

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

May 1, 2012

Lauren Groppi
TRM, Inc.
16 Chestnut Street, Suite 220
Foxborough, MA 02035

RE: **EM-CING-077-120412** - New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 60 Adams Street, Manchester, Connecticut.

Dear Ms. Groppi:

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

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

The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated April 12, 2012. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

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

Very truly yours,

Linda Roberts
Executive Director

LR/CDM/laf

c: The Honorable Louis A. Spadaccini, Mayor, Town of Manchester
Scott A. Shanley, General Manager, Town of Manchester
James Davis, Zoning Enforcement Officer, Town of Manchester
Pom-Pom Gali



ORIGINAL

April 12, 2012

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

RECEIVED
APR 12 2012
CONNECTICUT
SITING COUNCIL

RE: AT&T Exempt Modification Application
Antenna Upgrade on an Existing Installation on an Existing Tower Facility
60 Adams Street, Manchester, CT

Dear Ms. Roberts:

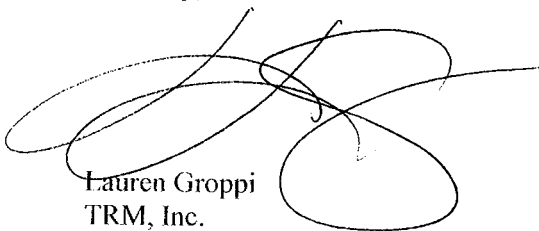
Enclosed please find an original and 5 copies of the above noted Applications and the corresponding filing fee on behalf of AT&T.

The installation consists of replacing six antennas and adding a surge arrester on the tower with supporting ground equipment. The supporting ground equipment will be housed in AT&T's shelter.

Please do not hesitate to contact me with any questions or concerns.

Thank you.

Sincerely,



Lauren Groppi
TRM, Inc.
16 Chestnut Street, Suite 220
Foxborough, MA 02035
lgroppi@trmcom.com

April 12, 2012

POM-POM GALLI, LLC
P.O. Box 133
Willimantic, CT 06226

RE: Exempt Modification Application with the Connecticut Siting Council
60 Adams Street, Manchester, CT

To Whom It May Concern:

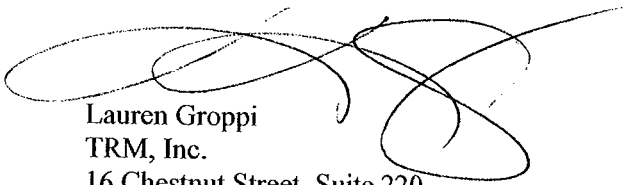
This letter is being sent to you on behalf of AT&T. AT&T filed a Exempt Modification Application with the Connecticut Siting Council on April 12, 2011, seeking approval to modify their existing installation on the existing wireless monopole at 60 Adams Street, Manchester, CT.

The installation consists of replacing six antennas and adding a surge arrestor on the tower with supporting ground equipment. The supporting ground equipment will be housed in AT&T's shelter.

If you have any questions or concerns, please do not hesitate to contact me.

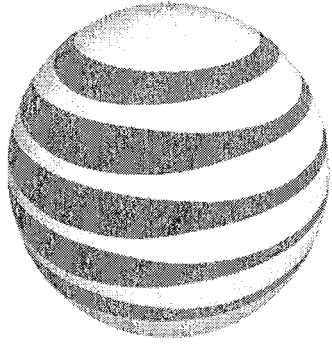
Thank you.

Sincerely,



Lauren Groppi
TRM, Inc.
16 Chestnut Street, Suite 220
Foxborough, MA 02035
lgroppi@trmcom.com

Cc: Linda Roberts, Executive Director, Connecticut Siting Council



at&t

Request of AT&T

For the Approval to Modify
An Existing Installation on a Monopole

Located at 60 Adams Street, Manchester, CT

Table of Contents

1. Project Narrative and Summary
2. Exhibits
 - A. Site Plan
 - B. Structural Analysis
 - C. Radio Frequency Electromagnetic Power Density Reports

CONNECTICUT SITING COUNCIL

Request of AT&T :
For the Approval to of an Exempt :
Modification to an Existing Monopole : April 12, 2012
Located at 60 Adams Street, :
Manchester, CT :

EXEMPT MODIFICATION APPLICATION
TO MODIFY AN INSTALLATION ON AN EXISTING MONOPOLE AT
60 ADAMS STREET, MANCHESTER, CT

1. Introduction

Pursuant to Section 16-50j-72 and 16-50j-73 of the Connecticut General Statutes (the "Statute"), AT&T requests that the Connecticut Siting Council (the "Council") approve this Exempt Modification Application to modify an existing installation on an existing monopole. The existing monopole is located at 60 Adams Street, Manchester, CT and is owned by POM-POM GALLI, LLC.

The AT&T modification involves replacing six (6) antennas on an existing array at one hundred twenty five feet (125') above ground level along with accompanying ground equipment.

The modification will not cause substantial adverse environmental effect. The Site is technically feasible, environmentally feasible and avoids the unnecessary siting of additional tower facilities within the Town of Manchester.

2. Proposed AT&T Installation

AT&T is licensed to provide wireless telecommunication services to the State of Connecticut by the Federal Communications Commission ("FCC").

The existing one hundred and forty foot (140') monopole is located at Builders East Concrete (Latitude: 41° 47' 38.572" N, Longitude: 72° 33' 19.295" W).

The AT&T installation is proposed at one hundred twenty five (125') feet above ground level. The ground equipment will be located within AT&T's existing shelter. The proposed AT&T installation will not interfere with either of the existing facilities.

AT&T intends to remove all six (6) CSS Antennas and ADC TMAs and replace them with six (6) KMW AM-X-CD-16-65-00T antennas, six (6) CCI DTMABP7819VG12A TMAs and one (1) DC6-48-60-18-8F Surge Arrestor on the monopole. In addition to the

antennas and surge arrestor, one (1) 3/8" fiber cables will be run to serve all of the new antennas along with two (2) 5/8" DC cables. These cables will be placed on the interior of the monopole.

AT&T proposes to place the ground equipment in the existing 12' x 26' shelter. The ground installation includes two cabinets: one (1) DC6-48-60RM BTS Cabinet and one (1) RBS6601 LTE cabinet. Further details can be seen on the Site Plan attached as Exhibit A.

A. Technical Feasibility

The monopole is capable of supporting AT&T's proposed installation. Hudson Design Group, LLC performed a structural assessment on monopole and provided a full report to AT&T. Based on their review, Hudson Design Group determined that the existing monopole will satisfy the requirements of applicable codes and standards, consistent with the requirement of the Statute. Please see Exhibit B for the Structural Analysis.

B. Environmental Feasibility

The proposed installation will have negligible impact. The environmental impact to the Town of Manchester is reduced by carriers collocating on an existing installation on an existing structure. AT&T proposes to collocate at approximately 125' feet above ground level on its existing antenna array, which will not increase the height of the monopole and have little or no increase in visibility to the Town.

AT&T's proposed installation will not impact wetlands or water resources.

AT&T's proposed facilities will not create air pollutants nor increase the impact on air quality during normal operation of the facility. There will only be a slight increase in noise pollution during site construction.

There will be a small amount of traffic generated at the Site during construction as workers arrive and depart the site and materials are delivered. When construction is complete, the traffic will be minimal with an average of one maintenance visit per month.

C. Public Safety Concerns

The proposed installation will not have an adverse impact to the health and safety of the surrounding residences and businesses.

The total radio frequency electromagnetic power density at the Site will not be increased above the standard adopted by the Connecticut Department of Environmental Protection as set forth in Section 22a-162 of the Connecticut General

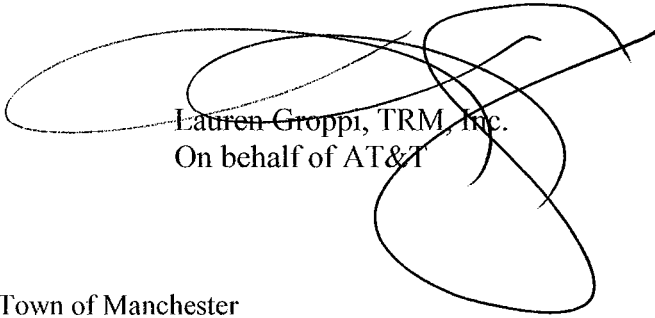
Statutes and the MPE limits established by the Federal Communications Commission. These findings are noted in the power density report included as Exhibit C.

With the proposed installation, AT&T will better serve its customers including local residences and businesses. By seeking to expand their LTE network in Connecticut, AT&T will be able to provide more reliable wireless service to their customers in the Manchester area, fulfilling their coverage goals to comply with their FCC License.

3. Conclusion

The proposed installation will comply with all the requirements set forth by the Statute. In accordance with RCSA § 16-50j-73, the proposed installation does not increase the tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by 6 decibels, nor will it add radio frequency sending or receiving capability to or above the standard adopted by the State Department of Environmental Protection pursuant to Section 22a-162 of the Connecticut General Statutes. Therefore, AT&T respectfully requests that the Council an approval of this Exempt Modification Application at 60 Adams Street, Manchester, CT.

Respectfully Submitted,



Lauren Groppi, TRM, Inc.
On behalf of AT&T

Cc: Scott Shanley, General Manager, Town of Manchester
POM-POM GALLI, LLC
Linda Roberts, Executive Director, Connecticut Siting Council

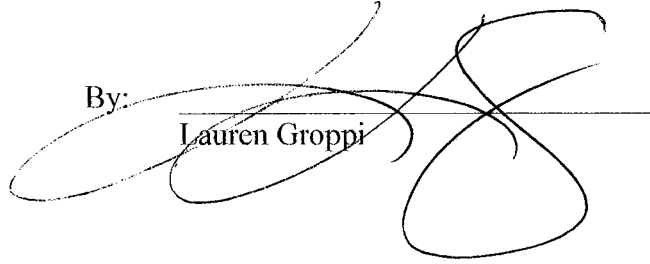
Certificate of Service

This is to certify that on this 12th day of April, 2012 the foregoing Application was sent via first class mail, to the following:

Scott Shanley, General Manager
Town of Manchester, Connecticut
41 Center Street
Manchester, CT 06040

By:

Lauren Groppi

A large, stylized handwritten signature in black ink, consisting of several overlapping loops and curves, positioned over the printed name 'Lauren Groppi'.

PROJECT INFORMATION

SCOPE OF WORK: UNMANNED TELECOMMUNICATIONS FACILITY MODIFICATIONS
 SITE ADDRESS: 60 ADAMS STREET
 MANCHESTER, CT 06042
 LATITUDE: 41.794056 N 41° 47' 38.6" N
 LONGITUDE: -72.555361 W -72° 33' 19.3" W
 JURISDICTION: NATIONAL, STATE & LOCAL CODES OR ORDINANCES
 CURRENT USE: TELECOMMUNICATIONS FACILITY
 PROPOSED USE: TELECOMMUNICATIONS FACILITY
 TAX ID: MAP 28 / BLOCK 20 / LOT 60
 ZONING: INDUSTRIAL



SITE NUMBER: CT1080
SITE NAME: MANCHESTER SAND & GRAVEL

DRAWING INDEX

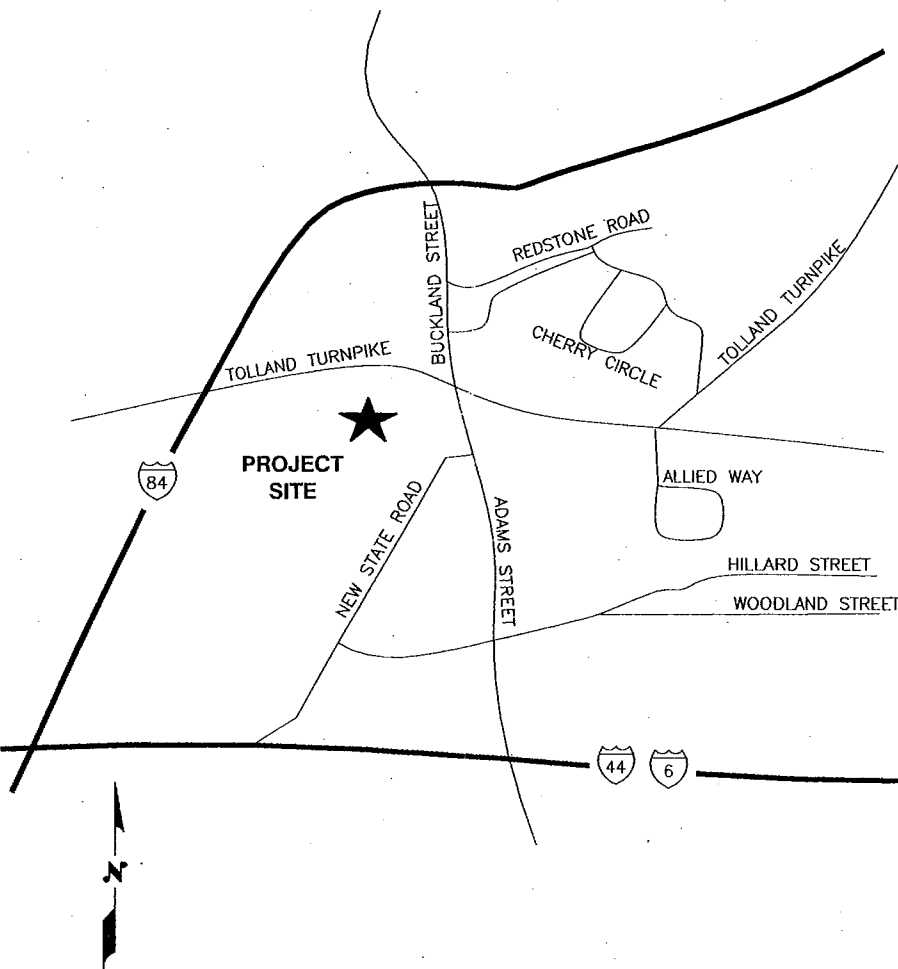
REV

VICINITY MAP

GENERAL NOTES

T-1	TITLE SHEET	1
GN-1	GENERAL NOTES	1
A-1	COMPOUND & EQUIPMENT PLAN	1
A-2	ANTENNA LAYOUT AND ELEVATION	1
A-3	DETAILS	1
G-1	PLUMBING DIAGRAM & GROUNDING DETAILS	1

FROM ROCKY HILL, CT: MERGE ONTO I-91 N VIA THE RAMP ON THE LEFT TOWARD HARTFORD. 7.8 MILES MERGE ONTO CT-15 N VIA EXIT 29 TOWARD I-84 / EAST HARTFORD / BOSTON. 2.1 MILES CT-15 N BECOMES I-84 E. 3.9 MILES TAKE THE BUCKLAND STREET EXIT- EXIT 62. 1.0 MILES TURN RIGHT ONTO BUCKLAND ST. 0.3 MILES STAY STRAIGHT TO GO ONTO ADAMS ST. 0.1 MILES END AT 60 ADAMS ST, MANCHESTER, CT 06042.



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

72 HOURS
 BEFORE YOU DIG
 CALL TOLL FREE 800-922-4455

UNDERGROUND SERVICE ALERT

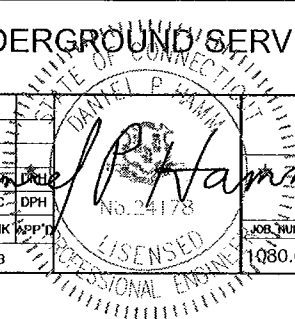
Hudson
 Design Group, Inc.
 1400 OSGOOD STREET
 BUILDING 20 NORTH, SUITE 2-101
 N. ANDOVER, MA 01845
 TEL: (978) 557-5553
 FAX: (978) 336-5586

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

SITE NUMBER: CT1080
SITE NAME: MANCHESTER SAND & GRAVEL
 60 ADAMS STREET
 MANCHESTER, CT 06042
 HARTFORD COUNTY

500 ENTERPRISE DRIVE, SUITE 3A
 ROCKY HILL, CT 06067

1		04/04/12	ISSUED FOR CONSTRUCTION	BY: Daniel P. Hamm	CHK: DB	APP'D: DC	DPH	AT&T
0		03/10/12	ISSUED FOR REVIEW	BY: DB	CHK: DC	APP'D: DPH		TITLE SHEET (LTE)
NO.	DATE	REVISIONS		BY	CHK	APP'D	JOB NUMBER	DRAWING NUMBER
							1080.01	T-1
SCALE: AS SHOWN		DESIGNED BY: DC		DRAWN BY: DB		REV		
						1		



GROUNDING NOTES

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTNING 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-OFF-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 AWG 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 UMS 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 TRANSCIEVER 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		
EGR	EQUIPMENT GROUND RINGING	REQ	REQUIRED	TYP	TYPICAL

1400 GREGORY STREET
 BURLINGAME, CA 94010
 TEL: (916) 567-5532
 FAX: (916) 336-5536

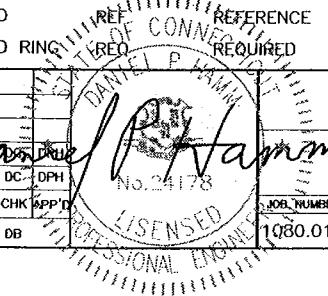
a UnifTek GLOBAL SERVICES company
 800 MARSHALL PHELPS ROAD UNIT#: 2A
 WINDSOR, CT 06095

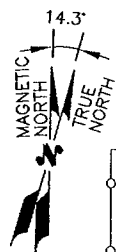
SITE NUMBER: CT1080
SITE NAME: MANCHESTER
SAND & GRAVEL
 60 ADAMS STREET
 MANCHESTER, CT 06042
 HARTFORD COUNTY

500 ENTERPRISE DRIVE, SUITE 3A
 ROCKY HILL, CT 06067

NO.		DATE	REVISIONS	BY	CHK	APP'D	SCALE	DESIGNED BY:	DRAWN BY:	JOB NUMBER	DRAWING NUMBER	REV
1	04/04/12		ISSUED FOR CONSTRUCTION				AS SHOWN	DC	DB	1080.01	CN-1	1
0	03/10/12		ISSUED FOR REVIEW					DC	DPH			

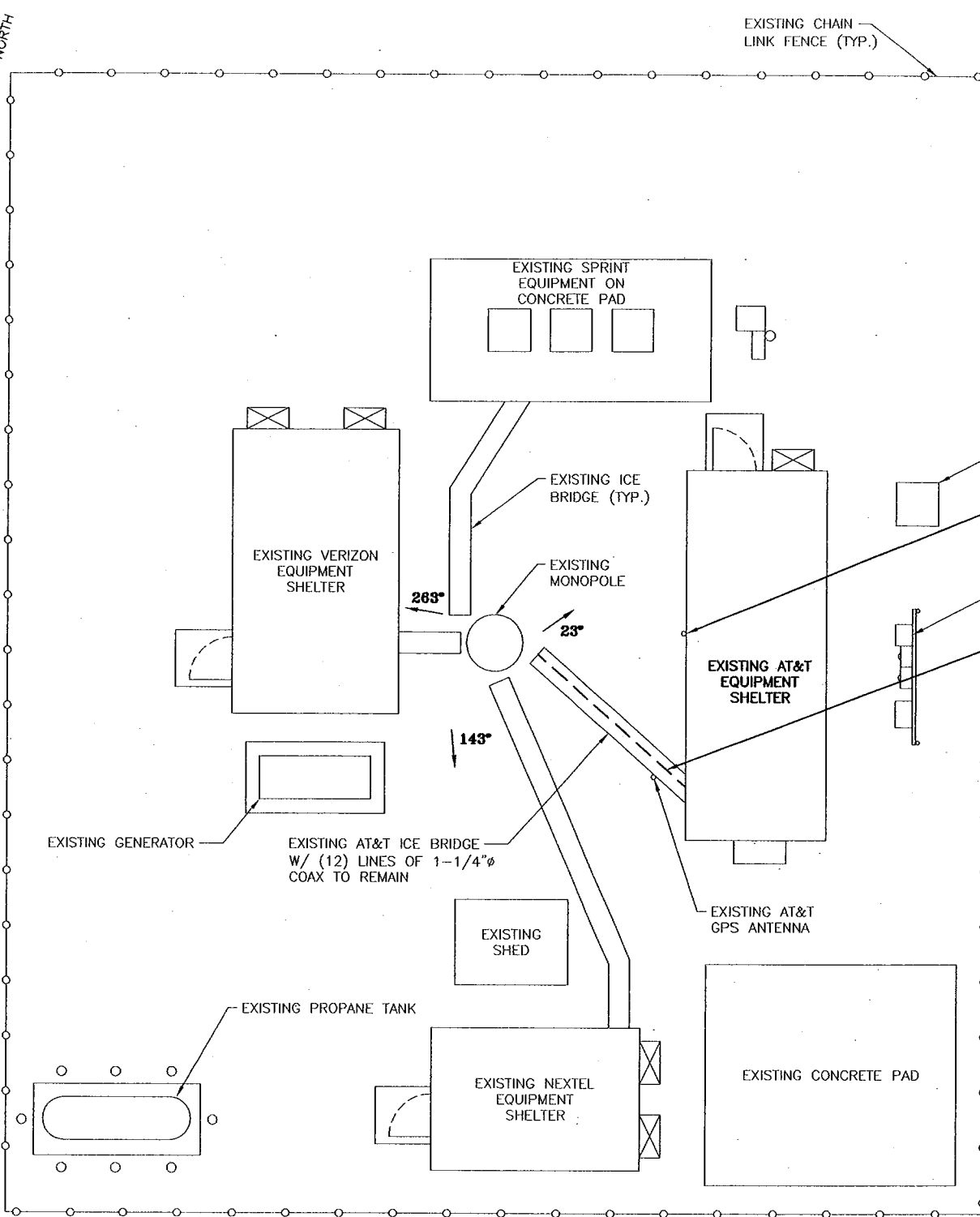
AT&T
 GENERAL NOTES (LTE)



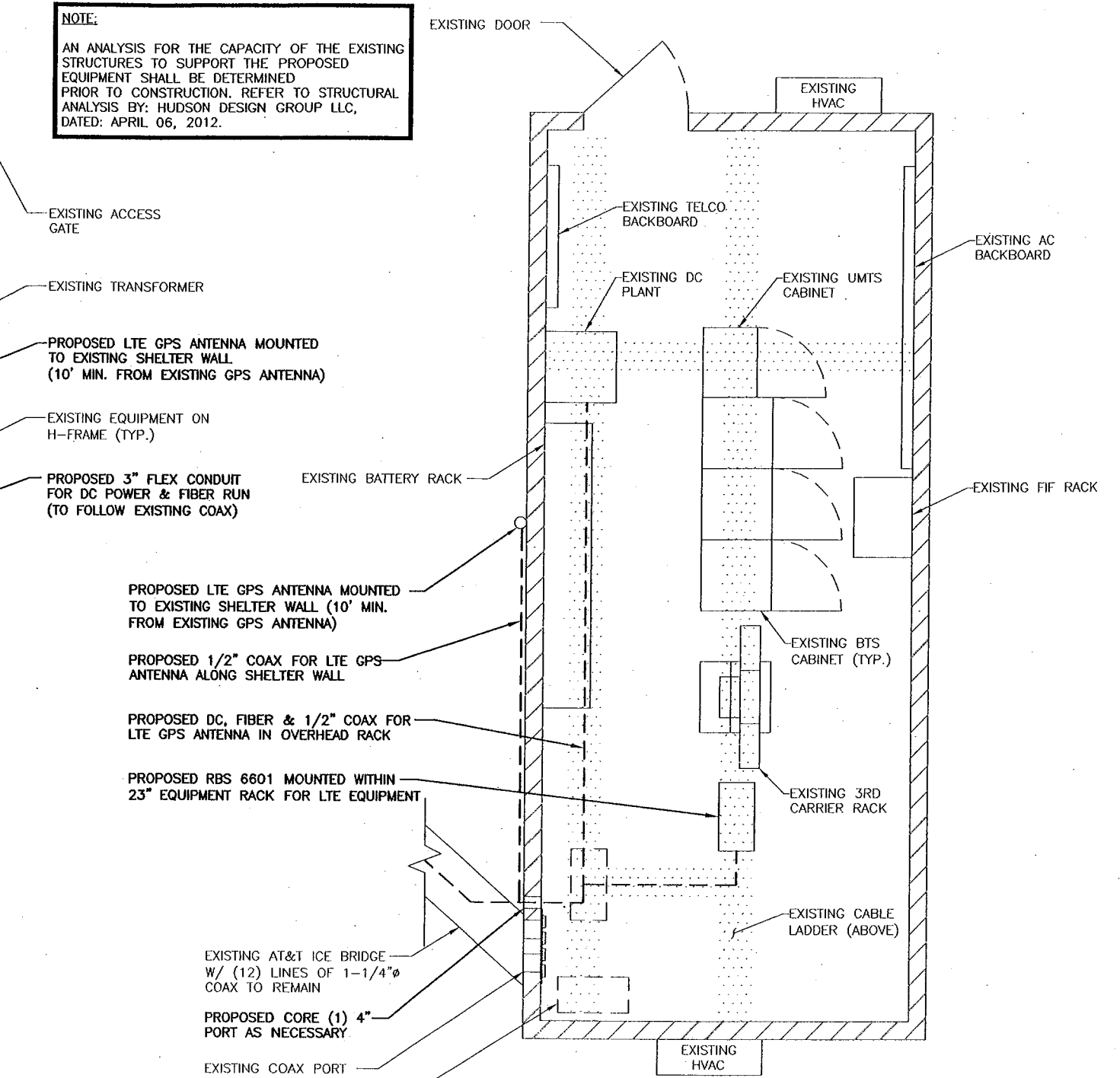


NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION. REFER TO STRUCTURAL ANALYSIS BY: HUDSON DESIGN GROUP LLC, DATED: APRIL 06, 2012.



COMPOUND PLAN
SCALE: 3/16"=1'-0"
0 2'-8" 5'-4" 10'-8" 16'-0"



EQUIPMENT PLAN
SCALE: 1/2"=1'-0"
0 1'-0" 2'-0" 4'-0" 6'-0"

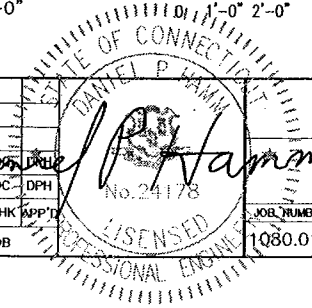
Hudson Design Group
1600 OSCOOD STREET
BUILDING 20 NORTH SUITE 2-101
H. ANDOVER, MA 01845
TEL: (978) 567-5553
FAX: (978) 336-5586

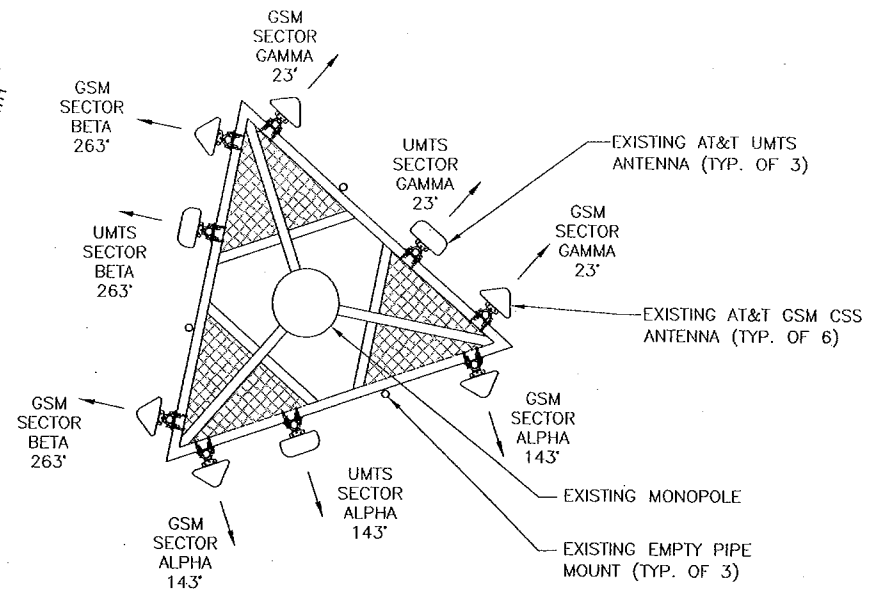
NEXLINK
GLOBAL SERVICES
a UniTek GLOBAL SERVICES company
800 MARSHALL PHELPS ROAD UNIT# 2A
WINDSOR, CT 06095

SITE NUMBER: CT1080
SITE NAME: MANCHESTER SAND & GRAVEL
60 ADAMS STREET
MANCHESTER, CT 06042
HARTFORD COUNTY

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

						AT&T	
						COMPOUND & EQUIPMENT PLAN (LTE)	
NO.	DATE	REVISIONS	BY	CHK	APP'D	JOB NUMBER	DRAWING NUMBER
1	04/04/12	ISSUED FOR CONSTRUCTION	DB	DC	DPH	1080.01	A-1
0	03/10/12	ISSUED FOR REVIEW					
SCALE: AS SHOWN		DESIGNED BY: DC		DRAWN BY: DB			

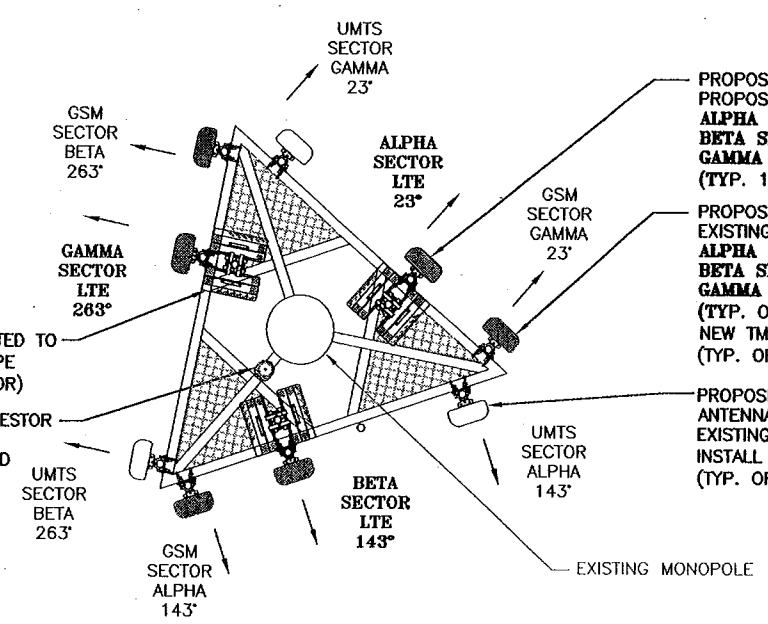
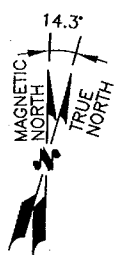




EXISTING GSM/UMTS ANTENNA PLAN
SCALE: N.T.S.

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

NOTE:
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION. REFER TO STRUCTURAL ANALYSIS BY: HUDSON DESIGN GROUP LLC, DATED: APRIL 06, 2012.



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

PROPOSED LTE ANTENNA MOUNTED TO PROPOSED MOUNTING PIPE AT POSITION 3
ALPHA SECTOR: AM-X-CD-16-65-00T
BETA SECTOR: AM-X-CD-16-65-00T
GAMMA SECTOR: AM-X-CD-16-65-00T
(TYP. 1 PER SECTOR, TOTAL OF 3)

PROPOSED NEW GSM ANTENNA TO REPLACE EXISTING AT POSITION 4
ALPHA SECTOR: AM-X-CD-16-65-00T
BETA SECTOR: AM-X-CD-16-65-00T
GAMMA SECTOR: AM-X-CD-16-65-00T
(TYP. OF 1 PER SECTOR, TOTAL OF 3) & NEW TMA MODEL# CCI DTMABP7819VG12A (TYP. OF 1 PER SECTOR, TOTAL OF 3)

PROPOSED RELOCATE EXISTING UMTS ANTENNA FROM POSITION 3 TO EXISTING MOUNTING PIPE AT POSITION 1, INSTALL NEW TMA MODEL# CCI DTMABP7819VG12A (TYP. OF 1 PER SECTOR, TOTAL OF 3)

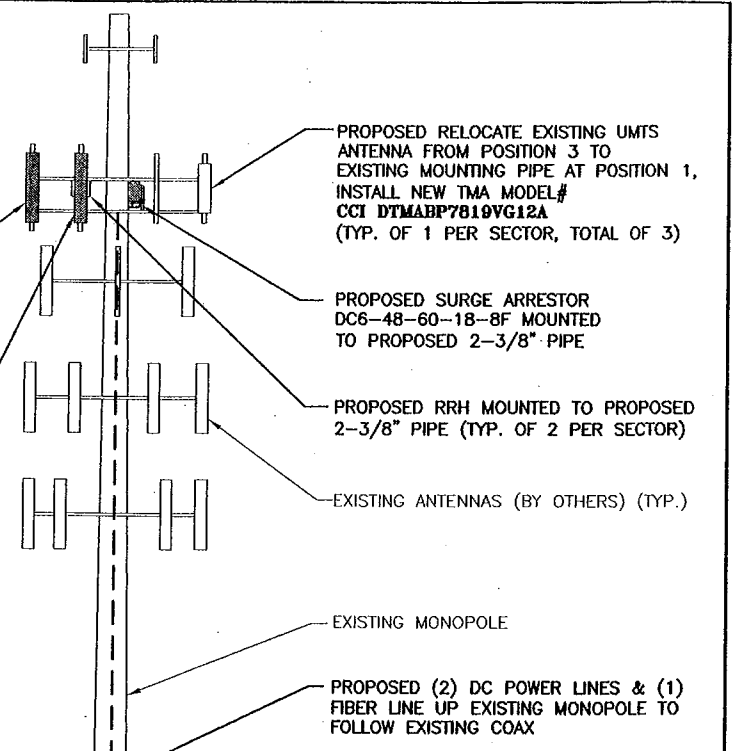
TOP OF MONOPOLE
ELEV. 140'-0"± (AGL)

PROPOSED AT&T RRH'S & SURGE ARRESTOR
ELEV. 125'-0"± (AGL)

CENTER OF PROPOSED AT&T ANTENNAS (LTE)
ELEV. 125'-0"± (AGL)

PROPOSED NEW GSM ANTENNA TO REPLACE EXISTING AT POSITION 4
ALPHA SECTOR: AM-X-CD-16-65-00T
BETA SECTOR: AM-X-CD-16-65-00T
GAMMA SECTOR: AM-X-CD-16-65-00T
(TYP. OF 1 PER SECTOR, TOTAL OF 3) & NEW TMA MODEL# CCI DTMABP7819VG12A (TYP. OF 1 PER SECTOR, TOTAL OF 3)

PROPOSED LTE ANTENNA MOUNTED TO PROPOSED MOUNTING PIPE AT POSITION 3
ALPHA SECTOR: AM-X-CD-16-65-00T
BETA SECTOR: AM-X-CD-16-65-00T
GAMMA SECTOR: AM-X-CD-16-65-00T
(TYP. 1 PER SECTOR, TOTAL OF 3)



EXISTING AT&T ICE BRIDGE WITH (12) LINES OF 1-1/4"Ø COAX TO REMAIN

EXISTING AT&T GPS ANTENNA

PROPOSED LTE GPS ANTENNA MOUNTED TO EXISTING SHELTER WALL (10' MIN. FROM EXISTING GPS ANTENNA)

EXISTING AT&T EQUIPMENT SHELTER

EXISTING CHAIN LINK FENCE (TYP.)

EXISTING SPRINT EQUIPMENT ON CONCRETE PAD

EXISTING VERIZON EQUIPMENT SHELTER

EXISTING PROPANE TANK

GROUND LEVEL
ELEV. 0'-0"± (AGL)

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

Hudson Design Group, Inc.
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 2-101
F. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5556

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

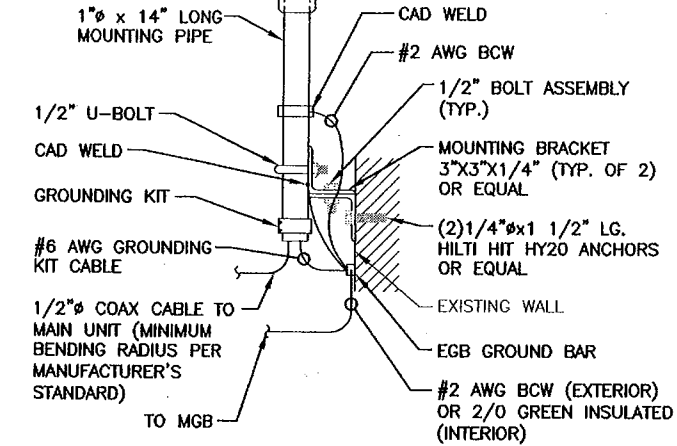
SITE NUMBER: CT1080
SITE NAME: MANCHESTER SAND & GRAVEL
60 ADAMS STREET
MANCHESTER, CT 06042
HARTFORD COUNTY

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

1		04/04/12	ISSUED FOR CONSTRUCTION	BY: DC	CHK: DPH	APP'D: [Signature]	AT&T ANTENNA LAYOUT AND ELEVATION (LTE)	1080.01	A-2	1
0		03/10/12	ISSUED FOR REVIEW	BY: DC	CHK: DPH	APP'D: [Signature]		1080.01	A-2	1
NO.	DATE	REVISIONS		BY	CHK	APP'D	JOB NUMBER	DRAWING NUMBER	REV	
SCALE: AS SHOWN		DESIGNED BY: DC		DRAWN BY: DB						

NOTE:

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



GPS MOUNTED TO SHELTER

SCALE: N.T.S.

LTE GPS MODEL
GPS-TMG-HR-26NCM
W/MOUNTING HARDWARE

GPS-TMG-MNT-R
COLLAR

CAD WELD

#2 AWG BCW

1/2" BOLT ASSEMBLY
(TYP.)

MOUNTING BRACKET
3"x3"x1/4" (TYP. OF 2)
OR EQUAL

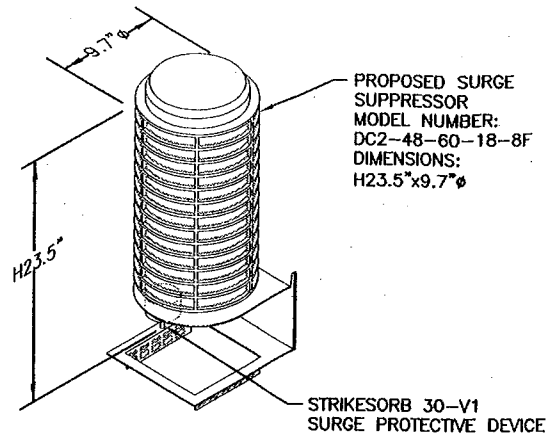
(2) 1/4"x1 1/2" LG.
HILTI HIT HY20 ANCHORS
OR EQUAL

EXISTING WALL

EGB GROUND BAR

#2 AWG BCW (EXTERIOR)
OR 2/0 GREEN INSULATED
(INTERIOR)

TO MGB



NOTE:
MOUNT PER MANUFACTURE'S SPECIFICATIONS.

DC SURGE SUPPRESSOR DETAIL

SCALE: N.T.S.

PROPOSED SURGE
SUPPRESSOR
MODEL NUMBER:
DC2-48-60-18-8F
DIMENSIONS:
H23.5"x9.7"

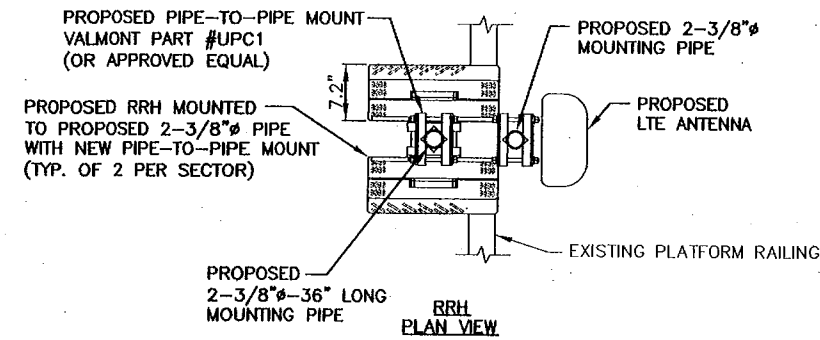
STRIKESORB 30-V1
SURGE PROTECTIVE DEVICE

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. REFER TO STRUCTURAL ANALYSIS BY: HUDSON DESIGN GROUP LLC, DATED: APRIL 06, 2012.



**RRH
PLAN VIEW**

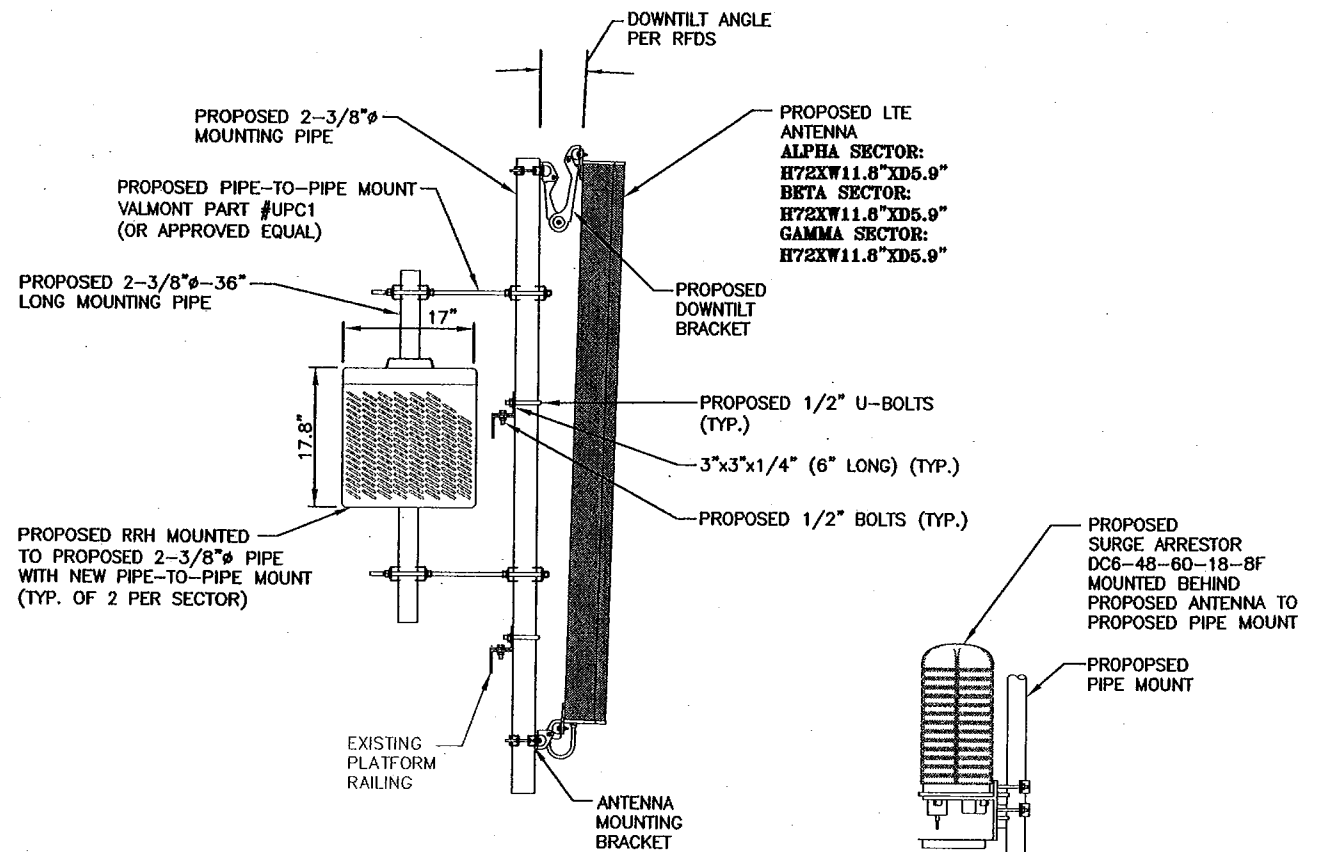
PROPOSED TMA MODEL #
CCI DTMABP7819VG12A

EXISTING
PLATFORM
RAILING

PROPOSED UMTS
ANTENNA
ALPHA SECTOR:
H72XW11.8"XD5.9"
BETA SECTOR:
H72XW11.8"XD5.9"
GAMMA SECTOR:
H72XW11.8"XD5.9"

**PROPOSED UMTS
ANTENNA MOUNTING DETAIL**

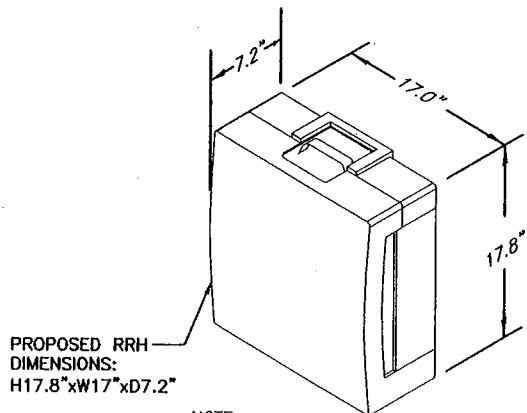
SCALE: N.T.S.



**PROPOSED LTE ANTENNA, RRH &
SURGE ARRESTOR MOUNTING DETAIL**

SCALE: N.T.S.

SURGE ARRESTOR
SIDE VIEW



PROPOSED RRH
DIMENSIONS:
H17.8"xW17"xD7.2"

NOTE:
MOUNT PER MANUFACTURE'S
SPECIFICATIONS.

RRH DETAIL

SCALE: N.T.S.

Hudson
Design Group, Inc.



1400 OSCOOD STREET
BUILDING 20 NORTH, SUITE 2-101
H. ANDOVER, MA 01845

TEL: (978) 557-5553
FAX: (978) 336-5586



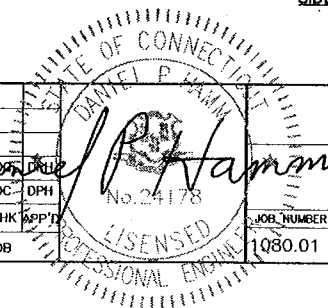
a UniTek GLOBAL SERVICES company
800 MARSHALL PHELPS ROAD UNIT# 2A
WINDSOR, CT 06095

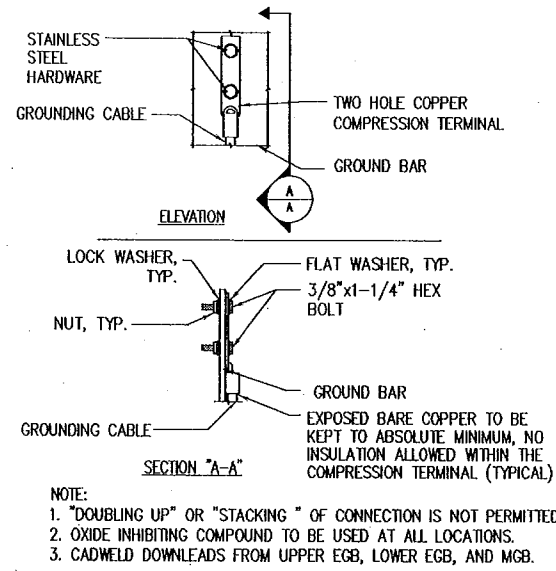
SITE NUMBER: CT1080
SITE NAME: MANCHESTER
SAND & GRAVEL
60 ADAMS STREET
MANCHESTER, CT 06042
HARTFORD COUNTY



500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

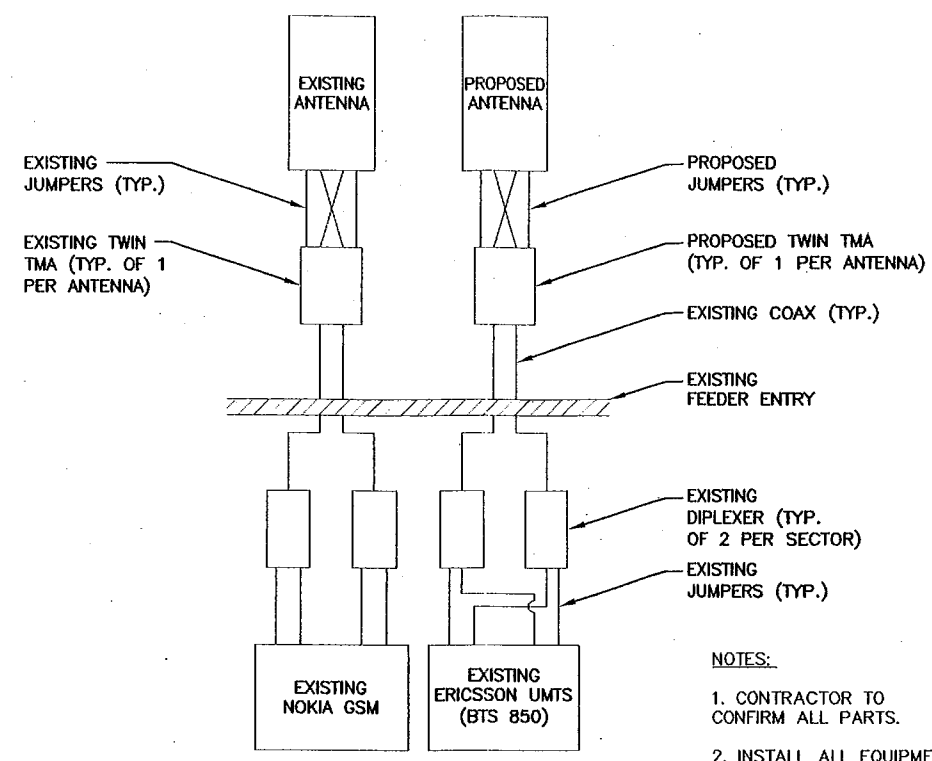
1		04/04/12	ISSUED FOR CONSTRUCTION	DB	DC	DPH	AT&T	
0		03/10/12	ISSUED FOR REVIEW	DB	DC	DPH	DETAILS (LTE)	
NO.	DATE	REVISIONS		BY	CHK	APP'D	JOB NUMBER	DRAWING NUMBER
							1080.01	A-3
SCALE: AS SHOWN		DESIGNED BY: DC		DRAWN BY: DB		REV 1		





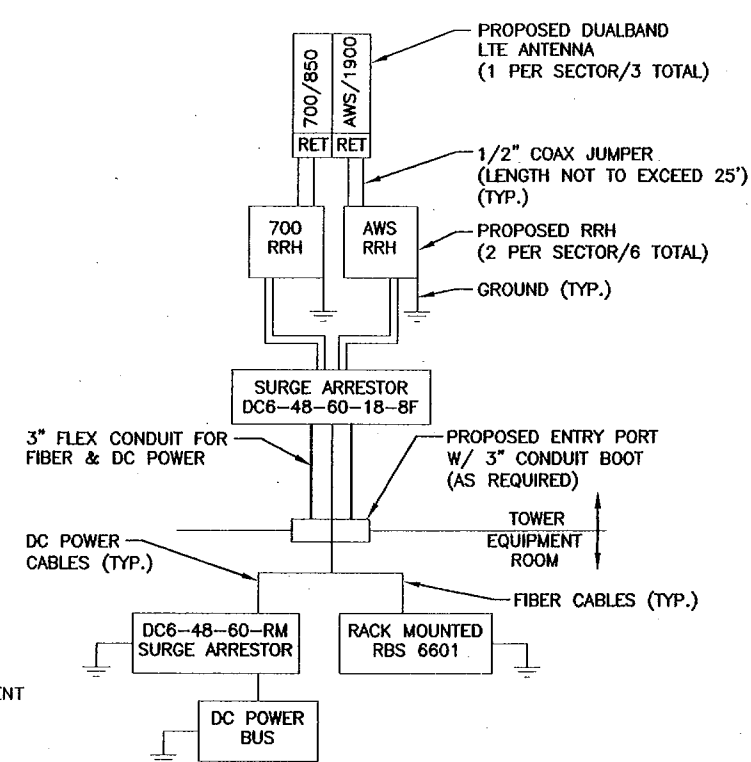
TYPICAL GROUND BAR CONNECTION DETAIL

1
N.T.S.



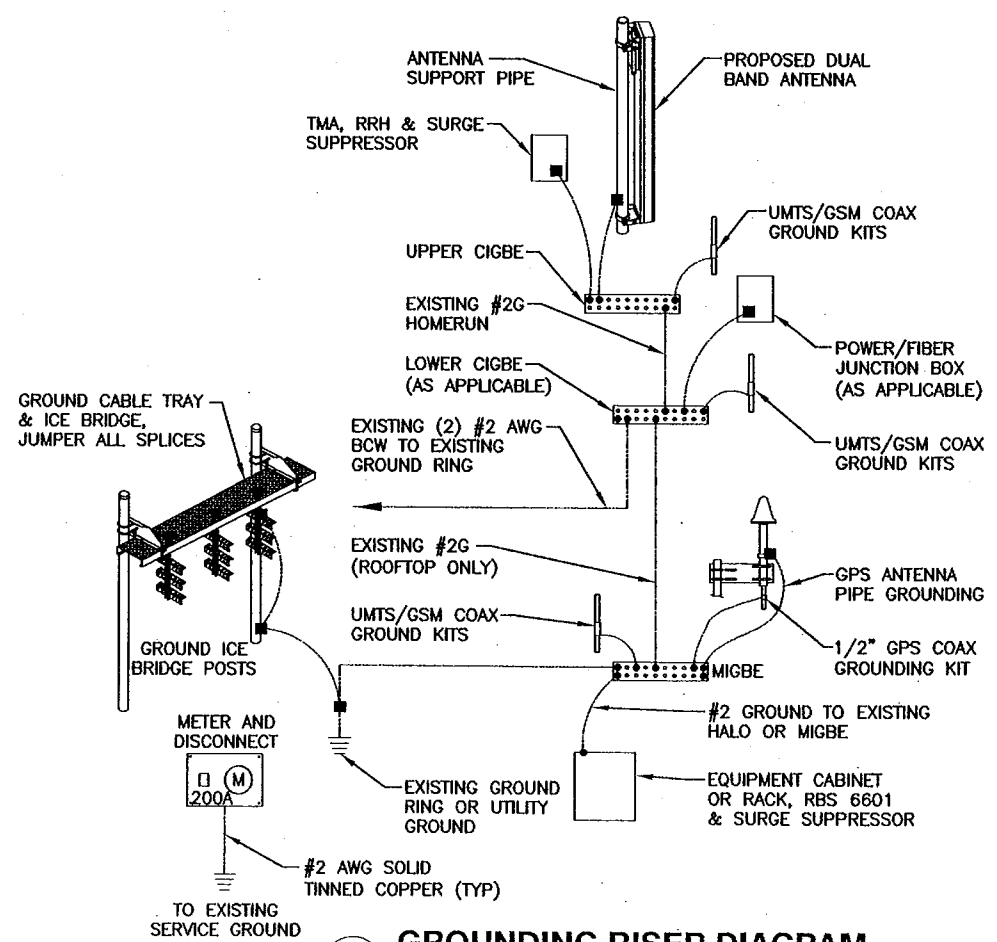
UMTS / GSM PLUMBING DIAGRAM

2
N.T.S.



LTE PLUMBING DIAGRAM

3
N.T.S.



GROUNDING RISER DIAGRAM

4
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.

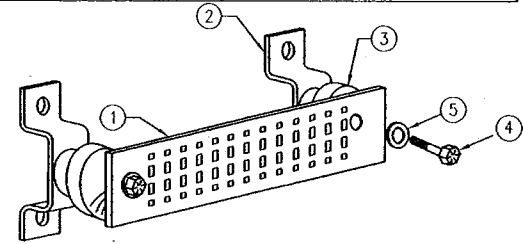
SECTION "A" - SURGE ABSORBERS

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

GROUND BAR - DETAIL

5
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



Hudson Design Group
 1400 OSGOOD STREET
 BUILDING 20 NORTH, SUITE 2-101
 N. ANDOVER, MA 01845
 TEL: (978) 567-5552
 FAX: (978) 336-5556

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

SITE NUMBER: CT1080
SITE NAME: MANCHESTER SAND & GRAVEL
 60 ADAMS STREET
 MANCHESTER, CT 06042
 HARTFORD COUNTY

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

1		04/04/12	ISSUED FOR CONSTRUCTION	DB	DC	DPH	AT&T	
0		03/10/12	ISSUED FOR REVIEW	DB	DC	DPH	PLUMBING DIAGRAM & GROUNDING DETAILS (LTE)	
NO.	DATE	REVISIONS		BY	CHK	APP'D	JOB NUMBER	DRAWING NUMBER
							1080.01	G-1
SCALE:		AS SHOWN		DESIGNED BY:	DC	DRAWN BY:	DB	REV
								1

STRUCTURAL ANALYSIS REPORT

For

CT1080

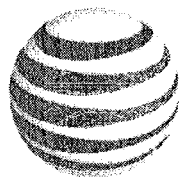
MANCHESTER SAND & GRAVEL

60 Adams Street
Manchester, CT 06042

Antennas Mounted to the Monopole



Prepared for:



at&t

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

Dated:
April 6, 2012

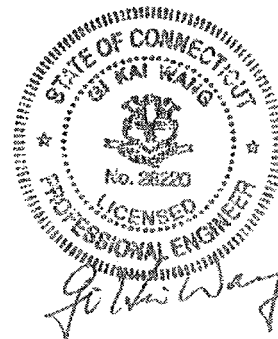
Prepared by:

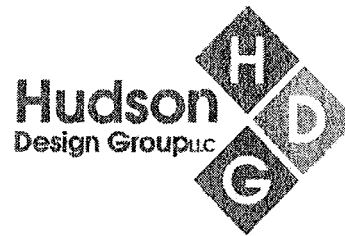
HUDSON DESIGN GROUP, LLC.

1600 Osgood Street Building 20 North, Suite 2-101
North Andover, MA 01845

Phone: (978) 557-5553

www.hudsondesigngroupllc.com





SCOPE OF WORK:

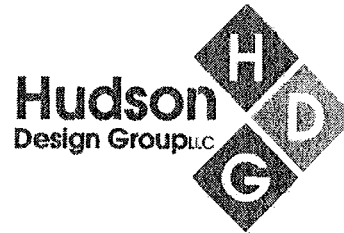
Hudson Design Group LLC (HDG) has been authorized by AT&T to conduct a structural evaluation of the 140' monopole supporting the proposed AT&T antennas located at elevation 125' above the ground level.

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 monopole were not available for our use. The previous structural analysis report prepared by URS Corporation, dated June 29, 2010, was available and obtained for our use.

CONCLUSION SUMMARY:

Based on our evaluation, we have determined that the existing monopole is in conformance with the ANSI/TIA-222-F Standard for the loading considered under the criteria listed in this report. The monopole structure is rated at 96.6% - (Pole section L3 from EL.0' to 45.04' Controlling).



APPURTENANCES CONFIGURATION:

Tenant	Appurtenances	Elev.	Mount
AT&T	(3) 800-10121 Antennas	125'	13' Low Profile Platform
AT&T	(6) AM-X-CD-16-65 Antennas	125'	13' Low Profile Platform
AT&T	(6)RRUs	125'	13' Low Profile Platform
AT&T	(6)DTMABP7819VG12A	125'	13' Low Profile Platform
AT&T	Surge Arrestor DC6-48-60-18-8F	125'	13' Low Profile Platform
	(6) DB980H90 Antennas	115'	15' Low Profile Platform
	(2) 6' Omni	110'	4' Side Mount Standoff
	(12) DB844H90 Antennas	100'	15' Low Profile Platform
	(6) ALP 6014 Antennas	90'	13' Low Profile Platform
	(3) BXA-70063-6CF Antennas	90'	13' Low Profile Platform
	(3) MGD3-900 Antennas	90'	13' Low Profile Platform
	(6) FD9R6004 Diplexers	90'	13' Low Profile Platform

**Existing/Proposed AT&T Appurtenances shown in Bold.*

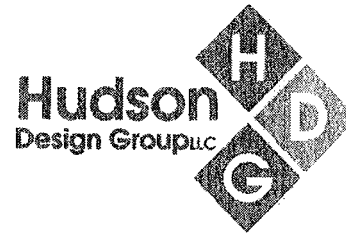
AT&T EXISTING/PROPOSED COAX CABLES:

Tenant	Coax Cables	Elev.	Mount
AT&T	(12) 1 5/8" Cables	125'	Inside Monopole
AT&T	Fiber Cable	125'	Inside Monopole
AT&T	(2) DC Power Cables	125'	Inside Monopole

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

ANALYSIS RESULTS SUMMARY:

Component	Max. Stress Ratio	Elev. of Component (ft)	Pass/Fail	Comments
Pole Section-L1	66.2 %	91.05 – 140.0	PASS	
Pole Section-L2	95.0 %	45.04 – 91.05	PASS	
Pole Section-L3	96.6 %	0 – 45.04	PASS	



DESIGN CRITERIA:

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

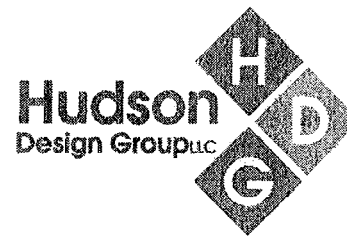
County: Hartford
Wind Load: 80 mph (fastest mile)
 100 mph (3 second gust)
Nominal Ice Thickness: 1/2 inch

2. Approximate height above grade to proposed antennas: 125'-0"

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

ASSUMPTIONS:

1. The monopole dimensions, member sizes and strength of material are as indicated in the previous structural analysis report prepared by URS Corporation, dated June 29, 2010.
2. The appurtenances configuration is as stated in the previous structural analysis report prepared by URS Corporation, dated June 29, 2010.
3. The monopole and foundation are properly constructed and maintained. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.
4. All antennas, mounts 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 modification, 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.



SUPPORT RECOMMENDATIONS:

HDG recommends that the proposed antennas, RRHs, TMAs and surge arresstor be mounted on the existing steel platform supported by the monopole.

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

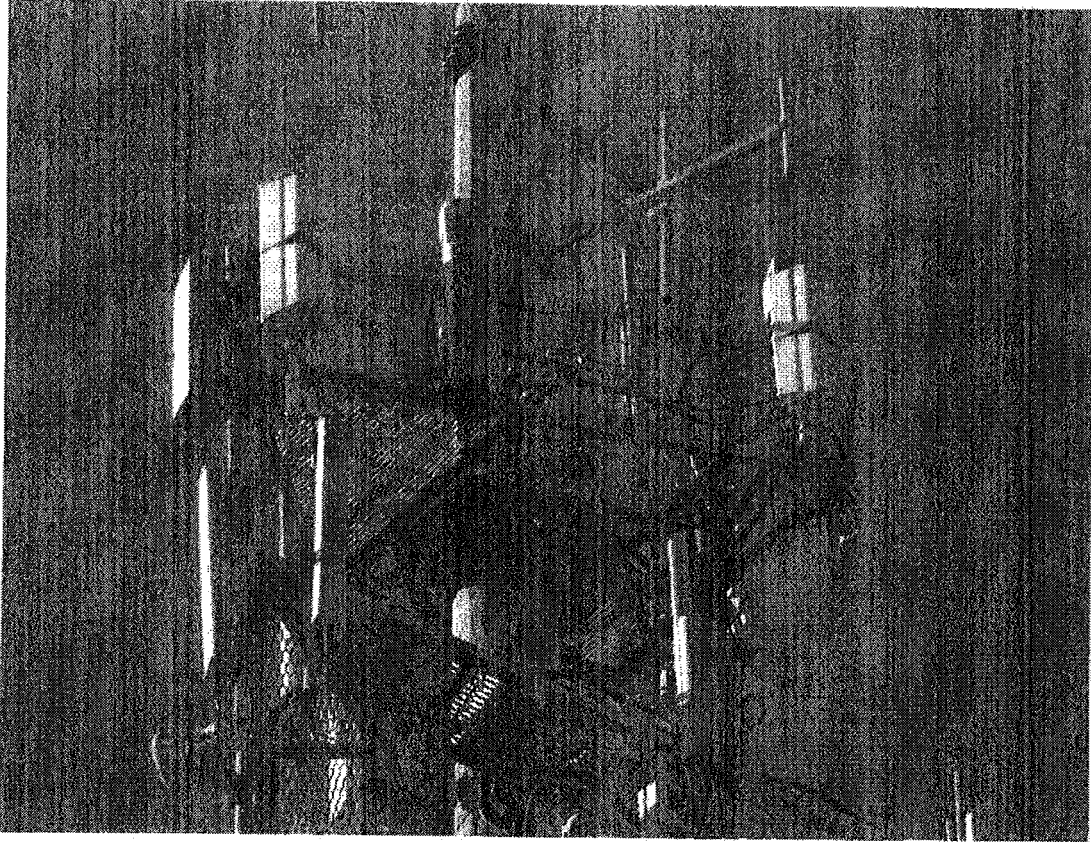


Photo 1: Photo illustrating the Monopole with Appurtenances shown.



CONSTRUCTION DRAWINGS

PROJECT INFORMATION

SCOPE OF WORK: UNMANNED TELECOMMUNICATIONS FACILITY MODIFICATIONS
 SITE ADDRESS: 60 ADAMS STREET, MANCHESTER, CT 06042
 LATITUDE: 41° 47' 39.5" N
 LONGITUDE: -72° 55' 38" W
 JURISDICTION: NATIONAL, STATE & LOCAL CODES OR ORDINANCES
 CURRENT USE: TELECOMMUNICATIONS FACILITY
 PROPOSED USE: TELECOMMUNICATIONS FACILITY

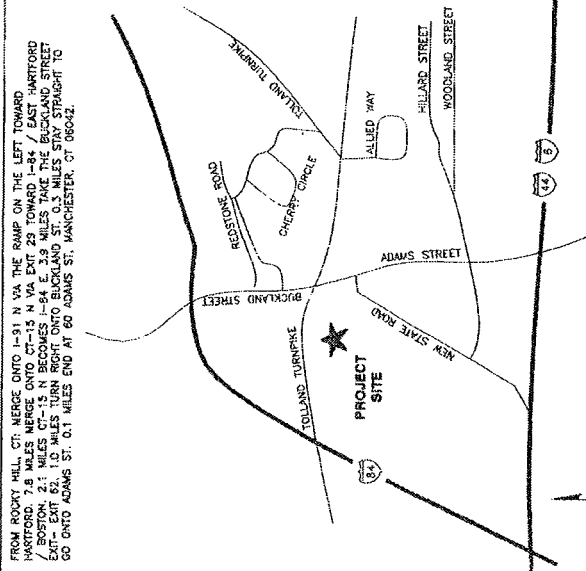


SITE NUMBER: CT1080
SITE NAME: MANCHESTER SAND & GRAVEL

DRAWING INDEX

REV	DESCRIPTION
0	T-1 TITLE SHEET
0	GN-1 GENERAL NOTES
0	A-1 COMPOUND & EQUIPMENT PLAN
0	A-2 ANTENNA LAYOUT AND ELEVATION
0	A-3 DETAILS
0	G-1 PLUMBING DIAGRAM & GROUNDING DETAILS

VICINITY MAP



GENERAL NOTES

- THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF AT&T. ANY REPRODUCTION, DISTRIBUTION, COPIING, REPRODUCTION, REUSE, MODIFICATION, DUPLICATION AND USE BY ANY OTHER PARTY WITHOUT THE WRITTEN PERMISSION OF AT&T IS STRICTLY PROHIBITED. THE PURPOSE OF THIS DOCUMENT IS TO PROVIDE INFORMATION TO THE USER FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.
- THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSIBLE BY TRAINED PERSONNEL. THE FACILITY IS NOT TO BE OPEN TO THE PUBLIC. THE FACILITY DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT COVERED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
- CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE GROUND. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE ACCURACY OF ALL DIMENSIONS AND CONDITIONS BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

72 HOURS

BEFORE YOU DIG

CALL TOLL FREE 800-922-4455

UNDERGROUND SERVICE ALERT

Hudson
 DESIGN GROUP
 100 WASHINGTON STREET
 WINDSOR, CT 06095
 TEL: 860-339-1333
 FAX: 860-339-1334

DELINK
 A UNIT OF GIGALINK SERVICES COMPANY
 600 MARSHALL PHELPS ROAD UNIT # 2A
 WINDSOR, CT 06095

at&t
 500 ENTERPRISE DRIVE, SUITE 3A
 ROCKY HILL, CT 06087

NO.	DATE	BY (NAME)	REVISIONS	ISSUED BY: DC	ISSUED BY: DR
1					
2					
3					

1080.01 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 STATE) AND THE SITE-SPECIFIC (UL, IFC, OR NFPA) LIGHTNING PROTECTION CODE AND GENERAL COMPLIANCE WITH THE "TELECOM 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 POWER SYSTEMS) SHALL BE BONDED TOGETHER AT OR ABOVE THE PANEL OR ABOVE COPPER BONDING CONNECTIONS IN ACCORDANCE WITH THE NEC.
3. THE SUBCONTRACTOR SHALL PERFORM IEEE 1106 AND 611 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 RACKING 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 RETIRED WITH THE POWER CIRCUITS TO ETS EQUIPMENT.
5. EACH ETS CARRIER FRAME SHALL BE DIRECTLY CONNECTED TO THE ETS GROUND BAR WITH GREEN INSULATED SUBSTANTIALLY OR LARGER FOR 1000V ETS 2 AWG STRANDED COPPER PER OUTDOOR ETS.
6. EXPOSURE WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
7. APPROVED ANTI-OXIDANT COMPOUNDS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND SOLDERED GROUND CONNECTIONS.
8. DC BRIDGE BONDING CONDUCTORS SHALL BE EXTERNALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER STEEL BAR.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTORS 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 WARE ELECTRICALY BONDED ACROSS THE ENTIRE LENGTH OF THE CONDUIT BY USING APPROVED BONDING FITTINGS OR BY WELDING ACROSS THE JOINTS. APPROVED BONDING FITTINGS OR WELDING SHALL BE USED FOR ALL COPPER BONDING CONNECTIONS.
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. ALL NEW SOLID BARE FINNED WELD GROUND WIRE, PER NEC 250.50.

GENERAL NOTES


1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
 CONTRACTOR - GENERAL CONTRACTOR (CONSTRUCTION)
 SUBCONTRACTOR - GENERAL MOBILITY OWNER - AT&T
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF THE CONTRACTOR.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, STANDARDS, MANUFACTURER'S INSTRUCTIONS, AND ALL APPLICABLE NOTICES AND COMPLI WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY AGENCIES. THE SUBCONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND APPROVALS FROM ALL APPLICABLE AGENCIES. ALL WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, LOCAL, AND FEDERAL 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, APPLICATIONS, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
6. "FITTINGS LIST SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY THE CONTRACTOR. ALL OTHER MATERIALS AND FITTINGS LISTED 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 TELECOM CABLES, INCLUDING THE LOCATION OF ALL CONDUIT 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 EXCESS CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. WASTE 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-CURED AND SHALL HAVE 4000 PSI STRENGTH. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.

15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND WELDED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A572 TYPE F (50 KSI YIELD) ALL STEEL BOLTED PIPES SHALL BE ASTM A575 TYPE F (50 KSI YIELD). ALL STEEL BOLTED 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 UNITS 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 STRUCTURES SHALL BE VERIFIED. ALL DIMENSIONS 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 INTERRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR CONSTRUCTION DURING MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER HOURS.
19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE OBSERVED. ALL WORKERS MUST BE TRAINED IN THE PROPER USE OF RADIATION EQUIPMENT SHOULD BE SHOWN IN EFFECT TO PREVENTING 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 BUILDING CODES. THE LOCAL AUTHORITY HAVING JURISDICTION (LAW CODES) SHALL BE COMPLIED WITH. ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.
 BUILDING CODE: 2003 IBC WITH 2003 CT SUPPLEMENT & 2009 CT SUPPLEMENT
 ELECTRICAL CODE: REFER TO ELECTRICAL DRAWINGS
 LIGHTNING 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, AISC, NINTH EDITION;
 TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-F, STRUCTURAL STANDARDS FOR STEEL.
 ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES: REFER TO ELECTRICAL DRAWINGS FOR LISTED CODES AND STANDARDS REGARDING MATERIAL METHODS OF CONSTRUCTION. ALL CONSTRUCTION REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS A CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

ABBREVIATIONS

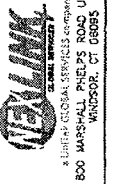
ACR	ABOVE GRADE LEVEL	G.C.	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
AWG	AMERICAN WIRE GAUGE	MGB	MASTER GROUND BUS	TSD	TO BE DETERMINED
BCW	BARE COPPER WIRE	MIN	MINIMUM	TBR	TO BE REMOVED
BTS	BASE TRANSCEIVER STATION	N.T.S.	NOT TO SCALE	TBR	TO BE REMOVED
EXISTING	EXISTING	REF	REFERENCE	TYP	TYPICAL
EQ	EQUIPMENT GROUND	REQ	REQUIRED		
EPR	EQUIPMENT GROUND RING				

SCALE AS SHOWN		INCREASED BY: DC	DECREASED BY: DR
DATE	BY	DATE	BY
01/25/10	10/10/10		
GENERAL NOTES (17E)			
AT&T			
GENERAL NOTES			
DR NUMBER	PROJECT NUMBER	PROJECT NAME	PROJECT ID
1080.01		GN-1	0



500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

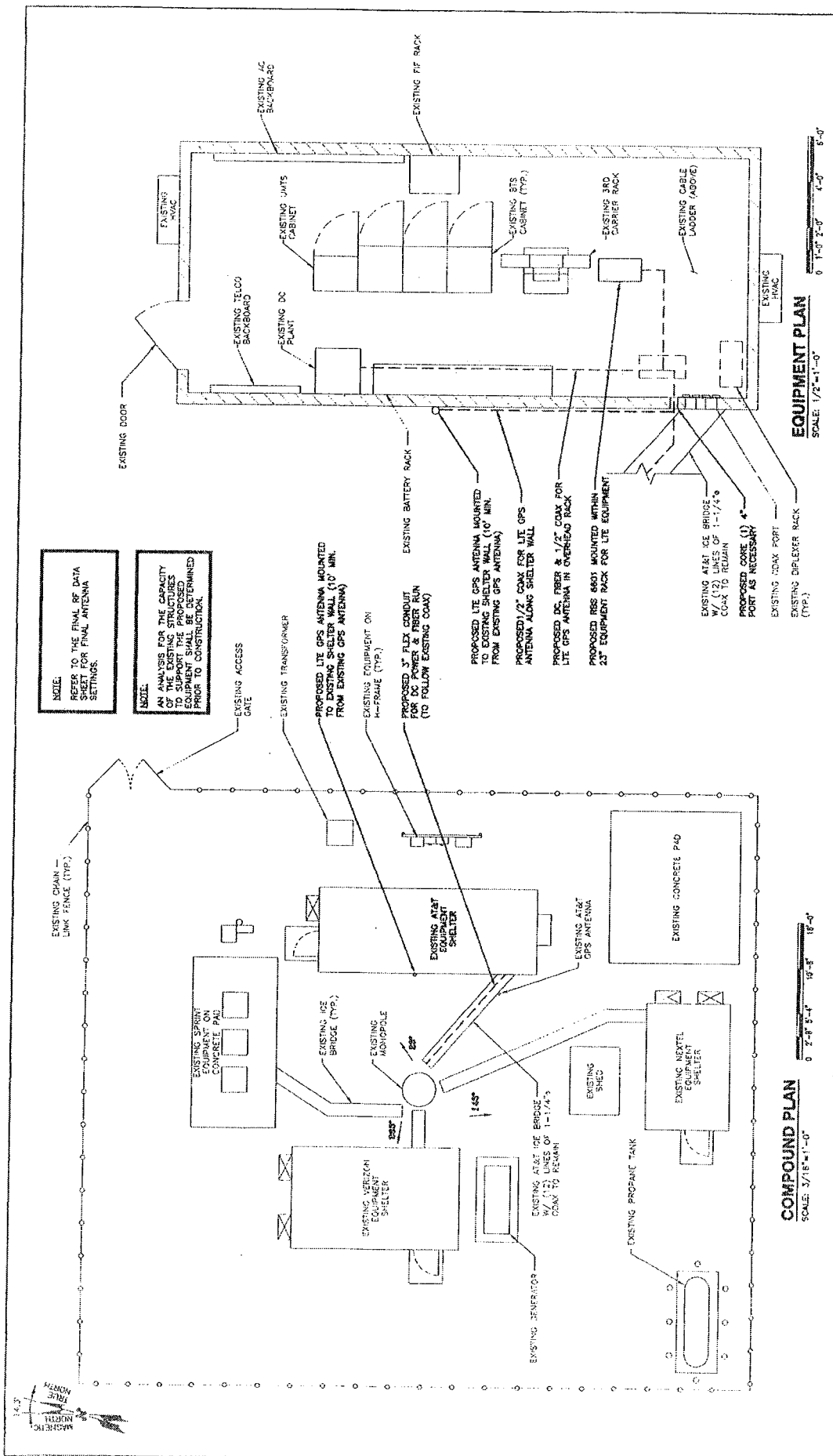
SITE NUMBER: CT1080
SITE NAME: HANCHEDER SAND & GRAVEL
 80 JOANS STREET
 HANCHEDER, CT 06042
 HARTFORD COUNTY



A TIA/ETSI 3GPP3 R4-010001 compliant company
 800 MARKET STREET, SUITE 200
 WINDSOR, CT 06095



Hudson
 Electrical Services
 800 MARKET STREET, SUITE 200
 WINDSOR, CT 06095






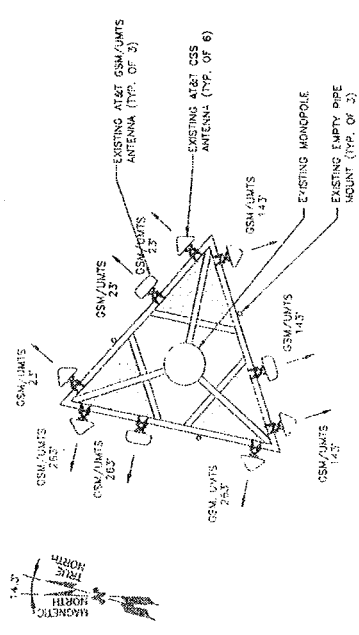
NOTE:
REFER TO THE FINAL BS DATA SHEET FOR FINAL ANTENNA SETTINGS.

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

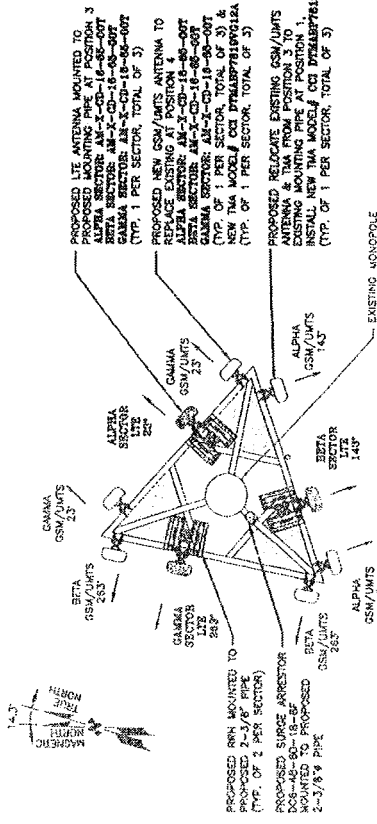
COMPOUND PLAN
SCALE: 3/16"=1'-0"

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

 Hudson <small>AN ENGINEERING COMPANY</small>	 Manning <small>AN ENGINEERING COMPANY</small>	 at&t 500 ENTERPRISE DRIVE, SUITE 3A ROCKY HILL, CT 06067	AT&T COMPOUND & EQUIPMENT PLAN (1.1E) DATE: 06/17/13 DRAWN BY: GSK/MLP CHECKED BY: GSK/MLP PROJECT NO.: 1060303 SHEET NO.: 1A-1								
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 5%;">NO.</th> <th style="width: 15%;">DATE</th> <th style="width: 40%;">REVISIONS</th> <th style="width: 40%;">BY</th> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table>				NO.	DATE	REVISIONS	BY				
NO.	DATE	REVISIONS	BY								



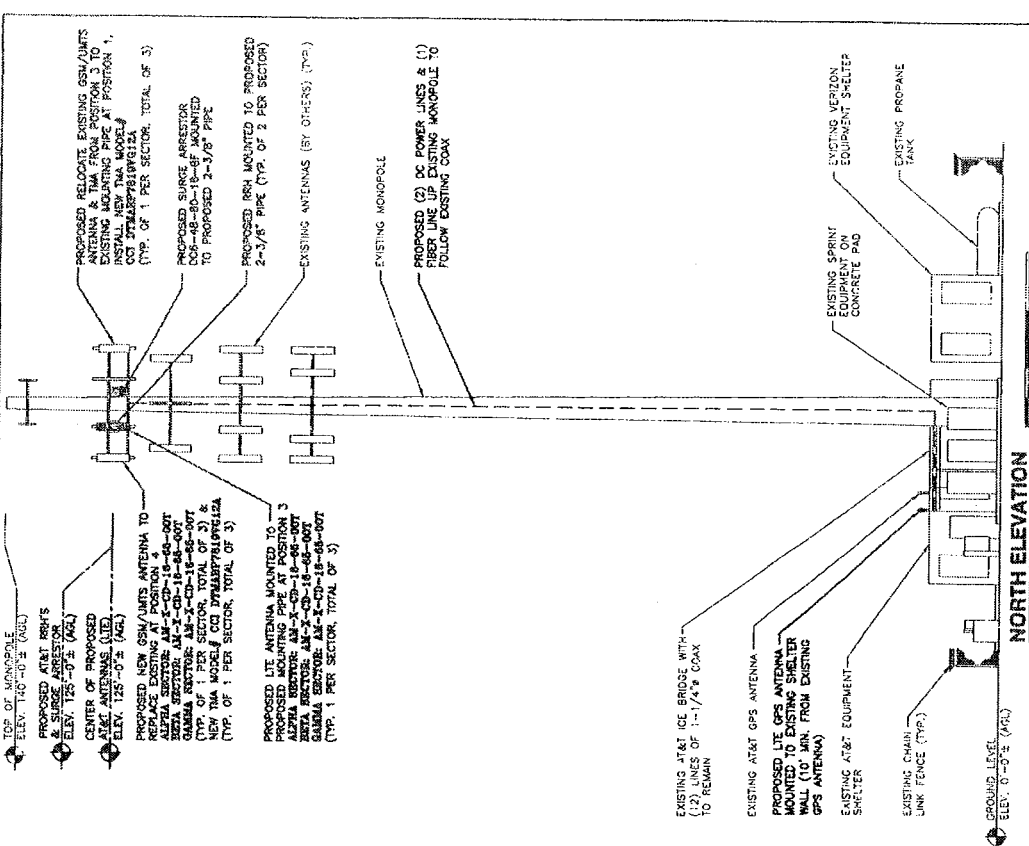
EXISTING GSM/UMTS ANTENNA PLAN
SCALE: N.T.S.



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

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

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

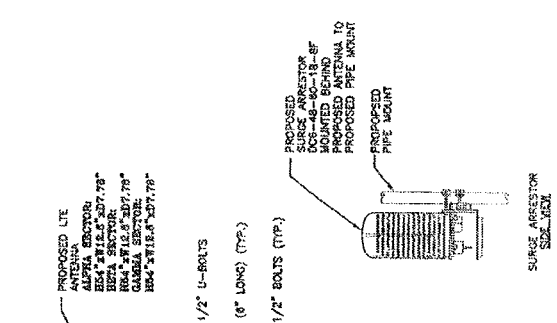
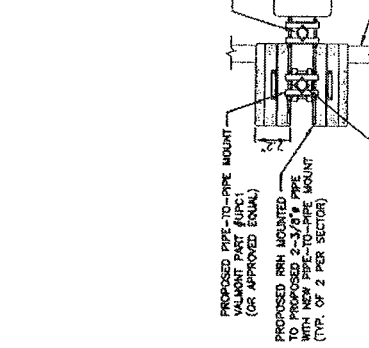


NORTH ELEVATION
SCALE: 1/8"=1'-0"

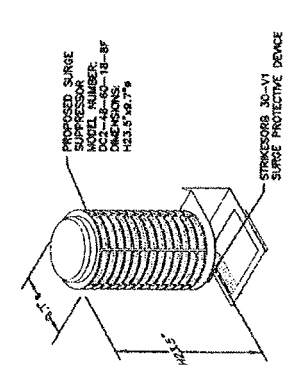
	SITE NUMBER: CT1080 SITE NAME: MANCHESTER SAND & GRAVEL 80 ADAMS STREET MANCHESTER, CT 06042 HARTFORD COUNTY	500 ENTERPRISE DRIVE, SUITE 3A ROCKY HILL, CT 06067	PROJECT NO. 1080-01 SHEET NO. 1 OF 2
	PROJECT NO. 1080-01 SHEET NO. 1 OF 2	PROJECT NO. 1080-01 SHEET NO. 1 OF 2	PROJECT NO. 1080-01 SHEET NO. 1 OF 2

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

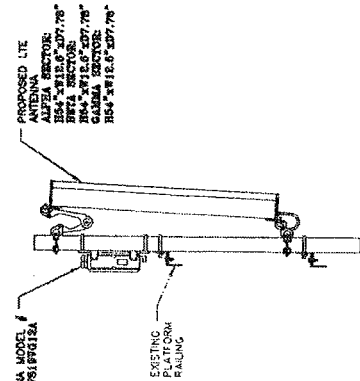
SCALE:
 REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.



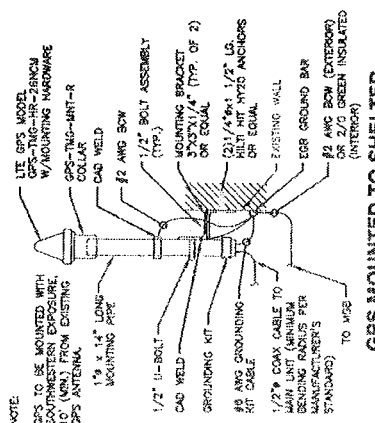
PROPOSED RRH & SURGE ARRESTOR MOUNTING DETAIL
 SCALE: N.T.S.



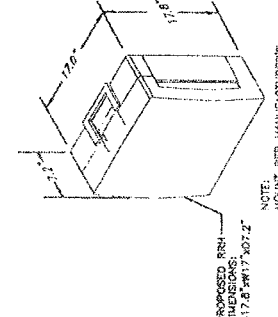
DC SURGE SUPPRESSOR DETAIL
 NOTE: MOUNT PER MANUFACTURER'S SPECIFICATIONS.
 SCALE: N.T.S.



PROPOSED GSM/UMTS ANTENNA MOUNTING DETAIL
 SCALE: N.T.S.

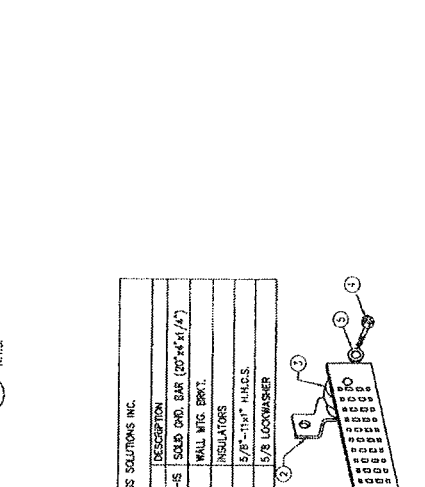
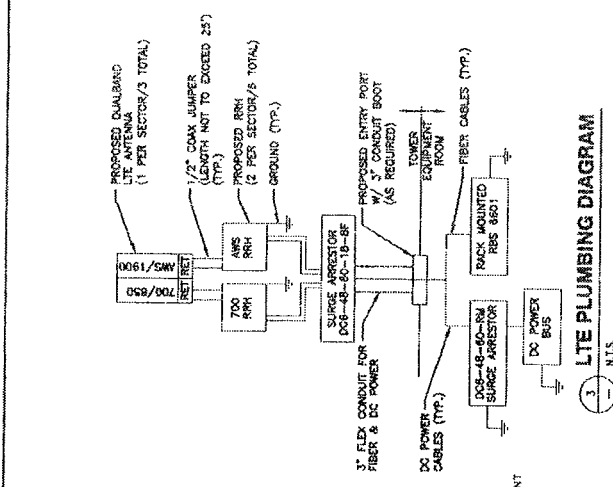
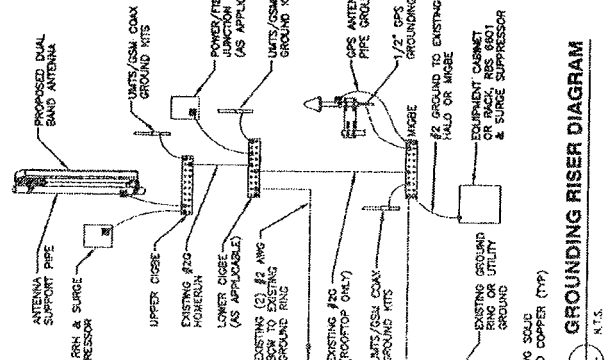
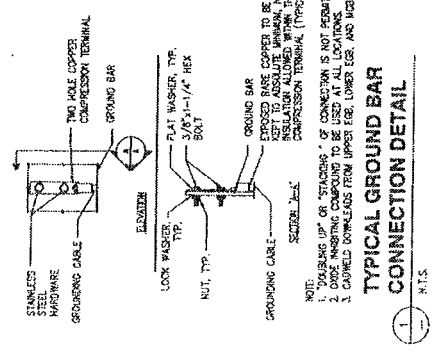


GPS MOUNTED TO SHELTER
 SCALE: N.T.S.



RRH DETAIL
 NOTE: MOUNT PER MANUFACTURER'S SPECIFICATIONS.
 SCALE: N.T.S.

<p>500 ENTERPRISE DRIVE, SUITE 3A ROCKY HILL, CT 06867</p>	<p>PROPOSED RRH & SURGE ARRESTOR MOUNTING DETAIL</p> <p>DATE: _____ DRAWN BY: DB CHECKED BY: DD PROJECT NO: _____</p>
	<p>PROPOSED GSM/UMTS ANTENNA MOUNTING DETAIL</p> <p>DATE: _____ DRAWN BY: DB CHECKED BY: DD PROJECT NO: _____</p>
	<p>GPS MOUNTED TO SHELTER</p> <p>DATE: _____ DRAWN BY: DB CHECKED BY: DD PROJECT NO: _____</p>
<p>RRH DETAIL</p> <p>DATE: _____ DRAWN BY: DB CHECKED BY: DD PROJECT NO: _____</p>	<p>PROPOSED SURGE ARRESTOR</p> <p>DATE: _____ DRAWN BY: DB CHECKED BY: DD PROJECT NO: _____</p>
<p>PROPOSED LITE ANTENNA</p> <p>DATE: _____ DRAWN BY: DB CHECKED BY: DD PROJECT NO: _____</p>	<p>PROPOSED RRH & SURGE ARRESTOR MOUNTING DETAIL</p> <p>DATE: _____ DRAWN BY: DB CHECKED BY: DD PROJECT NO: _____</p>
<p>DC SURGE SUPPRESSOR DETAIL</p> <p>DATE: _____ DRAWN BY: DB CHECKED BY: DD PROJECT NO: _____</p>	<p>GPS MOUNTED TO SHELTER</p> <p>DATE: _____ DRAWN BY: DB CHECKED BY: DD PROJECT NO: _____</p>
<p>RRH DETAIL</p> <p>DATE: _____ DRAWN BY: DB CHECKED BY: DD PROJECT NO: _____</p>	<p>AT&T</p> <p>DETAILS [LITE]</p> <p>DATE: _____ DRAWN BY: DB CHECKED BY: DD PROJECT NO: _____</p>



WIRELESS SOLUTIONS INC.

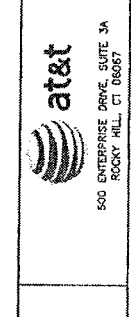
NO.	REQ.	PART NO.	DESCRIPTION
1	1	HUB-CARD-S	SOLID GND BAR (20"x4"x1/4")
2	2	---	WALL MTG. BRKT.
3	2	---	INSULATORS
4	4	---	5/8"-11"x1" H.L.C.S.
5	4	---	5/8" LOCKWASHER

SECTION "A" - SURGE ARRESTORS
CABLE ENTRY PORTS (MATCH PLATES) (F2)
ELEVATOR FRAMEWORK (IF AVAILABLE) (F2)
INTERNAL POWER COMMON NEUTRAL/GROUND BOND (F2)
+24V POWER SUPPLY RETURN BAR (F2)
-48V POWER SUPPLY RETURN BAR (F2)
RECTIFIER FRAME.

SECTION "B" - SURGE PROTECTORS
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BUS SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY THE WIRE AND DESTINATION.

SECTION "C" - SURGE PROTECTORS
CABLE ENTRY PORTS (MATCH PLATES) (F2)
ELEVATOR FRAMEWORK (IF AVAILABLE) (F2)
INTERNAL POWER COMMON NEUTRAL/GROUND BOND (F2)
+24V POWER SUPPLY RETURN BAR (F2)
-48V POWER SUPPLY RETURN BAR (F2)
RECTIFIER FRAME.

SECTION "A" - SURGE ARRESTORS
INTERIOR GROUND RING (F2)
EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (F2)
METALLIC COLD WATER PIPE (IF AVAILABLE) (F2)
BEDDING STEEL (IF AVAILABLE) (F2)

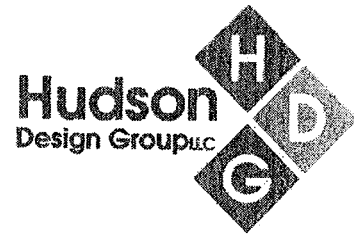


SITE NUMBER: CT1080
SITE NAME: MANCHESTER SAND & GRAVEL
60 ADAMS STREET
MANCHESTER, CT 06042
HARTFORD COUNTY

NEWLINK
A UNIT OF GLOBAL SERVICES COMPANY
800 MAPLESHAW PHOENIX ROAD UNIT # 2A
WINDSOR, CT 06095

Hudson
Design Group
1200 WASHINGTON STREET
WINDSOR, CT 06095
TEL: 860-339-8800
WWW.HUDSONDESIGN.COM

AT&T
PLUMBING DIAGRAM & GROUNDING DETAILS (LTE)
JOB NUMBER: 1080-01
DESIGNED BY: DC
DRAWN BY: DR
DATE: 03/17/12
SCALE: AS SHOWN
REVISIONS: 0-1



CALCULATIONS

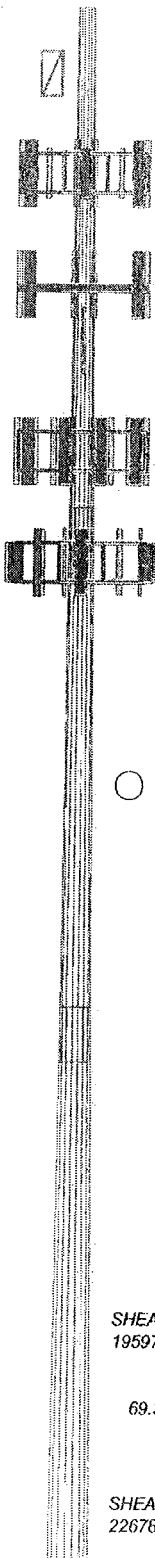
140.0 ft

Section	1	48.55	18	0.1875	3.50	18.0000	26.8100	2312.5
Length (ft)	2	49.91	18	0.3125	4.91	25.7331	34.8400	6301.7
Number of Sides	3	49.95	18	0.3750	33.3191	43.0000	8026.2	
Thickness (in)								
Socket Length (ft)								
Top Dia (in)								
Bot Dia (in)								
Grade								
Weight (lb)								

91.0 ft

45.0 ft

0.0 ft



DESIGNED APPURTENANCE LOADING

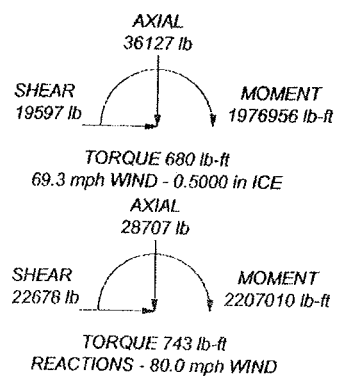
TYPE	ELEVATION	TYPE	ELEVATION
Pirod 4' Side Mount Standoff (1)	139	(2) DB980H90E-M w/Mount Pipe	115
Pirod 4' Side Mount Standoff (1)	139	(2) DB980H90E-M w/Mount Pipe	115
Pirod 6' Side Mount Standoff (1)	134	(2) Omni 1"x6'	110
PIROD 13' Platform w/handrails (Monopole) (ATI - existing)	125	(2) Pirod 4' Side Mount Standoff (1)	107
Kathrein 800 10121 w/mount pipe (ATI - existing)	125	PIROD 13' Platform w/handrails (Monopole)	100
Kathrein 800 10121 w/mount pipe (ATI - existing)	125	(4) DB844H90 w/Mount Pipe	100
Kathrein 800 10121 w/mount pipe (ATI - existing)	125	(4) DB844H90 w/Mount Pipe	100
(2) KMW AM-X-CD-16-65-00T-RET w/mount pipe (ATI - proposed)	125	(4) DB844H90 w/Mount Pipe	100
(2) KMW AM-X-CD-16-65-00T-RET w/mount pipe (ATI - proposed)	125	PIROD 13' Platform w/handrails (Monopole)	90
(2) KMW AM-X-CD-16-65-00T-RET w/mount pipe (ATI - proposed)	125	ALP 6014-N w/Mount Pipe	90
(2) Ericsson RRU (ATI - proposed)	125	ALP 6014-N w/Mount Pipe	90
(2) Ericsson RRU (ATI - proposed)	125	ALP 6014-N w/Mount Pipe	90
(2) Ericsson RRU (ATI - proposed)	125	ALP 6014-N w/Mount Pipe	90
(2) TMA DTMAPB7819VG12A (ATI - proposed)	125	ALP 6014-N w/Mount Pipe	90
(2) TMA DTMAPB7819VG12A (ATI - proposed)	125	BXA-70063-6CF-EDIN w/mount pipe	90
(2) TMA DTMAPB7819VG12A (ATI - proposed)	125	BXA-70063-6CF-EDIN w/mount pipe	90
Surge Arrestor (DC6-40-60-18-8F) (ATI - proposed)	125	BXA-70063-6CF-EDIN w/mount pipe	90
PIROD 15' Low Profile Platform	115	Rymse MGD3-900	90
(2) DB980H90E-M w/Mount Pipe	115	Rymse MGD3-900	90
		Rymse MGD3-900	90
		FD9R6004 Diplexer	90
		FD9R6004 Diplexer	90
		FD9R6004 Diplexer	90
		FD9R6004 Diplexer	90
		FD9R6004 Diplexer	90

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-85	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80.0 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 69.3 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 60.0 mph wind.
5. TOWER RATING: 96.6%



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 1080 Manchester, CT Project: 140 ft monopole Client: AT&T Code: TIA/EIA-222-F Path:	Drawn by: kw Date: 04/06/12 Scale: NTS Dwg No. E-1
--	--	---	---

tnxTower 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 1080 Manchester, CT	Page	1 of 8
	Project	140 ft monopole	Date	09:52:58 04/06/12
	Client	AT&T	Designed by	kw

Tower Input Data

There is a pole section.

This tower is designed using the TIA/EIA-222-F standard.

The following design criteria apply:

Tower is located in Hartford County, Connecticut.

Basic wind speed of 80.0 mph.

Nominal ice thickness of 0.5000 in.

Ice density of 56.0 pcf.

A wind speed of 69.3 mph is used in combination with ice.

Temperature drop of 50.0 °F.

Deflections calculated using a wind speed of 60.0 mph.

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in pole design is 1.333.

Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	140.00-91.05	48.95	3.90	18	18.0000	26.8100	0.1875	0.7500	A572-65 (65 ksi)
L2	91.05-45.04	49.91	4.91	18	25.7331	34.8400	0.3125	1.2500	A572-65 (65 ksi)
L3	45.04-0.00	49.95		18	33.3191	43.0000	0.3750	1.5000	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
L1	18.2777	10.6007	424.9328	6.3234	9.1440	46.4712	850.4248	5.3013	2.8380	15.136
	27.2236	15.8437	1418.7052	9.4510	13.6195	104.1674	2839.2771	7.9234	4.3886	23.406
L2	26.8527	25.2140	2058.4995	9.0243	13.0724	157.4691	4119.7076	12.6094	3.9790	12.733
	35.3775	34.2470	5158.1005	12.2573	17.6987	291.4392	10322.9881	17.1267	5.5818	17.862
L3	34.7994	39.2117	5376.6047	11.6952	16.9261	317.6518	10760.2841	19.6096	5.2042	13.878
	43.6633	50.7344	11645.7863	15.1319	21.8440	533.1343	23306.8964	25.3720	6.9080	18.421

Feed Line/Linear Appurtenances - Entered As Area

inxTower 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	Page
	Project	Date
	Client	Designed by
	CT 1080 Manchester, CT	2 of 8
	140 ft monopole	09:52:58 04/06/12
	AT&T	kw

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C _A A _t	Weight	
							ft ² /ft	plf	
1 1/4 (AT&T - existing)	A	No	Inside Pole	125.00 - 0.00	12	No Ice	0.00	0.66	
						1/2" Ice	0.00	0.66	
1 1/4	A	No	Inside Pole	115.00 - 0.00	6	No Ice	0.00	0.66	
						1/2" Ice	0.00	0.66	
7/8	A	No	Inside Pole	107.00 - 0.00	1	No Ice	0.00	0.54	
						1/2" Ice	0.00	0.54	
7/8	A	No	Inside Pole	100.00 - 0.00	12	No Ice	0.00	0.54	
						1/2" Ice	0.00	0.54	
1 5/8	A	No	Inside Pole	90.00 - 0.00	12	No Ice	0.00	1.04	
						1/2" Ice	0.00	1.04	

FB-L98B-002 (AT&T - proposed)	A	No	Inside Pole	125.00 - 0.00	1	No Ice	0.00	0.25	
						1/2" Ice	0.00	0.25	
FB-L98B-002 (AT&T - proposed)	A	No	Inside Pole	125.00 - 0.00	2	No Ice	0.00	0.25	
						1/2" Ice	0.00	0.25	

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _A A _t Front ft ²	C _A A _t Side ft ²	Weight lb
PiROD 4' Side Mount Standoff (1)	A	From Leg	2.00 0.00 0.00	0.0000	139.00	No Ice	2.72	2.72	50.00
						1/2" Ice	4.91	4.91	89.00
PiROD 4' Side Mount Standoff (1)	C	From Face	2.00 0.00 0.00	0.0000	139.00	No Ice	2.72	2.72	50.00
						1/2" Ice	4.91	4.91	89.00
PiROD 6' Side Mount Standoff (1)	A	From Face	3.00 0.00 0.00	0.0000	134.00	No Ice	4.97	4.97	70.00
						1/2" Ice	6.12	6.12	130.00

PiROD 13' Platform w/handrails (Monopole) (AT&T - existing)	A	None		0.0000	125.00	No Ice	31.30	31.30	1822.00
						1/2" Ice	40.20	40.20	2452.00
Kathrein 800 10121 w/mount pipe (AT&T - existing)	A	From Face	3.00 0.00 0.00	0.0000	125.00	No Ice	5.72	4.81	78.15
						1/2" Ice	6.21	5.49	126.48
Kathrein 800 10121 w/mount pipe (AT&T - existing)	B	From Face	3.00 0.00 0.00	0.0000	125.00	No Ice	5.72	4.81	78.15
						1/2" Ice	6.21	5.49	126.48
Kathrein 800 10121 w/mount pipe (AT&T - existing) (2) KMW	C	From Face	3.00 0.00 0.00	0.0000	125.00	No Ice	5.72	4.81	78.15
						1/2" Ice	6.21	5.49	126.48
AM-X-CD-16-65-00T-RET w/mount pipe (AT&T - proposed) (2) KMW	A	From Face	3.00 0.00 0.00	0.0000	125.00	No Ice	8.50	6.30	74.05
						1/2" Ice	9.15	7.48	136.21
AM-X-CD-16-65-00T-RET w/mount pipe (AT&T - proposed) (2) KMW	B	From Face	3.00 0.00 0.00	0.0000	125.00	No Ice	8.50	6.30	74.05
						1/2" Ice	9.15	7.48	136.21
AM-X-CD-16-65-00T-RET w/mount pipe (AT&T - proposed) (2) KMW	C	From Face	3.00	0.0000	125.00	No Ice	8.50	6.30	74.05

tnxTower 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	Page
	Project	Date
	Client	Designed by
	CT 1080 Manchester, CT	3 of 8
	140 ft monopole	09:52:58 04/06/12
	AT&T	kw

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _A A ₁ Front ft ²	C _A A ₂ Side ft ²	Weight lb
AM-X-CD-16-65-00T-RET w/mount pipe			0.00 0.00		1/2" Ice	9.15	7.48	136.21
(AT&T - proposed)								
(2) Ericsson RRU (AT&T - proposed)	A	From Face	2.00 0.00 0.00	0.0000	125.00	No Ice 1/2" Ice	2.07 1.08 1.23	44.00 58.64
(2) Ericsson RRU (AT&T - proposed)	B	From Face	2.00 0.00 0.00	0.0000	125.00	No Ice 1/2" Ice	2.07 1.08 1.23	44.00 58.64
(2) Ericsson RRU (AT&T - proposed)	C	From Face	2.00 0.00 0.00	0.0000	125.00	No Ice 1/2" Ice	2.07 1.08 1.23	44.00 58.64
(2) TMA DTMABP7819VG12A (AT&T - proposed)	A	From Face	2.00 0.00 0.00	0.0000	125.00	No Ice 1/2" Ice	1.14 0.39 0.49	19.20 26.50
(2) TMA DTMABP7819VG12A (AT&T - proposed)	B	From Face	2.00 0.00 0.00	0.0000	125.00	No Ice 1/2" Ice	1.14 0.39 0.49	19.20 26.50
(2) TMA DTMABP7819VG12A (AT&T - proposed)	C	From Face	2.00 0.00 0.00	0.0000	125.00	No Ice 1/2" Ice	1.14 0.39 0.49	19.20 26.50
Surge Arrestor (DC6-48-60-18-8F) (AT&T - proposed)	C	From Face	1.00 0.00 0.00	0.0000	125.00	No Ice 1/2" Ice	1.27 1.46 1.46	20.00 35.12

PiROD 15' Low Profile Platform	A	None		0.0000	115.00	No Ice 1/2" Ice	17.30 22.10	1500.00 2030.00
(2) DB980H90E-M w/Mount Pipe	A	From Face	3.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice	4.27 4.86 4.95	34.05 69.84
(2) DB980H90E-M w/Mount Pipe	B	From Face	3.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice	4.27 4.86 4.95	34.05 69.84
(2) DB980H90E-M w/Mount Pipe	C	From Face	3.00 0.00 0.00	0.0000	115.00	No Ice 1/2" Ice	4.27 4.86 4.95	34.05 69.84

(2) Pirod 4' Side Mount Standoff (1)	C	None		0.0000	107.00	No Ice 1/2" Ice	2.72 4.91	50.00 89.00
(2) Omni 1"x6'	C	None		0.0000	110.00	No Ice 1/2" Ice	0.60 1.22	25.00 30.60

PiROD 15' Platform w/handrails (Monopole)	A	None		0.0000	100.00	No Ice 1/2" Ice	33.80 43.60	2043.00 2748.00
(4) DB844H90 w/Mount Pipe	A	From Face	3.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice	3.58 5.63 6.73	35.55 77.48
(4) DB844H90 w/Mount Pipe	B	From Face	3.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice	3.58 5.63 6.73	35.55 77.48
(4) DB844H90 w/Mount Pipe	C	From Face	3.00 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice	3.58 5.63 6.73	35.55 77.48

PiROD 13' Platform w/handrails (Monopole)	A	None		0.0000	90.00	No Ice 1/2" Ice	31.30 40.20	1822.00 2452.00
ALP 6014-N w/Mount Pipe	A	From Face	3.00	0.0000	90.00	No Ice	7.50	45.55

tnxTower 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 1080 Manchester, CT	Page	4 of 8
	Project	140 ft monopole	Date	09:52:58 04/06/12
	Client	AT&T	Designed by	kw

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A ₄ Front	C _A A ₄ Side	Weight
			Horz	Lateral Vert					
			ft	ft	°	ft	ft ²	ft ²	lb
			6.00			1/2" Ice	8.24	7.56	107.82
ALP 6014-N w/Mount Pipe	A	From Face	0.00		0.0000	No Ice	7.50	6.47	45.55
			3.00			1/2" Ice	8.24	7.56	107.82
			-6.00						
			0.00						
ALP 6014-N w/Mount Pipe	B	From Face	3.00		0.0000	No Ice	7.50	6.47	45.55
			6.00			1/2" Ice	8.24	7.56	107.82
			0.00						
ALP 6014-N w/Mount Pipe	B	From Face	3.00		0.0000	No Ice	7.50	6.47	45.55
			-6.00			1/2" Ice	8.24	7.56	107.82
			0.00						
ALP 6014-N w/Mount Pipe	C	From Face	3.00		0.0000	No Ice	7.50	6.47	45.55
			6.00			1/2" Ice	8.24	7.56	107.82
			0.00						
ALP 6014-N w/Mount Pipe	C	From Face	3.00		0.0000	No Ice	7.50	6.47	45.55
			-6.00			1/2" Ice	8.24	7.56	107.82
			0.00						
BXA-70063-6CF-EDIN w/mount pipe	A	From Face	3.00		0.0000	No Ice	7.99	5.82	42.55
			0.00			1/2" Ice	8.64	6.99	100.70
			0.00						
BXA-70063-6CF-EDIN w/mount pipe	B	From Face	3.00		0.0000	No Ice	7.99	5.82	42.55
			0.00			1/2" Ice	8.64	6.99	100.70
			0.00						
BXA-70063-6CF-EDIN w/mount pipe	C	From Face	3.00		0.0000	No Ice	7.99	5.82	42.55
			0.00			1/2" Ice	8.64	6.99	100.70
			0.00						
Rymsa MGD3-900	A	From Face	3.00		0.0000	No Ice	5.37	3.60	22.00
			4.00			1/2" Ice	5.83	4.04	51.69
			0.00						
Rymsa MGD3-900	B	From Face	3.00		0.0000	No Ice	5.37	3.60	22.00
			4.00			1/2" Ice	5.83	4.04	51.69
			0.00						
Rymsa MGD3-900	C	From Face	3.00		0.0000	No Ice	5.37	3.60	22.00
			4.00			1/2" Ice	5.83	4.04	51.69
			0.00						
FD9R6004 Diplexer	A	From Face	3.00		0.0000	No Ice	0.37	0.08	2.60
			6.00			1/2" Ice	0.45	0.14	4.90
			0.00						
FD9R6004 Diplexer	A	From Face	3.00		0.0000	No Ice	0.37	0.08	2.60
			-6.00			1/2" Ice	0.45	0.14	4.90
			0.00						
FD9R6004 Diplexer	B	From Face	3.00		0.0000	No Ice	0.37	0.08	2.60
			6.00			1/2" Ice	0.45	0.14	4.90
			0.00						
FD9R6004 Diplexer	B	From Face	3.00		0.0000	No Ice	0.37	0.08	2.60
			-6.00			1/2" Ice	0.45	0.14	4.90
			0.00						
FD9R6004 Diplexer	C	From Face	3.00		0.0000	No Ice	0.37	0.08	2.60
			6.00			1/2" Ice	0.45	0.14	4.90
			0.00						
FD9R6004 Diplexer	C	From Face	3.00		0.0000	No Ice	0.37	0.08	2.60
			-6.00			1/2" Ice	0.45	0.14	4.90
			0.00						

inxTower 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 1080 Manchester, CT	Page	5 of 8
	Project	140 ft monopole	Date	09:52:58 04/06/12
	Client	AT&T	Designed by	kw

Load Combinations

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

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Pole	Max. Vert	24	36126.96	19597.19	-0.00
	Max. H _x	11	28706.97	22678.48	0.00
	Max. H _z	2	28706.97	0.00	22678.48
	Max. M _x	2	2206836.73	0.00	22678.48
	Max. M _z	5	2206487.72	-22678.48	0.00
	Max. Torsion	3	742.65	-11339.24	19640.13
	Min. Vert	1	28706.96	0.00	0.00
	Min. H _x	5	28706.97	-22678.48	0.00
	Min. H _z	8	28706.97	0.00	-22678.48

tnxTower Hudson Design Group, LLC 1600 Osgood Street, Building 20 North, Suite 2-101 North Andover, MA 01845 Phone: (978) 557-5533 FAX: (978) 226-5586	Job	CT 1080 Manchester, CT	Page	6 of 8
	Project	140 ft monopole	Date	09:52:58 04/06/12
	Client	AT&T	Designed by	kw

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
	Min. M _x	8	-2206631.91	0.00	-22678.48
	Min. M _y	11	-2206980.91	22678.48	0.00
	Min. Torsion	9	-742.77	11339.24	-19640.13

Tower Mast Reaction Summary

Load Combination	Vertical lb	Shear _x lb	Shear _y lb	Overturning Moment, M _x lb-ft	Overturning Moment, M _y lb-ft	Torque lb-ft
Dead Only	28706.96	0.00	0.00	-95.58	230.06	0.00
Dead+Wind 0 deg - No Ice	28706.97	-0.00	-22678.48	-2206836.73	240.32	-685.47
Dead+Wind 30 deg - No Ice	28706.96	11339.24	-19640.13	-1911196.78	-1103132.25	-742.65
Dead+Wind 60 deg - No Ice	28706.96	19640.13	-11339.24	-1103470.47	-1910854.01	-601.05
Dead+Wind 90 deg - No Ice	28706.97	22678.48	-0.00	-99.63	-2206487.72	-298.26
Dead+Wind 120 deg - No Ice	28706.96	19640.13	11339.24	1103269.85	-1910851.58	84.50
Dead+Wind 150 deg - No Ice	28706.96	11339.24	19640.13	1910993.37	-1103129.82	444.43
Dead+Wind 180 deg - No Ice	28706.97	-0.00	22678.48	2206631.91	240.32	685.49
Dead+Wind 210 deg - No Ice	28706.96	-11339.24	19640.13	1910998.84	1103613.54	742.77
Dead+Wind 240 deg - No Ice	28706.96	-19640.13	11339.24	1103275.32	1911341.61	600.91
Dead+Wind 270 deg - No Ice	28706.97	-22678.48	-0.00	-99.63	2206980.91	298.24
Dead+Wind 300 deg - No Ice	28706.96	-19640.13	-11339.24	-1103475.94	1911344.03	-84.38
Dead+Wind 330 deg - No Ice	28706.96	-11339.24	-19640.13	-1911202.25	1103615.96	-444.53
Dead+Ice+Temp	36126.96	-0.00	-0.00	-183.45	432.32	-0.00
Dead+Wind 0 deg+Ice+Temp	36126.96	0.00	-19597.19	-1976642.32	468.78	-625.11
Dead+Wind 30 deg+Ice+Temp	36126.96	9798.58	-16971.64	-1711848.52	-987752.76	-680.13
Dead+Wind 60 deg+Ice+Temp	36126.96	16971.64	-9798.58	-988418.46	-1711178.11	-552.94
Dead+Wind 90 deg+Ice+Temp	36126.96	19597.19	0.00	-198.65	-1975965.47	-277.56
Dead+Wind 120 deg+Ice+Temp	36126.96	16971.64	9798.58	988019.69	-1711175.55	72.21
Dead+Wind 150 deg+Ice+Temp	36126.96	9798.58	16971.64	1711446.81	-987750.19	402.60
Dead+Wind 180 deg+Ice+Temp	36126.96	0.00	19597.19	1976239.13	468.79	625.13
Dead+Wind 210 deg+Ice+Temp	36126.96	-9798.58	16971.64	1711452.42	988690.99	680.14
Dead+Wind 240 deg+Ice+Temp	36126.96	-16971.64	9798.58	988025.30	1712122.80	552.88
Dead+Wind 270 deg+Ice+Temp	36126.96	-19597.19	0.00	-198.64	1976915.96	277.53
Dead+Wind 300 deg+Ice+Temp	36126.96	-16971.64	-9798.58	-988424.05	1712125.35	-72.19
Dead+Wind 330 deg+Ice+Temp	36126.96	-9798.58	-16971.64	-1711854.12	988693.53	-402.59
Dead+Wind 0 deg - Service	28706.97	-0.00	-12756.65	-1243005.78	247.67	-389.69
Dead+Wind 30 deg - Service	28706.96	6378.32	-11047.57	-1076494.28	-621207.26	-422.24
Dead+Wind 60 deg - Service	28706.96	11047.57	-6378.32	-621557.21	-1076142.88	-341.68
Dead+Wind 90 deg - Service	28706.97	12756.65	-0.00	-102.83	-1242652.39	-169.56
Dead+Wind 120 deg - Service	28706.96	11047.57	6378.32	621351.10	-1076142.10	48.01
Dead+Wind 150 deg - Service	28706.96	6378.32	11047.57	1076287.29	-621206.48	252.69
Dead+Wind 180 deg - Service	28706.97	-0.00	12756.65	1242798.35	247.67	389.69
Dead+Wind 210 deg - Service	28706.96	-6378.32	11047.57	1076289.04	621702.80	422.25
Dead+Wind 240 deg - Service	28706.96	-11047.57	6378.32	621352.85	1076640.44	341.66
Dead+Wind 270 deg - Service	28706.97	-12756.65	-0.00	-102.83	1243151.73	169.55
Dead+Wind 300 deg - Service	28706.96	-11047.57	-6378.32	-621558.95	1076641.21	-48.00
Dead+Wind 330 deg - Service	28706.96	-6378.32	-11047.57	-1076496.03	621703.57	-252.70

Solution Summary

tnxTower 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 1080 Manchester, CT	Page 7 of 8
	Project 140 ft monopole	Date 09:52:58 04/06/12
	Client AT&T	Designed by kw

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
1	0.00	-28706.96	0.00	0.00	28706.96	0.00	0.000%
2	0.00	-28706.96	-22678.47	0.00	28706.97	22678.48	0.000%
3	11339.24	-28706.96	-19640.13	-11339.24	28706.96	19640.13	0.000%
4	19640.13	-28706.96	-11339.24	-19640.13	28706.96	11339.24	0.000%
5	22678.47	-28706.96	0.00	-22678.48	28706.97	0.00	0.000%
6	19640.13	-28706.96	11339.24	-19640.13	28706.96	-11339.24	0.000%
7	11339.24	-28706.96	19640.13	-11339.24	28706.96	-19640.13	0.000%
8	0.00	-28706.96	22678.47	0.00	28706.97	-22678.48	0.000%
9	-11339.24	-28706.96	19640.13	11339.24	28706.96	-19640.13	0.000%
10	-19640.13	-28706.96	11339.24	19640.13	28706.96	-11339.24	0.000%
11	-22678.47	-28706.96	0.00	22678.48	28706.97	0.00	0.000%
12	-19640.13	-28706.96	-11339.24	19640.13	28706.96	11339.24	0.000%
13	-11339.24	-28706.96	-19640.13	11339.24	28706.96	19640.13	0.000%
14	0.00	-36126.96	0.00	0.00	36126.96	0.00	0.000%
15	0.00	-36126.96	-19597.16	-0.00	36126.96	19597.19	0.000%
16	9798.58	-36126.96	-16971.64	-9798.58	36126.96	16971.64	0.000%
17	16971.64	-36126.96	-9798.58	-16971.64	36126.96	9798.58	0.000%
18	19597.16	-36126.96	0.00	-19597.19	36126.96	-0.00	0.000%
19	16971.64	-36126.96	9798.58	-16971.64	36126.96	-9798.58	0.000%
20	9798.58	-36126.96	16971.64	-9798.58	36126.96	-16971.64	0.000%
21	0.00	-36126.96	19597.16	-0.00	36126.96	-19597.19	0.000%
22	-9798.58	-36126.96	16971.64	9798.58	36126.96	-16971.64	0.000%
23	-16971.64	-36126.96	9798.58	16971.64	36126.96	-9798.58	0.000%
24	-19597.16	-36126.96	0.00	19597.19	36126.96	-0.00	0.000%
25	-16971.64	-36126.96	-9798.58	16971.64	36126.96	9798.58	0.000%
26	-9798.58	-36126.96	-16971.64	9798.58	36126.96	16971.64	0.000%
27	0.00	-28706.96	-12756.64	0.00	28706.97	12756.65	0.000%
28	6378.32	-28706.96	-11047.57	-6378.32	28706.96	11047.57	0.000%
29	11047.57	-28706.96	-6378.32	-11047.57	28706.96	6378.32	0.000%
30	12756.64	-28706.96	0.00	-12756.65	28706.97	0.00	0.000%
31	11047.57	-28706.96	6378.32	-11047.57	28706.96	-6378.32	0.000%
32	6378.32	-28706.96	11047.57	-6378.32	28706.96	-11047.57	0.000%
33	0.00	-28706.96	12756.64	0.00	28706.97	-12756.65	0.000%
34	-6378.32	-28706.96	11047.57	6378.32	28706.96	-11047.57	0.000%
35	-11047.57	-28706.96	6378.32	11047.57	28706.96	-6378.32	0.000%
36	-12756.64	-28706.96	0.00	12756.65	28706.97	0.00	0.000%
37	-11047.57	-28706.96	-6378.32	11047.57	28706.96	6378.32	0.000%
38	-6378.32	-28706.96	-11047.57	6378.32	28706.96	11047.57	0.000%

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	140 - 91.05	62.3458	36	3.5630	0.0106
L2	94.95 - 45.04	30.2364	36	2.9612	0.0030
L3	49.95 - 0	8.2910	36	1.5435	0.0009

Critical Deflections and Radius of Curvature - Service Wind

inxTower 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 1080 Manchester, CT	Page	8 of 8
	Project	140 ft monopole	Date	09:52:58 04/06/12
	Client	AT&T	Designed by	kw

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
139.00	PiRod 4' Side Mount Standoff (1)	36	61.5935	3.5545	0.0104	20633
134.00	PiRod 6' Side Mount Standoff (1)	36	57.8361	3.5115	0.0094	17194
125.00	PiROD 13' Platform w/handrails (Monopole)	36	51.1268	3.4275	0.0077	6877
115.00	PiROD 15' Low Profile Platform	36	43.8424	3.3132	0.0059	4124
110.00	(2) Omni 1"x6'	36	40.3025	3.2434	0.0051	3436
107.00	(2) PiRod 4' Side Mount Standoff (1)	36	38.2198	3.1965	0.0046	3123
100.00	PiROD 15' Platform w/handrails (Monopole)	36	33.5008	3.0698	0.0036	2576
90.00	PiROD 13' Platform w/handrails (Monopole)	36	27.1663	2.8394	0.0026	2124

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF*P _{allow} lb	% Capacity	Pass Fail
L1	140 - 91.05	Pole	TP26.81x18x0.1875	1	-8679.15	801950.10	66.2	Pass
L2	91.05 - 45.04	Pole	TP34.84x25.7331x0.3125	2	-17497.70	1734192.94	95.0	Pass
L3	45.04 - 0	Pole	TP43x33.3191x0.375	3	-28681.40	2637527.01	96.6	Pass
Summary								
Pole (L3)							96.6	Pass
RATING =							96.6	Pass



REFERENCE DOCUMENTS

CT7080

**DETAILED STRUCTURAL ANALYSIS AND
EVALUATION OF AN EXISTING 140'
MONOPOLE FOR PROPOSED ANTENNA
ARRANGEMENT**

60 Adams Street
Manchester, CT

prepared for



Verizon Wireless
99 East River Drive
East Hartford, Connecticut 06108

prepared by



36915665
VZ5-054 (Rev 2)

June 29, 2010

TABLE OF CONTENTS

1. EXECUTIVE SUMMARY
2. INTRODUCTION
3. ANALYSIS METHODOLOGY AND LOADING CONDITIONS
4. FINDINGS AND EVALUATION
5. CONCLUSIONS
6. DRAWINGS AND DATA
 - RISA TOWER INPUT / OUTPUT SUMMARY
 - RISA TOWER DETAILED OUTPUT
 - ANCHOR BOLT AND BASE PLATE ANALYSIS
 - FOUNDATION ANALYSIS

1. EXECUTIVE SUMMARY

This report summarizes the structural analysis of the existing 140' steel monopole structure, located at 60 Adams Street in Manchester, CT. The analysis was conducted in accordance with the 2005 Connecticut State Building Code which requires a three second gust wind speed of 100 mph which converts to a 80 mph fastest mile per 2003 IBC (Table 1609.3.1) and the TIA/EIA-222-F standard for a wind velocity of 80 mph (fastest mile). The wind speed from the Connecticut State Building Code governs the design at 80 mph (fastest mile) and 69 mph (fastest mile) concurrent with 1/2" 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 Verizon modification is as follows:

Proposed Antenna and Mount	Carrier	Antenna Center Elevation
<u>On the existing Verizon Platform:</u>		
<u>Remove:</u>		
(6) 950G65VTZE-M_2 antennas	Verizon (Existing)	@ 90'
<u>Install:</u>		
(3) BXA-70063-6CF-5 antennas	Verizon (Proposed)	@ 90'
(3) MG D3-900T2 antennas		
(6) FD9R6004/2C-3L diplexers		
Note: (6) Existing ALP6014 antennas and existing (12) 1-5/8" dia. coaxial cable to remain		

The results of the analysis indicate that the tower structure has the capacity to support 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 manufacturer design documents by Engineered Endeavors Incorporated, (EEI Project No. 4795); signed and sealed March 26, 1999.
- 3) Structural analysis performed by URS Corp project number 36911668 signed and sealed September 16, 2002.
- 4) Tower inventory taken from structural analysis performed by Malouf Engineering Intl., Inc. project ID CT00874M-07V0 signed and sealed August 17, 2007.
- 5) Antenna and mount configuration as specified on the following page of this report.

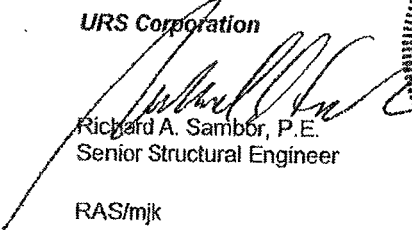
1. EXECUTIVE SUMMARY (continued)

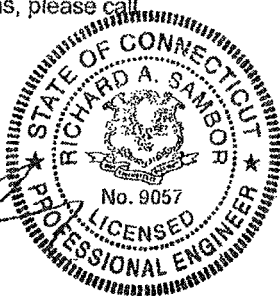
This report is only valid as per the assumptions and data utilized in this report for antenna inventory, mounts and associated cables. The user of this report shall field verify the assumption of the antenna and mount configuration as well as the physical condition of the tower. Notify the engineer in 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.
Senior Structural Engineer



RAS/mjk

cc: MJE, ICA – URS, CF/Book

2. INTRODUCTION

The subject tower is located at 60 Adams Street in Manchester, CT. The original structure is a 140' steel monopole designed by Engineered Endeavors Incorporated (EEI).

Tower geometry and structural member sizes taken from manufacturer design documents by Engineered Endeavors Incorporated, (EEI Project #: 4795); signed and sealed March 26, 1999.

The inventory is summarized in Table 1:

Table 1: Antenna and Mount Configuration

Antenna Type	Carrier	Mount	Antenna Centerline Elevation	Cable
---	Unknown (Existing)	(2) 4' Side Arms	139'	---
---	Unknown (Existing)	(1) 8' Side Arm	134'	---
(6) CSS DUO1417-8686 Antennas (3) Powerwave 7770 Antennas (6) TMAs (6) Duplexers (3) Powerwave 7060 CILOC (3) Powerwave 7020 RCU/RETs	AT&T (Existing)	13' Platform	125'	(12) 1 1/4" Coax
(6) DB980H90 Antennas	Sprint (Existing)	15' Low-Profile Platform	115'	(6) 1 1/4" Coax
(2) 6' Whip	Unknown (Existing)	(2) 4' Side Arm	107'	(2) 7/8" Coax
(12) DB844H90 Antennas	Sprint / Nextel (Existing)	15' Platform	100'	(12) 7/8" Coax
(6) ALP6014 Antennas	Verizon (Existing)	13' Platform	90'	(12) 1 5/8" Coax
(3) BXA-70063/6CF Antennas (3) MG D3-900T2 Antennas (6) FD9R6004/2C-3L Diplexers	Verizon (Proposed)	Same as Above	90'	Same as Above

This structural analysis of the communications tower was performed by URS Corporation (URS) for Verizon Wireless. 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 Connecticut State Building Code requires a three second gust wind speed of 100 mph which converts to a 80 mph fastest mile per 2003 IBC (Table 1609.3.1). The TIA/EIA-222-F requires a basic wind speed of 80 mph fastest mile. In this case the wind speed from the Connecticut State Building Code governs the design.

The analysis was conducted using RISA Tower 5.3.1.0. 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

Combined axial and bending stresses on the monopole 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, base plate, and foundation were found to be structurally adequate as shown in Table 2.

Table 2: Tower Component Stress vs. Capacity Table

Component / Section No.	Existing Component Size	Controlling Elevation	Stress (% Capacity)	Pass/Fail
L1	TP26.81x18x0.188	91.05'-140'	53.4	Pass
L2	TP34.84x25.733x0.313	45.05'-91.05'	79.4	Pass
L3	TP43x33.319x0.375	0-45.04'	82.0	Pass
Anchor Bolt	2.25" dia	Compression	98	Pass
Base Plate	1.75" Thick x 57" dia	Bending	81	Pass
Foundation	7' dia x 23' long caisson	Deflection (0.70")	93	Pass

Note: Maximum allowable deflection is 0.75" per TIA/EIA.

5. CONCLUSIONS

The results of the analysis indicate that the tower structure has the capacity to support 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.

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 within the monopole unless specified otherwise.

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



CT1080

(Manchester Sand & Gravel)

60 Adams St, Manchester, CT 06042

April 9, 2012

Table of Contents

1. Introduction.....	1
2. FCC Guidelines for Evaluating RF Radiation Exposure Limits.....	1
3. RF Exposure Prediction Methods.....	2
4. Calculation Results.....	3
5. Conclusion.....	4
6. Statement of Certification.....	4
Attachment A: References.....	5
Attachment B: FCC Limits for Maximum Permissible Exposure (MPE).....	6
Attachment C: AT&T Antenna Data Sheets and Electrical Patterns.....	8

List of Tables

Table 1: Carrier Information.....	3
Table 2: FCC Limits for Maximum Permissible Exposure (MPE).....	6

List of Figures

Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE).....	7
---	---

1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed modifications to the existing AT&T antenna arrays mounted on the monopole tower located at 60 Adams St in Manchester, CT. The coordinates of the tower are 41-47-38.6 N, 72-33-19.3 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:

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

Where:

EIRP = Effective Isotropic Radiated Power

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

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	127	880	1	500	0.0111	0.5867	1.90%
Cingular GSM	127	880	5	296	0.0330	0.5867	5.62%
Cingular GSM	127	1900	3	501	0.0335	1.0000	3.35%
Nextel	100	851	9	100	0.0324	0.5673	5.70%
PageNet	N/A	935	N/A	N/A	0.0249	0.6233	3.99%
Verizon	90	869	9	281	0.1123	0.5793	19.38%
Verizon	90	1970	3	448	0.0597	1.0000	5.97%
Verizon	90	757	1	903	0.0401	0.5047	7.94%
Clearwire	115	2496	2	153	0.0083	1.0000	0.83%
Clearwire	115	11 GHz	1	211	0.0057	1.0000	0.57%
Sprint	115	1962.5	11	412	0.1232	1.0000	12.32%
AT&T UMTS	125	880	2	565	0.0026	0.5867	0.44%
AT&T UMTS	125	1900	2	1077	0.0050	1.0000	0.50%
AT&T LTE	125	734	1	1313	0.0030	0.4893	0.62%
AT&T GSM	125	880	1	491	0.0011	0.5867	0.19%
AT&T GSM	125	1900	4	813	0.0075	1.0000	0.75%
Total							59.21%

Table 1: Carrier Information¹²

¹ The existing CSC filing for Cingular should be removed and replaced with the updated AT&T technologies and values provided in Table 1. The power density information for carriers other than AT&T was taken directly from the CSC database dated 3/29/2012.

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.

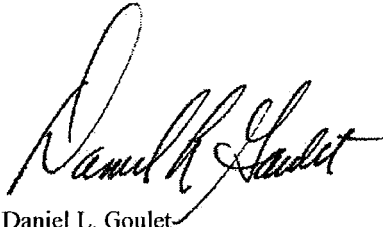
5. Conclusion

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 below the limits for the general public. The highest expected percent of Maximum Permissible Exposure at ground level is **59.21% 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

April 9, 2012

Date

Attachment A: References

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

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

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

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

(A) Limits for Occupational/Controlled Exposure³

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 Exposure⁴

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)

³ 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

⁴ 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

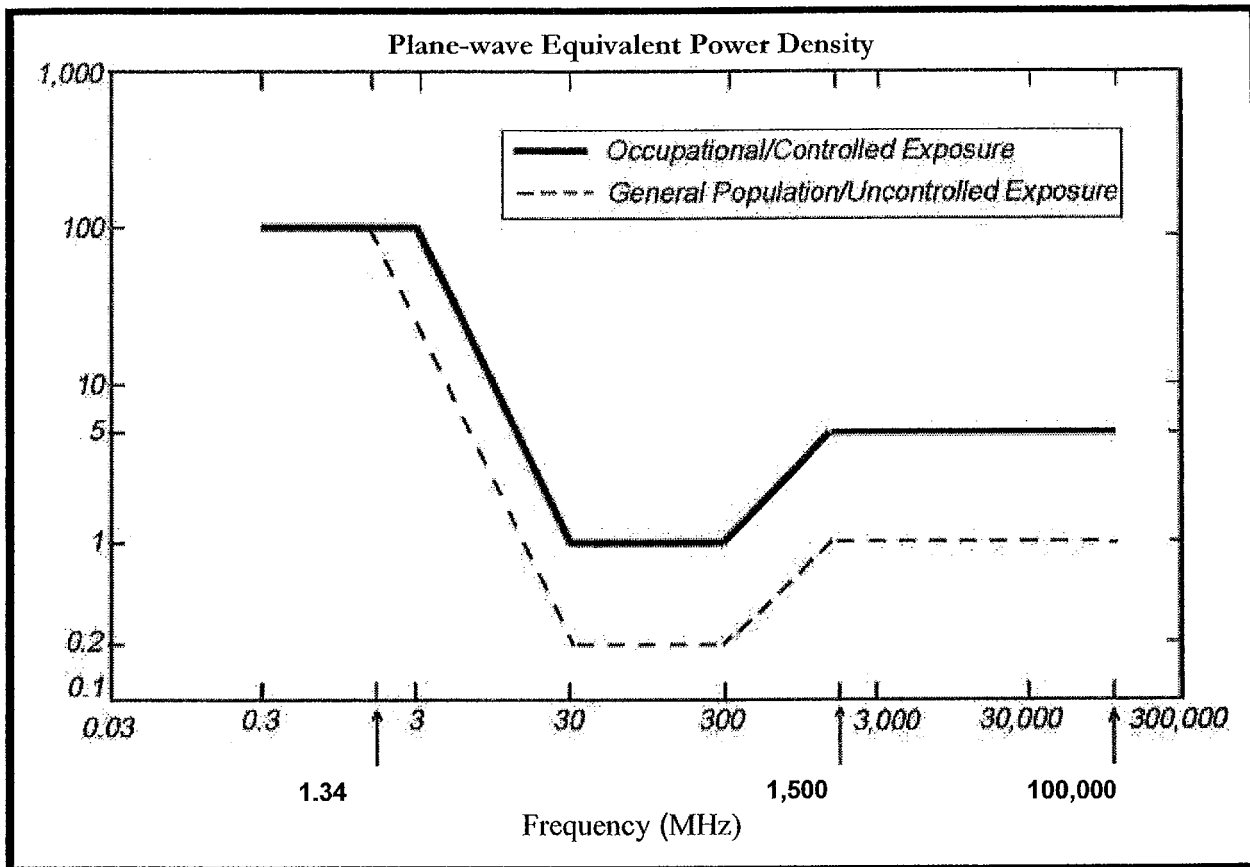
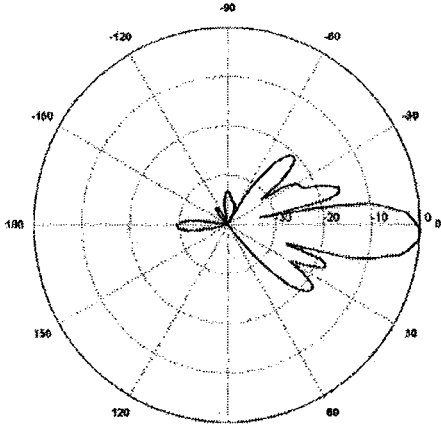
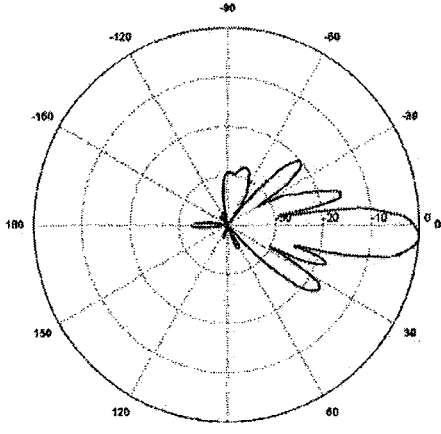
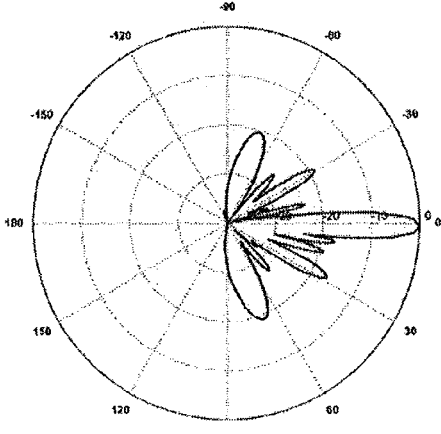
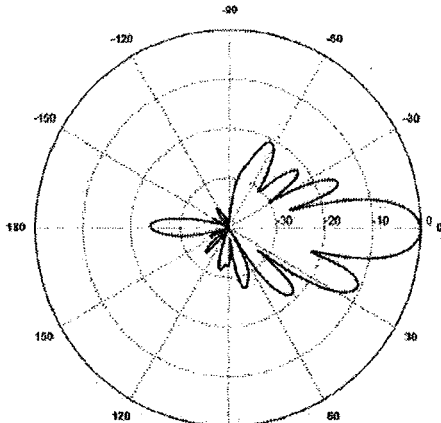


Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

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

<p>700 MHz</p> <p>Manufacturer: KMW Communications Model #: AM-X-CD-16-65-00T Frequency Band: 698-806 MHz Gain: 13.4 dBd Vertical Beamwidth: 12.3° Horizontal Beamwidth: 65° Polarization: Dual Slant ± 45° Size L x W x D: 72.0" x 11.8" x 5.9"</p>	 <p>A polar plot showing the radiation pattern for 700 MHz. The plot is circular with concentric dashed lines representing gain levels at 10, 20, and 30 dBd. Radial lines indicate angles from 0 to 180 degrees in 30-degree increments. The main lobe is centered at 0 degrees, extending to approximately 30 dBd. There are several side lobes, with the largest being at approximately 150 degrees, reaching about 15 dBd. The pattern is roughly symmetrical about the 0-degree axis.</p>
<p>850 MHz GSM</p> <p>Manufacturer: KMW Communications Model #: AM-X-CD-16-65-00T Frequency Band: 824-894 MHz Gain: 13.9 dBd Vertical Beamwidth: 11.5° Horizontal Beamwidth: 63° Polarization: Dual Slant ± 45° Size L x W x D: 72.0" x 11.8" x 5.9"</p>	 <p>A polar plot showing the radiation pattern for 850 MHz GSM. The plot is circular with concentric dashed lines representing gain levels at 10, 20, and 30 dBd. Radial lines indicate angles from 0 to 180 degrees in 30-degree increments. The main lobe is centered at 0 degrees, extending to approximately 30 dBd. There are several side lobes, with the largest being at approximately 150 degrees, reaching about 15 dBd. The pattern is roughly symmetrical about the 0-degree axis.</p>
<p>1900 MHz GSM</p> <p>Manufacturer: KMW Communications Model #: AM-X-CD-16-65-00T Frequency Band: 1850-1900 MHz Gain: 15.3 dBd Vertical Beamwidth: 6° Horizontal Beamwidth: 67° Polarization: Dual Slant ± 45° Size L x W x D: 72.0" x 11.8" x 5.9"</p>	 <p>A polar plot showing the radiation pattern for 1900 MHz GSM. The plot is circular with concentric dashed lines representing gain levels at 10, 20, and 30 dBd. Radial lines indicate angles from 0 to 180 degrees in 30-degree increments. The main lobe is centered at 0 degrees, extending to approximately 30 dBd. There are several side lobes, with the largest being at approximately 150 degrees, reaching about 15 dBd. The pattern is roughly symmetrical about the 0-degree axis.</p>

<p>850 MHz UMTS</p> <p>Manufacturer: Kathrein-Scala Model #: 80010121 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"</p>	
<p>1900 MHz UMTS</p> <p>Manufacturer: Kathrein-Scala Model #: 80010121 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"</p>	