EMPIRE
telecom

July 8, 2014

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

Regarding:	Notice of Exempt Modification – Addition of 3 radio heads previously approved
Property Address:	99 Cedarwood Lane, Newington, CT (the "Property")
Applicant:	New Cingular Wireless PCS, LLC ("AT&T")

Dear Ms. Bachman:

AT&T currently maintains a wireless telecommunications facility on an existing 170 foot guyed tower ("tower") location on the Property. AT&T's facility consists of nine (9) wireless telecommunications antenna at 120 feet. The tower is owned by Callahan Acres LLC. The Council approved the previous application on August 24th 2012 reference number EM-AT&T-094-120807. This application (attached) granted AT&T the use of 6 radio heads at this location. The approval expired one year from the issue date. During that time AT&T made the changes to the site per the approval but only installed three (3) of the six (6) radio heads that they received approval. AT&T would now like to install the additional three (3) radio heads that were originally approved under EM-AT&T-094-120807.

Please accept this application as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72 (b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to the Town Manager and the Planning Manager for the Town of Newington. A copy of this letter is also being sent to Callahan Acres LLC., the owner of the structure that AT&T is located.

The planned modifications to AT&T's facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The planned modifications will not result in an increase in the height of the existing structure. AT&T's additional, previously approved 3 radio heads will be installed at 120 foot level of the 170 foot guyed tower.
2. The proposed modifications will not involve any changes to ground-mounted equipment and, therefore will not require an extension of the site boundary.
3. The proposed modification will not increase the noise level at the facility by six decibel or more, or to levels that exceed state and local criteria.
4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety

16 Esquire Road, Billerica, MA 01862 Mobile 617-639-4908 Email: Dcooper@empiretelecomm.com

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standard. An RF emissions calculation (attached) for AT&T's modified facility was provided in the application which led to the August 24th 2012 Decision.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The tower and its foundation can support AT&T's proposed modifications. (Please see attached Structural analysis completed by Hudson Design Group dated June 11 2012).

For the foregoing reasons AT&T respectfully requests that the proposed addition of 3 radio heads previously approved be allowed within the exempt modifications under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

David P Cooper

David P. Cooper
Director of Site Acquisition
Empire Telecom

CC: Town Manager and the Planning Manager for the Town of Newington
Callahan Acres LLC

16 Esquire Road, Billerica, MA 01862 Mobile 617-639-4908 Email: Dcooper@empiretelecomm.com

CT 1145

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

August 24, 2012

Theresa Ranciato-Viele
Nexlink Global Services
55 Lynn Road
Ivoryton, CT 06442

RE: **EM-AT&T-094-120807** – AT&T Mobility notice of intent to modify an existing telecommunications facility located at 99 Cedarwood Lane, Newington, Connecticut.

Dear Ms. Ranciato-Viele:

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:

- Modifications to the tower be completed in accordance with the recommendations made in the (Revised) Structural Analysis Report prepared by Hudson Design Group dated June 11, 2012 , and stamped by Gi Kai Wang; and
- Prior to antenna installation, a signed letter from a Professional Engineer duly licensed in the State of Connecticut shall be submitted to the Council to certify that the recommended modifications have been completed and the tower and foundation will not exceed 100 percent of the post-construction structural rating.
- 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 July 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

CSC
CONNECTICUT SITING COUNCIL

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

August 7, 2012

The Honorable Stephen Woods
Mayor
Town of Newington
131 Cedar Street
Newington, CT 06111

RE: **EM-AT&T-094-120807** – AT&T Mobility notice of intent to modify an existing telecommunications facility located at 99 Cedarwood Lane, Newington, Connecticut.

Dear Mayor Woods:

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 August 21, 2012.

Thank you for your cooperation and consideration.

Very truly yours,

Linda Roberts
Executive Director

LR/cm

Enclosure: Notice of Intent

c: John L. Salomone, Town Manager, Town of Newington
Craig Minor, Town Planner, Town of Newington

EM-AT&T-094-120807

July 29, 2012

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

Re: AT&T Mobility – Notice of Exempt Modification
99 Cedarwood Lane, Newington CT 06111

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 attachment is being sent to the Mayor of Newington,

AT&T plans to modify the existing facility at 99 Cedarwood Lane owned by Frederick H. Callahan, Jr. (coordinates 41° 41′ 41.17′′ N. -72°42′ 32.30′′ W). Attached are drawings depicting the planned changes, and documentation of the structural sufficiency of the tower to accommodate the revised antenna configuration. The construction drawings provide the structural reinforcement noted in the structural analysis. Also, included are 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)(c)

1. Based on the signed and sealed construction drawings, the height of the overall structure will be unaffected. Both AT&T's existing and proposed antennas will be located at an approximate center line of 120′ AGL on the approximately 170′ tower. The existing antennas will remain. AT&T will add three (3) new antennas and six (6) new RRH's. The existing and proposed equipment will be pipe mounted. Additionally, AT&T will install one (1) surge arrestor at 120′ AGL, and one (1) fiber cable and two (2) DC control cables. One (1) GPS LTE antenna will be mounted to existing shelter.

2. The proposed changes will not extend the site boundaries. AT&T will install one additional cabinet within the existing 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 2.23%; the combined site operations will result in a total power density of 70.99%.

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

Respectfully submitted,
AT&T Mobility

By: _____

Theresa Ranciato-Viele
tviele@hotmail.com
(203) 606-5127

cc: Honorable Stephen Woods, Mayor, Town of Newington

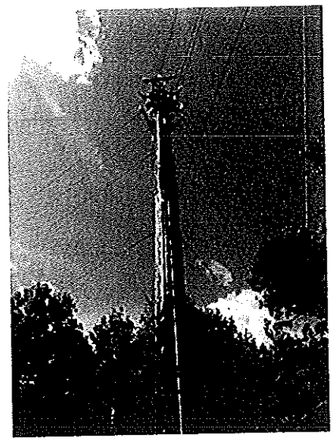
Attachments

(Revised)
STRUCTURAL ANALYSIS REPORT

For

CT1145
NEWINGTON
99 Cedarwood Lane
Newington, CT 06111

Antennas Mounted to the Tower



Prepared for:

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

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

Dated: June 11, 2012

Prepared by:

Hudson Design Group LLC

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

Gi Kai Wang 6/13/12

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

SCOPE OF WORK:

Hudson Design Group LLC (HDG) has been authorized by AT&T to conduct a structural evaluation of the 170' guyed tower supporting the proposed AT&T antennas located at elevation 120' above the ground level.

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

Record drawings of the existing tower were not available for our use. This office conducted an on-site visual survey and tower mapping on May 11, 2012 to record dimensional properties of the existing tower and its appurtenances. Attendees included Bradley Loeb (HDG – Associate) and Nick Marshall (HDG - Associate).

CONCLUSION SUMMARY:

HDG performed structural analysis of the existing tower with the following modifications:

1. Add HSS2.875x0.25 (1/3 split pipe) to the existing tower leg from El.60' to El.80'.
2. Add 8"x3/8" steel plates to the existing C12x20.7 torque arm at E132.5'.

Based on our evaluation, we have determined that the existing tower **is in conformance** with the ANSI/TIA-222-F Standard for the loading considered under the criteria listed in this report. The tower structure is rated at **98.4%** - (Leg at Tower Section T4 from EL.100.0' to El.120.0' Controlling).

Hudson Design Group LLC

APPURTENANCES CONFIGURATION:

Tenant	Appurtenances	Elev.	Mount
	DB636-C	176'	5' Side Mount Standoff
	DB806-XT	174'	5' Side Mount Standoff
	DB874H120 Antenna	171.5'	1' Side Mount Standoff
	Box 24"x6"x6"	171.5'	1' Side Mount Standoff
	HP2 Dish	167'	Tower Leg
	(6) APX16DWV-A6DWVS Antennas	162'	12' T-Frame
	(3) ATMAP1412D	160'	12' T-Frame
	(3) TMA	160'	12' T-Frame
	VHLP2 Dish	146'	9' T-Frame
	VHLP2 Dish	145.6'	9' T-Frame
	VHLP800 Dish	145.6'	9' T-Frame
	(9) 844G65VTZASX Antennas	141.5'	9' T-Frame
	(3) LLPX310R Antennas	140.5'	9' T-Frame
AT&T	(6) Powerwave 7770 Antennas	120'	12' T-Frame
AT&T	(6) LGP 21400 TMA	120'	12' T-Frame
AT&T	(6) LGP 21900	120'	12' T-Frame
AT&T	(6) Powerwave 7020	120'	12' T-Frame
AT&T	***(3) AM-X-CD-16-65-00 Antennas***	120'	12' T-Frame
AT&T	***(6) RRUs***	120'	12' T-Frame
AT&T	***Surge Arrestor DC6-48-60-18-8F***	120'	Tower Leg
	(3) Panel Antennas	108'	1' Side Mount Standoff

Proposed AT&T Appurtenances shown in Bold.

AT&T EXISTING/PROPOSED COAX CABLES:

Tenant	Coax Cables	Elev.	Mount
AT&T	(12) 7/8" Cables	120'	Face of Tower
AT&T	***Fiber Cable***	120'	Face of Tower
AT&T	***(2) DC Power Cables***	120'	Face of Tower

Proposed AT&T Coax Cables shown in Bold.

Hudson Design Group LLC

DESIGN CRITERIA:

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

   County: Hartford
   Wind Load: 80 mph (fastest mile)
   100 mph (3 second gust)
   Nominal Ice Thickness: 1/2 inch

2. Approximate height above grade to proposed antennas: 120'-0"

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

ASSUMPTIONS:

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

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

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

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

5. The foundation of the tower was not checked due to lack of information. As-built foundation drawings and geotechnical report would be required to determine whether the foundation is capable of supporting the proposed loadings.

Hudson Design Group LLC

SUPPORT RECOMMENDATIONS:

HDG recommends that the proposed antennas and RRHs be mounted on the existing T-frame supported by the existing tower; the proposed surge arrestor be mounted on the tower leg.

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

Hudson Design Group LLC

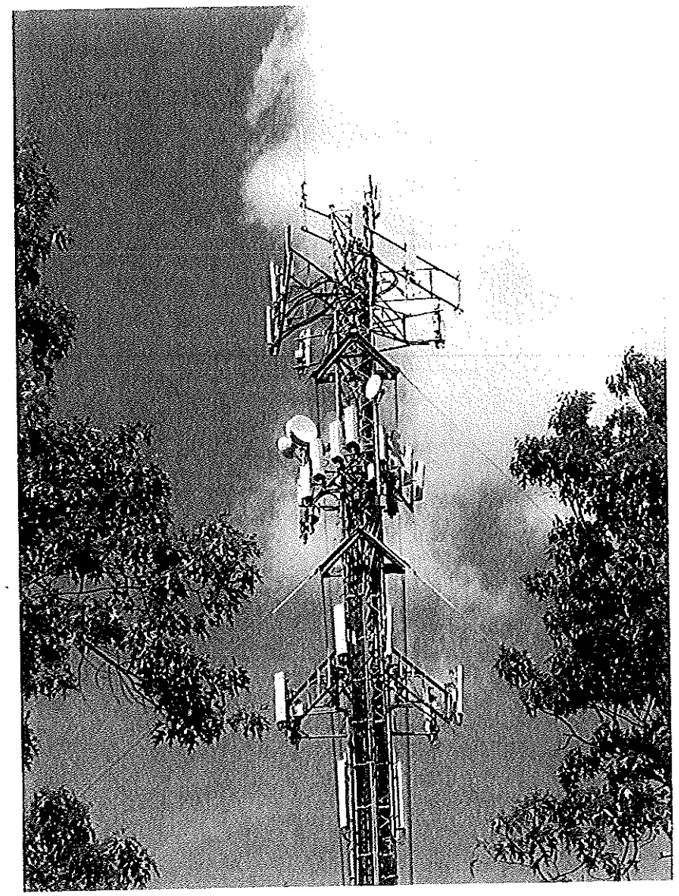
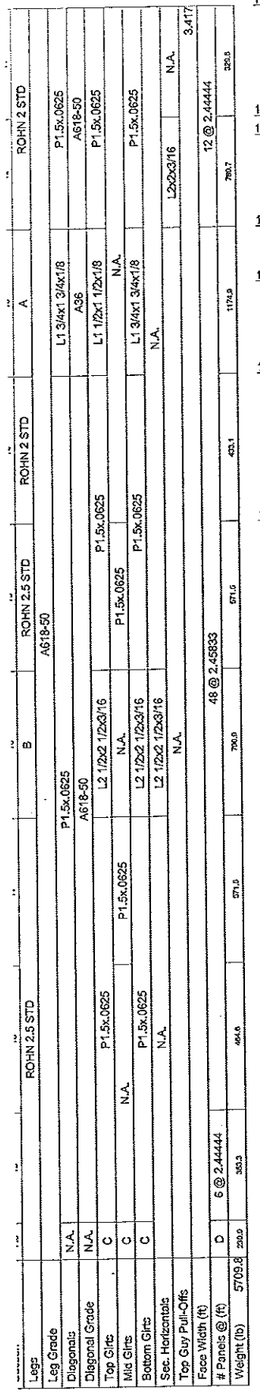
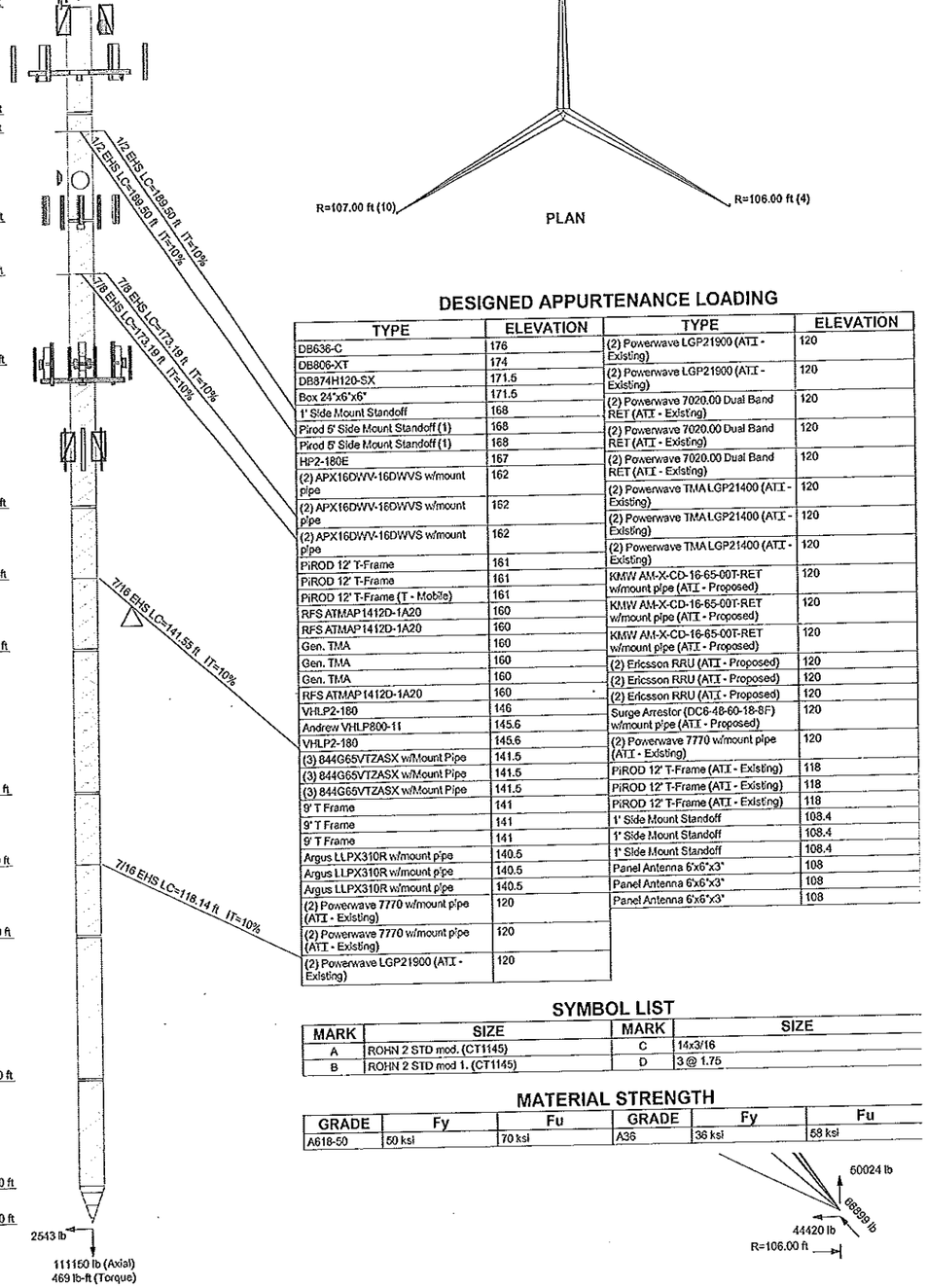


Photo 1: Photo illustrating the Tower with Appurtenances shown.

Hudson Design Group LLC

CALCULATIONS





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
DB636-C	176	(2) Powerwave LGP21900 (ATI - Existing)	120
DB806-XT	174	(2) Powerwave LGP21900 (ATI - Existing)	120
DB874H120-SX	171.5	(2) Powerwave 7020.00 Dual Band RET (ATI - Existing)	120
Box 24"x6"x6"	171.5	(2) Powerwave 7020.00 Dual Band RET (ATI - Existing)	120
1' Side Mount Standoff	168	(2) Powerwave 7020.00 Dual Band RET (ATI - Existing)	120
Pirod 5' Side Mount Standoff (1)	168	(2) Powerwave TMA LGP21400 (ATI - Existing)	120
Pirod 5' Side Mount Standoff (1)	168	(2) Powerwave TMA LGP21400 (ATI - Existing)	120
HP2-180E	167	(2) Powerwave TMA LGP21400 (ATI - Existing)	120
(2) APX16DWV-16DWVS w/mount pipe	162	KMW AM-X-CD-16-65-00T-RET w/mount pipe (ATI - Proposed)	120
(2) APX16DWV-16DWVS w/mount pipe	162	KMW AM-X-CD-16-65-00T-RET w/mount pipe (ATI - Proposed)	120
(2) APX16DWV-16DWVS w/mount pipe	162	KMW AM-X-CD-16-65-00T-RET w/mount pipe (ATI - Proposed)	120
PiROD 12' T-Frame	161	(2) Ericsson RRU (ATI - Proposed)	120
PiROD 12' T-Frame	161	(2) Ericsson RRU (ATI - Proposed)	120
PiROD 12' T-Frame (T - Mobile)	161	(2) Ericsson RRU (ATI - Proposed)	120
RFS ATMAP1412D-1A20	160	Surge Arrestor (DC6-48-60-18-8F) w/mount pipe (ATI - Proposed)	120
RFS ATMAP1412D-1A20	160	(2) Powerwave 7770 w/mount pipe (ATI - Existing)	120
Gen. TMA	160	PiROD 12' T-Frame (ATI - Existing)	118
Gen. TMA	160	PiROD 12' T-Frame (ATI - Existing)	118
Gen. TMA	160	PiROD 12' T-Frame (ATI - Existing)	118
RFS ATMAP1412D-1A20	160	1' Side Mount Standoff	108.4
VHLP2-180	146	1' Side Mount Standoff	108.4
Andrew VHLP800-11	145.6	1' Side Mount Standoff	108.4
VHLP2-180	145.6	Panel Antenna 6'x6"x3"	108
(3) 844G65VTZASX w/Mount Pipe	141.5	Panel Antenna 6'x6"x3"	108
(3) 844G65VTZASX w/Mount Pipe	141.5	Panel Antenna 6'x6"x3"	108
(3) 844G65VTZASX w/Mount Pipe	141.5		
9' T Frame	141		
9' T Frame	141		
9' T Frame	141		
Argus LLPX310R w/mount pipe	140.5		
Argus LLPX310R w/mount pipe	140.5		
Argus LLPX310R w/mount pipe	140.5		
(2) Powerwave 7770 w/mount pipe (ATI - Existing)	120		
(2) Powerwave 7770 w/mount pipe (ATI - Existing)	120		
(2) Powerwave LGP21900 (ATI - Existing)	120		

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	ROHN 2 STD mod. (CT1145)	C	14x3/16
B	ROHN 2 STD mod 1. (CT1145)	D	3 @ 1.75

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A618-50	50 ksi	70 ksi	A36	36 ksi	58 ksi

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

Job: *CT 1145 Newington, CT*			
Project: *170 ft Guyed Tower*			
Client: AT&T	Drawn by: kw	App'd:	
Code: TIA/EIA-222-F	Date: 06/11/12	Scale:	
Path:		Dwg No.	

tnxTower	Job	Page
	CT 1145 Newington, CT	1 of 12
Hudson Design Group, LLC 1600 Osgood Street, Building 20 North, Suite 2-101 North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 226-5586	Project 170 ft Guyed Tower	Date 10:26:54 06/11/12
	Client AT&T	Designed by kw

Tower Input Data

The main tower is a 3x guyed tower with an overall height of 170.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 3.42 ft at the top and tapered at the base.
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 0.5000 in.
Ice density of 56 pcf.
A wind speed of 69 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
Pressures are calculated at each section.
Safety factor used in guy design is 2.
Stress ratio used in tower member design is 1.333.
Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	170.00-155.00			3.42	1	15.00
T2	155.00-140.00			3.42	1	15.00
T3	140.00-120.00			3.42	1	20.00
T4	120.00-100.00			3.42	1	20.00
T5	100.00-80.00			3.42	1	20.00
T6	80.00-60.00			3.42	1	20.00
T7	60.00-40.00			3.42	1	20.00
T8	40.00-20.00			3.42	1	20.00
T9	20.00-5.00			3.42	1	15.00
T10	5.00-0.00			3.42	1	5.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	170.00-155.00	2.44	X Brace	No	No	2.0000	2.0000
T2	155.00-140.00	2.44	X Brace	No	No	2.0000	2.0000
T3	140.00-120.00	2.46	X Brace	No	No	2.0000	2.0000
T4	120.00-100.00	2.46	X Brace	No	No	2.0000	2.0000
T5	100.00-80.00	2.46	X Brace	No	No	2.0000	2.0000
T6	80.00-60.00	2.46	X Brace	No	Yes	2.0000	2.0000
T7	60.00-40.00	2.46	X Brace	No	No	2.0000	2.0000
T8	40.00-20.00	2.46	K Brace Right	No	No	2.0000	2.0000
T9	20.00-5.00	2.44	K Brace Right	No	No	2.0000	2.0000
T10	5.00-0.00	1.75	X Brace	No	Yes	9.0000	9.0000

tnxTower	Job	Page
Hudson Design Group, LLC 1600 Osgood Street, Building 20 North, Suite 2-101 North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 226-5586	CT 1145 Newington, CT	2 of 12
	Project 170 ft Guyed Tower	Date 10:26:54 06/11/12
	Client AT&T	Designed by kw

Tower Section Geometry *(cont'd)*

Tower Elevation ft	*Leg Type*	*Leg Size*	*Leg Grade*	*Diagonal Type*	*Diagonal Size*	*Diagonal Grade*
T1 170.00-155.00	Pipe	ROHN 2 STD	A618-50 (50 ksi)	Pipe	P1.5x.0625	A618-50 (50 ksi)
T2 155.00-140.00	Pipe	ROHN 2 STD	A618-50 (50 ksi)	Pipe	P1.5x.0625	A618-50 (50 ksi)
T3 140.00-120.00	Pipe	ROHN 2 STD mod. (CT1145)	A618-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x1/8	A36 (36 ksi)
T4 120.00-100.00	Pipe	ROHN 2 STD	A618-50 (50 ksi)	Pipe	P1.5x.0625	A618-50 (50 ksi)
T5 100.00-80.00	Pipe	ROHN 2.5 STD	A618-50 (50 ksi)	Pipe	P1.5x.0625	A618-50 (50 ksi)
T6 80.00-60.00	Pipe	ROHN 2 STD mod 1. (CT1145)	A618-50 (50 ksi)	Pipe	P1.5x.0625	A618-50 (50 ksi)
T7 60.00-40.00	Pipe	ROHN 2.5 STD	A618-50 (50 ksi)	Pipe	P1.5x.0625	A618-50 (50 ksi)
T8 40.00-20.00	Pipe	ROHN 2.5 STD	A618-50 (50 ksi)	Pipe	P1.5x.0625	A618-50 (50 ksi)
T9 20.00-5.00	Pipe	ROHN 2.5 STD	A618-50 (50 ksi)	Pipe	P1.5x.0625	A618-50 (50 ksi)
T10 5.00-0.00	Pipe	ROHN 2.5 STD	A618-50 (50 ksi)	Pipe		A618-50 (50 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	*Top Girt Type*	*Top Girt Size*	*Top Girt Grade*	*Bottom Girt Type*	*Bottom Girt Size*	*Bottom Girt Grade*
T1 170.00-155.00	Pipe	P1.5x.0625	A618-50 (50 ksi)	Pipe	P1.5x.0625	A618-50 (50 ksi)
T2 155.00-140.00	Pipe	P1.5x.0625	A618-50 (50 ksi)	Pipe	P1.5x.0625	A618-50 (50 ksi)
T3 140.00-120.00	Equal Angle	L1 1/2x1 1/2x1/8	A36 (36 ksi)	Equal Angle	L1 3/4x1 3/4x1/8	A36 (36 ksi)
T4 120.00-100.00	Pipe	P1.5x.0625	A618-50 (50 ksi)	Pipe	P1.5x.0625	A618-50 (50 ksi)
T5 100.00-80.00	Pipe	P1.5x.0625	A618-50 (50 ksi)	Pipe	P1.5x.0625	A618-50 (50 ksi)
T6 80.00-60.00	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T7 60.00-40.00	Pipe	P1.5x.0625	A618-50 (50 ksi)	Pipe	P1.5x.0625	A618-50 (50 ksi)
T8 40.00-20.00	Pipe	P1.5x.0625	A618-50 (50 ksi)	Pipe	P1.5x.0625	A618-50 (50 ksi)
T9 20.00-5.00	Pipe	P1.5x.0625	A618-50 (50 ksi)	Pipe	P1.5x.0625	A618-50 (50 ksi)
T10 5.00-0.00	Flat Bar	14x3/16	A36 (36 ksi)	Flat Bar	14x3/16	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

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Hudson Design Group, LLC 1600 Osgood Street, Building 20 North, Suite 2-101 North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 226-5586	Project: 170 ft Guyed Tower	Date: 10:26:54 06/11/12
	Client: AT&T	Designed by: kw

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T5 100.00-80.00	1	Pipe	P1.5x.0625	A572-50 (50 ksi)	Pipe		A572-50 (50 ksi)
T7 60.00-40.00	1	Pipe	P1.5x.0625	A572-50 (50 ksi)	Pipe		A572-50 (50 ksi)
T10 5.00-0.00	1	Flat Bar	14x3/16	A36 (36 ksi)	Flat Bar		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T6 80.00-60.00	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)

Guy Data

Guy Elevation ft	Guy Grade		Guy Size	Initial Tension lb	%	Guy Modulus ksi	Guy Weight plf	L_u ft	Anchor Radius ft	Anchor Azimuth Adj. °	Anchor Elevation ft	End Fitting Efficiency %
152.389	EHS	A	1/2	2690.00	10%	21000	0.517	189.34	106.00	0.0000	-6.00	100%
		B	1/2	2690.00	10%	21000	0.517	181.07	106.00	0.0000	4.00	100%
		C	1/2	2690.00	10%	21000	0.517	176.79	107.00	0.0000	10.00	100%
132.458	EHS	A	7/8	7970.00	10%	19000	1.581	173.03	106.00	0.0000	-6.00	100%
		B	7/8	7970.00	10%	19000	1.581	165.15	106.00	0.0000	4.00	100%
		C	7/8	7970.00	10%	19000	1.581	161.19	107.00	0.0000	10.00	100%
90	EHS	A	7/16	2080.00	10%	21000	0.399	141.43	106.00	0.0000	-6.00	100%
		B	7/16	2080.00	10%	21000	0.399	134.86	106.00	0.0000	4.00	100%
		C	7/16	2080.00	10%	21000	0.399	131.91	107.00	0.0000	10.00	100%
50	EHS	A	7/16	2080.00	10%	21000	0.399	118.04	106.00	0.0000	-6.00	100%
		B	7/16	2080.00	10%	21000	0.399	113.65	106.00	0.0000	4.00	100%
		C	7/16	2080.00	10%	21000	0.399	112.29	107.00	0.0000	10.00	100%

Guy Data *(cont'd)*

Guy Elevation ft	Mount Type	Torque-Arm Spread ft	Torque-Arm Leg Angle °	Torque-Arm Style	Torque-Arm Grade	Torque-Arm Type	Torque-Arm Size
152.389	Torque Arm	7.00	0.0000	Channel	A36 (36 ksi)	Channel	C12x20.7
132.458	Torque Arm	7.00	0.0000	Channel	A36 (36 ksi)	Channel	C12x20.7 mod (CT1145)
90	Corner						
50	Corner						

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	Client: AT&T	Designed by: kw

Guy Data *(cont'd)*

Guy Elevation ft	Diagonal Grade	Diagonal Type	Upper Diagonal Size	Lower Diagonal Size	Is Strap.	Pull-Off Grade	Pull-Off Type	Pull-Off Size
152.39	A572-50 (50 ksi)	Solid Round			No	A36 (36 ksi)	Equal Angle	L2x2x3/16
132.46	A572-50 (50 ksi)	Solid Round				A572-50 (50 ksi)	Solid Round	
90.00	A572-50 (50 ksi)	Solid Round				A572-50 (50 ksi)	Solid Round	
50.00	A572-50 (50 ksi)	Solid Round				A572-50 (50 ksi)	Solid Round	

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
1 1/4	A	Yes	Ar (CfAe)	141.00 - 6.00	0.0000	0.3	9	9	0.0000	1.5500		0.66
2" Rigid Conduit	A	Yes	Ar (CfAe)	141.00 - 6.00	0.0000	0	2	2	0.0000	2.0000		2.80
1/2	A	Yes	Ar (CfAe)	146.00 - 6.00	0.0000	-0.1	3	2	0.0000	0.5800		0.25
1 5/8	A	Yes	Ar (CfAe)	109.00 - 6.00	0.0000	-0.4	6	6	0.0000	1.8000		1.04
1 5/8	A	Yes	Ar (CfAe)	170.00 - 6.00	0.0000	-0.42	2	2	0.0000	1.8000		1.04
7/8	A	Yes	Ar (CfAe)	170.00 - 6.00	0.0000	-0.44	1	1	0.0000	1.1100		0.54
1/2	A	Yes	Ar (CfAe)	170.00 - 6.00	0.0000	-0.46	1	1	0.0000	0.5800		0.25
1/2	A	Yes	Ar (CfAe)	167.00 - 6.00	0.0000	-0.48	2	2	0.0000	0.5800		0.25
1 5/8	C	Yes	Ar (CfAe)	162.00 - 6.00	0.0000	-0.3	18	12	0.0000	1.8000		1.04
7/8 (AT&T - existing) **********	B	Yes	Ar (CfAe)	120.00 - 6.00	0.0000	-0.2	12	8	0.0000	1.1100		0.54
FB-L98B-002 (AT&T - proposed)	B	Yes	Ar (CfAe)	120.00 - 6.00	0.0000	0.1	1	1	0.0000	0.4000		0.25
WR-VG122ST-BRDA (AT&T - proposed)	B	Yes	Ar (CfAe)	120.00 - 6.00	0.0000	0.15	2	2	0.0000	0.4000		0.25

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Pirod 5' Side Mount Standoff (1)	A	From Leg	2.50 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice	3.85 5.52	3.85 5.52	60.00 110.00
DB636-C	A	From Leg	5.00 0.00 0.00	0.0000	176.00	No Ice 1/2" Ice	2.51 3.59	2.51 3.59	30.00 48.84

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	Client AT&T	Designed by kw

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Pirod 5' Side Mount Standoff (1)	B	From Leg	2.50 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice	3.85 5.52	3.85 5.52	60.00 110.00
DB806-XT	B	From Leg	5.00 0.00 0.00	0.0000	174.00	No Ice 1/2" Ice	1.14 1.68	1.14 1.68	21.00 29.93
1' Side Mount Standoff	C	From Leg	0.50 0.00 0.00	0.0000	168.00	No Ice 1/2" Ice	1.00 1.50	1.00 1.50	30.00 50.00
DB874H120-SX	C	From Leg	1.00 0.00 0.00	0.0000	171.50	No Ice 1/2" Ice	5.60 5.99	2.48 2.78	14.00 44.53
Box 24"x6"x6"	C	From Leg	0.00 0.00 0.00	0.0000	171.50	No Ice 1/2" Ice	1.40 1.60	1.40 1.60	15.00 26.70
**********									
PiROD 12' T-Frame (T - Mobile)	A	From Leg	3.00 0.00 0.00	0.0000	161.00	No Ice 1/2" Ice	12.20 17.60	12.20 17.60	360.00 490.00
PiROD 12' T-Frame	B	From Leg	3.00 0.00 0.00	0.0000	161.00	No Ice 1/2" Ice	12.20 17.60	12.20 17.60	360.00 490.00
PiROD 12' T-Frame	C	From Leg	3.00 0.00 0.00	0.0000	161.00	No Ice 1/2" Ice	12.20 17.60	12.20 17.60	360.00 490.00
(2) APX16DWV-16DWVS w/mount pipe	A	From Leg	6.00 0.00 0.00	0.0000	162.00	No Ice 1/2" Ice	10.00 10.59	6.39 7.30	40.40 110.14
(2) APX16DWV-16DWVS w/mount pipe	B	From Leg	6.00 0.00 0.00	0.0000	162.00	No Ice 1/2" Ice	10.00 10.59	6.39 7.30	40.40 110.14
(2) APX16DWV-16DWVS w/mount pipe	C	From Leg	6.00 0.00 0.00	0.0000	162.00	No Ice 1/2" Ice	10.00 10.59	6.39 7.30	40.40 110.14
RFS ATMAP1412D-1A20	A	From Leg	5.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice	1.17 1.31	0.47 0.57	13.00 20.62
RFS ATMAP1412D-1A20	B	From Leg	5.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice	1.17 1.31	0.47 0.57	13.00 20.62
RFS ATMAP1412D-1A20	C	From Leg	5.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice	1.17 1.31	0.47 0.57	13.00 20.62
Gen. TMA	A	From Leg	5.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice	0.68 0.80	0.45 0.56	13.20 18.38
Gen. TMA	B	From Leg	5.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice	0.68 0.80	0.45 0.56	13.20 18.38
Gen. TMA	C	From Leg	5.00 0.00 0.00	0.0000	160.00	No Ice 1/2" Ice	0.68 0.80	0.45 0.56	13.20 18.38
**********									
9' T Frame	A	From Leg	0.50 0.00 0.00	0.0000	141.00	No Ice 1/2" Ice	8.00 12.00	8.00 12.00	220.00 310.00
9' T Frame	B	From Leg	0.50	0.0000	141.00	No Ice	8.00	8.00	220.00

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	Project 170 ft Guyed Tower	Date 10:26:54 06/11/12
	Client AT&T	Designed by kw

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00			1/2" Ice	12.00	12.00	310.00
9' T Frame	C	From Leg	0.00 0.50 0.00	0.0000	141.00	No Ice 1/2" Ice	8.00 12.00	8.00 12.00	220.00 310.00
(3) 844G65VTZASX w/Mount Pipe	A	From Leg	0.00 1.00 0.00	0.0000	141.50	No Ice 1/2" Ice	6.55 7.25	5.63 6.73	41.55 95.60
(3) 844G65VTZASX w/Mount Pipe	B	From Leg	0.00 1.00 0.00	0.0000	141.50	No Ice 1/2" Ice	6.55 7.25	5.63 6.73	41.55 95.60
(3) 844G65VTZASX w/Mount Pipe	C	From Leg	0.00 1.00 0.00	0.0000	141.50	No Ice 1/2" Ice	6.55 7.25	5.63 6.73	41.55 95.60
Argus LLPX310R w/mount pipe	A	From Leg	0.00 1.00 0.00	0.0000	140.50	No Ice 1/2" Ice	4.94 5.32	2.81 3.32	43.60 78.53
Argus LLPX310R w/mount pipe	B	From Leg	0.00 1.00 0.00	0.0000	140.50	No Ice 1/2" Ice	4.94 5.32	2.81 3.32	43.60 78.53
Argus LLPX310R w/mount pipe	C	From Leg	0.00 1.00 0.00	0.0000	140.50	No Ice 1/2" Ice	4.94 5.32	2.81 3.32	43.60 78.53
**********			0.00						
PiROD 12' T-Frame (AT&T - Existing)	A	From Leg	1.50 0.00	0.0000	118.00	No Ice 1/2" Ice	12.20 17.60	12.20 17.60	360.00 490.00
PiROD 12' T-Frame (AT&T - Existing)	B	From Leg	0.00 1.50 0.00	0.0000	118.00	No Ice 1/2" Ice	12.20 17.60	12.20 17.60	360.00 490.00
PiROD 12' T-Frame (AT&T - Existing)	C	From Leg	0.00 1.50 0.00	0.0000	118.00	No Ice 1/2" Ice	12.20 17.60	12.20 17.60	360.00 490.00
(2) Powerwave 7770 w/mount pipe (AT&T - Existing)	A	From Leg	0.00 3.00 0.00	0.0000	120.00	No Ice 1/2" Ice	6.02 6.47	4.10 4.75	57.25 101.14
(2) Powerwave 7770 w/mount pipe (AT&T - Existing)	B	From Leg	0.00 3.00 0.00	0.0000	120.00	No Ice 1/2" Ice	6.02 6.47	4.10 4.75	57.25 101.14
(2) Powerwave 7770 w/mount pipe (AT&T - Existing)	C	From Leg	0.00 3.00 0.00	0.0000	120.00	No Ice 1/2" Ice	6.02 6.47	4.10 4.75	57.25 101.14
(2) Powerwave LGP21900 (AT&T - Existing)	A	From Leg	0.00 2.00 0.00	0.0000	120.00	No Ice 1/2" Ice	0.23 0.30	0.12 0.17	5.50 7.70
(2) Powerwave LGP21900 (AT&T - Existing)	B	From Leg	0.00 2.00 0.00	0.0000	120.00	No Ice 1/2" Ice	0.23 0.30	0.12 0.17	5.50 7.70
(2) Powerwave LGP21900 (AT&T - Existing)	C	From Leg	0.00 2.00 0.00	0.0000	120.00	No Ice 1/2" Ice	0.23 0.30	0.12 0.17	5.50 7.70
(2) Powerwave 7020.00 Dual Band RET (AT&T - Existing)	A	From Leg	0.00 3.00 0.00	0.0000	120.00	No Ice 1/2" Ice	0.40 0.49	0.20 0.27	2.20 5.13
(2) Powerwave 7020.00 Dual Band RET (AT&T - Existing)	B	From Leg	0.00 3.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice	0.40 0.49	0.20 0.27	2.20 5.13

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Hudson Design Group, LLC 1600 Osgood Street, Building 20 North, Suite 2-101 North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 226-5586	Project: 170 ft Guyed Tower	Date: 10:26:54 06/11/12
	Client: AT&T	Designed by: kw

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 lb
(2) Powerwave 7020.00 Dual Band RET (AT&T - Existing)	C	From Leg	3.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice	0.40 0.49	0.20 0.27	2.20 5.13
(2) Powerwave TMA LGP21400 (AT&T - Existing)	A	From Leg	2.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice	1.23 1.38	0.41 0.52	14.10 21.29
(2) Powerwave TMA LGP21400 (AT&T - Existing)	B	From Leg	2.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice	1.23 1.38	0.41 0.52	14.10 21.29
(2) Powerwave TMA LGP21400 (AT&T - Existing)	C	From Leg	2.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice	1.23 1.38	0.41 0.52	14.10 21.29
KMW AM-X-CD-16-65-00T-RET w/mount pipe (AT&T - Proposed)	A	From Leg	3.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice	8.50 9.15	6.30 7.48	74.05 136.21
KMW AM-X-CD-16-65-00T-RET w/mount pipe (AT&T - Proposed)	B	From Leg	3.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice	8.50 9.15	6.30 7.48	74.05 136.21
KMW AM-X-CD-16-65-00T-RET w/mount pipe (AT&T - Proposed)	C	From Leg	3.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice	8.50 9.15	6.30 7.48	74.05 136.21
(2) Ericsson RRU (AT&T - Proposed)	A	From Leg	2.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice	2.07 2.26	1.08 1.23	44.00 58.64
(2) Ericsson RRU (AT&T - Proposed)	B	From Leg	2.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice	2.07 2.26	1.08 1.23	44.00 58.64
(2) Ericsson RRU (AT&T - Proposed)	C	From Leg	2.00 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice	2.07 2.26	1.08 1.23	44.00 58.64
Surge Arrestor (DC6-48-60-18-8F) w/mount pipe (AT&T - Proposed)	A	From Leg	0.50 0.00 0.00	0.0000	120.00	No Ice 1/2" Ice	2.45 2.95	2.45 2.95	38.25 64.62
**********									
1' Side Mount Standoff	A	From Leg	0.50 0.00 0.00	0.0000	108.40	No Ice 1/2" Ice	1.00 1.50	1.00 1.50	30.00 50.00
1' Side Mount Standoff	B	From Leg	0.50 0.00 0.00	0.0000	108.40	No Ice 1/2" Ice	1.00 1.50	1.00 1.50	30.00 50.00
1' Side Mount Standoff	C	From Leg	0.50 0.00 0.00	0.0000	108.40	No Ice 1/2" Ice	1.00 1.50	1.00 1.50	30.00 50.00
Panel Antenna 6'x6"x3"	A	From Leg	1.00 0.00 0.00	0.0000	108.00	No Ice 1/2" Ice	4.70 5.15	2.95 3.38	40.00 64.24
Panel Antenna 6'x6"x3"	B	From Leg	1.00 0.00 0.00	0.0000	108.00	No Ice 1/2" Ice	4.70 5.15	2.95 3.38	40.00 64.24
Panel Antenna 6'x6"x3"	C	From Leg	1.00 0.00 0.00	0.0000	108.00	No Ice 1/2" Ice	4.70 5.15	2.95 3.38	40.00 64.24

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Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral / Vert	Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter		Aperture Area	Weight
				ft	°	°	ft	ft		ft^2	lb
HP2-180E	B	Paraboloid w/Shroud (HP)	From Leg	1.00 0.00 0.00	0.0000		167.00	2.00	No Ice 1/2" Ice	3.10 3.41	109.00 126.49
Andrew VHLP800-11	A	Paraboloid w/Radome	From Leg	1.00 0.00 0.00	0.0000		145.60	2.50	No Ice 1/2" Ice	4.90 84.00	49.00 282.00
VHLP2-180	A	Paraboloid w/o Radome	From Leg	1.00 0.00 0.00	0.0000		145.60	2.00	No Ice 1/2" Ice	3.14 3.41	25.00 42.49
VHLP2-180	C	Paraboloid w/o Radome	From Leg	1.00 0.00 0.00	0.0000		146.00	2.00	No Ice 1/2" Ice	3.14 3.41	25.00 42.49

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice+Guy
3	Dead+Wind 90 deg - No Ice+Guy
4	Dead+Wind 180 deg - No Ice+Guy
5	Dead+Ice+Temp+Guy
6	Dead+Wind 0 deg+Ice+Temp+Guy
7	Dead+Wind 90 deg+Ice+Temp+Guy
8	Dead+Wind 180 deg+Ice+Temp+Guy
9	Dead+Wind 0 deg - Service+Guy
10	Dead+Wind 90 deg - Service+Guy
11	Dead+Wind 180 deg - Service+Guy

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Mast	Max. Vert	6	111149.74	-18.30	1791.85
	Max. H_x	4	85324.61	-0.61	-2266.91
	Max. H_z	2	89982.58	-4.47	2543.27
	Max. M_x	1	0.00	-5.50	15.67
	Max. M_z	1	0.00	-5.50	15.67
	Max. Torsion	2	468.76	-4.47	2543.27
	Min. Vert	1	76474.29	-5.50	15.67
	Min. H_x	3	88449.08	-2445.45	-129.69
	Min. H_z	4	85324.61	-0.61	-2266.91
	Min. M_x	1	0.00	-5.50	15.67
	Min. M_z	1	0.00	-5.50	15.67
	Min. Torsion	4	-343.97	-0.61	-2266.91
Guy C @ 107 ft Elev 10 ft Azimuth 240 deg	Max. Vert	4	-9338.66	-7345.55	3588.24
	Max. H_x	4	-9338.66	-7345.55	3588.24

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	Client AT&T	Designed by kw

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
	Max. H_z	7	-40809.18	-36938.64	20640.78
	Min. Vert	7	-40809.18	-36938.64	20640.78
	Min. H_x	7	-40809.18	-36938.64	20640.78
	Min. H_z	4	-9338.66	-7345.55	3588.24
Guy B @ 106 ft Elev 4 ft Azimuth 120 deg	Max. Vert	3	-4328.18	2706.50	1874.78
	Max. H_x	6	-36881.39	30274.66	18831.80
	Max. H_z	6	-36881.39	30274.66	18831.80
	Min. Vert	6	-36881.39	30274.66	18831.80
	Min. H_x	3	-4328.18	2706.50	1874.78
	Min. H_z	3	-4328.18	2706.50	1874.78
Guy A @ 106 ft Elev -6 ft Azimuth 0 deg	Max. Vert	2	-2480.79	0.49	-1568.45
	Max. H_x	4	-46194.19	3.21	-41360.14
	Max. H_z	2	-2480.79	0.49	-1568.45
	Min. Vert	8	-50023.92	-1.52	-44419.84
	Min. H_x	7	-27864.37	-1405.18	-24044.43
	Min. H_z	8	-50023.92	-1.52	-44419.84

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	76474.29	5.50	-15.67	0.00	0.00	-66.90
Dead+Wind 0 deg - No Ice+Guy	89982.58	4.47	-2543.27	0.00	0.00	-468.76
Dead+Wind 90 deg - No Ice+Guy	88449.08	2445.45	129.69	0.00	0.00	47.16
Dead+Wind 180 deg - No Ice+Guy	85324.61	0.61	2266.91	0.00	0.00	343.97
Dead+Ice+Temp+Guy	96497.13	10.98	-19.18	0.00	0.00	-84.22
Dead+Wind 0 deg+Ice+Temp+Guy	111149.74	18.30	-1791.85	0.00	0.00	-109.06
Dead+Wind 90 deg+Ice+Temp+Guy	110869.28	1743.15	5.88	0.00	0.00	-171.83
Dead+Wind 180 deg+Ice+Temp+Guy	111075.78	9.69	1618.32	0.00	0.00	-79.32
Dead+Wind 0 deg - Service+Guy	79228.99	3.83	-1454.11	0.00	0.00	-299.56
Dead+Wind 90 deg - Service+Guy	78806.04	1378.24	46.74	0.00	0.00	9.92
Dead+Wind 180 deg - Service+Guy	77984.69	4.33	1279.61	0.00	0.00	168.15

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	170 - 155	2.641	11	0.1414	0.0087
T2	155 - 140	2.195	11	0.1107	0.0060

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	Project 170 ft Guyed Tower	Date 10:26:54 06/11/12
	Client AT&T	Designed by kw

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T3	140 - 120	1.986	11	0.0677	0.0070
T4	120 - 100	2.401	11	0.2083	0.0247
T5	100 - 80	3.039	9	0.1219	0.0594
T6	80 - 60	3.406	9	0.0403	0.0888
T7	60 - 40	3.237	9	0.1219	0.1076
T8	40 - 20	2.597	9	0.1914	0.1156
T9	20 - 5	1.550	9	0.3129	0.1154
T10	5 - 0	0.404	9	0.3745	0.0719

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
176.00	DB636-C	11	2.641	0.1414	0.0087	36603
174.00	DB806-XT	11	2.641	0.1414	0.0087	36603
171.50	DB874H120-SX	11	2.641	0.1414	0.0087	36603
168.00	Pirod 5' Side Mount Standoff (1)	11	2.577	0.1415	0.0085	36603
167.00	HP2-180E	11	2.545	0.1414	0.0084	36603
162.00	(2) APX16DWV-16DWVS w/mount pipe	11	2.391	0.1373	0.0078	22877
161.00	PiROD 12' T-Frame	11	2.361	0.1353	0.0076	20335
160.00	RFS ATMAP1412D-1A20	11	2.332	0.1328	0.0074	18302
152.39	Guy	11	2.131	0.0917	0.0049	8939
146.00	VHLP2-180	11	2.017	0.0609	0.0038	5458
145.60	Andrew VHLP800-11	11	2.012	0.0594	0.0040	5327
141.50	(3) 844G65VTZASX w/Mount Pipe	11	1.985	0.0611	0.0062	4409
141.00	9' T Frame	11	1.984	0.0631	0.0064	4367
140.50	Argus LLPX310R w/mount pipe	11	1.985	0.0653	0.0067	4345
132.46	Guy	11	2.077	0.1227	0.0119	6662
120.00	(2) Powerwave 7770 w/mount pipe	11	2.401	0.2083	0.0247	40555
118.00	PiROD 12' T-Frame	11	2.455	0.2112	0.0276	27465
108.40	1' Side Mount Standoff	9	2.754	0.1799	0.0441	17299
108.00	Panel Antenna 6'x6"x3"	9	2.769	0.1774	0.0448	17062
90.00	Guy	9	3.284	0.0625	0.0754	9671
50.00	Guy	9	2.966	0.1508	0.1111	12153

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
T1	170 - 155	Leg	ROHN 2 STD	3	-12867.90	37541.28	34.3	Pass
T2	155 - 140	Leg	ROHN 2 STD	48	-33507.30	37541.28	89.3	Pass
T3	140 - 120	Leg	ROHN 2 STD mod. (CT1145)	93	-55038.40	56564.66	97.3	Pass
T4	120 - 100	Leg	ROHN 2 STD	150	-36889.20	37500.09	98.4	Pass
T5	100 - 80	Leg	ROHN 2.5 STD	207	-43448.10	61355.59	70.8	Pass
T6	80 - 60	Leg	ROHN 2 STD mod 1. (CT1145)	267	-43914.90	50969.12	86.2	Pass
T7	60 - 40	Leg	ROHN 2.5 STD	348	-44010.90	60195.35	73.1	Pass
T8	40 - 20	Leg	ROHN 2.5 STD	408	-48806.30	50712.25	96.2	Pass
T9	20 - 5	Leg	ROHN 2.5 STD	441	-48398.00	50851.15	95.2	Pass
T10	5 - 0	Leg	ROHN 2.5 STD	466	-34544.50	44789.60	77.1	Pass
T1	170 - 155	Diagonal	P1.5x.0625	11	-2007.55	9353.13	21.5	Pass

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Hudson Design Group, LLC 1600 Osgood Street, Building 20 North, Suite 2-101 North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 226-5586	Project 170 ft Guyed Tower	Date 10:26:54 06/11/12
	Client AT&T	Designed by kw

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF*P_{allow} lb	% Capacity	Pass Fail
T2	155 - 140	Diagonal	P1.5x.0625	58	-2428.88	9353.13	26.0	Pass
T3	140 - 120	Diagonal	L1 3/4x1 3/4x1/8	129	-5176.09	8545.80	60.6	Pass
T4	120 - 100	Diagonal	P1.5x.0625	204	-2213.26	9348.02	23.7	Pass
T5	100 - 80	Diagonal	P1.5x.0625	235	-1253.65	9382.29	13.4	Pass
T6	80 - 60	Diagonal	P1.5x.0625	276	-1586.01	9349.74	17.0	Pass
T7	60 - 40	Diagonal	P1.5x.0625	389	-1451.53	9382.29	15.5	Pass
T8	40 - 20	Diagonal	P1.5x.0625	436	-1430.08	6182.23	23.1	Pass
T9	20 - 5	Diagonal	P1.5x.0625	448	-2497.34	6196.85	40.3	Pass
T6	80 - 60	Secondary Horizontal	L2 1/2x2 1/2x3/16	334	1142.27	25971.10	4.4	Pass
T1	170 - 155	Top Girt	P1.5x.0625	5	-5.48	5592.21	0.1	Pass
T2	155 - 140	Top Girt	P1.5x.0625	49	192.08	11287.27	1.7	Pass
T3	140 - 120	Top Girt	L1 1/2x1 1/2x1/8	94	-265.38	4480.55	5.9	Pass
T4	120 - 100	Top Girt	P1.5x.0625	152	417.35	11287.27	3.7	Pass
T5	100 - 80	Top Girt	P1.5x.0625	208	455.86	11287.27	4.0	Pass
T6	80 - 60	Top Girt	L2 1/2x2 1/2x3/16	268	352.58	25971.10	1.4	Pass
T7	60 - 40	Top Girt	P1.5x.0625	349	714.78	11287.27	6.3	Pass
T8	40 - 20	Top Girt	P1.5x.0625	411	529.26	11287.27	4.7	Pass
T9	20 - 5	Top Girt	P1.5x.0625	444	281.33	11287.27	2.5	Pass
T10	5 - 0	Top Girt	14x3/16	469	2813.55	56700.00	5.0	Pass
T1	170 - 155	Bottom Girt	P1.5x.0625	7	-453.57	7454.42	6.1	Pass
T2	155 - 140	Bottom Girt	P1.5x.0625	52	193.22	11287.27	1.7	Pass
T3	140 - 120	Bottom Girt	L1 3/4x1 3/4x1/8	97	857.05	12146.96	7.1	Pass
T4	120 - 100	Bottom Girt	P1.5x.0625	154	445.70	11287.27	3.9	Pass
T5	100 - 80	Bottom Girt	P1.5x.0625	211	698.08	11287.27	6.2	Pass
T6	80 - 60	Bottom Girt	L2 1/2x2 1/2x3/16	271	234.01	19483.20	1.2	Pass
T7	60 - 40	Bottom Girt	P1.5x.0625	354	584.28	11287.27	5.2	Pass
T8	40 - 20	Bottom Girt	P1.5x.0625	412	226.50	11287.27	2.0	Pass
T9	20 - 5	Bottom Girt	P1.5x.0625	445	4387.01	8467.57	51.8	Pass
T10	5 - 0	Bottom Girt	14x3/16	474	-860.01	45622.20	6.2	Pass
T5	100 - 80	Mid Girt	P1.5x.0625	214	2910.77	11287.27	25.8	Pass
T7	60 - 40	Mid Girt	P1.5x.0625	355	3819.02	11287.27	33.8	Pass
T10	5 - 0	Mid Girt	14x3/16	477	-70.70	4926.91	1.4	Pass
T2	155 - 140	Guy A@152.389	1/2	489	7232.10	13450.00	53.8	Pass
T3	140 - 120	Guy A@132.458	7/8	501	19001.90	39850.00	47.7	Pass
T5	100 - 80	Guy A@90	7/16	507	8035.84	10400.00	77.3	Pass
T7	60 - 40	Guy A@50	7/16	510	9195.89	10400.00	88.4	Pass
T2	155 - 140	Guy B@152.389	1/2	486	5681.69	13450.00	42.2	Pass
T3	140 - 120	Guy B@132.458	7/8	498	15193.60	39850.00	38.1	Pass
T5	100 - 80	Guy B@90	7/16	506	6570.49	10400.00	63.2	Pass
T7	60 - 40	Guy B@50	7/16	509	7823.56	10400.00	75.2	Pass
T2	155 - 140	Guy C@152.389	1/2	478	6475.67	13450.00	48.1	Pass
T3	140 - 120	Guy C@132.458	7/8	494	16733.90	39850.00	42.0	Pass
T5	100 - 80	Guy C@90	7/16	505	7737.28	10400.00	74.4	Pass
T7	60 - 40	Guy C@50	7/16	508	9046.81	10400.00	87.0	Pass
T2	155 - 140	Top Guy Pull-Off@152.389	L2x2x3/16	482	-1963.17	12603.70	17.1	Pass
T2	155 - 140	Torque Arm Top@152.389	C12x20.7	492	-386.99	99838.36	41.9	Pass
T3	140 - 120	Torque Arm Top@132.458	C12x20.7 mod (CT1145)	504	-3657.30	116487.67	93.3	Pass

Summary		
Leg (T4)	98.4	Pass
Diagonal (T3)	60.6	Pass
Secondary Horizontal (T6)	4.4	Pass
Top Girt (T7)	6.3	Pass
Bottom Girt (T9)	51.8	Pass

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Hudson Design Group, LLC 1600 Osgood Street, Building 20 North, Suite 2-101 North Andover, MA 01845 Phone: (978) 557-5553 FAX: (978) 226-5586	Project 170 ft Guyed Tower	Date 10:26:54 06/11/12
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Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
						Mid Girt (T7)	33.8	Pass
						Guy A (T7)	88.4	Pass
						Guy B (T7)	75.2	Pass
						Guy C (T7)	87.0	Pass
						Top Guy Pull-Off (T2)	17.1	Pass
						Torque Arm Top (T3)	93.3	Pass
						RATING =	**98.4**	**Pass**

Hudson Design Group LLC

MODIFICATION DRAWINGS

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 AND & (1) GPS ANTENNA. 2. INSTALL LTE 6601 CABINET
SITE ADDRESS:	99 CEDARWOOD LANE NEWINGTON, CT 06111
LATITUDE:	41.69477 N 41° 41' 41.17" N
LONGITUDE:	72.708971 W 72° 42' 32.30" W
JURISDICTION:	CONNECTICUT SITING COUNCIL
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

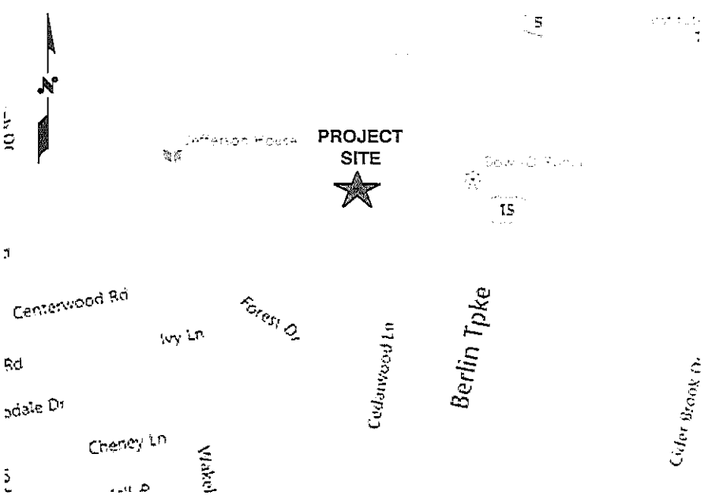
SITE NU
SITE NAI

DRAWING INDEX

VICINITY MAP

DIRECTIONS TO SITE:

DEPART ENTERPRISE DR TOWARD CAPITOL BLVD 0.4 MI TURN LEFT ONTO CAPITOL BLVD C TURN LEFT ONTO WEST ST 0.6 MI TURN RIGHT ONTO CT-3 / CROMWELL AVE 0.6 MI STRAIGHT ONTO CT-3 / CT-160 / CROMWELL AVE 0.2 MI TURN LEFT ONTO CT-160 / BRITAIN AVE 0.4 MI TURN RIGHT ONTO HAYES RD 0.8 MI ROAD NAME CHANGES TO HIGHLAN 0.6 MI KEEP LEFT ONTO THORNBUSH RD 0.7 MI TURN LEFT ONTO CT-287 / PROSPECT ST C TURN LEFT ONTO US-5 SOUTH / CT-15 SOUTH / CT-287 WEST / BERLIN TPKE 343 FT RIGHT ONTO CT-287 / E ROBBINS AVE 0.2 MI TURN RIGHT ONTO GOODALE DR 0.1 MI TURN ONTO CEDARWOOD LN 0.4 MI ARRIVE AT 99 CEDARWOOD LN, NEWINGTON, CT 06111



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

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 DI ERECTED IN ACCORDANCE WITH AISC SPECIFICAT STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNL PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 TO WEATHER SHALL BE HOT DIPPED GALVANIZEI AND OTHER MARKS IN THE FIELD AFTER STEEL COMPATIBLE ZINC RICH PAINT.

16. CONSTRUCTION SHALL COMPLY WITH UMTS "GENERAL CONSTRUCTION SERVICES FOR CONST SITES."

17. SUBCONTRACTOR SHALL VERIFY ALL EXISTIN CONDITIONS PRIOR TO COMMENCING ANY WORK. EXISTING CONSTRUCTION SHOWN ON THE DRAWI SUBCONTRACTOR SHALL NOTIFY THE CONTRACTO PRIOR TO ORDERING MATERIAL OR PROCEEDING

18. THE EXISTING CELL SITE IS IN FULL COMME CONSTRUCTION WORK BY SUBCONTRACTOR SHAL NORMAL OPERATION. ANY WORK ON EXISTING I COORDINATED WITH CONTRACTOR. ALSO, WORK AN APPROPRIATE MAINTENANCE WINDOW USUALL AFTER MIDNIGHT.

19. SINCE THE CELL SITE IS ACTIVE, ALL SAFET TAKEN WHEN WORKING AROUND HIGH LEVELS C RADIATION. EQUIPMENT SHOULD BE SHUTDOWN WORK THAT COULD EXPOSE THE WORKERS TO EXPOSURE MONITORS ARE ADVISED TO BE WORI DANGEROUS EXPOSURE LEVELS.

20. APPLICABLE BUILDING CODES:
SUBCONTRACTOR'S WORK SHALL COMPLY WITH STATE, AND LOCAL CODES AS ADOPTED BY THE JURISDICTION (AHJ) FOR THE LOCATION. THE E CODES AND STANDARDS IN EFFECT ON THE DAT SHALL GOVERN THE DESIGN.
BUILDING CODE: 2003 IBC WITH 2005 C AMENDMENTS
ELECTRICAL CODE: REFER TO ELECTRICA
LIGHTENING CODE: REFER TO ELECTRICA

SUBCONTRACTOR'S WORK SHALL COMPLY WITH FOLLOWING STANDARDS:

AMERICAN CONCRETE INSTITUTE (ACI) 3: REQUIREMENTS FOR STRUCTURAL CONCF

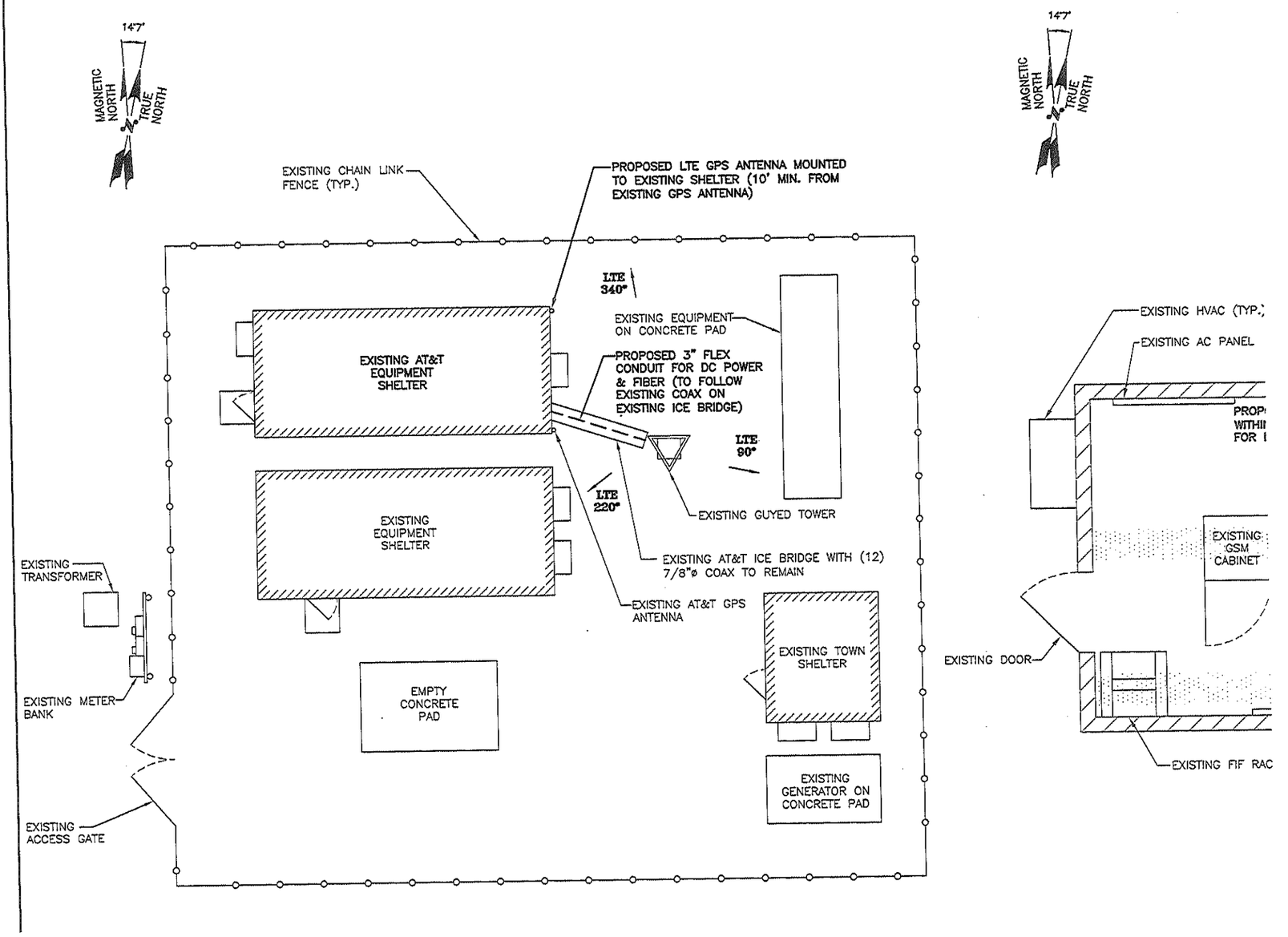
AMERICAN INSTITUTE OF STEEL CONSTRU

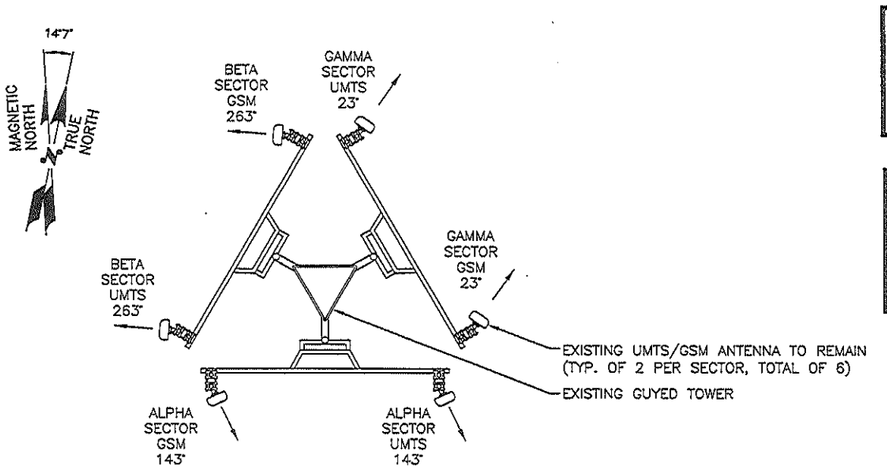
MANUAL OF STEEL CONSTRUCTION, ASD,

TELECOMMUNICATIONS INDUSTRY ASSOCI STRUCTURAL STANDARDS FOR STEEL

ANTENNA TOWER AND ANTENNA SUPPOR TO ELECTRICAL DRAWINGS FOR SPECIFIC

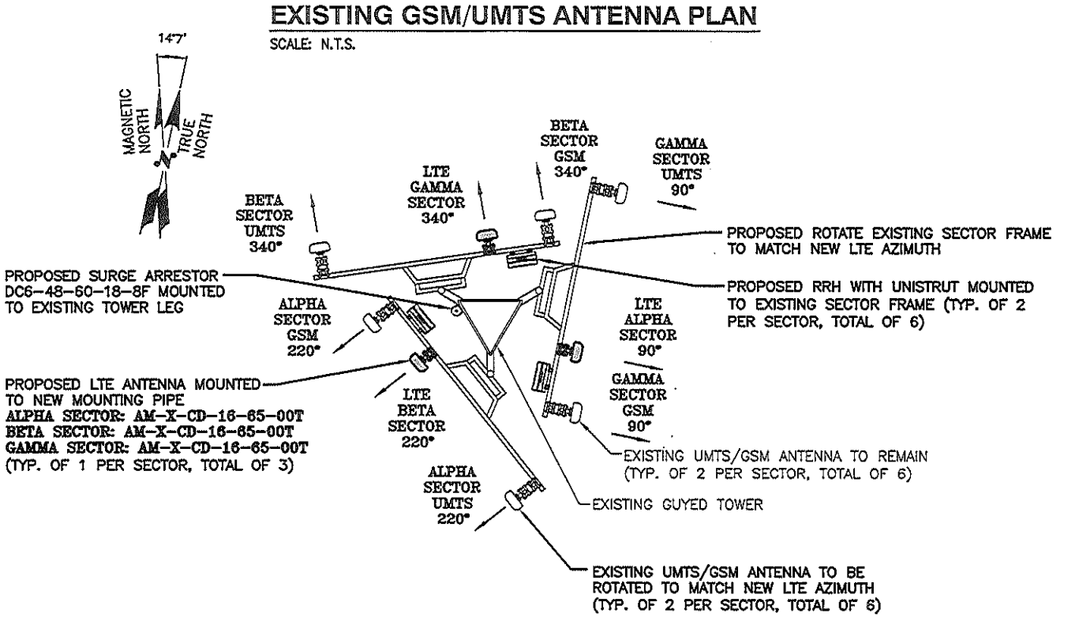
FOR ANY CONFLICTS BETWEEN SECTIONS OF LIS REGARDING MATERIAL, METHODS OF CONSTRUCTI REQUIREMENTS, THE MOST RESTRICTIVE REQUIRE WHERE THERE IS CONFLICT BETWEEN A GENERA SPECIFIC REQUIREMENT, THE SPECIFIC REQUIRE


147°
MAGNETIC NORTH
TRUE NORTH
EXISTING CHAIN LINK FENCE (TYP.)
PROPOSED LTE GPS ANTENNA MOUNTED TO EXISTING SHELTER (10' MIN. FROM EXISTING GPS ANTENNA)
LTE 340°
EXISTING EQUIPMENT ON CONCRETE PAD
EXISTING AT&T EQUIPMENT SHELTER
PROPOSED 3" FLEX CONDUIT FOR DC POWER & FIBER (TO FOLLOW EXISTING COAX ON EXISTING ICE BRIDGE)
LTE 90°
LTE 220°
EXISTING GUYED TOWER
EXISTING EQUIPMENT SHELTER
EXISTING AT&T ICE BRIDGE WITH (12) 7/8"ø COAX TO REMAIN
EXISTING TRANSFORMER
EXISTING AT&T GPS ANTENNA
EXISTING TOWN SHELTER
EXISTING METER BANK
EMPTY CONCRETE PAD
EXISTING GENERATOR ON CONCRETE PAD
EXISTING ACCESS GATE
147°
MAGNETIC NORTH
TRUE NORTH
EXISTING HVAC (TYP.)
EXISTING AC PANEL
EXISTING GSM CABINET
EXISTING DOOR
EXISTING FIF RAC



EXISTING GSM/UMTS ANTENNA PLAN

SCALE: N.T.S.



NOTE:

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

NOTE:

REFER TO STRUCTURAL ANALYSIS BY: HUDSON DESIGN GROUP LLC, DATED: JUNE 13, 2012 (REV 1), FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

EXISTING TOP OF TOW
ELEV. 170'-0"± (AGL

3/S-2 PROPOSED TORQUE A
REINFORCEMENT

CENTER OF PROPOSE
& EXISTING UMTS/GS
ELEV. 120'-0"± (AGL

PROPOSED AT&T RRH
& SURGE ARRESTOR
ELEV. 120'-0"± (AGL

PROPOSED RRH WITH
TO EXISTING SECTOR
PER SECTOR, TOTAL

PROPOSED LTE ANTEN
TO NEW MOUNTING P
ALPHA SECTOR: AM-
BETA SECTOR: AM-
GAMMA SECTOR: AM-
(TYP. OF 1 PER SEC

1/S-2 PROPOSED HSS 2.87
(1/3 S.P.) (A618, G
TO EXISTING TOWER
(TYP. THRU ELEV: 60

EXISTING E
SHELTER

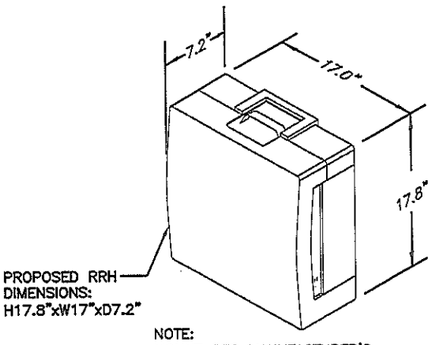
EXISTING C

NOTE:

REFER TO THE I
SHEET FOR FINA
SETTINGS.

NOTE:

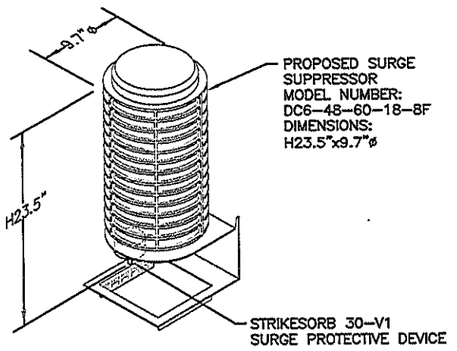
REFER TO STRU
BY: HUDSON DE
DATED: JUNE 1
FOR THE CAPAC
EXISTING STRUC
THE PROPOSED



NOTE:
MOUNT PER MANUFACTURER'S
SPECIFICATIONS.

RRH DETAIL

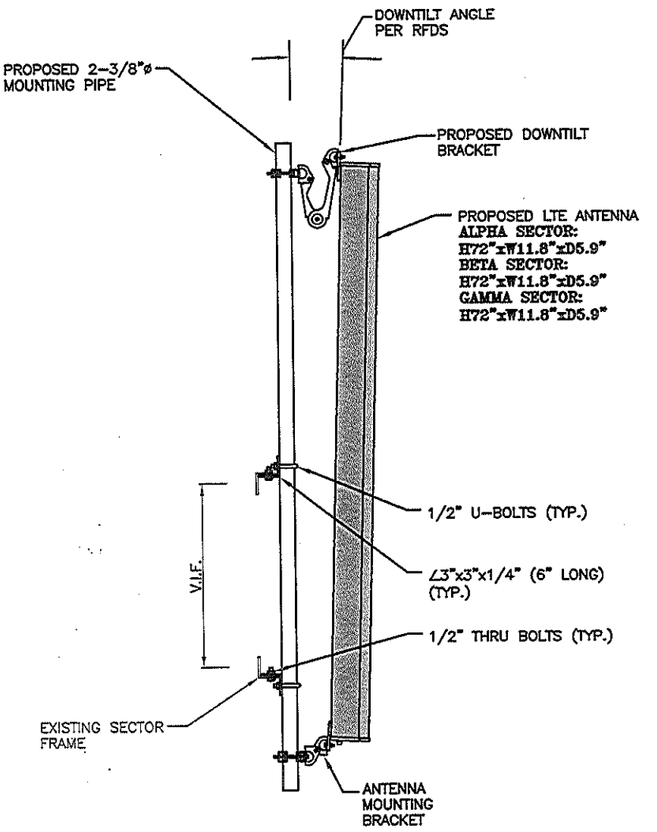
SCALE: N.T.S.



NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

DC SURGE SUPPRESSOR DETAIL

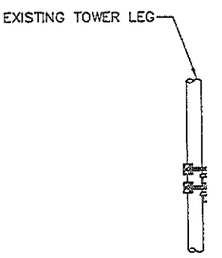
SCALE: N.T.S.



PROPOSED LTE ANTENNA DETAIL

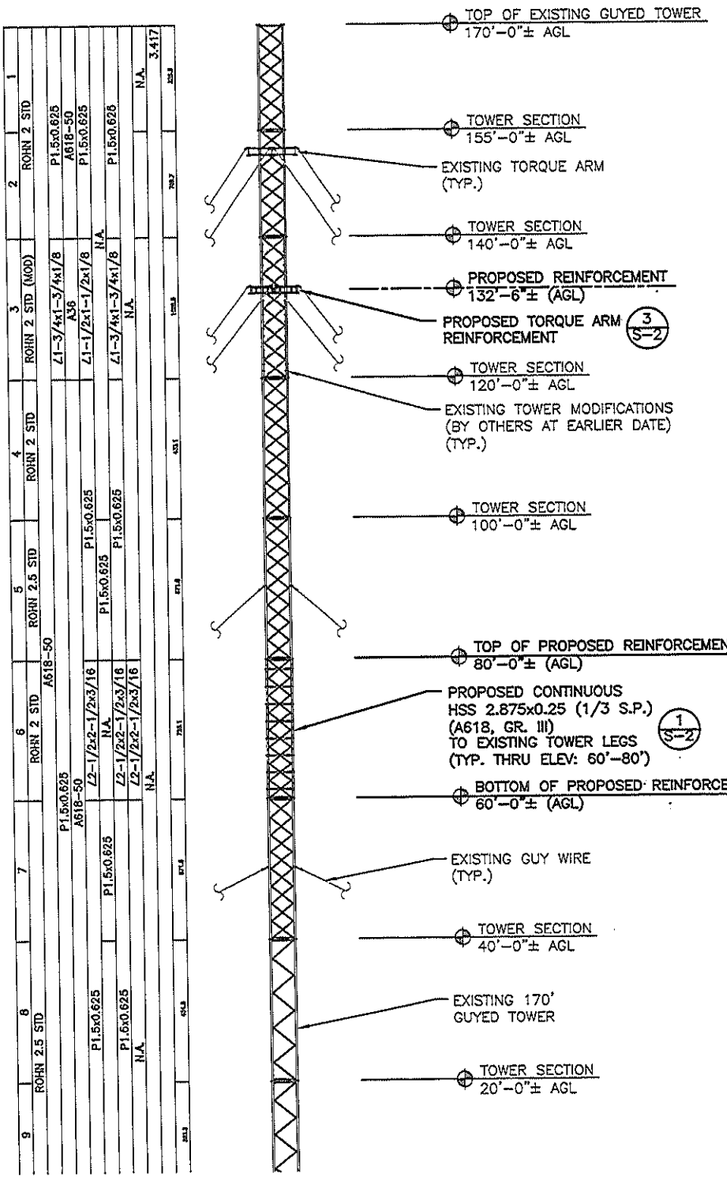
SCALE: N.T.S.

PROPOSED SURGE ARRESTO
DC6-48-60-18-8F MOUNT
TO EXISTING TOWER LEG



SURGE
SU

EXIS
FRA



NOTE:

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

NOTE:

REFER TO STRUCTURAL ANALYSIS BY: HUDSON DESIGN GROUP LLC, DATED: JUNE 13, 2012 (REV 1), FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

GENERAL NOTES:

1. ALL WORK SHALL BE DONE IN ACCORDANCE WI FEDERAL, STATE, AND LOCAL CODES AND ORDI CONTRACTORS RESPONSIBILITY TO OBTAIN ALL COMPLETE THE PROJECT AND ABIDE BY ALL C REQUIREMENTS OF THE PERMITS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DIMENSIONS, ELEVATIONS, AND EXISTING CONDI BEFORE ORDERING ANY MATERIALS OR DOING CHARGE OR COMPENSATION SHALL BE ALLOWE BETWEEN ACTUAL DIMENSIONS AND DIMENSION CONSTRUCTION DRAWINGS. ANY SUCH DISCRE WHICH MAY BE FOUND SHALL BE SUBMITTED T FOR CONSIDERATION BEFORE THE CONTRACTOR WORK IN THE AFFECTED AREA.
3. INCORRECTLY FABRICATED, DAMAGED, OTHERWIS NON-CONFORMING MATERIALS AND CONDITIONS HUDSON DESIGN GROUP PRIOR TO ANY REMED ACTION. ALL ACTIONS SHALL REQUIRE HUDSO APPROVAL.
4. IT IS THE CONTRACTORS SOLE RESPONSIBILITY PROCEDURE AND SEQUENCE TO INSURE THE S AND ITS COMPONENT PARTS DURING ERECTION MODIFICATIONS. THIS INCLUDES, BUT IS NOT L OF TEMPORARY BRACING, GUYS OR TIE DOWNS NECESSARY. SUCH MATERIAL SHALL BE REMO OF THE PROJECT.
5. CONTRACTOR SHALL PROMPTLY REMOVE ANY A AND RESTORE AS BEST AS POSSIBLE TO PRE-

STEEL:

1. ALL STRUCTURAL STEEL SHALL BE FABRICATED ACCORDANCE WITH THE LATEST AISC CODE AN
2. ALL CONNECTIONS OF STRUCTURAL STEEL MEM USING SPECIFIED WELDS WITH WELDING ELECTR SPECIFIED HIGH STRENGTH BOLTS TO BE ASTM WITH SHEAR PLANE (UNLESS OTHERWISE NOTE
3. ALL BOLTED CONNECTIONS TO BE INSTALLED T CONDITION IN ACCORDANCE WITH AISC 13 PART STRUCTURAL JOINTS USING ASTM A325 OR A4 UNLESS OTHERWISE NOTED.
4. ALL STEEL (EXCEPT A490 BOLTS), AFTER FABR DIPPED GALVANIZED PER ASTM A-123. ALL D AREAS AND AUTHORIZED NON-GALVANIZED MEM OR NEW) SHALL BE PAINTED WITH 2 COATS O COMPOUND.
5. ALL SHOP AND FIELD WELDING SHALL BE DON AS DESCRIBED IN THE "AMERICAN WELDING SO QUALIFICATION PROCEDURE" TO PERFORM THE
6. STRUCTURAL STEEL MAY NOT BE TORCH CUT F STEEL FABRICATION MUST FOLLOW AISC STAND

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

Calculated Radio Frequency Emissions

at&t

CT1145

(Newington)

99 Cedarwood Lane, Newington, CT 06111

(a.k.a. 2111 Berlin Turnpike)

July 27, 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 guyed lattice tower located at99 Cedarwood Lane in Newington, CT. The coordinates of the tower are 41-41-41.17 N, 72-42-32.3 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
Cingular UMTS	*120*	*880*	*1*	*500*	*0.0125*	*0.5867*	*2.13%*
Cingular UMTS	*120*	*1900*	*1*	*500*	*0.0125*	*1.0000*	*1.25%*
Cingular GSM	*120*	*880*	*4*	*296*	*0.0296*	*0.5867*	*5.04%*
Cingular GSM	*120*	*1900*	*2*	*427*	*0.0213*	*1.0000*	*2.13%*
Pocket	110	2130	3	631	0.0563	1.0000	5.63%
Clearwire	142	2496	2	153	0.0055	1.0000	0.55%
Clearwire	145	11 GHz	1	211	0.0036	1.0000	0.36%
Nextel ESMR	140	851	12	100	0.0220	0.5673	3.88%
Carbone's Auto Body	80	150.86	1	110	0.0062	0.2000	3.09%
Carbone's Auto Body	80	150.86	1	1855	0.1042	0.2000	52.11%
Town of Wethersfield	180	800	5	75	0.0042	0.5333	0.78%
T-Mobile GSM	163	1945	8	103	0.0112	1.0000	1.12%
T-Mobile UMTS	163	2100	2	656	0.0178	1.0000	1.78%
AT&T UMTS	120	880	2	565	0.0028	0.5867	0.48%
AT&T UMTS	120	1900	2	875	0.0044	1.0000	0.44%
AT&T LTE	120	734	1	1313	0.0033	0.4893	0.67%
AT&T GSM	120	880	1	283	0.0007	0.5867	0.12%
AT&T GSM	120	1900	4	525	0.0052	1.0000	0.52%
						Total	**70.99%**

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

[1] The existing CSC filing for Cingular should be removed and replaced with the updated AT&T technologies and values provided in Table 1. The power density information for carriers other than AT&T was taken directly from the CSC database dated 7/26/2012. Please note that %MPE values listed are rounded to two decimal points. The total %MPE listed is a summation of each unrounded contribution. Therefore, summing each rounded value may not reflect the total value listed in the table.

[2] In the case where antenna models are not uniform across all 3 sectors for the same frequency band, the antenna model with the highest gain was used for the calculations to present a worse-case scenario.

[3] Height listed for AT&T antennas is in reference to the Hudson Design Group (Revised) Structural Analysis Report dated June 11, 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 **70.99% 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

July 27, 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

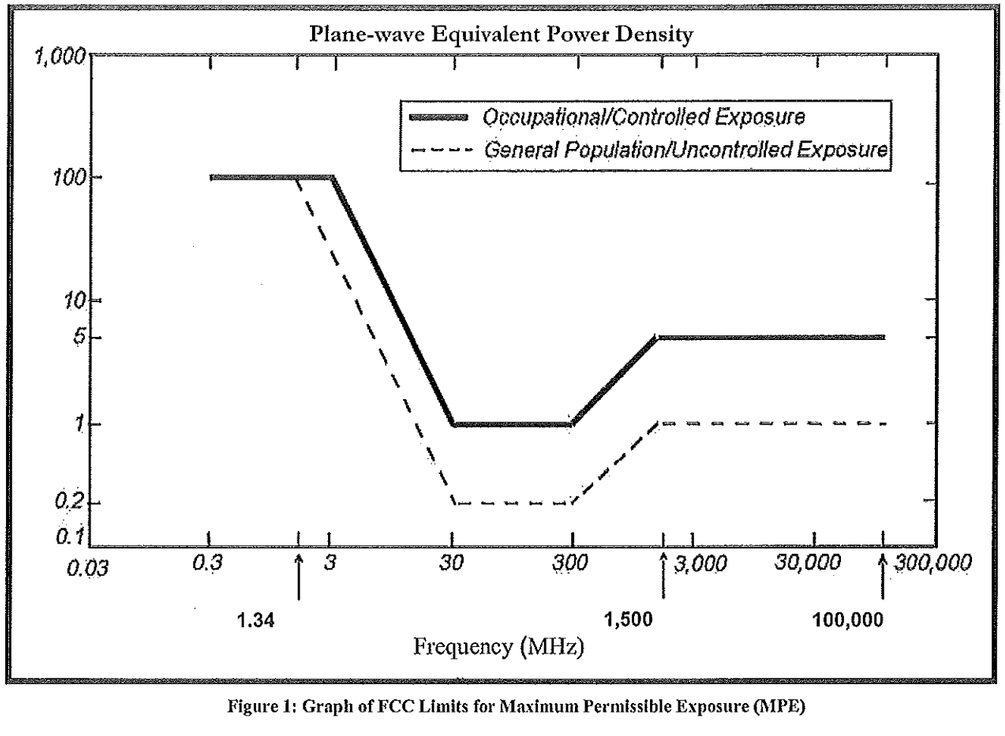
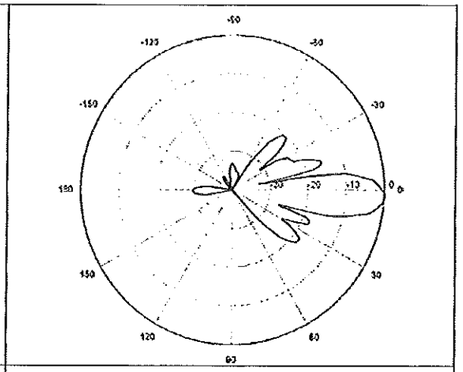


Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

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

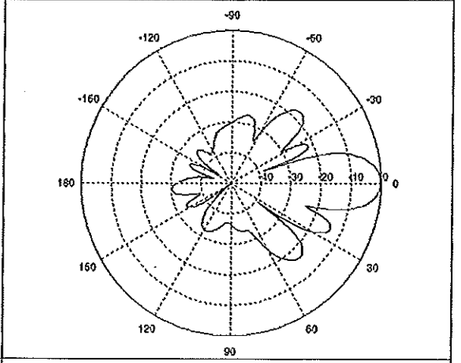
700 MHz

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



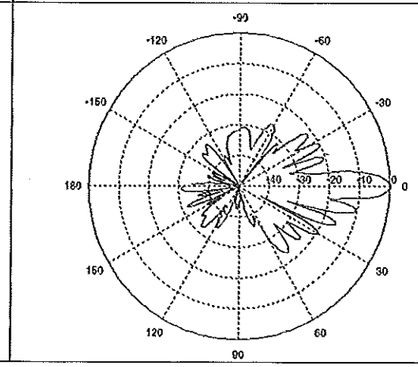
850 MHz

Manufacturer:	Powerwave
Model #:	7770
Frequency Band:	824-896 MHz
Gain:	11.4 dBd
Vertical Beamwidth:	15°
Horizontal Beamwidth:	85°
Polarization:	Dual Linear ±45°
Size L x W x D:	55.4" x 11.0" x 5.0"



1900 MHz

Manufacturer:	Powerwave
Model #:	7770
Frequency Band:	1850-1990 MHz
Gain:	13.4 dBd
Vertical Beamwidth:	7°
Horizontal Beamwidth:	90°
Polarization:	Dual Linear ±45°
Size L x W x D:	55.4" x 12.0" x 5.0"



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 AND & (1) GPS ANTENNA. 2. INSTALL LTE 6601 CABINET
SITE ADDRESS:	99 CEDARWOOD LANE NEWINGTON, CT 06111
LATITUDE:	41.69477 N 41° 41' 41.17" N
LONGITUDE:	72.708971 W 72° 42' 32.30" W
JURISDICTION:	CONNECTICUT SITING COUNCIL
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

at&t

SITE NUMBER: CT1145
SITE NAME: NEWINGTON

DRAWING INDEX

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A-3	DETAILS	2
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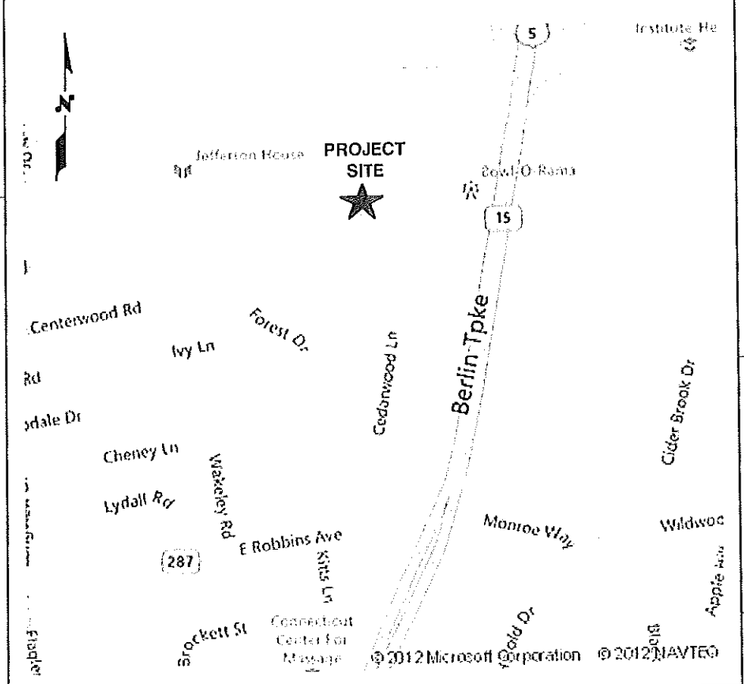
S-2	TOWER MODIFICATION DETAILS	2
G-1	PLUMBING DIAGRAM & GROUNDING DETAILS	2

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 0.6 MI TURN RIGHT ONTO CT-3 / CROMWELL AVE 0.6 MI KEEP STRAIGHT ONTO CT-3 / CT-160 / CROMWELL AVE 0.2 MI TURN LEFT ONTO CT-160 / NEW BRITAIN AVE 0.4 MI TURN RIGHT ONTO HAYES RD 0.8 MI ROAD NAME CHANGES TO HIGHLAND ST 0.6 MI KEEP LEFT ONTO THORNBUSH RD 0.7 MI TURN LEFT ONTO CT-287 / PROSPECT ST 0.8 MI TURN LEFT ONTO US-5 SOUTH / CT-15 SOUTH / CT-287 WEST / BERLIN TPKE 343 FT BEAR RIGHT ONTO CT-287 / E ROBBINS AVE 0.2 MI TURN RIGHT ONTO GOODALE DR 0.1 MI TURN RIGHT ONTO CEDARWOOD LN 0.4 MI ARRIVE AT 99 CEDARWOOD LN, NEWINGTON, CT 06111



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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.

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BEFORE YOU DIG
CALL TOLL FREE 800-922-4455
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STATE OF CONNECTICUT
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NEXLINK GLOBAL SERVICES
a UniTek GLOBAL SERVICES company
800 MARSHALL PHELPS ROAD UNIT#: 2A
WINDSOR, CT 06095

SITE NUMBER: CT1145
SITE NAME: NEWINGTON
99 CEDARWOOD LANE
NEWINGTON, CT 06111
HARTFORD COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
2	08/13/12	CONSTRUCTION REVISED	NB	DC	DPH
1	04/18/12	ISSUED FOR CONSTRUCTION	DB	DC	DPH
0	03/27/12	ISSUED FOR REVIEW	DB	DC	DPH

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

AT&T

TITLE SHEET (LTE)

JOB NUMBER	DRAWING NUMBER	REV
1145.01	T-1	2

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'D	REQUIRED		

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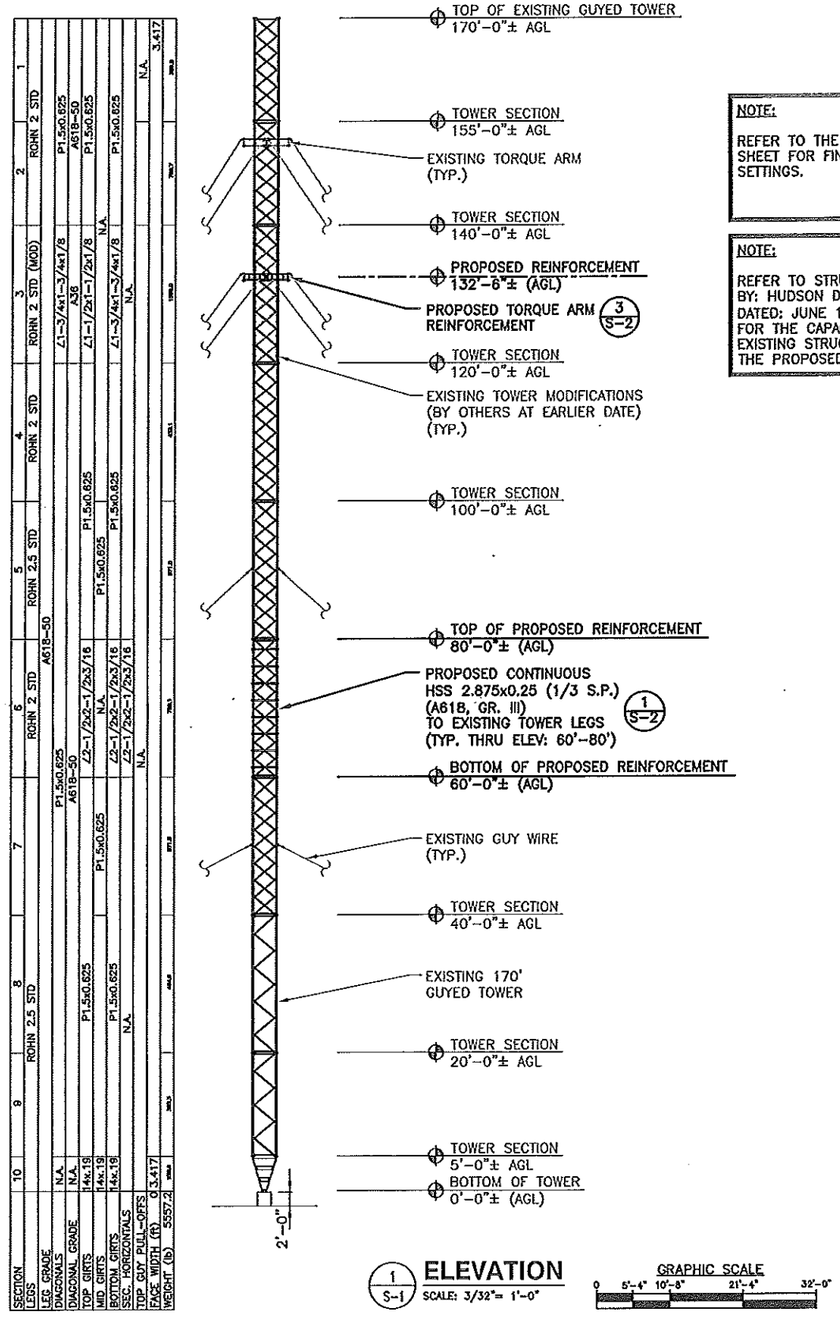
SCALE: AS SHOWN | DESIGNED BY: DC | DRAWN BY: DB

STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
PROFESSIONAL ENGINEER
LICENSED

AT&T

GENERAL NOTES (LTE)

JOB NUMBER	DRAWING NUMBER	REV
1145.01	GN-1	2



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

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

NOTE:

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

NOTE:

REFER TO STRUCTURAL ANALYSIS BY: HUDSON DESIGN GROUP LLC, DATED: JUNE 13, 2012 (REV 1), FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

GENERAL NOTES:

1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES AND ORDINANCES. IT IS THE CONTRACTORS RESPONSIBILITY TO OBTAIN ALL PERMITS NECESSARY TO COMPLETE THE PROJECT AND ABIDE BY ALL CONDITIONS AND REQUIREMENTS OF THE PERMITS.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL DIMENSIONS, ELEVATIONS, AND EXISTING CONDITIONS AT THE SITE BEFORE ORDERING ANY MATERIALS OR DOING ANY WORK. NO EXTRA CHARGE OR COMPENSATION SHALL BE ALLOWED DUE TO DIFFERENCE BETWEEN ACTUAL DIMENSIONS AND DIMENSIONS INDICATED ON THE CONSTRUCTION DRAWINGS. ANY SUCH DISCREPANCY IN DIMENSION WHICH MAY BE FOUND SHALL BE SUBMITTED TO HUDSON DESIGN GROUP FOR CONSIDERATION BEFORE THE CONTRACTOR PROCEEDS WITH THE WORK IN THE AFFECTED AREA.
3. INCORRECTLY FABRICATED, DAMAGED, OTHERWISE MISFITTING, OR NON-CONFORMING MATERIALS AND CONDITIONS SHALL BE REPORTED TO HUDSON DESIGN GROUP PRIOR TO ANY REMEDIAL OR CORRECTIVE ACTION. ALL ACTIONS SHALL REQUIRE HUDSON DESIGN GROUP, LLC APPROVAL.
4. IT IS THE CONTRACTORS SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE TO INSURE THE SAFETY OF THE STRUCTURE AND ITS COMPONENT PARTS DURING ERECTION AND/OR FIELD MODIFICATIONS. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF TEMPORARY BRACING, GUYS OR TIE DOWNS THAT MAY BE NECESSARY. SUCH MATERIAL SHALL BE REMOVED AFTER COMPLETION OF THE PROJECT.
5. CONTRACTOR SHALL PROMPTLY REMOVE ANY AND ALL DEBRIS FROM SITE AND RESTORE AS BEST AS POSSIBLE TO PRE-CONSTRUCTION CONDITION.

STEEL:

1. ALL STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST AISC CODE AND ASTM SPECIFICATIONS.
2. ALL CONNECTIONS OF STRUCTURAL STEEL MEMBERS SHALL BE MADE USING SPECIFIED WELDS WITH WELDING ELECTRODES E-70XX OR SPECIFIED HIGH STRENGTH BOLTS TO BE ASTM A325N, THREAD INCLUDED WITH SHEAR PLANE (UNLESS OTHERWISE NOTED)
3. ALL BOLTED CONNECTIONS TO BE INSTALLED TO A SNUG-TIGHTENED CONDITION IN ACCORDANCE WITH AISC 13 PART 16.2, "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS", SECTION 8.1, UNLESS OTHERWISE NOTED.
4. ALL STEEL (EXCEPT A490 BOLTS), AFTER FABRICATION, SHALL BE HOT DIPPED GALVANIZED PER ASTM A-123. ALL DAMAGED SURFACES, WELDED AREAS AND AUTHORIZED NON-GALVANIZED MEMBERS OR PARTS (EXISTING OR NEW) SHALL BE PAINTED WITH 2 COATS OF ZRC COLD GALVANIZING COMPOUND.
5. ALL SHOP AND FIELD WELDING SHALL BE DONE BY WELDERS QUALIFIED AS DESCRIBED IN THE "AMERICAN WELDING SOCIETY'S STANDARD QUALIFICATION PROCEDURE" TO PERFORM THE TYPE OF WORK REQUIRED.
6. STRUCTURAL STEEL MAY NOT BE TORCH CUT FOR FABRICATION. ALL STEEL FABRICATION MUST FOLLOW AISC STANDARDS.

MISC. NOTES:

1. ALL MODIFICATIONS ARE ASSUMED TO BE MADE ON AN EMPTY TOWER. CONTRACTOR IS RESPONSIBLE TO MAKE PROVISIONS TO SUPPORT OR WORK AROUND EXISTING ANTENNAS AND TRANSMISSION LINES. MODIFICATIONS MUST BE CONTINUOUS THROUGH ALL AREAS SHOWN.
2. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.

FABRICATION NOTES:

1. ALL DIMENSIONS ARE PRELIMINARY UNTIL FIELD VERIFIED BY CONTRACTOR. ANY CHANGES MUST BE APPROVED BY ENGINEER OF RECORD IN WRITING PRIOR TO FABRICATION AND INSTALLATION.
2. NEW STEEL MEMBERS MUST HAVE SINGLE DRILLED HOLES. SLOTTED AND DOUBLE DRILLED HOLES ARE NOT ACCEPTABLE MEANS OF FABRICATION.

CONTRACTOR QUALIFICATION NOTES:

1. ALL REPAIRS SHALL BE PERFORMED BY A TOWER CONTRACTOR WITH A MINIMUM OF 5 YEARS EXPERIENCE IN TOWER ERECTION AND RETROFIT AND WITH WORKING KNOWLEDGE OF THE ANSI/TIA-222-G "STRUCTURAL STANDARD FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS"
2. CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION MEANS AND METHODS. SHOULD THE CONTRACTOR REQUIRE DIRECT CONSULTATION, HUDSON DESIGN GROUP, LLC IS WILLING TO OFFER SERVICES BASED UPON AN AGREED FEE FOR THE WORK REQUIRED.
3. ALL SUBMITTAL INFORMATION MUST BE SENT TO HUDSON DESIGN GROUP, LLC 1600 OSGOOD ST. BUILDING 20N, SUITE 2-101 NORTH ANDOVER, MA 01845 TEL: (978)557-5553, FAX: (978)336-5586. ANY VARIATION OF THESE SPECIFICATIONS OR DRAWINGS WITHOUT CONSENT FROM HUDSON DESIGN GROUP WILL VOID ANY RESPONSIBILITY OR LIABILITY FOR DAMAGE (MATERIAL OR PHYSICAL) TOWARDS HUDSON DESIGN GROUP, LLC

JOB SITE SAFETY AND NOTES:

NEITHER THE PROFESSIONAL ACTIVITIES OF HUDSON DESIGN GROUP, LLC NOR THE PRESENCE OF HUDSON DESIGN GROUP, LLC OR EMPLOYEES AND SUB-CONSULTANTS AT THE CONSTRUCTION SITE, SHALL RELIEVE THE GENERAL CONTRACTOR AND/OR SUBCONTRACTORS AND ANY OTHER ENTITY OF THEIR OBLIGATIONS, DUTIES AND RESPONSIBILITIES INCLUDING, BUT NOT LIMITED TO, CONSTRUCTION MEANS, METHODS, SEQUENCE, TECHNIQUES, OR PROCEDURES NECESSARY FOR PERFORMING, SUPERINTENDING OR COORDINATING ALL PORTIONS OF THE WORK OF CONSTRUCTION IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND ANY HEALTH OR SAFETY PRECAUTIONS REQUIRED BY ANY REGULATORY AGENCIES. THE GENERAL CONTRACTOR AND/OR SUBCONTRACTOR IS SOLELY RESPONSIBLE FOR JOB SAFETY, AND WARRANTS THAT THIS INTENT IS EVIDENT BY ACCEPTING THIS WORK.

SUBSTITUTES AND/OR EQUALS:

IF CONTRACTOR WISHES TO FURNISH OR USE A SUBSTITUTE ITEM OF MATERIAL OR EQUIPMENT, CONTRACTOR SHALL MAKE WRITTEN APPLICATION TO ENGINEER FOR ACCEPTANCE THEREOF, CERTIFYING THAT THE PROPOSED SUBSTITUTE WILL ADEQUATELY PERFORM THE FUNCTIONS AND ACHIEVE THE RESULTS CALLED FOR BY THE GENERAL DESIGN, BE SIMILAR IN SUBSTANCE TO THAT SPECIFIED, AND SUITED TO THE SAME USE AS THAT SPECIFIED. ALL VARIATIONS OF THE PROPOSED SUBSTITUTE FROM THAT SPECIFIED WILL BE IDENTIFIED IN THE APPLICATION AND AVAILABLE MAINTENANCE, REPAIR, AND REPLACEMENT SERVICE WILL BE INDICATED. THE APPLICATION WILL ALSO CONTAIN AN ITEMIZED ESTIMATE OF ALL COSTS OR CREDITS THAT WILL RESULT DIRECTLY OR INDIRECTLY FROM ACCEPTANCE OF SUCH SUBSTITUTE INCLUDING COSTS OF REDESIGN AND CLAIMS OF OTHER CONTRACTORS AFFECTED BY THE RESULTING CHANGE, ALL OF WHICH WILL BE CONSIDERED BY ENGINEER IN EVALUATION OF THE PROPOSED SUBSTITUTE. ENGINEER MAY REQUIRE CONTRACTOR TO FURNISH ADDITIONAL DATA ABOUT THE PROPOSED SUBSTITUTE.

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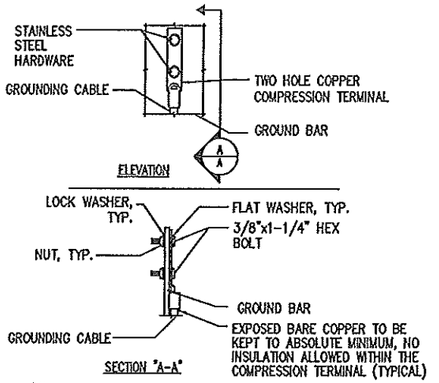
AT&T

TOWER ELEVATION
(LTE)

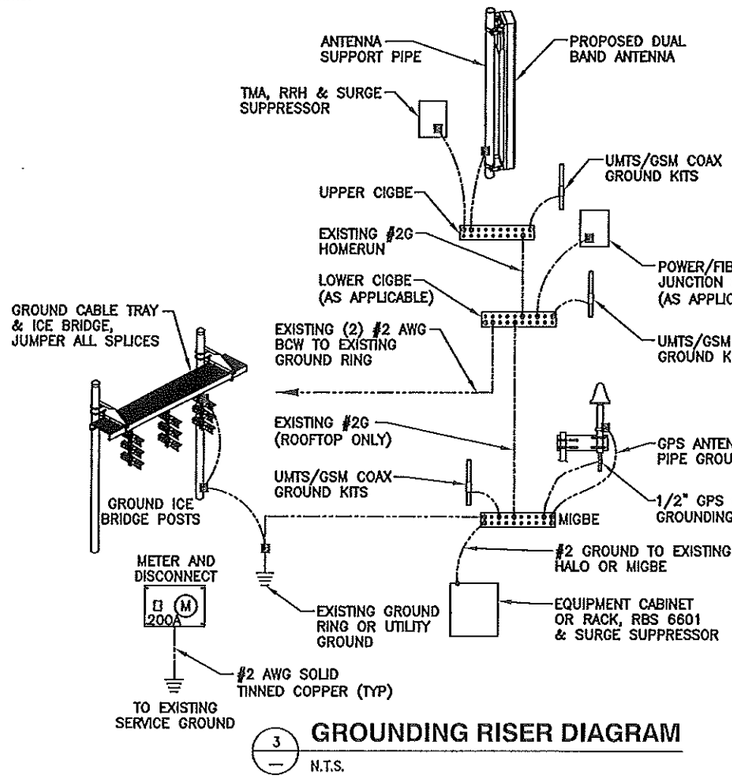
JOB NUMBER	DRAWING NUMBER	REV
1145.01	S-1	2



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.

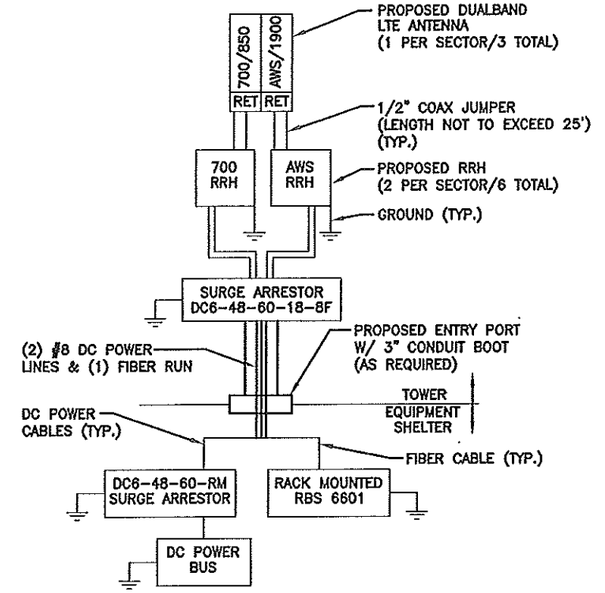
1 TYPICAL GROUND BAR CONNECTION DETAIL

N.T.S.



3 GROUNDING RISER DIAGRAM

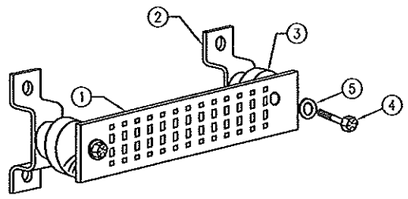
N.T.S.



2 PLUMBING DIAGRAM

N.T.S.

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



4 GROUND BAR - DETAIL

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)

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PLUMBING DIAGRAM & GROUNDING DETAILS (LTE)

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