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

July 20, 2012

Stephanie Wenderoth
Nexlink Global Services
Suite A, Building 2
800 Marshall Phelps Road
Windsor, CT 06095

RE: **EM-AT&T-064-120705** – AT&T Mobility notice of intent to modify an existing telecommunications facility located at 223 Brainard Road, Hartford, Connecticut.

Dear Ms. Wenderoth:

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

- Any deviation from the proposed modification as specified in this notice and supporting materials with Council shall render this acknowledgement invalid;
- Any material changes to this modification as proposed shall require the filing of a new notice with the Council;
- Not less than 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;
- The validity of this action shall expire one year from the date of this letter; and
- The applicant may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration;

The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated June 29, 2012. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

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

CSC
CONNECTICUT SITING COUNCIL

Very truly yours,

Linda Roberts

Linda Roberts
Executive Director

LR/CDM/cm

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

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

July 5, 2012

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

RE: **EM-AT&T-064-120705** – AT&T Mobility notice of intent to modify an existing telecommunications facility located at 223 Brainard Road, Hartford, Connecticut.

Dear Mayor Segarra:

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

If you have any questions or comments regarding this proposal, please call me or inform the Council by July 19, 2012.

Thank you for your cooperation and consideration.

Very truly yours,

Linda Roberts LAB
Linda Roberts
Executive Director

LR/cm

Enclosure: Notice of Intent

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

CSC
CONNECTICUT SITING COUNCIL

EM-AT&T-064-120705

June 29, 2012

VIA UPS Delivery

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

RE: AT&T Mobility - Notice of Exempt Modification
223 Brainard Road, Hartford 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 I6-50j-73, a copy of this letter and attachments is being sent to the Mayor of Hartford.

AT&T plans to modify the existing facility at 223 Brainard Road, owned by The Metropolitan District (coordinates 41.732792 N, 72.661899 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 | 6-50j-l 2(b)(2).

1. The height of the overall structure will be unaffected. The existing antennas will remain and AT&T will 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 following existing coax.

2. The proposed changes will not extend the site boundaries. AT&T will install additional equipment in the existing equipment shelter. Thus, there will 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 change 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 environment 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 3.04%; the combined site operations will result in a total power density of 33.67%.

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

Respectfully submitted,

AT&T Mobility
Stephanie Wenderoth, Consultant
wenderoths@nexlinkgs.com
401.477.2938

Cc:
Pedro E Segarra; Mayor
Municipal Building
550 Main Street
Hartford, Ct 06103

CONNECTICUT SITING COUNCIL
NOTICE OF INTENT TO MODIFY AN EXISTING TOWER FACILITY
EXEMPT MODIFICATION FILING FORM

Public Utility Environmental Standards Act, Connecticut General Statutes §§ 16-50g - 16-50aa
Regulations of Connecticut State Agencies §§ 16-50j-72(b)(2) and 16-50j-73

TO BE COMPLETED BY FILER

Date: 6/29/12

Filer Name and Contact Information
Name: Stephanie Wenderoth
Address: Nexlink Global Services; Suite A Building 2
800 Marshall Phelps Road, Windsor, CT 06095
Phone Number: 401.477.2938

Wireless Carrier: AT&T

Tower Owner: AT&T

Tower Site Address: 223 Brainard Road, Hartford CT

Municipality and Name of Chief Elected Official Provided A Copy Of This Notice:
Pedro E Segarra; Mayor

Description of Exempt Modification (including antenna and equipment changes):
Add 3 LTE Antennas, new conduit, RRUs and surge arrestor.

Attachments
✓ Plans
✓ Power density calculations if applicable
✓ Tower structural report if applicable
✓ $625.00 Filing Fee

If required:
Municipality w/i 2,500' & Name of Chief Elected Official Provided A Copy Of This Notice:

Underlying Property Owner Provided A Copy Of This Notice:

FOR STAFF USE ONLY

____ Modification will not result in an increase in tower height
____ Modification is within existing site boundaries
____ Modification will not increase noise levels at the site boundary by 6 dbA or more, or to levels that exceed State & local criteria
____ Modification will meet FCC and DEEP MPE limits

____ Modification will not result in significant adverse change in physical or environmental characteristics of the site

____ Modification will not impair the structural integrity of the facility as determined by PE

____ If yes to all of the above, approval of acknowledgement letter

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

Calculated Radio Frequency Emissions

at&t

CT5126 – East Hartford Hochanum

223 Brainard Road, Hartford, CT 06114

June 22, 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 223 Brainard Road in Hartford, CT. The coordinates of the tower are 41° 43' 58.0512" N, -72° 39' 42.8364" W.

AT&T is proposing the following modifications:

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

2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

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

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

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

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

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

3. RF Exposure Prediction Methods

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

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

Where:

EIRP = Effective Isotropic Radiated Power

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

H = Horizontal Distance from antenna in meters

V = Vertical Distance from radiation center of antenna in meters

Ground reflection factor of 1.6

Off Beam Loss is determined by the selected antenna pattern

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

4. Calculation Results

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

Carrier	Antenna Height (Feet)	Operating Frequency (MHz)	Number of Trans.	ERP Per Transmitter (Watts)	Power Density (mw/cm^2)	Limit	%MPE
AT&T/Cingular GSM	*98*	*1900*	*2*	*427*	*0.0320*	1.0000	3.20%
AT&T/Cingular GSM	*98*	*880*	*4*	*296*	*0.0443*	0.5867	7.56%
AT&T/Cingular UMTS	*98*	*880*	*1*	*500*	*0.0187*	0.5867	3.19%
Verizon	88	1970	3	375	0.0522	1.0000	5.22%
Verizon	88	880	9	271	0.1132	0.5867	19.30%
Clearwire	80	2496	2	153	0.0172	1.0000	1.72%
Clearwire	80	18 GHz	1	211	0.0119	1.0000	1.19%
AT&T UMTS	103	880	2	565	0.0038	0.5867	0.65%
AT&T UMTS	103	1900	2	875	0.0059	1.0000	0.59%
AT&T LTE	102	734	1	1313	0.0045	0.4893	0.93%
AT&T GSM	103	880	1	283	0.0010	0.5867	0.16%
AT&T GSM	103	1900	4	525	0.0071	1.0000	0.71%
						Total	**33.67%**

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 3/29/2012. 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 B&T Engineering, Inc. Structural Analysis dated May 29, 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 **33.67% 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

June 22, 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

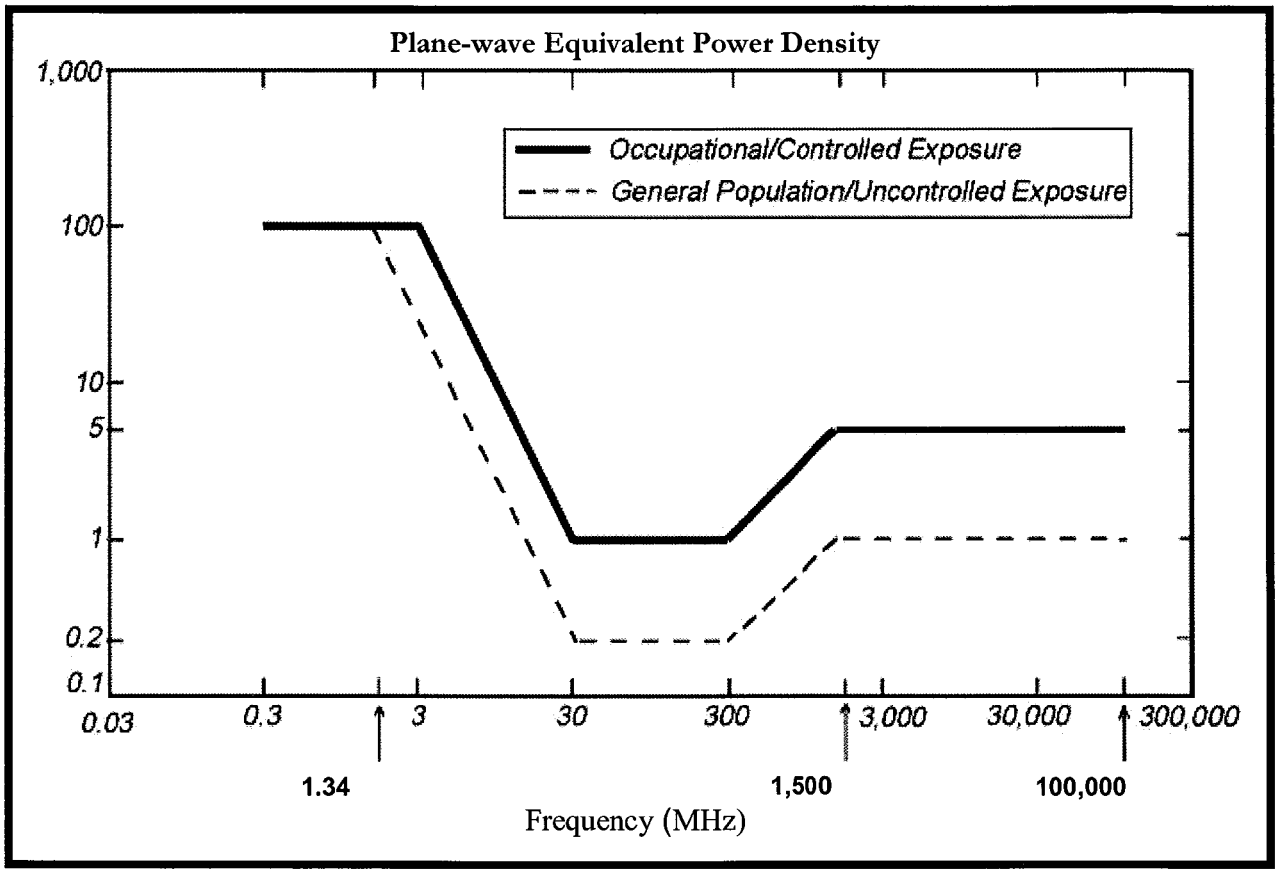
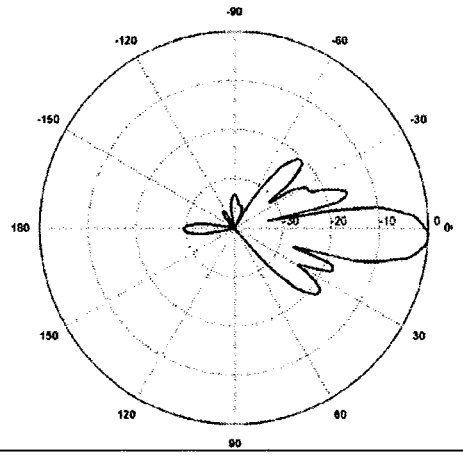


Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

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

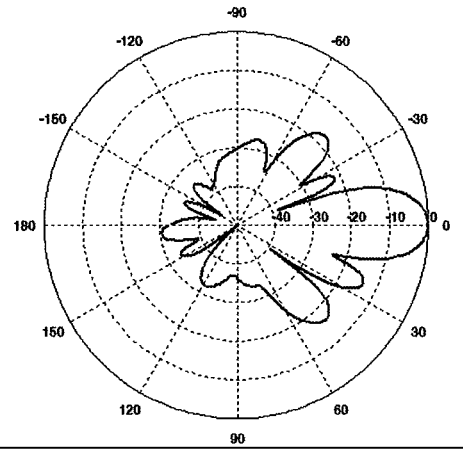
700 MHz

Manufacturer:	KMW
Model #:	AM-X-CD-16-65-00T
Frequency Band:	698-806 MHz
Gain:	13.4 dBd
Vertical Beamwidth:	12.3°
Horizontal Beamwidth:	65°
Polarization:	Dual Slant ± 45°
Size L x W x D:	72"×11.8"×5.9"



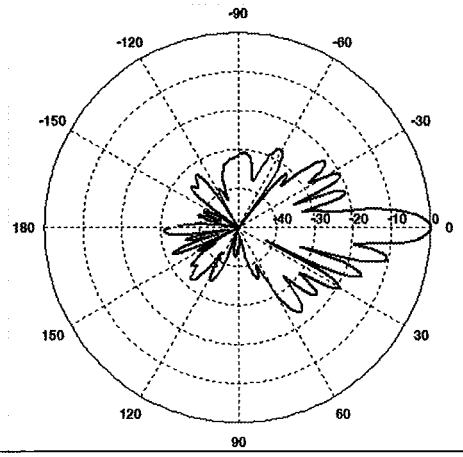
850 MHz

Manufacturer:	Powerwave
Model #:	7770
Frequency Band:	824-896 MHz
Gain:	11.5 dBd
Vertical Beamwidth:	15°
Horizontal Beamwidth:	85°
Polarization:	Dual Linear ±45°
Size L x W x D:	55.4"x11.0"x5.0"



1900 MHz

Manufacturer:	Powerwave
Model #:	7770
Frequency Band:	1850-1990 MHz
Gain:	13.4 dBd
Vertical Beamwidth:	7°
Horizontal Beamwidth:	90°
Polarization:	Dual Linear ±45°
Size L x W x D:	55.4"x11.0"x5.0"



Nexlink Global Services, Inc.
800 Marshall Phelps Road
Windsor, CT 06095

May 29, 2012

B&T Engineering, Inc.
1717 S. Boulder, Suite 300
Tulsa, OK 74119

B&T No.: 84436.000.0001

STRUCTURAL ANALYSIS
99.4' Monopole Tower

AT&T DESIGNATION:	Site ID:	4539 (CT5126)
	Site FA:	10071011
	Site Name:	EAST HARTFORD HOCHANUM
	AT&T Project:	MOD LTE W3 020912
ANALYSIS CRITERIA:	Codes:	TIA/EIA-222-F (80 mph fastest mile) IBC 2003 2005 CT State Building Code
SITE DATA:		223 Brainard Road, Hartford, CT, Hartford County Latitude 41.732792°, Longitude -72.661899° Market MA/RI/VT/NH/ME/CT

Ms. Stephanie Wenderoth,

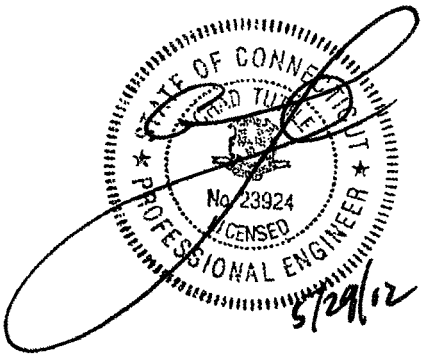
B&T Engineering, Inc. is pleased to submit this Structural Analysis Report to determine the structural integrity of the aformentioned tower. The purpose of the analysis is to determine the suitability of the tower with the existing and proposed loading configuration detailed in the analysis report.

Analysis Results

Tower Stress Level with Proposed Equipment:	**77.9%**	**Pass**
Foundation Ratio with Proposed Equipment:	**Unknown**	

We at B&T Engineering, Inc. appreciate the opportunity of providing our continuing professioinal services to you and Nexlink Global Services, Inc.. If you have any questions or need further assistance on this or any other project please give us a call.

Respectfully Submitted by:	B&T Engineering, Inc.
Analysis Prepared by:	Kristin Mears, E.I.
Analysis Reviewed by:	Chad E. Tuttle, P.E.



ANALYSIS RESULTS:

Table 1 - Section Capacity (Summary)

Component (Tower Section)	% Capacity	Pass / Fail
99.42 - 77.08	30.2	Pass
77.08 - 40.42	65.1	Pass
40.42 - 0	77.8	Pass

Table 2 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	Base	77.9	**Pass**
1	Base Plate	Base	48.7	**Pass**
2	Base Foundation	Base	--	--
	Structure Rating (max from all components) =			**77.9%**

Notes:

1.) See additional documentation in "Appendix B - Calculations" for calculation supporting the % capacity consumed.

2.) The base foundation could not be analyzed as part of this analysis, as foundation and geotechnical information was not available. It is assumed that the foundation was designed with capacities similar to the tower itself and is therefore considered sufficient for the purposes of this analysis.

Recommendations:

N/A

ANALYSIS PROCEDURE:

Table 4 - Documents Provided

Document	Description	Date	Source
Tower Data	BTE Management; Job No. 15085	4/27/2012	On File
Foundation Information	Information Not Available	N/A	N/A
Geotech Report	Information Not Available	N/A	N/A
Loading	Equip Mod Form	2/9/2012	Siterra
	Tower Mapping by BTE Management; Job No.	4/27/2012	On File
	Previous SA by GPD	9/26/2011	Siterra
Previous Structural Analysis	GPD (SL)	9/26/2011	Siterra
	GPD	11/23/2010	Siterra
	GPD	6/23/2010	Siterra

ANALYSIS METHOD:

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

ASSUMPTIONS:

1. Tower and structures were built in accordance with the manufacturer's specifications.
2. The tower and structures have been maintained in accordance with the manufacturer's specifications.
3. The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Appendix A of this report.
4. Mount areas and weights are assumed based on photographs provided.
5. Refer to the base level drawing for transmission line distribution.
6. Manufacturer's drawings were not available, therefore, material grades were assumed.
7. Nominal sizes were assumed based on measured thicknesses from the BTE tower mapping.
8. Lap splices were assumed.

If any of these assumptions have been made in error, B&T Engineering should be notified to determine the effect on the structural integrity of the tower.

APPENDIX A

TOWER ANALYSIS LOADING

99.4 Ft Monopole Tower Structural Analysis
EAST HARTFORD HOCHANUM , 4539 (CT5126)

May 29, 2012
B&T Project No: 84436.000.0001

TOWER ANALYSIS LOADING:

Existing / Reserved Loading

Antenna						Mount		Transmission Line	
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Manufacturer	Model	Quantity	Type	Quantity	Size (in)
AT&T Mobility	99.5	103	6	Powerwave	RA21.7770.00	1	LP Platform	12	1 1/4"
AT&T Mobility	99.5	103	12	Powerwave	LGP21401			1	RET
Verizon	88.5	90	4	Amphenol	LPA 80063/4CF	1	LP Platform	12	1 5/8"
Verizon	88.5	90	6	Amphenol	LPA 185063/8CF				
Verizon	88.5	90	2	Amphenol	LPA 80080/4CF				
Clearwire	79	81	3	Argus	LLPX310R-V4	3	T-Arms	6	5/16"
Clearwire	79	81	3	Samsung	RRH-2WB0			2	2.25"
Clearwire	79	81	1	Andrew	VHLP2.5-18-DW1			1	1/2"
Clearwire	79	81	1	Unknown	18"x17"x11"				

*Equipment to be Removed

Proposed Loading

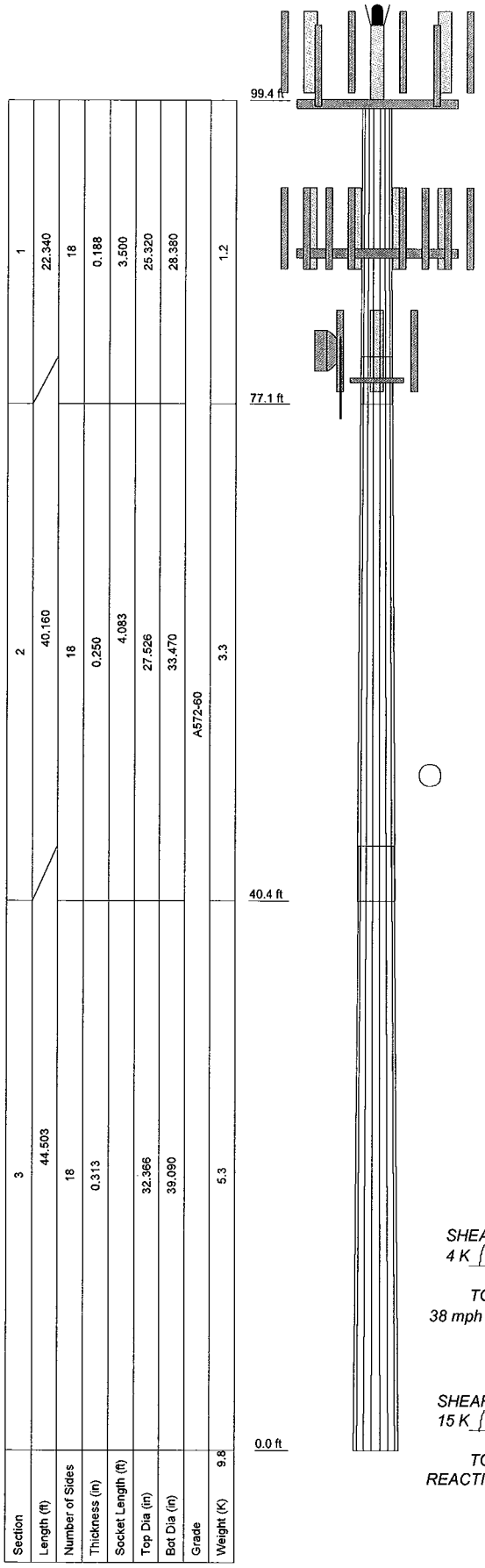
Antenna						Mount		Transmission Line	
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Manufacturer	Model	Quantity	Type	Quantity	Size (in)
AT&T Mobility	99.5	102	3	KMW	AM-X-CD-16-65-00T			3	1/2"
AT&T Mobility	99.5	100	6	Ericsson	RBS 6601				
AT&T Mobility	99.5	100	1	Raycap	DC6-48-60-18-8F				

Future Loading

Antenna						Mount		Transmission Line	
Antenna Owner	Mount Height (ft)	Antenna CL (ft)	Quantity	Manufacturer	Model	Quantity	Type	Quantity	Size (in)

APPENDIX B

CALCULATIONS



Section	1	2	3					
Length (ft)	22.340	40.160	44.503					
Number of Sides	18	18	18					
Thickness (in)	0.188	0.250	0.313					
Socket Length (ft)	3.500	4.083						
Top Dia (in)	25.320	27.526	32.366					
Bot Dia (in)	28.380	33.470	39.090					
Grade	A572-60							
Weight (K)	1.2	3.3	5.3	9.8				

AXIAL 28 K
SHEAR 4 K
MOMENT 340 kip-ft
TORQUE 0 kip-ft
38 mph WIND - 1.000 in ICE

AXIAL 17 K
SHEAR 15 K
MOMENT 1131 kip-ft
TORQUE 2 kip-ft
REACTIONS - 80 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Beacon (E)	105	(2) LPA-80063/4CF w/ Mount Pipe (Verizon-E)	90
(2) RA21.7770.00 w/ Mount Pipe (ATI-E)	103	(2) LPA-185063/8CF w/ Mount Pipe (Verizon-E)	90
(2) RA21.7770.00 w/ Mount Pipe (ATI-E)	103	(2) LPA-185063/8CF w/ Mount Pipe (Verizon-E)	90
(2) RA21.7770.00 w/ Mount Pipe (ATI-E)	103	(2) LPA-185063/8CF w/ Mount Pipe (Verizon-E)	90
(4) LGP21401 (ATI-E)	103	Platform Mount [LP 304-1] (E)	88.5
(4) LGP21401 (ATI-E)	103	LLPX310R-V4 w/Mount Pipe (Clearwire-E)	81
(4) LGP21401 (ATI-E)	103	LLPX310R-V4 w/Mount Pipe (Clearwire-E)	81
AM-X-CD-16-65-00T-RET w/ Mount Pipe (ATI-P)	102	LLPX310R-V4 w/Mount Pipe (Clearwire-E)	81
AM-X-CD-16-65-00T-RET w/ Mount Pipe (ATI-P)	102	RRH-2WB0 (Clearwire-E)	81
AM-X-CD-16-65-00T-RET w/ Mount Pipe (ATI-P)	102	RRH-2WB0 (Clearwire-E)	81
(2) RBS 6601 (ATI-P)	100	RRH-2WB0 (Clearwire-E)	81
(2) RBS 6601 (ATI-P)	100	18"x17"x11" TMA (Clearwire-E)	81
(2) RBS 6601 (ATI-P)	100	VHLP2.5-18-DW1 (E)	81
DC6-48-60-18-8F (ATI-P)	100	6' x 2" Mount Pipe (Clearwire-E)	79
Platform Mount [LP 601-1] (E)	99.5	6' x 2" Mount Pipe (Clearwire-E)	79
(2) LPA-80080/4CF w/Mount Pipe (Verizon-E)	90	Side Arm Mount [SO 103-3] (E)	79
(2) LPA-80063/4CF w/ Mount Pipe (Verizon-E)	90	6' x 2" Mount Pipe (Clearwire-E)	79

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-60	60 ksi	75 ksi			

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 77.8%

B&T Engineering, Inc.
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

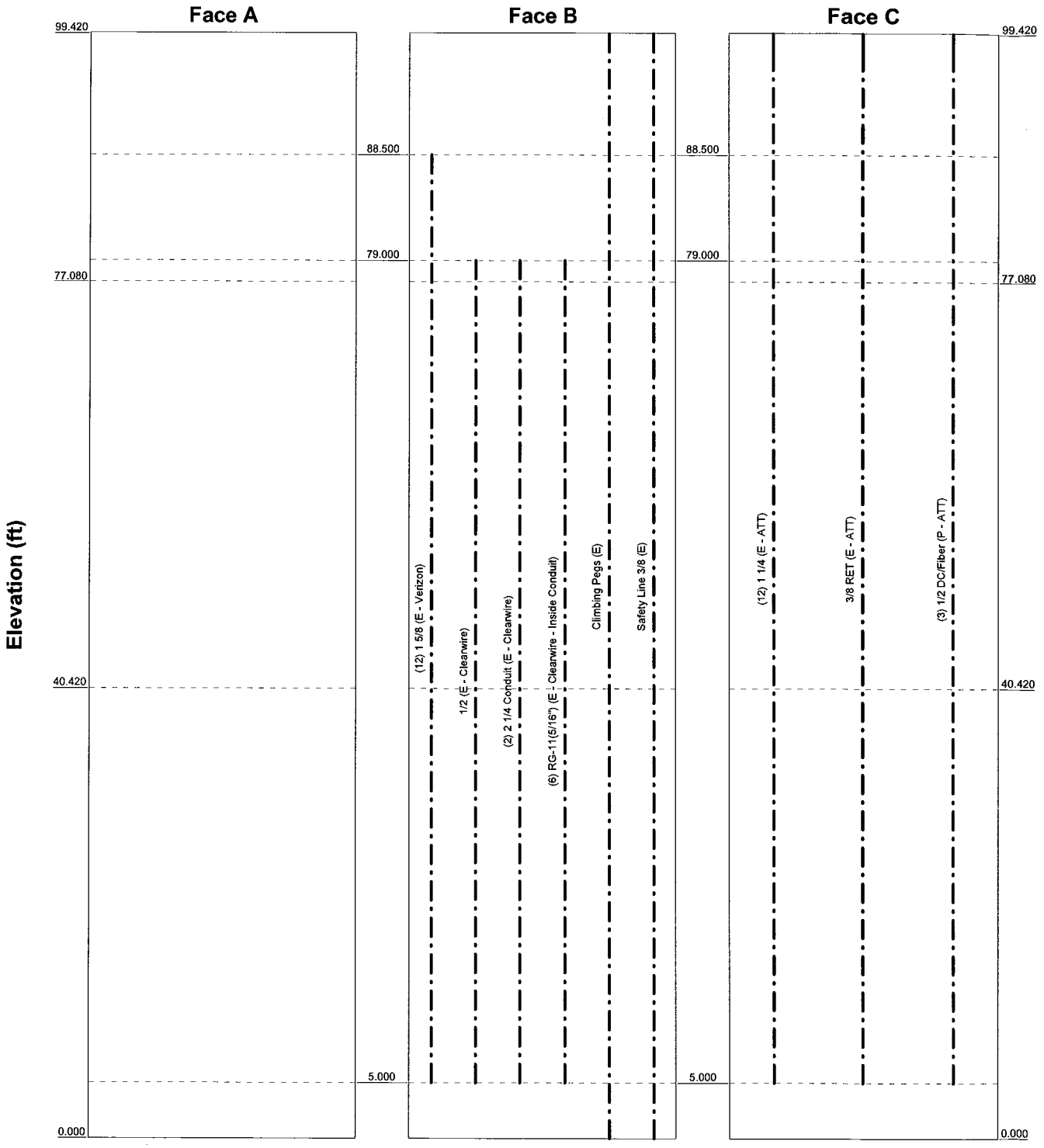
Job: 84436.000.0001 - East Hartford Hochanum, CT (USID# 453		
Project: 99.4' Monopole / AT&T Co-Locate		
Client: Nexlink	Drawn by: K. Mears	App'd:
Code: TIA/EIA-222-F	Date: 05/29/12	Scale: NTS
Path:		Dwg No. E-1

PROJECT#: 84436

NOT TO SCALE

Feedline Distribution Chart
0' - 99'5-1/32"

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



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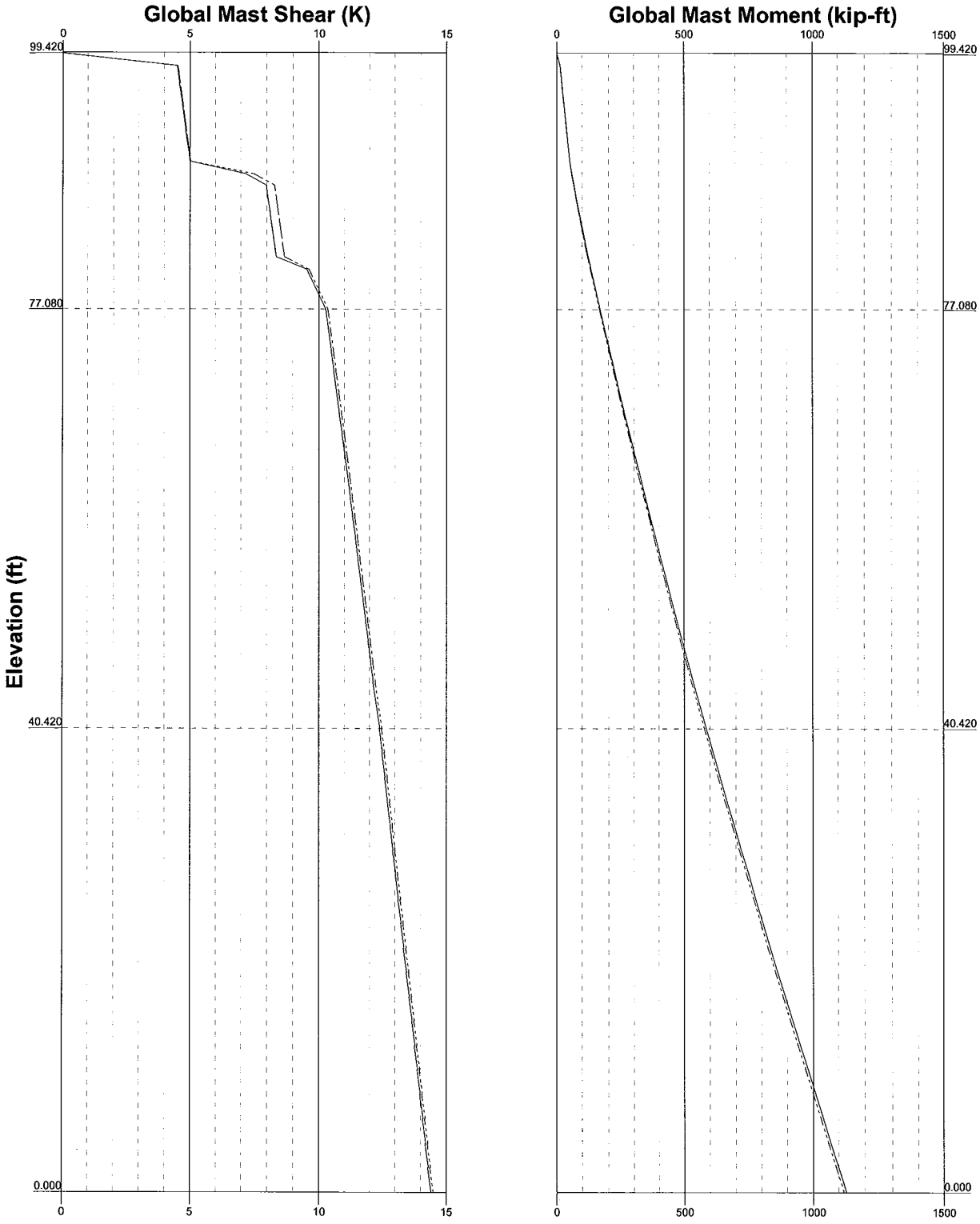
Job: 84436.000.0001 - East Hartford Hochanum, CT (USID# 453		
Project: 99.4' Monopole / AT&T Co-Locate		
Client: Nexlink	Drawn by: K. Mears	App'd:
Code: TIA/EIA-222-F	Date: 05/29/12	Scale: NTS
Path:		Dwg No. E-7

TIA/EIA-222-F - 80 mph/38 mph 1.000 in Ice

Vx Vz

Maximum Values

Mx Mz



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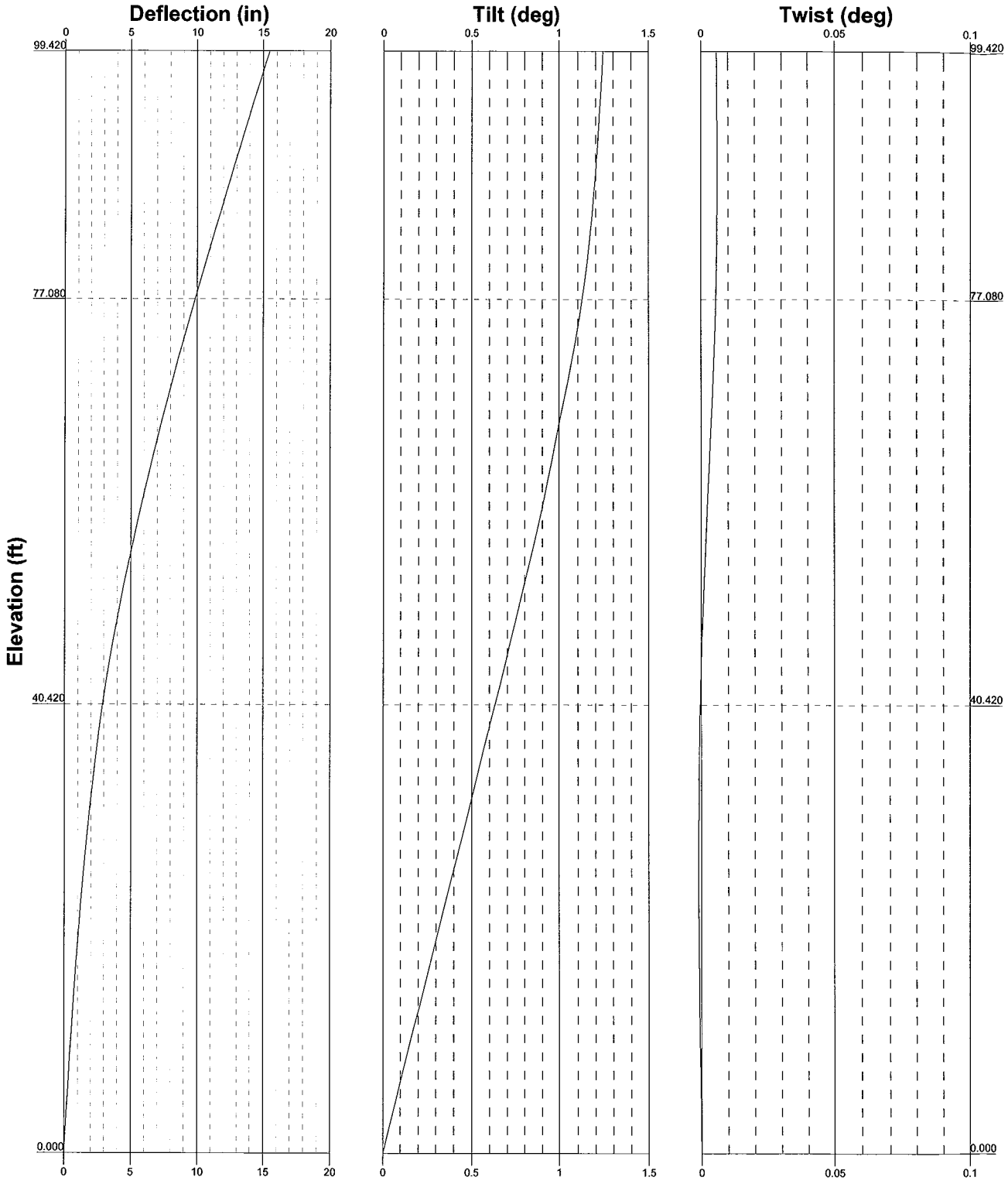
Job: 84436.000.0001 - East Hartford Hochanum, CT (USID# 453		
Project: 99.4' Monopole / AT&T Co-Locate		
Client: Nexlink	Drawn by: K. Mears	App'd:
Code: TIA/EIA-222-F	Date: 05/29/12	Scale: NTS
Path:		Dwg No. E-4

TIA/EIA-222-F - Service - 50 mph

Maximum Values



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Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job: 84436.000.0001 - East Hartford Hochanum, CT (USID# 453		
Project: 99.4' Monopole / AT&T Co-Locate		
Client: Nexlink	Drawn by: K. Mears	App'd:
Code: TIA/EIA-222-F	Date: 05/29/12	Scale: NTS
Path:		Dwg No. E-5

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 1.000 in.
Ice thickness is considered to increase with height.
Ice density of 56.000 pcf.
A wind speed of 38 mph is used in combination with ice.
Temperature drop of 50.000 °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.

Options

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

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	99.420-77.080	22.340	3.500	18	25.320	28.380	0.188	0.750	A572-60 (60 ksi)
L2	77.080-40.420	40.160	4.083	18	27.526	33.470	0.250	1.000	A572-60 (60 ksi)
L3	40.420-0.000	44.503		18	32.366	39.090	0.313	1.250	A572-60 (60 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	25.711	14.957	1193.583	8.922	12.863	92.795	2388.737	7.480	4.126	22.007
	28.818	16.778	1684.792	10.008	14.417	116.861	3371.802	8.391	4.665	24.879
L2	28.476	21.643	2034.262	9.683	13.983	145.481	4071.201	10.824	4.405	17.618
	33.986	26.360	3675.219	11.793	17.003	216.154	7355.275	13.183	5.451	21.803
L3	33.491	31.793	4126.732	11.379	16.442	250.991	8258.893	15.899	5.146	16.468
	39.693	38.462	7306.911	13.766	19.858	367.963	14623.436	19.235	6.330	20.255

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
L1 99.420-77.080				1	1	1		
L2 77.080-40.420				1	1	1		
L3 40.420-0.000				1	1	1		

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight klf
/										

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
1 1/4 (E - ATT)	C	No	Inside Pole	99.420 - 5.000	12	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
3/8 RET (E - ATT)	C	No	Inside Pole	99.420 - 5.000	1	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
1/2 DC/Fiber (P - ATT)	C	No	Inside Pole	99.420 - 5.000	3	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
/								
1 5/8 (E - Verizon)	B	No	Inside Pole	88.500 - 5.000	12	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
/								
1/2 (E - Clearwire)	B	No	Inside Pole	79.000 - 5.000	1	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
2 1/4 Conduit (E - Clearwire)	B	No	Inside Pole	79.000 - 5.000	2	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
RG-11(5/16") (E - Clearwire - Inside Conduit)	B	No	Inside Pole	79.000 - 5.000	6	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
/								
Climbing Pegs (E)	B	No	CaAa (Out Of Face)	99.420 - 0.000	1	No Ice	0.088	0.001
						1/2" Ice	0.188	0.001
						1" Ice	0.287	0.003
						2" Ice	0.487	0.008
						4" Ice	0.887	0.024
Safety Line 3/8 (E)	B	No	CaAa (Out Of Face)	99.420 - 0.000	1	No Ice	0.037	0.000
						1/2" Ice	0.137	0.001
						1" Ice	0.238	0.001
						2" Ice	0.437	0.002
						4" Ice	0.838	0.004
/								

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	99.420-77.080	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	2.793	0.165
		C	0.000	0.000	0.000	0.000	0.196
L2	77.080-40.420	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	4.583	0.599
		C	0.000	0.000	0.000	0.000	0.321
L3	40.420-0.000	A	0.000	0.000	0.000	0.000	0.000
		B	0.000	0.000	0.000	5.053	0.582
		C	0.000	0.000	0.000	0.000	0.310

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	99.420-77.080	A	1.125	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	12.845	0.256
		C		0.000	0.000	0.000	0.000	0.196
L2	77.080-40.420	A	1.071	0.000	0.000	0.000	0.000	0.000

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		B		0.000	0.000	0.000	21.079	0.748
		C		0.000	0.000	0.000	0.000	0.321
L3	40.420-0.000	A	1.000	0.000	0.000	0.000	0.000	0.000
		B		0.000	0.000	0.000	22.375	0.734
		C		0.000	0.000	0.000	0.000	0.310

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	99.420-77.080	0.154	0.089	0.557	0.322
L2	77.080-40.420	0.155	0.089	0.576	0.332
L3	40.420-0.000	0.156	0.090	0.578	0.334

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Beacon (E)	C	None		0.000	105.000	No Ice	1.500	1.500	0.200
						1/2" Ice	2.250	2.250	0.300
						1" Ice	3.000	3.000	0.400
						2" Ice	4.500	4.500	0.600
						4" Ice	7.500	7.500	1.000
/									
(2) RA21.7770.00 w/ Mount Pipe (AT&T-E)	C	From Leg	4.000 0.000 0.000	10.000	103.000	No Ice	7.031	5.002	0.060
						1/2" Ice	7.608	5.960	0.112
						1" Ice	8.165	6.747	0.174
						2" Ice	9.310	8.370	0.322
						4" Ice	11.721	11.872	0.746
(2) RA21.7770.00 w/ Mount Pipe (AT&T-E)	B	From Leg	4.000 0.000 0.000	10.000	103.000	No Ice	7.031	5.002	0.060
						1/2" Ice	7.608	5.960	0.112
						1" Ice	8.165	6.747	0.174
						2" Ice	9.310	8.370	0.322
						4" Ice	11.721	11.872	0.746
(2) RA21.7770.00 w/ Mount Pipe (AT&T-E)	A	From Leg	4.000 0.000 0.000	10.000	103.000	No Ice	7.031	5.002	0.060
						1/2" Ice	7.608	5.960	0.112
						1" Ice	8.165	6.747	0.174
						2" Ice	9.310	8.370	0.322
						4" Ice	11.721	11.872	0.746
(4) LGP21401 (AT&T-E)	C	From Leg	4.000 0.000 0.000	10.000	103.000	No Ice	1.288	0.233	0.014
						1/2" Ice	1.445	0.313	0.021
						1" Ice	1.611	0.403	0.030
						2" Ice	1.969	0.608	0.055
						4" Ice	2.788	1.121	0.135
(4) LGP21401 (AT&T-E)	B	From Leg	4.000 0.000	10.000	103.000	No Ice	1.288	0.233	0.014
						1/2" Ice	1.445	0.313	0.021

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.000			1" Ice	1.611	0.403	0.030
						2" Ice	1.969	0.608	0.055
						4" Ice	2.788	1.121	0.135
(4) LGP21401 (AT&T-E)	A	From Leg	4.000 0.000 0.000	10.000	103.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.288 1.445 1.611 1.969 2.788	0.233 0.313 0.403 0.608 1.121	0.014 0.021 0.030 0.055 0.135
AM-X-CD-16-65-00T-RET w/ Mount Pipe (AT&T-P)	C	From Leg	4.000 0.000 0.000	0.000	102.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.498 9.149 9.767 11.031 13.679	6.304 7.479 8.368 10.179 14.024	0.074 0.136 0.210 0.385 0.874
AM-X-CD-16-65-00T-RET w/ Mount Pipe (AT&T-P)	B	From Leg	4.000 0.000 0.000	0.000	102.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.498 9.149 9.767 11.031 13.679	6.304 7.479 8.368 10.179 14.024	0.074 0.136 0.210 0.385 0.874
AM-X-CD-16-65-00T-RET w/ Mount Pipe (AT&T-P)	A	From Leg	4.000 0.000 0.000	0.000	102.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.498 9.149 9.767 11.031 13.679	6.304 7.479 8.368 10.179 14.024	0.074 0.136 0.210 0.385 0.874
(2) RBS 6601 (AT&T-P)	C	From Leg	4.000 0.000 0.000	0.000	100.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.942 3.172 3.410 3.913 5.023	1.190 1.351 1.521 1.887 2.721	0.055 0.074 0.097 0.151 0.302
(2) RBS 6601 (AT&T-P)	B	From Leg	4.000 0.000 0.000	0.000	100.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.942 3.172 3.410 3.913 5.023	1.190 1.351 1.521 1.887 2.721	0.055 0.074 0.097 0.151 0.302
(2) RBS 6601 (AT&T-P)	A	From Leg	4.000 0.000 0.000	0.000	100.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.942 3.172 3.410 3.913 5.023	1.190 1.351 1.521 1.887 2.721	0.055 0.074 0.097 0.151 0.302
DC6-48-60-18-8F (AT&T-P)	C	From Leg	4.000 0.000 0.000	0.000	100.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.567 2.798 3.038 3.543 4.658	4.317 4.596 4.885 5.488 6.797	0.019 0.050 0.085 0.167 0.383
Platform Mount [LP 601-1] (E)	C	None		0.000	99.500	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	28.470 33.590 38.710 48.950 69.430	28.470 33.590 38.710 48.950 69.430	1.122 1.514 1.905 2.689 4.255
/									
(2) LPA-80080/4CF w/Mount Pipe (Verizon-E)	C	From Leg	4.000 0.000 0.000	15.000	90.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.110 3.585 4.022 5.013 7.153	7.482 8.378 9.152 10.752 14.168	0.034 0.080 0.137 0.270 0.651
(2) LPA-80063/4CF w/ Mount Pipe (Verizon-E)	B	From Leg	4.000 0.000 0.000	15.000	90.000	No Ice 1/2" Ice 1" Ice	7.248 7.719 8.200	7.260 7.957 8.672	0.038 0.102 0.175

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	9.195	10.156	0.344
						4" Ice	11.320	13.391	0.796
(2) LPA-80063/4CF w/ Mount Pipe (Verizon-E)	A	From Leg	4.000 0.000 0.000	15.000	90.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	7.248 7.719 8.200 9.195 11.320	7.260 7.957 8.672 10.156 13.391	0.038 0.102 0.175 0.344 0.796
(2) LPA-185063/8CF w/ Mount Pipe (Verizon-E)	C	From Leg	4.000 0.000 0.000	15.000	90.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.277 3.679 4.103 4.983 6.880	3.904 4.507 5.142 6.524 9.560	0.027 0.060 0.102 0.204 0.511
(2) LPA-185063/8CF w/ Mount Pipe (Verizon-E)	B	From Leg	4.000 0.000 0.000	15.000	90.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.277 3.679 4.103 4.983 6.880	3.904 4.507 5.142 6.524 9.560	0.027 0.060 0.102 0.204 0.511
(2) LPA-185063/8CF w/ Mount Pipe (Verizon-E)	A	From Leg	4.000 0.000 0.000	15.000	90.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.277 3.679 4.103 4.983 6.880	3.904 4.507 5.142 6.524 9.560	0.027 0.060 0.102 0.204 0.511
Platform Mount [LP 304-1] (E)	C	None		0.000	88.500	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	17.460 22.440 27.420 37.380 57.300	17.460 22.440 27.420 37.380 57.300	1.349 1.625 1.900 2.451 3.554
/									
LLPX310R-V4 w/Mount Pipe (Clearwire-E)	C	From Leg	2.000 0.000 0.000	60.000	81.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.429 5.990 6.506 7.574 9.862	3.382 4.151 4.796 6.194 9.254	0.051 0.090 0.139 0.255 0.597
LLPX310R-V4 w/Mount Pipe (Clearwire-E)	B	From Leg	2.000 0.000 0.000	50.000	81.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.429 5.990 6.506 7.574 9.862	3.382 4.151 4.796 6.194 9.254	0.051 0.090 0.139 0.255 0.597
LLPX310R-V4 w/Mount Pipe (Clearwire-E)	A	From Leg	2.000 0.000 0.000	70.000	81.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	5.429 5.990 6.506 7.574 9.862	3.382 4.151 4.796 6.194 9.254	0.051 0.090 0.139 0.255 0.597
RRH-2WB0 (Clearwire-E)	C	From Leg	2.000 0.000 0.000	0.000	81.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.689 2.912 3.144 3.634 4.717	0.851 1.012 1.182 1.548 2.385	0.044 0.059 0.077 0.121 0.250
RRH-2WB0 (Clearwire-E)	C	From Leg	2.000 0.000 0.000	0.000	81.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.689 2.912 3.144 3.634 4.717	0.851 1.012 1.182 1.548 2.385	0.044 0.059 0.077 0.121 0.250
RRH-2WB0 (Clearwire-E)	C	From Leg	2.000 0.000 0.000	0.000	81.000	No Ice 1/2" Ice 1" Ice 2" Ice	2.689 2.912 3.144 3.634	0.851 1.012 1.182 1.548	0.044 0.059 0.077 0.121

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						4" Ice	4.717	2.385	0.250
18"x17"x11" TMA (Clearwire-E)	C	From Leg	2.000 0.000 0.000	0.000	81.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.975 3.206 3.446 3.952 5.066	1.925 2.117 2.318 2.746 3.705	0.010 0.034 0.061 0.126 0.301
6' x 2" Mount Pipe (Clearwire-E)	C	From Leg	2.000 0.000 0.000	0.000	79.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.425 1.925 2.294 3.060 4.702	1.425 1.925 2.294 3.060 4.702	0.022 0.033 0.048 0.090 0.231
6' x 2" Mount Pipe (Clearwire-E)	B	From Leg	2.000 0.000 0.000	0.000	79.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.425 1.925 2.294 3.060 4.702	1.425 1.925 2.294 3.060 4.702	0.022 0.033 0.048 0.090 0.231
6' x 2" Mount Pipe (Clearwire-E)	A	From Leg	2.000 0.000 0.000	0.000	79.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.425 1.925 2.294 3.060 4.702	1.425 1.925 2.294 3.060 4.702	0.022 0.033 0.048 0.090 0.231
Side Arm Mount [SO 103-3] (E)	C	None		0.000	79.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	9.500 11.800 14.100 18.700 27.900	9.500 11.800 14.100 18.700 27.900	0.224 0.317 0.410 0.596 0.968

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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 K
VHLP2.5-18-DW1 (E)	C	Paraboloid w/Shroud (HP)	From Leg	2.000 0.000 0.000	0.000		81.000	2.917	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.681 7.069 7.456 8.230 9.779	0.048 0.077 0.106 0.164 0.280

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Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 60 deg - No Ice
5	Dead+Wind 90 deg - No Ice
6	Dead+Wind 120 deg - No Ice
7	Dead+Wind 150 deg - No Ice
8	Dead+Wind 180 deg - No Ice
9	Dead+Wind 210 deg - No Ice
10	Dead+Wind 240 deg - No Ice
11	Dead+Wind 270 deg - No Ice
12	Dead+Wind 300 deg - No Ice
13	Dead+Wind 330 deg - No Ice
14	Dead+Ice+Temp
15	Dead+Wind 0 deg+Ice+Temp
16	Dead+Wind 30 deg+Ice+Temp
17	Dead+Wind 60 deg+Ice+Temp
18	Dead+Wind 90 deg+Ice+Temp
19	Dead+Wind 120 deg+Ice+Temp
20	Dead+Wind 150 deg+Ice+Temp
21	Dead+Wind 180 deg+Ice+Temp
22	Dead+Wind 210 deg+Ice+Temp
23	Dead+Wind 240 deg+Ice+Temp
24	Dead+Wind 270 deg+Ice+Temp
25	Dead+Wind 300 deg+Ice+Temp
26	Dead+Wind 330 deg+Ice+Temp
27	Dead+Wind 0 deg - Service
28	Dead+Wind 30 deg - Service
29	Dead+Wind 60 deg - Service
30	Dead+Wind 90 deg - Service
31	Dead+Wind 120 deg - Service
32	Dead+Wind 150 deg - Service
33	Dead+Wind 180 deg - Service
34	Dead+Wind 210 deg - Service
35	Dead+Wind 240 deg - Service
36	Dead+Wind 270 deg - Service
37	Dead+Wind 300 deg - Service
38	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	99.42 - 77.08	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-12.211	1.139	-0.765
			Max. Mx	11	-5.334	129.927	0.924
			Max. My	8	-5.320	-0.740	-132.949
			Max. Vy	5	9.527	-128.852	-1.562
			Max. Vx	2	-9.611	1.702	132.281
			Max. Torque	13			1.799
L2	77.08 - 40.42	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-18.589	0.963	-0.889
			Max. Mx	5	-9.711	-528.899	0.891
			Max. My	8	-9.705	1.727	-535.538

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Vy	5	12.146	-528.899	0.891
			Max. Vx	2	-12.230	-2.814	535.319
			Max. Torque	13			1.798
L3	40.42 - 0	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-27.642	0.703	-1.039
			Max. Mx	5	-16.753	-1120.570	3.922
			Max. My	2	-16.752	-8.418	1130.600
			Max. Vy	5	14.416	-1120.570	3.922
			Max. Vx	2	-14.497	-8.418	1130.600
			Max. Torque	13			1.779

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	21	27.642	0.018	-4.219
	Max. H_x	11	16.764	14.343	-0.050
	Max. H_z	2	16.764	-0.124	14.483
	Max. M_x	2	1130.600	-0.124	14.483
	Max. M_z	5	1120.570	-14.402	0.068
	Max. Torsion	13	1.760	7.184	12.509
	Min. Vert	1	16.764	0.000	0.000
	Min. H_x	5	16.764	-14.402	0.068
	Min. H_z	8	16.764	0.067	-14.470
	Min. M_x	8	-1130.268	0.067	-14.470
	Min. M_z	11	-1116.641	14.343	-0.050
	Min. Torsion	7	-1.755	-7.138	-12.536

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	16.764	0.000	0.000	0.378	0.480	0.000
Dead+Wind 0 deg - No Ice	16.764	0.124	-14.483	-1130.600	-8.418	-1.524
Dead+Wind 30 deg - No Ice	16.764	7.260	-12.558	-979.699	-563.767	-1.085
Dead+Wind 60 deg - No Ice	16.764	12.478	-7.273	-566.607	-970.190	-0.386
Dead+Wind 90 deg - No Ice	16.764	14.402	-0.068	-3.922	-1120.570	0.415
Dead+Wind 120 deg - No Ice	16.764	12.485	7.134	558.171	-972.053	1.133
Dead+Wind 150 deg - No Ice	16.764	7.138	12.536	979.928	-555.972	1.755
Dead+Wind 180 deg - No Ice	16.764	-0.067	14.470	1130.268	4.696	1.651
Dead+Wind 210 deg - No Ice	16.764	-7.215	12.516	976.971	560.990	1.123
Dead+Wind 240 deg - No Ice	16.764	-12.428	7.244	564.959	966.973	0.391
Dead+Wind 270 deg - No Ice	16.764	-14.343	0.050	3.194	1116.641	-0.448
Dead+Wind 300 deg - No Ice	16.764	-12.445	-7.177	-560.917	969.728	-1.265
Dead+Wind 330 deg - No Ice	16.764	-7.184	-12.509	-976.987	560.709	-1.760
Dead+Ice+Temp	27.642	-0.000	0.000	1.039	0.703	-0.000
Dead+Wind 0 deg+Ice+Temp	27.642	0.033	-4.222	-337.722	-1.686	-0.356
Dead+Wind 30 deg+Ice+Temp	27.642	2.118	-3.661	-292.567	-168.539	-0.218
Dead+Wind 60 deg+Ice+Temp	27.642	3.642	-2.121	-168.837	-290.610	-0.028
Dead+Wind 90 deg+Ice+Temp	27.642	4.203	-0.019	-0.174	-335.646	0.170
Dead+Wind 120 deg+Ice+Temp	27.642	3.642	2.083	168.379	-290.930	0.328

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead+Wind 150 deg+Ice+Temp	27.642	2.084	3.654	294.429	-166.286	0.451
Dead+Wind 180 deg+Ice+Temp	27.642	-0.018	4.219	339.596	1.962	0.389
Dead+Wind 210 deg+Ice+Temp	27.642	-2.106	3.651	293.829	169.054	0.226
Dead+Wind 240 deg+Ice+Temp	27.642	-3.630	2.113	170.374	291.012	0.028
Dead+Wind 270 deg+Ice+Temp	27.642	-4.188	0.014	1.947	335.867	-0.178
Dead+Wind 300 deg+Ice+Temp	27.642	-3.632	-2.094	-167.120	291.561	-0.361
Dead+Wind 330 deg+Ice+Temp	27.642	-2.096	-3.647	-291.721	168.716	-0.452
Dead+Wind 0 deg - Service	16.764	0.048	-5.657	-441.619	-2.984	-0.596
Dead+Wind 30 deg - Service	16.764	2.836	-4.906	-382.644	-220.023	-0.426
Dead+Wind 60 deg - Service	16.764	4.874	-2.841	-221.199	-378.858	-0.152
Dead+Wind 90 deg - Service	16.764	5.626	-0.027	-1.293	-437.628	0.162
Dead+Wind 120 deg - Service	16.764	4.877	2.787	218.381	-379.586	0.444
Dead+Wind 150 deg - Service	16.764	2.788	4.897	383.211	-216.977	0.689
Dead+Wind 180 deg - Service	16.764	-0.026	5.652	441.967	2.141	0.647
Dead+Wind 210 deg - Service	16.764	-2.818	4.889	382.054	219.548	0.440
Dead+Wind 240 deg - Service	16.764	-4.855	2.830	221.031	378.210	0.153
Dead+Wind 270 deg - Service	16.764	-5.603	0.019	1.487	436.701	-0.176
Dead+Wind 300 deg - Service	16.764	-4.861	-2.804	-218.975	379.288	-0.495
Dead+Wind 330 deg - Service	16.764	-2.806	-4.886	-381.583	219.440	-0.689

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.000	-16.764	0.000	0.000	16.764	0.000	0.000%
2	0.124	-16.764	-14.483	-0.124	16.764	14.483	0.000%
3	7.260	-16.764	-12.558	-7.260	16.764	12.558	0.000%
4	12.478	-16.764	-7.273	-12.478	16.764	7.273	0.000%
5	14.402	-16.764	-0.068	-14.402	16.764	0.068	0.000%
6	12.485	-16.764	7.134	-12.485	16.764	-7.134	0.000%
7	7.138	-16.764	12.536	-7.138	16.764	-12.536	0.000%
8	-0.067	-16.764	14.470	0.067	16.764	-14.470	0.000%
9	-7.215	-16.764	12.516	7.215	16.764	-12.516	0.000%
10	-12.428	-16.764	7.244	12.428	16.764	-7.244	0.000%
11	-14.343	-16.764	0.050	14.343	16.764	-0.050	0.000%
12	-12.445	-16.764	-7.177	12.445	16.764	7.177	0.000%
13	-7.184	-16.764	-12.509	7.184	16.764	12.509	0.000%
14	0.000	-27.642	0.000	0.000	27.642	-0.000	0.000%
15	0.033	-27.642	-4.222	-0.033	27.642	4.222	0.000%
16	2.118	-27.642	-3.661	-2.118	27.642	3.661	0.000%
17	3.642	-27.642	-2.121	-3.642	27.642	2.121	0.000%
18	4.203	-27.642	-0.019	-4.203	27.642	0.019	0.000%
19	3.642	-27.642	2.083	-3.642	27.642	-2.083	0.000%
20	2.084	-27.642	3.654	-2.084	27.642	-3.654	0.000%
21	-0.018	-27.642	4.219	0.018	27.642	-4.219	0.000%
22	-2.106	-27.642	3.651	2.106	27.642	-3.651	0.000%
23	-3.630	-27.642	2.113	3.630	27.642	-2.113	0.000%
24	-4.188	-27.642	0.014	4.188	27.642	-0.014	0.000%
25	-3.632	-27.642	-2.094	3.632	27.642	2.094	0.000%
26	-2.096	-27.642	-3.647	2.096	27.642	3.647	0.000%
27	0.048	-16.764	-5.657	-0.048	16.764	5.657	0.000%
28	2.836	-16.764	-4.906	-2.836	16.764	4.906	0.000%
29	4.874	-16.764	-2.841	-4.874	16.764	2.841	0.000%
30	5.626	-16.764	-0.027	-5.626	16.764	0.027	0.000%
31	4.877	-16.764	2.787	-4.877	16.764	-2.787	0.000%
32	2.788	-16.764	4.897	-2.788	16.764	-4.897	0.000%
33	-0.026	-16.764	5.652	0.026	16.764	-5.652	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
34	-2.818	-16.764	4.889	2.818	16.764	-4.889	0.000%
35	-4.855	-16.764	2.830	4.855	16.764	-2.830	0.000%
36	-5.603	-16.764	0.019	5.603	16.764	-0.019	0.000%
37	-4.861	-16.764	-2.804	4.861	16.764	2.804	0.000%
38	-2.806	-16.764	-4.886	2.806	16.764	4.886	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00002688
3	Yes	5	0.00000001	0.00013102
4	Yes	5	0.00000001	0.00014441
5	Yes	4	0.00000001	0.00024373
6	Yes	5	0.00000001	0.00015182
7	Yes	5	0.00000001	0.00012630
8	Yes	5	0.00000001	0.00003239
9	Yes	5	0.00000001	0.00015384
10	Yes	5	0.00000001	0.00013560
11	Yes	4	0.00000001	0.00032526
12	Yes	5	0.00000001	0.00012958
13	Yes	5	0.00000001	0.00016173
14	Yes	4	0.00000001	0.00000001
15	Yes	5	0.00000001	0.00009302
16	Yes	5	0.00000001	0.00011452
17	Yes	5	0.00000001	0.00011502
18	Yes	5	0.00000001	0.00009119
19	Yes	5	0.00000001	0.00011758
20	Yes	5	0.00000001	0.00011516
21	Yes	5	0.00000001	0.00009417
22	Yes	5	0.00000001	0.00011900
23	Yes	5	0.00000001	0.00011646
24	Yes	5	0.00000001	0.00009185
25	Yes	5	0.00000001	0.00011473
26	Yes	5	0.00000001	0.00011964
27	Yes	4	0.00000001	0.00024441
28	Yes	4	0.00000001	0.00045606
29	Yes	4	0.00000001	0.00054765
30	Yes	4	0.00000001	0.00006240
31	Yes	4	0.00000001	0.00061723
32	Yes	4	0.00000001	0.00044864
33	Yes	4	0.00000001	0.00027454
34	Yes	4	0.00000001	0.00063381
35	Yes	4	0.00000001	0.00048576
36	Yes	4	0.00000001	0.00007195
37	Yes	4	0.00000001	0.00045400
38	Yes	4	0.00000001	0.00070143

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	99.42 - 77.08	15.453	33	1.241	0.007
L2	80.58 - 40.42	10.681	33	1.152	0.005
L3	44.503 - 0	3.444	33	0.694	0.002

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
105.000	Beacon	33	15.453	1.241	0.007	30537
103.000	(2) RA21.7770.00 w/ Mount Pipe	33	15.453	1.241	0.007	30537
102.000	AM-X-CD-16-65-00T-RET w/ Mount Pipe	33	15.453	1.241	0.007	30537
100.000	(2) RBS 6601	33	15.453	1.241	0.007	30537
99.500	Platform Mount [LP 601-1]	33	15.453	1.241	0.007	30537
90.000	(2) LPA-80080/4CF w/Mount Pipe	33	13.034	1.206	0.006	16209
88.500	Platform Mount [LP 304-1]	33	12.653	1.199	0.006	13982
81.000	VHLP2.5-18-DW1	33	10.784	1.155	0.005	8295
79.000	6' x 2" Mount Pipe	33	10.297	1.139	0.005	7492

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	99.42 - 77.08	39.484	8	3.171	0.018
L2	80.58 - 40.42	27.296	8	2.943	0.013
L3	44.503 - 0	8.807	2	1.775	0.005

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
105.000	Beacon	8	39.484	3.171	0.018	12040
103.000	(2) RA21.7770.00 w/ Mount Pipe	8	39.484	3.171	0.018	12040
102.000	AM-X-CD-16-65-00T-RET w/ Mount Pipe	8	39.484	3.171	0.018	12040
100.000	(2) RBS 6601	8	39.484	3.171	0.018	12040
99.500	Platform Mount [LP 601-1]	8	39.484	3.171	0.018	12040
90.000	(2) LPA-80080/4CF w/Mount Pipe	8	33.306	3.081	0.016	6390
88.500	Platform Mount [LP 304-1]	8	32.333	3.064	0.015	5512
81.000	VHLP2.5-18-DW1	8	27.558	2.951	0.014	3269
79.000	6' x 2" Mount Pipe	8	26.316	2.912	0.013	2951

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
L1	99.42 - 77.08 (1)	TP28.38x25.32x0.188	22.340	0.000	0.0	36.000	16.493	-5.320	593.739	0.009
L2	77.08 - 40.42 (2)	TP33.47x27.526x0.25	40.160	0.000	0.0	36.000	25.881	-9.705	931.698	0.010
L3	40.42 - 0 (3)	TP39.09x32.366x0.313	44.503	0.000	0.0	36.000	38.462	-16.752	1384.650	0.012

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	99.42 - 77.08 (1)	TP28.38x25.32x0.188	132.952	14.130	36.000	0.393	0.000	0.000	36.000	0.000
L2	77.08 - 40.42 (2)	TP33.47x27.526x0.25	535.541	30.847	36.000	0.857	0.000	0.000	36.000	0.000
L3	40.42 - 0 (3)	TP39.09x32.366x0.313	1130.633	36.872	36.000	1.024	0.000	0.000	36.000	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	99.42 - 77.08 (1)	TP28.38x25.32x0.188	9.598	0.582	24.000	0.049	1.715	0.089	24.000	0.004
L2	77.08 - 40.42 (2)	TP33.47x27.526x0.25	12.217	0.472	24.000	0.039	1.687	0.047	24.000	0.002
L3	40.42 - 0 (3)	TP39.09x32.366x0.313	14.497	0.377	24.000	0.031	1.525	0.024	24.000	0.001

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	99.42 - 77.08 (1)	0.009	0.393	0.000	0.049	0.004	0.402 ✔	1.333	H1-3+VT ✔
L2	77.08 - 40.42 (2)	0.010	0.857	0.000	0.039	0.002	0.868 ✔	1.333	H1-3+VT ✔
L3	40.42 - 0 (3)	0.012	1.024	0.000	0.031	0.001	1.037 ✔	1.333	H1-3+VT ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
L1	99.42 - 77.08	Pole	TP28.38x25.32x0.188	1	-5.320	791.454	30.2	Pass
L2	77.08 - 40.42	Pole	TP33.47x27.526x0.25	2	-9.705	1241.953	65.1	Pass
L3	40.42 - 0	Pole	TP39.09x32.366x0.313	3	-16.752	1845.738	77.8	Pass
							Summary	
						Pole (L3)	77.8	Pass
						RATING =	**77.8**	**Pass**

Program Version 6.0.4.0 - 1/27/2012 File: 84436_000_0001_East Hartford HochanumCT.eri

Square, Stiffened / Unstiffened Base Plate, Any Rod Material - Rev. F /G

Assumptions: 1) Rod groups at corners. Total # rods divisible by 4. Maximum total # of rods = 48 (12 per Corner).
2) Rod Spacing = Straight Center-to-Center distance between any (2) adjacent rods (same corner)
3) Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)*(Rod Diameter)

Site Data

Site#: *4539*
Site Name: *East Hartford Hochanum, (*

Base Reactions		
TIA Revision:	F	
Unfactored Moment, M:	1131	ft-kips
Unfactored Axial, P:	17	kips
Unfactored Shear, V:	14	kips

Anchor Rod Data		
Qty:	8	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, Fy:	75	ksi
Strength, Fu:	100	ksi
Bolt Circle:	44.09	in
Anchor Spacing:	6	in

Anchor Rod Results

TIA F --> Maximum Rod Tension	151.8 Kips
Allowable Tension:	195.0 Kips
Anchor Rod Stress Ratio:	77.9% Pass

Plate Data		
W=Side:	44	in
Thick:	2.75	in
Grade:	50	ksi
Clip Distance:	6	in

Base Plate Results Flexural Check

Base Plate Stress:	24.3 ksi
Allowable PL Bending Stress:	50.0 ksi
Base Plate Stress Ratio:	48.7% Pass

PL Ref. Data
Yield Line (in):
23.14
Max PL Length:
23.14

Stiffener Data (Welding at both sides)		
Configuration:	Unstiffened	
Weld Type:		**
Groove Depth:		in **
Groove Angle:		degrees
Fillet H. Weld:		<-- Disregard
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

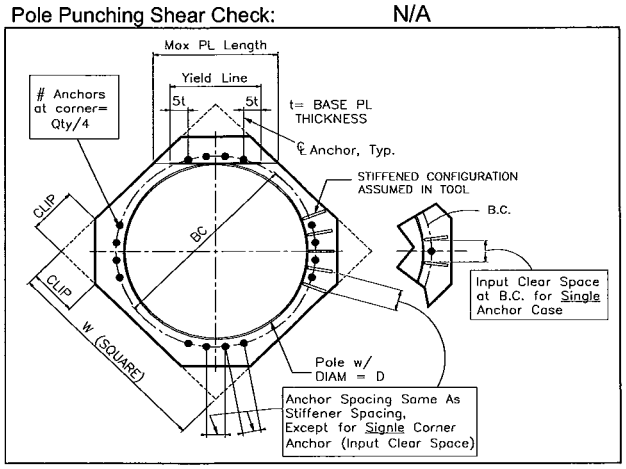
N/A - Unstiffened
Stiffener Results

Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	N/A
Plate Comp. (AISC Bracket):	N/A

Pole Results

Pole Punching Shear Check: N/A

Pole Data		
Diam:	39.09	in
Thick:	0.3125	in
Grade:	60	ksi
# of Sides:	18	"0" IF Round



Stress Increase Factor		
ASD ASIF:	1.333	

** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

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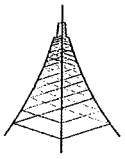
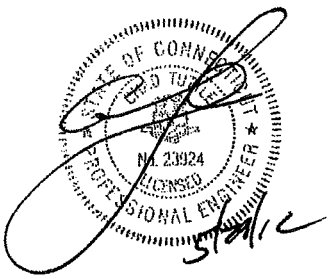




Letter of Explanation (LOE)
MUST be attached to any Structural Analysis

Site Name	**EAST HARTFORD HOCHANUM**
Site Number	**4539 (CT6126)**
PE of Record	**Chad E. Tuttle, P.E.**

ALL STRUCTURES	Statement in COL A is Correct	Value Differ from Col A	N/A	Alternate Value / Concept Used	Explanation	Yes	No	N/A	Comments / Reference
Structure Analyzed to F Code	X								
Note: ALL G analyses MUST be justified. A simple notation of jurisdiction requirement will suffice. F BUILT TOWERS in G Code jurisdictions MUST Have the new "5% Graze" Test Applied.G to be applied ONLY where this is exceeded. This 5% test applies to "like for like" only									
Guy Tensions Adjusted Within Code to Find Optimum tension / Minimum Reinforcement (Applies to Guyed Tower Failures Only). Note : AT&T requires a pulse chart for altered Tensions			X						
Antenna Azimuths Inputted Per AT&T Information. NOTE that new antennas should be calculated at 0 degrees to allow flexibility.	X								
All Yield Stresses > = 60 ksi (legs)			X		Monopole; Shaft = 60 ksi				
All Yield Stresses > = 36 ksi (Diagonals and Horizontals))			X		Monopole				
Structures Designated Class II (G Only)			X						
Exposure B Rating Used (Topography)			X						
K value for Slenderness ratio < 1.0			X		Monopole				
Shielding of All Appurtenances Used when Appropriate PER 2.6.9.4 (G Code Only)			X						
0.75 Reduction "Shape" Factor (Figure 2.6) for platform mounts, 0.8 for T-Boom Mounts Used (G Only)			X						
Pipes and round Members have 1.0 Drag Factors. Note if Pipe is attached to flat antenna, these must be considered separately if differing Drag factors are Used		X			In compliance with the TIA-222-F Table 3				
Are Tower Diagonals Designed as "Tension Only"			X		Monopole				

MODIFICATION SECTION	Statement in COL A is Correct	Deviation from Col A	N/A	Alternate Value / Concept Used	Explanation	Yes	No	N/A	Comments / Reference
Guyed									
Guyed Only: Reinforcement Recommendation accompanies Optimum Guy Tensioning Scenario.									
Compression Failing Legs / Diagonals / Horizontals: Effective Length Reduced by U-Bolted Member									
NOTE: Welded Solution Must be Explained and will only be considered in cases where other reinforcing methods will not work.									
Self Supporting									
Compression Failing Legs / Diagonals / Horizontals: Effective Length Reduced by U-Bolted Member									
NOTE: Welded Solution Must be Explained and will only be considered in cases where other reinforcing methods will not work.									
Monopole									
Compression Collars									
NOTE: Welded Solution Must be Explained and will only be considered in cases where other reinforcing methods will not work.									
Foundation									
Guyed Anchor Failure: Berm Solution									
SS Foundation Pad and Pier Failure Berm									
SS Foundation Caisson / Concrete Cap									
Monopole: Cap									

PROJECT INFORMATION

SCOPE OF WORK:	TELECOMMUNICATIONS FACILITY UPGRADE (LTE): 1. INSTALL (3) NEW LTE ANTENNAS, (6) RRH'S, SURGE ARRESTOR, (1) FIBER LINE (2) DC POWER LINES & (1) GPS ANTENNA. 2. INSTALL LTE 6601 CABINET
SITE ADDRESS:	223 BRAINARD ROAD EAST HARTFORD, CT 06114
LATITUDE:	41.7328 N 41° 43' 58.08" N
LONGITUDE:	72.6619 W 72° 39' 42.84" W
JURISDICTION:	NATIONAL, STATE & LOCAL CODES OR ORDINANCES
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

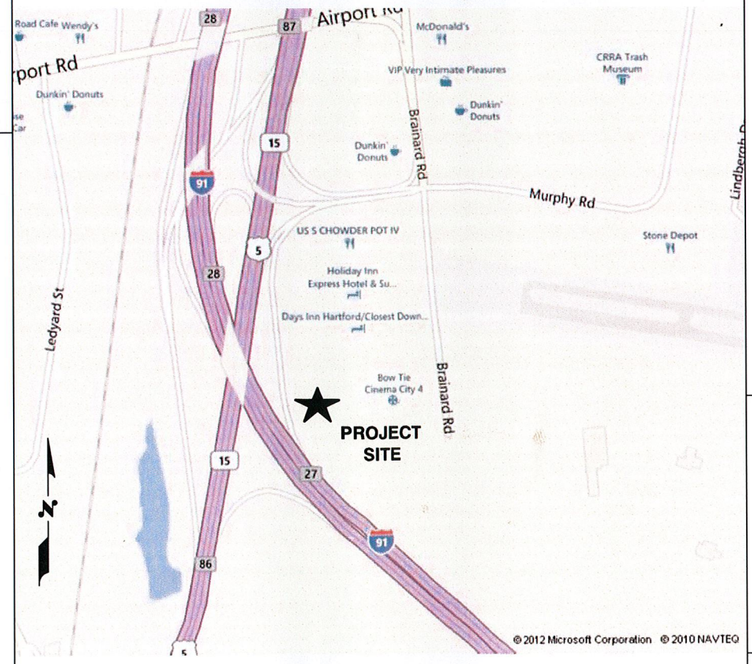
at&t

SITE NUMBER: CT5126
SITE NAME: AWE - EAST HARTFORD HOCHANUM

DRAWING INDEX

VICINITY MAP

DIRECTIONS TO SITE:
DEPART ENTERPRISE DR TOWARD CAPITOL BLVD 0.4 MI TURN LEFT ONTO CAPITOL BLVD 0.2 MI TURN LEFT ONTO WEST ST 0.2 MI TAKE RAMP LEFT FOR I-91 NORTH 6.6 MI AT EXIT 27, TAKE RAMP RIGHT FOR BRAINARD RD TOWARD BRAINARD AIRPORT / AIRPORT RD 0.5 MI TURN RIGHT ONTO BRAINARD RD 0.2 MI ARRIVE AT 223 BRAINARD RD, HARTFORD, CT 06114



GENERAL NOTES

1. THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF AT&T. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.
2. THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&T REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

72 HOURS

BEFORE YOU DIG

CALL TOLL FREE 800-922-4455

UNDERGROUND SERVICE ALERT

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TEL: (978) 557-5553
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STATE OF CONNECTICUT
GI KAI WANG
No. 28220
LICENSED PROFESSIONAL ENGINEER

AT&T

TITLE SHEET (LTE)

JOB NUMBER

DRAWING NUMBER: T-1 | REV: 1

GROUNDING NOTES

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.

2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.

3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.

4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.

5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS 2 AWG STRANDED COPPER FOR OUTDOOR BTS.

6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.

7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.

8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.

9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.

10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.

11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWS COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.

12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
   CONTRACTOR – NEXLINK
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – AT&T MOBILITY

2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.

3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.

4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.

5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.

7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.

9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.

10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.

11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.

15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.

16. CONSTRUCTION SHALL COMPLY WITH UMTS SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T MOBILITY SITES."

17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.

18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.

19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

20. APPLICABLE BUILDING CODES:
SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.
   BUILDING CODE: 2003 IBC WITH 2005 CT SUPPLEMENT & 2009 CT AMENDMENTS
   ELECTRICAL CODE: REFER TO ELECTRICAL DRAWINGS
   LIGHTENING CODE: REFER TO ELECTRICAL DRAWINGS

SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:

AMERICAN CONCRETE INSTITUTE (ACI) 318; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE;

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

MANUAL OF STEEL CONSTRUCTION, ASD, NINTH EDITION;

TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-F, STRUCTURAL STANDARDS FOR STEEL

ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES; REFER TO ELECTRICAL DRAWINGS FOR SPECIFIC ELECTRICAL STANDARDS.

FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

ABBREVIATIONS

AGL	ABOVE GRADE LEVEL	G.C.	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
AWG	AMERICAN WIRE GAUGE	MGB	MASTER GROUND BUS		
BCW	BARE COPPER WIRE	MIN	MINIMUM	TBD	TO BE DETERMINED
BTS	BASE TRANSCEIVER STATION	PROPOSED	NEW	TBR	TO BE REMOVED
EXISTING	EXISTING	N.T.S.	NOT TO SCALE	TBRR	TO BE REMOVED AND REPLACED
EG	EQUIPMENT GROUND	REF	REFERENCE	TYP	TYPICAL
EGR	EQUIPMENT GROUND RING	REQ	REQUIRED		

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SITE NUMBER: CT5126
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SCALE: AS SHOWN | DESIGNED BY: DC | DRAWN BY: DB

STATE OF CONNECTICUT
GI KAI WANG
No. 28220
LICENSED PROFESSIONAL ENGINEER

AT&T

GENERAL NOTES (LTE)

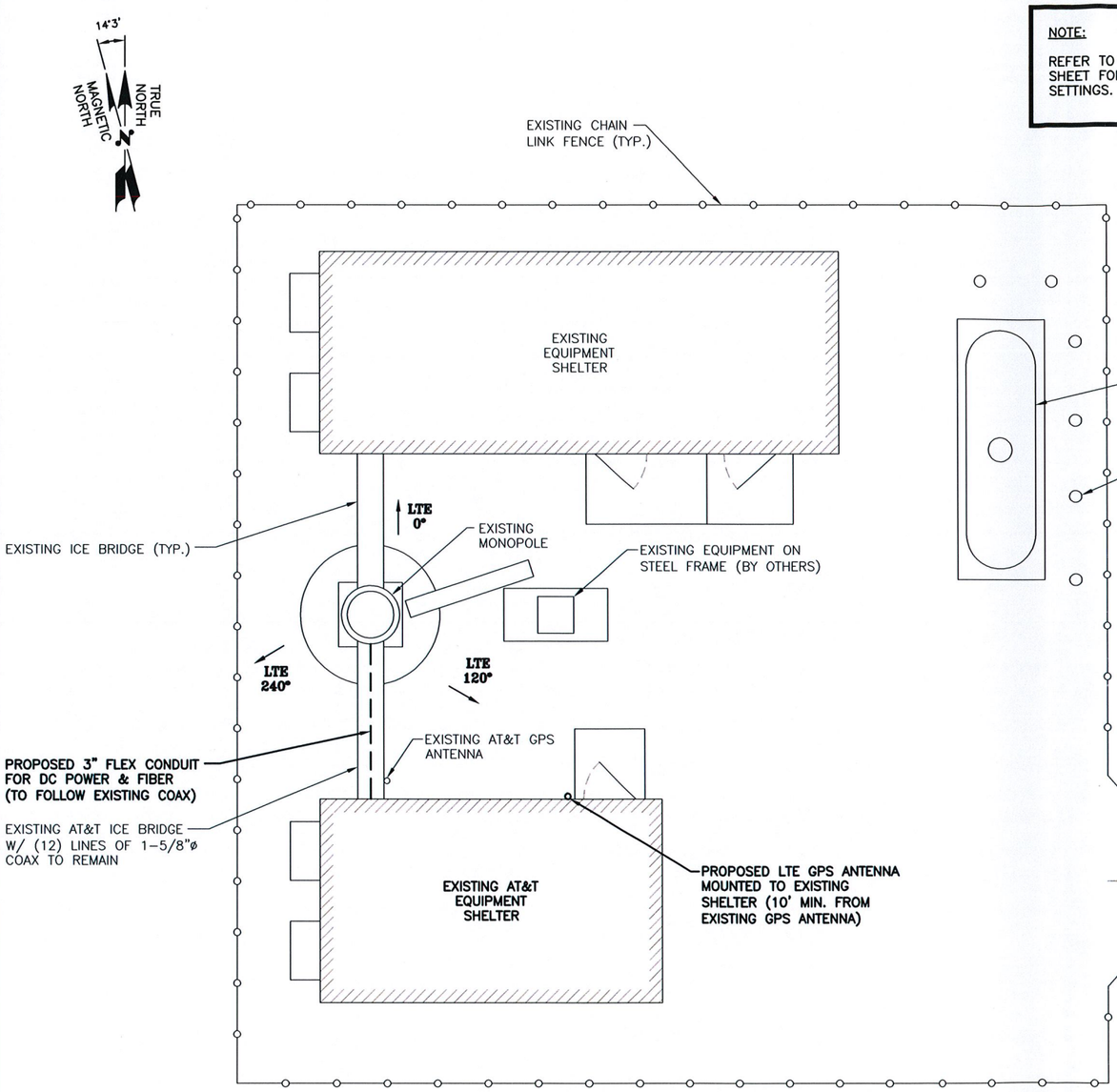
JOB NUMBER	DRAWING NUMBER	REV
51260	GN-1	1

NOTE:

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

NOTE:

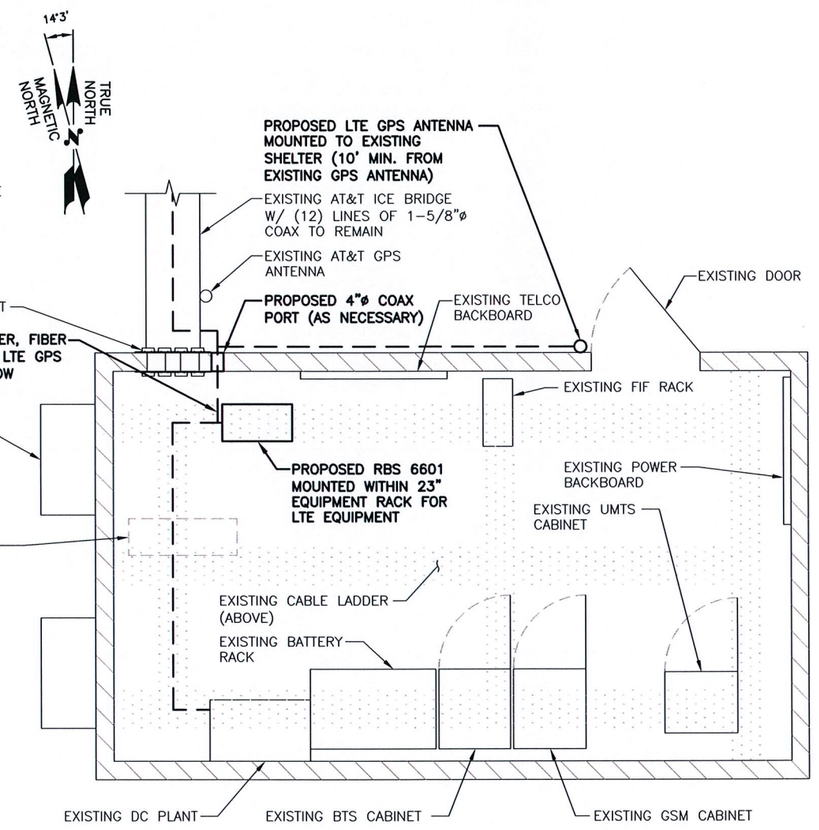
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.



COMPOUND PLAN

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

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



EQUIPMENT PLAN

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

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

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

STATE OF CONNECTICUT
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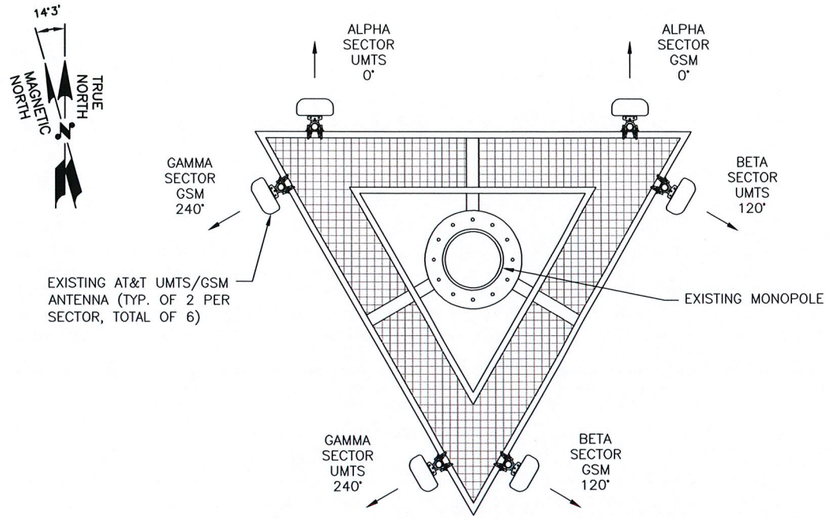
LICENSED PROFESSIONAL ENGINEER

AT&T

COMPOUND & EQUIPMENT PLAN (LTE)

JOB NUMBER	DRAWING NUMBER	REV
CT5126.01	A-1	1



EXISTING UMTS/GSM ANTENNA PLAN

SCALE: N.T.S.

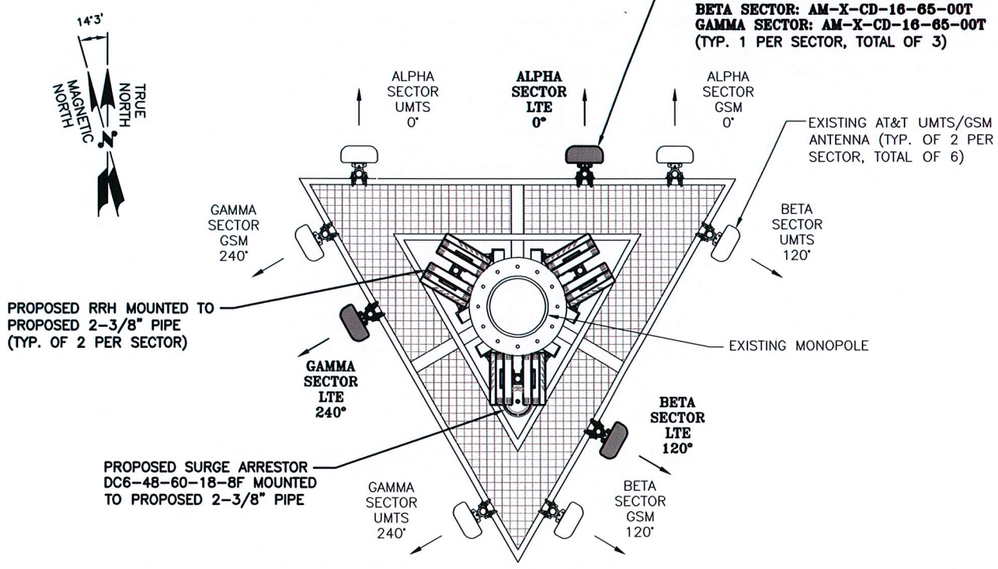
NOTE:

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

NOTE:

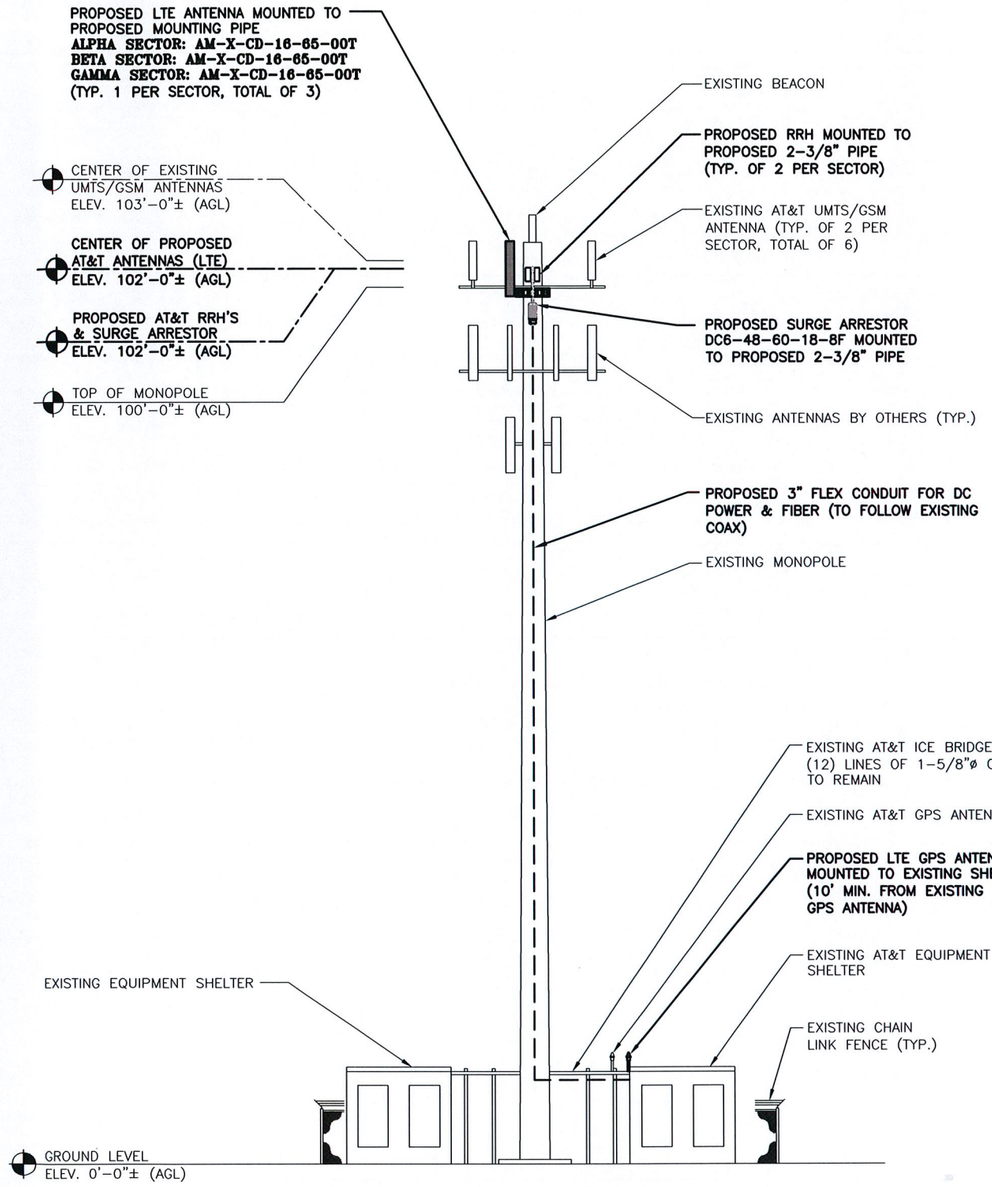
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.

NOTE:
PAINT ALL VISIBLE PROPOSED & EXISTING AT&T EQUIPMENT FAA ORANGE & WHITE



PROPOSED LTE ANTENNA PLAN

SCALE: N.T.S.



WEST ELEVATION

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

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

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

SITE NUMBER: CT5126
SITE NAME: AWE - EAST HARTFORD HOCHANUM
223 BRAINARD ROAD
EAST HARTFORD, CT 06114
HARTFORD COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP
1	04/18/12	ISSUED FOR CONSTRUCTION	DB	DC	DRH
0	03/26/12	ISSUED FOR REVIEW	DB	DC	DRH

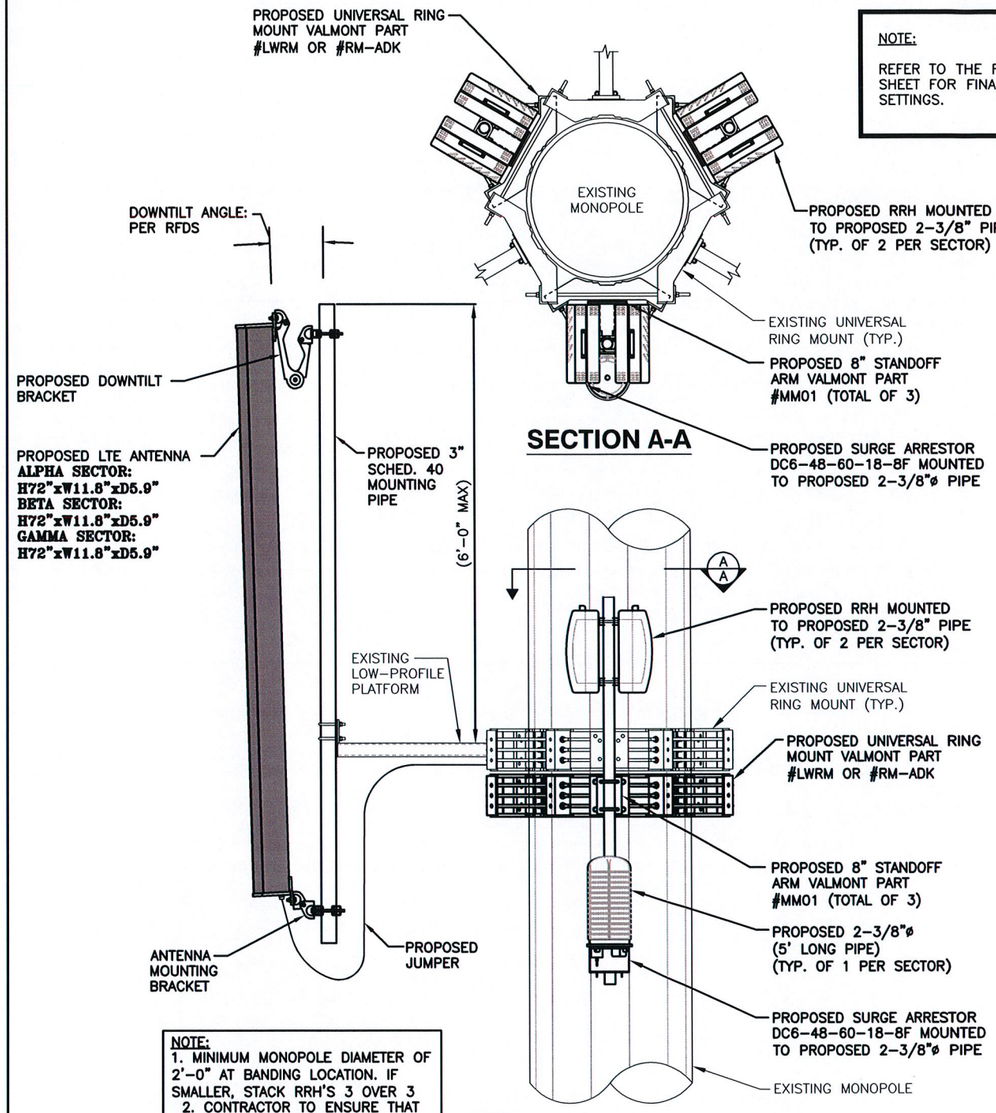
SCALE: AS SHOWN | DESIGNED BY: DC | DRAWN BY: DB

STATE OF CONNECTICUT
GI KAI WANG
No. 22220
LICENSED PROFESSIONAL ENGINEER

AT&T

ANTENNA LAYOUT AND ELEVATION (LTE)

JOB NUMBER	DRAWING NUMBER	REV
5126.01	A-2	1



SECTION A-A

NOTE:
1. MINIMUM MONOPOLE DIAMETER OF 2'-0" AT BANDING LOCATION. IF SMALLER, STACK RRH'S 3 OVER 3
2. CONTRACTOR TO ENSURE THAT RRH MOUNTING DOES NOT INTERFERE WITH CLIMBING LADDER

PART #	VMI PART #	SIZE RANGE
LWRM	801068	12"-45"
RM-ADK	157286	36"-60" ADAPTER KIT

NOTES:
1. REFER TO RFDS & SECTOR SCHEMATICS FOR ANTENNA MODEL, TYPE & QUANTITY REQUIRED PER SECTOR

PROPOSED RRH & SURGE ARRESTOR MOUNTING DETAIL

SCALE: N.T.S.

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

NOTE:
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NOTE:
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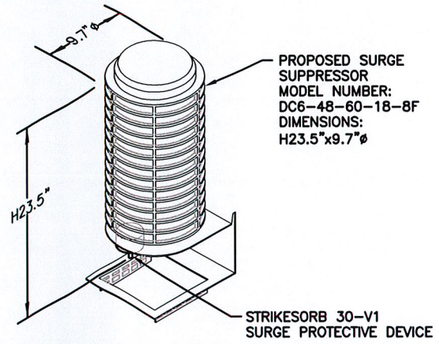
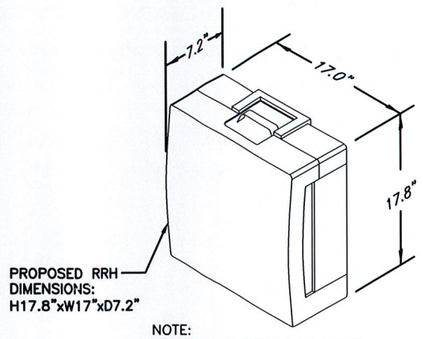


NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

DC SURGE SUPPRESSOR DETAIL

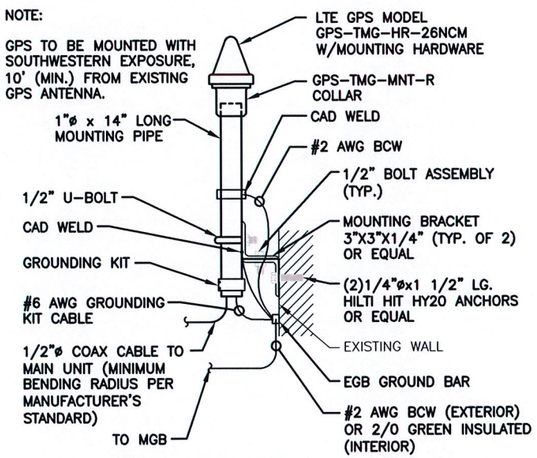
SCALE: N.T.S.



NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

RRH DETAIL

SCALE: N.T.S.



GPS MOUNTED TO SHELTER

SCALE: N.T.S.

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0	03/26/12	ISSUED FOR REVIEW	DB	DC	DPE

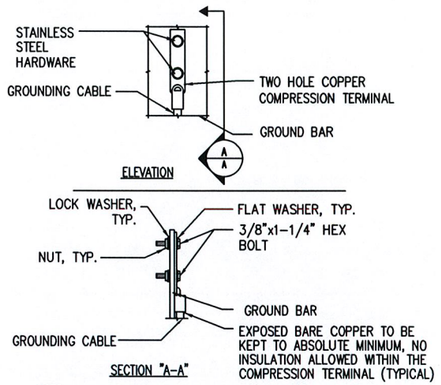
SCALE: AS SHOWN | DESIGNED BY: DC | DRAWN BY: DB

STATE OF CONNECTICUT
GI KAI WANG
NO. 20220
LICENSED PROFESSIONAL ENGINEER

AT&T

DETAILS (LTE)

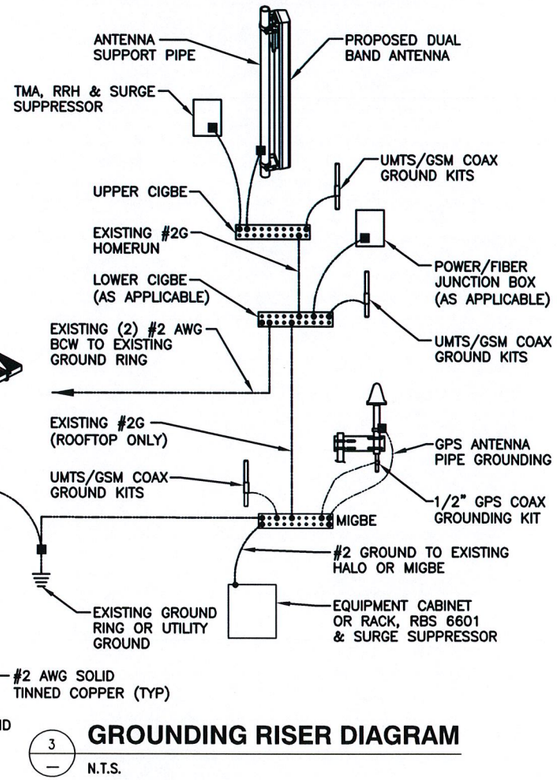
JOB NUMBER: 2601
DRAWING NUMBER: A-3
REV: 1



NOTE:
1. "DOUBLING UP" OR "STACKING " OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB.

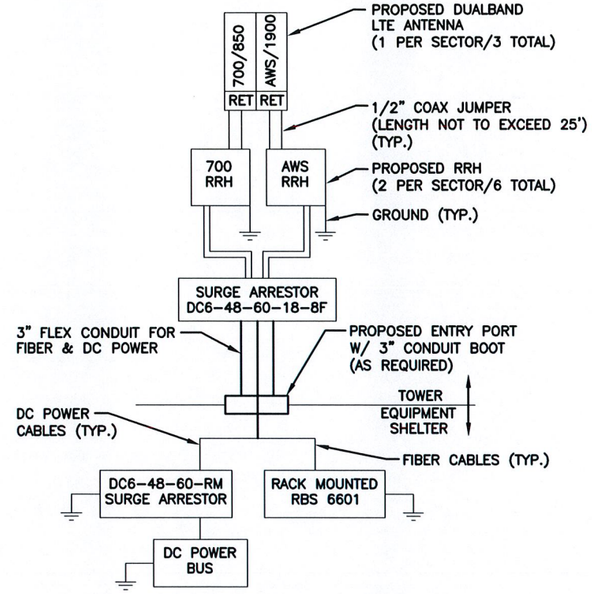
TYPICAL GROUND BAR CONNECTION DETAIL

1 — N.T.S.



GROUNDING RISER DIAGRAM

3 — N.T.S.



LTE PLUMBING DIAGRAM

2 — N.T.S.

EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

SECTION "P" – SURGE PRODUCERS

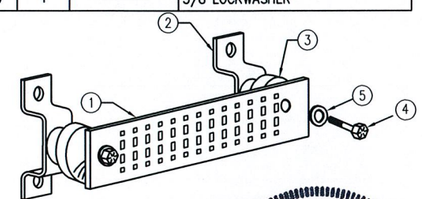
CABLE ENTRY PORTS (HATCH PLATES) (#2)
GENERATOR FRAMEWORK (IF AVAILABLE) (#2)
TELCO GROUND BAR
COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2)
+24V POWER SUPPLY RETURN BAR (#2)
–48V POWER SUPPLY RETURN BAR (#2)
RECTIFIER FRAMES.

SECTION "A" – SURGE ABSORBERS

INTERIOR GROUND RING (#2)
EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2)
METALLIC COLD WATER PIPE (IF AVAILABLE) (#2)
BUILDING STEEL (IF AVAILABLE) (#2)

WIRELESS SOLUTIONS INC.

NO.	REQ.	PART NO.	DESCRIPTION
1	1	HLGB-0420-IS	SOLID GND. BAR (20"x4"x1/4")
2	2	———	WALL MTG. BRKT.
3	2	———	INSULATORS
4	4	———	5/8"-11x1" H.H.C.S.
5	4	———	5/8 LOCKWASHER



GROUND BAR - DETAIL

4 — N.T.S.

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

STATE OF CONNECTICUT — GI KAI WANG — No. 28220 — LICENSED PROFESSIONAL ENGINEER

AT&T

PLUMBING DIAGRAM & GROUNDING DETAILS (LTE)

JOB NUMBER	DRAWING NUMBER	REV
12601	G-1	1