



**Centek Engineering, Inc.**  
3-2 North Branford Road  
Branford, Connecticut 06405  
Phone: (203) 488-0580  
Fax: (203) 488-8587

**Steven L. Levine**  
Real Estate Consultant

HAND DELIVERED

June 16, 2015

Attorney Melanie Bachman  
Acting Executive Director  
Connecticut Siting Council  
10 Franklin Square  
New Britain, Connecticut 06051

**Re: New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 119 (aka 10) Tanner Marsh Road, Guilford**

Dear Ms. Bachman:

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

UMTS technology offers services to mobile computer and phone users anywhere in the world. Based on the Global System for Mobile ("GSM") communication standard, UMTS is the planned worldwide standard for mobile users. UMTS, fully implemented, gives computer and phone users high-speed access to the Internet as they travel. They have the same capabilities even when they roam, through both terrestrial wireless and satellite transmissions.

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

Attached is a summary of the planned modifications, including power density calculations reflecting the 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.

The changes to the facility do not constitute modifications as defined in Connecticut General

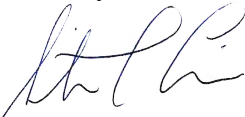
Statutes (“C.G.S.”) Section 16-50i(d) because the general physical and environmental characteristics of the site will not be significantly changed or altered. Rather, the planned changes to the facility fall squarely within those activities explicitly provided for in R.C.S.A. Section 16-50j-72(b)(2).

1. The height of the overall structure will not increase.
2. The proposed changes will not extend the site boundaries.
3. The proposed changes will not increase the noise level at the site boundary by six decibels or more, or to levels that exceed state and local criteria.
4. The changes will not add radio frequency sending or receiving capability which increases the total radio frequency electromagnetic radiation power density measured at the site boundary to or above the standards adopted by the Federal Communications Commission pursuant to Section 704 of the Telecommunications Act of 1996, as amended, and the State Department of Energy and Environmental Protection, pursuant to Section 22a-162 of the Connecticut General Statutes.
5. The proposed changes will not impair the structural integrity of the facility, as determined in a certification provided by a professional engineer licensed in Connecticut.

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

Please feel free to call me at (860) 830-0380 with questions concerning this matter. Thank you for your consideration.

Sincerely,



Steven L. Levine  
Real Estate Consultant

cc: TownCEO – Honorable Joseph S. Mazza, 1<sup>st</sup> Selectman, Town of Guilford  
Property owner of Record - Honorable Joseph S. Mazza, 1<sup>st</sup> Selectman, Town of Guilford  
Tower Owner / Operator – American Tower (by email)

Attachments

**NEW CINGULAR WIRELESS PCS, LLC  
Equipment Modification**

119 (aka 10) Tanner Marsh Road, Guilford, CT  
Site Number 2017  
Prior Decisions: Docket 44.2; Petition 1021  
EM 4/89, 1/94/ 9/02, 1/09, and 4/11

**Tower Owner/Manager:** American Tower

**Land Owner of Record:** Town of Guilford

**Lease Area:** The Tanner Marsh Road cell site was originally approved as a 150-ft monopole by the Council in Docket 44.2. The Council subsequently approved replacement of the monopole by a 190-ft self-supporting lattice tower in 2012 in Petition 1021, along with new equipment centerlines for existing carriers and reconfiguration of the site boundaries. The attached exhibit from Petition 1021 depicts the approved site boundaries. Since all proposed equipment modifications will occur either on the existing tower structure or within AT&T's existing equipment shelter, the proposed modifications will not extend either AT&T's lease area or the overall site boundaries.

**Equipment configuration:** Self-Supporting Lattice Tower

**Current and/or approved:** Equipment platform @ 163 ft a.g.l.  
Six PowerWave 7770 antennas @ 166ft c.l.  
Three KMW AM-X-CD-14-65-00T-RET antennas @ 166 ft c.l.  
Six PowerWave TMA's @ 166 ft  
One Raycap DC6-48-60-18-8F @ 166 ft  
Three remote radio heads @ 166 ft  
Twelve runs 1 1/4 inch coax  
One fiber cable and two DC control cables  
Equipment shelter

**Planned Modifications:** Remove all KMW antennas.  
Remove all runs 1 1/4 inch coax.  
Install three CCI OPA-65R-LCUU-H4 antennas @ 166 ft c.l.  
Install three additional remote radio heads with A2 modules @166 ft c.l.  
Install twelve runs 1 5/8 inch coax.  
Install four additional DC control cables.

**Power Density:**

Worst-case calculations for existing wireless operations at the site indicate a radio frequency electromagnetic radiation power density, measured at ground level beside the tower, of approximately 79.8 % of the standard adopted by the FCC. As depicted in the second table below, the total radio frequency electromagnetic radiation power density following proposed modifications would be approximately 69.8 % of the standard.

**Existing**

Company	Centerline Ht (feet)	Frequency (MHz)	Number of Channels	Power Per Channel (Watts)	Power Density (mW/cm <sup>2</sup> )	Standard Limits (mW/cm <sup>2</sup> )	Percent of Limit
Other Users *							63.65
AT&T LTE *	160	740	1	500	0.0070	0.4933	1.42
AT&T GSM *	160	880 - 894	13	296	0.0540	0.5867	9.21
AT&T GSM *	160	1900 Band	6	427	0.0360	1.0000	3.60
AT&T UMTS *	160	880 - 894	1	500	0.0070	0.5867	1.20
AT&T UMTS *	160	1900 Band	1	500	0.0070	1.0000	0.70
<b>Total</b>							<b>79.8%</b>

\* Per CSC records. Note: Centerline of 160 ft was an estimate based on Petition 1021.

**Proposed**

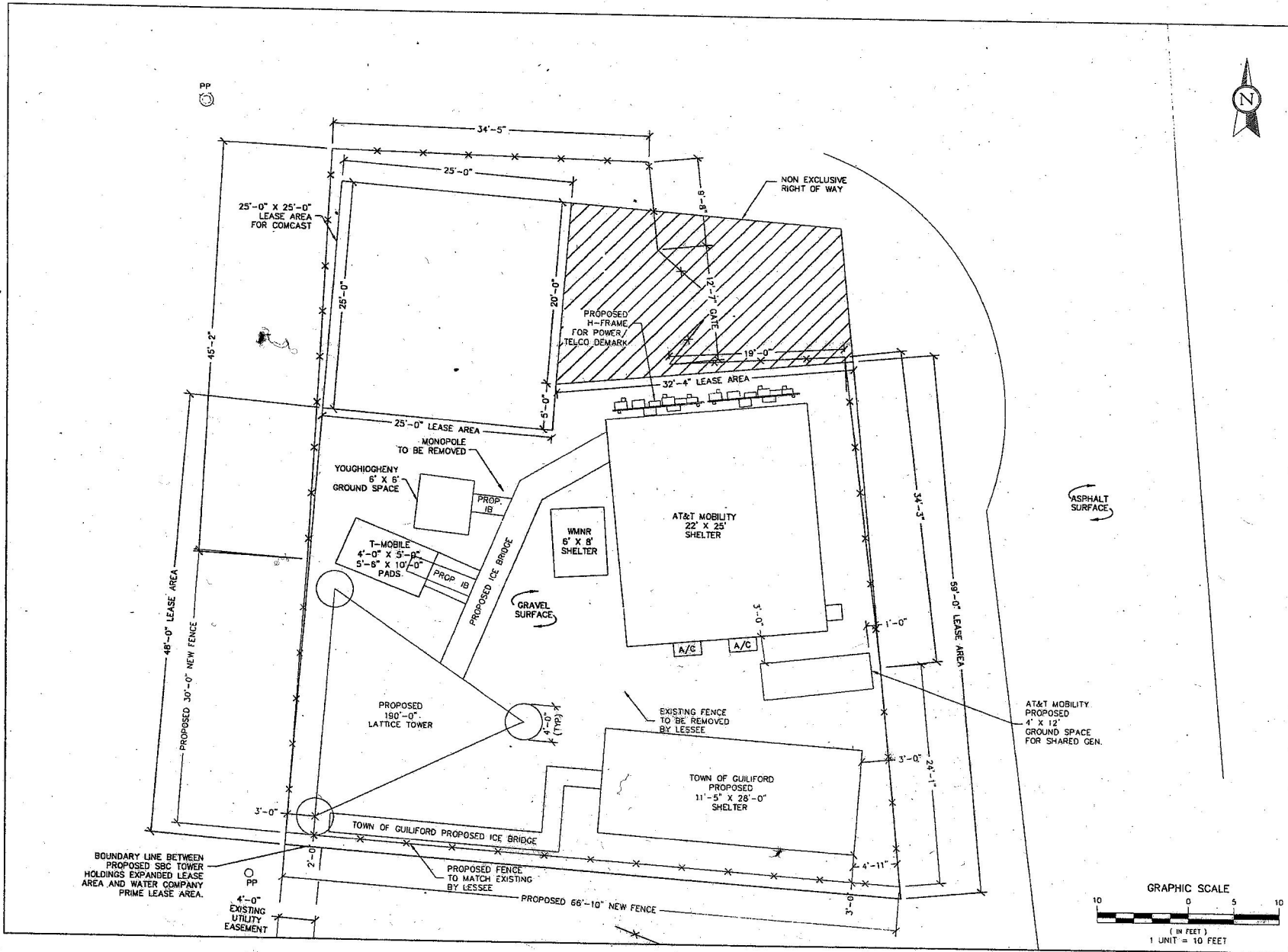
Company	Centerline Ht (feet)	Frequency (MHz)	Number of Channels	Power Per Channel (Watts)	Power Density (mW/cm <sup>2</sup> )	Standard Limits (mW/cm <sup>2</sup> )	Percent of Limit
Other Users *							63.65
AT&T LTE	166	700 Band	1	500	0.0065	0.4667	1.40
AT&T LTE	166	1900 Band	1	500	0.0065	1.0000	0.65
AT&T UMTS	166	880 - 894	2	500	0.0130	0.5867	2.22
AT&T UMTS	166	1900 Band	1	500	0.0065	1.0000	0.65
AT&T GSM	166	880 - 894	1	296	0.0039	0.5867	0.66
AT&T GSM	166	1900 Band	1	427	0.0056	1.0000	0.56
<b>Total</b>							<b>69.8%</b>

\* Per CSC records

**Structural information:**

The attached structural analysis (American Tower, 6/8/15) demonstrates that the tower and foundation have adequate structural capacity to accommodate the proposed equipment modifications.

# Petition 1012 Site Plan Excerpt



**AMERICAN TOWER**  
**SITE DESIGN**  
 400 REGENCY FOREST DRIVE  
 CARY, NORTH CAROLINA 27518  
 PHONE: (919) 468-9112  
 FAX: (919) 468-5040  
 NYSE AMT

THESE DRAWINGS AND/OR THE ACCOMPANYING SPECIFICATION AS INSTRUMENTS OF SERVICE, ARE THE EXCLUSIVE PROPERTY OF AMERICAN TOWER CORPORATION AND THEIR USE AND PUBLICATION SHALL BE RESTRICTED TO THE ORIGINAL SITE FOR WHICH THEY ARE PREPARED. REUSE, REPRODUCTION OR PUBLICATION BY ANY METHOD, IN WHOLE OR IN PART, IS PROHIBITED EXCEPT BY WRITTEN PERMISSION FROM AMERICAN TOWER CORPORATION. TITLE TO THESE PLANS AND/OR SPECIFICATIONS SHALL REMAIN WITH AMERICAN TOWER CORPORATION WITHOUT PREJUDICE AND VISUAL CONTACT WITH THEM SHALL CONSTITUTE PRIMA FACIE EVIDENCE OF ACCEPTANCE OF THESE RESTRICTIONS.

REV.	DESCRIPTION
1	REVISED DRAWING

SITE NUMBER:  
**302486**

SITE NAME:  
**GLFD - GUILFORD CONNECTICUT**

DRAWN BY:	D STRAYER
DATE DRAWN:	3/24/11
CUSTOMER:	NA
COLLOCATION NO.:	NA

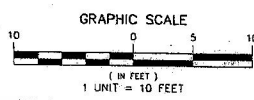
**LEGEND**

- ⊗ GROUNDING TEST WELL
- A/C AIR CONDITIONING UNIT
- A/V AIR VENT
- B BOLLARD
- C CABINET
- CSC FIBER OPTIC CABINET
- E ELECTRICAL SERVICE DISC.
- GEN GENERATOR
- G GENERATOR RECEPTACLE
- IB ICE BRIDGE
- LC LIGHTING CONTROL
- M METER
- PB FULL BOX
- PP POWER POLE
- T TELEPHONE HOOK-UP
- TD TELEPHONE DEMARK
- TRN TRANSFORMER
- W WATER VALVE

DIMENSIONS NOT VERIFIED BY LICENSED SURVEYOR

SHEET TITLE:  
**SITE PLAN LAYOUT**

SHEET NUMBER: <b>SP-1</b>	REV. # <b>0</b>
------------------------------	--------------------





**PROJECT INFORMATION**

SCOPE OF WORK: UNMANNED TELECOMMUNICATIONS FACILITY MODIFICATIONS  
 SITE ADDRESS: 10 TANNER MARSH ROAD  
 GUILFORD, CT 06437  
 LATITUDE: 41.288694° N 41° 17' 19.3" N  
 LONGITUDE: -72.658249° W -72° 39' 29.7" W  
 JURISDICTION: NATIONAL, STATE & LOCAL CODES OR ORDINANCES  
 CURRENT USE: TELECOMMUNICATIONS FACILITY  
 PROPOSED USE: TELECOMMUNICATIONS FACILITY



**SITE NUMBER: CT2017**  
**SITE NAME: GUILFORD**

**DRAWING INDEX**

**REV**

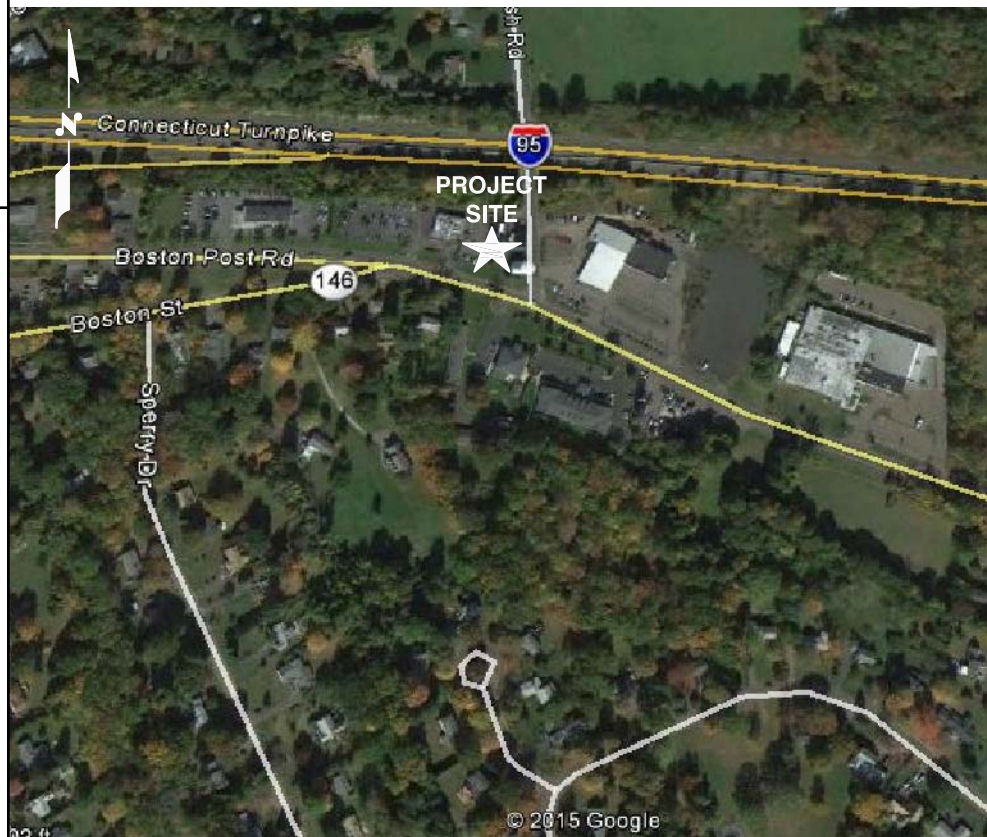
- T-1 TITLE SHEET**
- GN-1 GENERAL NOTES**
- A-1 COMPOUND AND EQUIPMENT PLAN**
- A-2 ANTENNA LAYOUT AND ELEVATION**
- A-3 DETAILS**
- G-1 PLUMBING DIAGRAM & GROUNDING DETAILS**

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

**VICINITY MAP**

**DIRECTIONS TO SITE:**

START OUT GOING WEST ON SR 30 W/COCHITUATE RD. CONTINUE TO FOLLOW SR 30 W. 0.9 MILES. STAY STRAIGHT TO GO ONTO SR 9 W/WORCESTER RD. 2.4 MILES. MERGE ONTO I-90 W/MASSACHUSETTS TPKE (PORTIONS TOLL). 22.0 MILES. TAKE EXIT 10 TOWARD AUBURN/WORCESTER. 0.7 MILES. KEEP LEFT AT THE FORK IN THE RAMP. 0.2 MILES. MERGE ONTO I-395 S VIA THE RAMP ON THE LEFT (CROSSING INTO CONNECTICUT). 66.8 MILES. I-395 S BECOMES I-95 S/CONNECTICUT TPKE. 26.9 MILES. TAKE EXIT 59. 0.3 MILES. TURN RIGHT ONTO GOOSE LN. 0.2 MILES. TURN LEFT ONTO US-1/BOSTON POST RD. 0.3 MILES. TURN LEFT ONTO TANNER MARSH RD. 0.0 MILES. SITE WILL BE LOCATED ON THE LEFT.



**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.

**AMERICAN TOWER SITE #: 311305**  
**AMERICAN TOWER SITE NAME: GLFD GUILFORD REBUILD CT**



**72 HOURS**

**BEFORE YOU DIG**



**CALL TOLL FREE 888-DIG-SAFE OR DIAL 811**

**UNDERGROUND SERVICE ALERT**

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

**SAI**  
 27 NORTHWESTERN DR.  
 SALEM, NH 03079

**SITE NUMBER: CT2017**  
**SITE NAME: GUILFORD**  
**ATC SITE # 311305**  
 10 TANNER MARSH ROAD  
 GUILFORD, CT  
 NEW HAVEN COUNTY

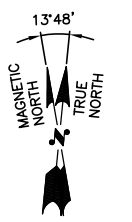
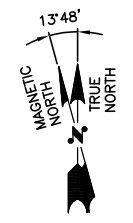
**at&t**  
 550 COCHITUATE ROAD  
 FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	06/12/15	ISSUED FOR CONSTRUCTION	SG	AT	DPH
0	05/29/15	ISSUED FOR REVIEW	SG	AT	DPH
A	03/17/15	ISSUED FOR REVIEW	SG	AT	DPH

SCALE: AS SHOWN    DESIGNED BY: AT    DRAWN BY: SG

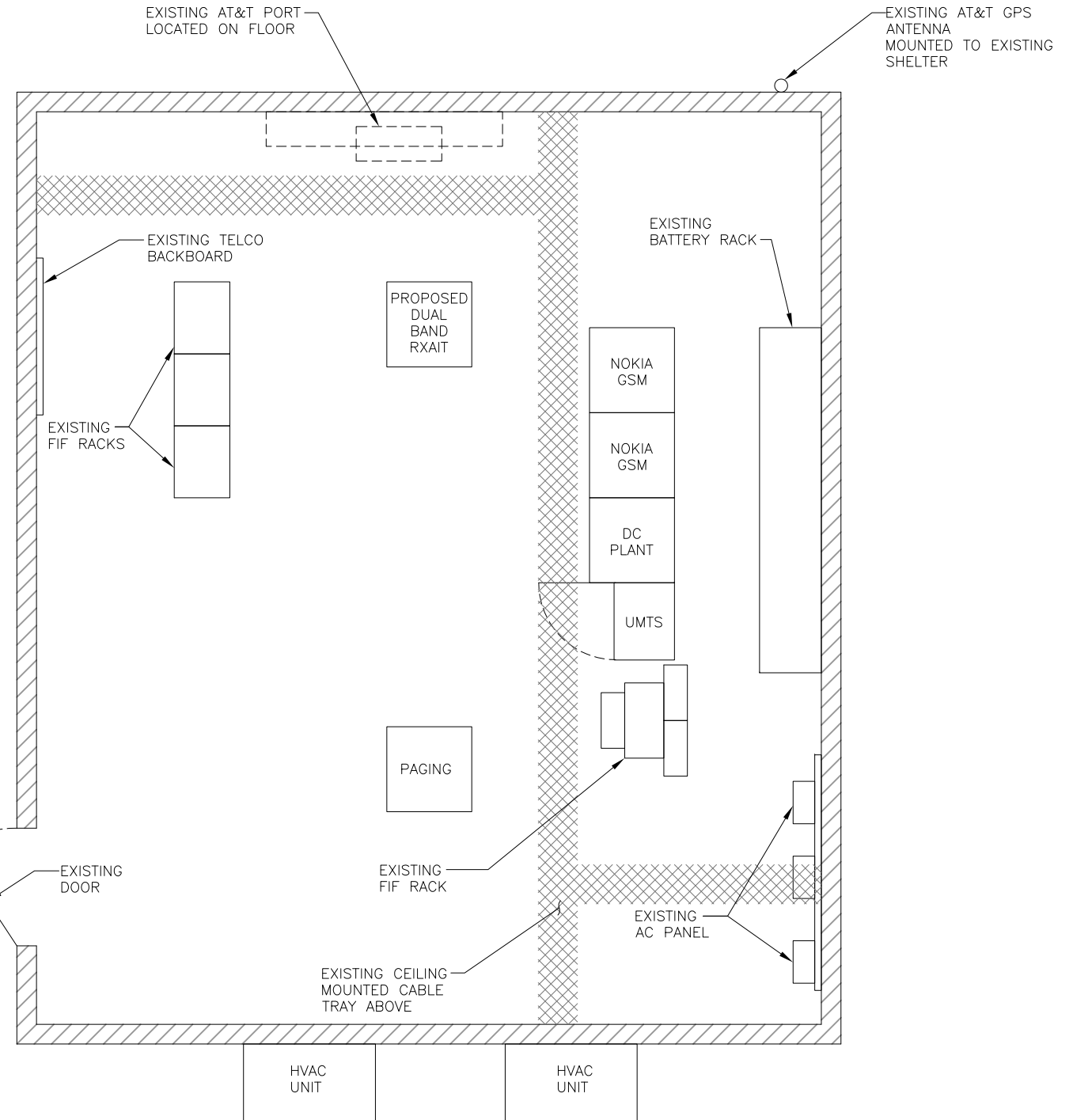
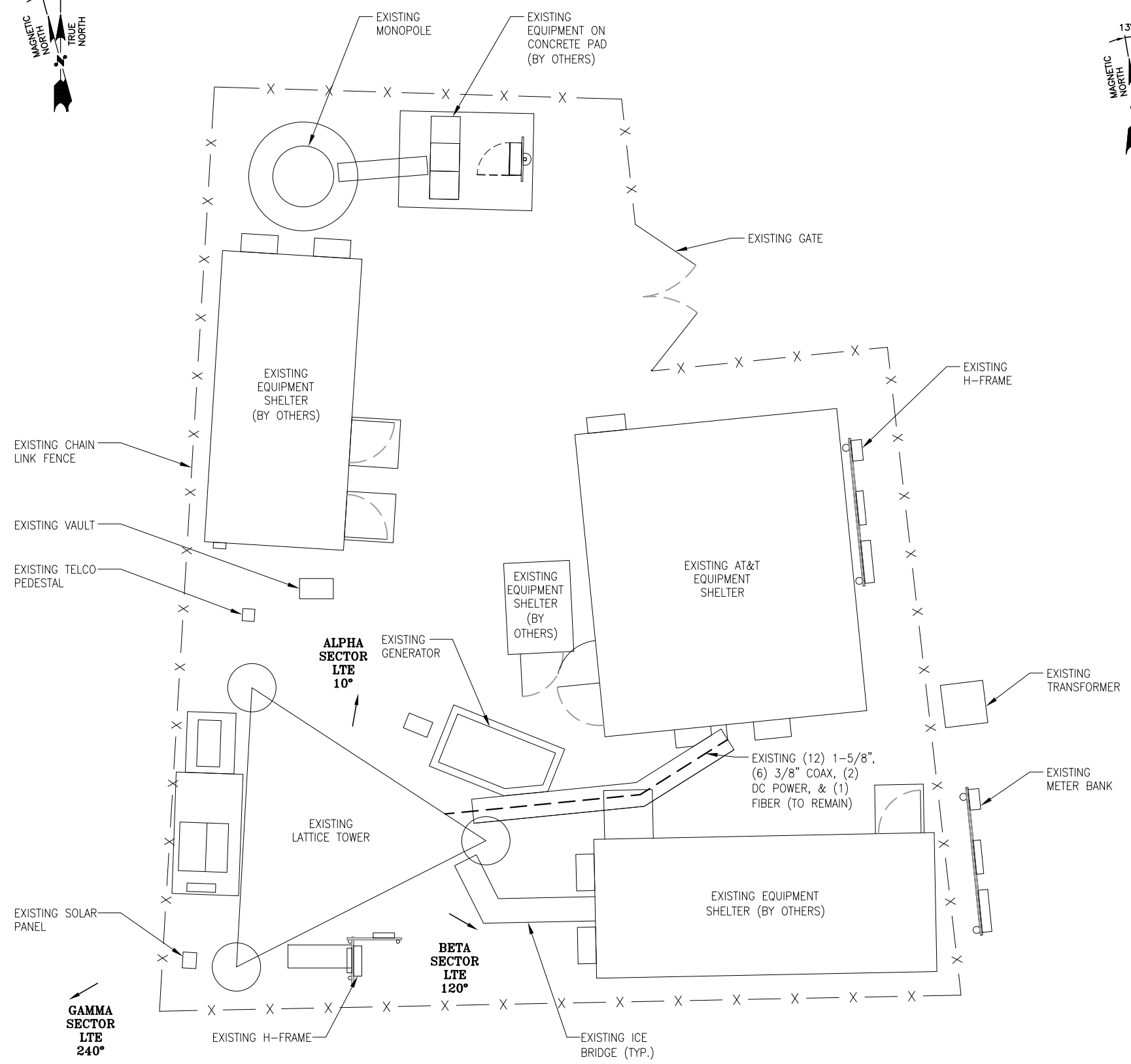
Professional Engineer Seal for Daniel J. Creamer, State of Connecticut, License No. 26255.

AT&T	
TITLE SHEET (LTE)	
JOB NUMBER	DRAWING NUMBER
2017.00	T-1
REV	1



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

**NOTE:**  
REFER TO STRUCTURAL ANALYSIS BY: AMERICAN TOWER CORP. DATED: JUNE 03, 2015, FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.



**COMPOUND PLAN** 1  
22x34 SCALE: 3/16"=1'-0"  
11x17 SCALE: 3/32"=1'-0"  
A-1

**EQUIPMENT PLAN** 2  
22x34 SCALE: 1/2"=1'-0"  
11x17 SCALE: 1/4"=1'-0"  
A-1

**Hudson Design Group LLC**  
1600 OSGOOD STREET  
BUILDING 20 NORTH, SUITE 3090  
N. ANDOVER, MA 01845  
TEL: (978) 557-5553  
FAX: (978) 334-5586

**SAI**  
27 NORTHWESTERN DR.  
SALEM, NH 03079

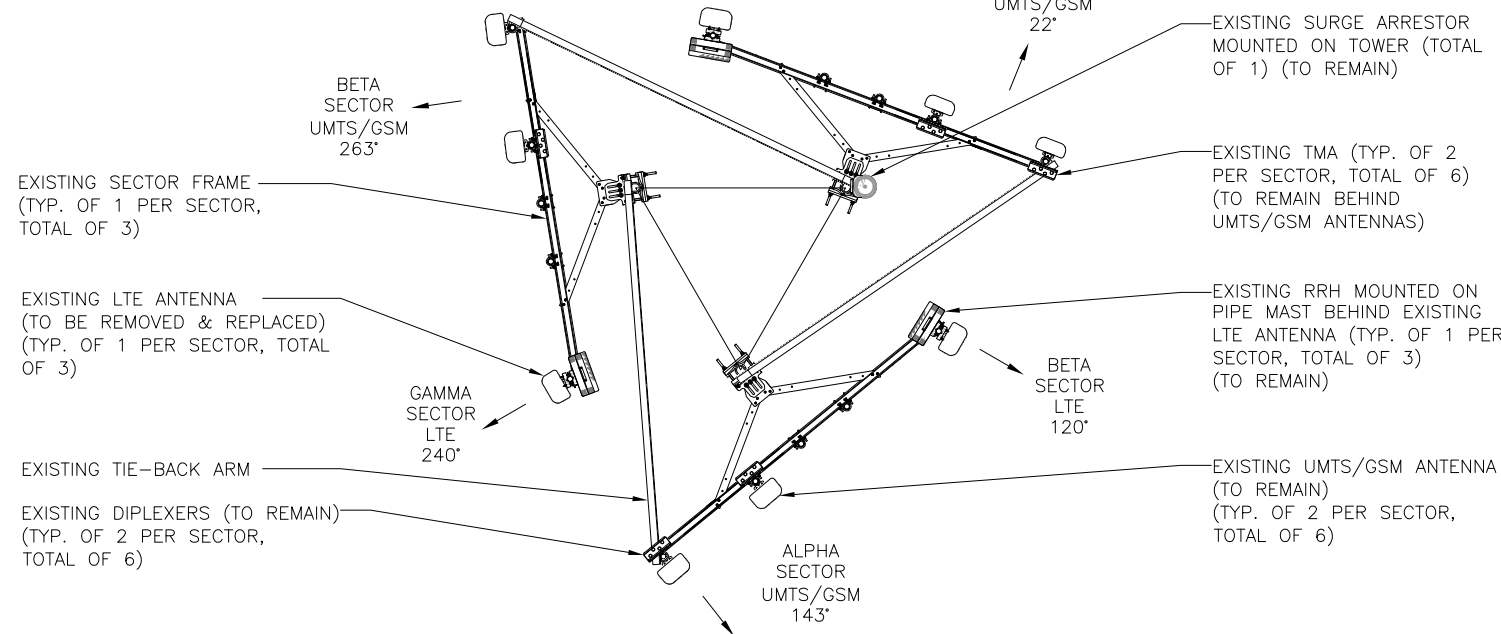
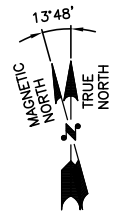
**SITE NUMBER: CT2017**  
**SITE NAME: GUILFORD**  
**ATC SITE # 311305**  
10 TANNER MARSH ROAD  
GUILFORD, CT  
NEW HAVEN COUNTY

**at&t**  
550 COCHITUATE ROAD  
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	06/12/15	ISSUED FOR CONSTRUCTION	SG	AT	DPH
0	05/29/15	ISSUED FOR REVIEW	SG	AT	DPH
A	03/17/15	ISSUED FOR REVIEW	SG	AT	DPH

SCALE: AS SHOWN    DESIGNED BY: AT    DRAWN BY: SG

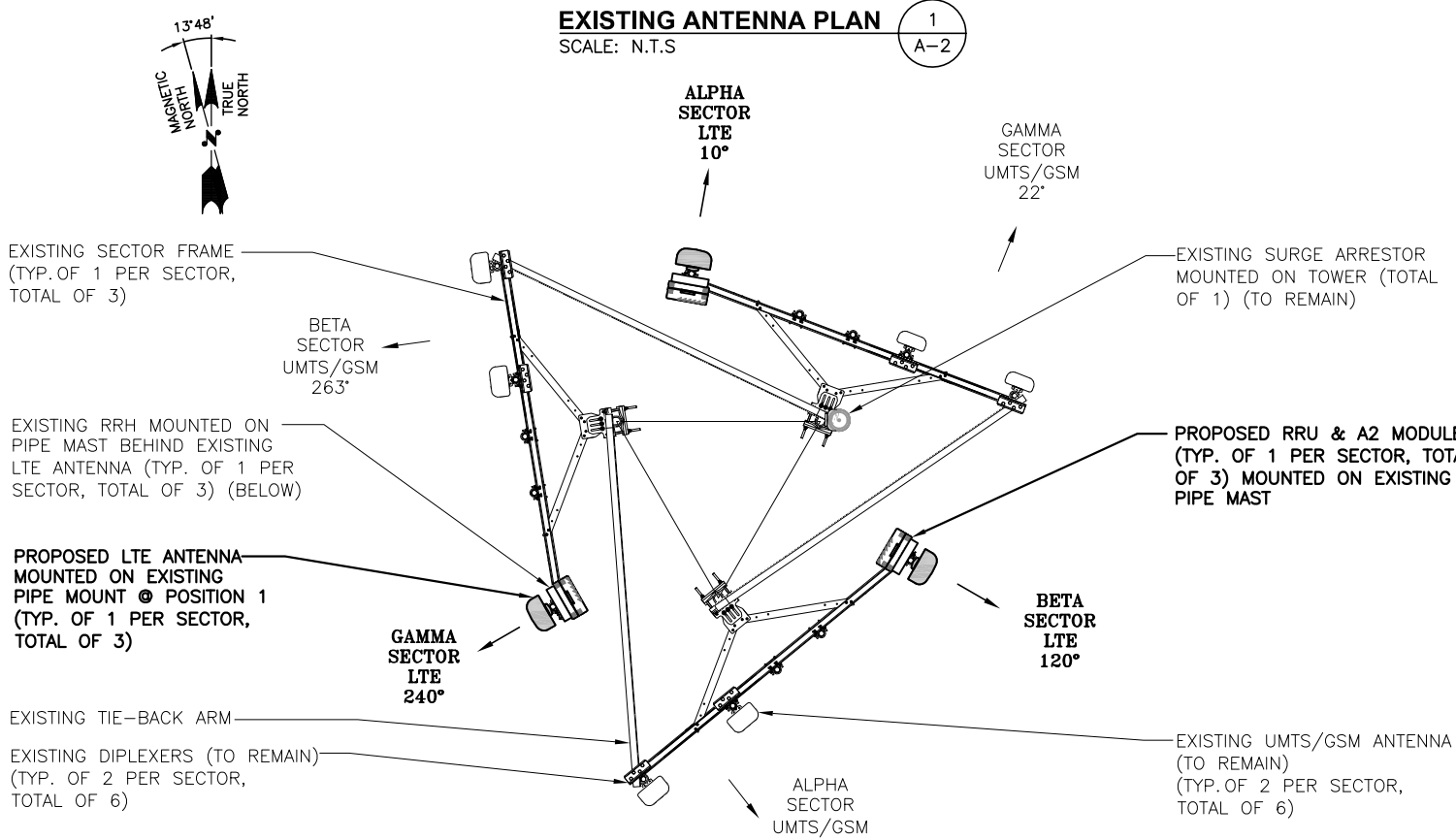
**AT&T**  
**COMPOUND & EQUIPMENT PLAN (LTE)**  
JOB NUMBER: 2017.00  
DRAWING NUMBER: A-1  
REV: 1



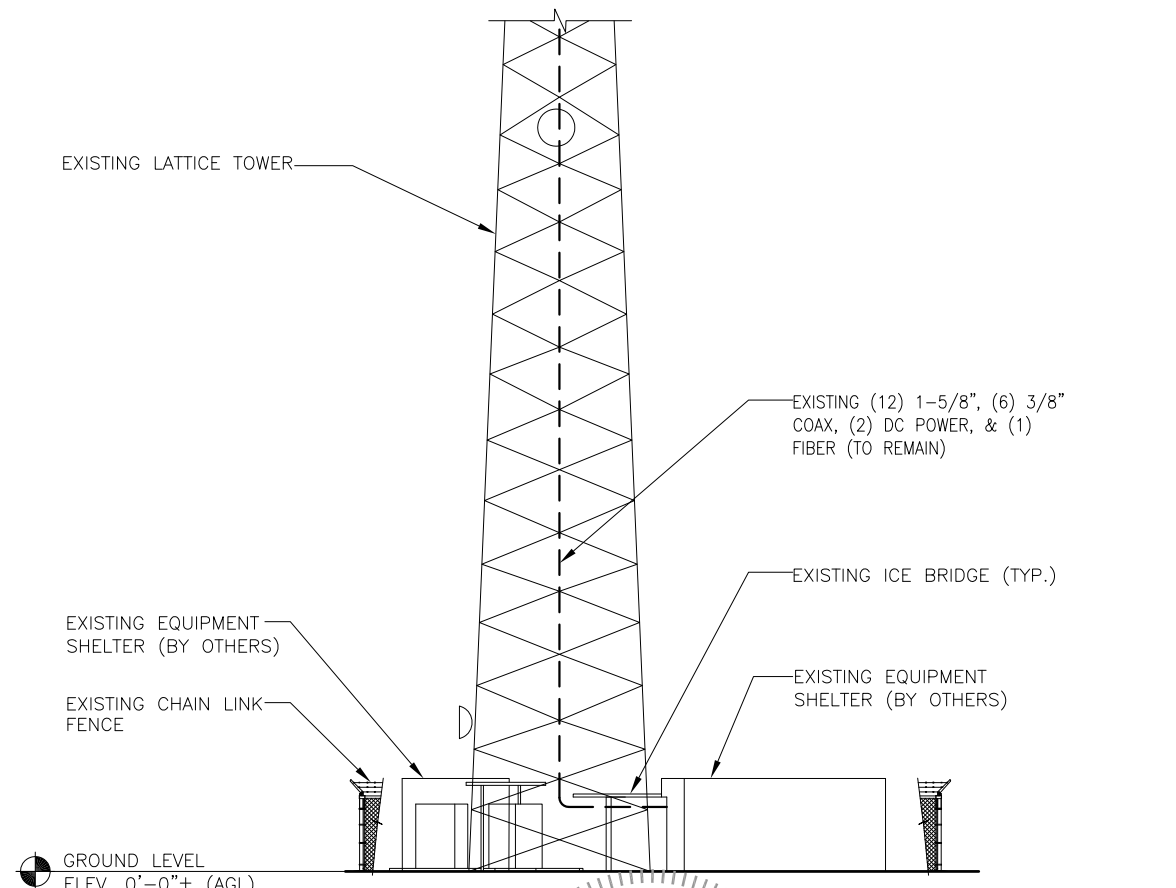
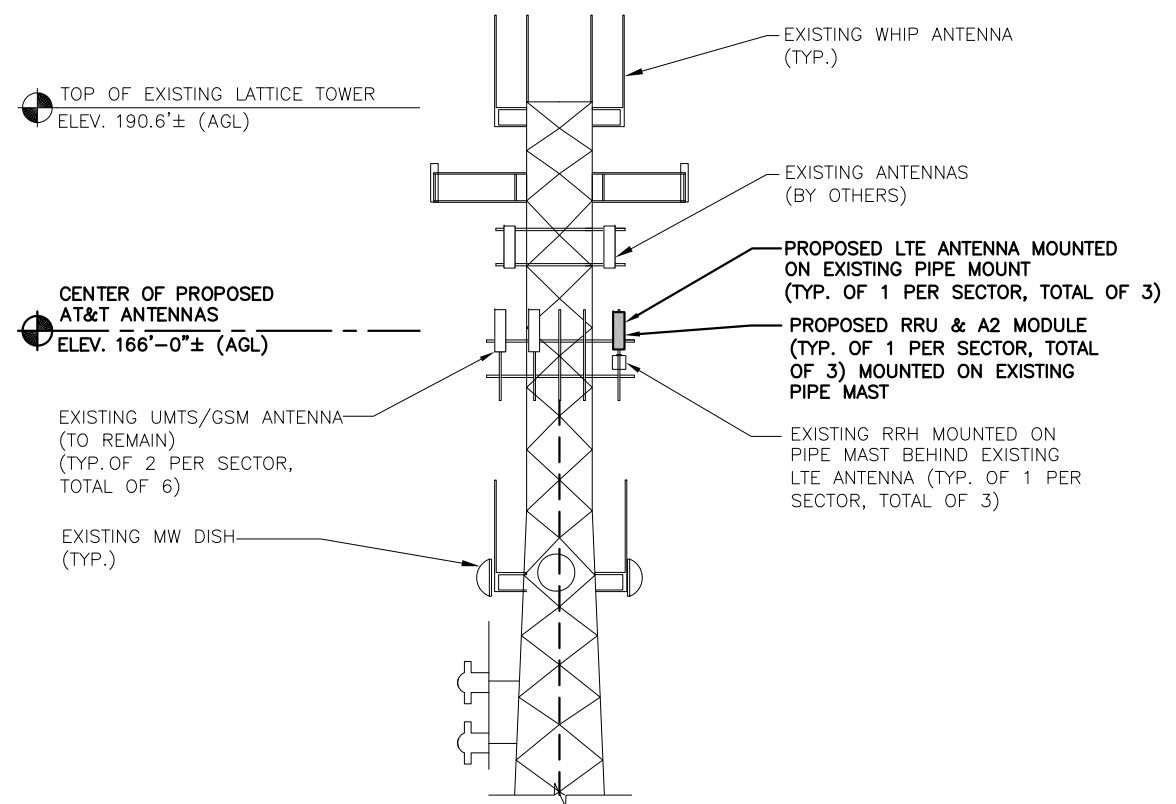
**EXISTING ANTENNA PLAN**  
SCALE: N.T.S.

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

**NOTE:**  
REFER TO STRUCTURAL ANALYSIS BY: AMERICAN TOWER CORP. DATED: JUNE 03, 2015, FOR THE CAPACITY OF THE EXISTING STRUCTURES TO SUPPORT THE PROPOSED EQUIPMENT.



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



**SOUTH ELEVATION**  
22x34 SCALE: 3/32"=1'-0"  
11x17 SCALE: 3/64"=1'-0"

**Hudson Design Group LLC**  
1600 OSGOOD STREET  
BUILDING 20 NORTH, SUITE 3090  
N. ANDOVER, MA 01845  
TEL: (978) 557-5553  
FAX: (978) 334-5586

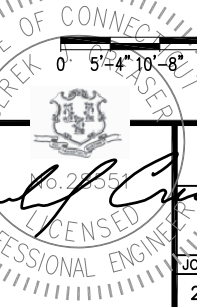
**SAI**  
27 NORTHWESTERN DR.  
SALEM, NH 03079

**SITE NUMBER: CT2017**  
**SITE NAME: GUILFORD**  
**ATC SITE # 311305**  
10 TANNER MARSH ROAD  
GUILFORD, CT  
NEW HAVEN COUNTY

**at&t**  
550 COCHITUATE ROAD  
FRAMINGHAM, MA 01701

NO.	DATE	REVISIONS	BY	CHK	APP'D
1	06/12/15	ISSUED FOR CONSTRUCTION	SG	AT	DPH
0	05/29/15	ISSUED FOR REVIEW	SG	AT	DPH
A	03/17/15	ISSUED FOR REVIEW	SG	AT	DPH

SCALE: AS SHOWN    DESIGNED BY: AT    DRAWN BY: SG



**AT&T**  
**ANTENNA LAYOUT AND ELEVATION (LTE)**  
JOB NUMBER: 2017.00    DRAWING NUMBER: A-2    REV: 1





**AMERICAN TOWER®**  
CORPORATION

---

## Structural Analysis Report

**Structure** : 190.6 ft Self Supported Tower  
**ATC Site Name** : GLFD-Guilford Rebuild CT, CT  
**ATC Site Number** : 311305  
**Engineering Number** : 61845522  
**Proposed Carrier** : AT&T Mobility  
**Carrier Site Name** : Guilford  
**Carrier Site Number** : CT2017/FA#10034980  
**Site Location** : 10 Tanner Marsh Road  
Guilford, CT 06437-2942  
41.288608,-72.658281  
**County** : New Haven  
**Date** : June 3, 2015  
**Max Usage** : 84%  
**Result** : Pass

Prepared By:  
Sarah W. Frye, E.I.  
Structural Engineer I

**COA: PEC.0001553**



## Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 190.6 ft self supported tower to reflect the change in loading by AT&T Mobility.

## Supporting Documents

<b>Tower Drawings</b>	Nello Job #RFQ34841, dated April 8, 2011
<b>Foundation Drawing</b>	ATC Job #47517572B, dated June 15, 2011
<b>Geotechnical Report</b>	GEOServices Project #21-07254, dated March 11, 2008

## Analysis

The tower was analyzed using American Tower Corporation's tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/EIA-222.

<b>Basic Wind Speed:</b>	90 mph (Fastest Mile)
<b>Basic Wind Speed w/ Ice:</b>	78 mph (Fastest Mile)w/ 1/2" radial ice concurrent
<b>Code:</b>	ANSI/TIA/EIA-222-F / 2003 IBC , Sec. 1609.1.1, Exception (4) & Sec. 3108.4 w/ 2005 CT Supplement & 2009 CT Amendment

## Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact American Tower via email at [Engineering@americantower.com](mailto:Engineering@americantower.com). Please include the American Tower site name, site number, and engineering number in the subject line for any questions.



**Existing and Reserved Equipment**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
190.0	192.0	2	Diamond X50A	Leg	(2) 1/2" Coax	Enertrac
187.0		3	10' Dipole	Leg	(3) 1 1/4" Coax	Town Of Guilford
183.0	183.0	3	RCU	Side Arms	(1) 3/8" Coax	Metro PCS
175.0	175.0	3	Ericsson AIR 21, 1.3 M, B2A B4P, AWS - 1700/2100	Sector Frames	(12) 1 5/8" Coax (1) 1 1/4" Hybriflex	T-Mobile
		3	Ericsson KRY 112 144/1			
		3	Ericsson AIR 21 B4A B2P			
163.0	-	-	-	Sector Frames	(2) 0.74" 8 AWG 7 (1) 1/2" Coax (1) 0.39" Fiber Trunk	AT&T Mobility
140.0	147.0	1	Andrew DB408	Side Arms	(6) 7/8" Coax	Town Of Guilford
	140.0	1	4' Dish w/ Radome			
130.0	130.0	3	RFS APXV18-206517S-C	Side Arms	(6) 1 5/8" Coax	Metro PCS
127.0	127.0	1	Shively 6810-HW-2 w/ Radome	Leg	(1) 1 5/8" Coax	Monroe B.o.e
120.0	140.0	1	Shively 6812B-1 w/o Radome	Leg	(1) 7/8" Coax	
87.0	92.5	1	Antel BCD-87010 ____ 4°	Stand-Off	(1) 1 5/8" Coax	USA Mobility
80.0	80.0	2	4' Dish w/ Radome	Leg	(2) 7/8" Coax	Town Of Guilford
16.0	16.0	1	Channel Master Type 120	Leg	(1) 0.28" RG-6	USA Mobility

**Equipment to be Removed**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
152.0	152.0	6	Powerwave LGP21401	-	(12) 1 1/4" Coax	AT&T Mobility
		3	Powerwave 7770.00			
		3	KMW AM-X-CD-14-65-00T-RET			

**Proposed Equipment**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
163.0	166.0	3	CCI OPA-65R-LCUU-H4 (14.4" width)	Sector Frames	(12) 1 5/8" Coax (6) 3/8" Coax	AT&T Mobility
		3	Ericsson RRUS-12 B2			
		3	Ericsson RRUS-11 (19.7")			
		3	Ericsson RRUS A2 B2			
		1	Raycap DC6-48-60-18-8F			
		6	Powerwave 7770.00			
		6	Powerwave LGP21401			
		6	Powerwave 7020			
		6	Powerwave LGP21901			

<sup>1</sup>Mount elevation is defined as height above bottom of steel structure to the bottom of mount, RAD elevation is defined as center of antenna above ground level (AGL).

Double stack the proposed (12) 1 5/8" coax alongside existing AT&T Mobility coax. Install the proposed (6) 3/8" coax on top of the double stacked coax.

### Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Legs	71%	Pass
Diagonals	84%	Pass
Horizontals	8%	Pass

### Foundations

Reaction Component	Analysis Reactions	% of Usage
Uplift (Kips)	299.4	49%
Axial (Kips)	359.3	57%
Shear (Kips)	39.4	13%

The structure base reactions resulting from this analysis were found to be acceptable through analysis based on geotechnical and foundation information, therefore no modification or reinforcement of the foundation will be required.

### Deflection, Twist and Sway\*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Twist (°)	Sway (Rotation) (°)
163.0	CCI OPA-65R-LCUU-H4 (14.4" width)	AT&T Mobility	0.309	0.025	0.239
	Ericsson RRUS A2 B2				
	Ericsson RRUS-11 (19.7")				
	Ericsson RRUS-12 B2				
	Powerwave Allgon 7020				
	Powerwave Allgon 7770.00				
	Powerwave Allgon LGP21401				
	Powerwave Allgon LGP21901				
Raycap DC6-48-60-18-8F					
140.0	4' Dish w/ Radome	Town of Guilford	0.237	0.015	0.210
80.0	4' Dish w/ Radome		0.079	0.005	0.112
16.0	Channel Master Type 120	USA Mobility			

\*Deflection, Twist and Sway was evaluated considering a design wind speed of 50 mph (Fastest Mile) per ANSI/TIA/EIA-222-F.





## Standard Conditions

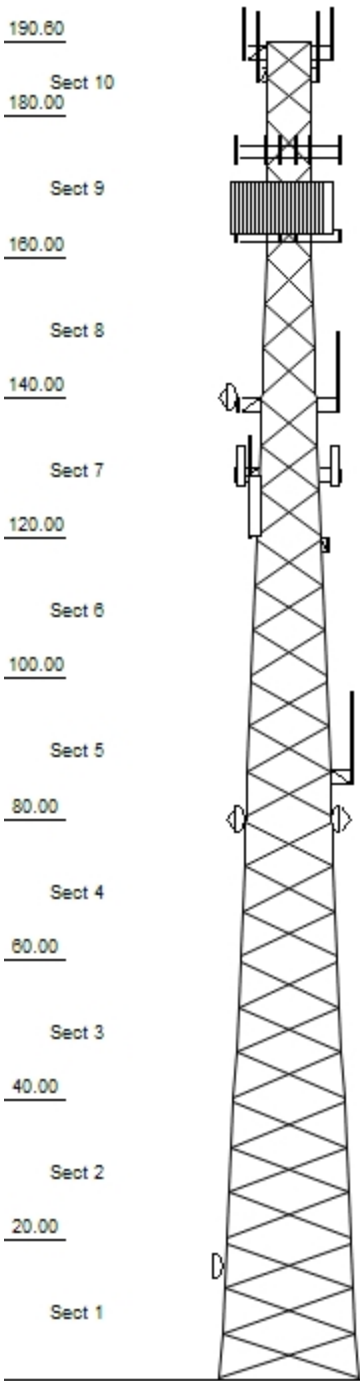
All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessary limited, to:

- Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.
- Information from drawings in the possession of American Tower Corporation, or generated by field inspections or measurements of the structure.

It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and that their capacity has not significantly changed from the "as new" condition.

Unless explicitly agreed by both the client and American Tower Corporation, all services will be performed in accordance with the current revision of ANSI/TIA -222. The design basic wind speed will be determined based on the minimum basic wind speed as prescribed in ANSI/TIA-222. Although every effort is taken to ensure that the loading considered is adequate to meet the requirements of all applicable regulatory entities, we can provide no assurance to meet any other local and state codes or requirements. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.



© 2007 - 2015 by ATC IP LLC. All rights reserved.

Loads: 90 mph no ice  
78 mph w / 1/2" radial ice  
50 mph no ice

Vert 0.00 k    Moment 5,189.98 k    Moment Ice 5,817.34 k-ft  
 Horiz 0.00 k    Tot Down 42.72 k    Tot Down Ice 70.27 k  
 Tot Shear 51.93 k    Tot Shear Ice 55.70 k

Job Information			
Tower : 311305	Location : GLFD-Guilford Rebuild CT, CT		
Code : TIA/EIA-222-F	Shape : Triangle	Base Width : 20.00 ft	
Client : AT&T Mobility			Top Width : 6.50 ft

Sections Properties			
Section	Leg Members	Diagonal Members	Horizontal Members
1	PST 50 ksi 12" DIA PIPE	SAE 50 ksi 4X4X0.25	
2	PST 50 ksi 10" DIA PIPE	SAE 50 ksi 3.5X3.5X0.25	
3 - 4	PST 50 ksi 10" DIA PIPE	SAE 50 ksi 3X3X0.25	
5 - 6	PST 50 ksi 8" DIA PIPE	SAE 50 ksi 3X3X0.1875	
7	PST 50 ksi 6" DIA PIPE	SAE 50 ksi 3X3X0.1875	
8	PST 50 ksi 5" DIA PIPE	SAE 50 ksi 2.5X2.5X0.1875	
9	PST 50 ksi 3" DIA PIPE	SAE 50 ksi 2.5X2.5X0.1875	
10	PST 50 ksi 2" DIA PIPE	SAE 50 ksi 2X2X0.1875	SAE 36 ksi 2X2X0.1875

Discrete Appurtenance			
Elev (ft)	Type	Qty	Description
190.00	Whip	2	Diamond X50A
187.00	Whip	3	10' Dipole
183.00		3	RCU
183.00	Straight Arm	3	Round Side Arm
175.00	Panel	3	Ericsson AIR 21, 1.3 M, B2A B4
175.00	Panel	3	Ericsson KRY 112 144/1
175.00	Panel	3	Ericsson AIR 21 B4A B2P
175.00	Mounting Frame	3	Round Sector Frame
163.00	Panel	3	CCI OPA-65R-LCUU-H4 (14.4" wid
163.00	Panel	3	Ericsson RRUS-12 B2
163.00	Panel	3	Ericsson RRUS-11 (19.7")
163.00	Panel	3	Ericsson RRUS A2 B2
163.00	Panel	1	Raycap DC6-48-60-18-8F
163.00	Panel	6	Powerwave Algon 7770.00
163.00	Panel	6	Powerwave Algon LGP21401
163.00	Panel	6	Powerwave Algon 7020
163.00	Panel	6	Powerwave Algon LGP21901
163.00	Mounting Frame	3	Flat Light Sector Frame
140.00	Dish	1	4' Dish w/ Radome
140.00	Whip	1	Andrew DB408
140.00	Straight Arm	2	Round Side Arm
130.00	Straight Arm	3	Round Side Arm
130.00	Panel	3	RFS APXV18-206517S-C
127.00	Whip	1	Shively 6810-HW-2 w/ Radome
120.00	Panel	1	Shively 6812B-1 w/o Radome
87.00	Straight Arm	1	Stand-Off
87.00	Whip	1	Antel BCD-87010 ___ 4°
80.00	Dish	2	4' Dish w/ Radome
16.00	Dish	1	Channel Master Type 120

Linear Appurtenance			
Elev (ft)		Qty	Description
From	To		
0.000	190.00	2	1/2" Coax
0.000	189.99	1	Climbing Ladder
0.000	187.00	3	1 1/4" Coax
0.000	183.00	1	Waveguide
0.000	183.00	1	3/8" Coax
0.000	175.00	1	Waveguide
0.000	175.00	12	1 5/8" Coax
0.000	175.00	1	1 1/4" Hybriflex Cab
0.000	163.00	1	Waveguide
0.000	163.00	6	3/8" Coax
0.000	163.00	1	1/2" Coax
0.000	163.00	12	1 5/8" Coax
0.000	163.00	2	0.74" 8 AWG 7
0.000	163.00	1	0.39" Fiber Trunk
0.000	140.00	6	7/8" Coax
0.000	130.00	6	1 5/8" Coax



**Centek Engineering, Inc.**  
3-2 North Branford Road  
Branford, Connecticut 06405  
Phone: (203) 488-0580  
Fax: (203) 488-8587

**Steven L. Levine**  
Real Estate Consultant

June 16, 2015

Honorable Joseph S. Mazza  
1<sup>st</sup> Selectman, Town of Guilford  
Town Hall, 31 Park Street  
Guilford, Connecticut 06437

**Re: Existing Telecommunications Facility – 119 (aka 10)Tanner Marsh Road, Guilford**

Dear Mr. Mazza:

In order to accommodate technological changes, implement Uniform Mobile Telecommunications System (“UMTS”) and Long Term Evolution (“LTE”) capabilities, and enhance system performance in the State of Connecticut, New Cingular Wireless PCS, LLC (“AT&T”) will be changing its equipment configuration at certain cell sites.

As required by Regulations of Connecticut State Agencies (“R.C.S.A.”) Section 16-50j-73, the Connecticut Siting Council has been notified of the changes and will review AT&T’s proposal. Please accept this letter as notification 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 enclosed Notice 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 the undersigned at 860-830-0380 or Ms. Melanie Bachman, Acting Executive Director, Connecticut Siting Council at (860) 827-2935.

Sincerely,

Steven L. Levine  
Real Estate Consultant

Enclosure



**AMERICAN TOWER®**  
CORPORATION

---

## Structural Analysis Report

**Structure** : 190.6 ft Self Supported Tower  
**ATC Site Name** : GLFD-Guilford Rebuild CT, CT  
**ATC Site Number** : 311305  
**Engineering Number** : 61845522  
**Proposed Carrier** : AT&T Mobility  
**Carrier Site Name** : Guilford  
**Carrier Site Number** : CT2017/FA#10034980  
**Site Location** : 10 Tanner Marsh Road  
Guilford, CT 06437-2942  
41.288608,-72.658281  
**County** : New Haven  
**Date** : June 3, 2015  
**Max Usage** : 84%  
**Result** : Pass

Reviewed by:  
William Garrett, PE  
Chief Engineer



Prepared By:  
Sarah W. Frye, E.I.  
Structural Engineer I

Jun 8 2015 5:12 PM

COA: PEC.0001553





**Table of Contents**

Introduction .....	1
Supporting Documents .....	1
Analysis .....	1
Conclusion.....	1
Existing and Reserved Equipment.....	2
Equipment to be Removed.....	2
Proposed Equipment .....	2
Structure Usages .....	3
Foundations .....	3
Deflection, Twist, and Sway.....	3
Standard Conditions .....	4
Calculations .....	Attached



## Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 190.6 ft self supported tower to reflect the change in loading by AT&T Mobility.

## Supporting Documents

<b>Tower Drawings</b>	Nello Job #RFQ34841, dated April 8, 2011
<b>Foundation Drawing</b>	ATC Job #47517572B, dated June 15, 2011
<b>Geotechnical Report</b>	GEOServices Project #21-07254, dated March 11, 2008

## Analysis

The tower was analyzed using American Tower Corporation's tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/EIA-222.

<b>Basic Wind Speed:</b>	90 mph (Fastest Mile)
<b>Basic Wind Speed w/ Ice:</b>	78 mph (Fastest Mile)w/ 1/2" radial ice concurrent
<b>Code:</b>	ANSI/TIA/EIA-222-F / 2003 IBC , Sec. 1609.1.1, Exception (4) & Sec. 3108.4 w/ 2005 CT Supplement & 2009 CT Amendment

## Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact American Tower via email at [Engineering@americantower.com](mailto:Engineering@americantower.com). Please include the American Tower site name, site number, and engineering number in the subject line for any questions.



**Existing and Reserved Equipment**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
190.0	192.0	2	Diamond X50A	Leg	(2) 1/2" Coax	Enertrac
187.0		3	10' Dipole	Leg	(3) 1 1/4" Coax	Town Of Guilford
183.0	183.0	3	RCU	Side Arms	(1) 3/8" Coax	Metro PCS
175.0	175.0	3	Ericsson AIR 21, 1.3 M, B2A B4P, AWS - 1700/2100	Sector Frames	(12) 1 5/8" Coax (1) 1 1/4" Hybriflex	T-Mobile
		3	Ericsson KRY 112 144/1			
		3	Ericsson AIR 21 B4A B2P			
163.0	-	-	-	Sector Frames	(2) 0.74" 8 AWG 7 (1) 1/2" Coax (1) 0.39" Fiber Trunk	AT&T Mobility
140.0	147.0	1	Andrew DB408	Side Arms	(6) 7/8" Coax	Town Of Guilford
	140.0	1	4' Dish w/ Radome			
130.0	130.0	3	RFS APXV18-206517S-C	Side Arms	(6) 1 5/8" Coax	Metro PCS
127.0	127.0	1	Shively 6810-HW-2 w/ Radome	Leg	(1) 1 5/8" Coax	Monroe B.o.e
120.0	140.0	1	Shively 6812B-1 w/o Radome	Leg	(1) 7/8" Coax	
87.0	92.5	1	Antel BCD-87010 ____ 4°	Stand-Off	(1) 1 5/8" Coax	USA Mobility
80.0	80.0	2	4' Dish w/ Radome	Leg	(2) 7/8" Coax	Town Of Guilford
16.0	16.0	1	Channel Master Type 120	Leg	(1) 0.28" RG-6	USA Mobility

**Equipment to be Removed**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
152.0	152.0	6	Powerwave LGP21401	-	(12) 1 1/4" Coax	AT&T Mobility
		3	Powerwave 7770.00			
		3	KMW AM-X-CD-14-65-00T-RET			

**Proposed Equipment**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
163.0	166.0	3	CCI OPA-65R-LCUU-H4 (14.4" width)	Sector Frames	(12) 1 5/8" Coax (6) 3/8" Coax	AT&T Mobility
		3	Ericsson RRUS-12 B2			
		3	Ericsson RRUS-11 (19.7")			
		3	Ericsson RRUS A2 B2			
		1	Raycap DC6-48-60-18-8F			
		6	Powerwave 7770.00			
		6	Powerwave LGP21401			
		6	Powerwave 7020			
		6	Powerwave LGP21901			

<sup>1</sup>Mount elevation is defined as height above bottom of steel structure to the bottom of mount, RAD elevation is defined as center of antenna above ground level (AGL).

Double stack the proposed (12) 1 5/8" coax alongside existing AT&T Mobility coax. Install the proposed (6) 3/8" coax on top of the double stacked coax.

### Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Legs	71%	Pass
Diagonals	84%	Pass
Horizontals	8%	Pass

### Foundations

Reaction Component	Analysis Reactions	% of Usage
Uplift (Kips)	299.4	49%
Axial (Kips)	359.3	57%
Shear (Kips)	39.4	13%

The structure base reactions resulting from this analysis were found to be acceptable through analysis based on geotechnical and foundation information, therefore no modification or reinforcement of the foundation will be required.

### Deflection, Twist and Sway\*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Twist (°)	Sway (Rotation) (°)
163.0	CCI OPA-65R-LCUU-H4 (14.4" width)	AT&T Mobility	0.309	0.025	0.239
	Ericsson RRUS A2 B2				
	Ericsson RRUS-11 (19.7")				
	Ericsson RRUS-12 B2				
	Powerwave Allgon 7020				
	Powerwave Allgon 7770.00				
	Powerwave Allgon LGP21401				
	Powerwave Allgon LGP21901				
	Raycap DC6-48-60-18-8F				
140.0	4' Dish w/ Radome	Town of Guilford	0.237	0.015	0.210
80.0	4' Dish w/ Radome				
16.0	Channel Master Type 120	USA Mobility	0.079	0.005	0.112

\*Deflection, Twist and Sway was evaluated considering a design wind speed of 50 mph (Fastest Mile) per ANSI/TIA/EIA-222-F.





## **Standard Conditions**

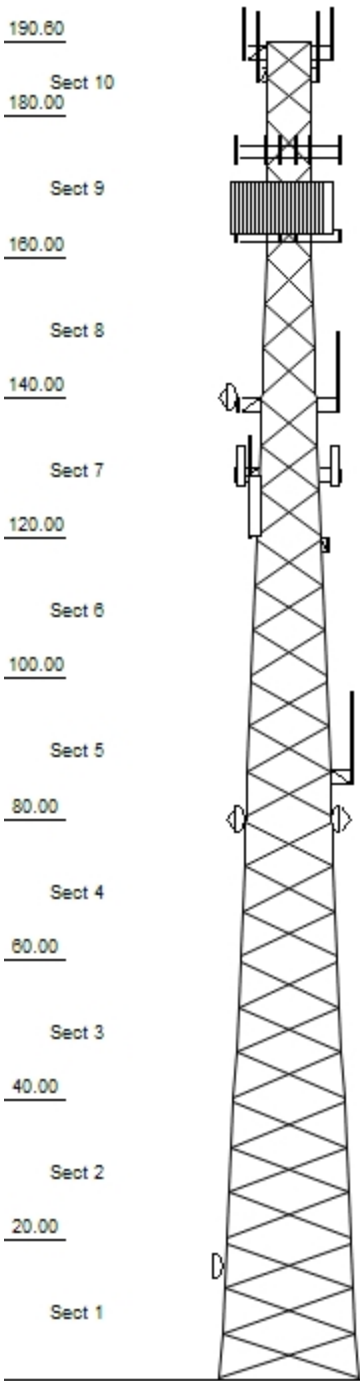
All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessary limited, to:

- Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.
- Information from drawings in the possession of American Tower Corporation, or generated by field inspections or measurements of the structure.

It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and that their capacity has not significantly changed from the "as new" condition.

Unless explicitly agreed by both the client and American Tower Corporation, all services will be performed in accordance with the current revision of ANSI/TIA -222. The design basic wind speed will be determined based on the minimum basic wind speed as prescribed in ANSI/TIA-222. Although every effort is taken to ensure that the loading considered is adequate to meet the requirements of all applicable regulatory entities, we can provide no assurance to meet any other local and state codes or requirements. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.



© 2007 - 2015 by ATC IP LLC. All rights reserved.

Loads: 90 mph no ice  
 78 mph w / 1/2" radial ice  
 50 mph no ice

Vert 0.00 k    Moment 5,189.98 k    Moment Ice 5,817.34 k-ft  
 Horiz 0.00 k    Tot Down 42.72 k    Tot Down Ice 70.27 k  
 Tot Shear 51.93 k    Tot Shear Ice 55.70 k

Job Information			
Tower : 311305	Location : GLFD-Guilford Rebuild CT, CT		Base Width : 20.00 ft
Code : TIA/EIA-222-F	Shape : Triangle	Top Width : 6.50 ft	
Client : AT&T Mobility			

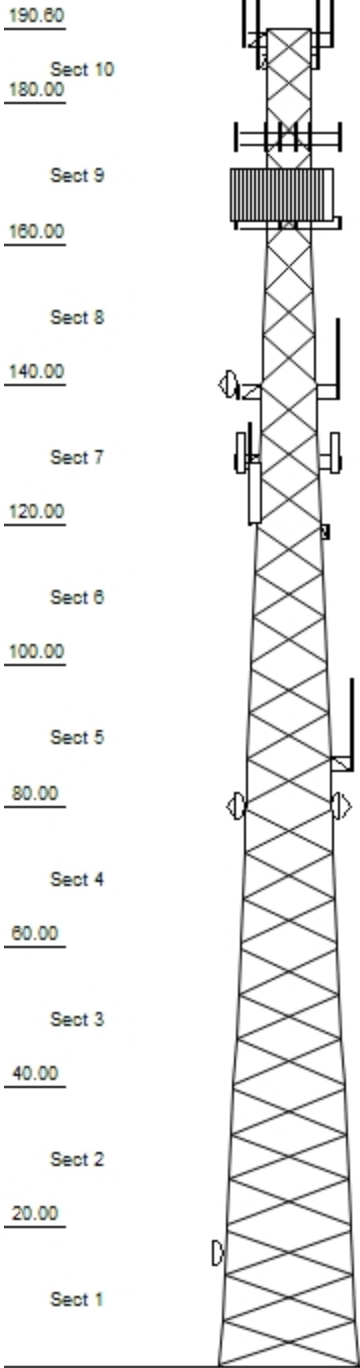
Sections Properties				
Section	Leg Members	Diagonal Members	Horizontal Members	
1	PST 50 ksi 12" DIA PIPE	SAE 50 ksi 4X4X0.25		
2	PST 50 ksi 10" DIA PIPE	SAE 50 ksi 3.5X3.5X0.25		
3 - 4	PST 50 ksi 10" DIA PIPE	SAE 50 ksi 3X3X0.25		
5 - 6	PST 50 ksi 8" DIA PIPE	SAE 50 ksi 3X3X0.1875		
7	PST 50 ksi 6" DIA PIPE	SAE 50 ksi 3X3X0.1875		
8	PST 50 ksi 5" DIA PIPE	SAE 50 ksi 2.5X2.5X0.1875		
9	PST 50 ksi 3" DIA PIPE	SAE 50 ksi 2.5X2.5X0.1875		
10	PST 50 ksi 2" DIA PIPE	SAE 50 ksi 2X2X0.1875	SAE 36 ksi 2X2X0.1875	

Discrete Appurtenance			
Elev (ft)	Type	Qty	Description
190.00	Whip	2	Diamond X50A
187.00	Whip	3	10' Dipole
183.00		3	RCU
183.00	Straight Arm	3	Round Side Arm
175.00	Panel	3	Ericsson AIR 21, 1.3 M, B2A B4
175.00	Panel	3	Ericsson KRY 112 144/1
175.00	Panel	3	Ericsson AIR 21 B4A B2P
175.00	Mounting Frame	3	Round Sector Frame
163.00	Panel	3	CCI OPA-65R-LCUU-H4 (14.4" wid
163.00	Panel	3	Ericsson RRUS-12 B2
163.00	Panel	3	Ericsson RRUS-11 (19.7")
163.00	Panel	3	Ericsson RRUS A2 B2
163.00	Panel	1	Raycap DC6-48-60-18-8F
163.00	Panel	6	Powerwave Algon 7770.00
163.00	Panel	6	Powerwave Algon LGP21401
163.00	Panel	6	Powerwave Algon 7020
163.00	Panel	6	Powerwave Algon LGP21901
163.00	Mounting Frame	3	Flat Light Sector Frame
140.00	Dish	1	4' Dish w/ Radome
140.00	Whip	1	Andrew DB408
140.00	Straight Arm	2	Round Side Arm
130.00	Straight Arm	3	Round Side Arm
130.00	Panel	3	RFS APXV18-206517S-C
127.00	Whip	1	Shively 6810-HW-2 w/ Radome
120.00	Panel	1	Shively 6812B-1 w/o Radome
87.00	Straight Arm	1	Stand-Off
87.00	Whip	1	Antel BCD-87010 ___ 4°
80.00	Dish	2	4' Dish w/ Radome
16.00	Dish	1	Channel Master Type 120

Linear Appurtenance			
Elev (ft)		Qty	Description
From	To		
0.000	190.00	2	1/2" Coax
0.000	189.99	1	Climbing Ladder
0.000	187.00	3	1 1/4" Coax
0.000	183.00	1	Waveguide
0.000	183.00	1	3/8" Coax
0.000	175.00	1	Waveguide
0.000	175.00	12	1 5/8" Coax
0.000	175.00	1	1 1/4" Hybriflex Cab
0.000	163.00	1	Waveguide
0.000	163.00	6	3/8" Coax
0.000	163.00	1	1/2" Coax
0.000	163.00	12	1 5/8" Coax
0.000	163.00	2	0.74" 8 AWG 7
0.000	163.00	1	0.39" Fiber Trunk
0.000	140.00	6	7/8" Coax
0.000	130.00	6	1 5/8" Coax

Job Information			
Tower : 311305	Location : GLFD-Guilford Rebuild CT, CT		
Code : TIA/EIA-222-F	Shape : Triangle	Base Width : 20.00 ft	
Client : AT&T Mobility	Top Width : 6.50 ft		

© 2007 - 2015 by ATC IP LLC. All rights reserved.



0.000	127.00	1	1 5/8" Coax
0.000	120.00	1	7/8" Coax
0.000	87.000	1	1 5/8" Coax
0.000	80.000	2	7/8" Coax
0.000	16.000	1	0.28" RG-6

Vert 0.00 k    Moment 5,189.98 k    Moment Ice 5,817.34 k-ft  
 Horiz 0.00 k    Tot Down 42.72 k    Tot Down Ice 70.27 k  
 Tot Shear 51.93 k    Tot Shear Ice 55.70 k

Site Number: 311305

Code:

TIA/EIA-222-F

© 2007 - 2015 by ATC IP LLC. All rights reserved.

Site Name: GLFD-Guilford Rebuild CT, CT

Engineering Number: 61845522

6/3/2015 3:43:41 PM

Customer: AT&T Mobility

## Analysis Parameters

### Tower Loading

Location:	New Haven County, CT	Height:	190.5999
Code:	TIA/EIA-222-F	Base Elevation:	0.00 ft
Shape:	Triangle	Base Face Width:	20.00 ft
Tower Manufacturer:	Nello Corp	Top Face Width:	6.50 ft
Tower Type:	Self Support		

### Ice & Wind Parameters

Exposure Category:	C	Design Windspeed Without Ice:	90 mph
Design Ice Thickness:	0.50 in	Design Windspeed With Ice:	78 mph

### Load Cases

Normal No Ice	90.00 mph Wind Normal To Face with No Ice
60 deg No Ice	90.00 mph Wind at 60 deg From Face with No Ice
90 deg No Ice	90.00 mph Wind at 90 deg From Face with No Ice
Normal Ice	77.94 mph Wind Normal To Face with Ice
60 deg Ice	77.94 mph Wind at 60 deg From Face with Ice
90 deg Ice	77.94 mph Wind at 90 deg From Face with Ice
Normal Twist/Sway	50.00 mph Wind Normal To Face with No Ice
60 deg Twist/Sway	50.00 mph Wind at 60 deg From Face with No Ice
90 deg Twist/Sway	50.00 mph Wind at 90 deg From Face with No Ice



Site Number: 311305

Code:

TIA/EIA-222-F

© 2007 - 2015 by ATC IP LLC. All rights reserved.

Site Name: GLFD-Guilford Rebuild CT, CT

Engineering Number: 61845522

6/3/2015 3:43:41 PM

Customer: AT&T Mobility

### Tower Loading

**Discrete Appurtenance Properties** Normal No Ice

Elevation (ft)	Description	Qty	Weight (lb)	CaAa (sf)	CaAa Factor	Dist. From Face (ft)	X Angle (deg)	Vert Ecc (ft)	Mom (lb-ft)	Qz (psf)	Total Force (lb)	Pu (lb)
190.00	Diamond X50A	2	2	1.1	1.00	0.0	0.00	2.0	171.6	34.30	86	5
187.00	10' Dipole	3	30	3.8	1.00	0.0	0.00	5.0	2160.6	34.30	432	90
183.00	RCU	3	1	0.2	0.50	0.0	0.00	0.0	0.0	33.83	9	3
183.00	Round Side Arm	3	150	5.2	0.67	0.0	0.00	0.0	0.0	33.83	395	450
175.00	Ericsson AIR 21 B4A	3	90	6.3	0.69	0.0	0.00	0.0	0.0	33.40	487	270
175.00	Ericsson AIR 21, 1.3	3	90	6.3	0.69	0.0	0.00	0.0	0.0	33.40	487	270
175.00	Ericsson KRY 112	3	11	0.4	0.50	0.0	0.00	0.0	0.0	33.40	23	33
175.00	Round Sector Frame	3	300	14.4	0.67	0.0	0.00	0.0	0.0	33.40	1080	900
163.00	CCI OPA-65R-LCUU-H4	3	57	6.7	0.64	0.0	0.00	3.0	1422.5	32.90	474	171
163.00	Ericsson RRUS A2 B2	3	22	2.4	0.50	0.0	0.00	3.0	398.5	32.90	133	66
163.00	Ericsson RRUS-11	3	51	3.3	0.50	0.0	0.00	3.0	539.1	32.90	180	153
163.00	Ericsson RRUS-12 B2	3	58	3.7	0.50	0.0	0.00	3.0	606.9	32.90	202	174
163.00	Flat Light Sector	3	400	17.9	0.67	0.0	0.00	0.0	0.0	32.73	1315	1200
163.00	Powerwave Allgon	6	2	0.4	0.50	0.0	0.00	3.0	132.3	32.90	44	13
163.00	Powerwave Allgon	6	35	5.9	0.64	0.0	0.00	3.0	2489.3	32.90	830	210
163.00	Powerwave Allgon	6	14	1.3	0.50	0.0	0.00	3.0	426.7	32.90	142	85
163.00	Powerwave Allgon	6	6	0.2	0.50	0.0	0.00	3.0	76.1	32.90	25	33
163.00	Raycap DC6-48-60-18-	1	20	1.3	1.00	0.0	0.00	3.0	138.9	32.90	46	20
140.00	4' Dish w/ Radome	1	120	10.9	1.00	0.0	0.00	0.0	0.0	31.34	380	120
140.00	Andrew DB408	1	17	2.9	1.00	0.0	0.00	7.0	720.5	31.78	103	17
140.00	Round Side Arm	2	150	5.2	0.90	0.0	0.00	0.0	0.0	31.34	328	300
130.00	RFS APXV18-206517S-	3	26	5.2	0.68	0.0	0.00	0.0	0.0	30.68	361	79
130.00	Round Side Arm	3	150	5.2	0.67	0.0	0.00	0.0	0.0	30.68	358	450
127.00	Shively 6810-HW-2 w/	1	247	13.8	1.00	0.0	0.00	0.0	0.0	30.48	470	247
120.00	Shively 6812B-1 w/o	1	3	0.6	1.00	0.0	0.00	20.0	420.0	31.34	21	3
87.00	Antel BCD-87010 ___ 4°	1	27	2.9	1.00	0.0	0.00	5.5	496.0	27.84	90	27
87.00	Stand-Off	1	75	2.5	1.00	0.0	0.00	0.0	0.0	27.35	76	75
80.00	4' Dish w/ Radome	2	120	10.9	1.00	0.0	0.00	0.0	0.0	26.71	647	240
16.00	Channel Master Type	1	126	20.2	1.00	0.0	0.00	0.0	0.0	20.74	468	126
	<b>Totals</b>	<b>80</b>	<b>5829</b>	<b>378.7</b>								

**Discrete Appurtenance Properties** Normal Ice

Elevation (ft)	Description	Qty	Weight (lb)	CaAa (sf)	CaAa Factor	Dist. From Face (ft)	X Angle (deg)	Vert Ecc (ft)	Mom (lb-ft)	Qz (psf)	Total Force (lb)	Pu (lb)
190.00	Diamond X50A	2	57	1.6	1.00	0.0	0.00	2.0	187.3	25.72	94	114
187.00	10' Dipole	3	51	4.3	1.00	0.0	0.00	5.0	1870.3	25.72	374	152
183.00	RCU	3	3	0.3	0.50	0.0	0.00	0.0	0.0	25.37	11	8
183.00	Round Side Arm	3	175	5.9	0.67	0.0	0.00	0.0	0.0	25.37	336	525
175.00	Ericsson AIR 21 B4A	3	131	6.9	0.69	0.0	0.00	0.0	0.0	25.05	403	392
175.00	Ericsson AIR 21, 1.3	3	131	6.9	0.69	0.0	0.00	0.0	0.0	25.05	403	392
175.00	Ericsson KRY 112	3	14	0.6	0.50	0.0	0.00	0.0	0.0	25.05	23	42
175.00	Round Sector Frame	3	415	19.2	0.67	0.0	0.00	0.0	0.0	25.05	1080	1245
163.00	CCI OPA-65R-LCUU-H4	3	57	14.4	0.64	0.0	0.00	3.0	2278.0	24.67	759	171
163.00	Ericsson RRUS A2 B2	3	61	2.9	0.50	0.0	0.00	3.0	357.2	24.67	119	182
163.00	Ericsson RRUS-11	3	73	3.6	0.50	0.0	0.00	3.0	449.0	24.67	150	219
163.00	Ericsson RRUS-12 B2	3	67	4.1	0.50	0.0	0.00	3.0	504.8	24.67	168	200

Site Number: 311305

Code:

TIA/EIA-222-F

© 2007 - 2015 by ATC IP LLC. All rights reserved.

Site Name: GLFD-Guilford Rebuild CT, CT

Engineering Number: 61845522

6/3/2015 3:43:41 PM

Customer: AT&T Mobility

### Tower Loading

163.00	Flat Light Sector	3	510	22.2	0.67	0.0	0.00	0.0	0.0	24.54	1223	1530
163.00	Powerwave Allgon	6	5	0.5	0.50	0.0	0.00	3.0	133.9	24.67	45	31
163.00	Powerwave Allgon	6	68	6.5	0.64	0.0	0.00	3.0	2073.2	24.67	691	406
163.00	Powerwave Allgon	6	21	1.5	0.50	0.0	0.00	3.0	379.5	24.67	127	128
163.00	Powerwave Allgon	6	8	0.3	0.50	0.0	0.00	3.0	84.3	24.67	28	46
163.00	Raycap DC6-48-60-18-	1	35	1.5	1.00	0.0	0.00	3.0	120.7	24.67	40	35
140.00	4' Dish w/ Radome	1	212	11.3	1.00	0.0	0.00	0.0	0.0	23.50	297	212
140.00	Andrew DB408	1	38	3.9	1.00	0.0	0.00	7.0	726.7	23.83	104	38
140.00	Round Side Arm	2	175	5.9	0.90	0.0	0.00	0.0	0.0	23.50	279	350
130.00	RFS APXV18-206517S-	3	53	5.8	0.68	0.0	0.00	0.0	0.0	23.01	307	159
130.00	Round Side Arm	3	175	5.9	0.67	0.0	0.00	0.0	0.0	23.01	305	525
127.00	Shively 6810-HW-2 w/	1	2388	135.0	1.00	0.0	0.00	0.0	0.0	22.86	3447	2388
120.00	Shively 6812B-1 w/o	1	177	5.1	1.00	0.0	0.00	20.0	2677.6	23.50	134	177
87.00	Antel BCD-87010 ___ 4°	1	48	4.1	1.00	0.0	0.00	5.5	519.4	20.88	94	48
87.00	Stand-Off	1	180	6.8	1.00	0.0	0.00	0.0	0.0	20.51	155	180
80.00	4' Dish w/ Radome	2	212	11.3	1.00	0.0	0.00	0.0	0.0	20.03	506	423
16.00	Channel Master Type	1	185	21.0	1.00	0.0	0.00	0.0	0.0	15.55	366	185
	<b>Totals</b>	<b>80</b>	<b>10501</b>	<b>589.0</b>								

### Discrete Appurtenance Properties Normal Twist/Sway

Elevation (ft)	Description	Qty	Weight (lb)	CaAa (sf)	CaAa Factor	Dist. From Face (ft)	X Angle (deg)	Vert Ecc (ft)	Mom (lb-ft)	Qz (psf)	Total Force (lb)	Pu (lb)
190.00	Diamond X50A	2	2	1.1	1.00	0.0	0.00	2.0	53.0	10.58	26	5
187.00	10' Dipole	3	30	3.8	1.00	0.0	0.00	5.0	666.9	10.58	133	90
183.00	RCU	3	1	0.2	0.50	0.0	0.00	0.0	0.0	10.44	3	3
183.00	Round Side Arm	3	150	5.2	0.67	0.0	0.00	0.0	0.0	10.44	122	450
175.00	Ericsson AIR 21 B4A	3	90	6.3	0.69	0.0	0.00	0.0	0.0	10.31	150	270
175.00	Ericsson AIR 21, 1.3	3	90	6.3	0.69	0.0	0.00	0.0	0.0	10.31	150	270
175.00	Ericsson KRY 112	3	11	0.4	0.50	0.0	0.00	0.0	0.0	10.31	7	33
175.00	Round Sector Frame	3	300	14.4	0.67	0.0	0.00	0.0	0.0	10.31	333	900
163.00	CCI OPA-65R-LCUU-H4	3	57	6.7	0.64	0.0	0.00	3.0	439.0	10.15	146	171
163.00	Ericsson RRUS A2 B2	3	22	2.4	0.50	0.0	0.00	3.0	123.0	10.15	41	66
163.00	Ericsson RRUS-11	3	51	3.3	0.50	0.0	0.00	3.0	166.4	10.15	55	153
163.00	Ericsson RRUS-12 B2	3	58	3.7	0.50	0.0	0.00	3.0	187.3	10.15	62	174
163.00	Flat Light Sector	3	400	17.9	0.67	0.0	0.00	0.0	0.0	10.10	406	1200
163.00	Powerwave Allgon	6	2	0.4	0.50	0.0	0.00	3.0	40.8	10.15	14	13
163.00	Powerwave Allgon	6	35	5.9	0.64	0.0	0.00	3.0	768.3	10.15	256	210
163.00	Powerwave Allgon	6	14	1.3	0.50	0.0	0.00	3.0	131.7	10.15	44	85
163.00	Powerwave Allgon	6	6	0.2	0.50	0.0	0.00	3.0	23.5	10.15	8	33
163.00	Raycap DC6-48-60-18-	1	20	1.3	1.00	0.0	0.00	3.0	42.9	10.15	14	20
140.00	4' Dish w/ Radome	1	120	10.9	1.00	0.0	0.00	0.0	0.0	9.67	117	120
140.00	Andrew DB408	1	17	2.9	1.00	0.0	0.00	7.0	222.4	9.81	32	17
140.00	Round Side Arm	2	150	5.2	0.90	0.0	0.00	0.0	0.0	9.67	101	300
130.00	RFS APXV18-206517S-	3	26	5.2	0.68	0.0	0.00	0.0	0.0	9.47	111	79
130.00	Round Side Arm	3	150	5.2	0.67	0.0	0.00	0.0	0.0	9.47	111	450
127.00	Shively 6810-HW-2 w/	1	247	13.8	1.00	0.0	0.00	0.0	0.0	9.41	145	247
120.00	Shively 6812B-1 w/o	1	3	0.6	1.00	0.0	0.00	20.0	129.6	9.67	6	3
87.00	Antel BCD-87010 ___ 4°	1	27	2.9	1.00	0.0	0.00	5.5	153.1	8.59	28	27
87.00	Stand-Off	1	75	2.5	1.00	0.0	0.00	0.0	0.0	8.44	24	75
80.00	4' Dish w/ Radome	2	120	10.9	1.00	0.0	0.00	0.0	0.0	8.24	200	240
16.00	Channel Master Type	1	126	20.2	1.00	0.0	0.00	0.0	0.0	6.40	144	126

Site Number: 311305

Code: TIA/EIA-222-F

© 2007 - 2015 by ATC IP LLC. All rights reserved.

Site Name: GLFD-Guilford Rebuild CT, CT

Engineering Number: 61845522

6/3/2015 3:43:41 PM

Customer: AT&T Mobility

## Tower Loading

Totals	80	5829	378.7
--------	----	------	-------

Site Number: 311305

Code:

TIA/EIA-222-F

© 2007 - 2015 by ATC IP LLC. All rights reserved.

Site Name: GLFD-Guilford Rebuild CT, CT

Engineering Number: 61845522

6/3/2015 3:43:41 PM

Customer: AT&T Mobility

### Tower Loading

#### Linear Appurtenance Properties

Elev From (ft)	Elev To (ft)	Description	Qty	Width (in)	Weight (lb/ft)	Pct In Wind	Spread On Faces	Bundling Arrangement
0.00	190.0	1/2" Coax	2	0.63	0.15	100.00	1	Separate
0.00	189.9	Climbing Ladder	1	2.00	6.90	100.00	2	Separate
0.00	187.0	1 1/4" Coax	3	1.55	0.63	100.00	3	Separate
0.00	183.0	3/8" Coax	1	0.44	0.08	100.00	3	Separate
0.00	183.0	Waveguide	1	2.00	6.00	100.00	3	Separate
0.00	175.0	1 1/4" Hybriflex Cab	1	1.54	1.00	100.00	2	Separate
0.00	175.0	1 5/8" Coax	12	1.98	0.82	50.00	2	Separate
0.00	175.0	Waveguide	1	2.00	6.00	100.00	2	Separate
0.00	163.0	0.39" Fiber Trunk	1	0.39	0.06	100.00	2	Separate
0.00	163.0	0.74" 8 AWG 7	2	0.74	0.49	50.00	2	Separate
0.00	163.0	1 5/8" Coax	12	1.98	0.82	50.00	2	Separate
0.00	163.0	1/2" Coax	1	0.63	0.15	100.00	2	Separate
0.00	163.0	3/8" Coax	6	0.44	0.08	0.00	2	Separate
0.00	163.0	Waveguide	1	2.00	6.00	100.00	2	Separate
0.00	140.0	7/8" Coax	6	1.09	0.33	50.00	3	Separate
0.00	130.0	1 5/8" Coax	6	1.98	0.82	50.00	3	Separate
0.00	127.0	1 5/8" Coax	1	1.98	0.82	100.00	3	Separate
0.00	120.0	7/8" Coax	1	1.09	0.33	100.00	3	Separate
0.00	87.00	1 5/8" Coax	1	1.98	0.82	100.00	3	Separate
0.00	80.00	7/8" Coax	2	1.09	0.33	0.00	2	Separate
0.00	16.00	0.28" RG-6	1	0.28	0.03	100.00	3	Separate

### Force/Stress Summary

**Section: 1 1 Bot Elev (ft): 0.00 Height (ft): 20.000**

Max Compression Member	Force (kip)	Load Case	Len (ft)	Bracing %				Fa (ksi)	Member			Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
				X	Y	Z	KL/R		Cap (kip)	Num Bolts	Num Holes				
LEG PST - 12" DIA PIPE	-356.69	Normal Ice	6.43	100	100	100	17.6	38.1	555.64	0	0	0.00	0.00	64	Member X
HORIZ	0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG SAE - 4X4X0.25	-10.01	90 deg Ice	20.05	48	73	48	145.3	9.4	18.29	0	0	0.00	0.00	54	Member Z

Max Tension Member	Force (kip)	Load Case	Fy (ksi)	Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
LEG PST - 12" DIA PIPE	301.69	60 deg Ice	50	583.94	0	0	0.00	0.00	51	Member
HORIZ	0.00		0	0.00	0	0	0.00	0.00	0	
DIAG SAE - 4X4X0.25	11.03	90 deg Ice	50	77.59	0	0	0.00	0.00	14	Member

**Section: 2 2 Bot Elev (ft): 20.00 Height (ft): 20.000**

Max Compression Member	Force (kip)	Load Case	Len (ft)	Bracing %				Fa (ksi)	Member			Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
				X	Y	Z	KL/R		Cap (kip)	Num Bolts	Num Holes				
LEG PST - 10" DIA PIPE	-321.60	Normal Ice	6.43	100	100	100	21.0	37.6	447.26	0	0	0.00	0.00	71	Member X
HORIZ	0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG SAE - 3.5X3.5X0.25	-8.96	90 deg Ice	18.77	48	73	48	155.8	8.2	13.86	0	0	0.00	0.00	64	Member Z

Max Tension Member	Force (kip)	Load Case	Fy (ksi)	Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
LEG PST - 10" DIA PIPE	276.22	60 deg Ice	50	475.95	0	0	0.00	0.00	58	Member
HORIZ	0.00		0	0.00	0	0	0.00	0.00	0	
DIAG SAE - 3.5X3.5X0.25	9.03	90 deg Ice	50	67.59	0	0	0.00	0.00	13	Member

**Section: 3 3 Bot Elev (ft): 40.00 Height (ft): 20.000**

Max Compression Member	Force (kip)	Load Case	Len (ft)	Bracing %				Fa (ksi)	Member			Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
				X	Y	Z	KL/R		Cap (kip)	Num Bolts	Num Holes				
LEG PST - 10" DIA PIPE	-285.88	Normal Ice	6.43	100	100	100	21.0	37.6	447.26	0	0	0.00	0.00	63	Member X
HORIZ	0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG SAE - 3X3X0.25	-8.97	90 deg Ice	16.90	48	73	48	164.5	7.4	10.59	0	0	0.00	0.00	84	Member Z

Max Tension Member	Force (kip)	Load Case	Fy (ksi)	Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
LEG PST - 10" DIA PIPE	247.85	60 deg Ice	50	475.95	0	0	0.00	0.00	52	Member
HORIZ	0.00		0	0.00	0	0	0.00	0.00	0	
DIAG SAE - 3X3X0.25	8.81	90 deg Ice	50	57.59	0	0	0.00	0.00	15	Member

### Force/Stress Summary

**Section: 4 4 Bot Elev (ft): 60.00 Height (ft): 20.000**

		Force	Len	Bracing %				Fa	Member			Shear	Bear	Use	
Max Compression Member		(kip)	(ft)	X	Y	Z	KL/R	(ksi)	Cap (kip)	Num Bolts	Num Holes	Cap (kip)	Cap (kip)	%	Controls
LEG	PST - 10" DIA PIPE	-246.11	6.42	100	100	100	21.0	37.6	447.29	0	0	0.00	0.00	55	Member X
HORIZ		0.00	0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG	SAE - 3X3X0.25	-10.67	15.15	48	73	48	147.5	9.2	13.18	0	0	0.00	0.00	80	Member Z

Max Tension Member		Force (kip)	Load Case	Fy (ksi)	Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
LEG	PST - 10" DIA PIPE	216.46	60 deg Ice	50	475.95	0	0	0.00	0.00	45	Member
HORIZ		0.00		0	0.00	0	0	0.00	0.00	0	
DIAG	SAE - 3X3X0.25	10.45	90 deg Ice	50	57.59	0	0	0.00	0.00	18	Member

**Section: 5 5 Bot Elev (ft): 80.00 Height (ft): 20.000**

		Force	Len	Bracing %				Fa	Member			Shear	Bear	Use	
Max Compression Member		(kip)	(ft)	X	Y	Z	KL/R	(ksi)	Cap (kip)	Num Bolts	Num Holes	Cap (kip)	Cap (kip)	%	Controls
LEG	PST - 8" DIA PIPE	-197.77	6.42	100	100	100	26.2	36.8	309.18	0	0	0.00	0.00	63	Member X
HORIZ		0.00	0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG	SAE - 3X3X0.1875	-9.82	13.81	48	73	48	133.5	11.2	12.18	0	0	0.00	0.00	80	Member Z

Max Tension Member		Force (kip)	Load Case	Fy (ksi)	Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
LEG	PST - 8" DIA PIPE	174.68	60 deg Ice	50	335.97	0	0	0.00	0.00	51	Member
HORIZ		0.00		0	0.00	0	0	0.00	0.00	0	
DIAG	SAE - 3X3X0.1875	10.10	90 deg Ice	50	43.60	0	0	0.00	0.00	23	Member

**Section: 6 6 Bot Elev (ft): 100.0 Height (ft): 20.000**

		Force	Len	Bracing %				Fa	Member			Shear	Bear	Use	
Max Compression Member		(kip)	(ft)	X	Y	Z	KL/R	(ksi)	Cap (kip)	Num Bolts	Num Holes	Cap (kip)	Cap (kip)	%	Controls
LEG	PST - 8" DIA PIPE	-148.87	6.42	100	100	100	26.2	36.8	309.18	0	0	0.00	0.00	48	Member X
HORIZ		0.00	0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0	
DIAG	SAE - 3X3X0.1875	-9.74	12.50	48	73	48	120.8	13.6	14.86	0	0	0.00	0.00	65	Member Z

Max Tension Member		Force (kip)	Load Case	Fy (ksi)	Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
LEG	PST - 8" DIA PIPE	131.89	60 deg Ice	50	335.97	0	0	0.00	0.00	39	Member
HORIZ		0.00		0	0.00	0	0	0.00	0.00	0	
DIAG	SAE - 3X3X0.1875	10.45	90 deg Ice	50	43.60	0	0	0.00	0.00	23	Member

### Force/Stress Summary

**Section: 7 7 Bot Elev (ft): 120.0 Height (ft): 20.000**

		Force		Len (ft)	Bracing %			Fa (ksi)	Member			Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
Max Compression Member		(kip)	Load Case		X	Y	Z		KL/R	Cap (kip)	Num Bolts				
LEG	PST - 6" DIA PIPE	-96.44	Normal Ice	6.42	100	100	100	34.3	35.5	197.97	0	0	0.00	0.00	48 Member X
HORIZ		0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0
DIAG	SAE - 3X3X0.1875	-10.05	90 deg Ice	11.24	48	73	48	111.5	16.0	17.42	0	0	0.00	0.00	57 Member Z

		Force (kip)	Load Case	Fy (ksi)	Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
Max Tension Member											
LEG	PST - 6" DIA PIPE	85.85	60 deg Ice	50	223.18	0	0	0.00	0.00	38	Member
HORIZ		0.00		0	0.00	0	0	0.00	0.00	0	
DIAG	SAE - 3X3X0.1875	7.72	90 deg Ice	50	43.60	0	0	0.00	0.00	17	Member

**Section: 8 8 Bot Elev (ft): 140.0 Height (ft): 20.000**

		Force		Len (ft)	Bracing %			Fa (ksi)	Member			Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
Max Compression Member		(kip)	Load Case		X	Y	Z		KL/R	Cap (kip)	Num Bolts				
LEG	PST - 5" DIA PIPE	-53.57	Normal Ice	6.55	100	100	100	41.8	34.1	146.63	0	0	0.00	0.00	36 Member X
HORIZ		0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0
DIAG	SAE - 2.5X2.5X0.1875	-5.45	90 deg Ice	10.12	48	73	48	118.4	14.2	12.82	0	0	0.00	0.00	42 Member Z

		Force (kip)	Load Case	Fy (ksi)	Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
Max Tension Member											
LEG	PST - 5" DIA PIPE	48.64	60 deg No Ice	50	171.98	0	0	0.00	0.00	28	Member
HORIZ		0.00		0	0.00	0	0	0.00	0.00	0	
DIAG	SAE - 2.5X2.5X0.1875	4.94	90 deg Ice	50	36.08	0	0	0.00	0.00	13	Member

**Section: 9 9 Bot Elev (ft): 160.0 Height (ft): 20.000**

		Force		Len (ft)	Bracing %			Fa (ksi)	Member			Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
Max Compression Member		(kip)	Load Case		X	Y	Z		KL/R	Cap (kip)	Num Bolts				
LEG	PST - 3" DIA PIPE	-19.13	Normal No Ice	6.54	100	100	100	67.7	28.5	63.52	0	0	0.00	0.00	30 Member X
HORIZ		0.00		0.000	0	0	0	0.0	0.0	0.00	0	0	0.00	0.00	0
DIAG	SAE - 2.5X2.5X0.1875	-3.40	Normal No Ice	9.222	48	73	48	110.5	16.3	14.71	0	0	0.00	0.00	23 Member Z

		Force (kip)	Load Case	Fy (ksi)	Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
Max Tension Member											
LEG	PST - 3" DIA PIPE	14.83	60 deg No Ice	50	89.19	0	0	0.00	0.00	16	Member
HORIZ		0.00		0	0.00	0	0	0.00	0.00	0	
DIAG	SAE - 2.5X2.5X0.1875	2.97	60 deg No Ice	50	36.08	0	0	0.00	0.00	8	Member



Site Number: 311305

Code: TIA/EIA-222-F

© 2007 - 2015 by ATC IP LLC. All rights reserved.

Site Name: GLFD-Guilford Rebuild CT, CT

Engineering Number: 61845522

6/3/2015 3:43:41 PM

Customer: AT&T Mobility

### Force/Stress Summary

Section: 10 10 Bot Elev (ft): 180.0 Height (ft): 10.599

		Force	Len	Bracing %				Fa	Member			Shear	Bear	Use	
Max Compression Member		(kip)	(ft)	X	Y	Z	KL/R	(ksi)	Cap (kip)	Num Bolts	Num Holes	(kip)	(kip)	%	Controls
LEG	PST - 2" DIA PIPE	-1.99	5.11	100	100	100	77.9	25.9	27.70	0	0	0.00	0.00	7	Member X
HORIZ	SAE - 2X2X0.1875	-0.30	6.500	100	100	100	198.0	5.1	3.63	0	0	0.00	0.00	8	Member Z
DIAG	SAE - 2X2X0.1875	-0.63	8.269	48	73	48	120.9	13.6	9.74	0	0	0.00	0.00	6	Member Z

Max Tension Member		Force (kip)	Load Case	Fy (ksi)	Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
LEG	PST - 2" DIA PIPE	0.89	Normal No Ice	50	42.80	0	0	0.00	0.00	2	Member
HORIZ	SAE - 2X2X0.1875	0.27	60 deg No Ice	36	20.59	0	0	0.00	0.00	1	Member
DIAG	SAE - 2X2X0.1875	0.86	Normal No Ice	50	28.60	0	0	0.00	0.00	3	Member

Site Number: 311305

Code:

TIA/EIA-222-F

© 2007 - 2015 by ATC IP LLC. All rights reserved.

Site Name: GLFD-Guilford Rebuild CT, CT

Engineering Number: 61845522

6/3/2015 3:43:41 PM

Customer: AT&T Mobility

### Support Forces Summary

Load Case	Node	FX (kip)	FY (kip)	FZ (kip)	(-) = Uplift (+) = Down
60 deg Ice	1b	-34.11	-299.37	-19.79	
	1a	-8.76	184.23	1.32	
	1	-3.40	185.41	-8.24	
60 deg No Ice	1b	-23.96	-267.76	-13.98	
	1a	-14.72	154.74	4.83	
	1	-3.42	155.75	-15.16	
60 deg	1b	-6.80	-72.71	-3.97	
	1a	-5.12	57.52	1.81	
	1	-1.07	57.91	-5.33	
90 deg Ice	1b	-31.81	-258.22	-15.76	
	1a	-18.41	305.38	8.19	
	1	-3.77	23.11	7.56	
90 deg No Ice	1b	-22.03	-233.31	-10.43	
	1a	-23.40	261.78	11.36	
	1	-4.02	14.26	-0.93	
90 deg	1b	-6.21	-62.09	-2.89	
	1a	-7.81	90.56	3.83	
	1	-1.24	14.26	-0.94	
Normal Ice	1b	-18.80	-143.93	-15.67	
	1a	19.32	-145.08	-14.79	
	1	-0.52	359.29	-25.24	
Normal No Ice	1b	-10.46	-135.48	-10.51	
	1a	10.61	-135.68	-10.25	
	1	-0.15	313.89	-31.17	
Normal	1b	-2.66	-31.83	-2.90	
	1a	2.71	-32.03	-2.82	
	1	-0.05	106.58	-10.29	

Max Uplift: 299.37 (kip)

Max Down: 359.29 (kip)

Max Shear: 39.44 (kip)

Moment: 5,189.98 (ft-kip) Normal No Ice

Total Down: 42.72 (kip)

Total Shear: 51.93 (kip)

Site Number: 311305

Code:

TIA/EIA-222-F

© 2007 - 2015 by ATC IP LLC. All rights reserved.

Site Name: GLFD-Guilford Rebuild CT, CT

Engineering Number: 61845522

6/3/2015 3:43:41 PM

Customer: AT&T Mobility

### Deflections and Rotations

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)
50.00 mph Wind at 60 deg From Face with No Ice	13.21	0.0032	-0.0014	0.0214
	80.00	0.0741	0.0050	0.1057
	86.79	0.0868	0.0055	0.1102
	120.00	0.1641	0.0082	0.1574
	126.79	0.1831	0.0113	0.1609
	140.00	0.2226	0.0154	0.1970
	160.00	0.2898	0.0249	0.1937
	173.08	0.3371	0.0259	0.2064
	185.49	0.3833	0.0281	0.1845
50.00 mph Wind at 90 deg From Face with No Ice	13.21	0.0032	-0.0017	0.0222
	80.00	0.0753	0.0053	0.1064
	86.79	0.0881	0.0061	0.1115
	120.00	0.1666	0.0098	0.1624
	126.79	0.1856	0.0111	0.1624
	140.00	0.2256	0.0141	0.1959
	160.00	0.2932	0.0199	0.1828
	173.08	0.3409	0.0198	0.2079
	185.49	0.3875	0.0197	0.1393
50.00 mph Wind Normal To Face with No Ice	13.21	0.0036	0.0000	0.0207
	80.00	0.0789	0.0002	0.1121
	86.79	0.0923	0.0000	0.1177
	120.00	0.1732	-0.0026	0.1676
	126.79	0.1948	0.0023	0.1714
	140.00	0.2369	0.0046	0.2103
	160.00	0.3087	0.0113	0.2388
	173.08	0.3594	0.0111	0.2272
	185.49	0.4088	0.0108	0.2980
77.94 mph Wind at 60 deg From Face with Ice	13.21	0.0104	-0.0045	0.0807
	80.00	0.2784	0.0265	0.3994
	86.79	0.3263	0.0300	0.4161
	120.00	0.6155	0.0474	0.5866
	126.79	0.6882	0.0515	0.5967
	140.00	0.8334	0.0660	0.7222
	160.00	1.0764	0.1075	0.7002
	173.08	1.2460	0.1193	0.7424
	185.49	1.4112	0.1447	0.6745
77.94 mph Wind at 90 deg From Face with Ice	13.21	0.0110	-0.0058	0.0784
	80.00	0.2819	0.0266	0.4009
	86.79	0.3302	0.0309	0.4200
	120.00	0.6228	0.0517	0.5994
	126.79	0.6959	0.0560	0.6007
	140.00	0.8417	0.0656	0.7147
	160.00	1.0854	0.0847	0.6631
	173.08	1.2556	0.0846	0.7439
	185.49	1.4214	0.0845	0.5545
77.94 mph Wind Normal To Face with Ice	13.21	0.0104	-0.0002	0.0807

Site Number: 311305

Code:

TIA/EIA-222-F

© 2007 - 2015 by ATC IP LLC. All rights reserved.

Site Name: GLFD-Guilford Rebuild CT, CT

Engineering Number: 61845522

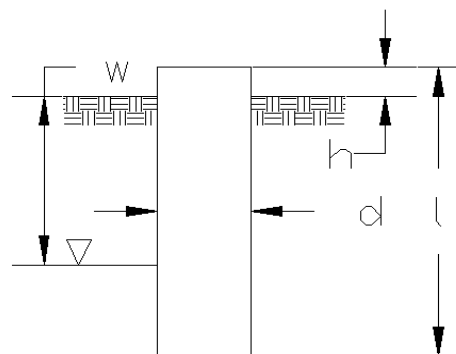
6/3/2015 3:43:41 PM

Customer: AT&T Mobility

	80.00	0.2929	-0.0003	0.4154
	86.79	0.3430	-0.0002	0.4399
	120.00	0.6327	-0.0373	0.6303
	126.79	0.7246	0.0060	0.6246
	140.00	0.8757	0.0138	0.7553
	160.00	1.1305	0.0367	0.8430
	173.08	1.3089	0.0364	0.7980
	185.49	1.4824	0.0360	0.9957
	190.60	1.5450	0.0005	0.7739
90.00 mph Wind at 60 deg From Face with No Ice	13.21	0.0103	-0.0042	0.0695
	80.00	0.2407	0.0205	0.3431
	86.79	0.2820	0.0229	0.3575
	120.00	0.5326	0.0357	0.5109
	126.79	0.5946	0.0463	0.5228
	140.00	0.7233	0.0634	0.6401
	160.00	0.9414	0.1032	0.6297
	173.08	1.0950	0.1153	0.6716
	185.49	1.2451	0.1419	0.6016
	190.60	1.3058	0.1186	0.7215
90.00 mph Wind at 90 deg From Face with No Ice	13.21	0.0102	-0.0055	0.0719
	80.00	0.2442	0.0173	0.3451
	86.79	0.2858	0.0198	0.3617
	120.00	0.5404	0.0321	0.5273
	126.79	0.6024	0.0364	0.5278
	140.00	0.7325	0.0460	0.6362
	160.00	0.9521	0.0651	0.5938
	173.08	1.1069	0.0650	0.6752
	185.49	1.2583	0.0650	0.4531
	190.60	1.3193	0.0652	0.7673
90.00 mph Wind Normal To Face with No Ice	13.21	0.0115	-0.0001	0.0677
	80.00	0.2563	0.0005	0.3639
	86.79	0.2998	-0.0001	0.3825
	120.00	0.5627	-0.0085	0.5447
	126.79	0.6328	0.0077	0.5571
	140.00	0.7699	0.0152	0.6839
	160.00	1.0032	0.0367	0.7751
	173.08	1.1679	0.0364	0.7377
	185.49	1.3286	0.0360	0.9676
	190.60	1.3918	0.0001	0.6951

Site Name: GLFD-Guilford Rebuild CT, CT  
 Site Number: 311305  
 Engineer: SWF  
 Engineering Number: 61845522  
 Date: 06/03/15

Program Last Updated: 5/13/2014  
 American Tower Corporation



**Design Base Loads (Unfactored) - Analysis per TIA-222-F Standards**

Analyze or Design a Foundation? Analyze  
 Foundation Mapped: N  
 Moment (M): k-ft  
 Shear/Leg (V): 39.4 k  
 Compression/Leg (P): 359.3 k  
 Uplift/Leg (U): 299.4 k  
 Tower Type (GT / SST / MP): SST

Diameter of Caisson (d): 6.0 ft  
 Caisson Embedment (L-h): 34.5 ft  
 Caisson Height Above Ground (h): 0.5 ft  
 Depth Below Ground Surface to Water Table (w): 99.0 ft  
 Unit Weight of Concrete: 150.0 pcf  
 Unit Weight of Water: 62.4 pcf  
 Tension Skin Friction/Compression Skin Friction: 1.00  
 Pullout Angle: 30.0 degrees

**Engineer Notes**

**Soil Mechanical Properties**

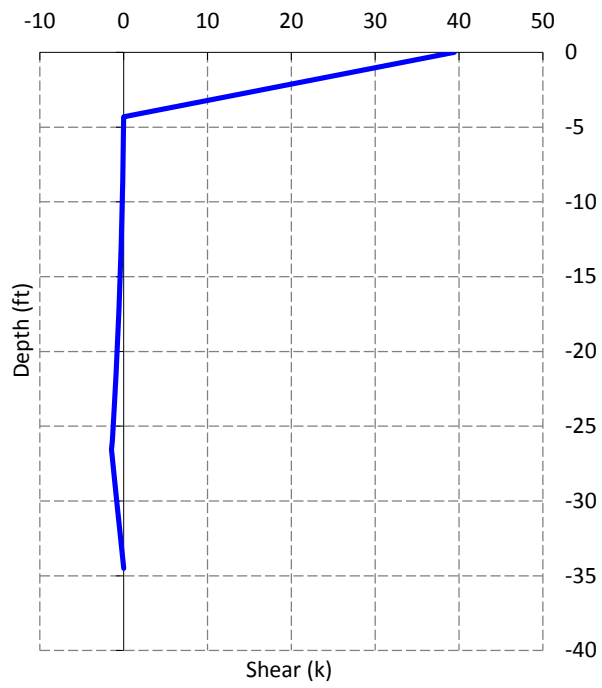
Depth (ft)		$\gamma_{Soil}$	Cohesion	$\phi$	Allowable Skin	Allowable Bearing
Top	Bottom	(pcf)	(psf)	(degree)	Friction (psf)	Pressure (psf)
0.0	3.0	100	0	0	0	0
3.0	25.0	115	0	33	0	0
25.0	34.5	130	5000	0	2750	6840

Required Embedment: 29.6 ft - OK, Caisson Embedment Satisfactory  
 Volume of Concrete: 989.6 ft<sup>3</sup> = 36.7 yd<sup>3</sup>  
 Weight of Concrete (Buoyancy Effect Considered): 148.4 k  
 Average Soil Unit Weight: 117.8 pcf  
 Skin Friction Resistance: 492.4 k  
 Compressive Bearing Resistance: 193.4 k  
 Pullout Weight (Minus Concrete Weight): 2452.0 k  
 Allowable Uplift Capacity ( $U_{Allow}$ ): 611.2 k  
 Allowable Compressive Capacity ( $P_{Allow}$ ): 685.8 k  
 Compressive Design Load (P): 390.7 k  
 $U / U_{Allow}$ : 0.49 Result: OK  
 $P / P_{Allow}$ : 0.57 Result: OK  
 Total Lateral Resistance: 3860.6 k  
 Inflection Point (Below Ground Surface): 26.5 ft  
 Design Overturning Moment At Inflection Point ( $M_D$ ): 1066.2 k-ft  
 Nominal Moment Capacity ( $M_{Allow}$ ): 23760.9 k-ft  
 $M_{Allow} / M_D$  Factor of Safety: 22.29 Result: OK

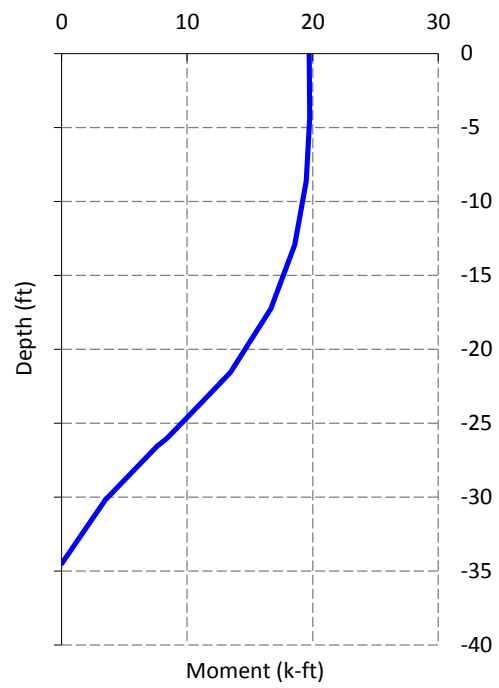
## Caisson Strength Capacity

Concrete Compressive Strength ( $f'_c$ ):	4500 psi
Vertical Steel Rebar Size #:	9
Vertical Steel Rebar Area:	1.00 in <sup>2</sup>
Design # of Vertical Steel Rebars:	22
Vertical Steel Rebar Yield Strength ( $F_y$ ):	60 ksi
Horizontal Tie / Stirrup Size #:	5
Horizontal Tie / Stirrup Area:	0.31 in <sup>2</sup>
Design Horizontal Tie / Stirrup Spacing:	12.0 in
Horizontal Tie / Stirrup Steel Yield Strength ( $F_y$ ):	60 ksi
Rebar Cage Diameter:	64.0 in
Strength Bending/Tension Reduction Factor ( $\phi_B$ ):	0.90 ACI318-05 - 9.3.2.1
Strength Shear Reduction Factor ( $\phi_V$ ):	0.75 ACI318-05 - 9.3.2.3
Strength Compression Reduction Factor ( $\phi_P$ ):	0.65 ACI318-05 - 9.3.2.2
Wind Design Factor:	1.30 ACI318-05 - 9.2.1
Steel Elastic Modulus:	29000 ksi
Design Moment ( $M_u$ ):	467.9 k-ft
Nominal Moment Capacity ( $\phi_B M_n$ ):	3102.9 k-ft - ACI318-005 - 10.2
$M_u / \phi_B M_n$ :	0.15 Result: OK
Design Shear ( $V_u$ ):	51.3 k
Nominal Shear Capacity ( $\phi_V V_n$ ):	394.6 k - ACI318-05 - 11.3.1.1 or 11.5.7.2
$V_u / \phi_V V_n$ :	0.13 Result: OK
Design Tension ( $T_u$ ):	389.2 k
Nominal Tension Capacity ( $\phi_T T_n$ ):	1188.0 k - ACI318-05 - 10.2
$T_u / \phi_T T_n$ :	0.33 Result: OK
Design Compression ( $P_u$ ):	507.9 k
Nominal Compression Capacity ( $\phi_P P_n$ ):	8054.5 k - ACI318-05 - 10.3.6.2
$P_u / \phi_P P_n$ :	0.06 Result: OK
Bending Reinforcement Ratio:	0.005 ACI318-05 - 10.8.4 & 10.9.1
$M_u / \phi_B M_n + T_u / \phi_T T_n$ :	0.48 Result: OK

Design Unfactored Shear / Depth



Design Unfactored Moment / Depth



Nominal and Factored Moment Capacity and Factored Design Loads

