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

December 7, 2012

Eric Dahl
Nexlink Global Services
55 Lynn Road
Ivoryton, CT 06442

RE: **EM-AT&T-020-121116 –** AT&T Mobility notice of intent to modify an existing telecommunications facility located at 12 Nepaug Road, Burlington, Connecticut.

Dear Mr. Dahl:

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

- The proposed feedlines shall be installed in accordance with the recommendations made in the Structural Analysis Report prepared by GPD Group dated October 26, 2012 and stamped by David Granger; and
- Not more than 45 days following completion of the antenna installation, AT&T shall provide documentation certifying that its installation complied with the engineer's recommendation.
- Any deviation from the proposed modification as specified in this notice and supporting materials with Council shall render this acknowledgement invalid;
- Any material changes to this modification as proposed shall require the filing of a new notice with the Council;
- Not more than 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;
- The validity of this action shall expire one year from the date of this letter; and
- The applicant may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration;

The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated November 15, 2012. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

CSC
CONNECTICUT SITING COUNCIL

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

Very truly yours,

Linda Roberts

Linda Roberts
Executive Director

LR/CDM/cm

c: The Honorable Theodore C. Shafer, First Selectman, Town of Burlington
Robert Angelillo, Planning and Zoning Chairman, Town of Burlington

EM-AT&T-020-121116

November 15, 2012

VIA OVERNIGHT DELIVERY

ORIGINAL

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

RE: AT&T Mobility – Notice of Exempt Modification
12 Nepaug Road, Burlington, 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 the Town of Burlington.

AT&T plans to modify the existing facility at 12 Nepaug Road, Burlington, owned by the AT&T Towers (coordinates 41°46'56.8"N, -72°59'22.7"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.

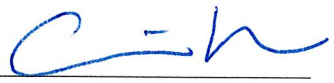
2.The proposed changes will not extend the site boundaries. AT&T will install additional equipment within its existing equipment shelter. Thus, there will be no effect on the site compound.

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 2.26%; the combined site operations will result in a total power density of 54.58%.

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

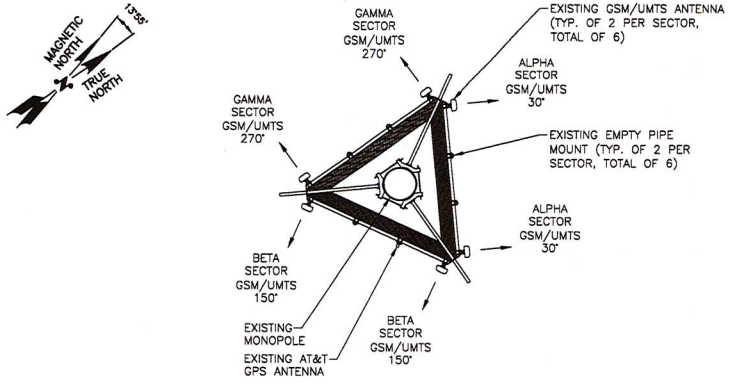
Respectfully submitted,
AT&T Mobility

By: 

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

cc: Honorable Theodore Shafer, First Selectman, Town of Burlington

Attachments



EXISTING GSM/UMTS ANTENNA PLAN

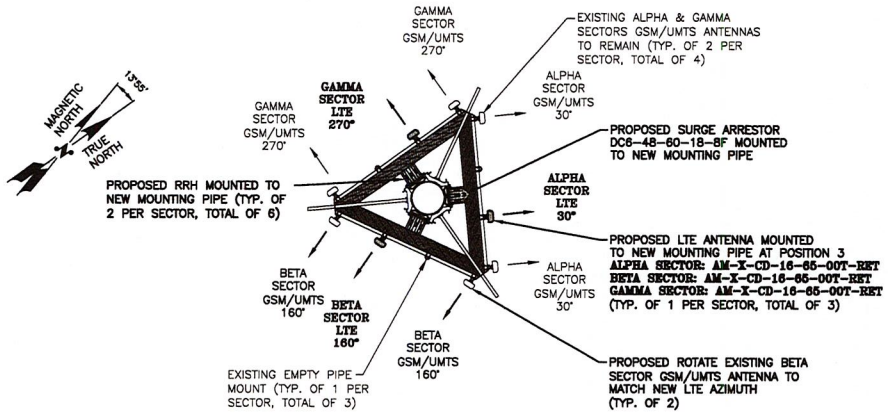
SCALE: N.T.S.

NOTE:

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

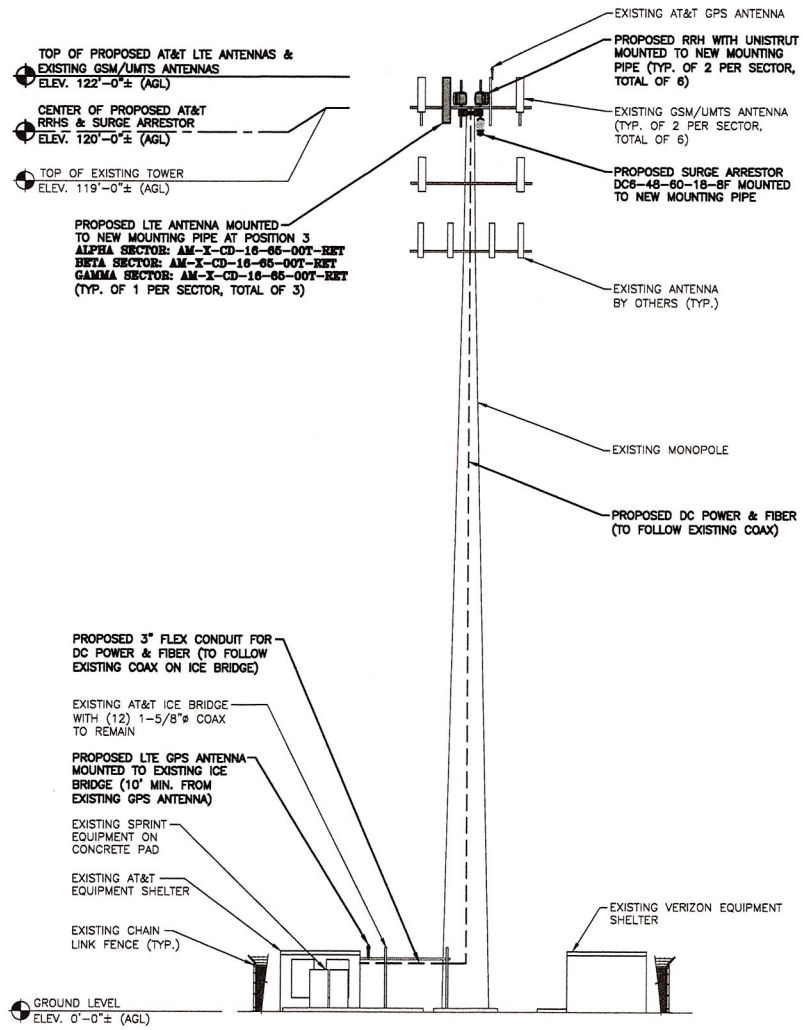
NOTE:

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



PROPOSED LTE ANTENNA PLAN

SCALE: N.T.S.



SOUTH ELEVATION

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

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

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

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

SITE NUMBER: CT1116
SITE NAME: BURLINGTON WEST

12 NEPAUG ROAD
BURLINGTON, CT 06013
HARTFORD COUNTY

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

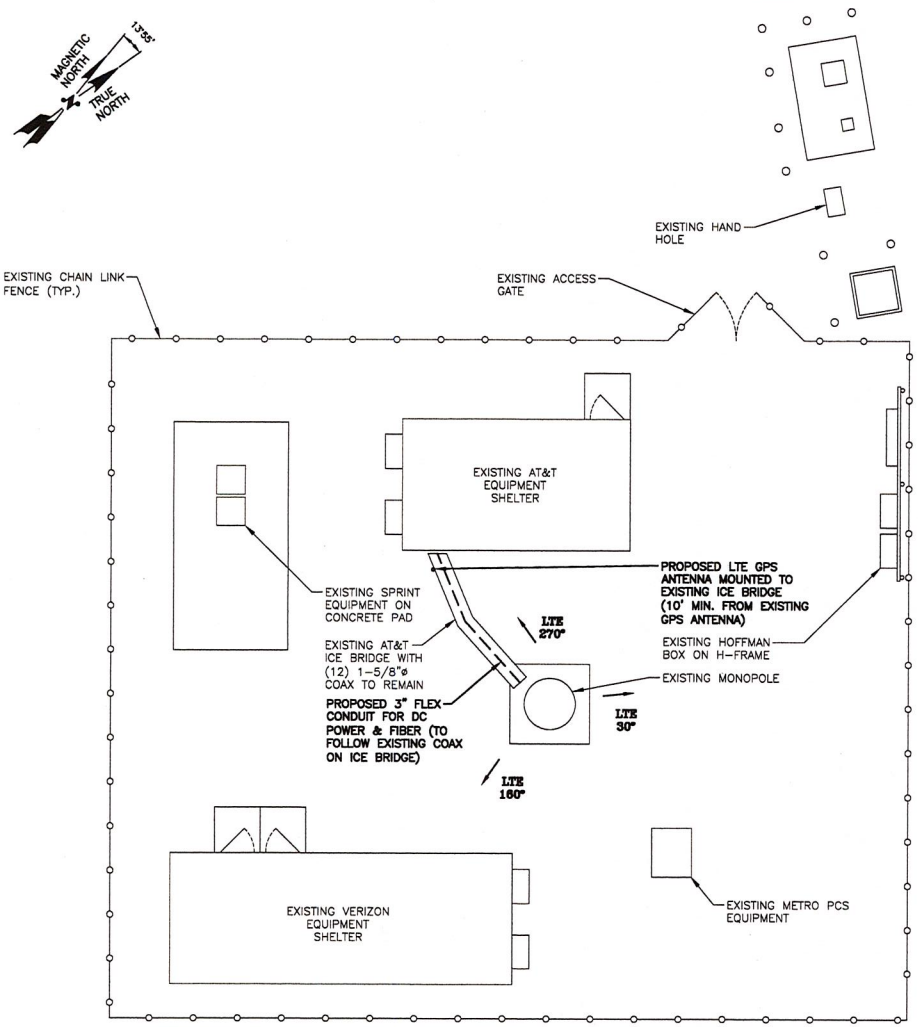
NO.	DATE	REVISIONS	BY	CHK	APP'D
0	08/02/12	ISSUED FOR REVIEW	RM	DC	DPH

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

AT&T

ELEVATION & ANTENNA PLAN (LTE)

JOB NUMBER	DRAWING NUMBER	REV
1116.01	A-2	0



COMPOUND PLAN

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

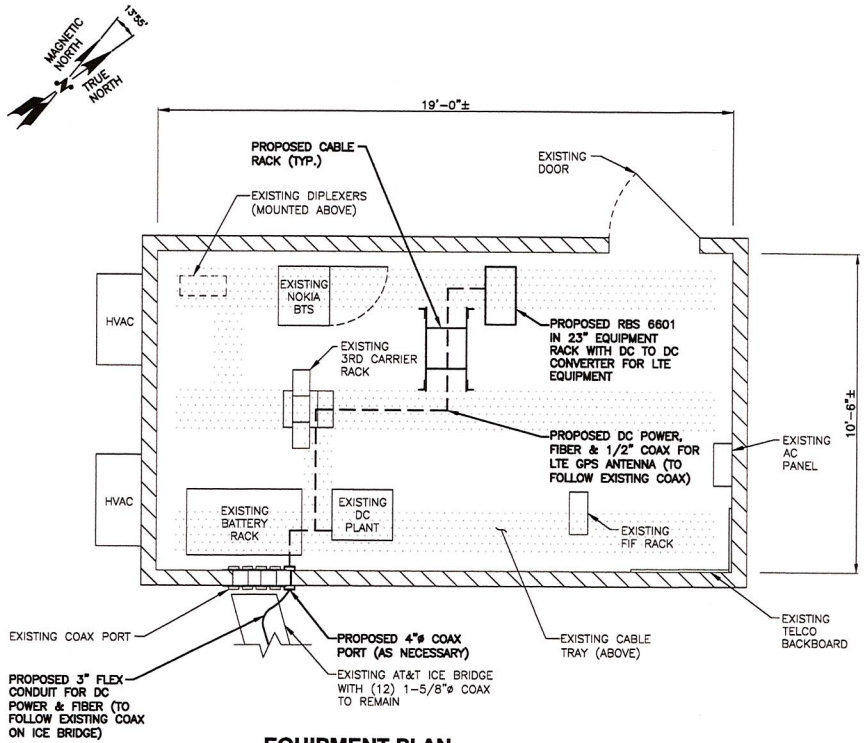
0 2'-8" 5'-4" 10'-8" 16'-0"

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
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: CT1116
SITE NAME: BURLINGTON WEST

12 NEPAUG ROAD
BURLINGTON, CT 06013
HARTFORD COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
0	08/02/12	ISSUED FOR REVIEW	RM	DC	DPH

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

AT&T

COMPOUND AND EQUIPMENT PLAN (LTE)

JOB NUMBER	DRAWING NUMBER	REV
1116.01	A-1	0

Nexlink Global Services
Suite A Building 2
800 Marshall Phelps Road
Windsor, CT 06095
(860) 219-9563

Kevin Clements
1117 Perimeter Center West; Suite W303
Atlanta, GA 30338
(678) 781-5061
kclements@gpdgroup.com

GPD# 2012801.73
October 26, 2012

STRUCTURAL ANALYSIS REPORT

AT&T DESIGNATION:	**Site USID:**	**84261**
	Site FA:	**10090883**
	Site Name:	**Burlington-Nepaug Road**
	AT&T Project:	**MOD LTE**
ANALYSIS CRITERIA:	**Codes:**	**TIA/EIA-222-F, 2006 IBC & 2005 CT Building Code** **80-mph 3 second gust with 0" ice** **28-mph fastest mile with 1" ice**
SITE DATA:		**12 Nepaug Rd., Burlington, CT 06013, Hartford County** **Latitude 41° 46' 56.830" N, Longitude 72° 59' 22.675" W** **Market: New England** **119.5' EEI Monopole**

Ms. Stephanie Wenderoth,

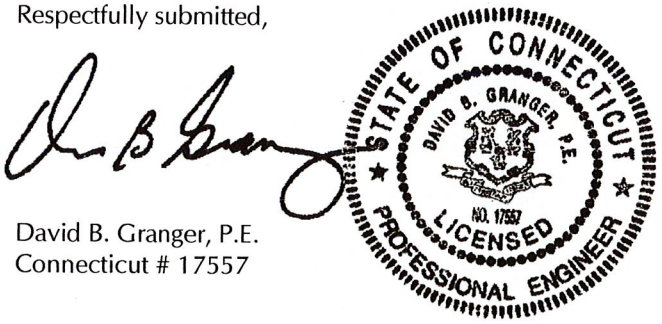
GPD is pleased to submit this Structural Analysis Report to determine the structural integrity of the aforementioned tower. The purpose of the analysis is to determine the suitability of the tower with the existing and proposed loading configuration detailed in the analysis report.

Analysis Results

Tower Stress Level with Proposed Equipment:	55.1%	Pass
Foundation Ratio with Proposed Equipment:	41.1%	Pass

We at GPD appreciate the opportunity of providing our continuing professional services to you and Nexlink. If you have any questions or need further assistance on this or any other projects please do not hesitate to call.

Respectfully submitted,



David B. Granger, P.E.
Connecticut # 17557

SUMMARY & RESULTS

The purpose of this analysis was to verify whether the existing modified structure is capable of carrying the proposed loading configuration as specified by AT&T to Nexlink. This report was commissioned by Ms. Stephanie Wenderoth of Nexlink.

The proposed feedlines must be installed internal to the pole in order for this analysis to be valid.

TOWER SUMMARY AND RESULTS

Member	Capacity	Results
Monopole	55.1%	Pass
Anchor Rods	35.8%	Pass
Base Plate	40.8%	Pass
Foundation	41.1%	Pass

ANALYSIS METHOD

TNX Tower (Version 6.0.4.0), a commercially available software program, was used to create a three-dimensional model of the tower and calculate primary member stresses for various dead, live, wind, and ice load cases. Selected output from the analysis is included in Appendix B. The following table details the information provided to complete this structural analysis. This analysis is solely based on this information and is being completed without the benefit of a detailed site visit.

DOCUMENTS PROVIDED

Document	Remarks	Source
Equipment Modification Form	AT&T Internal Loading Document, uploaded 8/27/2012	Siterra
Tower Design	Not provided	N/A
Foundation Design	Not provided	N/A
Geotechnical Report	Jaworski Geotech, Inc., Job #: 04143G, dated 2/24/2004	Siterra
Previous Structural Analysis	B&T Engineering, Inc., Job # 84029.002, dated 3/12/2012	Siterra
Tower Mapping	GPD, Job #: 2008265.31, dated 12/3/2008	Siterra

ASSUMPTIONS

This structural analysis is based on the theoretical capacity of the members and is not a condition assessment of the tower. This analysis is from information supplied, and therefore, its results are based on and are as accurate as that supplied data. GPD has made no independent determination, nor is it required to, of its accuracy. The following assumptions were made for this structural analysis.

1. The tower member sizes and shapes are considered accurate as supplied. The material grade is as per data supplied and/or as assumed and as stated in the materials section.
2. The appurtenance configuration is as supplied, determined from available photos, and/or as modeled in the analysis. It is assumed to be complete and accurate. All antennas, mounts, coax and waveguides are assumed to be properly installed and supported as per manufacturer requirements.
3. Some assumptions are made regarding antennas and mount sizes and their projected areas based on best interpretation of data supplied and of best knowledge of antenna type and industry practice.
4. All mounts, if applicable, are considered adequate to support the loading. No actual analysis of the mount(s) is performed. This analysis is limited to analyzing the tower only.
5. The soil parameters are as per data supplied or as assumed and stated in the calculations. If no data is available, the foundation system is not verified. In the case of absent foundation data, it is the tower owner's responsibility to insure that the foundation system is adequate to support the structure with its new reactions.
6. Foundations are properly designed and constructed to resist the original design loads indicated in the documents provided.
7. The tower and structures have been properly maintained in accordance with TIA Standards and/or with manufacturer's specifications.
8. All welds and connections are assumed to develop at least the member capacity unless determined otherwise and explicitly stated in this report.
9. Loading interpreted from photos is accurate to $\pm 5'$ AGL, antenna size accurate to ± 3.3 sf, and coax equal to the number of existing antennas without reserve.
10. All prior structural modifications, if applicable, are assumed to be as per data supplied/available and to have been properly installed.
11. All existing loading was obtained from a previous structural analysis by B&T Engineering (Job # 84029.002, dated 3/12/2012), site photos, and the provided Equipment Modification Form and is assumed to be accurate.
12. The existing AT&T loading elevations found in site photos and in the previous structural analysis by B&T Engineering, Inc. (Job # 84029.002, dated 3/12/2012) were found to vary from the Equipment Modification Form. The existing AT&T loading elevations have been modeled based on site photos and previous structural analysis by B&T Engineering, Inc. (Job # 84029.002, dated 3/12/2012).
13. The proposed AT&T loading elevations have been adjusted to match the existing AT&T loading elevations found in site photos and the previous structural analysis by B&T Engineering, Inc. (Job # 84029.002, dated 3/12/2012).
14. The proposed feedlines must be installed internal to the pole in order for this analysis to be valid.

If any of these assumptions are not valid or have been made in error, this analysis may be affected, and GPD Group should be allowed to review any new information to determine its effect on the structural integrity of the tower.

DISCLAIMER OF WARRANTIES

GPD GROUP has not performed a site visit to the tower to verify the member sizes or antenna/coax loading. If the existing conditions are not as represented on the tower elevation contained in this report, we should be contacted immediately to evaluate the significance of the discrepancy. This is not a condition assessment of the tower or foundation. This report does not replace a full tower inspection. The tower and foundations are assumed to have been properly fabricated, erected, maintained, in good condition, twist free, and plumb.

The engineering services rendered by GPD GROUP in connection with this Structural Analysis are limited to a computer analysis of the tower structure and theoretical capacity of its main structural members. All tower components have been assumed to only resist dead loads when no other loads are applied. No allowance was made for any damaged, bent, missing, loose, or rusted members (above and below ground). No allowance was made for loose bolts or cracked welds.

GPD GROUP does not analyze the fabrication of the structure (including welding). It is not possible to have all the very detailed information needed to perform a thorough analysis of every structural sub-component and connection of an existing tower. GPD GROUP provides a limited scope of service in that we cannot verify the adequacy of every weld, plate connection detail, etc. The purpose of this report is to assess the feasibility of adding appurtenances usually accompanied by transmission lines to the structure.

It is the owner's responsibility to determine the amount of ice accumulation in excess of the specified code recommended amount, if any, that should be considered in the structural analysis.

The attached sketches are a schematic representation of the analyzed tower. If any material is fabricated from these sketches, the contractor shall be responsible for field verifying the existing conditions, proper fit, and clearance in the field. Any mentions of structural modifications are reasonable estimates and should not be used as a precise construction document. Precise modification drawings are obtainable from GPD GROUP, but are beyond the scope of this report.

Miscellaneous items such as antenna mounts, etc., have not been designed or detailed as a part of our work. We recommend that material of adequate size and strength be purchased from a reputable tower manufacturer.

GPD GROUP makes no warranties, expressed and/or implied, in connection with this report and disclaims any liability arising from material, fabrication, and erection of this tower. GPD GROUP will not be responsible whatsoever for, or on account of, consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this report. The maximum liability of GPD GROUP pursuant to this report will be limited to the total fee received for preparation of this report.

APPENDIX A

Tower Analysis Summary Form

Tower Analysis Summary Form

General Info

Site Name	Burlington-Nepaug Road
Site Number	84261
FA Number	10090883
Date of Analysis	10/31/2012
Company Performing Analysis	GPD

The information contained in this summary report is not to be used independently from the PE stamped tower analysis.

Tower Info	Description	Date
Tower Type (G, SST, MP)	MP	
Tower Height (top of steel AGL)	119.5	
Tower Manufacturer	EEI	
Tower Model	n/a	
Tower Design	EEI Job # 13749	
Foundation Design	EEI Job # 13749	
Geotech Report	JGI Project # 04143G	
Tower Mapping	GPD & Northeast Towers, Inc.	
Previous Structural Analysis	B&T Engineering Job # 84029.002	
Foundation Mapping	n/a	

Design Parameters

Design Code Used	TIA/EIA-222-F 2006 IBC & 2005 CT State
Location of Tower (County, State)	Hartford, CT
Basic Wind Speed (mph)	80-fastest mile
Ice Thickness (in)	1"
Structure Classification (I, II, III)	
Exposure Category (B, C, D)	
Topographic Category (1 to 5)	

Analysis Results (% Maximum Usage)

Existing/Reserved + Future + Proposed Condition	
Tower (%)	55.1%
Tower Base (%)	40.8%
Foundation (%)	41.1%
Foundation Adequate?	Yes

Steel Yield Strength (ksi)

Pole	65
Base Plate	60
Anchor Rods	75

Note: Material grades are assumed based on experience with similar towers.

Existing / Reserved Loading

Antenna								Mount			Transmission Line			
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type	Quantity	Model	Size	Attachment Internal/External
AT&T Mobility	119	119	6	Panel	Powerwave	7770.00	30/150/270	1	Unknown	14' LP Platform	12	Unknown	1-5/8"	Internal
AT&T Mobility	119	119	6	TMA	Powerwave	LGP21401				on same mounts				
AT&T Mobility	119	119	6	Diplexer	Powerwave	LGP13519				on same mounts				
Unknown	109	109	6	Panel	Andrew	950F85T2E-M	0/120/240	1	Unknown	14' LP Platform	6	Unknown	1-1/4"	Internal
Verizon	99	99	3	Panel	Antel	BXA-171085-8BF_2	30/150/270	1	Unknown	14' LP Platform	12	Unknown	1-5/8"	Internal
Verizon	99	99	3	Panel	Antel	BXA-70063-6CF_2	30/150/270			on same mounts				
Verizon	99	99	6	Panel	Antel	LPA-800080-4CF	30/150/270			on same mounts				
Verizon	99	99	6	Diplexer	RFS Celwave	FD9R60004/2C-3L				on same mounts				
Pocket	88	88	3	Panel	Kathrein	742 213	30/150/270	3	Unknown	Pipe Mounted	6	Unknown	1-5/8"	Internal

Note: All existing loading shall remain on the tower.

Proposed Loading

Antenna								Mount			Transmission Line			
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type	Quantity	Model	Size	Attachment Internal/External
AT&T	119	119	3	Panel	KMW	AM-X-CD-16-65-00T	30/150/270			on existing mounts	2	DC Run	7/8"	Internal
AT&T	119	118	6	RRH	Ericsson	RBS6601				on existing mounts	1	Fiber	1/2"	Internal
AT&T	119	118	1	DC Unit	Raycap	DC6-48-60-18-8F				on existing mounts				

Note: The proposed loading is in addition to the remaining loading at the same elevation.

Future Loading

Antenna								Mount			Transmission Line			
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Type	Manufacturer	Model	Azimuth	Quantity	Manufacturer	Type	Quantity	Model	Size	Attachment Internal/External

APPENDIX B

tnxTower Output File

tnxTower	Job	Page
	Burlington-Nepaug Road	1 of 6
GPD Group *1801 Watermark Drive* *Columbus OH, 43215* *Phone: 614-588-8948* *FAX: 614-210-0752*	**Project** 2012801.73	**Date** 14:42:55 10/31/12
	Client Nexlink Global Services	**Designed by** R. Davidson

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 Hartford County, Connecticut.
Basic wind speed of 80 mph.
Nominal ice thickness of 1.0000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 28 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 50 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.

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	*Sector*	*Component Type*	*Placement*	*Total Number*	*Number Per Row*	*Start/End Position*	*Width or Diameter*	*Perimeter*	*Weight*
			ft				*in*	*in*	*plf*
5/8" Step Bolts	C	Surface Ar (CaAa)	119.50 - 8.00	1	1	0.000 0.000	0.4167		1.00
Safety Line 3/8	C	Surface Ar (CaAa)	119.50 - 8.00	1	1	0.000 0.000	0.3750		0.22

Feed Line/Linear Appurtenances - Entered As Area

Description	*Face or Leg*	*Allow Shield*	*Component Type*	*Placement*	*Total Number*		C_AA_A	*Weight*
				ft			*ft²/ft*	*plf*
LDF7-50A (1-5/8 FOAM)	C	No	Inside Pole	119.00 - 8.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82
7/8" DC Run	C	No	Inside Pole	119.00 - 8.00	2	No Ice	0.00	0.33
						1/2" Ice	0.00	0.33
						1" Ice	0.00	0.33
						2" Ice	0.00	0.33
						4" Ice	0.00	0.33
1/2" Fiber Cable	C	No	Inside Pole	119.00 - 8.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
						2" Ice	0.00	0.15
						4" Ice	0.00	0.15
LDF6-50A (1-1/4	C	No	Inside Pole	109.00 - 8.00	6	No Ice	0.00	0.66

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
FOAM)						1/2" Ice	0.00	0.66
						1" Ice	0.00	0.66
						2" Ice	0.00	0.66
						4" Ice	0.00	0.66
LDF7-50A (1-5/8 FOAM)	C	No	Inside Pole	99.00 - 8.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82
LDF7-50A (1-5/8 FOAM)	C	No	Inside Pole	88.00 - 8.00	6	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
						2" Ice	0.00	0.82
						4" Ice	0.00	0.82

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
MTS 14.5' LP Platform	C	None		0.0000	119.00	No Ice	17.46	17.46	1349.00
						1/2" Ice	22.44	22.44	1624.58
						1" Ice	27.42	27.42	1900.16
						2" Ice	37.38	37.38	2451.32
						4" Ice	57.30	57.30	3553.64
(2) 7770.00 w/ 6' Mount Pipe	A	From Leg	3.46 2.00 0.00	30.0000	119.00	No Ice	6.22	4.35	60.90
						1/2" Ice	6.77	5.20	106.99
						1" Ice	7.30	5.92	163.01
						2" Ice	8.38	7.41	297.01
						4" Ice	10.69	10.76	683.74
(2) LGP21401	A	From Leg	3.46 2.00 0.00	30.0000	119.00	No Ice	0.00	0.23	14.10
						1/2" Ice	0.00	0.31	21.26
						1" Ice	0.00	0.40	30.32
						2" Ice	0.00	0.61	54.89
						4" Ice	0.00	1.12	135.29
(2) LGP13519	A	From Leg	3.46 2.00 0.00	30.0000	119.00	No Ice	0.00	0.21	5.30
						1/2" Ice	0.00	0.28	8.02
						1" Ice	0.00	0.36	11.91
						2" Ice	0.00	0.55	23.96
						4" Ice	0.00	1.03	70.63
AM-X-CD-16-65-00T w/ Mount Pipe	A	From Leg	3.46 2.00 0.00	30.0000	119.00	No Ice	7.33	6.14	73.53
						1/2" Ice	7.98	7.13	134.57
						1" Ice	8.57	7.97	204.89
						2" Ice	9.80	9.71	371.41
						4" Ice	12.41	13.40	828.99
(2) 7770.00 w/ 6' Mount Pipe	B	From Leg	3.46 2.00 0.00	30.0000	119.00	No Ice	6.22	4.35	60.90
						1/2" Ice	6.77	5.20	106.99
						1" Ice	7.30	5.92	163.01
						2" Ice	8.38	7.41	297.01
						4" Ice	10.69	10.76	683.74
(2) LGP21401	B	From Leg	3.46 2.00 0.00	30.0000	119.00	No Ice	0.00	0.23	14.10
						1/2" Ice	0.00	0.31	21.26
						1" Ice	0.00	0.40	30.32

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
						2" Ice	0.00	0.61	54.89
						4" Ice	0.00	1.12	135.29
(2) LGP13519	B	From Leg	3.46 2.00 0.00	30.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.00 0.00 0.00 0.00 0.00	0.21 0.28 0.36 0.55 1.03	5.30 8.02 11.91 23.96 70.63
AM-X-CD-16-65-00T w/ Mount Pipe	B	From Leg	3.46 2.00 0.00	30.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.33 7.98 8.57 9.80 12.41	6.14 7.13 7.97 9.71 13.40	73.53 134.57 204.89 371.41 828.99
(2) 7770.00 w/ 6' Mount Pipe	C	From Leg	3.46 2.00 0.00	30.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.22 6.77 7.30 8.38 10.69	4.35 5.20 5.92 7.41 10.76	60.90 106.99 163.01 297.01 683.74
(2) LGP21401	C	From Leg	3.46 2.00 0.00	30.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.00 0.00 0.00 0.00 0.00	0.23 0.31 0.40 0.61 1.12	14.10 21.26 30.32 54.89 135.29
(2) LGP13519	C	From Leg	3.46 2.00 0.00	30.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.00 0.00 0.00 0.00 0.00	0.21 0.28 0.36 0.55 1.03	5.30 8.02 11.91 23.96 70.63
AM-X-CD-16-65-00T w/ Mount Pipe	C	From Leg	3.46 2.00 0.00	30.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.33 7.98 8.57 9.80 12.41	6.14 7.13 7.97 9.71 13.40	73.53 134.57 204.89 371.41 828.99
6' x 2-1/2" Mount Pipe	A	From Leg	3.46 2.00 0.00	30.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.50 1.97 2.34 3.10 4.75	1.50 1.97 2.34 3.10 4.75	34.74 46.05 61.43 105.01 247.78
6' x 2-1/2" Mount Pipe	B	From Leg	3.46 2.00 0.00	30.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.50 1.97 2.34 3.10 4.75	1.50 1.97 2.34 3.10 4.75	34.74 46.05 61.43 105.01 247.78
6' x 2-1/2" Mount Pipe	C	From Leg	3.46 2.00 0.00	30.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.50 1.97 2.34 3.10 4.75	1.50 1.97 2.34 3.10 4.75	34.74 46.05 61.43 105.01 247.78
(2) RBS 6601	A	From Leg	3.46 2.00 -1.00	30.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.00 0.00 0.00 0.00 0.00	0.40 0.52 0.64 0.91 1.55	22.00 34.88 50.27 89.38 206.33
(2) RBS 6601	B	From Leg	3.46 2.00 -1.00	30.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.00 0.00 0.00 0.00 0.00	0.40 0.52 0.64 0.91 1.55	22.00 34.88 50.27 89.38 206.33

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
(2) RBS 6601	C	From Leg	3.46 2.00 -1.00	30.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.00 0.00 0.00 0.00 0.00	0.40 0.52 0.64 0.91 1.55	22.00 34.88 50.27 89.38 206.33
DC6-48-60-18-8F Surge Suppression Unit	A	From Leg	0.87 0.50 -1.00	30.0000	119.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.47 1.67 1.88 2.33 3.38	1.47 1.67 1.88 2.33 3.38	32.80 50.52 70.72 119.24 252.92
MTS 14.5' LP Platform	C	None		0.0000	109.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	17.46 22.44 27.42 37.38 57.30	17.46 22.44 27.42 37.38 57.30	1349.00 1624.58 1900.16 2451.32 3553.64
(2) 950F85T2E-M w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	109.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.02 3.47 3.90 4.80 6.71	5.66 6.55 7.31 8.95 12.54	33.40 71.49 119.50 237.50 592.21
(2) 950F85T2E-M w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	109.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.02 3.47 3.90 4.80 6.71	5.66 6.55 7.31 8.95 12.54	33.40 71.49 119.50 237.50 592.21
(2) 950F85T2E-M w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	109.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.02 3.47 3.90 4.80 6.71	5.66 6.55 7.31 8.95 12.54	33.40 71.49 119.50 237.50 592.21
(2) 6' x 2-1/2" Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	109.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.50 1.97 2.34 3.10 4.75	1.50 1.97 2.34 3.10 4.75	34.74 46.05 61.43 105.01 247.78
(2) 6' x 2-1/2" Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	109.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.50 1.97 2.34 3.10 4.75	1.50 1.97 2.34 3.10 4.75	34.74 46.05 61.43 105.01 247.78
(2) 6' x 2-1/2" Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	109.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.50 1.97 2.34 3.10 4.75	1.50 1.97 2.34 3.10 4.75	34.74 46.05 61.43 105.01 247.78
MTS 14.5' LP Platform	C	None		0.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	17.46 22.44 27.42 37.38 57.30	17.46 22.44 27.42 37.38 57.30	1349.00 1624.58 1900.16 2451.32 3553.64
BXA-171085-8BF_2 w/ 6' Mount Pipe	A	From Leg	3.46 2.00 0.00	30.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.41 3.88 4.35 5.36 7.52	3.58 4.38 5.06 6.47 9.64	32.40 64.64 106.00 208.30 522.07
BXA-70063-6CF-2 w/ Mount Pipe	A	From Leg	3.46 2.00	30.0000	99.00	No Ice 1/2" Ice	7.97 8.61	5.80 6.95	42.25 100.22

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			1" Ice	9.22	7.82	169.88
						2" Ice	10.46	9.60	335.13
						4" Ice	13.07	13.37	803.42
(2) LPA-80080/4CF w/Mount Pipe	A	From Leg	3.46 2.00 0.00	30.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.35 3.97 4.47 5.58 7.98	7.72 8.84 9.68 11.40 15.04	37.55 86.34 145.49 285.62 687.51
(2) FD9R6004/2C-3L	A	From Leg	3.46 2.00 0.00	30.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.37 0.45 0.54 0.75 1.28	0.08 0.14 0.20 0.34 0.74	3.10 5.40 8.79 19.61 62.87
BXA-171085-8BF_2 w/ 6' Mount Pipe	B	From Leg	3.46 2.00 0.00	30.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.41 3.88 4.35 5.36 7.52	3.58 4.38 5.06 6.47 9.64	32.40 64.64 106.00 208.30 522.07
BXA-70063-6CF-2 w/ Mount Pipe	B	From Leg	3.46 2.00 0.00	30.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.97 8.61 9.22 10.46 13.07	5.80 6.95 7.82 9.60 13.37	42.25 100.22 169.88 335.13 803.42
(2) LPA-80080/4CF w/Mount Pipe	B	From Leg	3.46 2.00 0.00	30.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.35 3.97 4.47 5.58 7.98	7.72 8.84 9.68 11.40 15.04	37.55 86.34 145.49 285.62 687.51
(2) FD9R6004/2C-3L	B	From Leg	3.46 2.00 0.00	30.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.37 0.45 0.54 0.75 1.28	0.08 0.14 0.20 0.34 0.74	3.10 5.40 8.79 19.61 62.87
BXA-171085-8BF_2 w/ 6' Mount Pipe	C	From Leg	3.46 2.00 0.00	30.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.41 3.88 4.35 5.36 7.52	3.58 4.38 5.06 6.47 9.64	32.40 64.64 106.00 208.30 522.07
BXA-70063-6CF-2 w/ Mount Pipe	C	From Leg	3.46 2.00 0.00	30.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.97 8.61 9.22 10.46 13.07	5.80 6.95 7.82 9.60 13.37	42.25 100.22 169.88 335.13 803.42
(2) LPA-80080/4CF w/Mount Pipe	C	From Leg	3.46 2.00 0.00	30.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.35 3.97 4.47 5.58 7.98	7.72 8.84 9.68 11.40 15.04	37.55 86.34 145.49 285.62 687.51
(2) FD9R6004/2C-3L	C	From Leg	3.46 2.00 0.00	30.0000	99.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.37 0.45 0.54 0.75 1.28	0.08 0.14 0.20 0.34 0.74	3.10 5.40 8.79 19.61 62.87
Andrew Chain Mount	A	From Leg	0.00 0.00 0.00	0.0000	88.00	No Ice 1/2" Ice 1" Ice 2" Ice	1.76 2.08 2.40 3.04	1.76 2.08 2.40 3.04	26.76 34.79 42.82 58.87

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
742 213 w/ Mount Pipe	A	From Leg	1.00 0.00 0.00	30.0000	88.00	4" Ice No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.32 5.37 5.95 6.50 7.61 9.93	4.32 4.62 6.00 6.98 8.85 12.79	90.98 48.92 90.56 144.11 277.12 682.43
742 213 w/ Mount Pipe	B	From Leg	1.00 0.00 0.00	30.0000	88.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.37 5.95 6.50 7.61 9.93	4.62 6.00 6.98 8.85 12.79	48.92 90.56 144.11 277.12 682.43
742 213 w/ Mount Pipe	C	From Leg	1.00 0.00 0.00	30.0000	88.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.37 5.95 6.50 7.61 9.93	4.62 6.00 6.98 8.85 12.79	48.92 90.56 144.11 277.12 682.43

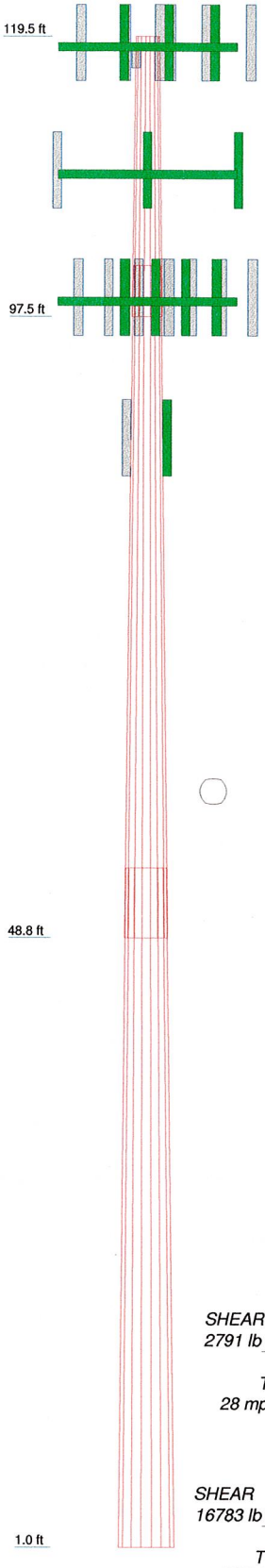
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
L1	119.5 - 97.5	Pole	TP27.59x22x0.1875	1	-4929.37	816354.49	19.4	Pass
L2	97.5 - 48.75	Pole	TP39.49x26.1986x0.25	2	-12513.60	1555530.96	52.4	Pass
L3	48.75 - 1	Pole	TP51x37.6042x0.3125	3	-22711.40	2522689.07	55.1	Pass
							Summary	
						Pole (L3)	55.1	Pass
						RATING =	**55.1**	**Pass**

APPENDIX C

Tower Elevation Drawing

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (lb)
1	22.00	18	0.1875	4.00	22.0000	27.5900	A572-65	1096.3
2	52.75	18	0.2500	5.50	26.1986	39.4900		4642.4
3	53.25	18	0.3125		37.6042	51.0000		7906.1
								13644.8



DESIGNED APPURTENANCE LOADING

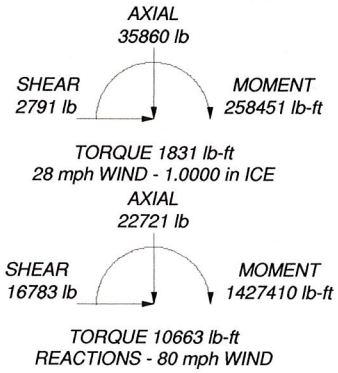
TYPE	ELEVATION	TYPE	ELEVATION
MTS 14.5' LP Platform	119	(2) 950F85T2E-M w/ Mount Pipe	109
(2) 7770.00 w/ 6' Mount Pipe	119	(2) 950F85T2E-M w/ Mount Pipe	109
(2) LGP21401	119	(2) 6' x 2-1/2" Mount Pipe	109
(2) LGP13519	119	(2) 6' x 2-1/2" Mount Pipe	109
AM-X-CD-16-65-00T w/ Mount Pipe	119	(2) 6' x 2-1/2" Mount Pipe	109
(2) 7770.00 w/ 6' Mount Pipe	119	MTS 14.5' LP Platform	99
(2) LGP21401	119	BXA-171085-8BF_2 w/ 6' Mount Pipe	99
(2) LGP13519	119	BXA-70063-6CF-2 w/ Mount Pipe	99
AM-X-CD-16-65-00T w/ Mount Pipe	119	(2) LPA-80080/4CF w/Mount Pipe	99
(2) 7770.00 w/ 6' Mount Pipe	119	(2) FD9R6004/2C-3L	99
(2) LGP21401	119	BXA-171085-8BF_2 w/ 6' Mount Pipe	99
(2) LGP13519	119	BXA-70063-6CF-2 w/ Mount Pipe	99
AM-X-CD-16-65-00T w/ Mount Pipe	119	(2) LPA-80080/4CF w/Mount Pipe	99
6' x 2-1/2" Mount Pipe	119	(2) FD9R6004/2C-3L	99
6' x 2-1/2" Mount Pipe	119	BXA-171085-8BF_2 w/ 6' Mount Pipe	99
6' x 2-1/2" Mount Pipe	119	BXA-70063-6CF-2 w/ Mount Pipe	99
(2) RBS 6601	119	(2) LPA-80080/4CF w/Mount Pipe	99
(2) RBS 6601	119	(2) FD9R6004/2C-3L	99
(2) RBS 6601	119	Andrew Chain Mount	88
DC6-48-60-18-8F Surge Suppression Unit	119	742 213 w/ Mount Pipe	88
		742 213 w/ Mount Pipe	88
MTS 14.5' LP Platform	109	742 213 w/ Mount Pipe	88
(2) 950F85T2E-M w/ Mount Pipe	109		

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 28 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 55.1%

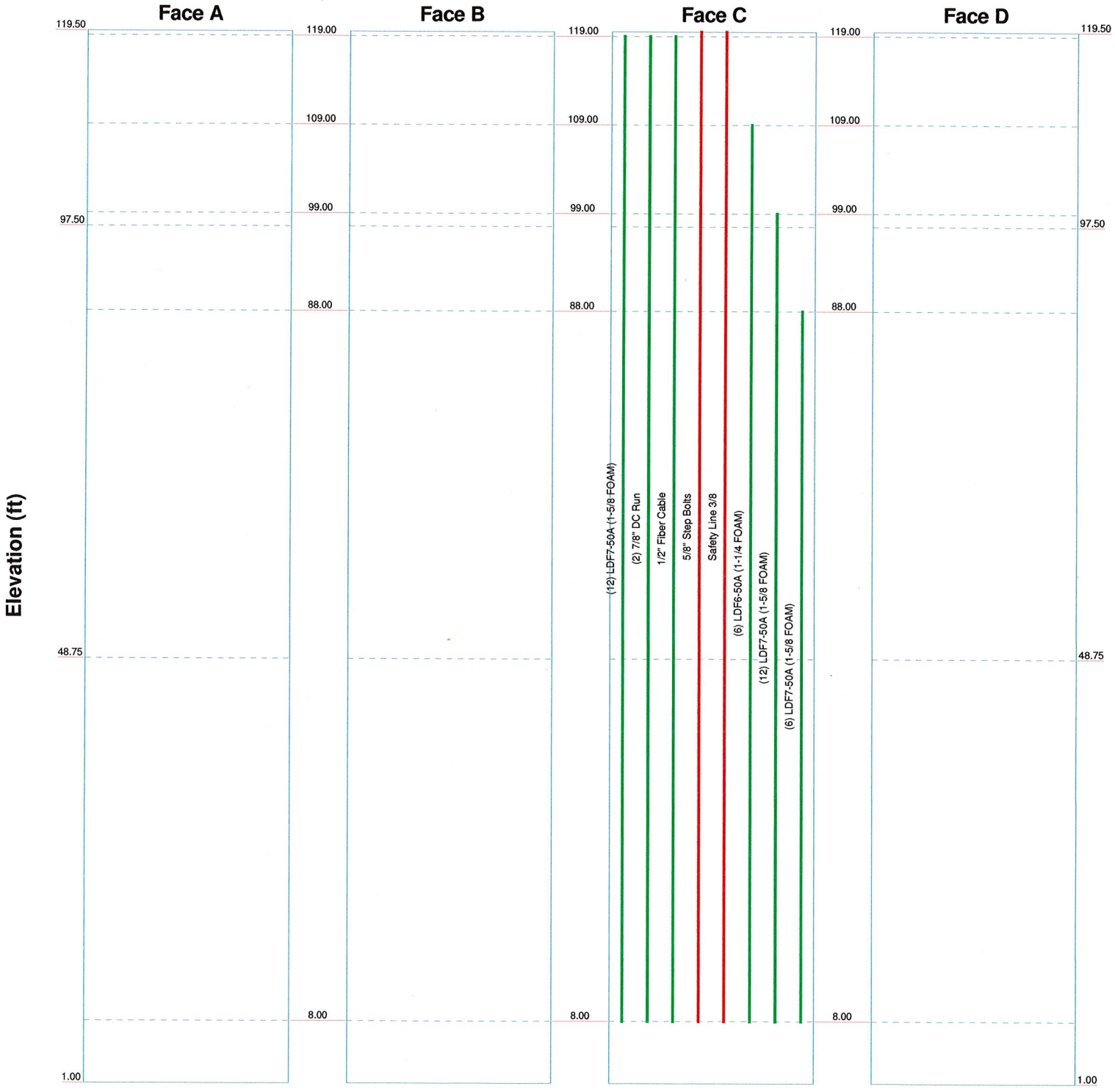


GPD Group
1801 Watermark Drive
Columbus OH, 43215
Phone: 614-588-8948
FAX: 614-210-0752

Job: **Burlington-Nepaug Road**			
Project: **2012801.73**			
Client: Nexlink Global Services	Drawn by: R. Davidson	App'd:	
Code: TIA/EIA-222-F	Date: 10/31/12	Scale: NTS	
Path: O:\2012\2012801\73\TNX\801 73.eri		Dwg No. E-1	

Feedline Distribution Chart
1' - 119'6"

Round | Flat | App In Face | App Out Face | Truss Leg

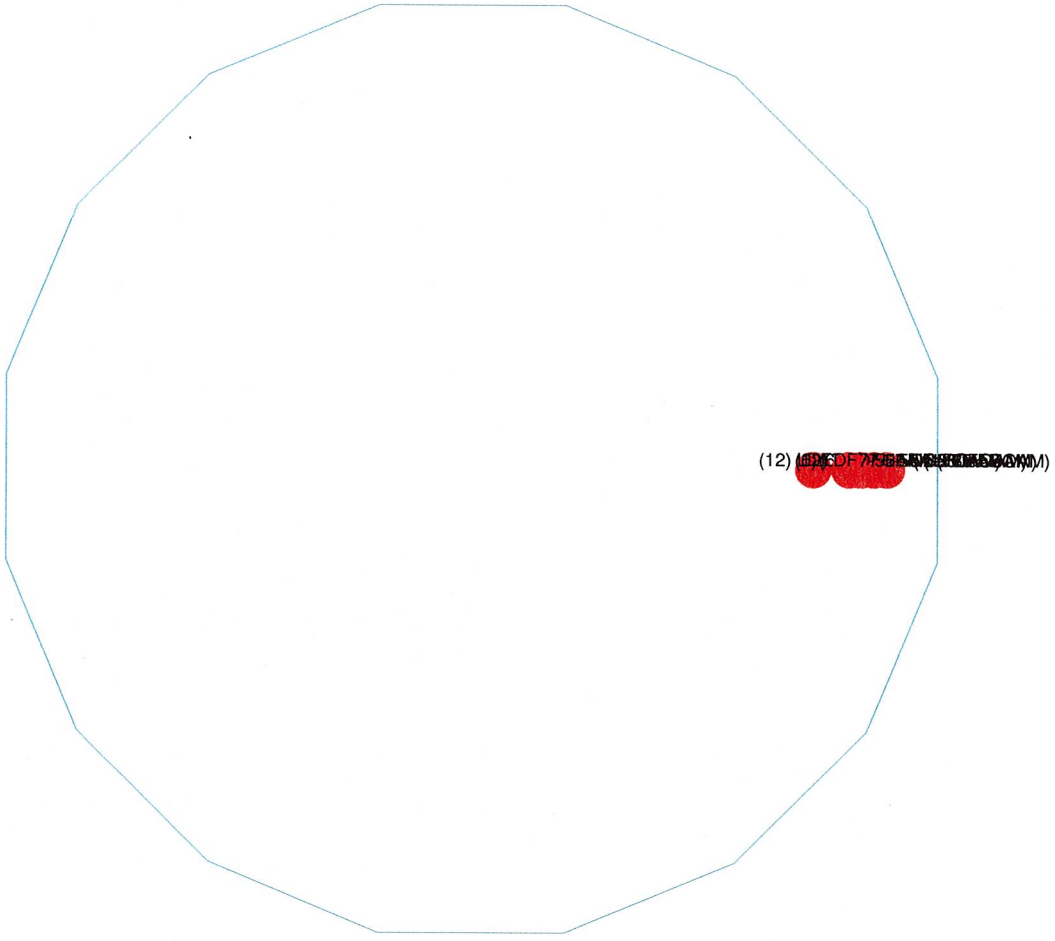


GPD Group
1801 Watermark Drive
Columbus OH, 43215
Phone: 614-588-8948
FAX: 614-210-0752

Job: **Burlington-Nepaug Road**			
Project: ***2012801.73***			
Client: Nexlink Global Services	Drawn by: R. Davidson		App'd:
Code: TIA/EIA-222-F	Date: 10/31/12		Scale: NTS
Path: O:\2012\2012801\73\TNX\801 73.eri			Dwg No. E-7

Feedline Plan

Round Flat App In Face App Out Face



GPD Group
1801 Watermark Drive
Columbus OH, 43215
Phone: 614-588-8948
FAX: 614-210-0752

Job: **Burlington-Nepaug Road**			
Project: ***2012801.73***			
Client: Nexlink Global Services	Drawn by: R. Davidson	App'd:	
Code: TIA/EIA-222-F	Date: 10/31/12	Scale: NTS	
Path: O:\2012\2012801\73\TNX\801 73.eri		Dwg No. E-7	

APPENDIX D

Base Plate & Anchor Rod Analysis

GPD GROUP

Anchor Rod and Base Plate Stresses
84261 Burlington-Nepaug Road
GPD Project Number 2012801.73

Overturning Moment =	1427.41	k*ft
Axial Force =	22.72	k
Shear Force =	16.78	k

Acceptable Stress Ratio =	100.0%

Anchor Rods		
Number of Rods =	12	
Type =	Upset Rod	
Rod Yield Strength (Fy) =	100	ksi
ASIF =	1.333	
Rod Circle =	60	in
Rod Diameter =	2.25	in
Net Tensile Area =	3.25	in^2
Max Tension on Rod =	93.20	kips
Max Compression on Rod =	96.99	kips
Allow. Rod Force =	260.00	kips
Anchor Rod Capacity =	**35.8%**	**OK**

Base Plate		
Location =	External	
Plate Strength (F_y) =	60	ksi
Outside Diameter =	66	in
Plate Thickness =	2.25	in
wcalc =	31.61	in
wmax =	38.03	in
w =	31.61	in
S =	26.67	in^3
fb =	24.45	ksi
Fb =	60	ksi
BP Capacity =	**40.8%**	**OK**

Stiffeners		
Configuration =	None	

Pole		
Pole Diameter =	51	in
Number of Sides =	18	
Thickness =	0.3125	in
Pole Yield Strength =	65	ksi

APPENDIX E

Foundation Analysis

GPD GROUP

Mat Foundation Analysis
84261 Burlington-Neqaug Road
GPD Project Number 2012801.73

General Info	
Code	TIA/EIA-222-F (ASD)
Bearing On	Soil
Foundation Type	Mono Pad
Pier Type	Round
Reinforcing Known	Yes
Max Capacity	1

Tower Reactions		
Moment, M	1427.41	k-ft
Axial, P	22.721	k
Shear, V	16.783	k

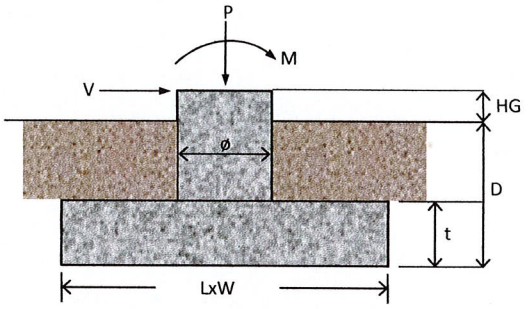
Pad & Pier Geometry		
Pier Diameter, ø	7	ft
Pad Length, L	25	ft
Pad Width, W	25	ft
Pad Thickness, t	3	ft
Depth, D	5	ft
Height Above Grade, HG	1	ft

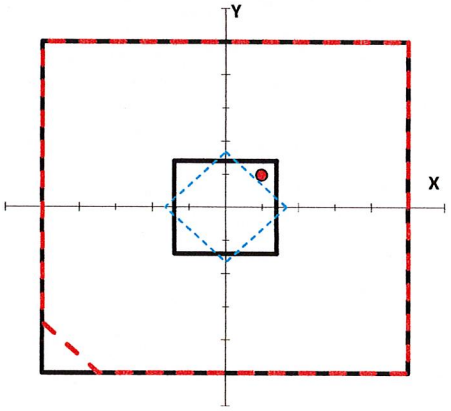
Pad & Pier Reinforcing		
Rebar Fy	60	ksi
Concrete Fc'	4	ksi
Clear Cover	3	in
Reinforced Top & Bottom?	Yes	
Pad Reinforcing Size	# 8	
Pad Quantity Per Layer	22	
Pier Rebar Size	# 8	
Pier Quantity of Rebar	30	

Soil Properties		
Soil Type	Granular	
Soil Unit Weight	120	pcf
Angle of Friction, ø	30	°
Bearing Type	Net	
Ultimate Bearing	12	ksf
Water Table Depth	4	ft
Frost Depth	3.33	ft

Bearing Summary			Load Case
Qxmax	1.23	ksf	1D+1W
Qymax	1.23	ksf	1D+1W
Qmax @ 45°	1.47	ksf	1D+1W
$Q_{(all)\ Gross}$	6.27	ksf	
Controlling Capacity	**23.5%**	**Pass**	

Overturning Summary (Required FS=1.5)			Load Case
FS(ot)x	3.65	≥1.5	1D+1W
FS(ot)y	3.65	≥1.5	1D+1W
Controlling Capacity	**41.1%**	**Pass**	





C Squared Systems, LLC
65 Dartmouth Drive, Unit A3
Auburn, NH 03032
(603) 644-2800
support@csquaredsystems.com

Calculated Radio Frequency Emissions

at&t

CT1116

(Burlington West)

12 Nepaug Road, Burlington, CT 06013

(a.k.a. Burlington – 12 Nepaug Road)

November 9, 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 12 Nepaug Road, Burlington, CT. The coordinates of the tower are 41° 46' 56.8" N, 72° 59' 22.7" 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:

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

Where:

EIRP = Effective Isotropic Radiated Power

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

H = Horizontal Distance from antenna in meters

V = Vertical Distance from radiation center of antenna in meters

Ground reflection factor of 1.6

Off Beam Loss is determined by the selected antenna pattern

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

4. Calculation Results

Table 1 below outlines the power density information for the site. Because the proposed AT&T antennas are directional in nature, the majority of the RF power is focused out towards the horizon. As a result, there will be less RF power directed below the antennas relative to the horizon, and consequently lower power density levels around the base of the tower. Please refer to Attachment C for the vertical patterns 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
New Cingular	*119*	*1930*	*3*	*427*	*0.0325*	*1.0000*	*3.25%*
New Cingular	*119*	*880*	*6*	*296*	*0.0451*	*0.5867*	*7.69%*
Sprint	110	1962.5	11	227	0.0742	1.0000	7.42%
Pocket	88	2130	3	631	0.0879	1.0000	8.79%
Verizon PCS	99	1970	11	274	0.1106	1.0000	11.06%
Verizon Cellular	99	869	9	273	0.0901	0.5793	15.56%
Verizon AWS	99	2145	1	680	0.0249	1.0000	2.49%
Verizon LTE	99	698	1	886	0.0325	0.4653	6.99%
AT&T UMTS	119	880	2	565	0.0029	0.5867	0.49%
AT&T UMTS	119	1900	2	875	0.0044	1.0000	0.44%
AT&T LTE	119	734	1	1313	0.0033	0.4893	0.68%
AT&T GSM	119	880	1	283	0.0007	0.5867	0.12%
AT&T GSM	119	1900	4	525	0.0053	1.0000	0.53%
						Total	**54.58%**

Table 1: Carrier Information[1] [2] [3]

[1] The existing CSC filing for AT&T 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 GPD Group Structural Analysis dated October 26, 2012.

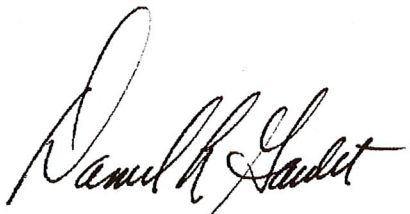
5. Conclusion

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 **54.58% 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

November 9, 2012
Date

Attachment A: References

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

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

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

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

(A) Limits for Occupational/Controlled Exposure[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.

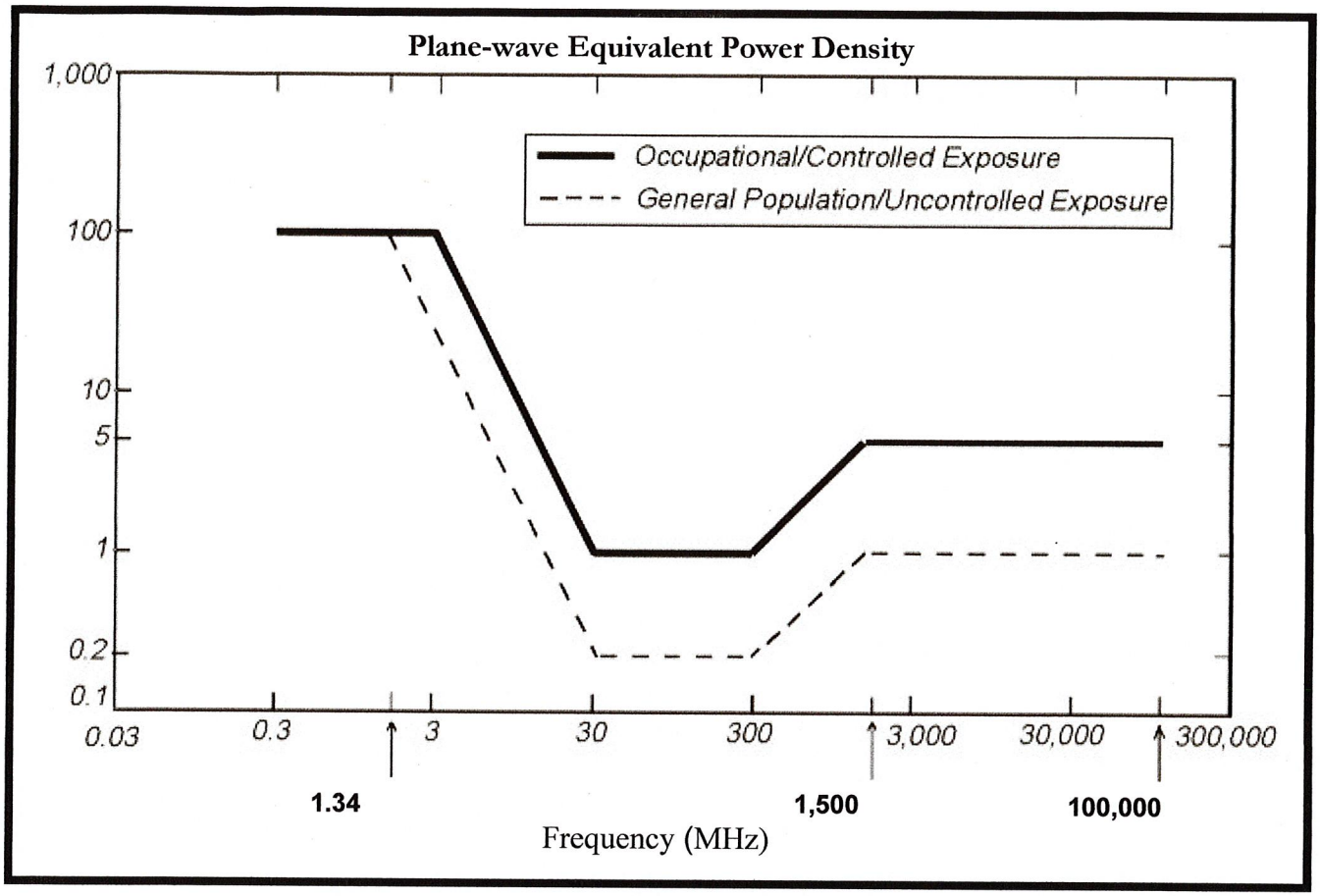
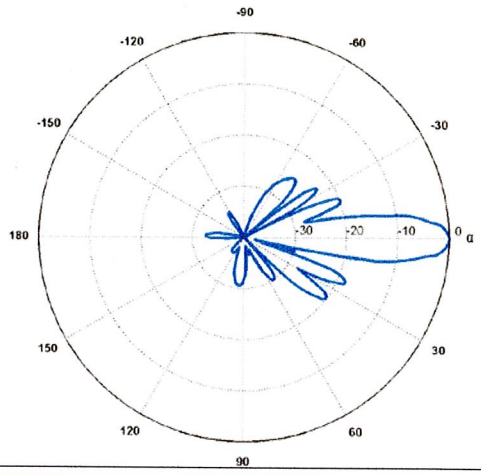


Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

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

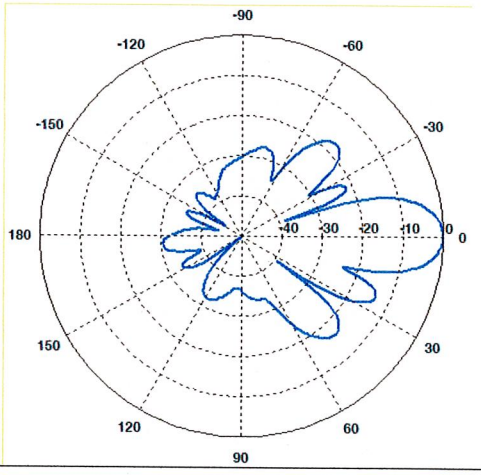
700 MHz

Manufacturer:	KMW
Model #:	AM-X-CD-16-65-00T-RET
Frequency Band:	698-806 MHz
Gain:	13.35 dBd
Vertical Beamwidth:	12.3°
Horizontal Beamwidth:	65°
Polarization:	Dual Slant ± 45°
Size L x W x D:	72" x 11.8" x 5.9"



850 MHz

Manufacturer:	Powerwave
Model #:	7770.00
Frequency Band:	1850-1990 MHz
Gain:	13.4 dBd
Vertical Beamwidth:	7°
Horizontal Beamwidth:	86°
Polarization:	± 45°
Size L x W x D:	55" x 11.0" x 5.0"



1900 MHz

Manufacturer:	Powerwave
Model #:	7770.00
Frequency Band:	1850-1990 MHz
Gain:	13.4 dBd
Vertical Beamwidth:	7°
Horizontal Beamwidth:	86°
Polarization:	± 45°
Size L x W x D:	55" x 11.0" x 5.0"