EMPIRE telecom
A QualTek Company

January 31, 2017

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

RE: AT&T Wireless NOTICE OF EXEMPT MODIFICATION
130 Bald Hill Road, Tolland, CT 06084

Dear Ms. Bachman:

Enclosed please find and original and two (2) copies of a Notice of Exempt Modification including drawings and a check in the amount of six hundred twenty five ($625.00) for the filing fee. In addition, I have included a single copy of each notification letter mailed this day to the municipality, the Tolland Planning Office, and the owner of the property and tower.

I will submit copies of the structural analysis and the RF table to you via e mail this day.

Please feel free to contact me with any questions or comments. Thank you for your kind cooperation in this matter.

Respectfully submitted,

Jack Andrews
Zoning Manager, Empire Telecom
o/b/o AT&T Wireless
10130 Donleigh Drive
Columbia, MD 21046
443-677-0144
jandrews@empiretelecomm.com

Enclosures

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Zoning Manager, Empire Telecom
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Columbia, MD 21046
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Melanie Bachman
Acting Executive Director
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10 Franklin Square
New Britain, CT 06051

NOTICE OF EXEMPT MODIFICATION
130 Bald Hill Road, Tolland, CT 06084

Lat: 41-52-59.38 41.88316111
Long. 72-22-31.83 -72.37550833

Dear Ms. Bachman:

AT&T Wireless currently maintains six (6) antennas at the 90 foot level of an existing 180 foot tall lattice tower located at 130 Bald Hill Road, in Tolland, CT. The tower is owned by Tolland County Mutual Aid Fire Service Inc. The property is likewise owned by Tolland County Mutual Aid Fire Service Inc. AT&T Wireless now seeks to install three (3) Ericsson RRUS-12 remote radio heads to be mounted above each of the existing RRU-11 units adjoining the antennas at the 90 foot level.

The facility was approved by the Connecticut Siting Council in EM-AT&T-142-140127 on February 14, 2014. Five (5) conditions were enumerated in the Council's decision: 1) Any deviation from the modification as specified in the Notice and supporting documentation shall render the acknowledgement invalid: 2) Any material changes to the modification as proposed shall require the filing of a new Notice with the Council; 3) Not less than 45 days after the completion of construction the Council shall be notified in writing that the construction has been completed; 4) the validity of the action shall expire one year from the date of the letter; and 5) the applicant may request an extension of time beyond the one year deadline provided that such a request is submitted to the Council not less than 60 days prior to the expiration.

The proposed modifications are minimal and will be in compliance with any prior conditions of approval.

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Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies section 16-50j-73 for construction that constitutes an exempt modification pursuant to RCSA section 16-50j-72(b)(2). In accordance with RCSA section 16-50j-73, a copy of this letter and attachments is being sent to Steven Werbner, the Town Manager of the Town of Tolland; as well as Tolland County Mutual Aid, the property owner and the tower owner. In addition, a copy is being sent to Heidi Samokar, the Director of Planning & Community Development / Zoning Officer for the Town of Tolland.

The planned modifications to the facility fall squarely within those activities expressly provided for in RCSA section 50j-72(b)(2).

1. The proposed modifications will not result in an increase in height of the existing structure.
2. The proposed modifications will not require an extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that will exceed state and local limits.
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, AT&T Wireless respectfully submits that the proposed modifications to the above referenced telecommunications facility constitute an exempt modification under RCSA section 16-50j-72(b)(2).

Respectfully submitted,

Jack Andrews
Zoning Manager, Empire Telecom
o/b/o AT&T Wireless
10130 Donleigh Drive
Columbia, MD 21046
443-677-0144
jandrews@empiretelecomm.com

cc: Steven Werbner Tolland Town Manager- as Notification to Municipality
Tyler Millix, Executive Director, Tolland County Mutual Aid – as tower and property owner
Heidi Samokar, Director of Planning & Community Development – as Notification to Municipal Planning

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

AT&T Existing Facility

Site ID: CT5331

Tolland Central
130 Bald Hill Road
Tolland, CT 06084

August 4, 2016

EBI Project Number: 6216003498

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	15.53 %

21 B Street · Burlington, MA 01803 · Tel: (781) 273.2500 · Fax: (781) 273.3311

EBI Consulting
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August 4, 2016

AT&T Mobility – New England
Attn: Cameron Syme, RF Manager
550 Cochituate Road
Suite 550 – 13&14
Framingham, MA 06040

Emissions Analysis for Site: **CT5331 – Tolland Central**

EBI Consulting was directed to analyze the proposed AT&T facility located at **130 Bald Hill Road, Tolland, CT**, for the purpose of determining whether the emissions from the Proposed AT&T 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 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ 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 ($\mu W/cm^2$). The general population exposure limits for the 700 and 850 MHz Bands are approximately 467 $\mu W/cm^2$ and 567 $\mu W/cm^2$ respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) bands is 1000 $\mu W/cm^2$. 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 AT&T Wireless antenna facility located at **130 Bald Hill Road, Tolland, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of 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 (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

2) 2 UMTS channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

3) 2 GSM channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

4) 2 UMTS channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

5) 2 LTE channels (700 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

6) 2 LTE channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

7) 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.

8) For the following calculations the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

9) The antennas used in this modeling are the **Kathrein 800-10121, KMW AM-X-CD-16-65-00T-RET and the Powerwave P65-17-XLH-RR** for transmission in the 700 MHz, 850 MHz and 1900 MHz (PCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

10) The antenna mounting height centerlines of the proposed antennas are **90 feet** above ground level (AGL) for **Sector A**, **90 feet** above ground level (AGL) for **Sector B** and **90 feet** above ground level (AGL) for Sector C.

11) 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 calculations were done with respect to uncontrolled / general public threshold limits.

AT&T Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	Kathrein 800-10121	Make / Model:	Kathrein 800-10121	Make / Model:	Kathrein 800-10121
Gain:	11.45 / 11.45 dBd	Gain:	11.45 / 11.45 dBd11.45 / 11.45 dBd	Gain:	
Height (AGL):	**90 feet**	Height (AGL):	**90 feet**	Height (AGL):	**90 feet**
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	8	Channel Count	8	Channel Count	8
Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts
ERP (W):	4,942.88	ERP (W):	4,942.88	ERP (W):	4,942.88
Antenna A1 MPE%	**3.17 %**	Antenna B1 MPE%	**3.17 %**	Antenna C1 MPE%	**3.17 %**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	KMW AM-X-CD-16-65-00T-RET	Make / Model:	Powerwave P65-17-XLH-RR	Make / Model:	KMW AM-X-CD-16-65-00T-RET
Gain:	13.35 / 15.25 dBd	Gain:	13.35 / 15.25 dBd	Gain:	13.35 / 15.25 dBd
Height (AGL):	**90 feet**	Height (AGL):	**90 feet**	Height (AGL):	**90 feet**
Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts
ERP (W):	6,614.85	ERP (W):	7,112.97	ERP (W):	6,614.85
Antenna A2 MPE%	**4.88 %**	Antenna B2 MPE%	**5.50 %**	Antenna C2 MPE%	**4.88 %**

Site Composite MPE%	
Carrier	**MPE%**
AT&T – Max per sector	**8.67 %**
CT State Police	3.25 %
FBI	0.18 %
Sheriff	0.57 %
Tolland Police	1.46 %
Tolland Highway Patrol	1.40 %
Site Total MPE %:	**15.53 %**

AT&T Sector A Total:	8.05 %
AT&T Sector B Total:	8.67 %
AT&T Sector C Total:	8.05 %
Site Total:	15.53 %

AT&T _ Max Values (Sector B)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
AT&T 850 MHz GSM	2	418.91	90	4.27	850 MHz	567	0.75%
AT&T 850 MHz UMTS	2	418.91	90	4.27	850 MHz	567	0.75%
AT&T 1900 MHz (PCS) GSM	2	816.81	90	8.32	1900 MHz (PCS)	1000	0.83%
AT&T 1900 MHz (PCS) UMTS	2	816.81	90	8.32	1900 MHz (PCS)	1000	0.83%
AT&T 700 MHz LTE	2	1,614.92	90	16.46	700 MHz	467	3.52%
AT&T 1900 MHz (PCS) LTE	2	1,941.56	90	19.78	1900 MHz (PCS)	1000	1.98%
						Total*:	8.67 %

NOTE: Totals may vary by 0.01% due to summing of remainders

Summary

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

The anticipated maximum composite contributions from the AT&T facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general public exposure to RF Emissions are shown here:

AT&T Sector	Power Density Value (%)
Sector A:	8.05 %
Sector B:	8.67 %
Sector C:	8.05 %
AT&T Maximum Total (per sector):	8.67 %
Site Total:	15.53 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **15.53 %** 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 well within the allowable 100% threshold standard per the federal government.

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EMPiRE telecom

16 Esquire Road
Billerica, MA 01862

LTE 2C

Antenna Mount Analysis
REV 1

Site Name: *Tolland Central*
FA#: *10071279*
Site Number#: *CTL05331*

Site Address: *130 Blad Hill Road*
Tolland, CT 06084
Tolland County

Maser Project Number: *16963007A*

December 30, 2016

Analysis Type	*Antenna Mount*
Pass/Fail	*Pass*
Member Utilization	*47%*

Reviewed By:

STATE OF CONNECTICUT
FRANK E. PAZDEN
No. 28188
LICENSED
PROFESSIONAL ENGINEER

Frank E. Pazden, P.E.
Connecticut Professional Engineer
License No. PEN.28188

Prepared by:

Gowtham

Gowtham Penumatsa, E.I.T.
Structural Engineer

TABLE OF CONTENTS

1. OBJECTIVE

The objective of this report is to determine the capacity of the existing antenna support mounts at the subject facility for the final wireless telecommunications configuration, per the applicable codes and standards.

2. CODES, STANDARDS, AND LOADING:

Maser Consulting P.A. utilized the following codes and standards:

- 2016 Connecticut State Building Code (CSBC)
- Structural Standards for Antenna Supporting Structures and Antennas ANSI/TIA-222-G
    - o Basic Wind Speed – 100 mph (3 Second Gust)
    - o Exposure Category – B
    - o Structure Class – II
    - o Topographic Category – 1
    - o Ice Wind – 40 mph
    - o Ice Thickness – 1 in

3. INTRODUCTION

Maser Consulting P.A. has performed limited field observations on July 26, 2016 to verify the existing condition of the structure and to locate and quantify the existing wireless appurtenances where possible, from ground level. Maser Consulting P.A. has reviewed the following documents in completing this report:

- Antenna Mount Mapping prepared by Tower Engineering Professionals TEP#72497.94715, dated August 31, 2016.
- Previous Mount Analysis prepared by Maser Consulting P.A., dated September 02, 2016.
- RFDS 1118671 provided by Empire Telecom, dated June 28, 2016.

The existing **AT&T** equipment is supported on existing antenna support mounts constructed of structural steel antenna support pipes supported by pipes at a centerline of approximately 90’-8” above ground level. This report is based only upon this information, as well as the information obtained in the field.

4. ANALYSIS APPROACH AND ASSUMPTIONS

The analysis approach used in this structural analysis is based on the premise that if the existing antenna support mounts are structurally adequate to support the existing and proposed equipment per the aforementioned codes and standards, or if the increase in the forces in the structure is deemed to be negligible or acceptable, then the proposed equipment can be installed as intended. Risa-3D, a 3D finite element modeling and analysis program, was used to determine the capacity and usage of the existing antenna support mounts.

GENERAL DESIGN ASSUMPTIONS

The following assumptions were utilized in the report:

• All engineering services are performed on the basis that the information used is current and correct.

• It is assumed that the telecommunication equipment supports, antenna supports, and existing structure have been designed by a registered licensed professional engineer for the existing loads acting on the structure, as required by all applicable codes, prior to the proposed modifications listed within this report.

• It is assumed that information provided by the client regarding the structure itself, the antenna models, feed lines, and other relevant information is current and correct.

• It is the responsibility of the client to ensure that the information provided to Maser Consulting and used in the performance of our engineering services is correct and complete. In the absence of information to the contrary, we assume that the original design, material production, fabrication, and erection of the existing structure was performed in accordance with accepted industry design standards and in accordance with all applicable codes. Further, it is assumed that the existing structure and appurtenances have been properly maintained in accordance with all applicable codes and manufacturer's specifications and no structural defects and/or deterioration to the structural members has occurred.

• It is assumed all other existing appurtenances, antennas, cables, etc. belonging to others have been installed and supported per code and per specifications so as not to damage any existing structural support members, and that any contributing loads from adjacent equipment has been taken into consideration for their design.

• All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. Maser Consulting P.A. is not responsible for the conclusion, opinions, and recommendations made by others based on the information we supply.

SITE SPECIFIC DESIGN ASSUMPTIONS

The following assumptions were utilized in the calculations:

• Structural Steel Pipes are constructed of A53 Grade B Steel.

5. LOADING SUMMARY

Quantity	Manufacterer	Antenna/ Appurtenance	Status	Sector
3	Kathrein	80010121	Existing	Alpha, Beta, & Gamma
3	KMW	AM-X-CD-16-65-OOT-RET	Existing	Alpha, Beta, & Gamma
3	Ericsson	RRUS 11 B12	Existing	Alpha, Beta, & Gamma
3	Ericsson	RRUS 12	Proposed	Alpha, Beta, & Gamma
1	Raycap	DC6-48-60-18-8F	Existing	Beta
6	Powerwave	LGP 21401	Existing	Alpha, Beta, & Gamma
1	KRECU	CO-41AN	Existing	Alpha

The worst case loading occurs in the Alpha Sector

Quantity	Manufacterer	Antenna/ Appurtenance	Status
1	Kathrein	80010121	Existing
1	KMW	AM-X-CD-16-65-OOT-RET	Existing
1	Ericsson	RRUS 11 B12	Existing
1	Ericsson	RRUS 12	Proposed
2	Powerwave	LGP 21401	Existing
1	KRECU	CO-41AN	Existing

Note: The DC6 Squid is mounted to the tower main leg and is not considered in the mount analysis

6. CONCLUSION

Maser Consulting P.A. has determined the existing sector frames have **ADEQUATE** structural capacity to support the proposed and existing loading. The sector frames have been determined to be stressed to a maximum of **47.3%** of their structural capacity with the maximum usage occurring at the pipe supporting the standoff members. Therefore, the proposed **AT&T** installation **CAN** be installed as intended pending a passing structural analysis of the existing tower and its foundation.

Prior to the installation of the proposed equipment, the contractor shall verify that all bolted connections are properly fastened from the original installation. Additionally, the contractor shall inspect all existing hardware and verify that it is in its original condition and free of rust and deterioration. If any deficiencies are noted the contractor shall notify the engineer of the conditions prior to installation of any equipment for additional evaluation.

The conclusions reached by Maser Consulting P.A. in this evaluation are only applicable for the existing structural members supporting the existing and proposed **AT&T** telecommunications installation described herein. Further, no structural qualifications are made or implied by this document for the existing structure.

Maser Consulting P.A. reserves the right to amend this report if additional information about the existing members is provided. The conclusions reached by Maser Consulting P.A. in this report are only valid for the discrete and linear appurtenances listed in this report. Any change to the installation will require a revision to this structural analysis.

We appreciate the opportunity to be of service on this project. If you should have any questions or require any additional information, please do not hesitate to call our office.

ANALYSIS AND DESIGN

Client:	ATT	Computed By:	GP
Site Name:	Tolland Central	Date:	12/30/2016
Project No.	16963007A	Verified By:	FEP
Title:	Antenna Mount Analysis	Page:	8

I. DESIGN INPUTS

Calculations for gravity and lateral loading on equipment and support mounts are determined as per the ANSI/TIA-222-G Code, Addendum 2

				Reference	Equation
Wind Load Inputs Parameters					
Antenna Centerline	z	90.7	ft		
Normal Wind Speed (3 sec. Gust):	V	100	mph	Ref. 1, Eqn. 16-33	
Normal Wind Speed with Ice (3 sec. gust):	V_i	40.0	mph	(Figure a5-2a, p. 233)	
Service Wind Speed:	V_s	60.0	mph	(Figure a5-2a, p. 233)	
Design Ice Thickness:	t_i	1.00	in	(Figure A1-2a, p. 233)	
Exposure Category:		B		Ref. 3, Section 2.6.5.1	
Structure Class:		II		Ref. 3, Table 2-1	
Gust Effect Factor:	G_h	0.85		Ref. 3, Section 2.6.7	
Wind Directionality Factor:	K_d	0.85		Ref. 3, Table 2-2	
Topographic Category:		1		Ref. 3, Section 2.6.6.2	
Wind Load Coefficients					
Importance Factors:					
Non-Iced:	I	1		Ref. 3, Table 2-3	
Iced:	I_{ice}	1		(Table 2-3, P. 39)	
Exposure Category Coefficients:					
3-s Gust-Speed Power Law Exponent:	α	7.0		Ref. 3, Table 2-4	
Nominal Height of the Atmospheric Boundary Layer:	Z_g	1200	ft	Ref. 3, Table 2-4	
Min. Value for k_z:	Kz_{min}	0.70		Ref. 3, Table 2-4	
Terrain Constant:	K_e	0.90		Ref. 3, Table 2-4	
Velocity Pressure Exposure Coefficient:	K_z	0.961		Ref. 3, Section 2.6.5.2	$=2.01\cdot(z/z_g)^{2/\alpha}$
Topographic Category Coefficients:					
Topographic Constant:	K_t	N/A		Ref. 3, Table 2-5	
Height Attenuation Factor:	f	N/A		Ref. 3, Table 2-5	
Height Reduction Factor:	K_h	N/A		Ref. 3, Section 2.6.6.4	$=e^{(f\cdot z/H)}$
Topographic Factor:	K_{zt}	1.00		Ref.3, Section 2.6.6.4	$=[1+(K_e\cdot K_t/K_h)]^2$
Ice Accumulation:					
Ice Velocity Pressure Exposure Coefficient:	K_{iz}	1.11			$=(z/33)^{0.10}$
Factored Ice Thickness:	t_{iz}	2.21	in	(Section 2.6.8, p. 16)	$=2.0\cdot t_i\cdot I\cdot K_{iz}\cdot K_{zt}$
Ice Density:	ρ_i	56.00	pcf		
Design Wind Pressures:					
Velocity Pressure:	q_z	20.91	psf	Ref. 3, Section 2.6.9.6	$=0.00256\cdot K_z\cdot K_{zt}\cdot K_d\cdot V^2\cdot I$
Velocity Pressure (With Ice):	q_{zi}	3.35	psf	(Section 2.6.9.6, P. 25)	$=.00256\cdot K_z\cdot K_{zt}\cdot K_d\cdot V_i^2\cdot I$
Velocity Pressure (Service):	q_{zs}	7.53	psf	(Section 2.6.9.6, P. 25)	$=.00256\cdot K_z\cdot K_{zt}\cdot K_d\cdot VS^2\cdot I$

II. CALCULATIONS

- ***Wind Load on Appurtenances***

Dimensions and Force Coefficients

Antenna/ Appurtenance	Non-Iced Condition								Iced Condition							
	Mounting Pipe			Equipment					Mounting Pipe			Equipment				
	Length (in)	Diameter (in)	Force Coefficient C_a	Height (in)	Width (in)	Depth (in)	Force Coefficient $C_{a\ Front}$	Force Coefficient $C_{a\ Side}$	Length (in)	Diameter (in)	Force Coefficient C_a	Height (in)	Width (in)	Depth (in)	Force Coefficient $C_{a\ Front}$	Force Coefficient $C_{a\ Side}$
80010121	96.0	2.375	1.200	54.50	10.30	5.90	1.32	1.47	100.4	6.8	0.973	58.93	14.73	10.33	1.27	1.34
AM-X-CD-16-65-OOT-RET	96.0	2.375	1.200	72.00	11.80	5.90	1.36	1.57	100.4	6.8	0.973	76.43	16.23	10.33	1.30	1.41
RRUS 11 B12	54.0	2.375	1.150	19.70	17.00	7.20	1.20	1.21	58.4	6.8	0.835	24.13	21.43	11.63	1.20	1.20
RRUS 12	0.0	0.000	0.000	20.40	18.50	7.50	1.20	1.21	0.0	0.0	0.000	24.83	22.93	11.93	1.20	1.20
LGP 21401	0.0	0.000	0.000	9.90	6.70	5.40	1.20	1.20	0.0	0.0	0.000	14.33	11.13	9.83	1.20	1.20
CO-41AN	0.0	0.000	0.000	120.00	2.63	2.63	1.20	1.20	0.0	0.0	0.000	124.43	7.05	7.05	1.04	1.04

Antenna/ Appurtenance	# of Brackets	Non-Iced Condition				Iced Condition			
		Wind Force (lbs.)		Controlling Wind Force (lbs.)	Gravity (lbs.)	Wind Force (lbs.)		Controlling Wind Force (lbs.)	Gravity (lbs.)
		F_N	F_T			F_N	F_T		
80010121	2	53.2	46.2	**53.2**	**30.7**	14.2	14.6	**14.6**	**93.5**
AM-X-CD-16-65-OOT-RET	2	75.5	58.1	**75.5**	**31.8**	17.8	17.6	**17.8**	**132.6**
RRUS 11 B12	2	30.6	19.7	**30.6**	**25.0**	8.8	6.6	**8.8**	**56.2**
RRUS 12	2	28.0	11.4	**28.0**	**29.0**	6.7	3.5	**6.7**	**62.0**
LGP 21401	1	9.8	7.9	**9.8**	**20.0**	3.8	3.3	**3.8**	**34.9**
CO-41AN	2	23.3	23.3	**23.3**	**12.5**	9.0	9.0	**9.0**	**83.0**

**** ALL CALCULATED LOADS ARE PER MOUNTING BRACKET. TO GET THE TOTAL EQUIPMENT LOAD, MULTIPLY THE INDIVIDUAL LOADS BY THE NUMBER OF BRACKETS***

- ***Wind Load on Framing Members***

Member Category	Member Shape	Length (in)	Member Surface	Non-Iced Condition			Iced Condition					
				Exposed Wind Height (in)	Force Coefficient C_a	Wind Load (plf)	Exposed Wind Height (in)	Depth (in)	Length (in)	Force Coefficient C_a	Wind Load (plf)	Ice Weight (plf)
Pipe	Pipe 2.0	126	Round	2.38	1.20	4.22	6.80	6.80	130.43	1.07	1.73	12.40
Square HSS	HSS 3X3	25	Square	3.00	1.44	6.42	7.43	7.43	29.43	1.26	2.23	17.45
Pipe	Pipe 3.0	56.5	Round	3.50	1.00	5.20	7.93	7.93	60.93	0.82	1.53	15.44

BASIC EQUATIONS

ANSI/TIA-222-G Reference

Importance Factor:

$$I := \begin{cases} 1.0 & \text{if Class} = \text{"II"} \\ 1.15 & \text{if Class} = \text{"III"} \end{cases} \quad = 1$$

Table 2-3, Pg. 39

Force Coefficient:
(Square)

$$C_{f\_square}(h, w) := \begin{cases} 1.2 & \text{if } \frac{h}{w} \le 2.5 \\ \left[1.2 + \frac{0.2}{4.5} \cdot \left(\frac{h}{w} - 2.5\right)\right] & \text{if } \frac{h}{w} > 2.5 \wedge \frac{h}{w} \le 7 \\ \left[1.4 + \frac{0.6}{18} \cdot \left(\frac{h}{w} - 7\right)\right] & \text{if } \frac{h}{w} > 7 \wedge \frac{h}{w} \le 25 \\ 2.0 & \text{otherwise} \end{cases}$$

Table 2-8, P. 42

Force Coefficient:
(Round)

$$C_{f\_round}(h, w) := \begin{cases} 0.7 & \text{if } \frac{h}{w} \le 2.5 \\ \left[0.7 + \frac{0.1}{4.5} \cdot \left(\frac{h}{w} - 2.5\right)\right] & \text{if } \frac{h}{w} > 2.5 \wedge \frac{h}{w} \le 7 \\ \left[0.8 + \frac{0.4}{18} \cdot \left(\frac{h}{w} - 7\right)\right] & \text{if } \frac{h}{w} > 7 \wedge \frac{h}{w} \le 25 \\ 1.2 & \text{otherwise} \end{cases}$$

Table 2-8, P. 42

Terrain Exposure Constants:

Table 2-4, P. 40

$$\alpha := \begin{cases} 7.0 & \text{if Exp} = \text{"B"} \\ 9.5 & \text{if Exp} = \text{"C"} \\ 11.5 & \text{if Exp} = \text{"D"} \end{cases} \quad Z_g := \begin{cases} 1200\text{ft} & \text{if Exp} = \text{"B"} \\ 900\text{ft} & \text{if Exp} = \text{"C"} \\ 700\text{ft} & \text{if Exp} = \text{"D"} \end{cases} \quad K_{zmin} := \begin{cases} 0.70 & \text{if Exp} = \text{"B"} \\ 0.85 & \text{if Exp} = \text{"C"} \\ 1.03 & \text{if Exp} = \text{"D"} \end{cases}$$

BASIC EQUATIONS

ANSI/TIA-222-G Reference

Velocity Pressure Coefficient:

$$Kz(z) := \left| \begin{array}{l} K_z \leftarrow \max\left[2.01 \cdot \left(\frac{z}{Z_g} \right)^{\frac{2}{\alpha}}, K_{zmin} \right] \\ K_z \leftarrow \min\left(K_z, 2.01 \right) \end{array} \right.$$

$K_z := Kz(z)$ — Section 2.6.5, P. 13

$$Kzt(z) := K_{zt} \leftarrow \left| \begin{array}{l} 1.0 \text{ if Topo = "1"} \\ \text{otherwise} \\ \quad \left| \begin{array}{l} K_e \leftarrow \left| \begin{array}{l} 0.90 \text{ if Exp = "B"} \\ 1.00 \text{ if Exp = "C"} \\ 1.10 \text{ if Exp = "D"} \end{array} \right. \quad \text{Table 2-4 p. 40} \\ K_t \leftarrow \left| \begin{array}{l} 0.43 \text{ if Topo = "2"} \\ 0.53 \text{ if Topo = "3"} \\ 0.72 \text{ if Topo = "4"} \end{array} \right. \quad \text{Table 2-5 p. 40} \\ f \leftarrow \left| \begin{array}{l} 1.25 \text{ if Topo = "2"} \\ 2.00 \text{ if Topo = "3"} \\ 1.50 \text{ if Topo = "4"} \end{array} \right. \quad \text{Table 2-5 p. 40} \\ K_h \leftarrow e^{\left(\frac{f \cdot z}{CH} \right)} \quad \text{Section 2.6.6.4, P. 14} \\ \left(1 + \frac{K_e \cdot K_t}{K_h} \right)^2 \quad \text{Section 2.6.6.4, P. 14} \end{array} \right. \end{array} \right.$$

Section 2.6.6.4, p. 14

$K_{zt} := Kzt(z)$

Velocity Pressure: — Section 2.6.9.6, P. 25

$$q_z := 0.00256 \cdot K_z \cdot K_{zt} \cdot K_d \cdot V^2 \cdot I \cdot \text{psf}$$

LOAD EQUATIONS

WIND LOAD

Area (Normal): $AN_{area} = H_{ant} \cdot Want$

Area (Side): $AT_{area} = H_{ant} \cdot Dant$

Force Coefficient (Normal): $C_{fn} = C_{fsquare}(H_{ant}, Want)$

Force Coefficient (Side): $C_{fs} = C_{fsquare}(H_{ant}, Dant)$

Pipe Area (Normal): $AN_p = \max[(L_p - H_{ant}) * Dp, 0]$

Pipe Area (Side): $AT_p = L_p \cdot Dp$

Force Coefficient (Normal): $C_{fp} = C_{fround}(Lp, Dp)$

Normal Effective Projected Area: $E_{pan} = (C_{fn} \cdot ANarea) + (Cfp \cdot ANp)$

Side Effective Projected Area: $E_{pat} = (C_{fs} \cdot ATarea) + (Cfp \cdot ATp)$

Effective Projected Area: $EPA = max(E_{pan}, Epat)$

Wind Force: $F_{ant} = q_z \cdot Gh \cdot EPA$

ICE DEAD LOAD

Largest Out-to-Out Dimension: $D_{ant} = \sqrt{{D_{ant}}^2 + {W_{ant}}^2}$

Cross Sectional Area of Ice: $A_{ice\_ant} = \pi \cdot tiz \cdot (Dant + tiz)$

Total Ice Dead Load: $DL_{ice\_ant} = \boldsymbol{\rho_i} \cdot (Aice_{\_ant} \cdot Hant)$

ICE WIND LOAD

Dimensions: $H_{i_{ant}} = H_{ant} + 2tiz$

$W_{i_{ant}} = W_{ant} + 2tiz$

$D_{i_{ant}} = D_{ant} + 2tiz$

Area (Normal): $AIN_{area} = H_{i\_ant} \cdot W_{i\_ant}$

Area (Side): $AIT_{area} = H_{i\_ant} \cdot D_{i\_ant}$

Force Coefficient (Normal): $Ci_{fn} = C_{fsquare}(H_{i\_ant}, W_{i\_ant})$

Force Coefficient (Side): $Ci_{fs} = C_{fsquare}(H_{i\_ant}, D_{i\_ant})$

Pipe Area (Normal): $AN_p = \max[(L_{ip} - H_{i\_ant}) * D_{ip}, 0]$

Pipe Area (Side): $AT_p = L_{ip} \cdot Dip$

Force Coefficient (Normal): $C_{fp} = C_{fround}(L_{ip}, D_{ip})$

Normal Effective Projected Area: $E_{pain} = (Ci_{fn} \cdot ANarea) + (Cfp \cdot ANp)$

Side Effective Projected Area: $E_{pait} = (Ci_{fs} \cdot ATarea) + (Cfp \cdot ATp)$

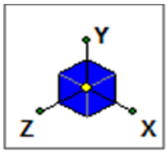
Effective Projected Area: $EPA_i = max(E_{pain}, Epait)$

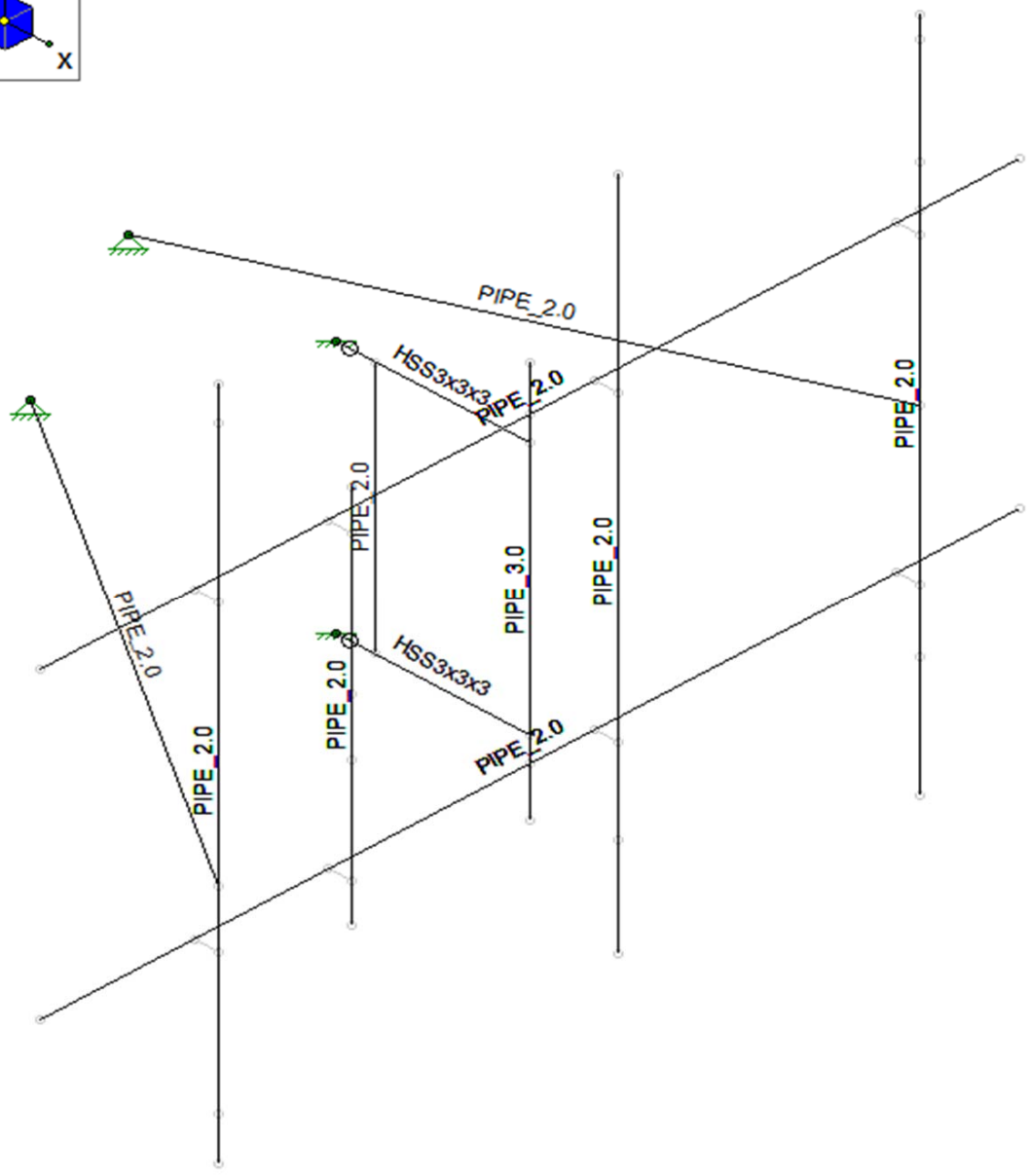
Wind Force: $F_{i\_ant} = q_z \cdot Gh \cdot EPAi$

III. ATTACHMENTS

Client:	ATT	Computed By:	GP
Site Name:	Tolland Central	Date:	12/30/2016
Project No.	16963007A	Verified By:	FEP
Title:	Antenna Mount Analysis	Page:	14

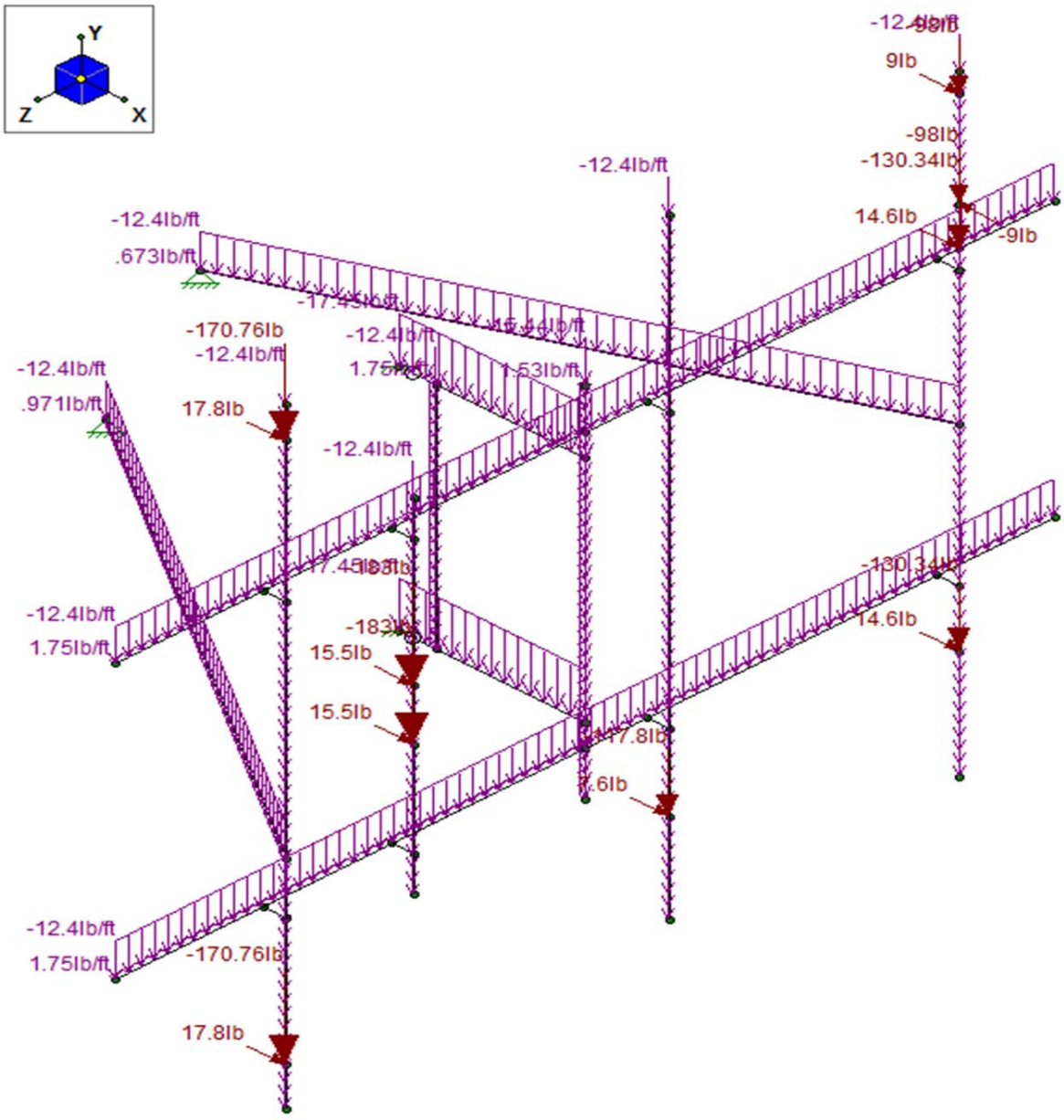
RISA MODEL





Client:	ATT	Computed By:	GP
Site Name:	Tolland Central	Date:	12/30/2016
Project No.	16963007A	Verified By:	FEP
Title:	Antenna Mount Analysis	Page:	15

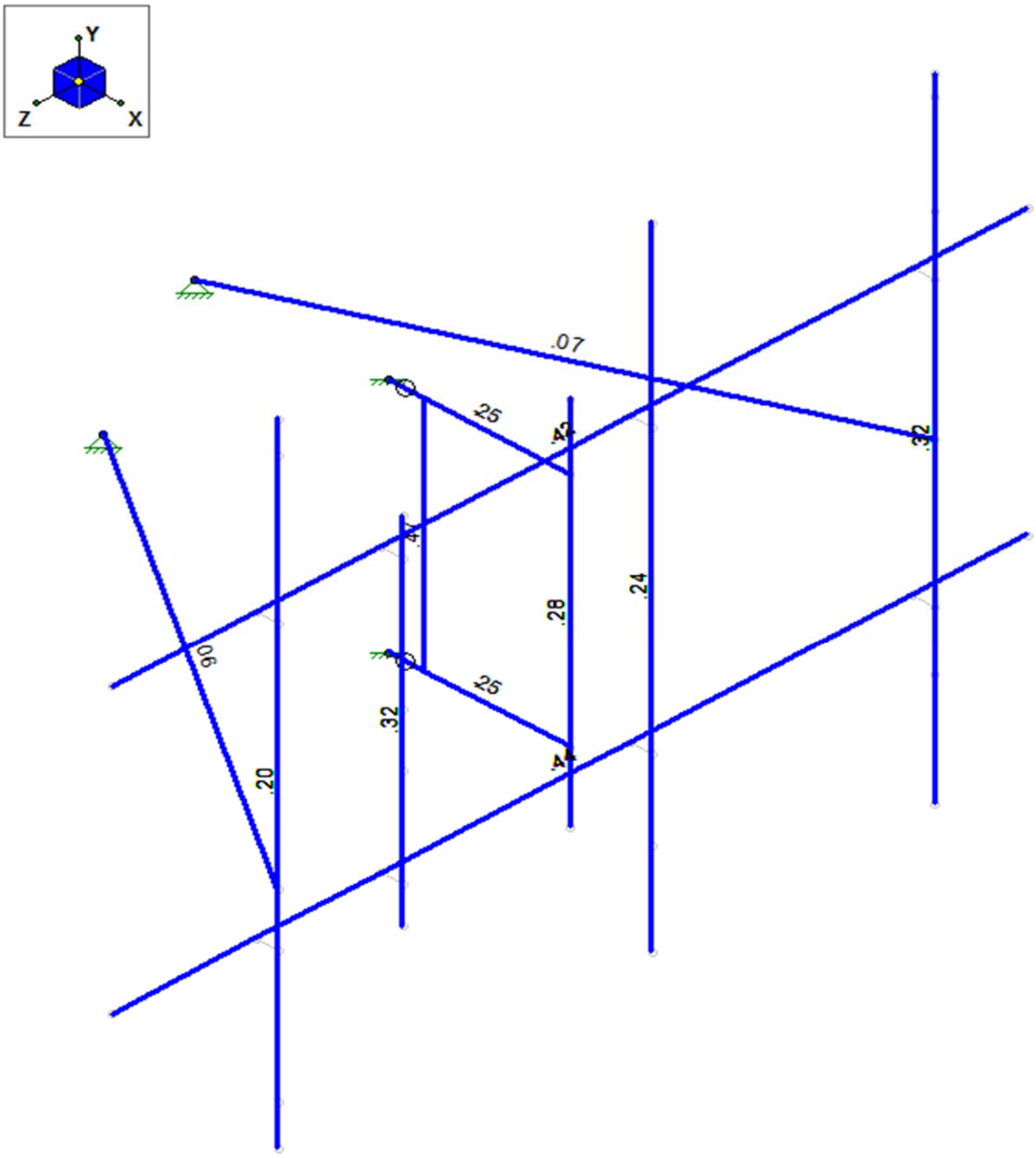
RISA WORST CASE LOADING



Loads: LC 21, 1.2D+1.0ICE+1.0W7ICE
Envelope Only Solution

Client:	ATT	Computed By:	GP
Site Name:	Tolland Central	Date:	12/30/2016
Project No.	16963007A	Verified By:	FEP
Title:	Antenna Mount Analysis	Page:	16

RISA CODE CHECK



MASER CONSULTING
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EMPiRE telecom

16 Esquire Road
Billerica, MA 01862

LTE 2C

Lattice Tower Analysis

Site Name:	*Tolland Central*
FA #:	*10071279*
Site Number:	*CTL05331*
Site Address:	*130 Bald Hill Road* *Tolland, CT 06084* *Tolland County*
Maser Project Number:	*16963007A*

December 30, 2016

Analysis Type	*Tower Feasibility*
Pass/Fail	*Pass*
Mount Utilization	*90.9 %*

Frank E. Pazden, P.E.
Connecticut Professional Engineer
PE License # 28188

Objective:

The objective of this report is to determine the capacity of the existing 180' lattice tower structure at the subject facility for the final wireless telecommunications configuration, per the applicable codes and standards.

Introduction:

Maser Consulting P.A. has performed limited field observations on July 26, 2016 to verify the existing condition of the structure and to locate and quantify the existing wireless appurtenances where possible. Maser Consulting P.A. has reviewed the following documents in completing this report:

- RFDS 1118671 provided by Empire Telecom, dated June 28, 2016 for LTE 2C scope of work.
- Rev Construction Drawings prepared by Maser Consulting Connecticut for LTE 2C Scope of Work
- Limited Visual Site Visit photos and notes prepared by Maser Consulting Connecticut on July 26, 2016.
- Tower Mapping Report prepared by Tower Engineering Professionals TEP#72497.94715 dated, August 30, 2016.
- Previous structural analysis report prepared by Maser Consulting P.A dated September 02, 2016

The existing **AT&T** equipment is supported on an existing 180' lattice tower structure. The main legs are constructed of pipes and the diagonals, horizontals are constructed of angle members. This report is based only upon this information, as well as the information obtained in the field.

Discrete and Linear Appurtenances:

Maser Consulting Connecticut understands the existing & proposed **AT&T** loading to be as follows:

- *(3) Kathrein 80010121 Antennas (Existing per Mount Mapping)*
- *(3) KMW AM-X-CD-16-65-OOD-RET Antennas (Existing per Mount Mapping)*
- *(3) Ericsson RRUS-11 B12 (Existing per Mount Mapping)*
- **(3) Ericsson RRUS-12 (***Proposed per RFDS***)**
- *(1) Raycap DC6 (Existing mounted to the tower leg)*
- *(6) Powerwave LGP21401 TMAs (Existing)*
- *(1) KRECU CO-41AN antenna (Existing per Mapping)*

Note: The overall antenna loading is found in the appendix A of this report.

Codes, Standards and Loading:

Maser Consulting Connecticut utilized the following codes and standards:

- 2016 CT State Building Code And All Subsequent Amendments
- Structural Standards for Antenna Supporting Structures and Antennas ANSI/TIA-222-G
    - Basic Wind Speed – 100 mph,
    - Exposure Category – B
    - Structure Class – II
    - Topographic Category – 1

Analysis Approach & Assumptions:

The analysis approach used in this structural analysis is based on the premise that if the existing lattice tower is structurally adequate to support the existing and proposed equipment per the aforementioned codes and standards, or if the increase in the forces in the structure are deemed to be negligible or acceptable, then the proposed equipment can be installed as intended. TNX, a 3D finite element modeling and analysis program, was used to determine the capacity and usage of the existing antenna support frame.

The following assumptions were utilized in this report:

- Structural Steel Pipes are constructed of A53 Grade B Steel.
- The existing tower is constructed to plumb and is properly maintained with no structural deficiencies and deteriorations.
- It is assumed that the telecommunication equipment supports, antenna supports, and existing structure have been designed by a registered licensed professional engineer for the existing loads acting on the structure, as required by all applicable codes, prior to the proposed modifications listed within this report.
- It is assumed that information provided by the client regarding the structure itself, the antenna models, feed lines, and other relevant information is current and correct.
- It is assumed all other existing appurtenances, antennas, cables, etc. belonging to others have been installed and supported per code and per specifications so as not to damage any existing structural support members, and that any contributing loads from adjacent equipment has been taken into consideration for their design.
- Proposed equipment and locations should not deviate from the proposed locations noted herein and shown on the associated Maser Consulting Connecticut final Construction Drawings.
- The Foundation analysis is not within the scope of this report.

Calculations:

The calculations are found in Appendix A of this report.

Conclusion:

The existing tower structure was analyzed for the loading in the applicable codes and standards. The tower structure has been determined to be structurally **ADEQUATE** to support the proposed and existing antennas, based upon the aforementioned assumptions.

The tower structure has been determined to be stressed to a maximum of **90.9%** of its structural capacity with the maximum usage occurring at the diagonal members within section height 120'-126.66'. The bolt connections are stressed to a maximum of **74.5%** of their capacity. Therefore, the proposed **AT&T** installation **CAN** be placed as intended pending a passing analysis of the existing foundation. Foundation analysis has not been done as part of this report and is not within the scope of this report.

Prior to the installation of the proposed equipment, the contractor shall verify that all bolted connections are properly fastened from the original installation. Additionally, the contractor shall inspect all existing hardware and verify that it is in its original condition and free of rust and deterioration. If any deficiencies are noted the contractor shall notify the engineer of the conditions prior to installation of any equipment for additional evaluation.

The conclusions reached by Maser Consulting Connecticut in this evaluation are only applicable for the existing structural members supporting the proposed **AT&T** telecommunications installation described herein. Further, no structural qualifications are made or implied by this document for the existing structure.

We appreciate the opportunity to be of service on this project. If you should have any questions or require any additional information, please do not hesitate to call our office.

Sincerely,
Maser Consulting Connecticut

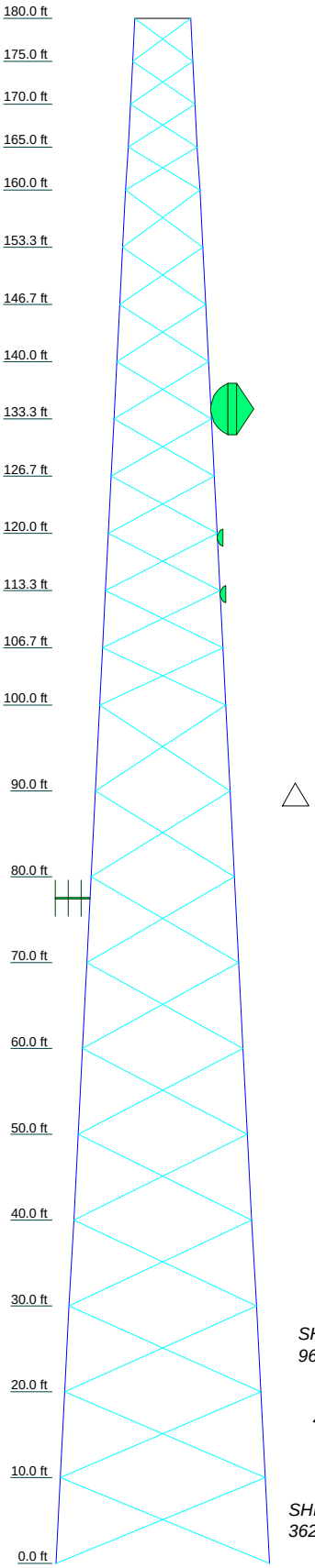
Frank Pazden, P.E.
Telecommunications Department Manager

Gowtham Penumatsa E.I.T
Structural Design Engineer

\\maserconsulting.com\UNM\AllOffices\MtLaurel\Projects\2016\16963000A\16963007A\Structural\Tower Structure Analysis\Rev 1\Word\

APPENDIX A

Section	T23	T22	T21	T20	T19	T18	T17	T16	T15	T14	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	ROHN 6 EH		P5x.375		P5.5x.375		ROHN 5 STD		ROHN 4 X-STR		ROHN 3 X-STR				ROHN 3 STD				ROHN 2.5 X-STR				
Leg Grade	A572-50																						
Diagonals	L4x4x5/16		L4x4x1/4		L3 1/2x3 1/2x1/4		L3x3x1/4		L3x3x3/16		L2 1/2x2 1/2x3/16				L2x2x3/16			L1 3/4x1 3/4x1/8			L1 1/2x1 1/2x1/8		
Diagonal Grade	A36																						
Top Girts	A																						
Face Width (ft)	23.7787	22.7659	21.753	20.7401	19.7273	18.7144	17.7015	16.6887	15.6758	14.6629	13.9877	13.3124	12.6372	11.962	11.2867	10.6115	9.93622	9.26098	8.58573	8.0793	7.57287	7.06643	6.56
# Panels @ (ft)	10 @ 10										9 @ 6.66667									4 @ 5			
Weight (lb)	2253.8	2205.8	1671.2	1632.9	1466.0	1433.3	1103.0	1075.8	917.8	897.8	521.4	509.7	498.0	374.0	364.9	356.0	272.1	267.0	262.1	195.9	192.5	189.3	220.2
18880.5																							



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
PD1142-1	182	2' Dia parabolic dish antenna	112.917
PD458-1	181	12' Omni	104.5
3' Side Arm Mount	180	4' Side Arm Mount	104.5
DB224	180	4' Side Arm Mount	99
PD455-5	180	16' omni	99
3' Side Arm Mount	180	LGP 21401 TMA	90.7
DB224	179.917 - 179.917	RET	90.7
3' Side Arm Mount	179.917	RET	90.7
3' Side Arm Mount	179	RET	90.7
DB201-A	177.167	Raycap DC6	90.7
PD220	163.25	Pirod 10' PCS Frame (1)	90.7
3' Side Arm Mount	163.25	Pirod 10' PCS Frame (1)	90.7
16' Omni	158.5	Pirod 10' PCS Frame (1)	90.7
3' Side Arm Mount	158.5	80010121	90.7
20' Omni	154.167	80010121	90.7
3' Side Arm Mount	154.167	80010121	90.7
DB420	144.917	LGP 21401 TMA	90.7
3' Side Arm Mount	144.917	LGP 21401 TMA	90.7
PD1142-1	138.75	kreuc	90.7
3' Side Arm Mount	138.75	RRUS 12	90
AO8410M-54T0	136.167	RRUS 11 B12	90
4' Side Arm Mount	136.167	RRUS 11 B12	90
Andrew 6' w/Radome	134.5	RRUS 11 B12	90
PD220	126.667	RRUS 12	90
4' Side Arm Mount	126.667	RRUS 12	90
PD1142-1	125.25	DB22	85.8167
4' Side Arm Mount	125.25	Yagi s4307-sf3s1f	77.5
4' Side Arm Mount	123.167	(2) Whip Antenna 4'X1.5" Dia	76.667
DB806-XC	123.167	Pirod 6' Side Mount Standoff (1)	73.75
2' Dia parabolic dish antenna	119.5		

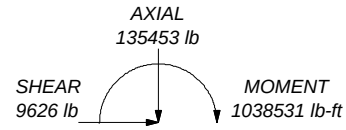
SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	L2x2x1/8		

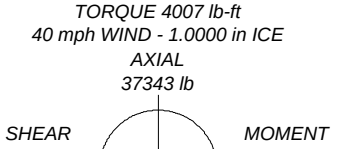
ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 164949 lb
SHEAR: 21922 lb

UPLIFT: -133080 lb
SHEAR: 18471 lb



TORQUE 4007 lb-ft
40 mph WIND - 1.0000 in ICE



TORQUE 10994 lb-ft
REACTIONS - 100 mph WIND

Maser Consulting P.A
400 Valley Road
Mt Arlington, NJ
Phone: 973.398.3110
FAX: 973.398.3199

Job: **16963007**		
Project: **Tower Analysis**		
Client: SmartLink	Drawn by: gpenumatsa	App'd:
Code: TIA-222-G	Date: 12/29/16	Scale: NTS
Path: C:\Users\gpenumatsa\Desktop\Othe survor jobs\Tolland Central\Final Shawn report\TNX 222G\Lattice Tower Analysis - Copy.eri		Dwg No. E-1

Section	T23	T22	T21	T20	T19	T18	T17	T16	T15	T14	T13	T12	T11	T10	T9	T8	T7	T6	T5	T4	T3	T2	T1
Legs	ROHN 6 EH		P5x.375		P5.5x.375		ROHN 5 STD		ROHN 4 X-STR		ROHN 3 X-STR				ROHN 3 STD				ROHN 2.5 X-STR				
Leg Grade	A572-50																						
Diagonals	L4x4x5/16		L4x4x1/4		L3 1/2x3 1/2x1/4		L3x3x1/4		L3x3x3/16		L2 1/2x2 1/2x3/16				L2x2x3/16				L1 3/4x1 3/4x1/8				L1 1/2x1 1/2x1/8
Diagonal Grade	A36																						
Top Girts	A								N.A.														
Face Width (ft)	23.7787	22.7659	21.753	20.7401	19.7273	18.7144	17.7015	16.6887	15.6758	14.6629	13.9877	13.3124	12.6372	11.962	11.2867	10.6115	9.93622	9.26098	8.58573	8.0793	7.57287	7.06643	6.56
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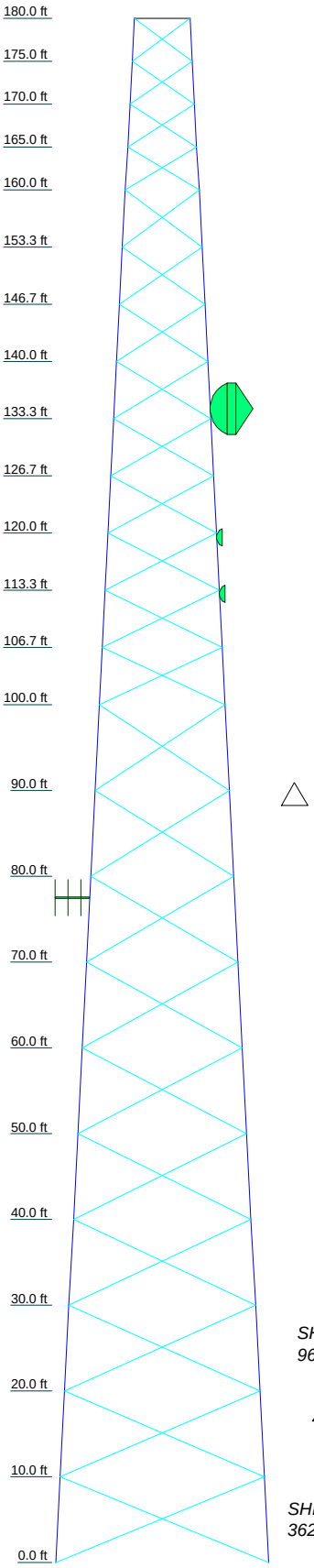
Weight (lb)	2253.8	2205.8	1671.2	1632.9	1466.0	1433.3	1103.0	1075.8	917.8	897.8	521.4	509.7	498.0	374.0	364.9	356.0	272.1	267.0	262.1	195.9	192.5	189.3	220.2
	18880.5																						



DESIGNED APPURTENANCE LOADING

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DB224	180	4' Side Arm Mount	99
PD455-5	180	16' omni	99
3' Side Arm Mount	180	LGP 21401 TMA	90.7
DB224	179.917 - 179.917	RET	90.7
3' Side Arm Mount	179.917	RET	90.7
3' Side Arm Mount	179	RET	90.7
DB201-A	177.167	Raycap DC6	90.7
PD220	163.25	Pirod 10' PCS Frame (1)	90.7
3' Side Arm Mount	163.25	Pirod 10' PCS Frame (1)	90.7
16' Omni	158.5	Pirod 10' PCS Frame (1)	90.7
3' Side Arm Mount	158.5	80010121	90.7
20' Omni	154.167	80010121	90.7
3' Side Arm Mount	154.167	80010121	90.7
DB420	144.917	LGP 21401 TMA	90.7
3' Side Arm Mount	144.917	LGP 21401 TMA	90.7
PD1142-1	138.75	kreuc	90.7
3' Side Arm Mount	138.75	RRUS 12	90
AO8410M-54T0	136.167	RRUS 11 B12	90
4' Side Arm Mount	136.167	RRUS 11 B12	90
Andrew 6' w/Radome	134.5	RRUS 11 B12	90
PD220	126.667	RRUS 12	90
4' Side Arm Mount	126.667	RRUS 12	90
PD1142-1	125.25	DB22	85.8167
4' Side Arm Mount	125.25	Yagi s4307-sf3s1f	77.5
4' Side Arm Mount	123.167	(2) Whip Antenna 4'X1.5" Dia	76.667
DB806-XC	123.167	Pirod 6' Side Mount Standoff (1)	73.75
2' Dia parabolic dish antenna	119.5		

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	L2x2x1/8		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

TOWER DESIGN NOTES

1. Tower designed for Exposure B to the TIA-222-G Standard.
2. Tower designed for a 100 mph basic wind in accordance with the TIA-222-G Standard.
3. Tower is also designed for a 40 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 60 mph wind.
5. Tower Structure Class II.
6. Topographic Category 1 with Crest Height of 0.00 ft
7. Weld together tower sections have flange connections.
8. Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications.
9. Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards.
10. Welds are fabricated with ER-70S-6 electrodes.

AXIAL
135453 lb

SHEAR
9626 lb

MOMENT
1038531 lb-ft

TORQUE 4007 lb-ft
40 mph WIND - 1.0000 in ICE

AXIAL
37343 lb

SHEAR
36209 lb

MOMENT
3274227 lb-ft

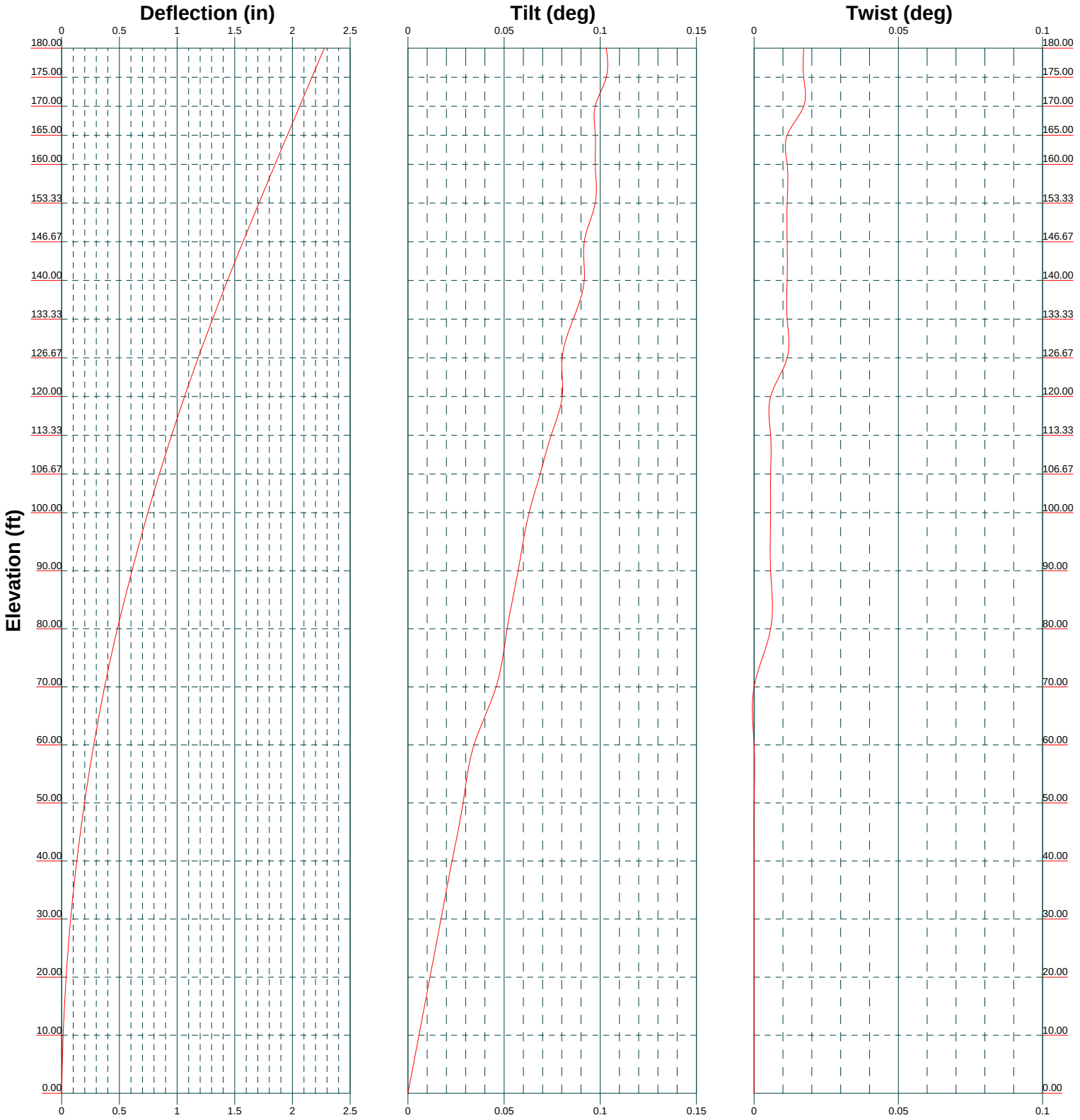
TORQUE 10994 lb-ft
REACTIONS - 100 mph WIND

Maser Consulting P.A
400 Valley Road
Mt Arlington, NJ
Phone: 973.398.3110
FAX: 973.398.3199

Job: **16963007**			
Project: **Tower Analysis**			
Client: SmartLink	Drawn by: gpenumatsa	App'd:	
Code: TIA-222-G	Date: 12/29/16	Scale: NTS	
Path: C:\Users\gpenumatsa\Desktop\Othe survor jobs\Tolland Central\Final Shawn report\TNX 222G\Lattice Tower Analysis - Copy.eri		Dwg No. E-1	

TIA-222-G - Service - 60 mph

Maximum Values



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Job: ***16963007***			
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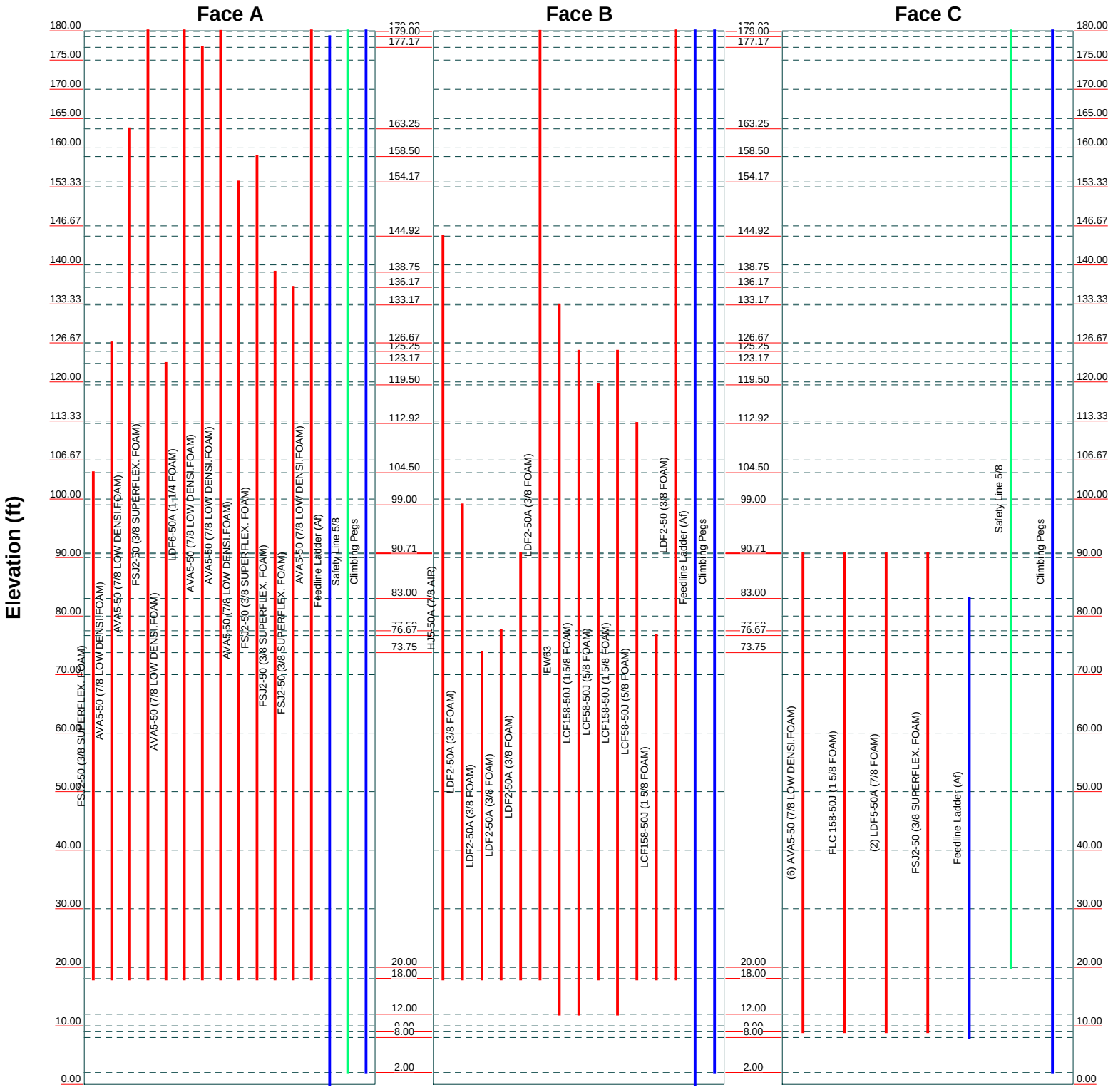
Client: SmartLink	Drawn by: gpenumatsa	App'd:	
Code: TIA-222-G	Date: 12/29/16	Scale: NTS	
Path: C:\Users\gpenumatsa\Desktop\Othe survor jobs\Tolland Central\Final Shawn report\TNX 222G\Lattice Tower Analysis - Copy.eri		Dwg No. E-5	

Feed Line Distribution Chart
0' - 180'

Round | Flat | App In Face | App Out Face | Truss Leg



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FAX: 973.398.3199

Job: **16963007**			
Project: **Tower Analysis**			
Client: SmartLink	Drawn by: gpenumatsa	App'd:	
Code: TIA-222-G	Date: 12/29/16	Scale: NTS	
Path: C:\Users\gpenumatsa\Desktop\Othe survor jobs\Tolland Central\Final Shawn report\TNX 222G\Lattice Tower Analysis - Copy.eri		Dwg No. E-7	

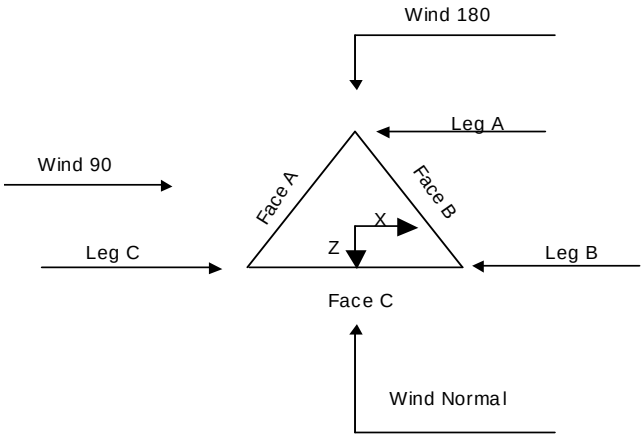
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 180.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 6.56 ft at the top and 24.79 ft at the base.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Basic wind speed of 100 mph.
Structure Class II.
Exposure Category B.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 1.0000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 40 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
Weld together tower sections have flange connections..
Connections use galvanized A325 bolts, nuts and locking devices. Installation per TIA/EIA-222 and AISC Specifications..
Tower members are "hot dipped" galvanized in accordance with ASTM A123 and ASTM A153 Standards..
Welds are fabricated with ER-70S-6 electrodes..
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs	Distribute Leg Loads As Uniform	Use ASCE 10 X-Brace Ly Rules
Consider Moments - Horizontals	√ Assume Legs Pinned	√ Calculate Redundant Bracing Forces
Consider Moments - Diagonals	√ Assume Rigid Index Plate	√ Ignore Redundant Members in FEA
Use Moment Magnification	√ Use Clear Spans For Wind Area	SR Leg Bolts Resist Compression
√ Use Code Stress Ratios	√ Use Clear Spans For KL/r	All Leg Panels Have Same Allowable
√ Use Code Safety Factors - Guys	Retension Guys To Initial Tension	Offset Girt At Foundation
Escalate Ice	Bypass Mast Stability Checks	√ Consider Feed Line Torque
Always Use Max Kz	Use Azimuth Dish Coefficients	Include Angle Block Shear Check
Use Special Wind Profile	√ Project Wind Area of Appurt.	Use TIA-222-G Bracing Resist. Exemption
Include Bolts In Member Capacity	Autocalc Torque Arm Areas	Use TIA-222-G Tension Splice Exemption
Leg Bolts Are At Top Of Section	Add IBC .6D+W Combination	Poles
√ Secondary Horizontal Braces Leg	√ Sort Capacity Reports By Component	Include Shear-Torsion Interaction
Use Diamond Inner Bracing (4 Sided)	Triangulate Diamond Inner Bracing	√ Always Use Sub-Critical Flow
SR Members Have Cut Ends	Treat Feed Line Bundles As Cylinder	Use Top Mounted Sockets
SR Members Are Concentric		



Triangular Tower

Tower Section Geometry

Tower Section	*Tower Elevation*	*Assembly Database*	*Description*	*Section Width*	*Number of Sections*	*Section Length*
	ft			*ft*		*ft*
T1	180.00-175.00			6.56	1	5.00
T2	175.00-170.00			7.07	1	5.00
T3	170.00-165.00			7.57	1	5.00
T4	165.00-160.00			8.08	1	5.00
T5	160.00-153.33			8.59	1	6.67
T6	153.33-146.67			9.26	1	6.67
T7	146.67-140.00			9.94	1	6.67
T8	140.00-133.33			10.61	1	6.67
T9	133.33-126.67			11.29	1	6.67
T10	126.67-120.00			11.96	1	6.67
T11	120.00-113.33			12.64	1	6.67
T12	113.33-106.67			13.31	1	6.67
T13	106.67-100.00			13.99	1	6.67
T14	100.00-90.00			14.66	1	10.00
T15	90.00-80.00			15.68	1	10.00
T16	80.00-70.00			16.69	1	10.00
T17	70.00-60.00			17.70	1	10.00
T18	60.00-50.00			18.71	1	10.00
T19	50.00-40.00			19.73	1	10.00
T20	40.00-30.00			20.74	1	10.00
T21	30.00-20.00			21.75	1	10.00
T22	20.00-10.00			22.77	1	10.00
T23	10.00-0.00			23.78	1	10.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	180.00-175.00	5.00	X Brace	No	No	0.0000	0.0000
T2	175.00-170.00	5.00	X Brace	No	No	0.0000	0.0000
T3	170.00-165.00	5.00	X Brace	No	No	0.0000	0.0000
T4	165.00-160.00	5.00	X Brace	No	No	0.0000	0.0000
T5	160.00-153.33	6.67	X Brace	No	No	0.0000	0.0000
T6	153.33-146.67	6.67	X Brace	No	No	0.0000	0.0000
T7	146.67-140.00	6.67	X Brace	No	No	0.0000	0.0000
T8	140.00-133.33	6.67	X Brace	No	No	0.0000	0.0000
T9	133.33-126.67	6.67	X Brace	No	No	0.0000	0.0000
T10	126.67-120.00	6.67	X Brace	No	No	0.0000	0.0000
T11	120.00-113.33	6.67	X Brace	No	No	0.0000	0.0000
T12	113.33-106.67	6.67	X Brace	No	No	0.0000	0.0000
T13	106.67-100.00	6.67	X Brace	No	No	0.0000	0.0000
T14	100.00-90.00	10.00	X Brace	No	No	0.0000	0.0000
T15	90.00-80.00	10.00	X Brace	No	No	0.0000	0.0000
T16	80.00-70.00	10.00	X Brace	No	No	0.0000	0.0000
T17	70.00-60.00	10.00	X Brace	No	No	0.0000	0.0000
T18	60.00-50.00	10.00	X Brace	No	No	0.0000	0.0000
T19	50.00-40.00	10.00	X Brace	No	No	0.0000	0.0000
T20	40.00-30.00	10.00	X Brace	No	No	0.0000	0.0000
T21	30.00-20.00	10.00	X Brace	No	No	0.0000	0.0000
T22	20.00-10.00	10.00	X Brace	No	No	0.0000	0.0000
T23	10.00-0.00	10.00	X Brace	No	No	0.0000	0.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 180.00-175.00	Pipe	ROHN 2.5 X-STR	A572-50 (50 ksi)	Equal Angle	L1 1/2x1 1/2x1/8	A36 (36 ksi)
T2 175.00-170.00	Pipe	ROHN 2.5 X-STR	A572-50 (50 ksi)	Equal Angle	L1 1/2x1 1/2x1/8	A36 (36 ksi)
T3 170.00-165.00	Pipe	ROHN 2.5 X-STR	A572-50 (50 ksi)	Equal Angle	L1 1/2x1 1/2x1/8	A36 (36 ksi)
T4 165.00-160.00	Pipe	ROHN 2.5 X-STR	A572-50 (50 ksi)	Equal Angle	L1 1/2x1 1/2x1/8	A36 (36 ksi)
T5 160.00-153.33	Pipe	ROHN 2.5 X-STR	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x1/8	A36 (36 ksi)
T6 153.33-146.67	Pipe	ROHN 2.5 X-STR	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x1/8	A36 (36 ksi)
T7 146.67-140.00	Pipe	ROHN 2.5 X-STR	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x1/8	A36 (36 ksi)
T8 140.00-133.33	Pipe	ROHN 3 STD	A572-50 (50 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T9 133.33-126.67	Pipe	ROHN 3 STD	A572-50 (50 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T10 126.67-120.00	Pipe	ROHN 3 STD	A572-50 (50 ksi)	Equal Angle	L2x2x3/16	A36 (36 ksi)
T11 120.00-113.33	Pipe	ROHN 3 X-STR	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T12	Pipe	ROHN 3 X-STR	A572-50	Equal Angle	L2 1/2x2 1/2x3/16	A36

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
113.33-106.67			(50 ksi)			(36 ksi)
T13 106.67-100.00	Pipe	ROHN 3 X-STR	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T14 100.00-90.00	Pipe	ROHN 4 X-STR	A572-50 (50 ksi)	Equal Angle	L3x3x3/16	A36 (36 ksi)
T15 90.00-80.00	Pipe	ROHN 4 X-STR	A572-50 (50 ksi)	Equal Angle	L3x3x3/16	A36 (36 ksi)
T16 80.00-70.00	Pipe	ROHN 5 STD	A572-50 (50 ksi)	Equal Angle	L3x3x1/4	A36 (36 ksi)
T17 70.00-60.00	Pipe	ROHN 5 STD	A572-50 (50 ksi)	Equal Angle	L3x3x1/4	A36 (36 ksi)
T18 60.00-50.00	Pipe	P5.5x.375	A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T19 50.00-40.00	Pipe	P5.5x.375	A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T20 40.00-30.00	Pipe	P5x.375	A572-50 (50 ksi)	Equal Angle	L4x4x1/4	A36 (36 ksi)
T21 30.00-20.00	Pipe	P5x.375	A572-50 (50 ksi)	Equal Angle	L4x4x1/4	A36 (36 ksi)
T22 20.00-10.00	Pipe	ROHN 6 EH	A572-50 (50 ksi)	Equal Angle	L4x4x5/16	A36 (36 ksi)
T23 10.00-0.00	Pipe	ROHN 6 EH	A572-50 (50 ksi)	Equal Angle	L4x4x5/16	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 180.00-175.00	Equal Angle	L2x2x1/8	A36 (36 ksi)	Solid Round		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T1 180.00-175.00	0.00	0.1875	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T2 175.00-170.00	0.00	0.1875	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T3 170.00-165.00	0.00	0.1875	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T4 165.00-160.00	0.00	0.1875	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T5 160.00-153.33	0.00	0.1875	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T6 153.33-146.67	0.00	0.1875	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000

Tower Elevation ft	Gusset Area (per face) ft²	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
T7 146.67-140.00	0.00	0.1875	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T8 140.00-133.33	0.00	0.1875	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T9 133.33-126.67	0.00	0.1875	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T10 126.67-120.00	0.00	0.1875	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T11 120.00-113.33	0.00	0.1875	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T12 113.33-106.67	0.00	0.1875	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T13 106.67-100.00	0.00	0.1875	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T14 100.00-90.00	0.00	0.2500	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T15 90.00-80.00	0.00	0.2500	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T16 80.00-70.00	0.00	0.2500	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T17 70.00-60.00	0.00	0.2500	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T18 60.00-50.00	0.00	0.2500	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T19 50.00-40.00	0.00	0.2500	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T20 40.00-30.00	0.00	0.2500	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T21 30.00-20.00	0.00	0.2500	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T22 20.00-10.00	0.00	0.3750	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T23 10.00-0.00	0.00	0.3750	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1 180.00-175.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T2 175.00-170.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T3 170.00-165.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T4 165.00-160.00	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T5 160.00-153.33	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1
T6 153.33-146.67	Yes	Yes	1	1 1	1 1	1 1	1 1	1 1	1 1	1 1

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T7	Yes	Yes	1	1	1	1	1	1	1	1
146.67-140.00				1	1	1	1	1	1	1
T8	Yes	Yes	1	1	1	1	1	1	1	1
140.00-133.33				1	1	1	1	1	1	1
T9	Yes	Yes	1	1	1	1	1	1	1	1
133.33-126.67				1	1	1	1	1	1	1
T10	Yes	Yes	1	1	1	1	1	1	1	1
126.67-120.00				1	1	1	1	1	1	1
T11	Yes	Yes	1	1	1	1	1	1	1	1
120.00-113.33				1	1	1	1	1	1	1
T12	Yes	Yes	1	1	1	1	1	1	1	1
113.33-106.67				1	1	1	1	1	1	1
T13	Yes	Yes	1	1	1	1	1	1	1	1
106.67-100.00				1	1	1	1	1	1	1
T14	Yes	Yes	1	1	1	1	1	1	1	1
100.00-90.00				1	1	1	1	1	1	1
T15	Yes	Yes	1	1	1	1	1	1	1	1
90.00-80.00				1	1	1	1	1	1	1
T16	Yes	Yes	1	1	1	1	1	1	1	1
80.00-70.00				1	1	1	1	1	1	1
T17	Yes	Yes	1	1	1	1	1	1	1	1
70.00-60.00				1	1	1	1	1	1	1
T18	Yes	Yes	1	1	1	1	1	1	1	1
60.00-50.00				1	1	1	1	1	1	1
T19	Yes	Yes	1	1	1	1	1	1	1	1
50.00-40.00				1	1	1	1	1	1	1
T20	Yes	Yes	1	1	1	1	1	1	1	1
40.00-30.00				1	1	1	1	1	1	1
T21	Yes	Yes	1	1	1	1	1	1	1	1
30.00-20.00				1	1	1	1	1	1	1
T22	Yes	Yes	1	1	1	1	1	1	1	1
20.00-10.00				1	1	1	1	1	1	1
T23	Yes	Yes	1	1	1	1	1	1	1	1
10.00-0.00				1	1	1	1	1	1	1

[1]*Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.*

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Net Width Deduct in	Leg U	Diagonal Net Width Deduct in	Diagonal U	Top Girt Net Width Deduct in	Top Girt U	Bottom Girt Net Width Deduct in	Bottom Girt U	Mid Girt Net Width Deduct in	Mid Girt U	Long Horizontal Net Width Deduct in	Long Horizontal U	Short Horizontal Net Width Deduct in	Short Horizontal U
T1	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
180.00-175.00														
T2	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
175.00-170.00														
T3	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
170.00-165.00														
T4	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
165.00-160.00														

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T5 160.00-153.33	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 153.33-146.67	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 146.67-140.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 140.00-133.33	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 133.33-126.67	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 126.67-120.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T11 120.00-113.33	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T12 113.33-106.67	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T13 106.67-100.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T14 100.00-90.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T15 90.00-80.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T16 80.00-70.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T17 70.00-60.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T18 60.00-50.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T19 50.00-40.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T20 40.00-30.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T21 30.00-20.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T22 20.00-10.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T23 10.00-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 180.00-175.00	Flange	0.6250 A325N	4	0.5000 A325N	1	0.5000 A325N	1	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 175.00-170.00	Flange	0.6250 A325N	0	0.5000 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 170.00-165.00	Flange	0.6250 A325N	0	0.5000 A325N	1	0.6250 A325N	0	0.0000 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T4	Flange	0.6250	0	0.5000	1	0.6250	0	0.0000	0	0.6250	0	0.6250	0	0.6250	0
165.00-160.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T5	Flange	0.7500	4	0.5000	1	0.0000	0	0.0000	0	0.6250	0	0.6250	0	0.6250	0
160.00-153.33		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T6	Flange	0.7500	0	0.5000	1	0.6250	0	0.0000	0	0.6250	0	0.6250	0	0.6250	0
153.33-146.67		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T7	Flange	0.7500	0	0.5000	1	0.6250	0	0.0000	0	0.6250	0	0.6250	0	0.6250	0
146.67-140.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T8	Flange	0.8750	4	0.5000	1	0.0000	0	0.0000	0	0.6250	0	0.6250	0	0.6250	0
140.00-133.33		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T9	Flange	0.8750	0	0.5000	1	0.6250	0	0.0000	0	0.6250	0	0.6250	0	0.6250	0
133.33-126.67		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T10	Flange	0.8750	0	0.5000	1	0.6250	0	0.0000	0	0.6250	0	0.6250	0	0.6250	0
126.67-120.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T11	Flange	0.8750	4	0.5000	1	0.0000	0	0.0000	0	0.6250	0	0.6250	0	0.6250	0
120.00-113.33		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T12	Flange	0.8750	0	0.5000	1	0.6250	0	0.0000	0	0.6250	0	0.6250	0	0.6250	0
113.33-106.67		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T13	Flange	0.8750	0	0.5000	1	0.6250	0	0.0000	0	0.6250	0	0.6250	0	0.6250	0
106.67-100.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T14	Flange	1.0000	4	0.6250	1	0.0000	0	0.0000	0	0.6250	0	0.6250	0	0.6250	0
100.00-90.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T15	Flange	1.0000	0	0.6250	1	0.6250	0	0.0000	0	0.6250	0	0.6250	0	0.6250	0
90.00-80.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T16	Flange	1.0000	4	0.6250	1	0.0000	0	0.0000	0	0.6250	0	0.6250	0	0.6250	0
80.00-70.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T17	Flange	1.0000	0	0.6250	1	0.6250	0	0.0000	0	0.6250	0	0.6250	0	0.6250	0
70.00-60.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T18	Flange	1.0000	4	0.6250	1	0.0000	0	0.0000	0	0.6250	0	0.6250	0	0.6250	0
60.00-50.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T19	Flange	1.0000	0	0.6250	1	0.6250	0	0.0000	0	0.6250	0	0.6250	0	0.6250	0
50.00-40.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T20	Flange	1.0000	6	0.6250	1	0.0000	0	0.0000	0	0.6250	0	0.6250	0	0.6250	0
40.00-30.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T21	Flange	1.0000	0	0.6250	1	0.6250	0	0.0000	0	0.6250	0	0.6250	0	0.6250	0
30.00-20.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T22	Flange	1.0000	6	0.7500	1	0.0000	0	0.0000	0	0.6250	0	0.6250	0	0.6250	0
20.00-10.00		A325N		A325N		A325N		A325N		A325N		A325N		A325N	
T23 10.00-0.00	Flange	1.0000	0	0.7500	1	0.6250	0	0.0000	0	0.6250	0	0.6250	0	0.6250	0
		A325N		A325N		A325N		A325N		A325N		A325N		A325N	

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
HJ5-50A (7/8 AIR)	B	No	Ar (CaAa)	144.92 - 18.00	1.0000	0.44	1	1	2.1100	2.1100		1.54
LDF2-50A (3/8 FOAM)	B	No	Ar (CaAa)	99.00 - 18.00	1.0000	0.42	1	1	0.4400	0.4400		0.08
LDF2-50A (3/8 FOAM)	B	No	Ar (CaAa)	73.75 - 18.00	1.0000	0.4	1	1	0.4400	0.4400		0.08
LDF2-50A (3/8 FOAM)	B	No	Ar (CaAa)	77.50 - 18.00	1.0000	0.38	1	1	0.4400	0.4400		0.08

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
LDF2-50A (3/8 FOAM)	B	No	Ar (CaAa)	90.70 - 18.00	1.0000	0.36	1	1	0.4400	0.4400		0.08
LDF2-50A (3/8 FOAM)	B	No	Ar (CaAa)	179.92 - 18.00	1.0000	0.34	1	1	0.4400	0.4400		0.08
EW63	B	No	Ar (CaAa)	133.17 - 12.00	1.0000	0.32	1	1	1.5742	1.5742		0.51
LCF158-50J (1 5/8 FOAM)	B	No	Ar (CaAa)	125.25 - 12.00	1.0000	0.3	1	1	2.0100	2.0100		0.92
LCF58-50J (5/8 FOAM)	B	No	Ar (CaAa)	119.50 - 18.00	1.0000	0.28	1	1	0.8400	0.8400		0.25
LCF158-50J (1 5/8 FOAM)	B	No	Ar (CaAa)	125.25 - 12.00	1.0000	0.26	1	1	2.0100	2.0100		0.92
LCF58-50J (5/8 FOAM)	B	No	Ar (CaAa)	112.92 - 18.00	1.0000	0.24	1	1	0.8400	0.8400		0.25
LCF158-50J (1 5/8 FOAM)	B	No	Ar (CaAa)	76.67 - 18.00	1.0000	0.22	1	1	2.0100	2.0100		0.92
LDF2-50 (3/8 FOAM)	B	No	Ar (CaAa)	180.00 - 18.00	1.0000	0.49	1	1	0.4400	0.4400		0.08
AVA5-50 (7/8 LOW DENSI.FOAM)	C	No	Ar (CaAa)	90.71 - 9.00	1.0000	0.3	6	6	1.1000	1.1000		0.30
FLC 158-50J (1 5/8 FOAM)	C	No	Ar (CaAa)	90.71 - 9.00	1.0000	0.32	1	1	2.0200	2.0200		0.92
LDF5-50A (7/8 FOAM)	C	No	Ar (CaAa)	90.71 - 9.00	1.0000	0.34	2	2	1.0900	1.0900		0.33
FSJ2-50 (3/8 SUPERFLEX. FOAM)	C	No	Ar (CaAa)	90.71 - 9.00	1.0000	0.36	1	1	0.4300	0.4300		0.08
FSJ2-50 (3/8 SUPERFLEX. FOAM)	A	No	Ar (CaAa)	104.50 - 18.00	1.0000	0.5	1	1	0.4300	0.4300		0.08
AVA5-50 (7/8 LOW DENSI.FOAM)	A	No	Ar (CaAa)	126.67 - 18.00	1.0000	0.48	1	1	1.1000	1.1000		0.30
AVA5-50 (7/8 LOW DENSI.FOAM)	A	No	Ar (CaAa)	163.25 - 18.00	1.0000	0.46	1	1	1.1000	1.1000		0.30
FSJ2-50 (3/8 SUPERFLEX. FOAM)	A	No	Ar (CaAa)	180.00 - 18.00	1.0000	0.44	1	1	0.4300	0.4300		0.08
AVA5-50 (7/8 LOW DENSI.FOAM)	A	No	Ar (CaAa)	123.17 - 18.00	1.0000	0.42	1	1	1.1000	1.1000		0.30
LDF6-50A (1-1/4 FOAM)	A	No	Ar (CaAa)	180.00 - 18.00	1.0000	0.4	1	1	1.5500	1.5500		0.66
AVA5-50 (7/8 LOW DENSI.FOAM)	A	No	Ar (CaAa)	177.17 - 18.00	1.0000	0.38	1	1	1.1000	1.1000		0.30
AVA5-50 (7/8 LOW DENSI.FOAM)	A	No	Ar (CaAa)	179.92 - 18.00	1.0000	0.36	1	1	1.1000	1.1000		0.30
AVA5-50 (7/8 LOW DENSI.FOAM)	A	No	Ar (CaAa)	154.17 - 18.00	1.0000	0.34	1	1	1.1000	1.1000		0.30
FSJ2-50 (3/8	A	No	Ar (CaAa)	158.50 - 18.00	1.0000	0.32	1	1	0.4300	0.4300		0.08

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
SUPERFLEX. FOAM) FSJ2-50 (3/8	A	No	Ar (CaAa)	138.75 - 18.00	1.0000	0.3	1	1	0.4300	0.4300		0.08
SUPERFLEX. FOAM) FSJ2-50 (3/8	A	No	Ar (CaAa)	136.17 - 18.00	1.0000	0.28	1	1	0.4300	0.4300		0.08
SUPERFLEX. FOAM) AVA5-50 (7/8 LOW DENSI.FOAM)	A	No	Ar (CaAa)	180.00 - 18.00	1.0000	0.26	1	1	1.1000	1.1000		0.30

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#		C_AA_A ft^2/ft	Weight plf
Feedline Ladder (Af)	B	No	CaAa (In Face)	180.00 - 0.00	1.0000	0.2	1	No Ice	0.50	8.40
								1/2" Ice	0.61	13.50
								1" Ice	0.72	18.60
Feedline Ladder (Af)	C	No	CaAa (In Face)	83.00 - 8.00	1.0000	0.4	1	No Ice	0.50	8.40
								1/2" Ice	0.61	13.50
								1" Ice	0.72	18.60
Feedline Ladder (Af)	A	No	CaAa (In Face)	179.00 - 0.00	1.0000	0.4	1	No Ice	0.50	8.40
								1/2" Ice	0.61	13.50
								1" Ice	0.72	18.60
Safety Line 5/8	A	No	CaAa (Out Of Face)	180.00 - 2.00	0.0000	0	1	No Ice	0.09	0.40
								1/2" Ice	0.19	1.24
								1" Ice	0.29	2.70
Safety Line 5/8	C	No	CaAa (Out Of Face)	180.00 - 20.00	0.0000	0	1	No Ice	0.09	0.40
								1/2" Ice	0.19	1.24
								1" Ice	0.29	2.70
Climbing Pegs	A	No	CaAa (In Face)	180.00 - 2.00	0.0000	0	1	No Ice	0.02	5.50
								1/2" Ice	0.05	6.00
								1" Ice	0.08	6.50
Climbing Pegs	C	No	CaAa (In Face)	180.00 - 2.00	0.0000	0	1	No Ice	0.02	5.50
								1/2" Ice	0.05	6.00
								1" Ice	0.08	6.50
Climbing Pegs	B	No	CaAa (In Face)	180.00 - 2.00	0.0000	0	1	No Ice	0.02	5.50
								1/2" Ice	0.05	6.00
								1" Ice	0.08	6.50

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T1	180.00-175.00	A	0.000	0.000	4.419	0.440	70.43
		B	0.000	0.000	3.036	0.000	70.29
		C	0.000	0.000	0.100	0.440	29.50
T2	175.00-170.00	A	0.000	0.000	5.240	0.440	79.70
		B	0.000	0.000	3.040	0.000	70.30
		C	0.000	0.000	0.100	0.440	29.50

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T3	170.00-165.00	A	0.000	0.000	5.240	0.440	79.70
		B	0.000	0.000	3.040	0.000	70.30
		C	0.000	0.000	0.100	0.440	29.50
T4	165.00-160.00	A	0.000	0.000	5.598	0.440	80.67
		B	0.000	0.000	3.040	0.000	70.30
		C	0.000	0.000	0.100	0.440	29.50
T5	160.00-153.33	A	0.000	0.000	8.034	0.587	108.93
		B	0.000	0.000	4.053	0.000	93.73
		C	0.000	0.000	0.133	0.587	39.33
T6	153.33-146.67	A	0.000	0.000	8.740	0.587	110.80
		B	0.000	0.000	4.053	0.000	93.73
		C	0.000	0.000	0.133	0.587	39.33
T7	146.67-140.00	A	0.000	0.000	8.740	0.587	110.80
		B	0.000	0.000	5.091	0.000	101.31
		C	0.000	0.000	0.133	0.587	39.33
T8	140.00-133.33	A	0.000	0.000	9.095	0.587	111.46
		B	0.000	0.000	5.460	0.000	104.00
		C	0.000	0.000	0.133	0.587	39.33
T9	133.33-126.67	A	0.000	0.000	9.313	0.587	111.87
		B	0.000	0.000	6.483	0.000	107.32
		C	0.000	0.000	0.133	0.587	39.33
T10	126.67-120.00	A	0.000	0.000	10.395	0.587	114.82
		B	0.000	0.000	8.620	0.000	117.06
		C	0.000	0.000	0.133	0.587	39.33
T11	120.00-113.33	A	0.000	0.000	10.780	0.587	115.87
		B	0.000	0.000	9.708	0.000	121.21
		C	0.000	0.000	0.133	0.587	39.33
T12	113.33-106.67	A	0.000	0.000	10.780	0.587	115.87
		B	0.000	0.000	10.275	0.000	122.90
		C	0.000	0.000	0.133	0.587	39.33
T13	106.67-100.00	A	0.000	0.000	10.974	0.587	116.23
		B	0.000	0.000	10.310	0.000	123.00
		C	0.000	0.000	0.133	0.587	39.33
T14	100.00-90.00	A	0.000	0.000	16.600	0.880	174.60
		B	0.000	0.000	15.891	0.000	185.28
		C	0.000	0.000	0.997	0.880	61.46
T15	90.00-80.00	A	0.000	0.000	16.600	0.880	174.60
		B	0.000	0.000	16.344	0.000	186.10
		C	0.000	0.000	12.930	0.880	118.80
T16	80.00-70.00	A	0.000	0.000	16.600	0.880	174.60
		B	0.000	0.000	18.179	0.000	193.13
		C	0.000	0.000	16.430	0.880	177.60
T17	70.00-60.00	A	0.000	0.000	16.600	0.880	174.60
		B	0.000	0.000	19.234	0.000	196.90
		C	0.000	0.000	16.430	0.880	177.60
T18	60.00-50.00	A	0.000	0.000	16.600	0.880	174.60
		B	0.000	0.000	19.234	0.000	196.90
		C	0.000	0.000	16.430	0.880	177.60
T19	50.00-40.00	A	0.000	0.000	16.600	0.880	174.60
		B	0.000	0.000	19.234	0.000	196.90
		C	0.000	0.000	16.430	0.880	177.60
T20	40.00-30.00	A	0.000	0.000	16.600	0.880	174.60
		B	0.000	0.000	19.234	0.000	196.90
		C	0.000	0.000	16.430	0.880	177.60
T21	30.00-20.00	A	0.000	0.000	16.600	0.880	174.60
		B	0.000	0.000	19.234	0.000	196.90
		C	0.000	0.000	16.430	0.880	177.60
T22	20.00-10.00	A	0.000	0.000	7.480	0.880	149.32
		B	0.000	0.000	11.363	0.000	164.68
		C	0.000	0.000	16.430	0.000	173.60
T23	10.00-0.00	A	0.000	0.000	5.160	0.704	131.20

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
		B	0.000	0.000	5.160	0.000	128.00
		C	0.000	0.000	2.283	0.000	64.26

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
T1	180.00-175.00	A	2.366	0.000	0.000	17.685	2.806	447.54
		B		0.000	0.000	11.069	0.000	283.28
		C		0.000	0.000	0.810	2.806	91.92
T2	175.00-170.00	A	2.360	0.000	0.000	20.368	2.800	508.33
		B		0.000	0.000	11.089	0.000	283.16
		C		0.000	0.000	0.808	2.800	91.60
T3	170.00-165.00	A	2.353	0.000	0.000	20.324	2.793	506.43
		B		0.000	0.000	11.066	0.000	282.33
		C		0.000	0.000	0.806	2.793	91.28
T4	165.00-160.00	A	2.346	0.000	0.000	22.160	2.786	537.54
		B		0.000	0.000	11.041	0.000	281.49
		C		0.000	0.000	0.804	2.786	90.94
T5	160.00-153.33	A	2.337	0.000	0.000	33.932	3.703	786.61
		B		0.000	0.000	14.683	0.000	373.96
		C		0.000	0.000	1.068	3.703	120.72
T6	153.33-146.67	A	2.327	0.000	0.000	37.939	3.689	852.52
		B		0.000	0.000	14.637	0.000	372.36
		C		0.000	0.000	1.064	3.689	120.08
T7	146.67-140.00	A	2.316	0.000	0.000	37.807	3.675	847.26
		B		0.000	0.000	17.904	0.000	439.86
		C		0.000	0.000	1.060	3.675	119.42
T8	140.00-133.33	A	2.305	0.000	0.000	41.827	3.661	906.02
		B		0.000	0.000	19.019	0.000	462.15
		C		0.000	0.000	1.056	3.661	118.73
T9	133.33-126.67	A	2.294	0.000	0.000	44.215	3.645	938.96
		B		0.000	0.000	22.957	0.000	533.49
		C		0.000	0.000	1.051	3.645	118.01
T10	126.67-120.00	A	2.282	0.000	0.000	49.601	3.629	1027.69
		B		0.000	0.000	29.875	0.000	667.53
		C		0.000	0.000	1.046	3.629	117.25
T11	120.00-113.33	A	2.269	0.000	0.000	51.357	3.612	1053.33
		B		0.000	0.000	34.929	0.000	754.10
		C		0.000	0.000	1.041	3.612	116.46
T12	113.33-106.67	A	2.256	0.000	0.000	51.119	3.595	1044.52
		B		0.000	0.000	38.394	0.000	807.97
		C		0.000	0.000	1.036	3.595	115.63
T13	106.67-100.00	A	2.242	0.000	0.000	53.078	3.576	1068.53
		B		0.000	0.000	38.440	0.000	805.28
		C		0.000	0.000	1.030	3.576	114.74
T14	100.00-90.00	A	2.223	0.000	0.000	80.674	5.326	1607.24
		B		0.000	0.000	62.047	0.000	1266.21
		C		0.000	0.000	4.731	5.326	217.51
T15	90.00-80.00	A	2.198	0.000	0.000	79.965	5.277	1581.72
		B		0.000	0.000	66.518	0.000	1322.15
		C		0.000	0.000	49.250	5.277	915.49
T16	80.00-70.00	A	2.171	0.000	0.000	79.177	5.222	1553.58
		B		0.000	0.000	75.509	0.000	1459.66
		C		0.000	0.000	55.801	5.222	1115.71
T17	70.00-60.00	A	2.140	0.000	0.000	78.288	5.161	1522.11
		B		0.000	0.000	80.922	0.000	1531.13

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight lb
		C		0.000	0.000	55.386	5.161	1098.25
T18	60.00-50.00	A	2.105	0.000	0.000	77.266	5.090	1486.31
		B		0.000	0.000	79.900	0.000	1497.17
		C		0.000	0.000	54.908	5.090	1078.30
T19	50.00-40.00	A	2.063	0.000	0.000	76.060	5.006	1444.61
		B		0.000	0.000	78.695	0.000	1457.64
		C		0.000	0.000	54.346	5.006	1054.93
T20	40.00-30.00	A	2.012	0.000	0.000	74.585	4.904	1394.30
		B		0.000	0.000	77.219	0.000	1409.99
		C		0.000	0.000	53.657	4.904	1026.54
T21	30.00-20.00	A	1.945	0.000	0.000	72.666	4.771	1332.16
		B		0.000	0.000	75.300	0.000	1349.28
		C		0.000	0.000	52.763	4.771	992.03
T22	20.00-10.00	A	1.848	0.000	0.000	22.308	4.577	579.53
		B		0.000	0.000	32.846	0.000	694.53
		C		0.000	0.000	51.462	0.000	876.02
T23	10.00-0.00	A	1.656	0.000	0.000	9.635	3.354	356.62
		B		0.000	0.000	9.635	0.000	310.17
		C		0.000	0.000	6.592	0.000	154.48

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	180.00-175.00	0.5346	-2.7611	0.0527	-2.5565
T2	175.00-170.00	0.5175	-3.5851	0.1613	-3.4386
T3	170.00-165.00	0.5520	-3.7950	0.1751	-3.6378
T4	165.00-160.00	0.5544	-4.2200	0.1581	-4.1320
T5	160.00-153.33	0.5342	-4.7275	0.0597	-4.9188
T6	153.33-146.67	0.4755	-5.2678	-0.0526	-5.5709
T7	146.67-140.00	1.1309	-5.0404	0.4760	-5.4551
T8	140.00-133.33	1.2630	-4.9510	0.5027	-5.8352
T9	133.33-126.67	1.7758	-4.9217	0.9482	-5.9291
T10	126.67-120.00	2.6444	-5.0973	1.7016	-6.3105
T11	120.00-113.33	2.9927	-4.9836	2.2485	-6.3255
T12	113.33-106.67	3.3165	-5.0680	2.7034	-6.3581
T13	106.67-100.00	3.4416	-5.3650	2.7921	-6.9028
T14	100.00-90.00	3.4385	-5.2249	3.2186	-6.9614
T15	90.00-80.00	0.4312	-2.0233	1.4323	-4.2714
T16	80.00-70.00	-0.0295	-1.1530	1.6443	-3.5911
T17	70.00-60.00	0.2526	-1.1268	2.1869	-3.5081
T18	60.00-50.00	0.2570	-1.1508	2.2608	-3.6332
T19	50.00-40.00	0.2674	-1.2013	2.3427	-3.7739
T20	40.00-30.00	0.2694	-1.2141	2.3926	-3.8671
T21	30.00-20.00	0.2788	-1.2604	2.4470	-3.9741
T22	20.00-10.00	-1.6359	1.2022	-0.3355	-0.3961
T23	10.00-0.00	1.1318	-3.5535	0.9010	-4.8142

Shielding Factor Ka

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	*K_a No Ice*	*K_a Ice*
T1	6	LDF2-50A (3/8 FOAM)	175.00 - 179.92	0.6000	0.5067
T1	13	LDF2-50 (3/8 FOAM)	175.00 - 180.00	0.6000	0.5067
T1	21	FSJ2-50 (3/8 SUPERFLEX. FOAM)	175.00 - 180.00	0.6000	0.5067
T1	23	LDF6-50A (1-1/4 FOAM)	175.00 - 180.00	0.6000	0.5067
T1	24	AVA5-50 (7/8 LOW DENSI.FOAM)	175.00 - 177.17	0.6000	0.5067
T1	25	AVA5-50 (7/8 LOW DENSI.FOAM)	175.00 - 179.92	0.6000	0.5067
T1	30	AVA5-50 (7/8 LOW DENSI.FOAM)	175.00 - 180.00	0.6000	0.5067
T1	31	Feedline Ladder (Af)	175.00 - 180.00	0.6000	0.5067
T1	33	Feedline Ladder (Af)	175.00 - 179.00	0.6000	0.5067
T1	36	Climbing Pegs	175.00 - 180.00	0.6000	0.5067
T1	37	Climbing Pegs	175.00 - 180.00	0.6000	0.5067
T1	38	Climbing Pegs	175.00 - 180.00	0.6000	0.5067
T2	6	LDF2-50A (3/8 FOAM)	170.00 - 175.00	0.6000	0.6000
T2	13	LDF2-50 (3/8 FOAM)	170.00 - 175.00	0.6000	0.6000
T2	21	FSJ2-50 (3/8 SUPERFLEX. FOAM)	170.00 - 175.00	0.6000	0.6000
T2	23	LDF6-50A (1-1/4 FOAM)	170.00 - 175.00	0.6000	0.6000
T2	24	AVA5-50 (7/8 LOW DENSI.FOAM)	170.00 - 175.00	0.6000	0.6000
T2	25	AVA5-50 (7/8 LOW DENSI.FOAM)	170.00 - 175.00	0.6000	0.6000
T2	30	AVA5-50 (7/8 LOW DENSI.FOAM)	170.00 - 175.00	0.6000	0.6000
T2	31	Feedline Ladder (Af)	170.00 - 175.00	0.6000	0.6000
T2	33	Feedline Ladder (Af)	170.00 - 175.00	0.6000	0.6000
T2	36	Climbing Pegs	170.00 - 175.00	0.6000	0.6000
T2	37	Climbing Pegs	170.00 - 175.00	0.6000	0.6000
T2	38	Climbing Pegs	170.00 - 175.00	0.6000	0.6000
T3	6	LDF2-50A (3/8 FOAM)	165.00 - 170.00	0.6000	0.6000
T3	13	LDF2-50 (3/8 FOAM)	165.00 - 170.00	0.6000	0.6000
T3	21	FSJ2-50 (3/8 SUPERFLEX. FOAM)	165.00 - 170.00	0.6000	0.6000
T3	23	LDF6-50A (1-1/4 FOAM)	165.00 - 170.00	0.6000	0.6000
T3	24	AVA5-50 (7/8 LOW DENSI.FOAM)	165.00 - 170.00	0.6000	0.6000
T3	25	AVA5-50 (7/8 LOW DENSI.FOAM)	165.00 - 170.00	0.6000	0.6000
T3	30	AVA5-50 (7/8 LOW DENSI.FOAM)	165.00 - 170.00	0.6000	0.6000

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	*K_a No Ice*	*K_a Ice*
T3	31	Feedline Ladder (Af)	165.00 - 170.00	0.6000	0.6000
T3	33	Feedline Ladder (Af)	165.00 - 170.00	0.6000	0.6000
T3	36	Climbing Pegs	165.00 - 170.00	0.6000	0.6000
T3	37	Climbing Pegs	165.00 - 170.00	0.6000	0.6000
T3	38	Climbing Pegs	165.00 - 170.00	0.6000	0.6000
T4	6	LDF2-50A (3/8 FOAM)	160.00 - 165.00	0.6000	0.6000
T4	13	LDF2-50 (3/8 FOAM)	160.00 - 165.00	0.6000	0.6000
T4	20	AVA5-50 (7/8 LOW DENSI.FOAM)	160.00 - 163.25	0.6000	0.6000
T4	21	FSJ2-50 (3/8 SUPERFLEX. FOAM)	160.00 - 165.00	0.6000	0.6000
T4	23	LDF6-50A (1-1/4 FOAM)	160.00 - 165.00	0.6000	0.6000
T4	24	AVA5-50 (7/8 LOW DENSI.FOAM)	160.00 - 165.00	0.6000	0.6000
T4	25	AVA5-50 (7/8 LOW DENSI.FOAM)	160.00 - 165.00	0.6000	0.6000
T4	30	AVA5-50 (7/8 LOW DENSI.FOAM)	160.00 - 165.00	0.6000	0.6000
T4	31	Feedline Ladder (Af)	160.00 - 165.00	0.6000	0.6000
T4	33	Feedline Ladder (Af)	160.00 - 165.00	0.6000	0.6000
T4	36	Climbing Pegs	160.00 - 165.00	0.6000	0.6000
T4	37	Climbing Pegs	160.00 - 165.00	0.6000	0.6000
T4	38	Climbing Pegs	160.00 - 165.00	0.6000	0.6000
T5	6	LDF2-50A (3/8 FOAM)	153.33 - 160.00	0.6000	0.6000
T5	13	LDF2-50 (3/8 FOAM)	153.33 - 160.00	0.6000	0.6000
T5	20	AVA5-50 (7/8 LOW DENSI.FOAM)	153.33 - 160.00	0.6000	0.6000
T5	21	FSJ2-50 (3/8 SUPERFLEX. FOAM)	153.33 - 160.00	0.6000	0.6000
T5	23	LDF6-50A (1-1/4 FOAM)	153.33 - 160.00	0.6000	0.6000
T5	24	AVA5-50 (7/8 LOW DENSI.FOAM)	153.33 - 160.00	0.6000	0.6000
T5	25	AVA5-50 (7/8 LOW DENSI.FOAM)	153.33 - 160.00	0.6000	0.6000
T5	26	AVA5-50 (7/8 LOW DENSI.FOAM)	153.33 - 154.17	0.6000	0.6000
T5	27	FSJ2-50 (3/8 SUPERFLEX. FOAM)	153.33 - 158.50	0.6000	0.6000
T5	30	AVA5-50 (7/8 LOW DENSI.FOAM)	153.33 - 160.00	0.6000	0.6000
T5	31	Feedline Ladder (Af)	153.33 - 160.00	0.6000	0.6000
T5	33	Feedline Ladder (Af)	153.33 - 160.00	0.6000	0.6000
T5	36	Climbing Pegs	153.33 - 160.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T5	37	Climbing Pegs	153.33 - 160.00	0.6000	0.6000
T5	38	Climbing Pegs	153.33 - 160.00	0.6000	0.6000
T6	6	LDF2-50A (3/8 FOAM)	146.67 - 153.33	0.6000	0.6000
T6	13	LDF2-50 (3/8 FOAM)	146.67 - 153.33	0.6000	0.6000
T6	20	AVA5-50 (7/8 LOW DENSI.FOAM)	146.67 - 153.33	0.6000	0.6000
T6	21	FSJ2-50 (3/8 SUPERFLEX. FOAM)	146.67 - 153.33	0.6000	0.6000
T6	23	LDF6-50A (1-1/4 FOAM)	146.67 - 153.33	0.6000	0.6000
T6	24	AVA5-50 (7/8 LOW DENSI.FOAM)	146.67 - 153.33	0.6000	0.6000
T6	25	AVA5-50 (7/8 LOW DENSI.FOAM)	146.67 - 153.33	0.6000	0.6000
T6	26	AVA5-50 (7/8 LOW DENSI.FOAM)	146.67 - 153.33	0.6000	0.6000
T6	27	FSJ2-50 (3/8 SUPERFLEX. FOAM)	146.67 - 153.33	0.6000	0.6000
T6	30	AVA5-50 (7/8 LOW DENSI.FOAM)	146.67 - 153.33	0.6000	0.6000
T6	31	Feedline Ladder (Af)	146.67 - 153.33	0.6000	0.6000
T6	33	Feedline Ladder (Af)	146.67 - 153.33	0.6000	0.6000
T6	36	Climbing Pegs	146.67 - 153.33	0.6000	0.6000
T6	37	Climbing Pegs	146.67 - 153.33	0.6000	0.6000
T6	38	Climbing Pegs	146.67 - 153.33	0.6000	0.6000
T7	1	HJ5-50A (7/8 AIR)	140.00 - 144.92	0.6000	0.6000
T7	6	LDF2-50A (3/8 FOAM)	140.00 - 146.67	0.6000	0.6000
T7	13	LDF2-50 (3/8 FOAM)	140.00 - 146.67	0.6000	0.6000
T7	20	AVA5-50 (7/8 LOW DENSI.FOAM)	140.00 - 146.67	0.6000	0.6000
T7	21	FSJ2-50 (3/8 SUPERFLEX. FOAM)	140.00 - 146.67	0.6000	0.6000
T7	23	LDF6-50A (1-1/4 FOAM)	140.00 - 146.67	0.6000	0.6000
T7	24	AVA5-50 (7/8 LOW DENSI.FOAM)	140.00 - 146.67	0.6000	0.6000
T7	25	AVA5-50 (7/8 LOW DENSI.FOAM)	140.00 - 146.67	0.6000	0.6000
T7	26	AVA5-50 (7/8 LOW DENSI.FOAM)	140.00 - 146.67	0.6000	0.6000
T7	27	FSJ2-50 (3/8 SUPERFLEX. FOAM)	140.00 - 146.67	0.6000	0.6000
T7	30	AVA5-50 (7/8 LOW DENSI.FOAM)	140.00 - 146.67	0.6000	0.6000
T7	31	Feedline Ladder (Af)	140.00 - 146.67	0.6000	0.6000
T7	33	Feedline Ladder (Af)	140.00 - 146.67	0.6000	0.6000
T7	36	Climbing Pegs	140.00 - 146.67	0.6000	0.6000

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	*K_a No Ice*	*K_a Ice*
T7	37	Climbing Pegs	140.00 - 146.67	0.6000	0.6000
T7	38	Climbing Pegs	140.00 - 146.67	0.6000	0.6000
T8	1	HJ5-50A (7/8 AIR)	133.33 - 140.00	0.6000	0.6000
T8	6	LDF2-50A (3/8 FOAM)	133.33 - 140.00	0.6000	0.6000
T8	13	LDF2-50 (3/8 FOAM)	133.33 - 140.00	0.6000	0.6000
T8	20	AVA5-50 (7/8 LOW DENSI.FOAM)	133.33 - 140.00	0.6000	0.6000
T8	21	FSJ2-50 (3/8 SUPERFLEX. FOAM)	133.33 - 140.00	0.6000	0.6000
T8	23	LDF6-50A (1-1/4 FOAM)	133.33 - 140.00	0.6000	0.6000
T8	24	AVA5-50 (7/8 LOW DENSI.FOAM)	133.33 - 140.00	0.6000	0.6000
T8	25	AVA5-50 (7/8 LOW DENSI.FOAM)	133.33 - 140.00	0.6000	0.6000
T8	26	AVA5-50 (7/8 LOW DENSI.FOAM)	133.33 - 140.00	0.6000	0.6000
T8	27	FSJ2-50 (3/8 SUPERFLEX. FOAM)	133.33 - 140.00	0.6000	0.6000
T8	28	FSJ2-50 (3/8 SUPERFLEX. FOAM)	133.33 - 138.75	0.6000	0.6000
T8	29	FSJ2-50 (3/8 SUPERFLEX. FOAM)	133.33 - 136.17	0.6000	0.6000
T8	30	AVA5-50 (7/8 LOW DENSI.FOAM)	133.33 - 140.00	0.6000	0.6000
T8	31	Feedline Ladder (Af)	133.33 - 140.00	0.6000	0.6000
T8	33	Feedline Ladder (Af)	133.33 - 140.00	0.6000	0.6000
T8	36	Climbing Pegs	133.33 - 140.00	0.6000	0.6000
T8	37	Climbing Pegs	133.33 - 140.00	0.6000	0.6000
T8	38	Climbing Pegs	133.33 - 140.00	0.6000	0.6000
T9	1	HJ5-50A (7/8 AIR)	126.67 - 133.33	0.6000	0.6000
T9	6	LDF2-50A (3/8 FOAM)	126.67 - 133.33	0.6000	0.6000
T9	7	EW63	126.67 - 133.17	0.6000	0.6000
T9	13	LDF2-50 (3/8 FOAM)	126.67 - 133.33	0.6000	0.6000
T9	19	AVA5-50 (7/8 LOW DENSI.FOAM)	126.67 - 126.67	0.6000	0.6000
T9	20	AVA5-50 (7/8 LOW DENSI.FOAM)	126.67 - 133.33	0.6000	0.6000
T9	21	FSJ2-50 (3/8 SUPERFLEX. FOAM)	126.67 - 133.33	0.6000	0.6000
T9	23	LDF6-50A (1-1/4 FOAM)	126.67 - 133.33	0.6000	0.6000
T9	24	AVA5-50 (7/8 LOW DENSI.FOAM)	126.67 - 133.33	0.6000	0.6000
T9	25	AVA5-50 (7/8 LOW DENSI.FOAM)	126.67 - 133.33	0.6000	0.6000
T9	26	AVA5-50 (7/8 LOW DENSI.FOAM)	126.67 - 133.33	0.6000	0.6000

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	*K_a No Ice*	*K_a Ice*
T9	27	FSJ2-50 (3/8 SUPERFLEX. FOAM)	126.67 - 133.33	0.6000	0.6000
T9	28	FSJ2-50 (3/8 SUPERFLEX. FOAM)	126.67 - 133.33	0.6000	0.6000
T9	29	FSJ2-50 (3/8 SUPERFLEX. FOAM)	126.67 - 133.33	0.6000	0.6000
T9	30	AVA5-50 (7/8 LOW DENSI.FOAM)	126.67 - 133.33	0.6000	0.6000
T9	31	Feedline Ladder (Af)	126.67 - 133.33	0.6000	0.6000
T9	33	Feedline Ladder (Af)	126.67 - 133.33	0.6000	0.6000
T9	36	Climbing Pegs	126.67 - 133.33	0.6000	0.6000
T9	37	Climbing Pegs	126.67 - 133.33	0.6000	0.6000
T9	38	Climbing Pegs	126.67 - 133.33	0.6000	0.6000
T10	1	HJ5-50A (7/8 AIR)	120.00 - 126.67	0.6000	0.6000
T10	6	LDF2-50A (3/8 FOAM)	120.00 - 126.67	0.6000	0.6000
T10	7	EW63	120.00 - 126.67	0.6000	0.6000
T10	8	LCF158-50J (1 5/8 FOAM)	120.00 - 125.25	0.6000	0.6000
T10	10	LCF158-50J (1 5/8 FOAM)	120.00 - 125.25	0.6000	0.6000
T10	13	LDF2-50 (3/8 FOAM)	120.00 - 126.67	0.6000	0.6000
T10	19	AVA5-50 (7/8 LOW DENSI.FOAM)	120.00 - 126.67	0.6000	0.6000
T10	20	AVA5-50 (7/8 LOW DENSI.FOAM)	120.00 - 126.67	0.6000	0.6000
T10	21	FSJ2-50 (3/8 SUPERFLEX. FOAM)	120.00 - 126.67	0.6000	0.6000
T10	22	AVA5-50 (7/8 LOW DENSI.FOAM)	120.00 - 123.17	0.6000	0.6000
T10	23	LDF6-50A (1-1/4 FOAM)	120.00 - 126.67	0.6000	0.6000
T10	24	AVA5-50 (7/8 LOW DENSI.FOAM)	120.00 - 126.67	0.6000	0.6000
T10	25	AVA5-50 (7/8 LOW DENSI.FOAM)	120.00 - 126.67	0.6000	0.6000
T10	26	AVA5-50 (7/8 LOW DENSI.FOAM)	120.00 - 126.67	0.6000	0.6000
T10	27	FSJ2-50 (3/8 SUPERFLEX. FOAM)	120.00 - 126.67	0.6000	0.6000
T10	28	FSJ2-50 (3/8 SUPERFLEX. FOAM)	120.00 - 126.67	0.6000	0.6000
T10	29	FSJ2-50 (3/8 SUPERFLEX. FOAM)	120.00 - 126.67	0.6000	0.6000
T10	30	AVA5-50 (7/8 LOW DENSI.FOAM)	120.00 - 126.67	0.6000	0.6000
T10	31	Feedline Ladder (Af)	120.00 - 126.67	0.6000	0.6000
T10	33	Feedline Ladder (Af)	120.00 - 126.67	0.6000	0.6000
T10	36	Climbing Pegs	120.00 - 126.67	0.6000	0.6000
T10	37	Climbing Pegs	120.00 - 126.67	0.6000	0.6000

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	*K_a No Ice*	*K_a Ice*
T10	38	Climbing Pegs	120.00 - 126.67	0.6000	0.6000
T11	1	HJ5-50A (7/8 AIR)	113.33 - 120.00	0.6000	0.6000
T11	6	LDF2-50A (3/8 FOAM)	113.33 - 120.00	0.6000	0.6000
T11	7	EW63	113.33 - 120.00	0.6000	0.6000
T11	8	LCF158-50J (1 5/8 FOAM)	113.33 - 120.00	0.6000	0.6000
T11	9	LCF58-50J (5/8 FOAM)	113.33 - 119.50	0.6000	0.6000
T11	10	LCF158-50J (1 5/8 FOAM)	113.33 - 120.00	0.6000	0.6000
T11	13	LDF2-50 (3/8 FOAM)	113.33 - 120.00	0.6000	0.6000
T11	19	AVA5-50 (7/8 LOW DENSI.FOAM)	113.33 - 120.00	0.6000	0.6000
T11	20	AVA5-50 (7/8 LOW DENSI.FOAM)	113.33 - 120.00	0.6000	0.6000
T11	21	FSJ2-50 (3/8 SUPERFLEX. FOAM)	113.33 - 120.00	0.6000	0.6000
T11	22	AVA5-50 (7/8 LOW DENSI.FOAM)	113.33 - 120.00	0.6000	0.6000
T11	23	LDF6-50A (1-1/4 FOAM)	113.33 - 120.00	0.6000	0.6000
T11	24	AVA5-50 (7/8 LOW DENSI.FOAM)	113.33 - 120.00	0.6000	0.6000
T11	25	AVA5-50 (7/8 LOW DENSI.FOAM)	113.33 - 120.00	0.6000	0.6000
T11	26	AVA5-50 (7/8 LOW DENSI.FOAM)	113.33 - 120.00	0.6000	0.6000
T11	27	FSJ2-50 (3/8 SUPERFLEX. FOAM)	113.33 - 120.00	0.6000	0.6000
T11	28	FSJ2-50 (3/8 SUPERFLEX. FOAM)	113.33 - 120.00	0.6000	0.6000
T11	29	FSJ2-50 (3/8 SUPERFLEX. FOAM)	113.33 - 120.00	0.6000	0.6000
T11	30	AVA5-50 (7/8 LOW DENSI.FOAM)	113.33 - 120.00	0.6000	0.6000
T11	31	Feedline Ladder (Af)	113.33 - 120.00	0.6000	0.6000
T11	33	Feedline Ladder (Af)	113.33 - 120.00	0.6000	0.6000
T11	36	Climbing Pegs	113.33 - 120.00	0.6000	0.6000
T11	37	Climbing Pegs	113.33 - 120.00	0.6000	0.6000
T11	38	Climbing Pegs	113.33 - 120.00	0.6000	0.6000
T12	1	HJ5-50A (7/8 AIR)	106.67 - 113.33	0.6000	0.6000
T12	6	LDF2-50A (3/8 FOAM)	106.67 - 113.33	0.6000	0.6000
T12	7	EW63	106.67 - 113.33	0.6000	0.6000
T12	8	LCF158-50J (1 5/8 FOAM)	106.67 - 113.33	0.6000	0.6000
T12	9	LCF58-50J (5/8 FOAM)	106.67 - 113.33	0.6000	0.6000
T12	10	LCF158-50J (1 5/8 FOAM)	106.67 - 113.33	0.6000	0.6000

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	*K_a No Ice*	*K_a Ice*
T12	11	LCF58-50J (5/8 FOAM)	106.67 - 112.92	0.6000	0.6000
T12	13	LDF2-50 (3/8 FOAM)	106.67 - 113.33	0.6000	0.6000
T12	19	AVA5-50 (7/8 LOW DENSI.FOAM)	106.67 - 113.33	0.6000	0.6000
T12	20	AVA5-50 (7/8 LOW DENSI.FOAM)	106.67 - 113.33	0.6000	0.6000
T12	21	FSJ2-50 (3/8 SUPERFLEX. FOAM)	106.67 - 113.33	0.6000	0.6000
T12	22	AVA5-50 (7/8 LOW DENSI.FOAM)	106.67 - 113.33	0.6000	0.6000
T12	23	LDF6-50A (1-1/4 FOAM)	106.67 - 113.33	0.6000	0.6000
T12	24	AVA5-50 (7/8 LOW DENSI.FOAM)	106.67 - 113.33	0.6000	0.6000
T12	25	AVA5-50 (7/8 LOW DENSI.FOAM)	106.67 - 113.33	0.6000	0.6000
T12	26	AVA5-50 (7/8 LOW DENSI.FOAM)	106.67 - 113.33	0.6000	0.6000
T12	27	FSJ2-50 (3/8 SUPERFLEX. FOAM)	106.67 - 113.33	0.6000	0.6000
T12	28	FSJ2-50 (3/8 SUPERFLEX. FOAM)	106.67 - 113.33	0.6000	0.6000
T12	29	FSJ2-50 (3/8 SUPERFLEX. FOAM)	106.67 - 113.33	0.6000	0.6000
T12	30	AVA5-50 (7/8 LOW DENSI.FOAM)	106.67 - 113.33	0.6000	0.6000
T12	31	Feedline Ladder (Af)	106.67 - 113.33	0.6000	0.6000
T12	33	Feedline Ladder (Af)	106.67 - 113.33	0.6000	0.6000
T12	36	Climbing Pegs	106.67 - 113.33	0.6000	0.6000
T12	37	Climbing Pegs	106.67 - 113.33	0.6000	0.6000
T12	38	Climbing Pegs	106.67 - 113.33	0.6000	0.6000
T13	1	HJ5-50A (7/8 AIR)	100.00 - 106.67	0.6000	0.6000
T13	6	LDF2-50A (3/8 FOAM)	100.00 - 106.67	0.6000	0.6000
T13	7	EW63	100.00 - 106.67	0.6000	0.6000
T13	8	LCF158-50J (1 5/8 FOAM)	100.00 - 106.67	0.6000	0.6000
T13	9	LCF58-50J (5/8 FOAM)	100.00 - 106.67	0.6000	0.6000
T13	10	LCF158-50J (1 5/8 FOAM)	100.00 - 106.67	0.6000	0.6000
T13	11	LCF58-50J (5/8 FOAM)	100.00 - 106.67	0.6000	0.6000
T13	13	LDF2-50 (3/8 FOAM)	100.00 - 106.67	0.6000	0.6000
T13	18	FSJ2-50 (3/8 SUPERFLEX. FOAM)	100.00 - 104.50	0.6000	0.6000
T13	19	AVA5-50 (7/8 LOW DENSI.FOAM)	100.00 - 106.67	0.6000	0.6000
T13	20	AVA5-50 (7/8 LOW DENSI.FOAM)	100.00 - 106.67	0.6000	0.6000
T13	21	FSJ2-50 (3/8 SUPERFLEX. FOAM)	100.00 - 106.67	0.6000	0.6000

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	*K_a No Ice*	*K_a Ice*
T13	22	AVA5-50 (7/8 LOW DENSI.FOAM)	100.00 - 106.67	0.6000	0.6000
T13	23	LDF6-50A (1-1/4 FOAM)	100.00 - 106.67	0.6000	0.6000
T13	24	AVA5-50 (7/8 LOW DENSI.FOAM)	100.00 - 106.67	0.6000	0.6000
T13	25	AVA5-50 (7/8 LOW DENSI.FOAM)	100.00 - 106.67	0.6000	0.6000
T13	26	AVA5-50 (7/8 LOW DENSI.FOAM)	100.00 - 106.67	0.6000	0.6000
T13	27	FSJ2-50 (3/8 SUPERFLEX. FOAM)	100.00 - 106.67	0.6000	0.6000
T13	28	FSJ2-50 (3/8 SUPERFLEX. FOAM)	100.00 - 106.67	0.6000	0.6000
T13	29	FSJ2-50 (3/8 SUPERFLEX. FOAM)	100.00 - 106.67	0.6000	0.6000
T13	30	AVA5-50 (7/8 LOW DENSI.FOAM)	100.00 - 106.67	0.6000	0.6000
T13	31	Feedline Ladder (Af)	100.00 - 106.67	0.6000	0.6000
T13	33	Feedline Ladder (Af)	100.00 - 106.67	0.6000	0.6000
T13	36	Climbing Pegs	100.00 - 106.67	0.6000	0.6000
T13	37	Climbing Pegs	100.00 - 106.67	0.6000	0.6000
T13	38	Climbing Pegs	100.00 - 106.67	0.6000	0.6000
T14	1	HJ5-50A (7/8 AIR)	90.00 - 100.00	0.6000	0.6000
T14	2	LDF2-50A (3/8 FOAM)	90.00 - 99.00	0.6000	0.6000
T14	5	LDF2-50A (3/8 FOAM)	90.00 - 90.70	0.6000	0.6000
T14	6	LDF2-50A (3/8 FOAM)	90.00 - 100.00	0.6000	0.6000
T14	7	EW63	90.00 - 100.00	0.6000	0.6000
T14	8	LCF158-50J (1 5/8 FOAM)	90.00 - 100.00	0.6000	0.6000
T14	9	LCF58-50J (5/8 FOAM)	90.00 - 100.00	0.6000	0.6000
T14	10	LCF158-50J (1 5/8 FOAM)	90.00 - 100.00	0.6000	0.6000
T14	11	LCF58-50J (5/8 FOAM)	90.00 - 100.00	0.6000	0.6000
T14	13	LDF2-50 (3/8 FOAM)	90.00 - 100.00	0.6000	0.6000
T14	14	AVA5-50 (7/8 LOW DENSI.FOAM)	90.00 - 90.71	0.6000	0.6000
T14	15	FLC 158-50J (1 5/8 FOAM)	90.00 - 90.71	0.6000	0.6000
T14	16	LDF5-50A (7/8 FOAM)	90.00 - 90.71	0.6000	0.6000
T14	17	FSJ2-50 (3/8 SUPERFLEX. FOAM)	90.00 - 90.71	0.6000	0.6000
T14	18	FSJ2-50 (3/8 SUPERFLEX. FOAM)	90.00 - 100.00	0.6000	0.6000
T14	19	AVA5-50 (7/8 LOW DENSI.FOAM)	90.00 - 100.00	0.6000	0.6000
T14	20	AVA5-50 (7/8 LOW DENSI.FOAM)	90.00 - 100.00	0.6000	0.6000
T14	21	FSJ2-50 (3/8 SUPERFLEX. FOAM)	90.00 - 100.00	0.6000	0.6000
T14	22	AVA5-50 (7/8 LOW DENSI.FOAM)	90.00 - 100.00	0.6000	0.6000
T14	23	LDF6-50A (1-1/4 FOAM)	90.00 - 100.00	0.6000	0.6000
T14	24	AVA5-50 (7/8 LOW DENSI.FOAM)	90.00 - 100.00	0.6000	0.6000
T14	25	AVA5-50 (7/8 LOW DENSI.FOAM)	90.00 - 100.00	0.6000	0.6000
T14	26	AVA5-50 (7/8 LOW DENSI.FOAM)	90.00 - 100.00	0.6000	0.6000
T14	27	FSJ2-50 (3/8 SUPERFLEX.	90.00 - 100.00	0.6000	0.6000

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	*K_a No Ice*	*K_a Ice*
		FOAM)			
T14	28	FSJ2-50 (3/8 SUPERFLEX. FOAM)	90.00 - 100.00	0.6000	0.6000
T14	29	FSJ2-50 (3/8 SUPERFLEX. FOAM)	90.00 - 100.00	0.6000	0.6000
T14	30	AVA5-50 (7/8 LOW DENSI.FOAM)	90.00 - 100.00	0.6000	0.6000
T14	31	Feedline Ladder (Af)	90.00 - 100.00	0.6000	0.6000
T14	33	Feedline Ladder (Af)	90.00 - 100.00	0.6000	0.6000
T14	36	Climbing Pegs	90.00 - 100.00	0.6000	0.6000
T14	37	Climbing Pegs	90.00 - 100.00	0.6000	0.6000
T14	38	Climbing Pegs	90.00 - 100.00	0.6000	0.6000
T15	1	HJ5-50A (7/8 AIR)	80.00 - 90.00	0.6000	0.6000
T15	2	LDF2-50A (3/8 FOAM)	80.00 - 90.00	0.6000	0.6000
T15	5	LDF2-50A (3/8 FOAM)	80.00 - 90.00	0.6000	0.6000
T15	6	LDF2-50A (3/8 FOAM)	80.00 - 90.00	0.6000	0.6000
T15	7	EW63	80.00 - 90.00	0.6000	0.6000
T15	8	LCF158-50J (1 5/8 FOAM)	80.00 - 90.00	0.6000	0.6000
T15	9	LCF58-50J (5/8 FOAM)	80.00 - 90.00	0.6000	0.6000
T15	10	LCF158-50J (1 5/8 FOAM)	80.00 - 90.00	0.6000	0.6000
T15	11	LCF58-50J (5/8 FOAM)	80.00 - 90.00	0.6000	0.6000
T15	13	LDF2-50 (3/8 FOAM)	80.00 - 90.00	0.6000	0.6000
T15	14	AVA5-50 (7/8 LOW DENSI.FOAM)	80.00 - 90.00	0.6000	0.6000
T15	15	FLC 158-50J (1 5/8 FOAM)	80.00 - 90.00	0.6000	0.6000
T15	16	LDF5-50A (7/8 FOAM)	80.00 - 90.00	0.6000	0.6000
T15	17	FSJ2-50 (3/8 SUPERFLEX. FOAM)	80.00 - 90.00	0.6000	0.6000
T15	18	FSJ2-50 (3/8 SUPERFLEX. FOAM)	80.00 - 90.00	0.6000	0.6000
T15	19	AVA5-50 (7/8 LOW DENSI.FOAM)	80.00 - 90.00	0.6000	0.6000
T15	20	AVA5-50 (7/8 LOW DENSI.FOAM)	80.00 - 90.00	0.6000	0.6000
T15	21	FSJ2-50 (3/8 SUPERFLEX. FOAM)	80.00 - 90.00	0.6000	0.6000
T15	22	AVA5-50 (7/8 LOW DENSI.FOAM)	80.00 - 90.00	0.6000	0.6000
T15	23	LDF6-50A (1-1/4 FOAM)	80.00 - 90.00	0.6000	0.6000
T15	24	AVA5-50 (7/8 LOW DENSI.FOAM)	80.00 - 90.00	0.6000	0.6000
T15	25	AVA5-50 (7/8 LOW DENSI.FOAM)	80.00 - 90.00	0.6000	0.6000
T15	26	AVA5-50 (7/8 LOW DENSI.FOAM)	80.00 - 90.00	0.6000	0.6000
T15	27	FSJ2-50 (3/8 SUPERFLEX. FOAM)	80.00 - 90.00	0.6000	0.6000
T15	28	FSJ2-50 (3/8 SUPERFLEX. FOAM)	80.00 - 90.00	0.6000	0.6000
T15	29	FSJ2-50 (3/8 SUPERFLEX. FOAM)	80.00 - 90.00	0.6000	0.6000
T15	30	AVA5-50 (7/8 LOW DENSI.FOAM)	80.00 - 90.00	0.6000	0.6000
T15	31	Feedline Ladder (Af)	80.00 - 90.00	0.6000	0.6000
T15	32	Feedline Ladder (Af)	80.00 - 83.00	0.6000	0.6000
T15	33	Feedline Ladder (Af)	80.00 - 90.00	0.6000	0.6000
T15	36	Climbing Pegs	80.00 - 90.00	0.6000	0.6000
T15	37	Climbing Pegs	80.00 - 90.00	0.6000	0.6000
T15	38	Climbing Pegs	80.00 - 90.00	0.6000	0.6000
T16	1	HJ5-50A (7/8 AIR)	70.00 - 80.00	0.6000	0.6000
T16	2	LDF2-50A (3/8 FOAM)	70.00 - 80.00	0.6000	0.6000
T16	3	LDF2-50A (3/8 FOAM)	70.00 - 73.75	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T16	4	LDF2-50A (3/8 FOAM)	70.00 - 77.50	0.6000	0.6000
T16	5	LDF2-50A (3/8 FOAM)	70.00 - 80.00	0.6000	0.6000
T16	6	LDF2-50A (3/8 FOAM)	70.00 - 80.00	0.6000	0.6000
T16	7	EW63	70.00 - 80.00	0.6000	0.6000
T16	8	LCF158-50J (1 5/8 FOAM)	70.00 - 80.00	0.6000	0.6000
T16	9	LCF58-50J (5/8 FOAM)	70.00 - 80.00	0.6000	0.6000
T16	10	LCF158-50J (1 5/8 FOAM)	70.00 - 80.00	0.6000	0.6000
T16	11	LCF58-50J (5/8 FOAM)	70.00 - 80.00	0.6000	0.6000
T16	12	LCF158-50J (1 5/8 FOAM)	70.00 - 76.67	0.6000	0.6000
T16	13	LDF2-50 (3/8 FOAM)	70.00 - 80.00	0.6000	0.6000
T16	14	AVA5-50 (7/8 LOW DENSI.FOAM)	70.00 - 80.00	0.6000	0.6000
T16	15	FLC 158-50J (1 5/8 FOAM)	70.00 - 80.00	0.6000	0.6000
T16	16	LDF5-50A (7/8 FOAM)	70.00 - 80.00	0.6000	0.6000
T16	17	FSJ2-50 (3/8 SUPERFLEX. FOAM)	70.00 - 80.00	0.6000	0.6000
T16	18	FSJ2-50 (3/8 SUPERFLEX. FOAM)	70.00 - 80.00	0.6000	0.6000
T16	19	AVA5-50 (7/8 LOW DENSI.FOAM)	70.00 - 80.00	0.6000	0.6000
T16	20	AVA5-50 (7/8 LOW DENSI.FOAM)	70.00 - 80.00	0.6000	0.6000
T16	21	FSJ2-50 (3/8 SUPERFLEX. FOAM)	70.00 - 80.00	0.6000	0.6000
T16	22	AVA5-50 (7/8 LOW DENSI.FOAM)	70.00 - 80.00	0.6000	0.6000
T16	23	LDF6-50A (1-1/4 FOAM)	70.00 - 80.00	0.6000	0.6000
T16	24	AVA5-50 (7/8 LOW DENSI.FOAM)	70.00 - 80.00	0.6000	0.6000
T16	25	AVA5-50 (7/8 LOW DENSI.FOAM)	70.00 - 80.00	0.6000	0.6000
T16	26	AVA5-50 (7/8 LOW DENSI.FOAM)	70.00 - 80.00	0.6000	0.6000
T16	27	FSJ2-50 (3/8 SUPERFLEX. FOAM)	70.00 - 80.00	0.6000	0.6000
T16	28	FSJ2-50 (3/8 SUPERFLEX. FOAM)	70.00 - 80.00	0.6000	0.6000
T16	29	FSJ2-50 (3/8 SUPERFLEX. FOAM)	70.00 - 80.00	0.6000	0.6000
T16	30	AVA5-50 (7/8 LOW DENSI.FOAM)	70.00 - 80.00	0.6000	0.6000
T16	31	Feedline Ladder (Af)	70.00 - 80.00	0.6000	0.6000
T16	32	Feedline Ladder (Af)	70.00 - 80.00	0.6000	0.6000
T16	33	Feedline Ladder (Af)	70.00 - 80.00	0.6000	0.6000
T16	36	Climbing Pegs	70.00 - 80.00	0.6000	0.6000
T16	37	Climbing Pegs	70.00 - 80.00	0.6000	0.6000
T16	38	Climbing Pegs	70.00 - 80.00	0.6000	0.6000
T17	1	HJ5-50A (7/8 AIR)	60.00 - 70.00	0.6000	0.6000
T17	2	LDF2-50A (3/8 FOAM)	60.00 - 70.00	0.6000	0.6000
T17	3	LDF2-50A (3/8 FOAM)	60.00 - 70.00	0.6000	0.6000
T17	4	LDF2-50A (3/8 FOAM)	60.00 - 70.00	0.6000	0.6000
T17	5	LDF2-50A (3/8 FOAM)	60.00 - 70.00	0.6000	0.6000
T17	6	LDF2-50A (3/8 FOAM)	60.00 - 70.00	0.6000	0.6000
T17	7	EW63	60.00 - 70.00	0.6000	0.6000
T17	8	LCF158-50J (1 5/8 FOAM)	60.00 - 70.00	0.6000	0.6000
T17	9	LCF58-50J (5/8 FOAM)	60.00 - 70.00	0.6000	0.6000
T17	10	LCF158-50J (1 5/8 FOAM)	60.00 - 70.00	0.6000	0.6000
T17	11	LCF58-50J (5/8 FOAM)	60.00 - 70.00	0.6000	0.6000
T17	12	LCF158-50J (1 5/8 FOAM)	60.00 - 70.00	0.6000	0.6000
T17	13	LDF2-50 (3/8 FOAM)	60.00 - 70.00	0.6000	0.6000
T17	14	AVA5-50 (7/8 LOW DENSI.FOAM)	60.00 - 70.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T17	15	FLC 158-50J (1 5/8 FOAM)	60.00 - 70.00	0.6000	0.6000
T17	16	LDF5-50A (7/8 FOAM)	60.00 - 70.00	0.6000	0.6000
T17	17	FSJ2-50 (3/8 SUPERFLEX. FOAM)	60.00 - 70.00	0.6000	0.6000
T17	18	FSJ2-50 (3/8 SUPERFLEX. FOAM)	60.00 - 70.00	0.6000	0.6000
T17	19	AVA5-50 (7/8 LOW DENSI.FOAM)	60.00 - 70.00	0.6000	0.6000
T17	20	AVA5-50 (7/8 LOW DENSI.FOAM)	60.00 - 70.00	0.6000	0.6000
T17	21	FSJ2-50 (3/8 SUPERFLEX. FOAM)	60.00 - 70.00	0.6000	0.6000
T17	22	AVA5-50 (7/8 LOW DENSI.FOAM)	60.00 - 70.00	0.6000	0.6000
T17	23	LDF6-50A (1-1/4 FOAM)	60.00 - 70.00	0.6000	0.6000
T17	24	AVA5-50 (7/8 LOW DENSI.FOAM)	60.00 - 70.00	0.6000	0.6000
T17	25	AVA5-50 (7/8 LOW DENSI.FOAM)	60.00 - 70.00	0.6000	0.6000
T17	26	AVA5-50 (7/8 LOW DENSI.FOAM)	60.00 - 70.00	0.6000	0.6000
T17	27	FSJ2-50 (3/8 SUPERFLEX. FOAM)	60.00 - 70.00	0.6000	0.6000
T17	28	FSJ2-50 (3/8 SUPERFLEX. FOAM)	60.00 - 70.00	0.6000	0.6000
T17	29	FSJ2-50 (3/8 SUPERFLEX. FOAM)	60.00 - 70.00	0.6000	0.6000
T17	30	AVA5-50 (7/8 LOW DENSI.FOAM)	60.00 - 70.00	0.6000	0.6000
T17	31	Feedline Ladder (Af)	60.00 - 70.00	0.6000	0.6000
T17	32	Feedline Ladder (Af)	60.00 - 70.00	0.6000	0.6000
T17	33	Feedline Ladder (Af)	60.00 - 70.00	0.6000	0.6000
T17	36	Climbing Pegs	60.00 - 70.00	0.6000	0.6000
T17	37	Climbing Pegs	60.00 - 70.00	0.6000	0.6000
T17	38	Climbing Pegs	60.00 - 70.00	0.6000	0.6000
T18	1	HJ5-50A (7/8 AIR)	50.00 - 60.00	0.6000	0.6000
T18	2	LDF2-50A (3/8 FOAM)	50.00 - 60.00	0.6000	0.6000
T18	3	LDF2-50A (3/8 FOAM)	50.00 - 60.00	0.6000	0.6000
T18	4	LDF2-50A (3/8 FOAM)	50.00 - 60.00	0.6000	0.6000
T18	5	LDF2-50A (3/8 FOAM)	50.00 - 60.00	0.6000	0.6000
T18	6	LDF2-50A (3/8 FOAM)	50.00 - 60.00	0.6000	0.6000
T18	7	EW63	50.00 - 60.00	0.6000	0.6000
T18	8	LCF158-50J (1 5/8 FOAM)	50.00 - 60.00	0.6000	0.6000
T18	9	LCF58-50J (5/8 FOAM)	50.00 - 60.00	0.6000	0.6000
T18	10	LCF158-50J (1 5/8 FOAM)	50.00 - 60.00	0.6000	0.6000
T18	11	LCF58-50J (5/8 FOAM)	50.00 - 60.00	0.6000	0.6000
T18	12	LCF158-50J (1 5/8 FOAM)	50.00 - 60.00	0.6000	0.6000
T18	13	LDF2-50 (3/8 FOAM)	50.00 - 60.00	0.6000	0.6000
T18	14	AVA5-50 (7/8 LOW DENSI.FOAM)	50.00 - 60.00	0.6000	0.6000
T18	15	FLC 158-50J (1 5/8 FOAM)	50.00 - 60.00	0.6000	0.6000
T18	16	LDF5-50A (7/8 FOAM)	50.00 - 60.00	0.6000	0.6000
T18	17	FSJ2-50 (3/8 SUPERFLEX. FOAM)	50.00 - 60.00	0.6000	0.6000
T18	18	FSJ2-50 (3/8 SUPERFLEX. FOAM)	50.00 - 60.00	0.6000	0.6000
T18	19	AVA5-50 (7/8 LOW DENSI.FOAM)	50.00 - 60.00	0.6000	0.6000
T18	20	AVA5-50 (7/8 LOW DENSI.FOAM)	50.00 - 60.00	0.6000	0.6000
T18	21	FSJ2-50 (3/8 SUPERFLEX. FOAM)	50.00 - 60.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T18	22	AVA5-50 (7/8 LOW DENSI.FOAM)	50.00 - 60.00	0.6000	0.6000
T18	23	LDF6-50A (1-1/4 FOAM)	50.00 - 60.00	0.6000	0.6000
T18	24	AVA5-50 (7/8 LOW DENSI.FOAM)	50.00 - 60.00	0.6000	0.6000
T18	25	AVA5-50 (7/8 LOW DENSI.FOAM)	50.00 - 60.00	0.6000	0.6000
T18	26	AVA5-50 (7/8 LOW DENSI.FOAM)	50.00 - 60.00	0.6000	0.6000
T18	27	FSJ2-50 (3/8 SUPERFLEX. FOAM)	50.00 - 60.00	0.6000	0.6000
T18	28	FSJ2-50 (3/8 SUPERFLEX. FOAM)	50.00 - 60.00	0.6000	0.6000
T18	29	FSJ2-50 (3/8 SUPERFLEX. FOAM)	50.00 - 60.00	0.6000	0.6000
T18	30	AVA5-50 (7/8 LOW DENSI.FOAM)	50.00 - 60.00	0.6000	0.6000
T18	31	Feedline Ladder (Af)	50.00 - 60.00	0.6000	0.6000
T18	32	Feedline Ladder (Af)	50.00 - 60.00	0.6000	0.6000
T18	33	Feedline Ladder (Af)	50.00 - 60.00	0.6000	0.6000
T18	36	Climbing Pegs	50.00 - 60.00	0.6000	0.6000
T18	37	Climbing Pegs	50.00 - 60.00	0.6000	0.6000
T18	38	Climbing Pegs	50.00 - 60.00	0.6000	0.6000
T19	1	HJ5-50A (7/8 AIR)	40.00 - 50.00	0.6000	0.6000
T19	2	LDF2-50A (3/8 FOAM)	40.00 - 50.00	0.6000	0.6000
T19	3	LDF2-50A (3/8 FOAM)	40.00 - 50.00	0.6000	0.6000
T19	4	LDF2-50A (3/8 FOAM)	40.00 - 50.00	0.6000	0.6000
T19	5	LDF2-50A (3/8 FOAM)	40.00 - 50.00	0.6000	0.6000
T19	6	LDF2-50A (3/8 FOAM)	40.00 - 50.00	0.6000	0.6000
T19	7	EW63	40.00 - 50.00	0.6000	0.6000
T19	8	LCF158-50J (1 5/8 FOAM)	40.00 - 50.00	0.6000	0.6000
T19	9	LCF58-50J (5/8 FOAM)	40.00 - 50.00	0.6000	0.6000
T19	10	LCF158-50J (1 5/8 FOAM)	40.00 - 50.00	0.6000	0.6000
T19	11	LCF58-50J (5/8 FOAM)	40.00 - 50.00	0.6000	0.6000
T19	12	LCF158-50J (1 5/8 FOAM)	40.00 - 50.00	0.6000	0.6000
T19	13	LDF2-50 (3/8 FOAM)	40.00 - 50.00	0.6000	0.6000
T19	14	AVA5-50 (7/8 LOW DENSI.FOAM)	40.00 - 50.00	0.6000	0.6000
T19	15	FLC 158-50J (1 5/8 FOAM)	40.00 - 50.00	0.6000	0.6000
T19	16	LDF5-50A (7/8 FOAM)	40.00 - 50.00	0.6000	0.6000
T19	17	FSJ2-50 (3/8 SUPERFLEX. FOAM)	40.00 - 50.00	0.6000	0.6000
T19	18	FSJ2-50 (3/8 SUPERFLEX. FOAM)	40.00 - 50.00	0.6000	0.6000
T19	19	AVA5-50 (7/8 LOW DENSI.FOAM)	40.00 - 50.00	0.6000	0.6000
T19	20	AVA5-50 (7/8 LOW DENSI.FOAM)	40.00 - 50.00	0.6000	0.6000
T19	21	FSJ2-50 (3/8 SUPERFLEX. FOAM)	40.00 - 50.00	0.6000	0.6000
T19	22	AVA5-50 (7/8 LOW DENSI.FOAM)	40.00 - 50.00	0.6000	0.6000
T19	23	LDF6-50A (1-1/4 FOAM)	40.00 - 50.00	0.6000	0.6000
T19	24	AVA5-50 (7/8 LOW DENSI.FOAM)	40.00 - 50.00	0.6000	0.6000
T19	25	AVA5-50 (7/8 LOW DENSI.FOAM)	40.00 - 50.00	0.6000	0.6000
T19	26	AVA5-50 (7/8 LOW DENSI.FOAM)	40.00 - 50.00	0.6000	0.6000
T19	27	FSJ2-50 (3/8 SUPERFLEX. FOAM)	40.00 - 50.00	0.6000	0.6000
T19	28	FSJ2-50 (3/8 SUPERFLEX.	40.00 - 50.00	0.6000	0.6000

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	*K_a No Ice*	*K_a Ice*
		FOAM)			
T19	29	FSJ2-50 (3/8 SUPERFLEX. FOAM)	40.00 - 50.00	0.6000	0.6000
T19	30	AVA5-50 (7/8 LOW DENSI.FOAM)	40.00 - 50.00	0.6000	0.6000
T19	31	Feedline Ladder (Af)	40.00 - 50.00	0.6000	0.6000
T19	32	Feedline Ladder (Af)	40.00 - 50.00	0.6000	0.6000
T19	33	Feedline Ladder (Af)	40.00 - 50.00	0.6000	0.6000
T19	36	Climbing Pegs	40.00 - 50.00	0.6000	0.6000
T19	37	Climbing Pegs	40.00 - 50.00	0.6000	0.6000
T19	38	Climbing Pegs	40.00 - 50.00	0.6000	0.6000
T20	1	HJ5-50A (7/8 AIR)	30.00 - 40.00	0.6000	0.6000
T20	2	LDF2-50A (3/8 FOAM)	30.00 - 40.00	0.6000	0.6000
T20	3	LDF2-50A (3/8 FOAM)	30.00 - 40.00	0.6000	0.6000
T20	4	LDF2-50A (3/8 FOAM)	30.00 - 40.00	0.6000	0.6000
T20	5	LDF2-50A (3/8 FOAM)	30.00 - 40.00	0.6000	0.6000
T20	6	LDF2-50A (3/8 FOAM)	30.00 - 40.00	0.6000	0.6000
T20	7	EW63	30.00 - 40.00	0.6000	0.6000
T20	8	LCF158-50J (1 5/8 FOAM)	30.00 - 40.00	0.6000	0.6000
T20	9	LCF58-50J (5/8 FOAM)	30.00 - 40.00	0.6000	0.6000
T20	10	LCF158-50J (1 5/8 FOAM)	30.00 - 40.00	0.6000	0.6000
T20	11	LCF58-50J (5/8 FOAM)	30.00 - 40.00	0.6000	0.6000
T20	12	LCF158-50J (1 5/8 FOAM)	30.00 - 40.00	0.6000	0.6000
T20	13	LDF2-50 (3/8 FOAM)	30.00 - 40.00	0.6000	0.6000
T20	14	AVA5-50 (7/8 LOW DENSI.FOAM)	30.00 - 40.00	0.6000	0.6000
T20	15	FLC 158-50J (1 5/8 FOAM)	30.00 - 40.00	0.6000	0.6000
T20	16	LDF5-50A (7/8 FOAM)	30.00 - 40.00	0.6000	0.6000
T20	17	FSJ2-50 (3/8 SUPERFLEX. FOAM)	30.00 - 40.00	0.6000	0.6000
T20	18	FSJ2-50 (3/8 SUPERFLEX. FOAM)	30.00 - 40.00	0.6000	0.6000
T20	19	AVA5-50 (7/8 LOW DENSI.FOAM)	30.00 - 40.00	0.6000	0.6000
T20	20	AVA5-50 (7/8 LOW DENSI.FOAM)	30.00 - 40.00	0.6000	0.6000
T20	21	FSJ2-50 (3/8 SUPERFLEX. FOAM)	30.00 - 40.00	0.6000	0.6000
T20	22	AVA5-50 (7/8 LOW DENSI.FOAM)	30.00 - 40.00	0.6000	0.6000
T20	23	LDF6-50A (1-1/4 FOAM)	30.00 - 40.00	0.6000	0.6000
T20	24	AVA5-50 (7/8 LOW DENSI.FOAM)	30.00 - 40.00	0.6000	0.6000
T20	25	AVA5-50 (7/8 LOW DENSI.FOAM)	30.00 - 40.00	0.6000	0.6000
T20	26	AVA5-50 (7/8 LOW DENSI.FOAM)	30.00 - 40.00	0.6000	0.6000
T20	27	FSJ2-50 (3/8 SUPERFLEX. FOAM)	30.00 - 40.00	0.6000	0.6000
T20	28	FSJ2-50 (3/8 SUPERFLEX. FOAM)	30.00 - 40.00	0.6000	0.6000
T20	29	FSJ2-50 (3/8 SUPERFLEX. FOAM)	30.00 - 40.00	0.6000	0.6000
T20	30	AVA5-50 (7/8 LOW DENSI.FOAM)	30.00 - 40.00	0.6000	0.6000
T20	31	Feedline Ladder (Af)	30.00 - 40.00	0.6000	0.6000
T20	32	Feedline Ladder (Af)	30.00 - 40.00	0.6000	0.6000
T20	33	Feedline Ladder (Af)	30.00 - 40.00	0.6000	0.6000
T20	36	Climbing Pegs	30.00 - 40.00	0.6000	0.6000
T20	37	Climbing Pegs	30.00 - 40.00	0.6000	0.6000
T20	38	Climbing Pegs	30.00 - 40.00	0.6000	0.6000
T21	1	HJ5-50A (7/8 AIR)	20.00 - 30.00	0.6000	0.6000

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	*K_a No Ice*	*K_a Ice*
T21	2	LDF2-50A (3/8 FOAM)	20.00 - 30.00	0.6000	0.6000
T21	3	LDF2-50A (3/8 FOAM)	20.00 - 30.00	0.6000	0.6000
T21	4	LDF2-50A (3/8 FOAM)	20.00 - 30.00	0.6000	0.6000
T21	5	LDF2-50A (3/8 FOAM)	20.00 - 30.00	0.6000	0.6000
T21	6	LDF2-50A (3/8 FOAM)	20.00 - 30.00	0.6000	0.6000
T21	7	EW63	20.00 - 30.00	0.6000	0.6000
T21	8	LCF158-50J (1 5/8 FOAM)	20.00 - 30.00	0.6000	0.6000
T21	9	LCF58-50J (5/8 FOAM)	20.00 - 30.00	0.6000	0.6000
T21	10	LCF158-50J (1 5/8 FOAM)	20.00 - 30.00	0.6000	0.6000
T21	11	LCF58-50J (5/8 FOAM)	20.00 - 30.00	0.6000	0.6000
T21	12	LCF158-50J (1 5/8 FOAM)	20.00 - 30.00	0.6000	0.6000
T21	13	LDF2-50 (3/8 FOAM)	20.00 - 30.00	0.6000	0.6000
T21	14	AVA5-50 (7/8 LOW DENSI.FOAM)	20.00 - 30.00	0.6000	0.6000
T21	15	FLC 158-50J (1 5/8 FOAM)	20.00 - 30.00	0.6000	0.6000
T21	16	LDF5-50A (7/8 FOAM)	20.00 - 30.00	0.6000	0.6000
T21	17	FSJ2-50 (3/8 SUPERFLEX. FOAM)	20.00 - 30.00	0.6000	0.6000
T21	18	FSJ2-50 (3/8 SUPERFLEX. FOAM)	20.00 - 30.00	0.6000	0.6000
T21	19	AVA5-50 (7/8 LOW DENSI.FOAM)	20.00 - 30.00	0.6000	0.6000
T21	20	AVA5-50 (7/8 LOW DENSI.FOAM)	20.00 - 30.00	0.6000	0.6000
T21	21	FSJ2-50 (3/8 SUPERFLEX. FOAM)	20.00 - 30.00	0.6000	0.6000
T21	22	AVA5-50 (7/8 LOW DENSI.FOAM)	20.00 - 30.00	0.6000	0.6000
T21	23	LDF6-50A (1-1/4 FOAM)	20.00 - 30.00	0.6000	0.6000
T21	24	AVA5-50 (7/8 LOW DENSI.FOAM)	20.00 - 30.00	0.6000	0.6000
T21	25	AVA5-50 (7/8 LOW DENSI.FOAM)	20.00 - 30.00	0.6000	0.6000
T21	26	AVA5-50 (7/8 LOW DENSI.FOAM)	20.00 - 30.00	0.6000	0.6000
T21	27	FSJ2-50 (3/8 SUPERFLEX. FOAM)	20.00 - 30.00	0.6000	0.6000
T21	28	FSJ2-50 (3/8 SUPERFLEX. FOAM)	20.00 - 30.00	0.6000	0.6000
T21	29	FSJ2-50 (3/8 SUPERFLEX. FOAM)	20.00 - 30.00	0.6000	0.6000
T21	30	AVA5-50 (7/8 LOW DENSI.FOAM)	20.00 - 30.00	0.6000	0.6000
T21	31	Feedline Ladder (Af)	20.00 - 30.00	0.6000	0.6000
T21	32	Feedline Ladder (Af)	20.00 - 30.00	0.6000	0.6000
T21	33	Feedline Ladder (Af)	20.00 - 30.00	0.6000	0.6000
T21	36	Climbing Pegs	20.00 - 30.00	0.6000	0.6000
T21	37	Climbing Pegs	20.00 - 30.00	0.6000	0.6000
T21	38	Climbing Pegs	20.00 - 30.00	0.6000	0.6000
T22	1	HJ5-50A (7/8 AIR)	18.00 - 20.00	0.6000	0.6000
T22	2	LDF2-50A (3/8 FOAM)	18.00 - 20.00	0.6000	0.6000
T22	3	LDF2-50A (3/8 FOAM)	18.00 - 20.00	0.6000	0.6000
T22	4	LDF2-50A (3/8 FOAM)	18.00 - 20.00	0.6000	0.6000
T22	5	LDF2-50A (3/8 FOAM)	18.00 - 20.00	0.6000	0.6000
T22	6	LDF2-50A (3/8 FOAM)	18.00 - 20.00	0.6000	0.6000
T22	7	EW63	12.00 - 20.00	0.6000	0.6000
T22	8	LCF158-50J (1 5/8 FOAM)	12.00 - 20.00	0.6000	0.6000
T22	9	LCF58-50J (5/8 FOAM)	18.00 - 20.00	0.6000	0.6000
T22	10	LCF158-50J (1 5/8 FOAM)	12.00 - 20.00	0.6000	0.6000
T22	11	LCF58-50J (5/8 FOAM)	18.00 - 20.00	0.6000	0.6000
T22	12	LCF158-50J (1 5/8 FOAM)	18.00 - 20.00	0.6000	0.6000
T22	13	LDF2-50 (3/8 FOAM)	18.00 - 20.00	0.6000	0.6000

Tower Section	*Feed Line Record No.*	*Description*	*Feed Line Segment Elev.*	*K_a No Ice*	*K_a Ice*
T22	14	AVA5-50 (7/8 LOW DENSI.FOAM)	10.00 - 20.00	0.6000	0.6000
T22	15	FLC 158-50J (1 5/8 FOAM)	10.00 - 20.00	0.6000	0.6000
T22	16	LDF5-50A (7/8 FOAM)	10.00 - 20.00	0.6000	0.6000
T22	17	FSJ2-50 (3/8 SUPERFLEX. FOAM)	10.00 - 20.00	0.6000	0.6000
T22	18	FSJ2-50 (3/8 SUPERFLEX. FOAM)	18.00 - 20.00	0.6000	0.6000
T22	19	AVA5-50 (7/8 LOW DENSI.FOAM)	18.00 - 20.00	0.6000	0.6000
T22	20	AVA5-50 (7/8 LOW DENSI.FOAM)	18.00 - 20.00	0.6000	0.6000
T22	21	FSJ2-50 (3/8 SUPERFLEX. FOAM)	18.00 - 20.00	0.6000	0.6000
T22	22	AVA5-50 (7/8 LOW DENSI.FOAM)	18.00 - 20.00	0.6000	0.6000
T22	23	LDF6-50A (1-1/4 FOAM)	18.00 - 20.00	0.6000	0.6000
T22	24	AVA5-50 (7/8 LOW DENSI.FOAM)	18.00 - 20.00	0.6000	0.6000
T22	25	AVA5-50 (7/8 LOW DENSI.FOAM)	18.00 - 20.00	0.6000	0.6000
T22	26	AVA5-50 (7/8 LOW DENSI.FOAM)	18.00 - 20.00	0.6000	0.6000
T22	27	FSJ2-50 (3/8 SUPERFLEX. FOAM)	18.00 - 20.00	0.6000	0.6000
T22	28	FSJ2-50 (3/8 SUPERFLEX. FOAM)	18.00 - 20.00	0.6000	0.6000
T22	29	FSJ2-50 (3/8 SUPERFLEX. FOAM)	18.00 - 20.00	0.6000	0.6000
T22	30	AVA5-50 (7/8 LOW DENSI.FOAM)	18.00 - 20.00	0.6000	0.6000
T22	31	Feedline Ladder (Af)	10.00 - 20.00	0.6000	0.6000
T22	32	Feedline Ladder (Af)	10.00 - 20.00	0.6000	0.6000
T22	33	Feedline Ladder (Af)	10.00 - 20.00	0.6000	0.6000
T22	36	Climbing Pegs	10.00 - 20.00	0.6000	0.6000
T22	37	Climbing Pegs	10.00 - 20.00	0.6000	0.6000
T22	38	Climbing Pegs	10.00 - 20.00	0.6000	0.6000
T23	14	AVA5-50 (7/8 LOW DENSI.FOAM)	9.00 - 10.00	0.6000	0.6000
T23	15	FLC 158-50J (1 5/8 FOAM)	9.00 - 10.00	0.6000	0.6000
T23	16	LDF5-50A (7/8 FOAM)	9.00 - 10.00	0.6000	0.6000
T23	17	FSJ2-50 (3/8 SUPERFLEX. FOAM)	9.00 - 10.00	0.6000	0.6000
T23	31	Feedline Ladder (Af)	0.00 - 10.00	0.6000	0.6000
T23	32	Feedline Ladder (Af)	8.00 - 10.00	0.6000	0.6000
T23	33	Feedline Ladder (Af)	0.00 - 10.00	0.6000	0.6000
T23	36	Climbing Pegs	2.00 - 10.00	0.6000	0.6000
T23	37	Climbing Pegs	2.00 - 10.00	0.6000	0.6000
T23	38	Climbing Pegs	2.00 - 10.00	0.6000	0.6000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
PD1142-1	C	From Leg	0.00	0.0000	182.00	No Ice	1.32	1.32	10.00
			0.00			1/2" Ice	3.21	3.21	20.00
			8.50			1" Ice	5.10	5.10	30.00
DB201-A	C	From Leg	3.00	0.0000	177.17	No Ice	1.05	1.05	30.00
			0.00			1/2" Ice	1.91	1.91	30.00
			10.00			1" Ice	2.77	2.77	30.00
3' Side Arm Mount	C	From Leg	1.50	0.0000	180.00	No Ice	3.15	3.15	100.00
			0.00			1/2" Ice	5.67	5.67	130.00
			0.00			1" Ice	8.19	8.19	160.00
DB224	B	From Leg	0.00	0.0000	180.00	No Ice	3.15	3.15	30.00
			0.00			1/2" Ice	5.67	5.67	40.00
			10.00			1" Ice	8.19	8.19	50.00
PD458-1	B	From Leg	3.00	0.0000	181.00	No Ice	2.88	2.88	20.00
			0.00			1/2" Ice	4.34	4.34	50.00
			7.50			1" Ice	5.80	5.80	80.00
3' Side Arm Mount	B	From Leg	1.50	0.0000	179.92	No Ice	3.15	3.15	100.00
			0.00			1/2" Ice	5.67	5.67	130.00
			0.00			1" Ice	8.19	8.19	160.00
DB224	B	From Leg	0.00	0.0000	179.92 - 179.92	No Ice	3.15	3.15	30.00
			0.00			1/2" Ice	5.67	5.67	40.00
			0.00			1" Ice	8.19	8.19	50.00
3' Side Arm Mount	B	From Leg	1.50	0.0000	179.00	No Ice	3.15	3.15	100.00
			0.00			1/2" Ice	5.67	5.67	130.00
			0.00			1" Ice	8.19	8.19	160.00
PD455-5	A	From Leg	3.00	0.0000	180.00	No Ice	2.83	2.83	20.00
			0.00			1/2" Ice	4.87	4.87	50.00
			6.00			1" Ice	6.91	6.91	80.00
3' Side Arm Mount	A	From Leg	1.50	0.0000	180.00	No Ice	3.15	3.15	100.00
			0.00			1/2" Ice	5.67	5.67	130.00
			0.00			1" Ice	8.19	8.19	160.00
PD220	B	From Leg	3.00	0.0000	163.25	No Ice	3.08	3.08	20.00
			0.00			1/2" Ice	5.30	5.30	50.00
			10.00			1" Ice	7.52	7.52	80.00
3' Side Arm Mount	B	From Leg	1.50	0.0000	163.25	No Ice	3.15	3.15	100.00
			0.00			1/2" Ice	5.67	5.67	130.00
			0.00			1" Ice	8.19	8.19	160.00
16' Omni	C	From Leg	3.00	0.0000	158.50	No Ice	2.63	2.63	30.00
			0.00			1/2" Ice	4.21	4.21	50.00
			8.00			1" Ice	5.79	5.79	70.00
3' Side Arm Mount	C	From Leg	1.50	0.0000	158.50	No Ice	3.15	3.15	100.00
			0.00			1/2" Ice	5.67	5.67	130.00
			0.00			1" Ice	8.19	8.19	160.00
20' Omni	A	From Leg	3.00	0.0000	154.17	No Ice	1.32	1.32	10.00
			0.00			1/2" Ice	3.21	3.21	20.00
			9.50			1" Ice	5.10	5.10	30.00
3' Side Arm Mount	A	From Leg	1.50	0.0000	154.17	No Ice	3.15	3.15	100.00
			0.00			1/2" Ice	5.67	5.67	130.00
			0.00			1" Ice	8.19	8.19	160.00
DB420	B	From Leg	3.50	0.0000	144.92	No Ice	3.33	3.33	30.00
			0.00			1/2" Ice	5.99	5.99	40.00
			10.00			1" Ice	8.65	8.65	50.00
3' Side Arm Mount	B	From Leg	2.50	0.0000	144.92	No Ice	3.15	3.15	100.00
			0.00			1/2" Ice	5.67	5.67	130.00
			0.00			1" Ice	8.19	8.19	160.00
PD1142-1	C	From Leg	3.50	0.0000	138.75	No Ice	1.32	1.32	10.00
			0.00			1/2" Ice	3.21	3.21	20.00
			6.00			1" Ice	5.10	5.10	30.00

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
3' Side Arm Mount	C	From Leg	1.50	0.0000	138.75	No Ice	3.15	3.15	100.00
			0.00			1/2" Ice	5.67	5.67	130.00
			0.00			1" Ice	8.19	8.19	160.00
AO8410M-54T0	A	From Leg	4.00	0.0000	136.17	No Ice	2.63	2.63	30.00
			0.00			1/2" Ice	4.21	4.21	50.00
			7.00			1" Ice	5.79	5.79	70.00
4' Side Arm Mount	A	From Leg	2.00	0.0000	136.17	No Ice	4.25	4.25	120.00
			0.00			1/2" Ice	5.85	5.85	160.00
			0.00			1" Ice	7.45	7.45	200.00
DB806-XC	C	From Leg	4.00	0.0000	123.17	No Ice	1.14	1.14	20.00
			0.00			1/2" Ice	1.68	1.68	30.00
			5.00			1" Ice	2.22	2.22	40.00
4' Side Arm Mount	C	From Leg	2.00	0.0000	123.17	No Ice	4.25	4.25	120.00
			0.00			1/2" Ice	5.85	5.85	160.00
			0.00			1" Ice	7.45	7.45	200.00
PD220	B	From Leg	4.00	0.0000	126.67	No Ice	3.08	3.08	20.00
			0.00			1/2" Ice	5.30	5.30	50.00
			10.00			1" Ice	7.52	7.52	80.00
4' Side Arm Mount	B	From Leg	2.00	0.0000	126.67	No Ice	4.25	4.25	120.00
			0.00			1/2" Ice	5.85	5.85	160.00
			0.00			1" Ice	7.45	7.45	200.00
PD1142-1	A	From Leg	4.00	0.0000	125.25	No Ice	1.32	1.32	10.00
			0.00			1/2" Ice	3.21	3.21	20.00
			3.00			1" Ice	5.10	5.10	30.00
4' Side Arm Mount	A	From Leg	2.00	0.0000	125.25	No Ice	4.25	4.25	120.00
			0.00			1/2" Ice	5.85	5.85	160.00
			0.00			1" Ice	7.45	7.45	200.00
12' Omni	C	From Leg	4.00	0.0000	104.50	No Ice	2.63	2.63	30.00
			0.00			1/2" Ice	4.21	4.21	50.00
			4.00			1" Ice	5.79	5.79	70.00
4' Side Arm Mount	C	From Leg	2.00	0.0000	104.50	No Ice	4.25	4.25	120.00
			0.00			1/2" Ice	5.85	5.85	160.00
			0.00			1" Ice	7.45	7.45	200.00
16' omni	A	From Leg	4.00	0.0000	99.00	No Ice	2.63	2.63	30.00
			0.00			1/2" Ice	4.21	4.21	50.00
			4.00			1" Ice	5.79	5.79	70.00
4' Side Arm Mount	A	From Leg	2.00	0.0000	99.00	No Ice	4.25	4.25	120.00
			0.00			1/2" Ice	5.85	5.85	160.00
			0.00			1" Ice	7.45	7.45	200.00
kreuc	B	From Leg	2.00	0.0000	90.70	No Ice	2.63	2.63	30.00
			0.00			1/2" Ice	4.21	4.21	50.00
			0.00			1" Ice	5.79	5.79	70.00
LGP 21401 TMA	A	From Leg	2.00	0.0000	90.70	No Ice	1.20	0.90	20.00
			0.00			1/2" Ice	1.56	1.17	23.00
			0.00			1" Ice	1.92	1.44	26.00
LGP 21401 TMA	B	From Leg	2.00	0.0000	90.70	No Ice	1.20	0.90	20.00
			0.00			1/2" Ice	1.56	1.17	23.00
			0.00			1" Ice	1.92	1.44	26.00
LGP 21401 TMA	C	From Leg	2.00	0.0000	90.70	No Ice	1.20	0.90	20.00
			0.00			1/2" Ice	1.56	1.17	23.00
			0.00			1" Ice	1.92	1.44	26.00
RET	A	From Leg	2.00	0.0000	90.70	No Ice	0.40	0.20	63.50
			0.00			1/2" Ice	0.54	0.31	80.00
			0.00			1" Ice	0.68	0.42	96.50
RET	B	From Leg	2.00	0.0000	90.70	No Ice	0.40	0.20	63.50
			0.00			1/2" Ice	0.54	0.31	80.00
			0.00			1" Ice	0.68	0.42	96.50

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
RET	C	From Leg	2.00	0.0000	90.70	No Ice	0.40	0.20	63.50
			0.00			1/2" Ice	0.54	0.31	80.00
			0.00			1" Ice	0.68	0.42	96.50
DB22	A	From Leg	7.00	0.0000	85.82	No Ice	3.21	3.21	70.00
			0.00			1/2" Ice	5.78	5.78	100.00
			0.00			1" Ice	8.35	8.35	130.00
Pirod 6' Side Mount Standoff (1)	A	From Leg	0.00	0.0000	73.75	No Ice	4.97	4.97	70.00
			0.00			1/2" Ice	6.12	6.12	130.00
			0.00			1" Ice	7.27	7.27	190.00
(2) Whip Antenna 4'X1.5" Dia	B	From Leg	0.00	0.0000	76.67	No Ice	0.60	0.60	6.40
			0.00			1/2" Ice	0.92	0.92	11.45
			0.00			1" Ice	1.17	1.17	19.24
Yagi s4307-sf3s1f	C	From Leg	0.00	0.0000	77.50	No Ice	0.40	0.40	3.20
			0.00			1/2" Ice	1.00	1.00	5.00
			0.00			1" Ice	1.60	1.60	6.80
Raycap DC6	C	From Leg	2.00	0.0000	90.70	No Ice	2.39	2.78	34.85
			0.00			1/2" Ice	2.65	3.17	65.48
			0.00			1" Ice	2.93	3.57	100.35
RRUS 11 B12	A	From Leg	2.00	0.0000	90.00	No Ice	2.52	1.07	55.00
			1.00			1/2" Ice	2.72	1.21	74.32
			0.00			1" Ice	2.92	1.36	96.56
RRUS 11 B12	B	From Leg	2.00	0.0000	90.00	No Ice	2.52	1.07	55.00
			1.00			1/2" Ice	2.72	1.21	74.32
			0.00			1" Ice	2.92	1.36	96.56
RRUS 11 B12	C	From Leg	2.00	0.0000	90.00	No Ice	2.52	1.07	55.00
			1.00			1/2" Ice	2.72	1.21	74.32
			0.00			1" Ice	2.92	1.36	96.56
RRUS 12	A	From Leg	2.00	0.0000	90.00	No Ice	3.15	1.29	58.00
			1.00			1/2" Ice	3.36	1.44	81.22
			0.00			1" Ice	3.59	1.60	107.64
RRUS 12	B	From Leg	2.00	0.0000	90.00	No Ice	3.15	1.29	58.00
			1.00			1/2" Ice	3.36	1.44	81.22
			0.00			1" Ice	3.59	1.60	107.64
RRUS 12	C	From Leg	2.00	0.0000	90.00	No Ice	3.15	1.29	58.00
			1.00			1/2" Ice	3.36	1.44	81.22
			0.00			1" Ice	3.59	1.60	107.64
Pirod 10' PCS Frame (1)	A	From Leg	0.00	0.0000	90.70	No Ice	9.00	9.00	250.00
			0.00			1/2" Ice	13.20	13.20	350.00
			0.00			1" Ice	17.40	17.40	450.00
Pirod 10' PCS Frame (1)	B	From Leg	0.00	0.0000	90.70	No Ice	9.00	9.00	250.00
			0.00			1/2" Ice	13.20	13.20	350.00
			0.00			1" Ice	17.40	17.40	450.00
Pirod 10' PCS Frame (1)	C	From Leg	0.00	0.0000	90.70	No Ice	9.00	9.00	250.00
			0.00			1/2" Ice	13.20	13.20	350.00
			0.00			1" Ice	17.40	17.40	450.00
80010121	A	From Leg	2.00	0.0000	90.70	No Ice	5.27	4.48	62.35
			0.00			1/2" Ice	5.65	5.14	108.54
			0.00			1" Ice	6.04	5.80	160.98
80010121	B	From Leg	2.00	0.0000	90.70	No Ice	5.27	4.48	62.35
			0.00			1/2" Ice	5.65	5.14	108.54
			0.00			1" Ice	6.04	5.80	160.98
80010121	C	From Leg	2.00	0.0000	90.70	No Ice	5.27	4.48	62.35
			0.00			1/2" Ice	5.65	5.14	108.54
			0.00			1" Ice	6.04	5.80	160.98

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight lb
Andrew 6' w/Radome	B	Paraboloid w/Radome	From Leg	0.00 0.00 0.00	Worst		134.50	6.00	No Ice 1/2" Ice 1" Ice	28.27 29.07 29.86	380.00 450.00 520.00
2' Dia parabolic dish antenna	B	Paraboloid w/o Radome	From Leg	0.00 0.00 0.00	Worst		112.92	2.00	No Ice 1/2" Ice 1" Ice	4.00 4.34 4.68	22.00 44.28 66.56
2' Dia parabolic dish antenna	B	Paraboloid w/o Radome	From Leg	0.00 0.00 0.00	Worst		119.50	2.00	No Ice 1/2" Ice 1" Ice	4.00 4.34 4.68	22.00 44.28 66.56

Force Totals

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Overturning Moments, M_x lb-ft	Sum of Overturning Moments, M_z lb-ft	Sum of Torques lb-ft
Leg Weight	8377.83					
Bracing Weight	10502.64					
Total Member Self-Weight	18880.46			-8456.68	-5648.91	
Total Weight	31119.17			-8456.68	-5648.91	
Wind 0 deg - No Ice		-2.99	-22630.83	-2043381.14	-5377.74	6367.55
Wind 30 deg - No Ice		10675.36	-18496.25	-1684796.01	-973170.75	4018.42
Wind 60 deg - No Ice		18126.22	-10465.18	-959618.76	-1653109.95	757.12
Wind 90 deg - No Ice		21355.91	2.99	-8185.51	-1941162.27	-2823.07
Wind 120 deg - No Ice		19597.38	11318.00	1009240.39	-1767809.60	-5878.36
Wind 150 deg - No Ice		10680.54	18499.24	1668153.82	-973640.43	-6841.49
Wind 180 deg - No Ice		2.99	20935.54	1894337.15	-5920.08	-6237.45
Wind 210 deg - No Ice		-10675.36	18496.25	1667882.65	961872.94	-4018.42
Wind 240 deg - No Ice		-19594.39	11312.82	1008770.71	1756240.62	-489.19
Wind 270 deg - No Ice		-21355.91	-2.99	-8727.85	1929864.46	2823.07
Wind 300 deg - No Ice		-18129.21	-10470.36	-960088.43	1642083.30	5480.32
Wind 330 deg - No Ice		-10680.54	-18499.24	-1685067.18	962342.62	6841.49
Member Ice	46133.39					
Total Weight Ice	129228.68			-88730.21	-42000.11	
Wind 0 deg - Ice		-1.22	-9626.21	-1024911.30	-41889.19	2538.46
Wind 30 deg - Ice		4725.87	-8187.89	-888328.34	-503520.22	708.78
Wind 60 deg - Ice		8137.32	-4698.08	-548177.59	-837786.31	-1273.66
Wind 90 deg - Ice		9453.86	1.22	-88619.29	-965232.46	-2939.37
Wind 120 deg - Ice		8335.93	4814.16	379456.39	-852701.25	-3868.83
Wind 150 deg - Ice		4727.99	8189.11	710978.84	-503712.35	-3648.15
Wind 180 deg - Ice		1.22	9398.29	830356.67	-42111.03	-2507.81
Wind 210 deg - Ice		-4725.87	8187.89	710867.92	419520.00	-708.78
Wind 240 deg - Ice		-8334.71	4812.05	379264.26	768590.11	1330.37
Wind 270 deg - Ice		-9453.86	-1.22	-88841.14	881232.24	2939.37
Wind 300 deg - Ice		-8138.54	-4700.20	-548369.72	753897.02	3781.47
Wind 330 deg - Ice		-4727.99	-8189.11	-888439.27	419712.13	3648.15
Total Weight	31119.17			-8456.68	-5648.91	
Wind 0 deg - Service		-1.08	-8147.10	-733127.60	-1624.27	2292.32
Wind 30 deg - Service		3843.13	-6658.65	-604036.95	-350029.75	1446.63
Wind 60 deg - Service		6525.44	-3767.46	-342973.14	-594807.86	272.56

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Overturning Moments, M_x lb-ft	Sum of Overturning Moments, M_z lb-ft	Sum of Torques lb-ft
Wind 90 deg - Service		7688.13	1.08	-457.17	-698506.70	-1016.30
Wind 120 deg - Service		7055.06	4074.48	365816.15	-636099.74	-2116.21
Wind 150 deg - Service		3845.00	6659.73	603024.99	-350198.84	-2462.94
Wind 180 deg - Service		1.08	7536.79	684450.99	-1819.51	-2245.48
Wind 210 deg - Service		-3843.13	6658.65	602927.37	346585.98	-1446.63
Wind 240 deg - Service		-7053.98	4072.62	365647.07	632558.34	-176.11
Wind 270 deg - Service		-7688.13	-1.08	-652.41	695062.92	1016.30
Wind 300 deg - Service		-6526.52	-3769.33	-343142.22	591461.71	1972.92
Wind 330 deg - Service		-3845.00	-6659.73	-604134.57	346755.06	2462.94

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service

Comb. No.	*Description*
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	*Elevation ft*	*Component Type*	*Condition*	*Gov. Load Comb.*	*Axial lb*	*Major Axis Moment lb-ft*	*Minor Axis Moment lb-ft*
T1	180 - 175	Leg	Max Tension	7	825.84	-43.62	-10.09
			Max. Compression	31	-1827.59	3.39	-2.98
			Max. Mx	22	542.64	59.19	3.26
			Max. My	4	-455.99	-3.97	92.09
			Max. Vy	22	-300.71	-0.00	0.00
			Max. Vx	4	-445.79	-0.00	0.00
		Diagonal	Max Tension	15	572.82	0.00	0.00
			Max. Compression	2	-609.26	0.00	0.00
			Max. Mx	30	32.60	27.92	-4.12
			Max. My	27	3.08	24.06	-4.37
			Max. Vy	28	32.05	27.90	-3.93
			Max. Vx	27	-1.96	0.00	0.00
		Top Girt	Max Tension	11	150.35	0.00	0.00
			Max. Compression	6	-167.04	0.00	0.00
			Max. Mx	29	-135.59	-91.92	0.00
			Max. My	27	-94.55	0.00	2.69
			Max. Vy	29	56.05	0.00	0.00
			Max. Vx	27	-1.64	0.00	0.00
T2	175 - 170	Leg	Max Tension	7	1830.88	-43.62	-10.09
			Max. Compression	27	-2927.64	-6.08	6.62
			Max. Mx	22	1533.93	-45.83	3.26
			Max. My	16	-553.41	-3.95	52.09
			Max. Vy	19	35.64	44.38	9.26
			Max. Vx	16	35.71	-3.95	52.09
		Diagonal	Max Tension	24	764.38	0.00	0.00
			Max. Compression	2	-771.68	0.00	0.00
			Max. Mx	28	126.61	31.29	4.44
			Max. My	27	14.57	27.33	-4.75
			Max. Vy	28	34.24	31.26	-4.27
			Max. Vx	27	-2.04	0.00	0.00
T3	170 - 165	Leg	Max Tension	7	3088.65	-14.68	15.24
			Max. Compression	27	-4336.34	5.09	-20.12
			Max. Mx	22	2712.04	-41.25	-10.93
			Max. My	16	-729.67	-5.03	87.06
			Max. Vy	18	-35.02	40.93	32.77
			Max. Vx	16	-42.77	-5.03	87.06
		Diagonal	Max Tension	24	881.13	0.00	0.00
			Max. Compression	24	-895.01	0.00	0.00
			Max. Mx	29	205.26	34.67	4.82
			Max. My	27	25.61	30.53	-5.15
			Max. Vy	28	36.36	34.65	-4.67
			Max. Vx	27	-2.12	0.00	0.00
T4	165 - 160	Leg	Max Tension	7	4683.66	-102.18	-11.54
			Max. Compression	10	-6391.04	98.69	-24.61
			Max. Mx	6	4540.93	-103.73	-11.53

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. My	4	-1047.01	-3.35	139.87
			Max. Vy	22	65.44	-101.10	24.22
			Max. Vx	16	138.30	-5.04	87.06
		Diagonal	Max Tension	24	1131.19	0.00	0.00
			Max. Compression	2	-1142.87	0.00	0.00
			Max. Mx	29	147.76	38.39	-5.26
			Max. My	27	14.37	34.10	-5.68
			Max. Vy	28	38.49	38.37	-5.10
			Max. Vx	27	-2.22	0.00	0.00
T5	160 - 153.333	Leg	Max Tension	7	6772.37	-70.12	42.61
			Max. Compression	10	-8979.95	73.57	9.71
			Max. Mx	6	6596.14	-103.73	-11.53
			Max. My	19	3044.24	-42.26	-119.73
			Max. Vy	6	-101.92	-103.73	-11.53
			Max. Vx	8	-160.34	-7.61	114.10
		Diagonal	Max Tension	24	1430.11	0.00	0.00
			Max. Compression	24	-1445.93	0.00	0.00
			Max. Mx	29	251.39	51.56	-7.50
			Max. My	28	-213.46	44.45	-7.90
			Max. Vy	29	44.97	51.56	-7.50
			Max. Vx	27	-2.74	0.00	0.00
T6	153.333 - 146.667	Leg	Max Tension	7	9525.43	-70.12	42.61
			Max. Compression	2	-12272.48	55.96	-47.54
			Max. Mx	14	9047.33	-73.94	-34.23
			Max. My	19	4464.50	-42.26	-119.73
			Max. Vy	11	42.99	73.55	9.60
			Max. Vx	18	-63.15	-44.06	-119.66
		Diagonal	Max Tension	12	1672.62	0.00	0.00
			Max. Compression	12	-1682.72	0.00	0.00
			Max. Mx	29	395.82	58.24	8.24
			Max. My	27	43.97	50.94	-8.64
			Max. Vy	29	48.07	58.24	8.24
			Max. Vx	27	-2.85	0.00	0.00
T7	146.667 - 140	Leg	Max Tension	7	12691.39	-175.29	-26.56
			Max. Compression	10	-16124.15	170.93	27.15
			Max. Mx	22	11874.23	-183.04	-26.04
			Max. My	16	-1769.87	-10.95	255.56
			Max. Vy	22	76.22	-183.04	-26.04
			Max. Vx	4	-141.66	-6.05	-86.53
		Diagonal	Max Tension	24	1913.42	0.00	0.00
			Max. Compression	24	-1932.23	0.00	0.00
			Max. Mx	29	367.66	63.94	-8.79
			Max. My	27	43.21	56.20	-9.41
			Max. Vy	29	50.93	63.94	-8.79
			Max. Vx	27	-2.97	0.00	0.00
T8	140 - 133.333	Leg	Max Tension	7	15961.41	-221.24	-29.71
			Max. Compression	10	-20484.24	219.40	48.93
			Max. Mx	22	14761.00	-230.38	-49.06
			Max. My	16	-1911.61	-10.95	-318.43
			Max. Vy	22	336.10	-230.38	-49.06
			Max. Vx	4	483.01	-8.46	-238.47
		Diagonal	Max Tension	24	2268.51	0.00	0.00
			Max. Compression	24	-2310.81	0.00	0.00
			Max. Mx	29	509.63	82.52	11.17
			Max. My	27	47.22	73.64	-11.78
			Max. Vy	29	61.98	82.52	11.17
			Max. Vx	27	-3.53	0.00	0.00
T9	133.333 - 126.667	Leg	Max Tension	7	19971.31	-71.09	48.16
			Max. Compression	10	-25373.26	73.47	-0.79

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Mx	22	18655.69	-230.38	-49.06
			Max. My	5	-1932.44	-6.16	-238.52
			Max. Vy	22	103.11	-65.81	0.69
			Max. Vx	16	-203.91	-1.68	68.69
		Diagonal	Max Tension	24	2946.13	0.00	0.00
			Max. Compression	24	-2960.60	0.00	0.00
			Max. Mx	29	518.42	88.38	-11.73
			Max. My	27	114.61	79.04	-12.63
			Max. Vy	29	64.96	88.38	-11.73
			Max. Vx	27	-3.64	0.00	0.00
T10	126.667 - 120	Leg	Max Tension	7	24345.16	-71.09	48.16
			Max. Compression	10	-30408.58	182.42	-6.46
			Max. Mx	10	-30408.58	182.42	-6.46
			Max. My	3	12189.38	-43.55	161.86
			Max. Vy	14	-108.69	-72.58	-48.55
			Max. Vx	8	175.08	-8.85	155.50
		Diagonal	Max Tension	24	3271.29	0.00	0.00
			Max. Compression	24	-3307.73	0.00	0.00
			Max. Mx	29	471.61	99.72	-13.28
			Max. My	27	44.36	89.87	-13.87
			Max. Vy	29	68.60	99.72	-13.28
			Max. Vx	27	-3.80	0.00	0.00
T11	120 - 113.333	Leg	Max Tension	7	28914.69	-179.09	11.86
			Max. Compression	10	-35899.48	66.42	29.01
			Max. Mx	10	-35769.09	182.42	-6.46
			Max. My	16	-3359.96	-5.62	155.20
			Max. Vy	19	126.18	177.40	-11.68
			Max. Vx	4	-161.52	0.87	-100.62
		Diagonal	Max Tension	24	3594.52	0.00	0.00
			Max. Compression	24	-3625.19	0.00	0.00
			Max. Mx	29	600.39	121.10	-16.00
			Max. My	27	142.68	109.52	-17.11
			Max. Vy	29	82.65	121.10	-16.00
			Max. Vx	27	-4.52	0.00	0.00
T12	113.333 - 106.667	Leg	Max Tension	7	33765.63	-58.79	-10.85
			Max. Compression	10	-41630.38	117.95	-34.88
			Max. Mx	6	33107.87	-121.25	0.76
			Max. My	16	-3571.28	-5.62	155.20
			Max. Vy	18	103.62	71.67	9.16
			Max. Vx	16	190.26	-5.62	155.20
		Diagonal	Max Tension	24	3927.58	0.00	0.00
			Max. Compression	24	-3949.42	0.00	0.00
			Max. Mx	29	517.62	137.99	-17.70
			Max. My	27	84.88	125.73	-18.62
			Max. Vy	29	87.10	137.99	-17.70
			Max. Vx	27	-4.69	0.00	0.00
T13	106.667 - 100	Leg	Max Tension	7	38871.15	-119.20	0.68
			Max. Compression	10	-47620.61	232.82	0.74
			Max. Mx	11	-46568.71	233.63	0.56
			Max. My	12	-3220.85	-8.55	-315.69
			Max. Vy	11	-84.32	233.63	0.56
			Max. Vx	12	119.69	-8.55	-315.69
		Diagonal	Max Tension	24	4057.82	0.00	0.00
			Max. Compression	24	-4092.64	0.00	0.00
			Max. Mx	29	814.25	141.53	18.19
			Max. My	28	-319.75	128.22	-19.36
			Max. Vy	29	89.71	141.53	-18.15
			Max. Vx	27	-4.76	0.00	0.00
T14	100 - 90	Leg	Max Tension	7	45106.20	-221.89	17.75
			Max. Compression	2	-55854.76	347.22	-13.74

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. Mx	14	42838.48	-406.87	16.38
			Max. My	8	-5057.70	-39.71	378.43
			Max. Vy	14	582.51	-406.87	16.38
			Max. Vx	4	543.50	-29.26	-291.88
		Diagonal	Max Tension	12	4877.58	0.00	0.00
			Max. Compression	12	-4923.95	0.00	0.00
			Max. Mx	29	858.13	208.21	28.10
			Max. My	27	120.65	183.77	-29.12
			Max. Vy	29	109.35	208.21	28.10
			Max. Vx	27	-6.23	0.00	0.00
T15	90 - 80	Leg	Max Tension	7	53374.96	-384.37	50.45
			Max. Compression	2	-66292.22	308.83	-6.36
			Max. Mx	14	51566.29	-406.87	16.38
			Max. My	8	-5348.09	-39.71	378.43
			Max. Vy	14	-235.70	-406.87	16.38
			Max. Vx	8	243.01	-39.71	378.43
		Diagonal	Max Tension	12	5837.13	0.00	0.00
			Max. Compression	12	-5950.15	0.00	0.00
			Max. Mx	29	1085.85	219.82	-29.46
			Max. My	27	-108.53	216.15	-30.68
			Max. Vy	29	114.13	219.82	-29.46
			Max. Vx	27	-6.36	0.00	0.00
T16	80 - 70	Leg	Max Tension	7	62910.47	-263.60	51.11
			Max. Compression	2	-77665.79	320.23	-0.44
			Max. Mx	14	60385.86	-375.75	5.00
			Max. My	8	-6575.60	-40.61	403.01
			Max. Vy	14	132.27	-375.75	5.00
			Max. Vx	8	-147.74	-40.61	403.01
		Diagonal	Max Tension	12	6217.86	0.00	0.00
			Max. Compression	12	-6270.06	0.00	0.00
			Max. Mx	29	995.56	269.27	35.09
			Max. My	27	71.30	243.03	-36.36
			Max. Vy	29	128.92	269.27	35.09
			Max. Vx	27	-7.09	0.00	0.00
T17	70 - 60	Leg	Max Tension	7	72216.25	-364.36	22.73
			Max. Compression	2	-88741.55	373.50	-4.17
			Max. Mx	37	-2235.50	-458.84	-11.48
			Max. My	8	-6974.02	-40.61	403.01
			Max. Vy	14	-92.41	-375.75	5.00
			Max. Vx	8	95.97	-40.61	403.01
		Diagonal	Max Tension	12	6537.35	0.00	0.00
			Max. Compression	12	-6653.79	0.00	0.00
			Max. Mx	29	1300.47	276.98	-35.97
			Max. My	27	-54.49	271.57	-36.79
			Max. Vy	29	132.93	276.98	-35.97
			Max. Vx	27	-7.08	0.00	0.00
T18	60 - 50	Leg	Max Tension	7	81875.91	-296.67	-2.60
			Max. Compression	2	-100464.00	239.64	2.49
			Max. Mx	35	-53782.85	605.20	4.99
			Max. My	8	-7974.01	-52.40	334.80
			Max. Vy	33	-124.04	-457.76	5.55
			Max. Vx	8	-86.37	-52.40	334.80
		Diagonal	Max Tension	12	6861.84	0.00	0.00
			Max. Compression	12	-6918.61	0.00	0.00
			Max. Mx	29	837.06	366.59	-45.73
			Max. My	27	-46.77	334.85	-47.23
			Max. Vy	29	158.16	366.59	-45.73
			Max. Vx	27	-8.43	0.00	0.00
T19	50 - 40	Leg	Max Tension	7	91214.52	-301.98	5.28
			Max. Compression	2	-111880.40	444.94	-4.29
			Max. Mx	33	-7424.43	-877.85	5.60

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial lb	Major Axis Moment lb-ft	Minor Axis Moment lb-ft
			Max. My	8	-8449.06	-52.40	334.80
			Max. Vy	33	165.08	-877.85	5.60
			Max. Vx	8	87.21	-52.40	334.80
		Diagonal	Max Tension	12	7115.34	0.00	0.00
			Max. Compression	12	-7241.20	0.00	0.00
			Max. Mx	29	1588.77	348.67	-44.77
			Max. My	31	170.04	341.45	45.85
			Max. Vy	29	159.36	348.67	-44.77
			Max. Vx	31	8.23	0.00	0.00
T20	40 - 30	Leg	Max Tension	7	100837.86	-349.89	2.21
			Max. Compression	2	-123801.09	172.28	2.35
			Max. Mx	35	-65328.46	1091.27	7.37
			Max. My	8	-9607.36	-70.13	492.78
			Max. Vy	33	-214.52	-877.85	5.60
			Max. Vx	8	-99.30	-70.13	492.78
		Diagonal	Max Tension	12	7434.45	0.00	0.00
			Max. Compression	12	-7508.33	0.00	0.00
			Max. Mx	29	509.93	487.55	58.35
			Max. My	30	-1225.93	447.84	60.28
			Max. Vy	29	188.24	487.52	-57.83
			Max. Vx	30	9.83	0.00	0.00
T21	30 - 20	Leg	Max Tension	7	110109.52	-263.00	4.34
			Max. Compression	2	-135343.68	572.38	-3.72
			Max. Mx	29	917.52	-1693.62	2.09
			Max. My	8	-10166.48	-70.13	492.78
			Max. Vy	33	294.30	-1685.75	2.75
			Max. Vx	8	109.13	-70.13	492.78
		Diagonal	Max Tension	12	7678.62	0.00	0.00
			Max. Compression	12	-7839.52	0.00	0.00
			Max. Mx	29	2074.53	409.00	-54.00
			Max. My	37	2178.42	407.22	-54.69
			Max. Vy	29	182.93	409.00	-54.00
			Max. Vx	37	-9.22	0.00	0.00
T22	20 - 10	Leg	Max Tension	7	119719.98	-442.98	0.25
			Max. Compression	2	-147567.85	374.25	4.83
			Max. Mx	27	-85387.49	2121.47	12.28
			Max. My	8	-11492.84	-90.26	927.77
			Max. Vy	29	-385.71	-1693.62	2.09
			Max. Vx	24	-163.67	-89.08	926.17
		Diagonal	Max Tension	12	7940.93	0.00	0.00
			Max. Compression	12	-8033.75	0.00	0.00
			Max. Mx	29	-168.96	613.18	71.08
			Max. My	37	-3595.65	592.31	-73.53
			Max. Vy	29	209.21	613.18	71.08
			Max. Vx	30	10.87	0.00	0.00
T23	10 - 0	Leg	Max Tension	7	128587.70	-480.14	4.31
			Max. Compression	2	-159132.23	-0.00	-0.04
			Max. Mx	27	-91910.48	2121.47	12.28
			Max. My	8	-12162.37	-90.26	927.77
			Max. Vy	38	221.13	-0.00	-0.00
			Max. Vx	8	176.40	-90.26	927.77
		Diagonal	Max Tension	12	8191.44	0.00	0.00
			Max. Compression	12	-8353.45	0.00	0.00
			Max. Mx	28	2933.00	406.04	-57.39
			Max. My	27	2545.15	404.20	-58.11
			Max. Vy	28	185.75	406.04	-57.39
			Max. Vx	27	-9.26	0.00	0.00

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical lb	Horizontal, X lb	Horizontal, Z lb
Leg C	Max. Vert	18	163927.38	18970.81	-10937.57
	Max. H_x	18	163927.38	18970.81	-10937.57
	Max. H_z	5	-116187.30	-13340.21	9328.10
	Min. Vert	7	-133079.85	-16011.87	9207.81
	Min. H_x	7	-133079.85	-16011.87	9207.81
	Min. H_z	18	163927.38	18970.81	-10937.57
Leg B	Max. Vert	10	164512.25	-18862.95	-11154.18
	Max. H_x	23	-132703.38	15893.86	9406.96
	Max. H_z	25	-115815.37	13137.83	9679.10
	Min. Vert	23	-132703.38	15893.86	9406.96
	Min. H_x	10	164512.25	-18862.95	-11154.18
	Min. H_z	10	164512.25	-18862.95	-11154.18
Leg A	Max. Vert	2	164948.82	241.51	21920.77
	Max. H_x	20	12942.35	3226.44	1122.71
	Max. H_z	2	164948.82	241.51	21920.77
	Min. Vert	15	-132376.31	-231.47	-18462.05
	Min. H_x	9	9671.27	-3216.71	829.31
	Min. H_z	15	-132376.31	-231.47	-18462.05

Tower Mast Reaction Summary

Load Combination	Vertical lb	$Shear_x$ lb	$Shear_z$ lb	Overturning Moment, M_x lb-ft	Overturning Moment, M_z lb-ft	Torque lb-ft
Dead Only	31119.17	-0.00	0.00	-8456.95	-5649.36	0.01
1.2 Dead+1.6 Wind 0 deg - No Ice	37343.33	-4.26	-36209.17	-3274221.06	-6399.43	10230.21
0.9 Dead+1.6 Wind 0 deg - No Ice	28007.25	-4.78	-36209.32	-3269624.22	-4690.20	10220.86
1.2 Dead+1.6 Wind 30 deg - No Ice	37343.00	17080.58	-29594.00	-2699060.56	-1558748.42	6451.89
0.9 Dead+1.6 Wind 30 deg - No Ice	28007.25	17080.58	-29594.00	-2694813.69	-1556065.92	6441.38
1.2 Dead+1.6 Wind 60 deg - No Ice	37343.00	29001.95	-16744.29	-1535865.71	-2649382.40	1198.49
0.9 Dead+1.6 Wind 60 deg - No Ice	28007.25	29001.95	-16744.29	-1532351.75	-2646006.86	1201.64
1.2 Dead+1.6 Wind 90 deg - No Ice	37343.00	34169.45	4.78	-9750.75	-3111416.41	-4562.00
0.9 Dead+1.6 Wind 90 deg - No Ice	28007.25	34169.45	4.78	-7203.65	-3107752.51	-4545.80
1.2 Dead+1.6 Wind 120 deg - No Ice	37343.33	31355.94	18108.27	1622200.39	-2833343.79	-9461.22
0.9 Dead+1.6 Wind 120 deg - No Ice	28007.25	31355.80	18108.80	1623729.04	-2829863.26	-9448.42
1.2 Dead+1.6 Wind 150 deg - No Ice	37343.00	17088.87	29598.79	2679132.18	-1559513.62	-10993.60
0.9 Dead+1.6 Wind 150 deg - No Ice	28007.25	17088.87	29598.79	2679989.82	-1556823.12	-10987.08
1.2 Dead+1.6 Wind 180 deg - No Ice	37343.00	4.78	33496.86	3041955.47	-7271.60	-10019.25
0.9 Dead+1.6 Wind 180 deg - No Ice	28007.25	4.78	33496.86	3042579.97	-5561.47	-10009.02
1.2 Dead+1.6 Wind 210 deg -	37343.00	-17080.58	29594.00	2678716.93	1545097.93	-6451.92

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	lb	lb	lb	lb-ft	lb-ft	lb-ft
No Ice 0.9 Dead+1.6 Wind 210 deg - No Ice	28007.25	-17080.58	29594.00	2679575.59	1545827.49	-6441.40
1.2 Dead+1.6 Wind 240 deg - No Ice	37342.99	-31351.00	18100.51	1621468.47	2819269.25	-769.02
0.9 Dead+1.6 Wind 240 deg - No Ice	28007.25	-31351.02	18100.52	1622997.12	2819209.18	-772.47
1.2 Dead+1.6 Wind 270 deg - No Ice	37343.00	-34169.45	-4.78	-10621.00	3097793.18	4561.98
0.9 Dead+1.6 Wind 270 deg - No Ice	28007.25	-34169.45	-4.78	-8073.27	3097547.61	4545.79
1.2 Dead+1.6 Wind 300 deg - No Ice	37343.00	-29006.74	-16752.57	-1536638.42	2636185.93	8820.74
0.9 Dead+1.6 Wind 300 deg - No Ice	28007.25	-29006.74	-16752.57	-1533123.96	2636227.70	8807.37
1.2 Dead+1.6 Wind 330 deg - No Ice	37343.00	-17088.87	-29598.79	-2699515.23	1545849.38	10993.59
0.9 Dead+1.6 Wind 330 deg - No Ice	28007.25	-17088.87	-29598.79	-2695267.69	1546582.85	10987.08
1.2 Dead+1.0 Ice+1.0 Temp	135452.51	-0.00	0.00	-91746.52	-43768.76	-1.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	135452.51	-1.22	-9626.21	-1037613.07	-43661.60	2600.10
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	135452.51	4725.87	-8187.89	-899623.92	-510082.40	700.37
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	135452.51	8137.32	-4698.08	-555949.67	-847819.55	-1349.21
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	135452.51	9453.85	1.22	-91626.91	-976585.89	-3062.67
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	135452.51	8335.93	4814.16	381320.22	-862897.29	-4007.03
1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp	135452.51	4727.99	8189.11	716259.83	-510291.78	-3762.88
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	135452.51	1.22	9398.29	836880.30	-43908.38	-2569.39
1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp	135452.51	-4725.87	8187.89	716146.17	422507.92	-700.37
1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp	135452.51	-8334.71	4812.05	381125.89	775219.74	1406.77
1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp	135452.51	-9453.85	-1.22	-91856.25	889012.82	3062.67
1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp	135452.51	-8138.54	-4700.20	-556149.23	760366.51	3918.48
1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp	135452.51	-4727.99	-8189.11	-899739.60	422716.61	3762.84
Dead+Wind 0 deg - Service	31119.17	-1.08	-8147.10	-742597.15	-5575.13	2300.16
Dead+Wind 30 deg - Service	31119.17	3843.13	-6658.65	-613233.13	-354716.75	1450.98
Dead+Wind 60 deg - Service	31119.17	6525.44	-3767.46	-351592.05	-599961.50	270.15
Dead+Wind 90 deg - Service	31119.17	7688.13	1.08	-8383.28	-703926.42	-1024.97
Dead+Wind 120 deg - Service	31119.17	7055.06	4074.48	358663.86	-641387.97	-2126.61
Dead+Wind 150 deg - Service	31119.17	3845.00	6659.73	596375.90	-354885.07	-2471.14
Dead+Wind 180 deg - Service	31119.17	1.08	7536.79	677943.64	-5779.18	-2252.08
Dead+Wind 210 deg - Service	31119.17	-3843.13	6658.65	596277.85	343367.12	-1451.06
Dead+Wind 240 deg - Service	31119.17	-7053.98	4072.62	358495.45	629944.52	-173.53
Dead+Wind 270 deg - Service	31119.17	-7688.13	-1.08	-8578.87	692582.01	1025.01
Dead+Wind 300 deg - Service	31119.17	-6526.52	-3769.33	-351782.13	588733.47	1981.94
Dead+Wind 330 deg - Service	31119.17	-3845.00	-6659.73	-613333.91	343541.18	2471.17

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX lb	PY lb	PZ lb	PX lb	PY lb	PZ lb	% Error
1	-0.00	-31119.17	0.00	0.00	31119.17	-0.00	0.000%
2	-4.78	-37343.00	-36209.32	4.26	37343.33	36209.17	0.001%
3	-4.78	-28007.25	-36209.32	4.78	28007.25	36209.32	0.000%
4	17080.58	-37343.00	-29594.00	-17080.58	37343.00	29594.00	0.000%
5	17080.58	-28007.25	-29594.00	-17080.58	28007.25	29594.00	0.000%
6	29001.95	-37343.00	-16744.29	-29001.95	37343.00	16744.29	0.000%
7	29001.95	-28007.25	-16744.29	-29001.95	28007.25	16744.29	0.000%
8	34169.45	-37343.00	4.78	-34169.45	37343.00	-4.78	0.000%
9	34169.45	-28007.25	4.78	-34169.45	28007.25	-4.78	0.000%
10	31355.80	-37343.00	18108.80	-31355.94	37343.33	-18108.27	0.001%
11	31355.80	-28007.25	18108.80	-31355.80	28007.25	-18108.80	0.000%
12	17088.87	-37343.00	29598.79	-17088.87	37343.00	-29598.79	0.000%
13	17088.87	-28007.25	29598.79	-17088.87	28007.25	-29598.79	0.000%
14	4.78	-37343.00	33496.86	-4.78	37343.00	-33496.86	0.000%
15	4.78	-28007.25	33496.86	-4.78	28007.25	-33496.86	0.000%
16	-17080.58	-37343.00	29594.00	17080.58	37343.00	-29594.00	0.000%
17	-17080.58	-28007.25	29594.00	17080.58	28007.25	-29594.00	0.000%
18	-31351.02	-37343.00	18100.52	31351.00	37342.99	-18100.51	0.000%
19	-31351.02	-28007.25	18100.52	31351.02	28007.25	-18100.52	0.000%
20	-34169.45	-37343.00	-4.78	34169.45	37343.00	4.78	0.000%
21	-34169.45	-28007.25	-4.78	34169.45	28007.25	4.78	0.000%
22	-29006.74	-37343.00	-16752.57	29006.74	37343.00	16752.57	0.000%
23	-29006.74	-28007.25	-16752.57	29006.74	28007.25	16752.57	0.000%
24	-17088.87	-37343.00	-29598.79	17088.87	37343.00	29598.79	0.000%
25	-17088.87	-28007.25	-29598.79	17088.87	28007.25	29598.79	0.000%
26	-0.00	-135452.51	0.00	0.00	135452.51	-0.00	0.000%
27	-1.22	-135452.51	-9626.21	1.22	135452.51	9626.21	0.000%
28	4725.87	-135452.51	-8187.89	-4725.87	135452.51	8187.89	0.000%
29	8137.32	-135452.51	-4698.08	-8137.32	135452.51	4698.08	0.000%
30	9453.86	-135452.51	1.22	-9453.85	135452.51	-1.22	0.000%
31	8335.93	-135452.51	4814.16	-8335.93	135452.51	-4814.16	0.000%
32	4727.99	-135452.51	8189.11	-4727.99	135452.51	-8189.11	0.000%
33	1.22	-135452.51	9398.29	-1.22	135452.51	-9398.29	0.000%
34	-4725.87	-135452.51	8187.89	4725.87	135452.51	-8187.89	0.000%
35	-8334.71	-135452.51	4812.05	8334.71	135452.51	-4812.05	0.000%
36	-9453.86	-135452.51	-1.22	9453.85	135452.51	1.22	0.000%
37	-8138.54	-135452.51	-4700.20	8138.54	135452.51	4700.20	0.000%
38	-4727.99	-135452.51	-8189.11	4727.99	135452.51	8189.11	0.000%
39	-1.08	-31119.17	-8147.10	1.08	31119.17	8147.10	0.000%
40	3843.13	-31119.17	-6658.65	-3843.13	31119.17	6658.65	0.000%
41	6525.44	-31119.17	-3767.46	-6525.44	31119.17	3767.46	0.000%
42	7688.13	-31119.17	1.08	-7688.13	31119.17	-1.08	0.000%
43	7055.06	-31119.17	4074.48	-7055.06	31119.17	-4074.48	0.000%
44	3845.00	-31119.17	6659.73	-3845.00	31119.17	-6659.73	0.000%
45	1.08	-31119.17	7536.79	-1.08	31119.17	-7536.79	0.000%
46	-3843.13	-31119.17	6658.65	3843.13	31119.17	-6658.65	0.000%
47	-7053.98	-31119.17	4072.62	7053.98	31119.17	-4072.62	0.000%
48	-7688.13	-31119.17	-1.08	7688.13	31119.17	1.08	0.000%
49	-6526.52	-31119.17	-3769.33	6526.52	31119.17	3769.33	0.000%
50	-3845.00	-31119.17	-6659.73	3845.00	31119.17	6659.73	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance

1	Yes	4	0.00000001	0.00000001
2	Yes	4	0.00000001	0.00000001
3	Yes	4	0.00000001	0.00000001
4	Yes	4	0.00000001	0.00000001
5	Yes	4	0.00000001	0.00000001
6	Yes	4	0.00000001	0.00000001
7	Yes	4	0.00000001	0.00000001
8	Yes	4	0.00000001	0.00000001
9	Yes	4	0.00000001	0.00000001
10	Yes	4	0.00000001	0.00000001
11	Yes	4	0.00000001	0.00000001
12	Yes	4	0.00000001	0.00000001
13	Yes	4	0.00000001	0.00000001
14	Yes	4	0.00000001	0.00000001
15	Yes	4	0.00000001	0.00000001
16	Yes	4	0.00000001	0.00000001
17	Yes	4	0.00000001	0.00000001
18	Yes	4	0.00000001	0.00000001
19	Yes	4	0.00000001	0.00000001
20	Yes	4	0.00000001	0.00000001
21	Yes	4	0.00000001	0.00000001
22	Yes	4	0.00000001	0.00000001
23	Yes	4	0.00000001	0.00000001
24	Yes	4	0.00000001	0.00000001
25	Yes	4	0.00000001	0.00000001
26	Yes	4	0.00000001	0.00000001
27	Yes	4	0.00000001	0.00000001
28	Yes	4	0.00000001	0.00000001
29	Yes	4	0.00000001	0.00000309
30	Yes	4	0.00000001	0.00000001
31	Yes	4	0.00000001	0.00000001
32	Yes	4	0.00000001	0.00000001
33	Yes	4	0.00000001	0.00000001
34	Yes	4	0.00000001	0.00000001
35	Yes	4	0.00000001	0.00000001
36	Yes	4	0.00000001	0.00000001
37	Yes	4	0.00000001	0.00000001
38	Yes	4	0.00000001	0.00000001
39	Yes	4	0.00000001	0.00000001
40	Yes	4	0.00000001	0.00000001
41	Yes	4	0.00000001	0.00000001
42	Yes	4	0.00000001	0.00000001
43	Yes	4	0.00000001	0.00000001
44	Yes	4	0.00000001	0.00000001
45	Yes	4	0.00000001	0.00000001
46	Yes	4	0.00000001	0.00000001
47	Yes	4	0.00000001	0.00000001
48	Yes	4	0.00000001	0.00000001
49	Yes	4	0.00000001	0.00000001
50	Yes	4	0.00000001	0.00000001

Maximum Tower Deflections - Service Wind

Section No.	*Elevation*	*Horz. Deflection*	*Gov. Load Comb.*	*Tilt*	*Twist*
	ft	*in*		°	°
T1	180 - 175	2.276	39	0.1009	0.0169
T2	175 - 170	2.169	39	0.1006	0.0159
T3	170 - 165	2.063	39	0.1001	0.0149
T4	165 - 160	1.956	39	0.0994	0.0142

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T5	160 - 153.333	1.850	39	0.0983	0.0130
T6	153.333 - 146.667	1.710	39	0.0965	0.0121
T7	146.667 - 140	1.572	39	0.0940	0.0115
T8	140 - 133.333	1.437	39	0.0911	0.0105
T9	133.333 - 126.667	1.308	39	0.0874	0.0099
T10	126.667 - 120	1.183	39	0.0830	0.0087
T11	120 - 113.333	1.065	39	0.0781	0.0075
T12	113.333 - 106.667	0.953	39	0.0739	0.0065
T13	106.667 - 100	0.847	39	0.0693	0.0054
T14	100 - 90	0.747	39	0.0642	0.0045
T15	90 - 80	0.610	39	0.0585	0.0037
T16	80 - 70	0.483	39	0.0521	0.0029
T17	70 - 60	0.372	39	0.0447	0.0024
T18	60 - 50	0.278	39	0.0368	0.0018
T19	50 - 40	0.198	39	0.0307	0.0014
T20	40 - 30	0.131	39	0.0243	0.0010
T21	30 - 20	0.078	39	0.0176	0.0007
T22	20 - 10	0.039	39	0.0107	0.0004
T23	10 - 0	0.013	47	0.0054	0.0002

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
182.00	PD1142-1	39	2.276	0.1009	0.0169	587692
181.00	PD458-1	39	2.276	0.1009	0.0169	587692
180.00	3' Side Arm Mount	39	2.276	0.1009	0.0169	587692
179.92	DB224	39	2.274	0.1009	0.0169	587692
179.92	DB224	39	2.274	0.1009	0.0169	587692
179.92	3' Side Arm Mount	39	2.274	0.1009	0.0169	587692
179.00	3' Side Arm Mount	39	2.254	0.1009	0.0167	587692
177.17	DB201-A	39	2.215	0.1008	0.0163	587692
163.25	PD220	39	1.919	0.0991	0.0138	650966
158.50	16' Omni	39	1.819	0.0979	0.0127	270973
154.17	20' Omni	39	1.727	0.0967	0.0122	193315
144.92	DB420	39	1.536	0.0933	0.0113	150475
138.75	PD1142-1	39	1.412	0.0904	0.0104	70712
136.17	AO8410M-54T0	39	1.362	0.0890	0.0102	107691
134.50	Andrew 6' w/Radome	39	1.330	0.0881	0.0100	157488
126.67	PD220	39	1.183	0.0830	0.0087	69804
125.25	PD1142-1	39	1.158	0.0820	0.0084	68603
123.17	DB806-XC	39	1.120	0.0804	0.0080	75336
119.50	2' Dia parabolic dish antenna	39	1.057	0.0777	0.0074	90438
112.92	2' Dia parabolic dish antenna	39	0.946	0.0736	0.0065	81357
104.50	12' Omni	39	0.814	0.0676	0.0051	91413
99.00	16' omni	39	0.732	0.0636	0.0044	61925
90.70	kreuc	39	0.619	0.0589	0.0037	165372
90.00	RRUS 11 B12	39	0.610	0.0585	0.0037	171620
85.82	DB22	39	0.555	0.0560	0.0033	111231
77.50	Yagi s4307-sf3s1f	39	0.454	0.0504	0.0028	64860
76.67	(2) Whip Antenna 4'X1.5" Dia	39	0.444	0.0498	0.0027	65908
73.75	Pirod 6' Side Mount Standoff (1)	39	0.412	0.0476	0.0026	71843

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	180 - 175	9.997	2	0.4407	0.0751
T2	175 - 170	9.531	2	0.4398	0.0706
T3	170 - 165	9.064	2	0.4380	0.0665
T4	165 - 160	8.597	2	0.4350	0.0633
T5	160 - 153.333	8.131	2	0.4308	0.0580
T6	153.333 - 146.667	7.515	2	0.4228	0.0539
T7	146.667 - 140	6.910	2	0.4124	0.0513
T8	140 - 133.333	6.316	2	0.3993	0.0468
T9	133.333 - 126.667	5.752	2	0.3831	0.0441
T10	126.667 - 120	5.204	2	0.3641	0.0388
T11	120 - 113.333	4.686	2	0.3423	0.0333
T12	113.333 - 106.667	4.194	2	0.3240	0.0290
T13	106.667 - 100	3.729	2	0.3039	0.0242
T14	100 - 90	3.287	2	0.2816	0.0201
T15	90 - 80	2.686	2	0.2566	0.0163
T16	80 - 70	2.129	2	0.2287	0.0130
T17	70 - 60	1.643	2	0.1965	0.0105
T18	60 - 50	1.226	2	0.1617	0.0082
T19	50 - 40	0.876	2	0.1352	0.0063
T20	40 - 30	0.580	2	0.1071	0.0046
T21	30 - 20	0.343	2	0.0777	0.0032
T22	20 - 10	0.174	2	0.0471	0.0019
T23	10 - 0	0.058	10	0.0238	0.0009

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
182.00	PD1142-1	2	9.997	0.4407	0.0751	150696
181.00	PD458-1	2	9.997	0.4407	0.0751	150696
180.00	3' Side Arm Mount	2	9.997	0.4407	0.0751	150696
179.92	DB224	2	9.989	0.4407	0.0750	150696
179.92	DB224	2	9.989	0.4407	0.0750	150696
179.92	3' Side Arm Mount	2	9.989	0.4407	0.0750	150696
179.00	3' Side Arm Mount	2	9.904	0.4405	0.0742	150696
177.17	DB201-A	2	9.733	0.4403	0.0725	150696
163.25	PD220	2	8.434	0.4337	0.0615	190007
158.50	16' Omni	2	7.991	0.4292	0.0567	65876
154.17	20' Omni	2	7.592	0.4239	0.0542	46548
144.92	DB420	2	6.752	0.4092	0.0502	35147
138.75	PD1142-1	2	6.208	0.3965	0.0462	16511
136.17	AO8410M-54T0	2	5.989	0.3903	0.0453	24958
134.50	Andrew 6' w/Radome	2	5.850	0.3861	0.0447	36256
126.67	PD220	2	5.205	0.3641	0.0388	16727
125.25	PD1142-1	2	5.092	0.3595	0.0376	16347
123.17	DB806-XC	2	4.928	0.3525	0.0358	17672
119.50	2' Dia parabolic dish antenna	2	4.648	0.3408	0.0330	20669
112.92	2' Dia parabolic dish antenna	2	4.164	0.3229	0.0288	19053
104.50	12' Omni	2	3.583	0.2965	0.0227	20847
99.00	16' omni	2	3.224	0.2787	0.0196	14142
90.70	kreuc	2	2.727	0.2583	0.0165	38584
90.00	RRUS 11 B12	2	2.686	0.2566	0.0163	40101
85.82	DB22	2	2.447	0.2456	0.0149	25601

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
77.50	Yagi s4307-sf3s1f	2	2.000	0.2211	0.0123	14787
76.67	(2) Whip Antenna 4'X1.5" Dia	2	1.958	0.2185	0.0121	15038
73.75	Pirod 6' Side Mount Standoff (1)	2	1.816	0.2092	0.0114	16454

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	180	Leg	A325N	0.6250	4	206.46	20708.70	0.010 ✔	1	Bolt Tension
		Diagonal	A325N	0.5000	1	572.82	4132.50	0.139 ✔	1	Member Bearing
		Top Girt	A325N	0.5000	1	150.35	4132.50	0.036 ✔	1	Member Bearing
T2	175	Diagonal	A325N	0.5000	1	764.38	4132.50	0.185 ✔	1	Member Bearing
T3	170	Diagonal	A325N	0.5000	1	881.13	4132.50	0.213 ✔	1	Member Bearing
T4	165	Diagonal	A325N	0.5000	1	1131.19	4132.50	0.274 ✔	1	Member Bearing
T5	160	Leg	A325N	0.7500	4	1693.09	29820.60	0.057 ✔	1	Bolt Tension
		Diagonal	A325N	0.5000	1	1430.11	4132.50	0.346 ✔	1	Member Bearing
T6	153.333	Diagonal	A325N	0.5000	1	1672.62	4132.50	0.405 ✔	1	Member Bearing
T7	146.667	Diagonal	A325N	0.5000	1	1913.42	4132.50	0.463 ✔	1	Member Bearing
T8	140	Leg	A325N	0.8750	4	3990.35	40589.10	0.098 ✔	1	Bolt Tension
		Diagonal	A325N	0.5000	1	2268.51	6198.75	0.366 ✔	1	Gusset Bearing
T9	133.333	Diagonal	A325N	0.5000	1	2946.13	6198.75	0.475 ✔	1	Member Bearing
T10	126.667	Diagonal	A325N	0.5000	1	3271.29	6198.75	0.528 ✔	1	Gusset Bearing
T11	120	Leg	A325N	0.8750	4	7228.67	40589.10	0.178 ✔	1	Bolt Tension
		Diagonal	A325N	0.5000	1	3594.52	6198.75	0.580 ✔	1	Gusset Bearing
T12	113.333	Diagonal	A325N	0.5000	1	3927.58	6198.75	0.634 ✔	1	Gusset Bearing
T13	106.667	Diagonal	A325N	0.5000	1	4057.82	6198.75	0.655 ✔	1	Gusset Bearing
T14	100	Leg	A325N	1.0000	4	11276.60	53014.40	0.213 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	1	4877.58	7830.00	0.623 ✔	1	Member Bearing
T15	90	Diagonal	A325N	0.6250	1	5837.13	7830.00	0.745 ✔	1	Member Bearing
T16	80	Leg	A325N	1.0000	4	15727.60	53014.40	0.297 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	1	6217.86	10440.00	0.596 ✔	1	Gusset Bearing
T17	70	Diagonal	A325N	0.6250	1	6537.35	10440.00	0.626 ✔	1	Gusset Bearing
T18	60	Leg	A325N	1.0000	4	20469.00	53014.40	0.386 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	1	6861.84	10440.00	0.657 ✔	1	Gusset Bearing
T19	50	Diagonal	A325N	0.6250	1	7115.34	10440.00	0.682 ✔	1	Member Bearing
T20	40	Leg	A325N	1.0000	6	16806.30	53014.40	0.317 ✔	1	Bolt Tension
		Diagonal	A325N	0.6250	1	7434.45	10440.00	0.712 ✔	1	Member Bearing
T21	30	Diagonal	A325N	0.6250	1	7678.62	10440.00	0.735 ✔	1	Gusset Bearing
T22	20	Leg	A325N	1.0000	6	19953.30	53014.40	0.376 ✔	1	Bolt Tension

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load lb	Ratio Load / Allowable	Allowable Ratio	Criteria
		Diagonal	A325N	0.7500	1	7940.93	15768.80	0.504 ✔	1	Member Bearing
T23	10	Diagonal	A325N	0.7500	1	8191.44	15768.80	0.519 ✔	1	Member Bearing

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 175	ROHN 2.5 X-STR	5.01	5.01	65.0 K=1.00	2.2535	-1827.59	74428.70	0.025 [1] ✔
T2	175 - 170	ROHN 2.5 X-STR	5.01	5.01	65.0 K=1.00	2.2535	-2927.64	74428.70	0.039 [1] ✔
T3	170 - 165	ROHN 2.5 X-STR	5.01	5.01	65.0 K=1.00	2.2535	-4336.34	74428.70	0.058 [1] ✔
T4	165 - 160	ROHN 2.5 X-STR	5.01	5.01	65.0 K=1.00	2.2535	-6391.04	74428.70	0.086 [1] ✔
T5	160 - 153.333	ROHN 2.5 X-STR	6.68	6.68	86.7 K=1.00	2.2535	-8979.95	58513.50	0.153 [1] ✔
T6	153.333 - 146.667	ROHN 2.5 X-STR	6.68	6.68	86.7 K=1.00	2.2535	-12272.50	58513.50	0.210 [1] ✔
T7	146.667 - 140	ROHN 2.5 X-STR	6.68	6.68	86.7 K=1.00	2.2535	-16124.10	58513.50	0.276 [1] ✔
T8	140 - 133.333	ROHN 3 STD	6.68	6.68	68.9 K=1.00	2.2285	-20484.20	70892.70	0.289 [1] ✔
T9	133.333 - 126.667	ROHN 3 STD	6.68	6.68	68.9 K=1.00	2.2285	-25373.30	70892.70	0.358 [1] ✔
T10	126.667 - 120	ROHN 3 STD	6.68	6.68	68.9 K=1.00	2.2285	-30408.60	70892.70	0.429 [1] ✔
T11	120 - 113.333	ROHN 3 X-STR	6.68	6.68	70.5 K=1.00	3.0159	-35899.50	94342.30	0.381 [1] ✔
T12	113.333 - 106.667	ROHN 3 X-STR	6.68	6.68	70.5 K=1.00	3.0159	-41630.40	94342.30	0.441 [1] ✔
T13	106.667 - 100	ROHN 3 X-STR	6.68	6.68	70.5 K=1.00	3.0159	-47620.60	94342.30	0.505 [1] ✔
T14	100 - 90	ROHN 4 X-STR	10.02	10.02	81.4 K=1.00	4.4074	-55854.80	122174.00	0.457 [1] ✔
T15	90 - 80	ROHN 4 X-STR	10.02	10.02	81.4 K=1.00	4.4074	-66292.20	122174.00	0.543 [1] ✔
T16	80 - 70	ROHN 5 STD	10.02	10.02	64.0 K=1.00	4.2999	-77665.80	143400.00	0.542 [1] ✔
T17	70 - 60	ROHN 5 STD	10.02	10.02	64.0 K=1.00	4.2999	-88741.50	143400.00	0.619 [1] ✔
T18	60 - 50	P5.5x.375	10.02	10.02	66.2 K=1.00	6.0377	-100464.00	197279.00	0.509 [1] ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T19	50 - 40	P5.5x.375	10.02	10.02	66.2 K=1.00	6.0377	-111880.00	197279.00	0.567 [1]
T20	40 - 30	P5x.375	10.02	10.02	65.4 K=1.00	6.1120	-123801.00	201245.00	0.615 [1]
T21	30 - 20	P5x.375	10.02	10.02	65.4 K=1.00	6.1120	-135344.00	201245.00	0.673 [1]
T22	20 - 10	ROHN 6 EH	10.02	10.02	54.8 K=1.00	8.4049	-147568.00	303742.00	0.486 [1]
T23	10 - 0	ROHN 6 EH	10.02	10.02	54.8 K=1.00	8.4049	-159132.00	303742.00	0.524 [1]

[1] P_u / ϕP_n controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 175	L1 1/2x1 1/2x1/8	8.45	4.13	167.3 K=1.00	0.3594	-609.26	2899.07	0.210 [1]
T2	175 - 170	L1 1/2x1 1/2x1/8	8.87	4.34	175.7 K=1.00	0.3594	-771.68	2629.64	0.293 [1]
T3	170 - 165	L1 1/2x1 1/2x1/8	9.29	4.55	184.3 K=1.00	0.3594	-895.02	2391.21	0.374 [1]
T4	165 - 160	L1 1/2x1 1/2x1/8	9.72	4.76	193.0 K=1.00	0.3594	-1142.87	2180.08	0.524 [1]
T5	160 - 153.333	L1 3/4x1 3/4x1/8	11.14	5.53	191.2 K=1.00	0.4219	-1445.93	2605.74	0.555 [1]
T6	153.333 - 146.667	L1 3/4x1 3/4x1/8	11.69	5.80	200.7 K=1.00	0.4219	-1682.72	2366.70	0.711 [1]
T7	146.667 - 140	KL/R > 200 (C) - 54 L1 3/4x1 3/4x1/8	12.25	6.08	210.3 K=1.00	0.4219	-1932.23	2154.40	0.897 [1]
T8	140 - 133.333	KL/R > 200 (C) - 64 L2x2x3/16	12.82	6.33	192.9 K=1.00	0.7150	-2310.81	4341.66	0.532 [1]
T9	133.333 - 126.667	L2x2x3/16	13.40	6.62	201.7 K=1.00	0.7150	-2960.60	3969.50	0.746 [1]
T10	126.667 - 120	KL/R > 200 (C) - 82 L2x2x3/16	13.99	6.92	210.7 K=1.00	0.7150	-3307.73	3638.71	0.909 [1]
T11	120 - 113.333	KL/R > 200 (C) - 91 L2 1/2x2 1/2x3/16	14.59	7.22	174.9 K=1.00	0.9020	-3625.19	6658.86	0.544 [1]
T12	113.333 - 106.667	L2 1/2x2 1/2x3/16	15.19	7.52	182.2 K=1.00	0.9020	-3949.42	6135.32	0.644 [1]
T13	106.667 - 100	L2 1/2x2 1/2x3/16	15.80	7.82	189.6 K=1.00	0.9020	-4092.64	5666.93	0.722 [1]
T14	100 - 90	L3x3x3/16	18.17	9.04	182.1	1.0900	-4923.95	7425.35	0.663 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T15	90 - 80	L3x3x3/16	19.03	9.47	190.7 K=1.00	1.0900	-5950.15	6773.24	0.878 [1]
T16	80 - 70	L3x3x1/4	19.89	9.85	199.7 K=1.00	1.4400	-6270.06	8157.31	0.769 [1]
T17	70 - 60	L3x3x1/4	20.78	10.29	208.6 K=1.00	1.4400	-6653.79	7473.99	0.890 [1]
T18	60 - 50	KL/R > 200 (C) - 153 L3 1/2x3 1/2x1/4	21.67	10.74	185.7 K=1.00	1.6900	-6918.61	11067.30	0.625 [1]
T19	50 - 40	L3 1/2x3 1/2x1/4	22.57	11.19	193.5 K=1.00	1.6900	-7241.20	10192.70	0.710 [1]
T20	40 - 30	L4x4x1/4	23.48	11.65	175.8 K=1.00	1.9400	-7508.33	14182.80	0.529 [1]
T21	30 - 20	L4x4x1/4	24.40	12.11	182.7 K=1.00	1.9400	-7839.52	13125.70	0.597 [1]
T22	20 - 10	L4x4x5/16	25.33	12.51	189.7 K=1.00	2.4000	-8033.75	15063.90	0.533 [1]
T23	10 - 0	L4x4x5/16	26.27	12.97	196.8 K=1.00	2.4000	-8353.45	13999.00	0.597 [1]

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 175	L2x2x1/8	6.56	6.11	184.5 K=1.00	0.4844	-167.04	3214.75	0.052 [1]

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 175	ROHN 2.5 X-STR	5.01	5.01	65.0	2.2535	825.84	101409.00	0.008 [1]
T2	175 - 170	ROHN 2.5 X-STR	5.01	5.01	65.0	2.2535	1830.88	101409.00	0.018 [1]
T3	170 - 165	ROHN 2.5 X-STR	5.01	5.01	65.0	2.2535	3088.65	101409.00	0.030 [1]

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T4	165 - 160	ROHN 2.5 X-STR	5.01	5.01	65.0	2.2535	4683.66	101409.00	0.046 [1]
T5	160 - 153.333	ROHN 2.5 X-STR	6.68	6.68	86.7	2.2535	6772.37	101409.00	0.067 [1]
T6	153.333 - 146.667	ROHN 2.5 X-STR	6.68	6.68	86.7	2.2535	9525.43	101409.00	0.094 [1]
T7	146.667 - 140	ROHN 2.5 X-STR	6.68	6.68	86.7	2.2535	12691.40	101409.00	0.125 [1]
T8	140 - 133.333	ROHN 3 STD	6.68	6.68	68.9	2.2285	15961.40	100281.00	0.159 [1]
T9	133.333 - 126.667	ROHN 3 STD	6.68	6.68	68.9	2.2285	19971.30	100281.00	0.199 [1]
T10	126.667 - 120	ROHN 3 STD	6.68	6.68	68.9	2.2285	24345.20	100281.00	0.243 [1]
T11	120 - 113.333	ROHN 3 X-STR	6.68	6.68	70.5	3.0159	28914.70	135717.00	0.213 [1]
T12	113.333 - 106.667	ROHN 3 X-STR	6.68	6.68	70.5	3.0159	33765.60	135717.00	0.249 [1]
T13	106.667 - 100	ROHN 3 X-STR	6.68	6.68	70.5	3.0159	38871.10	135717.00	0.286 [1]
T14	100 - 90	ROHN 4 X-STR	10.02	10.02	81.4	4.4074	45106.20	198335.00	0.227 [1]
T15	90 - 80	ROHN 4 X-STR	10.02	10.02	81.4	4.4074	53375.50	198335.00	0.269 [1]
T16	80 - 70	ROHN 5 STD	10.02	10.02	64.0	4.2999	62910.50	193494.00	0.325 [1]
T17	70 - 60	ROHN 5 STD	10.02	10.02	64.0	4.2999	72216.30	193494.00	0.373 [1]
T18	60 - 50	P5.5x.375	10.02	10.02	66.2	6.0377	81875.90	271699.00	0.301 [1]
T19	50 - 40	P5.5x.375	10.02	10.02	66.2	6.0377	91214.50	271699.00	0.336 [1]
T20	40 - 30	P5x.375	10.02	10.02	65.4	6.1120	100838.00	275039.00	0.367 [1]
T21	30 - 20	P5x.375	10.02	10.02	65.4	6.1120	110110.00	275039.00	0.400 [1]
T22	20 - 10	ROHN 6 EH	10.02	10.02	54.8	8.4049	119720.00	378222.00	0.317 [1]
T23	10 - 0	ROHN 6 EH	10.02	10.02	54.8	8.4049	128588.00	378222.00	0.340 [1]

[1] P_u / ϕP_n controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 175	L1 1/2x1 1/2x1/8	8.45	4.13	109.2	0.2109	572.82	9175.78	0.062 [1] ✔
T2	175 - 170	L1 1/2x1 1/2x1/8	8.87	4.34	114.6	0.2109	764.38	9175.78	0.083 [1] ✔
T3	170 - 165	L1 1/2x1 1/2x1/8	9.29	4.55	120.0	0.2109	881.13	9175.78	0.096 [1] ✔
T4	165 - 160	L1 1/2x1 1/2x1/8	9.72	4.76	125.6	0.2109	1131.19	9175.78	0.123 [1] ✔
T5	160 - 153.333	L1 3/4x1 3/4x1/8	11.14	5.53	123.8	0.2578	1430.11	11214.80	0.128 [1] ✔
T6	153.333 - 146.667	L1 3/4x1 3/4x1/8	11.69	5.80	129.8	0.2578	1672.62	11214.80	0.149 [1] ✔
T7	146.667 - 140	L1 3/4x1 3/4x1/8	12.25	6.08	136.0	0.2578	1913.42	11214.80	0.171 [1] ✔
T8	140 - 133.333	L2x2x3/16	12.82	6.33	125.2	0.4484	2268.51	19503.60	0.116 [1] ✔
T9	133.333 - 126.667	L2x2x3/16	13.40	6.62	130.8	0.4484	2946.13	19503.60	0.151 [1] ✔
T10	126.667 - 120	L2x2x3/16	13.99	6.92	136.6	0.4484	3271.29	19503.60	0.168 [1] ✔
T11	120 - 113.333	L2 1/2x2 1/2x3/16	14.59	7.22	112.9	0.5886	3594.52	25604.50	0.140 [1] ✔
T12	113.333 - 106.667	L2 1/2x2 1/2x3/16	15.19	7.52	117.6	0.5886	3927.58	25604.50	0.153 [1] ✔
T13	106.667 - 100	L2 1/2x2 1/2x3/16	15.80	7.82	122.3	0.5886	4057.82	25604.50	0.158 [1] ✔
T14	100 - 90	L3x3x3/16	18.17	9.04	117.1	0.7120	4877.58	30973.40	0.157 [1] ✔
T15	90 - 80	L3x3x3/16	19.03	9.47	122.6	0.7120	5837.13	30973.40	0.188 [1] ✔
T16	80 - 70	L3x3x1/4	19.89	9.85	128.7	0.9394	6217.86	40862.80	0.152 [1] ✔
T17	70 - 60	L3x3x1/4	20.78	10.29	134.4	0.9394	6537.35	40862.80	0.160 [1] ✔
T18	60 - 50	L3 1/2x3 1/2x1/4	21.67	10.74	119.6	1.1269	6861.84	49019.10	0.140 [1] ✔
T19	50 - 40	L3 1/2x3 1/2x1/4	22.57	11.19	124.5	1.1269	7115.34	49019.10	0.145 [1] ✔
T20	40 - 30	L4x4x1/4	23.48	11.65	113.0	1.3144	7434.45	57175.30	0.130 [1] ✔
T21	30 - 20	L4x4x1/4	24.40	12.11	117.4	1.3144	7678.62	57175.30	0.134 [1] ✔
T22	20 - 10	L4x4x5/16	25.33	12.51	122.3	1.5949	7940.93	69379.10	0.114 [1] ✔
T23	10 - 0	L4x4x5/16	26.27	12.97	126.8	1.5949	8191.44	69379.10	0.118 [1] ✔

[1] $P_u / \phi P_n$ controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	180 - 175	L2x2x1/8	6.56	6.11	121.1	0.3047	150.35	13253.90	0.011 [1] ✔

[1] $P_u / \phi P_n$ controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T1	180 - 175	Leg	ROHN 2.5 X-STR	2	-1827.59	74428.70	2.5	Pass
T2	175 - 170	Leg	ROHN 2.5 X-STR	15	-2927.64	74428.70	3.9	Pass
T3	170 - 165	Leg	ROHN 2.5 X-STR	24	-4336.34	74428.70	5.8	Pass
T4	165 - 160	Leg	ROHN 2.5 X-STR	32	-6391.04	74428.70	8.6	Pass
T5	160 - 153.333	Leg	ROHN 2.5 X-STR	41	-8979.95	58513.50	15.3	Pass
T6	153.333 - 146.667	Leg	ROHN 2.5 X-STR	51	-12272.50	58513.50	21.0	Pass
T7	146.667 - 140	Leg	ROHN 2.5 X-STR	59	-16124.10	58513.50	27.6	Pass
T8	140 - 133.333	Leg	ROHN 3 STD	68	-20484.20	70892.70	28.9	Pass
T9	133.333 - 126.667	Leg	ROHN 3 STD	77	-25373.30	70892.70	35.8	Pass
T10	126.667 - 120	Leg	ROHN 3 STD	86	-30408.60	70892.70	42.9	Pass
T11	120 - 113.333	Leg	ROHN 3 X-STR	95	-35899.50	94342.30	38.1	Pass
T12	113.333 - 106.667	Leg	ROHN 3 X-STR	104	-41630.40	94342.30	44.1	Pass
T13	106.667 - 100	Leg	ROHN 3 X-STR	113	-47620.60	94342.30	50.5	Pass
T14	100 - 90	Leg	ROHN 4 X-STR	123	-55854.80	122174.00	45.7	Pass
T15	90 - 80	Leg	ROHN 4 X-STR	132	-66292.20	122174.00	54.3	Pass
T16	80 - 70	Leg	ROHN 5 STD	141	-77665.80	143400.00	54.2	Pass
T17	70 - 60	Leg	ROHN 5 STD	150	-88741.50	143400.00	61.9	Pass
T18	60 - 50	Leg	P5.5x.375	159	-100464.00	197279.00	50.9	Pass
T19	50 - 40	Leg	P5.5x.375	168	-111880.00	197279.00	56.7	Pass
T20	40 - 30	Leg	P5x.375	177	-123801.00	201245.00	61.5	Pass
T21	30 - 20	Leg	P5x.375	186	-135344.00	201245.00	67.3	Pass
T22	20 - 10	Leg	ROHN 6 EH	195	-147568.00	303742.00	48.6	Pass
T23	10 - 0	Leg	ROHN 6 EH	204	-159132.00	303742.00	52.4	Pass
T1	180 - 175	Diagonal	L1 1/2x1 1/2x1/8	10	-609.26	2899.07	21.0	Pass
T2	175 - 170	Diagonal	L1 1/2x1 1/2x1/8	19	-771.68	2629.64	29.3	Pass
T3	170 - 165	Diagonal	L1 1/2x1 1/2x1/8	28	-895.02	2391.21	37.4	Pass
T4	165 - 160	Diagonal	L1 1/2x1 1/2x1/8	37	-1142.87	2180.08	52.4	Pass
T5	160 - 153.333	Diagonal	L1 3/4x1 3/4x1/8	46	-1445.93	2605.74	55.5	Pass
T6	153.333 - 146.667	Diagonal	L1 3/4x1 3/4x1/8	54	-1682.72	2366.70	71.1	Pass
T7	146.667 - 140	Diagonal	L1 3/4x1 3/4x1/8	64	-1932.23	2154.40	89.7	Pass
T8	140 - 133.333	Diagonal	L2x2x3/16	73	-2310.81	4341.66	53.2	Pass
T9	133.333 - 126.667	Diagonal	L2x2x3/16	82	-2960.60	3969.50	74.6	Pass
T10	126.667 - 120	Diagonal	L2x2x3/16	91	-3307.73	3638.71	90.9	Pass
T11	120 - 113.333	Diagonal	L2 1/2x2 1/2x3/16	100	-3625.19	6658.86	54.4	Pass
T12	113.333 - 106.667	Diagonal	L2 1/2x2 1/2x3/16	109	-3949.42	6135.32	64.4	Pass
T13	106.667 - 100	Diagonal	L2 1/2x2 1/2x3/16	118	-4092.64	5666.93	72.2	Pass
T14	100 - 90	Diagonal	L3x3x3/16	126	-4923.95	7425.35	66.3	Pass
T15	90 - 80	Diagonal	L3x3x3/16	135	-5950.15	6773.24	87.8	Pass

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
T16	80 - 70	Diagonal	L3x3x1/4	144	-6270.06	8157.31	76.9	Pass
T17	70 - 60	Diagonal	L3x3x1/4	153	-6653.79	7473.99	89.0	Pass
T18	60 - 50	Diagonal	L3 1/2x3 1/2x1/4	162	-6918.61	11067.30	62.5	Pass
T19	50 - 40	Diagonal	L3 1/2x3 1/2x1/4	171	-7241.20	10192.70	71.0	Pass
T20	40 - 30	Diagonal	L4x4x1/4	180	-7508.33	14182.80	52.9	Pass
T21	30 - 20	Diagonal	L4x4x1/4	189	-7839.52	13125.70	59.7	Pass
T22	20 - 10	Diagonal	L4x4x5/16	198	-8033.75	15063.90	53.3	Pass
T23	10 - 0	Diagonal	L4x4x5/16	207	-8353.45	13999.00	59.7	Pass
T1	180 - 175	Top Girt	L2x2x1/8	5	-167.04	3214.75	5.2	Pass
							Summary	
						Leg (T21)	67.3	Pass
						Diagonal (T10)	90.9	Pass
						Top Girt (T1)	5.2	Pass
						Bolt Checks	74.5	Pass
						RATING =	**90.9**	**Pass**

SITE NAME: TOLLAND CENTRAL
PROJECT LTE2C
FA NUMBER: 10071279
SITE NUMBER: CTL05331
130 BALD HILL ROAD
TOLLAND, CT 06084
TOLLAND COUNTY

PROJECT TEAM

CLIENT REPRESENTATIVE

COMPANY: EMPIRE TELECOM
ADDRESS: 16 ESQUIRE ROAD
CITY, STATE, ZIP: BILLERICA, MA 01862
CONTACT: DAVID COOPER
E-MAIL: DCOOPER@EMPIRETELCOMM.COM

ENGINEER

COMPANY: MASER CONSULTING P.A.
ADDRESS: 2000 MIDLANTIC DRIVE, SUITE 100
CITY, STATE, ZIP: MT. LAUREL, NJ 08054
CONTACT: MICHAEL CLEARY
PHONE: (856) 717-0412 x4105
E-MAIL: MCLEARY@MASERCONSULTING.COM

RF ENGINEER

COMPANY: AT&T MOBILITY - NEW ENGLAND
ADDRESS: 550 COCHITUATE RD.
CITY, STATE, ZIP: FRAMINGHAM, MA 01701
CONTACT: OMAIR MOHAMMED
E-MAIL: OM636A@US.ATT.COM

SITE INFORMATION

APPLICANT/LESSEE

at&t

NEW CINGULAR WIRELESS PCS, LLC
550 COCHITUATE RD.
FRAMINGHAM, MA 01701

PROPERTY OWNER:

NAME: TOLLAND COUNTY MUTUAL AID
ADDRESS: P.O. BOX 6
CITY, STATE, ZIP: TOLLAND, CT 06084

LATITUDE: 41.8830919° N

LONGITUDE: 72.3756989° W

LAT./LONG. TYPE: NAD 83

AREA OF CONSTRUCTION: TELECOMMUNICATIONS EQUIPMENT COMPOUND

ZONING/JURISDICTION: NATIONAL, STATE & LOCAL CODES OR ORDIANCES

CURRENT/PROPOSED USE: UNMANNED TELECOMMUNICATIONS FACILITY

HANDICAP REQUIREMENTS: FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. HANDICAPPED ACCESS NOT REQUIRED.

CONSTRUCTION TYPE: IIB

USE GROUP: U

VICINITY MAP

NOT TO SCALE
IMAGE SOURCE: BING MAPS

DRIVING DIRECTIONS

DIRECTIONS FROM AT&T OFFICE AT 550 COCHITUATE ROAD, FRAMINGHAM, MA:

DEPART RT-30 WEST/COCHITUATE ROAD TOWARD BURR STREET. TURN BACK ON RT-30 EAST/COCHITUATE ROAD. TAKE RAMP RIGHT FOR I-90 WEST TOWARD WORCESTER/SPRINGFIELD. AT EXIT 9, TAKE RAMP RIGHT FOR I-84 TOWARD NEW YORK CITY/HARTFORD. AT EXIT 68, TAKE RAMP RIGHT FOR CT-195 TOWARD MANSFIELD/TOLLAND. BEAR RIGHT ONTO CT-195/MERROW ROAD. KEEP STRAIGHT ONTO CT-74/TOLLAND GREEN. TURN RIGHT ONTO TOLLAND GREEN. TURN LEFT ONTO DUNN HILL RD, AND THEN IMMEDIATELY BEAR RIGHT ONTO BALD HILL ROAD. DRIVE APPROXIMATELY 0.6 MILES AND THE SITE IS ON THE RIGHT.

CODE COMPLIANCE

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THE LATEST EDITIONS OF THE FOLLOWING CODES.

1. 2016 CONNECTICUT STATE BUILDING CODE, INCORPORATING THE 2012 IBC
2. NATIONAL ELECTRIC CODE 2014
3. 2015 NFPA-1
4. LIGHTNING PROTECTION CODE 201
5. AMERICAN CONCRETE INSTITUTE 318
6. AMERICAN INSTITUTE OF STEEL CONSTRICTION 360-10
7. EIA/TIA-222 REVISION G
8. TIA 607 FOR GROUNDING
9. INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS 81
10. IEEE C2 LATEST EDITION
11. TELCORDIA GR-1275 12. ANSI T1.311

GENERAL CONTRACTOR NOTES

DO NOT SCALE DRAWINGS

CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE ARCHITECT/ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

GENERAL NOTES

THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. A TECHNICIAN WILL VISIT THE SITE AS REQUIRED FOR ROUTINE MAINTENANCE. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT DISTURBANCE OR EFFECT ON DRAINAGE; NO SANITARY SEWER SERVICE, POTABLE WATER, OR TRASH DISPOSAL IS REQUIRED AND NO COMMERCIAL SIGNAGE IS PROPOSED.

SHEET	DESCRIPTION
T-1	TITLE SHEET
GN-1	GENERAL NOTES
A-1	COMPOUND PLAN
A-2	EQUIPMENT PLAN
A-3	ELEVATION VIEW AND ANTENNA SCHEDULE
A-4	ANTENNA LAYOUTS
A-5	DETAILS
A-6	RF PLUMBING DIAGRAMS
G-1	GROUNDING DETAILS

PROJECT DESCRIPTION/SCOPE OF WORK

PROJECT SCOPE HEREIN BASED ON RFDS ID# CTV5331, VERSION 2.0, LAST UPDATED 06/28/16 FOR LTE 2C SCOPE OF WORK.

THIS PROJECT WILL BE COMPRISED OF:

- (3) NEW RRUS-12 TO BE INSTALLED

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at&t

NEW CINGULAR WIRELESS PCS, LLC
550 COCHITUATE ROAD
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FOR STATE SPECIFIC DIRECT PHONE NUMBERS VISIT: WWW.CALL811.COM

SCALE:	JOB NUMBER:
AS SHOWN	16963007A

REV	DATE	DESCRIPTION	DRAWN BY	CHECKED BY
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0	08/05/16	ISSUED FOR CONSTR.	MPC	FEP
A	07/29/16	ISSUED FOR REVIEW	MSG	FEP

STATE OF CONNECTICUT — FRANK E. FAZDEN — 30 — LICENSED PROFESSIONAL ENGINEER

FRANK E. FAZDEN
CONNECTICUT PROFESSIONAL ENGINEER - LICENSE NUMBER: PEN.28[illegible]

IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF THE RESPONSIBLE LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SITE NAME:

TOLLAND CENTRAL
FA10071279
CTL005331

130 BALD HILL ROAD
TOLLAND, CT 06084
TOLLAND COUNTY

RED BANK OFFICE
331 Newman Springs Road
Suite 203
Red Bank, NJ 07701-5699
Phone: 732.383.1950
Fax: 732.383.1984

SHEET TITLE:
TITLE SHEET

SHEET NUMBER:
T-1

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.
2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5O HMS OR LESS.
4. THE SUBCONTRACTOR IS RESPONSIBLE FOR PROPERLY SEQUENCING GROUNDING AND UNDERGROUND CONDUIT INSTALLATION AS TO PREVENT ANY LOSS OF CONTINUITY IN THE GROUNDING SYSTEM OR DAMAGE TO THE CONDUIT.
5. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH #6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
6. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
7. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE EQUIPMENT GROUND RING WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS; 2 AWG STRANDED COPPER FOR OUTDOOR BTS.
8. CONNECTIONS TO THE GROUND BUS SHALL NOT BE DOUBLED UP OR STACKED. BACK TO BACK CONNECTIONS ON OPPOSITE SIDES OF THE GROUND BUS ARE PERMITTED.
9. ALL EXTERIOR GROUND CONDUCTORS BETWEEN EQUIPMENT/GROUND BARS AND THE GROUND RING, SHALL BE #2 AWG SOLID TINNED COPPER UNLESS OTHERWISE INDICATED.
10. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
11. USE OF 90° BENDS IN THE PROTECTION GROUNDING CONDUCTORS SHALL BE AVOIDED WHEN 45° BENDS CAN BE ADEQUATELY SUPPORTED. ALL BENDS SHALL BE MADE WITH 12" RADIUS OR LARGER.
12. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
13. ALL GROUND CONNECTIONS ABOVE GRADE (INTERIOR) SHALL BE FORMED USING HIGH PRESS CRIMPS EXCEPT FOR GROUND BAR CONNECTION FROM MGB TO OUTSIDE EXTERIOR GROUND SHALL ALL BE CADWELD CONNECTIONS.
14. COMPRESSION GROUND CONNECTIONS MAY BE REPLACED BY EXOTHERMIC WELD CONNECTIONS.
15. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED TO THE TOWER GROUND BAR.
16. APPROVED ANTIOXIDANT COATINGS (I.E. CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
17. ALL EXTERIOR AND INTERIOR GROUND CONNECTIONS SHALL BE COATED WITH A CORROSION RESISTANT MATERIAL.
18. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
19. BOND ALL METALLIC OBJECTS WITHIN 6 FT OF MAIN GROUND WIRES WITH 1-#2 AWG TIN-PLATED COPPER GROUND CONDUCTOR.
20. GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G. NON-METALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
21. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/4" IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50.
22. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

    CONTRACTOR - EMPIRE TELECOM
    SUBCONTRACTOR - GENERAL CONTRACTOR (CONSTRUCTION)
    OWNER - AT&T (NEW CINGULAR WIRELESS PCS, LLC)

23. ALL SITE WORK SHALL BE COMPLETED AS INDICATED ON THE DRAWINGS AND PROJECT SPECIFICATIONS.
24. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
25. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK.
26. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
27. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
28. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
29. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.
30. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
31. THE SUBCONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.
32. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY THE RESPONSIBLE ENGINEER. EXTREME CAUTION SHOULD BE USED BY THE SUBCONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. SUBCONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING & EXCAVATION.
33. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, AS DIRECTED BY THE RESPONSIBLE ENGINEER, AND SUBJECT TO THE APPROVAL OF THE OWNER AND/OR LOCAL UTILITIES.
34. THE AREAS OF THE OWNER'S PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY SHALL BE GRADED TO A UNIFORM SLOPE AND STABILIZED TO PREVENT EROSION.
35. SUBCONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.
36. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.
37. THE SUBGRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.
38. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE BTS EQUIPMENT AND TOWER AREAS.
39. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.
40. THE SUBCONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE TECHNICAL SPECIFICATION FOR SITE SIGNAGE.
41. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
42. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF THE CONTRACTOR.
43. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILITIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.
44. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.
45. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS.
46. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
47. CONSTRUCTION SHALL COMPLY WITH SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T MOBILITY SITES."
48. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
49. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION, ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
50. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN ALERT OF DANGEROUS EXPOSURE LEVELS.

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SCALE :	JOB NUMBER :
AS SHOWN	16963007A

REV	DATE	DESCRIPTION	BY	CHECKED BY
1	01/03/17	ISSUED FOR CONSTR.	GP	SMS
0	08/05/16	ISSUED FOR CONSTR.	MPC	FEP
A	07/29/16	ISSUED FOR REVIEW	MSG	FEP

STATE OF CONNECTICUT
FRANK E. FAZDEN
PROFESSIONAL ENGINEER
LICENSED

FRANK E. FAZDEN
CONNECTICUT PROFESSIONAL ENGINEER - LICENSE NUMBER: PEN.28[illegible]

SITE NAME:

TOLLAND CENTRAL
FA10071279
CTL005331

130 BALD HILL ROAD
TOLLAND, CT 06084
TOLLAND COUNTY

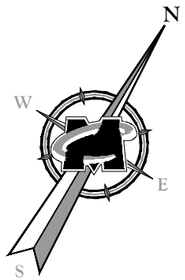
RED BANK OFFICE
331 Newman Springs Road
Suite 203
Red Bank, NJ 07701-5699
Phone: 732.383.1950
Fax: 732.383.1984

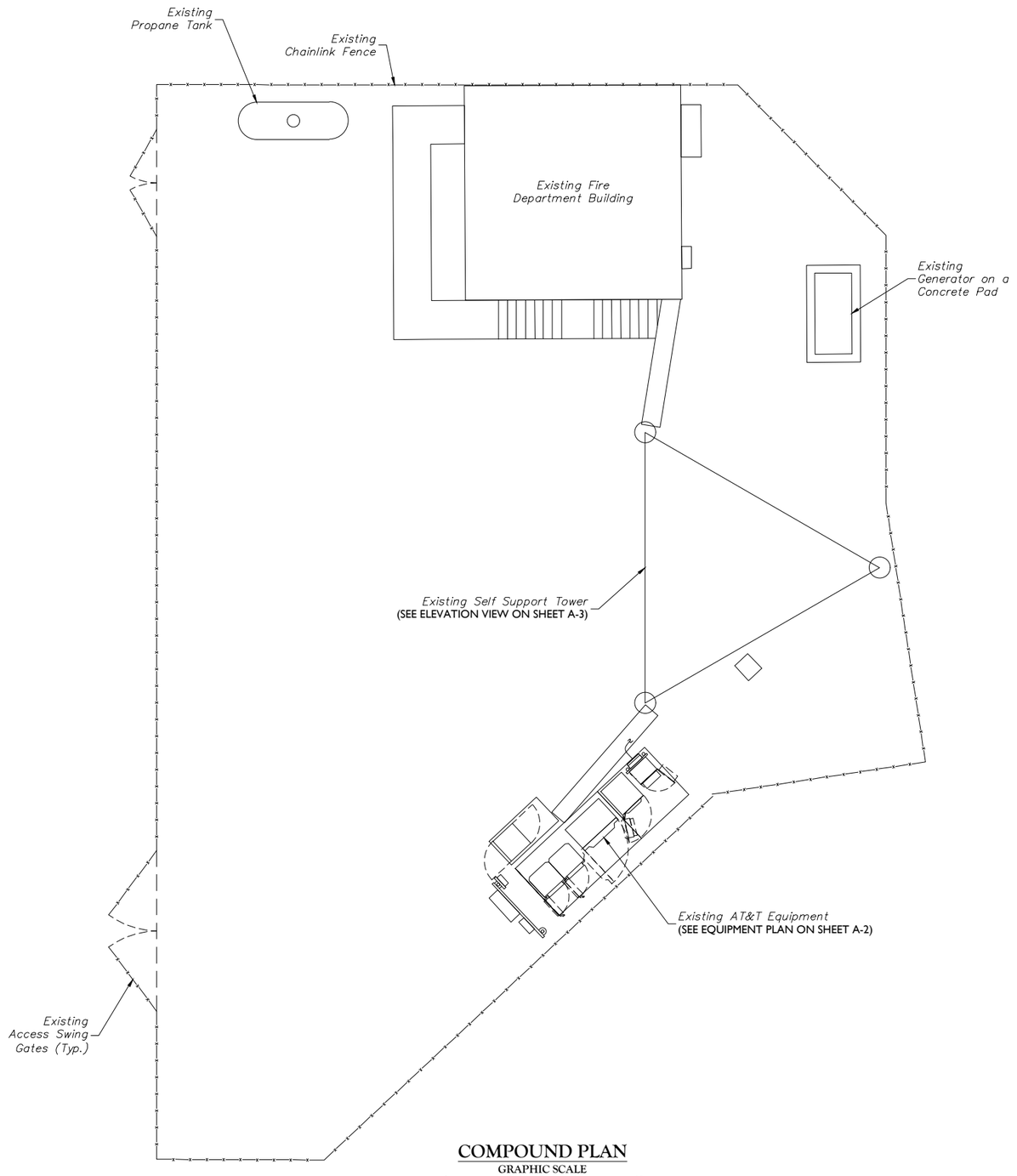
SHEET TITLE :

GENERAL NOTES

SHEET NUMBER :

GN-1





COMPOUND PLAN

GRAPHIC SCALE

6 0 3 6 12

(IN FEET)

SCALE: 1" = 6' FOR 24"X36" DRAWINGS
(DO NOT SCALE 11"X17" DRAWINGS)

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STATE OF CONNECTICUT
FRANK E. FAZDEN
LICENSED PROFESSIONAL ENGINEER

FRANK E. FAZDEN
CONNECTICUT LICENSED PROFESSIONAL ENGINEER - LICENSE NUMBER: PEN.0031

SITE NAME:

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FA10071279
CTL005331

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TOLLAND, CT 06084
TOLLAND COUNTY

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Suite 203
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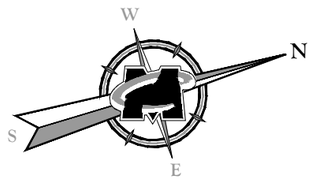
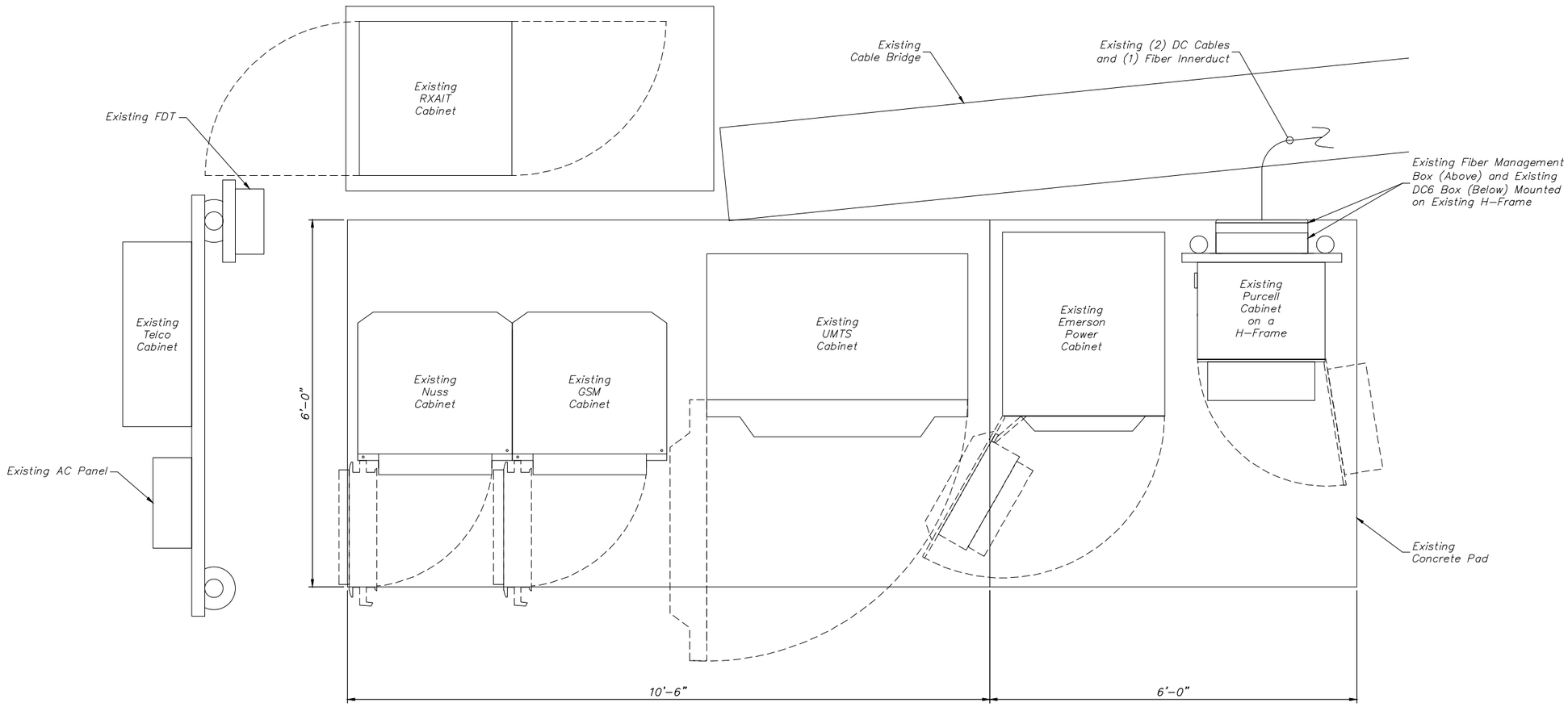
SHEET TITLE : COMPOUND PLAN

SHEET NUMBER : A-1





EQUIPMENT PLAN

GRAPHIC SCALE

1 0 .5 1 2

(IN FEET)

SCALE: 1" = 1' FOR 24"X36" DRAWINGS
(DO NOT SCALE 11"X17" DRAWINGS)

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STATE OF CONNECTICUT
FRANK E. FAZDEN
LICENSED PROFESSIONAL ENGINEER

FRANK E. FAZDEN
CONNECTICUT PROFESSIONAL ENGINEER - LICENSE NUMBER: PEN.0[illegible]

SITE NAME:

TOLLAND CENTRAL
FA10071279
CTL005331

130 BALD HILL ROAD
TOLLAND, CT 06084
TOLLAND COUNTY

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331 Newman Springs Road
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Red Bank, NJ 07701-5699
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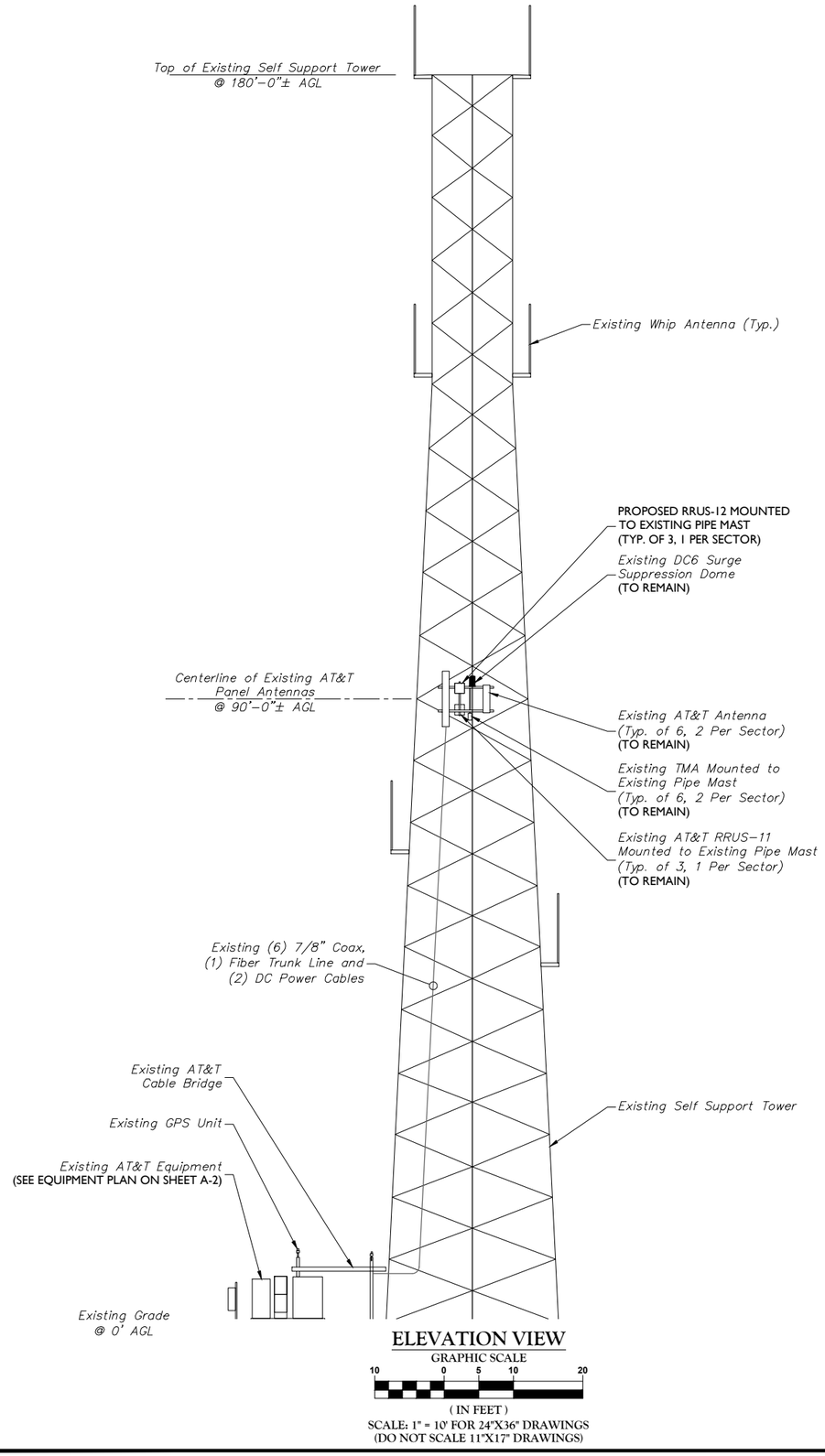
SHEET TITLE :

EQUIPMENT PLAN

SHEET NUMBER :

A-2



ELEVATION VIEW

GRAPHIC SCALE

10 0 5 10 20

(IN FEET)

SCALE: 1" = 10' FOR 24"X36" DRAWINGS
(DO NOT SCALE 11"X17" DRAWINGS)

PROPOSED ANTENNA AND RRUS CONFIGURATION

SECTOR		EXISTING ANTENNA CONFIGURATION	PROPOSED ANTENNA CONFIGURATION	TECHNOLOGY	ANTENNA STATUS	HEIGHT (in)	WIDTH (in)	DEPTH (in)	WEIGHT (lbs)	ANTENNA AZIMUTH	ANT. CL ELEV.(ft.)	RRUS CONFIGURATION	STATUS
ALPHA	A1	Kathrein 80010121	Kathrein 80010121	UMTS/GSM	REMAIN	54.50	10.30	5.90	46.30	30°	90.0'	-	-
	A2	KMW AM-X-CD-16-65-OOT-RET	KMW AM-X-CD-16-65-OOT-RET	LTE	REMAIN	55.00	11.00	5.00	35.00	30°	90.0'	RRUS-11 **RRUS-12**	REMAIN **NEW**
BETA	B1	Kathrein 80010121	Kathrein 80010121	UMTS/GSM	REMAIN	54.50	10.30	5.90	46.30	140°	90.0'	-	-
	B2	Powerwave P65-17-XLH-RR	Powerwave P65-17-XLH-RR	LTE	REMAIN	96.00	12.00	6.00	70.00	140°	90.0'	RRUS-11 **RRUS-12**	REMAIN **NEW**
GAMMA	C1	Kathrein 80010121	Kathrein 80010121	UMTS/GSM	REMAIN	54.50	10.30	5.90	46.30	250°	90.0'	-	-
	C2	KMW AM-X-CD-16-65-OOT-RET	KMW AM-X-CD-16-65-OOT-RET	LTE	REMAIN	72.00	11.80	5.90	48.50	260°	90.0'	RRUS-11 **RRUS-12**	REMAIN **NEW**

ANTENNA SCHEDULE

STRUCTURAL NOTES:

1. NO CONSTRUCTION OF THE PROPOSED LOADING SHOWN SHALL PROCEED UNTIL ADEQUACY OF THE EXISTING STRUCTURE AND FOUNDATION, INCLUDING THE PROPOSED AT&T ANTENNA MOUNTING CONFIGURATION SHOWN HEREIN, HAS BEEN COMPLETED.
2. THE STRUCTURE ELEVATION IS SHOWN FOR INFORMATIONAL PURPOSES ONLY AND MAY NOT REFLECT AS-BUILT FIELD CONDITIONS FOR ALL EXISTING INVENTORY LOADING/ANTENNAS/APPURTANENCES ON STRUCTURE. REFER TO THE LATEST STRUCTURAL ANALYSIS FOR EXISTING STRUCTURE LOADING AND THE PROPOSED METHOD OF ATTACHMENT OF THE PROPOSED ANTENNAS/CABLES.
3. THE CONTRACTOR IS RESPONSIBLE TO CONFIRM THAT ANY IMPROVEMENTS AND REINFORCEMENTS REQUIRED BY THE STRUCTURAL ANALYSIS CERTIFICATION ARE PROPERLY INSTALLED PRIOR TO THE ADDITION OF ANTENNAS, CABLES, SUPPORTS AND APPURTENANCES PROPOSED ON THESE DRAWINGS OR OTHERWISE NOTED IN THE STRUCTURAL ANALYSIS.

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STATE OF CONNECTICUT
FRANK E. FAZDEN
LICENSED PROFESSIONAL ENGINEER

FRANK E. FAZDEN
CONNECTICUT LICENSED PROFESSIONAL ENGINEER - LICENSE NUMBER: PEN.0018

SITE NAME:

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FA10071279
CTL005331

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TOLLAND COUNTY

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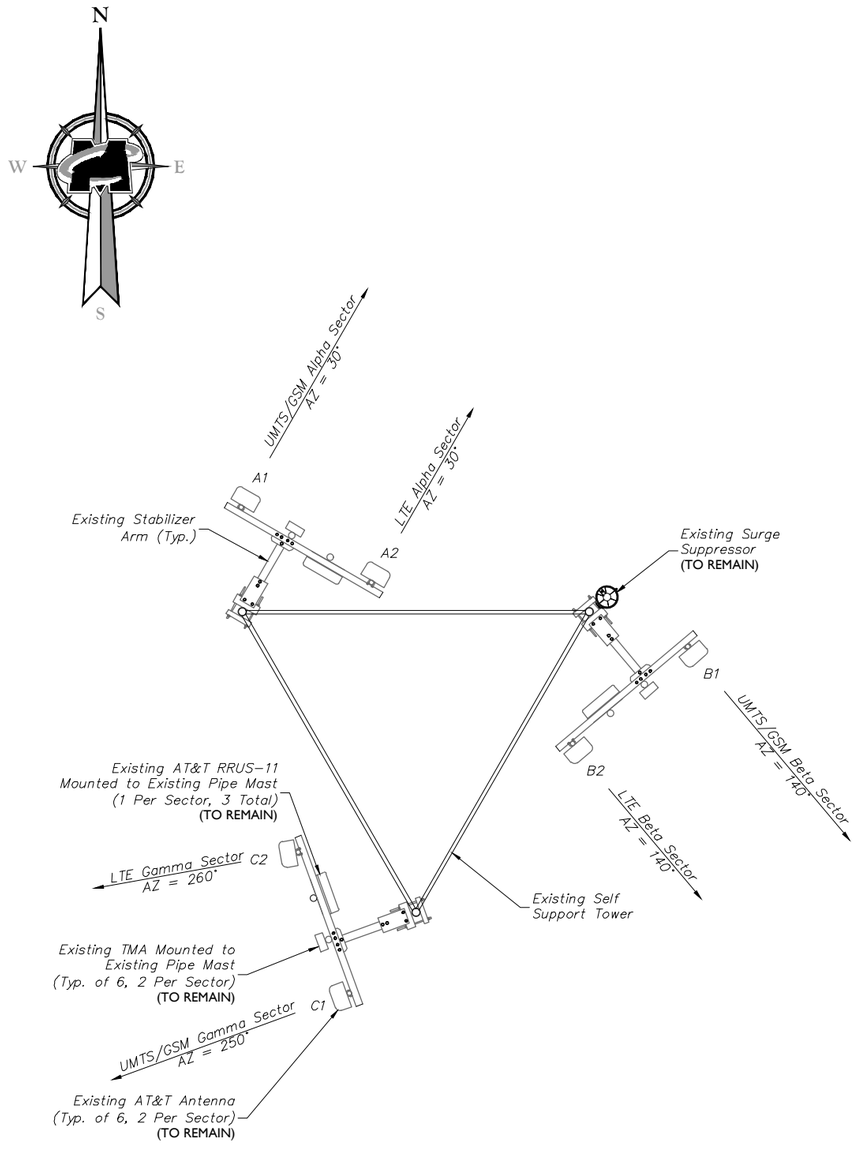
Suite 203
Red Bank, NJ 07701-5699
Phone: 732.383.1950
Fax: 732.383.1984

SHEET TITLE:

ELEVATION VIEW AND ANTENNA SCHEDULE

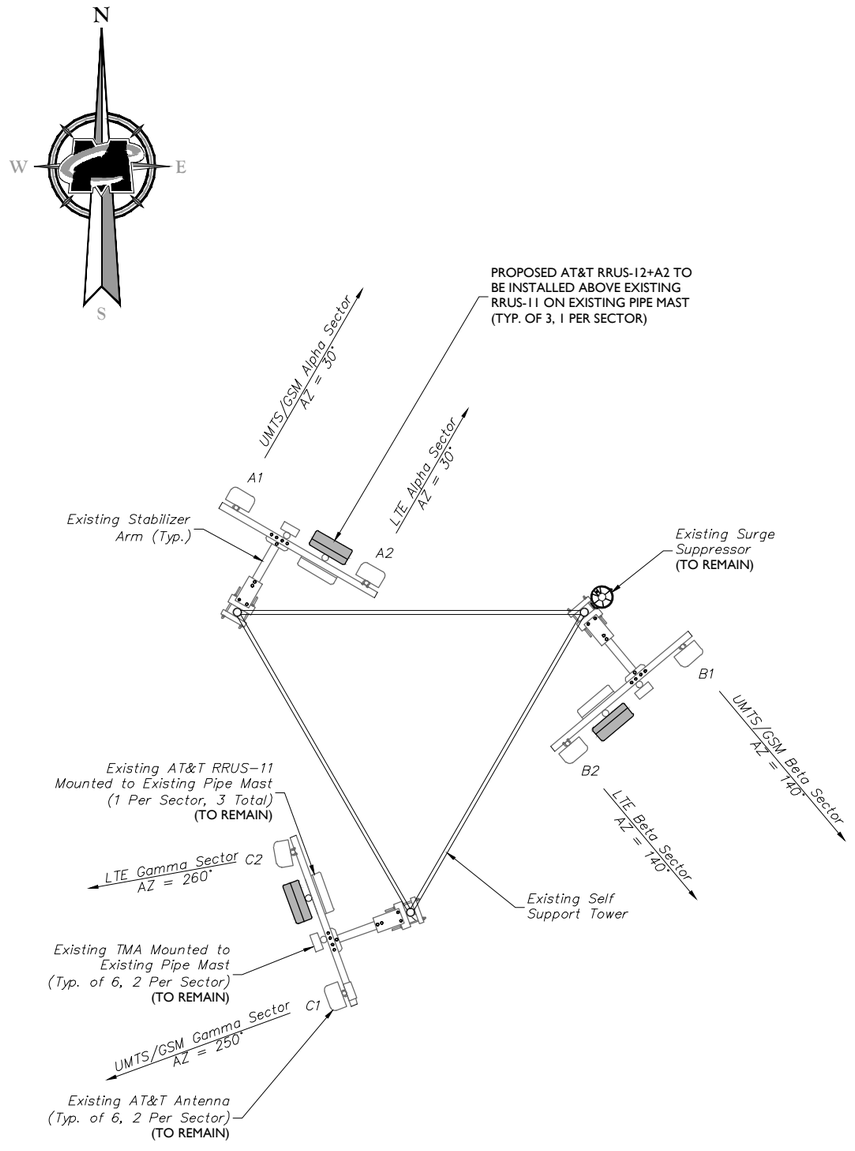
SHEET NUMBER:

A-2



EXISTING - ANTENNA LAYOUT

NOT TO SCALE



PROPOSED - ANTENNA LAYOUT

NOT TO SCALE

NOTES:

1. ANTENNA ORIENTATION IS BASED ON TRUE NORTH BEARING, CONTRACTOR SHALL VERIFY TRUE NORTH PRIOR TO CONSTRUCTION.
2. CONTRACTOR TO REFER TO FINAL RF CONFIGURATIONS SHEET FOR ANTENNA AZIMUTHS PRIOR TO CONSTRUCTION.
3. MINIMUM 4' O.C. HORIZONTAL SEPARATION BETWEEN ANTENNAS.

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STATE OF CONNECTICUT
FRANK E. PAZDEN
PROFESSIONAL ENGINEER
LICENSED
FRANK E. PAZDEN
CONNECTICUT PROFESSIONAL ENGINEER - LICENSE NUMBER: PEN.30

SITE NAME:

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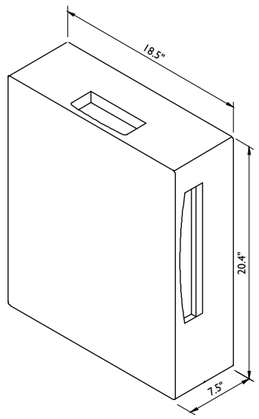
SHEET TITLE :

ANTENNA LAYOUTS

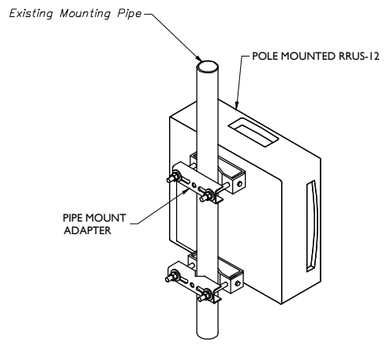
SHEET NUMBER :

A-4



RRUS-12 DIMENSIONS (H X W X D): 20.4" X 18.5" X 7.5" (INCLUDES SUNSHIELD)
WEIGHT: 58 LBS

RRUS-12 DETAIL
NOT TO SCALE



RRUS-12 MOUNTING DETAIL
NOT TO SCALE

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STATE OF CONNECTICUT
FRANK E. PASZDEN
LICENSED PROFESSIONAL ENGINEER

FRANK E. PASZDEN
CONNECTICUT PROFESSIONAL ENGINEER - LICENSE NUMBER: PEN.0[illegible]

SITE NAME:

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FA10071279
CTL005331

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TOLLAND COUNTY

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Phone: 732.383.1950
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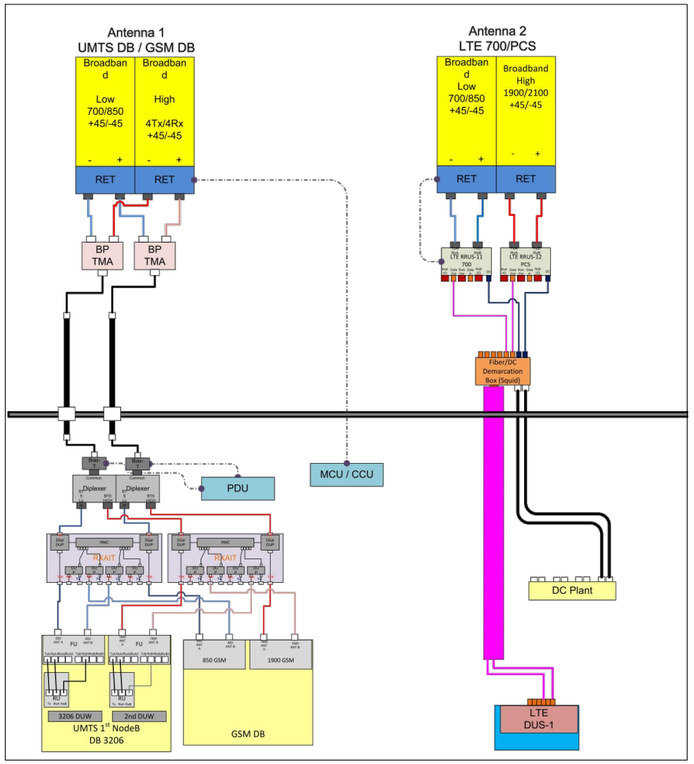
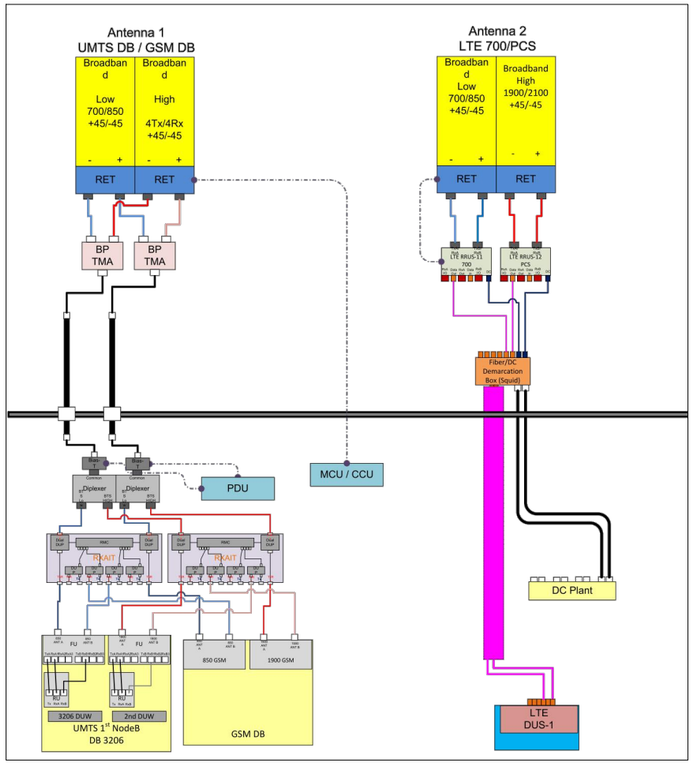
SHEET TITLE :
DETAILS

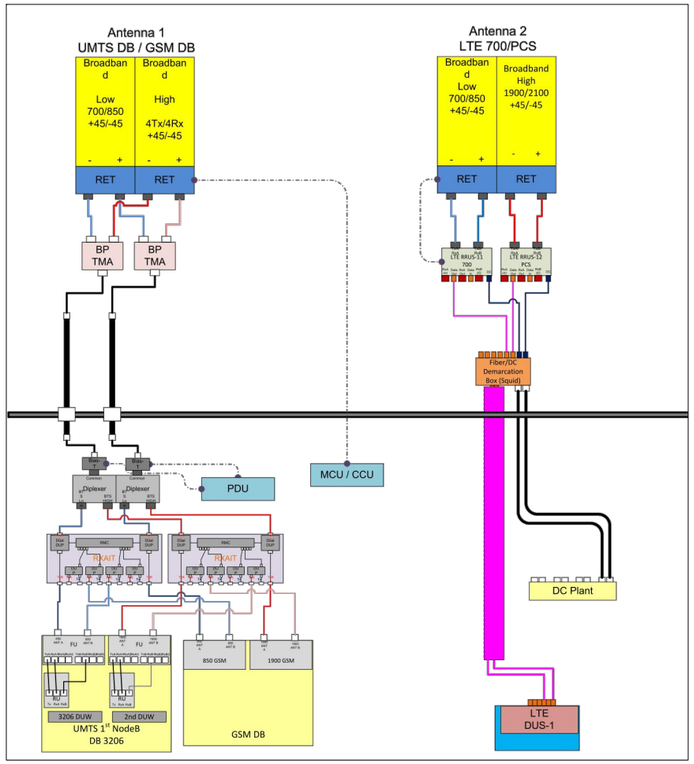
SHEET NUMBER :
A-5



ALPHA



BETA



GAMMA

BASED ON RF ENGINEERING DESIGN ENTITLED "NEW-ENGLAND_CONNECTICUT_CTV5331_2017-LTE-Next-Carrier_LTE-2C_om636a_PTN_10071279_25953_03-14-2016_As-Built-RF-Approval_v2.00"

RF PLUMBING DIAGRAMS

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LICENSED PROFESSIONAL ENGINEER

FRANK E. FAZDEN
CONNECTICUT PROFESSIONAL ENGINEER - LICENSE NUMBER: PEN.0[illegible]

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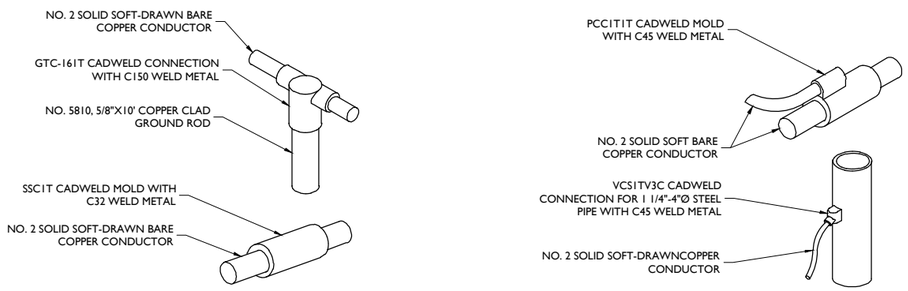
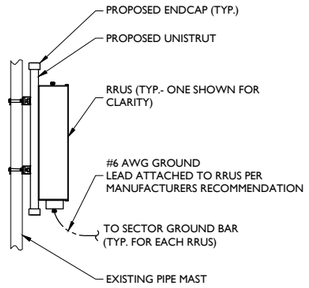
Fax: 732.383.1984

SHEET TITLE :
RF PLUMBING DIAGRAMS

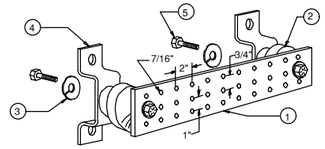
SHEET NUMBER :
A-6



CADWELD DETAILS
NOT TO SCALE



RRH GROUNDING
NOT TO SCALE



LEGEND

1- TINNED COPPER GROUND BAR, 1/4"x4"x20", NEWTON INSTRUMENT CO. CAT. NO. B-6142 OR EQUAL. HOLE CENTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION.

2- INSULATORS, NEWTON INSTRUMENT CAT. NO. 3061-4

3- 5/8" LOCKWASHERS, NEWTON INSTRUMENT CO. CAT. NO. 3015-8

4- WALL MOUNTING BRACKET, NEWTON INSTRUMENT CO. CAT NO. A-5056

5- 5/8-11 X 1" HHCS BOLTS, NEWTON INSTRUMENT CO. CAT NO. 3012-1

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

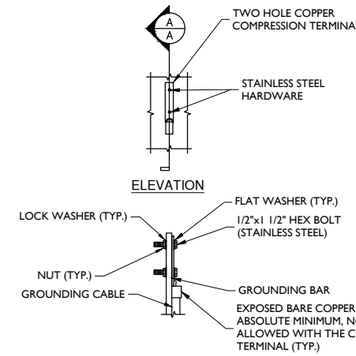
SECTION "P" - SURGE PRODUCERS

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

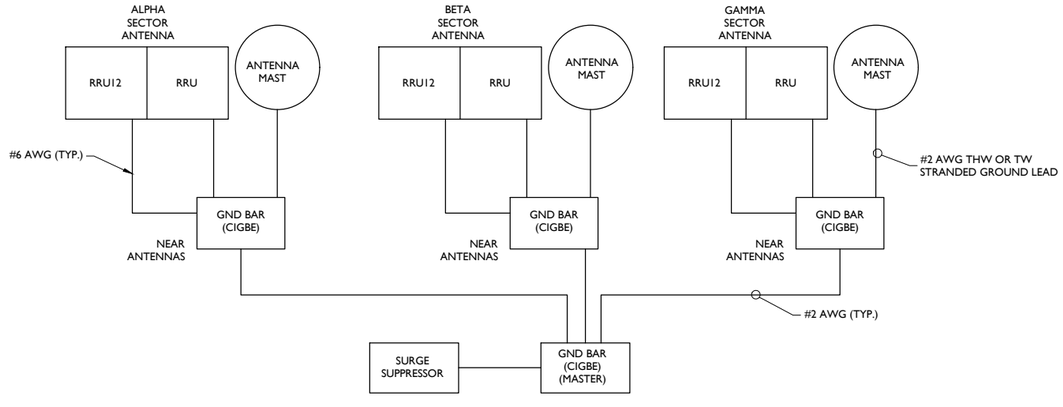
SECTION "A" - SURGE ABSORBERS

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

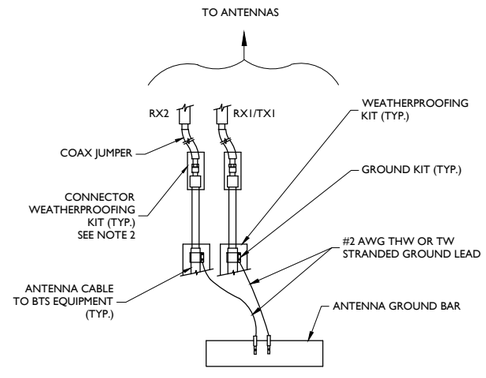
MASTER GROUND BAR
NOT TO SCALE



TYPICAL GROUND BAR CONNECTION DETAIL
NOT TO SCALE



SCHEMATIC DIAGRAM GROUNDING SYSTEM
NOT TO SCALE



NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO ANTENNA GROUND BAR.
2. WEATHER PROOFING SHALL BE TWO-PART TAPE KIT, COLD SHRINK SHALL NOT BE USED.

TYPICAL GROUND WIRE TO GROUNDING BAR
NOT TO SCALE

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A	07/29/16	ISSUED	MSG	FEP

STATE OF CONNECTICUT — FRANK E. FAZZEN — PROFESSIONAL ENGINEER — LICENSED

FRANK E. FAZZEN
CONNECTICUT PROFESSIONAL ENGINEER - LICENSE NUMBER: PEN.38[illegible]

SITE NAME:

TOLLAND CENTRAL
FA10071279
CTL005331

130 BALD HILL ROAD
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TOLLAND COUNTY

RED BANK OFFICE
331 Newman Springs Road
Suite 203
Red Bank, NJ 07701-5699
Phone: 732.383.1950
Fax: 732.383.1984

SHEET TITLE :
GROUNDING DETAILS

SHEET NUMBER :
G-1

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Jack Andrews
Zoning Manager, Empire Telecom o/b/o AT&T Wireless
10130 Donleigh Drive
Columbia, MD 21046
443-677-0144

January 31, 2017

Heidi Samokar
Director of Planning & Community Development Town Manager
Town of Tolland
21 Tolland Green, 5th Level
Tolland, CT 06084

RE: AT&T Wireless Modifications to Telecommunication Facility –
130 Bald Hill Road, Tolland, CT 06084

Dear Ms. Samokar:

In order to accommodate technological changes, implement the Uniform Mobile Telecommunications System and enhance system performance in the State of Connecticut, AT&T Wireless ("AT&T") will be changing its equipment configuration at the above referenced telecommunications facility. AT&T Wireless currently maintains six (6) antennas at the 90 foot level of an existing 180 foot tall lattice tower located at 130 Bald Hill Road, in Tolland, CT. The tower is owned by Tolland County Mutual Aid. The property is likewise owned by Tolland County Mutual Aid.

AT&T Wireless now seeks to install three (3) Ericsson RRUS-12 remote radio heads to be mounted above each of the existing RRU-11 units adjoining the antennas at the 90 foot level.

This letter is intended to serve as the required notice to the Town of Tolland Planning Office. As required by the Regulations of Connecticut State Agencies ("RCSA") section 16-50j-73, the Connecticut Siting Council ("CSC") has been notified of the proposed changes and will review AT&T's proposal. Please accept this letter as notification under RCSA section 16-50j-73 of construction which constitutes an exempt modification pursuant to RCSA section 16-50j-72(b)(2).

EMPIRE telecom
A QualTek Company

The enclosed letter to the CSC fully describes AT&T's proposal for the above referenced site. However, if you have any questions or require any additional information concerning our plans or the CSC procedures, please contact me at 443-677-0144 or contact Melanie Bachman, Acting Executive Director of the CSC at 860-872-2935.

Respectfully submitted,

Jack Andrews
Zoning Manager, Empire Telecom
o/b/o AT&T Wireless
10130 Donleigh Drive
Columbia, MD 21046
443-677-0144
jandrews@empiretelecomm.com

Enclosures

cc: Melanie Bachman, Connecticut Siting Council

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A QualTek Company

Jack Andrews
Zoning Manager, Empire Telecom o/b/o AT&T Wireless
10130 Donleigh Drive
Columbia, MD 21046
443-677-0144

January 31, 2017

Tyler Millix, Executive Director
The Tolland County Mutual Aid Fire Service, Inc.
P.O. BOX 6 / 56 Tolland Green
Tolland, CT 06084

RE: AT&T Wireless Modifications to Telecommunication Facility –
130 Bald Hill Road, Tolland, CT 06084

Dear Mr. Millix:

In order to accommodate technological changes, implement the Uniform Mobile Telecommunications System and enhance system performance in the State of Connecticut, AT&T Wireless ("AT&T") will be changing its equipment configuration at the above referenced telecommunications facility. AT&T Wireless currently maintains six (6) antennas at the 90 foot level of an existing 180 foot tall lattice tower located at 130 Bald Hill Road, in Tolland, CT. The tower is owned by Tolland County Mutual Aid. The property is likewise owned by Tolland County Mutual Aid.

AT&T Wireless now seeks to install three (3) Ericsson RRUS-12 remote radio heads to be mounted above each of the existing RRU-11 units adjoining the antennas at the 90 foot level.

This letter is intended to serve as the required notice to the Tower owner and the property owner. As required by the Regulations of Connecticut State Agencies ("RCSA") section 16-50j-73, the Connecticut Siting Council ("CSC") has been notified of the proposed changes and will review AT&T's proposal. Please accept this letter as notification under RCSA section 16-50j-73 of construction which constitutes an exempt modification pursuant to RCSA section 16-50j-72(b)(2).

EMPIRE telecom
A QualTek Company

The enclosed letter to the CSC fully describes AT&T's proposal for the above referenced site. However, if you have any questions or require any additional information concerning our plans or the CSC procedures, please contact me at 443-677-0144 or contact Melanie Bachman, Acting Executive Director of the CSC at 860-872-2935.

Respectfully submitted,

Jack Andrews
Zoning Manager, Empire Telecom
o/b/o AT&T Wireless
10130 Donleigh Drive
Columbia, MD 21046
443-677-0144
jandrews@empiretelecomm.com

Enclosures

cc: Melanie Bachman, Connecticut Siting Council

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Jack Andrews
Zoning Manager, Empire Telecom o/b/o AT&T Wireless
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Columbia, MD 21046
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January 31, 2017

Steven R. Werbner
Town Manager, Town of Tolland
21 Tolland Green, 5th Level
Tolland, CT 06084

RE: AT&T Wireless Modifications to Telecommunication Facility –
130 Bald Hill Road, Tolland, CT 06084

Dear Mr. Werbner:

In order to accommodate technological changes, implement the Uniform Mobile Telecommunications System and enhance system performance in the State of Connecticut, AT&T Wireless ("AT&T") will be changing its equipment configuration at the above referenced telecommunications facility. AT&T Wireless currently maintains six (6) antennas at the 90 foot level of an existing 180 foot tall lattice tower located at 130 Bald Hill Road, in Tolland, CT. The tower is owned by Tolland County Mutual Aid. The property is likewise owned by Tolland County Mutual Aid.

AT&T Wireless now seeks to install three (3) Ericsson RRUS-12 remote radio heads to be mounted above each of the existing RRU-11 units adjoining the antennas at the 90 foot level.

This letter is intended to serve as the required notice to the municipality. As required by the Regulations of Connecticut State Agencies ("RCSA") section 16-50j-73, the Connecticut Siting Council ("CSC") has been notified of the proposed changes and will review AT&T's proposal. Please accept this letter as notification under RCSA section 16-50j-73 of construction which constitutes an exempt modification pursuant to RCSA section 16-50j-72(b)(2).

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