Filed by:
Kri Pelletier, Property Specialist - SBA Communications
134 Flanders Rd., Suite 125, Westborough, MA 01581
508.251.0720 x 3804 - kpelletier@sbasite.com

September 5, 2018

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

Notice of Exempt Modification
207 Garden Circle, Waterbury CT
41 34 11 N / -73 1 3 W
T-Mobile: CT11392B_L600

Dear Ms. Bachman:

T-Mobile currently maintains antennas at the 182-foot level of the existing 280-foot Guyed Tower at 207 Garden Circle, Waterbury, CT. The property and tower are owned by SBA Properties, LLC. T-Mobile now intends to replace (6) existing cell antennas with (6) newer technology cell antennas at the 182-foot level of the tower. The proposed full scope of work is as follows:

Remove:

- (6) 1-5/8" lines
- (3) Kathrein 782 11056
- (2) pipes

At ground level:

- (3) RRUs on H-Frame

Remove and Replace:

- Remove: (3) LNX-6515DS-A1M Dual Panel Antennas
  - Replace with: (3) APXVAARR24_43_U_NA20_Octa Panel Antennas
- Remove: (3) APX16DWV-16DWV-S-E-A20-Quad Panel Antennas
  - Replace with: (3) Air 3246 B66 Octa Panel Antennas
- Remove: (6) Double TMA 17/21 and KRY 112 114-1 double TMAs
  - Replace with: (6) KRY 112 144/2 and KRY 112 489/2 TMAs
- Remove: (1) 1-5/8" fiber
  - Replace with: (2) 1-5/8" hybrid

Install:

- (3) Ericsson Radio 4449 B71 +B12 RRUs

Existing Equipment to Remain (Including entitlements):

- (3) Air 32 KRD901146-1_B66A_B2A Octa Panel Antennas (relocated)
- (3) T-Frames
- (12) 1-5/8" lines

This facility was originally approved by the Zoning Board of Appeals for the City of Waterbury on March 18, 1985. The Board voted unanimously to grant special exception to construct a tower and facility. The City does not have record of any tower conditions having been set. As such, the proposed modification is in full compliance.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §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 the City's Mayor, Neil M. O'Leary, and City Planner, James A. Sequin. (Separate notice is not being sent to the property or tower owner, as both are SBA.)

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. §16.50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing structure.
2. The proposed modification will not require the 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 exceed state and local criteria.
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 modification 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, T-Mobile respectfully submits that the proposed modifications to the above-referenced telecommunication facility constitute an exempt modifications under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Kri Pelletier
Property Specialist
SBA COMMUNICATIONS CORPORATION
134 Flanders Rd., Suite 125
Westborough, MA 01581
508.251.0720 x3804 + T - 508.366.2610 + F - kpelletier@sbasite.com
Attachments
cc: Neil M. O'Leary, Mayor / with attachments
City of Waterbury, City Hall Building, 235 Grand Street, Waterbury, CT 06702
James A. Sequin, AICP, City Planner / with attachments
City of Waterbury, City Hall Building, 235 Grand Street, Waterbury, CT 06702

POWER DENSITY

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Ericsson AIR 3246 B66	Make / Model:	Ericsson AIR 3246 B66	Make / Model:	Ericsson AIR 3246 B66
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	182 feet	Height (AGL):	182 feet	Height (AGL):	182 feet
Frequency Bands	2100 MHz (AWS)	Frequency Bands	2100 MHz (AWS)	Frequency Bands	2100 MHz (AWS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	160	Total TX Power(W):	160	Total TX Power(W):	160
ERP (W):	6,224.72	ERP (W):	6,224.72	ERP (W):	6,224.72
Antenna A1 MPE%	**0.72**	Antenna B1 MPE%	**0.72**	Antenna C1 MPE%	**0.72**
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Ericsson AIR32 KRD9011461 B66A/B2A	Make / Model:	Ericsson AIR32 KRD9011461 B66A/B2A	Make / Model:	Ericsson AIR32 KRD9011461 B66A/B2A
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	182 feet	Height (AGL):	182 feet	Height (AGL):	182 feet
Frequency Bands	1900 MHz (PCS)	Frequency Bands	1900 MHz (PCS)	Frequency Bands	1900 MHz (PCS)
Channel Count	2	Channel Count	2	Channel Count	2
Total TX Power(W):	80	Total TX Power(W):	80	Total TX Power(W):	80
ERP (W):	3,112.36	ERP (W):	3,112.36	ERP (W):	3,112.36
Antenna A2 MPE%	**0.36**	Antenna B2 MPE%	**0.36**	Antenna C2 MPE%	**0.36**
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20
Gain:	15.65 / 16.35 / 13.35 / 12.95 dBd	Gain:	15.65 / 16.35 / 13.35 / 12.95 dBd	Gain:	15.65 / 16.35 / 13.35 / 12.95 dBd
Height (AGL):	182 feet	Height (AGL):	182 feet	Height (AGL):	182 feet
Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS) / 600 MHz / 700 MHz	Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS) / 600 MHz / 700 MHz	Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS) / 600 MHz / 700 MHz
Channel Count	7	Channel Count	7	Channel Count	7
Total TX Power(W):	215	Total TX Power(W):	215	Total TX Power(W):	215
ERP (W):	6,265.27	ERP (W):	6,265.27	ERP (W):	6,265.27
Antenna A3 MPE%	**1.13**	Antenna B3 MPE%	**1.13**	Antenna C3 MPE%	**1.13**

POWER DENSITY

Site Summary Tables

Site Composite MPE%	
Carrier	MPE%
T-Mobile (Per Sector Max)	2.22 %
Sky Tel 1	0.04 %
Sky Tel 2	0.04 %
Sky Tel 3	0.04 %
Bell South	0.02 %
Arch 1	0.07 %
Arch 2	0.06 %
Mobile com 1	0.08 %
Mobile Com 2	0.08 %
Fedex	0.02 %
#7	0.01 %
CL&P (antennas moved from 181 Garden Circle)	0.42 %
Media FLO	0.52 %
CL&P (150 MHz) - 3 transmitters	0.31 %
CL&P (50 MHz) - 1 transmitter	0.33 %
CL&P (5 GHz) - 2 transmitters	0.00 %
Site Total MPE %:	4.26 %

T-Mobile Sector A Total:	2.22 %
T-Mobile Sector B Total:	2.22 %
T-Mobile Sector C Total:	2.22 %
Site Total:	4.26 %

T-Mobile Max Power Values (Per Sector)

T-Mobile _Frequency Band / Technology (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
T-Mobile AWS - 2100 MHz LTE	4	1,556.18	182	7.22	AWS - 2100 MHz	1000.00	0.72%
T-Mobile PCS - 1900 MHz LTE	2	1,556.18	182	3.61	PCS - 1900 MHz	1000.00	0.36%
T-Mobile PCS - 1900 MHz UMTS	1	1,469.13	182	1.71	PCS - 1900 MHz	1000.00	0.17%
T-Mobile PCS - 1900 MHz GSM	1	550.92	182	0.64	PCS - 1900 MHz	1000.00	0.06%
T-Mobile AWS - 2100 MHz UMTS	1	1,726.08	182	2.00	AWS - 2100 MHz	1000.00	0.20%
T-Mobile 600 MHz LTE	2	865.09	182	2.01	600 MHz	400.00	0.50%
T-Mobile 700 MHz LTE	2	394.48	182	0.92	700 MHz	467.00	0.20%
						Total:	2.22 %

After printing this label:
1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.
Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com.FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery,misdelivery,or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim.Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental,consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss.Maximum for items of extraordinary value is $1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

After printing this label:
1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.
Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com.FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery,misdelivery,or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim.Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental,consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss.Maximum for items of extraordinary value is $1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

The Assessor's office is responsible for the maintenance of records on the ownership of properties. Assessments are computed at 70% of the estimated market value of real property at the time of the last revaluation which was 2017.

CITY OF WATERBURY

Information on the Property Records for the Municipality of Waterbury was last updated on

Parcel Information

Location:	207 GARDEN CIR	Property Use:	Residential	Primary Use:	Residential
Unique ID:	018408050050	Map Block Lot:	0184-0805-0050	Acres:	0.92
490 Acres:	0.00	Zone:	RL	Volume / Page:	4307/ 9
Developers Map / Lot:		Census:			

Value Information

	Appraised Value	Assessed Value
Land	194,391	136,070
Buildings	0	0
Detached Outbuildings	0	0
Total	194,391	136,070

Owner's Information

Owner's Data
SBA PROPERTIES INC 8051 CONGRESS AVE ATTN: CT.4877 BOCA RATON FL 33487-1307

Owner History - Sales

Owner Name	Volume	Page	Sale Date	Deed Type	Valid Sale	Sale Price
SBA PROPERTIES INC	4307	9	01/28/2002	Other	No	$0
EMAC COMUNICATIONS INC			06/04/1985		No	$22,500

Building Permits

Permit Number	Permit Type	Date Opened	Date Closed	Permit Status	Reason
2018.1575	Electrical	06/12/2018		Open Permit	INSTALL AND WIRE GENERATOR
2013.2794	Electrical	09/19/2016		Closed	ADD 3 ANTENNAS TO EXISTING CELL SITE
2016.2793	Electrical	09/19/2016		Closed	MODIFICATION TO EXISTING CELL SITE ADD CABINET WITH 100A BREAKER
2015.3458	Comm Renovations	11/17/2015		Closed	REPLACE 3 EXISTING ANTENNAS WITH 3 NEW ANTENNAS
2015.3459	Comm Renovations	11/17/2015		Closed	UPGRADE & REPLACEMENT OF EQUIPMENT IN EXISTING SHELTER. SEE SUBMITTED PLAN

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: CT11392B

Waterbury/ Hill St.
207 Garden Circle
Waterbury, CT 06704

August 8, 2018

EBI Project Number: 6218005440

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	4.26 %

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

August 8, 2018

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

Emissions Analysis for Site: **CT11392B – Waterbury/ Hill St.**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **207 Garden Circle, Waterbury, 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 population 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 population 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 600 MHz and 700 MHz frequency bands are approximately 400 $\mu W/cm^2$ and 467 $\mu W/cm^2$ respectively. The general population exposure limit for the 1900 MHz (PCS) and 2100 MHz (AWS) frequency 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 **207 Garden Circle, Waterbury, 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 for directional panel antennas, 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) 1 GSM channel (PCS Band - 1900 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 15 Watts per Channel.

2) 1 UMTS channel (PCS Band - 1900 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 40 Watts per Channel.

3) 1 UMTS channel (AWS Band – 2100 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 40 Watts per Channel.

4) 2 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

5) 4 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

6) 2 LTE channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

7) 2 LTE channels (700 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.

8) 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.

9) 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 for directional panel antennas, 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.

10) The antennas used in this modeling are the **Ericsson AIR 3246 B66** & **Ericsson AIR32 KRD9011461 B66A/B2A** for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the **RFS APXVAARR24_43-U-NA20** for 600 MHz and 700 MHz channels. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, 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.

11) The antenna mounting height centerline of the proposed antennas is **182 feet** above ground level (AGL).

12) 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.

13) All calculations were done with respect to uncontrolled / general population threshold limits.

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	Ericsson AIR 3246 B66	Make / Model:	Ericsson AIR 3246 B66	Make / Model:	Ericsson AIR 3246 B66
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	182 feet	Height (AGL):	182 feet	Height (AGL):	182 feet
Frequency Bands	2100 MHz (AWS)	Frequency Bands	2100 MHz (AWS)	Frequency Bands	2100 MHz (AWS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	160	Total TX Power(W):	160	Total TX Power(W):	160
ERP (W):	6,224.72	ERP (W):	6,224.72	ERP (W):	6,224.72
Antenna A1 MPE%	**0.72**	Antenna B1 MPE%	**0.72**	Antenna C1 MPE%	**0.72**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Ericsson AIR32 KRD9011461 B66A/B2A	Make / Model:	Ericsson AIR32 KRD9011461 B66A/B2A	Make / Model:	Ericsson AIR32 KRD9011461 B66A/B2A
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	182 feet	Height (AGL):	182 feet	Height (AGL):	182 feet
Frequency Bands	1900 MHz (PCS)	Frequency Bands	1900 MHz (PCS)	Frequency Bands	1900 MHz (PCS)
Channel Count	2	Channel Count	2	Channel Count	2
Total TX Power(W):	80	Total TX Power(W):	80	Total TX Power(W):	80
ERP (W):	3,112.36	ERP (W):	3,112.36	ERP (W):	3,112.36
Antenna A2 MPE%	**0.36**	Antenna B2 MPE%	**0.36**	Antenna C2 MPE%	**0.36**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20
Gain:	15.65 / 16.35 / 13.35 / 12.95 dBd	Gain:	15.65 / 16.35 / 13.35 / 12.95 dBd	Gain:	15.65 / 16.35 / 13.35 / 12.95 dBd
Height (AGL):	182 feet	Height (AGL):	182 feet	Height (AGL):	182 feet
Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS) / 600 MHz / 700 MHz	Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS) / 600 MHz / 700 MHz	Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS) / 600 MHz / 700 MHz
Channel Count	7	Channel Count	7	Channel Count	7
Total TX Power(W):	215	Total TX Power(W):	215	Total TX Power(W):	215
ERP (W):	6,265.27	ERP (W):	6,265.27	ERP (W):	6,265.27
Antenna A3 MPE%	**1.13**	Antenna B3 MPE%	**1.13**	Antenna C3 MPE%	**1.13**

Site Summary Tables

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile (Per Sector Max)	**2.22 %**
Sky Tel 1	**0.04 %**
Sky Tel 2	**0.04 %**
Sky Tel 3	**0.04 %**
Bell South	**0.02 %**
Arch 1	**0.07 %**
Arch 2	**0.06 %**
Mobile com 1	**0.08 %**
Mobile Com 2	**0.08 %**
Fedex	**0.02 %**
#7	**0.01 %**
CL&P (antennas moved from 181 Garden Circle)	**0.42 %**
Media FLO	**0.52 %**
CL&P (150 MHz) - 3 transmitters	**0.31 %**
CL&P (50 MHz) - 1 transmitter	**0.33 %**
CL&P (5 GHz) - 2 transmitters	**0.00 %**
Site Total MPE %:	**4.26 %**

T-Mobile Sector A Total:	2.22 %
T-Mobile Sector B Total:	2.22 %
T-Mobile Sector C Total:	2.22 %
Site Total:	4.26 %

T-Mobile Max Power Values (Per Sector)

T-Mobile _Frequency Band / Technology (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
T-Mobile AWS - 2100 MHz LTE	4	1,556.18	182	7.22	AWS - 2100 MHz	1000.00	0.72%
T-Mobile PCS - 1900 MHz LTE	2	1,556.18	182	3.61	PCS - 1900 MHz	1000.00	0.36%
T-Mobile PCS - 1900 MHz UMTS	1	1,469.13	182	1.71	PCS - 1900 MHz	1000.00	0.17%
T-Mobile PCS - 1900 MHz GSM	1	550.92	182	0.64	PCS - 1900 MHz	1000.00	0.06%
T-Mobile AWS - 2100 MHz UMTS	1	1,726.08	182	2.00	AWS - 2100 MHz	1000.00	0.20%
T-Mobile 600 MHz LTE	2	865.09	182	2.01	600 MHz	400.00	0.50%
T-Mobile 700 MHz LTE	2	394.48	182	0.92	700 MHz	467.00	0.20%
						Total:	**2.22 %**

Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general population 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 population exposure to RF Emissions are shown here:

T-Mobile Sector	Power Density Value (%)
Sector A:	2.22 %
Sector B:	2.22 %
Sector C:	2.22 %
T-Mobile Maximum MPE % (Per Sector):	2.22 %
Site Total:	4.26 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **4.26%** of the allowable FCC established general population 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.

Tower Engineering Solutions
Phone (972) 483-0607, Fax (972) 975-9615
1320 Greenway Drive, Suite 600, Irving, Texas 75038

Structural Analysis Report

Existing 280 ft Stainless Guyed Tower

Customer Name: SBA Communications Corp

Customer Site Number: CT04877-A

Customer Site Name: Waterbury 2, CT

Carrier Name: T-Mobile

Carrier Site ID / Name: CT11392B / Waterbury/ Hill St.

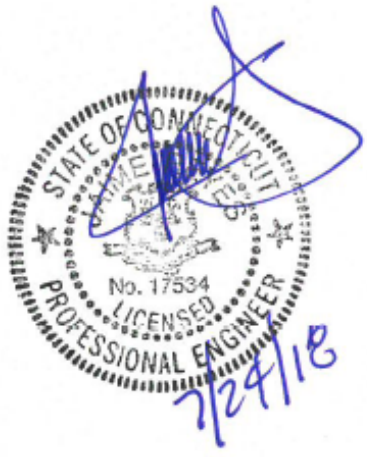
Site Location: 207 Garden Circle

Waterbury, Connecticut

New Haven County

Latitude: 41.569722

Longitude: -73.017499



Analysis Result:

Max Structural Usage: 77.1% [Pass]

Max Foundation Usage: 51.8% [Pass]

Additional Usage Caused by New Mount/Mount Modification: N/A

Report Prepared By : Fabiyaye Arinyedokiari

Introduction

The purpose of this report is to summarize the analysis results on the 280 ft Stainless Guyed Tower to support the proposed antennas and transmission lines in addition to those currently installed. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

Sources of Information

Tower Drawings	Stainless, Inc., Report #3329 dated May 2, 1987
Foundation Drawing	Stainless, Inc., Report #3329 dated March 16, 1987
Geotechnical Report	FDH Engineering, Inc., Project #12-09101EG1 dated October 23, 2012
Modification Drawings	Paul J. Ford and Co., Job # A00-T155 dated July 20, 2001 FDH Engineering, Project #11-02333E S1 dated March 30, 2011 FDH Engineering, Project #12-09101E S3 dated March 21, 2013

Analysis Criteria

The rigorous analysis was performed in accordance with the requirements and stipulations of the ANSI/TIA/EIA 222-G**.** In accordance with this standard, the structure was analyzed using **TESTowers,** a proprietary analysis software. The program considers the structure as an elastic 3-D model with second-order effects and temperature effects incorporated in the analysis. The analysis was performed using multiple wind directions.

Wind Speed Used in the Analysis:	Ultimate Design Wind Speed V_{ult} = 125.0 mph (3-Sec. Gust)/ Nominal Design Wind Speed V_{asd} = 97.0 mph (3-Sec. Gust)
Wind Speed with Ice:	50 mph (3-Sec. Gust) with 3/4" radial ice concurrent
Operational Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	ANSI/TIA/EIA 222-G / 2012 IBC / 2016 Connecticut State Building Code
Exposure Category:	B
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft
Seismic Parameters:	S_S = 0.188, S_1 = 0.064

This structural analysis is based upon the tower being classified as a Structure Class II; however, if a different classification is required subsequent to the date hereof, the tower classification will be changed to meet such requirement and a new structural analysis will be run.

Existing Antennas, Mounts and Transmission Lines

The table below summarizes the antennas, mounts and transmission lines that were considered in the analysis as existing on the tower.

Items	Antenna Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	285.0		-	(1)Empty 1.5' Standoff	-	-
2	284.0		-	(1) Empty 3.6' Pipe Mount	-	-
3	283.0		-	(1) Empty 5' Pipe Mount	-	-
4	280.0	-	-	8' Platform w/ Handrail	-	-
5	268.5	1	Dielectric DCRT4	Leg Mount	(1) 7/8"	Full Power Radio
6	257.0	2	Celwave TDE6082A - Whip	(1) 4.7' Standoff	(2) 7/8"	Campion Ambulance Service
-	182.0	3	Commscope LNX-6515DS	(3) T-Frames	(18) 1-5/8" (1) 1-5/8" Fiber	T-Mobile
-		3	EMS APX16PV-16PVL			
-		3	Ericsson Double TMA 17/21			
-		3	Ericsson KRY 112 144/1			
-		3	Kathrein 782 11056			
13	135.0	1	Andrew VHLP800-11-6GR - Dish	Pipe	(1) 3/8"	Northeast Utilities
14	132.0	1	Telewave ANT150F2	(1) Standoff Mount	(1) 3/8"	
15	130.0	1	RFS MA0528-28AN	Leg Mount	(1) 7/8"	
16	127.5	1	Telewave ANT150F2	(1) Standoff Mount	(1) 7/8"	
17	98.0	1	RFS SP4-107BC1C1R - Dish	Pipe	(1) EW65	
18	97.6	1	Decibel DB586-Y	(1) Standoff Mount	(1) 1/2" (2) 7/8" (1) EW65	
19	97.5	1	Bird 422 Series			
20	92.5	1	Decibel DB586-Y			
21	96.0	1	RFS PAL8-65A - Dish			
22	93.0	1	RFS PAD6-107A - Dish	Pipe	(1) EW65	

Proposed Carrier's Final Configuration of Antennas, Mounts and Transmission Lines

Information pertaining to the proposed carrier's final configuration of antennas and transmission lines was provided by SBA Communications Corp. The proposed antennas and lines are listed below.

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
7	182.0	3	Ericsson KRD9011461-B66A-B2A (Octa) - Panel	(3) T Frame	(12) 1 5/8" (2) 1 5/8" Hybrid	T-Mobile
8		3	RFS APXVAARR24_43-U-NA20 (Octa) - Panel			
9		3	Ericsson AIR 3246 B66 (Octa) - Panel			
10		3	Ericsson KRY 112 144/2 – TMA			
11		3	Ericsson KRY 112 489/2 - TMA			
12		3	Ericsson Radio 4449 B71 + B12			

The proposed transmission lines shall be double stacked and installed on the tower face with T-Mobile's transmission lines currently installed.

Analysis Results

The results of the structural analysis, performed for the wind and ice loading and antenna equipment as defined above, are summarized as the following:

Tower Component	Legs	Diagonals	Horizontals	Guy Wires
Max. Usage:	**69.5%**	**77.1%**	**62.9%**	**66.8%**
Pass/Fail	**Pass**	**Pass**	**Pass**	**Pass**

Foundations

	Base Reactions		Inner Anchors	
Reactions (kips)	Axial	Shear	Uplift	Shear
Analysis Reactions	189.1	2.9	54.1	46.4

The foundation has been investigated using the supplied documents and soils report and was found adequate. Therefore, no modification to the foundation will be required.

Operational Condition (Rigidity):

The maximum twist and sway of the microwave dishes under the operational wind speed as specified in the Analysis Criteria are listed in the table below:

Elevation (ft)	Antenna / Dish	Carrier	Twist (deg)	Sway (deg)
135.0	VHLP800-11-6GR - Dish	Northeast Utilities	0.263	0.007
98.0	SP4-107BC1C1R - Dish	Northeast Utilities	0.411	0.046
94.0	PAL8-65A - Dish	Northeast Utilities	0.411	0.046
93.0	PAD6-107A - Dish	Northeast Utilities	0.402	0.046

It is recommended that the carriers review the twist and sway values of the microwave dishes.

Conclusions

Based on the analysis results, the existing structure and its foundation were found to be adequate to safely support the existing and proposed equipment and meet the minimum requirements per the ANSI/TIA/EIA 222-G Standard under the design basic wind speed as specified in the Analysis Criteria.

Standard Conditions

1. This analysis was performed based on the information supplied to **(TES) Tower Engineering Solutions, LLC.** Verification of the information provided was not included in the Scope of Work for **TES**. The accuracy of the analysis is dependent on the accuracy of the information provided.

2. The analysis is based on the presumption that the tower members and components along with any existing reinforcement items have been correctly and properly designed, manufactured, installed and maintained.

3. All the existing structural members were assumed to be in good condition with no physical damage or deterioration associated with corrosion.

4. An initial tension of 10% of the break strength on all the existing guy wires was assumed in all the structural analyses of guyed towers unless different values were provided by the client. **TES** cannot take responsibility for the deviations in the analysis results because of differences in the initial tension forces of the existing guy wires.

5. Secondary component or connection secondary components, welds and bolts are assumed to be able to carry their intended original design loads. **TES** cannot take responsibility for verification of the adequacy on the connections, bolts and welds present in the structure.

6. The analyses will be performed based on the codes as specified by the client or based on the best knowledge of the engineering staff of **TES**. In the absence of information to the contrary, all work will be performed in accordance with the latest relevant revision of ANSI/TIA-222. If wind speed and/or ice loads are different from the minimum values recommended by the EIA/TIA-222 standard or other codes, **TES** should be notified in writing and the applicable minimum values provided by the client.

7. The configuration of the existing mounts, antennas, coax and other appurtenances were supplied by the customer for the current structural analysis. **TES** has not visited the tower site to verify the adequacy of the information provided. If there is any discrepancy found in the report regarding the existing conditions, **TES** should be notified immediately to evaluate the effect of the discrepancy on the analysis results.

8. The client will assume responsibility for rework associated with the differences in initially provided information, including tower and foundation information, existing and/or proposed equipment and transmission lines.

9. If a feasibility analysis was performed, final acceptance of changed conditions shall be based upon a rigorous structural analysis.

Structure: CT04877-A-SBA

Site Name:	Waterbury 2, CT			**Code:**	EIA/TIA-222-G	7/24/2018
Type:	Guyed	**Base Shape:**	Triangle	**Basic WS:**	97.00	
Height:	280.00 (ft)	**Base Width:**	0.00	**Basic Ice WS:**	50.00	
Base Elev:	0.00 (ft)	**Top Width:**	4.00	**Operational WS:**	60.00	Page: 1

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Section Properties

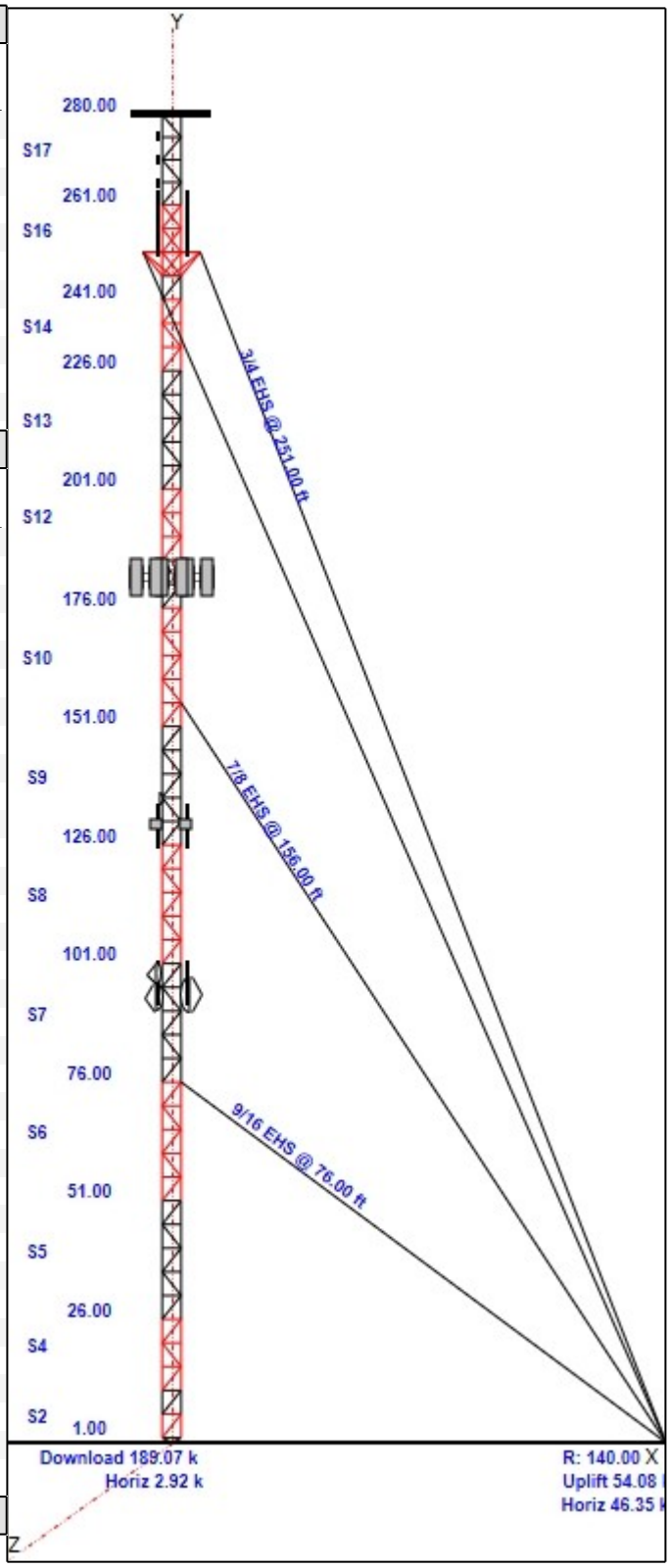
Sect	Leg Members	Diagonal Members	Horizontal Members
1	WBM W18 x 46		WBM W18 x 46
2	SOL 2 1/2" SOLID	PSP ROHN 1 1/2X11GA	PSP ROHN 1 1/2X11GA
3	SOL 2 1/2" SOLID	SAE 2X2X0.375	PSP ROHN 1 1/2X11GA
4-5	SOL 2 1/2" SOLID	PSP ROHN 1 1/2X11GA	PSP ROHN 1 1/2X11GA
6-7	SOL 2 1/2" SOLID	DAE 2X2X0.1875	PSP ROHN 1 1/2X11GA
8	SOL 2 1/2" SOLID	PSP ROHN 1 1/2X11GA	PSP ROHN 1 1/2X11GA
9-10	SOL 2 1/2" SOLID	DAE 2X2X0.1875	PSP ROHN 1 1/2X11GA
11	SOL 2 1/4" SOLID	SAE 2.5X2.5X0.1875	PSP ROHN 1 1/2X11GA
12-13	SOL 2 1/4" SOLID	PSP ROHN 1 1/2X11GA	PSP ROHN 1 1/2X11GA
14	SOL 2 1/4" SOLID	SAE 2.5X2.5X0.1875	PSP ROHN 1 1/2X11GA
15-17	SOL 2 1/4" SOLID	DAE 2X2X0.1875	PSP ROHN 1 1/2X11GA

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description
280.00	280.00	1	Beacon
280.00	280.00	1	Lightning Rod
280.00	280.00	1	Platform w/ Hand Rails (flat)
280.00	284.00	1	3.6'x2.4" Pipe Mount
280.00	285.00	1	1.5' Standoff
280.00	283.00	1	5'x2.4" Pipe Mount
275.00	275.00	1	DCRT-4
270.00	270.00	1	DCRT-4
265.00	265.00	1	DCRT-4
260.00	260.00	1	DCRT-4
250.00	253.00	1	4.7' Standoff
250.00	257.00	2	Celwave TDE6082A
182.00	182.00	3	Light Sector Frame-Flat
182.00	182.00	3	KRD 9011461-B66A-B2A (Octa)
182.00	182.00	3	APXVAARR24_43-U-NA20 (Octa)
182.00	182.00	3	AIR 3246 B66 (Octa)
182.00	182.00	3	KRY 112 144/2
182.00	182.00	3	KRY 112 489/2
182.00	182.00	3	Radio 4449 B71 + B12
135.00	135.00	1	VHLP800-11-6GR
130.00	130.00	1	MA0528-28AN
129.00	131.50	1	ANT150F2
129.00	134.00	1	2' Standoff (Commscope S-200)
125.00	127.50	1	ANT150F2
125.00	130.00	1	2' Standoff (Commscope S-200)
98.00	98.00	1	SP4-107BC1C1R w/ Radome
96.50	96.50	1	Bird 422 Series
96.50	98.95	1	DB586-Y
96.50	94.05	1	DB586-Y
95.00	95.00	2	4' Pipe Mount
94.00	94.00	1	4' Pipe Mount
94.00	94.00	1	PAL8-65A w/ Radome
93.00	93.00	1	PAD6-107A w/ Radome
93.00	93.00	1	4' Pipe Mount

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Qty	Description
0.00	280.00	1	Climbing Ladder



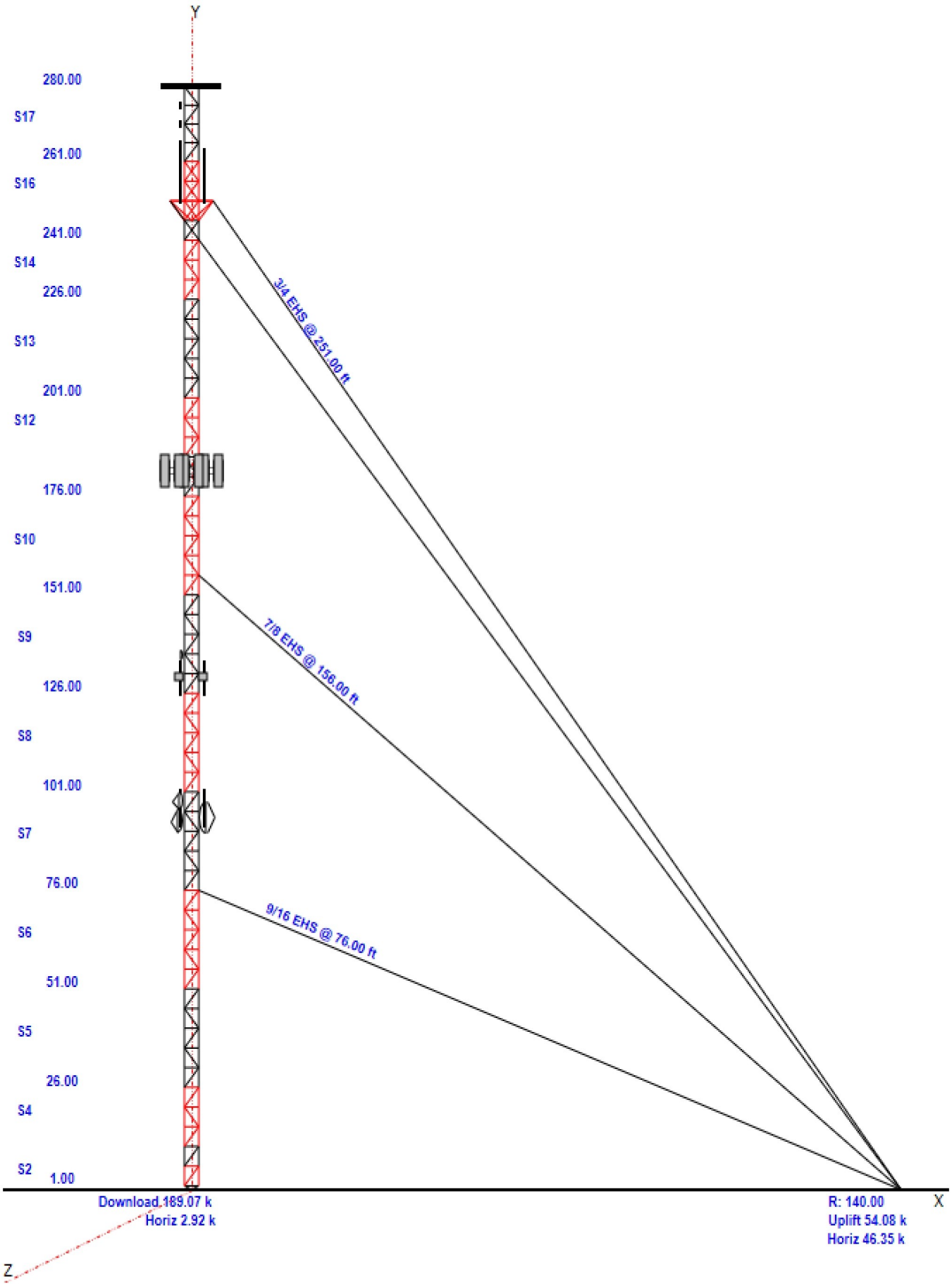
0.00	280.00	1	Safety Cable
0.00	280.00	2	W/G Ladder
0.00	268.50	1	7/8" Coax
0.00	250.00	2	7/8" Coax
0.00	182.00	12	1 5/8" Coax
0.00	182.00	2	1 5/8" Hybrid
0.00	135.00	1	3/8" Coax
0.00	130.00	1	3/8" Coax
0.00	129.00	1	7/8" Coax
0.00	125.00	1	7/8" Coax
0.00	101.00	1	W/G Ladder
0.00	97.50	1	EW65
0.00	96.50	1	1/2" Coax
0.00	96.50	2	7/8" Coax
0.00	96.50	1	EW65
0.00	93.00	1	EW65

Max Guy Wire

66.79% @ 76 ft - 9/16 EHS

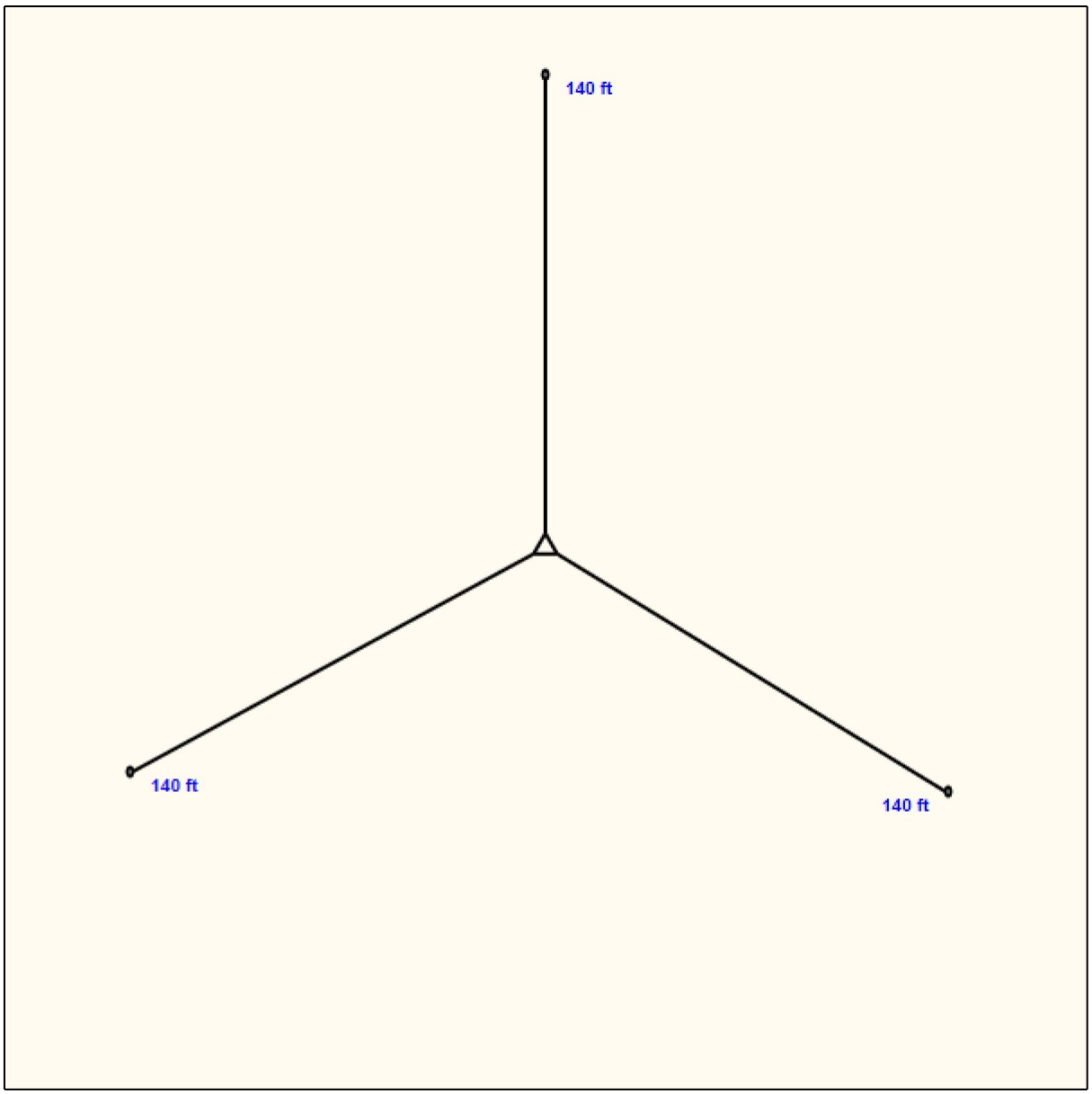
Structure: CT04877-A-SBA

Site Name:	Waterbury 2, CT			**Code:**	EIA/TIA-222-G	7/24/2018
Type:	Guyed	**Base Shape:**	Triangle	**Basic WS:**	97.00	
Height:	280.00 (ft)	**Base Width:**	0.00	**Basic Ice WS:**	50.00	
Base Elev:	0.00 (ft)	**Top Width:**	4.00	**Operational WS:**	60.00	Page: 3



Anchor Drops with Guy Radius - Structure: CT04877-A-SBA

Site Name:	Waterbury 2, CT			**Code:**	EIA/TIA-222-G	7/24/2018
Type:	Guyed	**Base Shape:**	Triangle	**Basic WS:**	97.00	
Height:	280.00 (ft)	**Base Width:**	0.00	**Basic Ice WS:**	50.00	
Base Elev:	0.00 (ft)	**Top Width:**	4.00	**Operational WS:**	60.00	Page: 4



Structure: CT04877-A-SBA - Coax Line Placement

Type: Guyed
Site Name: Waterbury 2, CT
Height: 280.00 (ft)

7/24/2018

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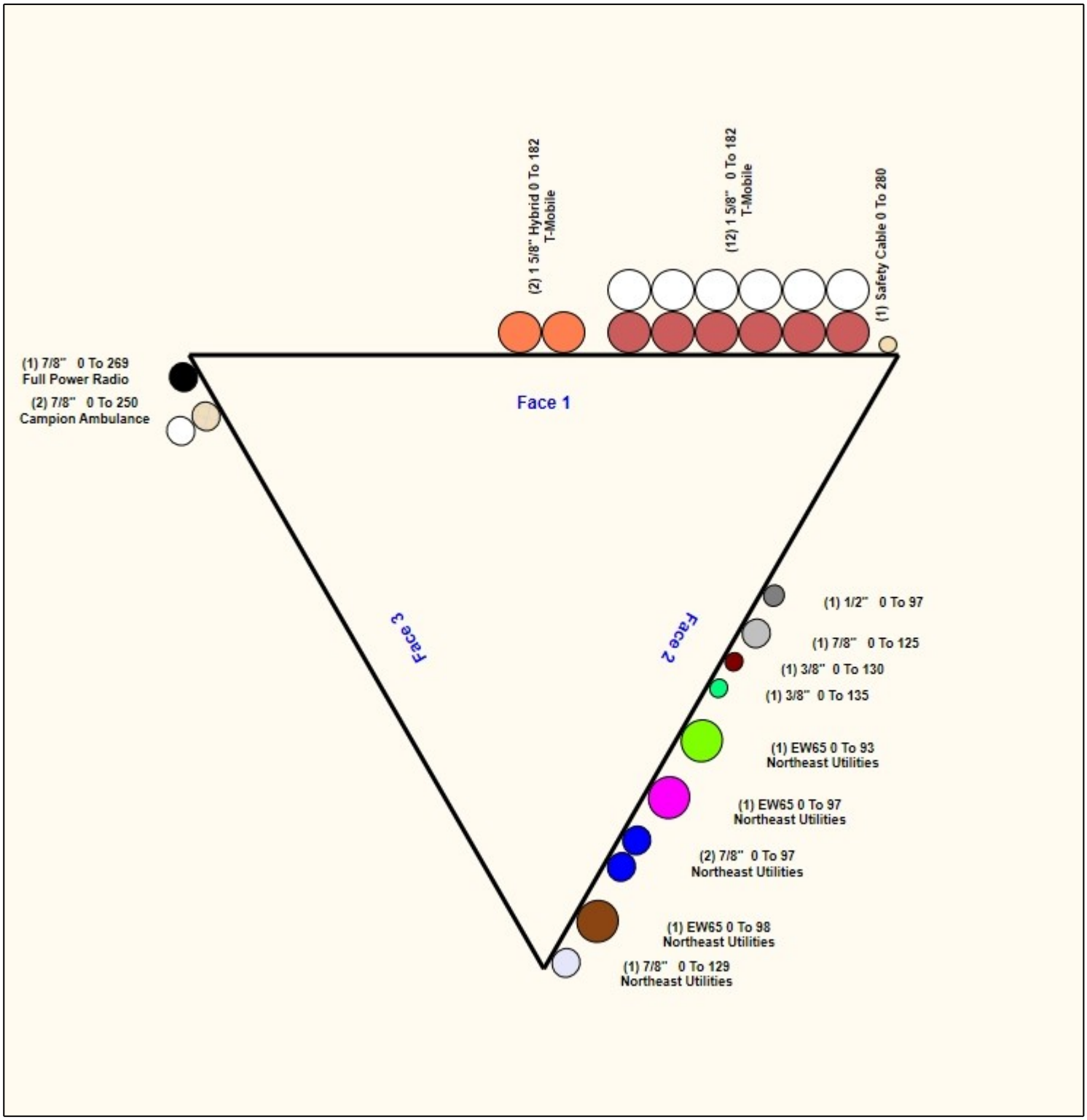

Loading Summary

Structure:	CT04877-A-SBA		**Code:**	EIA/TIA-222-G	7/24/2018
Site Name:	Waterbury 2, CT		**Exposure:**	B	
Height:	280.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	C - Very Dense Soil	
Gh:	0.85	**Topography:** 1	**Struct Class:**	II	Page: 6

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Discrete Appurtenances Properties

Attach Elev (ft)	Description	Qty	No Ice Weight (lb)	No Ice CaAa (sf)	Ice Weight (lb)	Ice CaAa (sf)	Len (in)	Width (in)	Depth (in)	Ka	Orientation Factor	Vert Ecc (ft)
280.00	Beacon	1	36.00	2.720	177.28	3.727	28.000	17.500	17.500	1.00	1.00	0.000
280.00	Lightning Rod	1	5.00	0.500	27.21	2.351	72.000	1.000	1.000	1.00	1.00	0.000
280.00	Platform w/ Hand Rails (flat)	1	1210.0	34.800	2553.98	54.127	0.000	0.000	0.000	1.00	1.00	0.000
280.00	3.6'x2.4" Pipe Mount	1	60.00	0.650	104.43	1.131	43.200	2.400	2.400	1.00	1.00	4.000
280.00	1.5' Standoff	1	60.00	2.960	104.43	5.152	18.000	2.400	2.400	1.00	1.00	5.000
280.00	5'x2.4" Pipe Mount	1	60.00	1.210	104.43	2.106	43.200	2.400	2.400	1.00	1.00	3.000
275.00	DCRT-4	1	44.00	4.100	338.41	8.341	27.500	27.500	13.300	1.00	1.00	0.000
270.00	DCRT-4	1	44.00	4.100	338.41	8.341	27.500	27.500	13.300	1.00	1.00	0.000
265.00	DCRT-4	1	44.00	4.100	338.41	8.341	27.500	27.500	13.300	1.00	1.00	0.000
260.00	DCRT-4	1	44.00	4.100	336.50	8.314	27.500	27.500	13.300	1.00	1.00	0.000
250.00	4.7' Standoff	1	70.00	2.970	121.50	5.155	48.000	2.400	2.400	1.00	1.00	3.000
250.00	Celwave TDE6082A	2	40.00	4.200	151.59	9.471	168.000	3.000	3.000	1.00	1.00	7.000
182.00	Light Sector Frame-Flat	3	500.00	17.500	1211.32	31.691	0.000	0.000	0.000	0.75	0.75	0.000
182.00	KRD 9011461-B66A-B2A (Octa)	3	132.20	6.510	319.56	7.654	56.600	12.900	8.700	0.80	0.87	0.000
182.00	APXVAARR24_43-U-NA20 (Octa)	3	128.00	20.240	554.89	22.177	95.900	24.000	7.800	0.80	0.70	0.000
182.00	AIR 3246 B66 (Octa)	3	180.00	7.940	385.37	9.143	58.100	15.700	9.400	0.80	0.83	0.000
182.00	KRY 112 144/2	3	11.00	0.410	21.99	0.894	6.900	6.100	2.700	0.80	0.67	0.000
182.00	KRY 112 489/2	3	11.30	0.690	29.02	1.319	10.500	6.800	3.500	0.80	0.67	0.000
182.00	Radio 4449 B71 + B12	3	70.00	1.650	139.88	2.199	15.000	13.200	9.300	0.80	0.67	0.000
135.00	VHLP800-11-6GR	1	49.00	7.760	207.27	9.383	33.600	33.600	19.000	1.00	1.00	0.000
130.00	MA0528-28AN	1	5.00	4.640	95.15	5.494	23.600	23.600	1.400	1.00	1.00	0.000
129.00	ANT150F2	1	12.00	1.290	47.61	2.340	60.000	2.800	2.800	1.00	1.00	2.500
129.00	2' Standoff (Commscope S-200)	1	110.00	2.960	186.18	5.010	18.000	2.400	2.400	1.00	1.00	5.000
125.00	ANT150F2	1	12.00	1.290	46.91	2.319	60.000	2.800	2.800	1.00	1.00	2.500
125.00	2' Standoff (Commscope S-200)	1	110.00	2.960	184.68	4.970	18.000	2.400	2.400	1.00	1.00	5.000
98.00	SP4-107BC1C1R w/ Radome	1	83.00	11.630	407.83	13.186	49.700	49.700	9.800	1.00	1.00	0.000
96.50	Bird 422 Series	1	50.00	3.450	125.92	6.093	18.000	6.000	6.000	1.00	1.00	0.000
96.50	DB586-Y	1	8.30	1.010	13.80	1.679	59.000	0.000	1.500	1.00	1.00	2.450
96.50	DB586-Y	1	8.30	1.010	13.80	1.679	59.000	0.000	1.500	1.00	1.00	-2.450
95.00	4' Pipe Mount	2	60.00	1.320	99.73	2.194	48.000	3.000	3.000	1.00	0.67	0.000
94.00	4' Pipe Mount	1	60.00	1.320	99.73	2.194	48.000	3.000	3.000	1.00	0.67	0.000
94.00	PAL8-65A w/ Radome	1	380.00	43.390	1569.25	46.407	96.000	96.000	0.000	1.00	1.00	0.000
93.00	PAD6-107A w/ Radome	1	308.00	24.410	981.88	26.657	72.000	72.000	0.000	1.00	1.00	0.000
93.00	4' Pipe Mount	1	60.00	1.320	99.73	2.194	48.000	3.000	3.000	1.00	0.67	0.000
	Totals:	**50**	**6,230.10**		**17,113.48**						**Number of Appurtenances :**	**34**

Linear Appurtenances Properties

Elev. From (ft)	Elev. To (ft)	Description	Qty	Width (in)	Weight (lb/ft)	Pct In Block	Spread On Faces	Bundling Arrangement	Cluster Dia (in)	Out of Zone	Spacing (in)	Orientation Factor	Ka Override
0.00	280.00	Climbing Ladder	1	3.00	6.90	100.00	1	Individual NR		N	1.00	1.00	
0.00	280.00	Safety Cable	1	0.38	0.27	100.00	1	Individual NR		N	1.00	1.00	
0.00	280.00	W/G Ladder	2	3.00	6.00	100.00	1,3	Individual NR		N	1.00	1.00	
0.00	268.50	7/8" Coax	1	1.11	0.52	100.00	3	Individual NR		N	1.00	1.00	
0.00	250.00	7/8" Coax	2	1.11	0.52	50.00	3	Block		N	1.00	1.00	
0.00	182.00	1 5/8" Coax	12	1.98	1.04	50.00	1	Block		N	1.00	1.00	
0.00	182.00	1 5/8" Hybrid	2	2.00	1.10	100.00	1	Individual NR		N	1.00	1.00	
0.00	135.00	3/8" Coax	1	0.44	0.08	100.00	2	Individual NR		N	1.00	1.00	
0.00	130.00	3/8" Coax	1	0.44	0.08	100.00	2	Individual NR		N	1.00	1.00	
0.00	129.00	7/8" Coax	1	1.11	0.52	100.00	2	Individual NR		N	1.00	1.00	
0.00	125.00	7/8" Coax	1	1.11	0.52	100.00	2	Individual NR		N	1.00	1.00	
0.00	101.00	W/G Ladder	1	3.00	6.00	100.00	2	Individual NR		N	1.00	1.00	
0.00	97.50	EW65	1	2.00	0.50	100.00	2	Individual NR		N	1.00	1.00	
0.00	96.50	1/2" Coax	1	0.65	0.16	100.00	2	Individual NR		N	1.00	1.00	
0.00	96.50	7/8" Coax	2	1.11	0.52	100.00	2	Individual NR		N	1.00	1.00	
0.00	96.50	EW65	1	2.00	0.50	100.00	2	Individual NR		N	1.00	1.00	
0.00	93.00	EW65	1	2.00	0.50	100.00	2	Individual NR		N	1.00	1.00	

Section Forces

Structure:	CT04877-A-SBA	**Code:**	EIA/TIA-222-G	7/24/2018	
Site Name:	Waterbury 2, CT	**Exposure:**	B		
Height:	280.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 8	

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Load Case: 1.2D + 1.6W Normal Wind — 1.2D + 1.6W 97 mph Wind at Normal To Face

Wind Load Factor: 1.60 — **Wind Importance Factor:** 1.00

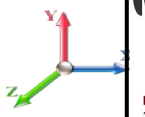
Dead Load Factor: 1.20

Ice Dead Load Factor: 0.00 — **Ice Importance Factor:** 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	0.5	14.33	12.800	0.00	0.00	1.00	2.10	1.00	1.00	0.00	12.80	3.95	0.00	1,133.5	0.0	523.92	0.00	102.33
2	3.5	14.33	0.000	3.31	0.00	0.16	2.74	1.00	1.00	0.00	1.92	19.77	0.00	638.8	0.0	102.86	350.51	453.37
3	8.5	14.33	1.032	2.56	0.00	0.17	2.70	1.00	1.00	0.00	2.50	19.77	0.00	706.4	0.0	131.68	350.51	482.19
4	18.5	14.33	0.000	9.99	0.00	0.16	2.74	1.00	1.00	0.00	5.77	59.31	0.00	1,916.5	0.0	308.29	1051.52	1,359.81
5	38.5	15.40	0.000	16.66	0.00	0.16	2.74	1.00	1.00	0.00	9.62	98.84	0.00	3,194.1	0.0	552.24	1883.59	2,435.83
6	63.5	17.77	5.829	12.31	0.00	0.17	2.69	1.00	1.00	0.00	12.91	98.84	0.00	3,597.3	0.0	839.46	2173.08	3,012.54
7	88.5	19.54	5.162	12.79	0.00	0.17	2.70	1.00	1.00	0.00	12.52	95.10	0.00	3,536.5	0.0	897.62	2317.67	3,215.29
8	113.5	20.98	0.000	16.66	0.00	0.16	2.74	1.00	1.00	0.00	9.62	74.02	0.00	2,932.5	0.0	752.11	1969.82	2,721.93
9	138.5	22.21	5.162	12.79	0.00	0.17	2.70	1.00	1.00	0.00	12.52	68.41	0.00	3,258.7	0.0	1020.16	1963.08	2,983.24
10	163.5	23.28	5.829	12.31	0.00	0.17	2.69	1.00	1.00	0.00	12.91	67.66	0.00	3,300.3	0.0	1099.90	2041.21	3,141.11
11	181.0	23.97	2.588	4.70	0.00	0.17	2.68	1.00	1.00	0.00	5.30	20.10	0.00	1,034.1	0.0	463.63	644.17	1,107.80
12	193.5	24.43	0.000	9.39	0.00	0.15	2.77	1.00	1.00	0.00	5.41	14.49	0.00	1,302.7	0.0	498.23	534.49	1,032.71
13	213.5	25.13	0.000	15.64	0.00	0.15	2.77	1.00	1.00	0.00	9.01	24.16	0.00	2,171.1	0.0	854.04	916.20	1,770.24
14	233.5	25.78	3.885	7.05	0.00	0.17	2.68	1.00	1.00	0.00	7.95	14.49	0.00	1,392.6	0.0	748.20	563.97	1,312.17
15	243.5	26.09	1.036	2.35	0.00	0.16	2.73	1.00	1.00	0.00	2.39	4.83	0.00	505.9	0.0	231.10	190.25	421.36
16	253.5	26.39	6.216	7.05	0.00	0.21	2.56	1.00	1.00	0.00	10.32	13.48	0.00	1,841.5	0.0	948.17	544.49	1,492.66
17	270.5	26.89	4.015	9.03	0.00	0.16	2.72	1.00	1.00	0.00	9.21	15.54	0.00	1,905.6	0.0	916.07	659.17	1,575.25
														34,368.1	**0.0**			**28,619.82**

Section Forces

Structure:	CT04877-A-SBA	**Code:**	EIA/TIA-222-G	7/24/2018	
Site Name:	Waterbury 2, CT	**Exposure:**	B		
Height:	280.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 9	



Tower Engineering Solutions

Load Case: 1.2D + 1.6W 60° Wind — 1.2D + 1.6W 97 mph Wind at 60° From Face

Wind Load Factor: 1.60
Dead Load Factor: 1.20
Ice Dead Load Factor: 0.00
Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	0.5	14.33	12.800	0.00	0.00	1.00	2.10	0.80	1.00	0.00	10.24	3.95	0.00	1,133.5	0.0	419.13	0.00	419.13
2	3.5	14.33	0.000	3.31	0.00	0.16	2.74	0.80	1.00	0.00	1.92	19.77	0.00	638.8	0.0	102.86	350.51	453.37
3	8.5	14.33	1.032	2.56	0.00	0.17	2.70	0.80	1.00	0.00	2.30	19.77	0.00	706.4	0.0	120.83	350.51	471.33
4	18.5	14.33	0.000	9.99	0.00	0.16	2.74	0.80	1.00	0.00	5.77	59.31	0.00	1,916.5	0.0	308.29	1051.52	1,359.81
5	38.5	15.40	0.000	16.66	0.00	0.16	2.74	0.80	1.00	0.00	9.62	98.84	0.00	3,194.1	0.0	552.24	1883.59	2,435.83
6	63.5	17.77	5.829	12.31	0.00	0.17	2.69	0.80	1.00	0.00	11.74	98.84	0.00	3,597.3	0.0	763.65	2173.08	2,936.73
7	88.5	19.54	5.162	12.79	0.00	0.17	2.70	0.80	1.00	0.00	11.49	95.10	0.00	3,536.5	0.0	823.62	2317.67	3,141.29
8	113.5	20.98	0.000	16.66	0.00	0.16	2.74	0.80	1.00	0.00	9.62	74.02	0.00	2,932.5	0.0	752.11	1969.82	2,721.93
9	138.5	22.21	5.162	12.79	0.00	0.17	2.70	0.80	1.00	0.00	11.49	68.41	0.00	3,258.7	0.0	936.06	1963.08	2,899.14
10	163.5	23.28	5.829	12.31	0.00	0.17	2.69	0.80	1.00	0.00	11.74	67.66	0.00	3,300.3	0.0	1000.57	2041.21	3,041.78
11	181.0	23.97	2.588	4.70	0.00	0.17	2.68	0.80	1.00	0.00	4.78	20.10	0.00	1,034.1	0.0	418.34	644.17	1,062.50
12	193.5	24.43	0.000	9.39	0.00	0.15	2.77	0.80	1.00	0.00	5.41	14.49	0.00	1,302.7	0.0	498.23	534.49	1,032.71
13	213.5	25.13	0.000	15.64	0.00	0.15	2.77	0.80	1.00	0.00	9.01	24.16	0.00	2,171.1	0.0	854.04	916.20	1,770.24
14	233.5	25.78	3.885	7.05	0.00	0.17	2.68	0.80	1.00	0.00	7.17	14.49	0.00	1,392.6	0.0	675.07	563.97	1,239.04
15	243.5	26.09	1.036	2.35	0.00	0.16	2.73	0.80	1.00	0.00	2.18	4.83	0.00	505.9	0.0	211.04	190.25	401.30
16	253.5	26.39	6.216	7.05	0.00	0.21	2.56	0.80	1.00	0.00	9.08	13.48	0.00	1,841.5	0.0	833.99	544.49	1,378.49
17	270.5	26.89	4.015	9.03	0.00	0.16	2.72	0.80	1.00	0.00	8.41	15.54	0.00	1,905.6	0.0	836.19	659.17	1,495.36
														34,368.1	**0.0**			**28,259.99**

Section Forces

Structure:	CT04877-A-SBA	**Code:**	EIA/TIA-222-G	7/24/2018	
Site Name:	Waterbury 2, CT	**Exposure:**	B		
Height:	280.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 10	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 90° Wind — 1.2D + 1.6W 97 mph Wind at 90° From Face

Wind Load Factor: 1.60
Dead Load Factor: 1.20
Ice Dead Load Factor: 0.00
Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	0.5	14.33	12.800	0.00	0.00	1.00	2.10	0.85	1.00	0.00	10.88	3.95	0.00	1,133.5	0.0	445.33	0.00	445.33
2	3.5	14.33	0.000	3.31	0.00	0.16	2.74	0.85	1.00	0.00	1.92	19.77	0.00	638.8	0.0	102.86	350.51	453.37
3	8.5	14.33	1.032	2.56	0.00	0.17	2.70	0.85	1.00	0.00	2.35	19.77	0.00	706.4	0.0	123.54	350.51	474.05
4	18.5	14.33	0.000	9.99	0.00	0.16	2.74	0.85	1.00	0.00	5.77	59.31	0.00	1,916.5	0.0	308.29	1051.52	1,359.81
5	38.5	15.40	0.000	16.66	0.00	0.16	2.74	0.85	1.00	0.00	9.62	98.84	0.00	3,194.1	0.0	552.24	1883.59	2,435.83
6	63.5	17.77	5.829	12.31	0.00	0.17	2.69	0.85	1.00	0.00	12.03	98.84	0.00	3,597.3	0.0	782.60	2173.08	2,955.68
7	88.5	19.54	5.162	12.79	0.00	0.17	2.70	0.85	1.00	0.00	11.75	95.10	0.00	3,536.5	0.0	842.12	2317.67	3,159.79
8	113.5	20.98	0.000	16.66	0.00	0.16	2.74	0.85	1.00	0.00	9.62	74.02	0.00	2,932.5	0.0	752.11	1969.82	2,721.93
9	138.5	22.21	5.162	12.79	0.00	0.17	2.70	0.85	1.00	0.00	11.75	68.41	0.00	3,258.7	0.0	957.08	1963.08	2,920.17
10	163.5	23.28	5.829	12.31	0.00	0.17	2.69	0.85	1.00	0.00	12.03	67.66	0.00	3,300.3	0.0	1025.40	2041.21	3,066.61
11	181.0	23.97	2.588	4.70	0.00	0.17	2.68	0.85	1.00	0.00	4.91	20.10	0.00	1,034.1	0.0	429.66	644.17	1,073.83
12	193.5	24.43	0.000	9.39	0.00	0.15	2.77	0.85	1.00	0.00	5.41	14.49	0.00	1,302.7	0.0	498.23	534.49	1,032.71
13	213.5	25.13	0.000	15.64	0.00	0.15	2.77	0.85	1.00	0.00	9.01	24.16	0.00	2,171.1	0.0	854.04	916.20	1,770.24
14	233.5	25.78	3.885	7.05	0.00	0.17	2.68	0.85	1.00	0.00	7.37	14.49	0.00	1,392.6	0.0	693.35	563.97	1,257.32
15	243.5	26.09	1.036	2.35	0.00	0.16	2.73	0.85	1.00	0.00	2.23	4.83	0.00	505.9	0.0	216.06	190.25	406.31
16	253.5	26.39	6.216	7.05	0.00	0.21	2.56	0.85	1.00	0.00	9.39	13.48	0.00	1,841.5	0.0	862.54	544.49	1,407.03
17	270.5	26.89	4.015	9.03	0.00	0.16	2.72	0.85	1.00	0.00	8.61	15.54	0.00	1,905.6	0.0	856.16	659.17	1,515.33
														34,368.1	**0.0**			**28,455.34**

Section Forces

Structure:	CT04877-A-SBA	**Code:**	EIA/TIA-222-G	7/24/2018	
Site Name:	Waterbury 2, CT	**Exposure:**	B		
Height:	280.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 11	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W Normal Wind — 0.9D + 1.6W 97 mph Wind at Normal To Face

Wind Load Factor: 1.60 — **Wind Importance Factor:** 1.00

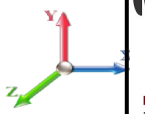
Dead Load Factor: 0.90

Ice Dead Load Factor: 0.00 — **Ice Importance Factor:** 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	0.5	14.33	12.800	0.00	0.00	1.00	2.10	1.00	1.00	0.00	12.80	3.95	0.00	850.1	0.0	523.92	0.00	523.92
2	3.5	14.33	0.000	3.31	0.00	0.16	2.74	1.00	1.00	0.00	1.92	19.77	0.00	479.1	0.0	102.86	350.51	453.37
3	8.5	14.33	1.032	2.56	0.00	0.17	2.70	1.00	1.00	0.00	2.50	19.77	0.00	529.8	0.0	131.68	350.51	482.19
4	18.5	14.33	0.000	9.99	0.00	0.16	2.74	1.00	1.00	0.00	5.77	59.31	0.00	1,437.3	0.0	308.29	1051.52	1,359.81
5	38.5	15.40	0.000	16.66	0.00	0.16	2.74	1.00	1.00	0.00	9.62	98.84	0.00	2,395.6	0.0	552.24	1883.59	2,435.83
6	63.5	17.77	5.829	12.31	0.00	0.17	2.69	1.00	1.00	0.00	12.91	98.84	0.00	2,698.0	0.0	839.46	2173.08	3,012.54
7	88.5	19.54	5.162	12.79	0.00	0.17	2.70	1.00	1.00	0.00	12.52	95.10	0.00	2,652.4	0.0	897.62	2317.67	3,215.29
8	113.5	20.98	0.000	16.66	0.00	0.16	2.74	1.00	1.00	0.00	9.62	74.02	0.00	2,199.4	0.0	752.11	1969.82	2,721.93
9	138.5	22.21	5.162	12.79	0.00	0.17	2.70	1.00	1.00	0.00	12.52	68.41	0.00	2,444.0	0.0	1020.16	1963.08	2,983.24
10	163.5	23.28	5.829	12.31	0.00	0.17	2.69	1.00	1.00	0.00	12.91	67.66	0.00	2,475.3	0.0	1099.90	2041.21	3,141.11
11	181.0	23.97	2.588	4.70	0.00	0.17	2.68	1.00	1.00	0.00	5.30	20.10	0.00	775.6	0.0	463.63	644.17	1,107.80
12	193.5	24.43	0.000	9.39	0.00	0.15	2.77	1.00	1.00	0.00	5.41	14.49	0.00	977.0	0.0	498.23	534.49	1,032.71
13	213.5	25.13	0.000	15.64	0.00	0.15	2.77	1.00	1.00	0.00	9.01	24.16	0.00	1,628.4	0.0	854.04	916.20	1,770.24
14	233.5	25.78	3.885	7.05	0.00	0.17	2.68	1.00	1.00	0.00	7.95	14.49	0.00	1,044.4	0.0	748.20	563.97	1,312.17
15	243.5	26.09	1.036	2.35	0.00	0.16	2.73	1.00	1.00	0.00	2.39	4.83	0.00	379.4	0.0	231.10	190.25	421.36
16	253.5	26.39	6.216	7.05	0.00	0.21	2.56	1.00	1.00	0.00	10.32	13.48	0.00	1,381.1	0.0	948.17	544.49	1,492.66
17	270.5	26.89	4.015	9.03	0.00	0.16	2.72	1.00	1.00	0.00	9.21	15.54	0.00	1,429.2	0.0	916.07	659.17	1,575.25
														25,776.0	**0.0**			**29,041.41**

Section Forces

Structure:	CT04877-A-SBA	**Code:**	EIA/TIA-222-G	7/24/2018	
Site Name:	Waterbury 2, CT	**Exposure:**	B		
Height:	280.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 12	



Tower Engineering Solutions

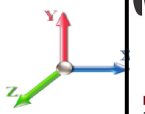
Load Case: 0.9D + 1.6W 60° Wind — 0.9D + 1.6W 97 mph Wind at 60° From Face

Wind Load Factor: 1.60
Dead Load Factor: 0.90
Ice Dead Load Factor: 0.00
Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	0.5	14.33	12.800	0.00	0.00	1.00	2.10	0.80	1.00	0.00	10.24	3.95	0.00	850.1	0.0	419.13	0.00	419.13
2	3.5	14.33	0.000	3.31	0.00	0.16	2.74	0.80	1.00	0.00	1.92	19.77	0.00	479.1	0.0	102.86	350.51	453.37
3	8.5	14.33	1.032	2.56	0.00	0.17	2.70	0.80	1.00	0.00	2.30	19.77	0.00	529.8	0.0	120.83	350.51	471.33
4	18.5	14.33	0.000	9.99	0.00	0.16	2.74	0.80	1.00	0.00	5.77	59.31	0.00	1,437.3	0.0	308.29	1051.52	1,359.81
5	38.5	15.40	0.000	16.66	0.00	0.16	2.74	0.80	1.00	0.00	9.62	98.84	0.00	2,395.6	0.0	552.24	1883.59	2,435.83
6	63.5	17.77	5.829	12.31	0.00	0.17	2.69	0.80	1.00	0.00	11.74	98.84	0.00	2,698.0	0.0	763.65	2173.08	2,936.73
7	88.5	19.54	5.162	12.79	0.00	0.17	2.70	0.80	1.00	0.00	11.49	95.10	0.00	2,652.4	0.0	823.62	2317.67	3,141.29
8	113.5	20.98	0.000	16.66	0.00	0.16	2.74	0.80	1.00	0.00	9.62	74.02	0.00	2,199.4	0.0	752.11	1969.82	2,721.93
9	138.5	22.21	5.162	12.79	0.00	0.17	2.70	0.80	1.00	0.00	11.49	68.41	0.00	2,444.0	0.0	936.06	1963.08	2,899.14
10	163.5	23.28	5.829	12.31	0.00	0.17	2.69	0.80	1.00	0.00	11.74	67.66	0.00	2,475.3	0.0	1000.57	2041.21	3,041.78
11	181.0	23.97	2.588	4.70	0.00	0.17	2.68	0.80	1.00	0.00	4.78	20.10	0.00	775.6	0.0	418.34	644.17	1,062.50
12	193.5	24.43	0.000	9.39	0.00	0.15	2.77	0.80	1.00	0.00	5.41	14.49	0.00	977.0	0.0	498.23	534.49	1,032.71
13	213.5	25.13	0.000	15.64	0.00	0.15	2.77	0.80	1.00	0.00	9.01	24.16	0.00	1,628.4	0.0	854.04	916.20	1,770.24
14	233.5	25.78	3.885	7.05	0.00	0.17	2.68	0.80	1.00	0.00	7.17	14.49	0.00	1,044.4	0.0	675.07	563.97	1,239.04
15	243.5	26.09	1.036	2.35	0.00	0.16	2.73	0.80	1.00	0.00	2.18	4.83	0.00	379.4	0.0	211.04	190.25	401.30
16	253.5	26.39	6.216	7.05	0.00	0.21	2.56	0.80	1.00	0.00	9.08	13.48	0.00	1,381.1	0.0	833.99	544.49	1,378.49
17	270.5	26.89	4.015	9.03	0.00	0.16	2.72	0.80	1.00	0.00	8.41	15.54	0.00	1,429.2	0.0	836.19	659.17	1,495.36
														25,776.0	**0.0**			**28,259.99**

Section Forces

Structure:	CT04877-A-SBA	**Code:**	EIA/TIA-222-G	7/24/2018	
Site Name:	Waterbury 2, CT	**Exposure:**	B		
Height:	280.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 13	



Tower Engineering Solutions

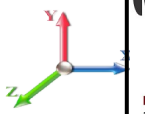
Load Case: 0.9D + 1.6W 90° Wind — 0.9D + 1.6W 97 mph Wind at 90° From Face

Wind Load Factor: 1.60
Dead Load Factor: 0.90
Ice Dead Load Factor: 0.00
Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	0.5	14.33	12.800	0.00	0.00	1.00	2.10	0.85	1.00	0.00	10.88	3.95	0.00	850.1	0.0	445.33	0.00	445.33
2	3.5	14.33	0.000	3.31	0.00	0.16	2.74	0.85	1.00	0.00	1.92	19.77	0.00	479.1	0.0	102.86	350.51	453.37
3	8.5	14.33	1.032	2.56	0.00	0.17	2.70	0.85	1.00	0.00	2.35	19.77	0.00	529.8	0.0	123.54	350.51	474.05
4	18.5	14.33	0.000	9.99	0.00	0.16	2.74	0.85	1.00	0.00	5.77	59.31	0.00	1,437.3	0.0	308.29	1051.52	1,359.81
5	38.5	15.40	0.000	16.66	0.00	0.16	2.74	0.85	1.00	0.00	9.62	98.84	0.00	2,395.6	0.0	552.24	1883.59	2,435.83
6	63.5	17.77	5.829	12.31	0.00	0.17	2.69	0.85	1.00	0.00	12.03	98.84	0.00	2,698.0	0.0	782.60	2173.08	2,955.68
7	88.5	19.54	5.162	12.79	0.00	0.17	2.70	0.85	1.00	0.00	11.75	95.10	0.00	2,652.4	0.0	842.12	2317.67	3,159.79
8	113.5	20.98	0.000	16.66	0.00	0.16	2.74	0.85	1.00	0.00	9.62	74.02	0.00	2,199.4	0.0	752.11	1969.82	2,721.93
9	138.5	22.21	5.162	12.79	0.00	0.17	2.70	0.85	1.00	0.00	11.75	68.41	0.00	2,444.0	0.0	957.08	1963.08	2,920.17
10	163.5	23.28	5.829	12.31	0.00	0.17	2.69	0.85	1.00	0.00	12.03	67.66	0.00	2,475.3	0.0	1025.40	2041.21	3,066.61
11	181.0	23.97	2.588	4.70	0.00	0.17	2.68	0.85	1.00	0.00	4.91	20.10	0.00	775.6	0.0	429.66	644.17	1,073.83
12	193.5	24.43	0.000	9.39	0.00	0.15	2.77	0.85	1.00	0.00	5.41	14.49	0.00	977.0	0.0	498.23	534.49	1,032.71
13	213.5	25.13	0.000	15.64	0.00	0.15	2.77	0.85	1.00	0.00	9.01	24.16	0.00	1,628.4	0.0	854.04	916.20	1,770.24
14	233.5	25.78	3.885	7.05	0.00	0.17	2.68	0.85	1.00	0.00	7.37	14.49	0.00	1,044.4	0.0	693.35	563.97	1,257.32
15	243.5	26.09	1.036	2.35	0.00	0.16	2.73	0.85	1.00	0.00	2.23	4.83	0.00	379.4	0.0	216.06	190.25	406.31
16	253.5	26.39	6.216	7.05	0.00	0.21	2.56	0.85	1.00	0.00	9.39	13.48	0.00	1,381.1	0.0	862.54	544.49	1,407.03
17	270.5	26.89	4.015	9.03	0.00	0.16	2.72	0.85	1.00	0.00	8.61	15.54	0.00	1,429.2	0.0	856.16	659.17	1,515.33
														25,776.0	**0.0**			**28,455.34**

Section Forces

Structure:	CT04877-A-SBA	**Code:**	EIA/TIA-222-G	7/24/2018	
Site Name:	Waterbury 2, CT	**Exposure:**	B		
Height:	280.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 14	



Tower Engineering Solutions

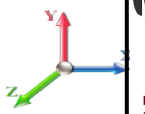
Load Case: 1.2D + 1.0Di + 1.0Wi Normal Wind — 1.2D + 1.0Di + 1.0Wi 50 mph Wind at Normal From Face

Wind Load Factor: 1.00
Dead Load Factor: 1.20
Ice Dead Load Factor: 1.00
Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	0.5	3.81	12.800	1.49	1.49	1.00	2.10	1.00	1.00	0.99	14.29	4.78	2.30	1,883.5	750.0	97.10	0.00	97.10
2	3.5	3.81	0.000	7.39	4.08	0.34	2.21	1.00	1.00	1.20	4.56	24.76	13.98	1,411.1	772.3	32.53	113.60	146.13
3	8.5	3.81	1.032	7.01	4.45	0.36	2.14	1.00	1.00	1.31	5.40	25.23	15.28	1,588.9	882.5	37.45	116.10	153.55
4	18.5	3.81	0.000	24.44	14.44	0.37	2.13	1.00	1.00	1.42	15.31	77.00	49.55	4,788.8	2872.3	105.73	361.22	466.95
5	38.5	4.09	0.000	42.56	25.90	0.38	2.10	1.00	1.00	1.52	26.91	130.58	88.86	8,472.0	5277.9	196.75	664.28	861.03
6	63.5	4.72	5.829	39.54	27.23	0.41	2.05	1.00	1.00	1.60	31.15	132.21	93.42	9,827.7	6230.4	256.68	768.31	1,024.98
7	88.5	5.19	5.162	40.93	28.15	0.41	2.04	1.00	1.00	1.66	31.49	129.59	88.43	9,794.9	6258.4	283.80	814.74	1,098.55
8	113.5	5.57	0.000	45.52	28.86	0.41	2.05	1.00	1.00	1.70	29.23	102.31	56.29	7,810.8	4878.3	284.40	653.96	938.36
9	138.5	5.90	5.162	42.22	29.44	0.42	2.02	1.00	1.00	1.73	32.51	97.27	33.47	8,391.2	5132.5	329.89	577.36	907.25
10	163.5	6.19	5.829	42.24	29.93	0.43	2.01	1.00	1.00	1.76	33.29	96.99	29.34	8,537.9	5237.6	352.33	584.37	936.70
11	181.0	6.37	2.588	16.80	12.09	0.43	2.00	1.00	1.00	1.78	13.55	30.77	9.48	2,716.8	1682.7	146.98	194.48	341.46
12	193.5	6.49	0.000	27.65	18.26	0.41	2.04	1.00	1.00	1.79	17.81	27.92	8.95	3,159.2	1856.5	200.80	202.08	402.88
13	213.5	6.68	0.000	46.38	30.74	0.41	2.04	1.00	1.00	1.81	29.93	46.76	15.07	5,311.0	3139.9	346.25	346.92	693.17
14	233.5	6.85	3.885	25.66	18.61	0.44	1.99	1.00	1.00	1.82	20.71	28.18	9.12	3,432.9	2040.3	240.27	205.40	445.67
15	243.5	6.93	1.036	8.58	6.23	0.43	2.01	1.00	1.00	1.83	6.62	9.41	3.05	1,267.6	761.7	78.43	70.76	149.19
16	253.5	7.01	6.216	31.71	24.65	0.56	1.83	1.00	1.00	1.84	29.12	23.90	9.20	4,825.2	2983.7	317.95	147.45	465.40
17	270.5	7.14	4.015	33.36	24.32	0.44	1.99	1.00	1.00	1.85	25.87	27.26	8.18	4,610.4	2704.8	313.28	216.24	529.52
														87,829.8	**53461.7**			**9,657.89**

Section Forces

Structure:	CT04877-A-SBA	**Code:**	EIA/TIA-222-G	7/24/2018	
Site Name:	Waterbury 2, CT	**Exposure:**	B		
Height:	280.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 15	



Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 60° Wind — 1.2D + 1.0Di + 1.0Wi 50 mph Wind at 60° From Face

Wind Load Factor: 1.00
Dead Load Factor: 1.20
Ice Dead Load Factor: 1.00
Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	0.5	3.81	12.800	1.49	1.49	1.00	2.10	0.80	1.00	0.99	11.73	4.78	2.30	1,883.5	750.0	79.70	0.00	79.70
2	3.5	3.81	0.000	7.39	4.08	0.34	2.21	0.80	1.00	1.20	4.56	24.76	13.98	1,411.1	772.3	32.53	113.60	146.13
3	8.5	3.81	1.032	7.01	4.45	0.36	2.14	0.80	1.00	1.31	5.20	25.23	15.28	1,588.9	882.5	36.02	116.10	152.12
4	18.5	3.81	0.000	24.44	14.44	0.37	2.13	0.80	1.00	1.42	15.31	77.00	49.55	4,788.8	2872.3	105.73	361.22	466.95
5	38.5	4.09	0.000	42.56	25.90	0.38	2.10	0.80	1.00	1.52	26.91	130.58	88.86	8,472.0	5277.9	196.75	664.28	861.03
6	63.5	4.72	5.829	39.54	27.23	0.41	2.05	0.80	1.00	1.60	29.98	132.21	93.42	9,827.7	6230.4	247.07	768.31	1,015.38
7	88.5	5.19	5.162	40.93	28.15	0.41	2.04	0.80	1.00	1.66	30.46	129.59	88.43	9,794.9	6258.4	274.50	814.74	1,089.24
8	113.5	5.57	0.000	45.52	28.86	0.41	2.05	0.80	1.00	1.70	29.23	102.31	56.29	7,810.8	4878.3	284.40	653.96	938.36
9	138.5	5.90	5.162	42.22	29.44	0.42	2.02	0.80	1.00	1.73	31.48	97.27	33.47	8,391.2	5132.5	319.41	577.36	896.78
10	163.5	6.19	5.829	42.24	29.93	0.43	2.01	0.80	1.00	1.76	32.12	96.99	29.34	8,537.9	5237.6	339.99	584.37	924.36
11	181.0	6.37	2.588	16.80	12.09	0.43	2.00	0.80	1.00	1.78	13.03	30.77	9.48	2,716.8	1682.7	141.36	194.48	335.84
12	193.5	6.49	0.000	27.65	18.26	0.41	2.04	0.80	1.00	1.79	17.81	27.92	8.95	3,159.2	1856.5	200.80	202.08	402.88
13	213.5	6.68	0.000	46.38	30.74	0.41	2.04	0.80	1.00	1.81	29.93	46.76	15.07	5,311.0	3139.9	346.25	346.92	693.17
14	233.5	6.85	3.885	25.66	18.61	0.44	1.99	0.80	1.00	1.82	19.93	28.18	9.12	3,432.9	2040.3	231.26	205.40	436.65
15	243.5	6.93	1.036	8.58	6.23	0.43	2.01	0.80	1.00	1.83	6.41	9.41	3.05	1,267.6	761.7	75.98	70.76	146.74
16	253.5	7.01	6.216	31.71	24.65	0.56	1.83	0.80	1.00	1.84	27.87	23.90	9.20	4,825.2	2983.7	304.37	147.45	451.83
17	270.5	7.14	4.015	33.36	24.32	0.44	1.99	0.80	1.00	1.85	25.06	27.26	8.18	4,610.4	2704.8	303.55	216.24	519.79
														87,829.8	**53461.7**			**9,556.95**

Section Forces

Structure:	CT04877-A-SBA	**Code:**	EIA/TIA-222-G	7/24/2018	
Site Name:	Waterbury 2, CT	**Exposure:**	B		
Height:	280.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 16	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 90° Wind — 1.2D + 1.0Di + 1.0Wi 50 mph Wind at 90° From Face

Wind Load Factor: 1.00
Dead Load Factor: 1.20
Ice Dead Load Factor: 1.00
Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	0.5	3.81	12.800	1.49	1.49	1.00	2.10	0.85	1.00	0.99	12.37	4.78	2.30	1,883.5	750.0	84.05	0.00	84.05
2	3.5	3.81	0.000	7.39	4.08	0.34	2.21	0.85	1.00	1.20	4.56	24.76	13.98	1,411.1	772.3	32.53	113.60	146.13
3	8.5	3.81	1.032	7.01	4.45	0.36	2.14	0.85	1.00	1.31	5.25	25.23	15.28	1,588.9	882.5	36.37	116.10	152.47
4	18.5	3.81	0.000	24.44	14.44	0.37	2.13	0.85	1.00	1.42	15.31	77.00	49.55	4,788.8	2872.3	105.73	361.22	466.95
5	38.5	4.09	0.000	42.56	25.90	0.38	2.10	0.85	1.00	1.52	26.91	130.58	88.86	8,472.0	5277.9	196.75	664.28	861.03
6	63.5	4.72	5.829	39.54	27.23	0.41	2.05	0.85	1.00	1.60	30.27	132.21	93.42	9,827.7	6230.4	249.47	768.31	1,017.78
7	88.5	5.19	5.162	40.93	28.15	0.41	2.04	0.85	1.00	1.66	30.72	129.59	88.43	9,794.9	6258.4	276.83	814.74	1,091.57
8	113.5	5.57	0.000	45.52	28.86	0.41	2.05	0.85	1.00	1.70	29.23	102.31	56.29	7,810.8	4878.3	284.40	653.96	938.36
9	138.5	5.90	5.162	42.22	29.44	0.42	2.02	0.85	1.00	1.73	31.74	97.27	33.47	8,391.2	5132.5	322.03	577.36	899.40
10	163.5	6.19	5.829	42.24	29.93	0.43	2.01	0.85	1.00	1.76	32.41	96.99	29.34	8,537.9	5237.6	343.07	584.37	927.44
11	181.0	6.37	2.588	16.80	12.09	0.43	2.00	0.85	1.00	1.78	13.16	30.77	9.48	2,716.8	1682.7	142.77	194.48	337.25
12	193.5	6.49	0.000	27.65	18.26	0.41	2.04	0.85	1.00	1.79	17.81	27.92	8.95	3,159.2	1856.5	200.80	202.08	402.88
13	213.5	6.68	0.000	46.38	30.74	0.41	2.04	0.85	1.00	1.81	29.93	46.76	15.07	5,311.0	3139.9	346.25	346.92	693.17
14	233.5	6.85	3.885	25.66	18.61	0.44	1.99	0.85	1.00	1.82	20.13	28.18	9.12	3,432.9	2040.3	233.51	205.40	438.91
15	243.5	6.93	1.036	8.58	6.23	0.43	2.01	0.85	1.00	1.83	6.46	9.41	3.05	1,267.6	761.7	76.59	70.76	147.35
16	253.5	7.01	6.216	31.71	24.65	0.56	1.83	0.85	1.00	1.84	28.18	23.90	9.20	4,825.2	2983.7	307.77	147.45	455.22
17	270.5	7.14	4.015	33.36	24.32	0.44	1.99	0.85	1.00	1.85	25.26	27.26	8.18	4,610.4	2704.8	305.99	216.24	522.23
														87,829.8	**53461.7**			**9,582.18**

Section Forces

Structure:	CT04877-A-SBA	**Code:**	EIA/TIA-222-G	7/24/2018	
Site Name:	Waterbury 2, CT	**Exposure:**	B		
Height:	280.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 17	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W Normal Wind — 1.0D + 1.0W 60 mph Wind at Normal To Face

Wind Load Factor: 1.00 — **Wind Importance Factor:** 1.00

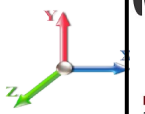
Dead Load Factor: 1.00

Ice Dead Load Factor: 0.00 — **Ice Importance Factor:** 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	0.5	5.48	12.800	0.00	0.00	1.00	2.10	1.00	1.00	0.00	12.80	3.95	0.00	944.6	0.0	125.29	0.00	125.29
2	3.5	5.48	0.000	3.31	0.00	0.16	2.74	1.00	1.00	0.00	1.92	19.77	0.00	532.4	0.0	24.60	83.82	108.42
3	8.5	5.48	1.032	2.56	0.00	0.17	2.70	1.00	1.00	0.00	2.50	19.77	0.00	588.6	0.0	31.49	83.82	115.31
4	18.5	5.48	0.000	9.99	0.00	0.16	2.74	1.00	1.00	0.00	5.77	59.31	0.00	1,597.1	0.0	73.72	251.45	325.17
5	38.5	5.89	0.000	16.66	0.00	0.16	2.74	1.00	1.00	0.00	9.62	98.84	0.00	2,661.8	0.0	132.06	450.43	582.49
6	63.5	6.80	5.829	12.31	0.00	0.17	2.69	1.00	1.00	0.00	12.91	98.84	0.00	2,997.8	0.0	200.74	519.65	720.40
7	88.5	7.48	5.162	12.79	0.00	0.17	2.70	1.00	1.00	0.00	12.52	95.10	0.00	2,947.1	0.0	214.65	554.23	768.88
8	113.5	8.03	0.000	16.66	0.00	0.16	2.74	1.00	1.00	0.00	9.62	74.02	0.00	2,443.7	0.0	179.85	471.05	650.90
9	138.5	8.50	5.162	12.79	0.00	0.17	2.70	1.00	1.00	0.00	12.52	68.41	0.00	2,715.6	0.0	243.95	469.44	713.39
10	163.5	8.91	5.829	12.31	0.00	0.17	2.69	1.00	1.00	0.00	12.91	67.66	0.00	2,750.3	0.0	263.02	488.12	751.14
11	181.0	9.17	2.588	4.70	0.00	0.17	2.68	1.00	1.00	0.00	5.30	20.10	0.00	861.7	0.0	110.87	154.04	264.91
12	193.5	9.35	0.000	9.39	0.00	0.15	2.77	1.00	1.00	0.00	5.41	14.49	0.00	1,085.6	0.0	119.14	127.81	246.96
13	213.5	9.61	0.000	15.64	0.00	0.15	2.77	1.00	1.00	0.00	9.01	24.16	0.00	1,809.3	0.0	204.23	219.09	423.32
14	233.5	9.86	3.885	7.05	0.00	0.17	2.68	1.00	1.00	0.00	7.95	14.49	0.00	1,160.5	0.0	178.92	134.86	313.78
15	243.5	9.98	1.036	2.35	0.00	0.16	2.73	1.00	1.00	0.00	2.39	4.83	0.00	421.6	0.0	55.26	45.50	100.76
16	253.5	10.10	6.216	7.05	0.00	0.21	2.56	1.00	1.00	0.00	10.32	13.48	0.00	1,534.6	0.0	226.74	130.21	356.94
17	270.5	10.29	4.015	9.03	0.00	0.16	2.72	1.00	1.00	0.00	9.21	15.54	0.00	1,588.0	0.0	219.06	157.63	376.69
														28,640.0	**0.0**			**6,944.75**

Section Forces

Structure:	CT04877-A-SBA	**Code:**	EIA/TIA-222-G	7/24/2018	
Site Name:	Waterbury 2, CT	**Exposure:**	B		
Height:	280.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 18	



Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60° Wind — 1.0D + 1.0W 60 mph Wind at 60° From Face

Wind Load Factor: 1.00 — **Wind Importance Factor:** 1.00

Dead Load Factor: 1.00

Ice Dead Load Factor: 0.00 — **Ice Importance Factor:** 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	0.5	5.48	12.800	0.00	0.00	1.00	2.10	0.80	1.00	0.00	10.24	3.95	0.00	944.6	0.0	100.23	0.00	100.23
2	3.5	5.48	0.000	3.31	0.00	0.16	2.74	0.80	1.00	0.00	1.92	19.77	0.00	532.4	0.0	24.60	83.82	108.42
3	8.5	5.48	1.032	2.56	0.00	0.17	2.70	0.80	1.00	0.00	2.30	19.77	0.00	588.6	0.0	28.89	83.82	112.71
4	18.5	5.48	0.000	9.99	0.00	0.16	2.74	0.80	1.00	0.00	5.77	59.31	0.00	1,597.1	0.0	73.72	251.45	325.17
5	38.5	5.89	0.000	16.66	0.00	0.16	2.74	0.80	1.00	0.00	9.62	98.84	0.00	2,661.8	0.0	132.06	450.43	582.49
6	63.5	6.80	5.829	12.31	0.00	0.17	2.69	0.80	1.00	0.00	11.74	98.84	0.00	2,997.8	0.0	182.61	519.65	702.27
7	88.5	7.48	5.162	12.79	0.00	0.17	2.70	0.80	1.00	0.00	11.49	95.10	0.00	2,947.1	0.0	196.96	554.23	751.19
8	113.5	8.03	0.000	16.66	0.00	0.16	2.74	0.80	1.00	0.00	9.62	74.02	0.00	2,443.7	0.0	179.85	471.05	650.90
9	138.5	8.50	5.162	12.79	0.00	0.17	2.70	0.80	1.00	0.00	11.49	68.41	0.00	2,715.6	0.0	223.84	469.44	693.28
10	163.5	8.91	5.829	12.31	0.00	0.17	2.69	0.80	1.00	0.00	11.74	67.66	0.00	2,750.3	0.0	239.27	488.12	727.39
11	181.0	9.17	2.588	4.70	0.00	0.17	2.68	0.80	1.00	0.00	4.78	20.10	0.00	861.7	0.0	100.04	154.04	254.08
12	193.5	9.35	0.000	9.39	0.00	0.15	2.77	0.80	1.00	0.00	5.41	14.49	0.00	1,085.6	0.0	119.14	127.81	246.96
13	213.5	9.61	0.000	15.64	0.00	0.15	2.77	0.80	1.00	0.00	9.01	24.16	0.00	1,809.3	0.0	204.23	219.09	423.32
14	233.5	9.86	3.885	7.05	0.00	0.17	2.68	0.80	1.00	0.00	7.17	14.49	0.00	1,160.5	0.0	161.43	134.86	296.29
15	243.5	9.98	1.036	2.35	0.00	0.16	2.73	0.80	1.00	0.00	2.18	4.83	0.00	421.6	0.0	50.47	45.50	95.96
16	253.5	10.10	6.216	7.05	0.00	0.21	2.56	0.80	1.00	0.00	9.08	13.48	0.00	1,534.6	0.0	199.43	130.21	329.64
17	270.5	10.29	4.015	9.03	0.00	0.16	2.72	0.80	1.00	0.00	8.41	15.54	0.00	1,588.0	0.0	199.96	157.63	357.59
														28,640.0	**0.0**			**6,757.89**

Section Forces

Structure:	CT04877-A-SBA	**Code:**	EIA/TIA-222-G	7/24/2018	
Site Name:	Waterbury 2, CT	**Exposure:**	B		
Height:	280.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 19	

Tower Engineering Solutions

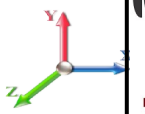
Load Case: 1.0D + 1.0W 90° Wind — 1.0D + 1.0W 60 mph Wind at 90° From Face

Wind Load Factor: 1.00
Dead Load Factor: 1.00
Ice Dead Load Factor: 0.00
Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Ice Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1	0.5	5.48	12.800	0.00	0.00	1.00	2.10	0.85	1.00	0.00	10.88	3.95	0.00	944.6	0.0	106.49	0.00	106.49
2	3.5	5.48	0.000	3.31	0.00	0.16	2.74	0.85	1.00	0.00	1.92	19.77	0.00	532.4	0.0	24.60	83.82	108.42
3	8.5	5.48	1.032	2.56	0.00	0.17	2.70	0.85	1.00	0.00	2.35	19.77	0.00	588.6	0.0	29.54	83.82	113.36
4	18.5	5.48	0.000	9.99	0.00	0.16	2.74	0.85	1.00	0.00	5.77	59.31	0.00	1,597.1	0.0	73.72	251.45	325.17
5	38.5	5.89	0.000	16.66	0.00	0.16	2.74	0.85	1.00	0.00	9.62	98.84	0.00	2,661.8	0.0	132.06	450.43	582.49
6	63.5	6.80	5.829	12.31	0.00	0.17	2.69	0.85	1.00	0.00	12.03	98.84	0.00	2,997.8	0.0	187.15	519.65	706.80
7	88.5	7.48	5.162	12.79	0.00	0.17	2.70	0.85	1.00	0.00	11.75	95.10	0.00	2,947.1	0.0	201.38	554.23	755.61
8	113.5	8.03	0.000	16.66	0.00	0.16	2.74	0.85	1.00	0.00	9.62	74.02	0.00	2,443.7	0.0	179.85	471.05	650.90
9	138.5	8.50	5.162	12.79	0.00	0.17	2.70	0.85	1.00	0.00	11.75	68.41	0.00	2,715.6	0.0	228.87	469.44	698.31
10	163.5	8.91	5.829	12.31	0.00	0.17	2.69	0.85	1.00	0.00	12.03	67.66	0.00	2,750.3	0.0	245.21	488.12	733.33
11	181.0	9.17	2.588	4.70	0.00	0.17	2.68	0.85	1.00	0.00	4.91	20.10	0.00	861.7	0.0	102.75	154.04	256.79
12	193.5	9.35	0.000	9.39	0.00	0.15	2.77	0.85	1.00	0.00	5.41	14.49	0.00	1,085.6	0.0	119.14	127.81	246.96
13	213.5	9.61	0.000	15.64	0.00	0.15	2.77	0.85	1.00	0.00	9.01	24.16	0.00	1,809.3	0.0	204.23	219.09	423.32
14	233.5	9.86	3.885	7.05	0.00	0.17	2.68	0.85	1.00	0.00	7.37	14.49	0.00	1,160.5	0.0	165.80	134.86	300.67
15	243.5	9.98	1.036	2.35	0.00	0.16	2.73	0.85	1.00	0.00	2.23	4.83	0.00	421.6	0.0	51.67	45.50	97.16
16	253.5	10.10	6.216	7.05	0.00	0.21	2.56	0.85	1.00	0.00	9.39	13.48	0.00	1,534.6	0.0	206.26	130.21	336.47
17	270.5	10.29	4.015	9.03	0.00	0.16	2.72	0.85	1.00	0.00	8.61	15.54	0.00	1,588.0	0.0	204.74	157.63	362.37
														28,640.0	**0.0**			**6,804.60**

Force/Stress Compression Summary

Structure:	CT04877-A-SBA	**Code:**	EIA/TIA-222-G	7/24/2018	
Site Name:	Waterbury 2, CT	**Exposure:**	B		
Height:	280.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 20	



Tower Engineering Solutions

LEG MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fy (ksi)	Mem Cap (kips)	Leg Use %	Controls
1	1	WBM - W18 x 46	-146.57	1.2D + 1.0Di + 1.0Wi 60° Wind	2.52	100	100	100	23.41	50.00	583.64	25.1	Member Y
2	6	SOL - 2 1/2" SOLID	-63.96	1.2D + 1.0Di + 1.0Wi 90° Wind	5.00	100	100	100	96.00	36.00	97.90	65.3	Member X
3	11	SOL - 2 1/2" SOLID	-65.51	1.2D + 1.0Di + 1.0Wi 60° Wind	5.00	100	100	100	96.00	36.00	97.90	66.9	Member X
4	26	SOL - 2 1/2" SOLID	-67.75	1.2D + 1.0Di + 1.0Wi 60° Wind	5.00	100	100	100	96.00	36.00	97.90	69.2	Member X
5	51	SOL - 2 1/2" SOLID	-68.04	1.2D + 1.0Di + 1.0Wi 60° Wind	5.00	100	100	100	96.00	36.00	97.90	69.5	Member X
6	76	SOL - 2 1/2" SOLID	-65.04	1.2D + 1.0Di + 1.0Wi 60° Wind	5.00	100	100	100	96.00	36.00	97.90	66.4	Member X
7	101	SOL - 2 1/2" SOLID	-57.52	1.2D + 1.6W 90° Wind	5.00	100	100	100	96.00	36.00	97.90	58.7	Member X
8	126	SOL - 2 1/2" SOLID	-57.50	1.2D + 1.6W 90° Wind	5.00	100	100	100	96.00	36.00	97.90	58.7	Member X
9	151	SOL - 2 1/2" SOLID	-48.30	1.2D + 1.0Di + 1.0Wi Normal	5.00	100	100	100	96.00	36.00	97.90	49.3	Member X
10	176	SOL - 2 1/2" SOLID	-54.11	1.2D + 1.6W Normal Wind	5.00	100	100	100	96.00	36.00	97.90	55.3	Member X
11	186	SOL - 2 1/4" SOLID	-31.79	1.2D + 1.0Di + 1.0Wi Normal	5.00	100	100	100	106.67	36.00	70.77	44.9	Member X
12	201	SOL - 2 1/4" SOLID	-32.79	1.2D + 1.6W 90° Wind	5.00	100	100	100	106.67	36.00	70.77	46.3	Member X
13	226	SOL - 2 1/4" SOLID	-32.88	1.2D + 1.6W 90° Wind	5.00	100	100	100	106.67	36.00	70.77	46.5	Member X
14	241	SOL - 2 1/4" SOLID	-27.11	1.2D + 1.0Di + 1.0Wi 60° Wind	5.00	100	100	100	106.67	36.00	70.77	38.3	Member X
15	246	SOL - 2 1/4" SOLID	-22.97	1.2D + 1.0Di + 1.0Wi 90° Wind	5.00	100	100	100	106.67	36.00	70.77	32.5	Member X
16	261	SOL - 2 1/4" SOLID	-28.43	1.2D + 1.6W Normal Wind	5.00	100	100	100	106.67	36.00	70.77	40.2	Member X
17	280	SOL - 2 1/4" SOLID	-14.45	1.2D + 1.6W Normal Wind	4.75	100	100	100	101.33	36.00	75.03	19.3	Member X

HORIZONTAL MEMBERS

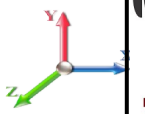
Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	Use %	Controls
1	1										0.00	0	0				
2	6	PSP - ROHN 1 1/2X11G	-2.30	1.2D + 1.6W 90° Wind	4.00	100	100	100	98.16	36.00	10.15	1	1	12.43		23	Member X
3	11	PSP - ROHN 1 1/2X11G	-2.08	1.2D + 1.6W 90° Wind	4.00	100	100	100	98.16	36.00	10.15	1	1	12.43		21	Member X
4	26	PSP - ROHN 1 1/2X11G	-1.02	1.2D + 1.6W Normal Wind	4.00	100	100	100	98.16	36.00	10.15	1	1	12.43		10	Member X
5	51	PSP - ROHN 1 1/2X11G	-0.71	1.2D + 1.6W 60° Wind	4.00	100	100	100	98.16	36.00	10.15	1	1	12.43		7	Member X
6	76	PSP - ROHN 1 1/2X11G	-0.17	1.2D + 1.6W Normal Wind	4.00	100	100	100	98.16	36.00	10.15	1	1	12.43		2	Member X
7	101	PSP - ROHN 1 1/2X11G	-0.54	0.9D + 1.6W 90° Wind	4.00	100	100	100	98.16	36.00	10.15	1	1	12.43		5	Member X
8	126	PSP - ROHN 1 1/2X11G	-1.29	1.2D + 1.6W 60° Wind	4.00	100	100	100	98.16	36.00	10.15	1	1	12.43		13	Member X
9	151	PSP - ROHN 1 1/2X11G	-3.30	1.2D + 1.6W 60° Wind	4.00	100	100	100	98.16	36.00	10.15	1	1	12.43		32	Member X
10	176	PSP - ROHN 1 1/2X11G	-3.81	1.2D + 1.6W 90° Wind	4.00	100	100	100	98.16	36.00	10.15	1	1	12.43		38	Member X
11	186	PSP - ROHN 1 1/2X11G	-1.40	1.2D + 1.6W Normal Wind	4.00	100	100	100	98.16	36.00	10.15	1	1	12.43		14	Member X
12	201	PSP - ROHN 1 1/2X11G	-0.16	0.9D + 1.6W 90° Wind	4.00	100	100	100	98.16	36.00	10.15	1	1	12.43		2	Member X
13	226	PSP - ROHN 1 1/2X11G	-0.76	0.9D + 1.6W 90° Wind	4.00	100	100	100	98.16	36.00	10.15	1	1	12.43		7	Member X
14	241	PSP - ROHN 1 1/2X11G	-1.38	0.9D + 1.6W Normal Wind	4.00	100	100	100	98.16	36.00	10.15	1	1	12.43		14	Member X
15	246	PSP - ROHN 1 1/2X11G	-2.99	0.9D + 1.6W 90° Wind	4.00	100	100	100	98.16	36.00	10.15	1	1	12.43		30	Member X
16	261	PSP - ROHN 1 1/2X11G	-3.38	0.9D + 1.6W Normal Wind	4.00	100	100	100	98.16	36.00	10.15	1	1	12.43		33	Member X
17	280	PSP - ROHN 1 1/2X11G	-0.84	1.2D + 1.6W Normal Wind	4.00	100	100	100	98.16	36.00	10.15	1	1	12.43		8	Member X

DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	Use %	Controls
1	1				0.00						0.00	0	0				
2	6	PSP - ROHN 1 1/2X11G	-3.67	1.2D + 1.6W Normal Wind	6.40	100	100	100	157.13	36.00	4.76	1	1	12.43		77	Member X
3	11	SAE - 2X2X0.375	-3.20	1.2D + 1.6W Normal Wind	6.40	100	100	100	197.53	36.00	7.87	1	1	12.43	22.1	41	Member Z
4	26	PSP - ROHN 1 1/2X11G	-2.91	1.2D + 1.6W Normal Wind	6.40	100	100	100	157.13	36.00	4.76	1	1	12.43		61	Member X
5	51	PSP - ROHN 1 1/2X11G	-1.49	1.2D + 1.6W Normal Wind	6.40	100	100	100	157.13	36.00	4.76	1	1	12.43		31	Member X
6	76	DAE - 2X2X0.1875	-4.27	1.2D + 1.6W 90° Wind	6.40	100	100	50	125.27	36.00	20.28	2	1	24.86	50.2	21	Member Y
7	101	DAE - 2X2X0.1875	-5.45	1.2D + 1.6W 90° Wind	6.40	100	100	50	125.27	36.00	20.28	2	1	24.86	50.2	27	Member Y

Force/Stress Compression Summary

Structure:	CT04877-A-SBA	**Code:**	EIA/TIA-222-G	7/24/2018	
Site Name:	Waterbury 2, CT	**Exposure:**	B		
Height:	280.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 21	



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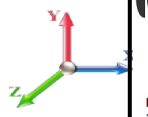
DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	Use %	Controls
8	126	PSP - ROHN 1 1/2X11G	-3.30	1.2D + 1.6W Normal Wind	6.40	100	100	100	157.13	36.00	4.76	1	1	12.43		69	Member X
9	151	DAE - 2X2X0.1875	-6.77	1.2D + 1.6W Normal Wind	6.40	100	100	50	125.27	36.00	20.28	2	1	24.86	50.2	33	Member Y
10	176	DAE - 2X2X0.1875	-8.44	1.2D + 1.6W 90° Wind	6.40	100	100	50	125.27	36.00	20.28	2	1	24.86	50.2	42	Member Y
11	186	SAE - 2.5X2.5X0.1875	-5.67	1.2D + 1.6W Normal Wind	6.40	100	100	100	155.23	36.00	8.46	1	1	12.43	9.79	67	Member Z
12	201	PSP - ROHN 1 1/2X11G	-1.73	1.2D + 1.6W Normal Wind	6.40	100	100	100	157.13	36.00	4.76	1	1	12.43		36	Member X
13	226	PSP - ROHN 1 1/2X11G	-2.30	1.2D + 1.6W Normal Wind	6.40	100	100	100	157.13	36.00	4.76	1	1	12.43		48	Member X
14	241	SAE - 2.5X2.5X0.1875	-3.45	1.2D + 1.6W Normal Wind	6.40	100	100	100	155.23	36.00	8.46	1	1	12.43	9.79	41	Member Z
15	246	DAE - 2X2X0.1875	-3.87	1.2D + 1.6W Normal Wind	6.40	100	100	50	125.27	36.00	20.28	2	1	24.86	50.2	19	Member Y
16	261	DAE - 2X2X0.1875	-4.20	1.2D + 1.6W 60° Wind	6.40	100	100	50	125.27	36.00	20.28	2	1	24.86	50.2	21	Member Y
17	280	DAE - 2X2X0.1875	-3.55	1.2D + 1.6W 60° Wind	6.21	100	100	50	121.49	36.00	21.30	2	1	24.86	50.2	17	Member Y

Force/Stress Tension Summary

Structure:	CT04877-A-SBA	**Code:**	EIA/TIA-222-G	7/24/2018	
Site Name:	Waterbury 2, CT	**Exposure:**	B		
Height:	280.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 22	



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LEG MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Leg Use %	Controls
1	1				0	0.00		
2	6				0	0.00		
3	11				0	0.00		
4	26				0	0.00		
5	51				0	0.00		
6	76				0	0.00		
7	101				0	0.00		
8	126				0	0.00		
9	151				0	0.00		
10	176	SOL - 2 1/2" SOLID	16.05	0.9D + 1.6W 60° Wind	36	159.04	10.1	Member
11	186				0	0.00		
12	201				0	0.00		
13	226				0	0.00		
14	241				0	0.00		
15	246				0	0.00		
16	261	SOL - 2 1/4" SOLID	22.50	0.9D + 1.6W 60° Wind	36	128.83	17.5	Member
17	280	SOL - 2 1/4" SOLID	11.93	0.9D + 1.6W 60° Wind	36	128.83	9.3	Member

HORIZONTAL MEMBERS

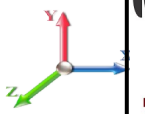
Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	B.S. Cap (kips)	Use %	Controls
1	1	WBM - W18 x 46	76.54	1.2D + 1.0Di + 1.0Wi 60	36	437.40	0	0				17.5	Member
2	6	PSP - ROHN 1 1/2X11GA	2.16	1.2D + 1.6W Normal Wi	36	16.85	1	1	12.43			17.4	Bolt Shear
3	11	PSP - ROHN 1 1/2X11GA	1.84	1.2D + 1.6W Normal Wi	36	16.85	1	1	12.43			14.8	Bolt Shear
4	26	PSP - ROHN 1 1/2X11GA	1.02	1.2D + 1.6W Normal Wi	36	16.85	1	1	12.43			8.2	Bolt Shear
5	51	PSP - ROHN 1 1/2X11GA	0.91	1.2D + 1.6W 60° Wind	36	16.85	1	1	12.43			7.4	Bolt Shear
6	76	PSP - ROHN 1 1/2X11GA	0.39	1.2D + 1.6W 60° Wind	36	16.85	1	1	12.43			3.2	Bolt Shear
7	101	PSP - ROHN 1 1/2X11GA	1.76	1.2D + 1.6W 60° Wind	36	16.85	1	1	12.43			14.2	Bolt Shear
8	126	PSP - ROHN 1 1/2X11GA	2.18	1.2D + 1.6W Normal Wi	36	16.85	1	1	12.43			17.5	Bolt Shear
9	151	PSP - ROHN 1 1/2X11GA	4.27	1.2D + 1.6W Normal Wi	36	16.85	1	1	12.43			34.4	Bolt Shear
10	176	PSP - ROHN 1 1/2X11GA	3.66	1.2D + 1.6W Normal Wi	36	16.85	1	1	12.43			29.5	Bolt Shear
11	186	PSP - ROHN 1 1/2X11GA	1.46	1.2D + 1.6W 60° Wind	36	16.85	1	1	12.43			11.8	Bolt Shear
12	201	PSP - ROHN 1 1/2X11GA	0.57	1.2D + 1.6W Normal Wi	36	16.85	1	1	12.43			4.6	Bolt Shear
13	226	PSP - ROHN 1 1/2X11GA	1.51	1.2D + 1.6W Normal Wi	36	16.85	1	1	12.43			12.1	Bolt Shear
14	241	PSP - ROHN 1 1/2X11GA	2.23	1.2D + 1.6W Normal Wi	36	16.85	1	1	12.43			17.9	Bolt Shear
15	246	PSP - ROHN 1 1/2X11GA			36	0.00	0	0					
16	261	PSP - ROHN 1 1/2X11GA	7.81	1.2D + 1.6W 60° Wind	36	16.85	1	1	12.43			62.9	Bolt Shear
17	280	PSP - ROHN 1 1/2X11GA	0.72	1.2D + 1.6W 60° Wind	36	16.85	1	1	12.43			5.8	Bolt Shear

DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	B.S. Cap (kips)	Use %	Controls
1	1	-	0.00		50	0.00	0	0					
2	6	PSP - ROHN 1 1/2X11GA	3.83	1.2D + 1.6W 90° Wind	36	16.85	1	1	12.43			30.8	Bolt Shear
3	11	SAE - 2X2X0.375	3.77	1.2D + 1.6W 90° Wind	36	44.06	1	1	12.43	22.19	15.75	30.3	Bolt Shear
4	26	PSP - ROHN 1 1/2X11GA	2.84	1.2D + 1.6W 90° Wind	36	16.85	1	1	12.43			22.9	Bolt Shear
5	51	PSP - ROHN 1 1/2X11GA	1.31	1.2D + 1.6W 90° Wind	36	16.85	1	1	12.43			10.5	Bolt Shear
6	76	DAE - 2X2X0.1875	3.62	1.2D + 1.6W 60° Wind	36	46.33	2	1	24.86	50.24	27.14	14.6	Bolt Shear
7	101	DAE - 2X2X0.1875	5.78	1.2D + 1.6W 90° Wind	36	46.33	2	1	24.86	50.24	27.14	23.3	Bolt Shear
8	126	PSP - ROHN 1 1/2X11GA	2.60	1.2D + 1.6W Normal Wi	36	16.85	1	1	12.43			20.9	Bolt Shear

Force/Stress Tension Summary

Structure:	CT04877-A-SBA	**Code:**	EIA/TIA-222-G	7/24/2018	
Site Name:	Waterbury 2, CT	**Exposure:**	B		
Height:	280.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 23	



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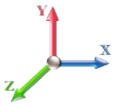
DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	B.S. Cap (kips)	Use %	Controls
9	151	DAE - 2X2X0.1875	5.89	1.2D + 1.6W Normal Wi	36	46.33	2	1	24.86	50.24	27.14	23.7	Bolt Shear
10	176	DAE - 2X2X0.1875	7.73	1.2D + 1.6W Normal Wi	36	46.33	2	1	24.86	50.24	27.14	31.1	Bolt Shear
11	186	SAE - 2.5X2.5X0.1875	5.76	1.2D + 1.6W 90° Wind	36	29.22	1	1	12.43	9.79	9.53	60.5	Blck Shear
12	201	PSP - ROHN 1 1/2X11GA	1.20	1.2D + 1.6W Normal Wi	36	16.85	1	1	12.43			9.7	Bolt Shear
13	226	PSP - ROHN 1 1/2X11GA	1.85	1.2D + 1.6W Normal Wi	36	16.85	1	1	12.43			14.9	Bolt Shear
14	241	SAE - 2.5X2.5X0.1875	2.95	1.2D + 1.6W Normal Wi	36	29.22	1	1	12.43	9.79	9.53	31.0	Blck Shear
15	246	DAE - 2X2X0.1875	2.46	0.9D + 1.6W 60° Wind	36	46.33	2	1	24.86	50.24	27.14	9.9	Bolt Shear
16	261	DAE - 2X2X0.1875	4.17	0.9D + 1.6W 90° Wind	36	46.33	2	1	24.86	50.24	27.14	16.8	Bolt Shear
17	280	DAE - 2X2X0.1875	3.22	1.2D + 1.6W Normal Wi	36	46.33	2	1	24.86	50.24	27.14	12.9	Bolt Shear

Support Forces Summary

Structure:	CT04877-A-SBA	**Code:**	EIA/TIA-222-G	7/24/2018	
Site Name:	Waterbury 2, CT	**Exposure:**	B		
Height:	280.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	0.85 **Topography:** 1	**Struct Class:**	II	Page: 24	



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Load Case	Node	FX (kips)	FY (kips)	FZ (kips)	(-) = Uplift (+) = Down
1.2D + 1.6W Normal Wind	1	0.01	142.05	-2.45	
	A1	0.00	-3.68	1.61	
	A1b	33.76	-46.69	-20.91	
	A1a	-33.77	-46.70	-20.89	
1.2D + 1.6W 60° Wind	1	-2.48	120.67	-1.43	
	A1	-0.98	-11.31	7.63	
	A1b	6.11	-11.35	-4.66	
	A1a	-39.22	-53.33	-22.65	
1.2D + 1.6W 90° Wind	1	-2.80	133.92	-0.03	
	A1	-1.32	-29.72	24.43	
	A1b	2.19	-5.29	-1.83	
	A1a	-40.48	-54.08	-22.57	
0.9D + 1.6W Normal Wind	1	0.01	131.61	-2.86	
	A1	0.00	-3.71	1.63	
	A1b	33.71	-46.65	-20.87	
	A1a	-33.72	-46.65	-20.86	
0.9D + 1.6W 60° Wind	1	-2.52	110.48	-1.46	
	A1	-0.98	-11.39	7.68	
	A1b	6.16	-11.43	-4.68	
	A1a	-39.22	-53.37	-22.65	
0.9D + 1.6W 90° Wind	1	-2.87	123.55	-0.01	
	A1	-1.31	-29.72	24.40	
	A1b	2.22	-5.33	-1.85	
	A1a	-40.43	-54.05	-22.55	
1.2D + 1.0Di + 1.0Wi Normal Wind	1	0.01	188.19	-1.00	
	A1	0.00	-12.20	10.97	
	A1b	21.17	-27.73	-13.23	
	A1a	-21.19	-27.75	-13.23	
1.2D + 1.0Di + 1.0Wi 60° Wind	1	-0.77	189.07	-0.45	
	A1	-0.86	-17.77	15.59	
	A1b	13.07	-17.80	-8.53	
	A1a	-25.64	-33.26	-14.81	
1.2D + 1.0Di + 1.0Wi 90° Wind	1	-0.93	188.68	0.04	
	A1	-1.04	-22.73	20.25	
	A1b	10.36	-13.87	-6.49	
	A1a	-24.80	-31.71	-13.80	
1.0D + 1.0W Normal Wind	1	0.00	84.33	-0.78	
	A1	0.00	-8.63	6.57	
	A1b	13.43	-18.88	-8.03	
	A1a	-13.43	-18.89	-8.03	
1.0D + 1.0W 60° Wind	1	-0.64	84.56	-0.37	
	A1	-0.24	-12.21	9.63	
	A1b	8.23	-12.22	-5.02	
	A1a	-16.10	-22.25	-9.29	

1.0D + 1.0W 90° Wind	1	-0.75	84.44	0.01
	A1	-0.29	-15.51	12.60
	A1b	6.38	-9.70	-3.82
	A1a	-15.48	-21.33	-8.79

Max Reactions (kips)	Base	Anchor 1
Vertical	189.07	54.08
Horizontal	2.92	46.35

Cable Forces Summary

Structure:	CT04877-A-SBA		**Code:**	EIA/TIA-222-G	7/24/2018
Site Name:	Waterbury 2, CT		**Exposure:**	B	
Height:	280.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	C - Very Dense Soil	
Gh:	0.85	**Topography:** 1	**Struct Class:**	II	Page: 26

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Load Case	Elevation (ft)	Cable	Node 1	Node 2	Allow Tension (kips)	Applied Tension (kips)	Use %
1.2D + 1.6W Normal	76.00	9/16 EHS	A1	17	21.00	0.15	1
			A1b	17a	21.00	11.94	57
			A1a	17b	21.00	11.93	57
	156.00	7/8 EHS	A1	33	47.82	0.51	1
			A1b	33a	47.82	24.06	50
			A1a	33b	47.82	24.07	50
	251.00	3/4 EHS	A1	T3	34.98	2.12	6
			A1a	T3b	34.98	14.05	40
			A1b	T3a	34.98	13.16	38
			A1b	T3	34.98	14.29	41
			A1a	T3a	34.98	13.40	38
			A1	T3b	34.98	2.14	6
1.2D + 1.6W 60° Wind	76.00	9/16 EHS	A1	17	21.00	1.34	6
			A1b	17a	21.00	1.32	6
			A1a	17b	21.00	13.31	63
	156.00	7/8 EHS	A1	33	47.82	3.61	8
			A1b	33a	47.82	3.57	7
			A1a	33b	47.82	26.93	56
	251.00	3/4 EHS	A1	T3	34.98	5.10	15
			A1a	T3b	34.98	16.05	46
			A1b	T3a	34.98	4.84	14
			A1b	T3	34.98	5.09	15
			A1a	T3a	34.98	15.96	46
			A1	T3b	34.98	4.74	14
1.2D + 1.6W 90° Wind	76.00	9/16 EHS	A1	17	21.00	7.02	33
			A1b	17a	21.00	0.33	2
			A1a	17b	21.00	14.03	67
	156.00	7/8 EHS	A1	33	47.82	14.50	30
			A1b	33a	47.82	1.16	2
			A1a	33b	47.82	28.04	59
	251.00	3/4 EHS	A1	T3	34.98	9.87	28
			A1a	T3b	34.98	15.55	44
			A1b	T3a	34.98	2.69	8
			A1b	T3	34.98	2.79	8
			A1a	T3a	34.98	15.95	46
			A1	T3b	34.98	8.80	25
0.9D + 1.6W Normal	76.00	9/16 EHS	A1	17	21.00	0.15	1
			A1b	17a	21.00	11.88	57
			A1a	17b	21.00	11.87	57
	156.00	7/8 EHS	A1	33	47.82	0.52	1
			A1b	33a	47.82	24.02	50
			A1a	33b	47.82	24.03	50
	251.00	3/4 EHS	A1	T3	34.98	2.14	6
			A1a	T3b	34.98	14.06	40
			A1b	T3a	34.98	13.17	38
			A1b	T3	34.98	14.29	41
			A1a	T3a	34.98	13.41	38
			A1	T3b	34.98	2.15	6
0.9D + 1.6W 60° Wind	76.00	9/16 EHS	A1	17	21.00	1.35	6
			A1b	17a	21.00	1.33	6
			A1a	17b	21.00	13.29	63
	156.00	7/8 EHS	A1	33	47.82	3.64	8
			A1b	33a	47.82	3.60	8

0.9D + 1.6W 60° Wind	156.00	7/8 EHS	A1a	33b	47.82	26.94	56
	251.00	3/4 EHS	A1	T3	34.98	5.13	15
			A1a	T3b	34.98	16.08	46
			A1b	T3a	34.98	4.87	14
			A1b	T3	34.98	5.12	15
			A1a	T3a	34.98	15.98	46
			A1	T3b	34.98	4.77	14
0.9D + 1.6W 90° Wind	76.00	9/16 EHS	A1	17	21.00	6.98	33
			A1b	17a	21.00	0.33	2
			A1a	17b	21.00	13.97	67
	156.00	7/8 EHS	A1	33	47.82	14.48	30
			A1b	33a	47.82	1.17	2
			A1a	33b	47.82	28.00	59
	251.00	3/4 EHS	A1	T3	34.98	9.89	28
			A1a	T3b	34.98	15.57	45
			A1b	T3a	34.98	2.71	8
			A1b	T3	34.98	2.81	8
			A1a	T3a	34.98	15.96	46
			A1	T3b	34.98	8.82	25
1.2D + 1.0Di + 1.0Wi	76.00	9/16 EHS	A1	17	21.00	3.72	18
			A1b	17a	21.00	7.69	37
			A1a	17b	21.00	7.68	37
	156.00	7/8 EHS	A1	33	47.82	6.18	13
			A1b	33a	47.82	13.49	28
			A1a	33b	47.82	13.53	28
	251.00	3/4 EHS	A1	T3	34.98	5.71	16
			A1a	T3b	34.98	10.91	31
			A1b	T3a	34.98	10.50	30
			A1b	T3	34.98	10.97	31
			A1a	T3a	34.98	10.56	30
			A1	T3b	34.98	5.79	17
1.2D + 1.0Di + 1.0Wi	76.00	9/16 EHS	A1	17	21.00	4.86	23
			A1b	17a	21.00	4.84	23
			A1a	17b	21.00	8.72	42
	156.00	7/8 EHS	A1	33	47.82	8.41	18
			A1b	33a	47.82	8.36	17
			A1a	33b	47.82	16.13	34
	251.00	3/4 EHS	A1	T3	34.98	7.96	23
			A1a	T3b	34.98	12.55	36
			A1b	T3a	34.98	7.60	22
			A1b	T3	34.98	7.99	23
			A1a	T3a	34.98	12.58	36
			A1	T3b	34.98	7.55	22
1.2D + 1.0Di + 1.0Wi	76.00	9/16 EHS	A1	17	21.00	6.28	30
			A1b	17a	21.00	3.96	19
			A1a	17b	21.00	8.49	40
	156.00	7/8 EHS	A1	33	47.82	10.92	23
			A1b	33a	47.82	6.68	14
			A1a	33b	47.82	15.44	32
	251.00	3/4 EHS	A1	T3	34.98	9.51	27
			A1a	T3b	34.98	11.92	34
			A1b	T3a	34.98	6.34	18
			A1b	T3	34.98	6.54	19
			A1a	T3a	34.98	12.12	35
			A1	T3b	34.98	8.98	26
1.0D + 1.0W Normal	76.00	9/16 EHS	A1	17	21.00	1.49	7
			A1b	17a	21.00	4.41	21
			A1a	17b	21.00	4.40	21
	156.00	7/8 EHS	A1	33	47.82	3.62	8
			A1b	33a	47.82	9.07	19
			A1a	33b	47.82	9.09	19
	251.00	3/4 EHS	A1	T3	34.98	3.39	10
			A1a	T3b	34.98	6.28	18
			A1b	T3a	34.98	6.09	17
			A1b	T3	34.98	6.34	18
			A1a	T3a	34.98	6.14	18
			A1	T3b	34.98	3.45	10

1.0D + 1.0W 60° Wind	76.00	9/16 EHS	A1	17	21.00	2.42	12
			A1b	17a	21.00	2.42	12
			A1a	17b	21.00	5.31	25
	156.00	7/8 EHS	A1	33	47.82	5.44	11
			A1b	33a	47.82	5.42	11
			A1a	33b	47.82	10.88	23
	251.00	3/4 EHS	A1	T3	34.98	4.56	13
			A1a	T3b	34.98	7.14	20
			A1b	T3a	34.98	4.37	12
			A1b	T3	34.98	4.56	13
			A1a	T3a	34.98	7.14	20
			A1	T3b	34.98	4.34	12
1.0D + 1.0W 90° Wind	76.00	9/16 EHS	A1	17	21.00	3.40	16
			A1b	17a	21.00	1.73	8
			A1a	17b	21.00	5.08	24
	156.00	7/8 EHS	A1	33	47.82	7.23	15
			A1b	33a	47.82	4.11	9
			A1a	33b	47.82	10.40	22
	251.00	3/4 EHS	A1	T3	34.98	5.46	16
			A1a	T3b	34.98	6.85	20
			A1b	T3a	34.98	3.72	11
			A1b	T3	34.98	3.79	11
			A1a	T3a	34.98	6.91	20
			A1	T3b	34.98	5.18	15

Max Reactions

Base:	189.07 (Vertical)	2.92 (Horizontal)
Anchor 1:	54.08 (Vertical)	46.35 (Horizontal)

Max Usages

Max Leg: 69.5% (1.2D + 1.0Di + 1.0Wi 60° Wind - Sect 5)
Max Diag: 77.1% (1.2D + 1.6W Normal Wind - Sect 2)
Max Horiz: 62.9% (1.2D + 1.6W 60° Wind - Sect 16)
Max Cable: 66.8% (1.2D + 1.6W 90° Wind) - Elev: 76 ft

Max Deflection, Twist and Sway

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)
0.9D + 1.6W 97 mph Wind at 60° From Face	91.00	0.4834	0.5800	0.2293
	96.00	0.5034	0.6543	0.2056
	126.00	0.5704	0.4210	0.1154
	131.00	0.5757	0.3819	0.0858
	136.00	0.5844	0.3426	0.0756
	181.00	0.6981	0.1396	0.2240
	251.00	0.8349	0.0628	0.1165
	261.00	0.8572	0.0649	0.1464
	265.75	0.8703	0.0659	0.1641
	270.50	0.8838	0.0668	0.1643
	275.25	0.8978	0.0678	0.1794
	280.00	0.9117	0.0685	0.1557
0.9D + 1.6W 97 mph Wind at 90° From Face	91.00	0.7305	0.9813	0.3225
	96.00	0.7595	1.0458	0.2993
	126.00	0.8601	0.7532	0.1757
	131.00	0.8688	0.7046	0.1269
	136.00	0.8819	0.6560	0.1205
	181.00	1.0038	0.3805	0.2235
	251.00	1.0993	0.1504	0.0584
	261.00	1.1157	0.1506	0.1113
	265.75	1.1258	0.1507	0.1390
	270.50	1.1365	0.1508	0.1301
	275.25	1.1473	0.1509	0.1605
	280.00	1.1582	0.1510	0.0606
0.9D + 1.6W 97 mph Wind at Normal To Face	91.00	0.8237	-0.2180	0.3719
	96.00	0.8519	-0.2165	0.3499
	126.00	0.9780	-0.2070	0.2241
	131.00	0.9947	-0.2055	0.1892
	136.00	1.0048	-0.2040	0.1433
	181.00	1.1603	-0.2062	0.2602
	251.00	1.2935	-0.1026	0.2063
	261.00	1.3131	-0.1007	0.1594
	265.75	1.3263	-0.1007	0.1603
	270.50	1.3401	-0.1006	0.1762
	275.25	1.3544	-0.1007	0.1520
	280.00	1.3724	-0.1025	0.2604

1.0D + 1.0W 60 mph Wind at 60° From Face	91.00	0.1026	0.2891	0.0463
	96.00	0.1077	0.3000	0.0456
	126.00	0.1165	0.2037	0.0403
	131.00	0.1157	0.1878	0.0140
	136.00	0.1178	0.1719	0.0066
	181.00	0.1302	0.0811	0.0380
	251.00	0.1357	0.0050	0.0260
	261.00	0.1373	0.0050	0.0149
	265.75	0.1387	0.0050	0.0186
	270.50	0.1403	0.0050	0.0190
	275.25	0.1418	0.0050	0.0220
	280.00	0.1435	0.0050	0.0239
1.0D + 1.0W 60 mph Wind at 90° From Face	91.00	0.1106	0.4022	0.0448
	96.00	0.1159	0.4107	0.0456
	126.00	0.1225	0.3001	0.0371
	131.00	0.1211	0.2817	0.0098
	136.00	0.1231	0.2634	0.0060
	181.00	0.1307	0.1516	0.0331
	251.00	0.1241	0.0273	0.0402
	261.00	0.1244	0.0272	0.0119
	265.75	0.1251	0.0272	0.0136
	270.50	0.1260	0.0272	0.0127
	275.25	0.1268	0.0272	0.0177
	280.00	0.1277	0.0272	0.0157
1.0D + 1.0W 60 mph Wind at Normal To Face	91.00	0.1025	0.1343	0.0446
	96.00	0.1076	0.1487	0.0453
	126.00	0.1161	0.0740	0.0381
	131.00	0.1149	0.0617	0.0142
	136.00	0.1166	0.0496	0.0031
	181.00	0.1242	-0.0126	0.0293
	251.00	0.1125	-0.0247	0.0151
	261.00	0.1110	-0.0244	0.0029
	265.75	0.1111	-0.0244	0.0022
	270.50	0.1114	-0.0244	0.0061
	275.25	0.1118	-0.0245	0.0015
	280.00	0.1131	-0.0250	0.0271
1.2D + 1.0Di + 1.0Wi 50 mph Wind at 60° From Face	91.00	0.1878	0.4678	0.0711
	96.00	0.1969	0.4637	0.0777
	126.00	0.2088	0.3185	0.0797
	131.00	0.2068	0.2943	0.0274
	136.00	0.2109	0.2701	0.0109
	181.00	0.2280	0.1339	0.0632
	251.00	0.2407	-0.0035	0.0498
	261.00	0.2412	-0.0017	0.0207
	265.75	0.2423	-0.0017	0.0208
	270.50	0.2440	-0.0016	0.0236
	275.25	0.2455	-0.0016	0.0234
	280.00	0.2478	-0.0033	0.0380
1.2D + 1.0Di + 1.0Wi 50 mph Wind at 90° From Face	91.00	0.2133	0.6121	0.0686
	96.00	0.2226	0.6061	0.0767
	126.00	0.2281	0.4497	0.0808
	131.00	0.2239	0.4237	0.0363
	136.00	0.2267	0.3976	0.0232
	181.00	0.2171	0.2451	0.0545
	251.00	0.1775	0.0713	0.1364
	261.00	0.1748	0.0715	0.0959
	265.75	0.1747	0.0717	0.0865
	270.50	0.1752	0.0718	0.0896
	275.25	0.1759	0.0719	0.0862
	280.00	0.1770	0.0720	0.1066

1.2D + 1.0Di + 1.0Wi 50 mph Wind at Normal From Face	91.00	0.2202	0.3394	0.0668
	96.00	0.2287	0.3379	0.0699
	126.00	0.2308	0.2089	0.0873
	131.00	0.2255	0.1875	0.0410
	136.00	0.2259	0.1660	0.0383
	181.00	0.1886	0.0500	0.0533
	251.00	0.0619	-0.0476	0.1125
	261.00	0.0395	-0.0462	0.1071
	265.75	0.0305	-0.0462	0.1083
	270.50	0.0218	-0.0463	0.1024
	275.25	0.0133	-0.0463	0.1096
	280.00	0.0068	-0.0477	0.0816
1.2D + 1.6W 97 mph Wind at 60° From Face	91.00	0.4862	0.5956	0.2306
	96.00	0.5065	0.6690	0.2075
	126.00	0.5735	0.4304	0.1187
	131.00	0.5787	0.3904	0.0868
	136.00	0.5876	0.3502	0.0760
	181.00	0.7014	0.1427	0.2250
	251.00	0.8390	0.0625	0.1172
	261.00	0.8615	0.0646	0.1470
	265.75	0.8746	0.0656	0.1650
	270.50	0.8883	0.0665	0.1653
	275.25	0.9023	0.0676	0.1801
	280.00	0.9163	0.0683	0.1570
1.2D + 1.6W 97 mph Wind at 90° From Face	91.00	0.7374	0.9962	0.3251
	96.00	0.7669	1.0598	0.3028
	126.00	0.8681	0.7618	0.1800
	131.00	0.8767	0.7124	0.1289
	136.00	0.8901	0.6629	0.1216
	181.00	1.0124	0.3830	0.2248
	251.00	1.1086	0.1500	0.0578
	261.00	1.1252	0.1502	0.1117
	265.75	1.1353	0.1504	0.1398
	270.50	1.1461	0.1505	0.1309
	275.25	1.1569	0.1506	0.1610
	280.00	1.1679	0.1507	0.0610
1.2D + 1.6W 97 mph Wind at Normal To Face	91.00	0.8305	-0.2040	0.3750
	96.00	0.8587	-0.2034	0.3535
	126.00	0.9861	-0.1991	0.2285
	131.00	1.0031	-0.1986	0.1914
	136.00	1.0132	-0.1979	0.1446
	181.00	1.1701	-0.2045	0.2621
	251.00	1.3053	-0.1038	0.2080
	261.00	1.3251	-0.1018	0.1612
	265.75	1.3384	-0.1018	0.1621
	270.50	1.3524	-0.1018	0.1781
	275.25	1.3668	-0.1018	0.1539
	280.00	1.3850	-0.1037	0.2627

Guyed Tower Base Design

Tower Engineering Solutions

			Date: 7/23/2018
Customer Name:	SBA Communications Corp	**EIA/TIA Standard:**	EIA-222-G
Site Name:		**Structure Height (Ft.):**	280
Site Nmber:	CT04877-A-SBA	**Engineer Name:**	F. Arinyedokiar
Engr. Number:	55576	**Engineer Login ID:**	

Foundation Info Obtained from: Drawings/Calculations

Structure Type: Guyed Tower

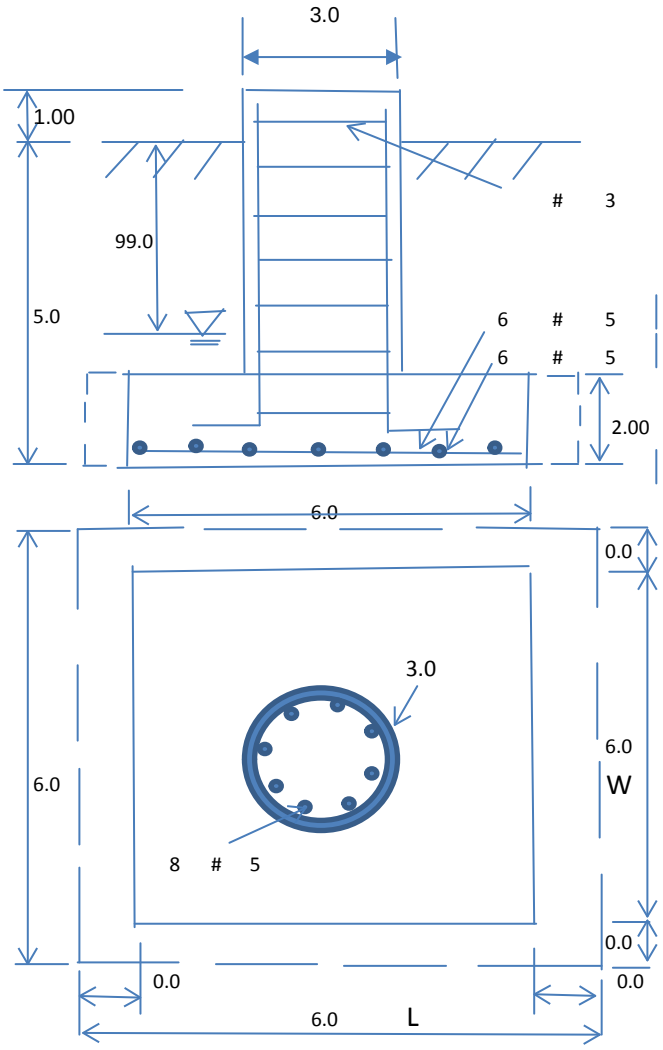
Analysis or Design? Analysis

Base Reactions (Factored):

Axial Load (Kips):	189.1	Shear Force (Kips):	2.9
Uplift Force (Kips):	0.0	Moment (Kips-ft):	
Allowable overstress %:	5.0%		

Foundation Geometries:

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	3.0	Depth of Base BG (ft.):	5.0
Pier Height A. G. (ft.):	1.00	Thickness of Pad (ft):	2.00
Length of Pad (ft.):	6	Width of Pad (ft.):	6
Final Length of pad (ft)	6.0	Final width of pad (ft):	6.0



Material Properties and Reabr Info:

Concrete Strength (psi):	3000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:	5	Tie / Stirrup Size #:	3	
Qty. of Vertical Rebars:	8	Tie Spacing (in):	12.0	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	5	
Concrete Cover (in.):	3	Unit Weight of Concrete:	150.0	pcf
Rebar at the bottom of the concrete pad:				
Qty. of Rebar in Pad (L):	6	Qty. of Rebar in Pad (W):	6	

Soil Design Parameters:

Soil Unit Weight (pcf):	125.0	Soil Buoyant Weight:	63.0	Pcf		
Water Table B.G.S. (ft):	99.0	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad:	30
Ultimate Bearing Pressure (psf):	30000	Ultimate Skin Friction:	0	Psf	Angle from Bottm of Pad:	30
					Angle from Bottm of Pad:	25

Foundation Analysis and Design: Uplift Strength Reduction Factor: 0.75 — Compression Strength Reduction Factor: 0.6

Total Dry Soil Volume (cu. Ft.):	86.79	Total Dry Soil Weight (Kips):	10.85
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	10.85	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	100.27	Total Dry Concrete Weight (Kips):	15.04
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	15.04	Total Vertical Load on Base (Kips):	214.99

Check Soil Capacities:

					Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	5654.2	<	Allowable Factored Soil Bearing (psf):	18000	0.31	OK!
Calculated Foundation Allowable Axail Capacity (Kips):	648.0	>	Design Factored Axial Load (Kips):	193	0.30	OK!

Check the capacities of Reinforceing Concrete:

Strength reduction factor (Flexure and axial tension):	0.90		Strength reduction factor (Shear):	0.75		
Strength reduction factor (Axial compresion):	0.65		Wind Load Factor on Concrete Design:	1.00		
					Load/ Capacity Ratio	
(1) Concrete Pier:						
Vertical Steel Rebar Area (sq. in./each):	0.31		Tie / Stirrup Area (sq. in./each):	0.11		
Calculated Moment Capacity (Mn,Kips-Ft):	163.2	>	Design Factored Moment (Mu, Kips-Ft	11.6	0.07	OK!
Calculated Shear Capacity (Kips):	115.3	>	Design Factored Shear (Kips):	2.9	0.03	OK!
Calculated Tension Capacity (Tn, Kips):	133.9	>	Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	1346.4	>	Design Factored Axial Load (Pu Kips):	189.1	0.14	OK!
Moment & Axial Strength Combination(Pu/Pn+Mu/Mn):	0.21	OK!				
Pier Reinforcement Ratio:	0.002					
(2).Concrete Pad:						
One-Way Design Shear Capacity (L-Dir. Kips);	122.4	>	One-Way Factored Shear (L-Dir Kips):	0.0	0.00	OK!
One-Way Design Shear Capacity (W-Dir. Kips):	122.4	>	One-Way Factored Shear (W-Dir Kips)	0.0	0.00	OK!
Two-Way Design Shear Capacity (Kips):	605.4	>	Two-Way Factored Shear (Kips):	96.4	0.16	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0012	OK!	Lower Steel Pad Reinf. Ratio (W-Direc	0.0012		OK!
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	170.6	>	Moment at Bottom (L-Direct. K-Ft):	36.1	0.21	OK!
Lower Steel Pad Moment Capacity (W-Dir. Kips-ft):	170.6	>	Moment at Bottom (W-Dir. Kips-Ft):	36.1	0.21	OK!

SITE NAME: WATERBURY/HILL ST.

207 GARDEN CIRCLE
WATERBURY, CT 06704

SITE NUMBER: CT11392B

PROJECT: T-MOBILE L600

CONFIGURATION: 67D94M

T-MOBILE TECHNICIAN SITE SAFETY NOTES

LOCATION	SPECIAL RESTRICTIONS
ANTENNA/TMA/RRU	
SECTOR A:	ACCESS NOT PERMITTED
SECTOR B:	ACCESS NOT PERMITTED
SECTOR C:	ACCESS NOT PERMITTED
GPS/LMU:	UNRESTRICTED*
	(*CAUTION: OSHA-APPROVED PORTABLE 8' STEP-LADDER REQUIRED)
RADIO CABINETS:	UNRESTRICTED
PPC DISCONNECT:	UNRESTRICTED
MAIN CIRCUIT D/C:	UNRESTRICTED
NIU/T DEMARC:	UNRESTRICTED
OTHER/SPECIAL:	NONE

GENERAL NOTES

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

SPECIAL CONSTRUCTION NOTES

1. TOWER OWNER SHALL PROVIDE GLOBAL STRUCTURAL STABILITY ANALYSIS OF EXISTING ANTENNA SUPPORT STRUCTURE. GENERAL CONTRACTOR SCOPE OF WORK SHALL INCLUDE TO FURNISH, INSTALL AND COMPLETE ALL REQUIRED STRUCTURAL MODIFICATIONS, RE-BUNDLING OF COAXIAL CABLES OR OTHER SPECIAL MODIFICATIONS AS OUTLINED THEREIN.
2. GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL SPECIAL OR SUPPLEMENTAL ADDITIONAL TOWER-MOUNTED EQUIPMENT PER RECOMMENDATIONS FROM SBA-PROVIDED TOWER STRUCTURAL ANALYSIS FOR ANY SPECIAL SHIELDING OF TOWER TOP EQUIPMENT AND FOR ANY SPECIAL FEEDLINE BUNDLING OR RELOCATION.
3. PROTERRA DESIGN GROUP ASSUMES THAT THE GUYED TOWER IS PROPERLY CONSTRUCTED AND MAINTAINED. ALL STRUCTURAL MEMBERS AND THEIR CONNECTION ARE ASSUMED TO BE IN GOOD CONDITION AND ARE FREE FROM DEFECTS WITH NO DETERIORATION TO ITS MEMBER CAPACITIES.

PROJECT INFORMATION

SCOPE OF WORK:	UNMANNED TELECOMMUNICATIONS FACILITY T-MOBILE EQUIPMENT MODERNIZATION
ZONING JURISDICTION:	SPECIAL ZONING NOTE (ELIGIBLE FACILITY REQUEST): BASED ON INFORMATION PROVIDED BY T-MOBILE REGULATORY COMPLIANCE PROFESSIONALS AND LEGAL COUNSEL, THIS TELECOMMUNICATIONS EQUIPMENT DEPLOYMENT IS CONSIDERED AN ELIGIBLE FACILITY UNDER THE MIDDLE CLASS TAX RELIEF AND JOB CREATION ACT OF 2012, 47 USC 1455(A), SECTION 6409(A), AND IS SUBJECT TO AN ELIGIBLE FACILITY REQUEST, EXPEDITED REVIEW AND LIMITED/PARTIAL ZONING PRE-EMPTION FOR LOCAL DISCRETIONARY PERMITS (VARIANCE, SPECIAL PERMIT, SITE PLAN REVIEW OR ADMINISTRATIVE REVIEW).
SITE ADDRESS:	207 GARDEN CIRCLE WATERBURY, CT 06704
LATITUDE:	41° 34' 11.00" N (41.5697°) (FROM SBA RECORD)
LONGITUDE:	73° 01' 03.00" W (-73.0175°) (FROM SBA RECORD)
JURISDICTION:	CITY OF WATERBURY / CSC SITING COUNCIL
BUILDING CODE:	2016 CONNECTICUT STATE BUILDING CODE WITH AMENDMENTS (IBC 2012 BASED)
ELECTRICAL CODE:	2014 NATIONAL ELECTRICAL CODE AND AMENDMENTS
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY
TOWER OWNER:	SBA PROPERTIES, LLC
SBA SITE ID:	CT04877-A
SBA SITE NAME:	WATERBURY 2, CT
SBA REGIONAL SITE MANAGER:	STEPHEN ROTH (860) 539-4920

APPROVALS

PROJECT MANAGER	DATE
CONSTRUCTION	DATE
RF ENGINEERING	DATE
ZONING / SITE ACQ.	DATE
OPERATIONS	DATE
TOWER OWNER	DATE

DIG SAFE SYSTEM
(MA, ME, NH, RI, VT):
1-888-344-7233

CALL BEFORE YOU DIG
(CT): 1-800-922-4455

UNDERGROUND SERVICE ALERT

DRAWING INDEX

SHEET NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	0
Z-1	COMPOUND PLAN & ELEVATION	0
Z-2	EXISTING & PROPOSED ANTENNA PLAN	0

T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860) 648-1116

SBA COMMUNICATIONS CORP.
134 FLANDERS ROAD, SUITE 125
WESTBOROUGH, MA 01581 TEL: (508) 251-0720

ProTerra DESIGN GROUP, LLC
4 Bay Road, Building A
Suite 200
Hadley, MA 01035 TEL: (413) 320-4918

STATE OF CONNECTICUT
THOMAS E. JOHNSON
No. 28192
LICENSED PROFESSIONAL ENGINEER
8/30/18

CHECKED BY: JMM/TEJ

APPROVED BY: JMM/TEJ

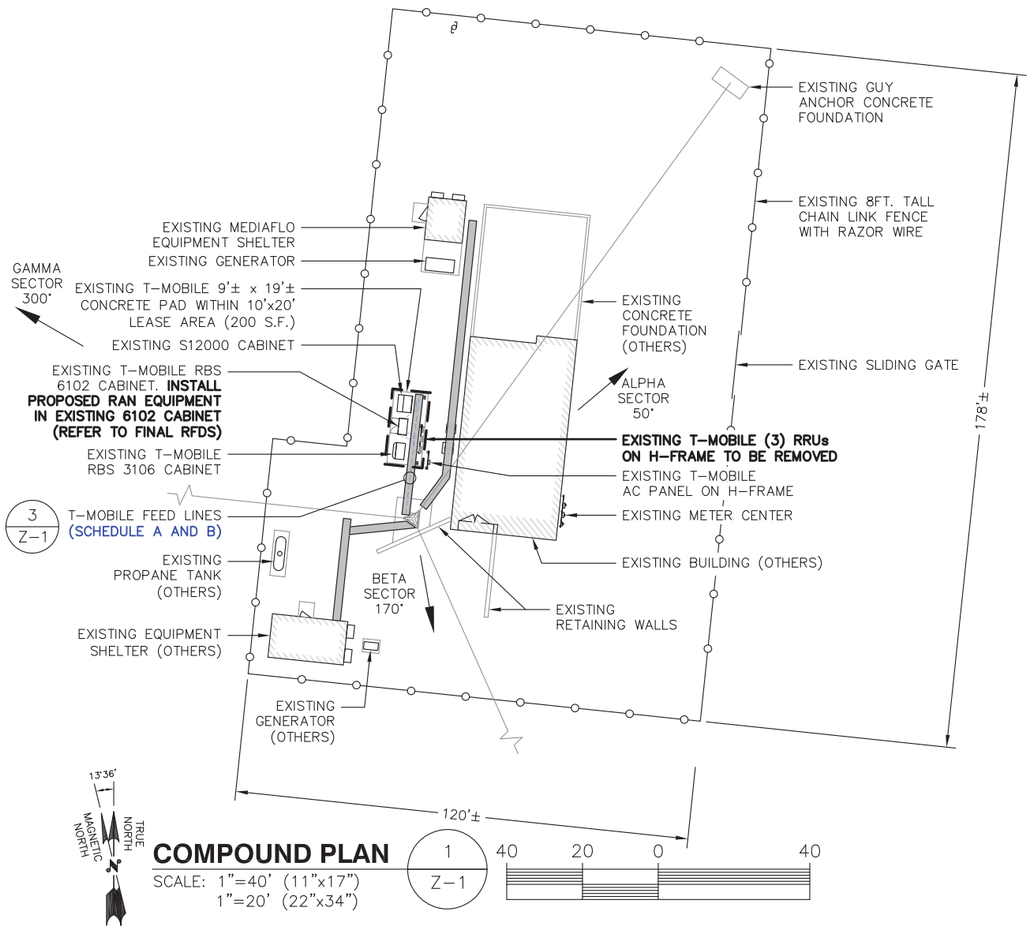
SUBMITTALS

REV.	DATE	DESCRIPTION	BY
0	08/30/18	FOR PERMITTING	PN

SITE NUMBER:
CT11392B
SITE NAME:
WATERBURY/HILL ST.
SITE ADDRESS:
207 GARDEN CIRCLE
WATERBURY, CT 06704

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1



COMPOUND PLAN

SCALE: 1"=40' (11"x17")
1"=20' (22"x34")

1 / Z-1

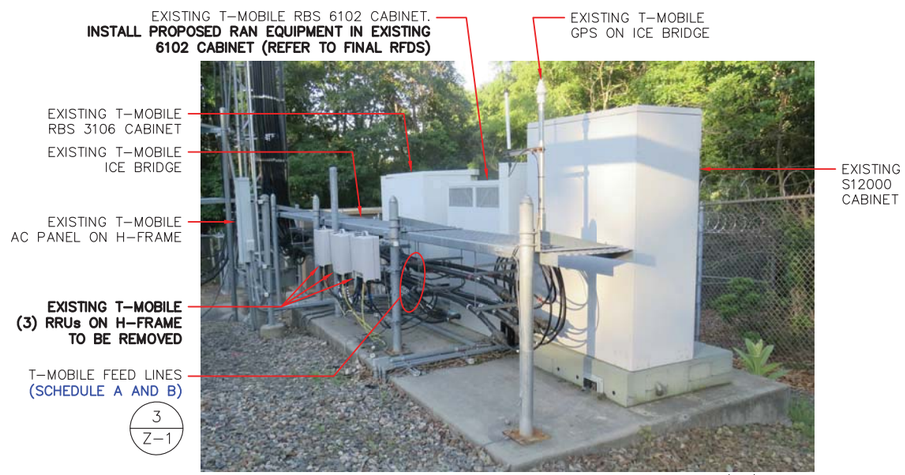


IMAGE SOURCE: PROTERRA 06/16/2018

EQUIPMENT PHOTO DETAIL

SCALE: N.T.S.

2 / Z-1

ALL Z-2 — ℄ OF PROPOSED T-MOBILE ANTENNAS
ELEV.= 182'± AGL (SBA DATABASE)

EXISTING 277'± (SBA DATABASE) GUYED TOWER

T-MOBILE FEED LINES (SCHEDULE A AND B)
3 / Z-1

IMAGE SOURCE: PROTERRA 06/16/2018

PARTIAL ELEVATION PHOTO DETAIL

SCALE: N.T.S.

4 / Z-1

FEEDLINE SCHEDULE	FEEDLINE DESCRIPTION	LOCATION
A	EXISTING TO REMAIN: (12) 1⅝" COAX TO 182' RAD	UP GUYED TOWER TO RAD
B	PROPOSED: (2) 6 X 12 HYBRID TO 182' RAD	UP GUYED TOWER TO RAD

NOTE: EXISTING T-MOBILE EQUIPMENT FEEDLINE INVENTORY BASED ON OBSERVED FIELD CONDITIONS. RFDS AND FEEDLINE LEASING ENTITLEMENTS MAY DIFFER

T-MOBILE FEED LINES

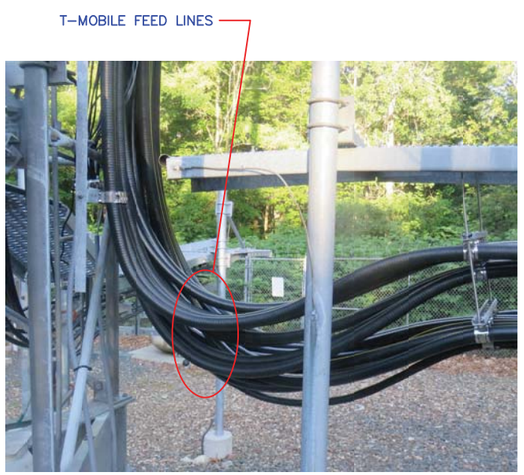


IMAGE SOURCE: PROTERRA 06/16/2018

FEEDLINE PHOTO DETAIL AT TOWER BASE

SCALE: N.T.S.

3 / Z-1

T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
OFFICE: (860) 648-1116

SBA COMMUNICATIONS CORP.
134 FLANDERS ROAD, SUITE 125
WESTBOROUGH, MA 01581 TEL: (508) 251-0720

ProTerra DESIGN GROUP, LLC
4 Bay Road, Building A
Suite 200
Hadley, MA 01035 (413) 320-4918

STATE OF CONNECTICUT
THOMAS E. JOHNSON
No. 28192
LICENSED PROFESSIONAL ENGINEER
8/30/18

CHECKED BY: JMM/TEJ

APPROVED BY: JMM/TEJ

SUBMITTALS

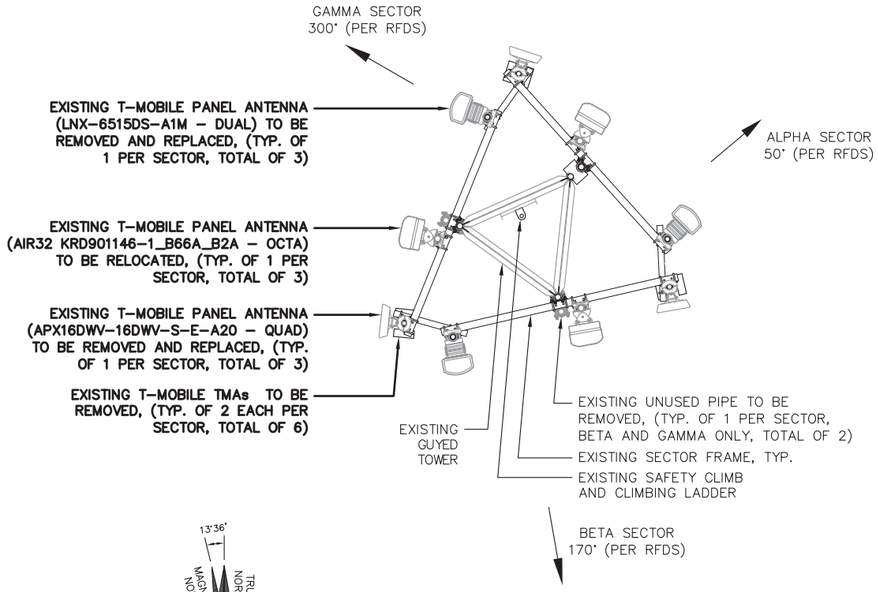
REV.	DATE	DESCRIPTION	BY
0	08/30/18	FOR PERMITTING	PN

SITE NUMBER:
CT11392B
SITE NAME:
WATERBURY/HILL ST.

SITE ADDRESS:
207 GARDEN CIRCLE
WATERBURY, CT 06704

SHEET TITLE
COMPOUND PLAN & ELEVATION

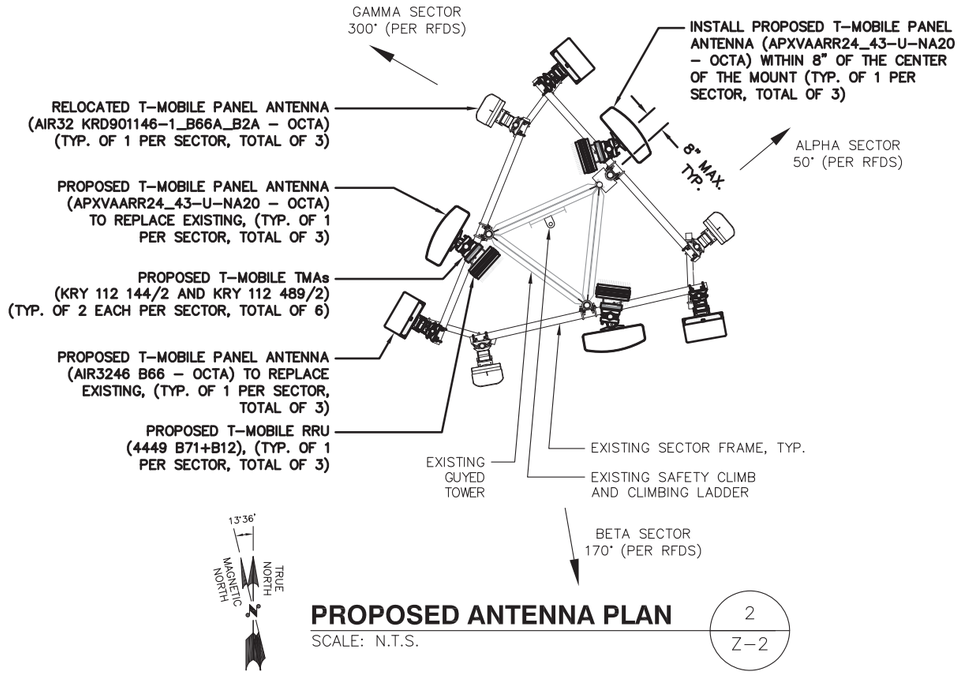
SHEET NUMBER
Z-1



EXISTING ANTENNA PLAN

SCALE: N.T.S.

1 / Z-2



PROPOSED ANTENNA PLAN

SCALE: N.T.S.

2 / Z-2

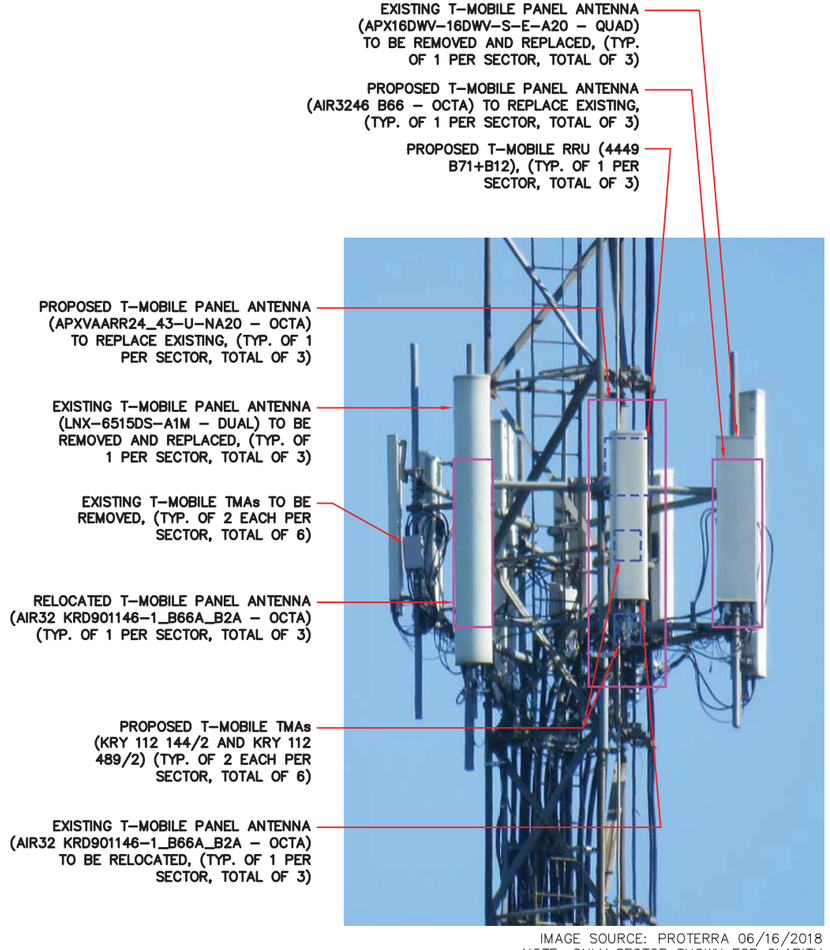


IMAGE SOURCE: PROTERRA 06/16/2018
NOTE: ONLY SECTOR SHOWN FOR CLARITY

ANTENNA PHOTO DETAIL

SCALE: N.T.S.

3 / Z-2

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SHEET TITLE
EXISTING & PROPOSED ANTENNA PLAN

SHEET NUMBER
Z-2