

Linda Roberts, Executive Director

Connecticut Siting Council

Ten Franklin Square

New Britain, CT 06051

ORIGINAL

April 7, 2011

RE: Request for Tower Share

New Cingular Wireless PCS, LLC AT&T Request for Approval of the Shared Use of an Existing Tower at 17 Cottage Road Madison, CT. AT&T site number- CT2517

Dear Ms Roberts,

AT&T proposes to share an existing monopole telecommunications tower (the tower) located at 17 Cottage Road Madison, CT (the facility). Pursuant to Connecticut General Statutes Section 16-50aa (the Statute), AT&T requests a finding from the Connecticut Siting Council has the shared use of this facility is technically, legally, environmentally and economically feasible, will meet safety concerns, will avoid the unnecessary proliferation of towers and is the the public interest. AT&T further requests an order approving the shared use of this facility.

The purpose of this request is to use an existing telecommunications tower to develop AT&T's wireless broadband network to provide high speed wireless data and to develop wireless service within the State of Connecticut and in this part of Torrington, CT: thus avoiding the need for an additional tower in Torrington.

The facility is a 130' monopole located at 17 Cottage Road Madison, CT. The tower is located at Lat 41 16 30.34 and Long 72 33 36.26. Currently T-Mobile is located on this tower. Site plan is attached.

AT&T will install nine (9) panel antennas, 6 TMAs, 6 RRUs one (1) Surge arrestor on LTE equipment frame and twelve (12) cables.

. AT&T plans to locate its equipment in a shelter located within the compound. An ice bridge will connect the cabinet equipment with the tower. A GPS antenna will be located on the ice bridge. The power and telephone cables will be located underground. No upgrades to the road or parking area are proposed.

Consistent with the requirements of the Statute, it is feasible for AT&T to collocate at this facility. To confirm that the tower can support AT&T's proposed antennas and equipment, AT&T commissioned All-Points Technology to perform a structural analysis of the tower. According to the report dated April 1, 2011. With tower reinforcements the tower is structurally capable of supporting the proposed installation. The structural analysis is attached hereto.

The council has authority, pursuant to statute, to issue an order approving of the shared use of this tower. By issuing an order approving AT&T's shared use of this tower, AT&T will be able to proceed with obtaining a building permit for the proposed installation. AT&T's proposal is legally feasible.

AT&T is a telecommunication provider licensed by the FCC to provide service in the State of Connecticut, including but not limited to Litchfield County. AT&T has entered into an agreement with the owner of this facility, CPTV, for the location of this proposed equipment on the tower so that it may provide telecommunications services to the surrounding community. Consequently, the proposal is legally feasible.

Pursuant to the Statute, the proposal will be environmentally feasible for the following reasons:

The overall impact on the Town of Torrington will be decreased with the sharing of a single tower versus the proliferation of multiple towers.

The proposal will not increase the height of the tower.

There will be little increase in the visibility of the tower with the addition of the antennas and associated equipment.

There will be no impact on any wetlands or water resources as a result of the modification.

There will be no increased impact on air quality because no air pollutants will be generated during normal operation of the facility.

There will only be a brief, slight increase in noise pollution while the site is under construction.

During construction, the proposed project will generate a small amount of traffic as construction takes place. Upon completion, traffic will be limited to an average of one trip per month for maintenance and inspections.

There will be no adverse impact to the health and safety of the surrounding community or workers at the facility due to the addition of AT&T's antennas to the tower. AT&T has performed an analysis of the radio frequency field emanating from the transmitting antennas on the tower to ensure compliance with the National Council on Radiation Protection and measurements (NCRP) standard for maximum permissible exposure (MPE) adopted by the FCC. The analysis dated February 9, 2011 . indicates that

AT&T's antennas will emit 10.72% of the NCRP standard for maximum permissible exposure. Power density report is attached. The report indicates that maximum level of exposure will be well below the FCC's mandated radio frequency exposure limits.

AT&T expects to enhance safety in this portion of Madison by improving wireless telecommunications for local residents and travelers. AT&T is currently developing its network to provide its customers with quality reliable coverage to comply with their FCC license, the site is a necessary part of AT&T's network development.

Specifically, this proposal is designed to provide reliable wireless coverage for this section of Madison, CT.

For the reasons stated above, the attachment of AT&T's antennas and associated equipment to the tower would meet all the requirements set forth in the Statue. The proposal is legally, technically, economically and environmentally feasible and meets all public safety concerns. Therefore, AT&T respectfully requests that the Council approve this request for the shared use of this tower located at 17 Cottage Road Madison, CT.



H. Karina Fournier

Centerline Communications

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Canton, MA 02021

860-796-3988

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# Exhibit 1



**CONSULTANTS:**

NO.	DATE	ISSUES FOR REVIEW	REVISIONS
1	1/17/17	CONSTRUCTION REVIEW	
2	2/21/17	CONSTRUCTION REVIEW	
3	2/21/17	CONSTRUCTION REVIEW	
4	2/21/17	CONSTRUCTION REVIEW	
5	2/21/17	CONSTRUCTION REVIEW	

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5	2/21/17	CONSTRUCTION REVIEW	

**at&t**

WIRELESS PLS, LLC  
850 CENTRE STREET  
PLAINFIELD, MA 07074

CLIENT:

**at&t**

**at&t**

STAMP:

**STAMP:**

DATE: 2/17/17  
DRAWN: M/JV  
CHECK: M/JV/TEL  
SCALE: SEE PLAN  
JOB NO: 17-016  
SHEET TITLE:

**GENERAL NOTES**

**GN-1**

**ELECTRICAL INSTALLATION NOTES:**

1. WIRING, RACEWAY, AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC).
2. SUBCONTRACTOR SHALL MODIFY OR INSTALL CABLE TRAY SYSTEM AS REQUIRED TO SUPPORT RF AND TRANSPORT CABLES. THE NEW PYS SYSTEM SHALL BE USED. ALL CONDUIT SHALL BE INSTALLED IN ACCORDANCE WITH APPROVAL.
3. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC AND ALL CIRCUMSTANCES.
4. CABLES SHALL NOT BE ROUTED THROUGH LADDER-RUN CABLE TRAY RUNGS.
5. EACH END OF EVERY POWER, GROUNDING, AND TI, CONDUCTOR AND CABLE SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (CM BRAND, 1/2 INCH PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA, AND MATCH INSTALLATION REQUIREMENTS.
6. POWER PHASE CONDUCTORS (I.E., HOT) SHALL BE LABELED WITH COLOR-CODED INSULATION OR ELECTRICAL TAPE (CM BRAND, 1/2 INCH PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). PHASE CONDUCTOR COLOR CODES SHALL CONFORM WITH NEC AND OSHA.
7. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH ENGRAVED LAMINATED PLASTIC LABELS. ALL EQUIPMENT SHALL BE LABELED WITH THEIR VOLTAGE RATING, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING, AND BRANCH CIRCUIT ID NUMBERS (I.E., PANELBOARD AND CIRCUIT ID'S).
8. PANELBOARDS (ID NUMBERS) AND INTERNAL CIRCUIT BREAKERS (CIRCUIT ID NUMBERS) SHALL BE CLEARLY LABELED WITH ENGRAVED LAMINATED PLASTIC LABELS.
9. ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.
10. POWER, CONTROL, AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE CONDUCTOR (#14 AWG OR LARGER), 600 V, OIL RESISTANT THIN OR THIN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (WET AND DRY) OPERATION, LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED, UNLESS OTHERWISE SPECIFIED.
11. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED OUTDOORS, OR BELOW GRADE, SHALL BE SINGLE CONDUCTOR (#4 AWG OR LARGER), 600 V, OIL RESISTANT THIN OR THIN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (WET AND DRY) OPERATION, LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED, UNLESS OTHERWISE SPECIFIED.
12. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED OUTDOORS, OR BELOW GRADE, SHALL BE SINGLE CONDUCTOR (#2 AWG SOLID THINNED COPPER CABLE, UNLESS OTHERWISE SPECIFIED).
13. POWER AND CONTROL WIRING, NOT IN TUBING OR CONDUIT, SHALL BE MULTI-CONDUCTOR, TYPE TC CABLE (#14 AWG OR LARGER), 600 V, OIL RESISTANT THIN OR THIN-2, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (WET AND DRY) OPERATION, WITH OUTER JACKET, LISTED OR LABELED FOR THE LOCATION USED, UNLESS OTHERWISE SPECIFIED.
14. ALL POWER AND GROUNDING CONDUCTORS SHALL BE CRIMP-STYLE COMPRESSION WIRE LUGS AND WIREMATS BY HARGER (OR EQUAL) LUGS AND WIREMATS SHALL BE RATED FOR OPERATION AT NO LESS THAN 75°C (165 °F IF AVAILABLE).
15. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE, AND NEC.
16. NELECTRICAL WIRING OR CABLE TRAY WILL MATCH THE EXISTING INSTALLATION WHERE POSSIBLE.
17. ELECTRICAL METALLIC TUBING (EMT) OR RIGID NONMETALLIC CONDUIT (I.E., RIGID PVC SCHEDULE 40 OR RIGID PVC SCHEDULE 80) FOR LOCATIONS SUBJECT TO PHYSICAL DAMAGE SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.
18. ELECTRICAL METALLIC TUBING (EMT), ELECTRICAL NONMETALLIC TUBING (ENMT), OR RIGID NONMETALLIC CONDUIT (RIGID PVC, SCHEDULE 40) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.
19. GALVANIZED STEEL INTERMEDIATE METALLIC CONDUIT (IMC) SHALL BE USED FOR OUTDOOR LOCATIONS ABOVE GRADE.
20. RIGID NONMETALLIC CONDUIT (I.E., RIGID PVC SCHEDULE 40 OR RIGID PVC SCHEDULE 80) SHALL BE USED UNDERGROUND, DIRECT BURIED, IN AREAS OF OCCASIONAL LIGHT VEHICLE TRAFFIC OR ENCASED IN REINFORCED CONCRETE IN AREAS OF HEAVY VEHICLE TRAFFIC.
21. LIQUID-TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID-TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.
22. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION-TYPE AND APPROVED FOR THE LOCATION USED. SETSCREW FITTINGS ARE NOT ACCEPTABLE.
23. CABINETS, BOXES AND WIREWAYS SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.
24. CABINETS, BOXES AND WIREWAYS TO MATCH THE EXISTING INSTALLATION WHERE POSSIBLE.
25. WIREWAYS SHALL BE EPOXY-COATED (GRAY) AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARD; SHALL BE PENDANT TYPE E (OR EQUAL), AND RATED NEMA 1 (OR BETTER) INDOORS, OR NEMA 3R (OR BETTER) OUTDOORS.
26. EQUIPMENT CABINETS, TERMINAL BOXES, AND PULL BOXES SHALL BE GALVANIZED OR GALVANNEED OR NEMA 3R (OR BETTER) OUTDOORS.
27. ALL JUNCTION BOXES AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY-COATED, OR NON-CORRODING; SHALL BE RATED FOR EXCEED 504A AND NEMA OS 1, AND RATED NEMA 1 (OR BETTER) INDOORS, OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.
28. NONMETALLIC RECEPTACLE SWITCH, AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2, AND RATED NEMA 1 (OR BETTER) INDOORS, OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.
29. THE SUBCONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CONTRACTOR BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.
30. THE SUBCONTRACTOR SHALL VERIFY NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD AGAINST LIFE AND PROPERTY.
31. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE LOCAL CODES.
32. ALL ELECTRICAL WIRING IS SCHEMATIC. SUBCONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED.

**CONCRETE & REINFORCING STEEL NOTES:**

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 308, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST-IN-PLACE CONCRETE.
2. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS, UNLESS NOTED OTHERWISE. (CONCRETE STRENGTH TESTS (CST) MAY BE USED. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 308 CODE REQUIREMENTS.)
3. REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 60, DEFORMED UNLESS NOTED OTHERWISE. WELDED SHALL BE CLASS "B" AND ALL HOOKS SHALL BE STANDARD, UNLESS OTHERWISE NOTED.
4. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE:
  - CONCRETE CAST AGAINST EARTH.....1 1/2 IN.
  - CONCRETE EXPOSED TO EARTH OR WEATHER.....1 1/2 IN.
  - CONCRETE NOT EXPOSED TO EARTH OR WEATHER.....1 1/2 IN.
  - OR SLAB AND WALL.....1 1/2 IN.
  - BEAMS AND COLUMNS.....1 1/2 IN.
5. A CHAMFER 3/4" SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNDO, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.
6. INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHORS SHALL BE PER MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURE. THE ANCHOR BOLT, SOWEL, OR ROD SHALL CONFORM TO THE MANUFACTURER'S PRIOR CONTRACTOR APPROVAL WHEN DRILLING HOLES IN CONCRETE. SPECIAL INSPECTIONS, REQUIRED BY GOVERNING CODES, SHALL BE PERFORMED IN ORDER TO MAINTAIN MANUFACTURER'S MAXIMUM ALLOWABLE LOADS. ALL ANCHORS SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN RECOMMENDATIONS PROVIDED BY SIMPSON OR APPROVED EQUAL.
7. CONCRETE CHAMFER TIES ARE NOT REQUIRED FOR SLAB ON GRADE WHEN CONCRETE IS LESS THAN 50 CUBIC YARDS (BCI-906.6.2.3). IN THAT EVENT THE FOLLOWING RECORDS SHALL BE PROVIDED BY THE CONCRETE SUPPLIER:
  - (A) RESULTS OF CONCRETE CHAMFER TEST PERFORMED FOR THE SUPPLIER'S PLANT SUPPLIED FOR GREATER THAN 50 CUBIC YARDS OF THE CC SHALL PERFORM THE CONCRETE CYLINDER TEST.
  - (B) AS AN ALTERNATIVE TO ITEM 7, TEST CYLINDERS SHALL BE TAKEN INITIALLY AND THEREAFTER FOR EVERY 50 YARDS OF CONCRETE FROM EACH DIFFERENT BATCH PLANT.
8. EQUIPMENT SHALL NOT BE PLACED ON NEW PADS FOR SEVEN DAYS AFTER PAD IS POURED, UNLESS IT IS VERIFIED BY CYLINDER TESTS THAT COMPRESSIVE STRENGTH HAS BEEN ATTAINED.

**STRUCTURAL STEEL NOTES:**

1. ALL STEEL SHALL BE PAINTED OR GALVANIZED IN ACCORDANCE WITH THE DRAWINGS AND AT&T SPECIFICATIONS UNLESS OTHERWISE NOTED. STRUCTURAL STEEL SHALL BE ASTM-A-36 UNLESS OTHERWISE NOTED ON THE SITE SPECIFIC DRAWINGS. STEEL DESIGN, INSTALLATION AND BOLTING SHALL BE IN ACCORDANCE WITH THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) MANUAL OF STEEL CONSTRUCTION.
2. ALL WELDING SHALL BE PERFORMED USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND AWS D1.1. ALL WELDING SHALL BE PERFORMED BY A LICENSED WELDER WHO SHALL BE QUALIFIED IN THE AISC MANUAL OF STEEL CONSTRUCTION, 9TH EDITION. PAINTED SURFACES SHALL BE TOUCHED UP.
3. BOLT CONNECTIONS SHALL USE BEARING TYPE ASTM A325 BOLTS (F1554) AND SHALL HAVE MINIMUM OF TWO BOLTS UNLESS NOTED OTHERWISE. ALL BOLTS SHALL BE GALVANIZED OR STAINLESS STEEL.
4. NON-STRUCTURAL CONNECTIONS FOR STEEL GRATING MAY USE 3/4" DIA. ASTM A 307 BOLTS (GALV) UNLESS NOTED OTHERWISE.
5. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ENGINEER REVIEW & APPROVAL ON PROJECTS REQUIRING STRUCTURAL STEEL.
6. ALL STRUCTURAL STEEL WORK SHALL BE DONE IN ACCORDANCE WITH AISC SPECIFICATIONS.

**SOIL COMPACTION NOTES:**

1. EXCAVATE AS REQUIRED TO REMOVE VEGETATION AND TOPSOIL TO EXPOSE NATURAL SUBGRADE AND PLACE CRUSHED STONE AS REQUIRED.
2. COMPACTION CERTIFICATION: AN INSPECTION AND WRITTEN CERTIFICATION BY A QUALIFIED GEOTECHNICAL TECHNICIAN OR ENGINEER IS ACCEPTABLE.
3. AS AN ALTERNATE TO INSPECTION AND WRITTEN CERTIFICATION, THE "UNDISTURBED SOIL" BASE SHALL BE COMPACTED WITH "COMPACTION EQUIPMENT", LISTED BELOW, TO AT LEAST 90% MODIFIED PROCTOR MAXIMUM DENSITY METHOD C (135).
4. COMPACTED SUBBASE SHALL BE UNIFORM AND LEVELLED. PROVIDE 6" MINIMUM CRUSHED STONE OR GRAVEL COMPACTED IN 3" LIFTS ABOVE COMPACTED SOIL. GRAVEL SHALL BE NATURAL OR CRUSHED WITH 100% PASSING #10 sieve.
5. AS AN ALTERNATE TO ITEMS 2 AND 3, THE SUBGRADE SOILS WITH 5 PASSES OR A MEDIUM SIZED VIBRATORY PLATE COMPACTOR (SUCH AS BOMAG BPR 30/50) OR HAND-OPERATED SINGLE DRUM VIBRATORY ROLLER (SUCH AS WELLS-GRADED GRANULAR FILL AND COMPACTED AS STATED ABOVE.

**COMPACTION EQUIPMENT NOTES:**

1. HAND OPERATED DOUBLE DRUM, VIBRATORY ROLLER, VIBRATORY PLATE COMPACTOR OR JUMPING JACK COMPACTOR.

**CONSTRUCTION NOTES:**

1. FIELD REVISIONS SHALL BE MADE BY THE CONTRACTOR.
2. COORDINATION OF WORK: SUBCONTRACTOR SHALL FIELD VERIFY SCOPE OF WORK, AT&T ANTENNA PLATFORM LOCATION AND UTILITY TRENCHWORK.
3. CABLE LADDER BACK: SUBCONTRACTOR SHALL COORDINATE RF WORK AND PROCEDURES WITH CONTRACTOR. SUBCONTRACTOR SHALL COORDINATE RF WORK AND PROCEDURES WITH CONTRACTOR. CABLE TRAY AND/OR ICE BRIDGE, AND CONDUIT AS REQUIRED TO SUPPORT CABLES TO THE AC BUS LOCATION.

**GENERAL NOTES:**

1. FOR THE PURPOSE OF GENERAL DRAWINGS, THE FOLLOWING DEFINITIONS SHALL APPLY:
  - CONTRACTOR = GENERAL CONTRACTOR (CONSTRUCTION)
  - OWNER = AT&T
  - CEM = ORIGINAL EQUIPMENT MANUFACTURER
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE THEMSELVES WITH THE EXISTING CONDITIONS AND UTILITIES. THE BIDDING SUBCONTRACTOR SHALL VERIFY THE CONSTRUCTION DRAWINGS AND DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR IMMEDIATELY UPON DISCOVERY.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL PERMITS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMING OF WORK. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL, STATE AND FEDERAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
5. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
6. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY NOTED OTHERWISE.
8. SUBCONTRACTOR SHALL DETERMINE ASTM, BOILING OF CONSULT, POWER, TI, CABLES AND GROUNDING CABLES AS SHOWN ON THE POWER GROUNDING AND TIE PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR AND/OR LANDLORD PRIOR TO CONSTRUCTION.
10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND UTILITIES. ANY DAMAGE TO EXISTING UTILITIES SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.
11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY.
13. THE SUBCONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE SUBCONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES FOR COMPLETING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
14. SUBCONTRACTOR SHALL NOTIFY PROJECT DESIGN GROUP, LLC 48 HOURS IN ADVANCE OF POURING CONCRETE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES AND POST-DONING, TIESING NEW WALLS OR FINAL ELECTRICAL CONNECTIONS FOR ENGINEERING REVIEW.
15. CONSTRUCTION SHALL COMPLY WITH ALL AT&T STANDARDS AND SPECIFICATIONS.
17. THE EXISTING CELL SITES ARE IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL BE LIMITED TO THE EXISTING CELL SITES. ALL CONSTRUCTION SHALL BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
18. IF THE EXISTING CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH VOLTAGE EQUIPMENT. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PERSONAL AND PERSONAL RF EXPOSURE MONITORS ARE TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

**SITE WORK GENERAL NOTES:**

1. THE SUBCONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
2. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES, WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED BY THE CONTRACTOR. EXCAVATION SHALL BE RELOCATED AS DIRECTED BY ENGINEERS. EXTREME CAUTION SHOULD BE USED BY THE SUBCONTRACTOR WHEN EXCAVATING OR DRILLING PITS AROUND OR NEAR UTILITIES. SUBCONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR ALL PERSONNEL INVOLVED IN EXCAVATION, LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING AND EXCAVATION.
3. ALL SITE WORK SHALL BE AS INDICATED ON THE DRAWINGS AND PROJECT SPECIFICATIONS.
4. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
5. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE BITS EQUIPMENT AND TOWER AREAS.
6. THE EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY TELL OR EMBANKMENT.
7. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISH.
8. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF ENGINEERING, OWNER AND/OR LOCAL UTILITIES.
9. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR FOUNDATION SHALL BE GRADDED TO A UNIFORM SLOPE AND STABILIZED TO PREVENT EROSION AS SPECIFIED IN THE PROJECT SPECIFICATIONS.
10. SUBCONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
11. THE SUBCONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE AT&T SPECIFICATION FOR SITE SIGNAGE.

NO.	DATE	REVISIONS
1	3/17/11	CONSTRUCTION REVISION
2	2/21/11	CONSTRUCTION REVISION
3	2/21/11	ISSUED FOR REVIEW

**at&t**

WIRELESS PCS, LLC  
NEW ENGLAND  
MADISON, CT 06443  
ADDRESS: 17 COTTAGE ROAD  
SITE NUMBER - OFFICE ROAD  
PLANNING, MA 0710

STATE OF MASSACHUSETTS  
REGISTRY OF PROFESSIONAL ENGINEERS & ARCHITECTS

STAMP: [Professional Engineer Seal]

DATE: 2/17/11  
DRAWN: MJV  
CHECK: JMM/TEJ  
SCALE: SEE PLAN  
JOB NO.: 11-016  
SHEET TITLE:

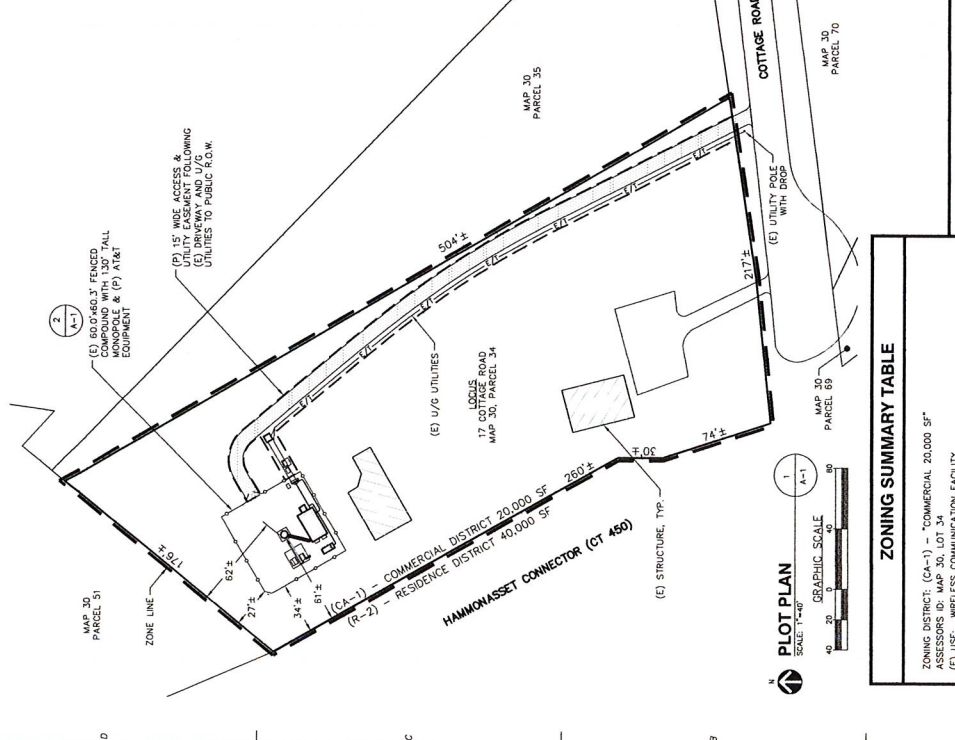
**GSM/UMTS/GPS ANTENNA INFORMATION TABLE**

SECTOR	AZIMUTH	ANTENNA DOWN TILT	ANT. QTY.	ANTENNA MAKE & MODEL	RAD. CENTER (AQL)	FEEDER CABLE QTY. & SIZE	FEEDER CABLE LENGTH	JUMPER CABLE QTY. & SIZE	JUMPER CABLE LENGTH	TWA QTY.	TWA MAKE & MODEL	RET. CABLE QTY. & SIZE
ALPHA	30°	0° MECH. 0° ELEC.	2	POWERWAVE PRO-15-RU-RR	127.0'	(4) 1 5/8" #	210'±	(8) 1/2" #	2	POWERWAVE TT19-DBB111001	(1) 5/8" #	
BETA	150°	0° MECH. 0° ELEC.	2	POWERWAVE PRO-15-RU-RR	127.0'	(4) 1 5/8" #	210'±	(8) 1/2" #	2	POWERWAVE TT19-DBB111001	(1) 5/8" #	
GAMMA	270°	0° MECH. 0° ELEC.	2	POWERWAVE PRO-15-RU-RR	127.0'	(4) 1 5/8" #	210'±	(8) 1/2" #	2	POWERWAVE TT19-DBB111001	(1) 5/8" #	
GPS	-	-	1	PCTEL GPS-ING-26N	12.0'	(1) 1/2" #	20'±	-	-	-	-	

\* - RET. CABLES DASHY CHAINED BETWEEN UMTS, LTE & GPS ANTENNAS TERMINATING AT GSM TWA

**LTE ANTENNA INFORMATION TABLE**

SECTOR	AZIMUTH	QTY.	MAKE & MODEL	RAD. CENTER (AQL)	DOWN TILT (AQL)	DC BUNDLE & DC PAIR LENGTH	FEEDER QTY.	FROM SURGE SUPPRESSOR		REMOTE RADIO UNIT		JUMPER QTY.	JUMPER SIZE	RET. QTY.
								DC PAIR QTY.	DC PAIR SIZE	MAKE & MODEL	QTY.			
ALPHA	30°	1	POWERWAVE PRO-15-RU-RR	127.0'	0° MECH. 0° ELEC.	2	2	8mm² PAIR	2	ERICSSON ERIS-11	2	4	1/2" #	1
BETA	150°	1	POWERWAVE PRO-15-RU-RR	127.0'	0° MECH. 0° ELEC.	2	2	8mm² PAIR	2	ERICSSON ERIS-11	2	4	1/2" #	1
GAMMA	270°	1	POWERWAVE PRO-15-RU-RR	127.0'	0° MECH. 0° ELEC.	2	2	8mm² PAIR	2	ERICSSON ERIS-11	2	4	1/2" #	1



**PANEL ANTENNA ORIENTATION**

SECTOR	ANTENNA ORIENTATION
SECTOR ALPHA	30°
SECTOR BETA	150°
SECTOR GAMMA	270°

**ZONING SUMMARY TABLE**

DIMENSION	PROVIDED	CONSTRAINT
(P) EQUIPMENT - HEIGHT	12.0'	30.0'
(E) COMPOUND - FRONT YARD	20.0'	50.0'
(E) COMPOUND - SIDE YARD	34'±	20.0'
(E) COMPOUND - REAR YARD	27'±	50.0'
(E) TOWER - HEIGHT	130.0'	30.0'
LOT - MINIMUM AREA	75,750± SF	20,000 SF
LOT - MINIMUM FRONTAGE	217'±	100'

**PLLOT PLAN**  
SCALE: 1"=40'

**LEGEND**

(P) = PROPOSED  
(F) = FUTURE  
(TYP) = TYPICAL

**ZONING SUMMARY TABLE**

ZONING DISTRICT: (CA-1) - COMMERCIAL 20,000 SF  
MAP 30 PARCEL 51 - COMMERCIAL 20,000 SF  
(E) USE: WIRELESS COMMUNICATION FACILITY

**COMPOUND PLAN**  
SCALE: 1"=10'

**GRAPHIC SCALE**

0 5 10 20







CONSULTANCE

NO.	DATE	REVISIONS
1	3/17/11	ISSUES FOR REVIEW
2	2/21/11	CONSTRUCTION REVIEW
3	3/17/11	CONSTRUCTION REVISED

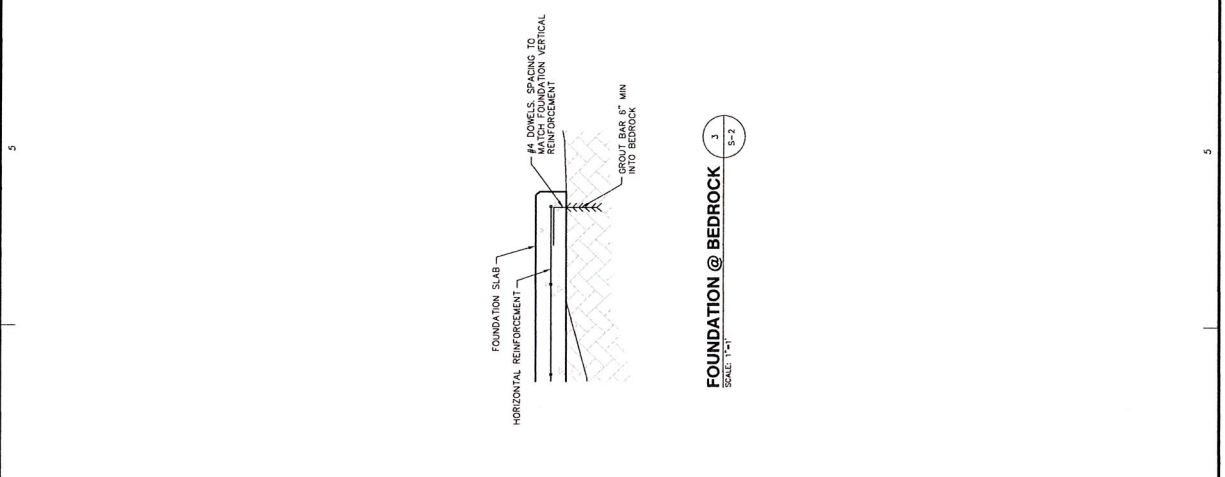
CLIENT:	at&t
PROJECT:	NEW CONCREAR LLC 604 ART MOBILITY 560 COTTAGE ROAD PLANNING, MA 07011

SITE NUMBER - OFFICE ROAD  
SITE NUMBER - COTTAGE ROAD  
ADDRESS - 17 COTTAGE ROAD  
MADISON, CT 06443

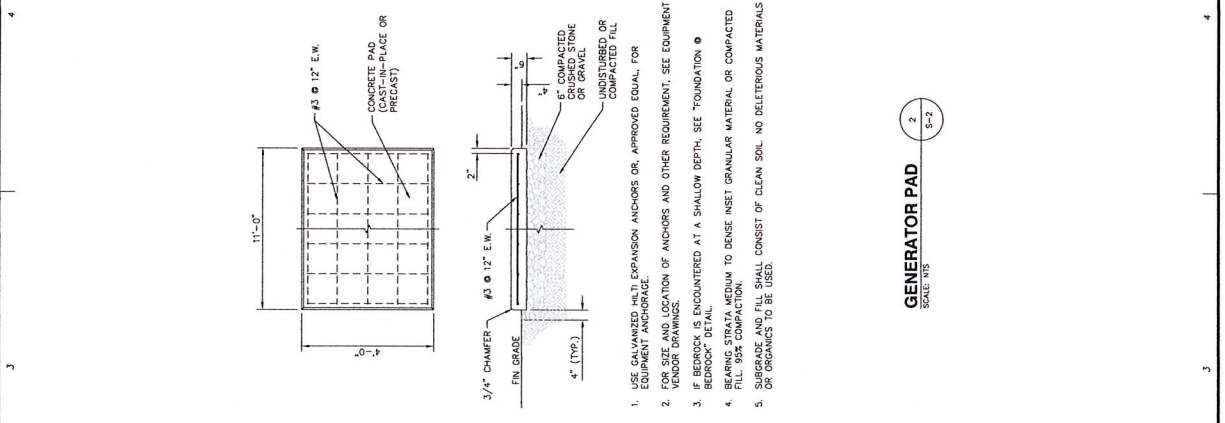
DATE: 2/11/11  
DRAWN: MUV  
CHECK: JMW/TEJ  
SCALE: SEE PLAN  
JOB NO: 11-016

SHEET TITLE:  
**STRUCTURAL DETAILS**

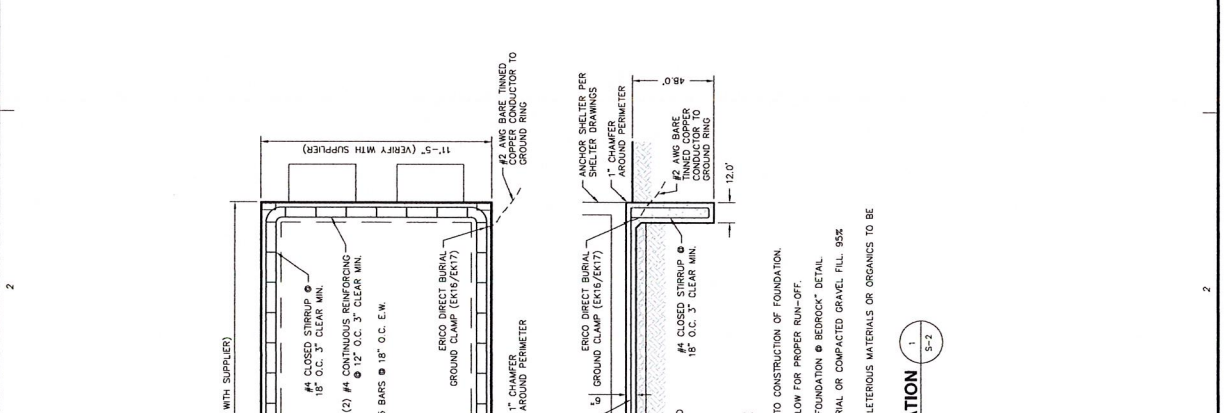
S-2



**FOUNDATION @ BEDROCK**  
SCALE: 1"=1'

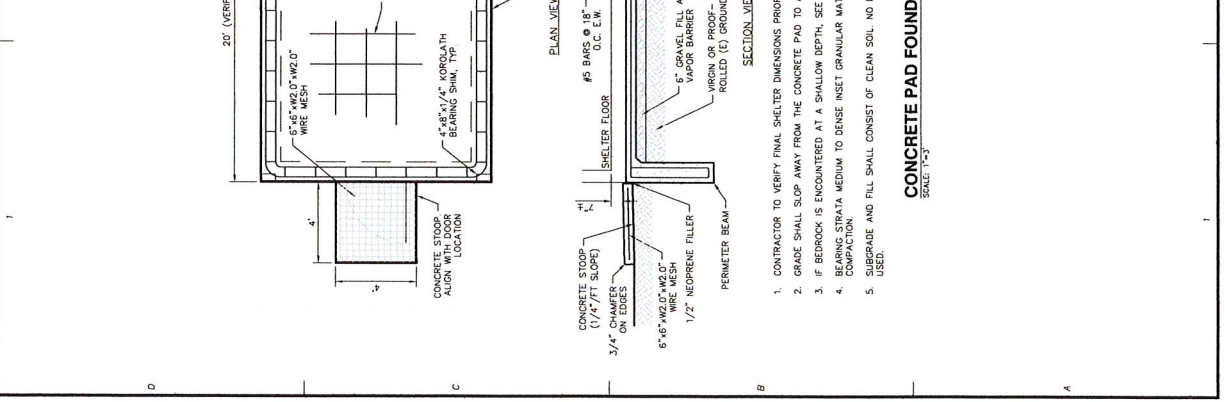


**GENERATOR PAD**  
SCALE: 1"=1'



**CONCRETE PAD FOUNDATION**  
SCALE: 1"=1'

1. CONTRACTOR TO VERIFY FINAL DIMENSIONS PRIOR TO CONSTRUCTION OF FOUNDATION.
2. GRADE SHALL SLOP AWAY FROM THE CONCRETE PAD TO ALLOW FOR PROPER RUN-OFF.
3. IF BEDROCK IS ENCOUNTERED AT A SHALLOW DEPTH, SEE FOUNDATION @ BEDROCK\* DETAIL.
4. SUBGRADE SHALL BE STRATA MEDIUM TO DENSE INSET GRANULAR MATERIAL OR COMPACTED GRAVEL. FILL 95% COMPACTION.
5. SUBGRADE AND FILL SHALL CONSIST OF CLEAN SOIL. NO DELETERIOUS MATERIALS OR ORGANICS TO BE USED.



**FOUNDATION @ BEDROCK**  
SCALE: 1"=1'

CONSULTANTS:

NO.	DATE	REVISIONS
1	3/17/11	ISSUED FOR REVIEW
2	2/21/11	CONSTRUCTION REVISED
3	3/17/11	CONSTRUCTION REVISED

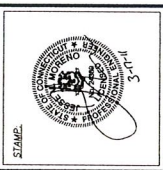
REVISIONS

NO.	DATE	REVISIONS
1	3/17/11	ISSUED FOR REVIEW
2	2/21/11	CONSTRUCTION REVISED
3	3/17/11	CONSTRUCTION REVISED

CLIENT: **at&t**

NEW CONSTRUCTION  
880 ROXBURY ROAD  
PLAINFIELD, MA 07061

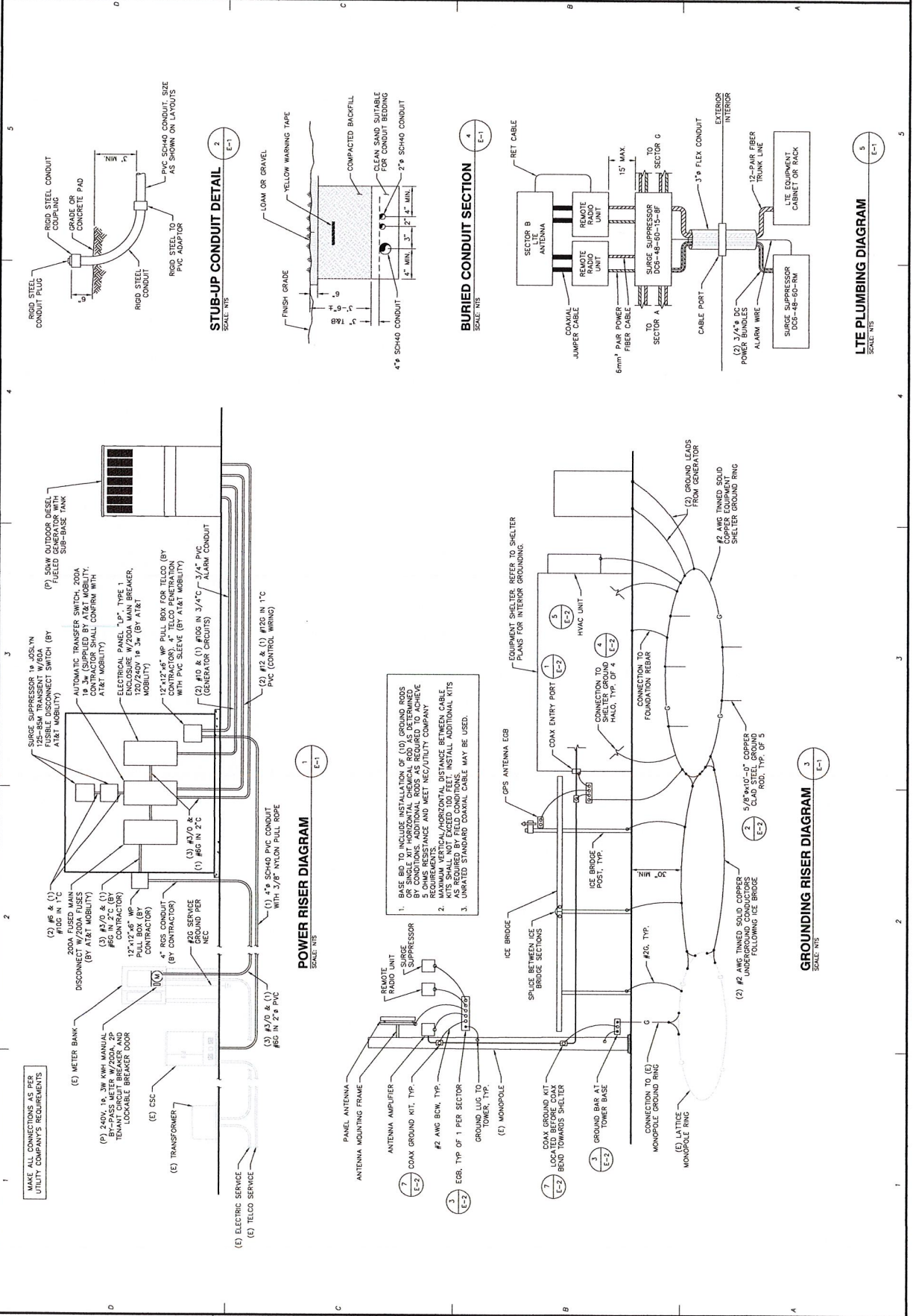
STAIR NAME: MADISON - OUTRAGE ROAD  
SITE NUMBER: CT-2617  
ADDRESS: 17 COTTAGE ROAD  
MADISON, CT 06443



DATE: 2/17/11  
DRAWN: MAW  
CHECK: JMM/TEU  
SCALE: SEE PLAN  
JOB NO: 11-1016

SHEET TITLE: **ELECTRICAL & GROUNDING DETAILS**

E-1





## Exhibit 2

**Structural Analysis for  
SBA Network Services, Inc.**

**130 ft Monopole**

**SBA Site Name: Madison 7  
SBA Site ID: CT13615-A**

FDH Project Number 11-03467E S1 (R1)

Prepared By:

*Randy C. Williams*

Randy C. Williams, EI  
Project Engineer

Reviewed By:

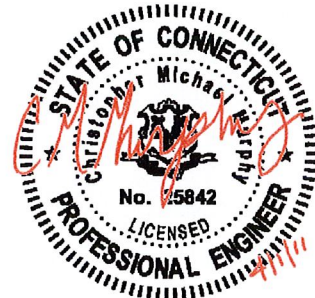
*Christopher M. Murphy*

Christopher M. Murphy, PE  
President  
CT PE License No. 25842

**FDH Engineering, Inc.**

2730 Rowland Rd.  
Raleigh, NC 27615  
(919) 755-1012  
info@fdh-inc.com

April 1, 2011



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## EXECUTIVE SUMMARY

At the request of SBA Network Services, Inc., FDH Engineering, Inc. performed a structural analysis of the monopole located in Madison, CT to determine whether the tower is structurally adequate to support both the existing and proposed loads, pursuant to the *Structural Standards for Steel Antenna Towers and Antenna Supporting Structures, TIA/EIA-222-F*. Information pertaining to the existing/proposed antenna loading, current tower geometry, and member sizes was obtained from:

- Radian Communication Services (File No. 060-4236) original design drawings dated October 1, 2007,
- FDH, Inc. (Job No. 08-07611T) TIA Inspection Report dated September 4, 2008
- JGI Eastern, Inc. (Project No. J2075395) Geotechnical Evaluation dated September 10, 2007
- SBA Network Services, Inc.

The *basic design wind speed* per *TIA/EIA-222-F* standards is 85 mph without ice and 38 mph with 3/4" radial ice. Ice is considered to increase in thickness with height.

## Conclusions

With the current antennas and the proposed antennas from AT&T in place at 127 ft. and 128 ft., the tower meets the requirements of the *TIA/EIA-222-F* standards provided the **Recommendations** below are satisfied. Furthermore, provided the foundation was designed and constructed to support the original design reactions (see Radian File No. 060-4236), the foundation should have the necessary capacity to support the existing and proposed loading. For a more detailed description of the analysis of the tower, see the **Results** section of this report.

Our structural analysis has been performed assuming all information provided to FDH Engineering, Inc. is accurate (i.e. the steel data, tower layout, existing antenna loading, and proposed antenna loading) and that the tower has been properly erected and maintained per the original design drawings.

## Recommendations

To ensure the requirements of the *TIA/EIA-222-F* standards are met with the existing and proposed loading in place, we have the following recommendations:

1. Proposed coax should be installed inside the monopole's shaft.
  2. Proposed TMAs should be installed behind the proposed antennas.
  3. Proposed RRH's should be placed on the collar mounts directly above the 12' Low-Profile Platform.
-



## APPURTENANCE LISTING

The proposed and existing antennas with their corresponding cables/coax lines are shown in **Table 1**. *If the actual layout determined in the field deviates from this layout, FDH Engineering, Inc. should be contacted to perform a revised analysis.*

**Table 1 – Appurtenance Loading**

### Existing Loading:

Antenna No.	Antenna Elevation (ft)	Description	Coax and Lines <sup>1</sup>	Carrier	Mount Elevation (ft)	Mount Type
1-9	117 <sup>2</sup>	(9) RFS APXV18-209014 (3) RFS ATMAA1412D-1A20 TMAs (3) RFS ATMP1412D-1CWA TMAs	(18) 1-5/8"	T-Mobile	117	(1) 12.5' Low-Profile Platform

<sup>1</sup> Coax installed inside the pole's shaft unless otherwise noted.

<sup>2</sup> Currently T-Mobile has (6) RFS APXV18-209014 antennas and (12) 7/8" coax at 117'. According to information provided by SBA, T-Mobile may install up to (9) RFS APXV18-209014 antennas and (18) 1-5/8" coax at 117'. Analysis performed with total leased loading in place.

### Proposed Loading:

Antenna No.	Antenna Elevation (ft)	Description	Coax and Lines	Carrier	Mount Elevation (ft)	Mount Type
1-9	128	(6) Ericsson RRUS-11 RRHs	(12) 1-5/8" (1) 3" Flex Conduit	AT&T	128	(1) Collar Mount
	127	(6) Powerwave P90-15-XLH-RR (3) Powerwave P65-16-XLH-RR (6) Powerwave TT19-08BP111-001 TMAs (1) Raycap DC6-48-60-18-8F			127	(1) 12' Low-Profile Platform (C <sub>A</sub> A <sub>A</sub> = 18.01 ft <sup>2</sup> )

<sup>1</sup> AT&T will install (1) 1/2" fiber cable, (2) 3/4" power cables, (1) alarm wire, and (1) ground wire inside (1) 3" flex conduit

## RESULTS

Based on information obtained from the original design drawings, the yield strength of steel for individual members was as follows:

**Table 2 - Material Strength**

Member Type	Yield Strength
Tower Shaft Sections	65 ksi
Base Plate	50 ksi
Anchor Bolts	105 ksi

**Table 3** displays the summary of the ratio (as a percentage) of actual force in the member to their allowable capacities. Values greater than 100% indicate locations where the maximum force in the member exceeds its allowable capacity. **Table 4** displays the maximum foundation reactions.

If the assumptions outlined in this report differ from actual field conditions, FDH Engineering, Inc. should be contacted to perform a revised analysis. Furthermore, as no information pertaining to the allowable twist and sway requirements for the existing or proposed appurtenances was provided, deflection and rotation were not taken into consideration when performing this analysis.

See the **Appendix** for detailed modeling information.

**Table 3 – Summary of Working Percentage of Structural Components**

Section No.	Elevation ft	Component Type	Size	% Capacity	Pass Fail
L1	130 - 85.25	Pole	TP38.218x27.009x0.25	33.3	Pass
L2	85.25 - 42	Pole	TP48.39x36.5282x0.375	35.9	Pass
L3	42 - 0	Pole	TP58x46.1573x0.4375	38.1	Pass
		Anchor Bolts	(26) 1.5" Ø w/ BC = 63.0"	54.1	Pass
		Base Plate	67" Ø Cir. PL x 1.75" thk.	49.0	Pass

\*Capacities include 1/3 allowable increase for wind.

**Table 4 – Maximum Base Reactions**

Base Reactions	Current Analysis* (TIA/EIA-222-F)	Original Design (ANSI/TIA-222-G)
Axial	32 k	101 k
Shear	20 k	46 k
Moment	1,837 k-ft	5,098 k-ft

## **GENERAL COMMENTS**

This engineering analysis is based upon the theoretical capacity of the structure. It is not a condition assessment of the tower and its foundation. It is the responsibility of SBA Network Services, Inc. to verify that the tower modeled and analyzed is the correct structure (with accurate antenna loading information) modeled. If there are substantial modifications to be made or the assumptions made in this analysis are not accurate, FDH Engineering, Inc. should be notified immediately to perform a revised analysis.

## **LIMITATIONS**

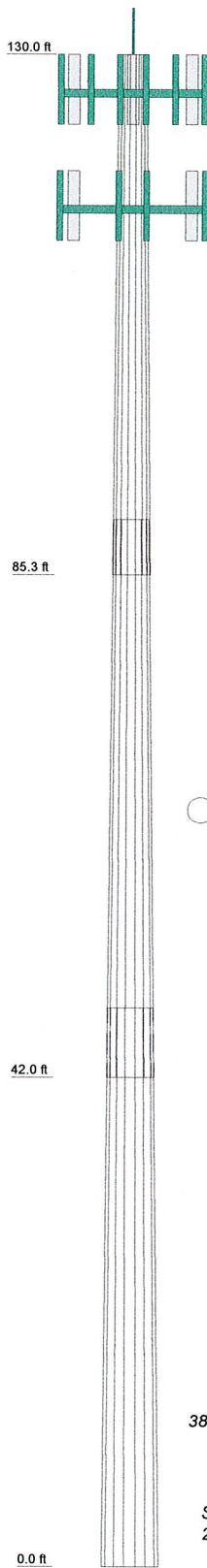
All opinions and conclusions are considered accurate to a reasonable degree of engineering certainty based upon the evidence available at the time of this report. All opinions and conclusions are subject to revision based upon receipt of new or additional/updated information. All services are provided exercising a level of care and diligence equivalent to the standard and care of our profession. No other warranty or guarantee, expressed or implied, is offered. Our services are confidential in nature and we will not release this report to any other party without the client's consent. The use of this engineering work is limited to the express purpose for which it was commissioned and it may not be reused, copied, or distributed for any other purpose without the written consent of FDH Engineering, Inc.

---

## **APPENDIX**

---

Section	1	2	3
Length (ft)	44.75	48.00	48.00
Number of Sides	18	18	18
Thickness (in)	0.2500	0.3750	0.4375
Socket Length (ft)	4.75	6.00	46.1573
Top Dia (in)	27.0090	36.5282	58.0000
Bot Dia (in)	38.2180	48.3900	58.0000
Grade		A572-65	
Weight (K)	3.9	8.2	11.7



### DESIGNED APPURTENANCE LOADING

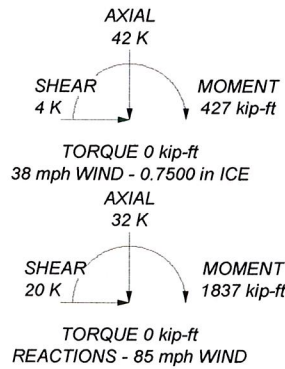
TYPE	ELEVATION	TYPE	ELEVATION
Lighting Rod	130	(2) Powerwave P90-15-XLH-RR w/ Mount Pipe (ATT)	127
(2) RRH - Ericsson RRUS-11 (ATT)	128	(3) RFS APXV18-209014-C w/ Mount Pipe (T-Mobile)	117
(2) RRH - Ericsson RRUS-11 (ATT)	128	(3) RFS APXV18-209014-C w/ Mount Pipe (T-Mobile)	117
(2) RRH - Ericsson RRUS-11 (ATT)	128	TMA - RFS ATMAA1412D-1A20 (T-Mobile)	117
Collar Mount (ATT)	128	TMA - RFS ATMAA1412D-1A20 (T-Mobile)	117
Powerwave P65-16-XLH-RR w/ Mount Pipe (ATT)	127	TMA - RFS ATMAA1412D-1A20 (T-Mobile)	117
(2) TMA - Powerwave TT19-08BP111-001 (ATT)	127	TMA - RFS ATMAA1412D-1A20 (T-Mobile)	117
(2) TMA - Powerwave TT19-08BP111-001 (ATT)	127	TMA - RFS ATMAA1412D-1A20 (T-Mobile)	117
(2) TMA - Powerwave TT19-08BP111-001 (ATT)	127	TMA - RFS ATMPPI1412D-1CWA (T-Mobile)	117
Raycap DC6-48-60-18-8F (ATT)	127	TMA - RFS ATMPPI1412D-1CWA (T-Mobile)	117
(2) Powerwave P90-15-XLH-RR w/ Mount Pipe (ATT)	127	TMA - RFS ATMPPI1412D-1CWA (T-Mobile)	117
(2) Powerwave P90-15-XLH-RR w/ Mount Pipe (ATT)	127	(1) 12' Low-Profile Platform (T-Mobile)	117
Powerwave P65-16-XLH-RR w/ Mount Pipe (ATT)	127	(3) RFS APXV18-209014-C w/ Mount Pipe (T-Mobile)	117
(1) 12.5' Low-Profile Platform (ATT)	127		
Powerwave P65-16-XLH-RR w/ Mount Pipe (ATT)	127		

### MATERIAL STRENGTH

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

### TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 38.1%



**FDH Engineering, Inc.**  
 2730 Rowland Road, Suite 100  
 Raleigh, North Carolina  
 Phone: (919) 755-1012  
 FAX: (919) 755-1031

Job: <b>Madison 7, CT13615-A</b>		
Project: <b>11-03467E S1 (R1)</b>		
Client: SBA	Drawn by: Randy Williams	App'd:
Code: TIA/EIA-222-F	Date: 04/01/11	Scale: NTS
Path:		Dwg No: E-1

## Exhibit 3



# MAXIMUM PERMISSIBLE EXPOSURE STUDY



at&t

**Site Number:** CT2517  
**Site Name:** Madison - Cottage Road  
**Latitude:** 41.27584167  
**Longitude:** -72.5616667  
**Address:** 17 Cottage Road  
Madison, CT

**Conclusion:** *AT&T's proposed antenna installation is calculated to be 10.72% of the FCC Standard for Uncontrolled/General Public Maximum Permissible Exposure (MPE).*

**Prepared by:** **SAI Communications**  
260 Cedar Hill Street  
Marlborough, MA 01752  
508-573-5407

**Date of Report:** February 9, 2011

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Introduction .....	3
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Case Summary .....	4
RF Design Specifications .....	4
FCC Guidelines.....	5
FCC RF Exposure Limits.....	6
Calculation Results.....	7
Statement of Certification .....	8

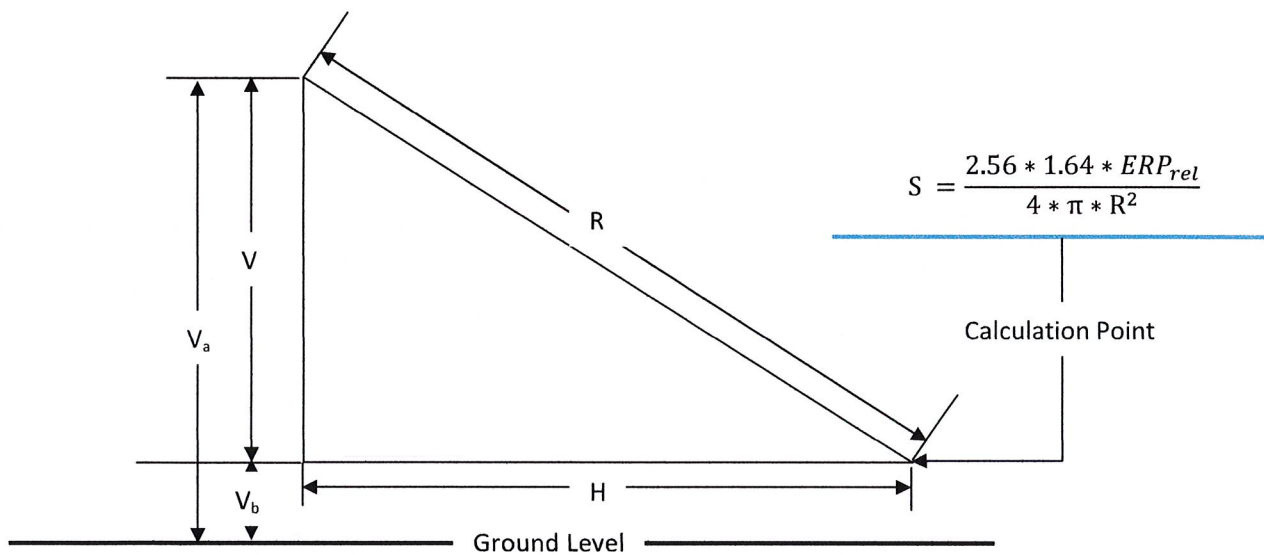


## Introduction

SAI Communications has conducted this theoretical analysis for AT&T, to ensure that the proposed radio facility complies with Federal Communications Commission (FCC) regulations. This report will show that, through the use of FCC suggested prediction methods, the radio facility in question will be in compliance with all appropriate Federal regulations in regards to Radio Frequency (RF) Exposure.

## RF Exposure Prediction Method

Power Density is calculated in accordance with FCC OET Bulletin 65 formula (7):



Where:

$S$  = Power Density

$ERP_{rel}$  = Effective Radiated Power relative to antenna pattern

$R$  = Radial distance =  $\sqrt{H^2 + V^2}$

$H$  = Horizontal distance from antenna

$V$  = Vertical distance from antenna =  $V_a - V_b$

$V_a$  = Antenna height above ground

$V_b$  = Calculation height above ground = 6ft

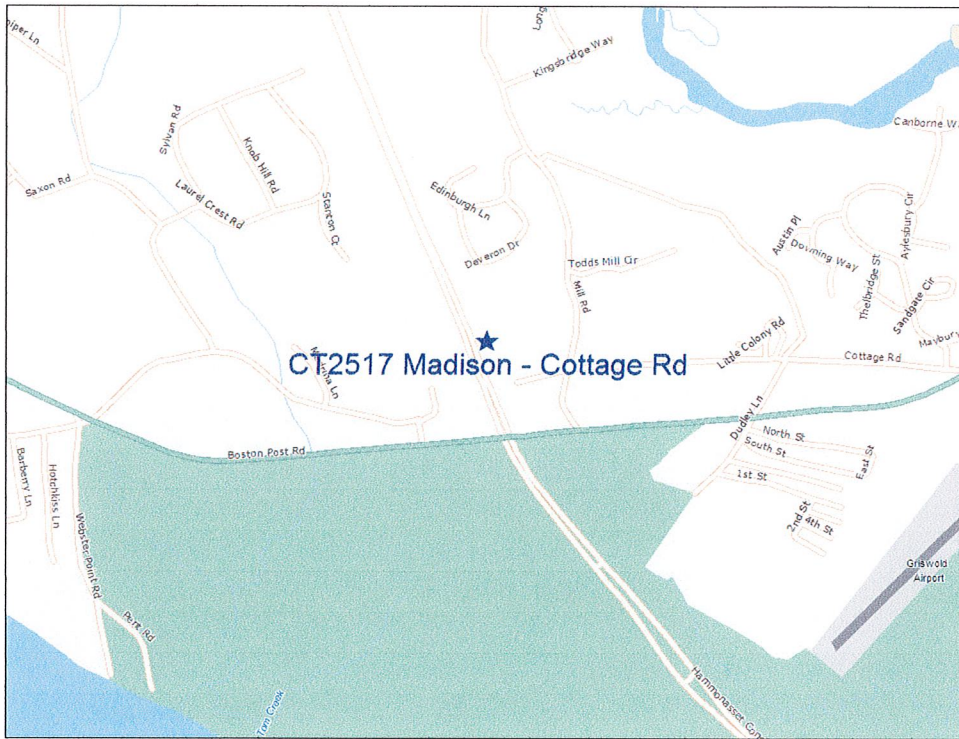
## Case Summary

The proposed radio facility will have a radiation center of 127 ft AGL, located at the following geographic coordinates:

**Latitude:** 41.27584167

**Longitude:** -72.5616667

See sketch below for specific property location.



## RF Design Specifications

AT&T Mobility is planning to install 9 panel antennae, 3 per sector, for the GSM/UMTS/LTE Technologies. The antenna array will be located at 127 ft AGL. Proposed sector technical data considered for AT&T is listed below.

	GSM850	GSM1900	UMTS850	UMTS1900	LTE700
Antenna Type:	Powerwave P90-15-XLH-RR		Powerwave P90-15-XLH-RR		Powerwave P65-16-XLH-RR
Antenna Gain (dBd)	12.4	13.9	12.4	13.9	11.4
Rad Center, AGL (ft)	127	127	127	127	127
ERP (dBm)	55	56	57	57	57
No of Carriers	3	1	1	1	1

**FCC Guidelines**

<b>Table 1. MPE Limits for General Population/ Uncontrolled Exposure</b>				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Averaging Time for  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		

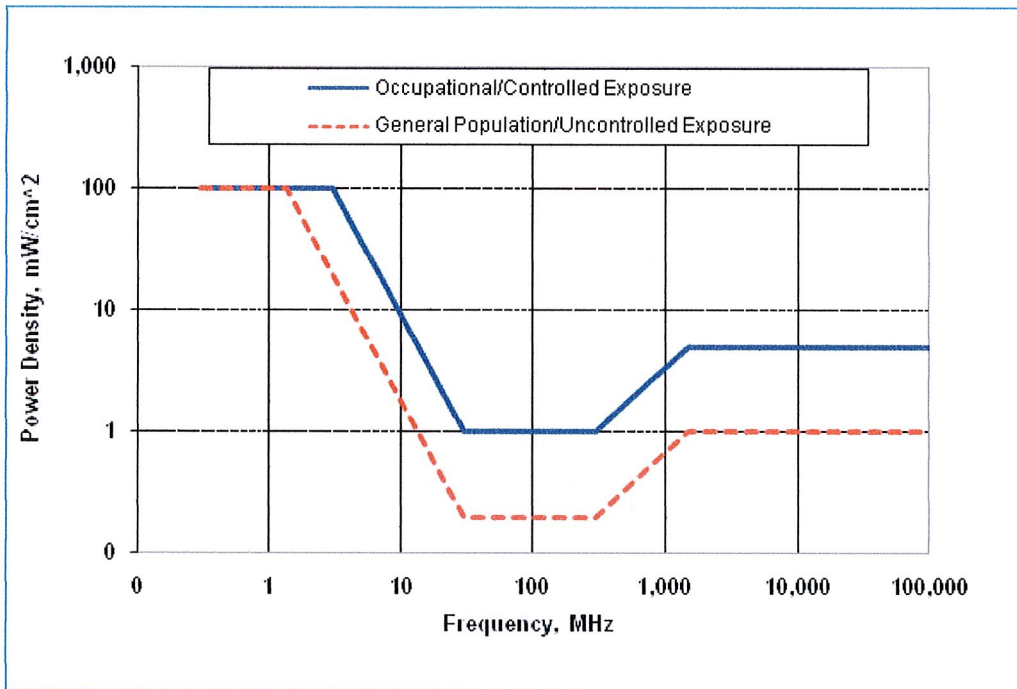
*General population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or can't exercise control over their exposure.*

<b>Table 2. MPE Limits for Occupational/Controlled Exposure</b>				
Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm <sup>2</sup> )	Averaging Time for  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	--	--	5.0	6
f = frequency in MHz		* = Plane wave equivalent power density		

*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 such occupational/controlled limits apply provided he or she is made aware of the potential for exposure.*

## FCC RF Exposure Limits

FCC MPE LIMITS (mW/cm <sup>2</sup> )		
EXPOSURE ENVIRONMENT	AT&T FREQUENCY BANDS	
	Cellular	PCS
General Public (Uncontrolled)	0.59	1.0
Occupational (Controlled)	2.93	5.0



*Maximum Permissible Exposures. Occupational/Controlled and General Population/Uncontrolled MPE's are functions of frequency.*

## Calculation Results

Table below shows the result of applying worst case scenario where an individual is standing at the base of the tower/building with the antenna pointed downwards (directly towards the individual) at a height of 127 ft. Calculation point is at 6ft above ground (assumed average height of a person).

		GSM850	GSM1900	UMTS850	UMTS1900	LTE700	Total
Calculated Power Density (mW/cm <sup>2</sup> )		0.0218	0.0105	0.0123	0.0123	0.0123	
Uncontrolled / General Population	MPE Limits (mW/cm <sup>2</sup> )	0.5867	1.0000	0.5867	1.0000	0.4667	
	%MPE	3.72%	1.05%	2.09%	1.23%	2.63%	10.72%
Controlled / Occupational	MPE Limits (mW/cm <sup>2</sup> )	2.9333	5.0000	2.9333	5.0000	2.3333	
	%MPE	0.74%	0.21%	0.42%	0.25%	0.53%	2.14%

### Statement of Certification

I certify to the best of my knowledge that the statements contained in this report are true and accurate. The theoretical computations contained are based on FCC recommended methods, with industry standard assumptions & formulas, and complies with FCC mandated Maximum Permissible RF Exposure requirements.

A comprehensive field survey was not performed prior to the generation of this report. If questions arise regarding the calculations herein, SAI Communications recommends that a comprehensive field survey be performed to resolve any disputes.



---

Charleston N. Sibal  
SAI Communications

February 9, 2011  
Date