

EM-CING-003-130305



New Cingular Wireless  
PCS, LLC  
100 Enterprise Drive  
Rocky Hill, Connecticut 06067

**John Lawrence**  
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March 4, 2013

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

**RECEIVED**  
MAR - 5 2013

CONNECTICUT  
SITING COUNCIL

**Re: Notice of Exempt Modification – Existing Telecommunications Facility at 99  
Knowlton Hill Road, Ashford CT 06278**

Dear Chairman Stein and Members of the Council:

New Cingular Wireless PCS, LLC (“AT&T”) intends to modify the existing telecommunications antennas and associated equipment at an existing multicarrier telecommunications tower at 99 Knowlton Hill Road, Ashford, CT 06278. AT&T operates under licenses issued by the Federal Communications Commission (“FCC”) to provide cellular and PCS mobile telephone service in Windham County, which includes the area to be served by AT&T’s proposed installation.

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. 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.

Please accept this letter as notification to the Council, 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 is being sent to Ralph H. Fletcher, First Selectman of the Town of Ashford.

Attached is a summary of the planned modifications, including power density calculations reflecting the change in AT&T’s operations at the site. Also included is documentation of the structural sufficiency of the tower to accommodate the revised antenna configuration.

### Existing Facility

The Ashford facility is located at 99 Knowlton Hill Road, Ashford, CT 06278

The facility is owned by SBA Communications.

The existing facility consists of a 150 foot monopole tower with an existing chain link fence around the tower compound fenced in compound. AT&T currently operates wireless communications equipment at the facility and has six (6) antennas mounted at the tower centerline height of 140'.

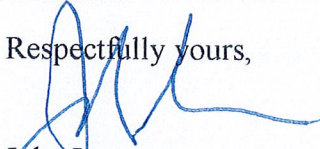
### Statutory Considerations

The changes to the Ashford tower facility do not constitute a modification as defined in Connecticut General Statutes ("C.G.S.") Section 16-50i(d) because the general physical characteristics of the facility will not be significantly changed 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) because they will not result in any substantial adverse environmental effect.

1. The height of the overall structure will be unaffected.
2. The proposed changes will not affect the property boundaries. All new construction will take place inside the existing fenced compound.
3. The proposed additions 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).

Respectfully yours,

  
John Lawrence  
Real Estate Consultant

Enclosures:

Ralph H. Fletcher, First Selectman of the Town of Ashford



**New Cingular Wireless  
PCS, LLC**  
500 Enterprise Drive  
Rocky Hill, Connecticut 06067

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Raynham, MA 02767  
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jlawrence@clinellc.com

March 4, 2013

Ralph H. Fletcher, First Selectman  
Town of Ashford  
5 Town Hall Road  
Ashford, CT 06278

**Re: Notice of Exempt Modification – Existing Telecommunications Facility at 99  
Knowlton Hill Road, Ashford CT 06278**

Dear Mr. Fletcher,

New Cingular Wireless PCS, LLC (“AT&T”) intends to replace telecommunications antennas and associated equipment at an existing telecommunications tower, owned and operated by SBA Communications.

A Notice of Exempt Modification has been filed with the Connecticut Siting Council as required by Regulations of Connecticut State Agencies (“R.C.S.A.”) Section 16-50j-73. Please accept this letter as notification to the Town of Ashford under Section 16-50j-73 of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2).

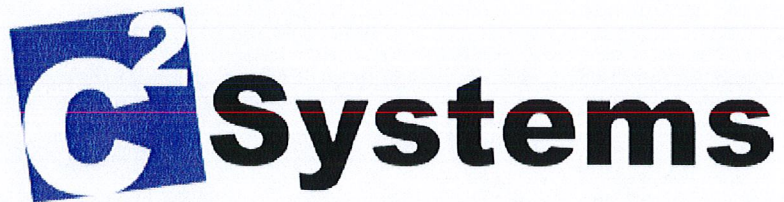
The attached letter fully sets forth the AT&T proposal. However, if you have any questions or require any further information on the plans for the site or the Siting Council’s procedures, please contact John Lawrence at (781) 715-5532 or Linda Roberts, Executive Director of the Connecticut Siting Council, at (860) 827-2935.

Sincerely,

John Lawrence  
Real Estate Consultant

Enclosure

CC: Honorable Robert Stein, Chairmen of the Connecticut Siting Council



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

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Calculated Radio Frequency Emissions



at&t

CT1250

(Ashford SW)

99 Knowlton Hill Road, Ashford, CT 06278

(a.k.a. Knowlton Hill Road)

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March 1, 2013

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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 99 Knowlton Hill Road in Ashford, CT. The coordinates of the tower are 41° 50' 26.2" N, 72° 12' 27.3" W.

AT&T is proposing the following modifications:

- 1) Install three multi-band (700/850/1900/2100 MHz) antennas for their LTE network (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:

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

Where:

EIRP = Effective Isotropic Radiated Power

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

H = Horizontal Distance from antenna in meters

V = Vertical Distance from radiation center of antenna in meters

Ground reflection factor of 1.6

Off Beam Loss is determined by the selected antenna pattern

These calculations assume that the antennas are operating at 100 percent capacity and power, and that all channels are transmitting simultaneously. Obstructions (trees, buildings, etc.) that would normally attenuate the signal are not taken into account. The calculations assume even terrain in the area of study and do not take into account actual terrain elevations which could attenuate the signal. As a result, the predicted signal levels reported below are much higher than the actual signal levels will be from the finished modifications.

#### 4. Calculation Results

Table 1 below outlines the power density information for the site. Because the proposed AT&T antennas are directional in nature, the majority of the RF power is focused out towards the horizon. As a result, there will be less RF power directed below the antennas relative to the horizon, and consequently lower power density levels around the base of the tower. Please refer to Attachment C for the vertical pattern of the proposed AT&T antennas. The calculated results for AT&T in Table 1 include a nominal 10 dB off-beam pattern loss to account for the lower relative gain below the antennas.

Carrier	Antenna Height (Feet)	Operating Frequency (MHz)	Number of Trans.	ERP Per Transmitter (Watts)	Power Density (mw/cm <sup>2</sup> )	Limit	%MPE
<i>Cingular</i>	137	880	6	296	0.0340	0.5867	5.80%
<i>Cingular</i>	137	1930	3	427	0.0245	1.0000	2.45%
Verizon PCS	129	1970	11	258	0.0613	1.0000	6.13%
Verizon Cellular	129	869	9	262	0.0509	0.5793	8.79%
Verizon AWS	129	2145	1	670	0.0145	1.0000	1.45%
Verizon LTE	129	698	1	856	0.0185	0.4653	3.97%
T-Mobile	147	1890	6	205	0.0205	1.0000	2.05%
AT&T UMTS	137	880	2	565	0.0022	0.5867	0.37%
AT&T UMTS	137	1900	2	875	0.0034	1.0000	0.34%
AT&T LTE	137	734	1	1771	0.0034	0.4893	0.69%
AT&T GSM	137	880	1	283	0.0005	0.5867	0.09%
AT&T GSM	137	1900	4	525	0.0040	1.0000	0.40%
<b>Total</b>							<b>24.29%</b>

**Table 1: Carrier Information<sup>1 2 3</sup>**

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

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

<sup>3</sup> Antenna height listed for AT&T is in reference to the FDH Engineering Structural Analysis dated February 28, 2013.



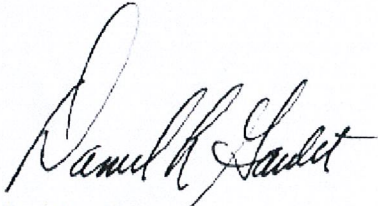
## 5. Conclusion

The above analysis verifies that emissions from the existing site will be below the maximum power density levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Even when using conservative methods, the cumulative power density from the proposed transmit antennas at the existing facility is well below the limits for the general public. The highest expected percent of Maximum Permissible Exposure at ground level is **24.29% 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

March 1, 2013

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>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)
0.3-3.0	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>5</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>4</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>5</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.

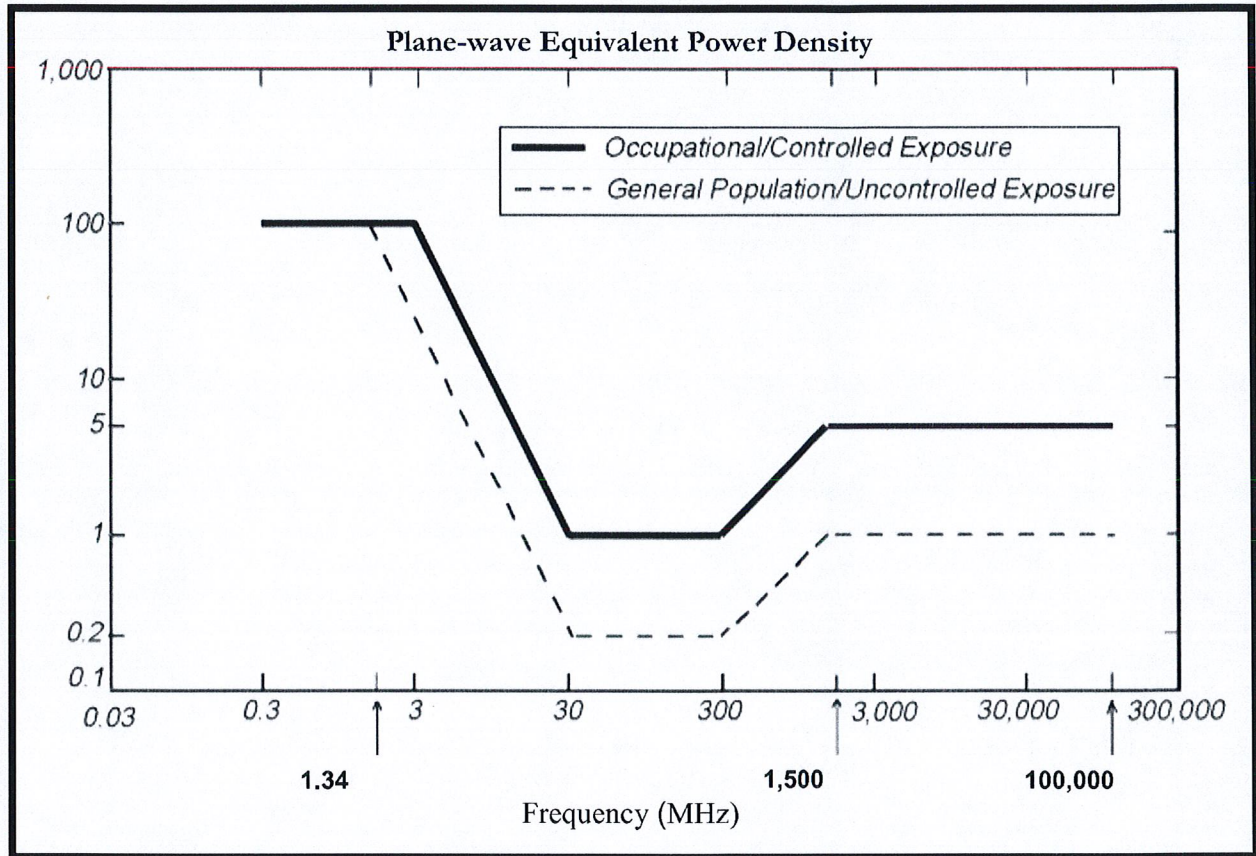
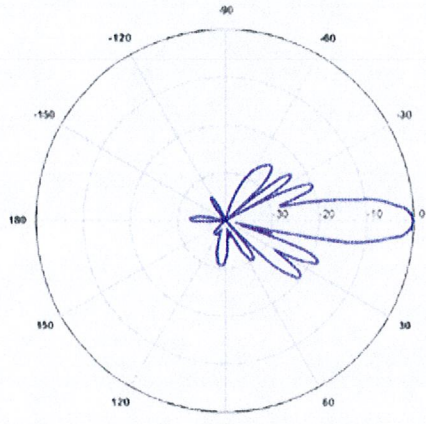
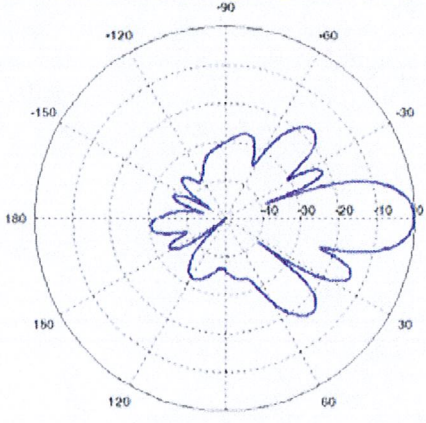
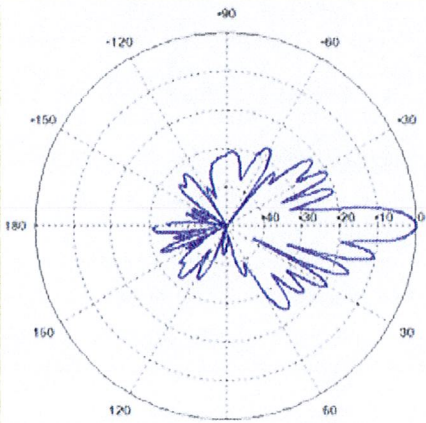


Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

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

<p><b>700 MHz</b></p> <p>Manufacturer: KMW            Model #: AM-X-CD-17-65-00T-RET            Frequency Band: 698-806 MHz            Gain: 14.7 dBd            Vertical Beamwidth: 10°            Horizontal Beamwidth: 66°            Polarization: Dual Slant ± 45°            Size L x W x D: 96.0" x 11.8" 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>	

**PROJECT INFORMATION**

SCOPE OF WORK: TELECOMMUNICATIONS FACILITY UPGRADE (LTE):  
 1. INSTALL (3) NEW LTE ANTENNAS, (6) RRR'S, (1) SURGE ARRESTOR, (1) FIBER LINE, (2) DC POWER LINES & (1) GPS ANTENNA  
 2. INSTALL (1) LTE 6601 CABINET

SITE ADDRESS: 99 KNOWLTON HILL ROAD  
 ASHFORD, CT 06278

LATITUDE: 41.84066 N 41° 50' 26.4" N  
 LONGITUDE: 72.20751 W 72° 12' 27.0" W

CURRENT USE: TELECOMMUNICATIONS FACILITY  
 PROPOSED USE: TELECOMMUNICATIONS FACILITY



**SITE NUMBER: CT1250**  
**SITE NAME: ASHFORD SW**

**DRAWING INDEX**

**REV**

**VICINITY MAP**

**GENERAL NOTES**

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

- 1
- 1
- 1
- 1
- 1
- 1

DIRECTIONS TO SITE:  
 START OUT GOING NORTHEAST ON ENTERPRISE DR TOWARD CAPITOL BLVD. TURN LEFT ONTO CAPITOL BLVD. TURN LEFT ONTO WEST ST. MERGE ONTO I-91 N VIA THE RAMP ON THE LEFT TOWARD HARTFORD 7.8 MILES. MERGE ONTO CT-15 N VIA EXIT 29 TOWARD I-84 E/E. HARTFORD/BOSTON. CT-15 BECOMES I-84 16.0 MILES. TAKE THE CT-195 EXIT, EXIT 68, TOWARD TOLLAND/MANSFIELD. TURN RIGHT ONTO MERROW RD/CT-195. CONTINUE TO FOLLOW CT-195 FOR 5.7 MILES. TURN LEFT ONTO MIDDLE TURNPIKE/US-44. CONTINUE TO FOLLOW US-44 FOR 3.6 MILES. TURN RIGHT ONTO KNOWLTON HILL RD. 99 KNOWLTON HILL RD IS ON THE LEFT.

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

**SBA SITE ID:** CT13614-A  
**SITE NAME:** KNOWLTON



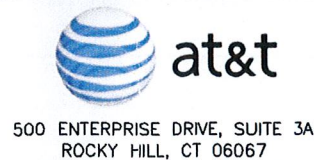
CALL  
 BEFORE YOU DIG   
 CALL TOLL FREE 1-800-922-4455 OR DIAL 811

**UNDERGROUND SERVICE ALERT**



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

**SITE NUMBER: CT1250**  
**SITE NAME: ASHFORD SW**  
 99 KNOWLTON HILL ROAD  
 ASHFORD, CT 06278  
 WINDHAM COUNTY



1 03/05/13 ISSUED FOR CONSTRUCTION		RM DC DPH		AT&T	
0 08/07/12 ISSUED FOR REVIEW				TITLE SHEET (LTE)	
NO.	DATE	REVISIONS	BY	CHK APP'D	REV
SCALE: AS SHOWN		DESIGNED BY: DC	DRAWN BY: RM		
				JOB NUMBER: 1250.01	
				DRAWING NUMBER: T-1	
				REV: 1	

**GROUNDING NOTES**


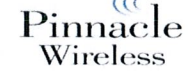

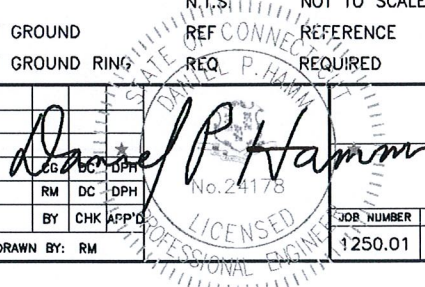
1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTNING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.
2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS 2 AWG STRANDED COPPER FOR OUTDOOR BTS.
6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWS COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE 1/2" OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID TINNED COPPER GROUND WIRE, PER NEC 250.50

**GENERAL NOTES**

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:  
 CONTRACTOR - PINNACLE WIRELESS  
 SUBCONTRACTOR - GENERAL CONTRACTOR (CONSTRUCTION)  
 OWNER - AT&T MOBILITY
  2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.
  3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
  4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
  5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
  6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.
  7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
  8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.
  9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.
  10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
  11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
  12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
  13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.
  14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
  15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
  16. CONSTRUCTION SHALL COMPLY WITH UMS SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T MOBILITY SITES."
  17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
  18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
  19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.
  20. APPLICABLE BUILDING CODES:  
 SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.  
 BUILDING CODE: 2003 IBC WITH 2005 CT SUPPLEMENT & 2009 CT AMENDMENTS  
 ELECTRICAL CODE: REFER TO ELECTRICAL DRAWINGS  
 LIGHTENING CODE: REFER TO ELECTRICAL DRAWINGS
- SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:
- AMERICAN CONCRETE INSTITUTE (ACI) 318; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE;
  - AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) MANUAL OF STEEL CONSTRUCTION, ASD, NINTH EDITION;
  - TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-F, STRUCTURAL STANDARDS FOR STEEL
  - ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES; REFER TO ELECTRICAL DRAWINGS FOR SPECIFIC ELECTRICAL STANDARDS.
- FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

**ABBREVIATIONS**

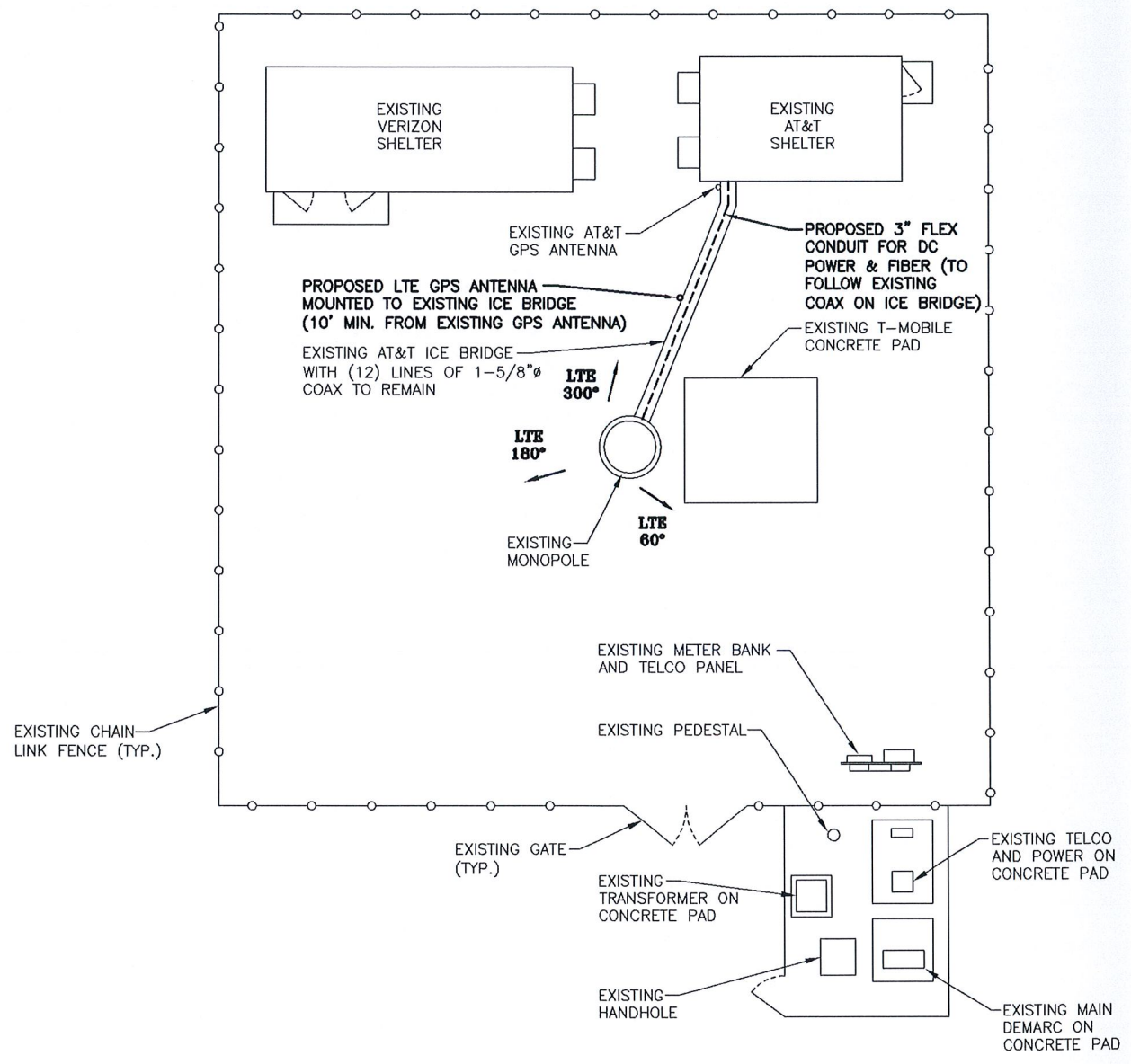
AGL	ABOVE GRADE LEVEL	G.C.	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
AWG	AMERICAN WIRE GAUGE	MGB	MASTER GROUND BUS		
BCW	BARE COPPER WIRE	MIN	MINIMUM	TBD	TO BE DETERMINED
BTS	BASE TRANSCEIVER STATION	PROPOSED	NEW	TBR	TO BE REMOVED
EXISTING	EXISTING	N.T.S.	NOT TO SCALE	TBRR	TO BE REMOVED AND REPLACED
EG	EQUIPMENT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

 <p>1600 OSGOOD STREET BUILDING 20 NORTH, SUITE 3090 N. ANDOVER, MA 01845 TEL: (978) 557-5553 FAX: (978) 336-5586</p>	 <p>a UniTek GLOBAL SERVICES company 800 MARSHALL PHELPS ROAD UNIT#: 2A WINDSOR, CT 06095</p>	<p><b>SITE NUMBER: CT1250</b> <b>SITE NAME: ASHFORD SW</b></p> <p>99 KNOWLTON HILL ROAD ASHFORD, CT 06278 WINDHAM COUNTY</p>	 <p>500 ENTERPRISE DRIVE, SUITE 3A ROCKY HILL, CT 06067</p>	<p>AT&amp;T</p> <p>GENERAL NOTES (LTE)</p>															
				<table border="1"> <tr> <th>NO.</th> <th>DATE</th> <th>REVISIONS</th> <th>BY</th> <th>CHK</th> <th>APP'D</th> </tr> <tr> <td>1</td> <td>03/05/13</td> <td>ISSUED FOR CONSTRUCTION</td> <td></td> <td></td> <td></td> </tr> <tr> <td>0</td> <td>08/07/12</td> <td>ISSUED FOR REVIEW</td> <td>RM</td> <td>DC</td> <td>DPH</td> </tr> </table>	NO.	DATE	REVISIONS	BY	CHK	APP'D	1	03/05/13	ISSUED FOR CONSTRUCTION				0	08/07/12	ISSUED FOR REVIEW
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0	08/07/12	ISSUED FOR REVIEW	RM	DC	DPH														
<p>JOB NUMBER: 1250.01</p> <p>DRAWING NUMBER: GN-1</p> <p>REV: 1</p>																			

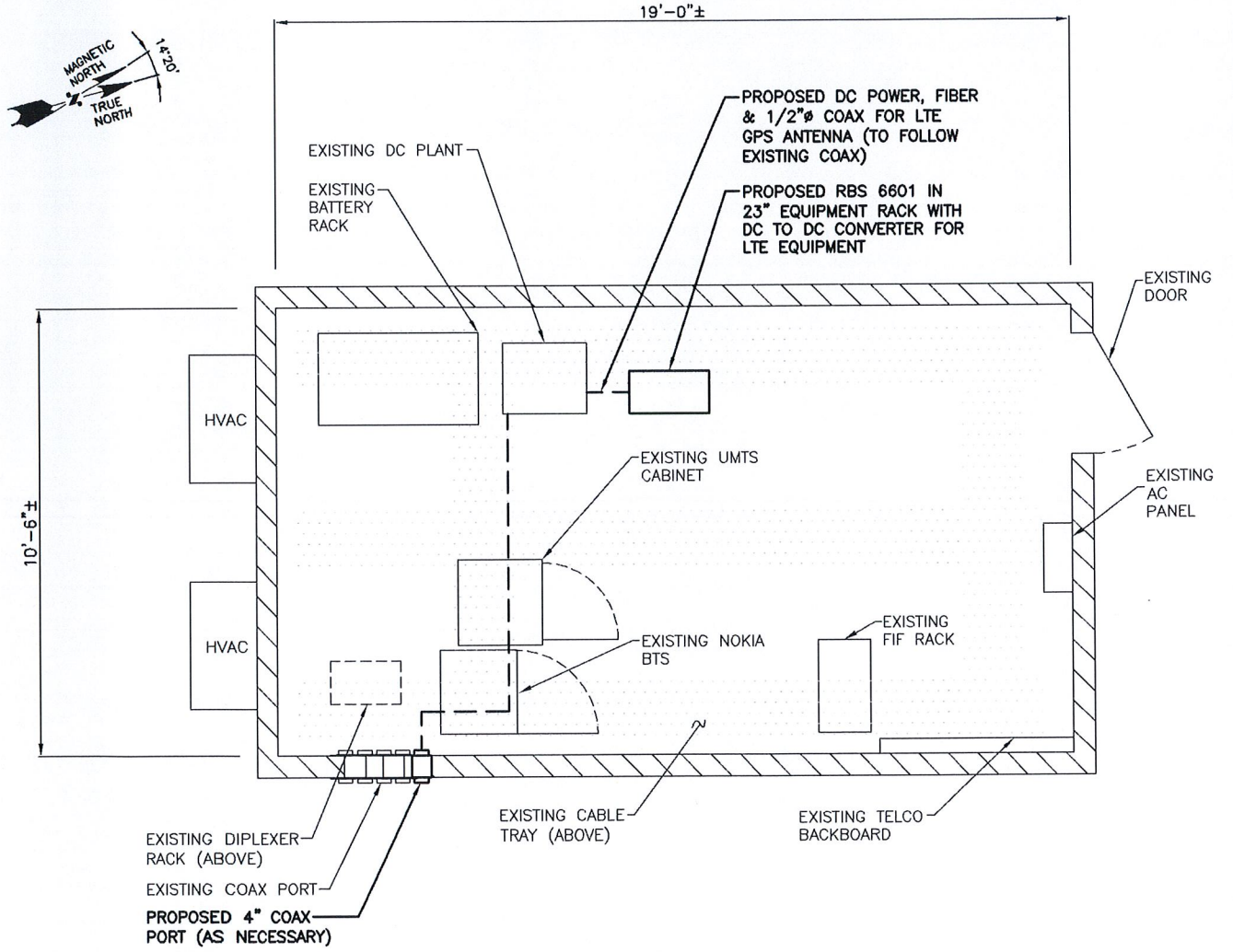
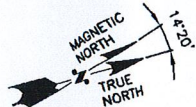


**NOTE:**  
REFER TO STRUCTURAL ANALYSIS BY: FDH ENGINEERING, INC. DATED: FEBRUARY 28, 2013, FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.

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



**COMPOUND PLAN**  
SCALE: 1/8" = 1'-0"



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



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**Pinnacle Wireless**

a UniTek GLOBAL SERVICES company

800 MARSHALL PHELPS ROAD UNIT#: 2A  
WINDSOR, CT 06095

**SITE NUMBER: CT1250**  
**SITE NAME: ASHFORD SW**

99 KNOWLTON HILL ROAD  
ASHFORD, CT 06278  
WINDHAM COUNTY

**at&t**

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
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0	08/07/12	ISSUED FOR REVIEW	RM	DC	DPH

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

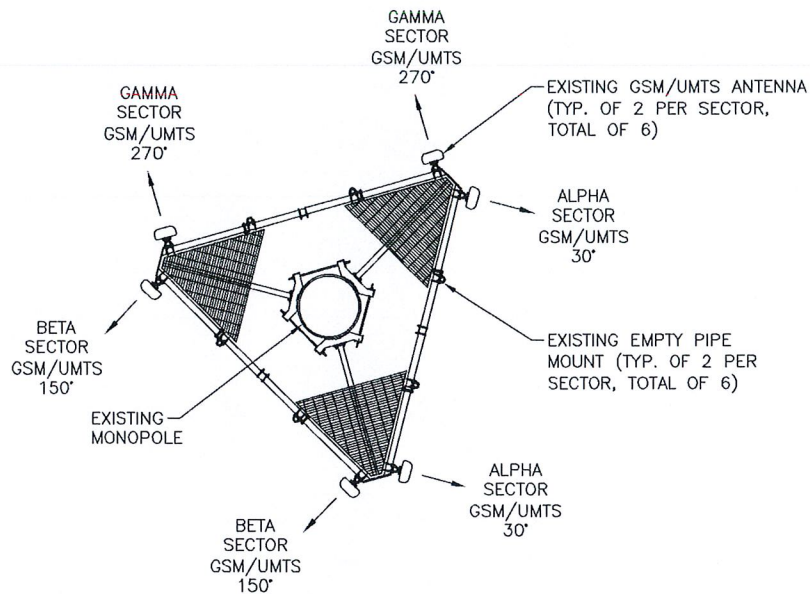


AT&T

COMPOUND AND EQUIPMENT PLAN (LTE)

JOB NUMBER	DRAWING NUMBER	REV
1250.01	A-1	1



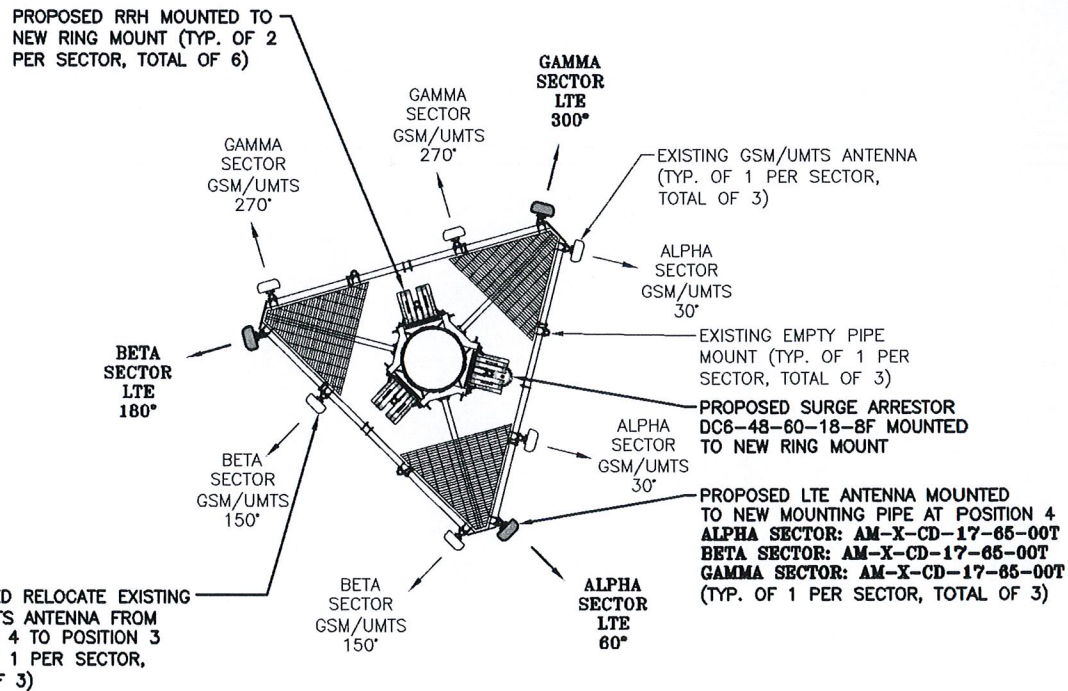


**EXISTING GSM/UMTS ANTENNA PLAN**

SCALE: N.T.S.

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

**NOTE:**  
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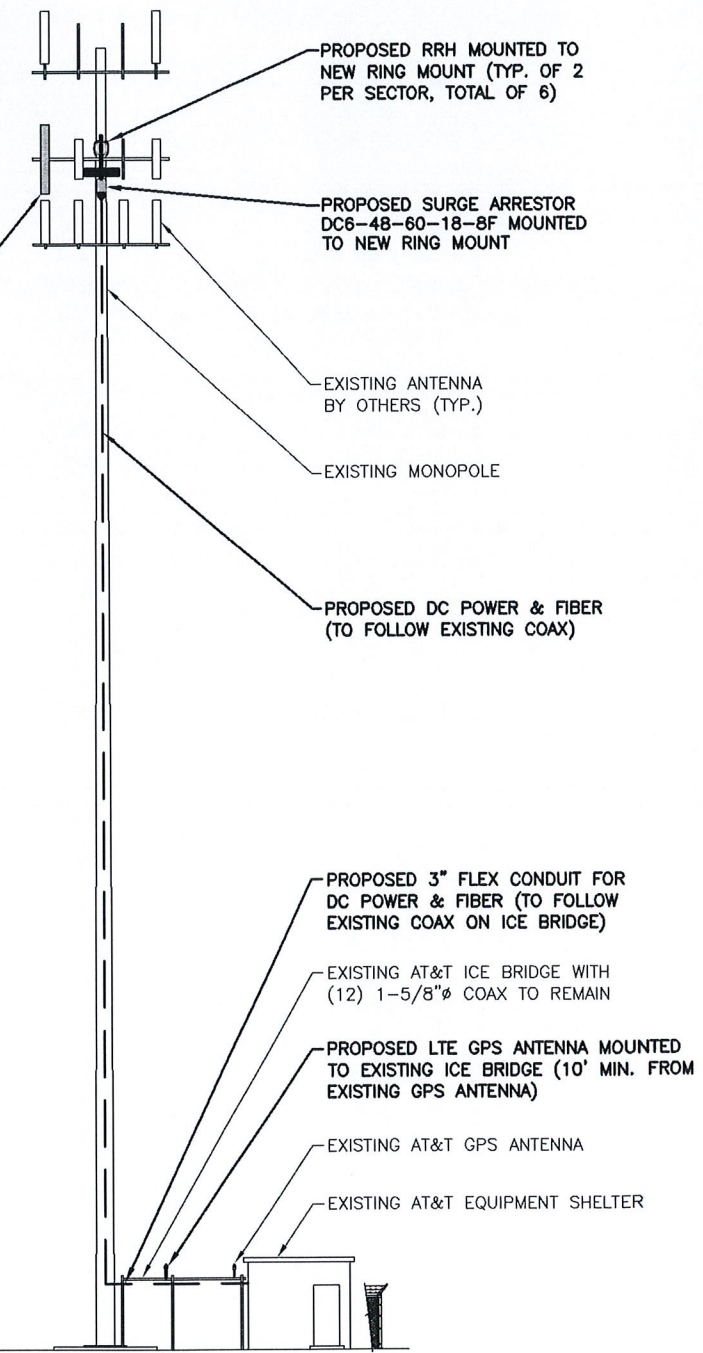


**PROPOSED LTE ANTENNA PLAN**

SCALE: N.T.S.

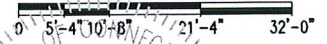
- TOP OF EXISTING TOWER  
ELEV. 150'-0"± (AGL)
- CENTER OF PROPOSED AT&T LTE ANTENNAS  
ELEV. 137'-0"± (AGL)
- CENTER OF PROPOSED RRH'S & SURGE ARRESTOR  
ELEV. 135'-6"± (AGL)

PROPOSED LTE ANTENNA MOUNTED TO NEW MOUNTING PIPE AT POSITION 4  
**ALPHA SECTOR: AM-X-CD-17-85-00T**  
**BETA SECTOR: AM-X-CD-17-85-00T**  
**GAMMA SECTOR: AM-X-CD-17-85-00T**  
 (TYP. OF 1 PER SECTOR, TOTAL OF 3)



**NORTH ELEVATION**

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



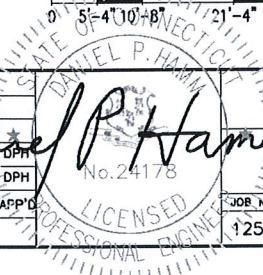
**Hudson Design Group, LLC**  
 1600 OSGOOD STREET  
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 TEL: (978) 557-5553  
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**Pinnacle Wireless**  
 a UniTek GLOBAL SERVICES company  
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 WINDSOR, CT 06095

**SITE NUMBER: CT1250**  
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 WINDHAM COUNTY

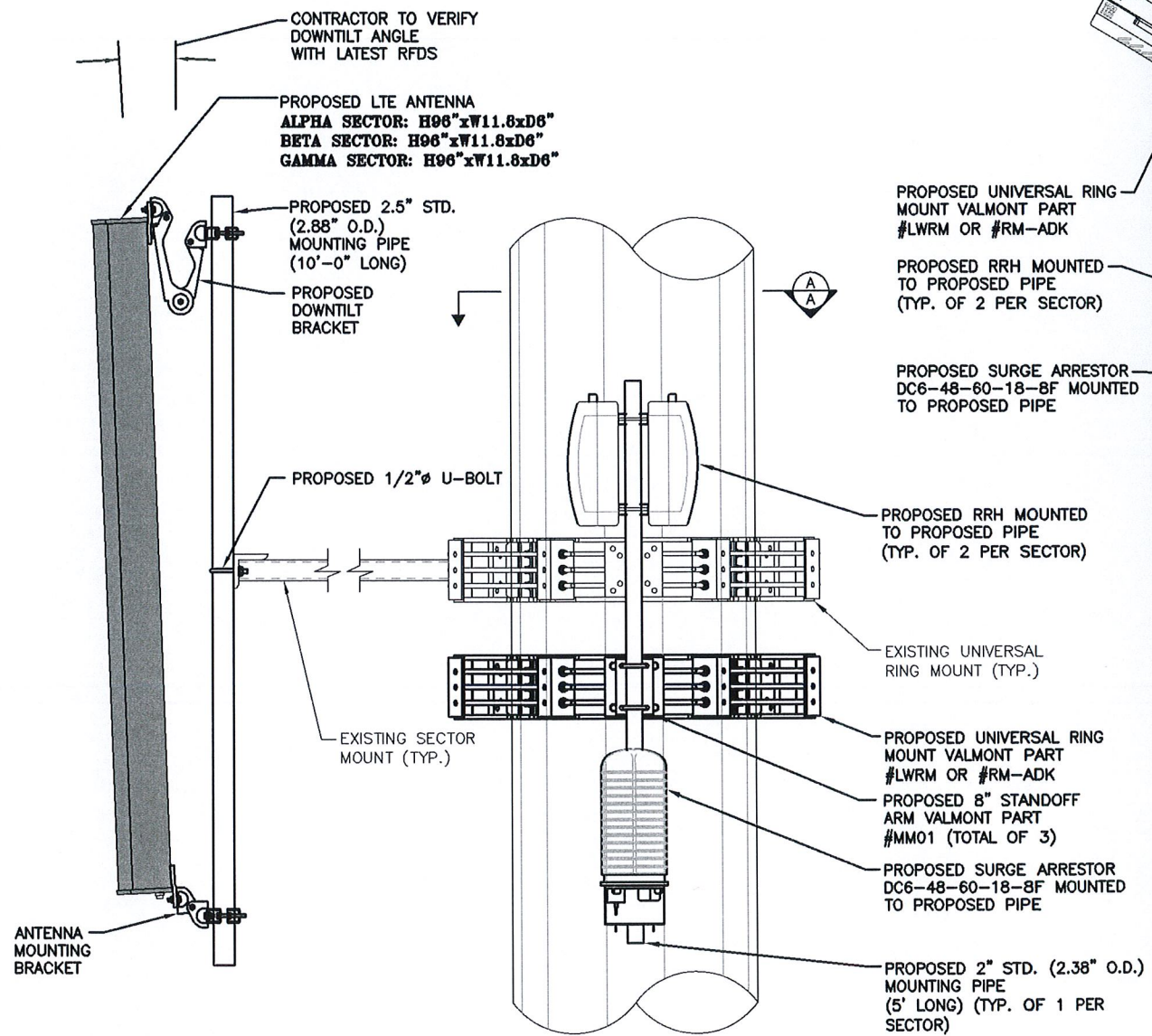
**at&t**  
 500 ENTERPRISE DRIVE, SUITE 3A  
 ROCKY HILL, CT 06067

1 03/05/13 ISSUED FOR CONSTRUCTION		RM	DC	DPH	AT&T ELEVATION & ANTENNA PLAN (LTE)	
0 08/07/12 ISSUED FOR REVIEW						
NO.	DATE	REVISIONS	BY	CHK APP'D	JOB NUMBER	
					1250.01	
SCALE: AS SHOWN				DESIGNED BY: DC	DRAWN BY: RM	DRAWING NUMBER
					A-2	
					1	



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

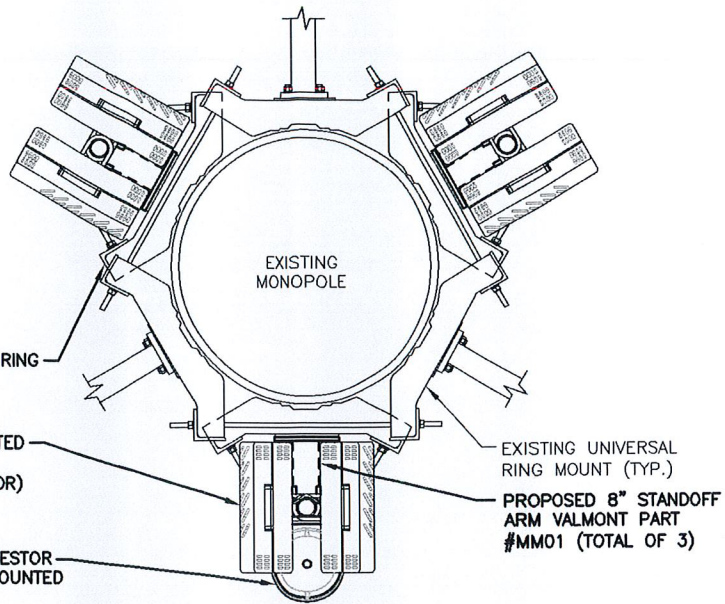
**NOTE:**  
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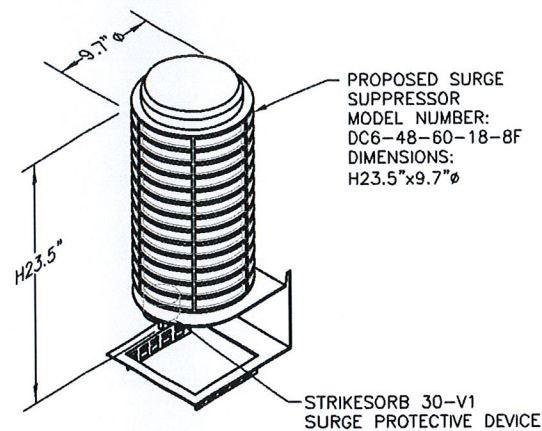
**PROPOSED RRH & SURGE ARRESTOR MOUNTING DETAIL**  
SCALE: N.T.S.

**NOTE:**  
1. MINIMUM MONOPOLE DIAMETER OF 2'-0" AT BANDING LOCATION. IF SMALLER, STACK RRH'S 3 OVER 3  
2. 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



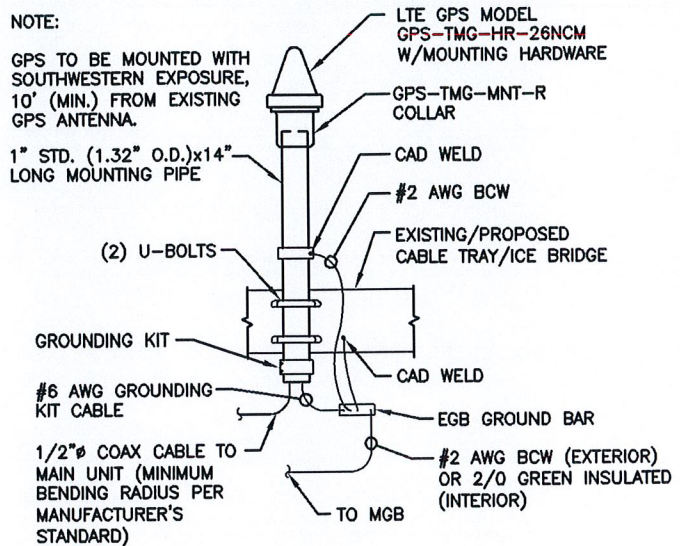
**SECTION A-A**  
SCALE: N.T.S.



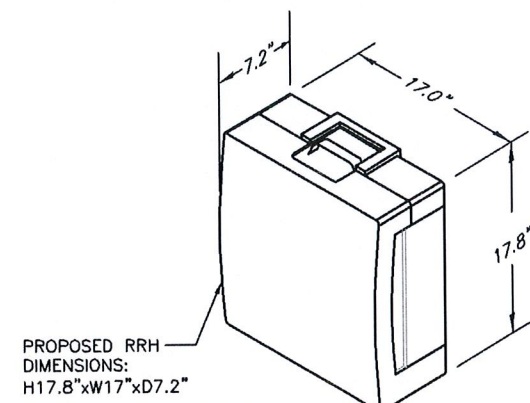
**NOTE:**  
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

**DC SURGE SUPPRESSOR DETAIL**  
SCALE: N.T.S.

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



**GPS MOUNTING DETAIL**  
SCALE: N.T.S.



**NOTE:**  
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

**RRH DETAIL**  
SCALE: N.T.S.

**Hudson Design Group, Inc.**  
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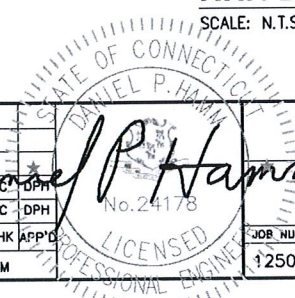
**SITE NUMBER: CT1250**  
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WINDHAM COUNTY

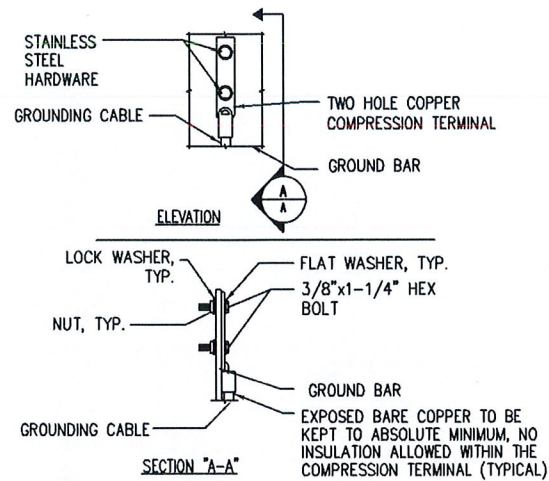
**at&t**  
500 ENTERPRISE DRIVE, SUITE 3A  
ROCKY HILL, CT 06067

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1	03/05/13	ISSUED FOR CONSTRUCTION	RM	DC	DPH	1250.01	A-3	1
0	08/07/12	ISSUED FOR REVIEW	RM	DC	DPH			

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

AT&T  
DETAILS (LTE)

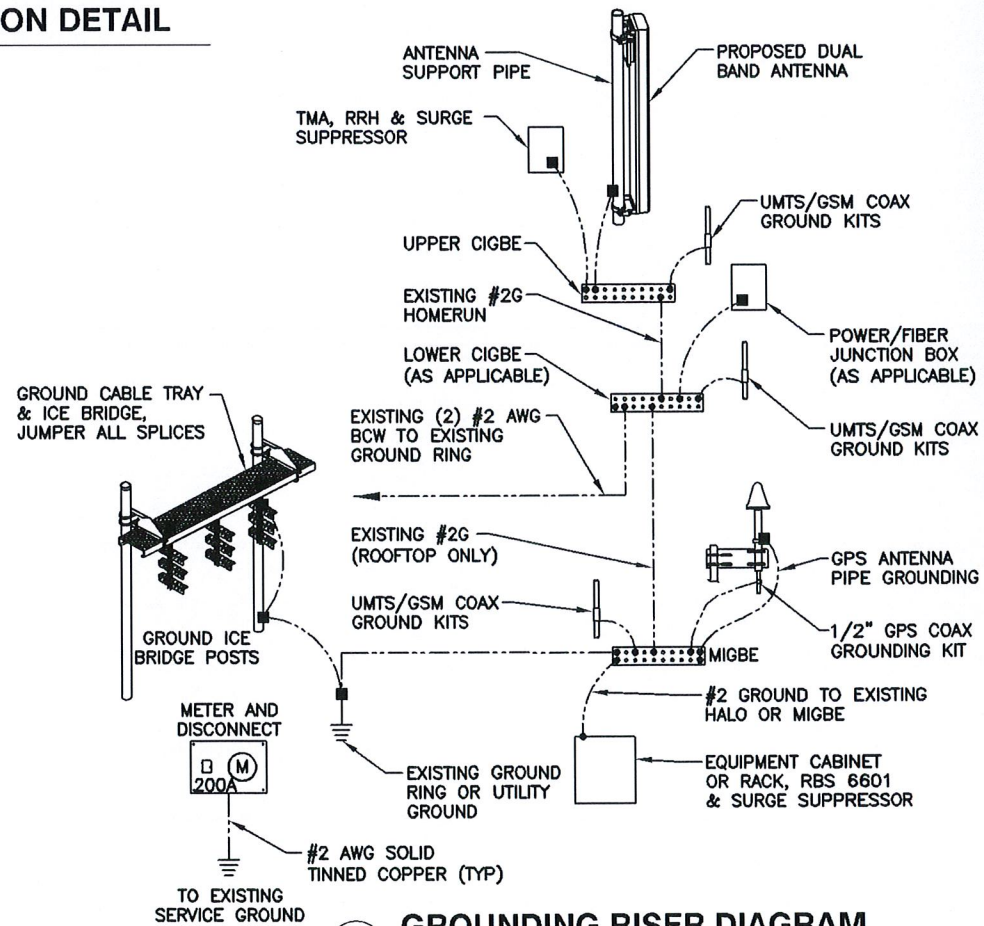




NOTE:  
 1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.  
 2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.  
 3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB.

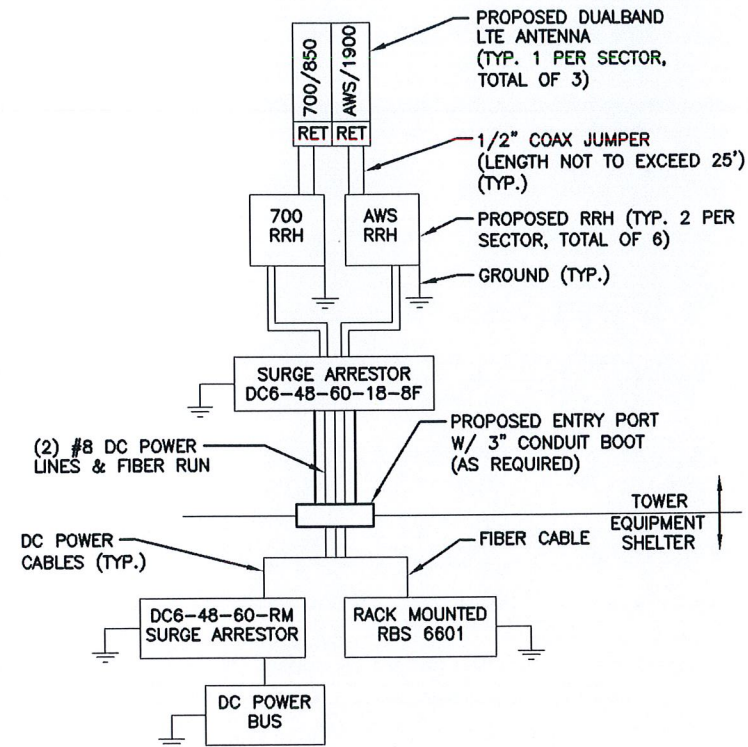
**TYPICAL GROUND BAR CONNECTION DETAIL**

1  
 N.T.S.



**GROUNDING RISER DIAGRAM**

3  
 N.T.S.



NOTE:  
 CONTRACTOR TO CONFIRM ALL PARTS & INSTALL ALL EQUIPMENT TO MANUFACTURER'S RECOMMENDATIONS.

**PLUMBING DIAGRAM**

2  
 N.T.S.

WIRELESS SOLUTIONS INC.			
NO.	REQ.	PART NO.	DESCRIPTION
1	1	HLGB-0420-IS	SOLID GND. BAR (20"x4"x1/4")
2	2		WALL MTG. BRKT.
3	2		INSULATORS
4	4		5/8"-11x1" H.H.C.S.
5	4		5/8 LOCKWASHER

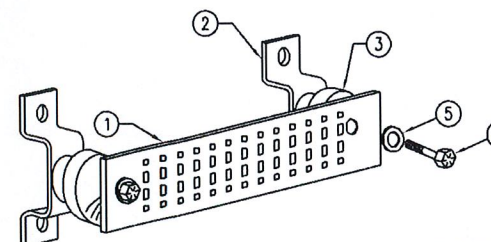
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

**SECTION "P" - SURGE PRODUCERS**

- CABLE ENTRY PORTS (HATCH PLATES) (#2)
- GENERATOR FRAMEWORK (IF AVAILABLE) (#2)
- TELCO GROUND BAR
- COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2)
- +24V POWER SUPPLY RETURN BAR (#2)
- 48V POWER SUPPLY RETURN BAR (#2)
- RECTIFIER FRAMES.

**SECTION "A" - SURGE ABSORBERS**

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



**GROUND BAR DETAIL**

4  
 N.T.S.

**Hudson Design Group, Inc.**  
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 WINDHAM COUNTY

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 500 ENTERPRISE DRIVE, SUITE 3A  
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1 03/05/13 ISSUED FOR CONSTRUCTION		RM DC DPH		AT&T	
0 08/07/12 ISSUED FOR REVIEW		RM DC DPH		PLUMBING DIAGRAM & GROUNDING DETAILS (LTE)	
NO.	DATE	REVISIONS	BY	CHK APPD	REV
SCALE: AS SHOWN		DESIGNED BY: DC	DRAWN BY: RM		JOB NUMBER: 1250.01
				DRAWING NUMBER: G-1	1

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



FDH Engineering, Inc., 6521 Meridien Dr. Raleigh, NC 27616, Ph. 919.755.1012, Fax 919.755.1031

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

**150' Monopole Tower**

**SBA Site Name: Knowlton  
SBA Site ID: CT13614-A-01  
New Cingular Site Name: Ashford Knowlton Hill Rd.  
New Cingular Site ID: CT1250**

FDH Project Number 1311831400

**Analysis Results**

Tower Components	54.8 %	Sufficient
Foundation	54.4 %	Sufficient

Prepared By:

*Heather W Jones*

Heather W. Jones, EI  
Project Engineer

Reviewed By:

*Christopher M Murphy*

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

**FDH Engineering, Inc.**  
6521 Meridien Dr.  
Raleigh, NC 27616  
(919) 755-1012  
info@fdh-inc.com



February 28, 2013

*Prepared pursuant to TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures & the 2005 Connecticut Building Code*

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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 Ashford, 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* and the *2005 Connecticut Building Code*. Information pertaining to the existing/proposed antenna loading, soil parameters, foundation dimensions, current tower geometry, and member sizes was obtained from:

- JGI Eastern, Inc. (Project No. 05360G) Geotechnical Evaluation dated June 28, 2005
- Sabre Communications Corp. (Job No. 06-06307) Stamped Permit Drawings dated June 29, 2005
- FDH, Inc. (Project No. 08-07650T) TIA Inspection Report dated October 7, 2008
- SBA Network Services, Inc.

The *basic design wind speed* per the *TIA/EIA-222-F* standards and the *2005 Connecticut Building Code* is 85 mph without ice and 38 mph with 1" radial ice. Ice is considered to increase in thickness with height.

## Conclusions

With the existing and proposed antennas from New Cingular in place at 137 ft, the tower meets the requirements of the *TIA/EIA-222-F* standards and the *2005 Connecticut Building Code* provided the **Recommendations** listed below are satisfied. Furthermore, provided the foundation was designed and constructed to support the original design reactions (see Sabre Job No. 06-06307), 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 and the *2005 Connecticut Building Code* are met with the existing and proposed loading in place, we have the following recommendations:

1. The proposed coax should be installed inside the pole's shaft.
2. The existing/proposed TMAs and diplexers should be installed directly behind the proposed panel antennas.
3. RRU/RRH Stipulation: The proposed equipment may be installed in any arrangement as determined by the client.

**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 the layout, FDH Engineering, Inc. should be contacted to perform a revised analysis.*

**Table 1 - Appurtenance Loading**

**Existing Loading:**

Antenna Elevation (ft)	Description	Coax and Lines <sup>1</sup>	Carrier	Mount Elevation (ft)	Mount Type
151	(6) RFS APXV18-204018	(12) 1-5/8"	T-Mobile	147	(1) 12' Low Profile Platform
149.5	(6) Remec S20057A-1 TMAs				
141	(6) Powerwave AXCM 800-1900-90-13	(1) 1/4" (12) 1-5/8"	New Cingular	137.5	(1) 14' Low Profile Platform
140	(6) Powerwave LGP21401 TMAs (6) Powerwave LGP13519 TMAs				
131.4	(3) Antel BXA-70063/6CF (6) Antel LPA-80080/6CF (3) Antel BXA-171085/12CF (6) FD9R6004/2C Diplexers	(12) 1-5/8"	Verizon	127	(1) 10' Low Profile Platform

1. Coax installed inside the pole's shaft, unless otherwise noted.

**Proposed Loading:**

Antenna Elevation (ft)	Description	Coax and Lines	Carrier	Mount Elevation (ft)	Mount Type
137	(6) Powerwave 7770 (3) KMW AM-X-CD-17-65-00T (6) Powerwave LGP21401 TMAs (6) Powerwave LGP21903 Diplexers	(12) 1-5/8" (2) 3/4" DC (1) 7/16" Fiber	New Cingular	137.5	(1) 14' LP Platform
135.5	(6) Ericsson RRUS11 RRUs			135.5	(1) Universal Ring Mount (Valmont Part No. LWRM)
	(1) Raycap DC2-48-60-18-8F Surge Arrestor				(1) 5'x2-3/8" Pipe Mount

## RESULTS

The following yield strength of steel for individual members was used for analysis:

**Table 2 - Material Strength**

Member Type	Yield Strength
Tower Shaft Sections	65 ksi
Base Plate	60 ksi
Anchor Bolts	75 ksi

**Table 3** displays the summary of the ratio (as a percentage) of force in the member to their capacities. Values greater than 100% indicate locations where the maximum force in the member exceeds its capacity. *Note: Capacities up to 100% are considered acceptable.* **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	150 - 96.75	Pole	TP38.7x25.7x0.375	35.2	Pass
L2	96.75 - 48	Pole	TP49.86x36.7904x0.4375	46.7	Pass
L3	48 - 0	Pole	TP60.46x47.7025x0.4375	54.8	Pass
		Anchor Bolts	(20) 2.25"Ø x 68" BC	51.0	Pass
		Base Plate	68" Sq. x 3" tk. PL	42.9	Pass

\*Capacities include 1/3 allowable stress increase for wind per TIA/EIA-222-F standards.

**Table 4 - Maximum Base Reactions**

Base Reactions	Current Analysis (TIA/EIA-222-F)	Original Design (TIA/EIA-222-F)
Axial	43 k	56 k
Shear	27 k	40 k
Moment	2,878 k-ft	5,289 k-ft



## GENERAL COMMENTS

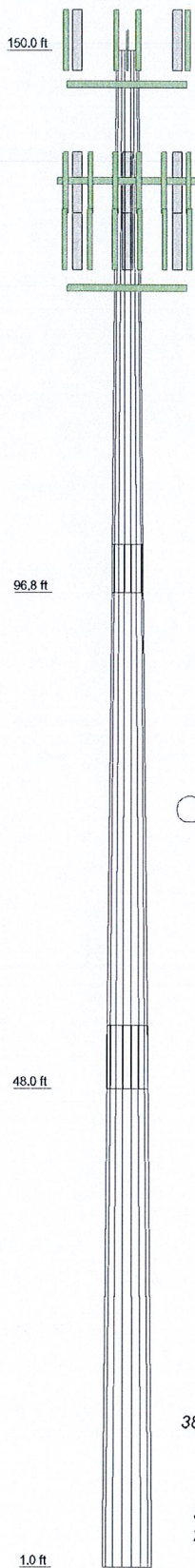
This engineering analysis is based upon the theoretical capacity of the structure. It is not a condition assessment of the tower and its foundation. It is the responsibility of SBA Network Services, Inc. to verify that the tower modeled and analyzed is the correct structure (with accurate antenna loading 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	53.25	18	0.3750	4.75	25.7000	38.7000	6.9
Length (ft)	2	53.50	18	0.4375	6.25	36.7904	49.9600	10.8
Number of Sides	3	53.25	18	0.4375	47.4582	60.4600	13.5	
Thickness (in)								
Socket Length (ft)								
Top Dia (in)								
Bot Dia (in)								
Grade								
Weight (K)								31.2



### DESIGNED APPURTENANCE LOADING

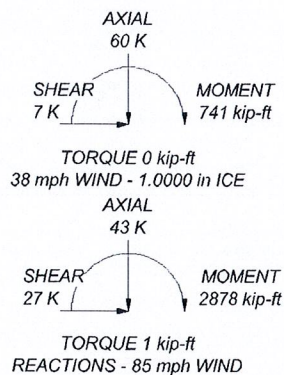
TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod	150	(2) LGP21903 Diplexer	137.5
(2) RFS APXV18-204018 w/Mount Pipe	147	(2) LGP21903 Diplexer	137.5
(2) RFS APXV18-204018 w/Mount Pipe	147	(2) LGP21903 Diplexer	137.5
(2) RFS APXV18-204018 w/Mount Pipe	147	14' Low Profile Platform	137.5
(2) S20057A-1	147	Empty Mount Pipe	137.5
(2) S20057A-1	147	Empty Mount Pipe	137.5
(2) Empty Mount Pipe	147	Empty Mount Pipe	137.5
(2) Empty Mount Pipe	147	Empty Mount Pipe	137.5
12' Low Profile Platform	147	5' x 2.4" Pipe Mount	135.5
(2) 7770.00 w/Mount Pipe	137.5	Valmont #LWRM mnt	135.5
(2) 7770.00 w/Mount Pipe	137.5	(2) Ericsson RRUS-11	135.5
(2) 7770.00 w/Mount Pipe	137.5	(2) Ericsson RRUS-11	135.5
KMW AM-X-CD-17-65-00T w/ Mount Pipe	137.5	(2) Ericsson RRUS-11	135.5
KMW AM-X-CD-17-65-00T w/ Mount Pipe	137.5	Raycap DC2-48-60-18-8F	135.5
KMW AM-X-CD-17-65-00T w/ Mount Pipe	137.5	10' Low Profile Platform	127
KMW AM-X-CD-17-65-00T w/ Mount Pipe	137.5	BXA-70063/6CF W/Mount Pipe	127
KMW AM-X-CD-17-65-00T w/ Mount Pipe	137.5	BXA-70063/6CF W/Mount Pipe	127
KMW AM-X-CD-17-65-00T w/ Mount Pipe	137.5	BXA-70063/6CF W/Mount Pipe	127
KMW AM-X-CD-17-65-00T w/ Mount Pipe	137.5	(2) LPA-80080/6CF W/Mount Pipe	127
KMW AM-X-CD-17-65-00T w/ Mount Pipe	137.5	(2) LPA-80080/6CF W/Mount Pipe	127
KMW AM-X-CD-17-65-00T w/ Mount Pipe	137.5	(2) LPA-80080/6CF W/Mount Pipe	127
(2) LGP21401 TMA	137.5	BXA-171085-12CF w/Mount Pipe	127
(2) LGP21401 TMA	137.5	BXA-171085-12CF w/Mount Pipe	127
(2) LGP21401 TMA	137.5	(2) FD9R6004	127
		(2) FD9R6004	127
		(2) FD9R6004	127


### MATERIAL STRENGTH

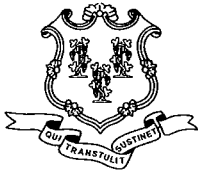
GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

### TOWER DESIGN NOTES

1. Tower is located in Windham 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 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 54.8%



 <b>FDH Engineering, Inc.</b> Tower Analysis	6521 Meridian Drive Raleigh, NC 27616 Phone: (919) 755-1012 FAX: (919) 755-1031	<b>Job: Knowlton, CT13614-A-01</b> Project: 1311831400 Client: SBA Network Services, Inc. Code: TIA/EIA-222-F Path:	Drawn by: Heather Jones Date: 02/28/13 App'd: Scale: NTS Dwg No. E-1
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# STATE OF CONNECTICUT

## CONNECTICUT SITING COUNCIL

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E-Mail: [siting.council@ct.gov](mailto:siting.council@ct.gov)

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

March 6, 2013

The Honorable Ralph H. Fletcher  
First Selectman  
Town of Ashford  
5 Town Hall Road  
Ashford, CT 06278

RE: **EM-CING-003-130305** – New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 99 Knowlton Hill Road, Ashford, Connecticut.

Dear Mr. Fletcher:

The Connecticut Siting Council (Council) received a request to modify an existing telecommunications facility, pursuant to Regulations of Connecticut State Agencies Section 16-50j-72, a copy of which has already been provided to you.

If you have any questions or comments regarding the proposal, please call me or inform the Council by March 20, 2013.

Thank you for your cooperation and consideration.

Very truly yours,

A handwritten signature in black ink that reads "L Roberts".

Linda Roberts  
Executive Director

LR/cm

c: Michael Gardner, Zoning Enforcement Officer, Town of Ashford