EM-AT&T-054-120518A

ORIGINAL

May 18, 2012

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

Re: AT&T Mobility – Notice of Exempt Modification
2108 Main Street
Glastonbury, CT 06033

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 Chairman of the Glastonbury Town Council.

AT&T plans to modify the existing facility at 2108 Main St. , Glastonbury owned by the Town of Glastonbury (coordinates 41° 42′ 22.32′′ N. -72° 36′ 24.84′′W). Attached are drawings depicting the planned changes, and documentation of the structural sufficiency of the tower to accommodate the revised antenna configuration. Also, included 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. The height of the overall structure will be unaffected. AT&T's proposed LTE antennas will be located at an approximate center line of 166′ AGL on the approximately 170′ tower. The three (3) existing antennas will be replaced at 166′ AGL . AT&T will add six (6) RRH's and one (1) surge arrestor at 166' AGL. Additionally AT&T will install one (1) fiber cable, and two (2) DC control cables. One (1) GPS LTE antenna will be mounted to existing building.

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

3. The proposed changes will not increase the noise level at the existing facility by six decibels or more. The incremental effect of the proposed changes will be negligible.

4. The changes to the facility will not increase the calculated "worst case" power density for the combined operations at the site to a level at or above the applicable standard for uncontrolled environments as calculated for a mixed frequency site. As indicated in the attached power density calculations, AT&T's operations at the site will result in a power density of 1.51% the combined site operations will result in a total power density of 1.51%.

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: Stewart "Chip" Beckett III, Chairman, Glastonbury Town Council

Attachments

PROJECT INFORMATION

SCOPE OF WORK:	UNMANNED TELECOMMUNICATIONS FACILITY MODIFICATIONS
SITE ADDRESS:	2108 MAIN STREET GLASTONBURY, CT 06033
LATITUDE:	41.7062 N 41° 42' 22.32" N
LONGITUDE:	72.6069 W 72° 36' 24.84" W
JURISDICTION:	NATIONAL, STATE & LOCAL CODES OR ORDINANCES
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

SITE NUMBER: CT1083
SITE NAME: GLASTONBURY PD

DRAWING INDEX

VICINITY MAP

DIRECTIONS TO SITE:

FROM ROCKY HILL: MERGE ONTO I-91 N VIA THE RAMP TO HARTFORD 1.9 MI. TAKE EXIT 25-26 TO MERGE ONTO CT-3 N TOWARD GLASTONBURY 1.8 MI. TAKE THE EXIT TOWARD MAIN ST/GLASTONBURY 0.3 MI. TURN LEFT AT GLASTONBURY BLVD 0.3 MI. TURN RIGHT AT MAIN ST 1.2 MI. END AT 2108 MAIN ST. GLASTONBURY, CT 06033

GENERAL NOTES

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

CALL

BEFORE YOU DIG

CALL TOLL FREE 800-922-4455

UNDERGROUND SERVICE ALERT

Hudson Design Group LLC
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 2-101
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TEL: (978) 557-5553
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SCALE: AS SHOWN | DESIGNED BY: MJS | DRAWN BY: MJS

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

AT&T

TITLE SHEET (LTE)

JOB NUMBER	DRAWING NUMBER	REV
1083.01	T-1	1

GROUNDING NOTES

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

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

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

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

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

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

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

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

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

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

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

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

GENERAL NOTES

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

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

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

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

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

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

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

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

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

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

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

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

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

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

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

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

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

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

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

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

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

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

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)

MANUAL OF STEEL CONSTRUCTION, ASD, NINTH EDITION;

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

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

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

ABBREVIATIONS

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

Hudson Design Group LLC
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TEL: (978) 557-5553
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WINDSOR, CT 06095

SITE NUMBER: CT1083
SITE NAME: GLASTONBURY PD
2108 MAIN STREET
GLASTONBURY, CT 06033
HARTFORD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06095

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1	04/18/12	CONSTRUCTION REVISED	SF	DC	DPH
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SCALE: AS SHOWN | DESIGNED BY: MJS | DRAWN BY: MJS

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

AT&T

GENERAL NOTES (LTE)

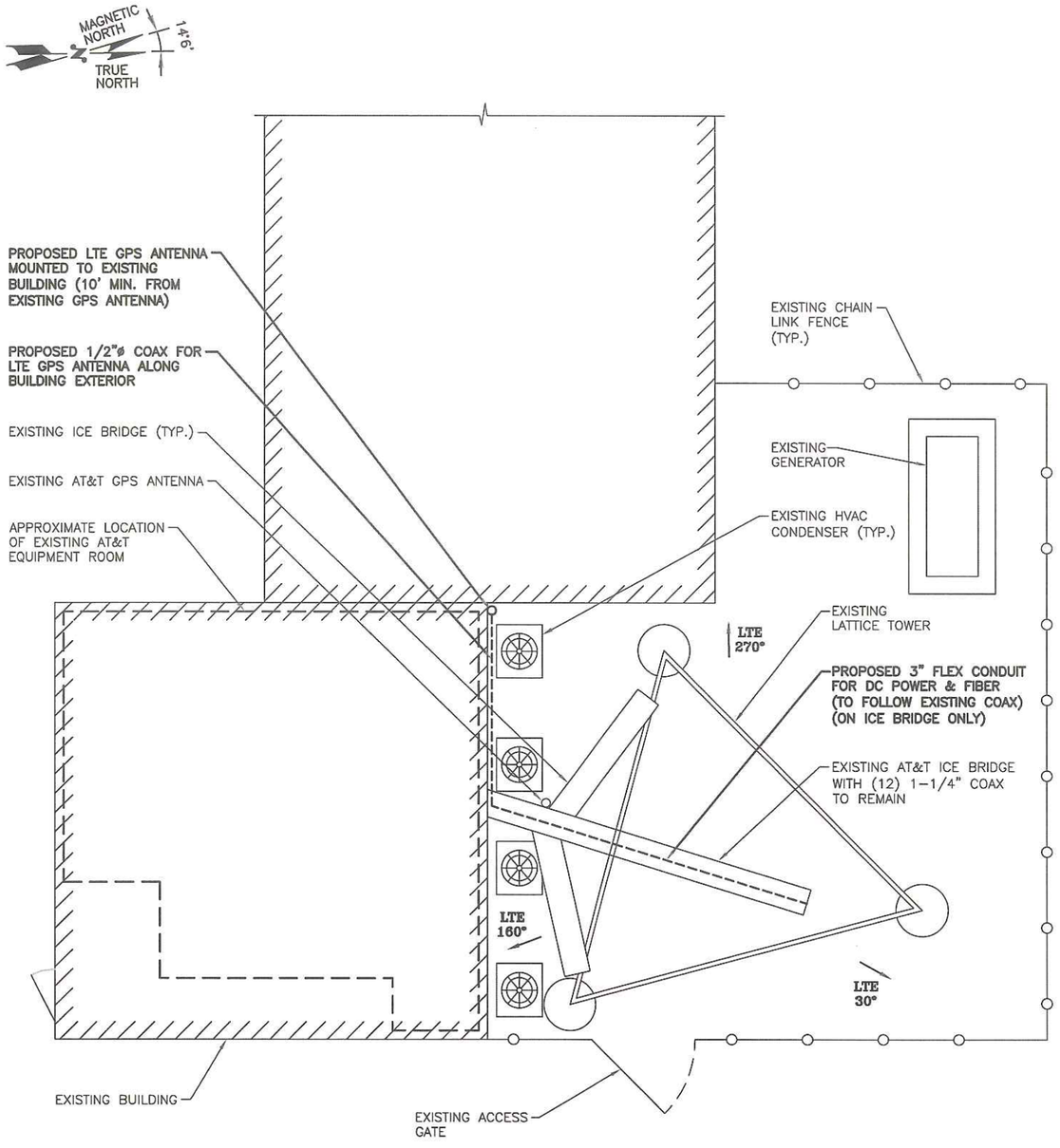
JOB NUMBER	DRAWING NUMBER	REV
1083.01	GN-1	1

NOTE:

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

NOTE:

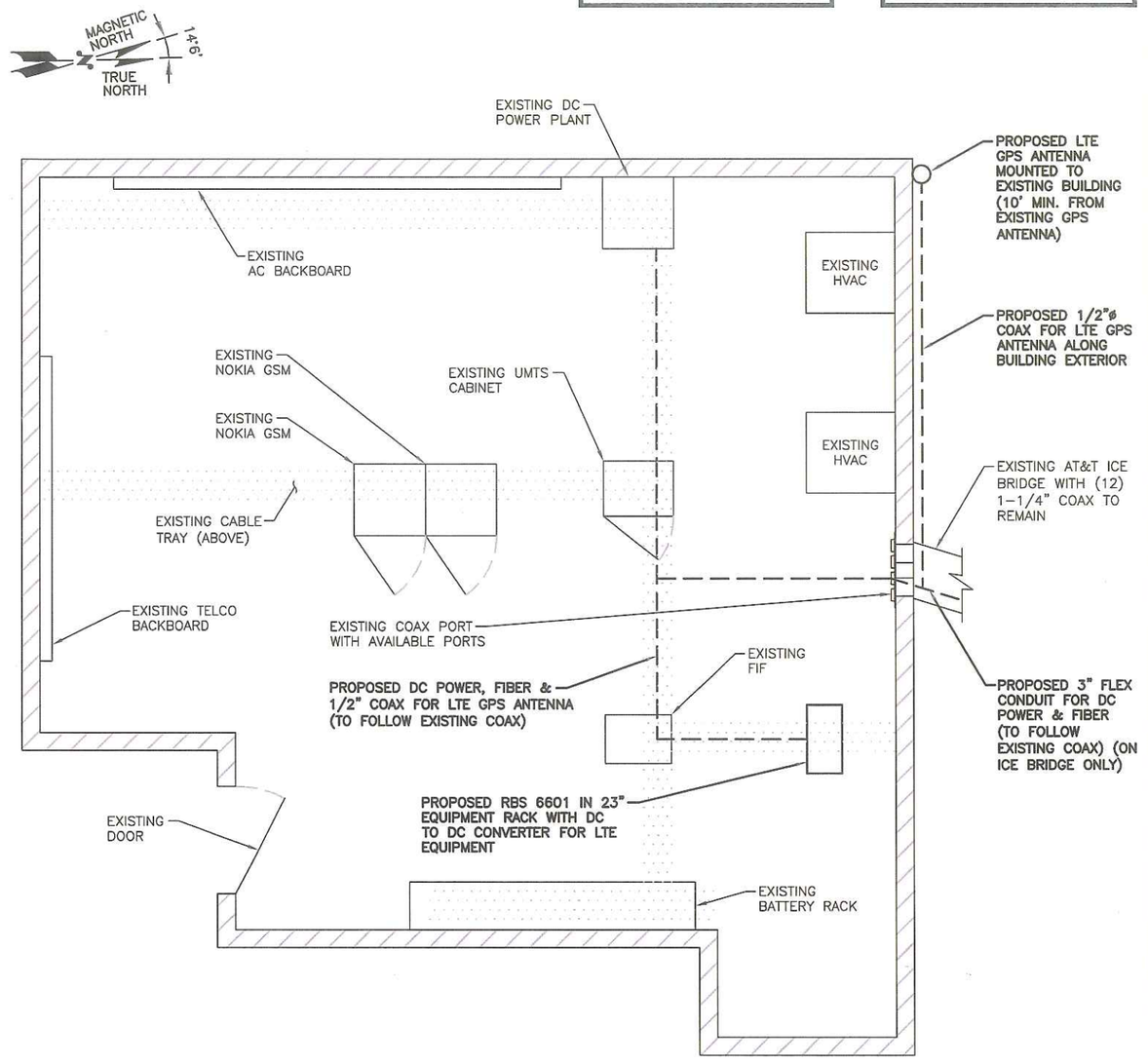
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION.



COMPOUND PLAN

SCALE: 1/4"=1'-0"

0 2'-0" 4'-0" 8'-0" 12'-0"



EQUIPMENT PLAN

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

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

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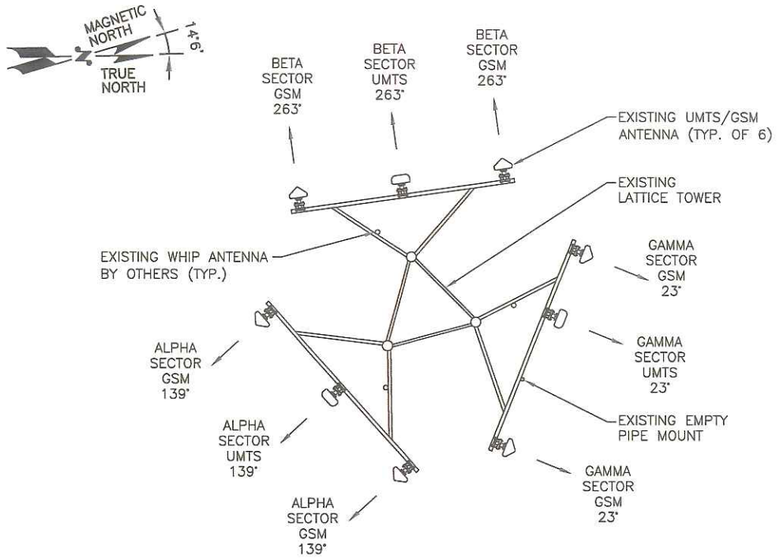
STATE OF CONNECTICUT
DANIEL P. HAMM
No. 24178
LICENSED PROFESSIONAL ENGINEER

AT&T

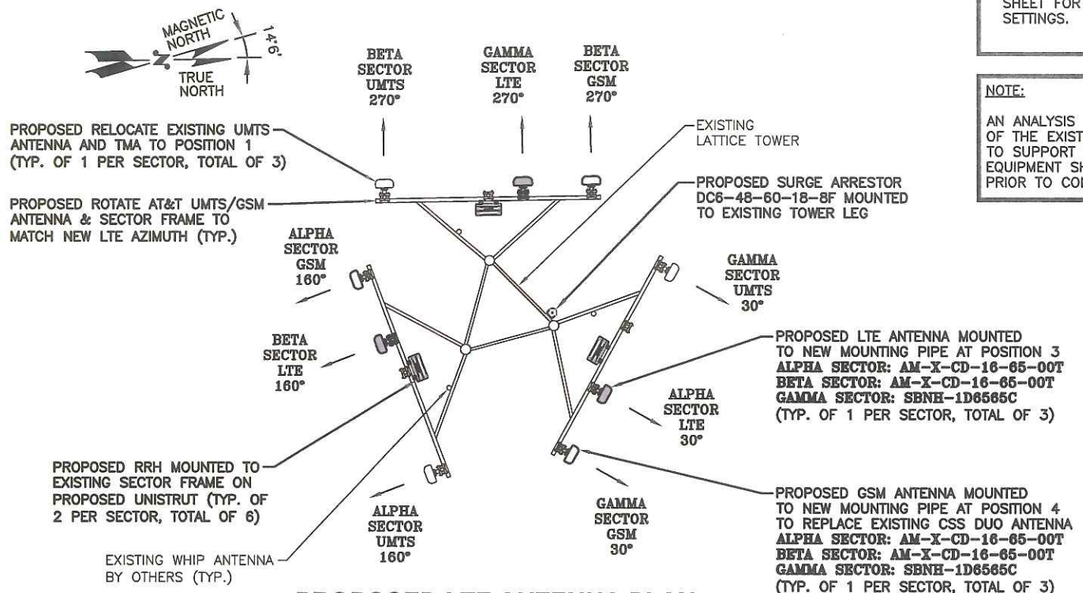
COMPOUND & EQUIPMENT PLAN (LTE)

JOB NUMBER	DRAWING NUMBER	REV
1083.01	A-1	1



EXISTING UMTS/GSM ANTENNA PLAN

SCALE: N.T.S.



PROPOSED LTE ANTENNA PLAN

SCALE: N.T.S.

NOTE:

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

NOTE:

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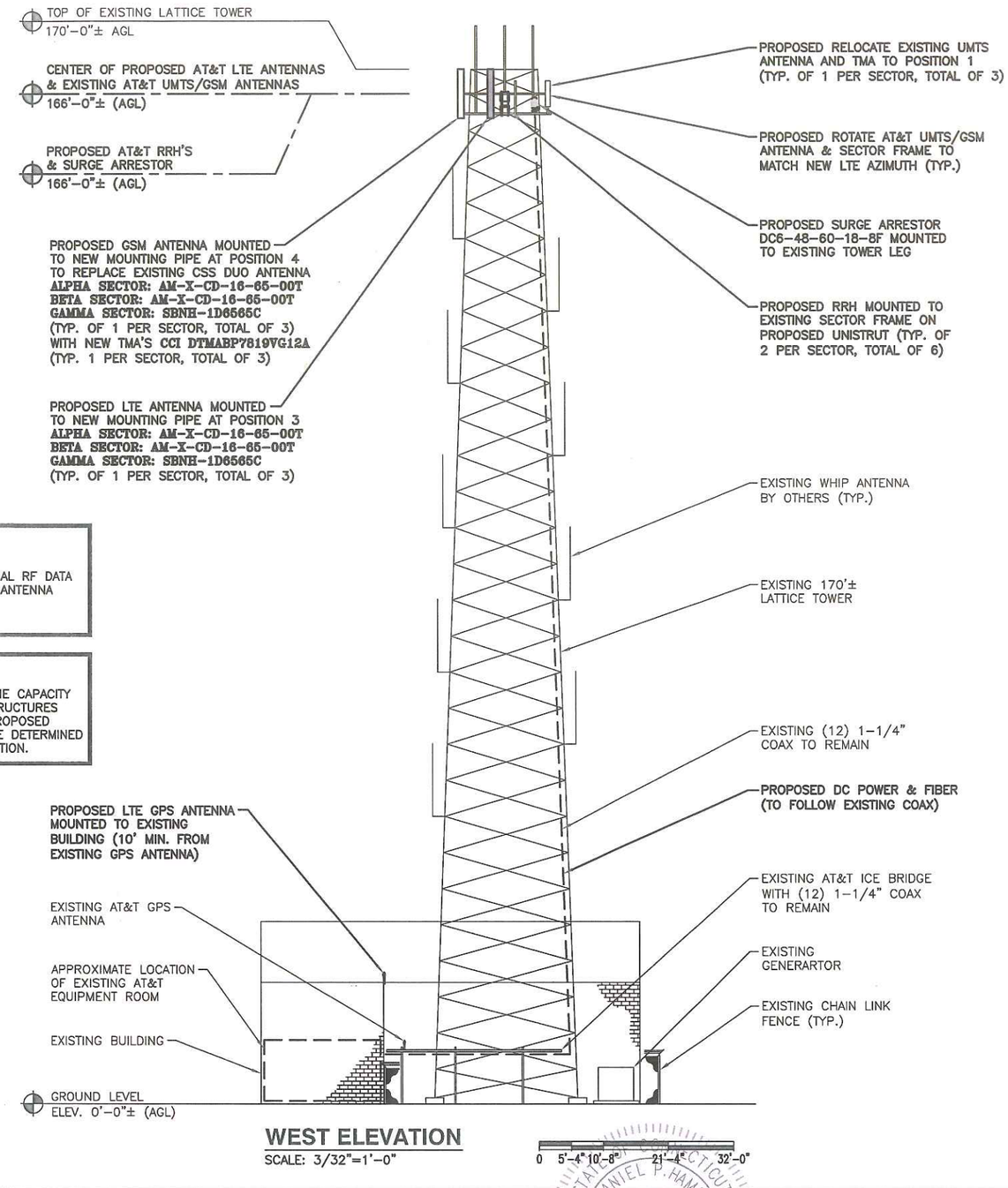

WEST ELEVATION

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

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

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

Daniel P. Hamm

AT&T

ANTENNA LAYOUT & ELEVATION (LTE)

JOB NUMBER	DRAWING NUMBER	REV
1083.01	A-2	1

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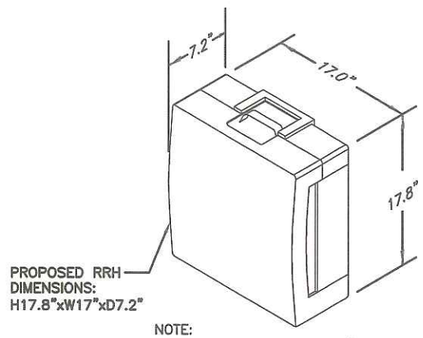
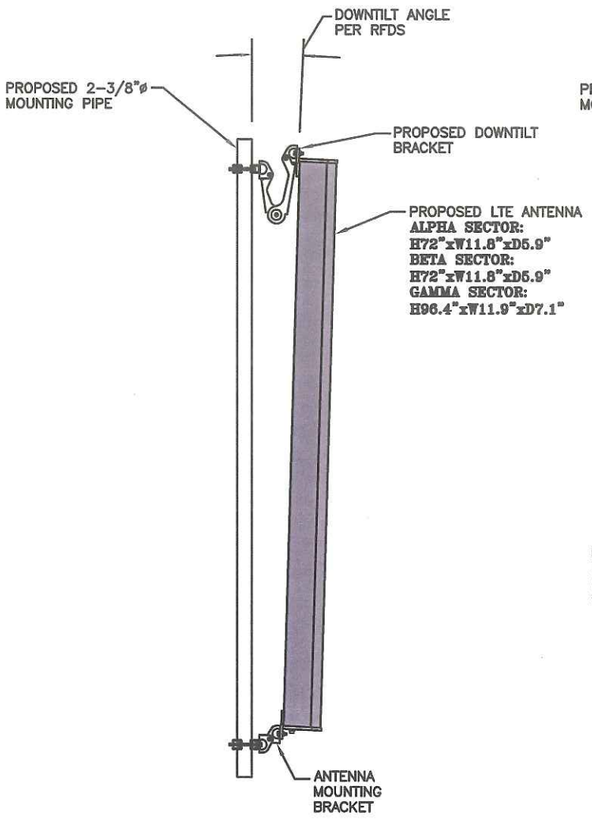


NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

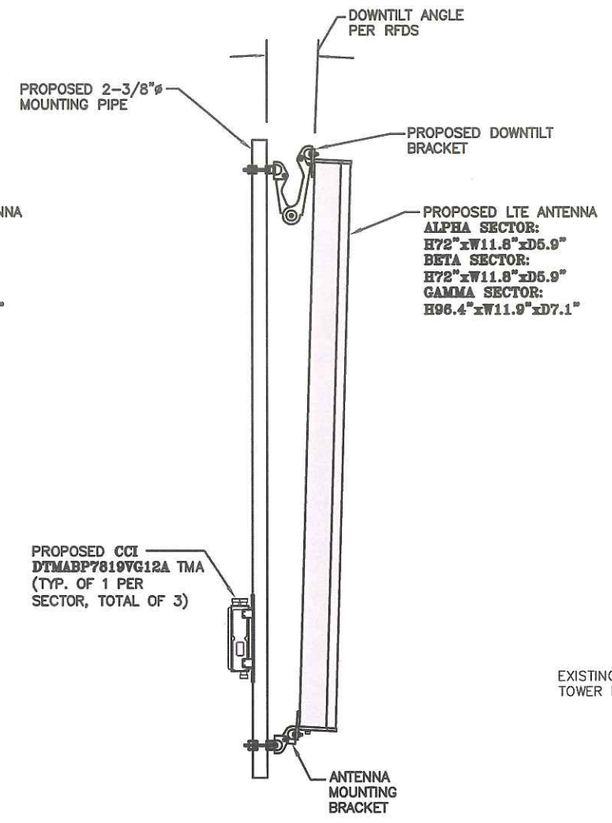
RRH DETAIL

SCALE: N.T.S.



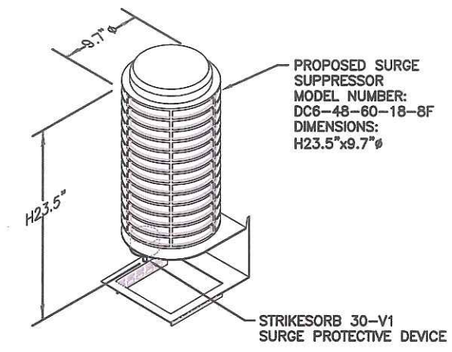
PROPOSED LTE ANTENNA DETAIL

SCALE: N.T.S.



PROPOSED GSM ANTENNA DETAIL

SCALE: N.T.S.



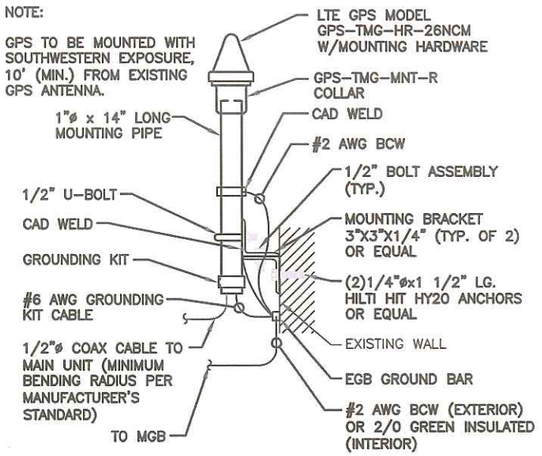
NOTE:
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

DC SURGE SUPPRESSOR DETAIL

SCALE: N.T.S.

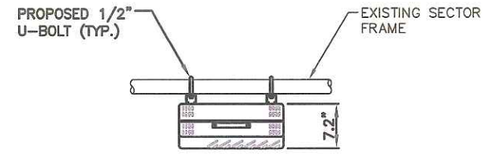
NOTE:

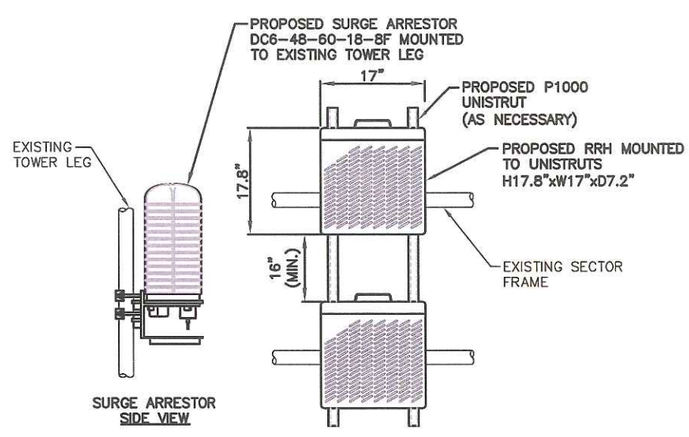
GPS TO BE MOUNTED WITH SOUTHWESTERN EXPOSURE, 10' (MIN.) FROM EXISTING GPS ANTENNA.



GPS MOUNTING DETAIL

SCALE: N.T.S.





PROPOSED RRH & SURGE ARRESTOR MOUNTING DETAIL

SCALE: N.T.S.

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

SITE NUMBER: CT1083
SITE NAME: GLASTONBURY PD

2108 MAIN STREET
GLASTONBURY, CT 06033
HARTFORD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06095

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	04/18/12	CONSTRUCTION REVISED	SF	DC	DPH
0	04/04/12	ISSUED FOR REVIEW	MJS	DC	DPH

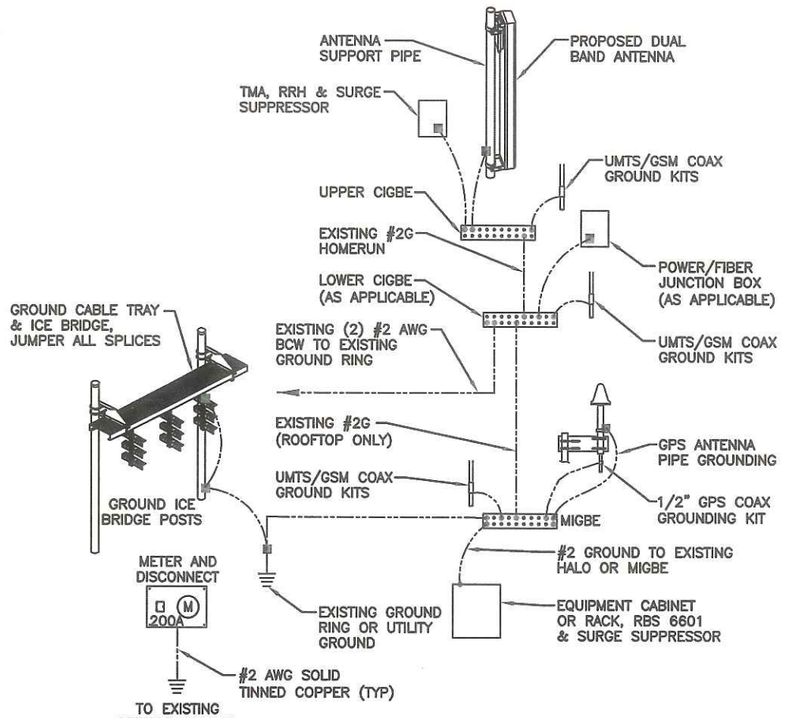
SCALE: AS SHOWN | DESIGNED BY: MJS | DRAWN BY: MJS

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

AT&T

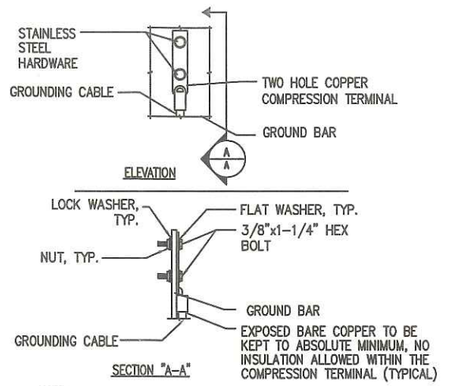
DETAILS (LTE)

JOB NUMBER	DRAWING NUMBER	REV
1083.01	A-3	1



1 — GROUNDING RISER DIAGRAM

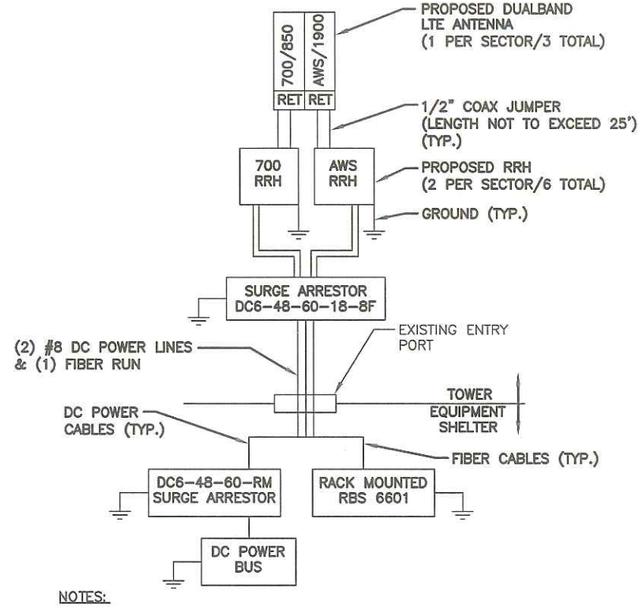
N.T.S.



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.

2 — TYPICAL GROUND BAR CONNECTION DETAIL

N.T.S.



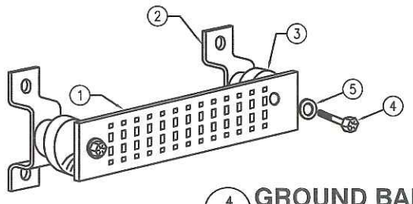
NOTES:

1. CONTRACTOR TO CONFIRM ALL PARTS.
2. INSTALL ALL EQUIPMENT TO MANUFACTURER'S RECOMMENDATIONS.

3 — 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)

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

NEXLINK GLOBAL SERVICES
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500 ENTERPRISE DRIVE, SUITE 3A
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SCALE: AS SHOWN | DESIGNED BY: MJS | DRAWN BY: MJS

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

AT&T
PLUMBING DIAGRAM & GROUNDING DETAILS (LTE)

JOB NUMBER	DRAWING NUMBER	REV
1083.01	G-1	1

STRUCTURAL ANALYSIS REPORT

For

CT1083

GLASTONBURY PD

2108 Main Street
Glastonbury, CT 06033

Antennas Mounted to the Tower

Prepared for:

at&t

500 Enterprise Drive, Suite 3A
Rocky Hill, CT 06067

Dated:
April 16, 2012

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

4/16/2012

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

Hudson Design Group LLC

SCOPE OF WORK:

Hudson Design Group LLC (HDG) has been authorized by AT&T to conduct a structural evaluation of the 170' self supporting tower supporting the proposed AT&T antennas located at elevation 166' 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. The previous structural analysis report prepared by URS Corporation, dated July 28, 2006 was available and obtained for our use. The previous structural analysis report prepared by Malouf Engineering Intl., Inc., dated October 16, 2007 was also available and obtained for our use.

CONCLUSION SUMMARY:

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 **88.8%** - (Diagonal at Tower Section T8 from El.20' to El.40' Controlling).

Hudson Design Group LLC

APPURTENANCES CONFIGURATION:

Tenant	Appurtenances	Elev.	Mount
	Lighting Rod	175'	Tower Leg
	8' Omni	174'	Tower Leg
	10' Omni	173'	12' T-Frame
	8' Omni	172'	12' T-Frame
AT&T	(3) Kathrein 800 10121 Antennas	166'	12' T-Frame
AT&T	(6) Kathrein 860 10025 RCU	166'	12' T-Frame
AT&T	(6) TT19-08BP111-001	166'	12' T-Frame
AT&T	(6) LGP 21900	166'	12' T-Frame
AT&T	***(4) AM-X-CD-16-65-00 Antennas***	166'	12' T-Frame
AT&T	***(2) SBNH-1D6565C Antennas***	166'	12' T-Frame
AT&T	***(6) RRUs***	166'	12' T-Frame
AT&T	***(3) DTMABP7819VG12A***	166'	12' T-Frame
AT&T	***(6) LGP 21900***	166'	12' T-Frame
AT&T	***Surge Arrestor DC6-48-60-18-8F***	166'	Tower Leg
	Parabolic Grid Dish	158'	3' Side Mount Standoff
	(3) Parabolic Grid Dish	152'	3' Side Mount Standoff
	(2) 12' Omni	142'	3' Side Mount Standoff
	10' Omni	129'	3' Side Mount Standoff
	12' Omni	124'	3' Side Mount Standoff
	10' Omni	124'	3' Side Mount Standoff
	6' Dish	115'	1' Side Mount Standoff
	10' Dipole	107'	Tower Leg
	20' Omni	102'	3' Side Mount Standoff
	(2) 10' Omni	102'	3' Side Mount Standoff
	10' Omni	84'	3' Side Mount Standoff
	10' Omni	80'	3' Side Mount Standoff
	12' Omni	70'	3' Side Mount Standoff
	8' Omni	67'	3' Side Mount Standoff
	20' Omni	52'	3' Side Mount Standoff
	(2) 10' Omni	52'	3' Side Mount Standoff
	(2) 20' Omni	32'	Tower Leg
	PD 1150	32'	3' Side Mount Standoff

Proposed AT&T Appurtenances shown in Bold.

Hudson Design Group LLC

AT&T EXISTING/PROPOSED COAX CABLES:

Tenant	Coax Cables	Elev.	Mount
AT&T	(12) 1 1/4" Cables	166'	Face of Tower
AT&T	*Fiber Cable*	166'	Face of Tower
AT&T	*(2) DC Power Cables*	166'	Face of Tower

**Proposed AT&T Coax Cables shown in Bold.*

ANALYSIS RESULTS SUMMARY:

Component	Max. Stress Ratio	Elev. of Component (ft)	Pass/Fail	Comments
Legs	86.2 %	60 – 80	PASS	
Diagonals	88.8 %	20 – 40	PASS	
Top Girt	10.2 %	160 – 170	PASS	

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: 166'-0"

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

ASSUMPTIONS:

1. The tower dimensions, member sizes and strength of material are as indicated in the previous structural analysis report prepared by URS Corporation, dated July 28, 2006.

2. The appurtenances configuration is as stated in the previous structural analysis report prepared by Malouf Engineering Intl., Inc., dated October 16, 2007.

3. 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.

4. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer requirements.

5. 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.

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

7. 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).

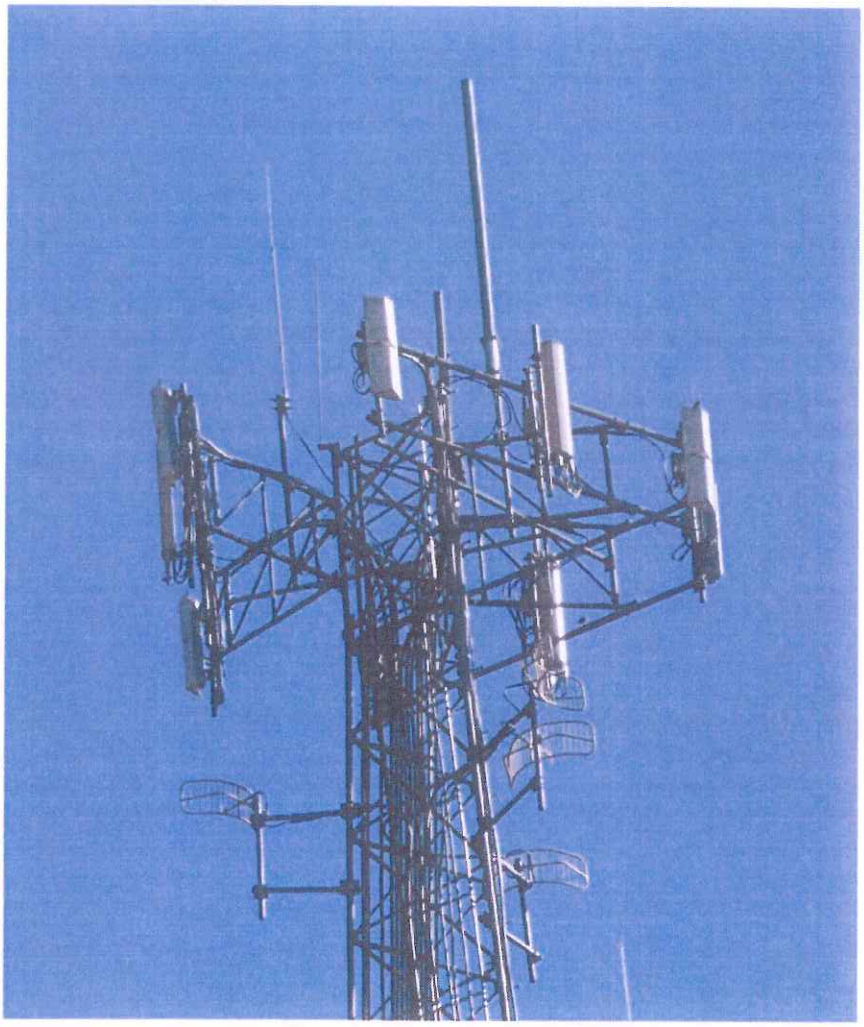


Photo 1: Photo illustrating the Tower with Appurtenances shown.

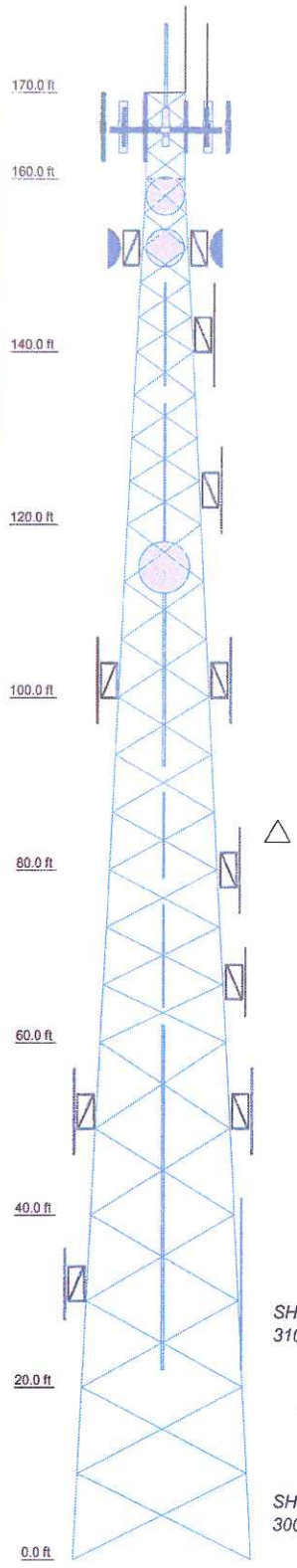
Hudson Design Group LLC

CONSTRUCTION DRAWINGS

Hudson Design Group LLC

CALCULATIONS

Section	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	ROHN 6 EHS	ROHN 5 X-STR	ROHN 4 X-STR		ROHN 3.5 EH	ROHN 3 STD	ROHN 2.5 STD		
Leg Grade	A572-50								
Diagonals	L3 1/2x3 1/2x1/4	L3x3x1/4		L2 1/2x2 1/2x1/4		L1 3/4x1 3/4x3/16	L1 1/2x1 1/2x3/16		A
Diagonal Grade	A572-50								
Top Girts	N.A.						L2 1/2x2 1/2x3/16		A
Face Width (ft)	20.86	18.85	16.85	14.77	12.68	10.68	8.64	6.6	4.56
# Panels @ (ft)	6 @ 10			9 @ 6.66667		4 @ 5	5 @ 4	3 @ 3.33333	
Weight (lb)	14887.4	2597.2	2350.4	2013.9	1644.6	1491.1	910.4	700.8	315.0



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod 1"x10'	175	(2) Powerwave LGP21900 (ATI - Proposed)	166
Omni 4"x8'	174	Surge Arrestor (DC6-48-60-18-8F) w/mount pipe (ATI - Proposed)	166
Omni 2"x10'	173	3' Side Mount Standoff	158
Omni 4"x8'	172	Kathrein PR-950	158
PiROD 12' T-Frame (ATI - Existing)	166	3' Side Mount Standoff	152
PiROD 12' T-Frame (ATI - Existing)	166	3' Side Mount Standoff	152
PiROD 12' T-Frame (ATI - Existing)	166	3' Side Mount Standoff	152
Kathrein 800 10121 w/mount pipe (ATI - Existing)	166	Kathrein PR-950	152
Kathrein 800 10121 w/mount pipe (ATI - Existing)	166	Kathrein PR-950	152
Kathrein 800 10121 w/mount pipe (ATI - Existing)	166	Kathrein PR-950	152
(2) Kathrein 860 10025 RCU (ATI - Existing)	166	3' Side Mount Standoff	142
(2) Kathrein 860 10025 RCU (ATI - Existing)	166	Omni 2 1/2"x12'	142
(2) Kathrein 860 10025 RCU (ATI - Existing)	166	3' Side Mount Standoff	142
(2) Powerwave TT19-08BP111-001 (ATI - Existing)	166	Omni 2 1/2"x12'	142
(2) Powerwave TT19-08BP111-001 (ATI - Existing)	166	3' Side Mount Standoff	129
(2) Powerwave TT19-08BP111-001 (ATI - Existing)	166	Omni 2 1/2"x10'	129
(2) Powerwave LGP21900 (ATI - Existing)	166	3' Side Mount Standoff	124
(2) Powerwave LGP21900 (ATI - Existing)	166	Omni 2 1/2"x10'	124
(2) Powerwave LGP21900 (ATI - Existing)	166	3' Side Mount Standoff	124
(2) KMW AM-X-CD-16-65-00T-RET w/mount pipe (ATI - Proposed)	166	Omni 2 1/2"x12'	124
(2) KMW AM-X-CD-16-65-00T-RET w/mount pipe (ATI - Proposed)	166	1' Side Mount Standoff	115
(2) SBNH-1D6565C w/mount pipe (ATI - Proposed)	166	PAR6-65	115
(2) Ericsson RRU (ATI - Proposed)	166	10'-4 Bay Dipole	107
(2) Ericsson RRU (ATI - Proposed)	166	Omni 2 1/2"x10'	102
(2) Ericsson RRU (ATI - Proposed)	166	3' Side Mount Standoff	102
TMA DTMABP7819VG12A (ATI - Proposed)	166	3' Side Mount Standoff	102
TMA DTMABP7819VG12A (ATI - Proposed)	166	3' Side Mount Standoff	102
TMA DTMABP7819VG12A (ATI - Proposed)	166	Omni 3"x20'	102
(2) Powerwave LGP21900 (ATI - Proposed)	166	Omni 2 1/2"x10'	102
(2) Powerwave LGP21900 (ATI - Proposed)	166	3' Side Mount Standoff	84
		Omni 2 1/2"x10'	84
		3' Side Mount Standoff	80
		Omni 2 1/2"x10'	80
		Omni 2 1/2"x12'	70
		3' Side Mount Standoff	70
		3' Side Mount Standoff	67
		Omni 2 1/2"x8'	67
		Omni 3"x10'	52
		Omni 3"x20'	52
		Omni 3"x10'	52
		3' Side Mount Standoff	52
		3' Side Mount Standoff	52
		3' Side Mount Standoff	52
		Omni 3"x20'	32
		3' Side Mount Standoff	32
		RFS PD1150	32
		Omni 3"x20'	32

MAX. C
DOI
UPL
SHE

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	L1 1/2x1 1/2x1/8		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi			

SHEAR
31031 lb

TORQUE 12638 lb-ft
69 mph WIND - 0.5000 in ICE

AXIAL
21885 lb

SHEAR
30071 lb

MOMENT
2926823 lb-ft

TORQUE 12637 lb-ft
REACTIONS - 80 mph WIND

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

Job: *CT 1083 Glastonbury, CT*		
Project: *170 ft Self Supporting Tower*		
Client: AT&T	Drawn by: kw	App'd:
Code: TIA/EIA-222-F	Date: 04/16/12	Scale: NTS
Path: R:\STRUCTURAL DEPT\Analysis Software\TnxTower\Tnx Projects\CT 1083\CT 1083.er		Dwg No. E-1

tnxTower	Job	Page
	CT 1083 Glastonbury, CT	1 of 10
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 Self Supporting Tower	Date 13:34:16 04/16/12
	Client AT&T	Designed by kw

Tower Input Data

The main tower is a 3x free standing 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 4.56 ft at the top and 20.86 ft 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.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
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	170.00-160.00			4.56	1	10.00
T2	160.00-140.00			4.56	1	20.00
T3	140.00-120.00			6.60	1	20.00
T4	120.00-100.00			8.64	1	20.00
T5	100.00-80.00			10.68	1	20.00
T6	80.00-60.00			12.68	1	20.00
T7	60.00-40.00			14.77	1	20.00
T8	40.00-20.00			16.85	1	20.00
T9	20.00-0.00			18.85	1	20.00

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	170.00-160.00	3.33	X Brace	No	No	0.0000	0.0000
T2	160.00-140.00	4.00	X Brace	No	No	0.0000	0.0000
T3	140.00-120.00	5.00	X Brace	No	No	0.0000	0.0000
T4	120.00-100.00	6.67	X Brace	No	No	0.0000	0.0000
T5	100.00-80.00	6.67	X Brace	No	No	0.0000	0.0000
T6	80.00-60.00	6.67	X Brace	No	No	0.0000	0.0000
T7	60.00-40.00	10.00	X Brace	No	No	0.0000	0.0000

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T8	40.00-20.00	10.00	X Brace	No	No	0.0000	0.0000
T9	20.00-0.00	10.00	X Brace	No	No	0.0000	0.0000

Tower Section Geometry (cont'd)

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 170.00-160.00	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Equal Angle	L1 1/2x1 1/2x1/8	A572-50 (50 ksi)
T2 160.00-140.00	Pipe	ROHN 2.5 STD	A572-50 (50 ksi)	Equal Angle	L1 1/2x1 1/2x3/16	A572-50 (50 ksi)
T3 140.00-120.00	Pipe	ROHN 3 STD	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A572-50 (50 ksi)
T4 120.00-100.00	Pipe	ROHN 3.5 EH	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A572-50 (50 ksi)
T5 100.00-80.00	Pipe	ROHN 4 X-STR	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A572-50 (50 ksi)
T6 80.00-60.00	Pipe	ROHN 4 X-STR	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x1/4	A572-50 (50 ksi)
T7 60.00-40.00	Pipe	ROHN 5 X-STR	A572-50 (50 ksi)	Equal Angle	L3x3x1/4	A572-50 (50 ksi)
T8 40.00-20.00	Pipe	ROHN 6 EHS	A572-50 (50 ksi)	Equal Angle	L3x3x1/4	A572-50 (50 ksi)
T9 20.00-0.00	Pipe	ROHN 6 EHS	A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A572-50 (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 170.00-160.00	Equal Angle	L1 1/2x1 1/2x1/8	A36 (36 ksi)	Solid Round		A572-50 (50 ksi)
T2 160.00-140.00	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)	Solid Round		A572-50 (50 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
T1 170.00-160.00	Equal Angle		A36 (36 ksi)	Solid Round	9/16	A572-50 (50 ksi)
T2 160.00-140.00	Equal Angle		A36	Solid Round	9/16	A572-50

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizonial Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T3 140.00-120.00	Equal Angle		(36 ksi) A36 (36 ksi)	Solid Round	9/16	(50 ksi) A572-50 (50 ksi)
T4 120.00-100.00	Equal Angle		(36 ksi) A36 (36 ksi)	Solid Round	9/16	(50 ksi) A572-50 (50 ksi)
T5 100.00-80.00	Equal Angle		(36 ksi) A36 (36 ksi)	Solid Round	9/16	(50 ksi) A572-50 (50 ksi)
T6 80.00-60.00	Equal Angle		(36 ksi) A36 (36 ksi)	Solid Round	9/16	(50 ksi) A572-50 (50 ksi)
T7 60.00-40.00	Equal Angle		(36 ksi) A36 (36 ksi)	Solid Round	9/16	(50 ksi) A572-50 (50 ksi)
T8 40.00-20.00	Equal Angle		(36 ksi) A36 (36 ksi)	Solid Round	9/16	(50 ksi) A572-50 (50 ksi)
T9 20.00-0.00	Equal Angle		(36 ksi) A36 (36 ksi)	Solid Round	9/16	(50 ksi) A572-50 (50 ksi)

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
7/8	A	No	Ar (CfAe)	170.00 - 6.00	0.0000	0.4	3	3	1.1100	1.1100		0.54
1 1/4 (AT&T - existing)	B	No	Ar (CfAe)	166.00 - 6.00	0.0000	0.4	12	12	1.5500	1.5500		0.66
7/8	A	No	Ar (CfAe)	158.00 - 6.00	0.0000	0.42	1	1	1.1100	1.1100		0.54
7/8	A	No	Ar (CfAe)	152.00 - 6.00	0.0000	0.45	3	3	1.1100	1.1100		0.54
7/8	A	No	Ar (CfAe)	142.00 - 6.00	0.0000	0.48	2	2	1.1100	1.1100		0.54
7/8	C	No	Ar (CfAe)	129.00 - 6.00	0.0000	0.4	1	1	1.1100	1.1100		0.54
7/8	C	No	Ar (CfAe)	124.00 - 6.00	0.0000	0.42	2	2	1.1100	1.1100		0.54
7/8	C	No	Ar (CfAe)	115.00 - 6.00	0.0000	0.44	1	1	1.1100	1.1100		0.54
7/8	C	No	Ar (CfAe)	107.00 - 6.00	0.0000	0.46	1	1	1.1100	1.1100		0.54
7/8	C	No	Ar (CfAe)	102.00 - 6.00	0.0000	0.48	3	3	1.1100	1.1100		0.54
7/8	C	No	Ar (CfAe)	84.00 - 6.00	0.0000	0.48	1	1	1.1100	1.1100		0.54
7/8	C	No	Ar (CfAe)	80.00 - 6.00	0.0000	0.48	1	1	1.1100	1.1100		0.54
7/8	C	No	Ar (CfAe)	70.00 - 6.00	0.0000	0.48	1	1	1.1100	1.1100		0.54
7/8	C	No	Ar (CfAe)	67.00 - 6.00	0.0000	0.48	1	1	1.1100	1.1100		0.54
7/8	C	No	Ar (CfAe)	52.00 - 6.00	0.0000	0.48	3	3	1.1100	1.1100		0.54
7/8	C	No	Ar (CfAe)	32.00 - 6.00	0.0000	0.48	3	3	1.1100	1.1100		0.54
**********												
FB-L98B-002 (AT&T - proposed)	B	No	Ar (CfAe)	166.00 - 6.00	0.0000	0.47	1	1	0.4000	0.4000		0.25
WR-VG122ST-BRDA (AT&T - proposed)	B	No	Ar (CfAe)	166.00 - 6.00	0.0000	0.48	2	2	0.4000	0.4000		0.25

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Lightning Rod 1"x10'	B	From Leg	0.00	0.00	0.0000	175.00	No Ice	1.00	1.00	40.00
			0.00				1/2" Ice	2.02	2.02	49.26
Omni 4"x8'	A	From Leg	0.00	0.00	0.0000	174.00	No Ice	3.14	3.14	18.00
			0.00				1/2" Ice	3.62	3.62	40.63
Omni 4"x8'	A	From Leg	3.00	0.00	0.0000	172.00	No Ice	3.14	3.14	18.00
			0.00				1/2" Ice	3.62	3.62	40.63
Omni 2"x10'	B	From Leg	3.00	0.00	0.0000	173.00	No Ice	2.00	2.00	20.00
			0.00				1/2" Ice	3.02	3.02	35.50
PiROD 12' T-Frame (AT&T - Existing)	A	From Leg	1.50	0.00	0.0000	166.00	No Ice	12.20	12.20	360.00
			0.00				1/2" Ice	17.60	17.60	490.00
PiROD 12' T-Frame (AT&T - Existing)	B	From Leg	1.50	0.00	0.0000	166.00	No Ice	12.20	12.20	360.00
			0.00				1/2" Ice	17.60	17.60	490.00
PiROD 12' T-Frame (AT&T - Existing)	C	From Leg	1.50	0.00	0.0000	166.00	No Ice	12.20	12.20	360.00
			0.00				1/2" Ice	17.60	17.60	490.00
Kathrein 800 10121 w/mount pipe (AT&T - Existing)	A	From Leg	3.00	0.00	0.0000	166.00	No Ice	5.72	4.81	78.15
			0.00				1/2" Ice	6.21	5.49	126.48
Kathrein 800 10121 w/mount pipe (AT&T - Existing)	B	From Leg	3.00	0.00	0.0000	166.00	No Ice	5.72	4.81	78.15
			0.00				1/2" Ice	6.21	5.49	126.48
Kathrein 800 10121 w/mount pipe (AT&T - Existing)	C	From Leg	3.00	0.00	0.0000	166.00	No Ice	5.72	4.81	78.15
			0.00				1/2" Ice	6.21	5.49	126.48
(2) Kathrein 860 10025 RCU (AT&T - Existing)	A	From Leg	3.00	0.00	0.0000	166.00	No Ice	0.16	0.14	1.20
			0.00				1/2" Ice	0.23	0.20	2.76
(2) Kathrein 860 10025 RCU (AT&T - Existing)	B	From Leg	3.00	0.00	0.0000	166.00	No Ice	0.16	0.14	1.20
			0.00				1/2" Ice	0.23	0.20	2.76
(2) Kathrein 860 10025 RCU (AT&T - Existing)	C	From Leg	3.00	0.00	0.0000	166.00	No Ice	0.16	0.14	1.20
			0.00				1/2" Ice	0.23	0.20	2.76
(2) Powerwave TT19-08BP111-001 (AT&T - Existing)	A	From Leg	3.00	0.00	0.0000	166.00	No Ice	0.64	0.52	16.00
			0.00				1/2" Ice	0.76	0.62	21.80
(2) Powerwave TT19-08BP111-001 (AT&T - Existing)	B	From Leg	3.00	0.00	0.0000	166.00	No Ice	0.64	0.52	16.00
			0.00				1/2" Ice	0.76	0.62	21.80
(2) Powerwave TT19-08BP111-001 (AT&T - Existing)	C	From Leg	3.00	0.00	0.0000	166.00	No Ice	0.64	0.52	16.00
			0.00				1/2" Ice	0.76	0.62	21.80
(2) Powerwave LGP21900 (AT&T - Existing)	A	From Leg	3.00	0.00	0.0000	166.00	No Ice	0.23	0.12	5.50
			0.00				1/2" Ice	0.30	0.17	7.70
(2) Powerwave LGP21900	B	From Leg	3.00	0.00	0.0000	166.00	No Ice	0.23	0.12	5.50

tnxTower	Job: CT 1083 Glastonbury, CT	Page: 5 of 10
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 Self Supporting Tower	Date: 13:34:16 04/16/12
	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
(AT&T - Existing)			0.00			1/2" Ice	0.30	0.17	7.70
			0.00						
(2) Powerwave LGP21900	C	From Leg	3.00	0.0000	166.00	No Ice	0.23	0.12	5.50
(AT&T - Existing)			0.00			1/2" Ice	0.30	0.17	7.70
			0.00						
**********									
(2) KMW	A	From Leg	3.00	0.0000	166.00	No Ice	8.50	6.30	74.05
AM-X-CD-16-65-00T-RET			0.00			1/2" Ice	9.15	7.48	136.21
w/mount pipe			0.00						
(AT&T - Proposed)									
(2) KMW	B	From Leg	3.00	0.0000	166.00	No Ice	8.50	6.30	74.05
AM-X-CD-16-65-00T-RET			0.00			1/2" Ice	9.15	7.48	136.21
w/mount pipe			0.00						
(AT&T - Proposed)									
(2) SBNH-1D6565C w/mount	C	From Leg	3.00	0.0000	166.00	No Ice	11.69	10.29	113.11
pipe			0.00			1/2" Ice	12.40	11.81	203.89
(AT&T - Proposed)			0.00						
(2) Ericsson RRU	A	From Leg	3.00	0.0000	166.00	No Ice	2.07	1.08	44.00
(AT&T - Proposed)			0.00			1/2" Ice	2.26	1.23	58.64
			0.00						
(2) Ericsson RRU	B	From Leg	3.00	0.0000	166.00	No Ice	2.07	1.08	44.00
(AT&T - Proposed)			0.00			1/2" Ice	2.26	1.23	58.64
			0.00						
(2) Ericsson RRU	C	From Leg	3.00	0.0000	166.00	No Ice	2.07	1.08	44.00
(AT&T - Proposed)			0.00			1/2" Ice	2.26	1.23	58.64
			0.00						
TMA DTMABP7819VG12A	A	From Leg	3.00	0.0000	166.00	No Ice	1.14	0.39	19.20
(AT&T - Proposed)			0.00			1/2" Ice	1.28	0.49	26.50
			0.00						
TMA DTMABP7819VG12A	B	From Leg	3.00	0.0000	166.00	No Ice	1.14	0.39	19.20
(AT&T - Proposed)			0.00			1/2" Ice	1.28	0.49	26.50
			0.00						
TMA DTMABP7819VG12A	C	From Leg	3.00	0.0000	166.00	No Ice	1.14	0.39	19.20
(AT&T - Proposed)			0.00			1/2" Ice	1.28	0.49	26.50
			0.00						
(2) Powerwave LGP21900	A	From Leg	3.00	0.0000	166.00	No Ice	0.23	0.12	5.50
(AT&T - Proposed)			0.00			1/2" Ice	0.30	0.17	7.70
			0.00						
(2) Powerwave LGP21900	B	From Leg	3.00	0.0000	166.00	No Ice	0.23	0.12	5.50
(AT&T - Proposed)			0.00			1/2" Ice	0.30	0.17	7.70
			0.00						
(2) Powerwave LGP21900	C	From Leg	3.00	0.0000	166.00	No Ice	0.23	0.12	5.50
(AT&T - Proposed)			0.00			1/2" Ice	0.30	0.17	7.70
			0.00						
Surge Arrestor	A	From Leg	0.00	0.0000	166.00	No Ice	2.45	2.45	38.25
(DC6-48-60-18-8F) w/mount			0.00			1/2" Ice	2.95	2.95	64.62
pipe			0.00						
(AT&T - Proposed)									
**********									
3' Side Mount Standoff	A	From Leg	1.50	0.0000	158.00	No Ice	1.90	1.90	40.00
			0.00			1/2" Ice	3.30	3.30	70.00
			0.00						
3' Side Mount Standoff	A	From Leg	1.50	0.0000	152.00	No Ice	1.90	1.90	40.00
			0.00			1/2" Ice	3.30	3.30	70.00
			0.00						
3' Side Mount Standoff	B	From Leg	1.50	0.0000	152.00	No Ice	1.90	1.90	40.00
			0.00			1/2" Ice	3.30	3.30	70.00

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						
3' Side Mount Standoff	C	From Leg	1.50	0.0000	152.00	No Ice	1.90	1.90	40.00
			0.00			1/2" Ice	3.30	3.30	70.00
			0.00						
3' Side Mount Standoff	A	From Leg	1.50	0.0000	142.00	No Ice	1.90	1.90	40.00
			0.00			1/2" Ice	3.30	3.30	70.00
			0.00						
Omni 2 1/2"x12'	A	From Leg	3.00	0.0000	142.00	No Ice	3.00	3.00	30.00
			0.00			1/2" Ice	4.23	4.23	52.30
			0.00						
3' Side Mount Standoff	B	From Leg	1.50	0.0000	142.00	No Ice	1.90	1.90	40.00
			0.00			1/2" Ice	3.30	3.30	70.00
			0.00						
Omni 2 1/2"x12'	B	From Leg	3.00	0.0000	142.00	No Ice	3.00	3.00	30.00
			0.00			1/2" Ice	4.23	4.23	52.30
			0.00						
3' Side Mount Standoff	A	From Leg	1.50	0.0000	129.00	No Ice	1.90	1.90	40.00
			0.00			1/2" Ice	3.30	3.30	70.00
			0.00						
Omni 2 1/2"x10'	A	From Leg	3.00	0.0000	129.00	No Ice	2.50	2.50	25.00
			0.00			1/2" Ice	3.53	3.53	43.64
			0.00						
3' Side Mount Standoff	A	From Leg	1.50	0.0000	124.00	No Ice	1.90	1.90	40.00
			0.00			1/2" Ice	3.30	3.30	70.00
			0.00						
Omni 2 1/2"x12'	A	From Leg	3.00	0.0000	124.00	No Ice	3.00	3.00	30.00
			0.00			1/2" Ice	4.23	4.23	52.30
			0.00						
3' Side Mount Standoff	B	From Leg	1.50	0.0000	124.00	No Ice	1.90	1.90	40.00
			0.00			1/2" Ice	3.30	3.30	70.00
			0.00						
Omni 2 1/2"x10'	B	From Leg	3.00	0.0000	124.00	No Ice	2.50	2.50	25.00
			0.00			1/2" Ice	3.53	3.53	43.64
			0.00						
1' Side Mount Standoff	A	From Leg	0.50	0.0000	115.00	No Ice	1.00	1.00	30.00
			0.00			1/2" Ice	1.50	1.50	50.00
			0.00						
10'-4 Bay Dipole	A	From Leg	0.50	0.0000	107.00	No Ice	2.75	2.75	25.00
			0.00			1/2" Ice	3.50	3.50	40.00
			0.00						
3' Side Mount Standoff	A	From Leg	1.50	0.0000	102.00	No Ice	1.90	1.90	40.00
			0.00			1/2" Ice	3.30	3.30	70.00
			0.00						
Omni 3"x20'	A	From Leg	3.00	0.0000	102.00	No Ice	6.00	6.00	50.00
			0.00			1/2" Ice	8.03	8.03	93.17
			0.00						
3' Side Mount Standoff	B	From Leg	1.50	0.0000	102.00	No Ice	1.90	1.90	40.00
			0.00			1/2" Ice	3.30	3.30	70.00
			0.00						
Omni 2 1/2"x10'	B	From Leg	3.00	0.0000	102.00	No Ice	2.50	2.50	25.00
			0.00			1/2" Ice	3.53	3.53	43.64
			0.00						
3' Side Mount Standoff	C	From Leg	1.50	0.0000	102.00	No Ice	1.90	1.90	40.00
			0.00			1/2" Ice	3.30	3.30	70.00
			0.00						
Omni 2 1/2"x10'	C	From Leg	3.00	0.0000	102.00	No Ice	2.50	2.50	25.00
			0.00			1/2" Ice	3.53	3.53	43.64

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						
3' Side Mount Standoff	A	From Leg	1.50	0.0000	84.00	No Ice	1.90	1.90	40.00
			0.00			1/2" Ice	3.30	3.30	70.00
			0.00						
Omni 2 1/2"x10'	A	From Leg	3.00	0.0000	84.00	No Ice	2.50	2.50	25.00
			0.00			1/2" Ice	3.53	3.53	43.64
			0.00						
3' Side Mount Standoff	B	From Leg	1.50	0.0000	80.00	No Ice	1.90	1.90	40.00
			0.00			1/2" Ice	3.30	3.30	70.00
			0.00						
Omni 2 1/2"x10'	B	From Leg	3.00	0.0000	80.00	No Ice	2.50	2.50	25.00
			0.00			1/2" Ice	3.53	3.53	43.64
			0.00						
3' Side Mount Standoff	A	From Leg	1.50	0.0000	70.00	No Ice	1.90	1.90	40.00
			0.00			1/2" Ice	3.30	3.30	70.00
			0.00						
Omni 2 1/2"x12'	A	From Leg	3.00	0.0000	70.00	No Ice	3.00	3.00	30.00
			0.00			1/2" Ice	4.23	4.23	52.30
			0.00						
3' Side Mount Standoff	B	From Leg	1.50	0.0000	67.00	No Ice	1.90	1.90	40.00
			0.00			1/2" Ice	3.30	3.30	70.00
			0.00						
Omni 2 1/2"x8'	B	From Leg	3.00	0.0000	67.00	No Ice	2.00	2.00	20.00
			0.00			1/2" Ice	2.83	2.83	34.97
			0.00						
3' Side Mount Standoff	A	From Leg	1.50	0.0000	52.00	No Ice	1.90	1.90	40.00
			0.00			1/2" Ice	3.30	3.30	70.00
			0.00						
Omni 3"x20'	A	From Leg	3.00	0.0000	52.00	No Ice	6.00	6.00	50.00
			0.00			1/2" Ice	8.03	8.03	93.17
			0.00						
3' Side Mount Standoff	B	From Leg	1.50	0.0000	52.00	No Ice	1.90	1.90	40.00
			0.00			1/2" Ice	3.30	3.30	70.00
			0.00						
Omni 3"x10'	B	From Leg	3.00	0.0000	52.00	No Ice	3.00	3.00	20.00
			0.00			1/2" Ice	4.03	4.03	41.79
			0.00						
3' Side Mount Standoff	C	From Leg	1.50	0.0000	52.00	No Ice	1.90	1.90	40.00
			0.00			1/2" Ice	3.30	3.30	70.00
			0.00						
Omni 3"x10'	C	From Leg	3.00	0.0000	52.00	No Ice	3.00	3.00	20.00
			0.00			1/2" Ice	4.03	4.03	41.79
			0.00						
Omni 3"x20'	A	From Leg	0.50	0.0000	32.00	No Ice	6.00	6.00	50.00
			0.00			1/2" Ice	8.03	8.03	93.17
			0.00						
Omni 3"x20'	B	From Leg	0.50	0.0000	32.00	No Ice	6.00	6.00	50.00
			0.00			1/2" Ice	8.03	8.03	93.17
			0.00						
3' Side Mount Standoff	C	From Leg	1.50	0.0000	32.00	No Ice	1.90	1.90	40.00
			0.00			1/2" Ice	3.30	3.30	70.00
			0.00						
RFS PD1150	C	From Leg	3.00	0.0000	32.00	No Ice	2.00	2.00	8.00
			0.00			1/2" Ice	2.86	2.86	23.06
			0.00						

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft²	Weight lb
Kathrein PR-950	A	Grid	From Leg	3.00 0.00 0.00	0.0000		158.00	4.50	No Ice 1/2" Ice	6.00 9.00	38.00 98.00
Kathrein PR-950	A	Grid	From Leg	3.00 0.00 0.00	0.0000		152.00	4.50	No Ice 1/2" Ice	6.00 9.00	38.00 98.00
Kathrein PR-950	B	Grid	From Leg	3.00 0.00 0.00	0.0000		152.00	4.50	No Ice 1/2" Ice	6.00 9.00	38.00 98.00
Kathrein PR-950	C	Grid	From Leg	3.00 0.00 0.00	0.0000		152.00	4.50	No Ice 1/2" Ice	6.00 9.00	38.00 98.00
PAR6-65	A	Paraboloid w/o Radome	From Leg	2.00 0.00 0.00	0.0000		115.00	6.00	No Ice 1/2" Ice	28.27 29.05	143.00 292.13

Load Combinations

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

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Leg C	Max. Vert	8	96233.19	6144.74	-5070.17
	Max. H_x	4	86022.89	7308.12	-5804.41
	Max. H_z	7	-130404.73	-14905.58	7641.93
	Min. Vert	7	-130404.73	-14905.58	7641.93
	Min. H_x	7	-130404.73	-14905.58	7641.93
	Min. H_z	4	86022.89	7308.12	-5804.41
Leg B	Max. Vert	7	153093.45	-12621.79	-6311.22
	Max. H_x	6	-73286.56	8154.79	7094.59
	Max. H_z	6	-73286.56	8154.79	7094.59

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
	Min. Vert	2	-73532.70	6195.32	6065.17
	Min. H_x	3	139833.81	-13626.19	-6845.47
	Min. H_z	3	139833.81	-13626.19	-6845.47
Leg A	Max. Vert	6	183697.88	359.97	17429.03
	Max. H_x	6	183697.88	359.97	17429.03
	Max. H_z	2	169308.39	348.40	18547.99
	Min. Vert	8	-157144.54	-335.74	-19538.86
	Min. H_x	3	7568.18	-2038.76	599.77
	Min. H_z	8	-157144.54	-335.74	-19538.86

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	21884.68	0.00	-0.00	-1844.81	-3669.30	-0.00
Dead+Wind 0 deg - No Ice	21884.68	0.00	-30070.57	-2926820.75	-3737.22	12636.81
Dead+Wind 90 deg - No Ice	21884.95	28277.48	-22.27	-4935.45	-2767609.36	-3328.55
Dead+Wind 180 deg - No Ice	21884.68	-0.00	28886.99	2850966.49	-3740.20	-12034.26
Dead+Ice+Temp	36220.32	-0.00	-0.00	-1389.74	-9276.48	-0.03
Dead+Wind 0 deg+Ice+Temp	36220.32	-0.00	-31030.50	-3100445.33	-9433.42	12637.85
Dead+Wind 90 deg+Ice+Temp	36220.32	29523.06	-164.57	-26342.05	-2956886.08	-3810.49
Dead+Wind 180 deg+Ice+Temp	36220.32	-0.00	30277.01	3056971.83	-9371.08	-12305.22
Dead+Wind 0 deg - Service	21884.68	0.00	-16914.69	-1647174.08	-3702.19	7108.42
Dead+Wind 90 deg - Service	21884.68	15906.00	-12.29	-3583.35	-1558414.13	-1874.55
Dead+Wind 180 deg - Service	21884.68	-0.00	16248.93	1602875.76	-3704.78	-6769.79

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	170 - 160	8.315	9	0.4836	0.0490
T2	160 - 140	7.287	9	0.4768	0.0489
T3	140 - 120	5.386	9	0.4018	0.0441
T4	120 - 100	3.841	9	0.3133	0.0325
T5	100 - 80	2.623	9	0.2505	0.0237
T6	80 - 60	1.648	9	0.1929	0.0158
T7	60 - 40	0.927	9	0.1314	0.0097
T8	40 - 20	0.438	9	0.0858	0.0057
T9	20 - 0	0.127	9	0.0434	0.0024

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
175.00	Lightning Rod 1"x10'	9	8.315	0.4836	0.0490	56423
174.00	Omni 4"x8'	9	8.315	0.4836	0.0490	56423
173.00	Omni 2"x10'	9	8.315	0.4836	0.0490	56423
172.00	Omni 4"x8'	9	8.315	0.4836	0.0490	56423
166.00	PiROD 12' T-Frame	9	7.901	0.4826	0.0490	56423
158.00	Kathrein PR-950	9	7.085	0.4728	0.0488	24853
152.00	Kathrein PR-950	9	6.493	0.4546	0.0480	18062
142.00	3' Side Mount Standoff	9	5.561	0.4113	0.0450	12551
129.00	3' Side Mount Standoff	9	4.490	0.3506	0.0379	13058
124.00	3' Side Mount Standoff	9	4.121	0.3291	0.0348	13766
115.00	PAR6-65	9	3.510	0.2954	0.0300	15790
107.00	10'-4 Bay Dipole	9	3.019	0.2704	0.0265	18702
102.00	3' Side Mount Standoff	9	2.733	0.2561	0.0245	20998
84.00	3' Side Mount Standoff	9	1.823	0.2050	0.0173	18737
80.00	3' Side Mount Standoff	9	1.648	0.1929	0.0158	18228
70.00	3' Side Mount Standoff	9	1.256	0.1612	0.0124	18850
67.00	3' Side Mount Standoff	9	1.151	0.1518	0.0115	19116
52.00	3' Side Mount Standoff	9	0.707	0.1115	0.0079	23389
32.00	Omni 3"x20'	9	0.291	0.0690	0.0043	26040

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
T1	170 - 160	Leg	ROHN 2.5 STD	3	-7299.60	57961.24	12.6	Pass
T2	160 - 140	Leg	ROHN 2.5 STD	27	-31615.60	55045.30	57.4	Pass
T3	140 - 120	Leg	ROHN 3 STD	63	-54255.60	71562.77	75.8	Pass
T4	120 - 100	Leg	ROHN 3.5 EH	90	-76191.80	110269.89	69.1	Pass
T5	100 - 80	Leg	ROHN 4 X-STR	111	-98456.30	139075.88	70.8	Pass
T6	80 - 60	Leg	ROHN 4 X-STR	132	-119849.00	139067.89	86.2	Pass
T7	60 - 40	Leg	ROHN 5 X-STR	153	-138848.00	177446.29	78.2	Pass
T8	40 - 20	Leg	ROHN 6 EHS	168	-159574.00	212201.59	75.2	Pass
T9	20 - 0	Leg	ROHN 6 EHS	183	-179882.00	212200.26	84.8	Pass
T1	170 - 160	Diagonal	L1 1/2x1 1/2x1/8	8	-2230.72	5773.98	38.6	Pass
T2	160 - 140	Diagonal	L1 1/2x1 1/2x3/16	34	-2592.66	4457.61	58.2	Pass
T3	140 - 120	Diagonal	L1 3/4x1 3/4x3/16	67	-3181.97	4286.79	74.2	Pass
T4	120 - 100	Diagonal	L2 1/2x2 1/2x3/16	94	-3971.41	8061.37	49.3	Pass
T5	100 - 80	Diagonal	L2 1/2x2 1/2x3/16	115	-4420.86	6247.92	70.8	Pass
T6	80 - 60	Diagonal	L2 1/2x2 1/2x1/4	136	-4303.65	6306.46	68.2	Pass
T7	60 - 40	Diagonal	L3x3x1/4	157	-5095.69	7556.22	67.4	Pass
T8	40 - 20	Diagonal	L3x3x1/4	172	-5703.62	6424.83	88.8	Pass
T9	20 - 0	Diagonal	L3 1/2x3 1/2x1/4	192	-6797.24	9526.34	71.4	Pass
T1	170 - 160	Top Girt	L1 1/2x1 1/2x1/8	4	-308.25	3022.26	10.2	Pass
T2	160 - 140	Top Girt	L2 1/2x2 1/2x3/16	28	-67.08	13647.52	0.5	Pass
						Summary		
						Leg (T6)	86.2	Pass
						Diagonal (T8)	88.8	Pass
						Top Girt (T1)	10.2	Pass
						RATING =	88.8	Pass

Hudson Design Group LLC

REFERENCE DOCUMENTS

October 16, 2007

Mr. Derek Creaser
HUDSON DESIGN GROUP, LLC
representing AT&T
46 Beechwood Drive
North Andover, MA 01845

MALOUF ENGINEERING INTL., INC.
STRUCTURAL CONSULTANTS

SUBJECT	**FEASIBILITY STRUCTURAL EVALUATION**			
Structure:	170 ft **Self-Supporting**		Rohn	
Client/ Site Name /#:	**Hudson D.G./ AT&T**		**Glastonbury – PD**	**# 1083**
Owner/Site Name /#:	Glastonbury Police Dept		Glastonbury	
MEI Project ID:	**CT00872S-07V1**			
Location:	2108 S. Main St Glastonbury, CT 06033		Hartford County F.CC # 1215088	
	LAT	41-42-22.4 N	LON	72-36-24.9 W

Malouf Engineering Int'l (MEI), as requested, has performed a feasibility structural evaluation of the above mentioned structure to assess the impact of the changed condition as noted below.

The structural evaluation performed used the following criteria:

CODE / STANDARD	ANSI/TIA-222-F-96 Standard / IBC 2003 Code – CT Building Code	
LOADING CASES	*Full Wind*:	80 Mph (with No Radial Ice)
	Iced Case:	69 Mph + 0.50" Radial Ice
	Service:	50 Mph

Table 1: Proposed Changed Condition Appurtenances

Elev (ft)	Tenant	Ants Qty	Appurtenance Model / Description	Mount Description	Lines Qty	Line size & Location
167 ± *	AT&T	3	7770 Panel Antennas	[exist 3-way close contact mount]	3	1-1/4"-FZ [in addition to exist]
		3	LGP 13519 Diplexers			
		1	Powerwave 7060 CILOC			
		3	Powerwave 7020 RCU/RET's		1	3/8" –(I)

* Note: Existing (3) panel antennas (1/sector) are to be removed and replaced with above.

Table 2: Previous Analysis Appurtenances

Elev (ft)	Tenant	Ants Qty	Appurtenance Model / Description	Mount Description	Lines Qty	Line size & Location
170'		1	10' omni	(1) T-Frame	1	7/8" coax
170'		1 1	DSSC381HF3LDF DQ01D9006001N	(2) T-Frames	2	7/8" coaxes
167'	AT&T	10	(10) CSS DUO1417-8686 ants	(3) T-Frames (listed above)	10	1-1/4" coaxes
158'		1	4' grid dish'	(1) Dish Mount	1	7/8" coax
152'		3	Parabolic Grids	(3) Standoff Mounts	3	7/8" coaxes
142'		1	12' omni	(1) Standoff Mount	1	7/8" coax
142'		1	DSSC381HF3LDF	(1) Standoff Mount	1	7/8" coax
129'		1	10' omni	(1) Standoff Mount	1	7/8" coax
124'		1	12' omni	(1) Standoff Mount	1	7/8" coax
124'		1	TDE6046	(1) Standoff Mount	1	7/8" coax
115'		1	PARE-65 dish w/radome	(1) Dish Mount	1	7/8" coax
107'		1	Exposed dipole	(1) Leg Mount	1	7/8" coax
102'		1 2	20' omni 10 omnis	(3) Standoff Mounts	3	7/8" coaxes

84'		1	10' omni	(1) Standoff Mount	1	7/8" coax
80'		1	TDF6321	(1) Standoff Mount	1	7/8" coax
70'		1	12' omni	(1) Standoff Mount	1	7/8" coax
67'		1	8' omni	(1) Standoff Mount	1	7/8" coax
52'		1 1 1	20' omni 10' omni ground plane ant	(3) Standoff Mounts	3	7/8" coaxes
32'		2	20' omnis	(2) Leg Mount	2	7/8" coaxes
32'		1	DSPD1150	(1) Standoff Mount	1	7/8" coax

The information used as source data to represent the existing structure and the related appurtenances is as follows:

Structure & Current Appurtenances	Structure data and design appurtenances loading as per previous analysis data by URS, ref. job # 36928231, dated 07/28/06 – Tower analysis *Max. Stress at 80.9%.*
Changed Condition	As per AT&T /Cingular Wireless RF approval email, dated 04/26/07 Version 2007-02, Supplied by Hudson Design Group, LLC on 08/15/07.

The subject structure is evaluated for the feasibility of the installation of the proposed changed condition previously noted. The data records furnished were reviewed and the appurtenances loading was evaluated (no computer analysis performed, only relative loading magnitude comparison), in accordance with the TIA-222 Standard provisions and with the agreed limited scope of work terms and the results of this feasibility evaluation are reported. This evaluation is based on information supplied, and therefore, its results are based on and as accurate as that supplied data. MEI has made no independent determination of its accuracy. This existing structure is assumed, for the purpose of this evaluation, to have been properly maintained and to be in good condition with no structural defects and with no deterioration to its capacity ('as-new').

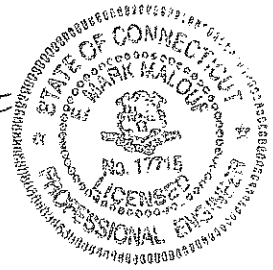
Based on the feasibility structural evaluation of the data provided, the subject structure, including foundation, would meet the minimum requirements of ANSI/TIA 222-F Standard for the proposed changed condition as stated above when considering the structure to have been properly designed for the stated appurtenances. The proposed loading would stress the structure slightly more (about 5% or less) than the previous structural analysis.

Therefore, **the installation of the noted proposed changed condition is structurally acceptable** on this existing structure in accordance with the ANSI/TIA **222-F** Standard for the loading considered under the criteria listed and referenced.

MEI appreciates the opportunity of providing our continuing professional services to you. If you have any questions or need further assistance on this or other projects please contact us.

Respectfully submitted,

MALOUF ENGINEERING INT'L, INC.



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(F)
Radio System

DETAILED STRUCTURAL ANALYSIS AND EVALUATION OF EXISTING 170' SELF SUPPORTTNG LATTICE TOWER FOR NEW ANTENNA ARRANGEMENT

2108 Main Street
Glastonbury, Connecticut

prepared for

TOWN OF GLASTONBURY

2108 MAIN STREET
GLASTONBURY, CT 06033

prepared by

URS

URS CORPORATION
500 ENTERPRISE DR, SUITE 3B
ROCKY HILL, CT 06067
TEL. 860-529-8882

36928231.00001
GLA-001

July 28, 2006

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1. EXECUTIVE SUMMARY

This report summarizes the structural analysis of the existing 170' self supporting lattice tower located at 2108 Main Street in Glastonbury, Connecticut. The analysis was conducted in accordance with the 2005 Connecticut State Building Code and the TIA/EIA-222-F standard for a wind velocity of 80 mph (fastest mile) and 69 mph (fastest mile) concurrent with ½" ice. The antenna loading considered in the analysis consists of all existing and proposed antennas, transmission lines, and ancillary items as outlined in the Introduction Section of this report. The proposed Town of Glastonbury modifications are as follows:

Proposed Antenna and Mount	Carrier	Antenna Center Elevation
Remove: (1) 20' omni antenna and (1) 12' omni antenna Install: (1) DSSC381HF3LDF antenna and (1) DQ01D9006001N antenna on the (2) existing T-Frames with (2) new or existing 7/8" coax cables	(Proposed)	@ 170'
Install: (1) DSSC381HF3LDF antenna on (1) existing standoff mount with (1) new 7/8" coax cable	(Proposed)	@ 142'
Remove: (1) 20' omni antenna Install: (1) TDE6046 antenna on the (1) existing standoff mount with (1) new or existing 7/8" coax cable	(Proposed)	@ 124'
Install: (1) PAR6-65 dish w/radome on (1) new dish mount on the North Leg with (1) new 7/8" coax cable	(Proposed)	@ 115'
Install: (1) TDF6321 antenna on (1) new standoff mount with (1) new 7/8" coax cable	(Proposed)	@ 80'
Remove: (1) 20' omni antenna Install: (1) DSPD1150 antenna on the (1) existing standoff mount with (1) new or existing 7/8" coax cable	(Proposed)	@ 32'

(Note: Omni antenna elevations are to the base of the antenna)

The results of the analysis indicate that the tower structure is in compliance with the proposed loading conditions. **The tower and its foundation are considered structurally adequate with the wind load classification specified above and all the existing and proposed antenna loading.**

This analysis is based on:

1) The tower structure's theoretical capacity, not including any assessment of the condition of the tower.
2) Tower geometry and structural member sizes taken from original construction drawings (Rohn File #: 34586PH) prepared by Rohn, dated September 18, 1997.
3) Antenna and mount configuration as specified on the following page of this report.

This report is only valid as per the assumptions and data utilized in this report for antenna inventory, mounts and associated cables. The user of this report shall field verify the assumption of the antenna and mount configuration as well as the physical condition of the tower and connections. Notify the engineer in writing immediately if any of the information in this report is found to be other than specified.

If you should have any questions, please call.

Sincerely,

URS Corporation

Richard A. Sambor, P.E.
Manager Facilities Design

RAS/jek

cc: AA, DR, IA – URS
CF/Book

2. INTRODUCTION

The subject tower is located at 2108 Main Street in Glastonbury, Connecticut. The structure is a 170' self supporting lattice tower designed and manufactured by Rohn.

The tower geometry and structure member sizes were taken from the original construction drawings (Rohn File #: 34586PH) prepared by Rohn, dated September 18, 1997.

The inventory is summarized in the table below:

Antenna Type	Carrier	Mount	Antenna Centerline Elevation	Cable
(1) 10' omni	(existing)	(1) T-Frame	170'	(1) 7/8" coax cable
(1) DSSC381HF3LDF (1) DQ01D9006001N	**(proposed)**	**(2) existing T-Frames**	**170'**	**(2) 7/8" coax cables (new or existing)**
(10) CSS DUO1417-8686 antennas	Cingular (existing)	(3) T-Frames (listed above)	167'	(10) 1 1/4" coax cables
(1) 4' grid dish	(existing)	(1) Dish Mount	158'	(1) 7/8" coax cable
(3) parabolic grids	(existing)	(3) Standoff Mounts	152'	(3) 7/8" coax cables
(1) 12' omni	(existing)	(1) Standoff Mount	142'	(1) 7/8" coax cable
(1) DSSC381HF3LDF	**(proposed)**	**(1) existing Standoff Mount**	**142'**	**(1) 7/8" coax cable (new or existing)**
(1) 10' omni	(existing)	(1) Standoff Mount	129'	(1) 7/8" coax cable
(1) 12' omni	(existing)	(1) Standoff Mount	124'	(1) 7/8" coax cable
(1) TDE6046	**(proposed)**	**(1) existing Standoff Mount**	**124'**	**(1) 7/8" coax cable (new or existing)**
(1) PAR6-65 dish w/radome	**(proposed)**	**(1) new Dish Mount**	**115'**	**(1) new 7/8" coax cable**
(1) exposed dipole	(existing)	(1) Leg Mount	107'	(1) 7/8" coax cable
(1) 20' omni and (2) 10' omnis	(existing)	(3) Standoff Mounts	102'	(3) 7/8" coax cables
(1) 10' omni	(existing)	(1) Standoff Mount	84'	(1) 7/8" coax cable
(1) TDF6321	**(proposed)**	**(1) new Standoff Mount**	**80'**	**(1) new 7/8" coax cable**
(1) 12' omni	(existing)	(1) Standoff Mount	70'	(1) 7/8" coax cable
(1) 8' omni	(existing)	(1) Standoff Mount	67'	(1) 7/8" coax cable
(1) 20' omni (1) 10' omni (1) ground plane antenna	(existing)	(3) Standoff Mounts	52'	(3) 7/8" coax cables
(2) 20' omnis	(existing)	(2) Leg Mount	32'	(2) 7/8" coax cables
(1) DSPD1150	**(proposed)**	**(1) existing Standoff Mount**	**32'**	**(1) 7/8" coax cable (new or existing)**

This structural analysis of the communications tower was performed by URS Corporation (URS) for the Town of Glastonbury. The purpose of this analysis was to investigate the structural integrity of the existing tower with its existing and proposed antenna loads. This analysis was conducted to evaluate stress on the tower and the effect of forces to the foundation of the tower resulting from existing and proposed antenna arrangements.

3. ANALYSIS METHODOLOGY AND LOADING CONDITIONS

The structural analysis was done in accordance with the 2005 Connecticut State Building Code, TIA/EIA-222-F—Structural Standard for Steel Antenna Towers and Antenna Supporting Structures, and the American Institute of Steel Construction (AISC) Manual of Steel Construction—Allowable Stress Design (ASD).

The analysis was conducted using RISA Tower 4.5. Two load conditions were evaluated as shown below which were compared to allowable stresses according to AISC and TIA/EIA.

Load Condition 1 = 80 mph (fastest mile) Wind Load (without ice) + Tower Dead Load
Load Condition 2 = 69 mph (fastest mile Wind Load (with ice) + Ice Load + Tower Dead Load

Please note that wind pressure is a function of velocity squared. Under Load Condition 2, a 25 percent reduction in wind pressure is allowed by code to account for the unlikelihood of the full wind pressure and ice load occurring at the same time. The same results may be achieved by utilizing a lower wind pressure without taking the 25 percent reduction, as shown above.

The TIA/EIA standard permits a one-third increase in allowable stresses for towers and monopoles less than 700 feet tall. For the purposes of this analysis, in computing the load capacity the allowable stresses of the tower members were increased by one-third.

4. FINDINGS AND EVALUATION

Stresses on the tower structure were evaluated to compare with allowable stresses in accordance with AISC. The calculated stresses under the proposed loading were below the allowable stresses. Detailed analysis and calculations for the proposed load condition are provided in section 6 of this report. Additionally, the anchor bolts and foundation were found to be structurally adequate.

5. CONCLUSIONS

The results of the analysis indicate that the tower structure is in compliance with the proposed loading conditions. **The tower and its foundation are structurally adequate under the wind load classification specified above and the proposed antenna loadings.**

Limitations/Assumptions:

This report is based on the following:

1. Tower inventory as listed in this report.
2. Tower is properly installed and maintained.
3. All members are as specified in the original design documents and are in good condition.
4. All required members are in place.
5. All bolts are in place and are properly tightened.
6. Tower is in plumb condition.
7. All member protective coatings are in good condition.
8. All tower members were properly designed, detailed, fabricated, and installed and have been properly maintained since erection.
9. Foundations were properly constructed to support original design loads as specified in the original design documents.
10. All coaxial cable is installed as specified in Section 6 of this report.

URS is not responsible for any modifications completed prior to or hereafter in which URS is not or was not directly involved. Modifications include but are not limited to:

A. Adding antennas
B. Removing/replacing antennas
C. Adding coaxial cables

URS hereby states that this document represents the entire report and that it assumes no liability for any factual changes that may occur after the date of this report. All representations, recommendations, and conclusions are based upon information contained and set forth herein. If you are aware of any information which conflicts with that which is contained herein, or you are aware of any defects arising from original design, material, fabrication, or erection deficiencies, you should disregard this report and immediately contact URS. URS disclaims all liability for any representation, recommendation, or conclusion not expressly stated herein.

Ongoing and Periodic Inspection and Maintenance:

After the Contractor has successfully completed the installation and the work has been accepted, the owner will be responsible for the ongoing and periodic inspection and maintenance of the tower.

The owner shall refer to TIA/EIA-222-F for recommendations for maintenance and inspection. The frequency of the inspection and maintenance intervals is to be determined by the owner based upon actual site and environmental conditions. It is recommended that a complete and thorough inspection of the entire tower structural system be performed at least yearly and more frequently as conditions warrant. According to TIA/EIA-222-F section 14.1, Note 1: It is recommended that the structure be inspected after severe wind and/or ice storms or other extreme loading conditions.

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

Calculated Radio Frequency Emissions

CT1083

(Glastonbury PD)

2108 Main Street, Glastonbury, CT 06033

May 16, 2012

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1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed modifications to the existing AT&T antenna arrays mounted on the lattice tower located at 2108 Main Street in Glastonbury, CT. The coordinates of the tower are 41-42-22.4 N, 72-36-25.0 W.

AT&T is proposing the following modifications:

1) Replace six of nine existing dual-band (850/1900 MHz) panel antennas with six multi-band (700/850/1900/2100 MHz) antennas (two 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	*166*	*880*	*1*	*500*	*0.0065*	*0.5867*	*1.11%*
Cingular GSM	*166*	*880*	*6*	*296*	*0.0232*	*0.5867*	*3.95%*
Cingular GSM	*166*	*1930*	*3*	*427*	*0.0167*	*1.0000*	*1.67%*
AT&T UMTS	166	880	2	565	0.0015	0.5867	0.25%
AT&T UMTS	166	1900	2	1077	0.0028	1.0000	0.28%
AT&T LTE	166	734	1	1375	0.0018	0.4893	0.37%
AT&T GSM	166	880	1	538	0.0007	0.5867	0.12%
AT&T GSM	166	1900	4	934	0.0049	1.0000	0.49%
						Total	**1.51%**

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

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

[3] Antenna height listed for AT&T is in reference to the Hudson Design Group, LLC. Structural Analysis Report dated 4/16/2012.

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 **1.51% 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

May 16, 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.

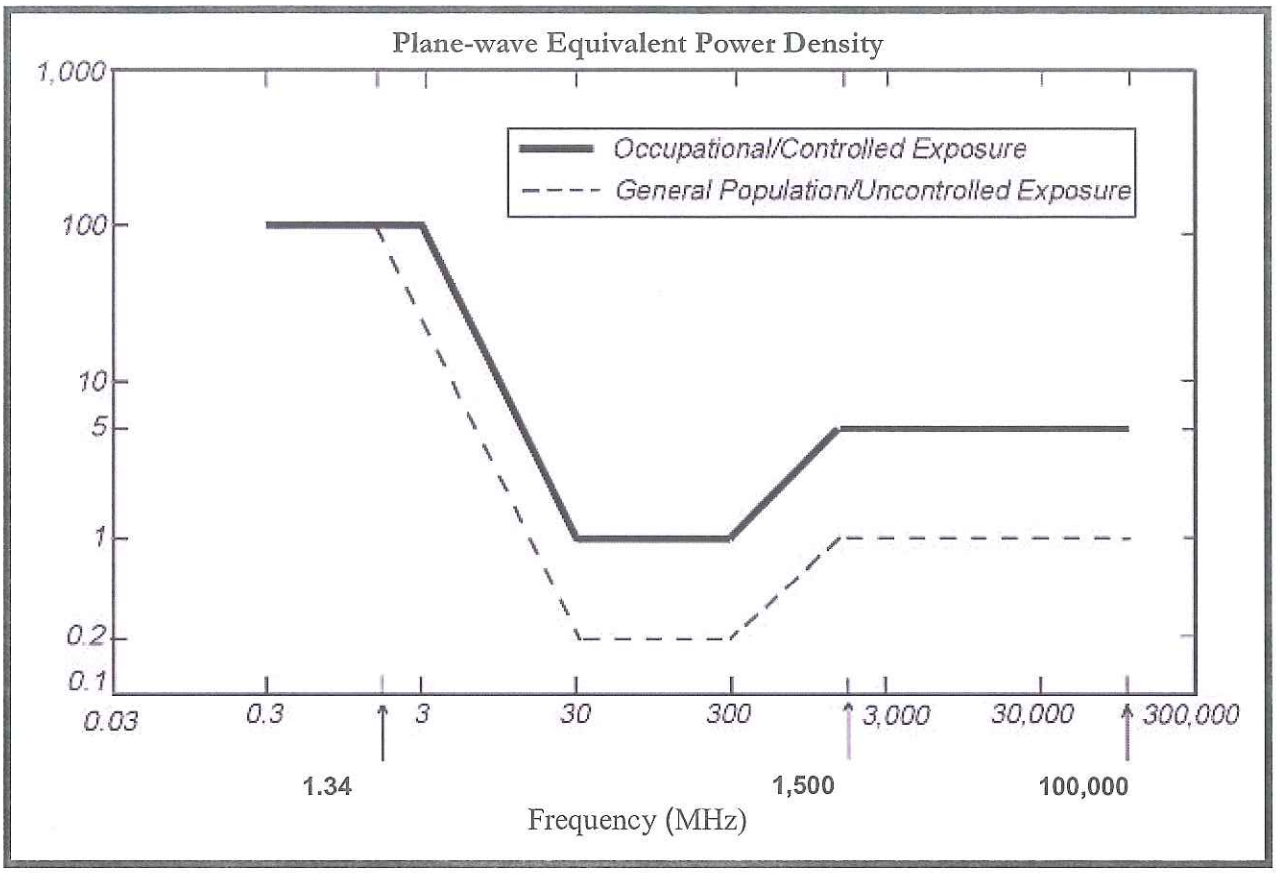
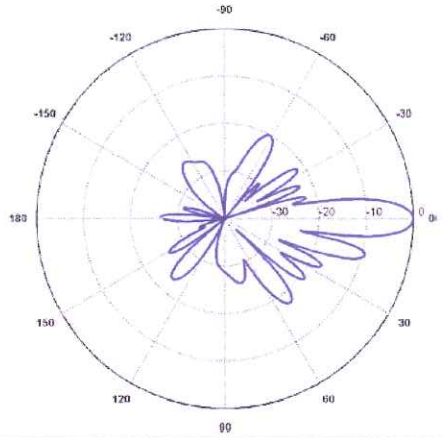


Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

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

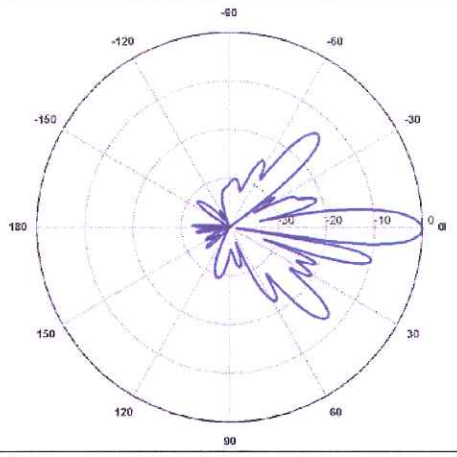
700 MHz

Manufacturer:	Commscope
Model #:	SBNH-1D6565C
Frequency Band:	698-806 MHz
Gain:	13.6 dBd
Vertical Beamwidth:	8.6°
Horizontal Beamwidth:	71°
Polarization:	± 45°
Size L x W x D:	96.4" x 11.8" x 7.1"



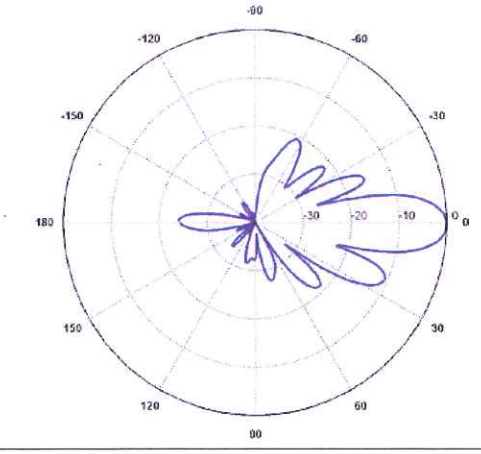
850 MHz GSM

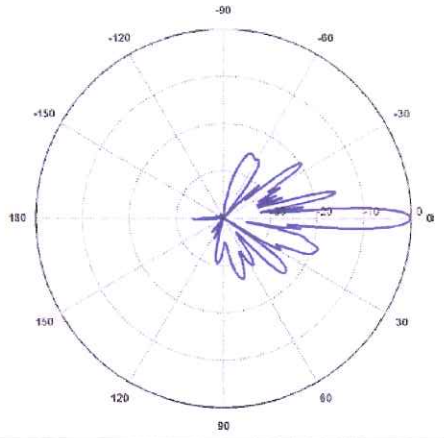
Manufacturer:	Commscope
Model #:	SBNH-1D6565C
Frequency Band:	806-896 MHz
Gain:	14.3 dBd
Vertical Beamwidth:	7.8°
Horizontal Beamwidth:	67°
Polarization:	± 45°
Size L x W x D:	96.4" x 11.8" x 7.1"



850 MHz UMTS

Manufacturer:	Kathrein-Scala
Model #:	800 10121
Frequency Band:	824-896 MHz
Gain:	11.5 dBd
Vertical Beamwidth:	14.5°
Horizontal Beamwidth:	86°
Polarization:	±45°
Size L x W x D:	54.5" x 10.3" x 5.9"



1900 MHz GSM Manufacturer: Commscope Model #: SBNH-1D6565C Frequency Band: 1850-1990 MHz Gain: 15.9 dBd Vertical Beamwidth: 5.1° Horizontal Beamwidth: 57° Polarization: ± 45° Size L x W x D: 96.4" x 11.8" x 7.1"	
1900 MHz UMTS Manufacturer: Kathrein-Scala Model #: 800 10121 Frequency Band: 1850-1990 MHz Gain: 14.3 dBd Vertical Beamwidth: 6.6° Horizontal Beamwidth: 85° Polarization: ±45° Size L x W x D: 54.5" x 10.3" x 5.9"