January 27, 2016

VIA EMAIL AND OVERNIGHT DELIVERY

Ms. Melanie A. Bachman
Acting Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: T-Mobile Northeast LLC - CT11189
Notice of Exempt Modification
115 Birch Mountain Road, Glastonbury, CT
LAT: 41-42-32.24" N
LNG: 72-28-24.41" W

Dear Ms. Bachman:

T-Mobile Northeast LLC ("T-Mobile") currently maintains six (6) antennas at the 182' level on the existing 200' self-support tower located at 115 Birch Mountain Road in Glastonbury, CT. The tower is owned by Crown Castle. T-Mobile now intends to replace three (3) existing antennas with six (6) new 1900/2100 MHz antennas. These antennas would be installed at the 82' level of the tower. T-Mobile also intends to add three (3) TMA's.

On August 7, 1998, the Town of Glastonbury Zoning Board of Appeals approved the application for a variance and special exception to replace three existing guyed wire towers of 151', 196' and 207' with the subject improved 200' non-guyed wire tower. This modification complies with the aforementioned conditions.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agenices 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. 16-50j-72(b)(2). In accordance with R.C.S.A. 16-50j-73, a copy of this letter is being sent to Richard J. Johnson, Town Manager for the Town of Glastonbury, as well as the property owner and the tower owner.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. 16-50j-72(b)(s).

1. The proposed modifications will not result in an increase in the height of the existing structure. T-Mobile proposes to replace three (3) existing antennas with six (6) new antennas at a centerline height of 182' on the existing 200' tower.

2. The proposed modifications will not require the extension of the site boundary. T-Mobile does not propose to replace or install any equipment at grade. Thus, there will be no effect on the site compound or T-Mobile's leased area.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria. The incremental effect of the proposed changes will be negligible.

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. As indicated in the attached power density calculations, T-Mobile's operations at the site will result in a power density of 3.78%; the combined site operations will result in a total power density of 35.31%.

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. As indicated in the attached structural analysis the subject tower is adequate to support the proposed T-Mobile equipment upgrade.

For the foregoing reasons, T-Mobile respectfully submits that the proposed modifications to the above-referenced telecommunications facility constitute an exempt modification under R.C.S.A. 16-50j-72(b)(2).

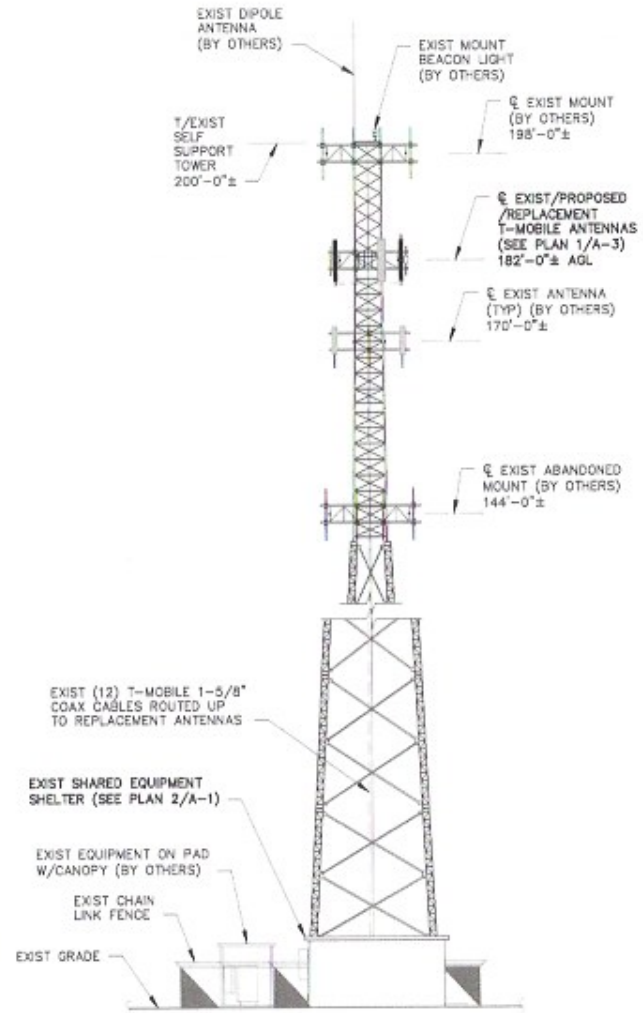
Respectfully submitted,

By: _____
Eric Dahl, Agent for T-Mobile
edahl@comcast.net
860-227-1975

Attachments

cc: Richard J. Johnson, Town Manager for the Town of Glastonbury
Crown Castle - as tower and property owner

STRUCTURAL NOTE:
THE EXISTING SELF SUPPORT TOWER AND EXISTING MOUNTS SHALL BE STRUCTURALLY ANALYZED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF CONNECTICUT (TO BE COORDINATED BY OTHERS)



1/A-2 ELEVATION
SCALE: 1/16" = 1'-0"

ELEVATION NOTE:
ELEVATION OF EXIST MONOPOLE HAS BEEN ARBITRARILY ASSIGNED AS EL 1088'-0"±. THIS IS APPROXIMATELY 200'-0"± ABOVE GRADE WHICH WAS ESTIMATED AS EL 888'-0"± TAKEN FROM U.S.G.S. QUAD MAP, AND DOES NOT NECESSARILY CORRESPOND TO ACTUAL ELEVATION ABOVE SEA LEVEL. ALL OTHER ELEVATIONS INDICATED WERE DETERMINED ON THIS BASIS.

CONFIGURATION
4G
REFER TO LATEST T-MOBILE RF DATA SHEET FOR FINAL RF DESIGN & BOM.

0 1 2 3
ORIGINAL SIZE IN INCHES

TECTONIC
• PLANNING • SURVEYING
• ENGINEERING • CONSTRUCTION MANAGEMENT
TECTONIC Engineering & Surveying Consultants P.C.
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-3100
Fax: (845) 567-6703

T-Mobile
NORTHEAST LLC.
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002

APPROVALS
T-MOBILE
LANDLORD
RF
CONSTRUCTION

PROJECT NUMBER	DESIGNED BY
6648.CT11189E	JG

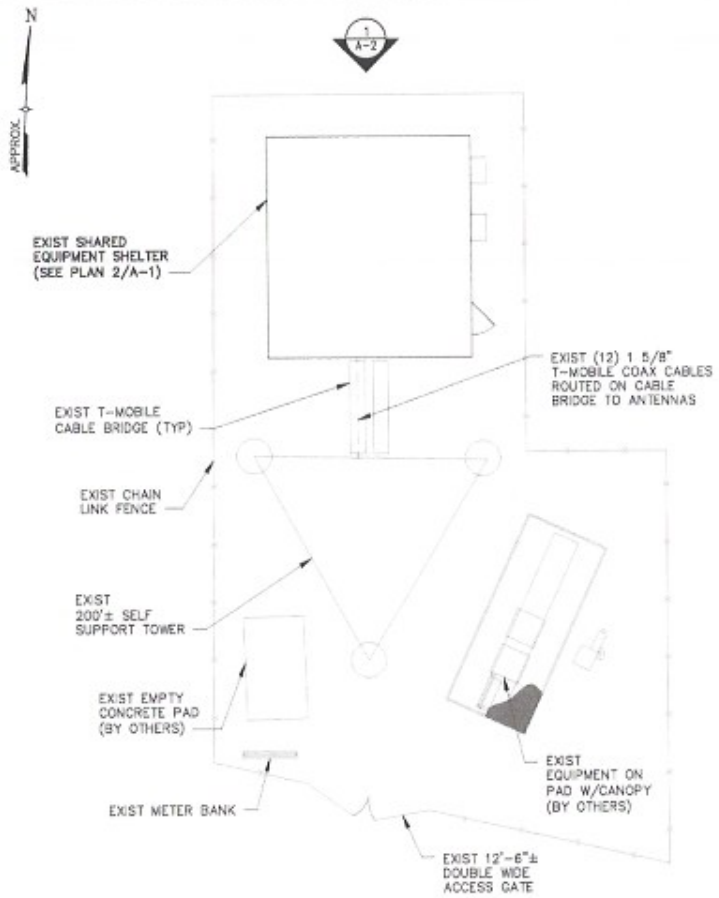
REV	DATE	REVISION	DRAWN BY
1	05/07/15	FOR COMMENT	MP

SIGNED BY | DATE

SITE INFORMATION
CT11189E
GLASTONBURY/
RT-94 & FERN
115 BIRCH MOUNTAIN RD
GLASTONBURY, CT 06033

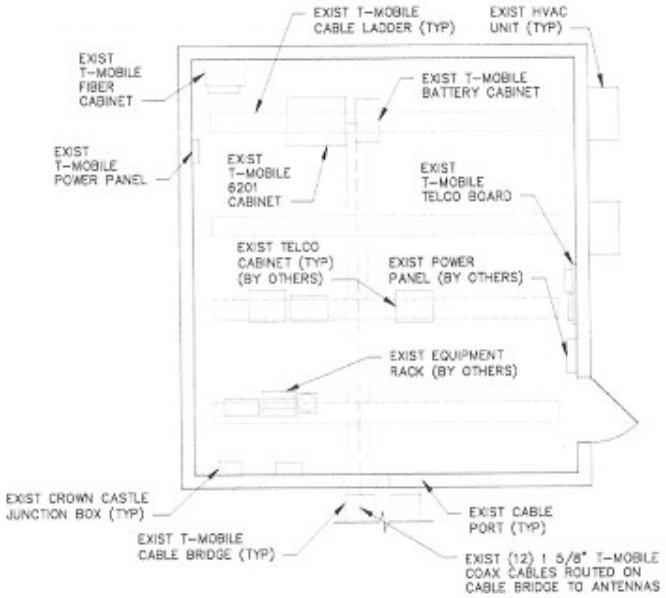
SHEET TITLE
ELEVATION

SHEET NUMBER
A-2



NOTES:
1. CONTRACTOR TO MATCH ANTENNA AZIMUTHS AND DOWNTILTS OF RFDS DATED 1/13/15, REV 1.
2. CONTRACTOR TO RE-VERIFY CABLE LENGTHS PRIOR TO CONSTRUCTION.
3. LOCK & TAG BREAKERS FOR ALL EQUIPMENT BEING TURNED OFF (WHEN APPLICABLE).

1 A-1 SITE PLAN
SCALE: 3/32" = 1'-0"



2 A-1 EQUIPMENT ROOM PLAN
SCALE: 3/16" = 1'-0"

CONFIGURATION
4G
REFER TO LATEST T-MOBILE RF DATA SHEET FOR FINAL RF DESIGN & BOM.

0 1 2 3
ORIGINAL SIZE IN INCHES

TECTONIC
• PLANNING • ENGINEERING • SURVEYING • CONSTRUCTION MANAGEMENT
TECTONIC Engineering & Surveying Consultants P.C.
1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-9656
Fax: (845) 567-9703

T-Mobile
NORTHEAST LLC.
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002

APPROVALS
T-MOBILE
LANDLORD
RF
CONSTRUCTION

PROJECT NUMBER	DESIGNED BY
6648.CT11189E	JG

REV	DATE	REVISION	DRAWN BY
1	05/27/15	FOR COMMENT	MP

BOARD BY | DATE

SITE INFORMATION
CT11189E
GLASTONBURY/
RT-94 & FERN
115 BIRCH MOUNTAIN RD
GLASTONBURY, CT 06033

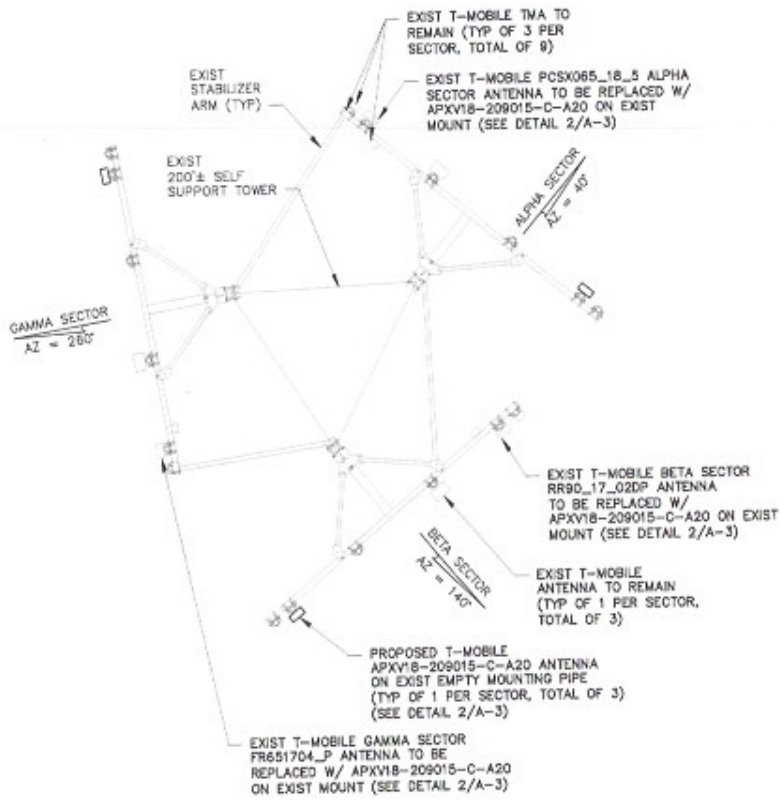
SHEET TITLE
SITE PLAN & EQUIPMENT ROOM PLAN

SHEET NUMBER
A-1

STRUCTURAL NOTE:
THE EXISTING SELF SUPPORT TOWER AND EXISTING MOUNTS SHALL BE STRUCTURALLY ANALYZED BY A PROFESSIONAL ENGINEER LICENSED IN THE STATE OF CONNECTICUT (TO BE COORDINATED BY OTHERS)

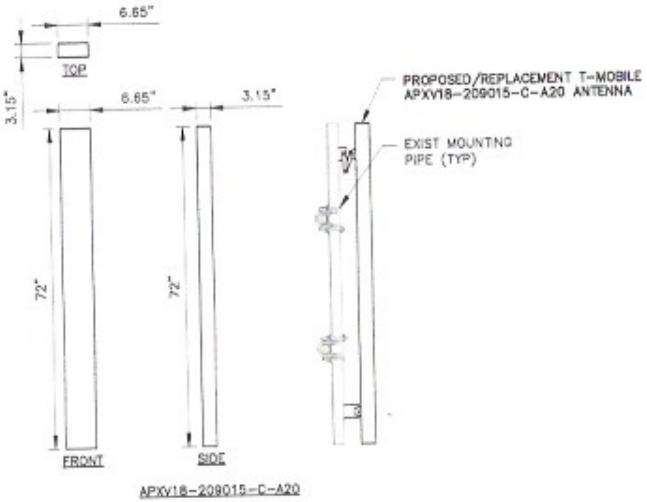
N

APPROX.



1 / A-3 ANTENNA PLAN

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



2 / A-3 ANTENNA DETAIL

SCALE: 1/2"=1'-0"

CONFIGURATION

4G

REFER TO LATEST T-MOBILE RF DATA SHEET FOR FINAL RF DESIGN & BOM

0 1 2 3

ORIGINAL SIZE IN INCHES

TECTONIC

• PLANNING • ENGINEERING • SURVEYING • CONSTRUCTION MANAGEMENT

TECTONIC Engineering & Surveying Consultants P.C.

1279 Route 300
Newburgh, NY 12550
Phone: (845) 567-3896
Fax: (845) 567-6703

T-Mobile

NORTHEAST LLC

35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002

APPROVALS

T-MOBILE
LANDLORD
RF
CONSTRUCTION

PROJECT NUMBER	DESIGNED BY
6648.CT11189E	JG

REV	DATE	REVISION	DRAWN BY
1	05/27/16	FOR COMMENT	KP

ISSUED BY | DATE

SITE INFORMATION

CT11189E
GLASTONBURY/
RT-94 & FERN
115 BIRCH MOUNTAIN RD
GLASTONBURY, CT 06033

SHEET TITLE

ANTENNA PLAN & DETAIL

SHEET NUMBER

A-3

EBI Consulting
environmental | engineering | due diligence

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

T-Mobile Existing Facility

Site ID: CT11189E

Glastonbury / Rt94 & Fern
115 Birch Mountain Road
Glastonbury, CT 06033

July 29, 2015

EBI Project Number: 6215004189

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	35.31 %

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

EBI Consulting
environmental | engineering | due diligence

July 29, 2015

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

Emissions Analysis for Site: **CT11189E – Glastonbury / Rt94 & Fern**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **115 Birch Mountain Road, Glastonbury, CT**, for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and 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 limit for the 700 MHz Band is 467 $\mu W/cm^2$, and the general population exposure limit for the PCS and AWS 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 T-Mobile Wireless antenna facility located at **115 Birch Mountain Road, Glastonbury, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, 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 (PCS Band - 1900 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 (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

3) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

4) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.

5) 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.

6) For the following calculations the sample point was the top of a six 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.

7) The antennas used in this modeling are the **RFS APXV18-209015** for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the **Commscope LNX-6515DS-VTM** for 700 MHz channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **RFS APXV18-209015** has a maximum gain of **15.8 dBd** at its main lobe. The **Commscope LNX-6515DS-VTM** has a maximum gain of **14.6 dBd** at its main lobe. 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.

8) The antenna mounting height centerline of the proposed antennas is **183 feet** above ground level (AGL).

9) 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.

EBI Consulting
environmental | engineering | due diligence

T-Mobile Site Inventory and Power Data

Sector:	A
Antenna #:	1
Make / Model:	RFS APXV18-209015
Gain:	15.8 dBd
Height (AGL):	183
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	2
Total TX Power:	120
ERP (W):	4,562.27
Antenna A1 MPE%	0.52
Antenna #:	2
Make / Model:	RFS APXV18-209015
Gain:	15.8 dBd
Height (AGL):	183
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	4
Total TX Power:	120
ERP (W):	4,562.27
Antenna A2 MPE%	0.52
Antenna #:	3
Make / Model:	Commscope LNX-6515DS-VTM
Gain:	14.6 dBd
Height (AGL):	183
Frequency Bands	700 MHz
Channel Count	1
Total TX Power:	30
ERP (W):	865.21
Antenna A3 MPE%	0.21

Sector:	B
Antenna #:	1
Make / Model:	RFS APXV18-209015
Gain:	15.8 dBd
Height (AGL):	183
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	2
Total TX Power:	120
ERP (W):	4,562.27
Antenna B1 MPE%	0.52
Antenna #:	2
Make / Model:	RFS APXV18-209015
Gain:	15.8 dBd
Height (AGL):	183
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	4
Total TX Power:	120
ERP (W):	4,562.27
Antenna B2 MPE%	0.52
Antenna #:	3
Make / Model:	Commscope LNX-6515DS-VTM
Gain:	14.6 dBd
Height (AGL):	183
Frequency Bands	700 MHz
Channel Count	1
Total TX Power:	30
ERP (W):	865.21
Antenna B3 MPE%	0.21

Sector:	C
Antenna #:	1
Make / Model:	RFS APXV18-209015
Gain:	15.8 dBd
Height (AGL):	183
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	2
Total TX Power:	120
ERP (W):	4,562.27
Antenna C1 MPE%	0.52
Antenna #:	2
Make / Model:	RFS APXV18-209015
Gain:	15.8 dBd
Height (AGL):	183
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	4
Total TX Power:	120
ERP (W):	4,562.27
Antenna C2 MPE%	0.52
Antenna #:	3
Make / Model:	Commscope LNX-6515DS-VTM
Gain:	14.6 dBd
Height (AGL):	183
Frequency Bands	700 MHz
Channel Count	1
Total TX Power:	30
ERP (W):	865.21
Antenna C3 MPE%	0.21

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile	3.78
Tilcon Tomasso	1.12 %
Arch Cmcns	0.82 %
SkyTel	0.75 %
Arch Cmcns	1.48 %
US Drug	0.78 %
Internal Revenue	0.77 %
Connecticut Radio	1.08 %
Federal Express	0.72 %
Northeast Paging	4.16 %
Stamm Const.	1.38 %
Unknown	16.96 %
Sprint	1.50 %
Site Total MPE %:	**35.31 %**

T-Mobile Sector 1 Total:	1.26 %
T-Mobile Sector 2 Total:	1.26 %
T-Mobile Sector 3 Total:	1.26 %
Site Total:	35.31 %

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

EBI Consulting
environmental | engineering | due diligence

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 T-Mobile 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:

T-Mobile Sector	Power Density Value (%)
Sector 1:	1.26 %
Sector 2:	1.26 %
Sector 3 :	1.26 %
T-Mobile Total:	3.78 %
Site Total:	35.31 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **35.31%** 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.

Scott Heffernan
RF Engineering Director

EBI Consulting
21 B Street
Burlington, MA 01803

Date: **April 22, 2015**

Sean Dempsey
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277

JACOBS
Jacobs Engineering Group. Inc.
5449 Bells Ferry Road
Acworth, GA 30102
770-701-2500

Subject: **Structural Analysis Report**

Carrier Designation:	***T-Mobile* Co-Locate**	
	Carrier Site Number:	CT11189E
	Carrier Site Name:	Glastonbury/ Rt 94 & Fern
Crown Castle Designation:	**Crown Castle BU Number:**	871584
	Crown Castle Site Name:	John Tom Hill
	Crown Castle JDE Job Number:	331358
	Crown Castle Work Order Number:	1046939
	Crown Castle Application Number:	291093 Rev. 2
Engineering Firm Designation:	**Jacobs Engineering Group, Inc. Project Number:**	1046939
Site Data:	**115 Birch Mtn. Road, GLASTONBURY, Hartford County, CT**	
	Latitude *41° 42' 32.24"*, Longitude *-72° 28' 24.41"*	
	200 Foot - Self Support Tower	

Dear Sean Dempsey,

Jacobs Engineering Group, Inc. is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 779156, in accordance with application 291093, revision 2.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC5: Existing + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing loading, respectively.

The analysis has been performed in accordance with the TIA/EIA-222-F standard and the 2005 CT State Building Code based upon a wind speed of 80 mph fastest mile.

All modifications and equipment proposed in this report shall be installed in accordance with the attached drawings for the determined available structural capacity to be effective.

We at *Jacobs Engineering Group, Inc.* appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully submitted by:

Di Wang, E.I.T.
Structural Engineer

Reviewed By:

Matthew Watkins, P.E.
Engineering Project Manager

tnxTower Report - version 6.1.4.1

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 200 ft Self Support tower designed by SABRE COMMUNICATIONS in November of 1998. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 80 mph with no ice, 37.6 mph with 1.25 inch ice thickness and 50 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
182.0	183.0	3	commscope	ATBT-BOTTOM-24V	6	1-5/8	-
		3	commscope	LNX-6515DS-VTM w/ Mount Pipe			
		3	ericsson	KRY 112 71			
		6	rfs celwave	APXV18-209015-C-A20 w/ Mount Pipe			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
198.0	208.0	1	rfs celwave	ALR10-O	2	7/8	1
	205.0	1	decibel	DB225-A	1	1/2	
		1	rfs celwave	PD1107-1	2	7/8	3
		1	rfs celwave	PD201-7			
	204.0	1	scala	OGB6-928N	-	-	1
	198.0	1	crown mounts	Sector Mount [SM 602-3]			
182.0	183.0	3	ems wireless	RR90-17-02DP w/ Mount Pipe	-	-	2
		3	ericsson	KRY 112 71			
		3	ericsson	KRY 112 71	6	1-5/8	1
	182.0	1	crown mounts	Sector Mount [SM 602-3]			
170.0	171.0	6	decibel	DB980H90E-M w/ Mount Pipe	6	1-5/8	1
	170.0	1	crown mounts	Sector Mount [SM 506-3]			
163.0	163.0	1	kathrein	PR-850	1	1/2	1
		1	crown mounts	Pipe Mount [PM 601-1]			
144.0	155.0	1	sinclair	SRL480N1DT4	-	-	3
	152.0	2	rfs celwave	PD1109-1	3	1/2	1
	150.0	1	celwave (cci)	PD156S-4	1	7/8	
	144.0	1	crown mounts	Sector Mount [SM 602-3]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
53.0	55.0	1	lucent	KS24019-L112A	1	1/2	1
	53.0	1	crown mounts	Side Arm Mount [SO 202-1]			

Notes:
1) Existing Equipment
2) Equipment to be removed; Not considered in this analysis
3) Abandoned Equipment; Considered In This Analysis

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
180.0	180.0	9	decibel	DB809	9	7/8
160.0	160.0	9	decibel	DB809	9	7/8
140.0	140.0	12	generic	DAPA 2980	12	1-5/8
120.0	120.0	12	generic	DAPA 2980	12	1-5/8
100.0	100.0	12	generic	DAPA 2980	12	1-5/8
80.0	80.0	1	generic	6' Dish	1	EW64
70.0	70.0	1	generic	1 Meter Dish	1	7/8
60.0	60.0	1	generic	1 Meter Dish	1	7/8
50.0	50.0	1	generic	1 Meter Dish	1	7/8

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Dr. Clarence Welti	1404208	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Sabre Communications	1333892	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Sabre Communications	1403674	CCISITES

3.1) Analysis Method

tnxTower (version 6.1.4.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA/EIA-222-F.

This analysis may be affected if any assumptions are not valid or have been made in error. Jacobs Engineering Group, Inc. should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T1	200 - 180	Leg	Pipe 2.875" x 0.375" (2.5 #160)	3	-14.54	84.26	17.3	Pass
T2	180 - 160	Leg	Pipe 3.5" x 0.300" (3 XS)	33	-43.29	96.06	45.1	Pass
T3	160 - 140	Leg	Pipe 4" x 0.318" (3.5 XS)	60	-72.00	122.40	58.8	Pass
T4	140 - 120	Leg	Pipe 4.5" x 0.438" (4 #120)	87	-99.39	174.90	56.8	Pass
T5	120 - 100	Leg	Pipe 5.563" x 0.375" (5 XS)	108	-125.90	206.29	61.0	Pass
T6	100 - 80	Leg	Pipe 5.563" x 0.375" (5 XS)	129	-151.58	206.29	73.5	Pass
T7	80 - 60	Leg	Pipe 6.625" x 0.432" (6 EH)	150	-174.71	264.31	66.1	Pass
T8	60 - 40	Leg	Pipe 8.625" x 0.322" (8 STD)	165	-199.53	287.78	69.3	Pass
T9	40 - 20	Leg	Pipe 8.625" x 0.500" (8 XS)	180	-224.38	435.22	51.6	Pass
T10	20 - 0	Leg	Pipe 8.625" x 0.500" (8 XS)	195	-255.93	435.64	58.7	Pass
T1	200 - 180	Diagonal	L1 3/4x1 3/4x3/16	11	-2.69	9.23	29.1 33.5 (b)	Pass
T2	180 - 160	Diagonal	L1 3/4x1 3/4x3/16	35	-3.32	6.30	52.6	Pass
T3	160 - 140	Diagonal	L1 3/4x1 3/4x3/16	62	-3.92	4.35	90.1	Pass
T4	140 - 120	Diagonal	L2 1/2x2 1/2x3/16	89	-4.53	8.21	55.1	Pass
T5	120 - 100	Diagonal	L2 1/2x2 1/2x3/16	112	-4.82	6.38	75.5	Pass
T6	100 - 80	Diagonal	L3x3x3/16	131	-5.19	8.76	59.3	Pass
T7	80 - 60	Diagonal	L3 1/2x3 1/2x1/4	154	-6.27	12.65	49.6	Pass
T8	60 - 40	Diagonal	L3 1/2x3 1/2x1/4	169	-6.95	10.81	64.3	Pass
T9	40 - 20	Diagonal	L3 1/2x3 1/2x1/4	184	-7.40	9.14	81.0	Pass
T10	20 - 0	Diagonal	L4x4x1/4	199	-8.37	11.79	71.0	Pass
T1	200 - 180	Top Girt	L1 3/4x1 3/4x3/16	5	-0.05	3.88	1.4	Pass
							Summary	
						Leg (T6)	73.5	Pass
						Diagonal (T3)	90.1	Pass
						Top Girt (T1)	1.4	Pass
						Bolt Checks	53.1	Pass

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
						Rating =	90.1	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
-	Anchor Rods	0	53.1	Pass
1	Base Foundation Structural	0	76.2	Pass
1	Base Foundation Soil Interaction	0	73.8	Pass

Structure Rating (max from all components) =	90.1%

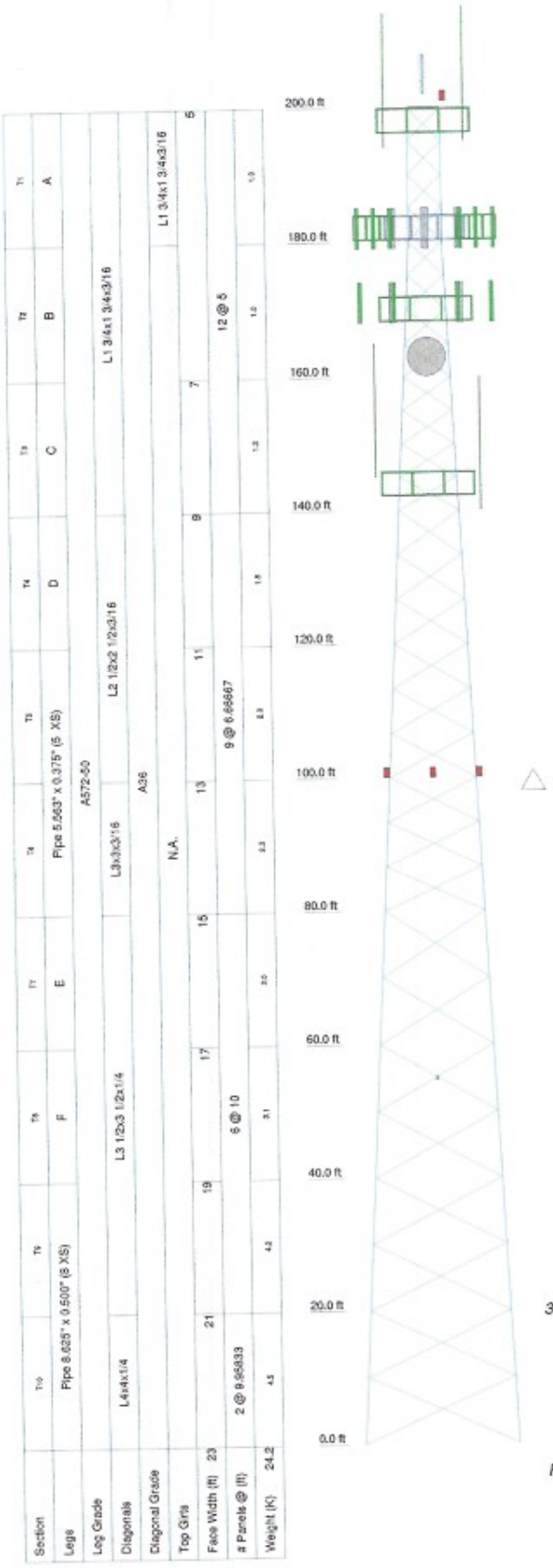
Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

4.1) Recommendations

The tower and its foundation have sufficient capacity to carry the existing and proposed loads. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Beacon	200	KRY 112 71	182
PD1107-1	198	6' x 2" Mount Pipe	182
PD201-7	198	6' x 2" Mount Pipe	182
DB225-A	198	6' x 2" Mount Pipe	182
ALR10-O	198	Sector Mount [SM 602-3]	182
OGB6-926N	198	(2) DB980H90E-M w/ Mount Pipe	170
(4) 6' x 2" Mount Pipe	198	(2) DB980H90E-M w/ Mount Pipe	170
(4) 6' x 2" Mount Pipe	198	(2) DB980H90E-M w/ Mount Pipe	170
(4) 6' x 2" Mount Pipe	198	6' x 2" Mount Pipe	170
Sector Mount [SM 602-3]	198	6' x 2" Mount Pipe	170
(2) APXV18-209015-C-A20 w/ Mount Pipe	182	6' x 2" Mount Pipe	170
(2) APXV18-209015-C-A20 w/ Mount Pipe	182	Sector Mount [SM 506-3]	170
(2) APXV18-209015-C-A20 w/ Mount Pipe	182	Pipe Mount [PM 601-1]	163
LNX-6515DS-VTM w/ Mount Pipe	182	PR-850	163
LNX-6515DS-VTM w/ Mount Pipe	182	PD156S-4	144
LNX-6515DS-VTM w/ Mount Pipe	182	(2) PD1109-1	144
ATBT-BOTTOM-24V	182	SRL480N1DT4	144
ATBT-BOTTOM-24V	182	(4) 6' x 2" Mount Pipe	144
ATBT-BOTTOM-24V	182	(4) 6' x 2" Mount Pipe	144
KRY 112 71	182	(4) 6' x 2" Mount Pipe	144
KRY 112 71	182	Sector Mount [SM 602-3]	144
KRY 112 71	182	Sidemarker	100
KRY 112 71	182	Sidemarker	100
KRY 112 71	182	Sidemarker	100
KRY 112 71	182	Side Arm Mount [SO 202-1]	53
KRY 112 71	182	KS24019-L112A	53

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	Pipe 2.875" x 0.375" (2.5 #160)	D	Pipe 4.5" x 0.438" (4 #120)
B	Pipe 3.5" x 0.300" (3 XS)	E	Pipe 6.625" x 0.432" (6 EH)
C	Pipe 4" x 0.318" (3.5 XS)	F	Pipe 8.625" x 0.322" (8 STD)

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 1.25 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 90.1%

MAX. CORNER REACTIONS AT BASE:
DOWN: 255 K
SHEAR: 27 K

UPLIFT: -214 K
SHEAR: 23 K

AXIAL
114 K

SHEAR
16 K

MOMENT
1899 kip-ft

TORQUE 5 kip-ft
38 mph WIND - 1.2500 in ICE

AXIAL
45 K

SHEAR
43 K

MOMENT
4778 kip-ft

TORQUE 21 kip-ft
REACTIONS - 80 mph WIND

Jacobs Engineering Group, Inc.
5449 Bells Ferry Road
Acworth, GA 30102
Phone: 770-701-2500
FAX: 770-701-2501

Job: *John Tom Hill*			
Project: *BU#871584 WO#1046939*			
Client: Crown Castle	Drawn by: Di Wang	App'd:	
Code: TIA/EIA-222-F	Date: 04/22/15	Scale: NTS	
Path:		Dwg No. E-1	

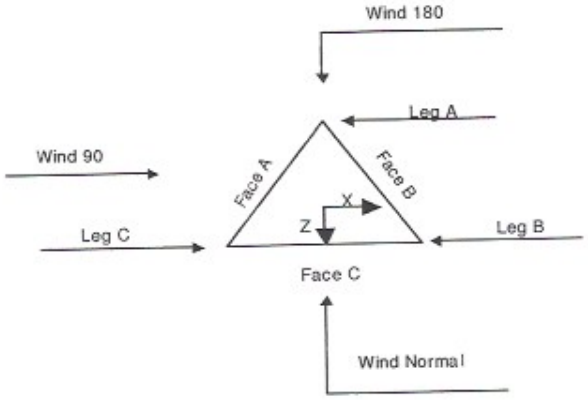
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 200.00 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 5.00 ft at the top and 23.00 ft at the base.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

2) Tower is located in Hartford County, Connecticut.
3) Basic wind speed of 80 mph.
4) Nominal ice thickness of 1.2500 in.
5) Ice thickness is considered to increase with height.
6) Ice density of 56 pcf.
7) A wind speed of 38 mph is used in combination with ice.
8) Temperature drop of 50 °F.
9) Deflections calculated using a wind speed of 50 mph.
10) Pressures are calculated at each section.
11) Stress ratio used in tower member design is 1.333.
12) 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		Treat Feedline Bundles As Cylinder
	Consider Moments - Horizontals		Assume Legs Pinned		Use ASCE 10 X-Brace Ly Rules
	Consider Moments - Diagonals	√	Assume Rigid Index Plate	√	Calculate Redundant Bracing Forces
	Use Moment Magnification	√	Use Clear Spans For Wind Area		Ignore Redundant Members in FEA
√	Use Code Stress Ratios	√	Use Clear Spans For KL/r	√	SR Leg Bolts Resist Compression
√	Use Code Safety Factors - Guys		Retension Guys To Initial Tension	√	All Leg Panels Have Same Allowable
√	Escalate Ice	√	Bypass Mast Stability Checks	√	Offset Girt At Foundation
	Always Use Max Kz	√	Use Azimuth Dish Coefficients	√	Consider Feedline Torque
	Use Special Wind Profile	√	Project Wind Area of Appurt.	√	Include Angle Block Shear Check
√	Include Bolts In Member Capacity		Autocalc Torque Arm Areas		Poles
	Leg Bolts Are At Top Of Section		SR Members Have Cut Ends		Include Shear-Torsion Interaction
√	Secondary Horizontal Braces Leg	√	Sort Capacity Reports By Component		Always Use Sub-Critical Flow
	Use Diamond Inner Bracing (4 Sided)		Triangulate Diamond Inner Bracing		Use Top Mounted Sockets
	Add IBC .6D+W Combination		Use TIA-222-G Tension Splice		
			Capacity Exemption		



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	ft			ft		ft
T1	200.00-180.00			5.00	1	20.00
T2	180.00-160.00			5.00	1	20.00
T3	160.00-140.00			7.00	1	20.00
T4	140.00-120.00			9.00	1	20.00
T5	120.00-100.00			11.00	1	20.00
T6	100.00-80.00			13.00	1	20.00
T7	80.00-60.00			15.00	1	20.00
T8	60.00-40.00			17.00	1	20.00
T9	40.00-20.00			19.00	1	20.00
T10	20.00-0.00			21.00	1	20.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	ft	ft				in	in
T1	200.00-180.00	5.00	X Brace	No	No	0.0000	0.0000
T2	180.00-160.00	5.00	X Brace	No	No	0.0000	0.0000
T3	160.00-140.00	5.00	X Brace	No	No	0.0000	0.0000
T4	140.00-120.00	6.67	X Brace	No	No	0.0000	0.0000
T5	120.00-100.00	6.67	X Brace	No	No	0.0000	0.0000
T6	100.00-80.00	6.67	X Brace	No	No	0.0000	0.0000
T7	80.00-60.00	10.00	X Brace	No	No	0.0000	0.0000
T8	60.00-40.00	10.00	X Brace	No	No	0.0000	0.0000
T9	40.00-20.00	10.00	X Brace	No	No	0.0000	0.0000
T10	20.00-0.00	9.96	X Brace	No	No	0.0000	1.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 200.00-180.00	Pipe	Pipe 2.875" x 0.375" (2.5 #160)	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T2 180.00-160.00	Pipe	Pipe 3.5" x 0.300" (3 XS)	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T3 160.00-140.00	Pipe	Pipe 4" x 0.318" (3.5 XS)	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T4 140.00-120.00	Pipe	Pipe 4.5" x 0.438" (4 #120)	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T5 120.00-100.00	Pipe	Pipe 5.563" x 0.375" (5 XS)	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T6 100.00-80.00	Pipe	Pipe 5.563" x 0.375" (5 XS)	A572-50 (50 ksi)	Equal Angle	L3x3x3/16	A36 (36 ksi)
T7 80.00-60.00	Pipe	Pipe 6.625" x 0.432" (6 EH)	A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T8 60.00-40.00	Pipe	Pipe 8.625" x 0.322" (8 STD)	A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T9 40.00-20.00	Pipe	Pipe 8.625" x 0.500" (8 XS)	A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T10 20.00-0.00	Pipe	Pipe 8.625" x 0.500" (8 XS)	A572-50 (50 ksi)	Equal Angle	L4x4x1/4	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 200.00-180.00	Equal Angle	L1 3/4x1 3/4x3/16	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
T1 200.00-180.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T2 180.00-160.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T3 160.00-140.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T4 140.00-120.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T5 120.00-100.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T6 100.00-80.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T7 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T8 60.00-40.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T9 40.00-20.00	0.00	0.0000	A36 (36 ksi)	1	1	1	36.0000	36.0000
T10 20.00-0.00	0.00	0.0000	A36 (36 ksi)	1	1	1	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	X Brace Diags Y	K	Single Diags X	Single Diags Y	Girts X	Girts Y	Horiz. X	Horiz. Y	Sec. Horiz. X	Sec. Horiz. Y	Inner Brace X	Inner Brace Y
T1 200.00-180.00	Yes	No	1	1	1		1	1	1	1	1	1	1	1	1	1
T2 180.00-160.00	Yes	No	1	1	1		1	1	1	1	1	1	1	1	1	1
T3 160.00-140.00	Yes	No	1	1	1		1	1	1	1	1	1	1	1	1	1
T4 140.00-120.00	Yes	No	1	1	1		1	1	1	1	1	1	1	1	1	1
T5 120.00-100.00	Yes	No	1	1	1		1	1	1	1	1	1	1	1	1	1
T6 100.00-80.00	Yes	No	1	1	1		1	1	1	1	1	1	1	1	1	1
T7 80.00-60.00	Yes	No	1	1	1		1	1	1	1	1	1	1	1	1	1
T8 60.00-40.00	Yes	No	1	1	1		1	1	1	1	1	1	1	1	1	1
T9 40.00-20.00	Yes	No	1	1	1		1	1	1	1	1	1	1	1	1	1
T10 20.00-0.00	Yes	No	1	1	1		1	1	1	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 200.00-180.00	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
T2 180.00-160.00	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
T3 160.00-140.00	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
T4 140.00-120.00	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
T5 120.00-100.00	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
T6 100.00-80.00	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
T7 80.00-60.00	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
T8 60.00-40.00	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
T9 40.00-20.00	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
T10 20.00-0.00	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 200.00-180.00	Flange	0.7500 A325N	4	0.6250 A325X	1	0.6250 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 180.00-160.00	Flange	1.0000 A325N	4	0.6250 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 160.00-140.00	Flange	1.0000 A325N	4	0.6250 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 140.00-120.00	Flange	1.2500 A325N	4	0.6250 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 120.00-100.00	Flange	1.2500 A325N	4	0.6250 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T6 100.00-80.00	Flange	1.2500 A325N	6	0.7500 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T7 80.00-60.00	Flange	1.2500 A325N	6	0.7500 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T8 60.00-40.00	Flange	1.3750 A325N	6	0.7500 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T9 40.00-20.00	Flange	1.3750 A325N	6	0.7500 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T10 20.00-0.00	Flange	1.5000 A572-50	8	0.7500 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

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
** A Face **												
** B Face **												
AVA7-50(1-5/8)	B	Yes	Ar (CfAe)	182.00 - 0.00	0.0000	-0.1	12	12	0.5000	2.0100		0.70
Feedline Ladder (Af)	B	Yes	Af (CfAe)	182.00 - 0.00	0.0000	-0.1	1	1	3.0000	3.0000	12.0000	8.40
Feedline Ladder (Af)	B	Yes	Af (CfAe)	200.00 - 0.00	0.0000	0.1	1	1	3.0000	3.0000	12.0000	8.40
**												
FLC 12-50J(1/2")	B	Yes	Ar (CfAe)	163.00 - 0.00	0.0000	-0.2	1	1	0.5000	0.6400		0.17
**												
LDF4-50A(1/2")	B	Yes	Ar (CfAe)	144.00 - 0.00	0.0000	0.12	4	3	0.5000	0.6300		0.15
LDF4-50A(1/2")	B	Yes	Ar (CfAe)	198.00 - 144.00	0.0000	0.12	1	1	0.5000	0.6300		0.15
LDF5-50A(7/8")	B	Yes	Ar (CfAe)	144.00 - 0.00	0.0000	0.13	5	4	0.5000	1.0900		0.33
LDF5-50A(7/8")	B	Yes	Ar (CfAe)	198.00 - 144.00	0.0000	0.13	4	4	0.5000	1.0900		0.33
Feedline Ladder (Af)	A	Yes	Af (CfAe)	198.00 - 0.00	0.0000	-0.12	1	1	3.0000	3.0000	12.0000	8.40
Feedline Ladder (Af)	A	Yes	Af (CfAe)	198.00 - 0.00	0.0000	0.12	1	1	3.0000	3.0000	12.0000	8.40
**												
** C Face **												
LDF7-50A(1-5/8")	C	Yes	Ar (CfAe)	170.00 - 0.00	-1.5000	0	6	6	0.5000	1.9800		0.82
LDF4-50A(1/2")	C	Yes	Ar (CfAe)	53.00 - 0.00	-1.5000	0.08	1	1	0.5000	0.6300		0.15
Feedline Ladder (Af)	C	Yes	Af (CfAe)	170.00 - 0.00	-1.5000	0	1	1	3.0000	3.0000	12.0000	8.40

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
**												
Safety Line 3/8	C	Yes	Ar (CfAe)	200.00 - 0.00	0.0000	0	1	1	0.3750	0.3750		0.22
Climbing Ladder	C	Yes	Af (CfAe)	200.00 - 0.00	0.0000	0	1	1	2.5000	2.5000	10.0000	7.90

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C_AA_A ft^2/ft	Weight plf
** A Face **							
**							
**							

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 K
T1	200.00-180.00	A	0.000	9.000	0.000	0.000	0.30
		B	11.505	5.500	0.000	0.000	0.23
		C	0.625	4.167	0.000	0.000	0.16
T2	180.00-160.00	A	0.000	10.000	0.000	0.000	0.34
		B	48.677	10.000	0.000	0.000	0.53
		C	10.525	6.667	0.000	0.000	0.30
T3	160.00-140.00	A	0.000	10.000	0.000	0.000	0.34
		B	50.003	10.000	0.000	0.000	0.54
		C	20.425	9.167	0.000	0.000	0.43
T4	140.00-120.00	A	0.000	10.000	0.000	0.000	0.34
		B	51.683	10.000	0.000	0.000	0.55
		C	20.425	9.167	0.000	0.000	0.43
T5	120.00-100.00	A	0.000	10.000	0.000	0.000	0.34
		B	51.683	10.000	0.000	0.000	0.55
		C	20.425	9.167	0.000	0.000	0.43
T6	100.00-80.00	A	0.000	10.000	0.000	0.000	0.34
		B	51.683	10.000	0.000	0.000	0.55
		C	20.425	9.167	0.000	0.000	0.43
T7	80.00-60.00	A	0.000	10.000	0.000	0.000	0.34
		B	51.683	10.000	0.000	0.000	0.55
		C	20.425	9.167	0.000	0.000	0.43
T8	60.00-40.00	A	0.000	10.000	0.000	0.000	0.34
		B	51.683	10.000	0.000	0.000	0.55
		C	21.108	9.167	0.000	0.000	0.43
T9	40.00-20.00	A	0.000	10.000	0.000	0.000	0.34
		B	51.683	10.000	0.000	0.000	0.55
		C	21.475	9.167	0.000	0.000	0.43
T10	20.00-0.00	A	0.000	10.000	0.000	0.000	0.34
		B	51.683	10.000	0.000	0.000	0.55
		C	21.475	9.167	0.000	0.000	0.43

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 K
T1	200.00-180.00	A	1.542	0.000	15.169	0.000	0.000	0.69
		B		12.682	21.026	0.000	0.000	0.84

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 K
		C		5.766	7.594	0.000	0.000	0.42
T2	180.00-160.00	A	1.522	0.000	16.763	0.000	0.000	0.76
		B		22.355	70.730	0.000	0.000	2.22
		C		9.884	22.072	0.000	0.000	0.91
T3	160.00-140.00	A	1.499	0.000	16.662	0.000	0.000	0.75
		B		27.271	71.382	0.000	0.000	2.29
		C		13.919	36.496	0.000	0.000	1.37
T4	140.00-120.00	A	1.474	0.000	16.549	0.000	0.000	0.74
		B		26.931	74.282	0.000	0.000	2.36
		C		13.749	36.382	0.000	0.000	1.36
T5	120.00-100.00	A	1.444	0.000	16.419	0.000	0.000	0.73
		B		26.541	74.152	0.000	0.000	2.33
		C		13.554	36.252	0.000	0.000	1.33
T6	100.00-80.00	A	1.410	0.000	16.266	0.000	0.000	0.72
		B		26.082	74.000	0.000	0.000	2.28
		C		13.325	36.100	0.000	0.000	1.31
T7	80.00-60.00	A	1.368	0.000	16.080	0.000	0.000	0.70
		B		25.524	73.814	0.000	0.000	2.23
		C		13.045	35.914	0.000	0.000	1.28
T8	60.00-40.00	A	1.314	0.000	15.840	0.000	0.000	0.68
		B		24.802	73.573	0.000	0.000	2.16
		C		16.214	35.673	0.000	0.000	1.28
T9	40.00-20.00	A	1.250	0.000	15.556	0.000	0.000	0.66
		B		23.950	73.289	0.000	0.000	2.08
		C		17.475	35.389	0.000	0.000	1.26
T10	20.00-0.00	A	1.250	0.000	15.556	0.000	0.000	0.66
		B		23.950	73.289	0.000	0.000	2.08
		C		17.475	35.389	0.000	0.000	1.26

Feed Line Shielding

Section	Elevation ft	Face	A_R ft^2	A_R Ice ft^2	A_F ft^2	A_F Ice ft^2
T1	200.00-180.00	A	0.000	2.889	0.808	1.639
		B	0.000	5.633	1.527	3.196
		C	0.000	2.385	0.430	1.353
T2	180.00-160.00	A	0.000	2.672	0.763	1.537
		B	0.000	12.797	4.476	7.358
		C	0.000	4.576	1.311	2.631
T3	160.00-140.00	A	0.000	2.361	0.689	1.378
		B	0.000	12.041	4.135	7.028
		C	0.000	6.346	2.039	3.704
T4	140.00-120.00	A	0.000	1.757	0.752	1.491
		B	0.000	9.263	4.639	7.858
		C	0.000	4.735	2.225	4.016
T5	120.00-100.00	A	0.000	1.623	0.715	1.404
		B	0.000	8.589	4.413	7.434
		C	0.000	4.382	2.117	3.793
T6	100.00-80.00	A	0.000	1.515	0.831	1.612
		B	0.000	8.062	5.126	8.577
		C	0.000	4.105	2.459	4.368
T7	80.00-60.00	A	0.000	1.029	0.688	1.316
		B	0.000	5.507	4.245	7.045
		C	0.000	2.797	2.036	3.578
T8	60.00-40.00	A	0.000	0.940	0.667	1.252
		B	0.000	5.076	4.117	6.761
		C	0.000	2.747	2.021	3.658
T9	40.00-20.00	A	0.000	0.854	0.652	1.196
		B	0.000	4.660	4.024	6.524
		C	0.000	2.592	1.999	3.629
T10	20.00-0.00	A	0.000	0.839	0.732	1.342
		B	0.000	4.575	4.515	7.320
		C	0.000	2.545	2.243	4.072

Feed Line Center of Pressure

Section	Elevation	CP_X	CP_Z	CP_X Ice	CP_Z Ice
	ft	in	in	in	in
T1	200.00-180.00	1.6864	-1.0949	0.8175	-0.1449
T2	180.00-160.00	5.3134	-3.8511	3.0743	-1.9979
T3	160.00-140.00	6.1836	-2.8652	3.7384	-1.8586
T4	140.00-120.00	7.2190	-3.1455	4.2635	-2.1367
T5	120.00-100.00	7.9056	-3.3697	4.8162	-2.3536
T6	100.00-80.00	8.3699	-3.5103	5.1950	-2.5111
T7	80.00-60.00	9.3209	-3.8610	6.3609	-2.9783
T8	60.00-40.00	9.3380	-3.6920	6.5067	-2.5704
T9	40.00-20.00	10.0833	-3.8760	7.0652	-2.5339
T10	20.00-0.00	10.2946	-3.9286	7.2712	-2.5936

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 K
Beacon	B	From Leg	0.50 0.00 1.00	0.0000	200.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.00 2.50 3.00 4.00 6.00	2.00 2.50 3.00 4.00 6.00	0.02 0.03 0.04 0.06 0.10
Sidemarker	A	From Leg	0.50 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.60 0.72 0.86 1.16 1.89	0.60 0.72 0.86 1.16 1.89	0.01 0.02 0.03 0.05 0.13
Sidemarker	B	From Leg	0.50 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.60 0.72 0.86 1.16 1.89	0.60 0.72 0.86 1.16 1.89	0.01 0.02 0.03 0.05 0.13
Sidemarker	C	From Leg	0.50 0.00 0.00	0.0000	100.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.60 0.72 0.86 1.16 1.89	0.60 0.72 0.86 1.16 1.89	0.01 0.02 0.03 0.05 0.13
** 198 ** PD1107-1	A	From Leg	4.00 0.00 7.00	0.0000	198.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.18 3.29 4.43 6.42 9.18	2.18 3.29 4.43 6.42 9.18	0.01 0.02 0.05 0.12 0.35
PD201-7	A	From Leg	4.00 0.00 7.00	0.0000	198.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.02 1.81 2.62 3.76 5.78	1.02 1.81 2.62 3.76 5.78	0.00 0.01 0.03 0.07 0.22
DB225-A	B	From Leg	4.00 0.00	0.0000	198.00	No Ice 1/2"	3.21 5.78	3.21 5.78	0.04 0.05

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 K
			7.00			Ice	8.35	8.35	0.06
						1" Ice	13.48	13.48	0.08
						2" Ice	23.75	23.75	0.13
						4" Ice			
ALR10-O	C	From Leg	4.00 0.00 10.00	0.0000	198.00	No Ice	13.25	13.25	0.09
						1/2" Ice	15.31	15.31	0.18
							17.39	17.39	0.28
						1" Ice	20.79	20.79	0.52
						2" Ice	25.72	25.72	1.17
						4" Ice			
OGB6-928N	C	From Leg	4.00 0.00 6.00	0.0000	198.00	No Ice	0.97	0.97	0.01
						1/2" Ice	1.33	1.33	0.02
							1.63	1.63	0.03
						1" Ice	2.26	2.26	0.06
						2" Ice	3.67	3.67	0.17
						4" Ice			
(4) 6' x 2" Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	198.00	No Ice	1.43	1.43	0.02
						1/2" Ice	1.50	1.50	0.03
							1.57	1.57	0.04
						1" Ice	1.71	1.71	0.05
						2" Ice	2.00	2.00	0.07
						4" Ice			
(4) 6' x 2" Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	198.00	No Ice	1.43	1.43	0.02
						1/2" Ice	1.50	1.50	0.03
							1.57	1.57	0.04
						1" Ice	1.71	1.71	0.05
						2" Ice	2.00	2.00	0.07
						4" Ice			
(4) 6' x 2" Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	198.00	No Ice	1.43	1.43	0.02
						1/2" Ice	1.50	1.50	0.03
							1.57	1.57	0.04
						1" Ice	1.71	1.71	0.05
						2" Ice	2.00	2.00	0.07
						4" Ice			
Sector Mount [SM 602-3]	C	None		0.0000	198.00	No Ice	33.11	33.11	1.54
						1/2" Ice	44.90	44.90	2.16
							56.69	56.69	2.78
						1" Ice	80.27	80.27	4.01
						2" Ice	127.43	127.43	6.49
						4" Ice			
**									
** 182 **									
(2) APXV18-209015-C-A20 w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	182.00	No Ice	5.32	4.70	0.05
						1/2" Ice	5.87	5.86	0.10
							6.39	6.73	0.15
						1" Ice	7.46	8.51	0.28
						2" Ice	9.81	12.28	0.67
						4" Ice			
(2) APXV18-209015-C-A20 w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	182.00	No Ice	5.32	4.70	0.05
						1/2" Ice	5.87	5.86	0.10
							6.39	6.73	0.15
						1" Ice	7.46	8.51	0.28
						2" Ice	9.81	12.28	0.67
						4" Ice			
(2) APXV18-209015-C-A20 w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	182.00	No Ice	5.32	4.70	0.05
						1/2" Ice	5.87	5.86	0.10
							6.39	6.73	0.15
						1" Ice	7.46	8.51	0.28
						2" Ice	9.81	12.28	0.67
						4" Ice			
LNX-6515DS-VTM w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	182.00	No Ice	11.68	9.84	0.08
						1/2" Ice	12.40	11.37	0.17
							13.14	12.91	0.27
						1" Ice	14.60	15.27	0.51
						2" Ice	17.87	20.14	1.15

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
LNX-6515DS-VTM w/ Mount Pipe	B	From Leg	4.00	0.00	0.0000	182.00	4" Ice			
							No Ice	11.68	9.84	0.08
							1/2" Ice	12.40	11.37	0.17
							1" Ice	13.14	12.91	0.27
							2" Ice	14.60	15.27	0.51
							4" Ice	17.87	20.14	1.15
			1.00							
LNX-6515DS-VTM w/ Mount Pipe	C	From Leg	4.00	0.00	0.0000	182.00	No Ice	11.68	9.84	0.08
							1/2" Ice	12.40	11.37	0.17
							1" Ice	13.14	12.91	0.27
							2" Ice	14.60	15.27	0.51
							4" Ice	17.87	20.14	1.15
			1.00							
ATBT-BOTTOM-24V	A	From Leg	4.00	0.00	0.0000	182.00	No Ice	0.12	0.08	0.00
							1/2" Ice	0.17	0.12	0.00
							1" Ice	0.23	0.17	0.01
							2" Ice	0.38	0.30	0.01
							4" Ice	0.77	0.67	0.04
			1.00							
ATBT-BOTTOM-24V	B	From Leg	4.00	0.00	0.0000	182.00	No Ice	0.12	0.08	0.00
							1/2" Ice	0.17	0.12	0.00
							1" Ice	0.23	0.17	0.01
							2" Ice	0.38	0.30	0.01
							4" Ice	0.77	0.67	0.04
			1.00							
ATBT-BOTTOM-24V	C	From Leg	4.00	0.00	0.0000	182.00	No Ice	0.12	0.08	0.00
							1/2" Ice	0.17	0.12	0.00
							1" Ice	0.23	0.17	0.01
							2" Ice	0.38	0.30	0.01
							4" Ice	0.77	0.67	0.04
			1.00							
KRY 112 71	A	From Leg	4.00	0.00	0.0000	182.00	No Ice	0.68	0.45	0.01
							1/2" Ice	0.80	0.56	0.02
							1" Ice	0.93	0.68	0.03
							2" Ice	1.22	0.94	0.04
							4" Ice	1.90	1.57	0.11
			1.00							
KRY 112 71	B	From Leg	4.00	0.00	0.0000	182.00	No Ice	0.68	0.45	0.01
							1/2" Ice	0.80	0.56	0.02
							1" Ice	0.93	0.68	0.03
							2" Ice	1.22	0.94	0.04
							4" Ice	1.90	1.57	0.11
			1.00							
KRY 112 71	C	From Leg	4.00	0.00	0.0000	182.00	No Ice	0.68	0.45	0.01
							1/2" Ice	0.80	0.56	0.02
							1" Ice	0.93	0.68	0.03
							2" Ice	1.22	0.94	0.04
							4" Ice	1.90	1.57	0.11
			1.00							
KRY 112 71	A	From Leg	4.00	0.00	0.0000	182.00	No Ice	0.68	0.45	0.01
							1/2" Ice	0.80	0.56	0.02
							1" Ice	0.93	0.68	0.03
							2" Ice	1.22	0.94	0.04
							4" Ice	1.90	1.57	0.11
			1.00							
KRY 112 71	B	From Leg	4.00	0.00	0.0000	182.00	No Ice	0.68	0.45	0.01
							1/2" Ice	0.80	0.56	0.02
							1" Ice	0.93	0.68	0.03
							2" Ice	1.22	0.94	0.04
							4" Ice	1.90	1.57	0.11
			1.00							
KRY 112 71	C	From Leg	4.00	0.00	0.0000	182.00	No Ice	0.68	0.45	0.01
							1/2" Ice	0.80	0.56	0.02
							1" Ice	0.93	0.68	0.03
								1.22	0.94	0.04
			1.00							

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
							2" Ice	1.90	1.57	0.11
							4" Ice			
6' x 2" Mount Pipe	A	From Leg	4.00	0.00	0.0000	182.00	No Ice	1.43	1.43	0.02
			0.00				1/2" Ice	1.50	1.50	0.03
			0.00				1" Ice	1.57	1.57	0.04
							2" Ice	1.71	1.71	0.05
							4" Ice	2.00	2.00	0.07
6' x 2" Mount Pipe	B	From Leg	4.00	0.00	0.0000	182.00	No Ice	1.43	1.43	0.02
			0.00				1/2" Ice	1.50	1.50	0.03
			0.00				1" Ice	1.57	1.57	0.04
							2" Ice	1.71	1.71	0.05
							4" Ice	2.00	2.00	0.07
6' x 2" Mount Pipe	C	From Leg	4.00	0.00	0.0000	182.00	No Ice	1.43	1.43	0.02
			0.00				1/2" Ice	1.50	1.50	0.03
			0.00				1" Ice	1.57	1.57	0.04
							2" Ice	1.71	1.71	0.05
							4" Ice	2.00	2.00	0.07
Sector Mount [SM 602-3]	C	None			0.0000	182.00	No Ice	33.11	33.11	1.54
							1/2" Ice	44.90	44.90	2.16
							1" Ice	56.69	56.69	2.78
							2" Ice	80.27	80.27	4.01
							4" Ice	127.43	127.43	6.49
**										
** 170 **										
(2) DB980H90E-M w/ Mount Pipe	A	From Leg	5.00	0.00	0.0000	170.00	No Ice	4.04	3.62	0.03
			0.00				1/2" Ice	4.50	4.48	0.07
			1.00				1" Ice	4.95	5.22	0.11
							2" Ice	5.87	6.74	0.22
							4" Ice	8.05	10.00	0.55
(2) DB980H90E-M w/ Mount Pipe	B	From Leg	5.00	0.00	0.0000	170.00	No Ice	4.04	3.62	0.03
			0.00				1/2" Ice	4.50	4.48	0.07
			1.00				1" Ice	4.95	5.22	0.11
							2" Ice	5.87	6.74	0.22
							4" Ice	8.05	10.00	0.55
(2) DB980H90E-M w/ Mount Pipe	C	From Leg	5.00	0.00	0.0000	170.00	No Ice	4.04	3.62	0.03
			0.00				1/2" Ice	4.50	4.48	0.07
			1.00				1" Ice	4.95	5.22	0.11
							2" Ice	5.87	6.74	0.22
							4" Ice	8.05	10.00	0.55
6' x 2" Mount Pipe	A	From Leg	5.00	0.00	0.0000	170.00	No Ice	1.43	1.43	0.02
			0.00				1/2" Ice	1.50	1.50	0.03
			0.00				1" Ice	1.57	1.57	0.04
							2" Ice	1.71	1.71	0.05
							4" Ice	2.00	2.00	0.07
6' x 2" Mount Pipe	B	From Leg	5.00	0.00	0.0000	170.00	No Ice	1.43	1.43	0.02
			0.00				1/2" Ice	1.50	1.50	0.03
			0.00				1" Ice	1.57	1.57	0.04
							2" Ice	1.71	1.71	0.05
							4" Ice	2.00	2.00	0.07
6' x 2" Mount Pipe	C	From Leg	5.00	0.00	0.0000	170.00	No Ice	1.43	1.43	0.02
			0.00				1/2" Ice	1.50	1.50	0.03
			0.00				1" Ice	1.57	1.57	0.04
							2" Ice	1.71	1.71	0.05
							4" Ice	2.00	2.00	0.07
Sector Mount [SM 506-3]	C	None			0.0000	170.00	No Ice	35.47	35.47	1.74

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 K
						1/2" Ice	50.60	50.60	2.35
						1" Ice	65.73	65.73	2.95
						2" Ice	95.99	95.99	4.16
						4" Ice	156.51	156.51	6.59
** ** 163 ** Pipe Mount [PM 601-1]	A	From Leg	0.50 0.00 0.00	0.0000	163.00	No Ice	3.00	0.90	0.07
						1/2" Ice	3.74	1.12	0.08
						1" Ice	4.48	1.34	0.09
						2" Ice	5.96	1.78	0.12
						4" Ice	8.92	2.66	0.18
** ** 144 ** PD156S-4	B	From Leg	4.00 0.00 6.00	0.0000	144.00	No Ice	0.44	0.44	0.01
						1/2" Ice	0.79	0.79	0.01
						1" Ice	1.14	1.14	0.01
						2" Ice	1.85	1.85	0.01
						4" Ice	3.26	3.26	0.02
(2) PD1109-1	B	From Leg	4.00 0.00 8.00	0.0000	144.00	No Ice	2.83	2.83	0.02
						1/2" Ice	3.89	3.89	0.04
						1" Ice	4.97	4.97	0.07
						2" Ice	6.37	6.37	0.14
						4" Ice	9.00	9.00	0.38
SRL480N1DT4	C	From Leg	4.00 0.00 11.00	0.0000	144.00	No Ice	3.81	3.81	0.03
						1/2" Ice	5.37	5.37	0.06
						1" Ice	6.94	6.94	0.10
						2" Ice	10.13	10.13	0.20
						4" Ice	14.61	14.61	0.54
(4) 6' x 2" Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	144.00	No Ice	1.43	1.43	0.02
						1/2" Ice	1.50	1.50	0.03
						1" Ice	1.57	1.57	0.04
						2" Ice	1.71	1.71	0.05
						4" Ice	2.00	2.00	0.07
(4) 6' x 2" Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	144.00	No Ice	1.43	1.43	0.02
						1/2" Ice	1.50	1.50	0.03
						1" Ice	1.57	1.57	0.04
						2" Ice	1.71	1.71	0.05
						4" Ice	2.00	2.00	0.07
(4) 6' x 2" Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	144.00	No Ice	1.43	1.43	0.02
						1/2" Ice	1.50	1.50	0.03
						1" Ice	1.57	1.57	0.04
						2" Ice	1.71	1.71	0.05
						4" Ice	2.00	2.00	0.07
Sector Mount [SM 602-3]	C	None		0.0000	144.00	No Ice	33.11	33.11	1.54
						1/2" Ice	44.90	44.90	2.16
						1" Ice	56.69	56.69	2.78
						2" Ice	80.27	80.27	4.01
						4" Ice	127.43	127.43	6.49
** ** 53 ** KS24019-L112A	A	From Leg	1.00 0.00 2.00	0.0000	53.00	No Ice	0.16	0.16	0.01
						1/2" Ice	0.22	0.22	0.01
						1" Ice	0.30	0.30	0.01
						2" Ice	0.48	0.48	0.02
						4" Ice	0.95	0.95	0.06

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 K
Side Arm Mount [SO 202-1]	A	From Leg	2.00 0.00 0.00	0.0000	53.00	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.96 4.10 5.24 7.52 12.08	2.53 3.51 4.49 6.45 10.37	0.11 0.13 0.16 0.20 0.30
**									

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
** 163 ** PR-850	A	Grid	From Leg	1.00 0.00 0.00	60.0000		163.00	5.67	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	25.22 25.97 26.71 28.21 31.20	0.04 0.17 0.30 0.57 1.10

Load Combinations

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

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	200 - 180	6.821	9	0.3248	0.0053
T2	180 - 160	5.462	9	0.3130	0.0139
T3	160 - 140	4.193	9	0.2727	0.0179
T4	140 - 120	3.108	9	0.2233	0.0169
T5	120 - 100	2.216	9	0.1845	0.0143
T6	100 - 80	1.483	9	0.1456	0.0111
T7	80 - 60	0.916	9	0.1046	0.0079
T8	60 - 40	0.516	9	0.0736	0.0060
T9	40 - 20	0.244	9	0.0419	0.0040
T10	20 - 0	0.077	9	0.0211	0.0019

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
200.00	Beacon	9	6.821	0.3248	0.0053	219808
198.00	PD1107-1	9	6.684	0.3243	0.0062	219808
182.00	(2) APXV18-209015-C-A20 w/ Mount Pipe	9	5.595	0.3153	0.0132	60912
170.00	(2) DB980H90E-M w/ Mount Pipe	9	4.810	0.2959	0.0166	33341
163.00	PR-850	9	4.373	0.2801	0.0176	25969
144.00	PD156S-4	9	3.309	0.2326	0.0173	23598
100.00	Sidemarker	9	1.483	0.1456	0.0111	28120
53.00	KS24019-L112A	9	0.408	0.0621	0.0053	41534

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	200 - 180	17.443	2	0.8312	0.0136
T2	180 - 160	13.966	2	0.8004	0.0355
T3	160 - 140	10.722	2	0.6971	0.0457
T4	140 - 120	7.947	2	0.5710	0.0432
T5	120 - 100	5.667	2	0.4716	0.0367
T6	100 - 80	3.791	2	0.3724	0.0284
T7	80 - 60	2.344	2	0.2673	0.0203
T8	60 - 40	1.320	2	0.1880	0.0153
T9	40 - 20	0.624	2	0.1071	0.0101
T10	20 - 0	0.198	2	0.0539	0.0048

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
200.00	Beacon	2	17.443	0.8312	0.0136	86789
198.00	PD1107-1	2	17.092	0.8298	0.0160	86789
182.00	(2) APXV18-209015-C-A20 w/ Mount Pipe	2	14.307	0.8064	0.0337	24027
170.00	(2) DB980H90E-M w/ Mount Pipe	2	12.298	0.7565	0.0424	13003
163.00	PR-850	2	11.183	0.7159	0.0451	10171
144.00	PD156S-4	2	8.461	0.5946	0.0442	9233
100.00	Sidemarker	2	3.791	0.3724	0.0284	10997
53.00	KS24019-L112A	2	1.043	0.1588	0.0136	16251

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	200	Leg	A325N	0.7500	4	2.75	19.44	0.142	1.333	Bolt Tension
		Diagonal	A325X	0.6250	1	2.55	5.71	0.446	1.333	Member Block Shear
		Top Girt	A325X	0.6250	1	0.05	8.16	0.007	1	Member Bearing
T2	180	Leg	A325N	1.0000	4	8.91	34.56	0.258	1.333	Bolt Tension
		Diagonal	A325X	0.6250	1	3.37	5.71	0.590	1.333	Member Block Shear
T3	160	Leg	A325N	1.0000	4	15.21	34.56	0.440	1.333	Bolt Tension
		Diagonal	A325X	0.6250	1	3.89	5.71	0.681	1.333	Member Block Shear
T4	140	Leg	A325N	1.2500	4	21.28	54.00	0.394	1.333	Bolt Tension
		Diagonal	A325X	0.6250	1	4.50	7.75	0.581	1.333	Member Block Shear
T5	120	Leg	A325N	1.2500	4	27.09	54.00	0.502	1.333	Bolt Tension
		Diagonal	A325X	0.6250	1	4.79	7.75	0.618	1.333	Member Block Shear
T6	100	Leg	A325N	1.2500	6	21.74	54.00	0.403	1.333	Bolt Tension
		Diagonal	A325X	0.7500	1	5.19	7.88	0.658	1.333	Member Block Shear
T7	80	Leg	A325N	1.2500	6	24.97	54.00	0.462	1.333	Bolt Tension
		Diagonal	A325X	0.7500	1	6.15	12.69	0.484	1.333	Member Bearing
T8	60	Leg	A325N	1.3750	6	28.35	65.34	0.434	1.333	Bolt Tension
		Diagonal	A325X	0.7500	1	6.95	13.05	0.532	1.333	Member Bearing
T9	40	Leg	A325N	1.3750	6	31.69	65.34	0.485	1.333	Bolt Tension
		Diagonal	A325X	0.7500	1	7.40	13.05	0.567	1.333	Member Bearing
T10	20	Leg	A572-50	1.5000	8	26.85	37.91	0.708	1.333	Bolt Tension
		Diagonal	A325X	0.7500	1	8.37	13.05	0.641	1.333	Member Bearing

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio P / P_a
T1	200 - 180	Pipe 2.875" x 0.375" (2.5 #160)	20.00	5.00	67.1 K=1.00	21.46	2.9452	-14.54	63.21	0.230
T2	180 - 160	Pipe 3.5" x 0.300" (3 XS)	20.03	5.01	52.9 K=1.00	23.89	3.0159	-43.29	72.06	0.601
T3	160 - 140	Pipe 4" x 0.318" (3.5 XS)	20.03	5.01	46.0 K=1.00	24.96	3.6784	-72.00	91.82	0.784
T4	140 - 120	Pipe 4.5" x 0.438" (4 #120)	20.03	6.68	55.5 K=1.00	23.47	5.5894	-99.39	131.21	0.757
T5	120 - 100	Pipe 5.563" x 0.375" (5 XS)	20.03	6.68	43.6 K=1.00	25.32	6.1120	-125.90	154.76	0.814
T6	100 - 80	Pipe 5.563" x 0.375" (5 XS)	20.03	6.68	43.6 K=1.00	25.32	6.1120	-151.58	154.76	0.979
T7	80 - 60	Pipe 6.625" x 0.432" (6 EH)	20.03	10.02	54.8 K=1.00	23.59	8.4049	-174.71	198.28	0.881

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T8	60 - 40	Pipe 8.625" x 0.322" (8 STD)	20.03	10.02	40.9 K=1.00	25.70	8.3993	-199.53	215.89	0.924
T9	40 - 20	Pipe 8.625" x 0.500" (8 XS)	20.03	10.02	41.8 K=1.00	25.58	12.7627	-224.38	326.50	0.687
T10	20 - 0	Pipe 8.625" x 0.500" (8 XS)	20.03	9.97	41.6 K=1.00	25.61	12.7627	-255.93	326.82	0.783

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	200 - 180	L1 3/4x1 3/4x3/16	7.07	3.20	113.8 K=1.02	11.15	0.6211	-2.69	6.92	0.388
T2	180 - 160	L1 3/4x1 3/4x3/16	8.40	4.01	140.0 K=1.00	7.61	0.6211	-3.32	4.73	0.701
T3	160 - 140	L1 3/4x1 3/4x3/16	10.08	4.82	168.6 K=1.00	5.25	0.6211	-3.92	3.26	1.202
T4	140 - 120	L2 1/2x2 1/2x3/16	12.58	6.10	147.9 K=1.00	6.83	0.9020	-4.53	6.16	0.735
T5	120 - 100	L2 1/2x2 1/2x3/16	14.32	6.92	167.7 K=1.00	5.31	0.9020	-4.82	4.79	1.006
T6	100 - 80	L3x3x3/16	16.11	7.82	157.4 K=1.00	6.03	1.0900	-5.19	6.57	0.790
T7	80 - 60	L3 1/2x3 1/2x1/4	19.30	9.43	163.1 K=1.00	5.62	1.6900	-6.27	9.49	0.661
T8	60 - 40	L3 1/2x3 1/2x1/4	21.03	10.20	176.4 K=1.00	4.80	1.6900	-6.95	8.11	0.857
T9	40 - 20	L3 1/2x3 1/2x1/4	22.81	11.10	191.9 K=1.00	4.06	1.6900	-7.40	6.86	1.079
T10	20 - 0	L4x4x1/4	24.60	11.99	181.0 K=1.00	4.56	1.9400	-8.37	8.84	0.947

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
T1	200 - 180	L1 3/4x1 3/4x3/16	5.00	4.43	154.7 K=1.00	6.24	0.6211	-0.05	3.88	0.014

* DL controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio P / P_a
T1	200 - 180	Pipe 2.875" x 0.375" (2.5 #160)	20.00	5.00	67.1	30.00	2.9452	11.01	88.36	0.125
T2	180 - 160	Pipe 3.5" x 0.300" (3 XS)	20.03	5.01	52.9	30.00	3.0159	35.63	90.48	0.394
T3	160 - 140	Pipe 4" x 0.318" (3.5 XS)	20.03	5.01	46.0	30.00	3.6784	60.83	110.35	0.551
T4	140 - 120	Pipe 4.5" x 0.438" (4 #120)	20.03	6.68	55.5	30.00	5.5894	85.13	167.68	0.508
T5	120 - 100	Pipe 5.563" x 0.375" (5 XS)	20.03	6.68	43.6	30.00	6.1120	108.38	183.36	0.591
T6	100 - 80	Pipe 5.563" x 0.375" (5 XS)	20.03	6.68	43.6	30.00	6.1120	130.45	183.36	0.711
T7	80 - 60	Pipe 6.625" x 0.432" (6 EH)	20.03	10.02	54.8	30.00	8.4049	149.83	252.15	0.594
T8	60 - 40	Pipe 8.625" x 0.322" (8 STD)	20.03	10.02	40.9	30.00	8.3993	170.12	251.98	0.675
T9	40 - 20	Pipe 8.625" x 0.500" (8 XS)	20.03	10.02	41.8	30.00	12.7627	190.12	382.88	0.497
T10	20 - 0	Pipe 8.625" x 0.500" (8 XS)	20.03	9.97	41.6	30.00	12.7627	214.84	382.88	0.561

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio P / P_a
T1	200 - 180	L1 3/4x1 3/4x3/16	7.07	3.20	75.2	29.00	0.3604	2.55	10.45	0.244
T2	180 - 160	L1 3/4x1 3/4x3/16	8.01	3.81	89.0	29.00	0.3604	3.37	10.45	0.323
T3	160 - 140	L1 3/4x1 3/4x3/16	10.08	4.82	111.6	29.00	0.3604	3.89	10.45	0.372
T4	140 - 120	L2 1/2x2 1/2x3/16	12.58	6.10	96.6	29.00	0.5710	4.50	16.56	0.272
T5	120 - 100	L2 1/2x2 1/2x3/16	14.32	6.92	109.3	29.00	0.5710	4.79	16.56	0.289
T6	100 - 80	L3x3x3/16	16.11	7.82	102.0	29.00	0.6945	5.19	20.14	0.258
T7	80 - 60	L3 1/2x3 1/2x1/4	19.30	9.43	105.9	29.00	1.1034	6.15	32.00	0.192
T8	60 - 40	L3 1/2x3 1/2x1/4	21.03	10.20	114.4	29.00	1.1034	6.59	32.00	0.206
T9	40 - 20	L3 1/2x3 1/2x1/4	22.81	11.10	124.2	29.00	1.1034	6.93	32.00	0.217
T10	20 - 0	L4x4x1/4	24.60	11.99	116.9	29.00	1.2909	7.68	37.44	0.205

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio P / P_a
T1	200 - 180	L1 3/4x1 3/4x3/16	5.00	4.43	106.4	29.00	0.3604	0.02	10.45	0.002

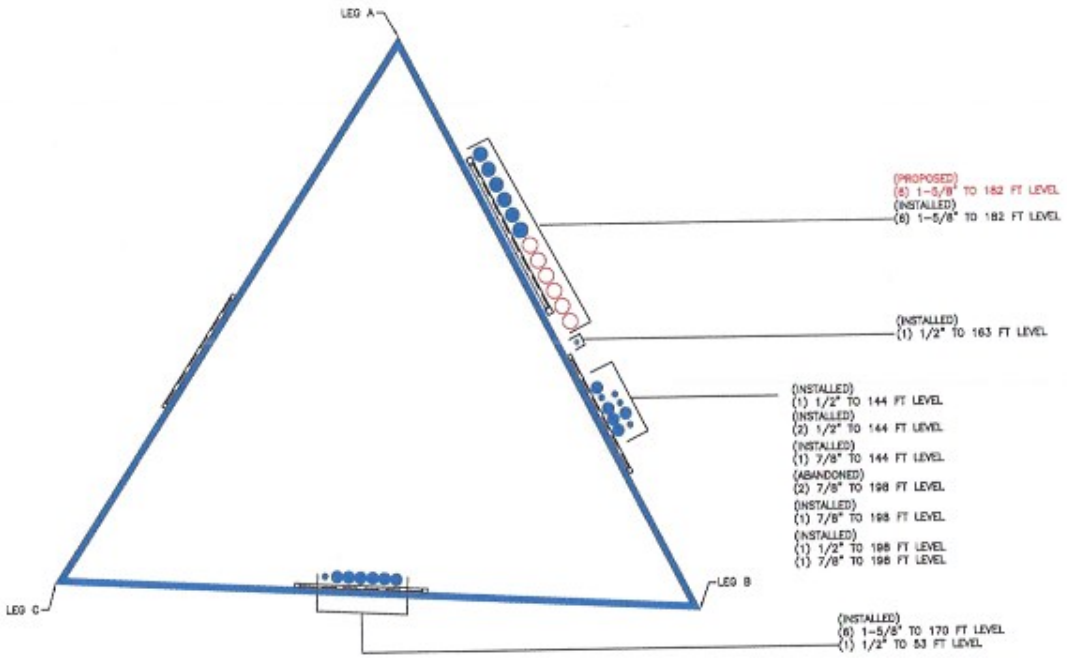
Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
T1	200 - 180	Leg	Pipe 2.875" x 0.375" (2.5 #160)	3	-14.54	84.26	17.3	Pass
T2	180 - 160	Leg	Pipe 3.5" x 0.300" (3 XS)	33	-43.29	96.06	45.1	Pass
T3	160 - 140	Leg	Pipe 4" x 0.318" (3.5 XS)	60	-72.00	122.40	58.8	Pass
T4	140 - 120	Leg	Pipe 4.5" x 0.438" (4 #120)	87	-99.39	174.90	56.8	Pass
T5	120 - 100	Leg	Pipe 5.563" x 0.375" (5 XS)	108	-125.90	206.29	61.0	Pass
T6	100 - 80	Leg	Pipe 5.563" x 0.375" (5 XS)	129	-151.58	206.29	73.5	Pass
T7	80 - 60	Leg	Pipe 6.625" x 0.432" (6 EH)	150	-174.71	264.31	66.1	Pass
T8	60 - 40	Leg	Pipe 8.625" x 0.322" (8 STD)	165	-199.53	287.78	69.3	Pass
T9	40 - 20	Leg	Pipe 8.625" x 0.500" (8 XS)	180	-224.38	435.22	51.6	Pass
T10	20 - 0	Leg	Pipe 8.625" x 0.500" (8 XS)	195	-255.93	435.64	58.7	Pass
T1	200 - 180	Diagonal	L1 3/4x1 3/4x3/16	11	-2.69	9.23	29.1 33.5 (b)	Pass
T2	180 - 160	Diagonal	L1 3/4x1 3/4x3/16	35	-3.32	6.30	52.6	Pass
T3	160 - 140	Diagonal	L1 3/4x1 3/4x3/16	62	-3.92	4.35	90.1	Pass
T4	140 - 120	Diagonal	L2 1/2x2 1/2x3/16	89	-4.53	8.21	55.1	Pass
T5	120 - 100	Diagonal	L2 1/2x2 1/2x3/16	112	-4.82	6.38	75.5	Pass
T6	100 - 80	Diagonal	L3x3x3/16	131	-5.19	8.76	59.3	Pass
T7	80 - 60	Diagonal	L3 1/2x3 1/2x1/4	154	-6.27	12.65	49.6	Pass
T8	60 - 40	Diagonal	L3 1/2x3 1/2x1/4	169	-6.95	10.81	64.3	Pass
T9	40 - 20	Diagonal	L3 1/2x3 1/2x1/4	184	-7.40	9.14	81.0	Pass
T10	20 - 0	Diagonal	L4x4x1/4	199	-8.37	11.79	71.0	Pass
T1	200 - 180	Top Girt	L1 3/4x1 3/4x3/16	5	-0.05	3.88	1.4	Pass
						Summary		
						Leg (T6)	73.5	Pass
						Diagonal (T3)	90.1	Pass
						Top Girt (T1)	1.4	Pass
						Bolt Checks	53.1	Pass
						RATING =	**90.1**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 871584 TOWER ID: C_BASELEVEL

DRAWN BY: KMA
CHECKED BY: PB
DRAWING DATE: 03/13/09

SITE NUMBER:
SITE NAME:

SITE NAME

JOHN TOM HILL

BUSINESS UNIT NUMBER

871584

SITE ADDRESS

115 BIRCH MTN. ROAD
GLASTONBURY, CT 06033
HARTFORD COUNTY
USA

SHEET TITLE

BASE LEVEL

SHEET NUMBER

A1-0

BASE LEVEL DRAWING

SCALE: N.T.S. 1

PLOT DATE: 4/20/2016 FILENAME: 871584_BASELEVEL.DWG

APPENDIX C

ADDITIONAL CALCULATIONS

Project Name:	John Tom Hill
Project Number:	871584
Job Number:	WO#1046939
Date:	4/22/2015

JACOBS®
Jacobs Engineering Group. Inc.

Created On:	6/3/2014
Checked By:	SMR / DW
Revised On:	9/26/2014
Revision No.:	5.4

Self Support Tower Pad-Pier Foundation

Load		
Code	F	
Compression	255	kips
Shear (comp)	27	kips
Uplift	214	kips
Shear (uplift)	23	kips
Soil Unit Weight	135	pcf
Friction Angle	36	
Cohesion	0	psf

Pad		
Thickness	1.75	ft
Bearing Depth	10	ft
Width	15	ft
Top Rebar Size	7	
Top Rebar Quantity	20	
Bottom Rebar Size	7	
Bottom Rebar Quantity	20	

Pier		
Pier type	Circle	
Diameter	3.5	ft
Height above Grade	0.5	ft
Rebar Size	7	
Rebar Quantity	14	
Tie Size	3	
Tie C/C Spacing	12	in

Material		
Concrete Strength (F'c)	3000	psi
Concrete Density	150	pcf
Rebar Tensile (Fy)	60	ksi
Clear Cover	3	in

Soil		
Ult. Bearing Capacity	8	ksf
Frost Depth	40	in
Water Table Depth	99	ft

Structural Capacity	76.2%	Pass
Soil Interaction Capacity	73.8%	Pass
Overall Foundation Capacity	76.2%	Pass

Compression		
Pad Beam Shear Capacity	246.8	kips
Pad Beam Shear	188.1	kips
Pad Beam Shear Check	76.2%	Pass
Steel Punching Resistance	648.0	kips
Punching Shear	337.2	kips
Punching Shear Check	52.0%	Pass
Pad Bending Moment Capacity	858.8	k-ft
Pad Bending Moment	559.7	k-ft
Pad Bending Moment Check	65.2%	Pass
Pier Beam Shear Capacity	92.2	kips
Pier Beam Shear	36.5	kips
Pier Beam Shear Check	39.6%	Pass
Peir Bending Moment Capacity	979.7	k-ft
Peir Bending Moment	201.3	k-ft
Pier Bending Moment Check	20.5%	Pass
Pad-Pier Bearing Capacity	4592.7	kips
Pad-Pier Bearing	655.8	kips
Pad-Pier Bearing Check	14.3%	Pass

Uplift		
Steel Rupture Capacity	453.6	kips
Steel Rupture Force	278.8	kips
Steel Rupture Check	61.5%	Pass
Pad Bending Moment Capacity	858.8	k-ft
Pad Bending Moment	83.1	k-ft
Pad Bending Moment Check	9.7%	Pass
Pier Beam Shear Capacity	92.2	kips
Pier Beam Shear	31.1	kips
Pier Beam Shear Check	33.7%	Pass
Peir Bending Moment Capacity	265.4	k-ft
Peir Bending Moment	163.1	k-ft
Pier Bending Moment Check	61.5%	Pass

Soil Interaction		
Compression Capacity	911.87	kips
Compression Force	262.82	kips
Compression Check	28.8%	Pass
Uplift Capacity	290.13	kips
Uplift Force	214	kips
Uplift Check	73.8%	Pass
Lateral Capacity	124.56	kips
Lateral Force	27	kips
Lateral Check	21.7%	Pass

Project Name:	John Tom Hill
Project Number:	871584
Job Number:	WO#1046939
Date:	4/22/2015
Leg:	
Boring Number:	

JACOBS®
Jacobs Engineering Group. Inc.

Created On:	5/28/2014
Checked By:	
Revised On:	
Revision No.:	0

Self Support Tower Pad - Pier Foundation

Code :	F

UPLIFT CHECK

Uplift Force (k)	214	
	(Ultimate)	(Allowable)
Wt. Concrete (k):	71.69	57.35
Wt. Soil (k):	441.82	220.91
Friction (k):	23.74	11.87
Total (k)		290.13
% Capacity		
73.8%	PASS	

COMPRESSION CHECK

Comp. Force (k)	255	
	(Ultimate)	(Allowable)
Friction (k):	23.74	11.87
Bearing Cap. (ksf):	8.00	4.00
Gross/Net Bearing?:	N	
	Weights	Factored Wt.
Gross Concrete (k):	N/A	7.82
Net Concrete (k):	7.82	
Soil (k):	N/A	0.00
% Capacity		
28.8%	PASS	

FOUNDATION INFORMATION

Density Concrete (pcf):	150
Pier Shape (R or S):	R
Pier Diameter/Width (ft):	3.5
Pier Area (ft^2):	9.62
Pier Height Above Grade (ft):	0.50
Pad Width/Length (ft):	15.00
Pad Thickness (ft):	1.75
Pad Bearing Depth (ft):	10.00
Frost Depth (ft):	3.33
Water Table Depth (ft):	99.00

SOIL INFORMATION

Number of Layers Above Pad:	2
Number of Layers Adjacent Pad:	1
Total Number of Layers:	3
Number of Layers Check	OK
Pad Check	OK
Frost Depth Check	OK
Water Table Check	OK

Soil Profile

Soil Layer Number.	Layer Thickness (ft)	Depth at Bot. (ft)	Soil Type (C/S)	Unit Weight. (pcf)	Frict. Angle (°)	Cohesion (psf)
1	3.33	3.33	S	135	0	0
2	4.92	8.25	S	135	36	0
3	1.75	10.00	S	135	36	0
4	N/A	N/A	N/A	N/A	N/A	N/A
5	N/A	N/A	N/A	N/A	N/A	N/A
6	N/A	N/A	N/A	N/A	N/A	N/A