	46.17-0.00	46.17		18	46.3200	55.2600	0.3750	1.5000	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	33.5903	26.0506	3547.2927	11.6547	16.8046	211.0901	7099.2531	13.0278	5.3821	21.528
	35.8344	27.8042	4312.9723	12.4392	17.9273	240.5810	8631.6198	13.9048	5.7710	23.084
L2	35.8344	34.6933	5362.4183	12.4170	17.9273	299.1199	10731.8926	17.3500	5.6610	18.115
	47.0346	45.6337	12203.3846	16.3327	23.5306	518.6185	24422.8267	22.8212	7.6023	24.327
L3	47.0346	54.6860	14584.4618	16.3105	23.5306	619.8094	29188.1143	27.3482	7.4923	19.98
	56.1125	65.3269	24862.0334	19.4842	28.0721	885.6498	49756.7810	32.6696	9.0658	24.175

Monopole Base Plate Data

Base Plate Data

Base plate is square

Base Plate Data

Base plate is grouted	
Anchor bolt grade	A615-75
Anchor bolt size	2.2500 in
Number of bolts	18
Embedment length	60.0000 in
f'_c	4.0 ksi
Grout space	3.2500 in
Base plate grade	A572-50
Base plate thickness	3.0000 in
Bolt circle diameter	63.5000 in
Outer diameter	69.5000 in
Inner diameter	31.0000 in
Base plate type	Plain Plate

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft²/ft	Weight plf
1 5/8	A	No	Inside Pole	101.00 - 6.00	12	No Ice	0.00	1.04
						1/2" Ice	0.00	1.04
1 5/8 (AT&T - existing)	A	No	Inside Pole	90.00 - 6.00	12	No Ice	0.00	1.04
						1/2" Ice	0.00	1.04
1/2 (AT&T - existing)	A	No	Inside Pole	90.00 - 6.00	12	No Ice	0.00	0.25
						1/2" Ice	0.00	0.25
7/8	A	No	Inside Pole	80.00 - 6.00	1	No Ice	0.00	0.54
						1/2" Ice	0.00	0.54
1/2	A	No	Inside Pole	80.00 - 6.00	1	No Ice	0.00	0.25
						1/2" Ice	0.00	0.25
3/8	A	No	Inside Pole	80.00 - 6.00	1	No Ice	0.00	0.25
						1/2" Ice	0.00	0.25
**********								
FB-L98B-002 (AT&T - proposed)	A	No	Inside Pole	90.00 - 6.00	1	No Ice	0.00	0.25
						1/2" Ice	0.00	0.25
WR-VG122ST-BRDA (AT&T - proposed)	A	No	Inside Pole	90.00 - 6.00	2	No Ice	0.00	0.25
						1/2" Ice	0.00	0.25

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft²	C_AA_A Side ft²	Weight lb
12' Low Profile Platform	A	None		0.0000	98.50	No Ice	14.00	14.00	1200.00
						1/2" Ice	15.00	15.00	1587.51
(2) SC-E 6016 w/mount pipe	A	From Leg	2.50 0.00 0.00	0.0000	100.40	No Ice 1/2" Ice	8.16 8.89	9.87 11.34	77.11 153.72
BXA-70063-6CF-EDIN w/mount pipe	A	From Leg	2.50 0.00	0.0000	100.40	No Ice 1/2" Ice	7.99 8.64	5.82 6.99	42.55 100.70

tnxTower	Job: CT 1182 Coventry, CT	Page: 3 of 8
Hudson Design Group, LLC 1600 Osgood Street, Building 20 North, Suite 2-101 North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 226-5586	Project: 101 ft Monopole	Date: 10:28:26 09/13/12
	Client: AT&T	Designed by: kw

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00						
(2) SC-E 6016 w/mount pipe	B	From Leg	2.50 0.00 0.00	0.0000	100.40	No Ice 1/2" Ice	8.16 8.89	9.87 11.34	77.11 153.72
BXA-70063-6CF-EDIN w/mount pipe	B	From Leg	2.50 0.00 0.00	0.0000	100.40	No Ice 1/2" Ice	7.99 8.64	5.82 6.99	42.55 100.70
(2) SC-E 6016 w/mount pipe	C	From Leg	2.50 0.00 0.00	0.0000	100.40	No Ice 1/2" Ice	8.16 8.89	9.87 11.34	77.11 153.72
BXA-70063-6CF-EDIN w/mount pipe	C	From Leg	2.50 0.00 0.00	0.0000	100.40	No Ice 1/2" Ice	7.99 8.64	5.82 6.99	42.55 100.70
**********									
12' Low Profile Platform (AT&T - existing)	A	None		0.0000	89.50	No Ice 1/2" Ice	14.00 15.00	14.00 15.00	1200.00 1587.51
(2) Powerwave 7770 w/mount pipe (AT&T - existing)	A	From Leg	2.50 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice	6.02 6.47	4.10 4.75	57.25 101.14
(2) Powerwave 7770 w/mount pipe (AT&T - existing)	B	From Leg	2.50 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice	6.02 6.47	4.10 4.75	57.25 101.14
(2) Powerwave 7770 w/mount pipe (AT&T - existing)	C	From Leg	2.50 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice	6.02 6.47	4.10 4.75	57.25 101.14
(2) Powerwave TMA LGP21400 (AT&T - existing)	A	From Leg	2.50 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice	1.23 1.38	0.41 0.52	14.10 21.29
(2) Powerwave TMA LGP21400 (AT&T - existing)	B	From Leg	2.50 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice	1.23 1.38	0.41 0.52	14.10 21.29
(2) Powerwave TMA LGP21400 (AT&T - existing)	C	From Leg	2.50 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice	1.23 1.38	0.41 0.52	14.10 21.29
(2) Powerwave LGP21900 (AT&T - existing)	A	From Leg	2.50 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice	0.23 0.30	0.12 0.17	5.50 7.70
(2) Powerwave LGP21900 (AT&T - existing)	B	From Leg	2.50 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice	0.23 0.30	0.12 0.17	5.50 7.70
(2) Powerwave LGP21900 (AT&T - existing)	C	From Leg	2.50 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice	0.23 0.30	0.12 0.17	5.50 7.70
DAS-HY-DFDM (AT&T - existing)	A	From Leg	2.50 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice	0.12 0.18	0.03 0.06	5.00 6.21
DAS-HY-DFDM (AT&T - existing)	B	From Leg	2.50 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice	0.12 0.18	0.03 0.06	5.00 6.21
DAS-HY-DFDM (AT&T - existing)	C	From Leg	2.50 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice	0.12 0.18	0.03 0.06	5.00 6.21
**********									
KMW AM-X-CD-16-65-00T-RET w/mount pipe (AT&T - proposed)	A	From Leg	2.50 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice	8.50 9.15	6.30 7.48	74.05 136.21

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
KMW AM-X-CD-16-65-00T-RET w/mount pipe (AT&T - proposed)	B	From Leg	2.50 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice	8.50 9.15	6.30 7.48	74.05 136.21
KMW AM-X-CD-16-65-00T-RET w/mount pipe (AT&T - proposed)	C	From Leg	2.50 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice	8.50 9.15	6.30 7.48	74.05 136.21
(2) Ericsson RRU (AT&T - proposed)	A	From Face	1.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice	2.07 2.26	1.08 1.23	44.00 58.64
(2) Ericsson RRU (AT&T - proposed)	B	From Face	1.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice	2.07 2.26	1.08 1.23	44.00 58.64
(2) Ericsson RRU (AT&T - proposed)	C	From Face	1.00 0.00 0.00	0.0000	90.00	No Ice 1/2" Ice	2.07 2.26	1.08 1.23	44.00 58.64
Surge Arrestor (DC6-48-60-18-8F) (AT&T - proposed)	C	From Face	1.00 0.00 0.00	0.0000	87.00	No Ice 1/2" Ice	1.27 1.46	1.27 1.46	20.00 35.12
Ring Mount (AT&T - proposed)	A	None		0.0000	88.50	No Ice 1/2" Ice	1.40 2.40	1.40 2.40	90.00 130.00
**********									
Ring Mount	A	None		0.0000	79.50	No Ice 1/2" Ice	1.40 2.40	1.40 2.40	90.00 130.00
PiROD 12' Lightweight T-Frame	A	From Face	2.00 0.00 0.00	0.0000	79.50	No Ice 1/2" Ice	10.20 16.20	10.20 16.20	253.00 355.00
Omni 1"x8'	A	From Face	3.50 0.00 0.00	0.0000	87.00	No Ice 1/2" Ice	0.80 1.62	0.80 1.62	20.00 27.43
20' Dipole	A	From Face	3.50 0.00 0.00	0.0000	70.20	No Ice 1/2" Ice	8.00 10.04	8.00 10.04	60.00 115.61

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight lb
Kathrein PR-950	C	Grid	From Face	2.00 0.00 0.00	0.0000		80.50	4.50	No Ice 1/2" Ice	6.00 9.00	38.00 98.00

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 Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Pole	Max. Vert	15	28805.90	-0.00	14085.66
	Max. H_x	11	23654.15	16802.87	-12.29
	Max. H_z	2	23654.15	0.00	16873.77
	Max. M_x	2	1206398.74	0.00	16873.77
	Max. M_z	5	1199010.26	-16802.87	-12.29
	Max. Torsion	16	3541.36	-6823.25	12256.16
	Min. Vert	38	23654.15	2916.23	5056.23
	Min. H_x	5	23654.15	-16802.87	-12.29
	Min. H_z	8	23654.15	0.00	-16887.94

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
	Min. M_x	8	-1206589.71	0.00	-16887.94
	Min. M_z	11	-1201325.73	16802.87	-12.29
	Min. Torsion	21	-3044.43	-0.00	-13950.62

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	23654.15	0.00	0.00	-473.53	1142.89	0.00
Dead+Wind 0 deg - No Ice	23654.15	-0.00	-16873.77	-1206398.74	1157.20	-2809.12
Dead+Wind 30 deg - No Ice	23654.15	8427.90	-14612.50	-1044786.48	-601073.77	-2936.78
Dead+Wind 60 deg - No Ice	23654.15	14569.02	-8428.85	-602787.11	-1039622.17	-2394.44
Dead+Wind 90 deg - No Ice	23654.15	16802.87	12.29	517.56	-1199010.26	-1233.52
Dead+Wind 120 deg - No Ice	23654.15	14568.07	8436.41	602441.67	-1039545.28	409.72
Dead+Wind 150 deg - No Ice	23654.15	8421.29	14616.28	1044134.07	-600536.79	1903.88
Dead+Wind 180 deg - No Ice	23654.15	-0.00	16887.94	1206589.71	1157.20	2809.12
Dead+Wind 210 deg - No Ice	23654.15	-8421.29	14616.28	1044134.53	602851.46	2961.67
Dead+Wind 240 deg - No Ice	23654.15	-14568.07	8436.41	602442.13	1041860.48	2399.41
Dead+Wind 270 deg - No Ice	23654.15	-16802.87	12.29	517.56	1201325.73	1233.51
Dead+Wind 300 deg - No Ice	23654.15	-14569.02	-8428.85	-602787.57	1041937.37	-414.69
Dead+Wind 330 deg - No Ice	23654.15	-8427.90	-14612.50	-1044786.94	603388.44	-1928.77
Dead+Ice+Temp	28805.90	0.00	0.00	-566.65	1742.03	0.00
Dead+Wind 0 deg+Ice+Temp	28805.90	0.00	-14085.66	-1028664.44	1771.53	-3044.40
Dead+Wind 30 deg+Ice+Temp	28805.90	6823.25	-12256.16	-895613.15	-494413.29	-3541.36
Dead+Wind 60 deg+Ice+Temp	28805.90	11898.87	-7280.49	-533949.93	-864206.31	-2817.83
Dead+Wind 90 deg+Ice+Temp	28805.90	13757.09	3.19	-316.55	-999593.44	-1148.73
Dead+Wind 120 deg+Ice+Temp	28805.90	11957.36	6956.17	506419.73	-868963.37	718.64
Dead+Wind 150 deg+Ice+Temp	28805.90	6938.09	12043.49	877164.08	-503753.93	2327.99
Dead+Wind 180 deg+Ice+Temp	28805.90	0.00	13950.62	1016528.89	1771.55	3044.43
Dead+Wind 210 deg+Ice+Temp	28805.90	-6938.09	12043.49	877164.67	507297.37	2945.13
Dead+Wind 240 deg+Ice+Temp	28805.90	-11957.36	6956.17	506420.33	872507.51	2325.81
Dead+Wind 270 deg+Ice+Temp	28805.90	-13757.09	3.19	-316.55	1003137.93	1148.72
Dead+Wind 300 deg+Ice+Temp	28805.90	-11898.87	-7280.49	-533950.51	867750.42	-226.52
Dead+Wind 330 deg+Ice+Temp	28805.90	-6823.25	-12256.16	-895613.73	497956.70	-1731.69
Dead+Wind 0 deg - Service	23654.15	-0.00	-5838.67	-417765.97	1157.97	-972.29
Dead+Wind 30 deg - Service	23654.15	2916.23	-5056.23	-361843.06	-207233.04	-1016.46
Dead+Wind 60 deg - Service	23654.15	5041.18	-2916.56	-208897.26	-358984.66	-828.74
Dead+Wind 90 deg - Service	23654.15	5814.14	4.25	-134.75	-414137.96	-426.95
Dead+Wind 120 deg - Service	23654.15	5040.86	2919.17	208150.09	-358958.10	141.80
Dead+Wind 150 deg - Service	23654.15	2913.94	5057.54	360989.71	-207047.26	658.96
Dead+Wind 180 deg - Service	23654.15	-0.00	5843.58	417204.52	1157.97	972.28
Dead+Wind 210 deg - Service	23654.15	-2913.94	5057.54	360989.77	209363.23	1025.09
Dead+Wind 240 deg - Service	23654.15	-5040.86	2919.17	208150.14	361274.12	830.49
Dead+Wind 270 deg - Service	23654.15	-5814.14	4.25	-134.74	416454.02	426.94
Dead+Wind 300 deg - Service	23654.15	-5041.18	-2916.56	-208897.31	361300.68	-143.55
Dead+Wind 330 deg - Service	23654.15	-2916.23	-5056.23	-361843.11	209549.00	-667.59

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
1	0.00	-23654.15	0.00	0.00	23654.15	0.00	0.000%
2	0.00	-23654.15	-16873.77	0.00	23654.15	16873.77	0.000%
3	8427.90	-23654.15	-14612.50	-8427.90	23654.15	14612.50	0.000%
4	14569.02	-23654.15	-8428.85	-14569.02	23654.15	8428.85	0.000%
5	16802.87	-23654.15	12.29	-16802.87	23654.15	-12.29	0.000%
6	14568.07	-23654.15	8436.41	-14568.07	23654.15	-8436.41	0.000%
7	8421.29	-23654.15	14616.28	-8421.29	23654.15	-14616.28	0.000%
8	0.00	-23654.15	16887.94	0.00	23654.15	-16887.94	0.000%
9	-8421.29	-23654.15	14616.28	8421.29	23654.15	-14616.28	0.000%
10	-14568.07	-23654.15	8436.41	14568.07	23654.15	-8436.41	0.000%
11	-16802.87	-23654.15	12.29	16802.87	23654.15	-12.29	0.000%
12	-14569.02	-23654.15	-8428.85	14569.02	23654.15	8428.85	0.000%
13	-8427.90	-23654.15	-14612.50	8427.90	23654.15	14612.50	0.000%
14	0.00	-28805.90	0.00	0.00	28805.90	0.00	0.000%
15	0.00	-28805.90	-14085.66	-0.00	28805.90	14085.66	0.000%
16	6823.25	-28805.90	-12256.16	-6823.25	28805.90	12256.16	0.000%
17	11898.87	-28805.90	-7280.49	-11898.87	28805.90	7280.49	0.000%
18	13757.08	-28805.90	3.19	-13757.09	28805.90	-3.19	0.000%
19	11957.36	-28805.90	6956.17	-11957.36	28805.90	-6956.17	0.000%
20	6938.09	-28805.90	12043.49	-6938.09	28805.90	-12043.49	0.000%
21	0.00	-28805.90	13950.62	-0.00	28805.90	-13950.62	0.000%
22	-6938.09	-28805.90	12043.49	6938.09	28805.90	-12043.49	0.000%
23	-11957.36	-28805.90	6956.17	11957.36	28805.90	-6956.17	0.000%
24	-13757.08	-28805.90	3.19	13757.09	28805.90	-3.19	0.000%
25	-11898.87	-28805.90	-7280.49	11898.87	28805.90	7280.49	0.000%
26	-6823.25	-28805.90	-12256.16	6823.25	28805.90	12256.16	0.000%
27	0.00	-23654.15	-5838.67	0.00	23654.15	5838.67	0.000%
28	2916.23	-23654.15	-5056.23	-2916.23	23654.15	5056.23	0.000%
29	5041.18	-23654.15	-2916.56	-5041.18	23654.15	2916.56	0.000%
30	5814.14	-23654.15	4.25	-5814.14	23654.15	-4.25	0.000%
31	5040.86	-23654.15	2919.17	-5040.86	23654.15	-2919.17	0.000%
32	2913.94	-23654.15	5057.54	-2913.94	23654.15	-5057.54	0.000%
33	0.00	-23654.15	5843.58	0.00	23654.15	-5843.58	0.000%
34	-2913.94	-23654.15	5057.54	2913.94	23654.15	-5057.54	0.000%
35	-5040.86	-23654.15	2919.17	5040.86	23654.15	-2919.17	0.000%
36	-5814.14	-23654.15	4.25	5814.14	23654.15	-4.25	0.000%
37	-5041.18	-23654.15	-2916.56	5041.18	23654.15	2916.56	0.000%
38	-2916.23	-23654.15	-5056.23	2916.23	23654.15	5056.23	0.000%

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	101.25 - 91.25	4.2414	38	0.3250	0.0021
L2	91.25 - 46.17	3.5632	38	0.3210	0.0021
L3	46.17 - 0	0.9958	38	0.1963	0.0009

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
100.40	(2) SC-E 6016 w/mount pipe	38	4.1836	0.3249	0.0021	184415
98.50	12' Low Profile Platform	38	4.0544	0.3244	0.0021	184415
90.00	(2) Powerwave 7770 w/mount pipe	38	3.4791	0.3199	0.0020	74535
89.50	12' Low Profile Platform	38	3.4455	0.3195	0.0020	70199
88.50	Ring Mount	38	3.3785	0.3184	0.0020	62607
87.00	Surge Arrestor (DC6-48-60-18-8F)	38	3.2783	0.3166	0.0020	53526
80.50	Kathrein PR-950	38	2.8509	0.3059	0.0019	32577
79.50	Ring Mount	38	2.7863	0.3039	0.0019	30726
70.20	20' Dipole	38	2.2078	0.2808	0.0017	20101

Section Capacity Table

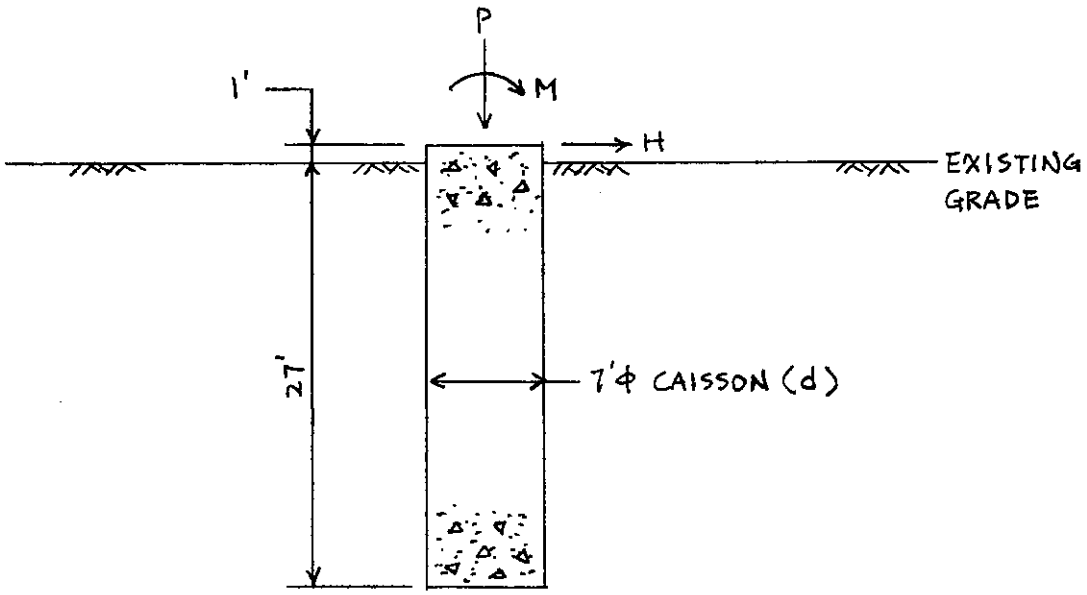
Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
L1	101.25 - 91.25	Pole	TP35.29x33.08x0.25	1	-2753.61	1445465.15	3.8	Pass
L2	91.25 - 46.17	Pole	TP46.32x35.29x0.3125	2	-12900.80	2372353.33	23.6	Pass
L3	46.17 - 0	Pole	TP55.26x46.32x0.375	3	-23649.40	3396150.61	32.1	Pass
							Summary	
						Pole (L3)	32.1	Pass
						Base Plate	29.2	Pass
						RATING =	**32.1**	**Pass**

DATE: 7/13/2012
Project Name: CT1182
Project No.:
Design By: KW Chk'd By: Page 1 of 1

Hudson Design Group LLC

FOUNDATION ANALYSIS

FOUNDATION INFORMATION TAKEN FROM "STRUCTURAL DESIGN CALCULATIONS" BY ENGINEERED ENDEAVORS INCORPORATED, DATED JANUARY 6, 2009.



MAXIMUM REACTIONS FROM MONOPOLE ANALYSIS

P = 23.7 kips

H = 16.9 kips

M = 1207 ft-k

NO UPLIFT FORCE

CHECK DEPTH OF CAISSON

$$2.0 + \frac{H}{3d} + 2\times\left[\frac{H^2}{18d^2} + \frac{H}{2} + \frac{M}{3d}\right]^{1/2}$$

$$= 2.0 + \frac{16.9}{3\times 7} + 2\times\left[\frac{16.9^2}{18\times 7^2} + \frac{16.9}{2} + \frac{1207}{3\times 7}\right]^{1/2}$$

$$= 2.0 + 0.8 + 16.3 = 19.1 \text{ ft} < 27 \text{ ft} \quad \text{OK}$$

157132

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Calculated Radio Frequency Emissions

CT1182

(1840 Coventry)

138 Main St., Coventry, CT 06238

September 20, 2012

Table of Contents

List of Tables

List of Figures

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 138 Main Street in Coventry, CT. The coordinates of the tower are 41° 45' 8.9" N, 72° 16' 8.7" W.

AT&T is proposing the following modifications:

1) Install three multi-band (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:

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

Where:

EIRP = Effective Isotropic Radiated Power

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

H = Horizontal Distance from antenna in meters

V = Vertical Distance from radiation center of antenna in meters

Ground reflection factor of 1.6

Off Beam Loss is determined by the selected antenna pattern

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

4. Calculation Results

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

Carrier	Antenna Height (Feet)	Operating Frequency (MHz)	Number of Trans.	ERP Per Transmitter (Watts)	Power Density (mw/cm^2)	Limit	%MPE
Cingular	*90*	*880*	*6*	*296*	*0.0788*	*0.5867*	*13.44%*
Cingular	*90*	*1930*	*3*	*427*	*0.0569*	*1.0000*	*5.69%*
Pelletier Builders	97	31.16	1	110	0.0042	0.2000	2.10%
Verizon PCS	102	1970	3	538	0.0558	1.0000	5.58%
Verizon cellular	102	869	9	624	0.1941	0.5793	33.50%
Verizon LTE	102	757	1	784	0.0271	0.5047	5.37%
AT&T UMTS	90	880	2	565	0.0050	0.5867	0.86%
AT&T UMTS	90	1900	2	875	0.0078	1.0000	0.78%
AT&T LTE	90	734	1	1313	0.0058	0.4893	1.19%
AT&T GSM	90	880	1	283	0.0013	0.5867	0.21%
AT&T GSM	90	1900	4	525	0.0093	1.0000	0.93%
						Total	**50.52%**

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 Hudson Design Group LLC Structural Analysis dated September 13, 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 **50.52% of the FCC limit**.

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

6. Statement of Certification

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

Daniel L. Goulet
C Squared Systems, LLC

September 20, 2012
Date

Attachment A: References

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

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

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

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

(A) Limits for Occupational/Controlled Exposure[4]

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

(B) Limits for General Population/Uncontrolled Exposure[5]

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

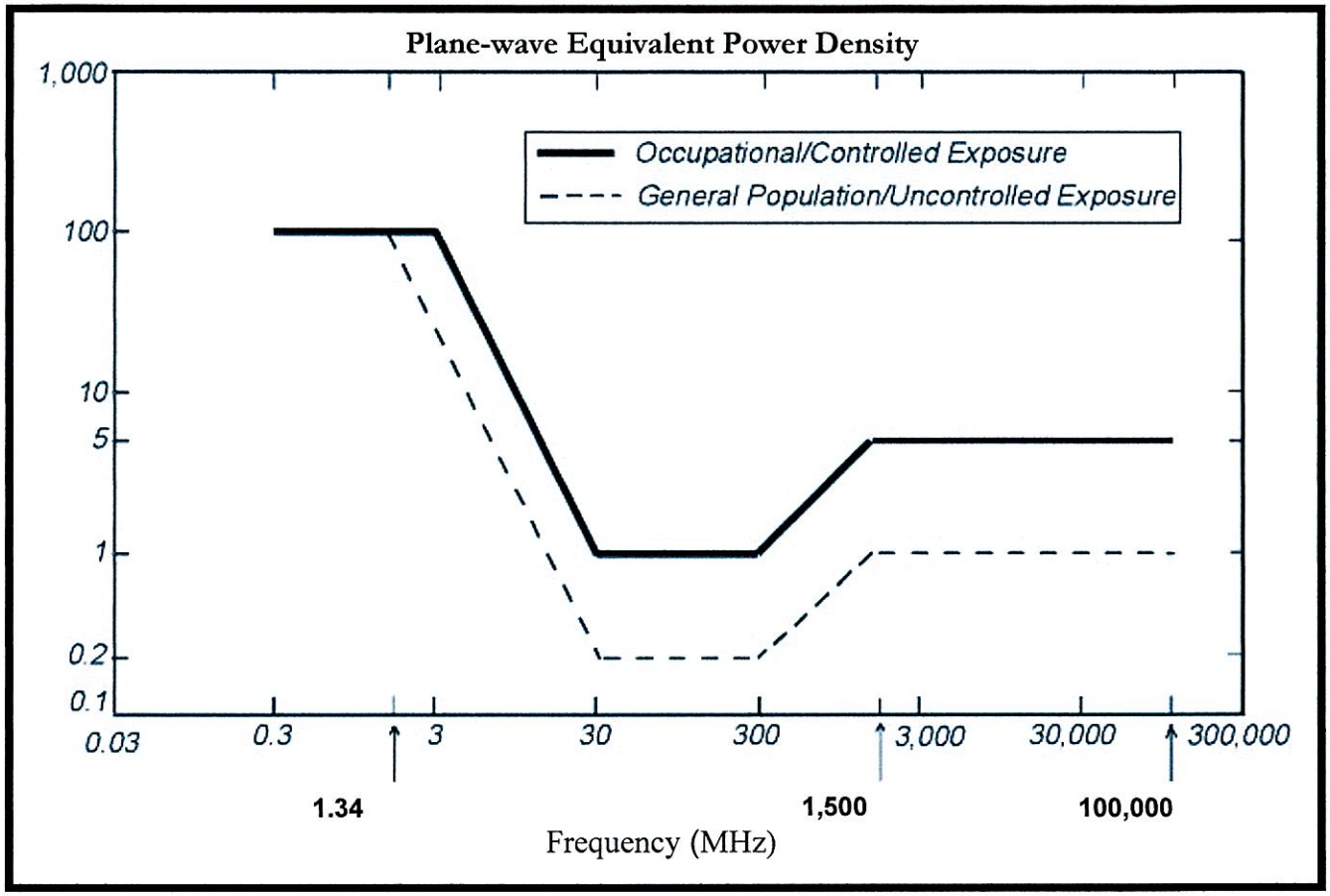
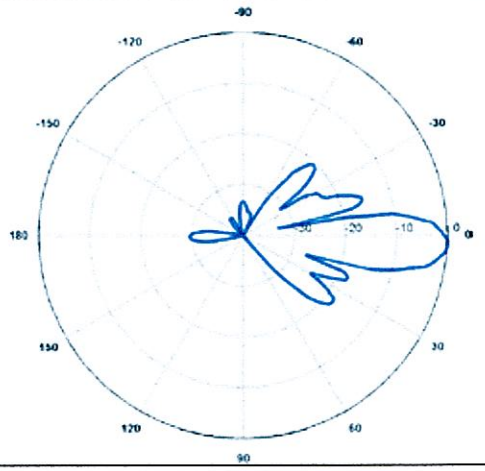


Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

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

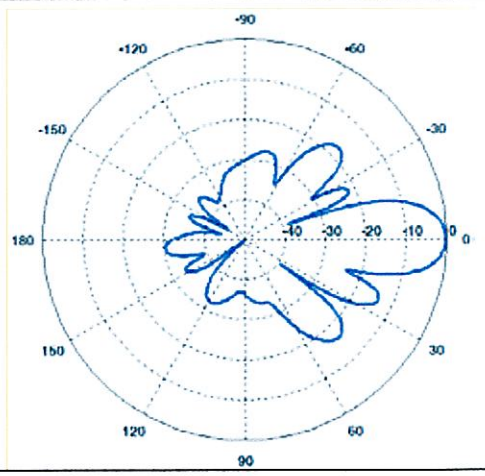
700 MHz

Manufacturer:	KMW Communications
Model #:	AM-X-CD-16-65-00T-RET
Frequency Band:	698-894 MHz
Gain:	13.4 dBd
Vertical Beamwidth:	12.3°
Horizontal Beamwidth:	65°
Polarization:	Dual Slant ± 45°
Size L x W x D:	72.0" x 11.8" x 5.9"



850 MHz

Manufacturer:	Powerwave
Model #:	7770
Frequency Band:	824-896 MHz
Gain:	11.5 dBd
Vertical Beamwidth:	15°
Horizontal Beamwidth:	82°
Polarization:	Dual Linear ± 45°
Size L x W x D:	55.0" x 11.0" x 5.0"



1900 MHz

Manufacturer:	Powerwave
Model #:	7770
Frequency Band:	1850-1990 MHz
Gain:	13.4 dBd
Vertical Beamwidth:	7°
Horizontal Beamwidth:	86°
Polarization:	Dual Linear ± 45°
Size L x W x D:	55.0" x 11.0" x 5.0"