



# STATE OF CONNECTICUT

## CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

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

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

December 29, 2015

Daniel M. Laub, Esq.  
Cuddy & Feder LLP  
445 Hamilton Avenue, 14<sup>th</sup> Floor  
White Plains, NY 10601

RE: **EM-CING-069-130123; EM-AT&T-060-130321; EM-CING-069-130130**  
**EM-CING-088-130109; TS-AT&T-004-131223; TS-AT&T-069-131216**  
**EM-CING-128-130828; EM-CING-135-130910; EM-CING-156-130531**  
**EM-CING-086-130712; TS-AT&T-101-131108; EM-CING-158-130703**  
**EM-CING-073-130207; TS-AT&T-143-131227; EM-CING-103-130703**  
**EM-CING-143-130122; EM-CING-104-130819; EM-CING-158-130326**  
**TS-AT&T-164-131114; EM-CING-074-130322; EM-CING-003-130214**  
**EM-CING-015-130531; EM-AT&T-089-131230; EM-AT&T-051-130408**  
**EM-AT&T-118-131030**

Dear Attorney Laub:

The Connecticut Siting Council (Council) is in receipt of your letter dated December 24, 2015, submitted on behalf of New Cingular Wireless PCS, LLC (AT&T), requesting an extension of time to submit notices of completion of construction and associated post modification inspection reports for the above-referenced exempt modifications.

The Council previously granted six extension of time to submit notices of completion of construction and associated post modification inspection reports for the above-referenced exempt modifications on June 30, 2014; September 2, 2014; November 4, 2014; November 20, 2014; December 29, 2014; and February 24, 2015.

Therefore, the Council hereby denies an extension of time to submit notices of completion of construction and associated post modification inspection reports for the above-referenced exempt modifications that were approved in 2013.

Any modifications to these facilities will require explicit notice to the Council pursuant to Regulations of Connecticut State Agencies Section 16-50j-73 and a filing fee.

Thank you for your attention to this matter.

Sincerely,

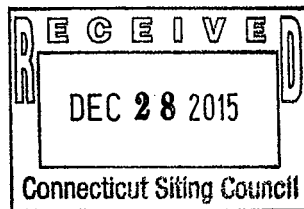
Melanie A. Bachman  
Acting Executive Director

MAB/cm

December 24, 2015

**VIA EMAIL & FEDEX**

Melanie Bachman, Esq.  
Acting Executive Director  
Connecticut Siting Council  
10 Franklin Square  
New Britain, CT 06051



Re: New Cingular Wireless PCS, LLC (AT&T)  
Exempt Modification/Tower Share Conditions  
Notifications of Completion & Extension Requests

*[Faint, illegible handwritten text]*

Dear Executive Director Bachman:

We are writing on behalf of our client, New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the Siting Council's requests for written notification of completion of construction and/or written notice of compliance with site-specific conditions for various modification filings made by AT&T and its vendors. Specifically, this letter addresses those sites related to the year 2013, listed in the attached correspondence. It is our understanding that these are the only sites remaining from 2013 that need an extension.

Accordingly, on behalf of AT&T and their vendors, we respectfully request an additional extension of time to June 30, 2016 for completion of all remaining 2013 non-tower sites.

Thank you once again for your continued consideration in this matter. Should you have any questions regarding the foregoing please do not hesitate to contact me.

Very truly yours,

A handwritten signature in black ink, appearing to read "Daniel M. Laub". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Daniel M. Laub

Enclosures

cc: Michele Briggs, AT&T

EM/TS #	Address	Town	Council Additional Conditions	Compliance with Council Additional Conditions Received	Notice of Completion Received	Decision Date	CSC Extension Granted
EM-CING-069-130123	1375 North Road	Dayville	Yes	No	No	3/8/2013	12/31/15
EM-AT&T-060-130321	370 Rockland Road	Guilford	Yes	No	No	4/5/2013	12/31/15
EM-CING-069-130130	246 East Franklin Street	Danielson	Yes	No	No	4/15/2013	12/31/15
EM-CING-088-130109	103 Eastside Boulevard	Naugatuck	N/A	N/A	No	4/15/2013	12/31/15
TS-AT&T-004-131223	376 Deercriff Road	Avon	N/A	N/A	No	6/28/2013	12/31/15
TS-AT&T-069-131216	1249 Hartford Pike	East Killingly	N/A	N/A	No	6/28/2013	12/31/15
EM-CING-128-130828	530 Brushy Hill Road	Simsbury	N/A	N/A	No	6/28/2013	12/31/15
EM-CING-135-130910	366 Old Long Ridge Road	Stamford	Yes	No	No	6/28/2013	12/31/15
EM-CING-156-130531	1 Burwell Road	West Haven	N/A	N/A	No	6/28/2013	12/31/15
EM-CING-086-130712	334 Route 85	Montville	Yes	No	No	7/12/2013	12/31/15
TS-AT&T-101-131108	50 Devine Street	North Haven	N/A	N/A	No	7/22/2013	12/31/15
EM-CING-158-130703	515 Post Road East	Westport	N/A	N/A	No	7/22/2013	12/31/15
EM-CING-073-130207	20 Mell Road	Lisbon	Yes	No	No	7/26/2013	12/31/15
TS-AT&T-143-131227	137 Wright Road	Torrington	Yes	No	No	7/26/2013	12/31/15
EM-CING-103-130703	177 West Rocks Road	Norwalk	N/A	N/A	No	8/8/2013	12/31/15
EM-CING-143-130122	1210 Highland Avenue	Torrington	Yes	No	No	8/16/2013	12/31/15
EM-CING-104-130819	39 Maennerchor Avenue	Norwich	Yes	No	No	8/23/2013	12/31/15
EM-CING-158-130326	880 Post Road East	Westport	Yes	No	No	9/13/2013	
TS-AT&T-164-131114	599 Matianuck Avenue	Windsor	N/A	N/A	No	9/27/2013	12/31/15
EM-CING-074-130322	438 BANTAM ROAD	LITCHFIELD	Yes	No	No	11/29/2013	
EM-CING-003-130214	353 Pumpkin Hill Road	Ashford	Yes	No	No	12/13/2013	
EM-CING-015-130531	1320 Chopsey Hill Road	Bridgeport	N/A	N/A	No	12/13/2013	
EM-AT&T-089-131230	One Hartford Square	New Britain	N/A	N/A	No	12/20/2013	
EM-AT&T-051-130408	280 Morehouse Drive	Fairfield	Yes	No	No	12/27/2013	
EM-AT&T-118-131030	845 Ethan Allen Highway	RIDGEFIELD	N/A	N/A	No	12/27/2013	



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March 1, 2013

John Lawrence  
New Cingular Wireless PCS, LLC  
95 Ryan Drive, Suite #1  
Raynham, MA 02767

RE: **EM-CING-003-130214** - New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 353 Pumpkin Hill Road, Ashford, Connecticut.

Dear Mr. Lawrence:

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

- Prior to antenna installation, the modifications identified in the (Revised) Structural Analysis Report prepared by Hudson Design Group dated January 28, 2013, and stamped by Gi Kai Wang shall be implemented;
- Within 45 days following completion of the antenna installation, a signed letter from a Professional Engineer duly licensed in the State of Connecticut shall be submitted to the Council to certify that the recommended modifications have been completed and the structure and foundation do not exceed 100 percent of the post-construction structural rating.
- Any deviation from the proposed modification as specified in this notice and supporting materials with Council shall render this acknowledgement invalid;
- Any material changes to this modification as proposed shall require the filing of a new notice with the Council;
- Within 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;
- The validity of this action shall expire one year from the date of this letter; and
- The applicant may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration;

The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated February 11, 2013. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General

Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

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

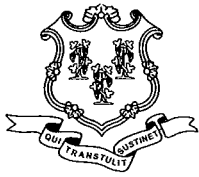
Very truly yours,



Linda Roberts  
Executive Director

LR/CDM/cm

c: The Honorable Ralph H. Fletcher, First Selectman, Town of Ashford  
Michael Gardner, Zoning Enforcement Officer, Town of Ashford



STATE OF CONNECTICUT  
CONNECTICUT SITING COUNCIL

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

February 20, 2013

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

RE: **EM-CING-003-130214** - New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 353 Pumpkin Hill Road, Ashford, Connecticut.

Dear First Selectman 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 6, 2013.

Thank you for your cooperation and consideration.

Very truly yours,

Linda Roberts  
Executive Director

LR/cm

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



EM-CING-003-130214

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

**John Lawrence**  
Real Estate Consultant  
95 Ryan Drive, Suite #1  
Raynham, MA 02767  
Phone: (781) 715-5532  
[jlawrence@clinellc.com](mailto:jlawrence@clinellc.com)

February 11, 2013

**ORIGINAL**

**RECEIVED**  
FEB 14 2013

CONNECTICUT  
SITING COUNCIL

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

**Re: Notice of Exempt Modification – Existing Telecommunications Facility at 353  
Pumpkin 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 353 Pumpkin 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 353 Pumpkin Hill Road, Ashford, CT 06278

The facility is owned by Charter Communications.

The existing facility consists of a 300 foot guyed 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 198'.


### **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

**John Lawrence**  
Real Estate Consultant  
95 Ryan Drive, Suite #1  
Raynham, MA 02767  
Phone: (781) 715-5532  
jlawrence@clinellc.com

February 11, 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 353  
Pumpkin 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 Charter 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).

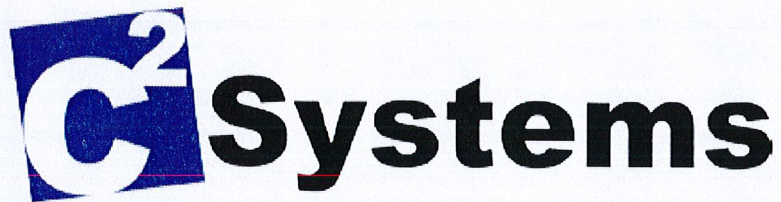
The attached letter fully sets forth the AT&T proposal. However, if you have any questions or require any further information on the plans for the site or the Siting Council’s procedures, please contact John Lawrence at (781) 715-5532 or Linda Roberts, Executive Director of the Connecticut Siting Council,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

CT1068

(Ashford)

353 Pumpkin Hill Road, Ashford, CT 06278

(a.k.a. Ashford - Pumpkin Hill Road)

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February 8, 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 guyed tower located at 353 Pumpkin Hill Road in Ashford, CT. The coordinates of the tower are 41° 50' 52.86" N, 72° 07' 16.81" 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:

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

Where:

EIRP = Effective Isotropic Radiated Power

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

H = Horizontal Distance from antenna in meters

V = Vertical Distance from radiation center of antenna in meters

Ground reflection factor of 1.6

Off Beam Loss is determined by the selected antenna pattern

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

#### 4. Calculation Results

Table 1 below outlines the power density information for the site. 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 patterns of the proposed AT&T antennas. The calculated results for AT&T in Table 1 include a nominal 10 dB off-beam pattern loss to account for the lower relative gain below the antennas.

Carrier	Antenna Height (Feet)	Operating Frequency (MHz)	Number of Trans.	ERP Per Transmitter (Watts)	Power Density (mw/cm <sup>2</sup> )	Limit	%MPE
AT&T UMTS	225	880	1	500	0.0036	0.5867	0.61%
AT&T GSM	225	880	4	296	0.0084	0.5867	1.43%
AT&T GSM	225	1900	2	427	0.0061	1.0000	0.61%
Charter	Measurements Resulted In No Power Density Levels Found						
Verizon	240	869	9	200	0.0112	0.5793	1.94%
Verizon	240	1900	3	200	0.0037	1.0000	0.37%
AT&T UMTS	197.5	880	2	565	0.0010	0.5867	0.18%
AT&T UMTS	197.5	1900	2	875	0.0016	1.0000	0.16%
AT&T LTE	197.5	734	1	1771	0.0016	0.4893	0.33%
AT&T GSM	197.5	880	1	283	0.0003	0.5867	0.04%
AT&T GSM	197.5	1900	4	525	0.0019	1.0000	0.19%
						<b>Total</b>	<b>3.22%</b>

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

<sup>1</sup> The existing CSC filing for AT&T 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 1/14/2013. 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 Hudson Design Group Structural Analysis dated November 12, 2012.

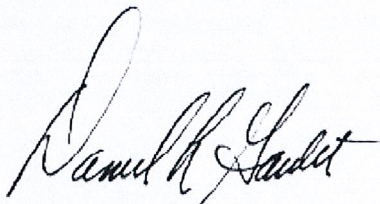
## 5. Conclusion

The above analysis verifies that emissions from the existing site will be below the maximum power density levels as outlined by the FCC in the OET Bulletin 65 Ed. 97-01. Even when using conservative methods, the cumulative power density from the proposed transmit antennas at the existing facility is well below the limits for the general public. The highest expected percent of Maximum Permissible Exposure at ground level is **3.22% 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

February 8, 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.

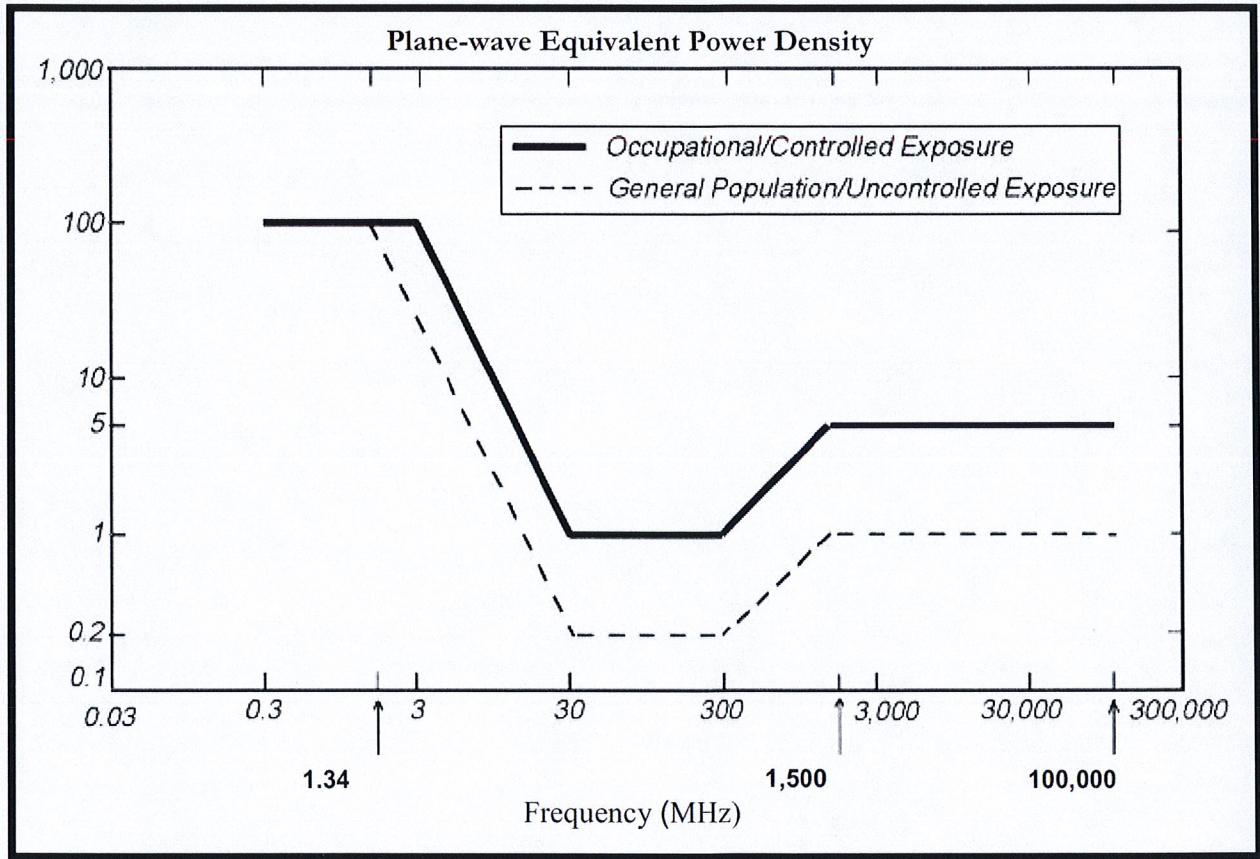
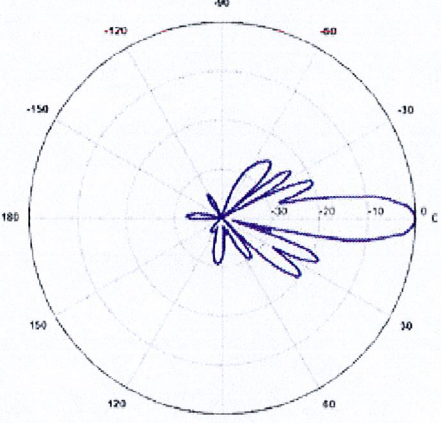
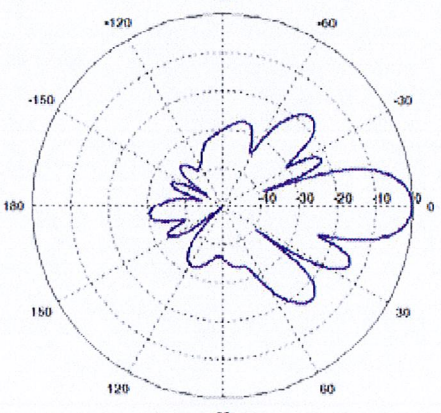
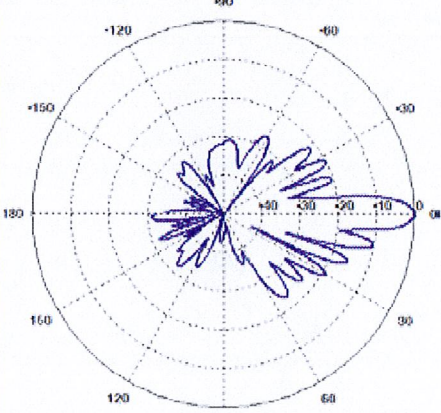


Figure 1: Graph of FCC Limits for Maximum Permissible Exposure (MPE)

### 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>	

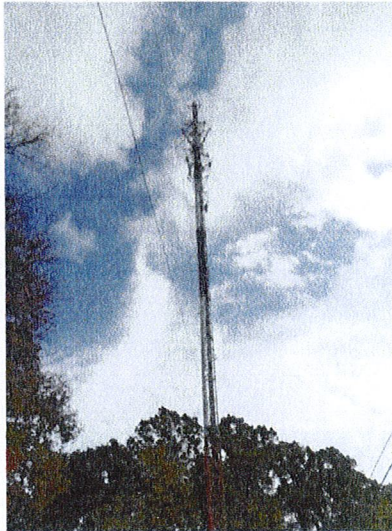
(Revised)  
**STRUCTURAL ANALYSIS REPORT**

For

**CT1068**  
**ASHFORD**

353 PUMPKIN HILL ROAD  
ASHFORD, CT 06278

**Antennas Mounted to the Tower**



Prepared for:

**Pinnacle**  
Wireless



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

Dated: January 28, 2013

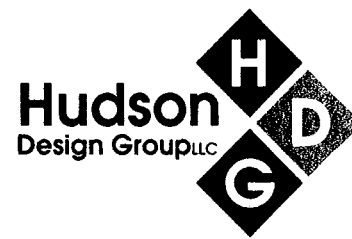
Prepared by:



1600 Osgood Street Building 20 North, Suite 3090  
North Andover, MA 01845  
Phone: (978) 557-5553

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#### SCOPE OF WORK:

Hudson Design Group LLC (HDG) has been authorized by AT&T to conduct a structural evaluation of the 300' guyed tower supporting the proposed AT&T antennas located at elevation 197.5' above the ground level.

This report represents this office's findings, conclusions and recommendations pertaining to the support of AT&T's existing and proposed antennas listed below.

Record drawings of the existing tower were not available for our use. The previous structural analysis report prepared by All-Points Technology Corporation, P.C., dated January 15, 2009 was available and obtained for our use. This office conducted an on-site visual survey and tower mapping on October 15, 2012 to record dimensional properties of the existing tower and its appurtenances. Attendees included Nick Bestor (HDG - Associate) and Jay Lee (HDG - Associate).

This office conducted a foundation investigation to determine the as-built dimensions of the tower mast and guy anchor foundations. Geotechnical report was also prepared by this office.

#### CONCLUSION SUMMARY:

HDG performed structural analysis of the existing tower with the following modifications:

1. **Strengthen tower legs from El.0' to El.40.6'.**
2. **Replace guy wires at El.233.9'.**
3. **Strengthen guy anchor foundations.**

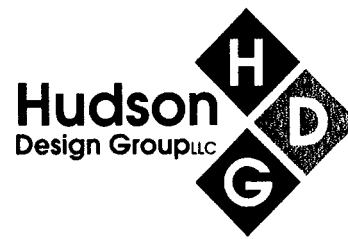
Based on our evaluation, we have determined that the existing tower and foundation **are in conformance** with the ANSI/TIA-222-F Standard for the loading considered under the criteria listed in this report. The tower structure is rated at **98.5%** - (Leg at Tower Section T15 from EL.0.6' to EL.20.6' Controlling).



**APPURTENANCES CONFIGURATION:**

Tenant	Appurtenances	Elev.	Mount
	Lighting Rod	302.5'	Tower Leg
	10' Omni	305'	Tower Leg
	7' Yagi	268'	Tower Leg
	8' Dish	269'	3' Side Mount Standoff
	15' Yagi	263'	Tower Leg
	6' Dish	260'	4' Side Mount Standoff
	15' Yagi	249'	Tower Leg
	(6) 948F85 Panel Antennas	242'	14' T-Frame
	(6) 4' Panel Antennas	242'	14' T-Frame
	(3) 10' Omni	225'	6' Side Mount Standoff
	8' Dish	210'	6' Side Mount Standoff
<b>AT&amp;T</b>	<b>(6) Powerwave 7770 Antennas</b>	197.5'	14' T-Frame
<b>AT&amp;T</b>	<b>(6) Powerwave 21400 TMAs</b>	197.5'	14' T-Frame
<b>AT&amp;T</b>	<b>(6) Powerwave 21900</b>	197.5'	14' T-Frame
<b>AT&amp;T</b>	<b>(3) Powerwave 7020</b>	197.5'	14' T-Frame
<b>AT&amp;T</b>	<b>(3) AM-X-CD-17-65-00 Antennas</b>	197.5'	14' T-Frame
<b>AT&amp;T</b>	<b>(6) RRUs</b>	197.5'	14' T-Frame
<b>AT&amp;T</b>	<b>Surge Arrestor DC6-48-60-18-8F</b>	197.5'	Tower Leg
	5' Yagi	191.5'	6' Side Mount Standoff
	(2) 8'x4' Dipole	181.3'	2' Side Mount Standoff
	15' Omni	176'	3' Side Mount Standoff
	6' Yagi	167.3'	2' Side Mount Standoff
	7' Yagi	158.5'	4' Side Mount Standoff
	6' Dish	155'	2' Side Mount Standoff
	6' Dish	150.5'	Tower Leg
	Mid Beacon	150.7'	Tower Leg
	7' Yagi	119.3'	Tower Leg
	6' Dish	109.3'	1.5' Side Mount Standoff
	8' Dish	100'	Tower Leg
	GPS	84'	Tower Leg
	Weather Head	65.5'	3' Side Mount Standoff
	Box 11"x9.5"x4"	10.5'	Tower Leg

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



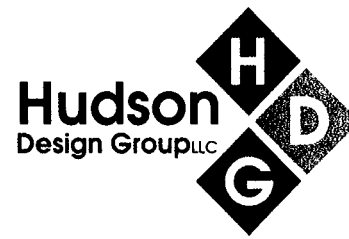
**AT&T EXISTING/PROPOSED COAX CABLES:**

Tenant	Coax Cables	Elev.	Mount
AT&T	(12) 1 5/8" Cables	197.5'	Face of Tower
AT&T	<b>Fiber Cable</b>	197.5'	Face of Tower
AT&T	<b>(2) DC Power Cables</b>	197.5'	Face of Tower

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

**ANALYSIS RESULTS SUMMARY:**

Component	Max. Stress Ratio	Elev. of Component (ft)	Pass/Fail	Comments
Legs	<b>98.5 %</b>	0.58 – 20.58	PASS	<b>Controlling</b>
Diagonals	31.8 %	160.58 – 180.58	PASS	
Horizontals	17.9 %	220.58 – 240.58	PASS	
Top Girt	48.2 %	220.58 – 240.58	PASS	
Bottom Girt	23.2 %	0.58 – 20.58	PASS	
Guy	91.4 %	170.6	PASS	
Torque Arm	58.1 %	233.9	PASS	



**DESIGN CRITERIA:**

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

City/Town: Ashford  
County: Windham  
Wind Load: 85 mph (fastest mile)  
105 mph (3 second gust)  
Nominal Ice Thickness: 1/2 inch

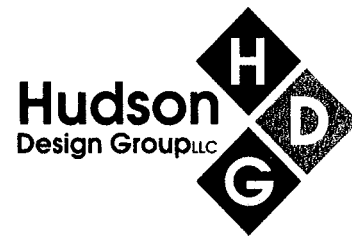
2. Approximate height above grade to proposed antennas: 197.5'

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

**ASSUMPTIONS:**

1. Material strength of the existing structure was not available for structural analysis, and was assumed as follows:  
Pipes and Solid Rods:  $F_y=50$  ksi  
Angles and Plates:  $F_y=36$  ksi
2. The appurtenances configuration is as stated in this report. All antennas, coax cables and waveguide cables are assumed to be properly installed and supported as per the manufacturer requirements.
3. The tower and foundation are properly constructed and maintained. All structural members and their connections are assumed to be in good condition and are free from defects with no deterioration to its member capacities.
4. The support mounts and platforms are not analyzed and are considered adequate to support the loading. The analysis is limited to the primary support structure itself.
5. All prior structural modification, if any, are assumed to be as per the data supplied (if available), and installed properly.

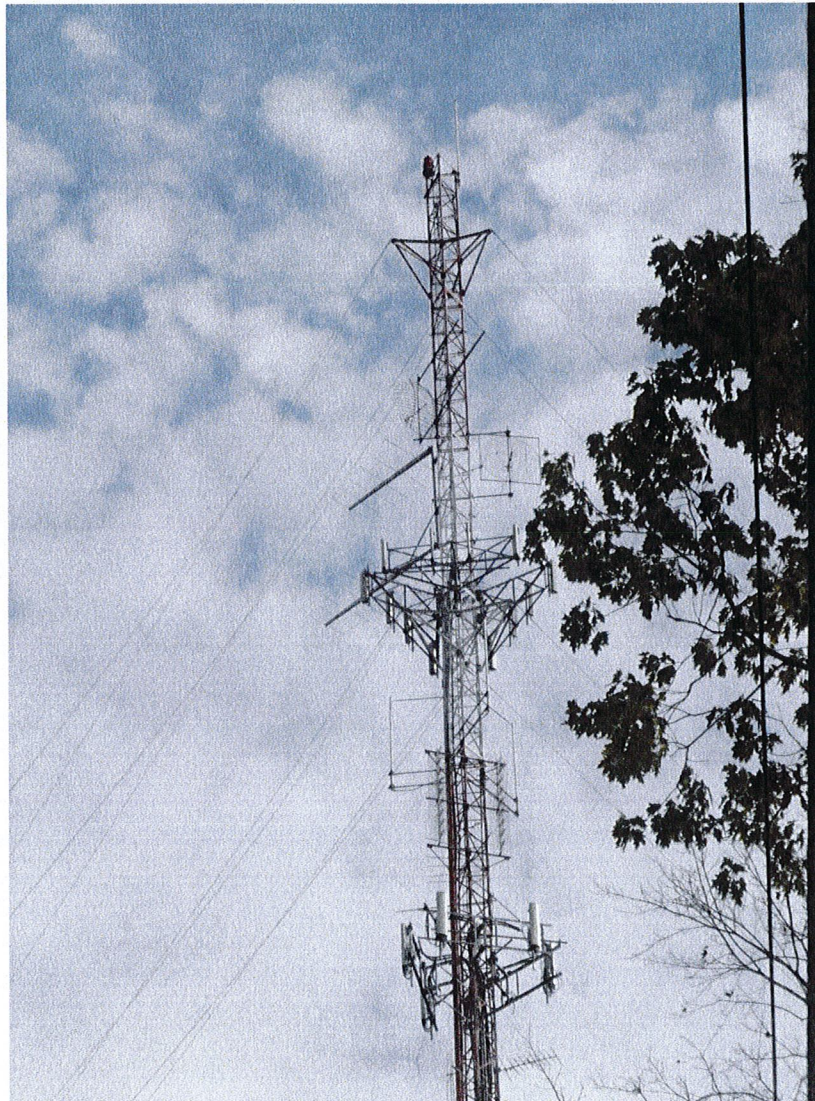




**SUPPORT RECOMMENDATIONS:**

HDG recommends that the proposed antennas and RRHs be mounted on the existing T-frame supported by the tower; the proposed surge arrestor be mounted on the tower leg.

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



**Photo 1:** Photo illustrating the Tower with Appurtenances shown.



## CALCULATIONS



<b>Job</b>	CT 1068 Modifications Ashford, CT	<b>Page</b>	1 of 15
<b>Project</b>	300 ft Guyed Tower	<b>Date</b>	14:53:00 01/28/13
<b>Client</b>	AT&T	<b>Designed by</b>	kw

**Tower Input Data**

The main tower is a 3x guyed tower with an overall height of 300.58 ft above the ground line.

The base of the tower is set at an elevation of 0.58 ft above the ground line.

The face width of the tower is 3.25 ft at the top and 3.25 ft at the base.

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

The following design criteria apply:

Tower is located in Windham County, Connecticut.

Basic wind speed of 85 mph.

Nominal ice thickness of 0.5000 in.

Ice density of 56 pcf.

A wind speed of 74 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 50 mph.

Pressures are calculated at each section.

Safety factor used in guy design is 2.

Stress ratio used in tower member design is 1.333.

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

**Tower Section Geometry**

<i>Tower Section</i>	<i>Tower Elevation</i>	<i>Assembly Database</i>	<i>Description</i>	<i>Section Width</i>	<i>Number of Sections</i>	<i>Section Length</i>
	<i>ft</i>			<i>ft</i>		<i>ft</i>
T1	300.58-280.58			3.25	1	20.00
T2	280.58-260.58			3.25	1	20.00
T3	260.58-240.58			3.25	1	20.00
T4	240.58-220.58			3.25	1	20.00
T5	220.58-200.58			3.25	1	20.00
T6	200.58-180.58			3.25	1	20.00
T7	180.58-160.58			3.25	1	20.00
T8	160.58-140.58			3.25	1	20.00
T9	140.58-120.58			3.25	1	20.00
T10	120.58-100.58			3.25	1	20.00
T11	100.58-80.58			3.25	1	20.00
T12	80.58-60.58			3.25	1	20.00
T13	60.58-40.58			3.25	1	20.00
T14	40.58-20.58			3.25	1	20.00
T15	20.58-0.58			3.25	1	20.00

**Tower Section Geometry (cont'd)**

<i>Tower Section</i>	<i>Tower Elevation</i>	<i>Diagonal Spacing</i>	<i>Bracing Type</i>	<i>Has K Brace End Panels</i>	<i>Has Horizontals</i>	<i>Top Girt Offset</i>	<i>Bottom Girt Offset</i>
	<i>ft</i>	<i>ft</i>				<i>in</i>	<i>in</i>
T1	300.58-280.58	3.28	K Brace Right	No	Yes	2.0000	2.0000
T2	280.58-260.58	3.28	K Brace Right	No	Yes	2.0000	2.0000
T3	260.58-240.58	3.28	K Brace Right	No	Yes	2.0000	2.0000
T4	240.58-220.58	3.28	K Brace Right	No	Yes	2.0000	2.0000
T5	220.58-200.58	3.28	K Brace Right	No	Yes	2.0000	2.0000

<b>Job</b>	CT 1068 Modifications Ashford, CT	<b>Page</b>	2 of 15
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<b>Client</b>	AT&T	<b>Designed by</b>	kw

Tower Section	Tower Elevation <i>ft</i>	Diagonal Spacing <i>ft</i>	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset <i>in</i>	Bottom Girt Offset <i>in</i>
T6	200.58-180.58	3.28	K Brace Right	No	Yes	2.0000	2.0000
T7	180.58-160.58	3.28	K Brace Right	No	Yes	2.0000	2.0000
T8	160.58-140.58	3.28	K Brace Right	No	Yes	2.0000	2.0000
T9	140.58-120.58	3.28	K Brace Right	No	Yes	2.0000	2.0000
T10	120.58-100.58	3.28	K Brace Right	No	Yes	2.0000	2.0000
T11	100.58-80.58	3.28	K Brace Right	No	Yes	2.0000	2.0000
T12	80.58-60.58	3.28	K Brace Right	No	Yes	2.0000	2.0000
T13	60.58-40.58	3.28	K Brace Right	No	Yes	2.0000	2.0000
T14	40.58-20.58	3.28	K Brace Right	No	Yes	2.0000	2.0000
T15	20.58-0.58	3.28	K Brace Right	No	Yes	2.0000	2.0000

**Tower Section Geometry (cont'd)**

Tower Elevation <i>ft</i>	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 300.58-280.58	Pipe	ROHN 3 STD	A572-50 (50 ksi)	Solid Round	1 1/2	A572-50 (50 ksi)
T2 280.58-260.58	Pipe	ROHN 3 STD	A572-50 (50 ksi)	Solid Round	1 1/2	A572-50 (50 ksi)
T3 260.58-240.58	Pipe	ROHN 3 STD	A572-50 (50 ksi)	Solid Round	1 1/2	A572-50 (50 ksi)
T4 240.58-220.58	Pipe	ROHN 3 STD	A572-50 (50 ksi)	Solid Round	1 1/2	A572-50 (50 ksi)
T5 220.58-200.58	Pipe	ROHN 3 STD	A572-50 (50 ksi)	Solid Round	1 1/2	A572-50 (50 ksi)
T6 200.58-180.58	Pipe	ROHN 3 STD	A572-50 (50 ksi)	Solid Round	1 1/2	A572-50 (50 ksi)
T7 180.58-160.58	Pipe	ROHN 3 STD	A572-50 (50 ksi)	Solid Round	1 1/2	A572-50 (50 ksi)
T8 160.58-140.58	Pipe	ROHN 3 STD	A572-50 (50 ksi)	Solid Round	1 1/2	A572-50 (50 ksi)
T9 140.58-120.58	Pipe	ROHN 3 STD	A572-50 (50 ksi)	Solid Round	1 1/2	A572-50 (50 ksi)
T10 120.58-100.58	Pipe	ROHN 3 STD	A572-50 (50 ksi)	Solid Round	1 1/2	A572-50 (50 ksi)
T11 100.58-80.58	Pipe	ROHN 3 STD	A572-50 (50 ksi)	Solid Round	1 1/2	A572-50 (50 ksi)
T12 80.58-60.58	Pipe	ROHN 3 STD	A572-50 (50 ksi)	Solid Round	1 1/2	A572-50 (50 ksi)
T13 60.58-40.58	Pipe	ROHN 3 STD	A572-50 (50 ksi)	Solid Round	1 1/2	A572-50 (50 ksi)
T14 40.58-20.58	Pipe	ROHN 3 STD Mod. (CT1068)	A572-50 (50 ksi)	Solid Round	1 1/2	A572-50 (50 ksi)
T15 20.58-0.58	Pipe	ROHN 3 STD Mod. (CT1068)	A572-50 (50 ksi)	Solid Round	1 1/2	A572-50 (50 ksi)

**Tower Section Geometry (cont'd)**

Tower Elevation <i>ft</i>	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 300.58-280.58	Flat Bar	2x1/2	A36	Flat Bar	2x1/2	A36

# tnxTower

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<b>Client</b>	AT&T	<b>Designed by</b>	kw

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T2 280.58-260.58	Flat Bar	2x1/2	(36 ksi) A36	Flat Bar	2x1/2	(36 ksi) A36
T3 260.58-240.58	Flat Bar	2x1/2	(36 ksi) A36	Flat Bar	2x1/2	(36 ksi) A36
T4 240.58-220.58	Flat Bar	2x1/2	(36 ksi) A36	Flat Bar	2x1/2	(36 ksi) A36
T5 220.58-200.58	Flat Bar	2x1/2	(36 ksi) A36	Flat Bar	2x1/2	(36 ksi) A36
T6 200.58-180.58	Flat Bar	2x1/2	(36 ksi) A36	Flat Bar	2x1/2	(36 ksi) A36
T7 180.58-160.58	Flat Bar	2x1/2	(36 ksi) A36	Flat Bar	2x1/2	(36 ksi) A36
T8 160.58-140.58	Flat Bar	2x1/2	(36 ksi) A36	Flat Bar	2x1/2	(36 ksi) A36
T9 140.58-120.58	Flat Bar	2x1/2	(36 ksi) A36	Flat Bar	2x1/2	(36 ksi) A36
T10 120.58-100.58	Flat Bar	2x1/2	(36 ksi) A36	Flat Bar	2x1/2	(36 ksi) A36
T11 100.58-80.58	Flat Bar	2x1/2	(36 ksi) A36	Flat Bar	2x1/2	(36 ksi) A36
T12 80.58-60.58	Flat Bar	2x1/2	(36 ksi) A36	Flat Bar	2x1/2	(36 ksi) A36
T13 60.58-40.58	Flat Bar	2x1/2	(36 ksi) A36	Flat Bar	2x1/2	(36 ksi) A36
T14 40.58-20.58	Flat Bar	2x1/2	(36 ksi) A36	Flat Bar	2x1/2	(36 ksi) A36
T15 20.58-0.58	Flat Bar	2x1/2	(36 ksi) A36	Flat Bar	2x1/2	(36 ksi) A36

## Tower Section Geometry (cont'd)

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 300.58-280.58	None	Solid Round		A572-50 (50 ksi)	Solid Round	1 1/2	A572-50 (50 ksi)
T2 280.58-260.58	None	Solid Round		A572-50 (50 ksi)	Solid Round	1 1/2	A572-50 (50 ksi)
T3 260.58-240.58	None	Solid Round		A572-50 (50 ksi)	Solid Round	1 1/2	A572-50 (50 ksi)
T4 240.58-220.58	None	Solid Round		A572-50 (50 ksi)	Solid Round	1 1/2	A572-50 (50 ksi)
T5 220.58-200.58	None	Solid Round		A572-50 (50 ksi)	Solid Round	1 1/2	A572-50 (50 ksi)
T6 200.58-180.58	None	Solid Round		A572-50 (50 ksi)	Solid Round	1 1/2	A572-50 (50 ksi)
T7 180.58-160.58	None	Solid Round		A572-50 (50 ksi)	Solid Round	1 1/2	A572-50 (50 ksi)
T8 160.58-140.58	None	Solid Round		A572-50 (50 ksi)	Solid Round	1 1/2	A572-50 (50 ksi)
T9 140.58-120.58	None	Solid Round		A572-50 (50 ksi)	Solid Round	1 1/2	A572-50 (50 ksi)
T10 120.58-100.58	None	Solid Round		A572-50 (50 ksi)	Solid Round	1 1/2	A572-50 (50 ksi)
T11 100.58-80.58	None	Solid Round		A572-50 (50 ksi)	Solid Round	1 1/2	A572-50 (50 ksi)

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<b>Client</b>	AT&T	<b>Designed by</b>	kw

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T12 80.58-60.58	None	Solid Round		A572-50 (50 ksi)	Solid Round	1 1/2	A572-50 (50 ksi)
T13 60.58-40.58	None	Solid Round		A572-50 (50 ksi)	Solid Round	1 1/2	A572-50 (50 ksi)
T14 40.58-20.58	None	Solid Round		A572-50 (50 ksi)	Solid Round	1 1/2	A572-50 (50 ksi)
T15 20.58-0.58	None	Solid Round		A572-50 (50 ksi)	Solid Round	1 1/2	A572-50 (50 ksi)

**Guy Data**

Guy Elevation ft	Guy Grade	Guy Size	Initial Tension lb	%	Guy Modulus ksi	Guy Weight plf	L <sub>w</sub> ft	Anchor Radius ft	Anchor Azimuth Adj. °	Anchor Elevation ft	End Fitting Efficiency %
284.024	EHS	A 1/2	2690.00	10%	21000	0.517	353.89	220.00	0.0000	5.00	100%
		B 1/2	2690.00	10%	21000	0.517	355.47	220.00	0.0000	3.00	100%
		C 1/2	2690.00	10%	21000	0.517	359.43	220.00	0.0000	-2.00	100%
233.858	EHS	A 5/8	4240.00	10%	21000	0.813	315.92	220.00	0.0000	5.00	100%
		B 5/8	4240.00	10%	21000	0.813	317.37	220.00	0.0000	3.00	100%
		C 5/8	4240.00	10%	21000	0.813	321.02	220.00	0.0000	-2.00	100%
170.58	EHS	A 1/2	2690.00	10%	21000	0.517	273.65	220.00	0.0000	5.00	100%
		B 1/2	2690.00	10%	21000	0.517	274.87	220.00	0.0000	3.00	100%
		C 1/2	2690.00	10%	21000	0.517	277.94	220.00	0.0000	-2.00	100%
133.858	EHS	A 1/2	2690.00	10%	21000	0.517	236.70	200.00	0.0000	4.00	100%
		B 1/2	2690.00	10%	21000	0.517	237.25	200.00	0.0000	3.00	100%
		C 1/2	2690.00	10%	21000	0.517	239.47	200.00	0.0000	-1.00	100%
90.58	EHS	A 1/2	2690.00	10%	21000	0.517	216.04	200.00	0.0000	4.00	100%
		B 1/2	2690.00	10%	21000	0.517	216.44	200.00	0.0000	3.00	100%
		C 1/2	2690.00	10%	21000	0.517	218.09	200.00	0.0000	-1.00	100%
47.3022	EHS	A 1/2	2690.00	10%	21000	0.517	202.64	200.00	0.0000	4.00	100%
		B 1/2	2690.00	10%	21000	0.517	202.85	200.00	0.0000	3.00	100%
		C 1/2	2690.00	10%	21000	0.517	203.76	200.00	0.0000	-1.00	100%

**Guy Data(cont'd)**

Guy Elevation ft	Mount Type	Torque-Arm Spread ft	Torque-Arm Leg Angle °	Torque-Arm Style	Torque-Arm Grade	Torque-Arm Type	Torque-Arm Size
284.024	Torque Arm	6.50	30.0000	Bat Ear	A36 (36 ksi)	Single Angle	L2x3x1/2
233.858	Torque Arm	6.50	30.0000	Bat Ear	A36 (36 ksi)	Single Angle	L2x3x1/2
170.58	Torque Arm	6.50	30.0000	Bat Ear	A36 (36 ksi)	Single Angle	L2x3x1/2
133.858	Corner						
90.58	Corner						
47.3022	Corner						



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<b>Job</b>	CT 1068 Modifications Ashford, CT	<b>Page</b>	5 of 15
<b>Project</b>	300 ft Guyed Tower	<b>Date</b>	14:53:00 01/28/13
<b>Client</b>	AT&T	<b>Designed by</b>	kw

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

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
1 5/8	A	Yes	Ar (CfAe)	300.00 - 7.00	1	1	0.0000	1.8000		1.04
1/2	A	Yes	Ar (CfAe)	269.00 - 7.00	2	1	0.0000	0.5800		0.25
1/2	A	Yes	Ar (CfAe)	259.50 - 7.00	2	1	0.0000	0.5800		0.25
1/2	A	Yes	Ar (CfAe)	256.00 - 7.00	2	2	0.0000	0.5800		0.25
1 5/8	B	Yes	Ar (CfAe)	241.00 - 7.00	12	12	0.0000	1.8000		1.04
7/8	A	Yes	Ar (CfAe)	220.00 - 7.00	3	3	0.0000	1.1100		0.54
1/2	A	Yes	Ar (CfAe)	212.00 - 7.00	1	1	0.0000	0.5800		0.25
1 5/8	C	Yes	Ar (CfAe)	197.50 - 7.00	12	6	0.0000	1.8000		1.04
(AT&T - Existing)										
1/2	A	Yes	Ar (CfAe)	186.00 - 7.00	1	1	0.0000	0.5800		0.25
1/2	A	Yes	Ar (CfAe)	181.30 - 7.00	2	2	0.0000	0.5800		0.25
1/2	A	Yes	Ar (CfAe)	168.70 - 7.00	1	1	0.0000	0.5800		0.25
1/2	A	Yes	Ar (CfAe)	164.30 - 7.00	1	1	0.0000	0.5800		0.25
1/2	A	Yes	Ar (CfAe)	158.50 - 7.00	1	1	0.0000	0.5800		0.25
1/2	A	Yes	Ar (CfAe)	155.00 - 7.00	1	1	0.0000	0.5800		0.25
1/2	A	Yes	Ar (CfAe)	150.70 - 7.00	2	2	0.0000	0.5800		0.25
1/2	A	Yes	Ar (CfAe)	119.30 - 7.00	1	1	0.0000	0.5800		0.25
1/2	A	Yes	Ar (CfAe)	108.30 - 7.00	1	1	0.0000	0.5800		0.25
1/2	A	Yes	Ar (CfAe)	98.70 - 7.00	1	1	0.0000	0.5800		0.25
1/2	A	Yes	Ar (CfAe)	84.00 - 7.00	1	1	0.0000	0.5800		0.25
1 5/8	A	Yes	Ar (CfAe)	11.00 - 7.00	1	1	1.8000	1.8000		1.04
*****										
FB-L98B-002 (AT&T - proposed)	C	Yes	Ar (CfAe)	197.50 - 7.00	1	1	0.0000	0.4000		0.25
WR-VG122ST-BRDA (AT&T - proposed)	C	Yes	Ar (CfAe)	197.50 - 7.00	2	2	0.0000	0.4000		0.25

**Discrete Tower Loads**

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C <sub>i</sub> A <sub>i</sub> Front ft <sup>2</sup>	C <sub>s</sub> A <sub>s</sub> Side ft <sup>2</sup>	Weight lb	
Lightning Rod	B	From Leg	0.00 0.00 0.00	0.0000	302.50	No Ice 1/2" Ice	0.75 1.25	0.75 1.25	10.00 40.00
Omni 3"x10'	C	From Leg	0.00 0.00 0.00	0.0000	305.00	No Ice 1/2" Ice	3.00 4.03	3.00 4.03	20.00 41.79
7' Yagi	A	From Leg	3.00 0.00 0.00	0.0000	268.00	No Ice 1/2" Ice	1.63 2.20	0.47 0.64	25.00 100.93
3' Side Mount Standoff	B	From Leg	1.50 0.00 0.00	0.0000	269.00	No Ice 1/2" Ice	1.90 3.30	1.90 3.30	40.00 70.00
Pirod 4' Side Mount Standoff (1)	C	From Leg	2.00 0.00 0.00	0.0000	259.50	No Ice 1/2" Ice	2.72 4.91	2.72 4.91	50.00 89.00
15' Yagi antenna	B	From Leg	8.00 0.00	0.0000	263.00	No Ice 1/2" Ice	5.25 6.44	0.70 0.88	40.00 206.57

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<b>Job</b>	CT 1068 Modifications Ashford, CT	<b>Page</b>	6 of 15
<b>Project</b>	300 ft Guyed Tower	<b>Date</b>	14:53:00 01/28/13
<b>Client</b>	AT&T	<b>Designed by</b>	kw

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C <sub>A</sub> A <sub>1</sub> Front	C <sub>A</sub> A <sub>1</sub> Side	Weight	
			Horz Lateral	Vert						
			ft	ft	°	ft	ft <sup>2</sup>	ft <sup>2</sup>	lb	
15' Yagi antenna	B	From Leg	0.00	8.00	0.0000	249.00	No Ice	5.25	0.70	40.00
			0.00	0.00			1/2" Ice	6.44	0.88	206.57
*****										
PiROD 14' T-Frame	A	From Leg	2.50	0.00	0.0000	240.50	No Ice	15.00	15.00	500.00
			0.00	0.00			1/2" Ice	20.60	20.60	650.00
PiROD 14' T-Frame	B	From Leg	2.50	0.00	0.0000	240.50	No Ice	15.00	15.00	500.00
			0.00	0.00			1/2" Ice	20.60	20.60	650.00
PiROD 14' T-Frame	C	From Leg	2.50	0.00	0.0000	240.50	No Ice	15.00	15.00	500.00
			0.00	0.00			1/2" Ice	20.60	20.60	650.00
(2) 948F85T4E-M w/Mount Pipe	A	From Leg	5.00	0.00	0.0000	242.00	No Ice	2.53	4.93	34.05
			0.00	0.00			1/2" Ice	3.14	6.02	68.41
(2) 948F85T4E-M w/Mount Pipe	B	From Leg	5.00	0.00	0.0000	242.00	No Ice	2.53	4.93	34.05
			0.00	0.00			1/2" Ice	3.14	6.02	68.41
(2) 948F85T4E-M w/Mount Pipe	C	From Leg	5.00	0.00	0.0000	242.00	No Ice	2.53	4.93	34.05
			0.00	0.00			1/2" Ice	3.14	6.02	68.41
(2) Panel Antenna 4'x8"x10" w/mount pipe	A	From Leg	5.00	0.00	0.0000	242.00	No Ice	3.73	5.53	44.60
			0.00	0.00			1/2" Ice	4.10	6.16	86.41
(2) Panel Antenna 4'x8"x10" w/mount pipe	B	From Leg	5.00	0.00	0.0000	242.00	No Ice	3.73	5.53	44.60
			0.00	0.00			1/2" Ice	4.10	6.16	86.41
(2) Panel Antenna 4'x8"x10" w/mount pipe	C	From Leg	5.00	0.00	0.0000	242.00	No Ice	3.73	5.53	44.60
			0.00	0.00			1/2" Ice	4.10	6.16	86.41
*****										
PiROD 6' Side Mount Standoff (1)	A	From Leg	3.00	0.00	0.0000	220.00	No Ice	4.97	4.97	70.00
			0.00	0.00			1/2" Ice	6.12	6.12	130.00
PiROD 6' Side Mount Standoff (1)	B	From Leg	3.00	0.00	0.0000	220.00	No Ice	4.97	4.97	70.00
			0.00	0.00			1/2" Ice	6.12	6.12	130.00
PiROD 6' Side Mount Standoff (1)	C	From Leg	3.00	0.00	0.0000	220.00	No Ice	4.97	4.97	70.00
			0.00	0.00			1/2" Ice	6.12	6.12	130.00
Omni 3"x10'	A	From Leg	6.00	0.00	0.0000	225.00	No Ice	3.00	3.00	20.00
			0.00	0.00			1/2" Ice	4.03	4.03	41.79
Omni 3"x10'	B	From Leg	6.00	0.00	0.0000	225.00	No Ice	3.00	3.00	20.00
			0.00	0.00			1/2" Ice	4.03	4.03	41.79
Omni 3"x10'	C	From Leg	6.00	0.00	0.0000	225.00	No Ice	3.00	3.00	20.00
			0.00	0.00			1/2" Ice	4.03	4.03	41.79
PiROD 6' Side Mount Standoff (1)	A	From Leg	3.00	0.00	0.0000	212.00	No Ice	4.97	4.97	70.00
			0.00	0.00			1/2" Ice	6.12	6.12	130.00
*****										
PiROD 14' T-Frame (AT&T - Existing)	A	From Leg	1.50	0.00	0.0000	197.50	No Ice	15.00	15.00	500.00
			0.00	0.00			1/2" Ice	20.60	20.60	650.00

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<b>Client</b>	AT&T	<b>Designed by</b>	kw

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C <sub>4</sub> A <sub>4</sub> Front ft <sup>2</sup>	C <sub>4</sub> A <sub>4</sub> Side ft <sup>2</sup>	Weight lb	
PiROD 14' T-Frame (AT&T - Existing)	B	From Leg	1.50 0.00 0.00	0.0000	197.50	No Ice 1/2" Ice 20.60	15.00 15.00 20.60	500.00 650.00	
PiROD 14' T-Frame (AT&T - Existing)	C	From Leg	1.50 0.00 0.00	0.0000	197.50	No Ice 1/2" Ice 20.60	15.00 15.00 20.60	500.00 650.00	
(2) Powerwave 7770 w/mount pipe (AT&T - Existing)	A	From Leg	3.00 0.00 0.00	0.0000	197.50	No Ice 1/2" Ice 6.47	6.02 4.10 4.75	57.25 101.14	
(2) Powerwave 7770 w/mount pipe (AT&T - Existing)	B	From Leg	3.00 0.00 0.00	0.0000	197.50	No Ice 1/2" Ice 6.47	6.02 4.10 4.75	57.25 101.14	
(2) Powerwave 7770 w/mount pipe (AT&T - Existing)	C	From Leg	3.00 0.00 0.00	0.0000	197.50	No Ice 1/2" Ice 6.47	6.02 4.10 4.75	57.25 101.14	
(2) Powerwave TMA LGP21400 (AT&T - Existing)	A	From Leg	3.00 0.00 0.00	0.0000	197.50	No Ice 1/2" Ice 1.38	1.23 0.41 0.52	14.10 21.29	
(2) Powerwave TMA LGP21400 (AT&T - Existing)	B	From Leg	3.00 0.00 0.00	0.0000	197.50	No Ice 1/2" Ice 1.38	1.23 0.41 0.52	14.10 21.29	
(2) Powerwave TMA LGP21400 (AT&T - Existing)	C	From Leg	3.00 0.00 0.00	0.0000	197.50	No Ice 1/2" Ice 1.38	1.23 0.41 0.52	14.10 21.29	
(2) Powerwave LGP21900 (AT&T - Existing)	A	From Leg	3.00 0.00 0.00	0.0000	197.50	No Ice 1/2" Ice 0.30	0.23 0.12 0.17	5.50 7.70	
(2) Powerwave LGP21900 (AT&T - Existing)	B	From Leg	3.00 0.00 0.00	0.0000	197.50	No Ice 1/2" Ice 0.30	0.23 0.12 0.17	5.50 7.70	
(2) Powerwave LGP21900 (AT&T - Existing)	C	From Leg	3.00 0.00 0.00	0.0000	197.50	No Ice 1/2" Ice 0.30	0.23 0.12 0.17	5.50 7.70	
Powerwave 7020.00 Dual Band RET (AT&T - Existing)	A	From Leg	3.00 0.00 0.00	0.0000	197.50	No Ice 1/2" Ice 0.49	0.40 0.20 0.27	2.20 5.13	
Powerwave 7020.00 Dual Band RET (AT&T - Existing)	B	From Leg	3.00 0.00 0.00	0.0000	197.50	No Ice 1/2" Ice 0.49	0.40 0.20 0.27	2.20 5.13	
Powerwave 7020.00 Dual Band RET (AT&T - Existing)	C	From Leg	3.00 0.00 0.00	0.0000	197.50	No Ice 1/2" Ice 0.49	0.40 0.20 0.27	2.20 5.13	
***** KMW AM-X-CD-17-65-00T-RET w/mount pipe (AT&T - Proposed)	A	From Leg	3.00 0.00 0.00	0.0000	197.50	No Ice 1/2" Ice 12.32	11.60 9.39 10.90	111.61 198.07	
KMW AM-X-CD-17-65-00T-RET w/mount pipe (AT&T - Proposed)	B	From Leg	3.00 0.00 0.00	0.0000	197.50	No Ice 1/2" Ice 12.32	11.60 9.39 10.90	111.61 198.07	
KMW AM-X-CD-17-65-00T-RET w/mount pipe (AT&T - Proposed)	C	From Leg	3.00 0.00 0.00	0.0000	197.50	No Ice 1/2" Ice 12.32	11.60 9.39 10.90	111.61 198.07	
(2) Ericsson RRU	A	From Leg	3.00	0.0000	197.50	No Ice	2.07	1.08	44.00

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<b>Client</b>	AT&T	<b>Designed by</b>	kw

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C <sub>A</sub> A <sub>1</sub> Front ft <sup>2</sup>	C <sub>A</sub> A <sub>1</sub> Side ft <sup>2</sup>	Weight lb	
(AT&T - Proposed)			0.00 0.00		1/2" Ice	2.26	1.23	58.64	
(2) Ericsson RRU (AT&T - Proposed)	B	From Leg	3.00 0.00 0.00	0.0000	197.50	No Ice 1/2" Ice	2.07 2.26	1.08 1.23	44.00 58.64
(2) Ericsson RRU (AT&T - Proposed)	C	From Leg	3.00 0.00 0.00	0.0000	197.50	No Ice 1/2" Ice	2.07 2.26	1.08 1.23	44.00 58.64
Surge Arrestor (DC6-48-60-18-8F) w/mount pipe (AT&T - Proposed) *****	A	From Leg	0.50 0.00 0.00	0.0000	197.50	No Ice 1/2" Ice	2.45 2.95	2.45 2.95	38.25 64.62
Pirot 6' Side Mount Standoff (1)	A	From Face	3.00 0.00 0.00	0.0000	191.30	No Ice 1/2" Ice	4.97 6.12	4.97 6.12	70.00 130.00
5' Yagi	B	From Leg	2.50 0.00 0.00	0.0000	191.50	No Ice 1/2" Ice	4.00 5.50	4.00 5.50	30.00 50.00
2' Side Mount Standoff	B	From Leg	1.00 0.00 0.00	0.0000	181.30	No Ice 1/2" Ice	1.00 1.50	1.00 1.50	30.00 50.00
8'x4' Dipole	B	From Leg	2.00 0.00 0.00	0.0000	181.30	No Ice 1/2" Ice	11.47 12.08	4.00 4.92	75.00 126.46
2' Side Mount Standoff	A	From Leg	1.00 0.00 0.00	0.0000	181.30	No Ice 1/2" Ice	1.00 1.50	1.00 1.50	30.00 50.00
8'x4' Dipole	A	From Leg	2.00 0.00 0.00	0.0000	181.30	No Ice 1/2" Ice	11.47 12.08	4.00 4.92	75.00 126.46
3' Side Mount Standoff	B	From Leg	1.50 0.00 0.00	0.0000	168.70	No Ice 1/2" Ice	1.90 3.30	1.90 3.30	40.00 70.00
Omni 3"x15'	B	From Leg	3.00 0.00 0.00	0.0000	176.00	No Ice 1/2" Ice	4.50 6.03	4.50 6.03	70.00 102.48
2' Side Mount Standoff	C	From Face	1.00 0.00 0.00	0.0000	164.30	No Ice 1/2" Ice	1.00 1.50	1.00 1.50	30.00 50.00
6' Yagi	C	From Face	3.00 0.00 0.00	0.0000	167.30	No Ice 1/2" Ice	1.40 1.88	0.35 0.48	35.00 85.85
Pirot 4' Side Mount Standoff (1)	B	From Leg	2.00 0.00 0.00	0.0000	158.50	No Ice 1/2" Ice	2.72 4.91	2.72 4.91	50.00 89.00
7' Yagi	B	From Leg	4.00 0.00 0.00	0.0000	158.50	No Ice 1/2" Ice	1.63 2.20	0.47 0.64	25.00 100.93
2' Side Mount Standoff	B	From Leg	1.00 0.00 0.00	0.0000	155.00	No Ice 1/2" Ice	1.00 1.50	1.00 1.50	30.00 50.00
Mid Beacon	A	From Leg	1.00 0.00 0.00	0.0000	150.70	No Ice 1/2" Ice	1.90 2.75	1.90 2.75	60.00 95.00
7' Yagi	A	From Leg	3.00 0.00	0.0000	119.30	No Ice 1/2" Ice	1.63 2.20	0.47 0.64	25.00 100.93

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C <sub>1</sub> A <sub>1</sub> Front ft <sup>2</sup>	C <sub>1</sub> A <sub>1</sub> Side ft <sup>2</sup>	Weight lb	
3' Side Mount Standoff	C	From Face	0.00	0.0000	116.30	No Ice	1.90	1.90	40.00
			1.50			1/2" Ice	3.30	3.30	70.00
1.5' Side Mount Standoff	A	From Leg	0.00	0.0000	108.30	No Ice	1.10	1.10	40.00
			0.75			1/2" Ice	1.70	1.70	50.00
GPS	B	From Leg	0.00	0.0000	84.00	No Ice	0.21	0.21	5.00
			1.00			1/2" Ice	0.32	0.32	7.52
3' Side Mount Standoff	A	From Leg	0.00	0.0000	64.30	No Ice	1.90	1.90	40.00
			1.50			1/2" Ice	3.30	3.30	70.00
Weather Head	A	From Leg	0.00	0.0000	65.50	No Ice	2.10	1.25	30.00
			3.00			1/2" Ice	2.73	1.55	40.00
Box 11"x9.5"x4"	B	From Face	0.00	0.0000	10.50	No Ice	1.02	0.43	10.00
			0.00			1/2" Ice	1.15	0.53	16.87

**Dishes**

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft	Aperture Area ft <sup>2</sup>	Weight lb	
GP8F-21A	B	Grid	From Leg	4.00	0.0000		269.00	8.00	No Ice	50.30	282.00
				0.00					1/2" Ice	51.29	545.30
GP6F-21A	C	Grid	From Leg	5.00	0.0000		260.00	6.00	No Ice	28.30	198.00
				0.00					1/2" Ice	29.05	347.13
GP8F-21A	A	Grid	From Leg	7.00	0.0000		210.00	8.00	No Ice	50.30	282.00
				0.00					1/2" Ice	51.29	545.30
GP6F-21A	B	Grid	From Face	3.00	0.0000		155.00	6.00	No Ice	28.30	198.00
				0.00					1/2" Ice	29.05	347.13
GP6F-21A	C	Grid	From Face	1.00	0.0000		150.50	6.00	No Ice	28.30	198.00
				0.00					1/2" Ice	29.05	347.13
GP6F-21A	A	Grid	From Leg	2.00	0.0000		109.30	6.00	No Ice	28.30	198.00
				0.00					1/2" Ice	29.05	347.13
GP8F-21A	A	Grid	From Leg	1.00	0.0000		100.00	8.00	No Ice	50.30	282.00
				0.00					1/2" Ice	51.29	545.30

**Load Combinations**

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

### Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Leg C	Max. Vert	8	82990.15	-5966.07	2571.71
	Max. H <sub>x</sub>	4	55168.98	608.19	-827.37
	Max. H <sub>z</sub>	7	13944.97	-7712.92	5579.46
	Min. Vert	7	13944.97	-7712.92	5579.46
	Min. H <sub>x</sub>	7	13944.97	-7712.92	5579.46
	Min. H <sub>z</sub>	4	55168.98	608.19	-827.37
Leg B	Max. Vert	7	94767.82	5419.78	3660.93
	Max. H <sub>x</sub>	8	82772.86	6901.38	3518.28
	Max. H <sub>z</sub>	6	32605.68	6331.00	4198.52
	Min. Vert	9	25685.10	-258.00	46.77
	Min. H <sub>x</sub>	3	65158.86	-962.64	-204.03
	Min. H <sub>z</sub>	4	55087.77	228.48	-408.25
Leg A	Max. Vert	6	107085.01	989.10	-6008.48
	Max. H <sub>x</sub>	6	107085.01	989.10	-6008.48
	Max. H <sub>z</sub>	2	73826.43	725.29	1372.04
	Min. Vert	8	4498.53	-1077.69	-9741.04
	Min. H <sub>x</sub>	7	60456.00	-1151.47	-8837.17
	Min. H <sub>z</sub>	8	4498.53	-1077.69	-9741.04
Guy C @ 220 ft Elev -2 ft Azimuth 240 deg	Max. Vert	11	-11004.20	-9430.83	4953.89
	Max. H <sub>x</sub>	11	-11004.20	-9430.83	4953.89
	Max. H <sub>z</sub>	7	-50095.01	-45686.26	24748.99
	Min. Vert	7	-50095.01	-45686.26	24748.99
	Min. H <sub>x</sub>	7	-50095.01	-45686.26	24748.99
	Min. H <sub>z</sub>	4	-11788.92	-9885.36	4276.15
Guy B @ 220 ft Elev 3 ft Azimuth 120 deg	Max. Vert	3	-5125.77	3283.24	2579.02
	Max. H <sub>x</sub>	6	-41875.79	36831.17	24500.91
	Max. H <sub>z</sub>	6	-41875.79	36831.17	24500.91
	Min. Vert	6	-41875.79	36831.17	24500.91
	Min. H <sub>x</sub>	3	-5125.77	3283.24	2579.02
	Min. H <sub>z</sub>	3	-5125.77	3283.24	2579.02
Guy A @ 220 ft Elev 5 ft Azimuth 0 deg	Max. Vert	2	-2896.59	0.67	-1942.41
	Max. H <sub>x</sub>	9	-6581.64	2.80	-6339.67
	Max. H <sub>z</sub>	2	-2896.59	0.67	-1942.41
	Min. Vert	8	-52243.95	-10.30	-56119.43
	Min. H <sub>x</sub>	7	-28446.82	-3302.04	-29187.99

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<b>Project</b>	300 ft Guyed Tower	<b>Date</b>	14:53:00 01/28/13
<b>Client</b>	AT&T	<b>Designed by</b>	kw

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Guy C @ 200 ft Elev -1 ft Azimuth 240 deg	Min. H <sub>x</sub>	8	-52243.95	-10.30	-56119.43
	Max. Vert	4	-2120.55	-4616.75	2329.04
	Max. H <sub>x</sub>	4	-2120.55	-4616.75	2329.04
	Max. H <sub>z</sub>	7	-10515.53	-20125.18	11283.92
	Min. Vert	7	-10515.53	-20125.18	11283.92
	Min. H <sub>x</sub>	7	-10515.53	-20125.18	11283.92
	Min. H <sub>z</sub>	4	-2120.55	-4616.75	2329.04
Guy B @ 200 ft Elev 3 ft Azimuth 120 deg	Max. Vert	3	-732.43	1950.32	1258.09
	Max. H <sub>x</sub>	6	-8921.48	17501.21	10912.82
	Max. H <sub>z</sub>	6	-8921.48	17501.21	10912.82
	Min. Vert	6	-8921.48	17501.21	10912.82
	Min. H <sub>x</sub>	3	-732.43	1950.32	1258.09
	Min. H <sub>z</sub>	3	-732.43	1950.32	1258.09
	Max. Vert	2	-302.52	0.01	-1416.80
Guy A @ 200 ft Elev 4 ft Azimuth 0 deg	Max. H <sub>x</sub>	8	-11727.59	4.87	-26721.51
	Max. H <sub>z</sub>	2	-302.52	0.01	-1416.80
	Min. Vert	8	-11727.59	4.87	-26721.51
	Min. H <sub>x</sub>	7	-5716.58	-863.48	-13943.75
	Min. H <sub>z</sub>	8	-11727.59	4.87	-26721.51

### Tower Mast Reaction Summary

Load Combination	Vertical lb	Shear <sub>x</sub> lb	Shear <sub>z</sub> lb	Overturning Moment, M <sub>x</sub> lb-ft	Overturning Moment, M <sub>z</sub> lb-ft	Torque lb-ft
Dead Only	89708.66	5.35	4.12	120.04	-198.53	84.98
Dead+Wind 0 deg - No Ice+Guy	127977.39	-3.89	-1947.13	-87722.95	-449.60	1676.82
Dead+Wind 90 deg - No Ice+Guy	124118.89	2182.63	-360.24	-6404.98	-81002.09	-1949.22
Dead+Wind 180 deg - No Ice+Guy	118230.66	16.71	2556.20	88480.10	131.97	-1704.86
Dead+Ice+Temp+Guy	123979.29	10.55	7.64	254.04	-403.36	71.94
Dead+Wind 0 deg+Ice+Temp+Guy	171929.75	-9.44	-3096.69	-140096.12	-595.78	1625.59
Dead+Wind 90 deg+Ice+Temp+Guy	169168.79	3444.61	-403.22	-11445.23	-131337.13	-3127.79
Dead+Wind 180 deg+Ice+Temp+Guy	170261.53	142.38	3651.06	147076.91	353.09	-1359.79
Dead+Wind 0 deg - Service+Guy	92045.24	3.58	-886.83	-28607.94	-277.71	590.66
Dead+Wind 90 deg - Service+Guy	92238.09	914.43	-15.38	-1015.84	-28018.36	-626.20
Dead+Wind 180 deg - Service+Guy	92680.53	7.04	918.19	29197.63	-127.18	-419.58

### Solution Summary

# tnxTower

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Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	
1	0.00	-40268.32	0.00	1.55	40268.12	-1.17	0.005%
2	42.08	-40719.58	-52884.87	-42.06	40719.51	52882.99	0.003%
3	51755.60	-40284.58	-131.73	-51753.26	40284.48	133.47	0.004%
4	7.30	-39817.07	52637.99	-6.29	39817.07	-52638.05	0.002%
5	0.00	-63061.72	0.00	1.38	63061.72	-0.86	0.003%
6	-668.46	-64039.36	-67661.11	668.55	64039.24	67657.80	0.004%
7	63765.86	-63097.08	-640.44	-63764.41	63097.03	641.83	0.002%
8	-813.46	-62084.08	66689.12	813.09	62084.07	-66689.02	0.000%
9	14.56	-40424.47	-18299.26	-14.52	40424.45	18298.14	0.003%
10	17908.51	-40273.95	-45.58	-17906.47	40273.93	46.85	0.005%
11	2.53	-40112.18	18213.84	-2.01	40112.14	-18211.00	0.007%

## Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	300.58 - 280.58	1.735	11	0.1836	0.1755
T2	280.58 - 260.58	2.237	11	0.1886	0.1781
T3	260.58 - 240.58	2.711	11	0.1596	0.1765
T4	240.58 - 220.58	3.069	11	0.1287	0.1524
T5	220.58 - 200.58	3.442	11	0.1069	0.1698
T6	200.58 - 180.58	3.546	11	0.0432	0.1705
T7	180.58 - 160.58	3.095	11	0.1448	0.1729
T8	160.58 - 140.58	2.526	9	0.1196	0.1323
T9	140.58 - 120.58	2.109	9	0.1016	0.1204
T10	120.58 - 100.58	1.780	9	0.0759	0.1046
T11	100.58 - 80.58	1.448	9	0.0866	0.1105
T12	80.58 - 60.58	1.093	9	0.0817	0.0912
T13	60.58 - 40.58	0.739	9	0.0870	0.0737
T14	40.58 - 20.58	0.395	11	0.0729	0.0523
T15	20.58 - 0.58	0.127	11	0.0507	0.0320

## Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
305.00	Omni 3"x10'	11	1.735	0.1836	0.1755	498094
302.50	Lightning Rod	11	1.735	0.1836	0.1755	498094
284.02	Guy	11	2.150	0.1899	0.1778	152343
269.00	GP8F-21A	11	2.524	0.1751	0.1785	34007
268.00	7' Yagi	11	2.548	0.1734	0.1784	31003
263.00	15' Yagi antenna	11	2.661	0.1643	0.1774	21846
260.00	GP6F-21A	11	2.723	0.1584	0.1763	20958
259.50	Pirod 4' Side Mount Standoff (1)	11	2.733	0.1574	0.1760	21245
249.00	15' Yagi antenna	11	2.922	0.1377	0.1672	77621
242.00	(2) 948F85T4E-M w/Mount Pipe	11	3.043	0.1295	0.1555	46495
240.50	PiROD 14' T-Frame	11	3.070	0.1287	0.1523	44196
233.86	Guy	11	3.198	0.1278	0.1510	79279
225.00	Omni 3"x10'	11	3.368	0.1203	0.1646	19579
220.00	Pirod 6' Side Mount Standoff (1)	11	3.451	0.1044	0.1703	13709
212.00	Pirod 6' Side Mount Standoff (1)	11	3.547	0.0602	0.1720	9199
210.00	GP8F-21A	11	3.561	0.0490	0.1716	8499



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<b>Project</b>	300 ft Guyed Tower	<b>Date</b>	14:53:00 01/28/13
<b>Client</b>	AT&T	<b>Designed by</b>	kw

Elevation	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
197.50	PiROD 14' T-Frame	11	3.508	0.0535	0.1716	7341
191.50	5' Yagi	11	3.392	0.0871	0.1749	10888
191.30	PiROD 6' Side Mount Standoff (1)	11	3.387	0.0884	0.1750	11069
181.30	2' Side Mount Standoff	11	3.116	0.1427	0.1737	53310
176.00	Omni 3"x15'	11	2.959	0.1506	0.1647	499197
170.58	Guy	11	2.798	0.1440	0.1510	84015
168.70	3' Side Mount Standoff	11	2.744	0.1396	0.1458	63727
167.30	6' Yagi	11	2.703	0.1359	0.1420	54014
164.30	2' Side Mount Standoff	11	2.618	0.1281	0.1343	40768
158.50	PiROD 4' Side Mount Standoff (1)	9	2.477	0.1159	0.1334	32095
155.00	GP6F-21A	9	2.398	0.1116	0.1334	32624
150.70	Mid Beacon	9	2.306	0.1082	0.1310	33820
150.50	GP6F-21A	9	2.302	0.1081	0.1308	33878
133.86	Guy	9	1.993	0.0929	0.1142	51557
119.30	7' Yagi	9	1.760	0.0752	0.1050	219277
116.30	3' Side Mount Standoff	9	1.711	0.0745	0.1071	190992
109.30	GP6F-21A	9	1.596	0.0800	0.1107	172132
108.30	1.5' Side Mount Standoff	9	1.580	0.0810	0.1110	169751
100.00	GP8F-21A	9	1.438	0.0868	0.1103	168306
90.58	Guy	9	1.272	0.0852	0.1024	500621
84.00	GPS	9	1.154	0.0824	0.0949	529764
65.50	Weather Head	9	0.827	0.0864	0.0780	246517
64.30	3' Side Mount Standoff	9	0.805	0.0867	0.0770	224884
47.30	Guy	11	0.507	0.0792	0.0595	104184
10.50	Box 11"x9.5"x4"	11	0.051	0.0279	0.0171	49436

## Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF*P <sub>allow</sub> lb	% Capacity	Pass Fail
T1	300.58 - 280.58	Leg	ROHN 3 STD	1	-16417.70	79224.99	20.7	Pass
T2	280.58 - 260.58	Leg	ROHN 3 STD	43	-25119.40	78711.51	31.9	Pass
T3	260.58 - 240.58	Leg	ROHN 3 STD	85	-25708.60	78641.66	32.7	Pass
T4	240.58 - 220.58	Leg	ROHN 3 STD	127	-46998.60	76582.85	61.4	Pass
T5	220.58 - 200.58	Leg	ROHN 3 STD	171	-68179.70	77253.21	88.3	Pass
T6	200.58 - 180.58	Leg	ROHN 3 STD	213	-68179.80	77253.21	88.3	Pass
T7	180.58 - 160.58	Leg	ROHN 3 STD	254	-50408.20	79224.99	63.6	Pass
T8	160.58 - 140.58	Leg	ROHN 3 STD	296	-50134.60	79224.99	63.3	Pass
T9	140.58 - 120.58	Leg	ROHN 3 STD	339	-53460.80	79224.99	67.5	Pass
T10	120.58 - 100.58	Leg	ROHN 3 STD	381	-60469.80	79224.99	76.3	Pass
T11	100.58 - 80.58	Leg	ROHN 3 STD	423	-59815.40	79224.99	75.5	Pass
T12	80.58 - 60.58	Leg	ROHN 3 STD	465	-58423.70	79224.99	73.7	Pass
T13	60.58 - 40.58	Leg	ROHN 3 STD	507	-73532.50	79224.99	92.8	Pass
T14	40.58 - 20.58	Leg	ROHN 3 STD Mod. (CT1068)	549	-85923.20	108745.07	79.0	Pass
T15	20.58 - 0.58	Leg	ROHN 3 STD Mod. (CT1068)	591	-107081.00	108745.07	98.5	Pass
T1	300.58 - 280.58	Diagonal	1 1/2	12	-2851.25	37781.22	7.5	Pass
T2	280.58 - 260.58	Diagonal	1 1/2	83	-3718.18	37781.22	9.8	Pass
T3	260.58 - 240.58	Diagonal	1 1/2	94	-7062.90	37781.22	18.7	Pass
T4	240.58 - 220.58	Diagonal	1 1/2	156	-9684.76	37781.22	25.6	Pass
T5	220.58 - 200.58	Diagonal	1 1/2	204	-6353.82	37781.22	16.8	Pass
T6	200.58 - 180.58	Diagonal	1 1/2	220	-7928.50	37781.22	21.0	Pass
T7	180.58 - 160.58	Diagonal	1 1/2	276	-11996.10	37781.22	31.8	Pass
T8	160.58 - 140.58	Diagonal	1 1/2	305	-4463.37	37781.22	11.8	Pass
T9	140.58 - 120.58	Diagonal	1 1/2	366	-5881.71	37781.22	15.6	Pass
T10	120.58 - 100.58	Diagonal	1 1/2	420	-4770.33	37781.22	12.6	Pass
T11	100.58 - 80.58	Diagonal	1 1/2	449	-6356.90	37781.22	16.8	Pass
T12	80.58 - 60.58	Diagonal	1 1/2	473	-4960.31	37781.22	13.1	Pass

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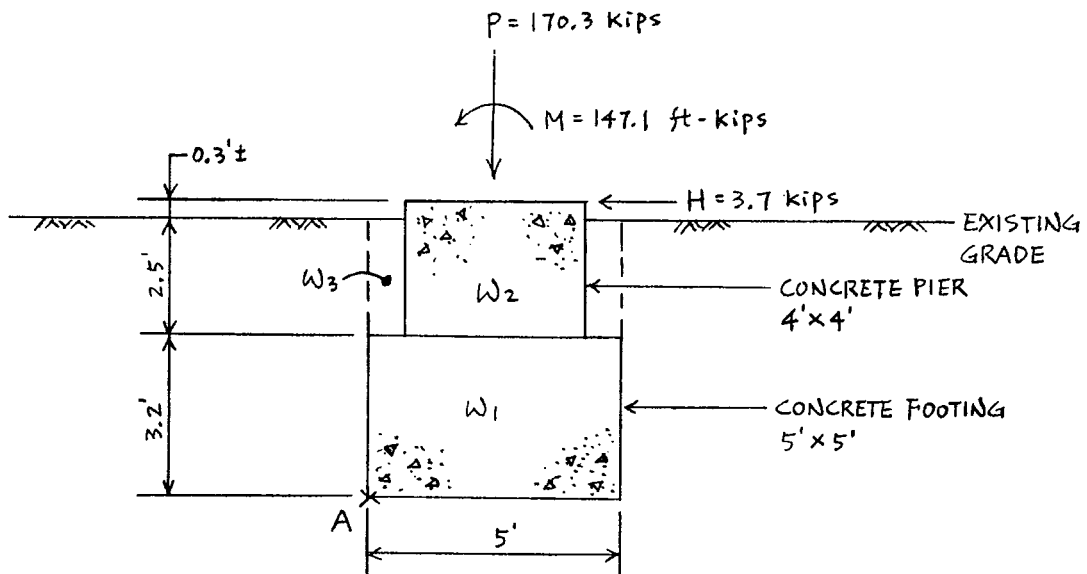
Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF*P <sub>allow</sub> lb	% Capacity	Pass Fail
T13	60.58 - 40.58	Diagonal	1 1/2	527	-6278.66	37781.22	16.6	Pass
T14	40.58 - 20.58	Diagonal	1 1/2	557	-5269.09	37850.40	13.9	Pass
T15	20.58 - 0.58	Diagonal	1 1/2	611	-5818.29	37850.40	15.4	Pass
T1	300.58 - 280.58	Horizontal	1 1/2	13	-2514.24	39772.72	6.3	Pass
T2	280.58 - 260.58	Horizontal	1 1/2	62	1225.23	70668.19	1.7	Pass
T3	260.58 - 240.58	Horizontal	1 1/2	97	1052.21	70668.19	1.5	Pass
T4	240.58 - 220.58	Horizontal	1 1/2	158	-7135.42	39772.72	17.9	Pass
T5	220.58 - 200.58	Horizontal	1 1/2	195	1872.49	70668.19	2.6	Pass
T6	200.58 - 180.58	Horizontal	1 1/2	249	2628.25	70668.19	3.7	Pass
T7	180.58 - 160.58	Horizontal	1 1/2	277	11822.00	70668.19	16.7	Pass
T8	160.58 - 140.58	Horizontal	1 1/2	327	1805.58	70668.19	2.6	Pass
T9	140.58 - 120.58	Horizontal	1 1/2	369	6722.22	70668.19	9.5	Pass
T10	120.58 - 100.58	Horizontal	1 1/2	405	1992.69	70668.19	2.8	Pass
T11	100.58 - 80.58	Horizontal	1 1/2	446	7138.25	70668.19	10.1	Pass
T12	80.58 - 60.58	Horizontal	1 1/2	477	1882.40	70668.19	2.7	Pass
T13	60.58 - 40.58	Horizontal	1 1/2	525	5479.15	70668.19	7.8	Pass
T14	40.58 - 20.58	Horizontal	1 1/2	560	1945.11	70668.19	2.8	Pass
T15	20.58 - 0.58	Horizontal	1 1/2	619	1933.72	70668.19	2.7	Pass
T1	300.58 - 280.58	Top Girt	2x1/2	4	-107.46	3290.66	3.3	Pass
T2	280.58 - 260.58	Top Girt	2x1/2	47	-348.82	3290.66	10.6	Pass
T3	260.58 - 240.58	Top Girt	2x1/2	89	-525.13	3290.66	16.0	Pass
T4	240.58 - 220.58	Top Girt	2x1/2	130	-1584.81	3290.66	48.2	Pass
T5	220.58 - 200.58	Top Girt	2x1/2	174	-600.10	3290.66	18.2	Pass
T6	200.58 - 180.58	Top Girt	2x1/2	214	799.66	28792.80	2.8	Pass
T7	180.58 - 160.58	Top Girt	2x1/2	257	-1202.23	3290.66	36.5	Pass
T8	160.58 - 140.58	Top Girt	2x1/2	300	877.53	28792.80	3.0	Pass
T9	140.58 - 120.58	Top Girt	2x1/2	341	-154.35	3290.66	4.7	Pass
T10	120.58 - 100.58	Top Girt	2x1/2	382	1003.41	28792.80	3.5	Pass
T11	100.58 - 80.58	Top Girt	2x1/2	425	1568.38	28792.80	5.4	Pass
T12	80.58 - 60.58	Top Girt	2x1/2	466	1076.35	28792.80	3.7	Pass
T13	60.58 - 40.58	Top Girt	2x1/2	510	1352.98	28792.80	4.7	Pass
T14	40.58 - 20.58	Top Girt	2x1/2	552	1221.07	28792.80	4.2	Pass
T15	20.58 - 0.58	Top Girt	2x1/2	594	1322.86	28792.80	4.6	Pass
T1	300.58 - 280.58	Bottom Girt	2x1/2	8	-513.78	3290.66	15.6	Pass
T2	280.58 - 260.58	Bottom Girt	2x1/2	49	-440.04	3290.66	13.4	Pass
T3	260.58 - 240.58	Bottom Girt	2x1/2	92	-224.98	3290.66	6.8	Pass
T4	240.58 - 220.58	Bottom Girt	2x1/2	134	-589.76	3290.66	17.9	Pass
T5	220.58 - 200.58	Bottom Girt	2x1/2	177	811.32	28792.80	2.8	Pass
T6	200.58 - 180.58	Bottom Girt	2x1/2	218	-540.47	3290.66	16.4	Pass
T7	180.58 - 160.58	Bottom Girt	2x1/2	261	941.89	28792.80	3.3	Pass
T8	160.58 - 140.58	Bottom Girt	2x1/2	302	1056.31	28792.80	3.7	Pass
T9	140.58 - 120.58	Bottom Girt	2x1/2	345	1110.55	28792.80	3.9	Pass
T10	120.58 - 100.58	Bottom Girt	2x1/2	385	904.05	28792.80	3.1	Pass
T11	100.58 - 80.58	Bottom Girt	2x1/2	427	1024.94	28792.80	3.6	Pass
T12	80.58 - 60.58	Bottom Girt	2x1/2	470	1202.87	28792.80	4.2	Pass
T13	60.58 - 40.58	Bottom Girt	2x1/2	513	961.64	28792.80	3.3	Pass
T14	40.58 - 20.58	Bottom Girt	2x1/2	554	1184.08	28792.80	4.1	Pass
T15	20.58 - 0.58	Bottom Girt	2x1/2	595	5003.77	21600.00	23.2	Pass
T1	300.58 - 280.58	Guy A@284.024	1/2	643	10122.50	13450.00	75.3	Pass
T4	240.58 - 220.58	Guy A@233.858	5/8	661	17491.00	21200.00	82.5	Pass
T7	180.58 - 160.58	Guy A@170.58	1/2	679	12293.20	13450.00	91.4	Pass
T9	140.58 - 120.58	Guy A@133.858	1/2	687	11818.80	13450.00	87.9	Pass
T11	100.58 - 80.58	Guy A@90.58	1/2	690	10827.40	13450.00	80.5	Pass
T13	60.58 - 40.58	Guy A@47.3022	1/2	693	7117.51	13450.00	52.9	Pass
T1	300.58 - 280.58	Guy B@284.024	1/2	638	8796.04	13450.00	65.4	Pass
T4	240.58 - 220.58	Guy B@233.858	5/8	656	13885.80	21200.00	65.5	Pass
T7	180.58 - 160.58	Guy B@170.58	1/2	674	9615.71	13450.00	71.5	Pass
T9	140.58 - 120.58	Guy B@133.858	1/2	686	9028.44	13450.00	67.1	Pass
T11	100.58 - 80.58	Guy B@90.58	1/2	689	8024.30	13450.00	59.7	Pass
T13	60.58 - 40.58	Guy B@47.3022	1/2	692	5944.49	13450.00	44.2	Pass
T1	300.58 - 280.58	Guy C@284.024	1/2	632	10015.40	13450.00	74.5	Pass

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<b>Job</b>	CT 1068 Modifications Ashford, CT	<b>Page</b>	15 of 15
<b>Project</b>	300 ft Guyed Tower	<b>Date</b>	14:53:00 01/28/13
<b>Client</b>	AT&T	<b>Designed by</b>	kw

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF*P <sub>allow</sub> lb	% Capacity	Pass Fail	
T4	240.58 - 220.58	Guy C@233.858	5/8	650	16314.50	21200.00	77.0	Pass	
T7	180.58 - 160.58	Guy C@170.58	1/2	667	11132.50	13450.00	82.8	Pass	
T9	140.58 - 120.58	Guy C@133.858	1/2	685	10290.00	13450.00	76.5	Pass	
T11	100.58 - 80.58	Guy C@90.58	1/2	688	9147.44	13450.00	68.0	Pass	
T13	60.58 - 40.58	Guy C@47.3022	1/2	691	6476.35	13450.00	48.2	Pass	
T1	300.58 - 280.58	Torque Arm Top@284.024	L2x3x1/2	640	9014.21	64783.80	13.9	Pass	
T4	240.58 - 220.58	Torque Arm Top@233.858	L2x3x1/2	663	15640.30	64783.80	24.1	Pass	
T7	180.58 - 160.58	Torque Arm Top@170.58	L2x3x1/2	681	13280.20	64783.80	20.5	Pass	
T1	300.58 - 280.58	Torque Arm Bottom@284.024	L2x3x1/2	648	-11137.20	29270.15	38.0	Pass	
T4	240.58 - 220.58	Torque Arm Bottom@233.858	L2x3x1/2	666	-17019.60	29270.15	58.1	Pass	
T7	180.58 - 160.58	Torque Arm Bottom@170.58	L2x3x1/2	671	-10877.20	29270.15	37.2	Pass	
							<b>Summary</b>		
							Leg (T15)	98.5	Pass
							Diagonal (T7)	31.8	Pass
							Horizontal (T4)	17.9	Pass
							Top Girt (T4)	48.2	Pass
							Bottom Girt (T15)	23.2	Pass
							Guy A (T7)	91.4	Pass
							Guy B (T7)	71.5	Pass
							Guy C (T7)	82.8	Pass
							Torque Arm Top (T4)	24.1	Pass
							Torque Arm Bottom (T4)	58.1	Pass
							<b>RATING =</b>	<b>98.5</b>	<b>Pass</b>

FOUNDATION ANALYSIS (AT TOWER MAST)



EXISTING FOUNDATION AND SOIL INFORMATION ARE BASED ON FOUNDATION INVESTIGATION REPORT AND GEOTECHNICAL EVALUATION OF SUBSURFACE CONDITIONS BY HDG, DATED 1/2013.

MAXIMUM REACTIONS AT TOWER BASE (LOAD COMB. 8)

$P = 170.3 \text{ kips}$

$H = 3.7 \text{ kips}$

$M = 147.1 \text{ ft-kips}$

$W_1 = 0.15 \times 5 \times 5 \times 3.2 = 12.0 \text{ kips}$

$W_2 = 0.15 \times 4 \times 4 \times 2.8 = 6.7 \text{ kips}$

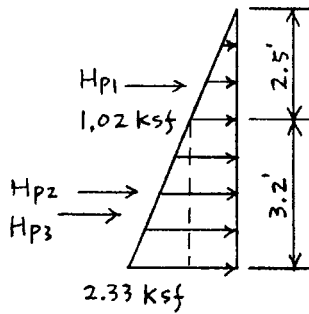
$W_3 = 0.12 \times (5 \times 5 - 4 \times 4) \times 2.5 = 2.7 \text{ kips}$

$P = 170.3 \text{ kips}$

---

$\Sigma W = 191.7 \text{ kips}$

SOIL PRESSURE



$$H_{p1} = \frac{1}{2} \times 1.02 \times 2.5 \times 4 = 5.1 \text{ kips}$$

$$H_{p2} = 1.02 \times 3.2 \times 5 = 16.3 \text{ kips}$$

$$H_{p3} = \frac{1}{2} \times 1.31 \times 3.2 \times 5 = 10.5 \text{ kips}$$

---


$$\Sigma H_p = 31.9 \text{ kips}$$

$$M_R = 191.7 \times 2.5 + 5.1 \times 4.03 + 16.3 \times 1.6 + 10.5 \times 1.07 = 537.1 \text{ ft-k}$$

$$M_{OT} = 147.1 + 3.7 \times 6 = 169.3 \text{ ft-k}$$

$$F.S. (\text{OVERTURNING}) = \frac{537.1}{169.3} = 3.2 \quad \text{OK}$$

$$F.S. (\text{SLIDING}) = \frac{0.45 \times 191.7 + 31.9}{3.7} = 31.9 \quad \text{OK}$$

CALCULATE BEARING PRESSURE

$$a = \frac{537.1 - 169.3}{191.7} = 1.92'$$

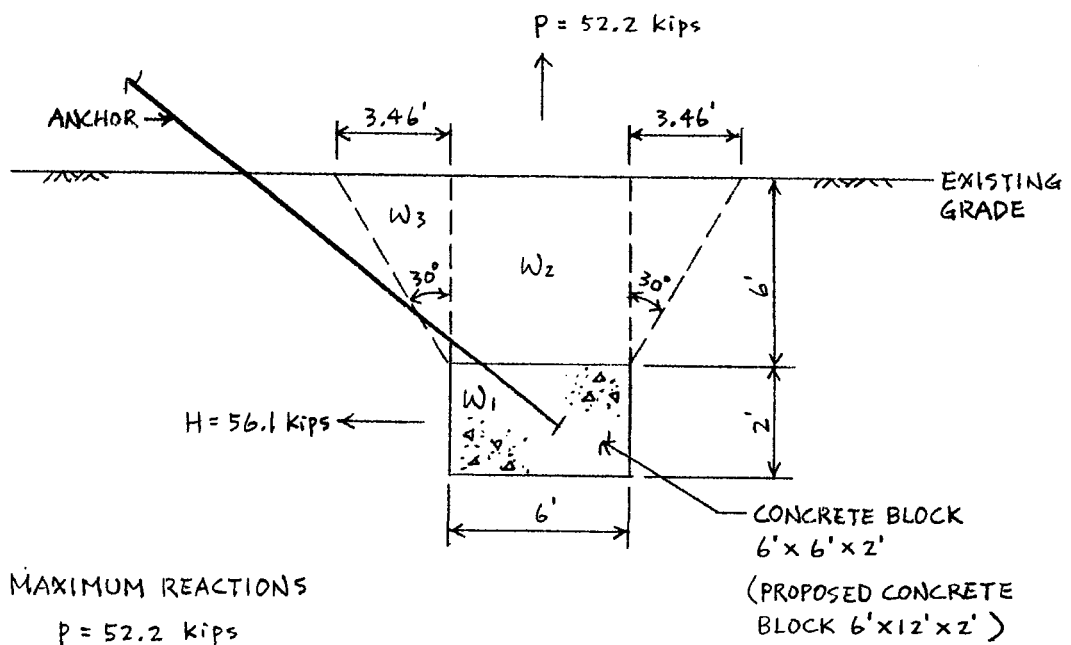
$$e = 2.5 - 1.92 = 0.58 < \frac{5}{6} = 0.83$$

$$q = \frac{191.7}{5 \times 5} \pm \frac{191.7 \times 0.58 \times 2.5}{\frac{1}{12} \times 5^4}$$

$$= 7.67 \pm 5.34 = 13.01 \text{ ksf} < 20 \text{ ksf} \quad \text{OK}$$

2.33 ksf

GUY ANCHOR (OUTER)      GUY ANCHOR 3



MAXIMUM REACTIONS

$P = 52.2$  kips  
 $H = 56.1$  kips

$W_1 = 0.15 \times 6 \times 6 \times 2 = 10.8$  kips  
 $W_2 \approx 0.12 \times 6 \times 6 \times 6 = 25.9$  kips  
 $W_3 \approx 0.12 \times (9.46 \times 9.46 - 6 \times 6) \times 6 = 38.5$  kips       $\Sigma W = 75.2$  kips

CHECK UPLIFT

$$\frac{64.4}{2} + \frac{10.8}{1.25} = 40.8 \text{ kips} < 52.2 \text{ kips NG!}$$

PROPOSED CONCRETE BLOCK 6' x 12' x 2'

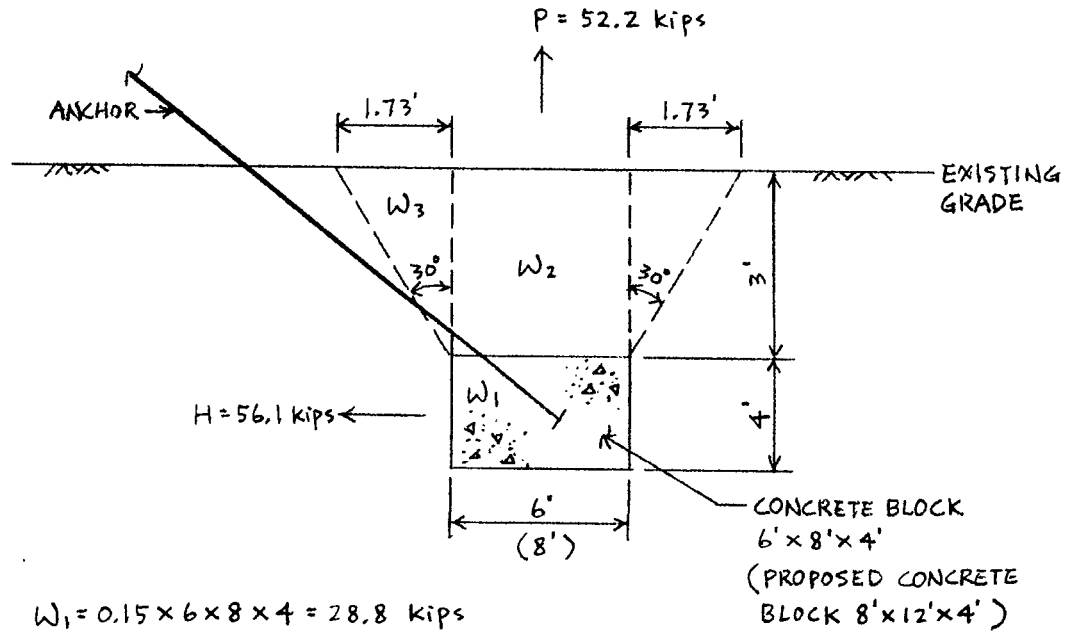
$W_1 = 0.15 \times 6 \times 12 \times 2 = 21.6$  kips  
 $W_2 = 0.12 \times 6 \times 12 \times 6 = 51.8$  kips  
 $W_3 = 0.12 \times (9.46 \times 15.46 - 6 \times 12) \times 6 = 53.5$  kips

CHECK UPLIFT

$$\frac{105.3}{2} + \frac{21.6}{1.25} = 69.9 \text{ kips} > 52.2 \text{ kips OK}$$

$$\frac{105.3 + 21.6}{1.5} = 84.6 \text{ kips} > 52.2 \text{ kips OK}$$

GUY ANCHOR (OUTER) GUY ANCHOR 2



$$W_1 = 0.15 \times 6 \times 8 \times 4 = 28.8 \text{ kips}$$

$$W_2 \approx 0.09 \times 6 \times 8 \times 3 = 13.0 \text{ kips}$$

$$W_3 = 0.09 \times (7.73 \times 9.73 - 6 \times 8) \times 3 = 7.3 \text{ kips}$$

CHECK UPLIFT

$$\frac{W_R}{2} + \frac{W_C}{1.25} = \frac{20.3}{2} + \frac{28.8}{1.25} = 33.2 \text{ kips} < 52.2 \text{ kips NG!}$$

PROPOSED CONCRETE BLOCK 8' x 12' x 4'

$$W_1 = 0.15 \times 8 \times 12 \times 4 = 57.6 \text{ kips}$$

$$W_2 = 0.09 \times 8 \times 12 \times 3 = 25.9 \text{ kips}$$

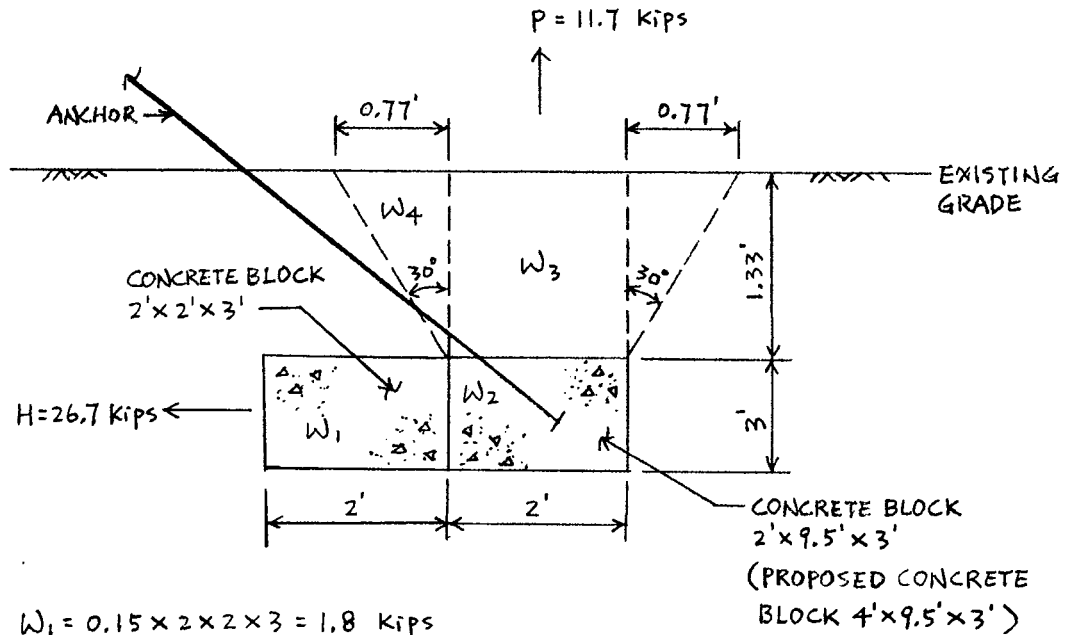
$$W_3 = 0.09 \times (9.73 \times 13.73 - 8 \times 12) \times 3 = 10.2 \text{ kips}$$

CHECK UPLIFT

$$\frac{36.1}{2} + \frac{57.6}{1.25} = 64.1 \text{ kips} > 52.2 \text{ kips OK}$$

$$\frac{36.1 + 57.6}{1.5} = 62.5 \text{ kips} > 52.2 \text{ kips OK}$$

GUY ANCHOR (INNER) GUY ANCHOR 3



$$W_1 = 0.15 \times 2 \times 2 \times 3 = 1.8 \text{ kips}$$

$$W_2 = 0.15 \times 2 \times 9.5 \times 3 = 8.6 \text{ kips}$$

$$W_3 = 0.12 \times 2 \times 9.5 \times 1.33 = 3.0 \text{ kips}$$

$$W_4 = 0.12 \times (2.77 \times 10.27 - 2 \times 9.5) \times 1.33 = 1.5 \text{ kips}$$

CHECK UPLIFT

$$\frac{14.9}{1.5} = 9.93 \text{ kips} < 11.7 \text{ kips NG!}$$

PROPOSED CONCRETE BLOCK 4' x 9.5' x 3'

$$W_{1,2} = 0.15 \times 4 \times 9.5 \times 3 = 17.1 \text{ kips}$$

$$W_3 = 0.12 \times 4 \times 9.5 \times 1.33 = 6.1 \text{ kips}$$

$$W_4 = 0.12 \times (4.77 \times 10.27 - 4 \times 9.5) \times 1.33 = 1.8 \text{ kips}$$

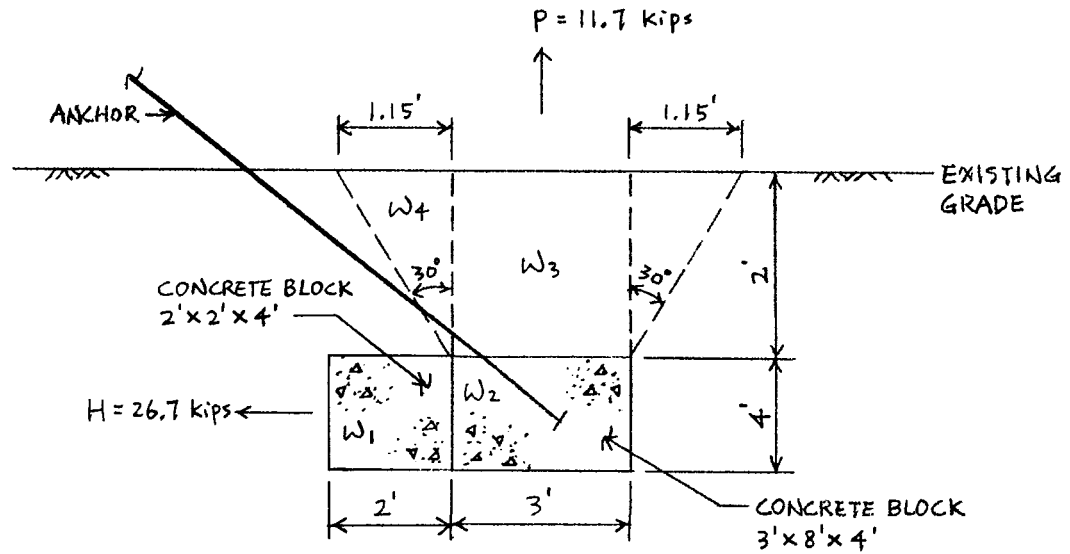
CHECK UPLIFT

$$\frac{7.9}{2} + \frac{17.1}{1.25} = 17.6 \text{ kips} > 11.7 \text{ kips OK}$$

$$\frac{7.9 + 17.1}{1.5} = 16.7 \text{ kips} > 11.7 \text{ kips OK}$$



GUY ANCHOR (INNER) GUY ANCHOR 2



$$W_1 = 0.15 \times 2 \times 2 \times 4 = 2.4 \text{ kips}$$

$$W_2 = 0.15 \times 3 \times 8 \times 4 = 14.4 \text{ kips}$$

$$W_3 = 0.09 \times 3 \times 8 \times 2 = 0.4 \text{ kips}$$

$$W_4 = 0.09 \times (4.15 \times 9.15 - 3 \times 8) \times 2 = 2.5 \text{ kips}$$

CHECK UPLIFT

$$\frac{2.9}{2} + \frac{16.8}{1.25} = 14.9 \text{ kips} > 11.7 \text{ kips OK}$$

$$\frac{2.9 + 16.8}{1.5} = 13.1 \text{ kips} > 11.7 \text{ kips OK}$$

**PROJECT INFORMATION**

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

SITE ADDRESS: 353 PUMPKIN HILL ROAD  
 ASHFORD, CT 06278

LATITUDE: 41.84802 N 41° 50' 52.9" N  
 LONGITUDE: 72.12139 W 72° 7' 17.0" W

CURRENT USE: TELECOMMUNICATIONS FACILITY  
 PROPOSED USE: TELECOMMUNICATIONS FACILITY



**SITE NUMBER: CT1068**  
**SITE NAME: ASHFORD**

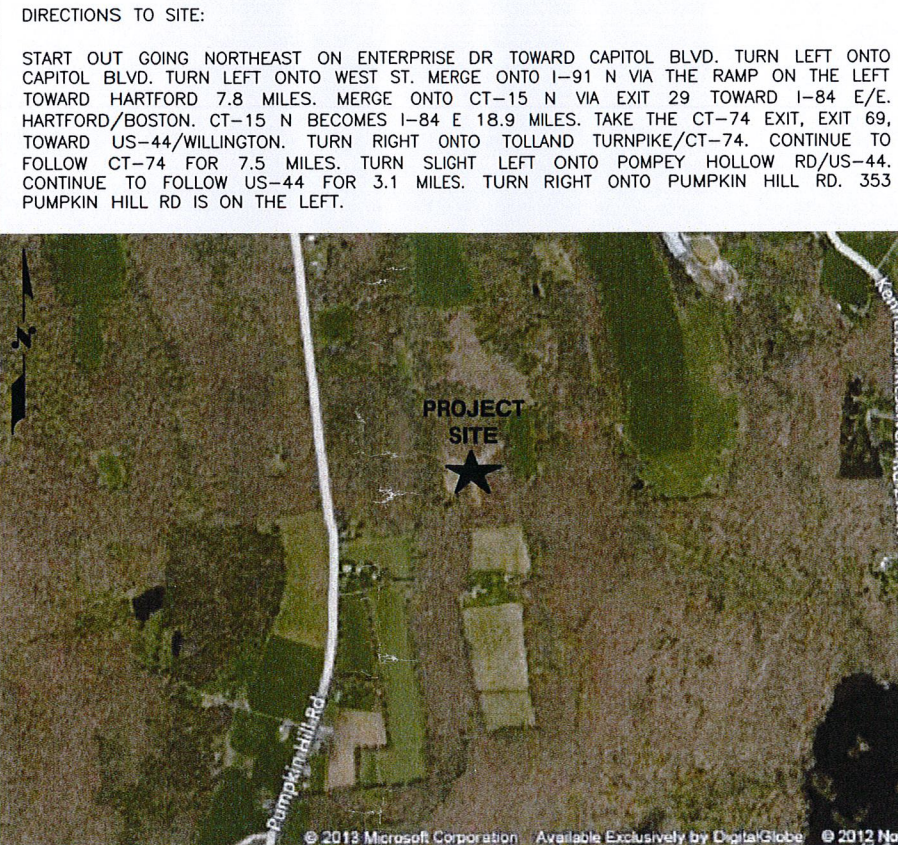
**DRAWING INDEX**

**REV**

- T-1 TITLE SHEET
- GN-1 GENERAL NOTES
- A-1 COMPOUND PLAN & EQUIPMENT PLAN
- A-2 ANTENNA PLAN & ELEVATION
- A-3 DETAILS
- S-1 TOWER MODIFICATION ELEVATION & GUY WIRE PLAN
- S-2 TOWER MODIFICATION DETAILS
- S-3 FOUNDATION MODIFICATION PLAN & DETAILS
- S-4 FOUNDATION MODIFICATION PLAN & DETAILS
- S-5 FOUNDATION MODIFICATION PLAN & DETAILS
- G-1 PLUMBING DIAGRAM & GROUNDING DETAILS

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**VICINITY MAP**



**GENERAL NOTES**

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

CALL



BEFORE YOU DIG



CALL TOLL FREE 1-800-922-4455 OR DIAL 811

**UNDERGROUND SERVICE ALERT**

**Hudson Design Group, LLC**  
 1600 OSGOOD STREET  
 BUILDING 20 NORTH, SUITE 3090  
 N. ANDOVER, MA 01845  
 TEL: (978) 557-5553  
 FAX: (978) 336-5586

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

**SITE NUMBER: CT1068**  
**SITE NAME: ASHFORD**  
 353 PUMPKIN HILL ROAD  
 ASHFORD, CT 06278  
 WINDHAM COUNTY

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

								AT&T	
2	01/30/13	ISSUED FOR CONSTRUCTION	DC	DPH			TITLE SHEET (LTE)		
1	10/19/12	ISSUED FOR PERMITTING	MJS	DC	DPH				
0	08/06/12	ISSUED FOR REVIEW	RM	DC	DPH				
NO.	DATE	REVISIONS	BY	CHK	APP'D			JOB NUMBER	DRAWING NUMBER
								1068.01	T-1
SCALE: AS SHOWN		DESIGNED BY: DC		DRAWN BY: RM					REV
									2

**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 UMTS SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T MOBILITY SITES."
  17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
  18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
  19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.
  20. APPLICABLE BUILDING CODES:  
 SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.  
 BUILDING CODE: 2003 IBC WITH 2005 CT SUPPLEMENT & 2009 CT AMENDMENTS  
 ELECTRICAL CODE: REFER TO ELECTRICAL DRAWINGS  
 LIGHTENING CODE: REFER TO ELECTRICAL DRAWINGS
- SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:
- AMERICAN CONCRETE INSTITUTE (ACI) 318; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE;
  - AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) MANUAL OF STEEL CONSTRUCTION, ASD, NINTH EDITION;
  - TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-F, STRUCTURAL STANDARDS FOR STEEL
  - ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES; REFER TO ELECTRICAL DRAWINGS FOR SPECIFIC ELECTRICAL STANDARDS.
- FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

**ABBREVIATIONS**

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

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GENERAL NOTES (LTE)

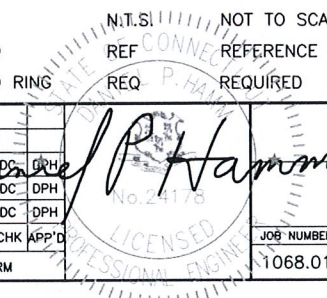
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1	10/19/12	ISSUED FOR PERMITTING	RM	DC	DPH
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SCALE: AS SHOWN					
DESIGNED BY: DC		DRAWN BY: RM			
JOB NUMBER	DRAWING NUMBER		REV		
1068.01	GN-1		2		

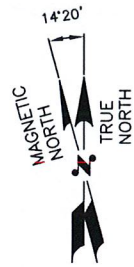
1600 OSGOOD STREET  
BUILDING 20 NORTH, SUITE 3090  
N. ANDOVER, MA 01845  
TEL: (978) 557-5553  
FAX: (978) 336-5586

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

**SITE NUMBER: CT1068**  
**SITE NAME: ASHFORD**  
353 PUMPKIN HILL ROAD  
ASHFORD, CT 06278  
WINDHAM COUNTY

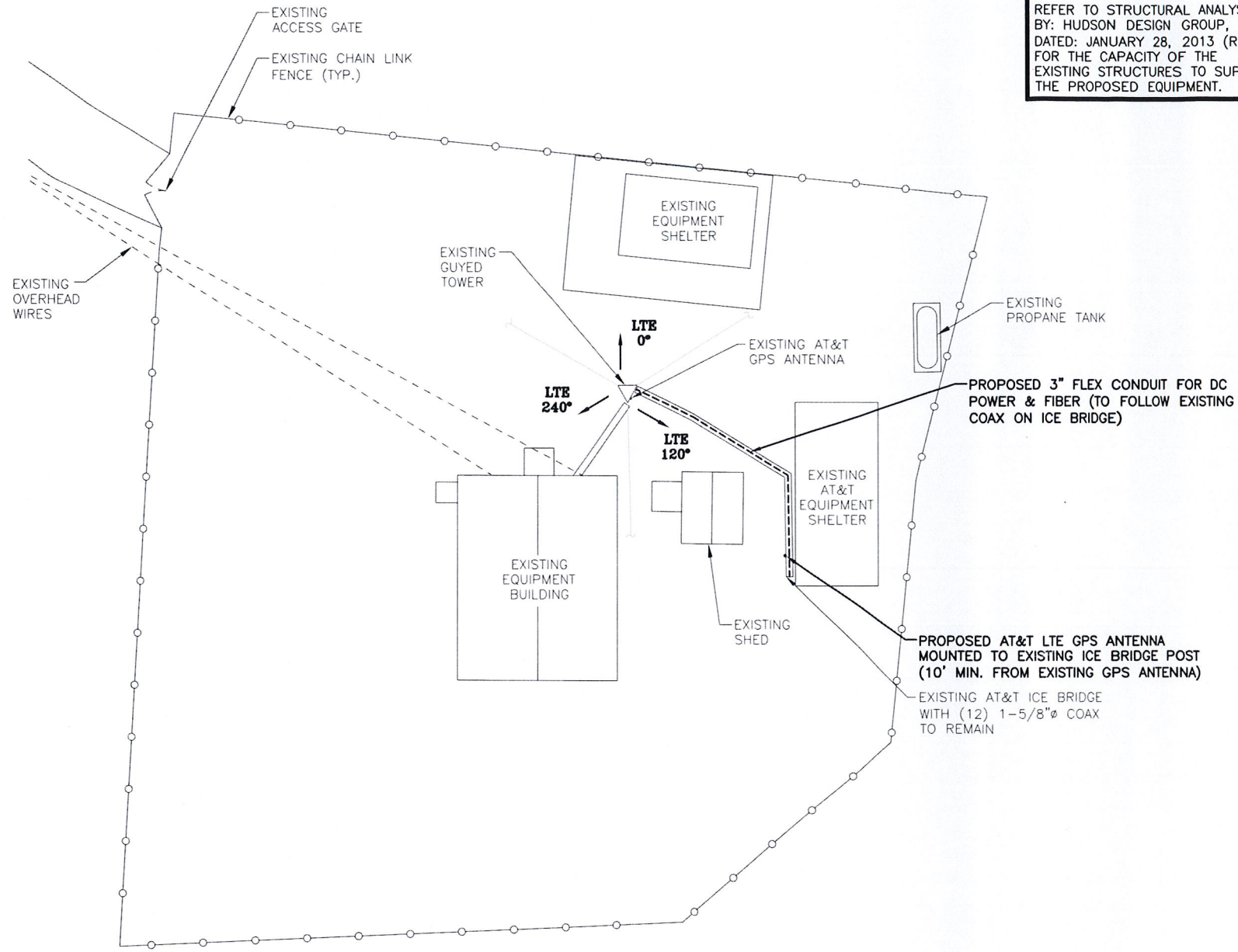
500 ENTERPRISE DRIVE, SUITE 3A  
ROCKY HILL, CT 06067



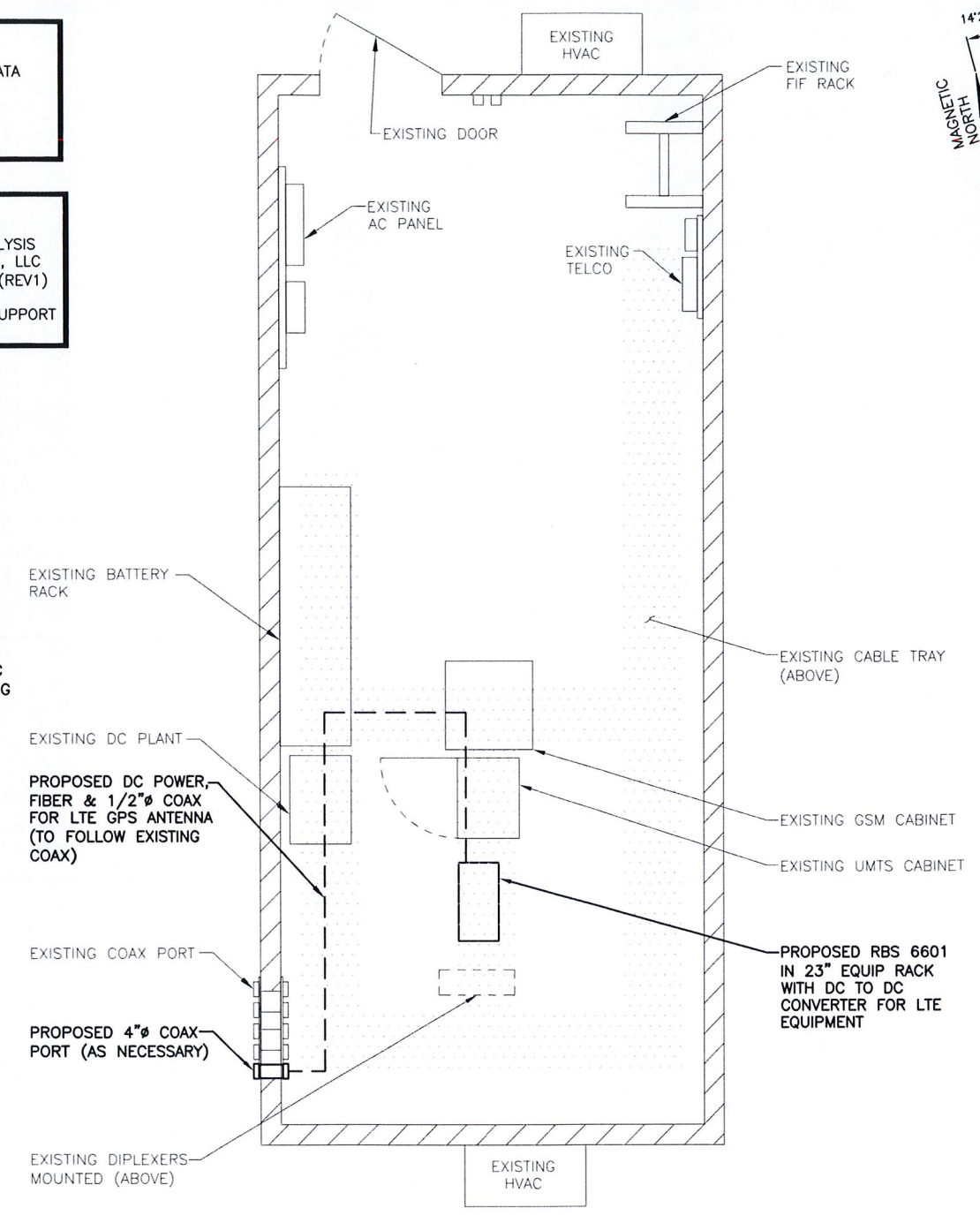


**NOTE:**  
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

**NOTE:**  
REFER TO STRUCTURAL ANALYSIS BY: HUDSON DESIGN GROUP, LLC DATED: JANUARY 28, 2013 (REV1) FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.



**COMPOUND PLAN**  
SCALE: 3/32" = 1'-0"  
0 5'-4" 10'-8" 21'-4" 32'-0"



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

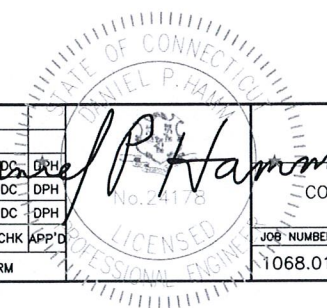
**Hudson Design Group LLC**  
1400 OSGOOD STREET  
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N. ANDOVER, MA 01845  
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**Pinnacle Wireless**  
a UniTek GLOBAL SERVICES company  
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WINDSOR, CT 06095

**SITE NUMBER: CT1068**  
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ASHFORD, CT 06278  
WINDHAM COUNTY

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

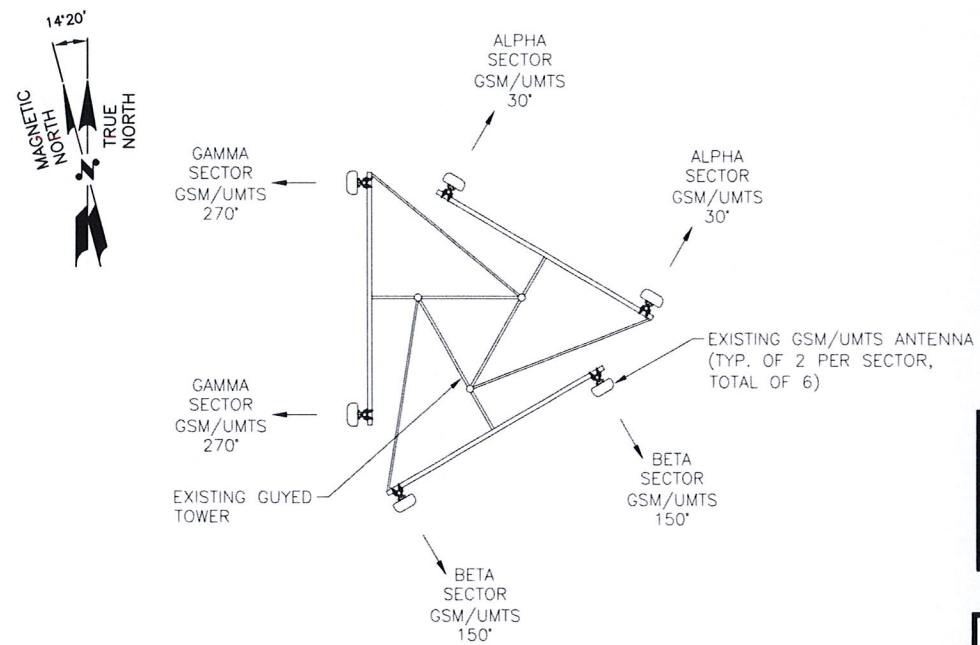
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NO.	DATE	REVISIONS	BY	CHK	APP'D
SCALE: AS SHOWN		DESIGNED BY: DC	DRAWN BY: RM		



AT&T

COMPOUND PLAN & EQUIPMENT PLAN (LTE)

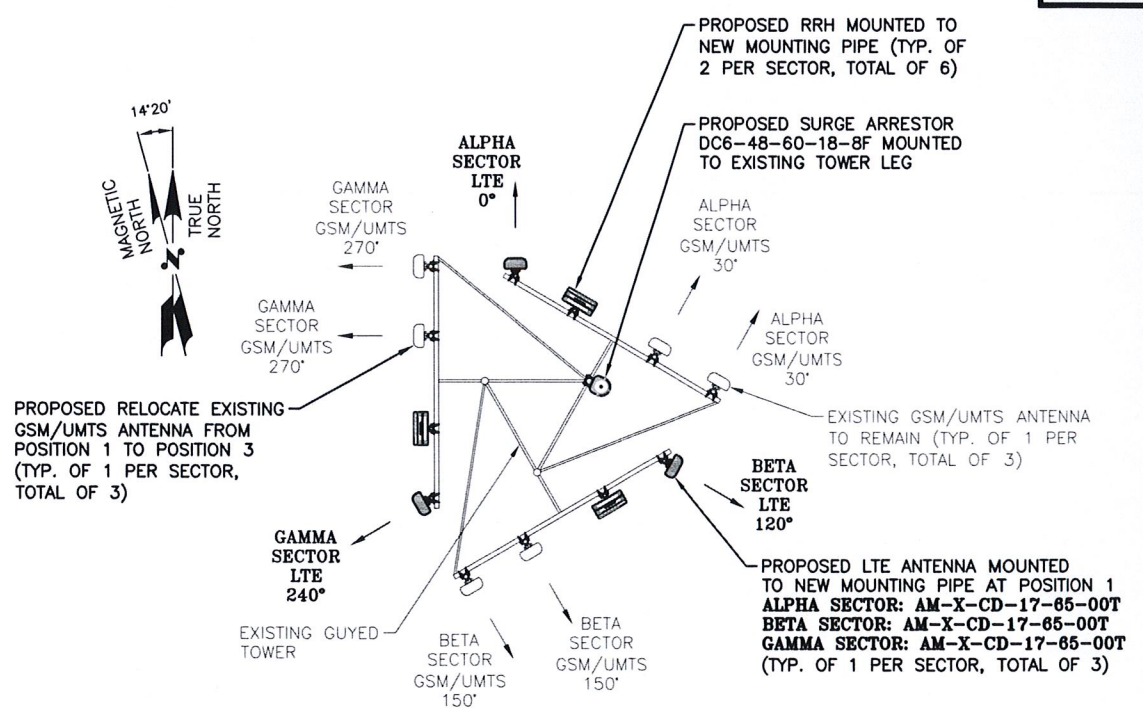
JOB NUMBER	DRAWING NUMBER	REV
1068.01	A-1	2



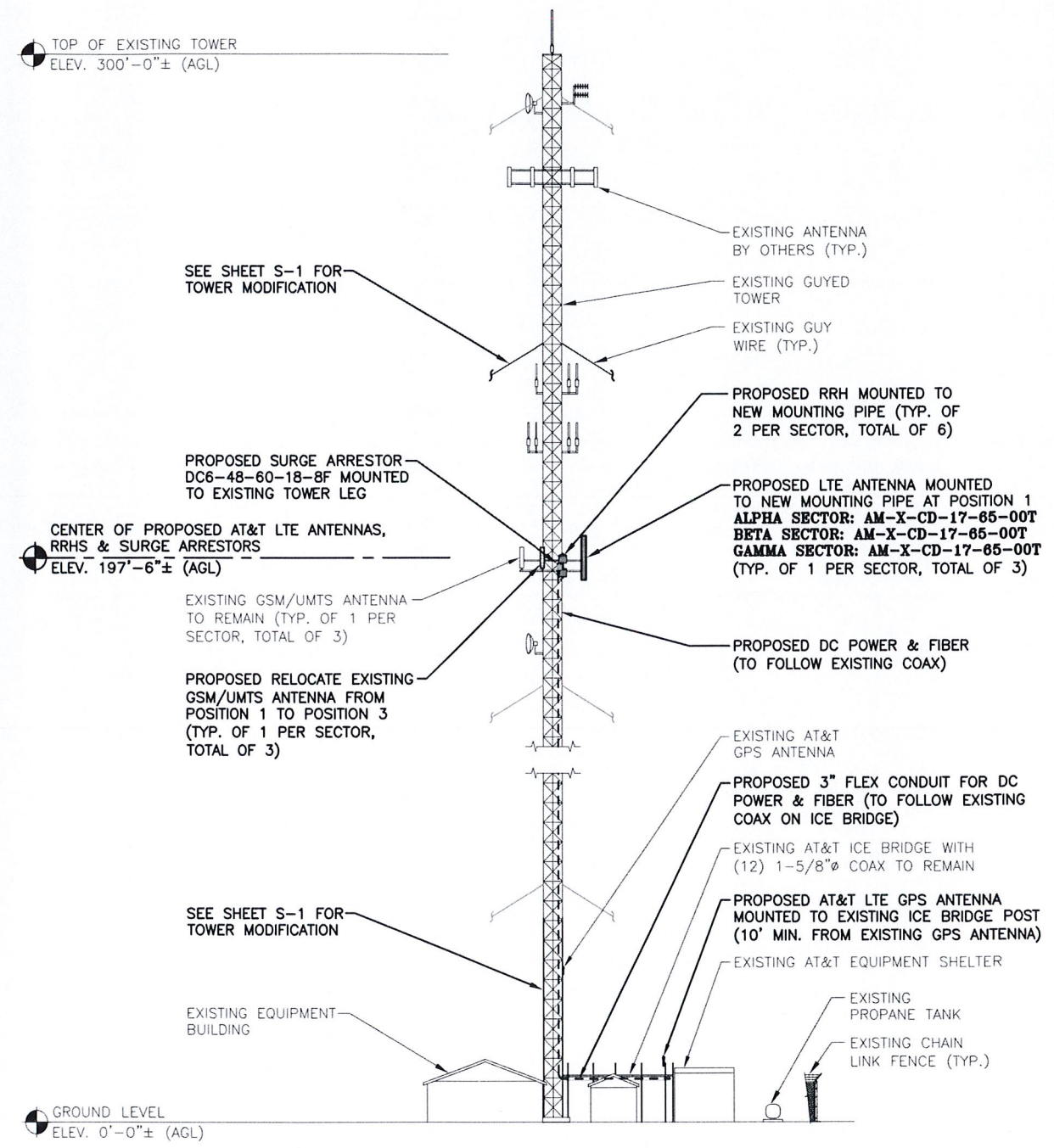
**EXISTING GSM/UMTS ANTENNA PLAN**  
SCALE: N.T.S.

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

**NOTE:**  
REFER TO STRUCTURAL ANALYSIS BY: HUDSON DESIGN GROUP, LLC DATED: JANUARY 28, 2013 (REV1) FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.



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



**SOUTH ELEVATION**  
SCALE: 3/32"=1'-0"  
0 5'-4" 10'-8" 21'-4" 32'-0"

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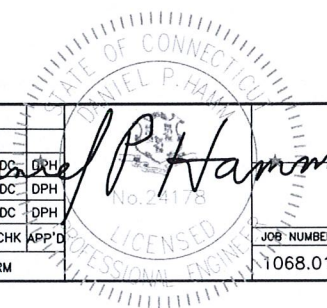
**Pinnacle Wireless**  
a UniTek GLOBAL SERVICES company  
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WINDSOR, CT 06095

**SITE NUMBER: CT1068**  
**SITE NAME: ASHFORD**  
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ASHFORD, CT 06278  
WINDHAM COUNTY

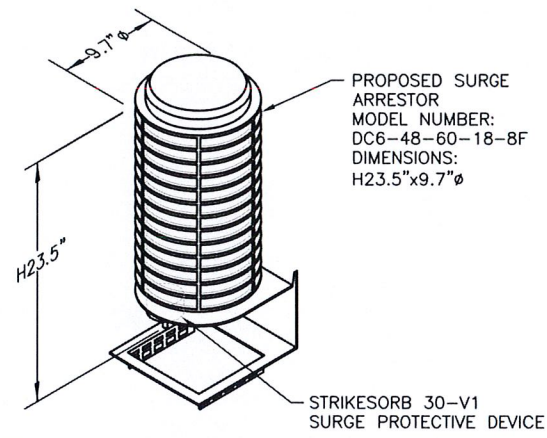
**at&t**  
500 ENTERPRISE DRIVE, SUITE 3A  
ROCKY HILL, CT 06067

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0	08/06/12	ISSUED FOR REVIEW	RM	DC	DPH

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



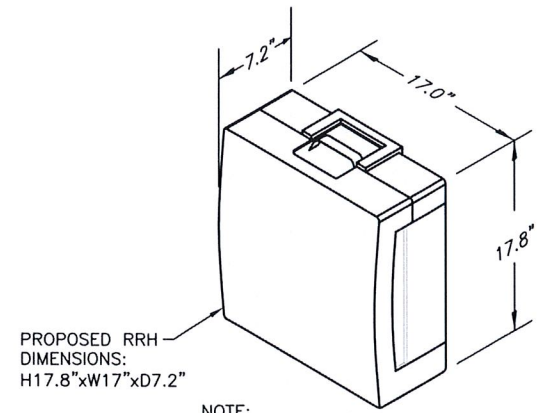
AT&T		
ANTENNA PLAN & ELEVATION (LTE)		
JOB NUMBER	DRAWING NUMBER	REV
1068.01	A-2	2



NOTE:  
MOUNT PER MANUFACTURER'S SPECIFICATIONS.

**DC SURGE ARRESTOR DETAIL**

SCALE: N.T.S.



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

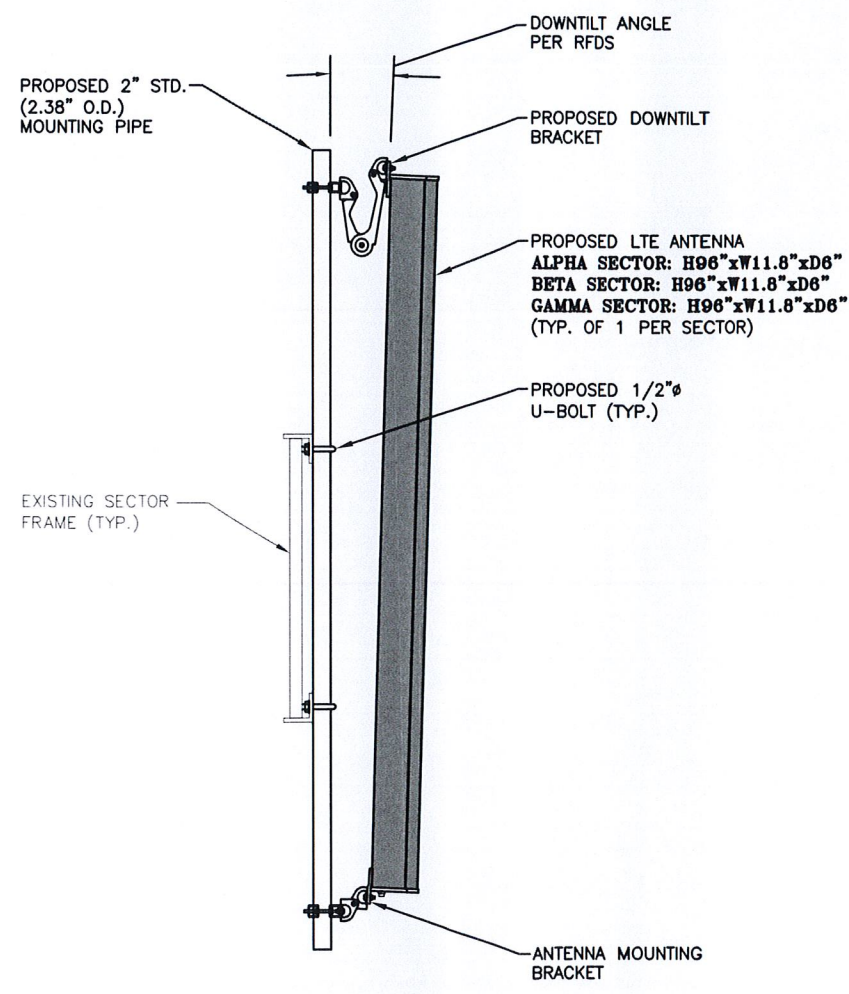
NOTE:  
MOUNT PER MANUFACTURER'S  
SPECIFICATIONS.

**RRH DETAIL**

SCALE: N.T.S.

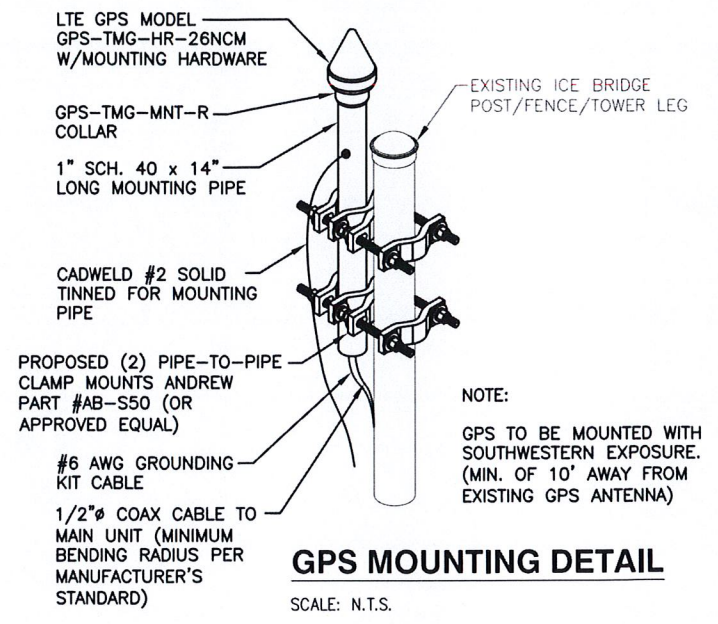
NOTE:  
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

NOTE:  
REFER TO STRUCTURAL ANALYSIS BY: HUDSON DESIGN GROUP, LLC DATED: JANUARY 28, 2013 (REV1) FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.



**PROPOSED LTE ANTENNA MOUNTING DETAIL**

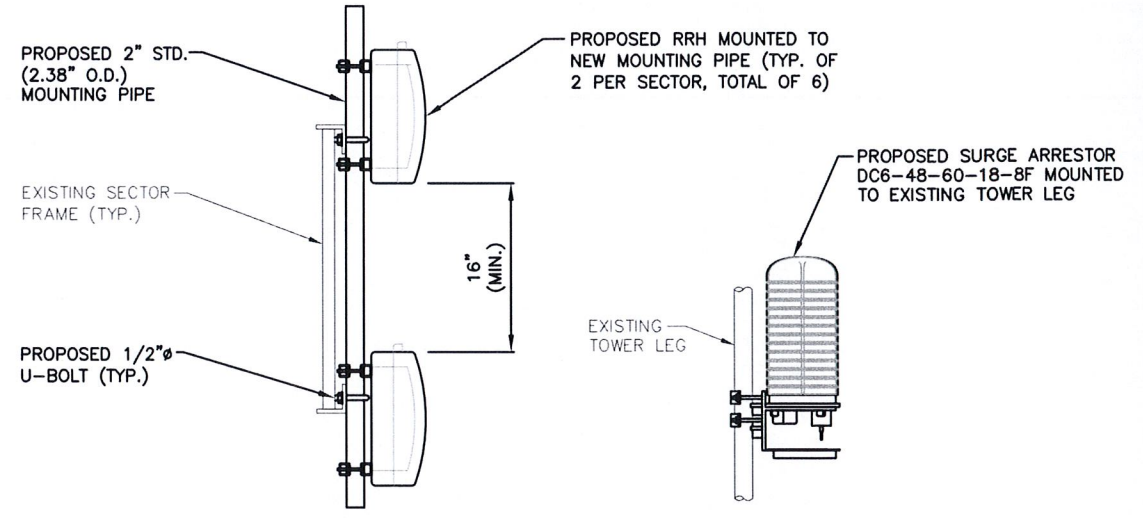
SCALE: N.T.S.



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

**GPS MOUNTING DETAIL**

SCALE: N.T.S.



**PROPOSED RRH & SURGE ARRESTOR MOUNTING DETAIL**

SCALE: N.T.S.

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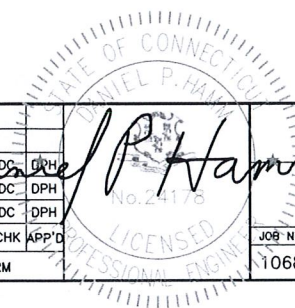
**Pinnacle Wireless**  
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WINDHAM COUNTY

**at&t**  
500 ENTERPRISE DRIVE, SUITE 3A  
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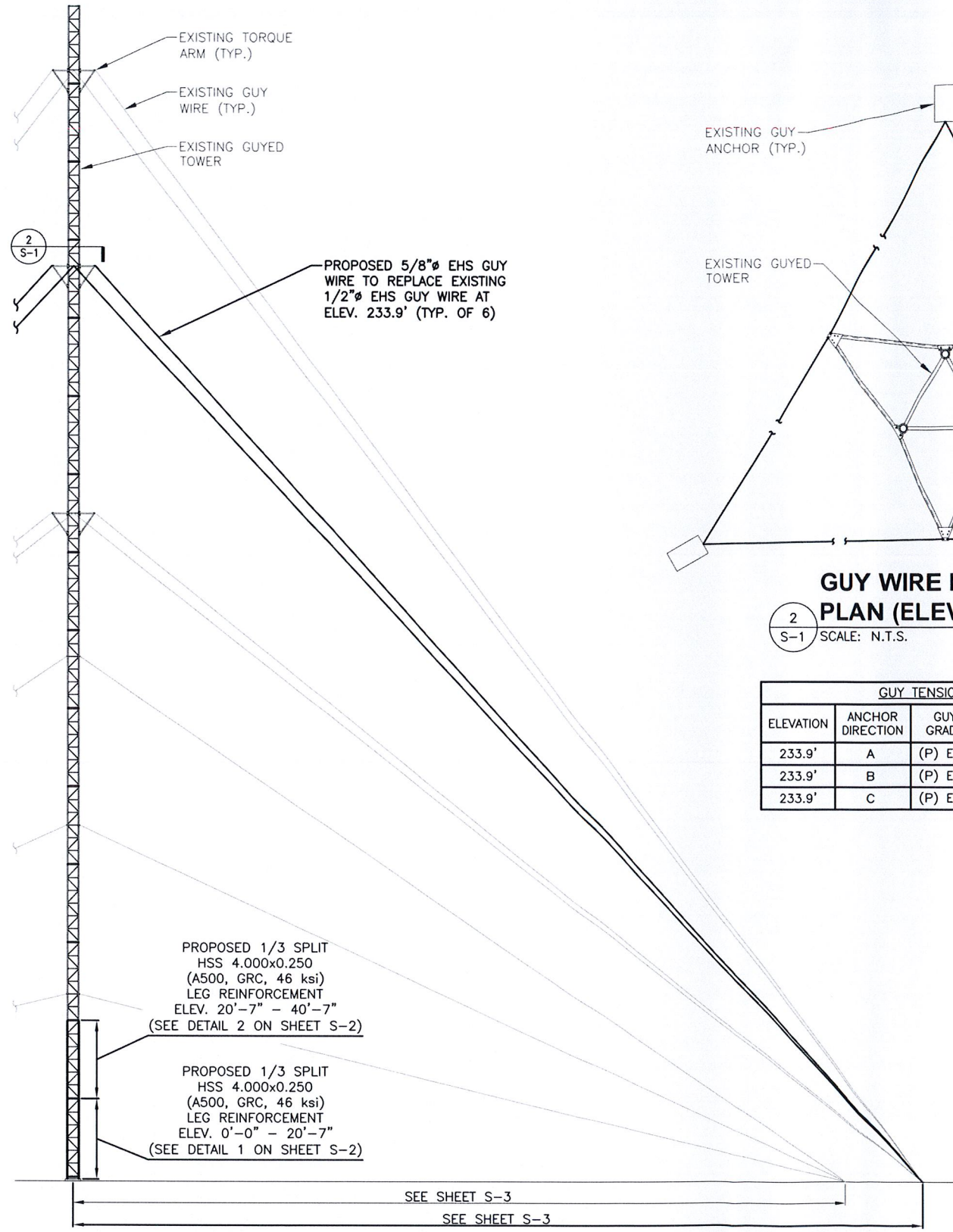
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0	08/06/12	ISSUED FOR REVIEW	RM	DC	DPH

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

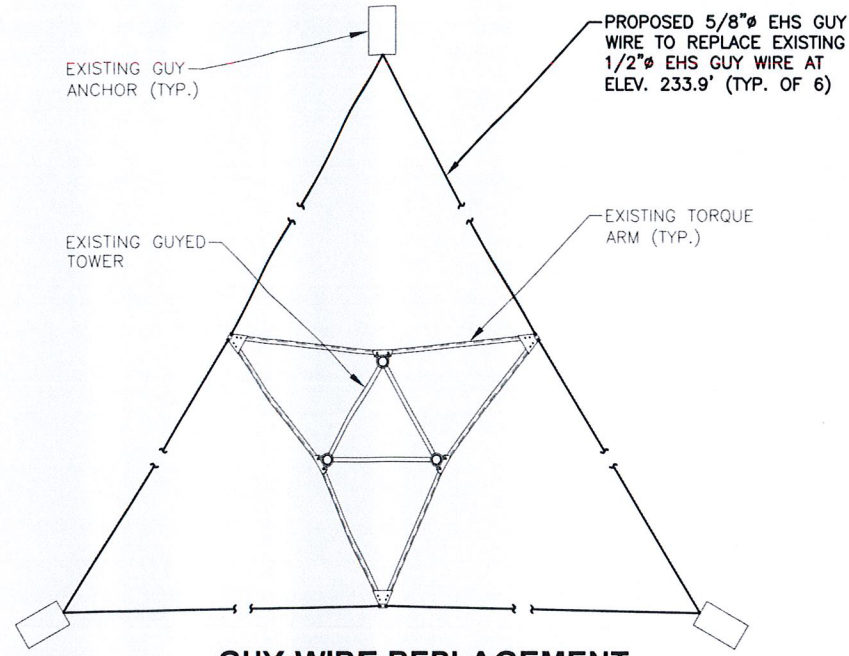


AT&T	
DETAILS (LTE)	
JOB NUMBER	DRAWING NUMBER
1068.01	A-3
REV	2

- TOP OF EXISTING TOWER  
ELEV. 300'-7"
- TOWER SECTION  
ELEV. 280'-7"
- TOWER SECTION  
ELEV. 260'-7"
- TOWER SECTION  
ELEV. 240'-7"
- TOWER SECTION  
ELEV. 220'-7"
- TOWER SECTION  
ELEV. 200'-7"
- TOWER SECTION  
ELEV. 180'-7"
- TOWER SECTION  
ELEV. 160'-7"
- TOWER SECTION  
ELEV. 140'-7"
- TOWER SECTION  
ELEV. 120'-7"
- TOWER SECTION  
ELEV. 100'-7"
- TOWER SECTION  
ELEV. 80'-7"
- TOWER SECTION  
ELEV. 60'-7"
- TOWER SECTION  
ELEV. 40'-7"
- TOWER SECTION  
ELEV. 20'-7"
- TOWER SECTION  
ELEV. 0'-7"
- BASE OF EXISTING TOWER  
ELEV. 0'-0"



1 TOWER ELEVATION  
S-1 SCALE: N.T.S.



2 GUY WIRE REPLACEMENT PLAN (ELEV. 233.9')  
S-1 SCALE: N.T.S.

GUY TENSION TABLE				
ELEVATION	ANCHOR DIRECTION	GUY GRADE	GUY SIZE	10% INITIAL TENSION (LBS)
233.9'	A	(P) EHS	5/8"	4,240
233.9'	B	(P) EHS	5/8"	4,240
233.9'	C	(P) EHS	5/8"	4,240

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

- GENERAL NOTES:**
- ALL WORK SHALL BE DONE IN ACCORDANCE WITH ALL APPLICABLE FEDERAL, STATE, AND LOCAL CODES AND ORDINANCES. IT IS THE CONTRACTORS RESPONSIBILITY TO OBTAIN ALL PERMITS NECESSARY TO COMPLETE THE PROJECT AND ABIDE BY ALL CONDITIONS AND REQUIREMENTS OF THE PERMITS.
  - THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL DIMENSIONS, ELEVATIONS, AND EXISTING CONDITIONS AT THE SITE BEFORE ORDERING ANY MATERIALS OR DOING ANY WORK. NO EXTRA CHARGE OR COMPENSATION SHALL BE ALLOWED DUE TO DIFFERENCE BETWEEN ACTUAL DIMENSIONS AND DIMENSIONS INDICATED ON THE CONSTRUCTION DRAWINGS. ANY SUCH DISCREPANCY IN DIMENSION WHICH MAY BE FOUND SHALL BE SUBMITTED TO HUDSON DESIGN GROUP FOR CONSIDERATION BEFORE THE CONTRACTOR PROCEEDS WITH THE WORK IN THE AFFECTED AREA.
  - INCORRECTLY FABRICATED, DAMAGED, OTHERWISE MISFITTING, OR NON-CONFORMING MATERIALS AND CONDITIONS SHALL BE REPORTED TO HUDSON DESIGN GROUP PRIOR TO ANY REMEDIAL OR CORRECTIVE ACTION. ALL ACTIONS SHALL REQUIRE HUDSON DESIGN GROUP, LLC APPROVAL.
  - IT IS THE CONTRACTORS SOLE RESPONSIBILITY TO DETERMINE ERECTION PROCEDURE AND SEQUENCE TO INSURE THE SAFETY OF THE STRUCTURE AND ITS COMPONENT PARTS DURING ERECTION AND/OR FIELD MODIFICATIONS. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF TEMPORARY BRACING, GUYS OR TIE DOWNS THAT MAY BE NECESSARY. SUCH MATERIAL SHALL BE REMOVED AFTER COMPLETION OF THE PROJECT.
  - CONTRACTOR SHALL PROMPTLY REMOVE ANY AND ALL DEBRIS FROM SITE AND RESTORE AS BEST AS POSSIBLE TO PRE-CONSTRUCTION CONDITION.

- STEEL:**
- ALL STRUCTURAL STEEL SHALL BE FABRICATED AND ERECTED IN ACCORDANCE WITH THE LATEST AISC CODE AND ASTM SPECIFICATIONS.
  - ALL CONNECTIONS OF STRUCTURAL STEEL MEMBERS SHALL BE MADE USING SPECIFIED WELDS WITH WELDING ELECTRODES E-70XX OR SPECIFIED HIGH STRENGTH BOLTS TO BE ASTM A325N, THREAD INCLUDED WITH SHEAR PLANE UNLESS OTHERWISE NOTED.
  - ALL BOLTED CONNECTIONS TO BE INSTALLED TO A SNUG-TIGHTENED CONDITION IN ACCORDANCE WITH AISC 13 PART 16.2, "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS", SECTION 8.1, UNLESS OTHERWISE NOTED.
  - ALL STEEL (EXCEPT A490 BOLTS), AFTER FABRICATION, SHALL BE HOT DIPPED GALVANIZED PER ASTM A-123. ALL DAMAGED SURFACES, WELDED AREAS AND AUTHORIZED NON-GALVANIZED MEMBERS OR PARTS (EXISTING OR NEW) SHALL BE PAINTED WITH 2 COATS OF ZRC COLD GALVANIZING COMPOUND.
  - ALL SHOP AND FIELD WELDING SHALL BE DONE BY WELDERS QUALIFIED AS DESCRIBED IN THE "AMERICAN WELDING SOCIETY'S STANDARD QUALIFICATION PROCEDURE" TO PERFORM THE TYPE OF WORK REQUIRED.
  - STRUCTURAL STEEL MAY NOT BE TORCH CUT FOR FABRICATION. ALL STEEL FABRICATION MUST FOLLOW AISC STANDARDS.
  - NEW STEEL MEMBERS AND CONNECTIONS SHALL BE PAINTED TO MATCH EXISTING TOWER.

- MISC. NOTES:**
- ALL MODIFICATIONS ARE ASSUMED TO BE MADE ON AN EMPTY TOWER. CONTRACTOR IS RESPONSIBLE TO MAKE PROVISIONS TO SUPPORT OR WORK AROUND EXISTING ANTENNAS AND TRANSMISSION LINES. MODIFICATIONS MUST BE CONTINUOUS THROUGH ALL AREAS SHOWN.
  - CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.

- FABRICATION NOTES:**
- ALL DIMENSIONS ARE PRELIMINARY UNTIL FIELD VERIFIED BY CONTRACTOR. ANY CHANGES MUST BE APPROVED BY ENGINEER OF RECORD IN WRITING PRIOR TO FABRICATION AND INSTALLATION.
  - NEW STEEL MEMBERS MUST HAVE SINGLE DRILLED HOLES. SLOTTED AND DOUBLE DRILLED HOLES ARE NOT ACCEPTABLE MEANS OF FABRICATION.

- CONTRACTOR QUALIFICATION NOTES:**
- ALL REPAIRS SHALL BE PERFORMED BY A TOWER CONTRACTOR WITH A MINIMUM OF 5 YEARS EXPERIENCE IN TOWER ERECTION AND RETROFIT AND WITH WORKING KNOWLEDGE OF THE ANSI/TIA-222-G "STRUCTURAL STANDARD FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS".
  - CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION MEANS AND METHODS. SHOULD THE CONTRACTOR REQUIRE DIRECT CONSULTATION, HUDSON DESIGN GROUP, LLC IS WILLING TO OFFER SERVICES BASED UPON AN AGREED FEE FOR THE WORK REQUIRED.
  - ALL SUBMITTAL INFORMATION MUST BE SENT TO HUDSON DESIGN GROUP, LLC 1600 OSGOOD ST. BUILDING 20N, SUITE 3090, NORTH ANDOVER, MA 01845 TEL: (978)557-5553, FAX: (978)336-5586. ANY VARIATION OF THESE SPECIFICATIONS OR DRAWINGS WITHOUT CONSENT FROM HUDSON DESIGN GROUP WILL VOID ANY RESPONSIBILITY OR LIABILITY FOR DAMAGE (MATERIAL OR PHYSICAL) TOWARDS HUDSON DESIGN GROUP, LLC.

**JOB SITE SAFETY AND NOTES:**  
NEITHER THE PROFESSIONAL ACTIVITIES OF HUDSON DESIGN GROUP, LLC NOR THE PRESENCE OF HUDSON DESIGN GROUP, LLC OR EMPLOYEES AND SUB-CONSULTANTS AT THE CONSTRUCTION SITE, SHALL RELIEVE THE GENERAL CONTRACTOR AND/OR SUBCONTRACTORS AND ANY OTHER ENTITY OF THEIR OBLIGATIONS, DUTIES AND RESPONSIBILITIES INCLUDING, BUT NOT LIMITED TO, CONSTRUCTION MEANS, METHODS, SEQUENCE, TECHNIQUES, OR PROCEDURES NECESSARY FOR PERFORMING, SUPERINTENDING OR COORDINATING ALL PORTIONS OF THE WORK OF CONSTRUCTION IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AND ANY HEALTH OR SAFETY PRECAUTIONS REQUIRED BY ANY REGULATORY AGENCIES. THE GENERAL CONTRACTOR AND/OR SUBCONTRACTOR IS SOLELY RESPONSIBLE FOR JOB SAFETY, AND WARRANTS THAT THIS INTENT IS EVIDENT BY ACCEPTING THIS WORK.

**SUBSTITUTES AND/OR EQUALS:**  
IF CONTRACTOR WISHES TO FURNISH OR USE A SUBSTITUTE ITEM OF MATERIAL OR EQUIPMENT, CONTRACTOR SHALL MAKE WRITTEN APPLICATION TO ENGINEER FOR ACCEPTANCE THEREOF, CERTIFYING THAT THE PROPOSED SUBSTITUTE WILL ADEQUATELY PERFORM THE FUNCTIONS AND ACHIEVE THE RESULTS CALLED FOR BY THE GENERAL DESIGN, BE SIMILAR IN SUBSTANCE TO THAT SPECIFIED, AND SUITED TO THE SAME USE AS THAT SPECIFIED. ALL VARIATIONS OF THE PROPOSED SUBSTITUTE FROM THAT SPECIFIED WILL BE IDENTIFIED IN THE APPLICATION AND AVAILABLE MAINTENANCE, REPAIR, AND REPLACEMENT SERVICE WILL BE INDICATED. THE APPLICATION WILL ALSO CONTAIN AN ITEMIZED ESTIMATE OF ALL COSTS OR CREDITS THAT WILL RESULT DIRECTLY OR INDIRECTLY FROM ACCEPTANCE OF SUCH SUBSTITUTE INCLUDING COSTS OF REDESIGN AND CLAIMS OF OTHER CONTRACTORS AFFECTED BY THE RESULTING CHANGE, ALL OF WHICH WILL BE CONSIDERED BY ENGINEER IN EVALUATION OF THE PROPOSED SUBSTITUTE. ENGINEER MAY REQUIRE CONTRACTOR TO FURNISH ADDITIONAL DATA ABOUT THE PROPOSED SUBSTITUTE.

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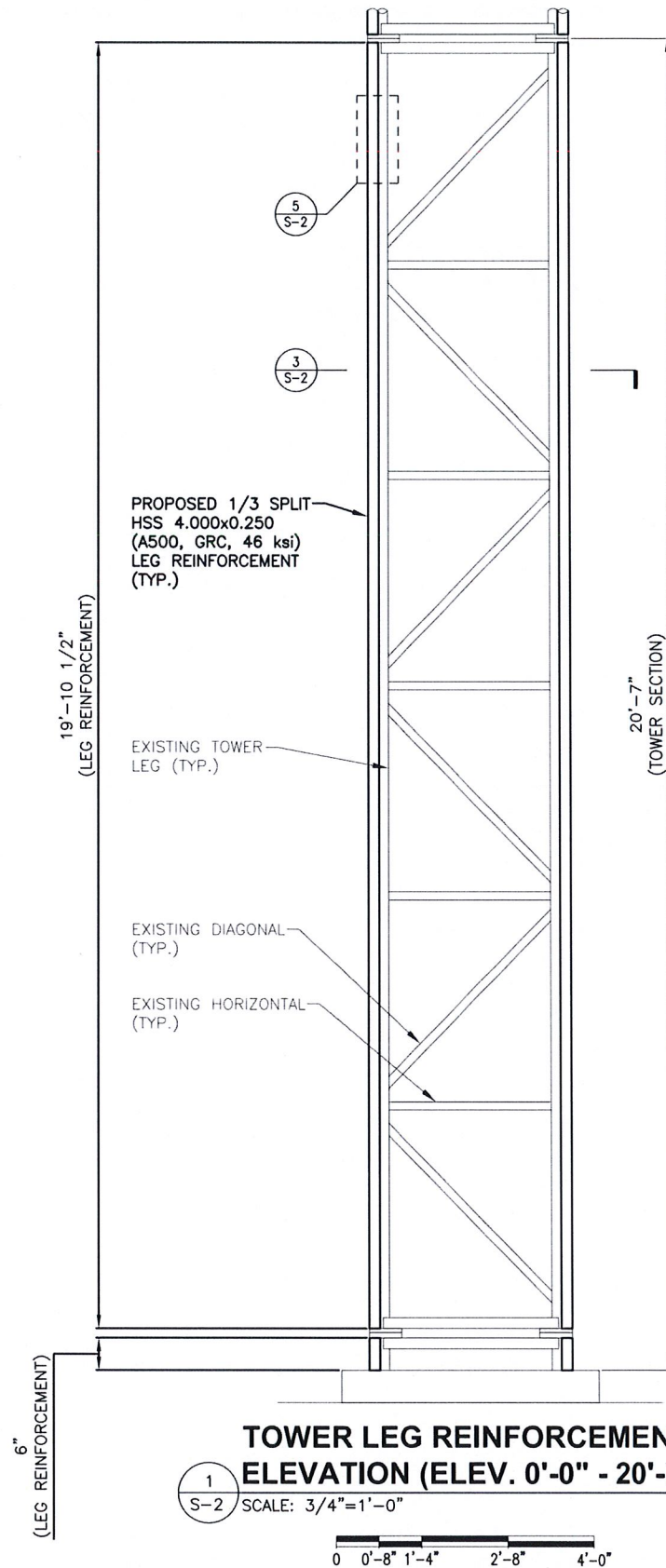
SCALE: AS SHOWN    DESIGNED BY: DC    DRAWN BY: RM

**AT&T**  
TOWER MODIFICATION ELEVATION & GUY WIRE PLAN (LTE)

*Signature: Daniel P. Hamm*

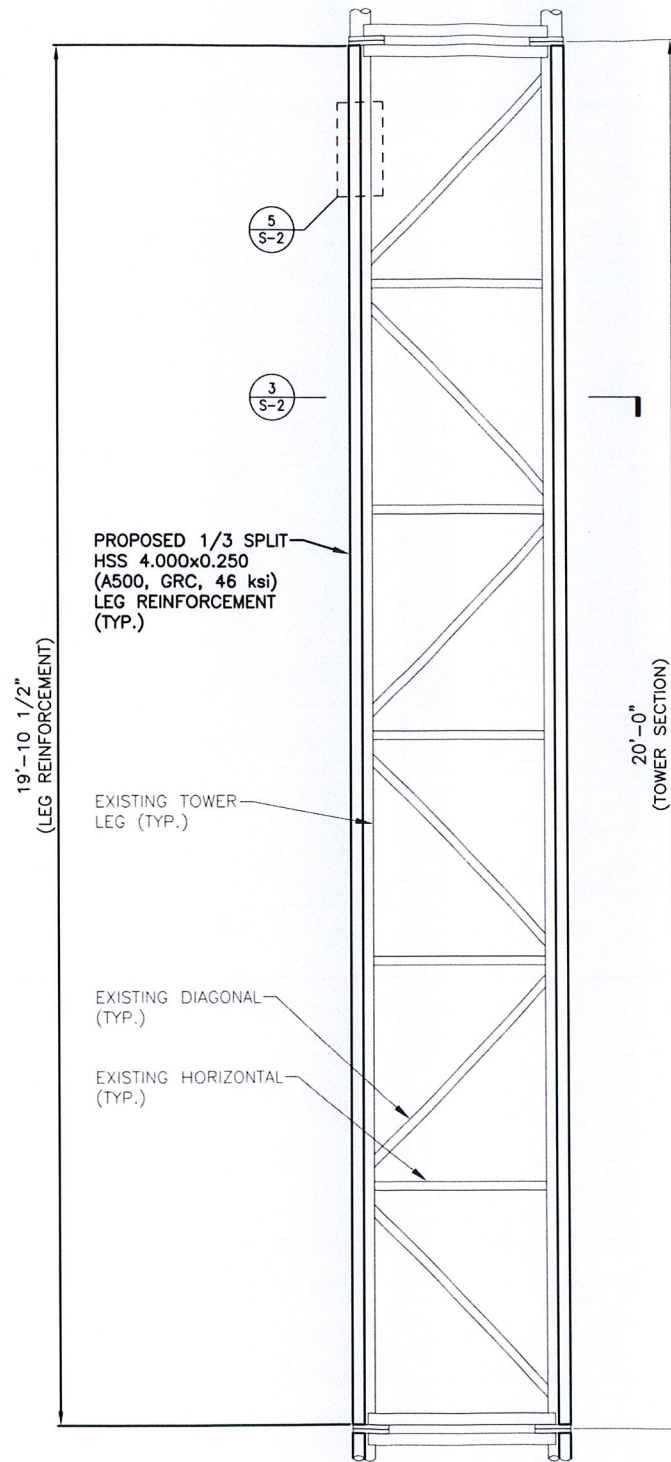
LICENSED PROFESSIONAL ENGINEER  
No. 24178

JOB NUMBER	DRAWING NUMBER	REV
1068.01	S-1	2



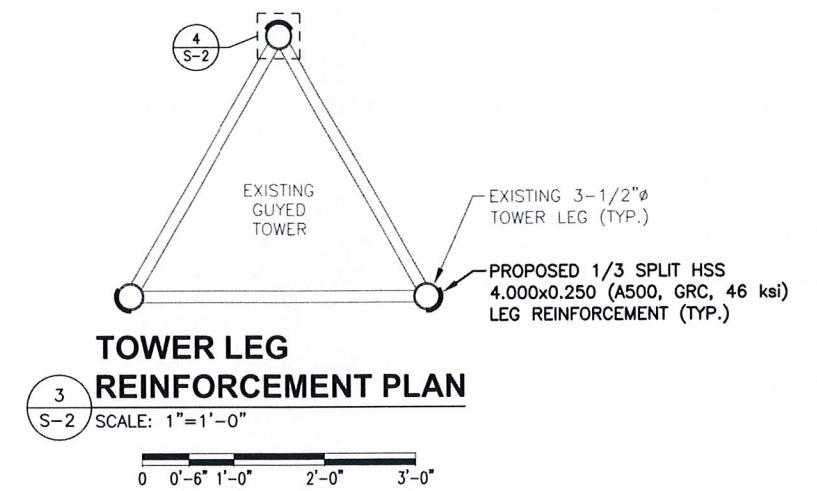
**TOWER LEG REINFORCEMENT ELEVATION (ELEV. 0'-0" - 20'-7")**

1 S-2 SCALE: 3/4"=1'-0"



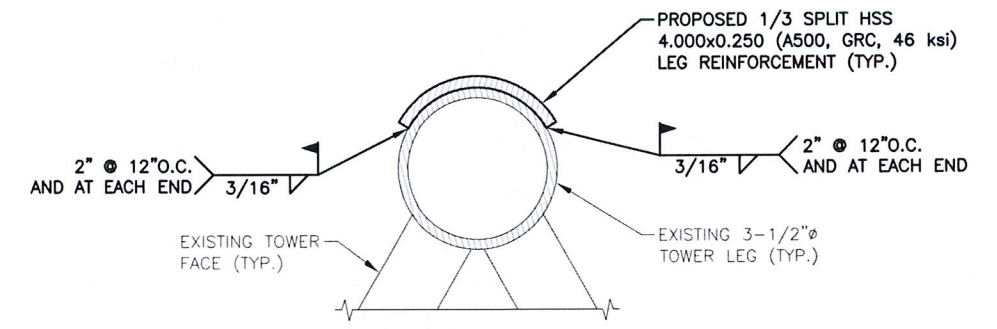
**TOWER LEG REINFORCEMENT ELEVATION (ELEV. 20'-7" - 40'-7")**

2 S-2 SCALE: 3/4"=1'-0"



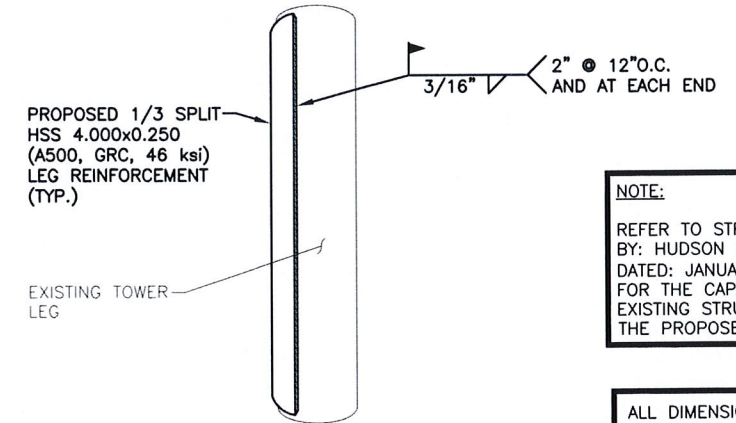
**TOWER LEG REINFORCEMENT PLAN**

3 S-2 SCALE: 1"=1'-0"



**TOWER LEG REINFORCEMENT DETAIL**

4 S-2 SCALE: 6"=1'-0"



**CONNECTION DETAIL**

5 S-2 SCALE: N.T.S.

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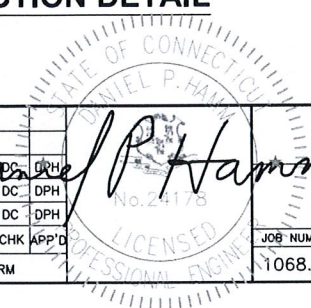
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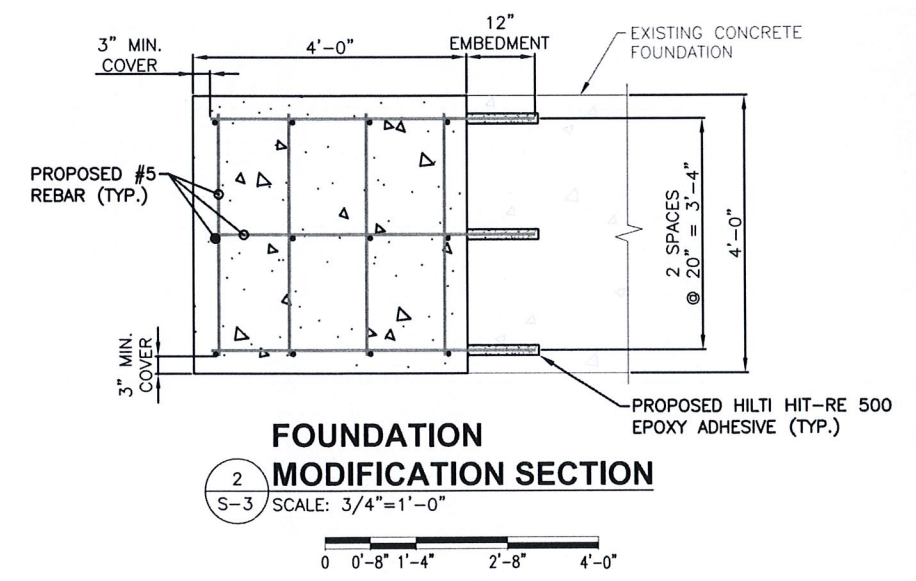
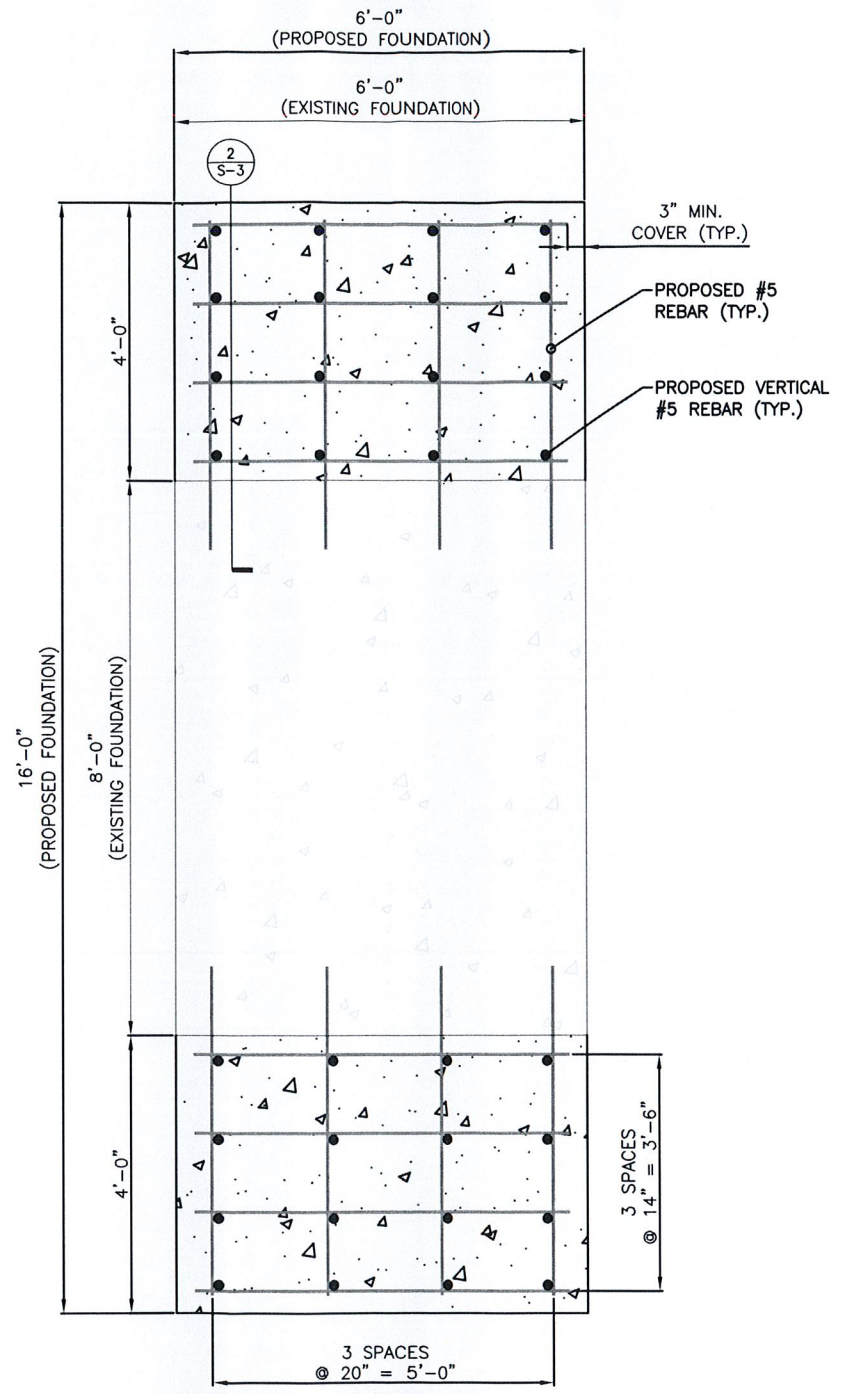
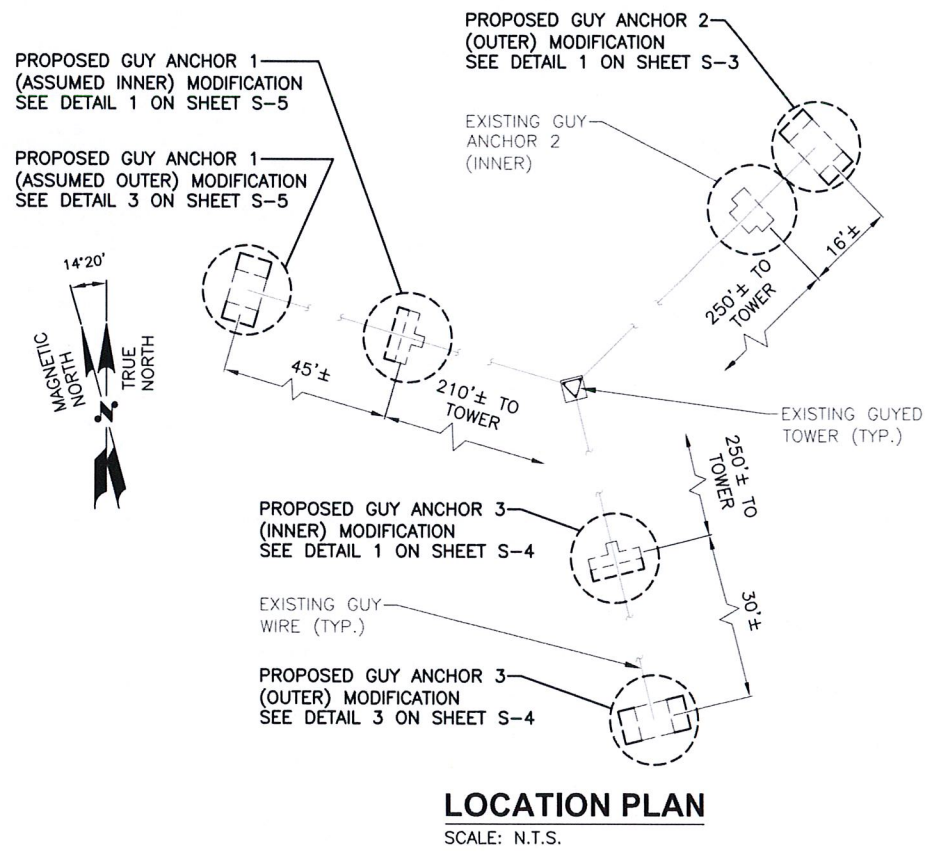
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1	10/19/12	ISSUED FOR PERMITTING	MJS	DC, DPH
0	08/06/12	ISSUED FOR REVIEW	RM	DC, DPH
NO.	DATE	REVISIONS	BY	CHK APP'D
SCALE: AS SHOWN		DESIGNED BY: DC	DRAWN BY: RM	



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TOWER MODIFICATION DETAILS (LTE)	
JOB NUMBER	DRAWING NUMBER
1068.01	S-2
REV	2



**NOTE:**  
 REFER TO STRUCTURAL ANALYSIS  
 BY: HUDSON DESIGN GROUP, LLC  
 DATED: JANUARY 28, 2013 (REV1)  
 FOR THE CAPACITY OF THE  
 EXISTING STRUCTURES TO SUPPORT  
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**FOUNDATION MODIFICATION PLAN**  
**GUY ANCHOR 2 - NORTHEAST (OUTER)**  
 1 S-3 SCALE: 3/4"=1'-0"

**Hudson Design Group, LLC**  
 1600 OSGOOD STREET  
 BUILDING 20 NORTH, SUITE 3090  
 N. ANDOVER, MA 01845  
 TEL: (978) 557-5553  
 FAX: (978) 336-5586

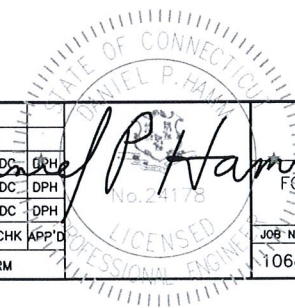
**Pinnacle Wireless**  
 a UniTek GLOBAL SERVICES company  
 800 MARSHALL PHELPS ROAD UNIT# 2A  
 WINDSOR, CT 06095

**SITE NUMBER: CT1068**  
**SITE NAME: ASHFORD**  
 353 PUMPKIN HILL ROAD  
 ASHFORD, CT 06278  
 WINDHAM COUNTY

**at&t**  
 500 ENTERPRISE DRIVE, SUITE 3A  
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SCALE: AS SHOWN    DESIGNED BY: DC    DRAWN BY: RM



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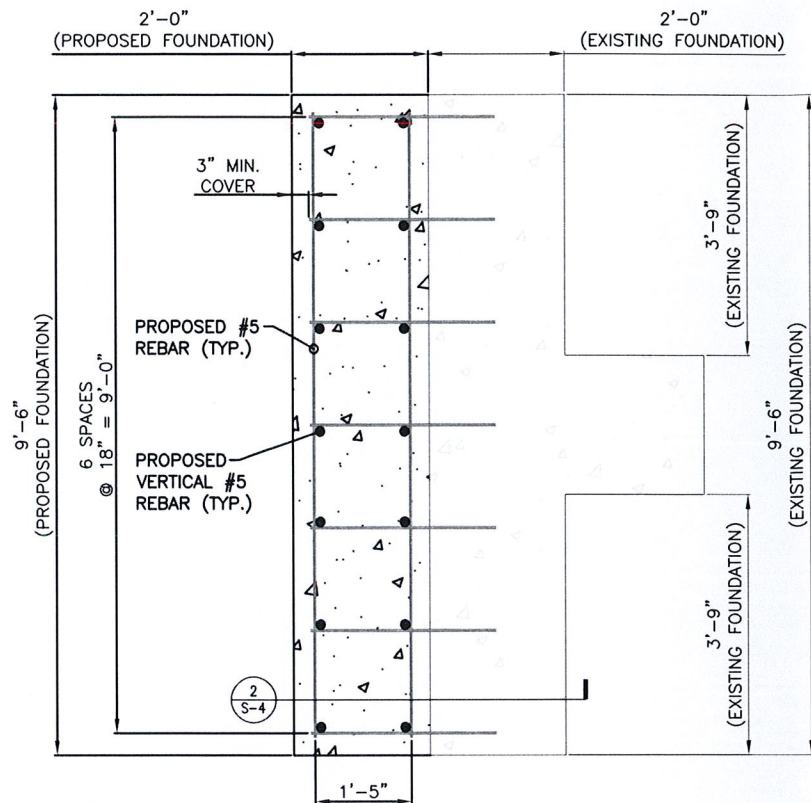
FOUNDATION MODIFICATION PLAN & DETAILS (LTE)

JOB NUMBER	DRAWING NUMBER	REV
1068.01	S-3	2

**CONCRETE NOTES:**

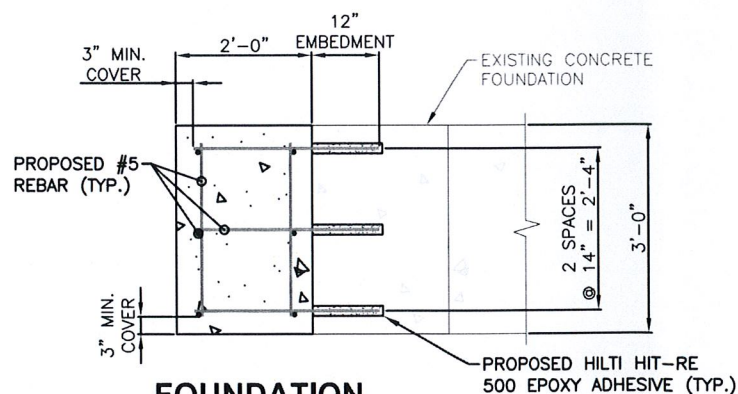
1. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
2. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.
3. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
4. USE HILTI HIT-RE500 EPOXY ADHESIVE ANCHORING SYSTEM PER MANUFACTURER'S SPECIFICATION FOR #5 STEEL REINFORCING BAR.
5. CONTRACTOR TO SCARIFY EXISTING CONCRETE SURFACE AND APPLY A BONDING ADHESIVE SUCH AS WELDCRETE. (OR APPROVED EQUAL)
6. SOIL REPORT SHOULD BE CONSULTED PRIOR TO CONSTRUCTION. STEEL CASING OR SLURRY METHOD MAY BE REQUIRED TO PREVENT SOIL FROM CAVING DURING CONSTRUCTION. THE CASING SHOULD REMOVED AFTER COMPLETION OF CONCRETING OR, IF LEFT IN THE GROUND, ALL VOIDS AROUND THE CASING SHALL BE FILLED WITH PRESSURIZED GROUT. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCE AND PROCEDURES.
7. SPECIAL INSPECTION OF REINFORCEMENT, AND CONCRETE IS REQUIRED PER IBC. FOUNDATION REINFORCEMENT SHALL BE INSPECTED PRIOR TO PLACEMENT.
8. REINFORCING STEEL SHALL CONFORM TO ASTM A615-87, Fy=60 ksi. REINFORCEMENT SHALL BE ASSEMBLED USING STEEL WIRE. WELDING IS NOT PERMITTED. MINIMUM SPLICE LENGTH: FOR No. 6 BARS AND SMALLER - 44 x  $\phi$ bar; FOR No. 7 BARS AND LARGER - 55 x  $\phi$ bar. HORIZONTAL TIES SHALL BE STAGGERED WITH NO MORE THAN 50% OF SPLICES IN ONE PLACE.
9. CONCRETE MIX DESIGN AND CONSTRUCTION PROCEDURE SHALL BE IN COMPLIANCE WITH ACI 318, ACI 336.3R, AND ALL APPLICABLE STATE AND LOCAL CODES.
  - a. MINIMUM COMPRESSIVE STRENGTH - AS NOTED
  - b. CONCRETE MIX SHOULD HAVE A SLUMP OF 3" ( $\pm 1$ ") FOR MAT FOUNDATIONS.

**NOTE:**  
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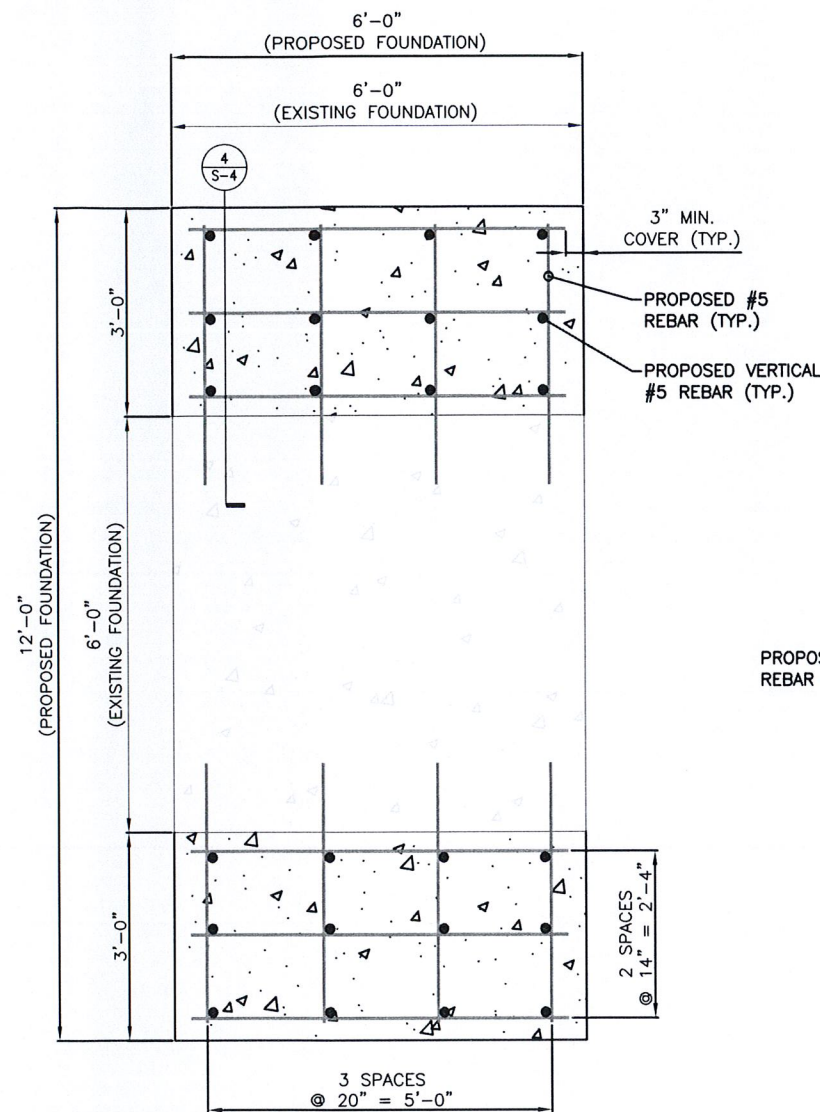
**FOUNDATION MODIFICATION PLAN  
GUY ANCHOR 3 - SOUTHEAST (INNER)**

1 S-4 SCALE: 3/4"=1'-0"



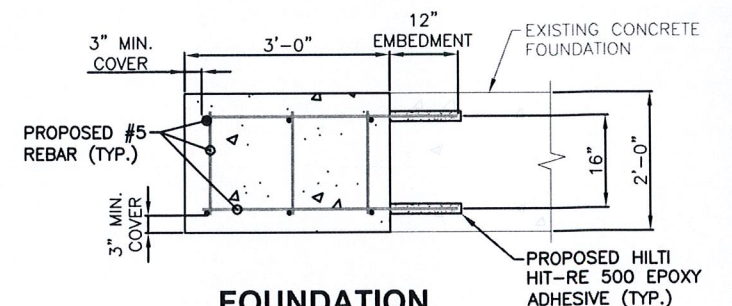
**FOUNDATION MODIFICATION SECTION**

2 S-4 SCALE: 3/4"=1'-0"



**FOUNDATION MODIFICATION PLAN  
GUY ANCHOR 3 - SOUTHEAST (OUTER)**

3 S-4 SCALE: 3/4"=1'-0"



**FOUNDATION MODIFICATION SECTION**

4 S-4 SCALE: 3/4"=1'-0"



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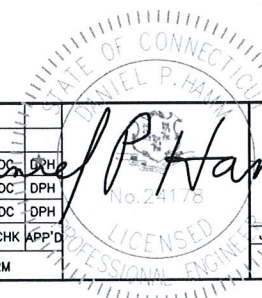
**Pinnacle Wireless**  
a UniTek GLOBAL SERVICES company  
800 MARSHALL PHELPS ROAD UNIT# 2A  
WINDSOR, CT 06095

**SITE NUMBER: CT1068  
SITE NAME: ASHFORD**  
353 PUMPKIN HILL ROAD  
ASHFORD, CT 06278  
WINDHAM COUNTY

**at&t**  
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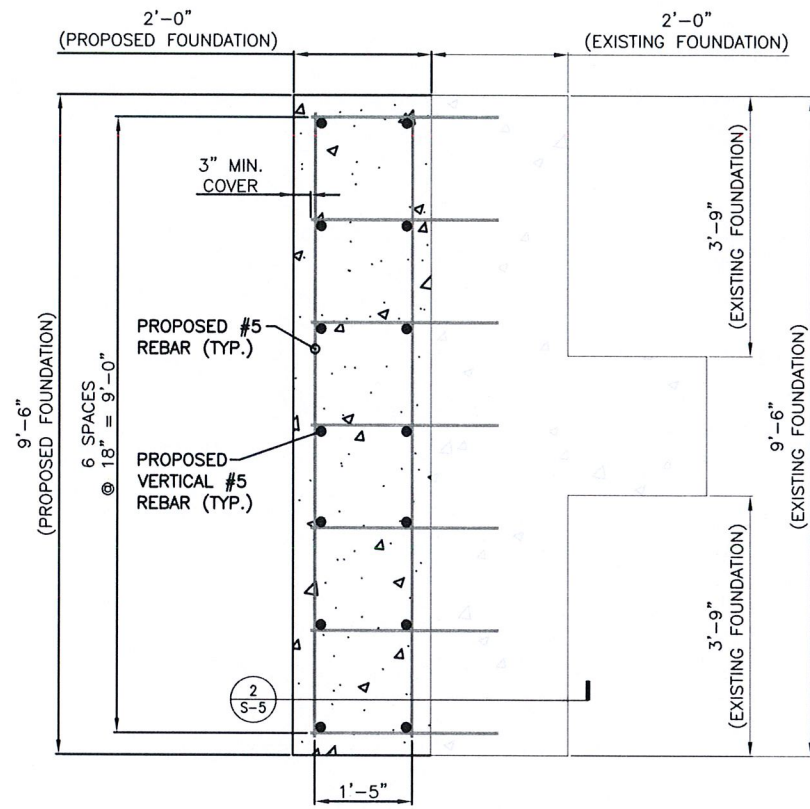
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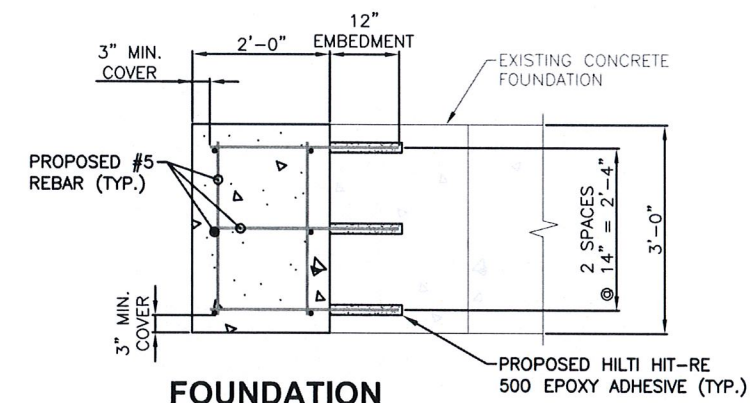
FOUNDATION MODIFICATION PLAN & DETAILS (LTE)

JOB NUMBER	DRAWING NUMBER	REV
1068.01	S-4	2



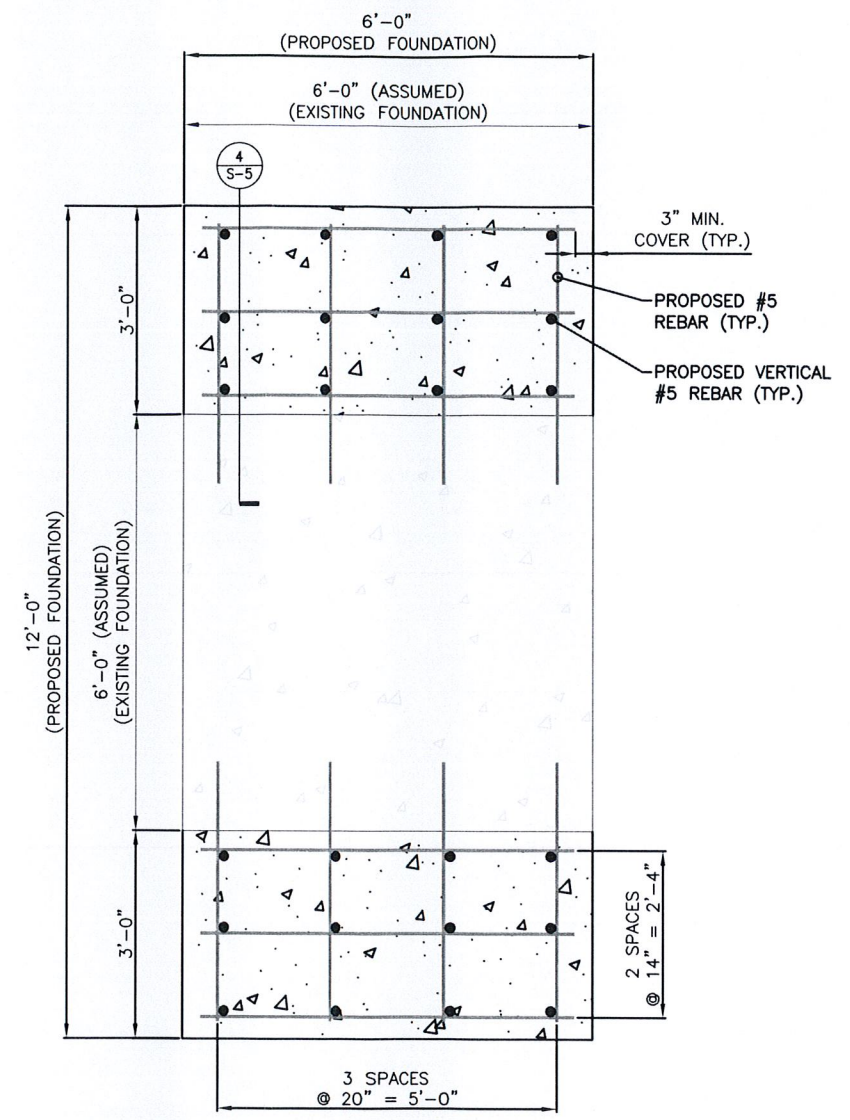
**FOUNDATION MODIFICATION PLAN**  
**GUY ANCHOR 1 (ASSUMED) - NORTHWEST (INNER)**

1  
S-5 SCALE: 3/4"=1'-0"



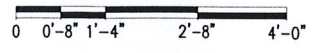
**FOUNDATION MODIFICATION SECTION**

2  
S-5 SCALE: 3/4"=1'-0"

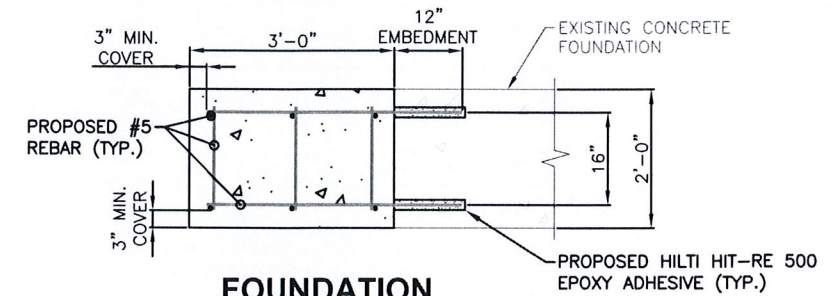


**FOUNDATION MODIFICATION PLAN**  
**GUY ANCHOR 1 (ASSUMED) - NORTHWEST (OUTER)**

3  
S-5 SCALE: 3/4"=1'-0"



**NOTE:**  
 ANCHOR SIZES OF GUY ANCHOR 1 (INNER) & GUY ANCHOR 1 (OUTER) ARE ASSUMED. THE LOCATIONS FOR THESE ANCHORS WERE NOT EXCAVATED OR INVESTIGATED DUE TO THE PRESENCE OF WETLAND VEGETATION, GROUNDWATER SEEPAGE AT THE TERRAIN SURFACE & THE INTEREST OF EXCAVATION SAFETY AND TOWER STABILITY. CONSTRUCTION DRAWINGS ARE SUBJECT TO CHANGE BASED ON ACTUAL FIELD CONDITIONS.



**FOUNDATION MODIFICATION SECTION**

4  
S-5 SCALE: 3/4"=1'-0"



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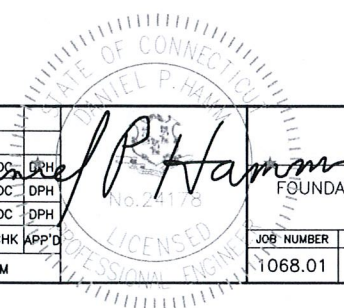
**Pinnacle Wireless**  
 a UniTek GLOBAL SERVICES company  
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**SITE NUMBER: CT1068**  
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 ASHFORD, CT 06278  
 WINDHAM COUNTY

**at&t**  
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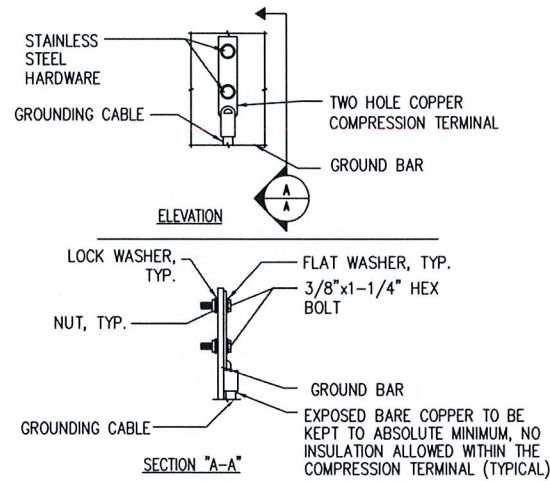
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FOUNDATION MODIFICATION PLAN & DETAILS (LTE)

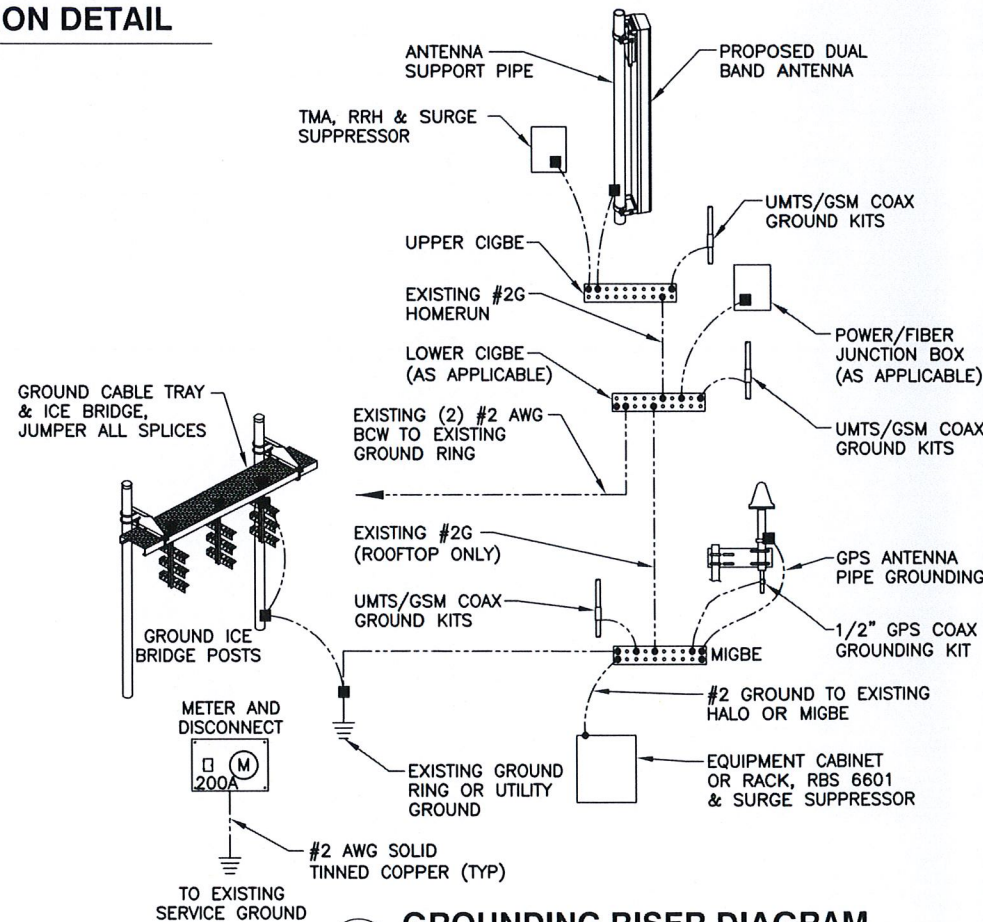
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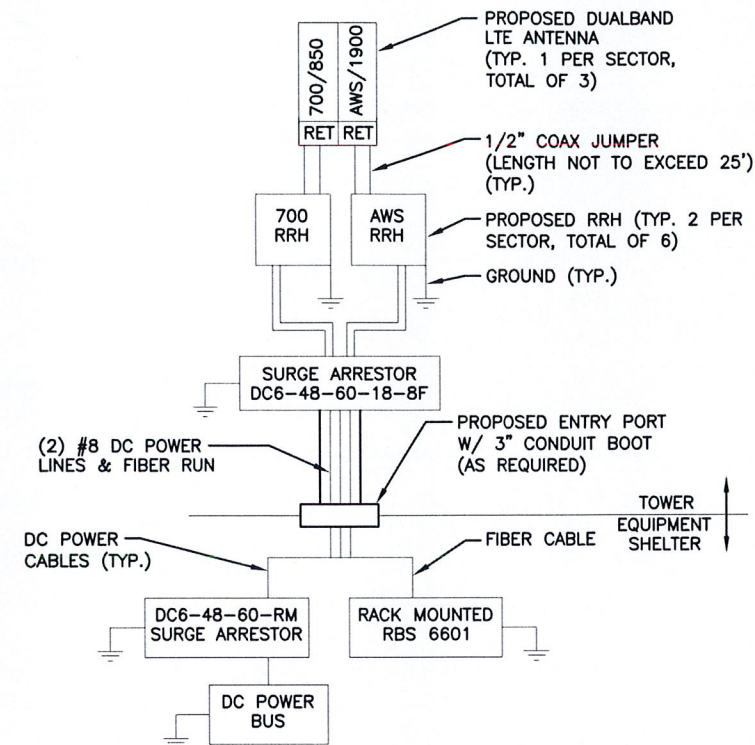
NOTE:  
 1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.  
 2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.  
 3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB.

**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.

**LTE 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

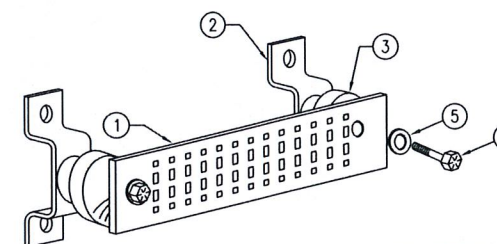
EACH GROUND CONDUCTOR TERMINATING ON ANY GROUND BAR SHALL HAVE AN IDENTIFICATION TAG ATTACHED AT EACH END THAT WILL IDENTIFY ITS ORIGIN AND DESTINATION.

**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.

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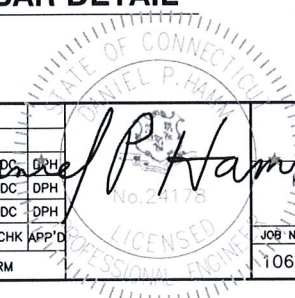
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SCALE: AS SHOWN    DESIGNED BY: DC    DRAWN BY: RM



**AT&T**  
 PLUMBING DIAGRAM & GROUNDING DETAILS  
 (LTE)  
 JOB NUMBER: 1068.01    DRAWING NUMBER: G-1    REV: 2