

Transcend Wireless  
48 Spruce Street  
Oakland, NJ 07436  
Phone: (845) 401-0965  
Gina Rappa  
Real Estate Consultant

March 4, 2014

**Hand Delivered**

Ms. Linda Roberts  
Executive Director  
Connecticut Siting Council  
10 Franklin Square  
New Britain, CT 06051

RE: T-Mobile Northeast LLC notice of intent to modify an existing telecommunications facility located at 119 Tanner Marsh Road, Guilford CT, 06437. Known to T-Mobile Northeast LLC as site CT11028A.

Dear Ms. Roberts:

In order to accommodate technological changes, implement Global System for Mobile Communications Access (“GSM”) and/or Long Term Evolution (“LTE”) capabilities, and enhance system performance in the state of Connecticut, T-Mobile Northeast LLC plans to modify the equipment configurations at many of its existing cell sites. Please accept this letter and attachments as notification, pursuant to R.C.S.A. Section 16-50j-73, of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2). In compliance with R.C.S.A. Section 16-50j-73, a copy of this letter and its attachments is being sent to the chief elected official of the municipality in which affected cell site is located.

GSM employs Spread-Spectrum technology and special coding scheme to allow multiple users to be multiplexed over the same physical channel. 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.

As part of the project the new multi-mode 800/1900 antenna will replace existing antennas. These antennas will provide more flexibility for optimization by allowing fast and easy electrical tilt adjustment from remote location and will enable the transmission of multiple technologies from a single antenna. As T-Mobile Northeast LLC network evolves to meet the demands of its customers, it is essential for T-Mobile Northeast LLC to install modern equipment and antennas in order to provide reliable wireless voice and data services. The proposed equipment will include multi-mode radios that will allow T-Mobile Northeast LLC to transmit at different frequencies using different technologies, including LTE technology. Likewise, the proposed antennas are quad-pole multi-band

high gain antennas that will allow T-Mobile Northeast LLC to operate using its multiple frequency bands and technologies, including LTE technology. The proposed equipment and antennas will improve the reliability, coverage and capacity of T-Mobile Northeast LLC voice and data networks across T-Mobile Northeast LLC various FCC licensed frequency bands and significantly increase the data speeds of T-Mobile Northeast LLC 's network by utilizing the latest LTE technology. Without the proposed modifications T-Mobile Northeast LLC will be unable to provide reliable wireless voice and data service using the latest technologies.

T-Mobile Northeast LLC will have an interim (testing) period during the modification/installation prior to the final configuration. This antenna configuration is shown on the attached drawings of the planned modifications. Also included is the power density calculation reflecting the change in T-Mobile Northeast LLC operations at the site and documentation of the structural sufficiency of the tower to accommodate the revised antenna configuration.

The changes to the facility do not constitute modification as defined 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 the R.C.S.A. Section 16-50j-72(b)(2).

1. The height of the overall structure will not be affected.
2. The proposed changes will not extend the site boundaries. There will be no effect on the site compound.
3. The proposed changes will not increase the noise level at the existing facility by 6 decibels or more.
4. Radio Frequency power density may increase due to the use of one or more GSM transmissions. Moreover, 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 T-Mobile Northeast LLC 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 (845) 401-0965 or email [grappa@transcendwireless.com](mailto:grappa@transcendwireless.com) with questions concerning this matter.

Thank you for your consideration.

Sincerely,

Gina Rappa  
(845) 401-0965

RADIO FREQUENCY EMISSIONS ANALYSIS REPORT  
EVALUATION OF HUMAN EXPOSURE POTENTIAL  
TO NON-IONIZING EMISSIONS

T-Mobile Existing Facility

Site ID: CT11028A

Guilford SNET (ATC)  
119 Tanner Marsh Road  
Guilford, CT 06437

**February 23, 2014**

February 23, 2014

T-Mobile USA  
Attn: Jason Overbey, RF Manager  
35 Griffin Road South  
Bloomfield, CT 06002

Re: Emissions Values for Site: **CT11028A - Guilford SNET (ATC)**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at 119 Tanner Marsh Road, Guilford, CT, for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The number of  $\mu\text{W}/\text{cm}^2$  calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general public would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The general population exposure limit for the cellular band is  $567 \mu\text{W}/\text{cm}^2$ , and the general population exposure limit for the PCS band is  $1000 \mu\text{W}/\text{cm}^2$ . Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

## **CALCULATIONS**

Calculations were done for the proposed T-Mobile Wireless antenna facility located at 119 Tanner Marsh Road, Guilford, CT, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, the actual antenna pattern gain value in the direction of the sample area was used. For this report the sample point is a 6 foot person standing at the base of the tower

For all calculations, all equipment was calculated using the following assumptions:

- 1) 2 GSM channels (1935.000 MHz—to 1945.000 MHz / 1980.000 MHz—to 1985.000 MHz) were considered for each sector of the proposed installation.
- 2) 2 UMTS channels (2110.000 MHz to 2120.000 MHz / 2140.000 MHz to 2145.000 MHz) were considered for each sector of the proposed installation
- 3) 2 LTE channels (2110.000 MHz to 2120.000 MHz / 2140.000 MHz to 2145.000 MHz) were considered for each sector of the proposed installation
- 4) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 5) For the following calculations the sample point was the top of a six foot person standing at the base of the tower. The actual gain in this direction was used per the manufactures supplied specifications.
- 6) The antenna used in this modeling is the Ericsson AIR21 for LTE, UMTS and GSM. This is based on feedback from the carrier with regards to anticipated antenna selection. This antenna has a 15.6 dBd gain value at its main lobe. Actual antenna gain values were used for all calculations as per the manufacturers specifications

- 7) The antenna mounting height centerline of the proposed antennas is **175 feet** above ground level (AGL)
- 8) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

All calculation were done with respect to uncontrolled / general public threshold limits

Site ID	CT11028A - Guilford SNET (ATC)
Site Address	119 Tanner Marsh Road, Guilford, CT 06437
Site Type	Self Support Tower

**Sector 1**

Antenna Number	Antenna Make	Antenna Model	Status	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBD)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
1a	Ericsson	AIR21 B4A/B2P	Active	AWS - 2100 MHz	LTE	60	2	120	-3.95	175	169	None	0	0	48.326044	0.608294	0.06083%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-	-	-	0	-3.95	175	169	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	175	169	1-5/8"	0	0	24.163022	0.304147	0.03041%
2B	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	175	169	1-5/8"	0	0	24.163022	0.304147	0.03041%

Sector total Power Density Value: 0.122%

**Sector 2**

Antenna Number	Antenna Make	Antenna Model	Status	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBD)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
1a	Ericsson	AIR21 B4A/B2P	Active	AWS - 2100 MHz	LTE	60	2	120	-3.95	175	169	None	0	0	48.326044	0.608294	0.06083%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-	-	-	0	-3.95	175	169	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	175	169	1-5/8"	0	0	24.163022	0.304147	0.03041%
2B	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	175	169	1-5/8"	0	0	24.163022	0.304147	0.03041%

Sector total Power Density Value: 0.122%

**Sector 3**

Antenna Number	Antenna Make	Antenna Model	Status	Frequency Band	Technology	Power Out Per Channel (Watts)	Number of Channels	Composite Power	Antenna Gain in direction of sample point (dBD)	Antenna Height (ft)	analysis height	Cable Size	Cable Loss (dB)	Additional Loss	ERP	Power Density Value	Power Density Percentage
1a	Ericsson	AIR21 B4A/B2P	Active	AWS - 2100 MHz	LTE	60	2	120	-3.95	175	169	None	0	0	48.326044	0.608294	0.06083%
1b	Ericsson	AIR21 B4A/B2P	Not Used	-	-	-	-	0	-3.95	175	169	None	0	0	0	0	0.00000%
2a	Ericsson	AIR21 B2A / B4P	Active	PCS - 1950 MHz	GSM / UMTS	30	2	60	-3.95	175	169	1-5/8"	0	0	24.163022	0.304147	0.03041%
2B	Ericsson	AIR21 B2A / B4P	Passive	AWS - 2100 MHz	UMTS	30	2	60	-3.95	175	169	1-5/8"	0	0	24.163022	0.304147	0.03041%

Sector total Power Density Value: 0.122%

Site Composite MPE %	
Carrier	MPE %
T-Mobile	0.365%
AT&T	16.130%
MetroPCS	2.420%
Town of Guilford	8.710%
USA Mobility	0.280%
WGRS - Town of Monroe	7.180%
WMNR	44.950%
Sprint (10 Tanner Marsh)	12.280%
TCI (10 Tanner Marsh)	0.010%
<b>Total Site MPE %</b>	<b>92.325%</b>

## Summary

All calculations performed for this analysis yielded results that were well within the allowable limits for general public exposure to RF Emissions.

The anticipated Maximum Composite contributions from the T-Mobile facility are **0.365% (0.122% from each sector)** of the allowable FCC established general public limit considering all three sectors simultaneously sampled at the ground level.

The anticipated composite MPE value for this site assuming all carriers present is **92.325%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were within the allowable 100% threshold standard per the federal government.



Scott Heffernan  
RF Engineering Director

**EBI Consulting**  
21 B Street  
Burlington, MA 01803





**SUBMITTALS**

DATE	DESCRIPTION	REVISION
12/11/13	REVIEW	A
3/03/14	FOR PERMIT	0

DEPT.	DATE	APP'D	REVISIONS
RFE			
RF. MAN.			
ZONING			
OPS			
CONSTR.			
SITE AC.			

PROJECT NO: 317-1090  
 DRAWN BY: JLM  
 CHECKED BY: AJD



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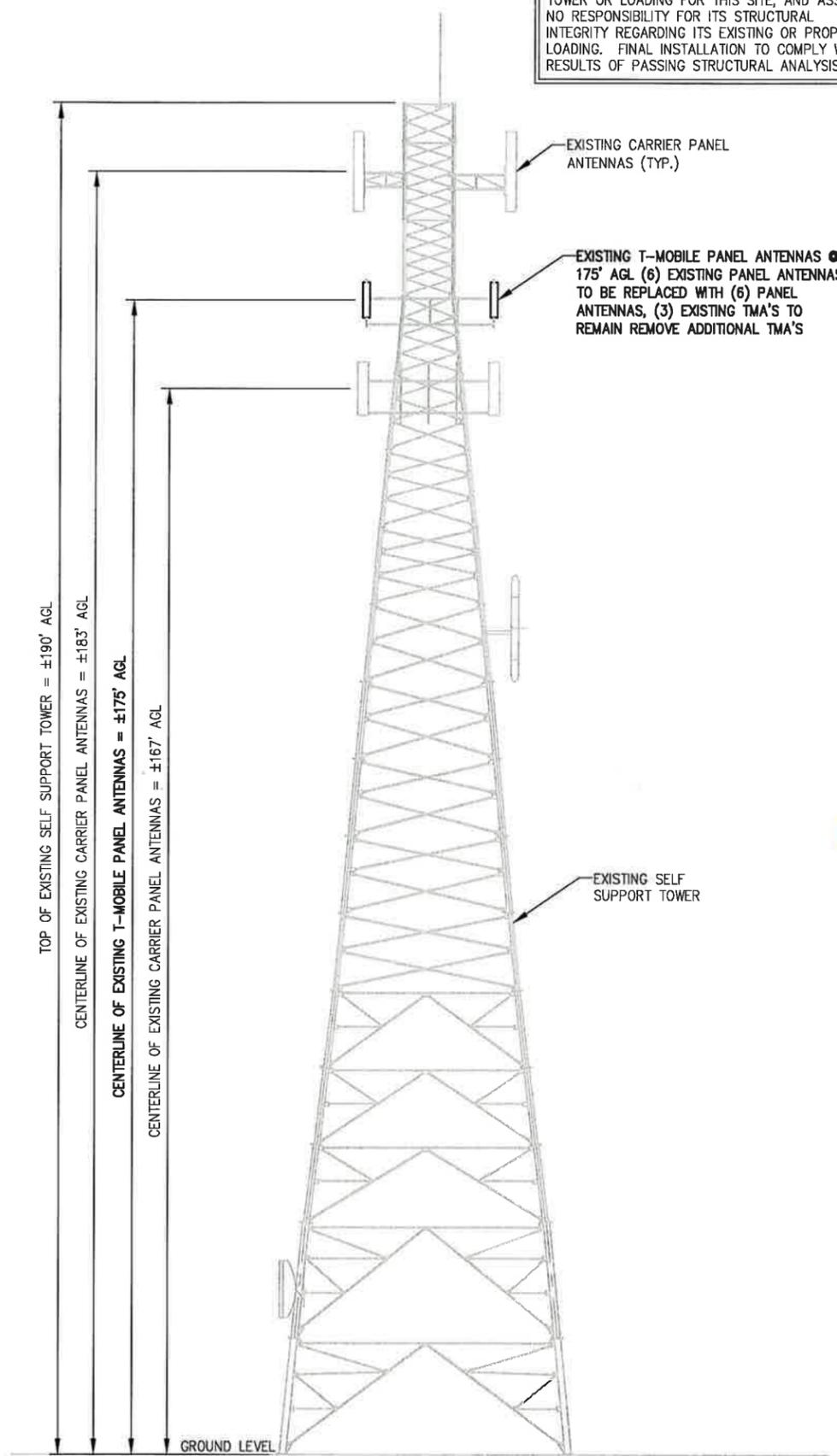
NOTE: IF DRAWINGS ARE 22"x34", USE GRAPHICAL SCALE AND/OR 1/2 TIMES OF THE NOTED SCALE.

**SITE NAME**  
 CT11028A  
 GUILFORD SNET MOBILIT\_1  
 119 TANNER MARSH ROAD  
 GUILFORD, CT 06437

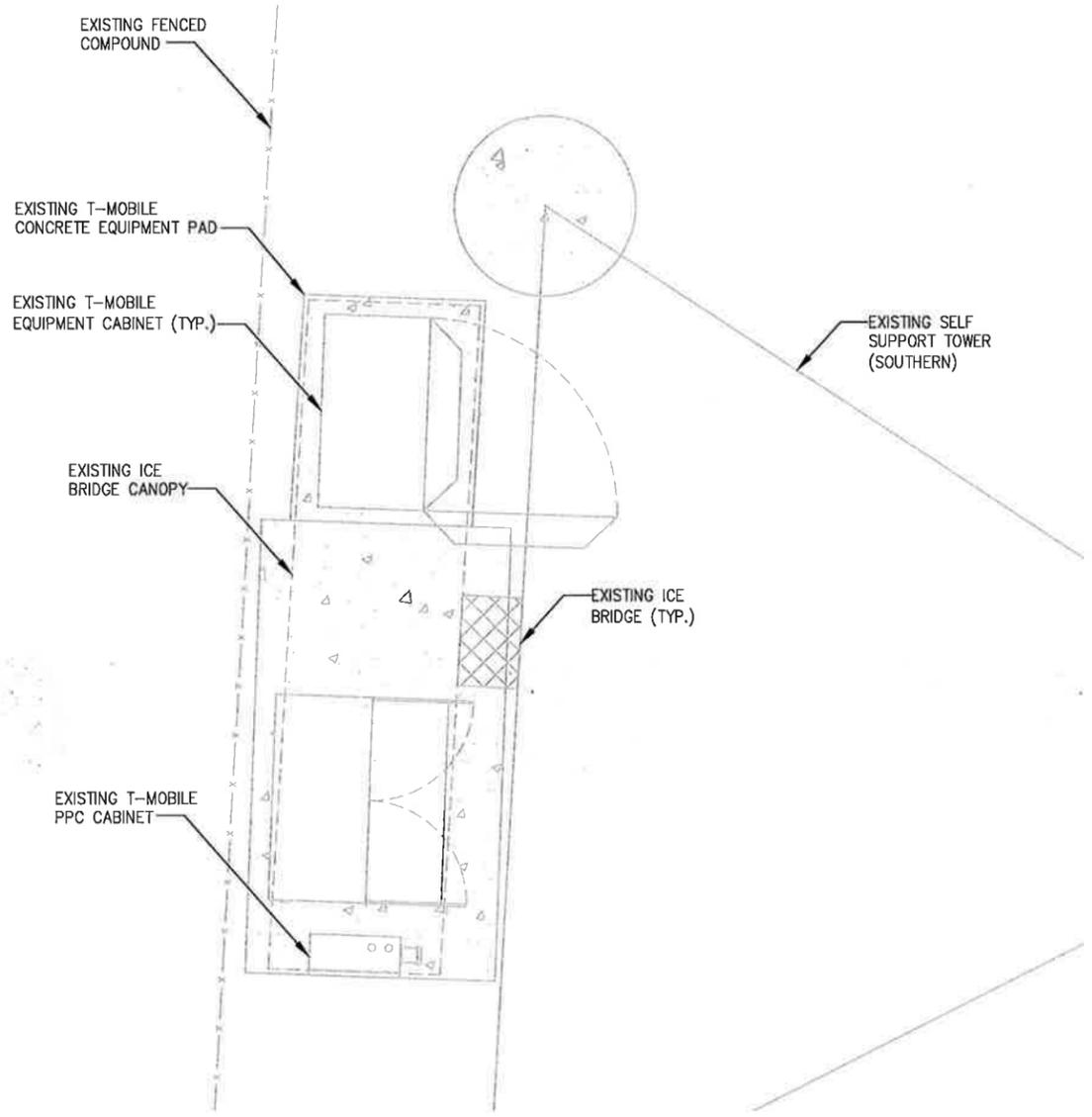
**SHEET TITLE**  
**COMPOUND PLAN & ELEVATION**

**SHEET NUMBER**  
**C-2**  
 SHEET 3 OF 8 SHEETS

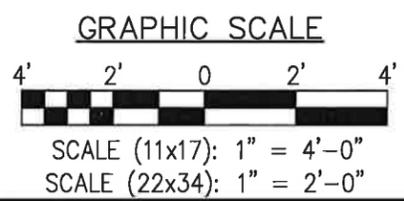
NOTE:  
 INFINIGY ENGINEERING HAS NOT EVALUATED THE TOWER OR LOADING FOR THIS SITE, AND ASSUMES NO RESPONSIBILITY FOR ITS STRUCTURAL INTEGRITY REGARDING ITS EXISTING OR PROPOSED LOADING. FINAL INSTALLATION TO COMPLY WITH RESULTS OF PASSING STRUCTURAL ANALYSIS.



**2 TOWER ELEVATION (SOUTHERN)**  
 NOT TO SCALE



**1 COMPOUND PLAN**  
 SCALE: AS NOTED

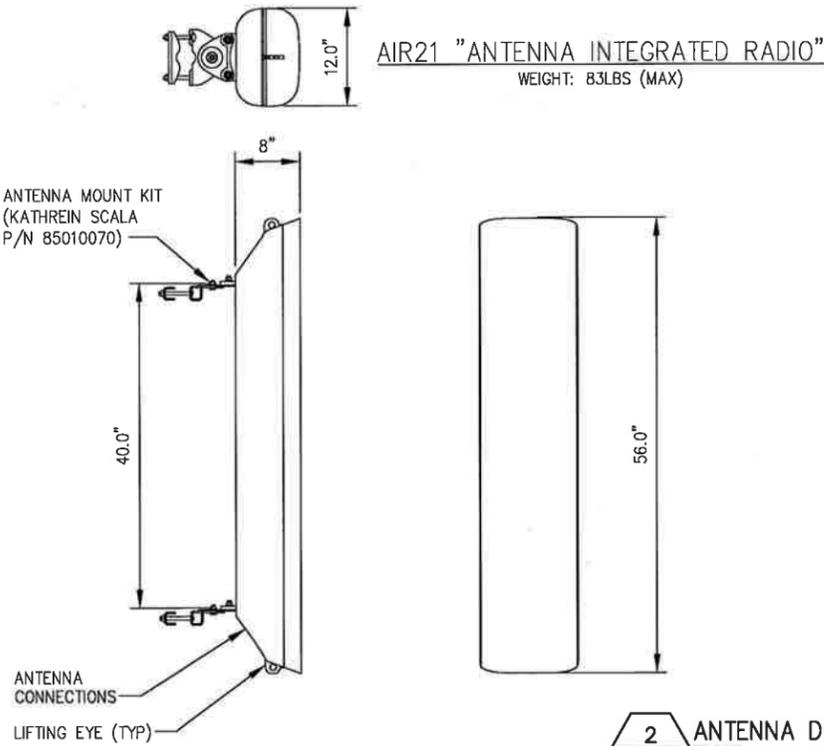


RF SYSTEM SCHEDULE (2C CONFIGURATION)

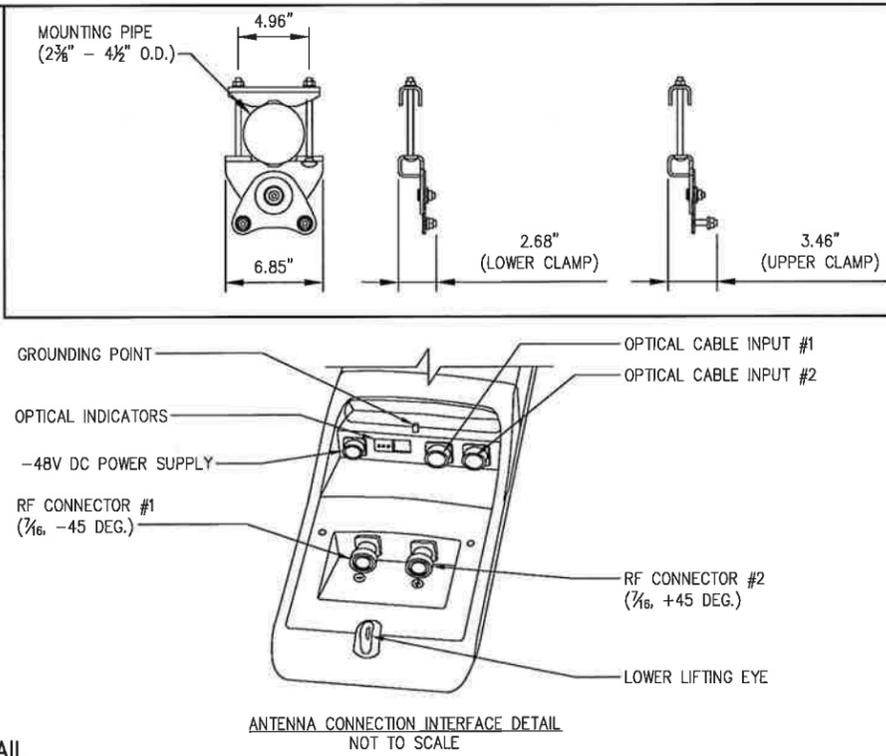
SECTOR	TECHNOLOGY	ANTENNA PORT	BAND	ANTENNA MODEL #	VENDOR	AZIMUTH	M-TILT	E-TILT	ANTENNA CENTERLINE	TMA MODEL #	VENDOR	CABLE LENGTH	CABLE DIAMETER	CABLE TYPE	CABLE MODEL #	VENDOR	CABLE TAGGING	COLOR CODING	JUMPER TYPE	JUMPER TAGGING	COLOR CODING											
A	UMTS AWS	RF #1	B4P	AIR21	ERICSSON	60°	0°	2'	175'-0"	KRY 112 144/1	N/A	EXISTING	1-5/8"	COAX	EXISTING	N/A	UMTS AWS A1	B	COAX	UMTS AWS A1	B											
		RF #2										EXISTING	1-5/8"	COAX	EXISTING	N/A	UMTS AWS A2	B	COAX	UMTS AWS A2	B											
	LMU	LMU #1	-									EXISTING	1-5/8"	COAX	EXISTING	N/A	LMU A1	-	COAX	LMU A1	-											
		LMU #2										EXISTING	1-5/8"	COAX	EXISTING	N/A	LMU A2	-	COAX	LMU A2	-											
	GSM	OPTICAL #1	B2A									-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	FIBER	GSM 1900 A1	R			
	UMTS	OPTICAL #2																									FIBER	UMTS 1900 A2	G			
LTE AWS	OPTICAL #1	B4A	AIR21	ERICSSON	60°	0°	2'	175'-0"	-	-	-	168'±	-	HYBRID	MASTERLINE EXTREME HYBRID (9x18)	ERICSSON	FIBER 1	0	FIBER	LTE FIBER 1	Y											
B	UMTS AWS	RF #1	B4P	AIR21	ERICSSON	180°	0°	2'	175'-0"	KRY 112 144/1	N/A	EXISTING	1-5/8"	COAX	EXISTING	N/A	UMTS AWS B1	BB	COAX	UMTS AWS B1	BB											
		RF #2										EXISTING	1-5/8"	COAX	EXISTING	N/A	UMTS AWS B2	BB	COAX	UMTS AWS B2	BB											
	LMU	LMU #1	-									EXISTING	1-5/8"	COAX	EXISTING	N/A	LMU B1	-	COAX	LMU B1	-											
		LMU #2										EXISTING	1-5/8"	COAX	EXISTING	N/A	LMU B2	-	COAX	LMU B2	-											
	GSM	OPTICAL #1	B2A									-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	HYBRID	GSM 1900 B1	RR		
	UMTS	OPTICAL #2																										HYBRID	UMTS 1900 B2	GG		
LTE AWS	OPTICAL #1	B4A	AIR21	ERICSSON	180°	0°	2'	175'-0"	-	-	-	-	-	-	-	-	-	-	-	HYBRID	LTE FIBER 2	YY										
C	UMTS AWS	RF #1	B4P	AIR21	ERICSSON	300°	0°	2'	175'-0"	KRY 112 144/1	N/A	EXISTING	1-5/8"	COAX	EXISTING	N/A	UMTS AWS C1	BBB	COAX	UMTS AWS C1	BBB											
		RF #2										EXISTING	1-5/8"	COAX	EXISTING	N/A	UMTS AWS C2	BBB	COAX	UMTS AWS C2	BBB											
	LMU	LMU #1	-									EXISTING	1-5/8"	COAX	EXISTING	N/A	LMU C1	-	COAX	LMU C1	-											
		LMU #2										EXISTING	1-5/8"	COAX	EXISTING	N/A	LMU C2	-	COAX	LMU C2	-											
	GSM	OPTICAL #1	B2A									-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	HYBRID	GSM 1900 C1	RRR
	UMTS	OPTICAL #2																												HYBRID	UMTS 1900 C2	GGG
LTE AWS	OPTICAL #1	B4A	AIR21	ERICSSON	300°	0°	2'	175'-0"	-	-	-	-	-	-	-	-	-	-	-	-	HYBRID	LTE FIBER 3	YYY									

1 RF SCHEDULE  
NOT TO SCALE

KEY	
EXISTING	R - RED - GSM
PROPOSED	G - GREEN - UMS 1900
FIBER CONNECTION	B - BLUE - UMS AWS
	Y - YELLOW - LTE
	O - ORANGE - FIBER CABLE



2 ANTENNA DETAIL  
NOT TO SCALE



METALLIC TAG NOTES:

- TWO METALLIC TAGS SHALL BE ATTACHED AT EACH END OF EVERY CABLE LONGER THAN (3) THREE FEET.
- CABLES LESS THAN (3) THREE FEET WILL HAVE TWO METALLIC TAGS ATTACHED AT THE CENTER OF THE CABLE.
- TAGS WILL BE FASTENED WITH STAINLESS STEEL ZIP TIES APPROPRIATE FOR CABLE DIAMETER.
- STANDARDIZED METALLIC TAG KITS WILL BE ASSEMBLED WITH TAGS ALREADY ENGRAVED TO ACCOMMODATE ALL CONFIGURATIONS.

3 METALLIC TAG DETAIL  
NOT TO SCALE

**T-Mobile**

T-MOBILE NORTHEAST LLC  
400 STREET ROAD  
BENSALEM, PA 19020

Design: Build: Deliver: **INFINIGY8**

1033 WATERLET SHAKER ROAD  
ALBANY, NY 12205  
OFFICE: (518) 880-0790  
FAX: (518) 690-0793

SUBMITTALS		
DATE	DESCRIPTION	REVISION
12/11/13	REVIEW	A
3/03/14	FOR PERMIT	0

DEPT.	DATE	APP'D	REVISIONS
RFE			
RF MAN.			
ZONING			
DPS			
CONSTR.			
SITE AC.			

PROJECT NO: 317-1090  
DRAWN BY: JLM  
CHECKED BY: AJD



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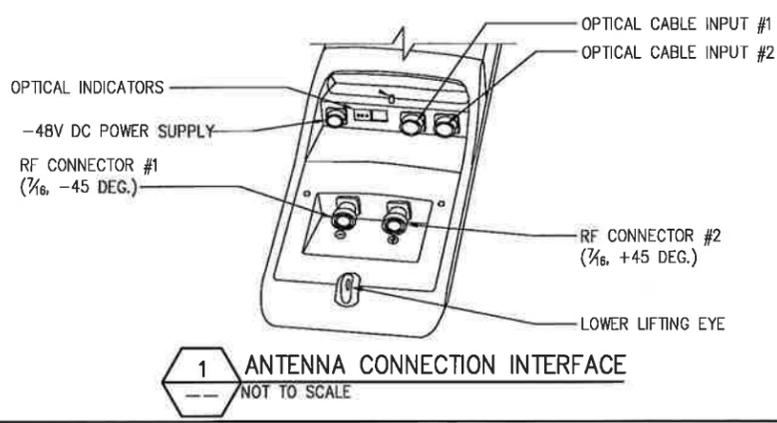
SITE NAME  
CT11028A  
GUILFORD SNET MOBILIT\_1  
119 TANNER MARSH ROAD  
GUILFORD, CT 06437

SHEET TITLE  
**ANTENNA DETAIL & RF SCHEDULE**

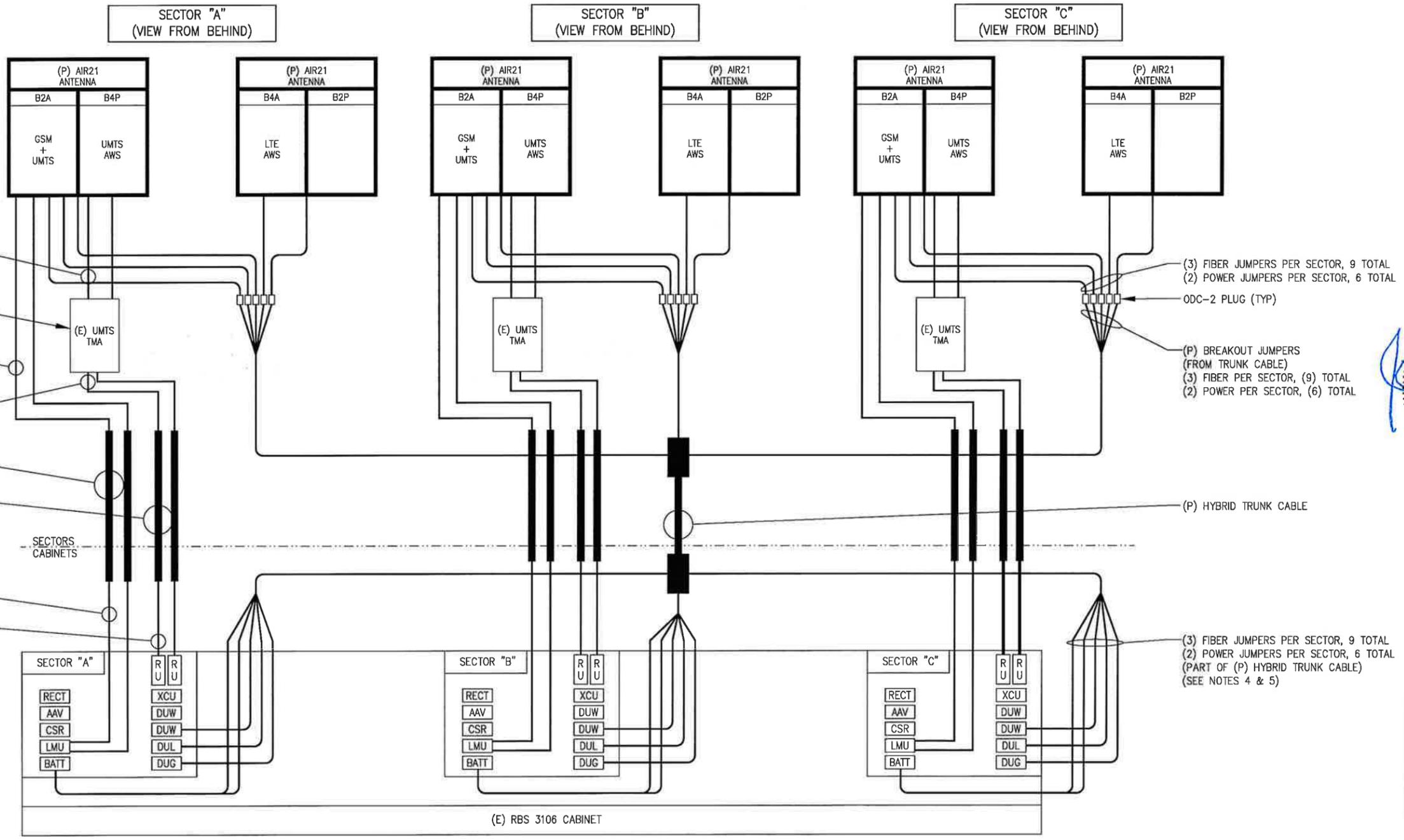
SHEET NUMBER  
**C-3**  
SHEET 4 OF 8 SHEETS







- NOTES:**
1. TAG ALL EXISTING AND PROPOSED CABLES/JUMPERS PER T-MOBILE SPECIFICATIONS (SEE RF SCHEDULE/C-3)
  2. SEE RF SCHEDULE/C-3 FOR CABLE AND JUMPER LENGTHS.
  3. IF NEW GPS ADDED TO SITE, CAP AND WEATHERPROOF ANY UNUSED COAX FOR FUTURE USE.
  4. TRIM POWER JUMPERS PER MANU. SPECS TO CORRECT LENGTH FOR CONNECTION.
  5. COIL EXCESS FIBER IN CABINET BASE.



**3 2C CONFIGURATION COAX/FIBER PLUMBING DIAGRAM**  
NOT TO SCALE

**SUBMITTALS**

DATE	DESCRIPTION	REVISION
12/11/13	REVIEW	A
3/03/14	FOR PERMIT	0

DEPT.	DATE	APP'D	REVISIONS
RFE			
RF MAN.			
ZONING			
OPS			
CONSTR.			
SITE AC.			

PROJECT NO: 317-1090  
DRAWN BY: JLM  
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**SITE NAME**  
CT11028A  
GUILFORD SNET MOBILIT\_1  
119 TANNER MARSH ROAD  
GUILFORD, CT 06437

**SHEET TITLE**  
**COAX/FIBER PLUMBING DIAGRAM**

**SHEET NUMBER**  
**E-2**  
SHEET 7 OF 8 SHEETS





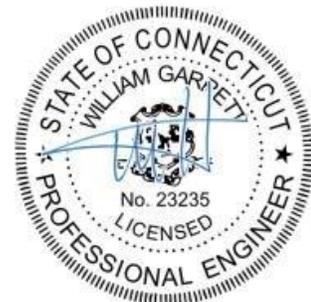
**AMERICAN TOWER®**  
CORPORATION

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## Structural Analysis Report

**Structure** : 190.6 ft Self Supported Tower  
**ATC Site Name** : GLFD-Guilford Rebuild CT, CT  
**ATC Site Number** : 311305  
**Engineering Number** : 55591521  
**Proposed Carrier** : T-Mobile  
**Carrier Site Name** : N/A  
**Carrier Site Number** : CT11028A  
**Site Location** : 10 Tanner Marsh Road  
Guilford, CT 06437-2942  
41.288608, -72.658281  
**County** : New Haven  
**Date** : January 10, 2014  
**Max Usage** : 100%  
**Result** : Pass

Adam Ponder  
Structural Engineer III



Jan 13 2014 4:44 PM



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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 T-Mobile.

## Supporting Documents

<b>Tower Drawings</b>	Nello Corporation, Job #RFQ34841 dated April 8, 2011
<b>Foundation Drawing</b>	ATC Engineering #47517572 dated June 14, 2011
<b>Geotechnical Report</b>	GEOServices, LLC, 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 (5) & 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**

Mount Elev. <sup>1</sup> (ft)	Qty.	Antenna	Mount Type	Lines	Carrier
190.0	2	Diamond X50A	Side Arms	(2) 1/2" Coax	Enertrac, Inc.
	3	Andrew DB408		(3) 1 1/4" Coax	Town of Guilford
183.0	3	RCU	Side Arms	(6) 1 5/8" Coax	Metro PCS, Inc.
	3	RFS HBX-6516DS-A1M		(1) 3/8" Coax	
175.0	-	-	-	(12) 1 5/8" Coax	T-Mobile
163.0	6	Ericsson RRUS 11 1900 MHz	Sector Frames	(2) 0.74" 8 AWG 7 (12) 1 1/4" Coax (1) 3" Conduit (1) 1/2" Coax (1) 0.28" RG6	AT&T Mobility
	3	KMW AM-X-CD-14-65-00T-RET			
	6	CCI DTMABP7819VG12A			
	6	KMW AM-X-CD-16-65-00T-RET			
158.0	3	Antel BXA-70063-6CF-EDIN-X	Sector Frames	(12) 1 5/8" Coax	Verizon Wireless
	6	RFS FD9R6004/2C-3L			
	3	Antel BXA-171063-8BF-EDIN-X			
	6	RFS APL866513-42T0			
140.0	3	4' Dish w/ Radome	Side Arms	(6) 1 1/4" Coax	Town of Guilford
	3	Andrew DB408			
127.3	2	Shively 6014-HW-2	Leg Mounts	(1) 3.5" Coax	Monroe Board of Education
125.2	1	Shively 6600-H (w/ Radome)	Leg	(1) 1 5/8" Coax	
122.0	1	Scala PR-950	Pipe	(1) 7/8" Coax	
100.0	1	Sinclair SD110-SFXPASNM	T-Arms	(6) 7/8" Coax	Town of Guilford
	2	Sinclair SD222			
	3	Andrew 1142-2cn			
87.0	1	Antel BCD-87010_4	Side Arm	(1) 1 5/8" Coax	USA Mobility
80.0	5	4' Dish w/ Radome	Pipe	(5) 1 1/4" Coax	Town of Guilford
60.0	2	Sinclair SD222	Side Arms	(2) 7/8" Coax	
20.0	1	Sinclair SY-203	Leg	(9) 1/2" Coax	
	8	Sinclair SY-307			
16.0	1	Channel Master Type 120	Pipe	(1) 0.28" RG6	USA Mobility

**Proposed Equipment**

Elevation <sup>1</sup> (ft)		Qty.	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
175.0	175.0	3	Air 21, 1.3 M, B2A B4P	Sector Frames	(1) 1 1/4" Hybriflex Cable	T-Mobile
		3	Ericsson KRY 112 144/1			
		3	Ericsson AIR 21 B4A B2P			

<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).

Install the proposed (1) 1-1/4" Hybriflex cable alongside the existing (12) 1-5/8" T-Mobile coax.



**Structure Usages**

Structural Component	Controlling Usage	Pass/Fail
Legs	85%	Pass
Diagonals	100%	Pass
Horizontals	10%	Pass

**Foundations**

Reaction Component	Original Design Reactions	Analysis Reactions	% of Design
Uplift (Kips)	434.0	351.9	82%
Axial (Kips)	488.3	424.2	87%
Shear (Kips)	49.5	44.5	90%

The structure base reactions resulting from this analysis are acceptable when compared to those shown on the original structure drawings. No modification or reinforcement of the foundation will be required.

**Deflection, Twist and Sway\***

Antenna Elevation (ft)	Deflection (ft)	Twist (°)	Sway (Rotation) (°)
175.0	0.468	0.040	0.290

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



## **Standard Conditions**

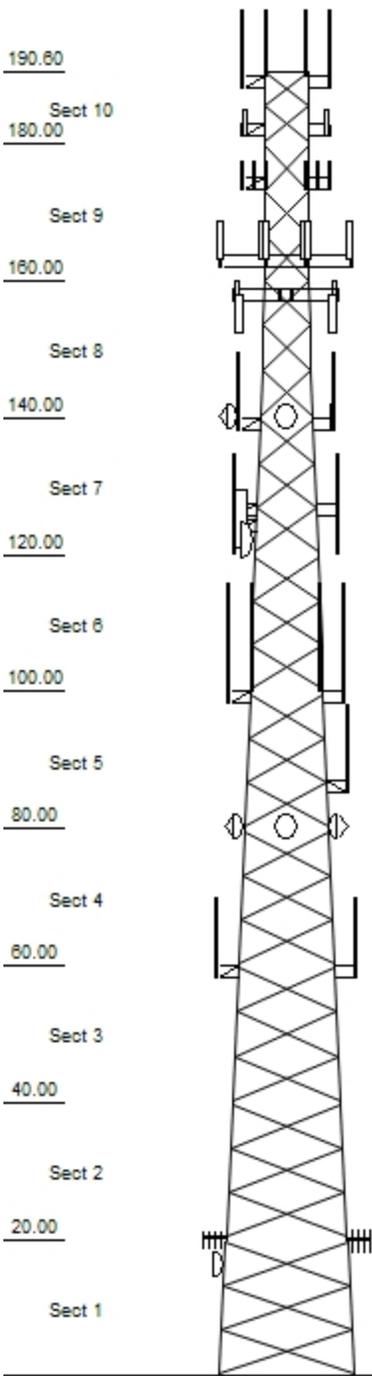
All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessary limited, to:

- 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 ATC Tower Services, Inc. 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. ATC Tower Services, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information we supply.



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

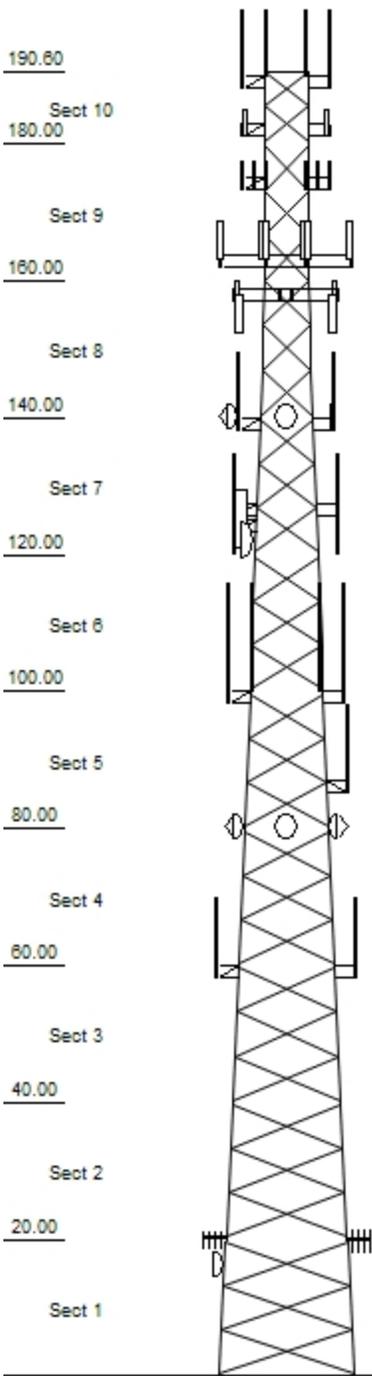
Uplift 351.81 k    Moment 6,628.28 k    Moment Ice 6,628.89 k-ft  
Vert 424.16 k    Tot Down 53.99 k    Tot Down Ice 89.71 k  
Horiz 44.46 k    Tot Shear 82.98 k    Tot Shear Ice 84.31 k

Job Information			
Tower : 311305	Location : GLFD-Guilford Rebuild CT, CT		
Code : TIA/EIA-222 Rev F	Shape : Triangle	Base Width : 20.00 ft	
Client : T- Mobile	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
190.00	Whip	3	Andrew DB408
190.00	Straight Arm	3	Side Arm
183.00		3	RCU
183.00	Straight Arm	3	Side Arm
183.00	Panel	3	RFS HBX-6516DS-A1M
175.00	Panel	3	Air 21, 1.3 M, B2AB4P
175.00	Panel	3	Ericsson KRY 112 144/1
175.00	Panel	3	Ericsson AIR 21 B4AB2P
175.00	Mounting Frame	3	Round Sector Frame
163.00		6	Ericsson RRUS 11 1900 MHz
163.00	Panel	3	KMW AM-X-CD-14-65-00T-RET
163.00	Mounting Frame	3	Sector Frame
163.00		6	CCI DTMAPB7819VG12A
163.00	Panel	6	KMW AM-X-CD-16-65-00T-RET
158.00	Panel	3	Antel BXA-70063-6CF-EDIN-X
158.00		6	RFS FD9R6004/2C-3L
158.00	Panel	3	Antel BXA-171063-8BF-EDIN-X
158.00		6	RFS APL866513-42T0
158.00	Mounting Frame	3	Flat Light Sector Frame
140.00	Dish	1	4' Dish w/ Radome
140.00	Dish	2	4' Dish w/ Radome
140.00	Whip	3	Andrew DB408
140.00	Straight Arm	3	Side Arm
127.31	Whip	2	Shively 6014-HW-2
127.31	Straight Arm	2	Leg Mount
125.20	Straight Arm	1	Leg Mount
125.20	Panel	1	Shively 6600-H (w/ radome)
122.00	Dish	1	Scala PR-950
100.00	Whip	1	Sinclair SD110-SFXPASNM
100.00	Whip	2	Sinclair SD222
100.00	Whip	3	Andrew 1142-2cn
100.00	Straight Arm	3	T-Arm
87.00	Straight Arm	1	Side Arm
87.00	Whip	1	Antel BCD-87010 4
80.00	Other	1	Flush Mount
80.00	Dish	5	4' Dish w/ Radome
60.00	Whip	2	Sinclair SD222
60.00	Straight Arm	2	Side Arm
20.00	Yagi	1	Sinclair SY-203
20.00	Yagi	8	Sinclair SY-307
20.00	Other	1	Flush Mount
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	190.00	3	1 1/4" Coax



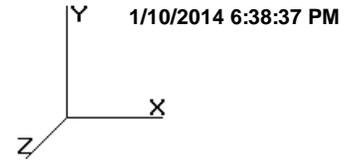
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Job Information			
Tower : 311305	Location : GLFD-Guilford Rebuild CT, CT		
Code : TIA/EIA-222 Rev F	Shape : Triangle	Base Width : 20.00 ft	
Client : T- Mobile		Top Width : 6.50 ft	

0.000	189.99	1	TX Line Ladder
0.000	183.00	1	TX Line Ladder
0.000	183.00	1	3/8" Coax
0.000	183.00	6	1 5/8" Coax
0.000	175.00	1	TX Line Ladder
0.000	175.00	12	1 5/8" Coax
0.000	175.00	1	1 1/4" Hybriflex
0.000	166.00	1	TX Line Ladder
0.000	166.00	1	3" Conduit
0.000	166.00	1	1/2" Coax
0.000	166.00	12	1 1/4" Coax
0.000	166.00	2	0.74" 8 AWG 7
0.000	166.00	1	0.28" RG6
0.000	158.00	1	TX Line Ladder
0.000	158.00	12	1 5/8" Coax
0.000	140.00	6	1 1/4" Coax
0.000	139.99	1	TX Line Ladder
0.000	127.31	1	3.5" Coax
0.000	125.20	1	1 5/8" Coax
0.000	122.00	1	7/8" Coax
0.000	100.00	6	7/8" Coax
0.000	87.000	1	1 5/8" Coax
0.000	80.000	5	1 1/4" Coax
0.000	60.000	2	7/8" Coax
0.000	20.000	9	1/2" Coax
0.000	16.000	1	0.28" RG6

Uplift 351.81 k    Moment 6,628.28 k    Moment Ice 6,628.69 k-ft  
 Vert 424.16 k    Tot Down 53.99 k    Tot Down Ice 89.71 k  
 Horiz 44.46 k    Tot Shear 62.98 k    Tot Shear Ice 64.31 k

Site Number: 311305  
 Location: GLFD-Guilford Rebuild CT,  
 CT  
 Code: TIA/EIA-222 Rev F



Gh : 1.12

### Section Forces

**LoadCase Normal No Ice 90.00 mph Wind Normal To Face with No Ice**

Allow Stress Inc: 1.333  
 Dead LF: 1.000  
 Wind LF: 1.000

Sect Seq	Height (ft)	Wind qz (psf)	Total		Ice		Sol Ratio	Cf	Df	Dr	Rr	Eff Area (sqft)	Linear Area (sqft)	Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)	Eff Face
			Flat Area (sqft)	Round Area (sqft)	Round Area (sqft)	Round Area (sqft)														
10	185.3	33.95	8.10	8.07	0.00	0.23	2.48	1.00	1.00	0.60	12.92	0.00	0.00	0.00	520.6	0.0	1,217.46	0.00	1,217.46	2
9	170.0	33.12	15.46	27.01	0.00	0.33	2.23	1.00	1.00	0.62	32.33	0.00	0.00	0.00	1,734.5	0.0	2,664.09	0.00	2,664.09	2
8	150.0	31.96	18.29	51.62	0.00	0.48	1.92	1.00	1.00	0.69	53.83	0.00	0.00	0.00	2,868.9	0.0	3,697.90	0.00	3,697.90	2
7	130.0	30.68	22.12	55.39	0.00	0.44	1.99	1.00	1.00	0.67	59.23	0.00	0.00	0.00	3,560.8	0.0	4,029.99	0.00	4,029.99	3
6	110.0	29.25	23.73	69.84	0.00	0.46	1.96	1.00	1.00	0.68	70.96	0.00	0.00	0.00	4,259.8	0.0	4,551.49	0.00	4,551.49	3
5	90.00	27.62	25.67	72.73	0.00	0.42	2.03	1.00	1.00	0.66	73.64	0.00	0.00	0.00	4,391.6	0.0	4,607.43	0.00	4,607.43	2
4	70.00	25.71	27.41	81.32	0.00	0.41	2.04	1.00	1.00	0.66	80.74	0.00	0.00	0.00	5,586.1	0.0	4,738.80	0.00	4,738.80	1
3	50.00	23.35	29.80	83.48	0.00	0.38	2.11	1.00	1.00	0.64	83.45	0.00	0.00	0.00	5,741.7	0.0	4,592.97	0.00	4,592.97	2
2	30.00	20.74	36.90	83.48	0.00	0.35	2.16	1.00	1.00	0.63	89.82	0.00	0.00	0.00	6,199.7	0.0	4,498.44	0.00	4,498.44	2
1	10.00	20.74	44.65	92.55	0.00	0.36	2.15	1.00	1.00	0.64	103.56	0.00	0.00	0.00	7,258.3	0.0	5,148.38	0.00	5,148.38	3
42,122.1																0.0			39,746.97	

**LoadCase 60 deg No Ice 90.00 mph Wind at 60 deg From Face with No Ice**

Allow Stress Inc: 1.333  
 Dead LF: 1.000  
 Wind LF: 1.000

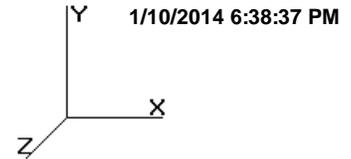
Sect Seq	Height (ft)	Wind qz (psf)	Total		Ice		Sol Ratio	Cf	Df	Dr	Rr	Eff Area (sqft)	Linear Area (sqft)	Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)	Eff Face
			Flat Area (sqft)	Round Area (sqft)	Round Area (sqft)	Round Area (sqft)														
10	185.3	33.95	8.10	8.07	0.00	0.23	2.48	0.80	1.00	0.60	11.30	0.00	0.00	0.00	520.6	0.0	1,064.91	0.00	1,064.91	2
9	170.0	33.12	15.46	27.01	0.00	0.33	2.23	0.80	1.00	0.62	29.23	0.00	0.00	0.00	1,734.5	0.0	2,409.25	0.00	2,409.25	2
8	150.0	31.96	18.29	51.62	0.00	0.48	1.92	0.80	1.00	0.69	50.17	0.00	0.00	0.00	2,868.9	0.0	3,446.65	0.00	3,446.65	2
7	130.0	30.68	22.12	55.39	0.00	0.44	1.99	0.80	1.00	0.67	54.81	0.00	0.00	0.00	3,560.8	0.0	3,729.03	0.00	3,729.03	3
6	110.0	29.25	23.73	69.84	0.00	0.46	1.96	0.80	1.00	0.68	66.22	0.00	0.00	0.00	4,259.8	0.0	4,247.07	0.00	4,247.07	3
5	90.00	27.62	25.67	72.73	0.00	0.42	2.03	0.80	1.00	0.66	68.50	0.00	0.00	0.00	4,391.6	0.0	4,286.16	0.00	4,286.16	2
4	70.00	25.71	27.41	81.32	0.00	0.41	2.04	0.80	1.00	0.66	75.26	0.00	0.00	0.00	5,586.1	0.0	4,417.07	0.00	4,417.07	1
3	50.00	23.35	29.80	83.48	0.00	0.38	2.11	0.80	1.00	0.64	77.50	0.00	0.00	0.00	5,741.7	0.0	4,264.98	0.00	4,264.98	2
2	30.00	20.74	36.90	83.48	0.00	0.35	2.16	0.80	1.00	0.63	82.44	0.00	0.00	0.00	6,199.7	0.0	4,128.84	0.00	4,128.84	2
1	10.00	20.74	44.65	92.55	0.00	0.36	2.15	0.80	1.00	0.64	94.63	0.00	0.00	0.00	7,258.3	0.0	4,704.41	0.00	4,704.41	3
42,122.1																0.0			36,698.37	

**LoadCase 90 deg No Ice 90.00 mph Wind at 90 deg From Face with No Ice**

Allow Stress Inc: 1.333  
 Dead LF: 1.000  
 Wind LF: 1.000

Sect Seq	Height (ft)	Wind qz (psf)	Total		Ice		Sol Ratio	Cf	Df	Dr	Rr	Eff Area (sqft)	Linear Area (sqft)	Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)	Eff Face
			Flat Area (sqft)	Round Area (sqft)	Round Area (sqft)	Round Area (sqft)														
10	185.3	33.95	8.10	8.07	0.00	0.23	2.48	0.80	1.00	0.60	11.30	0.00	0.00	0.00	520.6	0.0	1,064.91	0.00	1,064.91	2
9	170.0	33.12	15.46	27.01	0.00	0.33	2.23	0.80	1.00	0.62	29.23	0.00	0.00	0.00	1,734.5	0.0	2,409.25	0.00	2,409.25	2
8	150.0	31.96	18.29	51.62	0.00	0.48	1.92	0.80	1.00	0.69	50.17	0.00	0.00	0.00	2,868.9	0.0	3,446.65	0.00	3,446.65	2
7	130.0	30.68	22.12	55.39	0.00	0.44	1.99	0.80	1.00	0.67	54.81	0.00	0.00	0.00	3,560.8	0.0	3,729.03	0.00	3,729.03	3
6	110.0	29.25	23.73	69.84	0.00	0.46	1.96	0.80	1.00	0.68	66.22	0.00	0.00	0.00	4,259.8	0.0	4,247.07	0.00	4,247.07	3
5	90.00	27.62	25.67	72.73	0.00	0.42	2.03	0.80	1.00	0.66	68.50	0.00	0.00	0.00	4,391.6	0.0	4,286.16	0.00	4,286.16	2
4	70.00	25.71	27.41	81.32	0.00	0.41	2.04	0.80	1.00	0.66	75.26	0.00	0.00	0.00	5,586.1	0.0	4,417.07	0.00	4,417.07	1
3	50.00	23.35	29.80	83.48	0.00	0.38	2.11	0.80	1.00	0.64	77.50	0.00	0.00	0.00	5,741.7	0.0	4,264.98	0.00	4,264.98	2
2	30.00	20.74	36.90	83.48	0.00	0.35	2.16	0.80	1.00	0.63	82.44	0.00	0.00	0.00	6,199.7	0.0	4,128.84	0.00	4,128.84	2
1	10.00	20.74	44.65	92.55	0.00	0.36	2.15	0.80	1.00	0.64	94.63	0.00	0.00	0.00	7,258.3	0.0	4,704.41	0.00	4,704.41	3
42,122.1																0.0			36,698.37	

Site Number: 311305  
 Location: GLFD-Guilford Rebuild CT,  
 CT  
 Code: TIA/EIA-222 Rev F



Gh : 1.12

### Section Forces

10	185.3	33.95	8.10	8.07	0.00	0.23	2.48	0.85	1.00	0.60	11.71	0.00	0.00	520.6	0.0	1,103.05	0.00	1,103.05	2			
9	170.0	33.12	15.46	27.01	0.00	0.33	2.23	0.85	1.00	0.62	30.01	0.00	0.00	1,734.5	0.0	2,472.96	0.00	2,472.96	2			
8	150.0	31.96	18.29	51.62	0.00	0.48	1.92	0.85	1.00	0.69	51.08	0.00	0.00	2,868.9	0.0	3,509.46	0.00	3,509.46	2			
7	130.0	30.68	22.12	55.39	0.00	0.44	1.99	0.85	1.00	0.67	55.92	0.00	0.00	3,560.8	0.0	3,804.27	0.00	3,804.27	3			
6	110.0	29.25	23.73	69.84	0.00	0.46	1.96	0.85	1.00	0.68	67.40	0.00	0.00	4,259.8	0.0	4,323.17	0.00	4,323.17	3			
5	90.00	27.62	25.67	72.73	0.00	0.42	2.03	0.85	1.00	0.66	69.79	0.00	0.00	4,391.6	0.0	4,366.48	0.00	4,366.48	2			
4	70.00	25.71	27.41	81.32	0.00	0.41	2.04	0.85	1.00	0.66	76.63	0.00	0.00	5,586.1	0.0	4,497.50	0.00	4,497.50	1			
3	50.00	23.35	29.80	83.48	0.00	0.38	2.11	0.85	1.00	0.64	78.98	0.00	0.00	5,741.7	0.0	4,346.98	0.00	4,346.98	2			
2	30.00	20.74	36.90	83.48	0.00	0.35	2.16	0.85	1.00	0.63	84.29	0.00	0.00	6,199.7	0.0	4,221.24	0.00	4,221.24	2			
1	10.00	20.74	44.65	92.55	0.00	0.36	2.15	0.85	1.00	0.64	96.86	0.00	0.00	7,258.3	0.0	4,815.40	0.00	4,815.40	3			
														42,122.1	0.0			37,460.52				

### LoadCase Normal Ice

### 77.94 mph Wind Normal To Face with Ice

Allow Stress Inc: 1.333  
 Dead LF: 1.000  
 Wind LF: 1.000

Sect Seq	Wind Height (ft)	Wind qz (psf)	Total			Sol Ratio	Cf	Df	Dr	Rr	Eff Area (sqft)	Ice		Total Weight (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)	Eff Face				
			Flat Area (sqft)	Round Area (sqft)	Ice Round Area (sqft)							Linear Area (sqft)	Total Weight Ice (lb)									
10	185.3	25.46	8.10	16.47	8.40	0.36	2.16	1.00	1.00	0.63	18.55	0.00	0.00	912.0	391.4	1,137.66	0.00	1,137.66	2			
9	170.0	24.84	15.46	47.62	20.61	0.49	1.92	1.00	1.00	0.69	48.32	0.00	0.00	3,167.3	1,432.8	2,574.33	0.00	2,574.33	2			
8	150.0	23.97	18.29	86.50	34.88	0.72	1.78	1.00	1.00	0.84	90.63	0.00	0.00	5,239.8	2,370.9	4,317.00	0.00	4,317.00	2			
7	130.0	23.01	22.12	90.59	35.43	0.64	1.78	1.00	1.00	0.78	92.92	0.00	0.00	6,383.4	2,822.6	4,258.77	0.00	4,258.77	2			
6	110.0	21.94	23.73	104.23	34.38	0.62	1.79	1.00	1.00	0.77	103.85	0.00	0.00	7,283.2	3,023.4	4,557.50	0.00	4,557.50	3			
5	90.00	20.71	25.67	119.43	46.70	0.62	1.79	1.00	1.00	0.76	116.97	0.00	0.00	7,601.0	3,209.4	4,855.99	0.00	4,855.99	2			
4	70.00	19.28	27.41	127.19	47.36	0.58	1.82	1.00	1.00	0.74	121.98	0.00	0.00	9,079.1	3,493.0	4,768.34	0.00	4,768.34	2			
3	50.00	17.51	29.80	134.98	51.50	0.55	1.84	1.00	1.00	0.72	127.51	0.00	0.00	9,346.3	3,604.7	4,599.66	0.00	4,599.66	2			
2	30.00	15.55	36.90	135.91	52.43	0.51	1.89	1.00	1.00	0.70	132.27	0.00	0.00	10,016.0	3,816.3	4,341.57	0.00	4,341.57	2			
1	10.00	15.55	44.65	143.53	53.37	0.50	1.91	1.00	1.00	0.70	144.42	0.00	0.00	11,519.1	4,260.8	4,782.23	0.00	4,782.23	2			
														70,547.2	28,425.2			40,193.06				

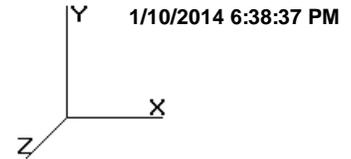
### LoadCase 60 deg Ice

### 77.94 mph Wind at 60 deg From Face with Ice

Allow Stress Inc: 1.333  
 Dead LF: 1.000  
 Wind LF: 1.000

Sect Seq	Wind Height (ft)	Wind qz (psf)	Total			Sol Ratio	Cf	Df	Dr	Rr	Eff Area (sqft)	Ice		Total Weight (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)	Eff Face	
			Flat Area (sqft)	Round Area (sqft)	Ice Round Area (sqft)							Linear Area (sqft)	Total Weight Ice (lb)						
10	185.3	25.46	8.10	16.47	8.40	0.36	2.16	0.80	1.00	0.63	16.93	0.00	0.00	912.0	391.4	1,038.36	0.00	1,038.36	2
9	170.0	24.84	15.46	47.62	20.61	0.49	1.92	0.80	1.00	0.69	45.23	0.00	0.00	3,167.3	1,432.8	2,409.60	0.00	2,409.60	2
8	150.0	23.97	18.29	86.50	34.88	0.72	1.78	0.80	1.00	0.84	86.97	0.00	0.00	5,239.8	2,370.9	4,142.79	0.00	4,142.79	2
7	130.0	23.01	22.12	90.59	35.43	0.64	1.78	0.80	1.00	0.78	88.50	0.00	0.00	6,383.4	2,822.6	4,056.02	0.00	4,056.02	2
6	110.0	21.94	23.73	104.23	34.38	0.62	1.79	0.80	1.00	0.77	99.11	0.00	0.00	7,283.2	3,023.4	4,349.21	0.00	4,349.21	3
5	90.00	20.71	25.67	119.43	46.70	0.62	1.79	0.80	1.00	0.76	111.84	0.00	0.00	7,601.0	3,209.4	4,642.82	0.00	4,642.82	2
4	70.00	19.28	27.41	127.19	47.36	0.58	1.82	0.80	1.00	0.74	116.50	0.00	0.00	9,079.1	3,493.0	4,554.06	0.00	4,554.06	2
3	50.00	17.51	29.80	134.98	51.50	0.55	1.84	0.80	1.00	0.72	121.55	0.00	0.00	9,346.3	3,604.7	4,384.67	0.00	4,384.67	2
2	30.00	15.55	36.90	135.91	52.43	0.51	1.89	0.80	1.00	0.70	124.89	0.00	0.00	10,016.0	3,816.3	4,099.34	0.00	4,099.34	2
1	10.00	15.55	44.65	143.53	53.37	0.50	1.91	0.80	1.00	0.70	135.48	0.00	0.00	11,519.1	4,260.8	4,486.50	0.00	4,486.50	2

Site Number: 311305  
 Location: GLFD-Guilford Rebuild CT,  
 CT  
 Code: TIA/EIA-222 Rev F



Gh : 1.12

### Section Forces

70,547.2 28,425.2

38,163.36

#### LoadCase 90 deg Ice

77.94 mph Wind at 90 deg From Face with Ice

Allow Stress Inc: 1.333  
 Dead LF: 1.000  
 Wind LF: 1.000

Seq	Sect	Height (ft)	Wind qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Rr	Eff Area (sqft)	Linear Area (sqft)	Ice		Struct Force (lb)	Linear Force (lb)	Total Force (lb)	Eff Face	
														Total Weight (lb)	Weight Ice (lb)					
10		185.3	25.46	8.10	16.47	8.40	0.36	2.16	0.85	1.00	0.63	17.34	0.00	0.00	912.0	391.4	1,063.18	0.00	1,063.18	2
9		170.0	24.84	15.46	47.62	20.61	0.49	1.92	0.85	1.00	0.69	46.00	0.00	0.00	3,167.3	1,432.8	2,450.78	0.00	2,450.78	2
8		150.0	23.97	18.29	86.50	34.88	0.72	1.78	0.85	1.00	0.84	87.89	0.00	0.00	5,239.8	2,370.9	4,186.34	0.00	4,186.34	2
7		130.0	23.01	22.12	90.59	35.43	0.64	1.78	0.85	1.00	0.78	89.60	0.00	0.00	6,383.4	2,822.6	4,106.71	0.00	4,106.71	2
6		110.0	21.94	23.73	104.23	34.38	0.62	1.79	0.85	1.00	0.77	100.29	0.00	0.00	7,283.2	3,023.4	4,401.28	0.00	4,401.28	3
5		90.00	20.71	25.67	119.43	46.70	0.62	1.79	0.85	1.00	0.76	113.12	0.00	0.00	7,601.0	3,209.4	4,696.12	0.00	4,696.12	2
4		70.00	19.28	27.41	127.19	47.36	0.58	1.82	0.85	1.00	0.74	117.87	0.00	0.00	9,079.1	3,493.0	4,607.63	0.00	4,607.63	2
3		50.00	17.51	29.80	134.98	51.50	0.55	1.84	0.85	1.00	0.72	123.04	0.00	0.00	9,346.3	3,604.7	4,438.42	0.00	4,438.42	2
2		30.00	15.55	36.90	135.91	52.43	0.51	1.89	0.85	1.00	0.70	126.74	0.00	0.00	10,016.0	3,816.3	4,159.90	0.00	4,159.90	2
1		10.00	15.55	44.65	143.53	53.37	0.50	1.91	0.85	1.00	0.70	137.72	0.00	0.00	11,519.1	4,260.8	4,560.43	0.00	4,560.43	2
														70,547.2	28,425.2			38,670.78		

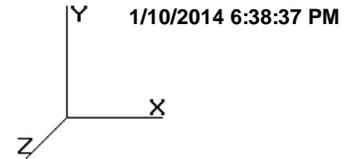
#### LoadCase Normal

50.00 mph Wind Normal To Face with No Ice

Allow Stress Inc: 1.333  
 Dead LF: 1.000  
 Wind LF: 1.000

Seq	Sect	Height (ft)	Wind qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Rr	Eff Area (sqft)	Linear Area (sqft)	Ice		Struct Force (lb)	Linear Force (lb)	Total Force (lb)	Eff Face	
														Total Weight (lb)	Weight Ice (lb)					
10		185.3	10.48	8.10	8.07	0.00	0.23	2.48	1.00	1.00	0.60	12.92	0.00	0.00	520.6	0.0	375.76	0.00	375.76	2
9		170.0	10.22	15.46	27.01	0.00	0.33	2.23	1.00	1.00	0.62	32.33	0.00	0.00	1,734.5	0.0	822.25	0.00	822.25	2
8		150.0	9.86	18.29	51.62	0.00	0.48	1.92	1.00	1.00	0.69	53.83	0.00	0.00	2,868.9	0.0	1,141.33	0.00	1,141.33	2
7		130.0	9.47	22.12	55.39	0.00	0.44	1.99	1.00	1.00	0.67	59.23	0.00	0.00	3,560.8	0.0	1,243.82	0.00	1,243.82	3
6		110.0	9.03	23.73	69.84	0.00	0.46	1.96	1.00	1.00	0.68	70.96	0.00	0.00	4,259.8	0.0	1,404.78	0.00	1,404.78	3
5		90.00	8.52	25.67	72.73	0.00	0.42	2.03	1.00	1.00	0.66	73.64	0.00	0.00	4,391.6	0.0	1,422.05	0.00	1,422.05	2
4		70.00	7.93	27.41	81.32	0.00	0.41	2.04	1.00	1.00	0.66	80.74	0.00	0.00	5,586.1	0.0	1,462.59	0.00	1,462.59	1
3		50.00	7.21	29.80	83.48	0.00	0.38	2.11	1.00	1.00	0.64	83.45	0.00	0.00	5,741.7	0.0	1,417.58	0.00	1,417.58	2
2		30.00	6.40	36.90	83.48	0.00	0.35	2.16	1.00	1.00	0.63	89.82	0.00	0.00	6,199.7	0.0	1,388.41	0.00	1,388.41	2
1		10.00	6.40	44.65	92.55	0.00	0.36	2.15	1.00	1.00	0.64	103.56	0.00	0.00	7,258.3	0.0	1,589.01	0.00	1,589.01	3
														42,122.1	0.0			12,267.58		

Site Number: 311305  
 Location: GLFD-Guilford Rebuild CT,  
 CT  
 Code: TIA/EIA-222 Rev F



Gh : 1.12

### Section Forces

**LoadCase 60 deg**

**50.00 mph Wind at 60 deg From Face with No Ice**

Allow Stress Inc: 1.333  
 Dead LF: 1.000  
 Wind LF: 1.000

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Rr	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)	Eff Face
10	185.3	10.48	8.10	8.07	0.00	0.23	2.48	0.80	1.00	0.60	11.30	0.00	0.00	520.6	0.0	328.68	0.00	328.68	2
9	170.0	10.22	15.46	27.01	0.00	0.33	2.23	0.80	1.00	0.62	29.23	0.00	0.00	1,734.5	0.0	743.60	0.00	743.60	2
8	150.0	9.86	18.29	51.62	0.00	0.48	1.92	0.80	1.00	0.69	50.17	0.00	0.00	2,868.9	0.0	1,063.78	0.00	1,063.78	2
7	130.0	9.47	22.12	55.39	0.00	0.44	1.99	0.80	1.00	0.67	54.81	0.00	0.00	3,560.8	0.0	1,150.93	0.00	1,150.93	3
6	110.0	9.03	23.73	69.84	0.00	0.46	1.96	0.80	1.00	0.68	66.22	0.00	0.00	4,259.8	0.0	1,310.82	0.00	1,310.82	3
5	90.00	8.52	25.67	72.73	0.00	0.42	2.03	0.80	1.00	0.66	68.50	0.00	0.00	4,391.6	0.0	1,322.89	0.00	1,322.89	2
4	70.00	7.93	27.41	81.32	0.00	0.41	2.04	0.80	1.00	0.66	75.26	0.00	0.00	5,586.1	0.0	1,363.29	0.00	1,363.29	1
3	50.00	7.21	29.80	83.48	0.00	0.38	2.11	0.80	1.00	0.64	77.50	0.00	0.00	5,741.7	0.0	1,316.35	0.00	1,316.35	2
2	30.00	6.40	36.90	83.48	0.00	0.35	2.16	0.80	1.00	0.63	82.44	0.00	0.00	6,199.7	0.0	1,274.33	0.00	1,274.33	2
1	10.00	6.40	44.65	92.55	0.00	0.36	2.15	0.80	1.00	0.64	94.63	0.00	0.00	7,258.3	0.0	1,451.98	0.00	1,451.98	3
														42,122.1	0.0			11,326.66	

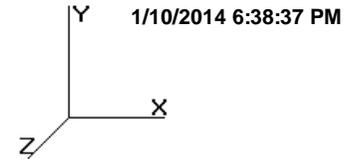
**LoadCase 90 deg**

**50.00 mph Wind at 90 deg From Face with No Ice**

Allow Stress Inc: 1.333  
 Dead LF: 1.000  
 Wind LF: 1.000

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Rr	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)	Eff Face
10	185.3	10.48	8.10	8.07	0.00	0.23	2.48	0.85	1.00	0.60	11.71	0.00	0.00	520.6	0.0	340.45	0.00	340.45	2
9	170.0	10.22	15.46	27.01	0.00	0.33	2.23	0.85	1.00	0.62	30.01	0.00	0.00	1,734.5	0.0	763.26	0.00	763.26	2
8	150.0	9.86	18.29	51.62	0.00	0.48	1.92	0.85	1.00	0.69	51.08	0.00	0.00	2,868.9	0.0	1,083.17	0.00	1,083.17	2
7	130.0	9.47	22.12	55.39	0.00	0.44	1.99	0.85	1.00	0.67	55.92	0.00	0.00	3,560.8	0.0	1,174.16	0.00	1,174.16	3
6	110.0	9.03	23.73	69.84	0.00	0.46	1.96	0.85	1.00	0.68	67.40	0.00	0.00	4,259.8	0.0	1,334.31	0.00	1,334.31	3
5	90.00	8.52	25.67	72.73	0.00	0.42	2.03	0.85	1.00	0.66	69.79	0.00	0.00	4,391.6	0.0	1,347.68	0.00	1,347.68	2
4	70.00	7.93	27.41	81.32	0.00	0.41	2.04	0.85	1.00	0.66	76.63	0.00	0.00	5,586.1	0.0	1,388.12	0.00	1,388.12	1
3	50.00	7.21	29.80	83.48	0.00	0.38	2.11	0.85	1.00	0.64	78.98	0.00	0.00	5,741.7	0.0	1,341.66	0.00	1,341.66	2
2	30.00	6.40	36.90	83.48	0.00	0.35	2.16	0.85	1.00	0.63	84.29	0.00	0.00	6,199.7	0.0	1,302.85	0.00	1,302.85	2
1	10.00	6.40	44.65	92.55	0.00	0.36	2.15	0.85	1.00	0.64	96.86	0.00	0.00	7,258.3	0.0	1,486.24	0.00	1,486.24	3
														42,122.1	0.0			11,561.89	

Site Number: 311305  
 Location: GLFD-Guilford Rebuild CT,  
 CT  
 Code: TIA/EIA-222 Rev F

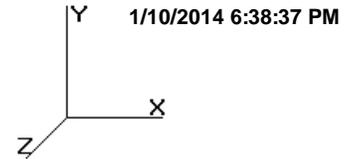


## Tower Loading

### Discrete Appurtenance Properties

Attach Elev (ft)	Description	Qty	Weight (lb)	No Ice CaAa (sf)	CaAa Factor	Weight (lb)	Ice CaAa (sf)	CaAa Factor	Distance From Face (ft)	X Angle (deg)	Vert Ecc (ft)
190.0	Diamond X50A	2	2.30	1.120	1.00	57.20	1.630	1.00	0.000	0.00	2.800
190.0	Andrew DB408	3	17.00	2.900	1.00	38.08	3.900	1.00	0.000	0.00	4.835
190.0	Side Arm	3	150.00	5.200	0.75	175.00	5.900	0.75	0.000	0.00	0.000
183.0	RCU	3	1.00	0.160	1.00	2.50	0.260	1.00	0.000	0.00	0.000
183.0	Side Arm	3	150.00	5.200	0.75	175.00	5.900	0.75	0.000	0.00	0.000
183.0	RFS HBX-6516DS-A1M	3	9.90	3.320	0.76	28.90	3.820	0.76	0.000	0.00	0.000
175.0	Air 21, 1.3 M, B2A B4P	3	90.00	6.300	0.84	130.50	6.950	0.84	0.000	0.00	0.000
175.0	Ericsson KRY 112 144/1	3	11.00	0.410	0.73	14.10	0.550	0.73	0.000	0.00	0.000
175.0	Ericsson AIR 21 B4A B2P	3	90.00	6.300	0.84	130.50	6.950	0.84	0.000	0.00	0.000
175.0	Round Sector Frame	3	300.00	14.400	0.75	415.00	19.200	0.75	0.000	0.00	0.000
163.0	Ericsson RRUS 11 1900 MHz	6	44.00	2.940	0.71	63.60	3.340	0.71	0.000	0.00	3.000
163.0	KMW AM-X-CD-14-65-00T-	3	36.40	5.500	0.76	68.30	6.100	0.76	0.000	0.00	3.000
163.0	Sector Frame	3	400.00	17.900	0.75	510.00	22.200	0.75	0.000	0.00	0.000
163.0	CCI DTMAP7819VG12A	6	19.20	1.140	0.68	26.50	1.360	0.68	0.000	0.00	3.000
163.0	KMW AM-X-CD-16-65-00T-	6	48.50	8.260	0.75	95.00	9.080	0.75	0.000	0.00	3.000
158.0	Antel BXA-70063-6CF-EDIN-X	3	17.00	7.730	0.74	58.00	8.540	0.74	0.000	0.00	-2.000
158.0	RFS FD9R6004/2C-3L	6	2.60	0.370	0.62	4.90	0.500	0.62	0.000	0.00	0.000
158.0	Antel BXA-171063-8BF-EDIN-X	3	10.50	2.940	0.84	29.30	3.410	0.84	0.000	0.00	0.000
158.0	RFS APL866513-42T0	6	15.70	4.290	0.94	46.99	4.860	0.94	0.000	0.00	0.000
158.0	Flat Light Sector Frame	3	400.00	17.900	0.75	510.00	22.200	0.75	0.000	0.00	0.000
140.0	4' Dish w/ Radome	1	120.00	10.850	1.00	211.70	11.310	1.00	0.000	0.00	2.000
140.0	4' Dish w/ Radome	2	120.00	10.850	1.00	211.70	11.310	1.00	0.000	0.00	2.000
140.0	Andrew DB408	3	17.00	2.900	1.00	38.08	3.900	1.00	0.000	0.00	4.835
140.0	Side Arm	3	150.00	5.200	0.75	175.00	5.900	0.75	0.000	0.00	0.000
127.3	Shively 6014-HW-2	2	1086.00	65.000	1.00	2388.00	135.00	1.00	0.000	0.00	0.000
127.3	Leg Mount	2	100.00	4.000	1.00	150.00	5.000	1.00	0.000	0.00	0.000
125.2	Leg Mount	1	100.00	4.000	1.00	150.00	5.000	1.00	0.000	0.00	0.000
125.2	Shively 6600-H (w/ radome)	1	93.00	4.200	1.00	177.00	5.100	1.00	0.000	0.00	0.000
122.0	Scala PR-950	1	38.00	10.090	1.00	129.00	29.500	1.00	0.000	0.00	0.000
100.0	Sinclair SD110-SFXPASNM	1	25.00	8.100	1.00	86.20	11.430	1.00	0.000	0.00	7.917
100.0	Sinclair SD222	2	16.00	4.900	1.00	54.20	7.140	1.00	0.000	0.00	5.000
100.0	Andrew 1142-2cn	3	24.00	0.150	1.00	36.00	0.240	1.00	0.000	0.00	0.500
100.0	T-Arm	3	250.00	9.700	0.75	314.00	12.100	0.75	0.000	0.00	0.000
87.00	Side Arm	1	150.00	5.200	1.00	175.00	5.900	1.00	0.000	0.00	0.000
87.00	Antel BCD-87010_4	1	26.50	2.900	1.00	47.98	4.050	1.00	0.000	0.00	5.583
80.00	Flush Mount	1	200.00	5.000	1.00	300.00	7.000	1.00	0.000	0.00	0.000
80.00	4' Dish w/ Radome	5	120.00	10.850	1.00	211.70	11.310	1.00	0.000	0.00	0.000
60.00	Sinclair SD222	2	16.00	4.900	1.00	54.20	7.140	1.00	0.000	0.00	5.000
60.00	Side Arm	2	150.00	5.200	1.00	175.00	5.900	1.00	0.000	0.00	0.000
20.00	Sinclair SY-203	1	15.00	4.900	1.00	56.50	8.620	1.00	0.000	0.00	0.000
20.00	Sinclair SY-307	8	5.00	1.310	1.00	16.90	2.030	1.00	0.000	0.00	0.000
20.00	Flush Mount	1	200.00	5.000	1.00	300.00	7.000	1.00	0.000	0.00	0.000
16.00	Channel Master Type 120	1	126.00	20.190	1.00	185.00	21.050	1.00	0.000	0.00	0.000
<b>Totals</b>		<b>122</b>	<b>11865.50</b>			<b>19159.40</b>			<b>Number of Appurtenances : 43</b>		

Site Number: 311305  
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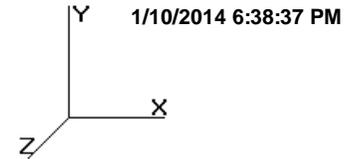


## Tower Loading

### 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 1/4" Coax	3	1.55	0.63	100.00	2	Separate
0.00	190.0	1/2" Coax	2	0.63	0.15	100.00	1	Separate
0.00	189.9	TX Line Ladder	1	2.00	6.00	100.00	2	Separate
0.00	183.0	1 5/8" Coax	6	1.98	0.82	50.00	1	Separate
0.00	183.0	3/8" Coax	1	0.44	0.08	50.00	1	Separate
0.00	183.0	TX Line Ladder	1	2.00	6.00	100.00	1	Separate
0.00	175.0	1 1/4" Hybriflex	1	1.54	1.00	100.00	3	Separate
0.00	175.0	1 5/8" Coax	12	1.98	0.82	50.00	3	Separate
0.00	175.0	TX Line Ladder	1	2.00	6.00	100.00	3	Separate
0.00	166.0	0.28" RG6	1	0.28	0.03	100.00	2	Separate
0.00	166.0	0.74" 8 AWG 7	2	0.74	0.49	100.00	2	Separate
0.00	166.0	1 1/4" Coax	12	1.55	0.63	50.00	2	Separate
0.00	166.0	1/2" Coax	1	0.63	0.15	100.00	2	Separate
0.00	166.0	3" Conduit	1	3.50	7.58	100.00	2	Separate
0.00	166.0	TX Line Ladder	1	2.00	6.00	100.00	2	Separate
0.00	158.0	1 5/8" Coax	12	1.98	0.82	50.00	1	Separate
0.00	158.0	TX Line Ladder	1	2.00	6.00	100.00	1	Separate
0.00	140.0	1 1/4" Coax	6	1.55	0.63	50.00	3	Separate
0.00	139.9	TX Line Ladder	1	2.00	6.00	100.00	3	Separate
0.00	127.3	3.5" Coax	1	3.50	1.78	100.00	3	Separate
0.00	125.2	1 5/8" Coax	1	1.98	0.82	100.00	3	Separate
0.00	122.0	7/8" Coax	1	1.09	0.33	100.00	3	Separate
0.00	100.0	7/8" Coax	6	1.09	0.33	100.00	2	Separate
0.00	87.00	1 5/8" Coax	1	1.98	0.82	100.00	3	Separate
0.00	80.00	1 1/4" Coax	5	1.55	0.63	100.00	1	Separate
0.00	60.00	7/8" Coax	2	1.09	0.33	100.00	2	Separate
0.00	20.00	1/2" Coax	9	0.63	0.15	50.00	3	Separate
0.00	16.00	0.28" RG6	1	0.28	0.03	100.00	3	Separate

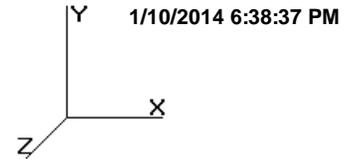
Site Number: 311305  
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## Force/Stress Summary

Section: 1		1		Bot Elev (ft): 0.00				Height (ft): 20.000								
		Force		Len	Bracing %			Member				Shear	Bear	Use		
Max Compression Member		(kip)	Load Case	(ft)	X	Y	Z	KL/R	Fa	Cap	Num	Num	Cap	Cap	%	Controls
									(ksi)	(kip)	Bolts	Holes	(kip)	(kip)		
LEG	PST - 12" DIA PIPE	-420.86	Normal Ice	6.43	100	100	100	17.6	38.1	555.64	0	0	0.00	0.00	75	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	-11.52	90 deg Ice	20.05	48	73	48	145.3	9.4	18.29	0	0	0.00	0.00	62	Member Z
Max Tension Member		Force		Fy	Cap	Num	Num		Shear	Bear	Use					
		(kip)	Load Case	(ksi)	(kip)	Bolts	Holes		Cap (kip)	Cap (kip)	%	Controls				
LEG	PST - 12" DIA PIPE	354.42	60 deg Ice	50	583.94	0	0		0.00	0.00	60	Member				
HORIZ		0.00		0	0.00	0	0		0.00	0.00	0					
DIAG	SAE - 4X4X0.25	12.19	90 deg Ice	50	77.59	0	0		0.00	0.00	15	Member				
Section: 2		2		Bot Elev (ft): 20.00				Height (ft): 20.000								
		Force		Len	Bracing %			Member				Shear	Bear	Use		
Max Compression Member		(kip)	Load Case	(ft)	X	Y	Z	KL/R	Fa	Cap	Num	Num	Cap	Cap	%	Controls
									(ksi)	(kip)	Bolts	Holes	(kip)	(kip)		
LEG	PST - 10" DIA PIPE	-380.77	Normal Ice	6.43	100	100	100	21.0	37.6	447.26	0	0	0.00	0.00	85	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	-10.47	90 deg Ice	18.77	48	73	48	155.8	8.2	13.86	0	0	0.00	0.00	75	Member Z
Max Tension Member		Force		Fy	Cap	Num	Num		Shear	Bear	Use					
		(kip)	Load Case	(ksi)	(kip)	Bolts	Holes		Cap (kip)	Cap (kip)	%	Controls				
LEG	PST - 10" DIA PIPE	325.13	60 deg Ice	50	475.95	0	0		0.00	0.00	68	Member				
HORIZ		0.00		0	0.00	0	0		0.00	0.00	0					
DIAG	SAE - 3.5X3.5X0.25	10.92	90 deg Ice	50	67.59	0	0		0.00	0.00	16	Member				
Section: 3		3		Bot Elev (ft): 40.00				Height (ft): 20.000								
		Force		Len	Bracing %			Member				Shear	Bear	Use		
Max Compression Member		(kip)	Load Case	(ft)	X	Y	Z	KL/R	Fa	Cap	Num	Num	Cap	Cap	%	Controls
									(ksi)	(kip)	Bolts	Holes	(kip)	(kip)		
LEG	PST - 10" DIA PIPE	-339.66	Normal Ice	6.43	100	100	100	21.0	37.6	447.26	0	0	0.00	0.00	75	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	-10.66	90 deg Ice	16.90	48	73	48	164.5	7.4	10.59	0	0	0.00	0.00	100	Member Z
Max Tension Member		Force		Fy	Cap	Num	Num		Shear	Bear	Use					
		(kip)	Load Case	(ksi)	(kip)	Bolts	Holes		Cap (kip)	Cap (kip)	%	Controls				
LEG	PST - 10" DIA PIPE	292.27	60 deg Ice	50	475.95	0	0		0.00	0.00	61	Member				
HORIZ		0.00		0	0.00	0	0		0.00	0.00	0					
DIAG	SAE - 3X3X0.25	10.44	90 deg Ice	50	57.59	0	0		0.00	0.00	18	Member				

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### Force/Stress Summary

Section: 4    4		Bot Elev (ft): 60.00						Height (ft): 20.000								
		Force		Len	Bracing %			Fa	Member		Num	Shear	Bear	Use		
		(kip)	Load Case	(ft)	X	Y	Z	KL/R	(ksi)	Cap	Num	Cap	Cap	%		
Max Compression Member																
LEG	PST - 10" DIA PIPE	-292.77	Normal Ice	6.42	100	100	100	21.0	37.6	447.29	0	0	0.00	0.00	65	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	-12.71	90 deg Ice	15.15	48	73	48	147.5	9.2	13.18	0	0	0.00	0.00	96	Member Z
Max Tension Member																
		Force	Load Case	Fy	Cap	Num	Num	Shear	Bear	Use						
		(kip)		(ksi)	(kip)	Bolts	Holes	Cap (kip)	Cap (kip)	%	Controls					
LEG	PST - 10" DIA PIPE	252.63	60 deg No Ice	50	475.95	0	0	0.00	0.00	53	Member					
HORIZ		0.00		0	0.00	0	0	0.00	0.00	0						
DIAG	SAE - 3X3X0.25	13.11	90 deg Ice	50	57.59	0	0	0.00	0.00	22	Member					

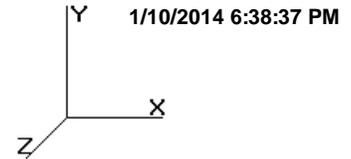
  

Section: 5    5		Bot Elev (ft): 80.00						Height (ft): 20.000								
		Force		Len	Bracing %			Fa	Member		Num	Shear	Bear	Use		
		(kip)	Load Case	(ft)	X	Y	Z	KL/R	(ksi)	Cap	Num	Cap	Cap	%		
Max Compression Member																
LEG	PST - 8" DIA PIPE	-235.43	Normal Ice	6.42	100	100	100	26.2	36.8	309.18	0	0	0.00	0.00	76	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	-11.78	90 deg Ice	13.81	48	73	48	133.5	11.2	12.18	0	0	0.00	0.00	96	Member Z
Max Tension Member																
		Force	Load Case	Fy	Cap	Num	Num	Shear	Bear	Use						
		(kip)		(ksi)	(kip)	Bolts	Holes	Cap (kip)	Cap (kip)	%	Controls					
LEG	PST - 8" DIA PIPE	205.44	60 deg No Ice	50	335.97	0	0	0.00	0.00	61	Member					
HORIZ		0.00		0	0.00	0	0	0.00	0.00	0						
DIAG	SAE - 3X3X0.1875	12.08	90 deg Ice	50	43.60	0	0	0.00	0.00	27	Member					

Section: 6    6		Bot Elev (ft): 100.0						Height (ft): 20.000								
		Force		Len	Bracing %			Fa	Member		Num	Shear	Bear	Use		
		(kip)	Load Case	(ft)	X	Y	Z	KL/R	(ksi)	Cap	Num	Cap	Cap	%		
Max Compression Member																
LEG	PST - 8" DIA PIPE	-176.90	Normal Ice	6.42	100	100	100	26.2	36.8	309.18	0	0	0.00	0.00	57	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	-11.54	Normal Ice	12.50	48	73	48	120.8	13.6	14.86	0	0	0.00	0.00	77	Member Z
Max Tension Member																
		Force	Load Case	Fy	Cap	Num	Num	Shear	Bear	Use						
		(kip)		(ksi)	(kip)	Bolts	Holes	Cap (kip)	Cap (kip)	%	Controls					
LEG	PST - 8" DIA PIPE	158.39	60 deg No Ice	50	335.97	0	0	0.00	0.00	47	Member					
HORIZ		0.00		0	0.00	0	0	0.00	0.00	0						
DIAG	SAE - 3X3X0.1875	13.13	Normal Ice	50	43.60	0	0	0.00	0.00	30	Member					

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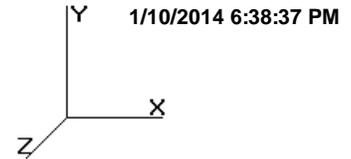
### Force/Stress Summary

Section: 7    7		Bot Elev (ft): 120.0						Height (ft): 20.000						
		Force	Len	Bracing %			Fa	Member		Num	Shear	Bear	Use	
		(kip)	(ft)	X	Y	Z	(ksi)	Cap	Num	Holes	Cap	Cap	%	Controls
Max Compression Member		Load Case				KL/R		(kip)	Bolts		(kip)	(kip)		
LEG	PST - 6" DIA PIPE	-116.13 Normal No Ice	6.42	100	100	100	34.3	35.5	197.97	0	0	0.00	0.00	58 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	-13.33 90 deg Ice	11.24	48	73	48	111.5	16.0	17.42	0	0	0.00	0.00	76 Member Z
Max Tension Member		Load Case	Fy	Cap	Num	Num	Shear	Bear	Use					
			(ksi)	(kip)	Bolts	Holes	Cap (kip)	Cap (kip)	%	Controls				
LEG	PST - 6" DIA PIPE	108.25 60 deg No Ice	50	223.18	0	0	0.00	0.00	48	Member				
HORIZ		0.00	0	0.00	0	0	0.00	0.00	0					
DIAG	SAE - 3X3X0.1875	9.68 90 deg Ice	50	43.60	0	0	0.00	0.00	22	Member				

Section: 8    8		Bot Elev (ft): 140.0						Height (ft): 20.000						
		Force	Len	Bracing %			Fa	Member		Num	Shear	Bear	Use	
		(kip)	(ft)	X	Y	Z	(ksi)	Cap	Num	Holes	Cap	Cap	%	Controls
Max Compression Member		Load Case				KL/R		(kip)	Bolts		(kip)	(kip)		
LEG	PST - 5" DIA PIPE	-67.45 Normal No Ice	6.55	100	100	100	41.8	34.1	146.63	0	0	0.00	0.00	46 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	-6.37 90 deg No Ice	10.12	48	73	48	118.4	14.2	12.82	0	0	0.00	0.00	49 Member Z
Max Tension Member		Load Case	Fy	Cap	Num	Num	Shear	Bear	Use					
			(ksi)	(kip)	Bolts	Holes	Cap (kip)	Cap (kip)	%	Controls				
LEG	PST - 5" DIA PIPE	64.16 60 deg No Ice	50	171.98	0	0	0.00	0.00	37	Member				
HORIZ		0.00	0	0.00	0	0	0.00	0.00	0					
DIAG	SAE - 2.5X2.5X0.1875	6.32 90 deg No Ice	50	36.08	0	0	0.00	0.00	17	Member				

Section: 9    9		Bot Elev (ft): 160.0						Height (ft): 20.000						
		Force	Len	Bracing %			Fa	Member		Num	Shear	Bear	Use	
		(kip)	(ft)	X	Y	Z	(ksi)	Cap	Num	Holes	Cap	Cap	%	Controls
Max Compression Member		Load Case				KL/R		(kip)	Bolts		(kip)	(kip)		
LEG	PST - 3" DIA PIPE	-23.00 Normal No Ice	6.54	100	100	100	67.7	28.5	63.52	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	-4.00 Normal No Ice	9.222	48	73	48	110.5	16.3	14.71	0	0	0.00	0.00	27 Member Z
Max Tension Member		Load Case	Fy	Cap	Num	Num	Shear	Bear	Use					
			(ksi)	(kip)	Bolts	Holes	Cap (kip)	Cap (kip)	%	Controls				
LEG	PST - 3" DIA PIPE	18.48 60 deg No Ice	50	89.19	0	0	0.00	0.00	20	Member				
HORIZ		0.00	0	0.00	0	0	0.00	0.00	0					
DIAG	SAE - 2.5X2.5X0.1875	3.36 60 deg No Ice	50	36.08	0	0	0.00	0.00	9	Member				

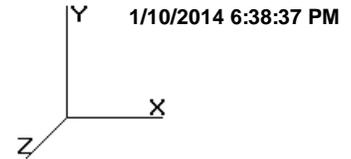
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### Force/Stress Summary

Section: 10 10		Bot Elev (ft): 180.0						Height (ft): 10.599							
Max Compression Member		Force (kip)	Load Case	Len (ft)	Bracing %			Fa (ksi)	Member Cap (kip)	Num Bolts	Num Holes	Shear Cap (kip)	Bear Cap (kip)	Use %	Controls
					X	Y	Z	KL/R							
LEG	PST - 2" DIA PIPE	-3.34	Normal No Ice	5.11	100	100	100	77.9	25.9	27.70	0	0	0.00	0.00	12 Member X
HORIZ	SAE - 2X2X0.1875	-0.38	90 deg No Ice	6.500	100	100	100	198.0	5.1	3.63	0	0	0.00	0.00	10 Member Z
DIAG	SAE - 2X2X0.1875	-1.14	60 deg No Ice	8.269	48	73	48	120.9	13.6	9.74	0	0	0.00	0.00	11 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	2.70	60 deg No Ice	50	42.80	0	0	0.00	0.00	6	Member				
HORIZ	SAE - 2X2X0.1875	0.36	60 deg No Ice	36	20.59	0	0	0.00	0.00	1	Member				
DIAG	SAE - 2X2X0.1875	1.07	Normal No Ice	50	28.60	0	0	0.00	0.00	3	Member				

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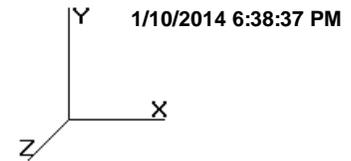


### Support Forces Summary

Load Case	Node	FX (kip)	FY (kip)	FZ (kip)	(-) = Uplift (+) = Down
90 deg	1b	-7.69	-80.08	-3.57	
	1a	-9.72	116.37	4.76	
	1	-1.32	17.70	-1.19	
60 deg	1b	-8.47	-94.30	-4.94	
	1a	-6.34	73.89	2.37	
	1	-1.21	74.41	-6.67	
Normal	1b	-3.24	-40.45	-3.52	
	1a	3.43	-41.44	-3.23	
	1	-0.19	135.87	-12.68	
90 deg Ice	1b	-35.70	-302.31	-17.53	
	1a	-22.95	362.77	10.40	
	1	-4.14	29.25	7.13	
60 deg Ice	1b	-38.42	-351.81	-22.37	
	1a	-11.61	220.00	2.59	
	1	-3.90	221.52	-11.36	
Normal Ice	1b	-20.30	-166.14	-17.49	
	1a	21.22	-168.31	-15.93	
	1	-0.92	424.16	-30.89	
90 deg No Ice	1b	-27.38	-301.21	-12.94	
	1a	-29.05	337.49	14.12	
	1	-4.26	17.70	-1.18	
60 deg No Ice	1b	-29.92	-347.32	-17.43	
	1a	-18.16	199.87	6.39	
	1	-3.82	201.44	-18.92	
Normal No Ice	1b	-12.85	-172.85	-12.85	
	1a	13.43	-173.84	-11.85	
	1	-0.58	400.68	-38.27	

Max Uplift:	351.81 (kip)	Moment:	6,628.28 (ft-kip)	Normal No Ice
Max Down:	424.16 (kip)	Total Down:	53.99 (kip)	
Max Shear:	44.46 (kip)	Total Shear:	62.98 (kip)	

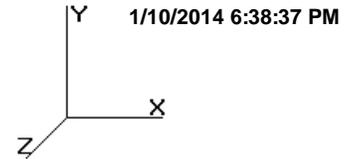
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## Deflections and Rotations

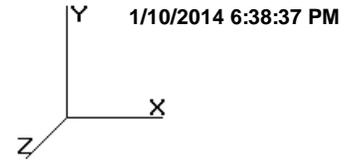
Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)
50.00 mph Wind at 60 deg From Face with No Ice	13.21	0.0040	-0.0022	0.0269
	20.00	0.0078	0.0019	0.0391
	60.00	0.0555	0.0073	0.1060
	80.00	0.0963	0.0098	0.1391
	86.79	0.1130	0.0117	0.1448
	100.00	0.1497	0.0152	0.1806
	120.38	0.2163	-0.0250	0.2084
	126.79	0.2399	0.0225	0.2105
	140.00	0.2914	0.0288	0.2555
	160.00	0.3795	0.0387	0.2580
	173.08	0.4411	0.0399	0.2712
	185.49	0.5014	0.0426	0.2908
190.60	0.5260	0.0440	0.2518	
50.00 mph Wind at 90 deg From Face with No Ice	13.21	0.0038	-0.0026	0.0273
	20.00	0.0080	0.0019	0.0393
	60.00	0.0564	0.0066	0.1066
	80.00	0.0978	0.0087	0.1398
	86.79	0.1147	0.0100	0.1465
	100.00	0.1519	0.0127	0.1805
	120.38	0.2161	-0.0314	0.2054
	126.79	0.2431	0.0176	0.2122
	140.00	0.2950	0.0218	0.2508
	160.00	0.3834	0.0284	0.2489
	173.08	0.4454	0.0284	0.2752
	185.49	0.5061	0.0284	0.3102
190.60	0.5310	0.0283	0.1790	
50.00 mph Wind Normal To Face with No Ice	13.21	0.0044	-0.0001	0.0258
	20.00	0.0084	0.0003	0.0407
	60.00	0.0593	0.0015	0.1114
	80.00	0.1026	0.0024	0.1458
	86.79	0.1202	0.0035	0.1547
	100.00	0.1593	0.0051	0.1926
	120.38	0.2275	0.0000	0.2275
	126.79	0.2553	0.0094	0.2240
	140.00	0.3094	0.0129	0.2771
	160.00	0.4025	0.0185	0.3055
	173.08	0.4678	0.0183	0.2898
	185.49	0.5319	0.0182	0.2615
190.60	0.5581	0.0181	0.4318	
77.94 mph Wind at 60 deg From Face with Ice	13.21	0.0123	-0.0064	0.0948
	20.00	0.0284	0.0075	0.1333
	60.00	0.1905	0.0271	0.3612
	80.00	0.3295	0.0366	0.4746
	86.79	0.3864	0.0436	0.4941
	100.00	0.5112	0.0566	0.6151
	120.38	0.7362	-0.0634	0.7085
	126.79	0.8169	0.0826	0.7067

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	140.00	0.9886	0.1052	0.8487
	160.00	1.2786	0.1422	0.8538
	173.08	1.4813	0.1555	0.8932
	185.49	1.6794	0.1865	0.9560
	190.60	1.7609	0.2019	0.8286
77.94 mph Wind at 90 deg From Face with Ice	13.21	0.0126	-0.0085	0.0913
	20.00	0.0286	0.0062	0.1342
	60.00	0.1930	0.0210	0.3622
	80.00	0.3334	0.0277	0.4760
	86.79	0.3907	0.0315	0.4981
	100.00	0.5169	0.0398	0.6142
	120.38	0.7297	-0.0968	0.6915
	126.79	0.8256	0.0532	0.7095
	140.00	0.9974	0.0654	0.8316
	160.00	1.2877	0.0836	0.8279
	173.08	1.4910	0.0834	0.9020
	185.49	1.6895	0.0839	1.0166
	190.60	1.7709	0.0834	0.5845
77.94 mph Wind Normal To Face with Ice	13.21	0.0124	-0.0004	0.0931
	20.00	0.0294	0.0012	0.1387
	60.00	0.2016	0.0033	0.3763
	80.00	0.3475	0.0055	0.4902
	86.79	0.4069	0.0088	0.5223
	100.00	0.5388	0.0132	0.6476
	120.38	0.7605	-0.0003	0.7611
	126.79	0.8608	0.0249	0.7398
	140.00	1.0372	0.0347	0.8990
	160.00	1.3382	0.0497	0.9780
	173.08	1.5492	0.0496	0.9352
	185.49	1.7562	0.0495	0.8441
	190.60	1.8410	0.0497	1.4046
90.00 mph Wind at 60 deg From Face with No Ice	13.21	0.0128	-0.0063	0.0875
	20.00	0.0255	0.0074	0.1265
	60.00	0.1806	0.0288	0.3446
	80.00	0.3137	0.0391	0.4531
	86.79	0.3682	0.0467	0.4724
	100.00	0.4880	0.0608	0.5889
	120.38	0.7052	-0.0659	0.6821
	126.79	0.7832	0.0910	0.6901
	140.00	0.9523	0.1172	0.8365
	160.00	1.2402	0.1604	0.8447
	173.08	1.4418	0.1736	0.8884
	185.49	1.6390	0.2043	0.9502
	190.60	1.7200	0.2196	0.8269
90.00 mph Wind at 90 deg From Face with No Ice	13.21	0.0122	-0.0085	0.0884
	20.00	0.0259	0.0062	0.1274
	60.00	0.1834	0.0215	0.3463
	80.00	0.3181	0.0284	0.4551
	86.79	0.3730	0.0325	0.4774
	100.00	0.4943	0.0412	0.5887
	120.38	0.7038	-0.1019	0.6709
	126.79	0.7926	0.0570	0.6941
	140.00	0.9623	0.0711	0.8198
	160.00	1.2510	0.0926	0.8135

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90.00 mph Wind Normal To Face with No Ice	173.08	1.4537	0.0925	0.8989
	185.49	1.6520	0.0931	1.0122
	190.60	1.7332	0.0926	0.5867
	13.21	0.0141	-0.0002	0.0842
	20.00	0.0272	0.0009	0.1323
	60.00	0.1926	0.0050	0.3622
	80.00	0.3332	0.0078	0.4740
	86.79	0.3904	0.0115	0.5031
	100.00	0.5178	0.0167	0.6270
	120.38	0.7394	-0.0002	0.7404
	126.79	0.8303	0.0306	0.7304
	140.00	1.0069	0.0423	0.9029
	160.00	1.3101	0.0601	0.9934
	173.08	1.5226	0.0602	0.9429
	185.49	1.7313	0.0601	0.8518
	190.60	1.8169	0.0605	1.4050
	0.0000	0.0000	0.0000	