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 28, 2016

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

Notice of Exempt Modification
299 Sheffield Street, Waterbury, CT 06704
41 35 38.72 N
-73 3 2.04 W
AT&T #: 10035415_LTE - CT1125

Dear Ms. Bachman:

AT&T currently maintains nine (9) antennas at the 137-foot level of the existing 158-foot Monopole Tower at 299 Sheffield Street, Waterbury, CT. The tower is owned by SBA Towers, LLC. The property is owned by Level Development Corporation. AT&T now intends to swap three (3) existing LTE Antennas with three (3) newer technology LTE antennas. These antennas would be installed at the 137-foot level of the tower. AT&T's proposed full scope of work is as follows:

Remove:

- (3) Ericsson RRUS E2

Remove and Replace:

- Swap (3) Kathrein 800 10121 Panel Antennas with (3) Quintel QS66512-2 Panel Antennas

Install:

- (3) CCI DTMABP7819VG12A – TMAs
- (3) Ericsson RRUS 32 B2

Existing Equipment to Remain (including entitlements):

- (6) CCI HPA-65R-BUU-H8 Panel Antennas - (3) are entitlements only
- (3) KMW AM-X-CD-16-65-OOT Panel Antennas
- (3) CCI DTMABP7819VG12A – TMAs
- (6) Ericsson RRUS 11
- (6) Ericsson RRUS 12
- (3) Ericsson RRUS 32
- (6) Ericsson RRUS A2
- (3) Raycap DC6-48-60-18-8F
- (12) 1-5/8" Coax
- (2) ½" Fiber
- (4) ¾" DC
- (1) Nokia CS72188.01 – Omni (Direct Mount at 122') w/ (1) ½" Coax

This facility was approved February 19, 2002 by the Zoning Board of Appeals following endorsement of a Stipulation of Judgment that required lines between the station and the street to be underground so as to allow above-ground wires to the tower on the site for property located at 299 Sheffield Street. On January 10, 2008, the CSC required that proposed coax be installed inside of the monopole. There were no other noted restrictions. This modification complies with all conditions.

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 Neil M. O'Leary, Mayor of the City of Waterbury, as well as the property owner. (Separate notice is not being sent to tower owner, as it belongs to 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, AT&T 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
203.446.7700 + C
kpelletier@sbasite.com

Attachments
cc: The Honorable Neil M. O'Leary -- as elected official
The City of Waterbury, City Hall Building, 235 Grand St., Waterbury, CT 06702
Level Development Corporation – as property owner
293 Sheffield Street, Waterbury, CT 06704

POWER DENSITY

AT&T Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	KMW AM-X-CD-16-65-00T-RET	Make / Model:	KMW AM-X-CD-16-65-00T-RET	Make / Model:	KMW AM-X-CD-16-65-00T-RET
Gain:	13.85 / 15.25 dBd	Gain:	13.85 / 15.25 / 0/0 dBd	Gain:	13.85 / 15.25 / 0/0 dBd
Height (AGL):	**137 feet**	Height (AGL):	**137 feet**	Height (AGL):	**137 feet**
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts
ERP (W):	3,465.76	ERP (W):	3,465.76	ERP (W):	3,465.76
Antenna A1 MPE%	**0.96 %**	Antenna B1 MPE%	**0.96 %**	Antenna C1 MPE%	**0.96 %**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	CCI OPA-65R-LCUU-H6	Make / Model:	CCI OPA-65R-LCUU-H6	Make / Model:	CCI OPA-65R-LCUU-H6
Gain:	12.45 / 15.45 dBd	Gain:	12.45 / 15.45 dBd	Gain:	12.45 / 15.45 dBd
Height (AGL):	**137 feet**	Height (AGL):	**137 feet**	Height (AGL):	**137 feet**
Frequency Bands	850 MHz / 2300 MHz (WCS)	Frequency Bands	850 MHz / 2300 MHz (WCS)	Frequency Bands	850 MHz / 2300 MHz (WCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	180 Watts	Total TX Power(W):	180 Watts	Total TX Power(W):	180 Watts
ERP (W):	5,263.78	ERP (W):	5,263.78	ERP (W):	5,263.78
Antenna A2 MPE%	**1.27 %**	Antenna B2 MPE%	**1.27 %**	Antenna C2 MPE%	**1.27 %**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	Quintel QS66512-2	Make / Model:	Quintel QS66512-2	Make / Model:	Quintel QS66512-2
Gain:	10.85 / 13.85 dBd	Gain:	10.85 / 13.85 dBd	Gain:	10.85 / 13.85 dBd
Height (AGL):	**137 feet**	Height (AGL):	**137 feet**	Height (AGL):	**137 feet**
Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts
ERP (W):	4,371.36	ERP (W):	4,371.36	ERP (W):	4,371.36
Antenna A3 MPE%	**1.26 %**	Antenna B3 MPE%	**1.26 %**	Antenna C3 MPE%	**1.26 %**

Site Composite MPE%	
Carrier	**MPE%**
AT&T – Max per sector	**3.50 %**
MetroPCS	0.53 %
Verizon Wireless	2.03 %
Clearwire	0.13 %
Nextel	0.94 %
Site Total MPE %:	**7.13 %**

AT&T Sector A Total:	3.50 %
AT&T Sector B Total:	3.50 %
AT&T Sector C Total:	3.50 %
Site Total:	7.13 %

AT&T _ Frequency Band / Technology	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
AT&T 850 MHz UMTS	2	727.98	137	3.05	850 MHz	567	0.54%
AT&T 1900 MHz (PCS) UMTS	2	1,004.90	137	4.21	1900 MHz (PCS)	1000	0.42%
AT&T 850 MHz GSM	2	527.38	137	2.21	850 MHz	567	0.39%
AT&T 2300 MHz (WCS) LTE	2	2,104.51	137	8.82	2300 MHz (WCS)	1000	0.88%
AT&T 700 MHz LTE	2	729.71	137	3.06	700 MHz	467	0.65%
AT&T 1900 MHz (PCS) LTE	2	1,455.97	137	6.10	1900 MHz (PCS)	1000	0.61%
						Total:	3.50%

WTBY REVALUATION 2012

UNIQUE ID: 004709830006 **Card No:** 1 of 1

LOCATION:	SHEFFIELD ST	Map/Block/Lot:	0047-0983-0006	Date Printed	08/23/2016
911 ADDRESS:		Zoning	RL	Neighborhood	85000	Last Update	04/11/2016

OWNER OF RECORD

OWNER OF RECORD	VOLUME / PAGE	DATE	SALES TYPE	VALID	SELLING PRICE
LEVEL DEVELOPMENT CORPORATION	5739 231	Apr/25/2006	Quit Claim	NO	0
Care of:					
293 SHEFFIELD ST WATERBURY CT 06704					

PRIOR OWNER HISTORY

HYCHKO JOHN					

THIS DOCUMENT WAS PREPARED FOR ASSESSMENT PURPOSES ONLY — Revaluation Date: 10/01/2012

PERMIT NUMBER	DATE	COST	NEW HSE	STATUS	% COMP	CO ISSUED	DATE OF CERT	REASON FOR CHANGE
2013.0309	Aug/09/2013	0	NO	Open	0			REPLACE EXISTING 6X6 PAD WITH 9X10 CONCRETE P
2012.1784	Jun/29/2012	15,000	NO	Closed	100			REPLACE 6 ANTENENNAS ON TOWER/SUPPORT EQUIPME

STATE ITEM CODES

Census	
Dev Map	
Dev Lot	
Inspection Date	01/23/2013
Inspector	
Data Entry	

Code	Quanity	Value	Code	Quanity	Value
53	25.00	622,390			
55	1.00	2,090			

APPRAISED VALUE

Total Land Value	889,132
Total Building Value	0
Total Outbuilding Value	2,980
Total Market Value	892,112

ACRES

Land Type	Acres	490	Rate	Adj	Influence	Total Value
Primary Site	25.00	0.00	117,610	0.36	-16	889,132
Total	25.00					889,132

INFLUENCE FACTORS

Land Type	Influence	Reason	Comment

ASSESSMENT HISTORY (PRIOR YEARS AS OF OCT 1)

	Current	2015	2014	2013	2012
Land	622,390	622,390	622,390	622,390	622,390
Building	0	0	0	0	0
Outbuilding	2,090	2,090	2,090	2,090	2,090
Total	624,480	624,480	624,480	624,480	624,480

LAND SUMMARY

Land if 490 not applied	889,132

COMMENTS

EBI Consulting
environmental | engineering | due diligence

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

AT&T Existing Facility

Site ID: CT1125

North Waterbury
299 Sheffield Street
Waterbury, CT 06704

September 20, 2016

EBI Project Number: 6216004151

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	7.13 %

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

EBI Consulting
environmental | engineering | due diligence

September 20, 2016

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

Emissions Analysis for Site: **CT1125 – North Waterbury**

EBI Consulting was directed to analyze the proposed AT&T facility located at **299 Sheffield Street, Waterbury, CT**, for the purpose of determining whether the emissions from the Proposed AT&T Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

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

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 700 and 850 MHz Bands are approximately 467 $\mu W/cm^2$ and 567 $\mu W/cm^2$ respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed AT&T Wireless antenna facility located at **299 Sheffield Street, Waterbury, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

1) 2 UMTS channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

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

3) 2 GSM channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

4) 2 LTE channels (2300 MHz (WCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

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

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

7) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

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

9) The antennas used in this modeling are the **KMW AM-X-CD-16-65-00T-RET, CCI OPA-65R-LCUU-H6 and the Quintel QS66512-2** for transmission in the 700 MHz, 850 MHz, 1900 MHz (PCS) and 2300 MHz (WCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

10) The antenna mounting height centerlines of the proposed antennas are **137 feet** above ground level (AGL) for **Sector A**, **137 feet** above ground level (AGL) for **Sector B** and **137 feet** above ground level (AGL) for Sector C.

11) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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

AT&T Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	KMW AM-X-CD-16-65-00T-RET	Make / Model:	KMW AM-X-CD-16-65-00T-RET	Make / Model:	KMW AM-X-CD-16-65-00T-RET
Gain:	13.85 / 15.25 dBd	Gain:	13.85 / 15.25 / 0/0 dBd	Gain:	13.85 / 15.25 / 0/0 dBd
Height (AGL):	**137 feet**	Height (AGL):	**137 feet**	Height (AGL):	**137 feet**
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts
ERP (W):	3,465.76	ERP (W):	3,465.76	ERP (W):	3,465.76
Antenna A1 MPE%	**0.96 %**	Antenna B1 MPE%	**0.96 %**	Antenna C1 MPE%	**0.96 %**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	CCI OPA-65R-LCUU-H6	Make / Model:	CCI OPA-65R-LCUU-H6	Make / Model:	CCI OPA-65R-LCUU-H6
Gain:	12.45 / 15.45 dBd	Gain:	12.45 / 15.45 dBd	Gain:	12.45 / 15.45 dBd
Height (AGL):	**137 feet**	Height (AGL):	**137 feet**	Height (AGL):	**137 feet**
Frequency Bands	850 MHz / 2300 MHz (WCS)	Frequency Bands	850 MHz / 2300 MHz (WCS)	Frequency Bands	850 MHz / 2300 MHz (WCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	180 Watts	Total TX Power(W):	180 Watts	Total TX Power(W):	180 Watts
ERP (W):	5,263.78	ERP (W):	5,263.78	ERP (W):	5,263.78
Antenna A2 MPE%	**1.27 %**	Antenna B2 MPE%	**1.27 %**	Antenna C2 MPE%	**1.27 %**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	Quintel QS66512-2	Make / Model:	Quintel QS66512-2	Make / Model:	Quintel QS66512-2
Gain:	10.85 / 13.85 dBd	Gain:	10.85 / 13.85 dBd	Gain:	10.85 / 13.85 dBd
Height (AGL):	**137 feet**	Height (AGL):	**137 feet**	Height (AGL):	**137 feet**
Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts
ERP (W):	4,371.36	ERP (W):	4,371.36	ERP (W):	4,371.36
Antenna A3 MPE%	**1.26 %**	Antenna B3 MPE%	**1.26 %**	Antenna C3 MPE%	**1.26 %**

Site Composite MPE%	
Carrier	**MPE%**
AT&T – Max per sector	**3.50 %**
MetroPCS	0.53 %
Verizon Wireless	2.03 %
Clearwire	0.13 %
Nextel	0.94 %
Site Total MPE %:	**7.13 %**

AT&T Sector A Total:	3.50 %
AT&T Sector B Total:	3.50 %
AT&T Sector C Total:	3.50 %
Site Total:	7.13 %

AT&T _ Frequency Band / Technology	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
AT&T 850 MHz UMTS	2	727.98	137	3.05	850 MHz	567	0.54%
AT&T 1900 MHz (PCS) UMTS	2	1,004.90	137	4.21	1900 MHz (PCS)	1000	0.42%
AT&T 850 MHz GSM	2	527.38	137	2.21	850 MHz	567	0.39%
AT&T 2300 MHz (WCS) LTE	2	2,104.51	137	8.82	2300 MHz (WCS)	1000	0.88%
AT&T 700 MHz LTE	2	729.71	137	3.06	700 MHz	467	0.65%
AT&T 1900 MHz (PCS) LTE	2	1,455.97	137	6.10	1900 MHz (PCS)	1000	0.61%
						Total:	3.50%

Summary

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

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

AT&T Sector	Power Density Value (%)
Sector A:	3.50 %
Sector B:	3.50 %
Sector C:	3.50 %
AT&T Maximum Total (per sector):	3.50 %
Site Total:	7.13 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **7.13 %** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Tower Engineering Solutions
Phone (972) 483-0607, Fax (972) 975-9615
8445 Freeport Parkway, Suite 375, Irving, Texas 75063

Structural Analysis Report

Existing 158 ft SUMMIT Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT02722-S

Customer Site Name: Waterbury

Carrier Name: AT&T

Carrier Site ID / Name: FA# 10035415 USID# CT1125

Site Location: 299 Sheffield Street

Waterbury, Connecticut

New Haven County

Latitude: 41.594089

Longitude: -73.050567

Analysis Result:

Max Structural Usage: 64.8% [Pass]

Max Foundation Usage: 51.7% [Pass]

Report Prepared By: Farzam Yazdani

9/21/16

Introduction

The purpose of this report is to summarize the analysis results on the 158 ft SUMMIT Monopole 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	Summit Manufacturing, LLC. DWG.No. 9302-01, dated 08/23/2000.
Foundation Drawing	Summit Manufacturing, LLC. Job No. 9302-A530, dated 08/23/2000.
Geotechnical Report	N/A
Modification Drawings	N/A

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 **TESPoles,** 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:	C
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft
Seismic Parameters:	S_S = 0.189, S_1 = 0.064

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	Elevation (ft.)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	158.0	3	RFS APXV18-206517S-C	(1) Low Profile Platform	(6) 1-5/8"	Pocket
2	148.0	1	RFS Celwave DB-T1-6Z-8AB-0Z	(1) Low Profile Platform	(12) 1-5/8" (1) 1-5/8" Hybrid	Verizon
3		6	Andrew DB844G65ZAXY – Panel			
4		6	RFS Celwave FD9R6004/2C-3L			
5		6	Commscope HBXX-6517DS-A2M – Panel			
6		1	Andrew LNX-4514DS-A1M – Panel			
7		2	Andrew LNX-6514DS-A1M – Panel			
8		3	ALU RRH 2x60-aws – RRU			
9		3	ALU RRH 60 W-PCS – RRU			
10	137.0	3	Kathrein 800 10121 – Panel	(1) Platform w/ Hand Rails (Commscope P/N MTC3607)	(6) 1-5/8" (2) 1/2" Fiber (8) 3/4" DC	AT&T
11		3	Raycap DC6-48-60-18-8F			
12		3	CCI DTMABP7819VG12A			
13		9	CCI HPA-65R-BUU-H8 – Panel			
14		6	Ericsson RRUS 11 – RRU			
15		6	Ericsson RRUS 12 – RRU			
16		3	Ericsson RRUS 32 – RRU			
17		6	Ericsson RRUS A2 – RRU			
18		3	Ericsson RRUS-E2 – RRU			
19	127.0	2	Dragonwave A-ANT-23G-2.0-C – Dish	(1) Low Profile Platform	(12) 1-1/4" (6) 5/16" (2) 1/2"	Sprint/ Clearwire
20		9	Decibel DB844H90E-XY – Panel			
21		3	Argus LLPX310R			
22		3	Samsung U-RAS – RRH			
23	122.0	1	Nokia CS72188.01 – Omni	Direct Mount	(1) 1/2" Coax	AT&T

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
1	137.0	3	Quintel QS66512-2 – Panel	(1) Platform w/ Hand Rails (Commscope P/N MTC3607)	(12) 1-5/8" Coax (2) 1/2" Fiber (4) 3/4" DC	AT&T
2		3	CCI HPA-65R-BUU-H8 – Panel			
3		3	CCI OPA-65R-LCUU-H6 – Panel			
4		3	KMW AM-X-CD-16-65-OOT – Panel			
5		6	CCI DTMABP7819VG12A – TMA			
6		6	Ericsson RRUS-11 – RRU			
7		6	Ericsson RRUS-12 – RRU			
8		3	Ericsson RRUS 32 B2 – RRU			
9		3	Ericsson RRUS-32 – RRU			
10		6	Ericsson RRU A2 – RRU			
11		3	Raycap DC6-48-60-18-8F			
12	122.0	1	Nokia CS72188.01 – Omni	Direct Mount	(1) 1/2" Coax	

All transmission lines are considered running inside of the pole shafts.

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:

	Pole shafts	Anchor Bolts	Base Plate
Max. Usage:	**64.8%**	**62.2%**	**45.6%**
Pass/Fail	**Pass**	**Pass**	**Pass**

Foundations

	Moment (Kip-Ft)	Shear (Kips)
Original Design Reactions	5150.0	44.0
Analysis Reactions	4293.9	37.3
Factored Reactions*	6952.5	59.4
% of Design Reactions	61.8%	62.8%

* Per section 15.5.1 of the TIA-222-G standard, factored reactions were obtained by multiplying a 1.35 factor to the original design reactions.

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)
127.0	Dragonwave A-ANT-23G-2.0-C – Dish	Sprint/Clearwire	0.000	1.089

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.

Usage Diagram - Max Ratio 64.75% at 83.5ft

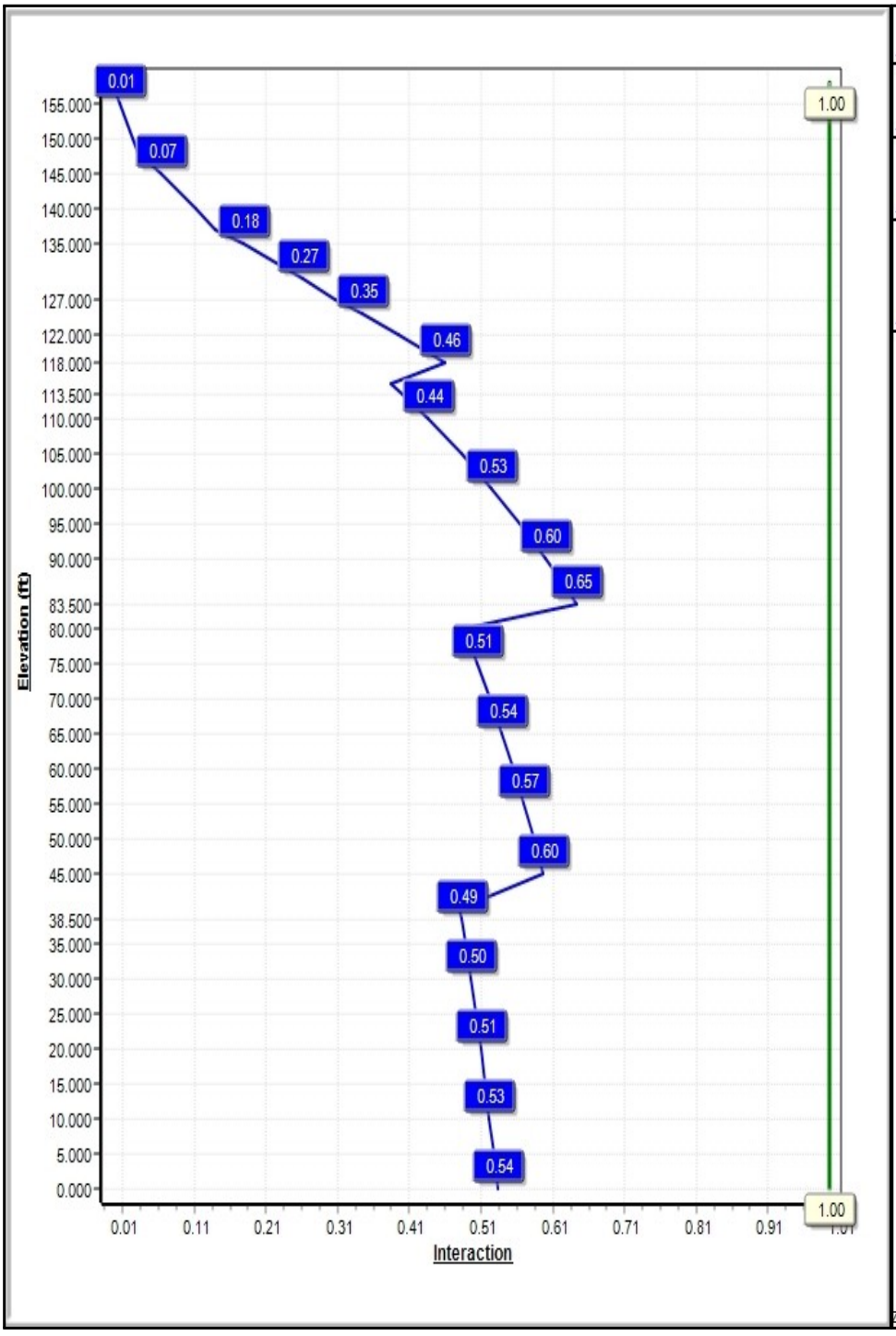
Structure:	CT02722-S-SBA	**Code:**	EIA/TIA-222-G	9/21/2016
Site Name:	Waterbury	**Exposure:**	C	
Height:	158.00 (ft)	**Gh:**	1.1	
Base Elev:	0.000 (ft)			Page: 1

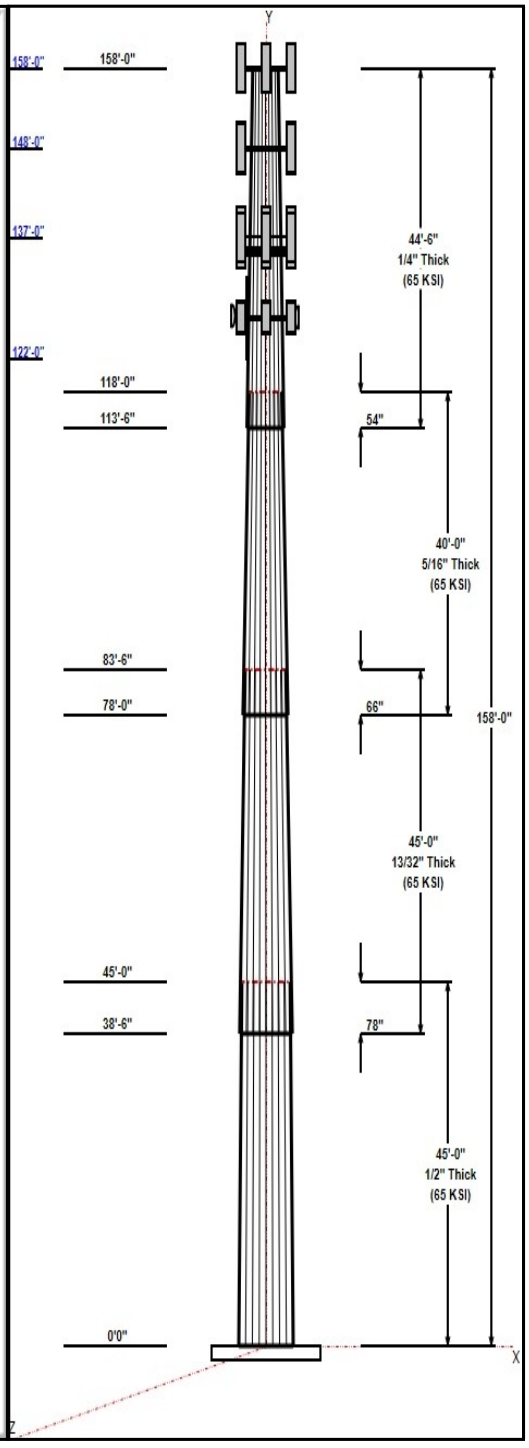
Tower Engineering Solutions

Dead Load Factor:	1.20
Wind Load Factor:	1.60

Load Case : 1.2D + 1.6W 97 mph Wind

Iterations: 23





Structure: CT02722-S-SBA

Type: Tapered
Site Name: Waterbury
Height: 158.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.23998

9/21/2016

Tower Engineering Solutions

Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	45.00	49.18	59.98	0.500		0.23998	65
2	45.00	40.75	51.55	0.406	Slip	0.23998	65
3	40.00	33.10	42.70	0.313	Slip	0.23998	65
4	44.50	24.00	34.68	0.250	Slip	0.23998	65

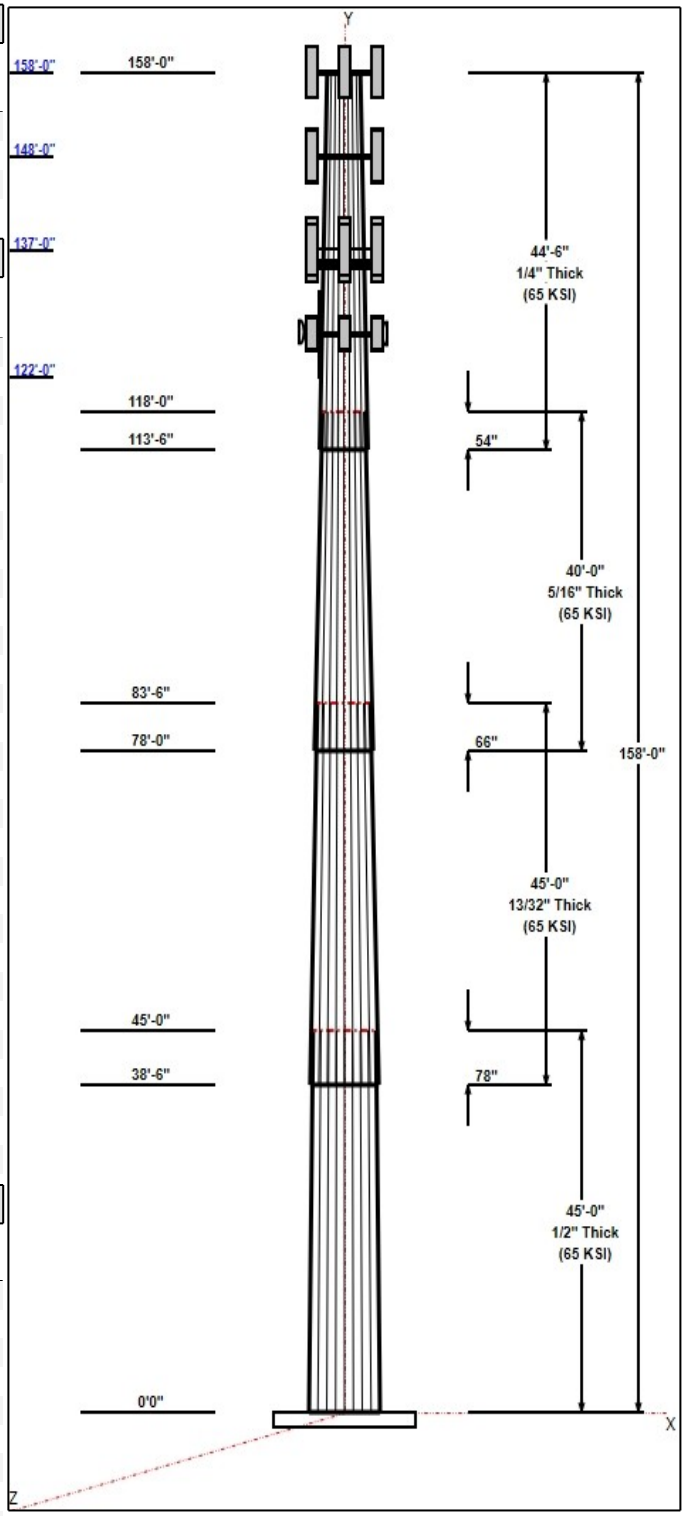
Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
158.00	158.00	3	APXV18-206517S-C	Pocket
158.00	158.00	1	Low Profile Platform	Pocket
148.00	148.00	6	HBXX-6517DS-R2M	Verizon
148.00	148.00	6	DB844G65ZAXY	Verizon
148.00	148.00	1	LNX-4514DS-A1M	Verizon
148.00	148.00	2	LNX-6514DS-A1M	Verizon
148.00	148.00	3	RRH 60 W-PCS	Verizon
148.00	148.00	3	RRH 2x60-aws	Verizon
148.00	148.00	6	FD9R6004/2C-3L	Verizon
148.00	148.00	1	DB-T1-6Z-8AB-0Z	Verizon
148.00	148.00	1	Low Profile Platform	Verizon
137.00	137.00	3	CCI OPA-65R-LCUU-H6	AT&T
137.00	137.00	3	KMW	AT&T
137.00	137.00	3	Ericsson RRUS 32 B2	AT&T
137.00	137.00	3	CCI HPA-65R-BUU-H8	AT&T
137.00	137.00	6	CCI DTMABP7819VG12A	AT&T
137.00	137.00	6	Ericsson RRUS-11	AT&T
137.00	137.00	6	Ericsson RRUS-12	AT&T
137.00	137.00	6	Ericsson RRU A2	AT&T
137.00	137.00	3	Ericsson RRUS-32	AT&T
137.00	137.00	3	Quintel QS66512-2	AT&T
137.00	137.00	3	DC6-48-60-18-8F	AT&T
137.00	137.00	1	Platform w/ Hand Rails	AT&T
127.00	127.00	9	DB844H90E-XY	Sprint/Clearwire
127.00	127.00	3	LLPX310R	Sprint/Clearwire
127.00	127.00	3	U-RAS RRH's	Sprint/Clearwire
127.00	127.00	2	A-ANT-23G-2.0-C	Sprint/Clearwire
127.00	127.00	1	Low Profile Platform	Sprint/Clearwire
122.00	127.00	1	CS72188.01 Omni	AT&T

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	158.00	Inside	1-5/8"	Pocket
0.00	148.00	Inside	1-5/8"	Verizon
0.00	148.00	Inside	1-5/8" Hybrid	Verizon
0.00	137.00	Inside	1-5/8" Coax	AT&T
0.00	137.00	Inside	1/2" Fiber	AT&T
0.00	137.00	Inside	3/4" DC	AT&T
0.00	127.00	Inside	1-1/4"	Sprint
0.00	127.00	Inside	1/2"	Sprint
0.00	127.00	Inside	5/16"	Sprint
0.00	122.00	Inside	1/2" Coax	AT&T

Anchor Bolts



Qty	Specifications	Grade (ksi)	Arrangement
20	2.25" 18J	75.0	Cluster

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
3.2500	66.0	60.0	Clipped

Reactions

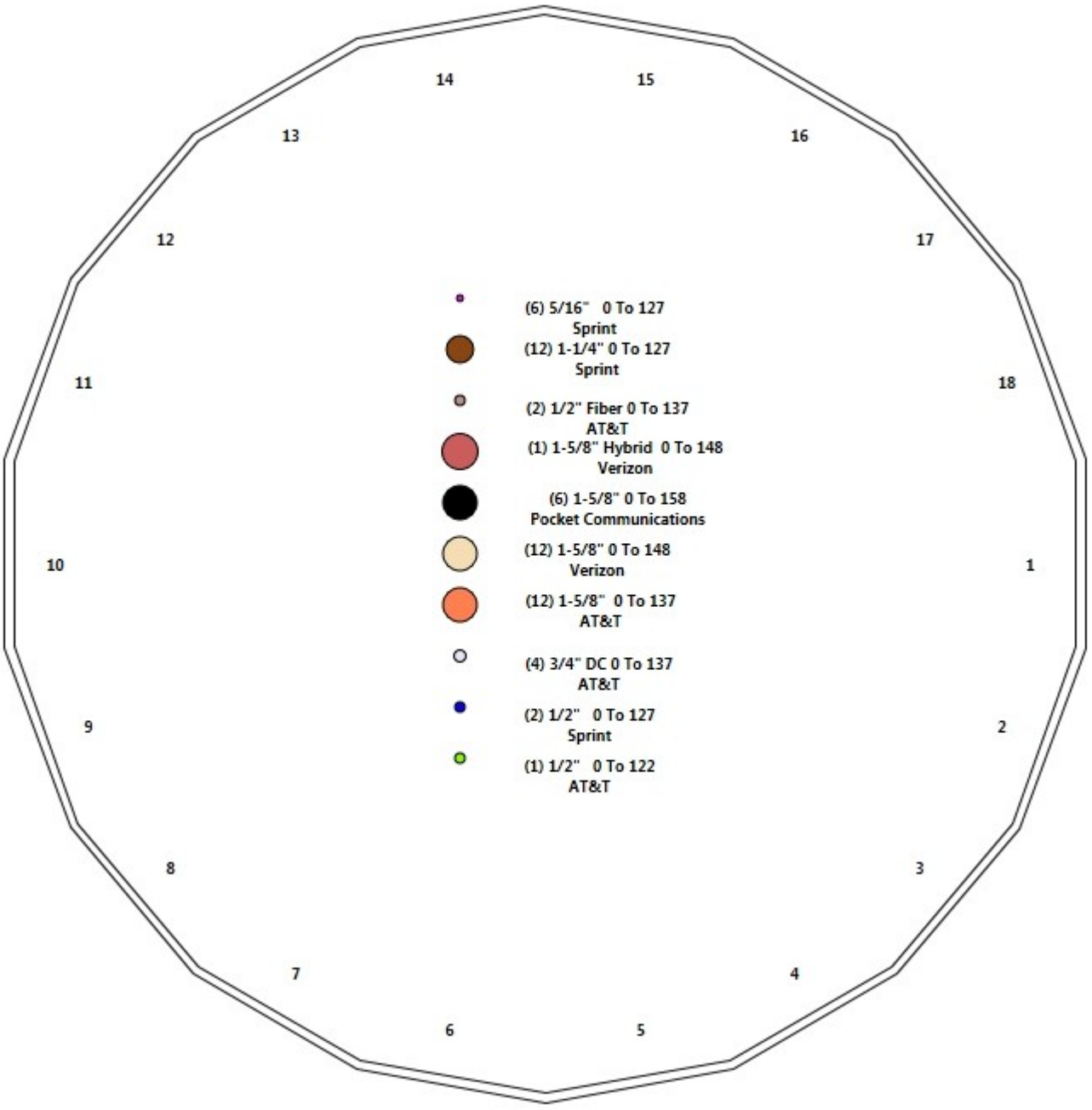
Load Case	Moment	Shear	Axial
1.2D + 1.6W 97 mph Wind	4293.9	37.3	55.3
0.9D + 1.6W 97 mph Wind	4259.1	37.3	41.4
1.2D + 1.0Di + 1.0Wi 50 mph Wind	1174.2	10.4	81.2
1.2D + 1.0E	223.2	2.0	55.3
0.9D + 1.0E	221.3	2.0	41.5
1.0D + 1.0W 60 mph Wind	1022.2	8.9	46.1

Structure: CT02722-S-SBA - Coax Line Placement

Type: Monopole
Site Name: Waterbury
Height: 158.00 (ft)

9/21/2016

Tower Engineering Solutions



Shaft Properties

Structure:	CT02722-S-SBA		**Code:**	EIA/TIA-222-G	9/21/2016
Site Name:	Waterbury		**Exposure:**	C	
Height:	158.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 5

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Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	45.000	0.5000	65		0.00	13,142
2	18	45.000	0.4063	65	Slip	78.00	9,033
3	18	40.000	0.3125	65	Slip	66.00	5,074
4	18	44.500	0.2500	65	Slip	54.00	3,495
					Total Shaft Weight:		**30,744**

	Bottom						Top						
Sec. No.	**Dia (in)**	**Elev (ft)**	**Area (sqin)**	**Ix (in^4)**	**W/t Ratio**	**D/t Ratio**	**Dia (in)**	**Elev (ft)**	**Area (sqin)**	**Ix (in^4)**	**W/t Ratio**	**D/t Ratio**	**Taper**
1	59.98	0.00	94.39	42191.72	19.74	119.96	49.18	45.00	77.25	23130.4	15.93	98.36	0.239985
2	51.55	38.50	65.96	21799.61	20.96	126.88	40.75	83.50	52.03	10701.4	16.28	100.3	0.239985
3	42.70	78.00	42.04	9542.68	22.68	136.64	33.10	118.00	32.52	4416.67	17.27	105.9	0.239985
4	34.68	113.5	27.32	4091.38	23.05	138.72	24.00	158.00	18.84	1343.00	15.52	96.00	0.239985

Load Summary

Structure:	CT02722-S-SBA	**Code:**	EIA/TIA-222-G	9/21/2016	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 6	

Tower Engineering Solutions

Discrete Appurtenances

				No Ice			Ice				
No.	Elev (ft)	Description	Qty	Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor	Hor. Ecc. (ft)	Vert Ecc (ft)
1	158.00	APXV18-206517S-C	3	26.40	5.17	0.74	119.73	7.557	0.74	0.00	0.00
2	158.00	Low Profile Platform	1	1200.00	25.00	1.00	2252.58	46.052	1.00	0.00	0.00
3	148.00	HBXX-6517DS-R2M	6	40.80	8.55	0.77	216.81	11.465	0.77	0.00	0.00
4	148.00	DB844G65ZAXY	6	12.00	4.33	0.93	149.47	5.281	0.93	0.00	0.00
5	148.00	LNX-4514DS-A1M	1	41.90	6.79	0.71	187.57	8.825	0.71	0.00	0.00
6	148.00	LNX-6514DS-A1M	2	38.40	8.17	0.83	214.44	10.989	0.83	0.00	0.00
7	148.00	RRH 60 W-PCS	3	55.00	3.50	0.76	134.91	4.288	0.76	0.00	0.00
8	148.00	RRH 2x60-aws	3	55.00	3.50	0.76	134.91	4.288	0.76	0.00	0.00
9	148.00	FD9R6004/2C-3L	6	3.10	0.37	0.62	12.66	0.825	0.62	0.00	0.00
10	148.00	DB-T1-6Z-8AB-0Z	1	44.00	4.10	0.91	287.56	4.900	0.91	0.00	0.00
11	148.00	Low Profile Platform	1	1200.00	25.00	1.00	2245.72	45.914	1.00	0.00	0.00
12	137.00	CCI OPA-65R-LCUU-H6	3	80.00	9.66	0.79	309.31	11.013	0.81	0.00	0.00
13	137.00	KMW AM-X-CD-16-65-OOT	3	48.50	8.02	0.75	209.31	10.789	0.77	0.00	0.00
14	137.00	Ericsson RRUS 32 B2	3	60.00	2.74	0.81	147.02	3.462	0.83	0.00	0.00
15	137.00	CCI HPA-65R-BUU-H8	3	68.00	12.98	0.79	355.99	14.580	0.79	0.00	0.00
16	137.00	CCI DTMABP7819VG12A	6	19.20	1.14	0.67	44.49	1.903	0.67	0.00	0.00
17	137.00	Ericsson RRUS-11	6	51.00	2.52	0.71	122.62	3.148	0.73	0.00	0.00
18	137.00	Ericsson RRUS-12	6	58.00	3.15	0.70	152.34	3.857	0.70	0.00	0.00
19	137.00	Ericsson RRU A2	6	21.20	1.86	0.62	56.98	2.825	0.62	0.00	0.00
20	137.00	Ericsson RRUS-32	3	77.00	3.87	0.87	189.35	4.098	0.89	0.00	0.00
21	137.00	Quintel QS66512-2	3	111.00	8.13	0.92	327.77	9.412	0.93	0.00	0.00
22	137.00	DC6-48-60-18-8F	3	31.80	1.47	0.80	93.07	2.163	0.80	0.00	0.00
23	137.00	Platform w/ Hand Rails	1	2000.00	40.00	1.00	4075.36	60.754	1.00	0.00	0.00
24	127.00	DB844H90E-XY	9	14.00	3.05	0.75	122.39	3.907	0.75	0.00	0.00
25	127.00	LLPX310R	3	28.60	4.30	0.69	117.41	5.933	0.69	0.00	0.00
26	127.00	U-RAS RRH's	3	33.00	1.82	0.73	73.96	2.778	0.73	0.00	0.00
27	127.00	A-ANT-23G-2.0-C	2	47.60	8.43	1.00	217.37	10.108	1.00	0.00	0.00
28	127.00	Low Profile Platform	1	1200.00	25.00	1.00	2229.84	45.597	1.00	0.00	0.00
29	122.00	CS72188.01 Omni	1	25.00	3.00	1.00	99.50	6.533	1.00	0.00	5.00
		Totals:	**98**	**9,263.60**			**24,513.83**				

Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
0.00	158.00	(6) 1-5/8"	0.00	Inside
0.00	148.00	(12) 1-5/8"	0.00	Inside
0.00	148.00	(1) 1-5/8" Hybrid	0.00	Inside
0.00	137.00	(12) 1-5/8" Coax	0.00	Inside
0.00	137.00	(2) 1/2" Fiber	0.00	Inside
0.00	137.00	(4) 3/4" DC	0.00	Inside
0.00	127.00	(12) 1-1/4"	0.00	Inside
0.00	127.00	(2) 1/2"	0.00	Inside
0.00	127.00	(6) 5/16"	0.00	Inside
0.00	122.00	(1) 1/2" Coax	0.00	Inside

Shaft Section Properties

Structure:	CT02722-S-SBA	**Code:**	EIA/TIA-222-G	9/21/2016	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 7	

Increment Length: **5 (ft)**

Elev (ft)	Description	Thick (in)	Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fpy (ksi)	S (in^3)	Weight (lb)
0.00		0.5000	59.980	94.391	42191.7	19.74	119.96	78.2	1385.	0.0
5.00		0.5000	58.780	92.487	39689.4	19.32	117.56	78.7	1329.	1589.8
10.00		0.5000	57.580	90.583	37288.1	18.90	115.16	79.2	1275.	1557.4
15.00		0.5000	56.380	88.679	34985.6	18.47	112.76	79.7	1222.	1525.0
20.00		0.5000	55.180	86.775	32779.9	18.05	110.36	80.2	1170.	1492.6
25.00		0.5000	53.980	84.870	30668.9	17.63	107.96	80.7	1119.	1460.2
30.00		0.5000	52.780	82.966	28650.5	17.20	105.56	81.2	1069.	1427.8
35.00		0.5000	51.581	81.062	26722.7	16.78	103.16	81.7	1020.	1395.4
38.50	Bot - Section 2	0.5000	50.741	79.729	25426.0	16.48	101.48	82.0	987.0	957.5
40.00		0.5000	50.381	79.158	24883.4	16.36	100.76	82.2	972.8	741.0
45.00	Top - Section 1	0.4063	49.993	63.945	19865.3	20.29	123.05	0.0	0.0	2431.7
50.00		0.4063	48.793	62.398	18457.8	19.76	120.09	78.2	745.1	1074.8
55.00		0.4063	47.593	60.850	17118.4	19.24	117.14	78.8	708.4	1048.5
60.00		0.4063	46.394	59.303	15845.4	18.72	114.19	79.4	672.7	1022.1
65.00		0.4063	45.194	57.755	14637.1	18.20	111.23	80.0	637.9	995.8
70.00		0.4063	43.994	56.208	13491.9	17.68	108.28	80.6	604.0	969.5
75.00		0.4063	42.794	54.661	12408.0	17.16	105.33	81.2	571.1	943.2
78.00	Bot - Section 3	0.4063	42.074	53.732	11786.5	16.85	103.55	81.6	551.8	553.3
80.00		0.4063	41.594	53.113	11383.8	16.64	102.37	81.8	539.1	648.1
83.50	Top - Section 2	0.3125	41.379	40.731	8678.7	21.94	132.41	0.0	0.0	1116.2
85.00		0.3125	41.019	40.374	8452.4	21.73	131.26	75.8	405.9	207.0
90.00		0.3125	39.819	39.184	7726.8	21.06	127.42	76.6	382.2	676.8
95.00		0.3125	38.619	37.994	7043.9	20.38	123.58	77.4	359.2	656.5
100.00		0.3125	37.419	36.804	6402.5	19.70	119.74	78.2	337.0	636.3
105.00		0.3125	36.219	35.614	5801.2	19.03	115.90	79.0	315.5	616.1
110.00		0.3125	35.019	34.424	5238.9	18.35	112.06	79.8	294.7	595.8
113.50	Bot - Section 4	0.3125	34.179	33.590	4867.6	17.87	109.37	80.4	280.5	405.0
115.00		0.3125	33.819	33.233	4714.1	17.67	108.22	80.6	274.5	309.3
118.00	Top - Section 3	0.2500	33.599	26.462	3718.3	22.29	134.40	0.0	0.0	608.7
120.00		0.2500	33.119	26.081	3560.1	21.95	132.48	75.6	211.7	178.8
122.00		0.2500	32.639	25.700	3406.4	21.61	130.56	76.0	205.6	176.2
125.00		0.2500	31.919	25.129	3184.3	21.10	127.68	76.6	196.5	259.4
127.00		0.2500	31.440	24.748	3041.7	20.76	125.76	77.0	190.6	169.7
130.00		0.2500	30.720	24.177	2835.9	20.26	122.88	77.6	181.8	249.7
135.00		0.2500	29.520	23.225	2513.8	19.41	118.08	78.6	167.7	403.2
137.00		0.2500	29.040	22.844	2392.2	19.07	116.16	79.0	162.2	156.8
140.00		0.2500	28.320	22.273	2217.2	18.56	113.28	79.6	154.2	230.3
145.00		0.2500	27.120	21.320	1944.8	17.72	108.48	80.6	141.2	370.8
148.00		0.2500	26.400	20.749	1792.6	17.21	105.60	81.2	133.7	214.7
150.00		0.2500	25.920	20.368	1695.7	16.87	103.68	81.6	128.9	139.9
155.00		0.2500	24.720	19.416	1468.9	16.02	98.88	82.5	117.0	338.4
158.00		0.2500	24.000	18.845	1343.0	15.52	96.00	82.5	110.2	195.3
										30744.2

Wind Loading - Shaft

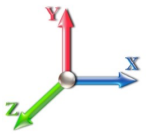
Structure:	CT02722-S-SBA	**Code:**	EIA/TIA-222-G	9/21/2016	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 8	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 23

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	19.450	21.40	453.89	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	19.450	21.40	444.81	0.650	0.000	5.00	25.123	16.33	559.0	0.0	1907.7
10.00		1.00	0.85	19.450	21.40	435.73	0.650	0.000	5.00	24.616	16.00	547.7	0.0	1868.8
15.00		1.00	0.85	19.450	21.40	426.65	0.650	0.000	5.00	24.108	15.67	536.4	0.0	1830.0
20.00		1.00	0.90	20.638	22.70	430.13	0.650	0.000	5.00	23.600	15.34	557.2	0.0	1791.1
25.00		1.00	0.95	21.630	23.79	430.78	0.650	0.000	5.00	23.093	15.01	571.4	0.0	1752.2
30.00		1.00	0.98	22.477	24.72	429.36	0.650	0.000	5.00	22.585	14.68	580.7	0.0	1713.3
35.00		1.00	1.01	23.218	25.54	426.47	0.650	0.000	5.00	22.077	14.35	586.4	0.0	1674.5
38.50	Bot - Section 2	1.00	1.04	23.689	26.06	423.75	0.650	0.000	3.50	15.152	9.85	410.6	0.0	1149.0
40.00		1.00	1.04	23.880	26.27	422.44	0.650	0.000	1.50	6.521	4.24	178.1	0.0	889.2
45.00	Top - Section 1	1.00	1.07	24.479	26.93	417.52	0.650	0.000	5.00	21.406	13.91	599.5	0.0	2918.0
50.00		1.00	1.09	25.029	27.53	418.86	0.650	0.000	5.00	20.898	13.58	598.4	0.0	1289.7
55.00		1.00	1.12	25.536	28.09	412.67	0.650	0.000	5.00	20.390	13.25	595.7	0.0	1258.2
60.00		1.00	1.14	26.008	28.61	405.97	0.650	0.000	5.00	19.883	12.92	591.6	0.0	1226.6
65.00		1.00	1.16	26.450	29.09	398.82	0.650	0.000	5.00	19.375	12.59	586.3	0.0	1195.0
70.00		1.00	1.17	26.866	29.55	391.27	0.650	0.000	5.00	18.867	12.26	579.9	0.0	1163.4
75.00		1.00	1.19	27.259	29.98	383.37	0.650	0.000	5.00	18.360	11.93	572.5	0.0	1131.8
78.00	Bot - Section 3	1.00	1.20	27.485	30.23	378.48	0.650	0.000	3.00	10.772	7.00	338.7	0.0	663.9
80.00		1.00	1.21	27.632	30.39	375.16	0.650	0.000	2.00	7.186	4.67	227.1	0.0	777.7
83.50	Top - Section 2	1.00	1.22	27.882	30.67	369.25	0.650	0.000	3.50	12.379	8.05	394.9	0.0	1339.4
85.00		1.00	1.22	27.987	30.79	372.34	0.650	0.000	1.50	5.229	3.40	167.4	0.0	248.4
90.00		1.00	1.24	28.325	31.16	363.63	0.650	0.000	5.00	17.101	11.12	554.1	0.0	812.2
95.00		1.00	1.25	28.650	31.51	354.69	0.650	0.000	5.00	16.593	10.79	543.9	0.0	787.9
100.00		1.00	1.27	28.961	31.86	345.53	0.650	0.000	5.00	16.086	10.46	532.9	0.0	763.6
105.00		1.00	1.28	29.260	32.19	336.17	0.650	0.000	5.00	15.578	10.13	521.4	0.0	739.3
110.00		1.00	1.29	29.548	32.50	326.63	0.650	0.000	5.00	15.070	9.80	509.4	0.0	715.0
113.50	Bot - Section 4	1.00	1.30	29.743	32.72	319.85	0.650	0.000	3.50	10.247	6.66	348.7	0.0	486.0
115.00		1.00	1.30	29.826	32.81	316.92	0.650	0.000	1.50	4.379	2.85	149.4	0.0	371.1
118.00	Top - Section 3	1.00	1.31	29.988	32.99	311.01	0.650	0.000	3.00	8.621	5.60	295.7	0.0	730.4
120.00		1.00	1.32	30.094	33.10	311.75	0.650	0.000	2.00	5.646	3.67	194.4	0.0	214.5
122.00	Appurtenance(s)	1.00	1.32	30.199	33.22	307.77	0.650	0.000	2.00	5.564	3.62	192.2	0.0	211.4
125.00		1.00	1.33	30.354	33.39	301.75	0.650	0.000	3.00	8.194	5.33	284.5	0.0	311.3
127.00	Appurtenance(s)	1.00	1.33	30.455	33.50	297.71	0.650	0.000	2.00	5.361	3.48	186.8	0.0	203.7
130.00		1.00	1.34	30.605	33.67	291.61	0.650	0.000	3.00	7.890	5.13	276.2	0.0	299.7
135.00		1.00	1.35	30.850	33.93	281.33	0.650	0.000	5.00	12.743	8.28	449.7	0.0	483.9
137.00	Appurtenance(s)	1.00	1.35	30.945	34.04	277.19	0.650	0.000	2.00	4.955	3.22	175.4	0.0	188.1
140.00		1.00	1.36	31.087	34.20	270.93	0.650	0.000	3.00	7.281	4.73	258.9	0.0	276.3
145.00		1.00	1.37	31.317	34.45	260.41	0.650	0.000	5.00	11.728	7.62	420.2	0.0	445.0
148.00	Appurtenance(s)	1.00	1.37	31.452	34.60	254.05	0.650	0.000	3.00	6.793	4.42	244.4	0.0	257.7
150.00		1.00	1.38	31.541	34.70	249.78	0.650	0.000	2.00	4.427	2.88	159.7	0.0	167.9
155.00		1.00	1.39	31.760	34.94	239.04	0.650	0.000	5.00	10.713	6.96	389.2	0.0	406.1
158.00	Appurtenance(s)	1.00	1.39	31.888	35.08	232.55	0.650	0.000	3.00	6.184	4.02	225.6	0.0	234.3
								Totals:	**158.00**			**16,692.6**		**36,893.1**

Discrete Appurtenance Forces

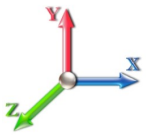
Structure:	CT02722-S-SBA	**Code:**	EIA/TIA-222-G	9/21/2016	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 9	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 23

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	158.00	Low Profile Platform	1	31.888	35.077	1.00	1.00	25.00	1440.00	0.000	0.000	1403.09	0.00	0.00
2	158.00	APXV18-206517S-C	3	31.888	35.077	0.74	1.00	11.48	95.04	0.000	0.000	644.15	0.00	0.00
3	148.00	HBXX-6517DS-R2M	6	31.452	34.598	0.62	0.80	31.60	293.76	0.000	0.000	1749.30	0.00	0.00
4	148.00	DB844G65ZAXY	6	31.452	34.598	0.74	0.80	19.33	86.40	0.000	0.000	1069.99	0.00	0.00
5	148.00	LNX-4514DS-A1M	1	31.452	34.598	0.57	0.80	3.86	50.28	0.000	0.000	213.49	0.00	0.00
6	148.00	LNX-6514DS-A1M	2	31.452	34.598	0.66	0.80	10.85	92.16	0.000	0.000	600.60	0.00	0.00
7	148.00	RRH 60 W-PCS	3	31.452	34.598	0.61	0.80	6.38	198.00	0.000	0.000	353.39	0.00	0.00
8	148.00	RRH 2x60-aws	3	31.452	34.598	0.61	0.80	6.38	198.00	0.000	0.000	353.39	0.00	0.00
9	148.00	FD9R6004/2C-3L	6	31.452	34.598	0.50	0.80	1.10	22.32	0.000	0.000	60.95	0.00	0.00
10	148.00	DB-T1-6Z-8AB-0Z	1	31.452	34.598	0.73	0.80	2.98	52.80	0.000	0.000	165.23	0.00	0.00
11	148.00	Low Profile Platform	1	31.452	34.598	1.00	1.00	25.00	1440.00	0.000	0.000	1383.91	0.00	0.00
12	137.00	Platform w/ Hand Rails	1	30.945	34.040	1.00	1.00	40.00	2400.00	0.000	0.000	2178.54	0.00	0.00
13	137.00	DC6-48-60-18-8F	3	30.945	34.040	0.64	0.80	2.82	114.48	0.000	0.000	153.72	0.00	0.00
14	137.00	Quintel QS66512-2	3	30.945	34.040	0.73	0.80	17.91	399.60	0.000	0.000	975.55	0.00	0.00
15	137.00	Ericsson RRUS-32	3	30.945	34.040	0.70	0.80	8.08	277.20	0.000	0.000	440.10	0.00	0.00
16	137.00	CCI HPA-65R-BUU-H8	3	30.945	34.040	0.63	0.80	24.61	244.80	0.000	0.000	1340.35	0.00	0.00
17	137.00	CCI OPA-65R-LCUU-H6	3	30.945	34.040	0.63	0.80	18.32	288.00	0.000	0.000	997.52	0.00	0.00
18	137.00	KMW	3	30.945	34.040	0.60	0.80	14.44	174.60	0.000	0.000	786.24	0.00	0.00
19	137.00	Ericsson RRUS 32 B2	3	30.945	34.040	0.65	0.80	5.33	216.00	0.000	0.000	290.10	0.00	0.00
20	137.00	Ericsson RRU A2	6	30.945	34.040	0.50	0.80	5.54	152.64	0.000	0.000	301.48	0.00	0.00
21	137.00	CCI DTMABP7819VG12A	6	30.945	34.040	0.54	0.80	3.67	138.24	0.000	0.000	199.68	0.00	0.00
22	137.00	Ericsson RRUS-11	6	30.945	34.040	0.57	0.80	8.59	367.20	0.000	0.000	467.74	0.00	0.00
23	137.00	Ericsson RRUS-12	6	30.945	34.040	0.56	0.80	10.58	417.60	0.000	0.000	576.44	0.00	0.00
24	127.00	Low Profile Platform	1	30.455	33.501	1.00	1.00	25.00	1440.00	0.000	0.000	1340.03	0.00	0.00
25	127.00	A-ANT-23G-2.0-C	2	30.455	33.501	1.00	1.00	16.86	114.24	0.000	0.000	903.72	0.00	0.00
26	127.00	U-RAS RRH's	3	30.455	33.501	0.58	0.80	3.19	118.80	0.000	0.000	170.92	0.00	0.00
27	127.00	LLPX310R	3	30.455	33.501	0.55	0.80	7.12	102.96	0.000	0.000	381.68	0.00	0.00
28	127.00	DB844H90E-XY	9	30.455	33.501	0.60	0.80	16.47	151.20	0.000	0.000	882.81	0.00	0.00
29	122.00	CS72188.01 Omni	1	30.455	33.501	1.00	1.00	3.00	30.00	0.000	5.000	160.80	0.00	804.02
							Totals:		**11,116.32**			**20,544.94**		

Total Applied Force Summary

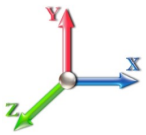
Structure:	CT02722-S-SBA		**Code:**	EIA/TIA-222-G	9/21/2016
Site Name:	Waterbury		**Exposure:**	C	
Height:	158.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 10

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 23

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		559.02	2166.32	0.00	0.00
10.00		547.73	2127.44	0.00	0.00
15.00		536.43	2088.56	0.00	0.00
20.00		557.19	2049.69	0.00	0.00
25.00		571.43	2010.81	0.00	0.00
30.00		580.73	1971.93	0.00	0.00
35.00		586.40	1933.05	0.00	0.00
38.50		410.62	1330.00	0.00	0.00
40.00		178.14	966.73	0.00	0.00
45.00		599.46	3176.63	0.00	0.00
50.00		598.37	1548.35	0.00	0.00
55.00		595.66	1516.75	0.00	0.00
60.00		591.57	1485.16	0.00	0.00
65.00		586.26	1453.57	0.00	0.00
70.00		579.88	1421.98	0.00	0.00
75.00		572.53	1390.39	0.00	0.00
78.00		338.70	819.07	0.00	0.00
80.00		227.14	881.11	0.00	0.00
83.50		394.86	1520.43	0.00	0.00
85.00		167.43	325.97	0.00	0.00
90.00		554.15	1070.76	0.00	0.00
95.00		543.85	1046.46	0.00	0.00
100.00		532.94	1022.16	0.00	0.00
105.00		521.44	997.86	0.00	0.00
110.00		509.42	973.56	0.00	0.00
113.50		348.67	667.04	0.00	0.00
115.00		149.41	448.68	0.00	0.00
118.00		295.74	885.55	0.00	0.00
120.00		194.37	317.99	0.00	0.00
122.00	(1) attachments	353.04	344.88	0.00	804.02
125.00		284.55	465.91	0.00	0.00
127.00	(18) attachments	3865.96	2233.92	0.00	0.00
130.00		276.24	422.86	0.00	0.00
135.00		449.74	689.21	0.00	0.00
137.00	(46) attachments	8882.87	5460.60	0.00	0.00
140.00		258.92	347.69	0.00	0.00
145.00		420.18	563.93	0.00	0.00
148.00	(29) attachments	6194.70	2762.75	0.00	0.00
150.00		159.75	182.87	0.00	0.00
155.00		389.23	443.57	0.00	0.00
158.00	(4) attachments	2272.83	1791.85	0.00	0.00
	Totals:	**37,237.54**	**55,324.04**	**0.00**	**804.02**

Calculated Forces

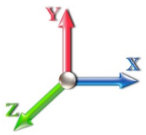
Structure:	CT02722-S-SBA	**Code:**	EIA/TIA-222-G	9/21/2016	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 11	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 23

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-55.28	-37.31	0.00	-4293.9	0.00	4293.90	6641.65	3320.83	16223.6	8123.90	0.00	0.000	0.000	0.537
5.00	-53.02	-36.88	0.00	-4107.3	0.00	4107.36	6549.09	3274.55	15672.1	7847.74	0.08	-0.142	0.000	0.532
10.00	-50.80	-36.45	0.00	-3922.9	0.00	3922.98	6454.83	3227.41	15125.8	7574.18	0.30	-0.286	0.000	0.526
15.00	-48.62	-36.03	0.00	-3740.7	0.00	3740.73	6358.86	3179.43	14585.0	7303.35	0.68	-0.432	0.000	0.520
20.00	-46.49	-35.57	0.00	-3560.6	0.00	3560.60	6261.18	3130.59	14049.8	7035.38	1.21	-0.580	0.000	0.514
25.00	-44.39	-35.10	0.00	-3382.7	0.00	3382.74	6161.80	3080.90	13520.6	6770.39	1.90	-0.731	0.000	0.507
30.00	-42.33	-34.60	0.00	-3207.2	0.00	3207.26	6060.71	3030.36	12997.7	6508.52	2.75	-0.884	0.000	0.500
35.00	-40.33	-34.08	0.00	-3034.2	0.00	3034.26	5957.92	2978.96	12481.2	6249.90	3.76	-1.039	0.000	0.492
38.50	-38.96	-33.69	0.00	-2915.0	0.00	2915.00	5884.95	2942.47	12123.6	6070.85	4.56	-1.149	0.000	0.487
40.00	-37.94	-33.57	0.00	-2864.4	0.00	2864.46	5853.42	2926.71	11971.4	5994.64	4.93	-1.198	0.000	0.484
45.00	-34.68	-32.99	0.00	-2696.6	0.00	2696.64	4462.52	2231.26	9089.55	4551.53	6.27	-1.357	0.000	0.600
50.00	-33.05	-32.46	0.00	-2531.6	0.00	2531.68	4388.93	2194.47	8721.58	4367.27	7.78	-1.518	0.000	0.587
55.00	-31.45	-31.92	0.00	-2369.4	0.00	2369.40	4313.64	2156.82	8357.61	4185.02	9.47	-1.707	0.000	0.574
60.00	-29.88	-31.38	0.00	-2209.8	0.00	2209.80	4236.64	2118.32	7997.90	4004.90	11.36	-1.897	0.000	0.559
65.00	-28.34	-30.84	0.00	-2052.8	0.00	2052.88	4157.93	2078.96	7642.72	3827.04	13.45	-2.088	0.000	0.543
70.00	-26.84	-30.30	0.00	-1898.6	0.00	1898.67	4077.51	2038.76	7292.30	3651.57	15.74	-2.280	0.000	0.527
75.00	-25.40	-29.74	0.00	-1747.1	0.00	1747.18	3995.39	1997.70	6946.91	3478.62	18.23	-2.472	0.000	0.509
78.00	-24.54	-29.40	0.00	-1657.9	0.00	1657.97	3945.30	1972.65	6742.20	3376.11	19.82	-2.589	0.000	0.498
80.00	-23.62	-29.18	0.00	-1599.1	0.00	1599.16	3911.57	1955.78	6606.80	3308.31	20.92	-2.668	0.000	0.490
83.50	-22.07	-28.75	0.00	-1497.0	0.00	1497.03	2771.30	1385.65	4677.52	2342.24	22.93	-2.803	0.000	0.648
85.00	-21.68	-28.62	0.00	-1453.9	0.00	1453.90	2755.69	1377.84	4610.09	2308.47	23.82	-2.862	0.000	0.638
90.00	-20.53	-28.10	0.00	-1310.7	0.00	1310.78	2702.54	1351.27	4386.89	2196.71	26.94	-3.095	0.000	0.605
95.00	-19.40	-27.57	0.00	-1170.2	0.00	1170.29	2647.69	1323.84	4166.29	2086.24	30.31	-3.323	0.000	0.569
100.00	-18.31	-27.05	0.00	-1032.4	0.00	1032.43	2591.13	1295.56	3948.53	1977.20	33.91	-3.546	0.000	0.530
105.00	-17.25	-26.53	0.00	-897.18	0.00	897.18	2532.86	1266.43	3733.89	1869.72	37.73	-3.760	0.000	0.487
110.00	-16.24	-26.00	0.00	-764.53	0.00	764.53	2472.89	1236.44	3522.60	1763.92	41.78	-3.964	0.000	0.440
113.50	-15.56	-25.63	0.00	-673.52	0.00	673.52	2429.89	1214.95	3376.84	1690.93	44.74	-4.101	0.000	0.405
115.00	-15.08	-25.48	0.00	-635.07	0.00	635.07	2411.21	1205.60	3314.94	1659.93	46.04	-4.158	0.000	0.389
118.00	-14.18	-25.14	0.00	-558.65	0.00	558.65	1790.62	895.31	2454.63	1229.14	48.68	-4.266	0.000	0.463
120.00	-13.85	-24.94	0.00	-508.37	0.00	508.37	1774.20	887.10	2396.85	1200.21	50.48	-4.335	0.000	0.432
122.00	-13.49	-24.58	0.00	-457.70	0.00	457.70	1757.50	878.75	2339.36	1171.42	52.32	-4.412	0.000	0.399
125.00	-13.01	-24.28	0.00	-383.95	0.00	383.95	1731.94	865.97	2253.71	1128.53	55.12	-4.517	0.000	0.349
127.00	-11.07	-20.26	0.00	-335.40	0.00	335.40	1714.56	857.28	2197.01	1100.14	57.03	-4.582	0.000	0.312
130.00	-10.63	-19.97	0.00	-274.61	0.00	274.61	1687.98	843.99	2112.62	1057.88	59.93	-4.667	0.000	0.266
135.00	-9.96	-19.48	0.00	-174.74	0.00	174.74	1642.31	821.15	1973.86	988.40	64.88	-4.780	0.000	0.183
137.00	-5.25	-10.17	0.00	-135.78	0.00	135.78	1623.56	811.78	1919.06	960.96	66.89	-4.815	0.000	0.145
140.00	-4.92	-9.89	0.00	-105.26	0.00	105.26	1594.93	797.47	1837.67	920.20	69.93	-4.858	0.000	0.118
145.00	-4.39	-9.43	0.00	-55.80	0.00	55.80	1545.85	772.93	1704.31	853.42	75.04	-4.910	0.000	0.068
148.00	-2.17	-3.02	0.00	-27.52	0.00	27.52	1515.59	757.79	1625.76	814.09	78.13	-4.928	0.000	0.035
150.00	-2.00	-2.84	0.00	-21.48	0.00	21.48	1495.07	747.53	1574.03	788.19	80.19	-4.936	0.000	0.029
155.00	-1.59	-2.42	0.00	-7.26	0.00	7.26	1442.53	721.26	1447.04	724.60	85.36	-4.948	0.000	0.011
158.00	0.00	-2.27	0.00	0.00	0.00	0.00	1400.09	700.04	1362.73	682.38	88.47	-4.950	0.000	0.000

Wind Loading - Shaft

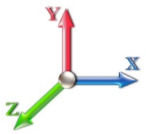
Structure:	CT02722-S-SBA	**Code:**	EIA/TIA-222-G	9/21/2016	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 12	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 23

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	19.450	21.40	453.89	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	19.450	21.40	444.81	0.650	0.000	5.00	25.123	16.33	559.0	0.0	1430.8
10.00		1.00	0.85	19.450	21.40	435.73	0.650	0.000	5.00	24.616	16.00	547.7	0.0	1401.6
15.00		1.00	0.85	19.450	21.40	426.65	0.650	0.000	5.00	24.108	15.67	536.4	0.0	1372.5
20.00		1.00	0.90	20.638	22.70	430.13	0.650	0.000	5.00	23.600	15.34	557.2	0.0	1343.3
25.00		1.00	0.95	21.630	23.79	430.78	0.650	0.000	5.00	23.093	15.01	571.4	0.0	1314.2
30.00		1.00	0.98	22.477	24.72	429.36	0.650	0.000	5.00	22.585	14.68	580.7	0.0	1285.0
35.00		1.00	1.01	23.218	25.54	426.47	0.650	0.000	5.00	22.077	14.35	586.4	0.0	1255.8
38.50	Bot - Section 2	1.00	1.04	23.689	26.06	423.75	0.650	0.000	3.50	15.152	9.85	410.6	0.0	861.7
40.00		1.00	1.04	23.880	26.27	422.44	0.650	0.000	1.50	6.521	4.24	178.1	0.0	666.9
45.00	Top - Section 1	1.00	1.07	24.479	26.93	417.52	0.650	0.000	5.00	21.406	13.91	599.5	0.0	2188.5
50.00		1.00	1.09	25.029	27.53	418.86	0.650	0.000	5.00	20.898	13.58	598.4	0.0	967.3
55.00		1.00	1.12	25.536	28.09	412.67	0.650	0.000	5.00	20.390	13.25	595.7	0.0	943.6
60.00		1.00	1.14	26.008	28.61	405.97	0.650	0.000	5.00	19.883	12.92	591.6	0.0	919.9
65.00		1.00	1.16	26.450	29.09	398.82	0.650	0.000	5.00	19.375	12.59	586.3	0.0	896.2
70.00		1.00	1.17	26.866	29.55	391.27	0.650	0.000	5.00	18.867	12.26	579.9	0.0	872.5
75.00		1.00	1.19	27.259	29.98	383.37	0.650	0.000	5.00	18.360	11.93	572.5	0.0	848.8
78.00	Bot - Section 3	1.00	1.20	27.485	30.23	378.48	0.650	0.000	3.00	10.772	7.00	338.7	0.0	497.9
80.00		1.00	1.21	27.632	30.39	375.16	0.650	0.000	2.00	7.186	4.67	227.1	0.0	583.3
83.50	Top - Section 2	1.00	1.22	27.882	30.67	369.25	0.650	0.000	3.50	12.379	8.05	394.9	0.0	1004.6
85.00		1.00	1.22	27.987	30.79	372.34	0.650	0.000	1.50	5.229	3.40	167.4	0.0	186.3
90.00		1.00	1.24	28.325	31.16	363.63	0.650	0.000	5.00	17.101	11.12	554.1	0.0	609.1
95.00		1.00	1.25	28.650	31.51	354.69	0.650	0.000	5.00	16.593	10.79	543.9	0.0	590.9
100.00		1.00	1.27	28.961	31.86	345.53	0.650	0.000	5.00	16.086	10.46	532.9	0.0	572.7
105.00		1.00	1.28	29.260	32.19	336.17	0.650	0.000	5.00	15.578	10.13	521.4	0.0	554.4
110.00		1.00	1.29	29.548	32.50	326.63	0.650	0.000	5.00	15.070	9.80	509.4	0.0	536.2
113.50	Bot - Section 4	1.00	1.30	29.743	32.72	319.85	0.650	0.000	3.50	10.247	6.66	348.7	0.0	364.5
115.00		1.00	1.30	29.826	32.81	316.92	0.650	0.000	1.50	4.379	2.85	149.4	0.0	278.3
118.00	Top - Section 3	1.00	1.31	29.988	32.99	311.01	0.650	0.000	3.00	8.621	5.60	295.7	0.0	547.8
120.00		1.00	1.32	30.094	33.10	311.75	0.650	0.000	2.00	5.646	3.67	194.4	0.0	160.9
122.00	Appurtenance(s)	1.00	1.32	30.199	33.22	307.77	0.650	0.000	2.00	5.564	3.62	192.2	0.0	158.6
125.00		1.00	1.33	30.354	33.39	301.75	0.650	0.000	3.00	8.194	5.33	284.5	0.0	233.5
127.00	Appurtenance(s)	1.00	1.33	30.455	33.50	297.71	0.650	0.000	2.00	5.361	3.48	186.8	0.0	152.7
130.00		1.00	1.34	30.605	33.67	291.61	0.650	0.000	3.00	7.890	5.13	276.2	0.0	224.7
135.00		1.00	1.35	30.850	33.93	281.33	0.650	0.000	5.00	12.743	8.28	449.7	0.0	362.9
137.00	Appurtenance(s)	1.00	1.35	30.945	34.04	277.19	0.650	0.000	2.00	4.955	3.22	175.4	0.0	141.1
140.00		1.00	1.36	31.087	34.20	270.93	0.650	0.000	3.00	7.281	4.73	258.9	0.0	207.3
145.00		1.00	1.37	31.317	34.45	260.41	0.650	0.000	5.00	11.728	7.62	420.2	0.0	333.8
148.00	Appurtenance(s)	1.00	1.37	31.452	34.60	254.05	0.650	0.000	3.00	6.793	4.42	244.4	0.0	193.3
150.00		1.00	1.38	31.541	34.70	249.78	0.650	0.000	2.00	4.427	2.88	159.7	0.0	125.9
155.00		1.00	1.39	31.760	34.94	239.04	0.650	0.000	5.00	10.713	6.96	389.2	0.0	304.6
158.00	Appurtenance(s)	1.00	1.39	31.888	35.08	232.55	0.650	0.000	3.00	6.184	4.02	225.6	0.0	175.8
								Totals:	**158.00**			**16,692.6**		**27,669.8**

Discrete Appurtenance Forces

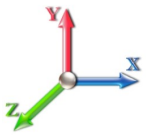
Structure:	CT02722-S-SBA	**Code:**	EIA/TIA-222-G	9/21/2016	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 13	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 23

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	158.00	Low Profile Platform	1	31.888	35.077	1.00	1.00	25.00	1080.00	0.000	0.000	1403.09	0.00	0.00
2	158.00	APXV18-206517S-C	3	31.888	35.077	0.74	1.00	11.48	71.28	0.000	0.000	644.15	0.00	0.00
3	148.00	HBXX-6517DS-R2M	6	31.452	34.598	0.62	0.80	31.60	220.32	0.000	0.000	1749.30	0.00	0.00
4	148.00	DB844G65ZAXY	6	31.452	34.598	0.74	0.80	19.33	64.80	0.000	0.000	1069.99	0.00	0.00
5	148.00	LNX-4514DS-A1M	1	31.452	34.598	0.57	0.80	3.86	37.71	0.000	0.000	213.49	0.00	0.00
6	148.00	LNX-6514DS-A1M	2	31.452	34.598	0.66	0.80	10.85	69.12	0.000	0.000	600.60	0.00	0.00
7	148.00	RRH 60 W-PCS	3	31.452	34.598	0.61	0.80	6.38	148.50	0.000	0.000	353.39	0.00	0.00
8	148.00	RRH 2x60-aws	3	31.452	34.598	0.61	0.80	6.38	148.50	0.000	0.000	353.39	0.00	0.00
9	148.00	FD9R6004/2C-3L	6	31.452	34.598	0.50	0.80	1.10	16.74	0.000	0.000	60.95	0.00	0.00
10	148.00	DB-T1-6Z-8AB-0Z	1	31.452	34.598	0.73	0.80	2.98	39.60	0.000	0.000	165.23	0.00	0.00
11	148.00	Low Profile Platform	1	31.452	34.598	1.00	1.00	25.00	1080.00	0.000	0.000	1383.91	0.00	0.00
12	137.00	Platform w/ Hand Rails	1	30.945	34.040	1.00	1.00	40.00	1800.00	0.000	0.000	2178.54	0.00	0.00
13	137.00	DC6-48-60-18-8F	3	30.945	34.040	0.64	0.80	2.82	85.86	0.000	0.000	153.72	0.00	0.00
14	137.00	Quintel QS66512-2	3	30.945	34.040	0.73	0.80	17.91	299.70	0.000	0.000	975.55	0.00	0.00
15	137.00	Ericsson RRUS-32	3	30.945	34.040	0.70	0.80	8.08	207.90	0.000	0.000	440.10	0.00	0.00
16	137.00	CCI HPA-65R-BUU-H8	3	30.945	34.040	0.63	0.80	24.61	183.60	0.000	0.000	1340.35	0.00	0.00
17	137.00	CCI OPA-65R-LCUU-H6	3	30.945	34.040	0.63	0.80	18.32	216.00	0.000	0.000	997.52	0.00	0.00
18	137.00	KMW	3	30.945	34.040	0.60	0.80	14.44	130.95	0.000	0.000	786.24	0.00	0.00
19	137.00	Ericsson RRUS 32 B2	3	30.945	34.040	0.65	0.80	5.33	162.00	0.000	0.000	290.10	0.00	0.00
20	137.00	Ericsson RRU A2	6	30.945	34.040	0.50	0.80	5.54	114.48	0.000	0.000	301.48	0.00	0.00
21	137.00	CCI DTMABP7819VG12A	6	30.945	34.040	0.54	0.80	3.67	103.68	0.000	0.000	199.68	0.00	0.00
22	137.00	Ericsson RRUS-11	6	30.945	34.040	0.57	0.80	8.59	275.40	0.000	0.000	467.74	0.00	0.00
23	137.00	Ericsson RRUS-12	6	30.945	34.040	0.56	0.80	10.58	313.20	0.000	0.000	576.44	0.00	0.00
24	127.00	Low Profile Platform	1	30.455	33.501	1.00	1.00	25.00	1080.00	0.000	0.000	1340.03	0.00	0.00
25	127.00	A-ANT-23G-2.0-C	2	30.455	33.501	1.00	1.00	16.86	85.68	0.000	0.000	903.72	0.00	0.00
26	127.00	U-RAS RRH's	3	30.455	33.501	0.58	0.80	3.19	89.10	0.000	0.000	170.92	0.00	0.00
27	127.00	LLPX310R	3	30.455	33.501	0.55	0.80	7.12	77.22	0.000	0.000	381.68	0.00	0.00
28	127.00	DB844H90E-XY	9	30.455	33.501	0.60	0.80	16.47	113.40	0.000	0.000	882.81	0.00	0.00
29	122.00	CS72188.01 Omni	1	30.455	33.501	1.00	1.00	3.00	22.50	0.000	5.000	160.80	0.00	804.02
							Totals:		**8,337.24**			**20,544.94**		

Total Applied Force Summary

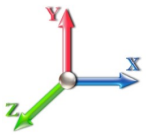
Structure:	CT02722-S-SBA		**Code:**	EIA/TIA-222-G	9/21/2016
Site Name:	Waterbury		**Exposure:**	C	
Height:	158.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 14

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 23

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		559.02	1624.74	0.00	0.00
10.00		547.73	1595.58	0.00	0.00
15.00		536.43	1566.42	0.00	0.00
20.00		557.19	1537.26	0.00	0.00
25.00		571.43	1508.11	0.00	0.00
30.00		580.73	1478.95	0.00	0.00
35.00		586.40	1449.79	0.00	0.00
38.50		410.62	997.50	0.00	0.00
40.00		178.14	725.05	0.00	0.00
45.00		599.46	2382.48	0.00	0.00
50.00		598.37	1161.26	0.00	0.00
55.00		595.66	1137.57	0.00	0.00
60.00		591.57	1113.87	0.00	0.00
65.00		586.26	1090.18	0.00	0.00
70.00		579.88	1066.48	0.00	0.00
75.00		572.53	1042.79	0.00	0.00
78.00		338.70	614.30	0.00	0.00
80.00		227.14	660.83	0.00	0.00
83.50		394.86	1140.32	0.00	0.00
85.00		167.43	244.47	0.00	0.00
90.00		554.15	803.07	0.00	0.00
95.00		543.85	784.84	0.00	0.00
100.00		532.94	766.62	0.00	0.00
105.00		521.44	748.40	0.00	0.00
110.00		509.42	730.17	0.00	0.00
113.50		348.67	500.28	0.00	0.00
115.00		149.41	336.51	0.00	0.00
118.00		295.74	664.16	0.00	0.00
120.00		194.37	238.49	0.00	0.00
122.00	(1) attachments	353.04	258.66	0.00	804.02
125.00		284.55	349.43	0.00	0.00
127.00	(18) attachments	3865.96	1675.44	0.00	0.00
130.00		276.24	317.14	0.00	0.00
135.00		449.74	516.91	0.00	0.00
137.00	(46) attachments	8882.87	4095.45	0.00	0.00
140.00		258.92	260.77	0.00	0.00
145.00		420.18	422.95	0.00	0.00
148.00	(29) attachments	6194.70	2072.06	0.00	0.00
150.00		159.75	137.15	0.00	0.00
155.00		389.23	332.68	0.00	0.00
158.00	(4) attachments	2272.83	1343.89	0.00	0.00
	Totals:	**37,237.54**	**41,493.03**	**0.00**	**804.02**

Calculated Forces

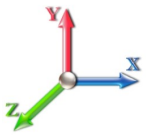
Structure:	CT02722-S-SBA	**Code:**	EIA/TIA-222-G	9/21/2016	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 15	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 23

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-41.45	-37.29	0.00	-4259.1	0.00	4259.14	6641.65	3320.83	16223.6	8123.90	0.00	0.000	0.000	0.531
5.00	-39.73	-36.83	0.00	-4072.7	0.00	4072.70	6549.09	3274.55	15672.1	7847.74	0.08	-0.140	0.000	0.525
10.00	-38.05	-36.37	0.00	-3888.5	0.00	3888.57	6454.83	3227.41	15125.8	7574.18	0.30	-0.283	0.000	0.519
15.00	-36.39	-35.92	0.00	-3706.7	0.00	3706.73	6358.86	3179.43	14585.0	7303.35	0.67	-0.428	0.000	0.513
20.00	-34.77	-35.43	0.00	-3527.1	0.00	3527.16	6261.18	3130.59	14049.8	7035.38	1.20	-0.575	0.000	0.507
25.00	-33.18	-34.93	0.00	-3349.9	0.00	3349.99	6161.80	3080.90	13520.6	6770.39	1.88	-0.724	0.000	0.500
30.00	-31.61	-34.42	0.00	-3175.3	0.00	3175.32	6060.71	3030.36	12997.7	6508.52	2.72	-0.876	0.000	0.493
35.00	-30.10	-33.87	0.00	-3003.2	0.00	3003.25	5957.92	2978.96	12481.2	6249.90	3.72	-1.029	0.000	0.486
38.50	-29.06	-33.48	0.00	-2884.6	0.00	2884.69	5884.95	2942.47	12123.6	6070.85	4.52	-1.139	0.000	0.480
40.00	-28.28	-33.34	0.00	-2834.4	0.00	2834.46	5853.42	2926.71	11971.4	5994.64	4.89	-1.187	0.000	0.478
45.00	-25.82	-32.76	0.00	-2667.7	0.00	2667.75	4462.52	2231.26	9089.55	4551.53	6.21	-1.344	0.000	0.592
50.00	-24.58	-32.21	0.00	-2503.9	0.00	2503.94	4388.93	2194.47	8721.58	4367.27	7.71	-1.503	0.000	0.579
55.00	-23.35	-31.66	0.00	-2342.8	0.00	2342.89	4313.64	2156.82	8357.61	4185.02	9.38	-1.690	0.000	0.565
60.00	-22.16	-31.11	0.00	-2184.5	0.00	2184.59	4236.64	2118.32	7997.90	4004.90	11.25	-1.878	0.000	0.551
65.00	-20.98	-30.55	0.00	-2029.0	0.00	2029.06	4157.93	2078.96	7642.72	3827.04	13.32	-2.067	0.000	0.535
70.00	-19.84	-30.00	0.00	-1876.3	0.00	1876.30	4077.51	2038.76	7292.30	3651.57	15.59	-2.257	0.000	0.519
75.00	-18.75	-29.43	0.00	-1726.3	0.00	1726.31	3995.39	1997.70	6946.91	3478.62	18.05	-2.447	0.000	0.501
78.00	-18.10	-29.10	0.00	-1638.0	0.00	1638.01	3945.30	1972.65	6742.20	3376.11	19.63	-2.562	0.000	0.490
80.00	-17.39	-28.87	0.00	-1579.8	0.00	1579.81	3911.57	1955.78	6606.80	3308.31	20.72	-2.640	0.000	0.482
83.50	-16.23	-28.45	0.00	-1478.7	0.00	1478.75	2771.30	1385.65	4677.52	2342.24	22.70	-2.774	0.000	0.638
85.00	-15.92	-28.31	0.00	-1436.0	0.00	1436.07	2755.69	1377.84	4610.09	2308.47	23.58	-2.832	0.000	0.628
90.00	-15.03	-27.78	0.00	-1294.5	0.00	1294.50	2702.54	1351.27	4386.89	2196.71	26.67	-3.062	0.000	0.595
95.00	-14.18	-27.25	0.00	-1155.6	0.00	1155.60	2647.69	1323.84	4166.29	2086.24	30.00	-3.287	0.000	0.560
100.00	-13.34	-26.72	0.00	-1019.3	0.00	1019.36	2591.13	1295.56	3948.53	1977.20	33.56	-3.507	0.000	0.521
105.00	-12.53	-26.20	0.00	-885.75	0.00	885.75	2532.86	1266.43	3733.89	1869.72	37.35	-3.719	0.000	0.479
110.00	-11.76	-25.68	0.00	-754.76	0.00	754.76	2472.89	1236.44	3522.60	1763.92	41.35	-3.920	0.000	0.433
113.50	-11.25	-25.31	0.00	-664.89	0.00	664.89	2429.89	1214.95	3376.84	1690.93	44.28	-4.055	0.000	0.398
115.00	-10.89	-25.16	0.00	-626.92	0.00	626.92	2411.21	1205.60	3314.94	1659.93	45.56	-4.111	0.000	0.383
118.00	-10.21	-24.83	0.00	-551.46	0.00	551.46	1790.62	895.31	2454.63	1229.14	48.17	-4.218	0.000	0.455
120.00	-9.95	-24.63	0.00	-501.80	0.00	501.80	1774.20	887.10	2396.85	1200.21	49.96	-4.286	0.000	0.424
122.00	-9.68	-24.27	0.00	-451.74	0.00	451.74	1757.50	878.75	2339.36	1171.42	51.77	-4.362	0.000	0.392
125.00	-9.32	-23.98	0.00	-378.92	0.00	378.92	1731.94	865.97	2253.71	1128.53	54.54	-4.466	0.000	0.342
127.00	-7.93	-20.00	0.00	-330.97	0.00	330.97	1714.56	857.28	2197.01	1100.14	56.42	-4.530	0.000	0.306
130.00	-7.60	-19.71	0.00	-270.97	0.00	270.97	1687.98	843.99	2112.62	1057.88	59.30	-4.614	0.000	0.261
135.00	-7.10	-19.23	0.00	-172.40	0.00	172.40	1642.31	821.15	1973.86	988.40	64.19	-4.725	0.000	0.179
137.00	-3.75	-10.04	0.00	-133.94	0.00	133.94	1623.56	811.78	1919.06	960.96	66.17	-4.760	0.000	0.142
140.00	-3.50	-9.77	0.00	-103.81	0.00	103.81	1594.93	797.47	1837.67	920.20	69.18	-4.802	0.000	0.115
145.00	-3.11	-9.31	0.00	-54.98	0.00	54.98	1545.85	772.93	1704.31	853.42	74.23	-4.853	0.000	0.067
148.00	-1.57	-2.97	0.00	-27.04	0.00	27.04	1515.59	757.79	1625.76	814.09	77.28	-4.871	0.000	0.034
150.00	-1.44	-2.80	0.00	-21.11	0.00	21.11	1495.07	747.53	1574.03	788.19	79.32	-4.879	0.000	0.028
155.00	-1.15	-2.38	0.00	-7.14	0.00	7.14	1442.53	721.26	1447.04	724.60	84.43	-4.891	0.000	0.011
158.00	0.00	-2.27	0.00	0.00	0.00	0.00	1400.09	700.04	1362.73	682.38	87.51	-4.893	0.000	0.000

Wind Loading - Shaft

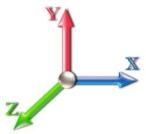
Structure:	CT02722-S-SBA	**Code:**	EIA/TIA-222-G	9/21/2016	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 16	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 22

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	5.168	5.68	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	5.168	5.68	0.00	1.200	1.242	5.00	26.158	31.39	178.4	467.0	2374.8
10.00		1.00	0.85	5.168	5.68	0.00	1.200	1.331	5.00	25.725	30.87	175.5	491.3	2360.1
15.00		1.00	0.85	5.168	5.68	0.00	1.200	1.386	5.00	25.263	30.32	172.3	501.7	2331.6
20.00		1.00	0.90	5.483	6.03	0.00	1.200	1.427	5.00	24.789	29.75	179.4	505.9	2297.0
25.00		1.00	0.95	5.747	6.32	0.00	1.200	1.459	5.00	24.308	29.17	184.4	506.7	2258.9
30.00		1.00	0.98	5.972	6.57	0.00	1.200	1.486	5.00	23.823	28.59	187.8	505.1	2218.4
35.00		1.00	1.01	6.169	6.79	0.00	1.200	1.509	5.00	23.335	28.00	190.0	501.8	2176.2
38.50	Bot - Section 2	1.00	1.04	6.294	6.92	0.00	1.200	1.523	3.50	16.041	19.25	133.3	349.1	1498.1
40.00		1.00	1.04	6.345	6.98	0.00	1.200	1.529	1.50	6.903	8.28	57.8	151.5	1040.6
45.00	Top - Section 1	1.00	1.07	6.504	7.15	0.00	1.200	1.547	5.00	22.695	27.23	194.9	499.5	3417.5
50.00		1.00	1.09	6.650	7.32	0.00	1.200	1.564	5.00	22.201	26.64	194.9	493.2	1782.9
55.00		1.00	1.12	6.785	7.46	0.00	1.200	1.579	5.00	21.706	26.05	194.4	486.2	1744.4
60.00		1.00	1.14	6.910	7.60	0.00	1.200	1.592	5.00	21.210	25.45	193.5	478.6	1705.2
65.00		1.00	1.16	7.028	7.73	0.00	1.200	1.605	5.00	20.713	24.86	192.1	470.5	1665.5
70.00		1.00	1.17	7.138	7.85	0.00	1.200	1.617	5.00	20.215	24.26	190.5	462.0	1625.4
75.00		1.00	1.19	7.243	7.97	0.00	1.200	1.628	5.00	19.717	23.66	188.5	453.0	1584.8
78.00	Bot - Section 3	1.00	1.20	7.303	8.03	0.00	1.200	1.635	3.00	11.589	13.91	111.7	268.5	932.4
80.00		1.00	1.21	7.342	8.08	0.00	1.200	1.639	2.00	7.732	9.28	74.9	180.1	957.7
83.50	Top - Section 2	1.00	1.22	7.408	8.15	0.00	1.200	1.646	3.50	13.340	16.01	130.4	310.5	1649.9
85.00		1.00	1.22	7.436	8.18	0.00	1.200	1.649	1.50	5.642	6.77	55.4	132.2	380.6
90.00		1.00	1.24	7.526	8.28	0.00	1.200	1.658	5.00	18.483	22.18	183.6	430.8	1242.9
95.00		1.00	1.25	7.612	8.37	0.00	1.200	1.667	5.00	17.983	21.58	180.7	420.7	1208.5
100.00		1.00	1.27	7.695	8.46	0.00	1.200	1.676	5.00	17.482	20.98	177.6	410.3	1173.9
105.00		1.00	1.28	7.774	8.55	0.00	1.200	1.684	5.00	16.981	20.38	174.3	399.7	1139.0
110.00		1.00	1.29	7.851	8.64	0.00	1.200	1.692	5.00	16.480	19.78	170.8	389.0	1103.9
113.50	Bot - Section 4	1.00	1.30	7.903	8.69	0.00	1.200	1.697	3.50	11.237	13.48	117.2	266.9	752.9
115.00		1.00	1.30	7.925	8.72	0.00	1.200	1.699	1.50	4.804	5.76	50.3	115.0	486.1
118.00	Top - Section 3	1.00	1.31	7.968	8.76	0.00	1.200	1.704	3.00	9.473	11.37	99.6	226.0	956.4
120.00		1.00	1.32	7.996	8.80	0.00	1.200	1.707	2.00	6.215	7.46	65.6	148.9	363.4
122.00	Appurtenance(s)	1.00	1.32	8.024	8.83	0.00	1.200	1.710	2.00	6.134	7.36	65.0	147.1	358.5
125.00		1.00	1.33	8.065	8.87	0.00	1.200	1.714	3.00	9.051	10.86	96.4	216.5	527.9
127.00	Appurtenance(s)	1.00	1.33	8.092	8.90	0.00	1.200	1.716	2.00	5.934	7.12	63.4	142.5	346.2
130.00		1.00	1.34	8.132	8.95	0.00	1.200	1.720	3.00	8.750	10.50	93.9	209.7	509.3
135.00		1.00	1.35	8.197	9.02	0.00	1.200	1.727	5.00	14.183	17.02	153.5	337.9	821.8
137.00	Appurtenance(s)	1.00	1.35	8.222	9.04	0.00	1.200	1.729	2.00	5.532	6.64	60.0	133.3	321.4
140.00		1.00	1.36	8.260	9.09	0.00	1.200	1.733	3.00	8.147	9.78	88.8	195.7	472.0
145.00		1.00	1.37	8.321	9.15	0.00	1.200	1.739	5.00	13.178	15.81	144.7	314.3	759.3
148.00	Appurtenance(s)	1.00	1.37	8.357	9.19	0.00	1.200	1.743	3.00	7.665	9.20	84.6	184.3	441.9
150.00		1.00	1.38	8.381	9.22	0.00	1.200	1.745	2.00	5.009	6.01	55.4	120.9	288.8
155.00		1.00	1.39	8.439	9.28	0.00	1.200	1.751	5.00	12.172	14.61	135.6	290.2	696.3
158.00	Appurtenance(s)	1.00	1.39	8.473	9.32	0.00	1.200	1.754	3.00	7.061	8.47	79.0	169.7	404.1
								Totals:	**158.00**			**5,520.1**		**50,376.5**

Discrete Appurtenance Forces

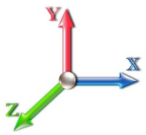
Structure:	CT02722-S-SBA	**Code:**	EIA/TIA-222-G	9/21/2016	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 17	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 22

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	158.00	Low Profile Platform	1	8.473	9.320	1.00	1.00	46.05	2192.58	0.000	0.000	429.21	0.00	0.00
2	158.00	APXV18-206517S-C	3	8.473	9.320	0.74	1.00	16.78	295.23	0.000	0.000	156.36	0.00	0.00
3	148.00	HBXX-6517DS-R2M	6	8.357	9.193	0.62	0.80	42.37	1047.42	0.000	0.000	389.53	0.00	0.00
4	148.00	DB844G65ZAXY	6	8.357	9.193	0.74	0.80	23.57	911.23	0.000	0.000	216.70	0.00	0.00
5	148.00	LNX-4514DS-A1M	1	8.357	9.193	0.57	0.80	5.01	154.15	0.000	0.000	46.08	0.00	0.00
6	148.00	LNX-6514DS-A1M	2	8.357	9.193	0.66	0.80	14.59	343.25	0.000	0.000	134.16	0.00	0.00
7	148.00	RRH 60 W-PCS	3	8.357	9.193	0.61	0.80	7.82	362.42	0.000	0.000	71.90	0.00	0.00
8	148.00	RRH 2x60-aws	3	8.357	9.193	0.61	0.80	7.82	362.42	0.000	0.000	71.90	0.00	0.00
9	148.00	FD9R6004/2C-3L	6	8.357	9.193	0.50	0.80	2.46	68.86	0.000	0.000	22.57	0.00	0.00
10	148.00	DB-T1-6Z-8AB-0Z	1	8.357	9.193	0.73	0.80	3.57	289.26	0.000	0.000	32.79	0.00	0.00
11	148.00	Low Profile Platform	1	8.357	9.193	1.00	1.00	45.91	2185.72	0.000	0.000	422.08	0.00	0.00
12	137.00	Platform w/ Hand Rails	1	8.222	9.044	1.00	1.00	60.75	3875.36	0.000	0.000	549.48	0.00	0.00
13	137.00	DC6-48-60-18-8F	3	8.222	9.044	0.64	0.80	4.15	245.18	0.000	0.000	37.57	0.00	0.00
14	137.00	Quintel QS66512-2	3	8.222	9.044	0.74	0.80	20.94	998.92	0.000	0.000	189.40	0.00	0.00
15	137.00	Ericsson RRUS-32	3	8.222	9.044	0.71	0.80	8.75	614.27	0.000	0.000	79.18	0.00	0.00
16	137.00	CCI HPA-65R-BUU-H8	3	8.222	9.044	0.63	0.80	27.64	1108.77	0.000	0.000	250.02	0.00	0.00
17	137.00	CCI OPA-65R-LCUU-H6	3	8.222	9.044	0.65	0.80	21.41	975.94	0.000	0.000	193.64	0.00	0.00
18	137.00	KMW	3	8.222	9.044	0.62	0.80	19.94	517.54	0.000	0.000	180.32	0.00	0.00
19	137.00	Ericsson RRUS 32 B2	3	8.222	9.044	0.66	0.80	6.90	477.07	0.000	0.000	62.37	0.00	0.00
20	137.00	Ericsson RRU A2	6	8.222	9.044	0.50	0.80	8.41	306.15	0.000	0.000	76.04	0.00	0.00
21	137.00	CCI DTMABP7819VG12A	6	8.222	9.044	0.54	0.80	6.12	246.18	0.000	0.000	55.34	0.00	0.00
22	137.00	Ericsson RRUS-11	6	8.222	9.044	0.58	0.80	11.03	700.92	0.000	0.000	99.75	0.00	0.00
23	137.00	Ericsson RRUS-12	6	8.222	9.044	0.56	0.80	12.96	983.64	0.000	0.000	117.22	0.00	0.00
24	127.00	Low Profile Platform	1	8.092	8.901	1.00	1.00	45.60	2169.84	0.000	0.000	405.87	0.00	0.00
25	127.00	A-ANT-23G-2.0-C	2	8.092	8.901	1.00	1.00	20.22	354.79	0.000	0.000	179.96	0.00	0.00
26	127.00	U-RAS RRH's	3	8.092	8.901	0.58	0.80	4.87	205.69	0.000	0.000	43.33	0.00	0.00
27	127.00	LLPX310R	3	8.092	8.901	0.55	0.80	9.82	291.70	0.000	0.000	87.45	0.00	0.00
28	127.00	DB844H90E-XY	9	8.092	8.901	0.60	0.80	21.10	1126.74	0.000	0.000	187.79	0.00	0.00
29	122.00	CS72188.01 Omni	1	8.092	8.901	1.00	1.00	6.53	82.80	0.000	5.000	58.15	0.00	290.74
							Totals:		**23,494.05**			**4,846.15**		

Total Applied Force Summary

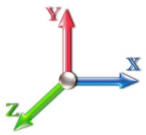
Structure:	CT02722-S-SBA		**Code:**	EIA/TIA-222-G	9/21/2016
Site Name:	Waterbury		**Exposure:**	C	
Height:	158.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 18

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 22

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		178.45	2633.35	0.00	0.00
10.00		175.49	2618.72	0.00	0.00
15.00		172.34	2590.21	0.00	0.00
20.00		179.43	2555.61	0.00	0.00
25.00		184.41	2517.46	0.00	0.00
30.00		187.80	2476.98	0.00	0.00
35.00		190.02	2434.82	0.00	0.00
38.50		133.27	1679.09	0.00	0.00
40.00		57.82	1118.23	0.00	0.00
45.00		194.85	3676.15	0.00	0.00
50.00		194.89	2041.55	0.00	0.00
55.00		194.40	2002.96	0.00	0.00
60.00		193.47	1963.78	0.00	0.00
65.00		192.15	1924.09	0.00	0.00
70.00		190.48	1883.95	0.00	0.00
75.00		188.50	1843.43	0.00	0.00
78.00		111.72	1087.57	0.00	0.00
80.00		74.93	1061.18	0.00	0.00
83.50		130.45	1830.89	0.00	0.00
85.00		55.38	458.15	0.00	0.00
90.00		183.62	1501.53	0.00	0.00
95.00		180.70	1467.12	0.00	0.00
100.00		177.57	1432.47	0.00	0.00
105.00		174.27	1397.60	0.00	0.00
110.00		170.79	1362.53	0.00	0.00
113.50		117.22	933.95	0.00	0.00
115.00		50.25	563.68	0.00	0.00
118.00		99.63	1111.55	0.00	0.00
120.00		65.59	466.87	0.00	0.00
122.00	(1) attachments	123.12	544.76	0.00	290.74
125.00		96.36	682.46	0.00	0.00
127.00	(18) attachments	967.77	4598.02	0.00	0.00
130.00		93.92	632.53	0.00	0.00
135.00		153.45	1027.08	0.00	0.00
137.00	(46) attachments	1950.36	11453.45	0.00	0.00
140.00		88.83	543.37	0.00	0.00
145.00		144.74	878.20	0.00	0.00
148.00	(29) attachments	1492.26	6238.01	0.00	0.00
150.00		55.41	303.78	0.00	0.00
155.00		135.58	733.74	0.00	0.00
158.00	(4) attachments	664.54	2914.34	0.00	0.00
	Totals:	**10,366.22**	**81,185.19**	**0.00**	**290.74**

Calculated Forces

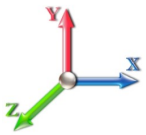
Structure:	CT02722-S-SBA	**Code:**	EIA/TIA-222-G	9/21/2016	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 19	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 22

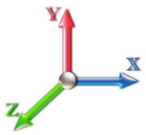
Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-81.18	-10.39	0.00	-1174.1	0.00	1174.18	6641.65	3320.83	16223.6	8123.90	0.00	0.000	0.000	0.157
5.00	-78.54	-10.27	0.00	-1122.2	0.00	1122.21	6549.09	3274.55	15672.1	7847.74	0.02	-0.039	0.000	0.155
10.00	-75.92	-10.14	0.00	-1070.8	0.00	1070.87	6454.83	3227.41	15125.8	7574.18	0.08	-0.078	0.000	0.153
15.00	-73.32	-10.02	0.00	-1020.1	0.00	1020.17	6358.86	3179.43	14585.0	7303.35	0.19	-0.118	0.000	0.151
20.00	-70.76	-9.88	0.00	-970.08	0.00	970.08	6261.18	3130.59	14049.8	7035.38	0.33	-0.158	0.000	0.149
25.00	-68.23	-9.74	0.00	-920.68	0.00	920.68	6161.80	3080.90	13520.6	6770.39	0.52	-0.199	0.000	0.147
30.00	-65.75	-9.59	0.00	-871.99	0.00	871.99	6060.71	3030.36	12997.7	6508.52	0.75	-0.241	0.000	0.145
35.00	-63.31	-9.43	0.00	-824.04	0.00	824.04	5957.92	2978.96	12481.2	6249.90	1.03	-0.283	0.000	0.142
38.50	-61.63	-9.31	0.00	-791.05	0.00	791.05	5884.95	2942.47	12123.6	6070.85	1.24	-0.313	0.000	0.141
40.00	-60.51	-9.27	0.00	-777.08	0.00	777.08	5853.42	2926.71	11971.4	5994.64	1.34	-0.326	0.000	0.140
45.00	-56.82	-9.10	0.00	-730.71	0.00	730.71	4462.52	2231.26	9089.55	4551.53	1.71	-0.369	0.000	0.173
50.00	-54.78	-8.94	0.00	-685.21	0.00	685.21	4388.93	2194.47	8721.58	4367.27	2.12	-0.413	0.000	0.169
55.00	-52.77	-8.77	0.00	-640.53	0.00	640.53	4313.64	2156.82	8357.61	4185.02	2.58	-0.464	0.000	0.165
60.00	-50.80	-8.61	0.00	-596.66	0.00	596.66	4236.64	2118.32	7997.90	4004.90	3.09	-0.515	0.000	0.161
65.00	-48.87	-8.44	0.00	-553.61	0.00	553.61	4157.93	2078.96	7642.72	3827.04	3.66	-0.567	0.000	0.156
70.00	-46.98	-8.28	0.00	-511.39	0.00	511.39	4077.51	2038.76	7292.30	3651.57	4.28	-0.619	0.000	0.152
75.00	-45.13	-8.10	0.00	-470.01	0.00	470.01	3995.39	1997.70	6946.91	3478.62	4.96	-0.671	0.000	0.146
78.00	-44.04	-7.99	0.00	-445.71	0.00	445.71	3945.30	1972.65	6742.20	3376.11	5.39	-0.702	0.000	0.143
80.00	-42.98	-7.93	0.00	-429.73	0.00	429.73	3911.57	1955.78	6606.80	3308.31	5.69	-0.723	0.000	0.141
83.50	-41.14	-7.79	0.00	-401.98	0.00	401.98	2771.30	1385.65	4677.52	2342.24	6.23	-0.760	0.000	0.186
85.00	-40.68	-7.76	0.00	-390.29	0.00	390.29	2755.69	1377.84	4610.09	2308.47	6.48	-0.775	0.000	0.184
90.00	-39.17	-7.60	0.00	-351.49	0.00	351.49	2702.54	1351.27	4386.89	2196.71	7.32	-0.838	0.000	0.175
95.00	-37.70	-7.43	0.00	-313.51	0.00	313.51	2647.69	1323.84	4166.29	2086.24	8.23	-0.899	0.000	0.165
100.00	-36.27	-7.27	0.00	-276.34	0.00	276.34	2591.13	1295.56	3948.53	1977.20	9.21	-0.959	0.000	0.154
105.00	-34.86	-7.11	0.00	-239.99	0.00	239.99	2532.86	1266.43	3733.89	1869.72	10.24	-1.016	0.000	0.142
110.00	-33.50	-6.94	0.00	-204.46	0.00	204.46	2472.89	1236.44	3522.60	1763.92	11.34	-1.070	0.000	0.129
113.50	-32.57	-6.82	0.00	-180.18	0.00	180.18	2429.89	1214.95	3376.84	1690.93	12.13	-1.107	0.000	0.120
115.00	-32.00	-6.77	0.00	-169.95	0.00	169.95	2411.21	1205.60	3314.94	1659.93	12.48	-1.122	0.000	0.116
118.00	-30.89	-6.66	0.00	-149.65	0.00	149.65	1790.62	895.31	2454.63	1229.14	13.20	-1.151	0.000	0.139
120.00	-30.42	-6.59	0.00	-136.33	0.00	136.33	1774.20	887.10	2396.85	1200.21	13.69	-1.170	0.000	0.131
122.00	-29.88	-6.47	0.00	-122.86	0.00	122.86	1757.50	878.75	2339.36	1171.42	14.18	-1.190	0.000	0.122
125.00	-29.19	-6.37	0.00	-103.44	0.00	103.44	1731.94	865.97	2253.71	1128.53	14.94	-1.219	0.000	0.109
127.00	-24.61	-5.32	0.00	-90.69	0.00	90.69	1714.56	857.28	2197.01	1100.14	15.45	-1.236	0.000	0.097
130.00	-23.98	-5.22	0.00	-74.74	0.00	74.74	1687.98	843.99	2112.62	1057.88	16.24	-1.259	0.000	0.085
135.00	-22.96	-5.05	0.00	-48.64	0.00	48.64	1642.31	821.15	1973.86	988.40	17.57	-1.290	0.000	0.063
137.00	-11.55	-2.85	0.00	-38.54	0.00	38.54	1623.56	811.78	1919.06	960.96	18.12	-1.300	0.000	0.047
140.00	-11.01	-2.75	0.00	-30.00	0.00	30.00	1594.93	797.47	1837.67	920.20	18.94	-1.312	0.000	0.040
145.00	-10.13	-2.58	0.00	-16.27	0.00	16.27	1545.85	772.93	1704.31	853.42	20.32	-1.327	0.000	0.026
148.00	-3.93	-0.95	0.00	-8.52	0.00	8.52	1515.59	757.79	1625.76	814.09	21.16	-1.333	0.000	0.013
150.00	-3.63	-0.88	0.00	-6.62	0.00	6.62	1495.07	747.53	1574.03	788.19	21.72	-1.335	0.000	0.011
155.00	-2.90	-0.73	0.00	-2.20	0.00	2.20	1442.53	721.26	1447.04	724.60	23.12	-1.339	0.000	0.005
158.00	0.00	-0.66	0.00	0.00	0.00	0.00	1400.09	700.04	1362.73	682.38	23.96	-1.339	0.000	0.000

Seismic Segment Forces (Factored)

Structure:	CT02722-S-SBA		**Code:**	EIA/TIA-222-G	9/21/2016
Site Name:	Waterbury		**Exposure:**	C	
Height:	158.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 20

Tower Engineering Solutions

Load Case: 1.2D + 1.0E



Gust Response Factor	1.10			**Sds**	0.20	**Iterations**	20
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.10	**Ss**	0.19
Wind Load Factor	0.00	**Structure Frequency**	0.40	**SA**	0.04	**S1**	0.06
						Seismic Importance Factor	1.00

Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		1589.7	0.00	0.03	0.02	27.48	
10.00		1557.3	0.01	0.05	0.03	40.05	
15.00		1524.9	0.02	0.06	0.04	45.90	
20.00		1492.5	0.03	0.07	0.04	48.44	
25.00		1460.1	0.05	0.07	0.04	49.39	
30.00		1427.7	0.07	0.07	0.04	49.67	
35.00		1395.3	0.09	0.07	0.04	49.73	
38.50	Bot - Section 2	957.49	0.11	0.07	0.04	34.68	
40.00		740.96	0.12	0.07	0.03	27.02	
45.00	Top - Section 1	2431.7	0.15	0.07	0.03	90.34	
50.00		1074.7	0.19	0.06	0.02	40.26	
55.00		1048.4	0.23	0.06	0.02	38.79	
60.00		1022.1	0.27	0.05	0.01	36.03	
65.00		995.81	0.32	0.04	0.01	31.50	
70.00		969.48	0.37	0.03	0.01	24.84	
75.00		943.15	0.43	0.01	0.01	16.01	
78.00	Bot - Section 3	553.26	0.46	0.00	0.01	5.88	
80.00		648.06	0.48	-0.01	0.01	3.91	
83.50	Top - Section 2	1116.1	0.53	-0.03	0.01	-2.72	
85.00		206.99	0.55	-0.03	0.01	-1.26	
90.00		676.80	0.61	-0.06	0.02	-12.00	
95.00		656.55	0.68	-0.08	0.03	-17.75	
100.00		636.30	0.76	-0.10	0.04	-20.79	
105.00		616.05	0.83	-0.12	0.06	-20.84	
110.00		595.80	0.92	-0.12	0.09	-17.99	
113.50	Bot - Section 4	405.01	0.98	-0.12	0.12	-10.02	
115.00		309.25	1.00	-0.11	0.13	-6.71	
118.00	Top - Section 3	608.66	1.05	-0.09	0.16	-8.67	
120.00		178.79	1.09	-0.08	0.18	-1.49	
122.00	Appurtenance(s)	201.20	1.13	-0.05	0.20	-0.33	
125.00		259.44	1.18	-0.01	0.24	2.56	
127.00	Appurtenance(s)	1775.7	1.22	0.03	0.27	32.88	
130.00		249.72	1.28	0.09	0.32	8.22	
135.00		403.24	1.38	0.25	0.41	24.54	
137.00	Appurtenance(s)	4482.0	1.42	0.32	0.45	329.08	
140.00		230.28	1.48	0.46	0.52	21.59	
145.00		370.84	1.59	0.75	0.66	48.84	
148.00	Appurtenance(s)	2242.8	1.66	0.97	0.75	351.92	
150.00		139.91	1.70	1.14	0.82	24.45	
155.00		338.44	1.82	1.63	1.01	75.49	
158.00	Appurtenance(s)	1474.4	1.89	1.98	1.14	375.42	
	Totals:	**40,007.8**				**1,834.4**	**Total Wind:** **37,237.5**

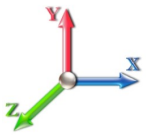
Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

Calculated Forces

Structure:	CT02722-S-SBA	**Code:**	EIA/TIA-222-G	9/21/2016	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 21	

Tower Engineering Solutions

Load Case: 1.2D + 1.0E



Gust Response Factor	1.10			**Sds**	0.20			**Iterations**	20
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.10			**Ss**	0.19
Wind Load Factor	0.00	**Structure Frequency**	0.40	**SA**	0.04			**S1**	0.06
								Seismic Importance Factor	1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-55.32	-1.96	0.00	-223.22	0.00	223.22	6641.65	3320.83	16223.6	8123.90		0.00	0.00	0.036
5.00	-53.16	-1.94	0.00	-213.43	0.00	213.43	6549.09	3274.55	15672.1	7847.74		0.00	-0.01	0.035
10.00	-51.03	-1.90	0.00	-203.75	0.00	203.75	6454.83	3227.41	15125.8	7574.18		0.02	-0.01	0.035
15.00	-48.94	-1.86	0.00	-194.24	0.00	194.24	6358.86	3179.43	14585.0	7303.35		0.04	-0.02	0.034
20.00	-46.89	-1.82	0.00	-184.93	0.00	184.93	6261.18	3130.59	14049.8	7035.38		0.06	-0.03	0.034
25.00	-44.88	-1.78	0.00	-175.83	0.00	175.83	6161.80	3080.90	13520.6	6770.39		0.10	-0.04	0.033
30.00	-42.91	-1.73	0.00	-166.96	0.00	166.96	6060.71	3030.36	12997.7	6508.52		0.14	-0.05	0.033
35.00	-40.97	-1.68	0.00	-158.31	0.00	158.31	5957.92	2978.96	12481.2	6249.90		0.20	-0.05	0.032
38.50	-39.64	-1.65	0.00	-152.42	0.00	152.42	5884.95	2942.47	12123.6	6070.85		0.24	-0.06	0.032
40.00	-38.68	-1.63	0.00	-149.94	0.00	149.94	5853.42	2926.71	11971.4	5994.64		0.26	-0.06	0.032
45.00	-35.50	-1.54	0.00	-141.81	0.00	141.81	4462.52	2231.26	9089.55	4551.53		0.33	-0.07	0.039
50.00	-33.95	-1.50	0.00	-134.13	0.00	134.13	4388.93	2194.47	8721.58	4367.27		0.40	-0.08	0.038
55.00	-32.44	-1.47	0.00	-126.62	0.00	126.62	4313.64	2156.82	8357.61	4185.02		0.49	-0.09	0.038
60.00	-30.95	-1.43	0.00	-119.30	0.00	119.30	4236.64	2118.32	7997.90	4004.90		0.59	-0.10	0.037
65.00	-29.50	-1.40	0.00	-112.14	0.00	112.14	4157.93	2078.96	7642.72	3827.04		0.70	-0.11	0.036
70.00	-28.07	-1.38	0.00	-105.12	0.00	105.12	4077.51	2038.76	7292.30	3651.57		0.82	-0.12	0.036
75.00	-26.68	-1.37	0.00	-98.22	0.00	98.22	3995.39	1997.70	6946.91	3478.62		0.95	-0.13	0.035
78.00	-25.86	-1.36	0.00	-94.12	0.00	94.12	3945.30	1972.65	6742.20	3376.11		1.04	-0.14	0.034
80.00	-24.98	-1.36	0.00	-91.40	0.00	91.40	3911.57	1955.78	6606.80	3308.31		1.10	-0.14	0.034
83.50	-23.46	-1.36	0.00	-86.65	0.00	86.65	2771.30	1385.65	4677.52	2342.24		1.20	-0.15	0.045
85.00	-23.14	-1.36	0.00	-84.61	0.00	84.61	2755.69	1377.84	4610.09	2308.47		1.25	-0.15	0.045
90.00	-22.07	-1.36	0.00	-77.82	0.00	77.82	2702.54	1351.27	4386.89	2196.71		1.42	-0.17	0.044
95.00	-21.02	-1.36	0.00	-71.02	0.00	71.02	2647.69	1323.84	4166.29	2086.24		1.60	-0.18	0.042
100.00	-20.00	-1.36	0.00	-64.20	0.00	64.20	2591.13	1295.56	3948.53	1977.20		1.80	-0.19	0.040
105.00	-19.00	-1.37	0.00	-57.38	0.00	57.38	2532.86	1266.43	3733.89	1869.72		2.01	-0.21	0.038
110.00	-18.02	-1.36	0.00	-50.56	0.00	50.56	2472.89	1236.44	3522.60	1763.92		2.23	-0.22	0.036
113.50	-17.36	-1.36	0.00	-45.78	0.00	45.78	2429.89	1214.95	3376.84	1690.93		2.40	-0.23	0.034
115.00	-16.91	-1.36	0.00	-43.74	0.00	43.74	2411.21	1205.60	3314.94	1659.93		2.47	-0.23	0.033
118.00	-16.02	-1.36	0.00	-39.64	0.00	39.64	1790.62	895.31	2454.63	1229.14		2.62	-0.24	0.041
120.00	-15.70	-1.36	0.00	-36.92	0.00	36.92	1774.20	887.10	2396.85	1200.21		2.73	-0.25	0.040
122.00	-15.36	-1.36	0.00	-34.19	0.00	34.19	1757.50	878.75	2339.36	1171.42		2.83	-0.25	0.038
125.00	-14.89	-1.36	0.00	-30.11	0.00	30.11	1731.94	865.97	2253.71	1128.53		2.99	-0.26	0.035
127.00	-12.66	-1.32	0.00	-27.39	0.00	27.39	1714.56	857.28	2197.01	1100.14		3.10	-0.27	0.032
130.00	-12.24	-1.31	0.00	-23.43	0.00	23.43	1687.98	843.99	2112.62	1057.88		3.27	-0.27	0.029
135.00	-11.55	-1.28	0.00	-16.88	0.00	16.88	1642.31	821.15	1973.86	988.40		3.56	-0.28	0.024
137.00	-6.09	-0.93	0.00	-14.31	0.00	14.31	1623.56	811.78	1919.06	960.96		3.68	-0.29	0.019
140.00	-5.74	-0.91	0.00	-11.53	0.00	11.53	1594.93	797.47	1837.67	920.20		3.86	-0.29	0.016
145.00	-5.18	-0.85	0.00	-7.00	0.00	7.00	1545.85	772.93	1704.31	853.42		4.17	-0.30	0.012
148.00	-2.42	-0.49	0.00	-4.44	0.00	4.44	1515.59	757.79	1625.76	814.09		4.36	-0.30	0.007
150.00	-2.23	-0.46	0.00	-3.47	0.00	3.47	1495.07	747.53	1574.03	788.19		4.48	-0.30	0.006
155.00	-1.79	-0.38	0.00	-1.15	0.00	1.15	1442.53	721.26	1447.04	724.60		4.80	-0.30	0.003
158.00	0.00	-0.38	0.00	0.00	0.00	0.00	1400.09	700.04	1362.73	682.38		4.99	-0.30	0.000

Seismic Segment Forces (Factored)

Structure:	CT02722-S-SBA		**Code:**	EIA/TIA-222-G	9/21/2016
Site Name:	Waterbury		**Exposure:**	C	
Height:	158.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 22

Tower Engineering Solutions

Load Case:	0.9D + 1.0E							**Iterations**	20
Gust Response Factor	1.10				**Sds**	0.20		**Ss**	0.19
Dead Load Factor	0.90	**Seismic Load Factor**	1.00		**Sd1**	0.10		**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency**	0.40		**SA**	0.04	**Seismic Importance Factor**		1.00

Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		1589.7	0.00	0.03	0.02	27.48	
10.00		1557.3	0.01	0.05	0.03	40.05	
15.00		1524.9	0.02	0.06	0.04	45.90	
20.00		1492.5	0.03	0.07	0.04	48.44	
25.00		1460.1	0.05	0.07	0.04	49.39	
30.00		1427.7	0.07	0.07	0.04	49.67	
35.00		1395.3	0.09	0.07	0.04	49.73	
38.50	Bot - Section 2	957.49	0.11	0.07	0.04	34.68	
40.00		740.96	0.12	0.07	0.03	27.02	
45.00	Top - Section 1	2431.7	0.15	0.07	0.03	90.34	
50.00		1074.7	0.19	0.06	0.02	40.26	
55.00		1048.4	0.23	0.06	0.02	38.79	
60.00		1022.1	0.27	0.05	0.01	36.03	
65.00		995.81	0.32	0.04	0.01	31.50	
70.00		969.48	0.37	0.03	0.01	24.84	
75.00		943.15	0.43	0.01	0.01	16.01	
78.00	Bot - Section 3	553.26	0.46	0.00	0.01	5.88	
80.00		648.06	0.48	-0.01	0.01	3.91	
83.50	Top - Section 2	1116.1	0.53	-0.03	0.01	-2.72	
85.00		206.99	0.55	-0.03	0.01	-1.26	
90.00		676.80	0.61	-0.06	0.02	-12.00	
95.00		656.55	0.68	-0.08	0.03	-17.75	
100.00		636.30	0.76	-0.10	0.04	-20.79	
105.00		616.05	0.83	-0.12	0.06	-20.84	
110.00		595.80	0.92	-0.12	0.09	-17.99	
113.50	Bot - Section 4	405.01	0.98	-0.12	0.12	-10.02	
115.00		309.25	1.00	-0.11	0.13	-6.71	
118.00	Top - Section 3	608.66	1.05	-0.09	0.16	-8.67	
120.00		178.79	1.09	-0.08	0.18	-1.49	
122.00	Appurtenance(s)	201.20	1.13	-0.05	0.20	-0.33	
125.00		259.44	1.18	-0.01	0.24	2.56	
127.00	Appurtenance(s)	1775.7	1.22	0.03	0.27	32.88	
130.00		249.72	1.28	0.09	0.32	8.22	
135.00		403.24	1.38	0.25	0.41	24.54	
137.00	Appurtenance(s)	4482.0	1.42	0.32	0.45	329.08	
140.00		230.28	1.48	0.46	0.52	21.59	
145.00		370.84	1.59	0.75	0.66	48.84	
148.00	Appurtenance(s)	2242.8	1.66	0.97	0.75	351.92	
150.00		139.91	1.70	1.14	0.82	24.45	
155.00		338.44	1.82	1.63	1.01	75.49	
158.00	Appurtenance(s)	1474.4	1.89	1.98	1.14	375.42	
	Totals:	**40,007.8**				**1,834.4**	**Total Wind:** **37,237.5**

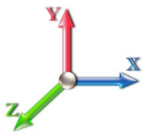
Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

Calculated Forces

Structure:	CT02722-S-SBA	**Code:**	EIA/TIA-222-G	9/21/2016	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 23	

Tower Engineering Solutions

Load Case: 0.9D + 1.0E



Gust Response Factor	1.10			**Sds**	0.20			**Iterations**	20
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.10			**Ss**	0.19
Wind Load Factor	0.00	**Structure Frequency**	0.40	**SA**	0.04			**S1**	0.06
								Seismic Importance Factor	1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-41.49	-1.96	0.00	-221.33	0.00	221.33	6641.65	3320.83	16223.6	8123.90		0.00	0.00	0.033
5.00	-39.87	-1.93	0.00	-211.55	0.00	211.55	6549.09	3274.55	15672.1	7847.74		0.00	-0.01	0.033
10.00	-38.27	-1.90	0.00	-201.88	0.00	201.88	6454.83	3227.41	15125.8	7574.18		0.02	-0.01	0.033
15.00	-36.71	-1.86	0.00	-192.39	0.00	192.39	6358.86	3179.43	14585.0	7303.35		0.04	-0.02	0.032
20.00	-35.17	-1.81	0.00	-183.10	0.00	183.10	6261.18	3130.59	14049.8	7035.38		0.06	-0.03	0.032
25.00	-33.66	-1.77	0.00	-174.04	0.00	174.04	6161.80	3080.90	13520.6	6770.39		0.10	-0.04	0.031
30.00	-32.18	-1.72	0.00	-165.21	0.00	165.21	6060.71	3030.36	12997.7	6508.52		0.14	-0.05	0.031
35.00	-30.73	-1.67	0.00	-156.61	0.00	156.61	5957.92	2978.96	12481.2	6249.90		0.19	-0.05	0.030
38.50	-29.73	-1.64	0.00	-150.75	0.00	150.75	5884.95	2942.47	12123.6	6070.85		0.23	-0.06	0.030
40.00	-29.01	-1.61	0.00	-148.29	0.00	148.29	5853.42	2926.71	11971.4	5994.64		0.25	-0.06	0.030
45.00	-26.63	-1.53	0.00	-140.22	0.00	140.22	4462.52	2231.26	9089.55	4551.53		0.32	-0.07	0.037
50.00	-25.46	-1.49	0.00	-132.59	0.00	132.59	4388.93	2194.47	8721.58	4367.27		0.40	-0.08	0.036
55.00	-24.33	-1.45	0.00	-125.16	0.00	125.16	4313.64	2156.82	8357.61	4185.02		0.49	-0.09	0.036
60.00	-23.21	-1.42	0.00	-117.90	0.00	117.90	4236.64	2118.32	7997.90	4004.90		0.59	-0.10	0.035
65.00	-22.12	-1.39	0.00	-110.81	0.00	110.81	4157.93	2078.96	7642.72	3827.04		0.69	-0.11	0.034
70.00	-21.05	-1.37	0.00	-103.87	0.00	103.87	4077.51	2038.76	7292.30	3651.57		0.81	-0.12	0.034
75.00	-20.01	-1.35	0.00	-97.05	0.00	97.05	3995.39	1997.70	6946.91	3478.62		0.94	-0.13	0.033
78.00	-19.40	-1.34	0.00	-93.00	0.00	93.00	3945.30	1972.65	6742.20	3376.11		1.03	-0.14	0.032
80.00	-18.74	-1.34	0.00	-90.31	0.00	90.31	3911.57	1955.78	6606.80	3308.31		1.09	-0.14	0.032
83.50	-17.60	-1.34	0.00	-85.61	0.00	85.61	2771.30	1385.65	4677.52	2342.24		1.19	-0.15	0.043
85.00	-17.35	-1.34	0.00	-83.60	0.00	83.60	2755.69	1377.84	4610.09	2308.47		1.24	-0.15	0.043
90.00	-16.55	-1.34	0.00	-76.90	0.00	76.90	2702.54	1351.27	4386.89	2196.71		1.41	-0.17	0.041
95.00	-15.76	-1.34	0.00	-70.18	0.00	70.18	2647.69	1323.84	4166.29	2086.24		1.59	-0.18	0.040
100.00	-15.00	-1.35	0.00	-63.45	0.00	63.45	2591.13	1295.56	3948.53	1977.20		1.78	-0.19	0.038
105.00	-14.25	-1.35	0.00	-56.72	0.00	56.72	2532.86	1266.43	3733.89	1869.72		1.99	-0.21	0.036
110.00	-13.52	-1.35	0.00	-49.99	0.00	49.99	2472.89	1236.44	3522.60	1763.92		2.21	-0.22	0.034
113.50	-13.02	-1.35	0.00	-45.28	0.00	45.28	2429.89	1214.95	3376.84	1690.93		2.37	-0.23	0.032
115.00	-12.68	-1.35	0.00	-43.26	0.00	43.26	2411.21	1205.60	3314.94	1659.93		2.45	-0.23	0.031
118.00	-12.02	-1.34	0.00	-39.22	0.00	39.22	1790.62	895.31	2454.63	1229.14		2.59	-0.24	0.039
120.00	-11.78	-1.34	0.00	-36.53	0.00	36.53	1774.20	887.10	2396.85	1200.21		2.70	-0.24	0.037
122.00	-11.52	-1.35	0.00	-33.84	0.00	33.84	1757.50	878.75	2339.36	1171.42		2.80	-0.25	0.035
125.00	-11.17	-1.34	0.00	-29.81	0.00	29.81	1731.94	865.97	2253.71	1128.53		2.96	-0.26	0.033
127.00	-9.49	-1.30	0.00	-27.12	0.00	27.12	1714.56	857.28	2197.01	1100.14		3.07	-0.26	0.030
130.00	-9.18	-1.29	0.00	-23.21	0.00	23.21	1687.98	843.99	2112.62	1057.88		3.24	-0.27	0.027
135.00	-8.66	-1.27	0.00	-16.74	0.00	16.74	1642.31	821.15	1973.86	988.40		3.52	-0.28	0.022
137.00	-4.56	-0.92	0.00	-14.20	0.00	14.20	1623.56	811.78	1919.06	960.96		3.64	-0.28	0.018
140.00	-4.30	-0.90	0.00	-11.44	0.00	11.44	1594.93	797.47	1837.67	920.20		3.82	-0.29	0.015
145.00	-3.88	-0.85	0.00	-6.95	0.00	6.95	1545.85	772.93	1704.31	853.42		4.13	-0.29	0.011
148.00	-1.81	-0.48	0.00	-4.41	0.00	4.41	1515.59	757.79	1625.76	814.09		4.31	-0.30	0.007
150.00	-1.67	-0.46	0.00	-3.44	0.00	3.44	1495.07	747.53	1574.03	788.19		4.44	-0.30	0.005
155.00	-1.34	-0.38	0.00	-1.15	0.00	1.15	1442.53	721.26	1447.04	724.60		4.75	-0.30	0.003
158.00	0.00	-0.38	0.00	0.00	0.00	0.00	1400.09	700.04	1362.73	682.38		4.94	-0.30	0.000

Wind Loading - Shaft

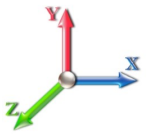
Structure:	CT02722-S-SBA	**Code:**	EIA/TIA-222-G	9/21/2016	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 24	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 22

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	7.442	8.19	280.76	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	7.442	8.19	275.14	0.650	0.000	5.00	25.123	16.33	133.7	0.0	1589.8
10.00		1.00	0.85	7.442	8.19	269.53	0.650	0.000	5.00	24.616	16.00	131.0	0.0	1557.4
15.00		1.00	0.85	7.442	8.19	263.91	0.650	0.000	5.00	24.108	15.67	128.3	0.0	1525.0
20.00		1.00	0.90	7.896	8.69	266.06	0.650	0.000	5.00	23.600	15.34	133.2	0.0	1492.6
25.00		1.00	0.95	8.276	9.10	266.46	0.650	0.000	5.00	23.093	15.01	136.6	0.0	1460.2
30.00		1.00	0.98	8.600	9.46	265.58	0.650	0.000	5.00	22.585	14.68	138.9	0.0	1427.8
35.00		1.00	1.01	8.883	9.77	263.79	0.650	0.000	5.00	22.077	14.35	140.2	0.0	1395.4
38.50	Bot - Section 2	1.00	1.04	9.064	9.97	262.11	0.650	0.000	3.50	15.152	9.85	98.2	0.0	957.5
40.00		1.00	1.04	9.137	10.05	261.30	0.650	0.000	1.50	6.521	4.24	42.6	0.0	741.0
45.00	Top - Section 1	1.00	1.07	9.366	10.30	258.26	0.650	0.000	5.00	21.406	13.91	143.3	0.0	2431.7
50.00		1.00	1.09	9.576	10.53	259.09	0.650	0.000	5.00	20.898	13.58	143.1	0.0	1074.8
55.00		1.00	1.12	9.770	10.75	255.26	0.650	0.000	5.00	20.390	13.25	142.4	0.0	1048.5
60.00		1.00	1.14	9.951	10.95	251.12	0.650	0.000	5.00	19.883	12.92	141.5	0.0	1022.1
65.00		1.00	1.16	10.120	11.13	246.69	0.650	0.000	5.00	19.375	12.59	140.2	0.0	995.8
70.00		1.00	1.17	10.279	11.31	242.02	0.650	0.000	5.00	18.867	12.26	138.7	0.0	969.5
75.00		1.00	1.19	10.430	11.47	237.14	0.650	0.000	5.00	18.360	11.93	136.9	0.0	943.2
78.00	Bot - Section 3	1.00	1.20	10.516	11.57	234.11	0.650	0.000	3.00	10.772	7.00	81.0	0.0	553.3
80.00		1.00	1.21	10.572	11.63	232.06	0.650	0.000	2.00	7.186	4.67	54.3	0.0	648.1
83.50	Top - Section 2	1.00	1.22	10.668	11.73	228.40	0.650	0.000	3.50	12.379	8.05	94.4	0.0	1116.2
85.00		1.00	1.22	10.708	11.78	230.32	0.650	0.000	1.50	5.229	3.40	40.0	0.0	207.0
90.00		1.00	1.24	10.838	11.92	224.93	0.650	0.000	5.00	17.101	11.12	132.5	0.0	676.8
95.00		1.00	1.25	10.962	12.06	219.39	0.650	0.000	5.00	16.593	10.79	130.1	0.0	656.5
100.00		1.00	1.27	11.081	12.19	213.73	0.650	0.000	5.00	16.086	10.46	127.4	0.0	636.3
105.00		1.00	1.28	11.195	12.31	207.94	0.650	0.000	5.00	15.578	10.13	124.7	0.0	616.1
110.00		1.00	1.29	11.305	12.44	202.04	0.650	0.000	5.00	15.070	9.80	121.8	0.0	595.8
113.50	Bot - Section 4	1.00	1.30	11.380	12.52	197.84	0.650	0.000	3.50	10.247	6.66	83.4	0.0	405.0
115.00		1.00	1.30	11.412	12.55	196.03	0.650	0.000	1.50	4.379	2.85	35.7	0.0	309.3
118.00	Top - Section 3	1.00	1.31	11.474	12.62	192.38	0.650	0.000	3.00	8.621	5.60	70.7	0.0	608.7
120.00		1.00	1.32	11.514	12.67	192.84	0.650	0.000	2.00	5.646	3.67	46.5	0.0	178.8
122.00	Appurtenance(s)	1.00	1.32	11.554	12.71	190.37	0.650	0.000	2.00	5.564	3.62	46.0	0.0	176.2
125.00		1.00	1.33	11.614	12.78	186.65	0.650	0.000	3.00	8.194	5.33	68.0	0.0	259.4
127.00	Appurtenance(s)	1.00	1.33	11.653	12.82	184.15	0.650	0.000	2.00	5.361	3.48	44.7	0.0	169.7
130.00		1.00	1.34	11.710	12.88	180.38	0.650	0.000	3.00	7.890	5.13	66.1	0.0	249.7
135.00		1.00	1.35	11.803	12.98	174.02	0.650	0.000	5.00	12.743	8.28	107.5	0.0	403.2
137.00	Appurtenance(s)	1.00	1.35	11.840	13.02	171.46	0.650	0.000	2.00	4.955	3.22	41.9	0.0	156.8
140.00		1.00	1.36	11.894	13.08	167.59	0.650	0.000	3.00	7.281	4.73	61.9	0.0	230.3
145.00		1.00	1.37	11.982	13.18	161.08	0.650	0.000	5.00	11.728	7.62	100.5	0.0	370.8
148.00	Appurtenance(s)	1.00	1.37	12.034	13.24	157.14	0.650	0.000	3.00	6.793	4.42	58.5	0.0	214.7
150.00		1.00	1.38	12.068	13.27	154.50	0.650	0.000	2.00	4.427	2.88	38.2	0.0	139.9
155.00		1.00	1.39	12.152	13.37	147.86	0.650	0.000	5.00	10.713	6.96	93.1	0.0	338.4
158.00	Appurtenance(s)	1.00	1.39	12.201	13.42	143.84	0.650	0.000	3.00	6.184	4.02	53.9	0.0	195.3
								Totals:	**158.00**			**3,991.7**		**30,744.2**

Discrete Appurtenance Forces

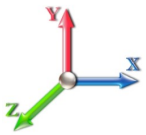
Structure:	CT02722-S-SBA	**Code:**	EIA/TIA-222-G	9/21/2016	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 25	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 22

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	158.00	Low Profile Platform	1	12.201	13.421	1.00	1.00	25.00	1200.00	0.000	0.000	335.52	0.00	0.00
2	158.00	APXV18-206517S-C	3	12.201	13.421	0.74	1.00	11.48	79.20	0.000	0.000	154.04	0.00	0.00
3	148.00	HBXX-6517DS-R2M	6	12.034	13.238	0.62	0.80	31.60	244.80	0.000	0.000	418.32	0.00	0.00
4	148.00	DB844G65ZAXY	6	12.034	13.238	0.74	0.80	19.33	72.00	0.000	0.000	255.87	0.00	0.00
5	148.00	LNX-4514DS-A1M	1	12.034	13.238	0.57	0.80	3.86	41.90	0.000	0.000	51.05	0.00	0.00
6	148.00	LNX-6514DS-A1M	2	12.034	13.238	0.66	0.80	10.85	76.80	0.000	0.000	143.62	0.00	0.00
7	148.00	RRH 60 W-PCS	3	12.034	13.238	0.61	0.80	6.38	165.00	0.000	0.000	84.51	0.00	0.00
8	148.00	RRH 2x60-aws	3	12.034	13.238	0.61	0.80	6.38	165.00	0.000	0.000	84.51	0.00	0.00
9	148.00	FD9R6004/2C-3L	6	12.034	13.238	0.50	0.80	1.10	18.60	0.000	0.000	14.58	0.00	0.00
10	148.00	DB-T1-6Z-8AB-0Z	1	12.034	13.238	0.73	0.80	2.98	44.00	0.000	0.000	39.51	0.00	0.00
11	148.00	Low Profile Platform	1	12.034	13.238	1.00	1.00	25.00	1200.00	0.000	0.000	330.94	0.00	0.00
12	137.00	Platform w/ Hand Rails	1	11.840	13.024	1.00	1.00	40.00	2000.00	0.000	0.000	520.96	0.00	0.00
13	137.00	DC6-48-60-18-8F	3	11.840	13.024	0.64	0.80	2.82	95.40	0.000	0.000	36.76	0.00	0.00
14	137.00	Quintel QS66512-2	3	11.840	13.024	0.73	0.80	17.91	333.00	0.000	0.000	233.29	0.00	0.00
15	137.00	Ericsson RRUS-32	3	11.840	13.024	0.70	0.80	8.08	231.00	0.000	0.000	105.24	0.00	0.00
16	137.00	CCI HPA-65R-BUU-H8	3	11.840	13.024	0.63	0.80	24.61	204.00	0.000	0.000	320.52	0.00	0.00
17	137.00	CCI OPA-65R-LCUU-H6	3	11.840	13.024	0.63	0.80	18.32	240.00	0.000	0.000	238.54	0.00	0.00
18	137.00	KMW	3	11.840	13.024	0.60	0.80	14.44	145.50	0.000	0.000	188.01	0.00	0.00
19	137.00	Ericsson RRUS 32 B2	3	11.840	13.024	0.65	0.80	5.33	180.00	0.000	0.000	69.37	0.00	0.00
20	137.00	Ericsson RRU A2	6	11.840	13.024	0.50	0.80	5.54	127.20	0.000	0.000	72.09	0.00	0.00
21	137.00	CCI DTMABP7819VG12A	6	11.840	13.024	0.54	0.80	3.67	115.20	0.000	0.000	47.75	0.00	0.00
22	137.00	Ericsson RRUS-11	6	11.840	13.024	0.57	0.80	8.59	306.00	0.000	0.000	111.85	0.00	0.00
23	137.00	Ericsson RRUS-12	6	11.840	13.024	0.56	0.80	10.58	348.00	0.000	0.000	137.85	0.00	0.00
24	127.00	Low Profile Platform	1	11.653	12.818	1.00	1.00	25.00	1200.00	0.000	0.000	320.45	0.00	0.00
25	127.00	A-ANT-23G-2.0-C	2	11.653	12.818	1.00	1.00	16.86	95.20	0.000	0.000	216.11	0.00	0.00
26	127.00	U-RAS RRH's	3	11.653	12.818	0.58	0.80	3.19	99.00	0.000	0.000	40.87	0.00	0.00
27	127.00	LLPX310R	3	11.653	12.818	0.55	0.80	7.12	85.80	0.000	0.000	91.27	0.00	0.00
28	127.00	DB844H90E-XY	9	11.653	12.818	0.60	0.80	16.47	126.00	0.000	0.000	211.11	0.00	0.00
29	122.00	CS72188.01 Omni	1	11.653	12.818	1.00	1.00	3.00	25.00	0.000	5.000	38.45	0.00	192.27
							Totals:		**9,263.60**			**4,912.97**		

Total Applied Force Summary

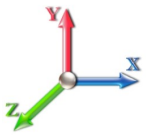
Structure:	CT02722-S-SBA		**Code:**	EIA/TIA-222-G	9/21/2016
Site Name:	Waterbury		**Exposure:**	C	
Height:	158.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 26

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 22

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		133.68	1805.27	0.00	0.00
10.00		130.98	1772.87	0.00	0.00
15.00		128.28	1740.47	0.00	0.00
20.00		133.24	1708.07	0.00	0.00
25.00		136.65	1675.67	0.00	0.00
30.00		138.87	1643.27	0.00	0.00
35.00		140.23	1610.88	0.00	0.00
38.50		98.19	1108.34	0.00	0.00
40.00		42.60	805.61	0.00	0.00
45.00		143.35	2647.20	0.00	0.00
50.00		143.09	1290.29	0.00	0.00
55.00		142.44	1263.96	0.00	0.00
60.00		141.46	1237.63	0.00	0.00
65.00		140.19	1211.31	0.00	0.00
70.00		138.67	1184.98	0.00	0.00
75.00		136.91	1158.65	0.00	0.00
78.00		80.99	682.56	0.00	0.00
80.00		54.32	734.26	0.00	0.00
83.50		94.43	1267.02	0.00	0.00
85.00		40.04	271.64	0.00	0.00
90.00		132.51	892.30	0.00	0.00
95.00		130.05	872.05	0.00	0.00
100.00		127.44	851.80	0.00	0.00
105.00		124.69	831.55	0.00	0.00
110.00		121.82	811.30	0.00	0.00
113.50		83.38	555.86	0.00	0.00
115.00		35.73	373.90	0.00	0.00
118.00		70.72	737.96	0.00	0.00
120.00		46.48	264.99	0.00	0.00
122.00	(1) attachments	84.42	287.40	0.00	192.27
125.00		68.04	388.26	0.00	0.00
127.00	(18) attachments	924.48	1861.60	0.00	0.00
130.00		66.06	352.38	0.00	0.00
135.00		107.55	574.34	0.00	0.00
137.00	(46) attachments	2124.19	4550.50	0.00	0.00
140.00		61.92	289.74	0.00	0.00
145.00		100.48	469.94	0.00	0.00
148.00	(29) attachments	1481.35	2302.29	0.00	0.00
150.00		38.20	152.39	0.00	0.00
155.00		93.08	369.64	0.00	0.00
158.00	(4) attachments	543.51	1493.21	0.00	0.00
	Totals:	**8,904.72**	**46,103.36**	**0.00**	**192.27**

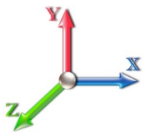
Calculated Forces

Structure:	CT02722-S-SBA	**Code:**	EIA/TIA-222-G	9/21/2016	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 27	

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 22

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-46.10	-8.92	0.00	-1022.2	0.00	1022.23	6641.65	3320.83	16223.6	8123.90	0.00	0.000	0.000	0.133
5.00	-44.29	-8.81	0.00	-977.64	0.00	977.64	6549.09	3274.55	15672.1	7847.74	0.02	-0.034	0.000	0.131
10.00	-42.51	-8.70	0.00	-933.59	0.00	933.59	6454.83	3227.41	15125.8	7574.18	0.07	-0.068	0.000	0.130
15.00	-40.77	-8.60	0.00	-890.08	0.00	890.08	6358.86	3179.43	14585.0	7303.35	0.16	-0.103	0.000	0.128
20.00	-39.05	-8.48	0.00	-847.09	0.00	847.09	6261.18	3130.59	14049.8	7035.38	0.29	-0.138	0.000	0.127
25.00	-37.37	-8.37	0.00	-804.67	0.00	804.67	6161.80	3080.90	13520.6	6770.39	0.45	-0.174	0.000	0.125
30.00	-35.73	-8.25	0.00	-762.83	0.00	762.83	6060.71	3030.36	12997.7	6508.52	0.65	-0.210	0.000	0.123
35.00	-34.11	-8.12	0.00	-721.61	0.00	721.61	5957.92	2978.96	12481.2	6249.90	0.89	-0.247	0.000	0.121
38.50	-33.00	-8.03	0.00	-693.20	0.00	693.20	5884.95	2942.47	12123.6	6070.85	1.09	-0.273	0.000	0.120
40.00	-32.19	-7.99	0.00	-681.16	0.00	681.16	5853.42	2926.71	11971.4	5994.64	1.17	-0.285	0.000	0.119
45.00	-29.54	-7.85	0.00	-641.20	0.00	641.20	4462.52	2231.26	9089.55	4551.53	1.49	-0.323	0.000	0.148
50.00	-28.24	-7.72	0.00	-601.92	0.00	601.92	4388.93	2194.47	8721.58	4367.27	1.85	-0.361	0.000	0.144
55.00	-26.98	-7.59	0.00	-563.30	0.00	563.30	4313.64	2156.82	8357.61	4185.02	2.25	-0.406	0.000	0.141
60.00	-25.73	-7.46	0.00	-525.33	0.00	525.33	4236.64	2118.32	7997.90	4004.90	2.70	-0.451	0.000	0.137
65.00	-24.52	-7.33	0.00	-488.00	0.00	488.00	4157.93	2078.96	7642.72	3827.04	3.20	-0.497	0.000	0.133
70.00	-23.33	-7.20	0.00	-451.34	0.00	451.34	4077.51	2038.76	7292.30	3651.57	3.74	-0.542	0.000	0.129
75.00	-22.17	-7.07	0.00	-415.32	0.00	415.32	3995.39	1997.70	6946.91	3478.62	4.34	-0.588	0.000	0.125
78.00	-21.48	-6.99	0.00	-394.11	0.00	394.11	3945.30	1972.65	6742.20	3376.11	4.72	-0.616	0.000	0.122
80.00	-20.74	-6.94	0.00	-380.14	0.00	380.14	3911.57	1955.78	6606.80	3308.31	4.98	-0.635	0.000	0.120
83.50	-19.48	-6.84	0.00	-355.86	0.00	355.86	2771.30	1385.65	4677.52	2342.24	5.46	-0.667	0.000	0.159
85.00	-19.20	-6.80	0.00	-345.61	0.00	345.61	2755.69	1377.84	4610.09	2308.47	5.67	-0.681	0.000	0.157
90.00	-18.30	-6.68	0.00	-311.59	0.00	311.59	2702.54	1351.27	4386.89	2196.71	6.41	-0.736	0.000	0.149
95.00	-17.43	-6.55	0.00	-278.20	0.00	278.20	2647.69	1323.84	4166.29	2086.24	7.21	-0.790	0.000	0.140
100.00	-16.57	-6.43	0.00	-245.44	0.00	245.44	2591.13	1295.56	3948.53	1977.20	8.07	-0.843	0.000	0.131
105.00	-15.74	-6.30	0.00	-213.30	0.00	213.30	2532.86	1266.43	3733.89	1869.72	8.98	-0.894	0.000	0.120
110.00	-14.92	-6.18	0.00	-181.78	0.00	181.78	2472.89	1236.44	3522.60	1763.92	9.94	-0.943	0.000	0.109
113.50	-14.37	-6.09	0.00	-160.15	0.00	160.15	2429.89	1214.95	3376.84	1690.93	10.64	-0.975	0.000	0.101
115.00	-13.99	-6.06	0.00	-151.01	0.00	151.01	2411.21	1205.60	3314.94	1659.93	10.95	-0.989	0.000	0.097
118.00	-13.25	-5.98	0.00	-132.84	0.00	132.84	1790.62	895.31	2454.63	1229.14	11.58	-1.014	0.000	0.116
120.00	-12.99	-5.93	0.00	-120.89	0.00	120.89	1774.20	887.10	2396.85	1200.21	12.01	-1.031	0.000	0.108
122.00	-12.70	-5.85	0.00	-108.83	0.00	108.83	1757.50	878.75	2339.36	1171.42	12.45	-1.049	0.000	0.100
125.00	-12.31	-5.77	0.00	-91.30	0.00	91.30	1731.94	865.97	2253.71	1128.53	13.12	-1.074	0.000	0.088
127.00	-10.46	-4.82	0.00	-79.75	0.00	79.75	1714.56	857.28	2197.01	1100.14	13.57	-1.089	0.000	0.079
130.00	-10.11	-4.75	0.00	-65.30	0.00	65.30	1687.98	843.99	2112.62	1057.88	14.26	-1.110	0.000	0.068
135.00	-9.54	-4.63	0.00	-41.55	0.00	41.55	1642.31	821.15	1973.86	988.40	15.44	-1.137	0.000	0.048
137.00	-5.03	-2.42	0.00	-32.28	0.00	32.28	1623.56	811.78	1919.06	960.96	15.92	-1.145	0.000	0.037
140.00	-4.74	-2.35	0.00	-25.02	0.00	25.02	1594.93	797.47	1837.67	920.20	16.64	-1.155	0.000	0.030
145.00	-4.27	-2.24	0.00	-13.26	0.00	13.26	1545.85	772.93	1704.31	853.42	17.86	-1.167	0.000	0.018
148.00	-2.00	-0.72	0.00	-6.53	0.00	6.53	1515.59	757.79	1625.76	814.09	18.59	-1.172	0.000	0.009
150.00	-1.85	-0.67	0.00	-5.10	0.00	5.10	1495.07	747.53	1574.03	788.19	19.08	-1.174	0.000	0.008
155.00	-1.48	-0.57	0.00	-1.72	0.00	1.72	1442.53	721.26	1447.04	724.60	20.31	-1.177	0.000	0.003
158.00	0.00	-0.54	0.00	0.00	0.00	0.00	1400.09	700.04	1362.73	682.38	21.05	-1.177	0.000	0.000

Final Analysis Summary

Structure:	CT02722-S-SBA	**Code:**	EIA/TIA-222-G	9/21/2016	
Site Name:	Waterbury	**Exposure:**	C		
Height:	158.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 28	

Tower Engineering Solutions

Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)
1.2D + 1.6W 97 mph Wind	37.3	0.00	55.28	0.00	0.00	4293.90
0.9D + 1.6W 97 mph Wind	37.3	0.00	41.45	0.00	0.00	4259.14
1.2D + 1.0Di + 1.0Wi 50 mph Wind	10.4	0.00	81.18	0.00	0.00	1174.18
1.2D + 1.0E	2.0	0.00	55.32	0.00	0.00	223.22
0.9D + 1.0E	2.0	0.00	41.49	0.00	0.00	221.33
1.0D + 1.0W 60 mph Wind	8.9	0.00	46.10	0.00	0.00	1022.23

Max Stresses

Load Case	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Elev (ft)	Stress Ratio
1.2D + 1.6W 97 mph Wind	-22.07	-28.75	0.00	-1497.0	0.00	-1497.0	2771.30	1385.6	4677.52	2342.24	83.50	0.648
0.9D + 1.6W 97 mph Wind	-16.23	-28.45	0.00	-1478.7	0.00	-1478.7	2771.30	1385.6	4677.52	2342.24	83.50	0.638
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-41.14	-7.79	0.00	-401.98	0.00	-401.98	2771.30	1385.6	4677.52	2342.24	83.50	0.186
1.2D + 1.0E	-23.46	-1.36	0.00	-86.65	0.00	-86.65	2771.30	1385.6	4677.52	2342.24	83.50	0.045
0.9D + 1.0E	-17.60	-1.34	0.00	-85.61	0.00	-85.61	2771.30	1385.6	4677.52	2342.24	83.50	0.043
1.0D + 1.0W 60 mph Wind	-19.48	-6.84	0.00	-355.86	0.00	-355.86	2771.30	1385.6	4677.52	2342.24	83.50	0.159

Monopole Mat Foundation Design

				Date
				9/21/2016
Customer Name:	AT&T	**EIA/TIA Standard:**	EIA-222-G
Site Name:		**Structure Height (Ft.):**	158
Site Number:	CT02722-S-SBA	**Engineer Name:**	F. Yazdani
Engr. Number:	26189	**Engineer Login ID:**	

Foundation Info Obtained from: Drawings/Calculations

Structure Type: Monopole

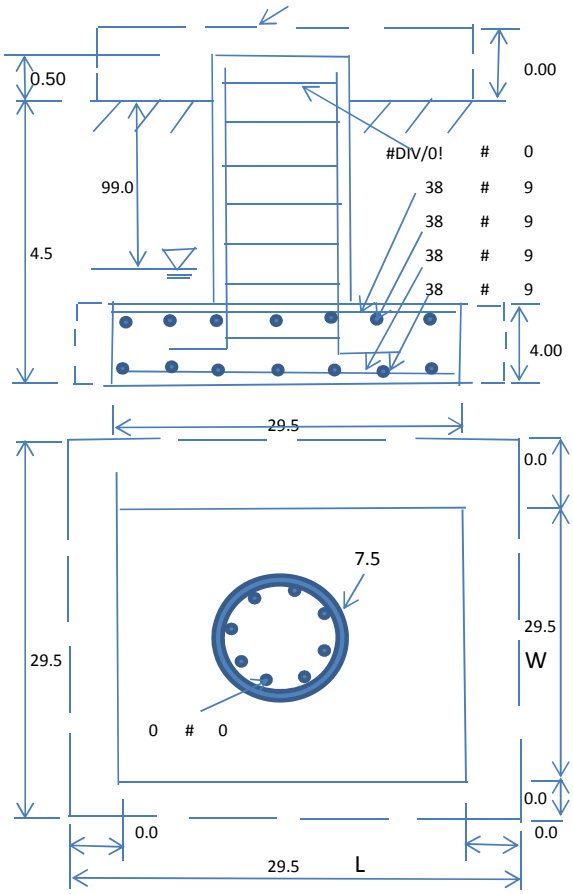
Analysis or Design? Analysis

Base Reactions (Factored):

Axial Load (Kips):	60.4	Shear Force (Kips):	37.3
Uplift Force (Kips):	0.0	Moment (Kips-ft):	4259.1
Allowable overstress %:	5.0%		

Foundation Geometries:

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	7.5	Depth of Base BG (ft.):	4.5
Pier Height A. G. (ft.):	0.50	Thickness of Pad (ft):	4.00
Length of Pad (ft.):	29.5	Width of Pad (ft.):	29.5
Final Length of pad (ft)	29.5	Final width of pad (ft):	29.5
Control Value for Cell D18:	0	Control Value for Cell F18:	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	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	9	
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):	38	Qty. of Rebar in Pad (W):	38

Rebar at the top of the concrete pad:

Qty. of Rebar in Pad (L):	38	Qty. of Rebar in Pad (W):	38
Apply 1.35 factor for e/w Per G:	1.35		

Soil Design Parameters:

Soil Unit Weight (pcf):	125.0	Soil Buoyant Weight:	50.0	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):	40000	Ultimate Skin Friction:		Psf	Angle from Bottm of Pad:	25
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	No		Angle from Bottm of Pad:	25
Consider soil hor. resist. for OTM.:	No	Reduction factor on the maximum soil bearing pressure:	1.00			

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

Total Dry Soil Volume (cu. Ft.):	413.04	Total Dry Soil Weight (Kips):	51.63
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	51.63	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	3525.18	Total Dry Concrete Weight (Kips):	528.78
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	528.78	Total Vertical Load on Base (Kips):	640.84

Check Soil Capacities:

					Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	1903	<	Allowable Factored Soil Bearing (psf):	30000	0.06	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	8596.2	>	Design Factored Momont (kips-ft):	4446	0.52	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	1.93	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

(1).Concrete Pad:

						Load/ Capacity Ratio	
One-Way Design Shear Capacity (L-Direction, Kips):	1292.4	>	One-Way Factored Shear (L-D. Kips):	238.2	0.18	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	1292.4	>	One-Way Factored Shear (W-D., Kips):	238.2	0.18	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	1499.2	>	One-Way Factored Shear (C-C, Kips):	233.9	0.16	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0024	OK!	Lower Steel Pad Reinf. Ratio (W-Direct	0.0024		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	7382.9	>	Moment at Bottom (L-Direct. K-Ft):	868.9	0.12	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	7382.9	>	Moment at Bottom (W-Direct. K-Ft):	868.9	0.12	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	10374.0	>	Moment at Bottom (C-C Dir. K-Ft):	1228.8	0.12	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0024	OK!	Upper Steel Reinf. Ratio (W-Direct.):	0.0024		
Upper Steel Pad Moment Capacity (L-Direction. Kips-ft):	7382.9	>	Moment at the top (L-Dir Kips-Ft):	75.0	0.01	OK!
Upper Steel Pad Moment Capacity (W-Direction. Kips-ft):	7382.9	>	Moment at the top (W-Dir Kips-Ft):	75.0	0.01	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	10374.0	>	Moment at the top (C-C Direc. K-Ft):	572.0	0.06	OK!

PROJECT TEAM

CLIENT REPRESENTATIVE:

EMPIRE TELECOM
16 ESQUIRE ROAD
BILLERICA, MA 01821
DAVID COOPER
617-639-4908
dcooper@empiretelecomm.com

SITE ACQUISITION:

N/A

ZONING:

N/A

ENGINEERING:

TRYLON TSF
24 QUEEN ST E
BRAMPTON, ON L6V 1A2
KATYA SERAVALLE
PHONE: 519-465-4125

RF ENGINEER:

AT&T MOBILITY - NEW ENGLAND
550 COCHITUATE ROAD
SUITE 550 13 & 14
FRAMINGHAM, MA 01701
CAMERON SYME
508-596-7146
cs6970@att.com

CONSTRUCTION MANAGEMENT:

EMPIRE TELECOM
16 ESQUIRE ROAD
BILLERICA, MA 01821
GRZEGORZ "GREG" DORMAN
484-683-1750
gdorman@empiretelecomm.com

TOWER OWNER:

SBA COMMUNICATIONS
5900 BROKEN SOUND PARKWAY NW
BOCA RATON, FL 33487

GENERAL NOTES

DO NOT SCALE DRAWINGS

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

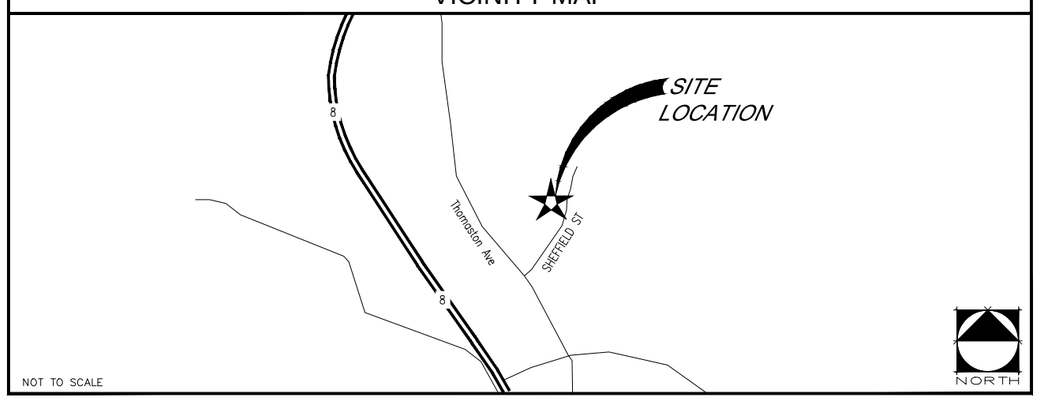
THE FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. A TECHNICIAN WILL VISIT THE SITE AS REQUIRED FOR ROUTINE MAINTENANCE. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT DISTURBANCE OR EFFECT ON DRAINAGE; NO SANITARY SEWER SERVICE, POTABLE WATER, OR TRASH DISPOSAL IS REQUIRED AND NO COMMERCIAL SIGNAGE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

SITE INFORMATION

LATITUDE:	41° 35' 38.67" N
LONGITUDE:	73° 3' 1.998" W
LAT./LONG. TYPE:	NAD 83
GROUND ELEVATION:	N/A
APN/UPC:	N/A
AREA OF CONSTRUCTION:	EXISTING
ZONING/JURISDICTION:	CONNECTICUT COUNTY
CURRENT ZONING:	UNKNOWN
EXISTING USE:	UNMANNED TELECOMMUNICATIONS FACILITY
COUNTY:	CONNECTICUT COUNTY
HANDICAP REQUIREMENTS:	FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. HANDICAPPED ACCESS NOT REQUIRED.

LTE MULTI CARRIER RRH ADD
CT1125
NORTH WATERBURY
299 SHEFFIELD STREET
WATERBURY, CT 06704
FA CODE: 10035415
USID: 15071
PTN: 2051A06DHJ
PACE: MRCTB018810

VICINITY MAP



DRIVING DIRECTIONS

UPDATE 11-12-2010FROM RT 84 WATERBURY TAKE ROUTE 8 NORTH TO EXIT 36 HUNTINGTON COLONIAL AVE S AT LIGHT BOTTOM OF EXIT TAKE RIGHT GO TO 2ND LIGHT TAKE LEFT TAKE 3RD RIGHT ONTO SHEFFIELD ST AND GO TO THE END WHICH WILL BE THE ENTRANCE TO BLUE RIDGE STONE A SBA LOCK WILL BE ON THE GATE COMB 4722 CELL IS ON MOUNTAIN TO YOUR LEFT FOLLOW DIRT RD IN THAT DIRECTION. OUT OF HOURS ACCESS CALL LIST FOR CELL 1125 WATERBURY SHEFFIELD ST. CALL BEFORE ACCESSING CELL SITE JOHN HYCHKO 203-756-8366, 203-910-5222, 203-756-1165 OR MIKE HYCHKO 203-509-4802, 203-757-3458, 860-283-1602.GENERATOR LOCKS 0043. TRANSFER SWITCH PASS CODE IS 123.POWER: CL&P (800)286-2000METER: 89 130 699 2TELCO: AT&T (800)247-20202GET-242 HCGS725132SNET-169 HCGS294999SNET-117 HCGS750528SNET-053 HCGS2386275N30ETHERNETHTTP://ALNXNGWB1.WNSNET.ATTWS.COM:7777/PLS/ENGDB/XPERWEB.PATH_DEF?IPATHINSTID=4255683

CODE COMPLIANCE

BUILDING CODE: 2012 CONNECTICUT COMMERCIAL BUILDING CODE

ELECTRICAL CODE: 2014 CONNECTICUT ELECTRICAL CODE

LIGHTNING PROTECTION CODE: NFPA 780 – 2000, LIGHTNING PROTECTION CODE

SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

RFDS DATA

DESIGN PACKAGE BASED ON RF DATA SHEET
RFDS NAME: NEW-ENGLAND_CONNECTICUT_CTV1125_2017-LTE-MULTI-CARRIER_RRH-ADD_OM636A_PTN_10035415_150711_04-11-2016_FINAL-APPROVED_V1.00
REVISION: FINAL
ISSUED: 04/11/2016

NUMBER OF SECTORS: 3
NUMBER OF ANTENNAS: 9
NUMBER OF TWIN TMA' S: 6
NUMBER OF RRH' S: 9
NUMBER OF FIBER/DC SQUIDS: 2
NUMBER OF DC SQUIDS: 0
NUMBER OF OPTICAL TRUNK CABLES: 2
NUMBER OF DC TRUNK CABLES: 4
NUMBER OF RF CABLES: 12
NUMBER OF RET CABLES: 1

APPROVALS

AT&T (RF): _____ DATE: _____

AT&T (CONST.): _____ DATE: _____

AT&T (OPS): _____ DATE: _____

LANDLORD: _____ DATE: _____

LANDLORD: _____ DATE: _____

JURISDICTIONAL APPROVAL

PROJECT DESCRIPTION

THIS PROJECT WILL BE COMPRISED OF:
CHANGES ON THE EXISTING MONOPOLE TOWER;

- REMOVE (3) EXISTING ANTENNA (1) PER SECTOR FOR (3) SECTORS.
- REMOVE (3) EXISTING RRUS-11 (1) PER SECTOR FOR (3) SECTORS.
- INSTALL (3) NEW ANTENNAS (1) PER SECTOR FOR (3) SECTORS.
- INSTALL (3) NEW RRH'S, (1) PER SECTOR FOR (3) SECTORS.
- REUSE (2) EXISTING FIBER TRUNK.
- REUSE (4) EXISTING DC TRUNK.
- REUSE (1) EXISTING RET CABLE.
- REUSE (2) EXISTING DC/FIBER SQUID.
- REUSE (12)EXISTING RF CABLES.

CHANGES IN THE EXISTING AT&T EQUIPMENT ENCLOSURE AREA;

- REMOVE (1) EXISTING 2ND DUS.
- INSTALL (1) NEW XMU.
- INSTALL (1) NEW IDL2 LINK.

MFP PROJECT #23216-036

SHEET	DESCRIPTION
T-1	TITLE SHEET
GN-1	GROUNDING & GENERAL NOTES
A-1	SITE PLAN
A-2	EQUIPMENT LAYOUTS
A-3	ANTENNA LAYOUTS & TOWER ELEVATION
A-4	DETAILS
A-5	ANTENNA SCHEDULE
G-1	GROUNDING, ONE-LINE DIAGRAM & DETAILS

at&t Mobility
550 COCHITUATE ROAD
FRAMINGHAM,MA 01701

EMPIRE telecom
16 ESQUIRE ROAD
BILLERICA, MA 01821

PLANS PREPARED BY:
Trylon
24 QUEEN ST E
BRAMPTON, ON
1 (519) 572-9995

NO.	DATE	DESCRIPTION	BY
A	08/12/16	FOR REVIEW	RSN
0	09/19/16	FOR CONSTRUCTION	RSN

SITE INFORMATION:
CT1125
NORTH WATERBURY
FA CODE: 10035415
USID: 15071
PTN: 2051A06DHJ
299 SHEFFIELD STREET
WATERBURY, CT 06704

SEAL:

MICHAEL F. PLAHOVINSAK, P.E. #25849
Sole Proprietor - Independent Engineer
18301 S.R. 161, Plain City, OH 43064
614-398-6250 / mike@mfpeng.com

SHEET TITLE:
TITLE SHEET

SHEET NUMBER:
T-1

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:
   CONTRACTOR – EMPIRE TELECOM
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – AT&T MOBILITY
   OEM – ORIGINAL EQUIPMENT MANUFACTURER

2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.

3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.

4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.

5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

6. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

7. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.

8. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR. ROUTING OF TRENCHING SHALL BE APPROVED BY CONTRACTOR

9. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.

10. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OFF ALL SCR1 'AP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.

11. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.

12. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

13. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS UNLESS OTHERWISE SPECIFIED. ALL CONCRETING WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.

14. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy=36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCH UP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.

15. CONSTRUCTION SHALL COMPLY WITH SPECIFICATION 25741-000-3APS-A0OZ-00002, "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T MOBILITY SITES."

16. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.

17. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK MAY NEED TO BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.

18. SINCE THE CELL SITE MAY BE ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE REQUIRED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

19. SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

    - INTERNATIONAL BUILDING CODE: IBC 2009 WITH LOCAL & COUNTY AMENDMENTS
    - NATIONAL ELECTRICAL CODE: NEC 2011 WITH LOCAL & COUNTY AMENDMENTS
    - FIRE/LIFE SAFETY CODE: NFPA-101 2009 WITH LOCAL & COUNTY AMENDMENTS

20. SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:

    - AMERICAN CONCRETE INSTITUTE (ACI) 318, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
    - AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC), MANUAL OF STEEL CONSTRUCTION, THIRTEENTH EDITION
    - AMERICAN SOCIETY OF TESTING OF MATERIALS, ASTM
    - TELECOMMUNICATIONS INDUSTRY ASSOCIATION (ANSI/TIA-222-G-1), STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES:
    - TIA 607, COMMERCIAL BUILDING GROUNDING AND BONDING REQUIREMENTS FOR TELECOMMUNICATIONS
    - OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, OSHA
    - INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE) 81, GUIDE FOR MEASURING EARTH RESISTIVELY, GROUND IMPEDANCE, AND EARTH SURFACE POTENTIALS OF A GROUND SYSTEM IEEE 1100 (1999) RECOMMENDED PRACTICE FOR POWERING AND GROUNDING OF ELECTRONIC EQUIPMENT
    - TELCORDIA GR-1503, COAXIAL CABLE CONNECTIONS

21. FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

GROUNDING NOTES:

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.

2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.

3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS. TESTS SHALL BE PERFORMED IN ACCORDANCE WITH 25471-000-3PS-EG00-0001, DESIGN & TESTING OF FACILITY GROUNDING FOR CELL SITES.

4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.

5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS; 2 AWG STRANDED COPPER FOR OUTDOOR BTS.

6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.

7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.

8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED WITH STAINLESS STEEL HARDWARE TO THE BRIDGE AND THE TOWER GROUND BAR.

9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.

10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.

11. METAL CONDUIT AND TRAY SHALL BE GROUNDED AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.

12. GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G., NON-METALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.

13. ALL TOWER GROUNDING SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF ANSI/TIA 222. FOR TOWERS BEING BUILT TO REV-G OF THE STANDARD, THE WIRE SIZE OF THE BURIED GROUND RING AND CONNECTIONS BETWEEN THE TOWER AND THE BURIED GROUND RING SHALL BE CHANGED FROM 2 AWG TO 2/0 AWG. IN ADDITION, THE MINIMUM LENGTH OF THE GROUND RODS SHALL BE INCREASED FROM EIGHT FEET (8') TO TEN FEET (10').

14. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE ½" OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID TINNED COPPER GROUND WIRE, PER NEC 250.50.

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PLANS PREPARED BY:
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24 QUEEN ST E
BRAMPTON, ON
1 (519) 572-9995

NO.	DATE	DESCRIPTION	BY
A	08/12/16	FOR REVIEW	RSN
0	09/19/16	FOR CONSTRUCTION	RSN

SITE INFORMATION:
CT1125
NORTH WATERBURY
FA CODE: 10035415
USID: 15071
PTN: 2051A06DHJ
299 SHEFFIELD STREET
WATERBURY, CT 06704

SEAL:

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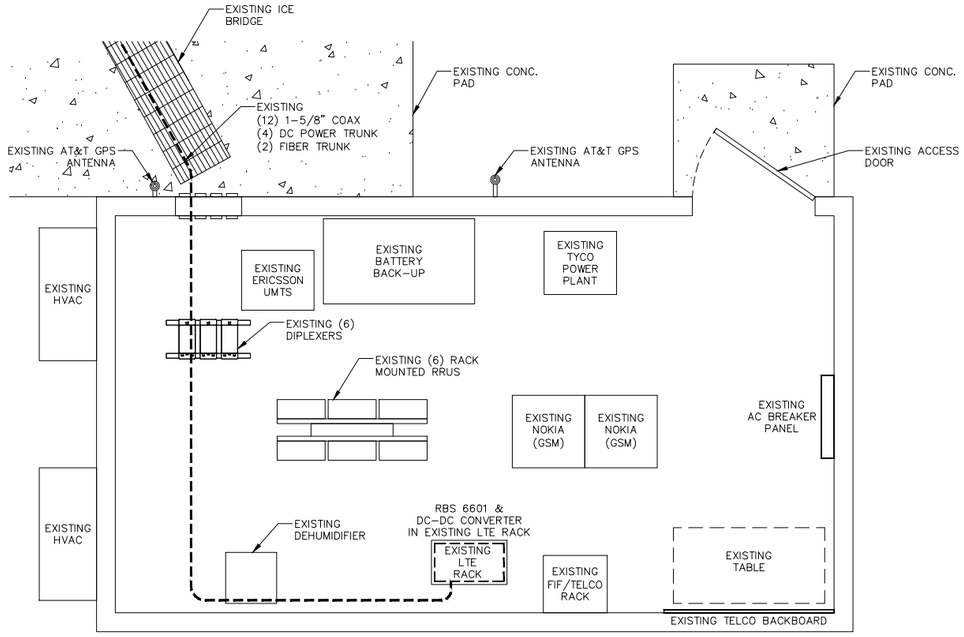
SHEET TITLE:
GENERAL NOTES & GROUNDING NOTES

SHEET NUMBER:
GN-1

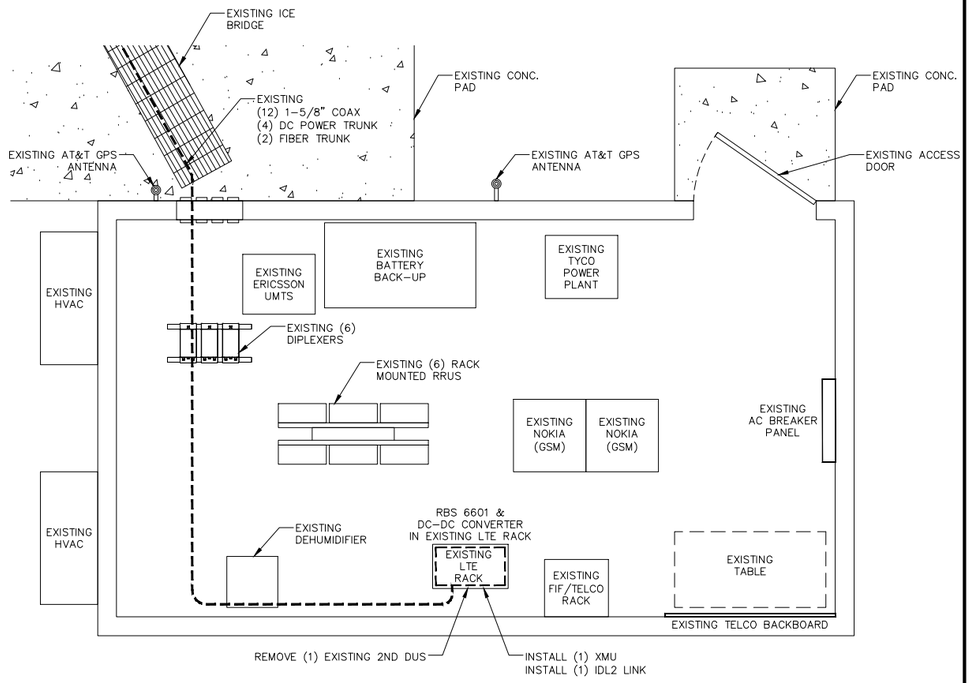


EXISTING EQUIPMENT LAYOUT

22"x34" SCALE: 1/2" = 1'-0"
11"x17" SCALE: 1/4" = 1'-0"

2' 1' 0" 2'

3



PROPOSED EQUIPMENT LAYOUT

22"x34" SCALE: 1/2" = 1'-0"
11"x17" SCALE: 1/4" = 1'-0"

2' 1' 0" 2'

4

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FRAMINGHAM,MA 01701

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16 ESQUIRE ROAD
BILLERICA, MA 01821

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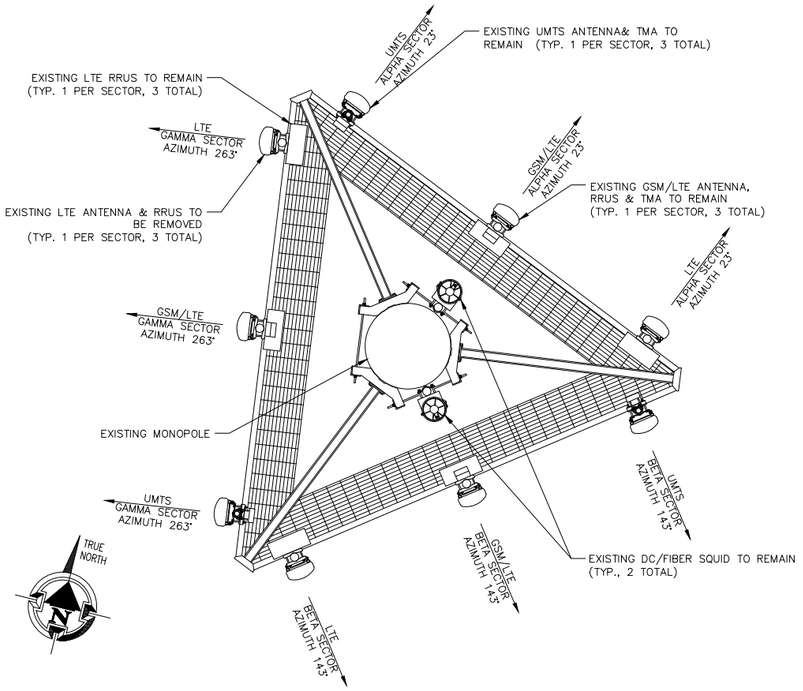
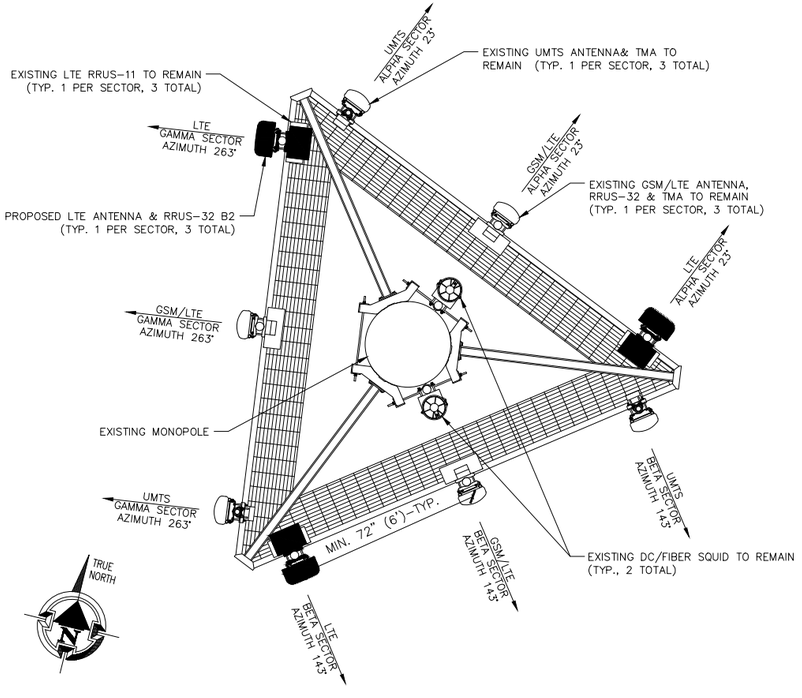
SHEET TITLE:
EQUIPMENT LAYOUTS

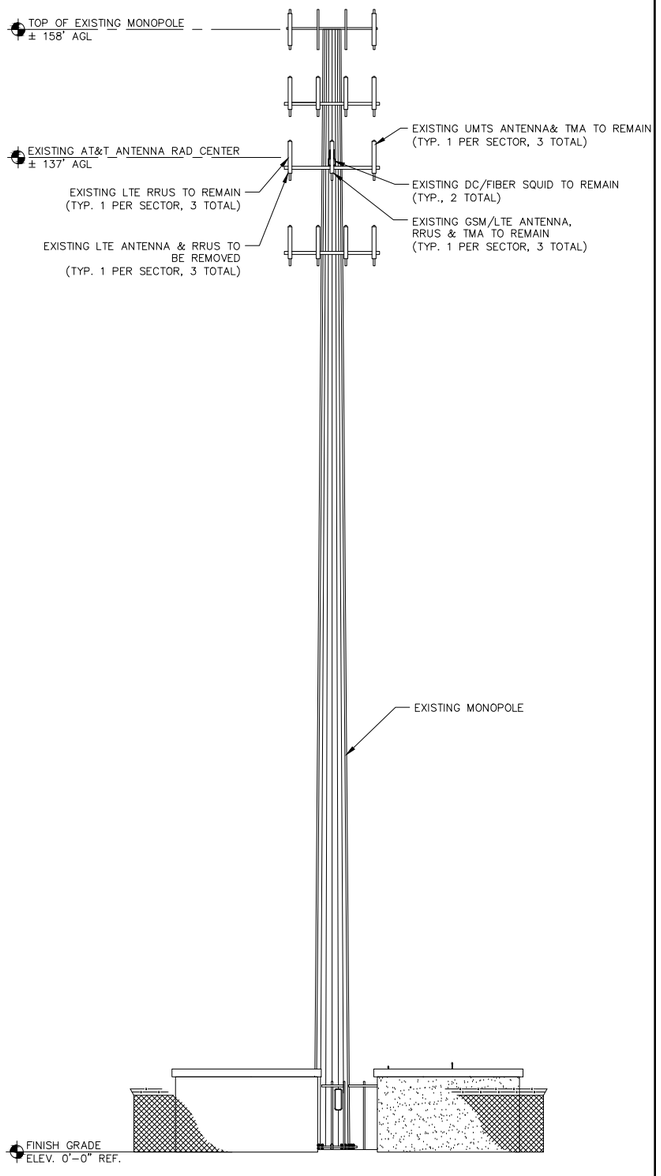
SHEET NUMBER:
A-2



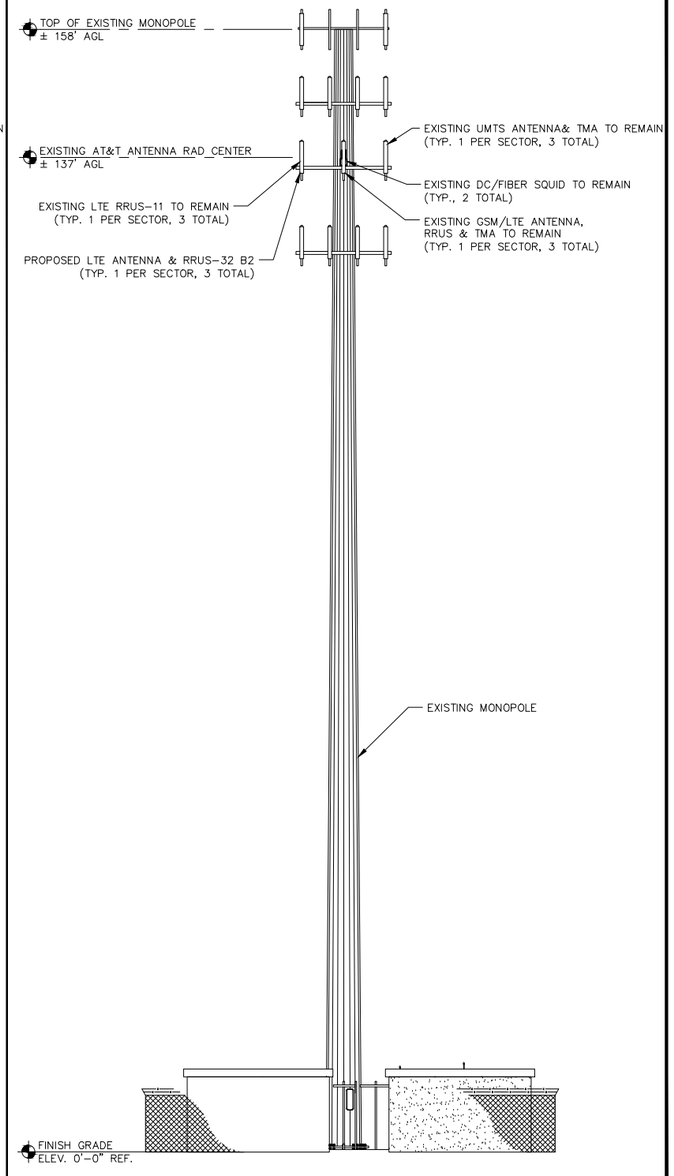
EXISTING ANTENNA LAYOUT | 22"x34" SCALE: 3/8" = 1'-0" | 11"x17" SCALE: 3/16" = 1'-0" | 2' 1' 0" 2' | 1



PROPOSED ANTENNA LAYOUT | 22"x34" SCALE: 3/8" = 1'-0" | 11"x17" SCALE: 3/16" = 1'-0" | 2' 1' 0" 2' | 2



EXISTING ELEVATION | 22"x34" SCALE: 3/32" = 1'-0" | 11"x17" SCALE: 3/64" = 1'-0" | 8' 4' 0" 8' | 3



PROPOSED ELEVATION | 22"x34" SCALE: 3/32" = 1'-0" | 11"x17" SCALE: 3/64" = 1'-0" | 8' 4' 0" 8' | 4

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550 COCHITUATE ROAD
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BILLERICA, MA 01821

PLANS PREPARED BY:
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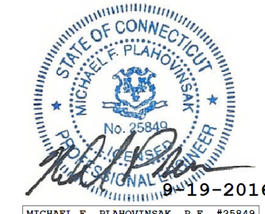
SEAL:



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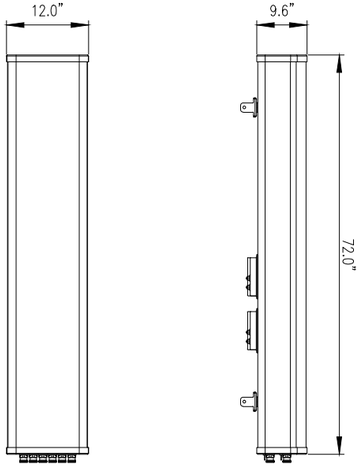
SHEET TITLE:
ANTENNA LAYOUTS & TOWER ELEVATION

SHEET NUMBER:
A-3



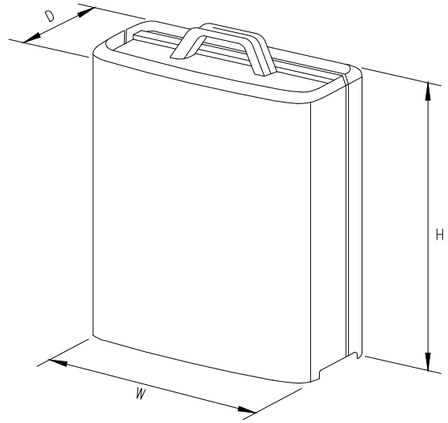
FRONT VIEW

SIDE VIEW

BOTTOM VIEW

MANUFACTURER	QUINTEL
MODEL	QS66512-2
WEIGHT	111 LBS

LTE ANTENNA DETAILS | N.T.S | 1



MODEL	L x W x H	WEIGHT
RRUS-11	19.69" x 16.97" x 7.17"	50.7 LBS
RRUS-12	20.4" x 18.5" x 7.5"	58 LBS
RRUS-32	29.9" x 13.3" x 9.5"	77 LBS
RRUS-E2	20.4" x 18.5" x 7.5"	58 LBS
A2 MODULE	16.4" x 15.2" x 3.4"	22 LBS

RRUS DETAILS | N.T.S | 2

NOT USED | N.T.S | 3

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550 COCHITUATE ROAD
FRAMINGHAM,MA 01701

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BILLERICA, MA 01821

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299 SHEFFIELD STREET
WATERBURY, CT 06704

SEAL:

SHEET TITLE:
DETAILS

SHEET NUMBER:
A-4

EXISTING ANTENNA SCHEDULE				
SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	A2	CCI	DPA-65R-LCUU-H6	72"X14.8"X7.4"
	A3	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	A4	-	-	-
BETA	B1	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	B2	CCI	DPA-65R-LCUU-H6	72"X14.8"X7.4"
	B3	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	B4	-	-	-
GAMMA	G1	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	G2	CCI	DPA-65R-LCUU-H6	72"X14.8"X7.4"
	G3	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	G4	-	-	-

PROPOSED ANTENNA SCHEDULE				
SECTOR	POSITION	MAKE	MODEL	SIZE (INCHES)
ALPHA	A1	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	A2	CCI	DPA-65R-LCUU-H6	72"X14.8"X7.4"
	A3	-	-	-
	A4	QUINTEL	QS66512-2	72"X12"X9.6"
BETA	B1	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	B2	CCI	DPA-65R-LCUU-H6	72"X14.8"X7.4"
	B3	-	-	-
	B4	QUINTEL	QS66512-2	72"X12"X9.6"
GAMMA	G1	KMW	AM-X-CD-16-65-00T-RET	72"x11.8"x5.9"
	G2	CCI	DPA-65R-LCUU-H6	72"X14.8"X7.4"
	G3	-	-	-
	G4	QUINTEL	QS66512-2	72"X12"X9.6"

PROPOSED RRH SCHEDULE					
SECTOR	MAKE	MODEL	SIZE (INCHES)	ADDITIONAL COMPONENT	SIZE (INCHES)
ALPHA	ERICSSON	RRUS-32	27.2"x12.1"x7.0"		
	ERICSSON	RRUS-11	20.4"x18.5"x7.5"		
	ERICSSON	RRUS-32 B2	27.2"x12.1"x7.0"		
BETA	ERICSSON	RRUS-32	27.2"x12.1"x7.0"		
	ERICSSON	RRUS-11	20.4"x18.5"x7.5"		
	ERICSSON	RRUS-32 B2	27.2"x12.1"x7.0"		
GAMMA	ERICSSON	RRUS-32	27.2"x12.1"x7.0"		
	ERICSSON	RRUS-11	20.4"x18.5"x7.5"		
	ERICSSON	RRUS-32 B2	27.2"x12.1"x7.0"		

PROJECT OWNER IS RESPONSIBLE FOR PROVIDING A STRUCTURAL STABILITY ANALYSIS TO DETERMINE THE CAPACITY AND SUITABILITY OF THE EXISTING ANTENNA SUPPORT STRUCTURE TO SAFELY CARRY ALL ADDITIONAL LOADS IMPOSED BY THE PROPOSED EQUIPMENT AS SHOWN HEREIN. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR INCORPORATING ANY REQUIRED STRUCTURAL MODIFICATIONS INTO THEIR SCOPE OF WORK.

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SEAL:

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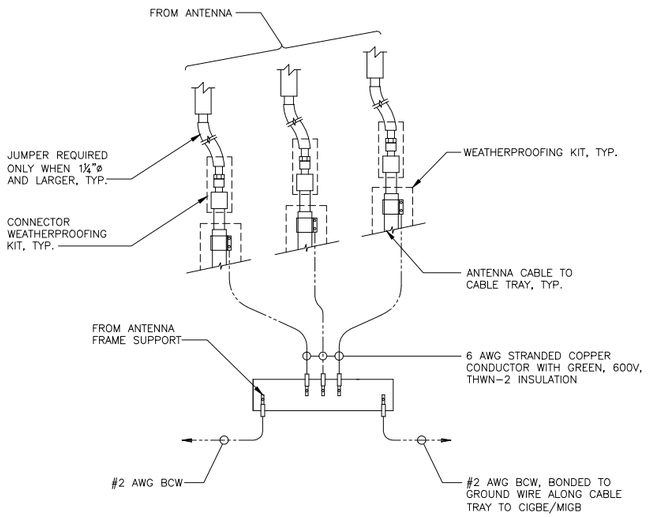
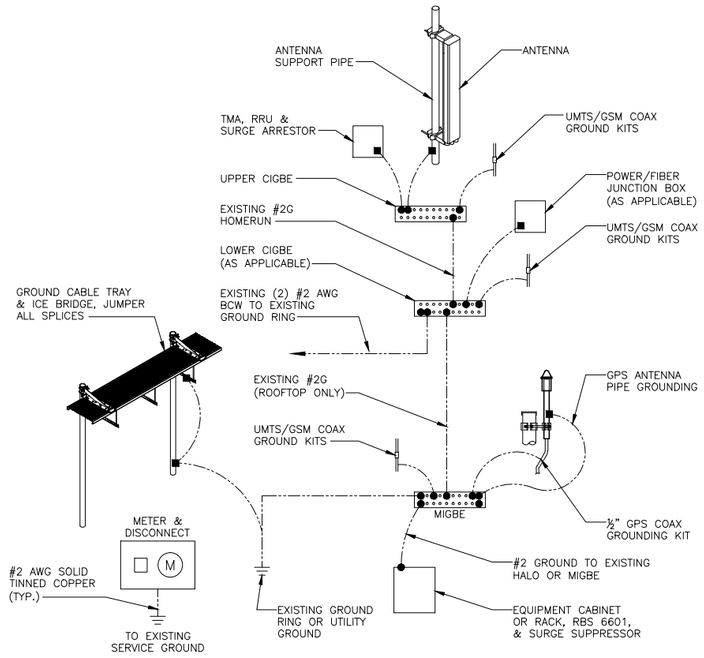
SHEET TITLE:
ANTENNA SCHEDULE

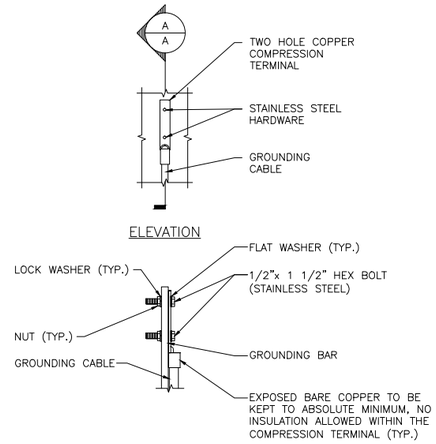
SHEET NUMBER:
A-5



GROUND WIRE TO GROUND BAR CONNECTION DETAILS | N.T.S | 1



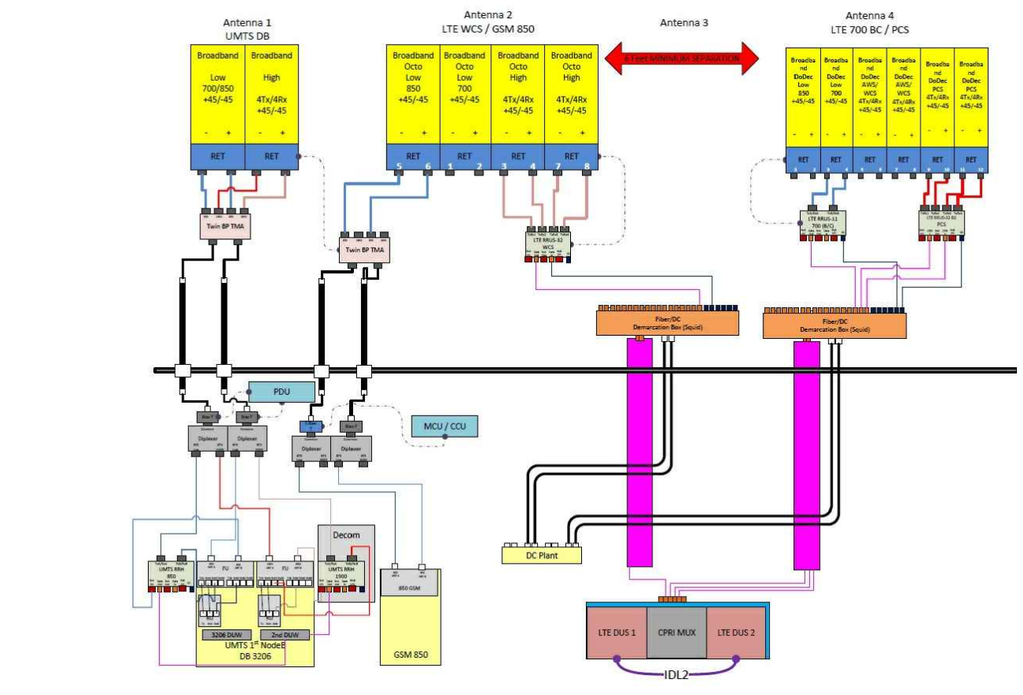
GROUND RISER DIAGRAM | N.T.S | 2



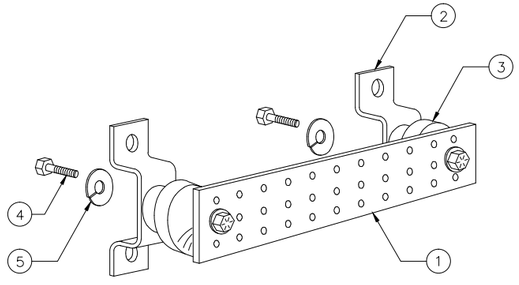
NOTE:

1. "DOUBLING UP" OR "STACKING" OF CONNECTIONS IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB.

TYPICAL GROUND BAR CONNECTION DETAILS | N.T.S | 3



PLUMBING DIAGRAM | N.T.S | 4



ITEM NO.	QTY.	DESCRIPTION
1	1	SOLID GROUND BAR (20"x 4"x ¼")
2	2	WALL MOUNTING BRACKET
3	2	INSULATORS
4	4	⅝"-11x1" H.H.C.S.
5	4	⅝" LOCK WASHER

NOTES:

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

SECTION "P" – SURGE PRODUCERS
- CABLE ENTRY PORTS (HATCH PLATES) (#2)
- GENERATOR FRAMEWORK (IF AVAILABLE) (#2)
- TELCO GROUND BAR
- COMMERCIAL POWER COMMON NEUTRAL/GROUND BOND (#2)
- +24V POWER SUPPLY RETURN BAR (#2)
- −48V POWER SUPPLY RETURN BAR (#2)
- RECTIFIER FRAMES

SECTION "A" – SURGE ABSORBERS
- INTERIOR GROUND RING (#2)
- EXTERNAL EARTH GROUND FIELD (BURIED GROUND RING) (#2)
- METALLIC COLD WATER PIPE (IF AVAILABLE) (#2)
- BUILDING STEEL (IF AVAILABLE) (#2)

GROUND BAR DETAILS | N.T.S | 5

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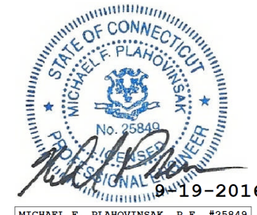

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SHEET TITLE:
GROUNDING, ONE-LINE DIAGRAM & DETAILS

SHEET NUMBER:
G-1