

ORIGINAL

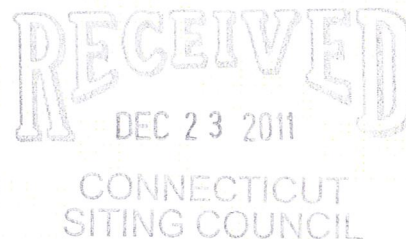


New Cingular Wireless PCS, LLC  
960 Turnpike Street, Suite 28  
Canton, MA 02021  
Phone: (508) 404-8917  
Fax: (617) 249-0819

Stephen Kelleher  
Real Estate Consultant

December 22, 2011

Honorable Robert Stein, Chairman,  
and Members of the Connecticut Siting Council  
Connecticut Siting Council  
10 Franklin Square  
New Britain, Connecticut 06051



**Re: Request by New Cingular Wireless PCS, LLC for an Order Approving an Exempt Modification of an Existing tower at 100 Reef Road, Fairfield, CT.**

Dear Chairman Stein and Members of the Council:

In order to accommodate technological changes, implement Long Term Evolution ("LTE") capabilities, and enhance system performance in the State of Connecticut, New Cingular Wireless PCS, LLC ("AT&T") plans to modify the equipment configurations at many of its existing cell sites. Please accept this letter and attachments as notification, pursuant to R.C.S.A Section 16-50j-73, of construction which constitutes an exempt modification pursuant to R.C.S.A Section 16-50j-72(b)(2). In compliance with R.C.S.A Section 16-50j-73, a copy of this letter and attachments is being sent to the chief elected official of the municipality in which the affected cell site is located.

LTE is a new high-performance air interface for cellular mobile communications. It is designed to increase the capacity and speed of mobile telephone networks.

Attached is a summary of the planned modifications, including power density calculations reflecting the changes in AT&T's operation of the site. Also, included is documentation of the structural sufficiency of the tower. The tower, with the proposed structural modifications depicted in the Construction Drawings and Structural Analysis, is structurally sufficient to accommodate the revised antenna configuration.

The changes to the facility do not constitute modifications as defined in Connecticut General Statutes ("C.G.S.") Section 16-50i(d) because the general physical characteristics of the facility will not be significantly changed or altered. Rather, the planned changes to the facility fall squarely within those activities explicitly provided for in R.C.S.A Section 16-50j-72(b)(2).

1. The height of the overall structure will be unaffected.
2. The proposed changes will not extend the site boundaries. There will be no effect on the site compound other than some enlarged equipment pads as may be noted in the

# **EXHIBIT 2**



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](mailto:siting.council@ct.gov)  
[www.ct.gov/csc](http://www.ct.gov/csc)

January 6, 2012

Douglas L. Culp, Real Estate Consultant  
New Cingular Wireless PCS, LLC  
500 Enterprise Drive  
Rocky Hill, CT 06067-3900

RE: **EM-CING-051-111223** - New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 100 Reef Road, Fairfield, Connecticut.

Dear Mr. Culp:

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

- The tower be modified in accordance with the construction drawings included in the (Revised) Structural Analysis Report prepared by Hudson Design Group dated December 20, 2011 and stamped by Gi Kai Wang; and
- Prior to antenna installation, a signed letter from a Professional Engineer duly licensed in the State of Connecticut shall be submitted to the Council to certify that the recommended modifications have been completed and the tower and foundation will not exceed 100 percent of the post-construction structural rating.
- Any deviation from the proposed modification as specified in this notice and supporting materials with Council shall render this acknowledgement invalid;
- Any material changes to this modification as proposed shall require the filing of a new notice with the Council;
- Not less than 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;
- The validity of this action shall expire one year from the date of this letter; and
- The applicant may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration;

The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated December 22, 2011. 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



attachments

3. The proposed changes will not increase the noise level at the existing facility by six decibels or more.
4. LTE will utilize additional radio frequencies newly licensed by the FCC for cellular mobile communications. However, the changes will not increase the calculated "worst case" power density for the combined operations at the site to a level at or above the applicable standard for uncontrolled environments as calculated for a mixed frequency site.

For the foregoing reasons, New Cingular Wireless respectfully submits that the proposed changes at the referenced site constitute exempt modifications under R.C.S.A Section 16-50j-72(b)(2).

Please feel free to contact me at 508-404-8917 with questions concerning this matter. Thank you for your consideration.

Sincerely,



Stephen Kelleher  
Real Estate Consultant

Attachments



# **EXHIBIT 1**

**PROJECT INFORMATION**

SCOPE OF WORK: UNMANNED TELECOMMUNICATIONS FACILITY MODIFICATIONS  
 100 REEF ROAD  
 FAIRFIELD, CT 06824  
 LATITUDE: 41.13971911° N 41° 08' 22.99" N  
 LONGITUDE: -73.25777729° W -73° 15' 28.00" W  
 JURISDICTION: NATIONAL, STATE & LOCAL CODES OR ORDINANCES  
 CURRENT USE: TELECOMMUNICATIONS FACILITY  
 PROPOSED USE: TELECOMMUNICATIONS FACILITY  
 NOC# 866-915-5600



**SITE NUMBER: CT5022**  
**SITE NAME: AWE - FAIRFIELD**

**DRAWING INDEX**

**REV**

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ALL DIMENSIONS, MEASUREMENTS, QUANTITIES, PART NUMBERS, AND COAX/ANTENNA PLACEMENTS TO BE FIELD VERIFIED BY CONTRACTOR PRIOR TO MATERIAL ORDERS AND CONSTRUCTION.

THE MODIFICATIONS DEPICTED ON THESE DRAWINGS ARE BASED ON THE RECOMMENDATIONS OUTLINED IN THE STRUCTURAL ANALYSIS COMPLETED BY HUDSON DESIGN GROUP, LLC. DATED DECEMBER 20, 2011.

THIS PLAN IS BASED ON A SPECIFIC ANTENNA AND COAX CONFIGURATION FROM "MAPPING REPORT FOR CT5022 - AT&T MOBILITY" AWE-FAIRFIELD, 100 REEF ROAD, FAIRFIELD, CT 06824, DATED JUNE 2, 2011. PREPARED BY HUDSON DESIGN GROUP, LLC.

**VICINITY MAP**

DIRECTIONS TO SITE:  
 START OUT GOING NORTHEAST ON ENTERPRISE DR TOWARD CAPITOL BLVD. 0.4 MI TURN LEFT ONTO CAPITOL BLVD. 0.3 MI TURN LEFT ONTO WEST ST. 0.3 MI MERGE ONTO I-91 S VIA THE RAMP ON THE LEFT TOWARD NEW HAVEN. 28.1 MI MERGE ONTO I-95 S/GOVERNOR JOHN DAVIS BRIDGE. EXIT VIA THE EXIT ON THE LEFT TOWARD N.Y. CITY. 22.5 MI TAKE THE CT-135/N. BENSON ROAD EXIT. EXIT LEFT ONTO BENSON RD/CT-135. 0.2 MI TURN RIGHT ONTO POST RD/US-4. 0.6 MI TURN LEFT ONTO REEF RD. 0.1 MI 100 REEF RD IS ON THE RIGHT.



**GENERAL NOTES**

- 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.
- THIS FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSIBLE BY TRAINED TECHNICAL PERSONNEL. THE FACILITY IS NOT TO BE ENTERED OR ACCESSED BY ANY OTHER PERSONS WITHOUT THE AUTHORITY OF AT&T. BEFORE ANY WORK IS PERFORMED, THE 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 ANY 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

500 ENTERPRISE DRIVE, SUITE 3A  
 ROCKY HILL, CT 06867

**SITE NUMBER: CT5022**  
**SITE NAME: AWE - FAIRFIELD**  
 100 REEF ROAD  
 FAIRFIELD, CT 06824  
 FAIRFIELD COUNTY

22 KEFWAYDIN DRIVE  
 SALEM, NH 03079

1450 ROCKWOOD STREET  
 BIRMINGHAM 20 NORTH, SUITE 2-101  
 N. AVENUE, N.A. 35204  
 TEL: (978) 553-5533  
 FAX: (978) 345-5566

NO.	DATE	REVISIONS	BY	CHK	APP
3	12/20/11	CONSTRUCTION REVISED	AS	DC	DPH
2	04/19/11	CONSTRUCTION REVISED	AS	DC	DPH
1	03/18/11	ISSUED FOR CONSTRUCTION	AS	DC	DPH
0	02/17/11	ISSUED FOR REVIEW	AS	DC	DPH
SCALE: AS SHOWN			DESIGNED BY:	DC	
			DRAWN BY:	DB	
			JOB NUMBER:	50222.01	
			DATE:	1-1	
			DRAWING NUMBER:	T-1	
			TITLE SHEET (LIE)	AT&T	
			DATE:	5/20/11	
			BY:	P. Avram	
			CHK:	AS	
			APP:	AS	

**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 GESS) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO ITS EQUIPMENT.
5. EACH BITS 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 BITS 2 AWG STRANDED COPPER FOR OUTDOOR BITS.
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 USING 6 AWG COPPER WIRE. PER NEC 250.50.

**GENERAL NOTES**

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:  
CONTRACTOR - SA  
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 DRAWING. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT COMPLIANCE WITH ALL APPLICABLE CODES, ORDINANCES, AND REGULATIONS. THE 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 REGULATIONS 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 T1 CABLES 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, SANITARIETY, 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 DESIGNATED LOCATION. ALL ITEMS 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 ORDERED 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. STEEL SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO OTHER ELEMENTS SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS BEHIND AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC PAINT.
16. CONSTRUCTION SHALL COMPLY WITH LIMITS 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. 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 OPERATION OF THE CELL SITE. ALL WORK SHALL 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 PROTECTIVE EQUIPMENT MUST 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 AS ENFORCED BY THE LOCAL JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE 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 BUILDING CODE.  
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 THE CONSTRUCTION OF THIS PROJECT, THE MOST RESTRICTIVE REQUIREMENTS 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	TBD	TO BE DETERMINED
BCW	BARE COPPER WIRE	MIN	MINIMUM	TBR	TO BE REMOVED
BTS	BASE TRANSCIVER STATION	PROPOSED	NEW	TBR	TO BE REMOVED
EX	EXISTING	N.T.S.	NOT TO SCALE	TBR	TO BE REMOVED AND REPLACED
EG	EQUIPMENT GROUND	REF	REFERENCE	TYP	TYPICAL
EGR	EQUIPMENT GROUND RING	REQ	REQUIRED		



22 KEENAWTON DRIVE  
SALEM, NH 03079

TEL: 603.883.6565  
FAX: 603.883.6566

**SITE NUMBER: CT5022**  
**SITE NAME: AWE - FAIRFIELD**

100 REEF ROAD  
FAIRFIELD, CT 06824  
FAIRFIELD COUNTY

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



SCALE: AS SHOWN

DESIGNED BY: DC

DRAWN BY: DB

NO. DATE

REVISIONS

BY: CHK/PCT

3 12/20/11 CONSTRUCTION REVISED

2 04/19/11 CONSTRUCTION REVISED

1 03/18/11 ISSUED FOR CONSTRUCTION

0 02/17/11 ISSUED FOR REVIEW

AT&T

GENERAL NOTES

(1-1E)

DRAWING NUMBER

5022.01

GN-1

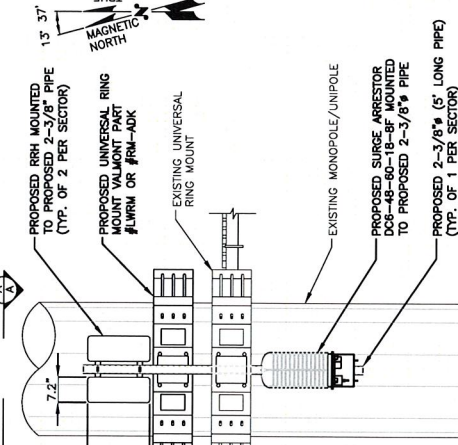
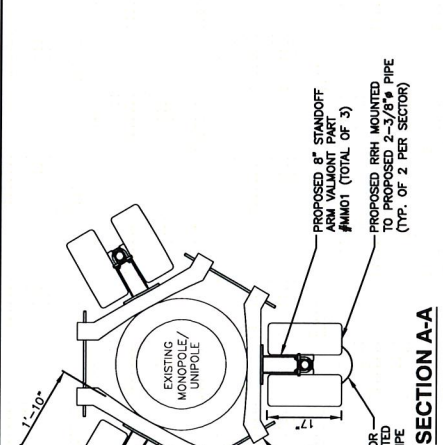
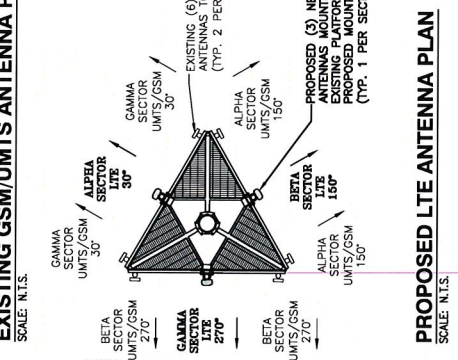
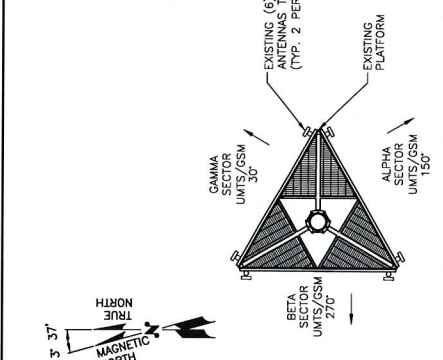
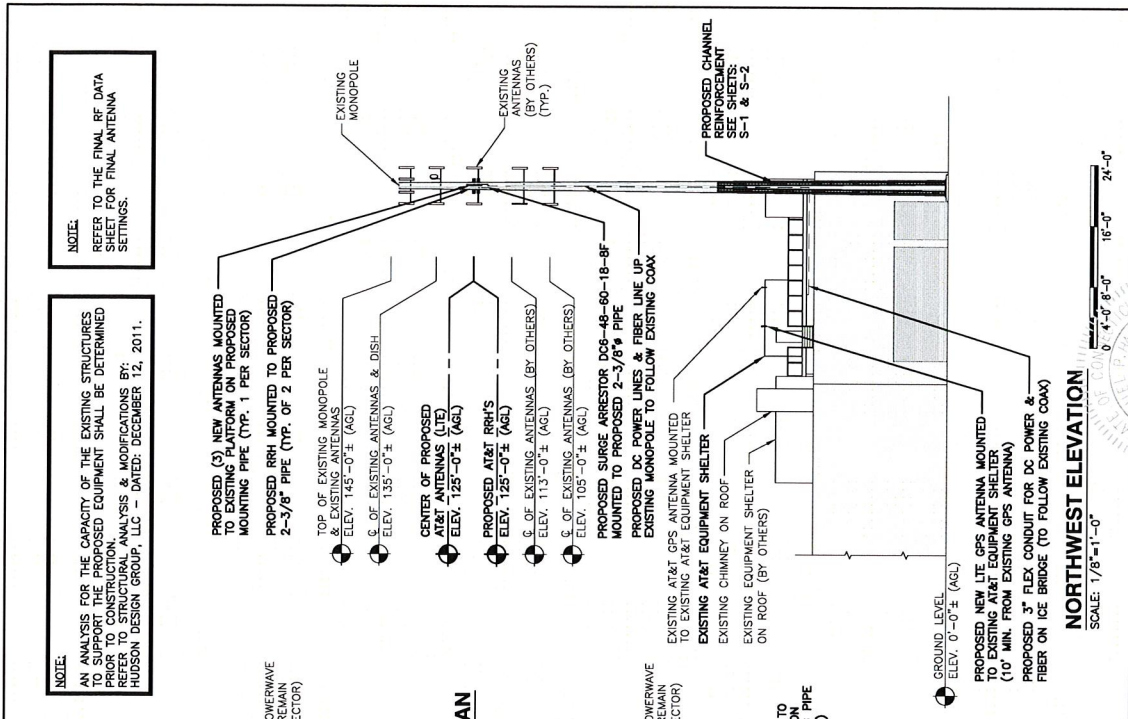
REV 3





**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 & MODIFICATIONS BY: HUDSON DESIGN GROUP, LLC - DATED: DECEMBER 12, 2011.

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

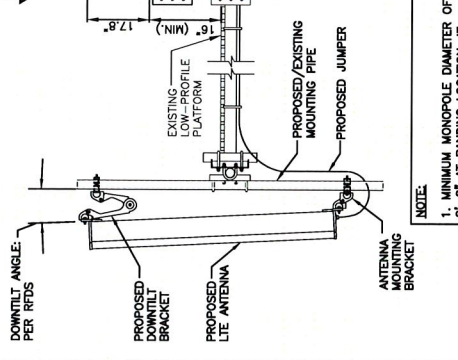
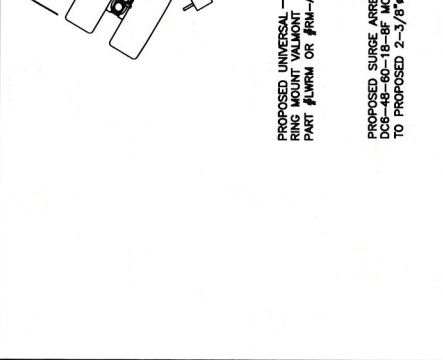


**NOTE:**

- MINIMUM MONOPOLE DIAMETER OF 1.5\"/>
- USE SMALLER STACK BRACKETS IF SMALLER STACK BRACKETS ARE AVAILABLE. CONTRACTOR TO ENSURE THAT RRH MOUNTING DOES NOT INTERFERE WITH CLIMBING LADDER.

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

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



**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 & MODIFICATIONS BY: HUDSON DESIGN GROUP, LLC - DATED: DECEMBER 12, 2011.

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

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

NO.	DATE	REVISIONS	BY	CHK/APPR	DESIGNED BY	DC
3	12/20/11	CONSTRUCTION REVISED				
2	04/19/11	CONSTRUCTION REVISED				
1	02/16/11	ISSUED FOR CONSTRUCTION				
	02/17/11	ISSUED FOR REVIEW				

SCALE: AS SHOWN

AT&T  
ANTENNA LAYOUT AND ELEVATION (LIE)  
JOB NUMBER: 5022.01  
DRAWN BY: DB  
BY: CHM/KPZ

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

SITE NUMBER: CT5022  
SITE NAME: AWE - FAIRFIELD  
100 REEF ROAD  
FAIRFIELD, CT 06824  
FAIRFIELD COUNTY

22 KEEMAYDIN DRIVE  
SALEM, NH 03079

HUDSON DESIGN GROUP  
1000 WASHINGTON STREET, SUITE 2100  
MILWAUKEE, WI 53233  
TEL: (778) 333-5333  
FAX: (778) 333-5386

SIATU Communications



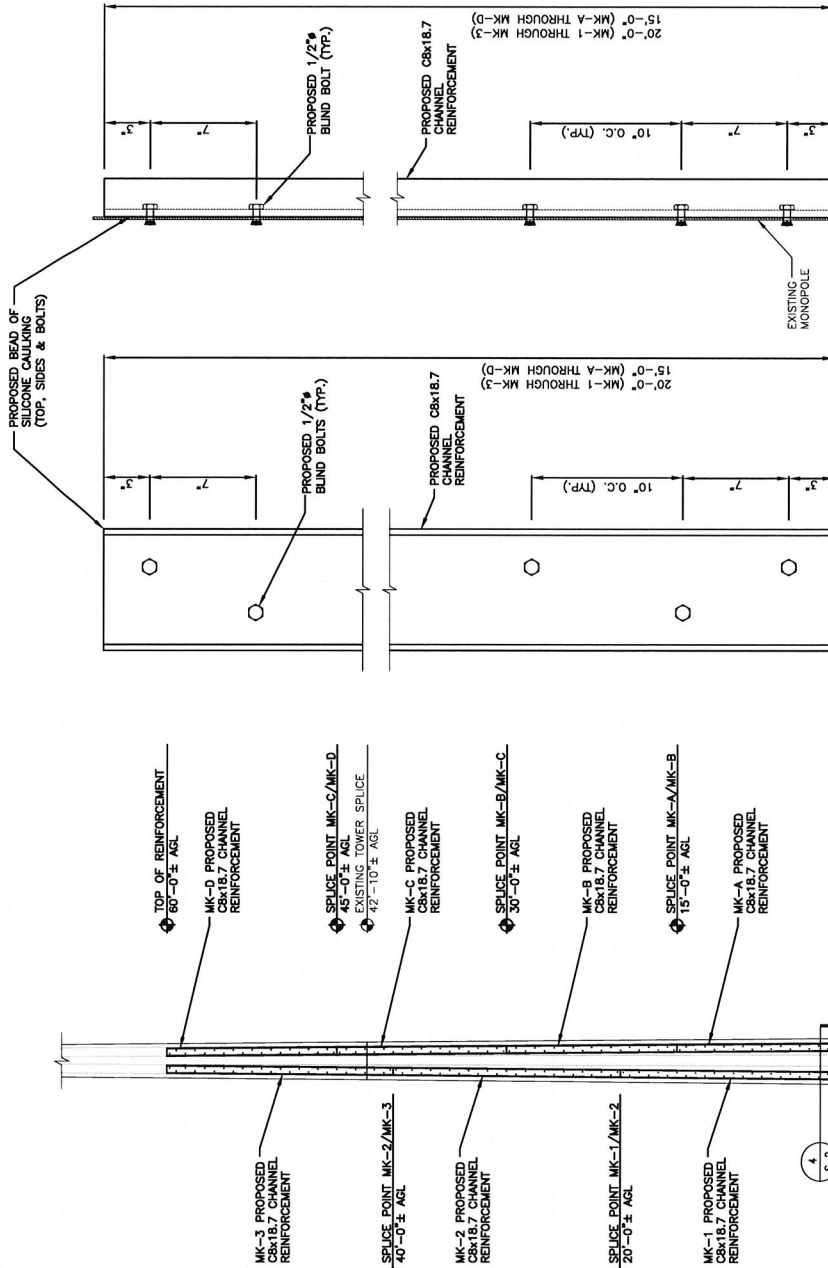




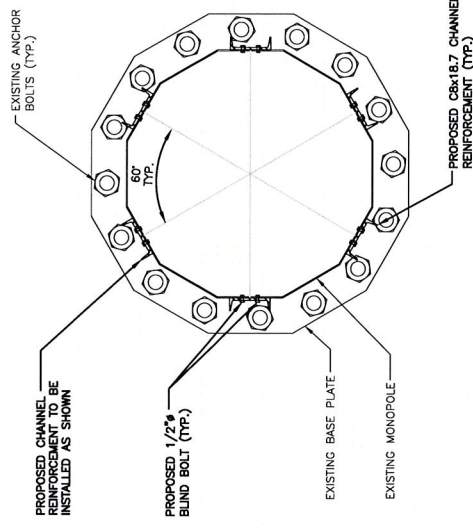
# REINFORCEMENT CHANNEL INSTALLATION CHART

PART#	DESCRIPTION	ELEVATION
MK-1	20' CHANNEL REINFORCEMENT	0'-0" TO 20'-0"
MK-2	20' CHANNEL REINFORCEMENT	20'-0" TO 40'-0"
MK-3	20' CHANNEL REINFORCEMENT	40'-0" TO 60'-0"
MK-A	3 15' CHANNEL REINFORCEMENT	0'-0" TO 15'-0"
MK-B	3 15' CHANNEL REINFORCEMENT	15'-0" TO 30'-0"
MK-C	3 15' CHANNEL REINFORCEMENT	30'-0" TO 45'-0"
MK-D	3 15' CHANNEL REINFORCEMENT	45'-0" TO 60'-0"
453	1/2" SHEREX BLIND BOLTS	

NOTE:  
CHANNELS SHALL ALTERNATE BETWEEN MK-1 THROUGH MK-3 AND MK-A THROUGH MK-D TO AVOID HAVING SPlice POINTS LEVEL AROUND THE CIRCUMFERENCE OF THE MONOPOLE.



NOTE:  
CONTRACTOR TO COORDINATE CHANNEL REINFORCEMENTS W/ EXISTING CLIMBING PECS, LANEWAYS AND OTHER OBSTRUCTIONS ON THE SHAFT OF THE TOWER. RELOCATION OF THESE OBSTRUCTIONS MAY BE REQUIRED PRIOR TO INSTALLATION OF TOWER MODIFICATIONS.



**Hudson**  
Design Group  
180 GOSWOLD STREET  
N. ANDOVER, MA 01861  
TEL: (978) 453-1401  
FAX: (978) 334-3388

**SAI**  
communications

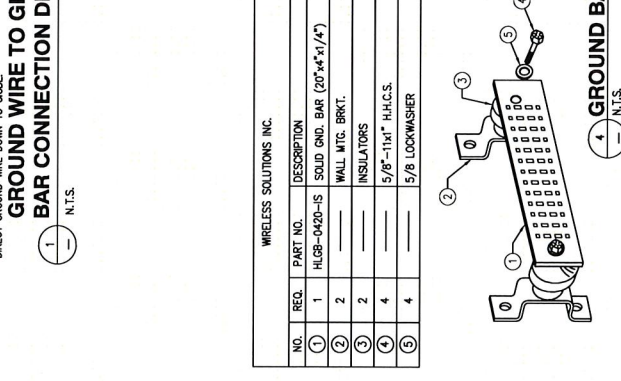
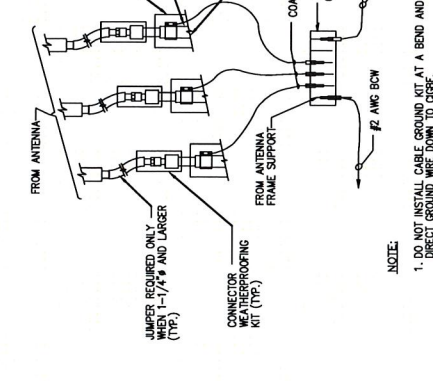
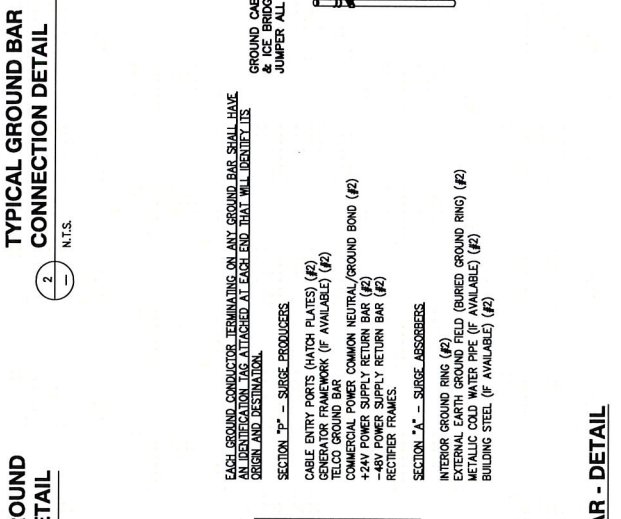
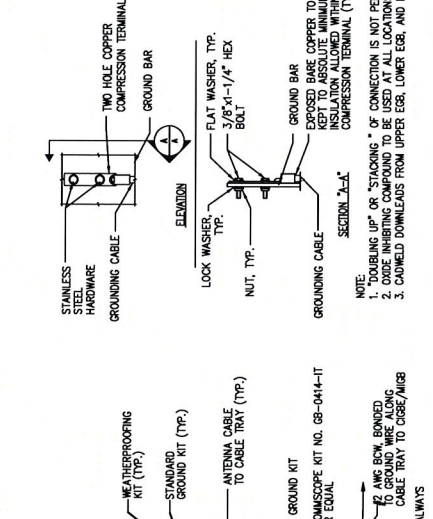
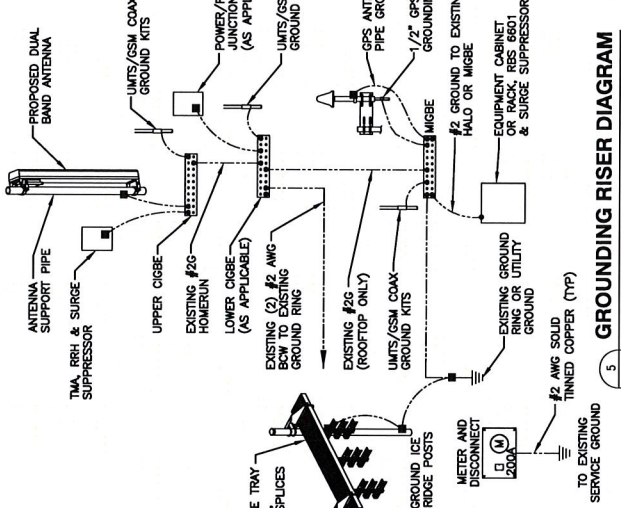
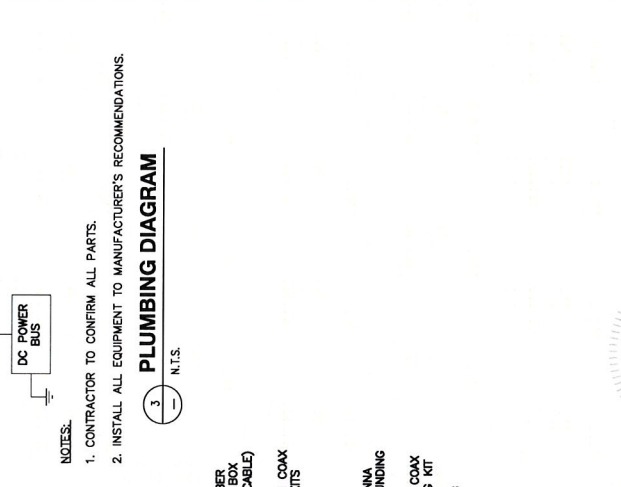
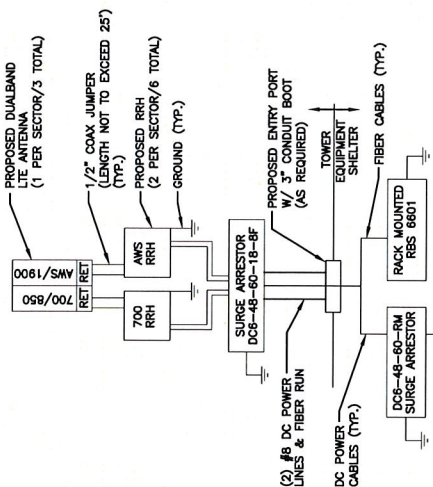
**at&t**  
500 ENTERPRISE DRIVE, SUITE 3A  
ROCKY HILL, CT 06067

AT&T  
TOWER MODIFICATION DRAWINGS  
CBX18.7 CHANNEL REINFORCEMENT DETAILS

NO.	DATE	BY	CHK	REVISIONS	DESIGNED BY: DC	DRAWN BY: DB
1	02/17/11	ISSUED FOR REVIEW	DB	DC	DC	DC
2	03/16/11	ISSUED FOR CONSTRUCTION	DB	DC	DC	DC
3	12/29/11	CONSTRUCTION REVISED	DB	DC	DC	DC

JOB NUMBER: 5022.01  
DRAWING NUMBER: S-2  
REV: 3





**at&t**

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

AT&T PLUMBING DIAGRAM & DETAILS (LTE)

DATE: 02/17/11  
ISSUED FOR REVIEW

DESIGNED BY: DC  
DRAWN BY: DB

SCALE: AS SHOWN

JOB NUMBER: 5022.01  
DRAWING NUMBER: G-1

**at&t**

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

100 REEF ROAD  
FAIRFIELD, CT 06824  
FAIRFIELD COUNTY

SITE NUMBER: CT5022  
SITE NAME: AWE - FAIRFIELD

22 KEEMONDIN DRIVE  
SALEM, NH 03079

**SAI** communications

22 KEEMONDIN DRIVE  
SALEM, NH 03079

**Hudson Design Group**

140 GARDNER STREET SUITE 2-101  
N. ANDOVER, MA 01861

TEL: 978.552.5553  
FAX: 978.354.3386

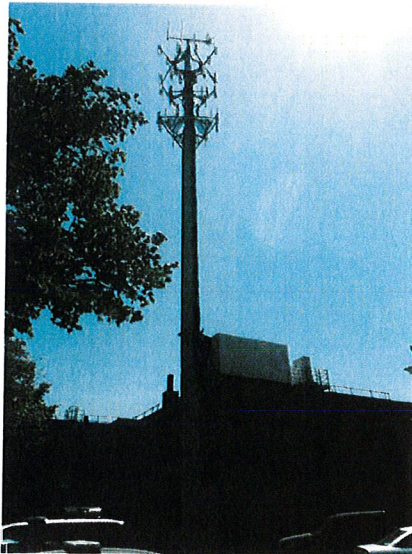


**(Revised)**  
**STRUCTURAL ANALYSIS REPORT**

For

**CT5022**  
**AWE - FAIRFIELD**  
100 Reef Road  
Fairfield, CT 06824

**Antennas Mounted to the Monopole**



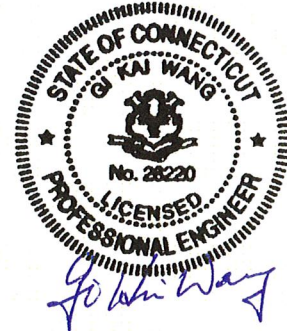
Prepared for:

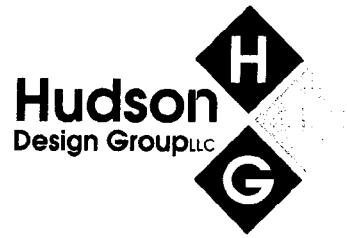


550 Cochituate Road  
Framingham, MA 01701

Dated:  
December 20, 2011

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](http://www.hudsondesigngroupllc.com)





#### **SCOPE OF WORK:**

Hudson Design Group LLC (HDG) has been authorized by AT&T to conduct a structural evaluation of the 145' 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.

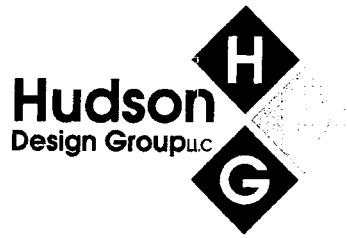
Record drawings of the monopole prepared by Valmont Industries Inc. (order #11635-94, dated May 19, 1994) were available and obtained for our use. This office conducted an on-site visual survey and tower mapping on June 2, 2011 to record dimensional properties of the existing monopole and its appurtenances. Attendees included Bradley Loeb (HDG – Associate) and Nick Marshall (HDG - Associate).

#### **CONCLUSION SUMMARY:**

HDG performed structural analysis of the existing monopole with modifications (adding 6-C8x18.7 to the existing monopole from EL.0' to EL.60').

Based on our evaluation, we have determined that the existing monopole, anchor bolts and base plate **are 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 **98.2%** - Pole Section L4 from EL.0' to EL.42.83' Controlling).

All Tower Modification Design Details will be designed and furnished in the latest set of HDG construction drawings (Rev 3)-Tower Modification Details Included.



**APPURTENANCES CONFIGURATION:**

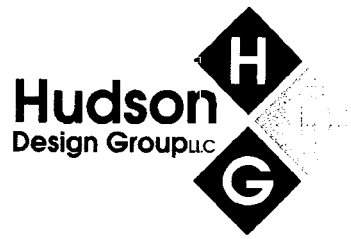
Tenant	Appurtenances	Elev.	Mount
	(12) Panel Antennas	143'	12' T-Arm
	(3) RRU	143'	12' T-Arm
	(2) 8' 4-Bay Dipole	143'	12' T-Arm
	Omni 2 1/2"x12' and Pull Box	143'	12' T-Arm
	3' diameter Dish	143'	12' T-Arm
	(6) Panel Antennas	135'	12' T-Arm
	(6) TMAs	135'	12' T-Arm
	24"x24" Dish	135'	12' T-Arm
<b>AT&amp;T</b>	<b>(6) 7770.00 Antennas</b>	<b>125'</b>	<b>10' T-Arm</b>
<b>AT&amp;T</b>	<b>(12) LGP 21401 TMAs</b>	<b>125'</b>	<b>10' T-Arm</b>
<b>AT&amp;T</b>	<b>Omni 1 1/4"x3'</b>	<b>125'</b>	<b>10' T-Arm</b>
<b>AT&amp;T</b>	<b>Omni 3"x3'</b>	<b>125'</b>	<b>10' T-Arm</b>
<b>AT&amp;T</b>	<b>(3) P65-16-XLH-RR Antennas</b>	<b>125'</b>	<b>10' T-Arm</b>
<b>AT&amp;T</b>	<b>(6) RRUS</b>	<b>125'</b>	<b>Ring Mount</b>
<b>AT&amp;T</b>	<b>Surge Arrestor DC6-48-60-18-8f</b>	<b>125'</b>	<b>Ring Mount</b>
	(3) Panel Antennas	113'	8' T-Arm
	(6) Panel Antennas	105'	Low Profile Platform

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

**ANALYSIS RESULTS SUMMARY:**

Component	Max. Stress Ratio	Elev. of Component (ft)	Pass/Fail	Comments
<b>Pole Section-L1</b>	73.8 %	90.83 – 145	PASS	
<b>Pole Section-L2</b>	96.6 %	60 – 90.83	PASS	
<b>Pole Section-L3</b>	88.7 %	42.83 – 60	PASS	
<b>Pole Section-L4</b>	98.2 %	0 – 42.83	PASS	
<b>Base Plate</b>	95.6 %	0	PASS	





**DESIGN CRITERIA:**

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

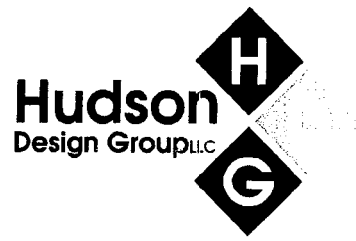
County: Fairfield  
Wind Load: 85 mph (fastest mile)  
Ice Thickness: 1/2 inch

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

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

**ASSUMPTIONS:**

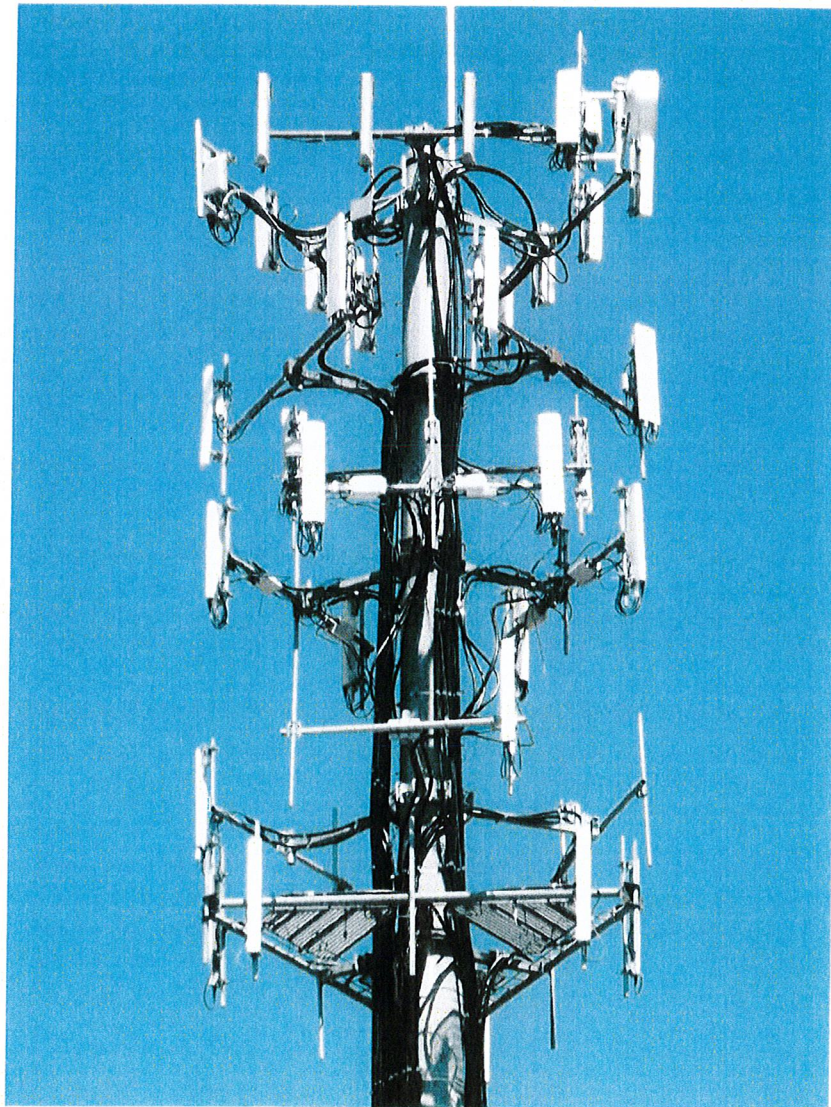
1. The monopole dimensions, member sizes are as indicated in the drawings by Valmont Industries Inc. (order #11635-94, dated May 19, 1994). The monopole and foundation are properly constructed and maintained.
2. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.
3. The appurtenances configuration is as stated in this report. All antennas, mounts coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer requirements.
4. 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.
5. All prior structural modification, if any, are assumed to be as per the data supplied (if available), and installed properly.



**SUPPORT RECOMMENDATIONS:**

HDG recommends that the proposed antennas be mounted on the existing T-frame supported by the existing monopole; the proposed RRHs be mounted on the proposed pipes.

Reference HDG's Latest Construction Drawings (Rev 3) including the Tower Modifications 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: 100 REEF ROAD FAIRFIELD, CT 06824  
 LATITUDE: 41° 08' 22.99" N  
 LONGITUDE: -73° 25' 77.729" W  
 JURISDICTION: NATIONAL, STATE, & LOCAL CODES OR ORDINANCES  
 CURRENT USE: TELECOMMUNICATIONS FACILITY  
 PROPOSED USE: TELECOMMUNICATIONS FACILITY  
 NCC#: 866-915-5600



**SITE NUMBER: CT5022**  
**SITE NAME: AWE - FAIRFIELD**

**DRAWING INDEX**

**REV**

T-1	TITLE SHEET	3
GN-1	GENERAL NOTES	3
A-1	COMPOUND & EQUIPMENT PLAN	3
A-2	ANTENNA LAYOUT AND ELEVATION	3
A-3	DETAILS	3
S-1	MODIFICATION SCHEDULE	3
S-2	C8x18.7 CHANNEL REINFORCEMENT DETAILS	3
G-1	PLUMBING DIAGRAM & DETAILS	3

THE MODIFICATIONS DEPICTED ON THESE DRAWINGS ARE BASED ON THE RECOMMENDATIONS OUTLINED IN THE STRUCTURAL ANALYSIS COMPLETED BY HUDSON DESIGN GROUP, LLC, DATED DECEMBER 20, 2011.

THIS PLAN IS BASED ON A SPECIFIC ANTENNA AND COAX CONFIGURATION FROM "MAPPING REPORT FOR CT5022 - AT&T MOBILITY" AWE-FAIRFIELD 100 REEF ROAD, FAIRFIELD, CT 06824, DATED JUNE 2, 2011. PREPARED BY HUDSON DESIGN GROUP, LLC.

ALL DIMENSIONS, MEASUREMENTS, QUANTITIES, PART NUMBERS, AND COAX/ANTENNA PLACEMENTS TO BE FIELD VERIFIED BY CONTRACTOR PRIOR TO MATERIAL ORDERS AND CONSTRUCTION.

**VICINITY MAP**

DIRECTIONS TO SITE:  
 START OUT GOING NORTHEAST ON ENTERPRISE DR TOWARD CAPITOL BLVD. 0.4 MI TURN LEFT ONTO CAPITOL BLVD. 0.3 MI TURN LEFT ONTO WEST ST. 0.3 MI MERGE ONTO I-91 S VIA THE RAMP ON THE LEFT TOWARD NEW HAVEN. 29.1 MI MERGE ONTO I-95 S/GOVERNOR JOHN DAVIS BRIDGE. 0.1 MI TURN LEFT ONTO I-95 S/EXIT 122A. 0.2 MI TURN LEFT ONTO CT-132/N. BENSON ROAD EXT. EXIT 2. 0.2 MI TURN LEFT ONTO N. BENSON ROAD. 0.1 MI TURN RIGHT ONTO POST RD/US-1. 0.6 MI TURN LEFT ONTO REEF RD. 0.1 MI 100 REEF RD IS ON THE RIGHT.



**GENERAL NOTES**

- THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF AT&T. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. REPRODUCTION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING 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 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.
- CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AEA REPRESENTATIVE IN WRITING OF ANY 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

3	12/29/11	CONSTRUCTION REVISION	HC	DC	DPA
2	04/18/11	CONSTRUCTION REVISION	AST	DC	DPA
1	03/18/11	ISSUED FOR CONSTRUCTION	HC	DC	DPA
0	02/17/11	ISSUED FOR REVIEW	DB	DC	DPA
NO.	DATE	REVISIONS	BY	CHK	APP'D
DESIGNED BY:	DC	DRAWN BY:	DB		
SCALE:	AS SHOWN				
JOB NUMBER	5022.01				
DRAWING NUMBER	1-1				
SHEET	3				

**at&t**  
 500 ENTERPRISE DRIVE, SUITE 3A  
 ROCKY HILL, CT 06867

**SITE NUMBER: CT5022**  
**SITE NAME: AWE - FAIRFIELD**  
 100 REEF ROAD  
 FAIRFIELD, CT 06824  
 FAIRFIELD COUNTY

22 KEENAWAN DRIVE  
 SALEM, NH 03079



**Hudson** Design Group, LLC  
 100 GORHAM STREET  
 N. ANDOVER, MA 01850  
 TEL: 978.657.6555  
 FAX: 978.336.5588

### GROUNDING NOTES

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEMS AND DETERMINE THE REQUIRED FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AIA) THE SITE-SPECIFIC (UL, LFL, OR NFPA) LIGHTNING PROTECTION CODE AND GENERAL STANDARDS WITH TELEGRAM AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.
2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO ETS 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 ANTI-OXIDANT COMINGS (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 SIZED BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

### GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY: CONTRACTOR - SA 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. THE SUBCONTRACTOR SHALL VERIFY ALL APPLICABLE CODES, REGULATIONS, AND 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 REGULATIONS 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 TELECOMMUNICATION CABLES. 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 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 PRECISELY ASSEMBLED IN ACCORDANCE WITH THE CONSTRUCTION DRAWINGS. STEEL SHALL BE ASTM A572 (Fy = 50 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 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 CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. DISCREPANCIES SHALL BE REPORTED TO 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 OPERATION OF THE CELL SITE. ALL CONSTRUCTION SHALL BE SCHEDULED FOR COORDINATION 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. WORKERS SHOULD WEAR PROTECTIVE EQUIPMENT. PERSONAL RF EXPOSURE MONITORS SHOULD BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.
20. APPLICABLE BUILDING CODES: CONSTRUCTION SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE AND LOCAL CODES AS ADOPTED BY THE AIA FOR THE JURISDICTION (AIA) FOR THE LOCATION. THE EDITION OF THE AIA 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 BUILDING CODE. 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. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

### ABBREVIATIONS

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

NO.	DATE	ISSUED FOR REVIEW	REVISIONS	BY	CHK/HPTC
1	12/29/11	CONSTRUCTION REVISION			
2	04/19/11	CONSTRUCTION REVISION			
3	03/16/11	ISSUED FOR CONSTRUCTION			
4	02/17/11	ISSUED FOR REVIEW			



SCALE	AS SHOWN	DESIGNED BY:	DC	DRAWN BY:	DB



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

**SITE NUMBER: CT5022**  
**SITE NAME: AWE - FAIRFIELD**  
100 REEF ROAD  
FAIRFIELD, CT 06424  
FAIRFIELD COUNTY

22 KEEWANON DRIVE  
SALEM, NH 03079

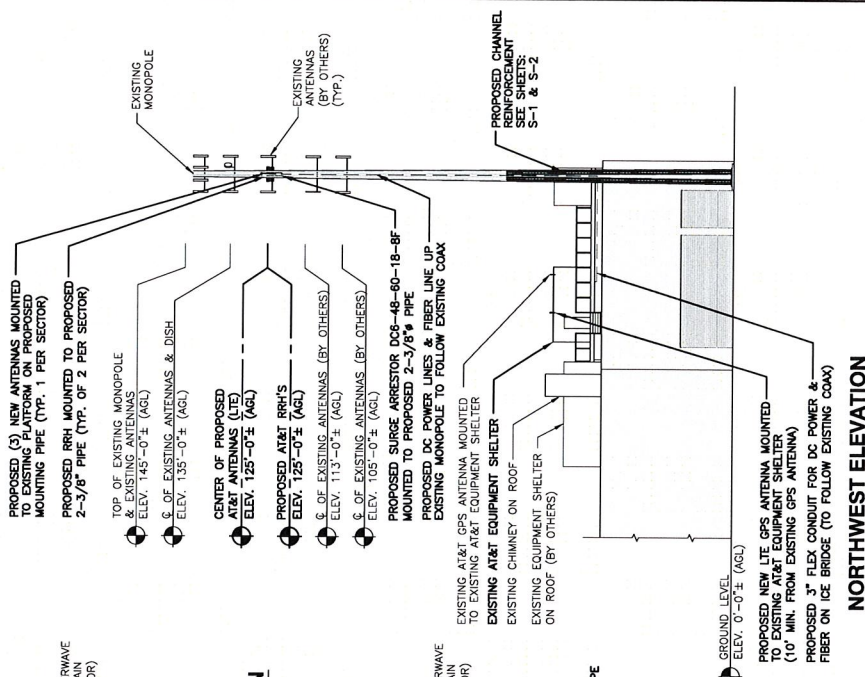
1400 GORHAM STREET  
SALISBURY, NH 03081  
TEL: 603.882.1555  
FAX: 603.882.3688



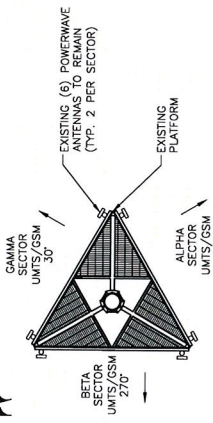


**NOTE:**  
AN ANALYSIS FOR THE CAPACITY OF THE EXISTING STRUCTURES FOR THE PROPOSED EQUIPMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION. REFER TO STRUCTURAL ANALYSIS & MODIFICATIONS BY: HUDSON DESIGN GROUP, LLC - DATED: DECEMBER 12, 2011.

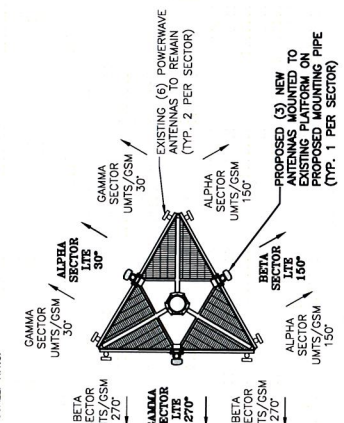
**NOTE:**  
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.



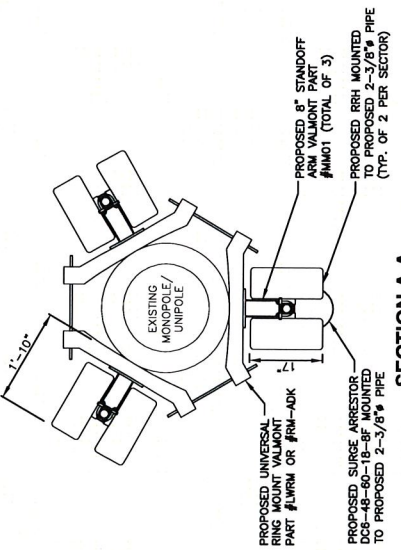
**NORTHWEST ELEVATION**  
SCALE: 1/8"=1'-0"



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



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



**SECTION A-A**

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

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

PART #	VMI PART #	SIZE RANGE
LWRM	801068	12"-45"
RM-ADK	157286	30°-90° ADAPTER KIT

NO.	DATE	REVISIONS	BY	CHK	APP
1	02/17/11	ISSUED FOR REVIEW	DB	DC	DRH
2	03/18/11	ISSUED FOR CONSTRUCTION	AC	DC	DRH
3	12/20/11	CONSTRUCTION REVISION	HC	DC	DRH

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

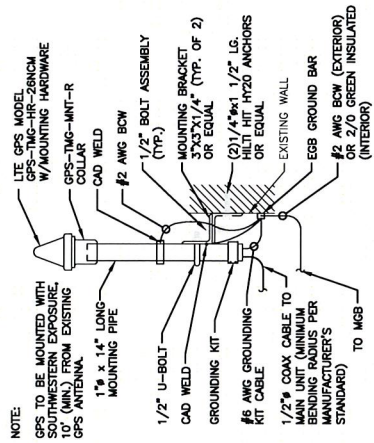
**at&t**  
500 ENTERPRISE DRIVE, SUITE 3A  
ROCKY HILL, CT 06067

**SITE NUMBER: CT5022**  
**SITE NAME: AWE - FAIRFIELD**  
100 REEF ROAD  
FAIRFIELD, CT 06824  
FAIRFIELD COUNTY

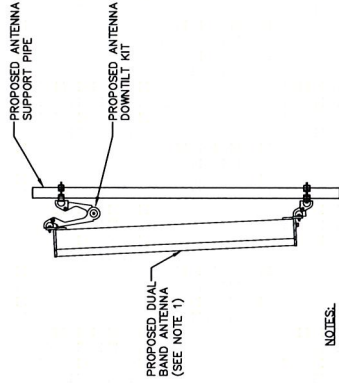
22 KEENEYDIN DRIVE  
SALEM, NH 03079

**SIAT** communications  
Hudson Design Group  
100 WASHINGTON STREET, SUITE 2.10  
N. ANDOVER, MA 01845  
TEL: 978 652 5555  
FAX: 978 336-5886





**GPS MOUNTED TO WALL**  
SCALE: N.T.S.



**PROPOSED ANTENNA DETAIL**  
SCALE: N.T.S.

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

**Hudson**  
Design Group  
1400 CROCOD STREET  
N. ANDOVER, MA 01850  
TEL: (978) 336-1001  
FAX: (978) 336-3388

**SAI**  
communications

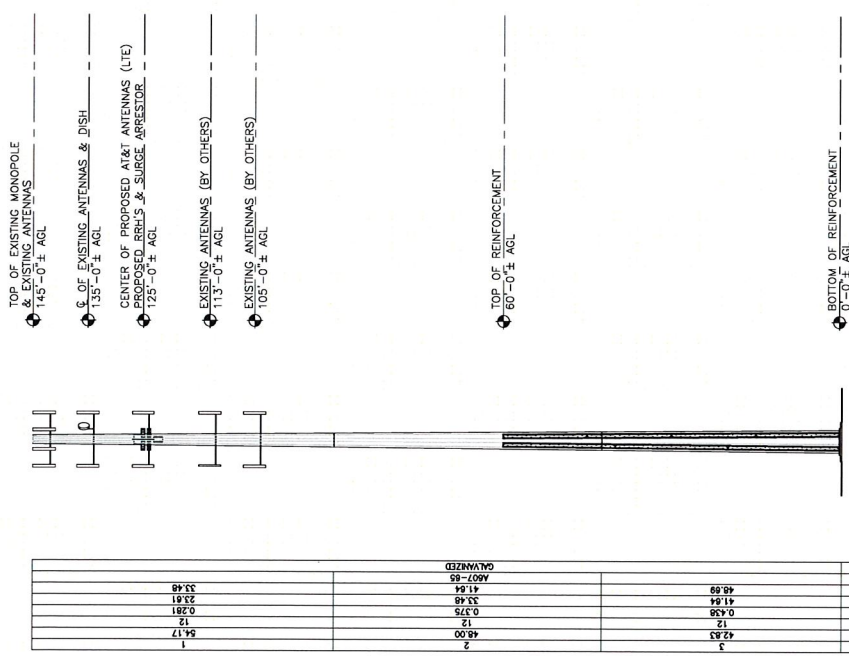
22 KEEWAYON DRIVE  
SALEM, NH 03079

**SITE NUMBER: CT5022**  
**SITE NAME: AWE - FAIRFIELD**  
100 REEF ROAD  
FAIRFIELD, CT 06824  
FAIRFIELD COUNTY

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

3	12/29/11	CONSTRUCTION REVISION	HC	DC	DPA
2	04/19/11	CONSTRUCTION REVISION	AST	DC	DPA
1	03/16/11	ISSUED FOR CONSTRUCTION	HC	DC	DPA
0	02/17/11	ISSUED FOR REVIEW	DB	DC	DPA
NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE:	AS SHOWN	DESIGNED BY:	DC	FORNEN BY:	DB

AT&T	
DETAILS (LTE)	
JOB NUMBER	DRAWING NUMBER
5022.01	A-3
	3



**GENERAL NOTES:**

- ALL WORK SHALL BE DONE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES AND ORDINANCES. IT IS THE CONTRACTOR'S RESPONSIBILITY TO OBTAIN ALL PERMITS NECESSARY TO COMPLETE THE PROJECT IN ACCORDANCE WITH ALL CONDITIONS AND REQUIREMENTS OF THE PERMITS.
  - THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL DIMENSIONS, ELEVATIONS, AND SIZES OF ALL MATERIALS AND COMPONENTS BEFORE ORDERING ANY MATERIALS OR DOING ANY WORK. NO EXTRA CHARGE OR COMPENSATION SHALL BE ALLOWED DUE TO DIFFERENCE BETWEEN ACTUAL DIMENSIONS AND DIMENSIONS INDICATED ON THE DRAWINGS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING WHICH MAY BE FOUND SHALL BE SUBMITTED TO HUDSON DESIGN GROUP FOR CONSIDERATION BEFORE THE CONTRACTOR PROCEEDS WITH THE WORK IN THE AFFECTED AREA.
  - INCORRECTLY FABRICATED, DAMAGED, OTHERWISE MISFITTING, OR NON-CONFORMING MATERIALS AND CONDITIONS SHALL BE REPORTED TO HUDSON DESIGN GROUP PRIOR TO ANY REMEDIAL OR CORRECTIVE ACTION. ALL ACTIONS SHALL REQUIRE HUDSON DESIGN GROUP, LLC APPROVAL.
  - IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE TO INSURE THE SAFETY OF THE STRUCTURE AND ITS COMPONENT PARTS DURING ERECTION AND/OR FIELD MODIFICATION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE ADDITION OF TEMPORARY BRACING, GUYS OR TIE DOWNS THAT MAY BE NECESSARY. SUCH MATERIAL SHALL BE REMOVED AFTER COMPLETION OF THE PROJECT.
  - CONTRACTOR SHALL PROMPTLY REMOVE ANY AND ALL DEBRIS FROM SITE AND RESTORE AS BEST AS POSSIBLE TO PRE-CONSTRUCTION CONDITION.
- STEEL**
- ALL STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST AISC CODE AND ASTM SPECIFICATIONS.
  - ALL CONNECTIONS OF STRUCTURAL STEEL MEMBERS SHALL BE MADE USING SPECIFIED WELDS WITH WELDING ELECTRODES E-70XX OR SPECIFIED HIGH STRENGTH BOLTS TO BE ASTM A325N, THREAD INCLUDED WITH SHEAR PLANE (UNLESS OTHERWISE NOTED)
  - ALL BOLTED CONNECTIONS TO BE INSTALLED TO A SNUG-TIGHTENED CONDITION IN ACCORDANCE WITH AISC 13 PART 16.2. "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS", SECTION 8.1, UNLESS OTHERWISE NOTED.
  - ALL STEEL (EXCEPT A490 BOLTS) AFTER FABRICATION SHALL BE HOT DIPPED GALVANIZED PER ASTM A-123. ALL DAMAGED SURFACES (EXISTING OR NEW) SHALL BE PAINTED WITH 2 COATS OF ZRC COLD GALVANIZING COMPOUND.
  - ALL SHOP AND FIELD WELDING SHALL BE DONE BY WELDERS QUALIFIED AS DESCRIBED IN THE "AMERICAN WELDING SOCIETY'S STANDARD QUALIFICATION PROCEDURE" TO PERFORM THE TYPE OF WORK REQUIRED.
  - STRUCTURAL STEEL MAY NOT BE TORCH CUT FOR FABRICATION. ALL STEEL FABRICATION MUST FOLLOW AISC STANDARDS.

**MISC. NOTES:**

- ALL MODIFICATIONS ARE ASSUMED TO BE MADE ON AN EMPTY TOWER. CONTRACTOR IS RESPONSIBLE TO MAKE PROVISIONS TO SUPPORT OR WORK AROUND EXISTING ANTENNAS AND TRANSMISSION LINES. MODIFICATIONS MUST BE CONTINUOUS THROUGH ALL AREAS SHOWN.
  - CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.
- FABRICATION NOTES:**
- ALL DIMENSIONS ARE PRELIMINARY UNTIL FIELD VERIFIED BY CONTRACTOR. ANY CHANGES MUST BE APPROVED BY ENGINEER OF RECORD IN WRITING PRIOR TO FABRICATION AND INSTALLATION.
  - NEW STEEL MEMBERS MUST HAVE SINGLE DRILLED HOLES. SLOTTED AND DOUBLE DRILLED HOLES ARE NOT ACCEPTABLE MEANS OF FABRICATION.
- CONTRACTOR QUALIFICATION NOTES:**
- ALL REPAIRS SHALL BE PERFORMED BY A TOWER CONTRACTOR WITH A MINIMUM OF 5 YEARS EXPERIENCE IN TOWER ERECTION AND RETROFIT WORK WITH WORKING KNOWLEDGE OF THE ANSI/AISC-323-G STRUCTURAL STANDARD FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS
  - CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION MEANS AND METHODS. SHOULD THE CONTRACTOR REQUIRE DIRECT CONSULTATION, WORKING DRAWINGS, OR SPECIFICATIONS, THE CONTRACTOR SHALL OFFER SERVICES BASED UPON AN AGREED FEE FOR THE WORK REQUIRED.
  - ALL SUBMITTAL INFORMATION MUST BE SENT TO HUDSON DESIGN GROUP, LLC 1600 OSWOOD ST. BUILDING 20N, SUITE 2-101 NORTH ANDOVER, MA 01845. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND THESE SPECIFICATIONS OR DRAWINGS WITHOUT CONSENT FROM HUDSON DESIGN GROUP WILL VOID ANY RESPONSIBILITY OR LIABILITY FOR DAMAGE (MATERIAL OR PHYSICAL) TOWARDS HUDSON DESIGN GROUP, LLC

**JOB SITE SAFETY AND NOTES:**

NEITHER THE PROFESSIONAL ACTIVITIES OF HUDSON DESIGN GROUP, LLC NOR THE PRESENCE OF HUDSON DESIGN GROUP, LLC OR EMPLOYEES AND SUB-CONSULTANTS AT THE CONSTRUCTION SITE, SHALL RELIEVE THE GENERAL CONTRACTOR AND/OR SUBCONTRACTORS AND ANY OTHER ENTITY OF THEIR LIABILITY FOR THE DESIGN OF THE STRUCTURE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, SEQUENCE, TECHNOLOGIES, OR PROCEDURES NECESSARY FOR PERFORMING, SUPERINTENDING OR COORDINATING ALL PORTIONS OF THE WORK OF CONSTRUCTION IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND ANY HEALTH OR SAFETY PRECAUTIONS REQUIRED BY THE CONTRACT DOCUMENTS AND ANY HEALTH OR SAFETY PRECAUTIONS REQUIRED BY THE CONTRACT DOCUMENTS AND ANY HEALTH OR SAFETY PRECAUTIONS REQUIRED BY THE CONTRACT DOCUMENTS. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR JOB SAFETY, AND WARRANTIES THAT THIS INTENT IS EVIDENT BY ACCEPTING THIS WORK.

**SUBSTITUTES AND/OR EQUALS:**

IF CONTRACTOR WISHES TO FURNISH OR USE A SUBSTITUTE ITEM OF MATERIAL OR EQUIPMENT, CONTRACTOR SHALL MAKE WRITTEN APPLICATION TO ENGINEER OF RECORD. CONTRACTOR SHALL CERTIFY THAT THE PROPOSED SUBSTITUTE WILL PROVIDE EQUAL OR BETTER PERFORMANCE AND QUALITY THAN THE ORIGINAL ITEM. THE GENERAL DESIGN SHALL BE SIMILAR IN SUBSTANCE TO THAT SPECIFIED, AND SUITED TO THE SAME USE AS THAT SPECIFIED. ALL VARIATIONS OF THE PROPOSED SUBSTITUTE FROM THAT SPECIFIED WILL BE IDENTIFIED IN THE APPLICATION. THE APPLICATION WILL ALSO CONTAIN AN ITEMIZED ESTIMATE OF ALL COSTS OR CREDITS THAT WILL RESULT DIRECTLY OR INDIRECTLY FROM ACCEPTANCE OF SUCH SUBSTITUTE INCLUDING COSTS OF FABRICATION AND ERECTION. OTHER COSTS INCURRED BY THE RESULTING CHANGE, ALL OF WHICH WILL BE CONSIDERED BY THE ENGINEER. THE CONTRACTOR SHALL FURNISH ADDITIONAL DATA ABOUT THE PROPOSED SUBSTITUTE.

JOB NUMBER		5022.01
DRAWING NUMBER		S-1
DATE		3

**at&t**

500 ENTERPRISE DRIVE, SUITE 3A  
ROCKY HILL, CT 06867

**SITE NUMBER: CT5022**  
**SITE NAME: AWE - FAIRFIELD**  
100 REEF ROAD  
FAIRFIELD, CT 06824  
FAIRFIELD COUNTY

**S&I**  
communications

22 KEEMAYON DRIVE  
SALEM, NH 03079

**Hudson**  
Design Group, Inc.

1600 OSWOOD STREET, SUITE 2-101  
N. ANDOVER, MA 01845  
TEL: 978.557.5555  
FAX: 978.334.5556

HC	DC	DPH
3	12/29/11	CONSTRUCTION REISED
AST	DC	DPH
2	04/19/11	CONSTRUCTION REISED
HC	DC	DPH
1	03/18/11	ISSUED FOR CONSTRUCTION
DB	DC	DPH
0	02/17/11	ISSUED FOR REVIEW
NO.	DATE	REVISIONS
SCALE: AS SHOWN		
DESIGNED BY:	DC	
DRAWN BY:	DB	

**AT&T**

TOWER MODIFICATION DRAWINGS  
MODIFICATION SCHEDULE



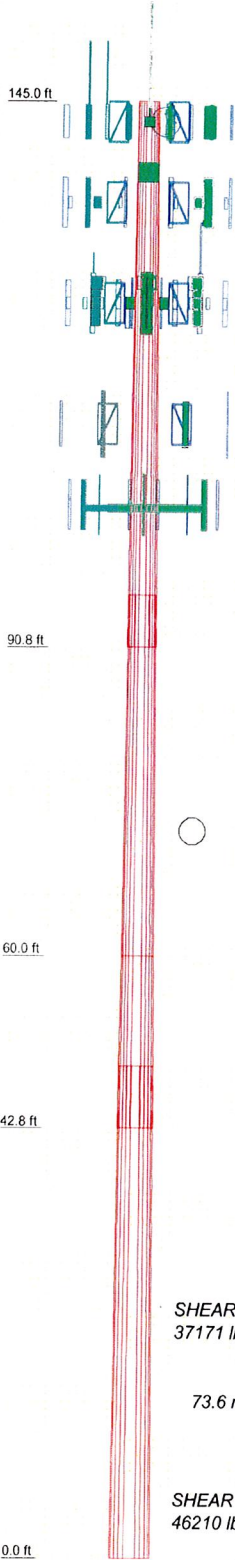






## CALCULATIONS

Section	1	2	3	4
Length (ft)	54.17	36.00	17.17	49.00
Number of Sides	12	12	12	12
Thickness (in)	0.2810	0.3750	0.4500	0.5450
Socket Length (ft)	5.17		6.17	39.6188
Top Dia (in)	23.6100	31.9760	38.5200	48.6900
Bot. Dia (in)	33.4800	38.5200	41.6100	
Grade		A607-65		
Weight (lb)	4714.0	5158.4	3355.0	12760.4

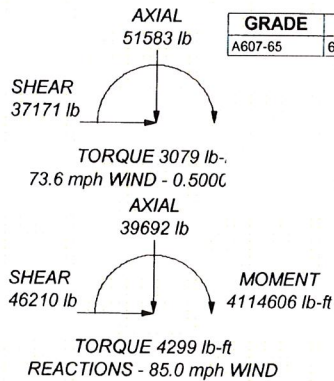


### DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Standoff T-Arm (12' face width)	143	Standoff T-Arm (10' face width)	125
Standoff T-Arm (12' face width)	143	Standoff T-Arm (10' face width)	125
Standoff T-Arm (12' face width)	143	(2) Powerwave 7770.00 w/mount pipe	125
Panel Antenna 40"x15"x4" w/mount pipe	143	(2) Powerwave 7770.00 w/mount pipe	125
Panel Antenna 40"x15"x4" w/mount pipe	143	(2) Powerwave 7770.00 w/mount pipe	125
Panel Antenna 40"x15"x4" w/mount pipe	143	(4) Powerwave LGP 21401	125
Panel Antenna 42"x6"x6" w/mount pipe	143	(4) Powerwave LGP 21401	125
Panel Antenna 42"x6"x6" w/mount pipe	143	(4) Powerwave LGP 21401	125
Panel Antenna 42"x6"x6" w/mount pipe	143	Omni 1 1/4"x3"	125
Panel Antenna 42"x6"x6" w/mount pipe	143	Omni 3"x6"	125
Panel Antenna 42"x6"x6" w/mount pipe	143	Powerwave P65-16-XLH-RR w/mount pipe	125
Panel Antenna 42"x6"x6" w/mount pipe	143	Powerwave P65-16-XLH-RR w/mount pipe	125
Panel Antenna 42"x6"x6" w/mount pipe	143	Powerwave P65-16-XLH-RR w/mount pipe	125
Panel Antenna 42"x6"x6" w/mount pipe	143	(2) Ericsson RRU w/mount pipe	125
Panel Antenna 42"x6"x6" w/mount pipe	143	(2) Ericsson RRU w/mount pipe	125
Panel Antenna 42"x6"x6" w/mount pipe	143	(2) Ericsson RRU w/mount pipe	125
Panel Antenna 42"x6"x6" w/mount pipe	143	Surge Arrestor (DC6-48-60-18-8F)	125
Panel Antenna 42"x6"x6" w/mount pipe	143	Valmont Light Duty Tri-Bracket (1)	125
Ericsson RRU	143	2"x5" pipe	125
Ericsson RRU	143	2"x5" pipe	125
Ericsson RRU	143	2"x5" pipe	125
8' 4-Bay Dipole	143	Standoff T-Arm (10' face width)	125
8' 4-Bay Dipole	143	Standoff T-Arm (8' face width)	113
Omni 2 1/2"x12"	143	Standoff T-Arm (8' face width)	113
pull box	143	kathrein 800 10504 w/80" mount pipe	113
P3F-52	143	kathrein 800 10504 w/80" mount pipe	113
Standoff T-Arm (12' face width)	135	kathrein 800 10504 w/80" mount pipe	113
Standoff T-Arm (12' face width)	135	2 1/2"x80" pipe	113
Panel Antenna 60"x12"x3" w/mount pipe	135	2 1/2"x80" pipe	113
Panel Antenna 60"x12"x3" w/mount pipe	135	2 1/2"x80" pipe	113
Panel Antenna 60"x12"x3" w/mount pipe	135	Standoff T-Arm (8' face width)	113
Panel Antenna 60"x12"x3" w/mount pipe	135	Panel Antenna 60"x6 1/2"x3" w/mount pipe	105
Panel Antenna 60"x12"x3" w/mount pipe	135	Panel Antenna 60"x6 1/2"x3" w/mount pipe	105
Panel Antenna 60"x6"x3" w/mount pipe	135	Panel Antenna 60"x6 1/2"x3" w/mount pipe	105
Panel Antenna 60"x6"x3" w/mount pipe	135	Panel Antenna 60"x6 1/2"x3" w/mount pipe	105
Panel Antenna 60"x6"x3" w/mount pipe	135	Panel Antenna 60"x6 1/2"x3" w/mount pipe	105
Panel Antenna 60"x6"x3" w/mount pipe	135	Panel Antenna 60"x6 1/2"x3" w/mount pipe	105
(2) Powerwave tma	135	Panel Antenna 60"x6 1/2"x3" w/mount pipe	105
(2) Powerwave tma	135	2 1/2"x6" pipe	105
(2) Powerwave tma	135	2 1/2"x6" pipe	105
Dish 24"x24"	135	2 1/2"x6" pipe	105
Standoff T-Arm (12' face width)	135	PIROD 13' Low Profile Platform (Monopole)	105

### MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-65	65 ksi	80 ksi			



<b>Hudson Design Group</b>		Job: <b>CT5022 - MOD</b>	
1600 Osgood Street, Building 20 North, Suite 2-101		Project: <b>145 ft monopole</b>	
North Andover, MA 01845		Client: <b>at&amp;t</b>	Drawn by: <b>kw</b>
Phone: (978)557-5553		Code: <b>TIA/EIA-222-F</b>	Date: <b>12/20/11</b>
FAX: (978)336-5586		Path:	Scale: <b>NTS</b>
		Dwg No. <b>E-1</b>	



<b>RISATower</b>  <b>Hudson Design Group</b> 1600 Osgood Street, Building 20 North, Suite 2-101 North Andover, MA 01845 Phone: (978)557-5553 FAX: (978)336-5586	Job	CT5022 - MOD	Page	1 of 13
	Project	145 ft monopole	Date	11:02:44 12/20/11
	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 Fairfield County, Connecticut.

Basic wind speed of 85.0 mph.

Nominal ice thickness of 0.5000 in.

Ice density of 56.0 pcf.

A wind speed of 73.6 mph is used in combination with ice.

Temperature drop of 60.0 °F.

Deflections calculated using a wind speed of 50.0 mph.

Weld together tower sections have flange connections..

Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications..

Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards..

Welds are fabricated with ER-70S-6 electrodes..

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	145.00-90.83	54.17	5.17	12	23.6100	33.4800	0.2810	1.1240	A607-65
L2	90.83-60.00	36.00	0.00	12	31.9760	38.5200	0.3750	1.5000	(65 ksi) A607-65
L3	60.00-42.83	17.17	6.17	12	38.5200	41.6400	0.4500	1.8000	(65 ksi) A607-65
L4	42.83-0.00	49.00		12	39.6188	48.6900	0.5450	2.1800	(65 ksi) A607-65

## Tapered Pole Properties

Section	Tip Dia. in	Area in <sup>2</sup>	I in <sup>4</sup>	r in	C in	I/C in <sup>3</sup>	J in <sup>4</sup>	I/Q in <sup>2</sup>	w in	w / I
L1	24.4429	21.1085	1466.3462	8.3518	12.2300	119.8977	2971.2149	10.3890	5.5744	19.838
	34.6610	30.0391	4225.9383	11.8852	17.3426	243.6733	8562.8966	14.7843	8.2196	29.251
L2	34.0769	38.1582	4863.8005	11.3132	16.5636	293.6444	9855.3784	18.7803	7.5646	20.172
	39.8788	46.0601	8554.3290	13.6559	19.9534	428.7162	17333.3897	22.6694	9.3184	24.849
L3	39.8788	55.1634	10204.7640	13.6291	19.9534	511.4309	20677.6185	27.1498	9.1174	20.261
	43.1089	59.6843	12924.9750	14.7460	21.5695	599.2240	26189.5035	29.3748	9.9535	22.119
L4	42.1990	68.5707	13362.7685	13.9884	20.5226	651.1259	27076.5918	33.7484	9.1572	16.802
	50.4076	84.4897	24997.2306	17.2359	25.2214	991.1112	50651.1664	41.5832	11.5883	21.263

<b>RISATower</b>  <b>Hudson Design Group</b> 1600 Osgood Street, Building 20 North, Suite 2-101 North Andover, MA 01845 Phone: (978)557-5553 FAX: (978)336-5586	Job	CT5022 - MOD	Page	2 of 13
	Project	145 ft monopole	Date	11:02:44 12/20/11
	Client	at&t	Designed by	kw

### Monopole Base Plate Data

Base Plate Data	
Base plate is square	√
Base plate is grouted	√
Anchor bolt grade	A615-75
Anchor bolt size	2.2500 in
Number of bolts	16
Embedment length	108.0000 in
$f_c$	4.0 ksi
Grout space	4.0000 in
Base plate grade	A572-60
Base plate thickness	2.7500 in
Bolt circle diameter	56.9100 in
Outer diameter	62.9100 in
Inner diameter	24.0000 in
Base plate type	Plain Plate

### Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Component Type	Placement <i>ft</i>	Total Number	Number Per Row	Start/End Position	Width or	Perimeter	Weight
							Diameter <i>in</i>	<i>in</i>	<i>plf</i>
1 5/8	A	Surface Ar (CaAa)	105.00 - 12.00	6	6	0.000 0.300	1.9800		1.04
1 5/8	B	Surface Ar (CaAa)	113.00 - 12.00	6	6	0.000 0.300	1.9800		1.04
1 1/4	C	Surface Ar (CaAa)	125.00 - 12.00	9	9	0.000 0.300	1.5500		0.66
1 5/8	A	Surface Ar (CaAa)	125.00 - 12.00	3	3	0.000 0.300	1.9800		1.04
1 5/8	B	Surface Ar (CaAa)	135.00 - 12.00	6	6	0.000 0.300	1.9800		1.04
1 1/4	C	Surface Ar (CaAa)	135.00 - 12.00	6	6	0.000 0.300	1.5500		0.66
2 1/4	A	Surface Ar (CaAa)	143.00 - 12.00	3	3	0.000 0.300	2.3800		1.16
3" conduit	B	Surface Ar (CaAa)	125.00 - 12.00	3	3	0.000 0.000	3.5000		3.00

### Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement <i>ft</i>	Total Number	$C_s A_s$	Weight
							<i>plf</i>
7/8	B	No	Inside Pole	125.00 - 7.00	1	No Ice 1/2" Ice	0.00 0.54
1/2	B	No	Inside Pole	125.00 - 7.00	1	No Ice 1/2" Ice	0.00 0.25
7/8	C	No	Inside Pole	135.00 - 7.00	1	No Ice 1/2" Ice	0.00 0.54
7/8	C	No	Inside Pole	143.00 - 7.00	9	No Ice 1/2" Ice	0.00 0.54
1 1/4	C	No	Inside Pole	143.00 - 7.00	3	No Ice 1/2" Ice	0.00 0.66
1 5/8	C	No	Inside Pole	143.00 - 7.00	6	No Ice	0.00 1.04

<b>RISATower</b>  <b>Hudson Design Group</b> 1600 Osgood Street, Building 20 North, Suite 2-101 North Andover, MA 01845 Phone: (978)557-5553 FAX: (978)336-5586	Job	CT5022 - MOD	Page	3 of 13
	Project	145 ft monopole	Date	11:02:44 12/20/11
	Client	at&t	Designed by	kw

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C <sub>AA</sub>	Weight
					1/2" Ice	0.00	1.04

### Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C <sub>AA</sub> Front ft <sup>2</sup>	C <sub>AA</sub> Side ft <sup>2</sup>	Weight lb	
Standoff T-Arm (12' face width)	A	From Face	2.50	0.0000	143.00	No Ice	4.20	4.20	170.00
			0.00			1/2" Ice	5.40	5.40	220.00
Standoff T-Arm (12' face width)	B	From Face	2.50	0.0000	143.00	No Ice	4.20	4.20	170.00
			0.00			1/2" Ice	5.40	5.40	220.00
Standoff T-Arm (12' face width)	C	From Face	2.50	0.0000	143.00	No Ice	4.20	4.20	170.00
			0.00			1/2" Ice	5.40	5.40	220.00
Panel Antenna 40"x15"x4" w/mount pipe	A	From Face	5.00	0.0000	143.00	No Ice	5.90	2.43	43.38
			-6.00			1/2" Ice	6.28	2.91	80.21
Panel Antenna 40"x15"x4" w/mount pipe	B	From Face	5.00	0.0000	143.00	No Ice	5.90	2.43	43.38
			-6.00			1/2" Ice	6.28	2.91	80.21
Panel Antenna 40"x15"x4" w/mount pipe	C	From Face	5.00	0.0000	143.00	No Ice	5.90	2.43	43.38
			-6.00			1/2" Ice	6.28	2.91	80.21
Panel Antenna 42"x6"x6" w/mount pipe	A	From Face	5.00	0.0000	143.00	No Ice	2.48	3.22	43.38
			-2.00			1/2" Ice	2.81	3.76	70.98
Panel Antenna 42"x6"x6" w/mount pipe	A	From Face	5.00	0.0000	143.00	No Ice	2.48	3.22	43.38
			2.00			1/2" Ice	2.81	3.76	70.98
Panel Antenna 42"x6"x6" w/mount pipe	A	From Face	5.00	0.0000	143.00	No Ice	2.48	3.22	43.38
			6.00			1/2" Ice	2.81	3.76	70.98
Panel Antenna 42"x6"x6" w/mount pipe	B	From Face	5.00	0.0000	143.00	No Ice	2.48	3.22	43.38
			-2.00			1/2" Ice	2.81	3.76	70.98
Panel Antenna 42"x6"x6" w/mount pipe	B	From Face	5.00	0.0000	143.00	No Ice	2.48	3.22	43.38
			2.00			1/2" Ice	2.81	3.76	70.98
Panel Antenna 42"x6"x6" w/mount pipe	B	From Face	5.00	0.0000	143.00	No Ice	2.48	3.22	43.38
			6.00			1/2" Ice	2.81	3.76	70.98
Panel Antenna 42"x6"x6" w/mount pipe	C	From Face	5.00	0.0000	143.00	No Ice	2.48	3.22	43.38
			-2.00			1/2" Ice	2.81	3.76	70.98
Panel Antenna 42"x6"x6" w/mount pipe	C	From Face	5.00	0.0000	143.00	No Ice	2.48	3.22	43.38
			2.00			1/2" Ice	2.81	3.76	70.98
Panel Antenna 42"x6"x6" w/mount pipe	C	From Face	5.00	0.0000	143.00	No Ice	2.48	3.22	43.38
			6.00			1/2" Ice	2.81	3.76	70.98
Ericsson RRU	A	From Face	5.00	0.0000	143.00	No Ice	2.07	1.08	44.00
			-6.00			1/2" Ice	2.26	1.23	58.64



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	<b>Project</b>	145 ft monopole	<b>Date</b>	11:02:44 12/20/11
	<b>Client</b>	at&t	<b>Designed by</b>	kw

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>A</sub> A <sub>A</sub> Front	C <sub>A</sub> A <sub>A</sub> Side	Weight	
			Horz	Lateral						Vert
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	lb	
			0.00							
Ericsson RRU	B	From Face	5.00		0.0000	143.00	No Ice	2.07	1.08	44.00
			-6.00				1/2" Ice	2.26	1.23	58.64
			0.00							
Ericsson RRU	C	From Face	5.00		0.0000	143.00	No Ice	2.07	1.08	44.00
			-6.00				1/2" Ice	2.26	1.23	58.64
			0.00							
8' 4-Bay Dipole	A	From Face	5.00		0.0000	143.00	No Ice	1.60	1.60	25.00
			2.00				1/2" Ice	2.42	2.42	37.45
			4.00							
8' 4-Bay Dipole	C	From Face	5.00		0.0000	143.00	No Ice	1.60	1.60	25.00
			6.00				1/2" Ice	2.42	2.42	37.45
			4.00							
Omni 2 1/2"x12'	C	From Face	0.50		0.0000	143.00	No Ice	3.00	3.00	30.00
			0.00				1/2" Ice	4.23	4.23	52.30
			6.00							
pull box	C	From Face	2.00		0.0000	143.00	No Ice	1.40	0.70	30.00
			0.00				1/2" Ice	1.56	0.82	40.34
			0.00							
*****										
Standoff T-Arm (12' face width)	A	From Face	2.50		60.0000	135.00	No Ice	4.20	4.20	170.00
			0.00				1/2" Ice	5.40	5.40	220.00
			0.00							
Standoff T-Arm (12' face width)	B	From Face	2.50		60.0000	135.00	No Ice	4.20	4.20	170.00
			0.00				1/2" Ice	5.40	5.40	220.00
			0.00							
Standoff T-Arm (12' face width)	C	From Face	2.50		60.0000	135.00	No Ice	4.20	4.20	170.00
			0.00				1/2" Ice	5.40	5.40	220.00
			0.00							
Panel Antenna 60"x12"x3" w/mount pipe	A	From Face	5.00		60.0000	135.00	No Ice	7.47	3.95	55.55
			-6.00				1/2" Ice	8.15	5.04	104.01
			0.00							
Panel Antenna 60"x12"x3" w/mount pipe	B	From Face	5.00		60.0000	135.00	No Ice	7.47	3.95	55.55
			-6.00				1/2" Ice	8.15	5.04	104.01
			0.00							
Panel Antenna 60"x12"x3" w/mount pipe	C	From Face	5.00		60.0000	135.00	No Ice	7.47	3.95	55.55
			-6.00				1/2" Ice	8.15	5.04	104.01
			0.00							
Panel Antenna 60"x6"x3" w/mount pipe	A	From Face	5.00		60.0000	135.00	No Ice	4.22	3.95	55.55
			6.00				1/2" Ice	4.81	5.04	91.57
			0.00							
Panel Antenna 60"x6"x3" w/mount pipe	B	From Face	5.00		60.0000	135.00	No Ice	4.22	3.95	55.55
			6.00				1/2" Ice	4.81	5.04	91.57
			0.00							
Panel Antenna 60"x6"x3" w/mount pipe	C	From Face	5.00		60.0000	135.00	No Ice	4.22	3.95	55.55
			6.00				1/2" Ice	4.81	5.04	91.57
			0.00							
(2) Powerwave tma	A	From Face	5.00		60.0000	135.00	No Ice	1.29	0.36	14.10
			0.00				1/2" Ice	1.45	0.48	21.26
			0.00							
(2) Powerwave tma	B	From Face	5.00		60.0000	135.00	No Ice	1.29	0.36	14.10
			0.00				1/2" Ice	1.45	0.48	21.26
			0.00							
(2) Powerwave tma	C	From Face	5.00		60.0000	135.00	No Ice	1.29	0.36	14.10
			0.00				1/2" Ice	1.45	0.48	21.26
			0.00							
Dish 24"x24"	C	From Face	5.00		60.0000	135.00	No Ice	5.60	0.33	30.00

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	Client	at&t	Designed by	kw

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>AA</sub> Front	C <sub>AA</sub> Side	Weight
			Horz	Lateral					
			0.00			1/2" Ice	5.92	0.47	51.84
*****			3.00						
Standoff T-Arm (10' face width)	A	From Face	2.50		0.0000	125.00	No Ice	3.50	160.00
			0.00				1/2" Ice	4.50	200.00
			0.00						
Standoff T-Arm (10' face width)	B	From Face	2.50		0.0000	125.00	No Ice	3.50	160.00
			0.00				1/2" Ice	4.50	200.00
			0.00						
Standoff T-Arm (10' face width)	C	From Face	2.50		0.0000	125.00	No Ice	3.50	160.00
			0.00				1/2" Ice	4.50	200.00
			0.00						
(2) Powerwave 7770.00 w/mount pipe	A	From Face	5.00		0.0000	125.00	No Ice	6.10	55.08
			0.00				1/2" Ice	6.60	100.07
			0.00						
(2) Powerwave 7770.00 w/mount pipe	B	From Face	5.00		0.0000	125.00	No Ice	6.10	55.08
			0.00				1/2" Ice	6.60	100.07
			0.00						
(2) Powerwave 7770.00 w/mount pipe	C	From Face	5.00		0.0000	125.00	No Ice	6.10	55.08
			0.00				1/2" Ice	6.60	100.07
			0.00						
(4) Powerwave LGP 21401	A	From Face	5.00		0.0000	125.00	No Ice	1.29	31.00
			0.00				1/2" Ice	1.45	39.08
			0.00						
(4) Powerwave LGP 21401	B	From Face	5.00		0.0000	125.00	No Ice	1.29	31.00
			0.00				1/2" Ice	1.45	39.08
			0.00						
(4) Powerwave LGP 21401	C	From Face	5.00		0.0000	125.00	No Ice	1.29	31.00
			0.00				1/2" Ice	1.45	39.08
			0.00						
Omni 1 1/4"x3'	A	From Face	5.00		0.0000	125.00	No Ice	0.38	10.00
			0.00				1/2" Ice	0.58	13.34
			3.50						
Omni 3"x6'	B	From Face	5.00		0.0000	125.00	No Ice	1.77	20.00
			0.00				1/2" Ice	2.13	33.24
			5.00						
Powerwave P65-16-XLH-RR w/mount pipe	A	From Face	5.00		0.0000	125.00	No Ice	8.40	85.90
			0.00				1/2" Ice	8.95	146.64
			0.00						
Powerwave P65-16-XLH-RR w/mount pipe	B	From Face	5.00		0.0000	125.00	No Ice	8.40	85.90
			0.00				1/2" Ice	8.95	146.64
			0.00						
Powerwave P65-16-XLH-RR w/mount pipe	C	From Face	5.00		0.0000	125.00	No Ice	8.40	85.90
			0.00				1/2" Ice	8.95	146.64
			0.00						
(2) Ericsson RRU w/mount pipe	A	From Face	1.00		0.0000	125.00	No Ice	2.94	62.25
			0.00				1/2" Ice	3.35	88.15
			2.00						
(2) Ericsson RRU w/mount pipe	B	From Face	1.00		0.0000	125.00	No Ice	2.94	62.25
			0.00				1/2" Ice	3.35	88.15
			2.00						
(2) Ericsson RRU w/mount pipe	C	From Face	1.00		0.0000	125.00	No Ice	2.94	62.25
			0.00				1/2" Ice	3.35	88.15
			2.00						
Surge Arrestor (DC6-48-60-18-8F)	A	From Face	1.00		0.0000	125.00	No Ice	1.27	20.00
			0.00				1/2" Ice	1.46	35.12
			-1.50						

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	<b>Project</b>	145 ft monopole	<b>Date</b>	11:02:44 12/20/11
	<b>Client</b>	at&t	<b>Designed by</b>	kw

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment °	Placement ft	C <sub>A</sub> A <sub>A</sub>		Weight lb	
			Horz Lateral ft	Vert ft			Front ft <sup>2</sup>	Side ft <sup>2</sup>		
Valmont Light Duty Tri-Bracket (1)	A	None			0.0000	125.00	No Ice	1.76	1.76	54.00
2"x5' pipe	A	From Face	0.50		0.0000	125.00	1/2" Ice	2.08	2.08	70.00
			0.00				No Ice	1.19	1.19	19.00
			0.00				1/2" Ice	1.50	1.50	28.09
2"x5' pipe	B	From Face	0.50		0.0000	125.00	No Ice	1.19	1.19	19.00
			0.00				1/2" Ice	1.50	1.50	28.09
			0.00							
2"x5' pipe	C	From Face	0.50		0.0000	125.00	No Ice	1.19	1.19	19.00
			0.00				1/2" Ice	1.50	1.50	28.09
			0.00							
*****										
Standoff T-Arm (8' face width)	A	From Face	3.00		0.0000	113.00	No Ice	2.80	2.80	140.00
			0.00				1/2" Ice	3.60	3.60	170.00
			0.00							
Standoff T-Arm (8' face width)	B	From Face	3.00		0.0000	113.00	No Ice	2.80	2.80	140.00
			0.00				1/2" Ice	3.60	3.60	170.00
			0.00							
Standoff T-Arm (8' face width)	C	From Face	3.00		0.0000	113.00	No Ice	2.80	2.80	140.00
			0.00				1/2" Ice	3.60	3.60	170.00
			0.00							
kathrein 800 10504 w/80" mount pipe	A	From Face	6.00		0.0000	113.00	No Ice	3.97	3.78	58.60
			-4.00				1/2" Ice	4.48	4.61	95.27
			0.00							
kathrein 800 10504 w/80" mount pipe	B	From Face	6.00		0.0000	113.00	No Ice	3.97	3.78	58.60
			-4.00				1/2" Ice	4.48	4.61	95.27
			0.00							
kathrein 800 10504 w/80" mount pipe	C	From Face	6.00		0.0000	113.00	No Ice	3.97	3.78	58.60
			-4.00				1/2" Ice	4.48	4.61	95.27
			0.00							
2 1/2"x80" pipe	A	From Face	6.00		0.0000	113.00	No Ice	1.92	1.92	39.00
			4.00				1/2" Ice	2.42	2.42	53.15
			0.00							
2 1/2"x80" pipe	B	From Face	6.00		0.0000	113.00	No Ice	1.92	1.92	39.00
			4.00				1/2" Ice	2.42	2.42	53.15
			0.00							
2 1/2"x80" pipe	C	From Face	6.00		0.0000	113.00	No Ice	1.92	1.92	39.00
			4.00				1/2" Ice	2.42	2.42	53.15
			0.00							
*****										
PiROD 13' Low Profile Platform (Monopole)	A	None			0.0000	105.00	No Ice	15.70	15.70	1300.00
							1/2" Ice	20.10	20.10	1765.00
Panel Antenna 60"x6 1/2"x3" w/mount pipe	A	From Face	3.75		0.0000	105.00	No Ice	4.28	4.02	64.74
			6.00				1/2" Ice	4.72	4.74	102.93
			0.00							
Panel Antenna 60"x6 1/2"x3" w/mount pipe	A	From Face	3.75		0.0000	105.00	No Ice	4.28	4.02	64.74
			-6.00				1/2" Ice	4.72	4.74	102.93
			0.00							
Panel Antenna 60"x6 1/2"x3" w/mount pipe	B	From Face	3.75		0.0000	105.00	No Ice	4.28	4.02	64.74
			6.00				1/2" Ice	4.72	4.74	102.93
			0.00							
Panel Antenna 60"x6 1/2"x3" w/mount pipe	B	From Face	3.75		0.0000	105.00	No Ice	4.28	4.02	64.74
			-6.00				1/2" Ice	4.72	4.74	102.93
			0.00							
Panel Antenna 60"x6 1/2"x3" w/mount pipe	C	From Face	3.75		0.0000	105.00	No Ice	4.28	4.02	64.74
			6.00				1/2" Ice	4.72	4.74	102.93
			0.00							



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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement	C <sub>1</sub> A <sub>1</sub> Front	C <sub>1</sub> A <sub>1</sub> Side	Weight	
			ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	lb	
Panel Antenna 60"x6 1/2"x3" w/mount pipe	C	From Face	3.75 -6.00 0.00	0.0000	105.00	No Ice 1/2" Ice	4.28 4.72	4.02 4.74	64.74 102.93
2 1/2"x6' pipe	A	From Face	3.75 0.00	0.0000	105.00	No Ice 1/2" Ice	1.73 2.09	1.73 2.09	35.00 47.77
2 1/2"x6' pipe	B	From Face	3.75 0.00	0.0000	105.00	No Ice 1/2" Ice	1.73 2.09	1.73 2.09	35.00 47.77
2 1/2"x6' pipe	C	From Face	3.75 0.00	0.0000	105.00	No Ice 1/2" Ice	1.73 2.09	1.73 2.09	35.00 47.77

### Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter	Aperture Area	Weight
				ft	°	°	ft	ft	ft <sup>2</sup>	lb
P3F-52	B	Paraboloid w/o Radome	From Face	5.00 -7.00	-90.0000		143.00	3.00	No Ice 1/2" Ice	90.00 128.31

### Force Totals

Load Case	Vertical Forces	Sum of Forces X	Sum of Forces Z	Sum of Overturning Moments, M <sub>x</sub>	Sum of Overturning Moments, M <sub>z</sub>	Sum of Torques
	lb	lb	lb	lb-ft	lb-ft	lb-ft
Leg Weight	25987.84					
Bracing Weight	0.00					
Total Member Self-Weight	25987.84			-1845.32	-1525.19	
Total Weight	39692.26			-1845.32	-1525.19	
Wind 0 deg - No Ice		91.06	-46036.14	-3993369.25	-14009.27	1621.80
Wind 30 deg - No Ice		23066.94	-39880.02	-3459989.89	-2003500.46	971.16
Wind 60 deg - No Ice		39846.42	-23026.54	-1998353.56	-3454328.18	190.29
Wind 90 deg - No Ice		46183.85	333.44	46373.85	-4013551.76	-3165.91
Wind 120 deg - No Ice		39893.71	23238.68	2025929.00	-3461627.86	-3007.88
Wind 150 deg - No Ice		23086.11	40015.12	3476156.59	-2007171.95	-3754.63
Wind 180 deg - No Ice		164.03	46193.25	4012146.52	-25518.02	-4352.26
Wind 210 deg - No Ice		-22803.15	40191.92	3500901.02	1962729.07	-4123.11
Wind 240 deg - No Ice		-39850.37	23019.69	1993683.53	3451843.25	-142.85
Wind 270 deg - No Ice		-46045.63	50.95	4903.74	3990735.63	1494.65
Wind 300 deg - No Ice		-39885.18	-22939.21	-1986795.75	3457358.15	2575.57
Wind 330 deg - No Ice		-23002.41	-39870.16	-3459117.09	1992153.02	2750.46
Member Ice	3333.25					
Total Weight Ice	51582.55			-2993.30	-2598.55	
Wind 0 deg - Ice		70.26	-37035.77	-3281241.35	-12229.67	956.58

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Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Overturning Moments, $M_x$ lb-ft	Sum of Overturning Moments, $M_z$ lb-ft	Sum of Torques lb-ft
Wind 30 deg - Ice		18554.17	-32082.27	-2843026.25	-1646311.86	489.44
Wind 60 deg - Ice		32054.19	-18523.26	-1642526.41	-2838200.50	-6.40
Wind 90 deg - Ice		37150.32	264.26	35211.45	-3296747.30	-2489.78
Wind 120 deg - Ice		32092.96	18693.03	1661536.36	-2844159.54	-2205.20
Wind 150 deg - Ice		18571.87	32190.24	2852894.47	-1649563.09	-2677.85
Wind 180 deg - Ice		130.76	37159.58	3292960.09	-21712.27	-3108.25
Wind 210 deg - Ice		-18346.30	32328.06	2872187.09	1611389.53	-2973.27
Wind 240 deg - Ice		-32057.31	18517.87	1635768.03	2833448.98	43.79
Wind 270 deg - Ice		-37041.40	38.65	2118.46	3275974.21	1172.78
Wind 300 deg - Ice		-32086.24	-18457.04	-1633776.53	2838001.57	1864.53
Wind 330 deg - Ice		-18505.92	-32076.00	-2842545.14	1634934.42	1886.54
Total Weight	39692.26			-1845.32	-1525.19	
Wind 0 deg - Service		31.51	-15929.46	-1381730.67	-4233.59	561.18
Wind 30 deg - Service		7981.64	-13799.31	-1197170.34	-692638.84	336.04
Wind 60 deg - Service		13787.69	-7967.66	-691413.83	-1194655.36	65.85
Wind 90 deg - Service		15980.57	115.38	16104.31	-1388158.33	-1095.47
Wind 120 deg - Service		13804.05	8041.07	701071.49	-1197181.20	-1040.79
Wind 150 deg - Service		7988.27	13846.06	1202880.34	-693909.26	-1299.18
Wind 180 deg - Service		56.76	15983.83	1388343.99	-8215.85	-1505.97
Wind 210 deg - Service		-7890.36	13907.24	1211442.43	679758.92	-1426.68
Wind 240 deg - Service		-13789.06	7965.29	689913.89	1195023.34	-49.43
Wind 270 deg - Service		-15932.74	17.63	1754.79	1381491.29	517.18
Wind 300 deg - Service		-13801.10	-7937.44	-687414.58	1196931.61	891.20
Wind 330 deg - Service		-7959.31	-13795.90	-1196868.33	689940.21	951.72

## 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

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Comb. No.	Description
28	Dead+Wind 30 deg - Service
29	Dead+Wind 60 deg - Service
30	Dead+Wind 90 deg - Service
31	Dead+Wind 120 deg - Service
32	Dead+Wind 150 deg - Service
33	Dead+Wind 180 deg - Service
34	Dead+Wind 210 deg - Service
35	Dead+Wind 240 deg - Service
36	Dead+Wind 270 deg - Service
37	Dead+Wind 300 deg - Service
38	Dead+Wind 330 deg - Service

### Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft			
L1	145 - 90.83	Pole	Max Tension	30	0.03	0.03	-1.19			
			Max. Compression	14	-18370.86	-552.44	1168.66			
			Max. Mx	5	-11109.53	-691265.82	-15959.18			
			Max. My	8	-11109.50	-8647.79	-691254.20			
			Max. Vy	5	24606.76	-691265.82	-15959.18			
			Max. Vx	8	24616.47	-8647.79	-691254.20			
			Max. Torque	9			3762.91			
			L2	90.83 - 60	Pole	Max Tension	1	0.00	0.00	0.00
						Max. Compression	14	-28559.35	-1325.77	1845.21
Max. Mx	5	-19134.88				-1730984.9	-28028.34			
Max. My	8	-19135.02				-15399.69	-1730488.7			
Max. Vy	5	33086.13				-1730984.9	-28028.34			
Max. Vx	8	33095.86				-15399.69	-1730488.7			
Max. Torque	9						3880.00			
L3	60 - 42.83	Pole				Max Tension	1	0.00	0.00	0.00
						Max. Compression	14	-32142.60	-1605.49	2099.40
			Max. Mx	5	-22124.99	-2108533.6	-31672.89			
			Max. My	8	-22125.14	-17457.24	-2107839.3			
			Max. Vy	5	35568.47	-2108533.6	-31672.89			
			Max. Vx	8	35577.61	-17457.24	-2107839.3			
			Max. Torque	8			3945.58			
			L4	42.83 - 0	Pole	Max Tension	1	0.00	0.00	0.00
						Max. Compression	14	-51582.55	-2605.80	3004.91
Max. Mx	5	-39649.42				-4113918.4	-47838.51			
Max. My	8	-39649.49				-26295.25	-4112618.6			
Max. Vy	5	46218.89				-4113918.4	-47838.51			
Max. Vx	8	46229.45				-26295.25	-4112618.6			
Max. Torque	8						4298.72			



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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
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### Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Pole	Max. Vert	14	51582.55	0.19	-0.32
	Max. H <sub>x</sub>	11	39692.17	46043.97	-50.95
	Max. H <sub>z</sub>	2	39692.17	-91.05	46034.48
	Max. M <sub>x</sub>	2	4093202.71	-91.05	46034.48
	Max. M <sub>z</sub>	5	4113918.43	-46182.18	-333.41
	Max. Torsion	8	4298.79	-164.03	-46192.76
	Min. Vert	5	39692.17	-46182.18	-333.41
	Min. H <sub>x</sub>	5	39692.17	-46182.18	-333.41
	Min. H <sub>z</sub>	8	39692.23	-164.03	-46192.76
	Min. M <sub>x</sub>	8	-4112618.66	-164.03	-46192.76
	Min. M <sub>z</sub>	11	-4090487.36	46043.97	-50.95
	Min. Torsion	13	-2720.78	23002.39	39870.12

### Tower Mast Reaction Summary

Load Combination	Vertical lb	Shear <sub>x</sub> lb	Shear <sub>z</sub> lb	Overturning Moment, M <sub>x</sub> lb-ft	Overturning Moment, M <sub>z</sub> lb-ft	Torque lb-ft
Dead Only	39692.26	-0.01	0.03	-1846.01	-1525.47	0.02
Dead+Wind 0 deg - No Ice	39692.17	91.05	-46034.48	-4093202.71	-14424.31	1620.93
Dead+Wind 30 deg - No Ice	39692.25	23066.92	-39879.98	-3546644.85	-2053689.29	978.92
Dead+Wind 60 deg - No Ice	39692.25	39846.38	-23026.52	-2048418.56	-3540808.81	195.67
Dead+Wind 90 deg - No Ice	39692.17	46182.18	333.41	47839.34	-4113918.43	-3127.33
Dead+Wind 120 deg - No Ice	39692.25	39893.68	23238.66	2076832.88	-3548271.00	-2977.56
Dead+Wind 150 deg - No Ice	39692.25	23086.09	40015.09	3563269.06	-2057448.00	-3712.00
Dead+Wind 180 deg - No Ice	39692.23	164.03	46192.76	4112618.66	-26294.11	-4298.79
Dead+Wind 210 deg - No Ice	39692.25	-22803.14	40191.88	3588756.64	2011652.81	-4077.27
Dead+Wind 240 deg - No Ice	39692.25	-39850.34	23019.67	2043596.87	3538271.80	-149.30
Dead+Wind 270 deg - No Ice	39692.17	-46043.97	50.95	5048.01	4090487.36	1460.17
Dead+Wind 300 deg - No Ice	39692.25	-39885.15	-22939.19	-2036507.59	3543966.22	2531.71
Dead+Wind 330 deg - No Ice	39692.25	-23002.39	-39870.12	-3545762.68	2042040.33	2720.78
Dead+Ice+Temp	51582.55	-0.19	0.32	-3004.91	-2605.80	0.04
Dead+Wind 0 deg+Ice+Temp	51582.55	70.26	-37035.73	-3400846.11	-12756.26	959.68
Dead+Wind 30 deg+Ice+Temp	51582.55	18554.15	-32082.24	-2946658.49	-1706332.51	501.09
Dead+Wind 60 deg+Ice+Temp	51582.55	32054.16	-18523.24	-1702414.27	-2941595.80	4.85
Dead+Wind 90 deg+Ice+Temp	51582.55	37150.28	264.26	36830.48	-3416980.91	-2460.43
Dead+Wind 120 deg+Ice+Temp	51582.55	32092.92	18693.01	1722281.80	-2947794.23	-2183.13
Dead+Wind 150 deg+Ice+Temp	51582.55	18571.85	32190.20	2956952.82	-1709724.90	-2651.80
Dead+Wind 180 deg+Ice+Temp	51582.55	130.76	37159.54	3413049.68	-22676.22	-3079.46
Dead+Wind 210 deg+Ice+Temp	51582.55	-18346.29	32328.02	2977095.41	1669859.58	-2952.54
Dead+Wind 240 deg+Ice+Temp	51582.55	-32057.27	18517.85	1695341.82	2936670.18	31.93
Dead+Wind 270 deg+Ice+Temp	51582.55	-37041.36	38.65	2201.20	3395345.72	1144.17
Dead+Wind 300 deg+Ice+Temp	51582.55	-32086.20	-18457.02	-1693282.20	2941437.21	1832.93
Dead+Wind 330 deg+Ice+Temp	51582.55	-18505.90	-32075.97	-2946172.82	1694502.13	1867.87
Dead+Wind 0 deg - Service	39692.22	31.50	-15927.52	-1419127.49	-6026.85	562.14
Dead+Wind 30 deg - Service	39692.25	7981.55	-13799.16	-1229923.48	-712492.51	338.87
Dead+Wind 60 deg - Service	39692.25	13787.53	-7967.57	-710884.94	-1227667.94	68.81

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Load Combination	Vertical lb	Shear <sub>1</sub> lb	Shear <sub>2</sub> lb	Overturning Moment, M <sub>x</sub> lb-ft	Overturning Moment, M <sub>z</sub> lb-ft	Torque lb-ft
Dead+Wind 90 deg - Service	39692.22	15978.62	115.35	15325.91	-1426104.64	-1091.25
Dead+Wind 120 deg - Service	39692.25	13803.89	8040.97	718241.81	-1230278.08	-1037.50
Dead+Wind 150 deg - Service	39692.25	7988.18	13845.90	1233198.92	-713809.46	-1295.85
Dead+Wind 180 deg - Service	39692.25	56.75	15983.21	1423482.99	-10147.11	-1503.07
Dead+Wind 210 deg - Service	39692.25	-7890.07	13906.70	1241994.68	695847.50	-1425.80
Dead+Wind 240 deg - Service	39692.25	-13788.90	7965.20	706709.24	1224731.65	-52.46
Dead+Wind 270 deg - Service	39692.22	-15930.81	17.63	496.07	1415905.18	511.72
Dead+Wind 300 deg - Service	39692.25	-13800.94	-7937.35	-706759.43	1226706.74	885.77
Dead+Wind 330 deg - Service	39692.25	-7959.22	-13795.74	-1229615.43	706395.81	948.97

## Solution Summary

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	-39692.26	0.00	0.01	39692.26	-0.03	0.000%
2	91.06	-39692.26	-46036.14	-91.05	39692.17	46034.48	0.003%
3	23066.94	-39692.26	-39880.02	-23066.92	39692.25	39879.98	0.000%
4	39846.42	-39692.26	-23026.54	-39846.38	39692.25	23026.52	0.000%
5	46183.85	-39692.26	333.44	-46182.18	39692.17	-333.41	0.003%
6	39893.71	-39692.26	23238.68	-39893.68	39692.25	-23238.66	0.000%
7	23086.11	-39692.26	40015.12	-23086.09	39692.25	-40015.09	0.000%
8	164.03	-39692.26	46193.25	-164.03	39692.23	-46192.76	0.001%
9	-22803.15	-39692.26	40191.92	22803.14	39692.25	-40191.88	0.000%
10	-39850.37	-39692.26	23019.69	39850.34	39692.25	-23019.67	0.000%
11	-46045.63	-39692.26	50.95	46043.97	39692.17	-50.95	0.003%
12	-39885.18	-39692.26	-22939.21	39885.15	39692.25	22939.19	0.000%
13	-23002.41	-39692.26	-39870.16	23002.39	39692.25	39870.12	0.000%
14	0.00	-51582.55	0.00	0.19	51582.55	-0.32	0.001%
15	70.26	-51582.55	-37035.77	-70.26	51582.55	37035.73	0.000%
16	18554.17	-51582.55	-32082.27	-18554.15	51582.55	32082.24	0.000%
17	32054.19	-51582.55	-18523.26	-32054.16	51582.55	18523.24	0.000%
18	37150.32	-51582.55	264.26	-37150.28	51582.55	-264.26	0.000%
19	32092.96	-51582.55	18693.03	-32092.92	51582.55	-18693.01	0.000%
20	18571.87	-51582.55	32190.24	-18571.85	51582.55	-32190.20	0.000%
21	130.76	-51582.55	37159.58	-130.76	51582.55	-37159.54	0.000%
22	-18346.30	-51582.55	32328.06	18346.29	51582.55	-32328.02	0.000%
23	-32057.31	-51582.55	18517.87	32057.27	51582.55	-18517.85	0.000%
24	-37041.40	-51582.55	38.65	37041.36	51582.55	-38.65	0.000%
25	-32086.24	-51582.55	-18457.04	32086.20	51582.55	18457.02	0.000%
26	-18505.92	-51582.55	-32076.00	18505.90	51582.55	32075.97	0.000%
27	31.51	-39692.26	-15929.46	-31.50	39692.22	15927.52	0.005%
28	7981.64	-39692.26	-13799.31	-7981.55	39692.25	13799.16	0.000%
29	13787.69	-39692.26	-7967.66	-13787.53	39692.25	7967.57	0.000%
30	15980.57	-39692.26	115.38	-15978.62	39692.22	-115.35	0.005%
31	13804.05	-39692.26	8041.07	-13803.89	39692.25	-8040.97	0.000%
32	7988.27	-39692.26	13846.06	-7988.18	39692.25	-13845.90	0.000%
33	56.76	-39692.26	15983.83	-56.75	39692.25	-15983.21	0.001%
34	-7890.36	-39692.26	13907.24	7890.07	39692.25	-13906.70	0.001%
35	-13789.06	-39692.26	7965.29	13788.90	39692.25	-7965.20	0.000%
36	-15932.74	-39692.26	17.63	15930.81	39692.22	-17.63	0.005%
37	-13801.10	-39692.26	-7937.44	13800.94	39692.25	7937.35	0.000%
38	-7959.31	-39692.26	-13795.90	7959.22	39692.25	13795.74	0.000%



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### Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	145 - 90.83	34.0125	30	1.9262	0.0060
L2	96 - 60	15.4887	30	1.5281	0.0024
L3	60 - 42.83	5.9747	30	0.9317	0.0011
L4	49 - 0	4.0439	30	0.7431	0.0008

### Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
143.00	P3F-52	30	33.2046	1.9150	0.0119	37050
135.00	Standoff T-Arm (12' face width)	30	29.9833	1.8695	0.0104	18525
125.00	Standoff T-Arm (10' face width)	30	26.0190	1.8064	0.0085	9262
113.00	Standoff T-Arm (8' face width)	30	21.4388	1.7132	0.0065	5788
105.00	PiROD 13' Low Profile Platform (Monopole)	30	18.5446	1.6354	0.0053	4629

### Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	145 - 90.83	97.9250	5	5.5522	0.0175
L2	96 - 60	44.6271	5	4.4044	0.0067
L3	60 - 42.83	17.2248	5	2.6864	0.0030
L4	49 - 0	11.6598	5	2.1428	0.0022

### Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
143.00	P3F-52	5	95.6008	5.5201	0.0326	13075
135.00	Standoff T-Arm (12' face width)	5	86.3340	5.3885	0.0284	6536
125.00	Standoff T-Arm (10' face width)	5	74.9292	5.2064	0.0234	3266
113.00	Standoff T-Arm (8' face width)	5	61.7512	4.9377	0.0180	2039
105.00	PiROD 13' Low Profile Platform (Monopole)	5	53.4225	4.7135	0.0148	1629

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### Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF*P <sub>allow</sub> lb	% Capacity	Pass Fail	
L1	145 - 90.83	Pole	TP33.48x23.61x0.281	1	-11107.90	255908.00	73.8	Pass	
L2	90.83 - 60	Pole	TP38.52x31.976x0.375	2	-19133.90	564740.09	96.6	Pass	
L3	60 - 42.83	Pole	TP41.64x38.52x0.45	3	-22124.30	785483.55	88.7	Pass	
L4	42.83 - 0	Pole	TP48.69x39.6188x0.545	4	-39649.50	1650267.26	98.2	Pass	
							Summary		
							Pole (L4)	98.2	Pass
							Base Plate	95.6	Pass
							RATING =	98.2	Pass



# EXHIBIT 3



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Calculated Radio Frequency Emissions



CT5022

100 Reef Road, Fairfield, CT 06824

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November 18, 2011

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## 1. Introduction

The purpose of this report is to investigate compliance with applicable FCC regulations for the proposed modifications to the existing AT&T antenna arrays mounted on the monopole tower located at 100 Reef Road in Fairfield, CT. T-Mobile, Clearwire, MetroPCS, Sprint-Nextel and multiple private/government operators also have antennas on the tower. The coordinates of the tower are 41-08-22.99 N, 73-15-28.00 W.

AT&T is proposing the following modifications:

- 1) Add 700 MHz LTE frequencies;
- 2) Install three 700 MHz LTE antennas (one per sector).

## 2. FCC Guidelines for Evaluating RF Radiation Exposure Limits

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

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

Public exposure to radio frequencies is regulated and enforced in units of milliwatts per square centimeter ( $\text{mW}/\text{cm}^2$ ). 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 = 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. All information for T-Mobile, Clearwire, MetroPCS, Sprint, Nextel, FCI900, and Fairfield comes directly from the current CSC database. 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 <sup>2</sup> )	Limit	%MPE
AT&T UMTS	130	880	2	565	0.0240	0.5867	0.41%
AT&T UMTS	130	1900	2	875	0.0372	1.0000	0.37%
AT&T LTE	130	734	1	1117	0.0238	0.4893	0.49%
AT&T GSM	130	880	1	296	0.0063	0.5867	0.11%
AT&T GSM	130	1900	4	525	0.0447	1.0000	0.45%
T-Mobile GSM	133	1945	8	124	0.0202	1.0000	2.02%
T-Mobile UMTS	133	2100	2	701	0.0285	1.0000	2.85%
Clearwire	143	2496	2	153	0.0054	1.0000	0.54%
Clearwire	143	11000	1	211	0.0037	1.0000	0.37%
MetroPCS	116	2130	7	881	0.1648	1.0000	16.48%
Sprint							0.0095%
Nextel							0.0007%
FCI900							0.0139%
Fairfield							0.0074%
						<b>Total</b>	<b>24.11%</b>

**Table 1: Carrier Information<sup>1 2</sup>**

<sup>1</sup>The nominal 10 dB off-beam loss factor for AT&T is derived from the specific AT&T antennas for this site and their associated antenna patterns which are presented in Attachment C.

<sup>2</sup> Blank spaces indicate where information was unavailable from the CSC database.



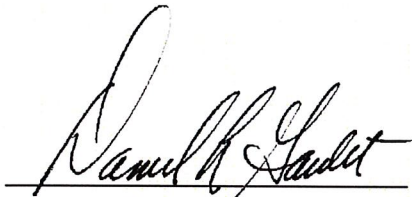
## 5. Conclusion

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 and existing transmit antennas at the existing facility is below the limits for the general public. The highest expected percent of Maximum Permissible Exposure at the base of the tower is 24.11% of the FCC limit.

As noted previously, obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. As a result, the predicted signal levels are more conservative (higher) than the actual signal levels will be from the finished modifications.

## 6. Statement of Certification

I certify to the best of my knowledge that the statements in this report are true and accurate. The calculations follow guidelines set forth in ANSI/IEEE Std. C95.3, ANSI/IEEE Std. C95.1 and FCC OET Bulletin 65 Edition 97-01.



Daniel L. Goulet  
C Squared Systems, LLC

November 18, 2011

Date

### **Attachment A: References**

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

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

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

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

**(A) Limits for Occupational/Controlled Exposure<sup>3</sup>**

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm <sup>2</sup> )	Averaging Time  E  <sup>2</sup> ,  H  <sup>2</sup> or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f <sup>2</sup> )*	6
30-300	61.4	0.163	1.0	6
300-1500	-	-	f/300	6
1500-100,000	-	-	5	6

**(B) Limits for General Population/Uncontrolled Exposure<sup>4</sup>**

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (E) (A/m)	Power Density (S) (mW/cm <sup>2</sup> )	Averaging Time  E  <sup>2</sup> ,  H  <sup>2</sup> or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f <sup>2</sup> )*	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)**

<sup>3</sup> 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

<sup>4</sup> 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

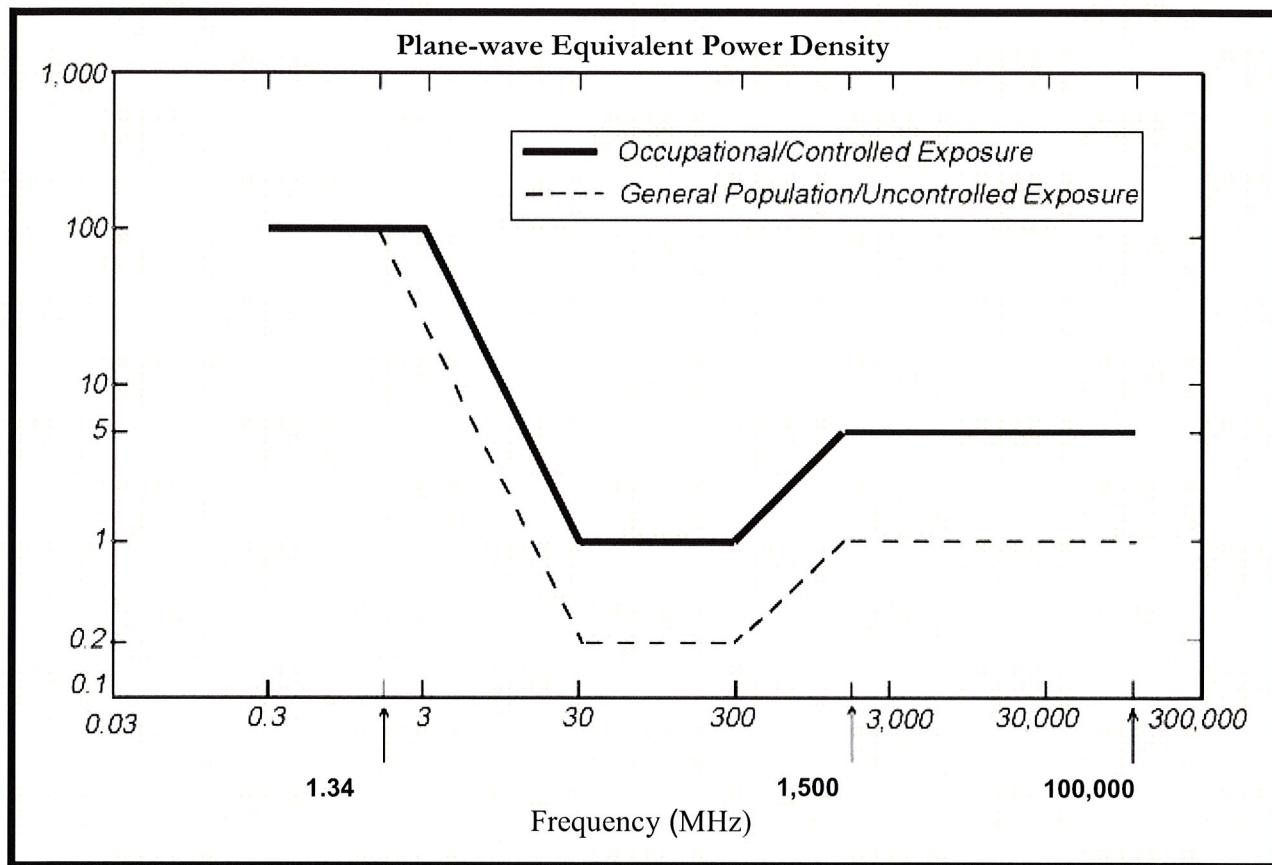
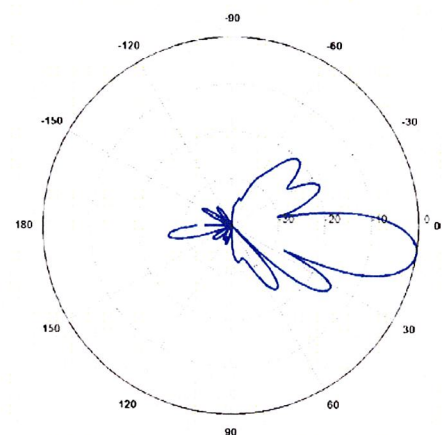
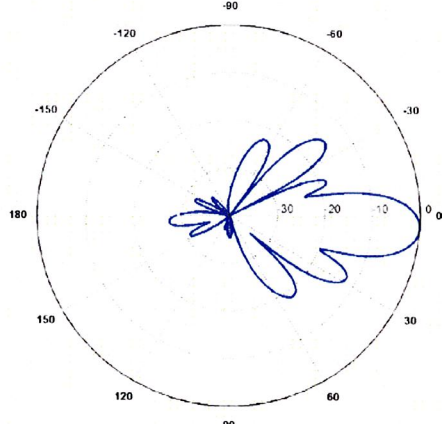
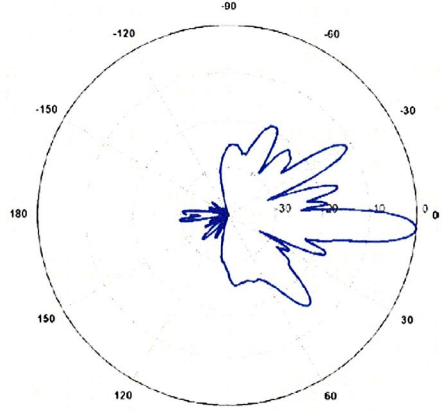


Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)



**Attachment C: AT&T's Antenna Model Data Sheets and Electrical Patterns**

<p><b>700 MHz</b></p> <p>Manufacturer: Powerwave            Model #: P65-16-XLH-RR            Frequency Band: 698-806 MHz            Gain: 12.7 dBd            Vertical Beamwidth: 14.7°            Horizontal Beamwidth: 66°            Polarization: Dual Linear ±45°            Size L x W x D: 72.0" x 12.0" x 6.0"</p>	
<p><b>850 MHz</b></p> <p>Manufacturer: Powerwave            Model #: 7770.00            Frequency Band: 824-896 MHz            Gain: 11.5 dBd            Vertical Beamwidth: 15°            Horizontal Beamwidth: 82°            Polarization: Dual Linear ±45°            Size L x W x D: 55.0" x 11.0" x 5.0"</p>	
<p><b>1900 MHz</b></p> <p>Manufacturer: Powerwave            Model #: 7770.00            Frequency Band: 1850-1990 MHz            Gain: 13.4 dBd            Vertical Beamwidth: 7°            Horizontal Beamwidth: 86°            Polarization: Dual Linear ±45°            Size L x W x D: 55.0" x 11.0" x 5.0"</p>	



STATE OF CONNECTICUT  
CONNECTICUT SITING COUNCIL

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[www.ct.gov/csc](http://www.ct.gov/csc)

December 27, 2011

The Honorable Michael C. Tetreau  
First Selectman  
Town of Fairfield  
Town Hall  
725 Old Post Road  
Fairfield, CT 06430

RE: **EM-CING-051-111223** - New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 100 Reef Road, Fairfield, Connecticut.

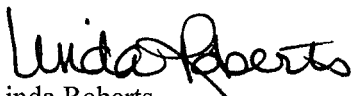
Dear First Selectman Tetreau:

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

If you have any questions or comments regarding this proposal, please call me or inform the Council by January 11, 2011.

Thank you for your cooperation and consideration.

Very truly yours,

  
Linda Roberts  
Executive Director

LR/jbw

Enclosure: Notice of Intent

c: Joseph E. Devonshuk, Town Planner, Town of Fairfield