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

February 20, 2017

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

Notice of Exempt Modification
151 Berkshire Road, Newtown, CT 06470
41 23 50.55 N
-73 14 9.85 W
T-Mobile Site #: CT11668B_L700

Dear Ms. Bachman:

T-Mobile currently maintains six (6) antennas at the 99.5-foot level of the existing 149-foot Monopole Tower at 151 Berkshire Road in Newtown, CT. The tower is owned by SBA Infrastructure, LLC. The property is owned by Marnie Uliasz, Tracy Hill, Kevin D. Friedman, and Kathy Kelly. T-Mobile intends to replace the (6) existing antennas with (6) newer technology L700MHz antennas. These antennas would be installed at the 99.5-foot level of the tower. T-Mobile's full scope of work is as follows:

Remove: None

Remove and Replace:

- (3) Panel Antennas with (3) Commscope LNX-6515DS-VTM Panel Antennas
- (3) Panel Antennas with (3) RFS APXV18-206513-C-A-20 Panel Antennas
- (3) TMAs with (3) RFS ATMAA1412D-1A20 TMAs

Install:

- (3) Kathrein 782 11054 Smart Bias Ts
- (1) Commscope MT-195-12 Hand Rail Kit

Existing Equipment to Remain (including entitlements):

- (6) Andrew RR65-18-OODPL2 Panel Antennas
- (3) TMAs
- (1) Low Profile Platform
- (12) 1-1/4" lines

This facility was approved by the Council in docket # 220 on June 3, 2002. The approval called for a height of 120' and accommodation be made for public and private providers. The tower was to be capable of being increased in height as needed and a D&M plan provided. This modification complies with the aforementioned 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 E. Patricia Llodra, First Selectman for the Town of Newtown, Robert Mulholland, Chair, Planning & Zoning Commission for the Town of Newtown, and the property owners, Marnie Uliasz, Tracy Hill, Kevin D. Friedman, and Kathy Kelly. (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 with certain modifications.

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

Sincerely,

Kri Pelletier
Property Specialist
SBA COMMUNICATIONS CORPORATION
134 Flanders Rd., Suite 125
Westborough, MA 01581

508.251.0720 x3804 + T
508.366.2610 + F
203.446.7700 + C
kpelletier@sbasite.com

Attachments

cc: E. Patricia Llodra, First Selectman – as elected official
Town of Newtown, 3 Primrose Street, Newtown, CT 06470
Robert Mulholland Chair, Planning & Zoning Commission – as representative for respective P&Z department
Town of Newtown, 3 Primrose Street, Newtown, CT 06470
Marnie Uliasz, Tracy Hill, Kevin D. Friedman, and Kathy Kelly – as property owners
151 Berkshire Road Sandy Hook CT 06482

POWER DENSITY

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	RFS APXV18-206513-C-A20	Make / Model:	RFS APXV18-206513-C-A20	Make / Model:	RFS APXV18-206513-C-A20
Gain:	13 dBd	Gain:	13 dBd	Gain:	13 dBd
Height (AGL):	99.5	Height (AGL):	99.5	Height (AGL):	99.5
Frequency Bands	1900 MHz (PCS)	Frequency Bands	1900 MHz (PCS)	Frequency Bands	1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	120	Total TX Power(W):	120	Total TX Power(W):	120
ERP (W):	1,462.79	ERP (W):	1,462.79	ERP (W):	1,462.79
Antenna A1 MPE%	0.60	Antenna B1 MPE%	0.60	Antenna C1 MPE%	0.60
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM
Gain:	14.6 dBd	Gain:	14.6 dBd	Gain:	14.6 dBd
Height (AGL):	99.5	Height (AGL):	99.5	Height (AGL):	99.5
Frequency Bands	700 MHz	Frequency Bands	700 MHz	Frequency Bands	700 MHz
Channel Count	1	Channel Count	1	Channel Count	1
Total TX Power(W):	30	Total TX Power(W):	30	Total TX Power(W):	30
ERP (W):	653.31	ERP (W):	653.31	ERP (W):	653.31
Antenna A2 MPE%	0.58	Antenna B2 MPE%	0.58	Antenna C2 MPE%	0.58

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile (Per Sector Max)	**1.18 %**
Sprint	0.07 %
Town of Newtown	0.17 %
Verizon Wireless	1.19 %
AT&T	1.56 %
Site Total MPE %:	**4.17 %**

T-Mobile Sector A Total:	1.18 %
T-Mobile Sector B Total:	1.18 %
T-Mobile Sector C Total:	1.18 %
Site Total:	4.17 %

T-Mobile _per sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
T-Mobile PCS - 1950 MHz UMTS	2	365.70	99.5	3.01	PCS - 1950 MHz	1000	0.30%
T-Mobile PCS - 1950 MHz GSM	2	365.70	99.5	3.01	PCS - 1950 MHz	1000	0.30%
T-Mobile 700 MHz LTE	1	653.31	99.5	2.69	700 MHz	467	0.58%
						Total:	**1.18%**

Town of Newtown, CT
Property Listing Report

Map Block Lot 50-9-16

Account 00713000

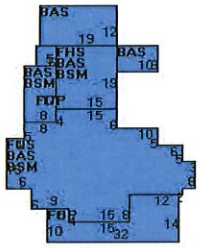
Property Information

Owner	ULIASZ MARNIE & HILL TRACY
Co-Owner	
Address	151 BERKSHIRE ROAD
Mailing Address	151 BERKSHIRE ROAD SANDY HOOK CT 06482
Land Use	1010 Single Family
Land Class	R
Vision ID	7475
School Zone	
Town Clerk Map	

Fire District	
Census Tract	
Neighborhood	090
Zoning Code	R-2
Acreage	9.36
Utilities	Well,Septic
Lot Setting/Desc	
Voting District	
Borough	
Historic	

Photo

Sketch



Construction Details

Year Built	1900
Stories	2.00
Building Style	Colonial
Building Use	Residential
Building Condition	B-
Floors	Hardwood
Total Rooms	

Bedrooms	4
Full Bathrooms	2
Half Bathrooms	0
Bath Style	Typical
Kitchen Style	Old Style
Roof Style	Gable
Roof Cover	Asphalt/F Glas

Exterior Walls	Clapboard
Interior Walls	Drywall
Heating Type	Baseboard
Heating Fuel	Oil
AC Type	None
Gross Bldg Area	5049
Total Living Area	3084

Report Created On 1/23/2017

Town of Newtown, CT
Property Listing Report

Map Block Lot 50-9-16

Account 00713000

Valuation Summary (Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings	248310	173820
Outbuildings	19780	13850
Improvements	268090	187670
Extras	0	0
Land	169813	118870
Total	437903	306540

Outbuilding and Extra Items

Type	Description
Garage w/ Loft	440 S.F.
2S Barn	1260 S.F.

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
First Floor	1821	1821
Basement	1513	0
Finished Half Story	285	171
Open Porch	338	0
Finished Upper Story	1092	1092
Total Area		

Sales History

Owner of Record	Book/ Page	Sale Date	Sale Price
ULIASZ MARNIE & HILL TRACY	1070/1063	9/2/2015	0
ULIAZ MARIE & HILL TRACY	1060/ 469	2/10/2015	190000
SBA TOWERS V LLC	1035/1004	7/29/2013	675000
FRIEDMAN KEVIN D & KELLY KATHY	0527/0870	12/25/2009	

Report Created On 1/23/2017

Town of Newtown, CT
Property Listing Report

Map Block Lot 50-9-16-C

Account 00713001C

Property Information

Owner	SBA INFRASTRUCTURE LLC
Co-Owner	
Address	151 BERKSHIRE ROAD
Mailing Address	8051 CONGRESS AVENUE BOCA RATON FL 33487
Land Use	1060 Vacant W/ OB
Land Class	R
Vision ID	15216
School Zone	
Town Clerk Map	

Fire District	
Census Tract	
Neighborhood	
Zoning Code	R-2
Acreage	0
Utilities	Well,Septic
Lot Setting/Desc	
Voting District	
Borough	
Historic	

Photo

No Photo Available

Sketch

Construction Details

Year Built	
Stories	
Building Style	
Building Use	
Building Condition	
Floors	
Total Rooms	

Bedrooms	0
Full Bathrooms	
Half Bathrooms	
Bath Style	
Kitchen Style	
Roof Style	
Roof Cover	

Exterior Walls	
Interior Walls	
Heating Type	
Heating Fuel	
AC Type	
Gross Bldg Area	
Total Living Area	0

Report Created On 1/23/2017

Town of Newtown, CT
Property Listing Report

Map Block Lot 50-9-16-C

Account 00713001C

Valuation Summary (Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings	0	0
Outbuildings	96000	67200
Improvements	96000	67200
Extras	0	0
Land	360000	252000
Total	456000	319200

Outbuilding and Extra Items

Type	Description
2S Barn	1260 S.F.
Garage w/ Loft	440 S.F.
Cell Tower	1 Units

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
Total Area		

Sales History

Owner of Record	Book/ Page	Sale Date	Sale Price
SBA INFRASTRUCTURE LLC	1039/1152	10/2/2013	425000
SBA TOWERS V LLC	1035/1004	7/29/2013	675000
FRIEDMAN KEVIN D & KELLY KATHY	0527/0870	12/25/2009	

Report Created On 1/23/2017

EBI Consulting
environmental | engineering | due diligence

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

T-Mobile Existing Facility

Site ID: CT11668B

CT668/Arch Twrs - Newtown
151 Berkshire Road
Newtown, CT 06470

February 15, 2017

EBI Project Number: 6217000549

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	4.17 %

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

EBI Consulting
environmental | engineering | due diligence

February 15, 2017

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

Emissions Analysis for Site: **CT11668B – CT668/Arch Twrs - Newtown**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **151 Berkshire Road, Newtown, CT**, for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

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

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at **151 Berkshire Road, Newtown, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

1) 2 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

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

3) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.

4) Since all radios are ground mounted there are additional cabling losses accounted for. For each ground mounted RF path the following losses were calculated. 1.22 dB of additional cable loss for all ground mounted 700 MHz Channels and 2.14 dB of additional cable loss for all ground mounted 1900 MHz channels were factored into the calculations used for this analysis. This is based on manufacturers Specifications for 175 feet of 1-1/4" coax cable on each path.

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

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

7) The antennas used in this modeling are the **RFS APXV18-206513-C-A20** for 1900 MHz (PCS) channels and the **Commscope LNX-6515DS-VTM** for 700 MHz channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **RFS APXV18-206513-C-A20** has a maximum gain of **13 dBd** at its main lobe at 1900 MHz. The **Commscope LNX-6515DS-VTM** has a maximum gain of **14.6 dBd** at its main lobe at 700 MHz. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

8) The antenna mounting height centerline of the proposed antennas is **99.5 feet** above ground level (AGL).

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

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

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	RFS APXV18-206513-C-A20	Make / Model:	RFS APXV18-206513-C-A20	Make / Model:	RFS APXV18-206513-C-A20
Gain:	13 dBd	Gain:	13 dBd	Gain:	13 dBd
Height (AGL):	99.5	Height (AGL):	99.5	Height (AGL):	99.5
Frequency Bands	1900 MHz (PCS)	Frequency Bands	1900 MHz (PCS)	Frequency Bands	1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	120	Total TX Power(W):	120	Total TX Power(W):	120
ERP (W):	1,462.79	ERP (W):	1,462.79	ERP (W):	1,462.79
Antenna A1 MPE%	0.60	Antenna B1 MPE%	0.60	Antenna C1 MPE%	0.60
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM
Gain:	14.6 dBd	Gain:	14.6 dBd	Gain:	14.6 dBd
Height (AGL):	99.5	Height (AGL):	99.5	Height (AGL):	99.5
Frequency Bands	700 MHz	Frequency Bands	700 MHz	Frequency Bands	700 MHz
Channel Count	1	Channel Count	1	Channel Count	1
Total TX Power(W):	30	Total TX Power(W):	30	Total TX Power(W):	30
ERP (W):	653.31	ERP (W):	653.31	ERP (W):	653.31
Antenna A2 MPE%	0.58	Antenna B2 MPE%	0.58	Antenna C2 MPE%	0.58

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile (Per Sector Max)	**1.18 %**
Sprint	0.07 %
Town of Newtown	0.17 %
Verizon Wireless	1.19 %
AT&T	1.56 %
Site Total MPE %:	**4.17 %**

T-Mobile Sector A Total:	1.18 %
T-Mobile Sector B Total:	1.18 %
T-Mobile Sector C Total:	1.18 %
Site Total:	4.17 %

T-Mobile _per sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
T-Mobile PCS - 1950 MHz UMTS	2	365.70	99.5	3.01	PCS - 1950 MHz	1000	0.30%
T-Mobile PCS - 1950 MHz GSM	2	365.70	99.5	3.01	PCS - 1950 MHz	1000	0.30%
T-Mobile 700 MHz LTE	1	653.31	99.5	2.69	700 MHz	467	0.58%
						Total:	**1.18%**

Summary

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

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

T-Mobile Sector	Power Density Value (%)
Sector A:	1.18 %
Sector B:	1.18 %
Sector C:	1.18 %
T-Mobile Per Sector Maximum:	1.18 %
Site Total:	4.17 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **4.17%** 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 149 ft. SABRE Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT13057-A

Customer Site Name: Newtown

Carrier Name: T-Mobile

Carrier Site ID / Name: CT11668B / CT668/Arch Twrs-Newtwn

Site Location: 151 Berkshire Road

Newtown, Connecticut

Fairfield County

Latitude: 41.397375

Longitude: -73.236069

Analysis Result:

Max Structural Usage: 76.3% [Pass]

Max Foundation Usage: 65% [Pass]

Report Prepared By : Stacey Hesselbein

Introduction

The purpose of this report is to summarize the analysis results on the 149 ft. SABRE 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	Sabre, Job # 06-07285 Dated 07/28/2005
Foundation Drawing	Sabre, Job # 06-07285 Dated 07/28/2005
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} = 120 mph (3-Sec. Gust)/ Nominal Design Wind Speed V_{asd} = 93.0 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 = 0.203, S_1 = 0.065

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	153.0	1	Decibel - DB-TDD6492A-A - Omni	(1) 2 ft. Standoff	(1) 7/8"	Town of Newtown
2	147.0	1	Trombone		(1) 7/8"	
3	137.5	3	Antel - BXA-171063-8BF - Panel	(1)Low Profile Platform	(12) 1 5/8"	Verizon
4		3	Swedcom - SLCP2x6014 - Panel			
5		6	Swedcom - SC-E 6014 Rev2W - Panel			
6		6	RFS - FD9R6004/2C-3L - Diplexer			
7	118.5	3	Allgon - 7770 - Panel	(1)Low Profile Platform + (1) RRH Collar Mount	(6) 1 5/8" (1) 3/8" (2) 5/8"	AT&T
9		3	Allgon - P65-16 - Panel			
10		6	Powerwave - LGP 21401 - TMA			
11		6	Ericsson - RRUS-11 - RRU			
12		1	Raycap - DC6-48-60-18-8F - SP			
13	109.0	3	RFS - APXVSPP18-C-A20 - Panel	(3) T-Arms w/ Working Platforms	(4) 1 1/4"	Sprint
14		3	RFS - APXVTM14-C-I20 - Panel			
15		3	ALU - 800 MHz RRH - RRU			
16		3	ALU - 1900MHz RRH - RRU			
17		3	ALU - TD-RRH8x20 - RRU			
18		3	ALU - 800MHz RRH Filter			
19		4	RFS - ACU-A20-N - RET			
-	99.5	12	Panels	(1)Low Profile Platform	(12) 1 1/4"	T-Mobile
-		6	TMAs			
25	50.5	1	Decibel - 260B - GPS	(1) 3 ft. Standoff	(1) 1/2"	Sprint

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
20	99.5	6	Andrew - RR65-18-00DPL2 - Panel	Platform w/ Hand Rails (Commscope MT-195-12)	(12) 1 1/4"	T-Mobile
21		3	RFS - APXV18-206513-C-A20 - Panel			
22		3	Commscope - LNX-6515DS-A1M - Panel			
23		3	RFS - ATMAA1412D-1A2 - TMA			
24		3	Kathrein - 782 11054 - Bias Ts			

See the attached coax layout for the line placement considered in the analysis.

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	Flange Bolts	Flange Plate
Max. Usage:	**76.3%**	**69.6%**	**54.5%**	**20.4%**	**31.7%**
Pass/Fail	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**

Foundations

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Analysis Reactions	2497.7	25.5	54.3

The foundation has been analyzed using the supplied documents and was found adequate. Therefore, no modification to the foundation will be required. Geotechnical soil parameters were obtained from the original foundation calculations included with the referenced tower and foundation design drawings.

Operational Condition (Rigidity):

Operational characteristics of the tower are found to be within the limits prescribed by ANSI/TIA/EIA 222-G for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 1.0884 degrees under the operational wind speed as specified in the Analysis Criteria.

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.

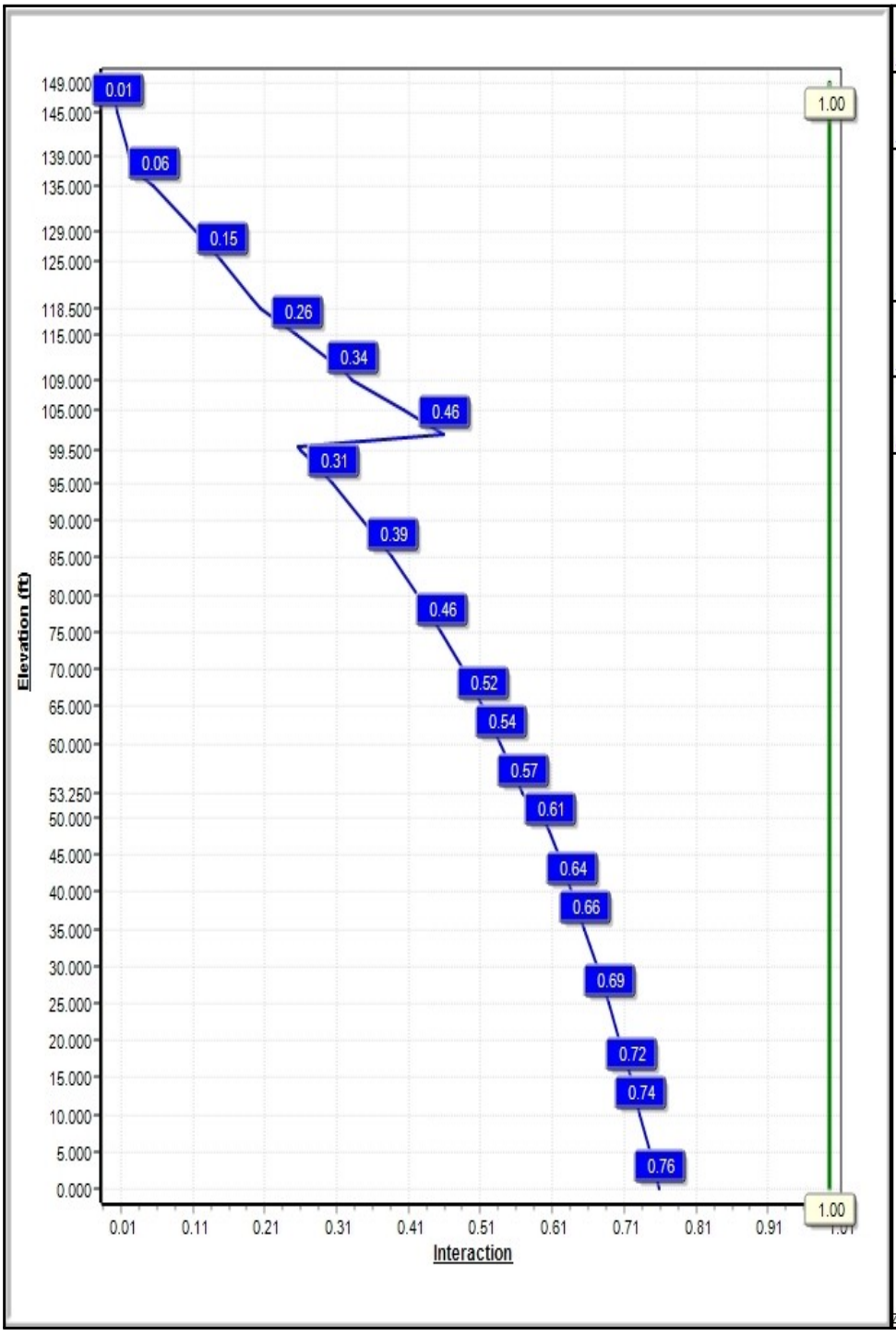
Usage Diagram - Max Ratio 76.31% at 0.0ft

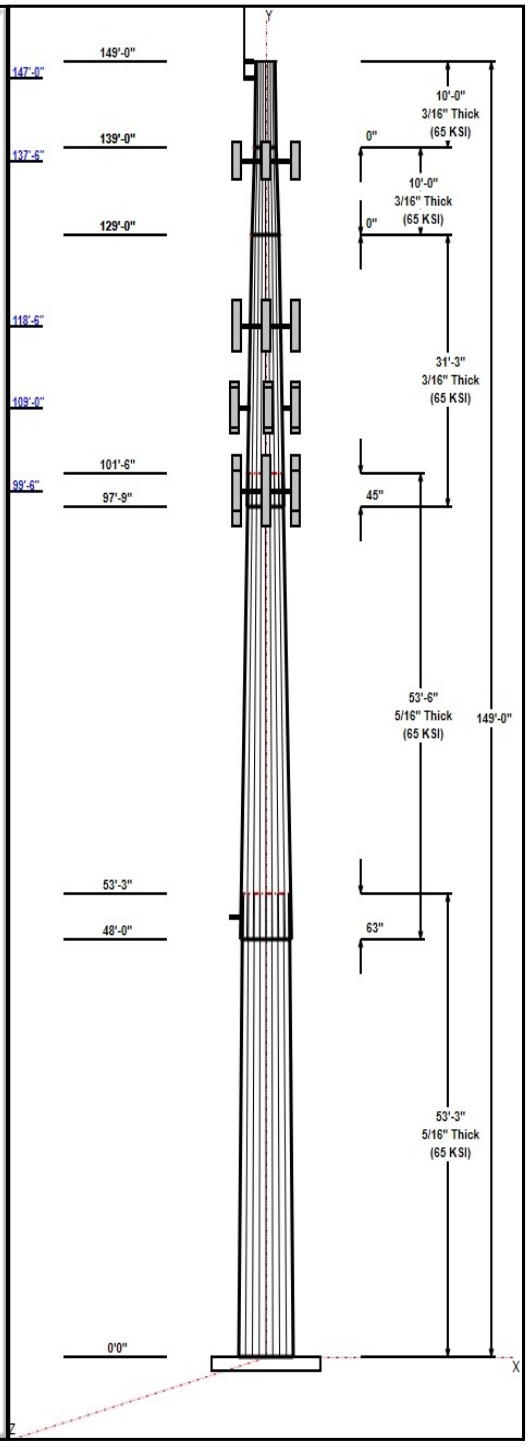
Structure:	CT13057-A-SBA	**Code:**	EIA/TIA-222-G	1/23/2017	
Site Name:	Newtown	**Exposure:**	C		
Height:	149.00 (ft)	**Gh:**	1.1	Page: 1	
Base Elev:	0.000 (ft)				

Tower Engineering Solutions

Dead Load Factor:	1.20	**Iterations:**	27
Wind Load Factor:	1.60		

Load Case : 1.2D + 1.6W 93 mph Wind





Structure: CT13057-A-SBA

Type: Tapered
Site Name: Newtown
Height: 149.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.23497

1/23/2017

Tower Engineering Solutions

Shaft Properties

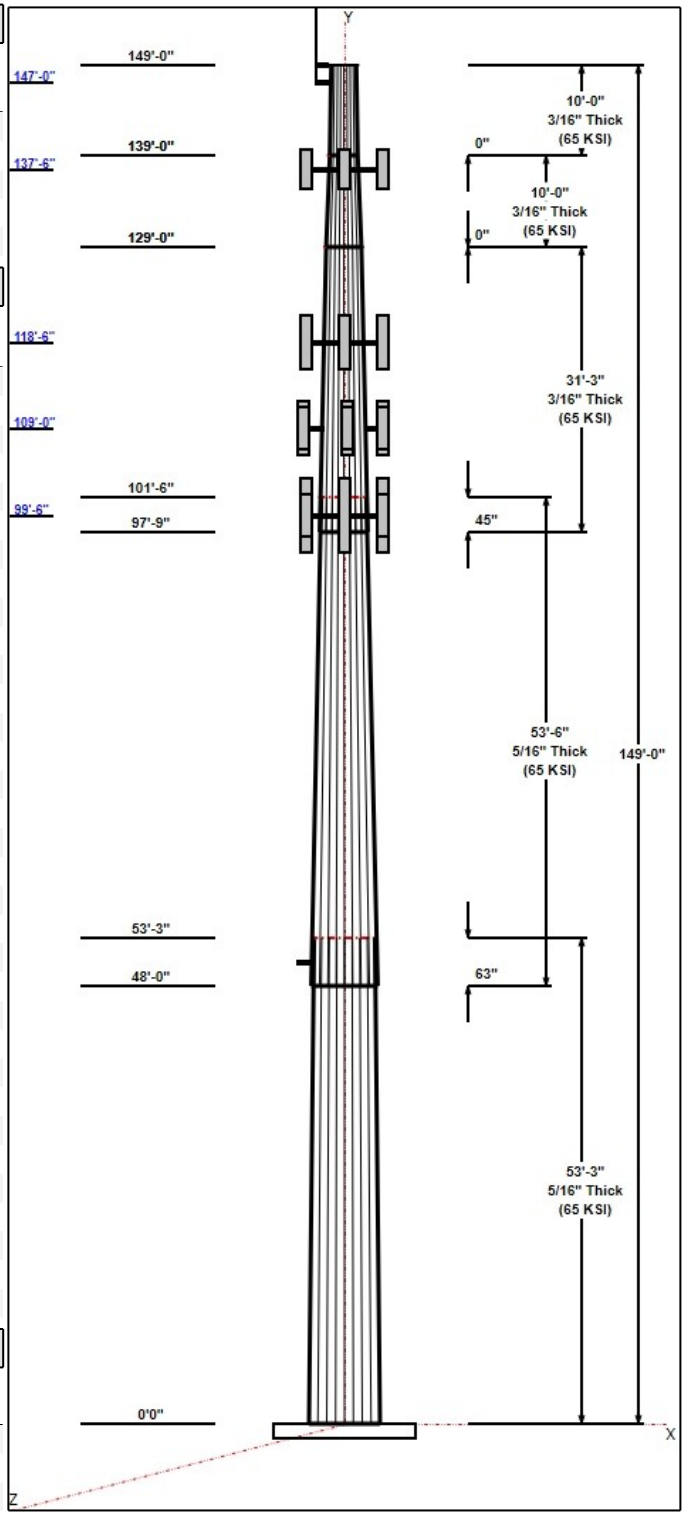
Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	53.25	39.00	51.51	0.313		0.23497	65
2	53.50	28.29	40.86	0.313	Slip	0.23497	65
3	31.25	22.20	29.54	0.188	Slip	0.23497	65
4	10.00	19.85	22.20	0.188	Butt	0.23497	65
5	10.00	17.50	19.85	0.188	Butt	0.23497	65

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
149.00	149.00	1	6' Lightning rod	T-Mobile
149.00	153.02	1	DB-TDD6492A-A	Town of Newtown
149.00	149.00	1	Pipe Mount	Town of Newtown
147.00	147.00	1	Standoff	Town of Newtown
147.00	148.46	1	Trombone	Town of Newtown
137.50	137.50	3	BXA-171063-8BF	Verizon
137.50	137.50	3	SLCP2x6014	Verizon
137.50	137.50	6	SC-E 6014 Rev2W	Verizon
137.50	137.50	6	FD9R6004/2C-3L -	Verizon
137.50	137.50	1	Low Profile Platform	Verizon
118.50	118.50	3	7770	AT&T
118.50	118.50	3	P65-16	AT&T
118.50	118.50	6	LGP21401 - TMA	AT&T
118.50	118.50	1	Low Profile Platform	AT&T
118.50	118.50	6	RRUS-11 - RRU	AT&T
118.50	118.50	1	DC6-48-60-18-8F - SP	AT&T
118.50	118.50	1	RRH Collar Mount	AT&T
109.00	109.00	3	APXVSPP18-C-A20	Sprint
109.00	109.00	3	APXVTM14-C-I20	Sprint
109.00	109.00	3	1900MHz RRH - RRU	Sprint
109.00	109.00	3	800 MHz RRH - RRU	Sprint
109.00	109.00	3	800MHz RRH Filter	Sprint
109.00	109.00	3	TD-RRH8x20 - RRU	Sprint
109.00	109.00	4	ACU-A20-N - RET	Sprint
109.00	109.00	3	T-Arms w/ Working	Sprint
99.50	99.50	1	Platform w/ Hand Rail	T-Mobile
99.50	99.50	6	RR65-18-00DPL2	T-Mobile
99.50	99.50	3	APXV18-206513-C-A20	T-Mobile
99.50	99.50	3	LNX-6515DS-A1M	T-Mobile
99.50	99.50	3	ATMAA1412D-1A2 - TMA	T-Mobile
99.50	99.50	3	782 11054 - Bias Ts	T-Mobile
50.50	50.50	1	260B	Sprint
50.50	50.50	1	3 ft Standoff	Sprint

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	149.00	Inside	7/8" Coax	Town of Newtown
0.00	147.00	Inside	7/8" Coax	Town of Newtown
0.00	137.50	Inside	1 5/8" Coax	Verizon
0.00	118.50	Inside	1 5/8" Coax	AT&T
0.00	118.50	Inside	3/8" Coax	AT&T
0.00	118.50	Inside	5/8" Coax	AT&T
0.00	109.00	Inside	1 1/4" Coax	Sprint
0.00	99.50	Inside	1 1/4" Coax	T-Mobile



0.00	50.50	Outside	1/2"	Coax	Sprint

Anchor Bolts

Qty	Specifications	Grade (ksi)	Arrangement
12	2.25" 18J	75.0	Cluster

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
2.7500	56.0	60.0	Clipped

Reactions

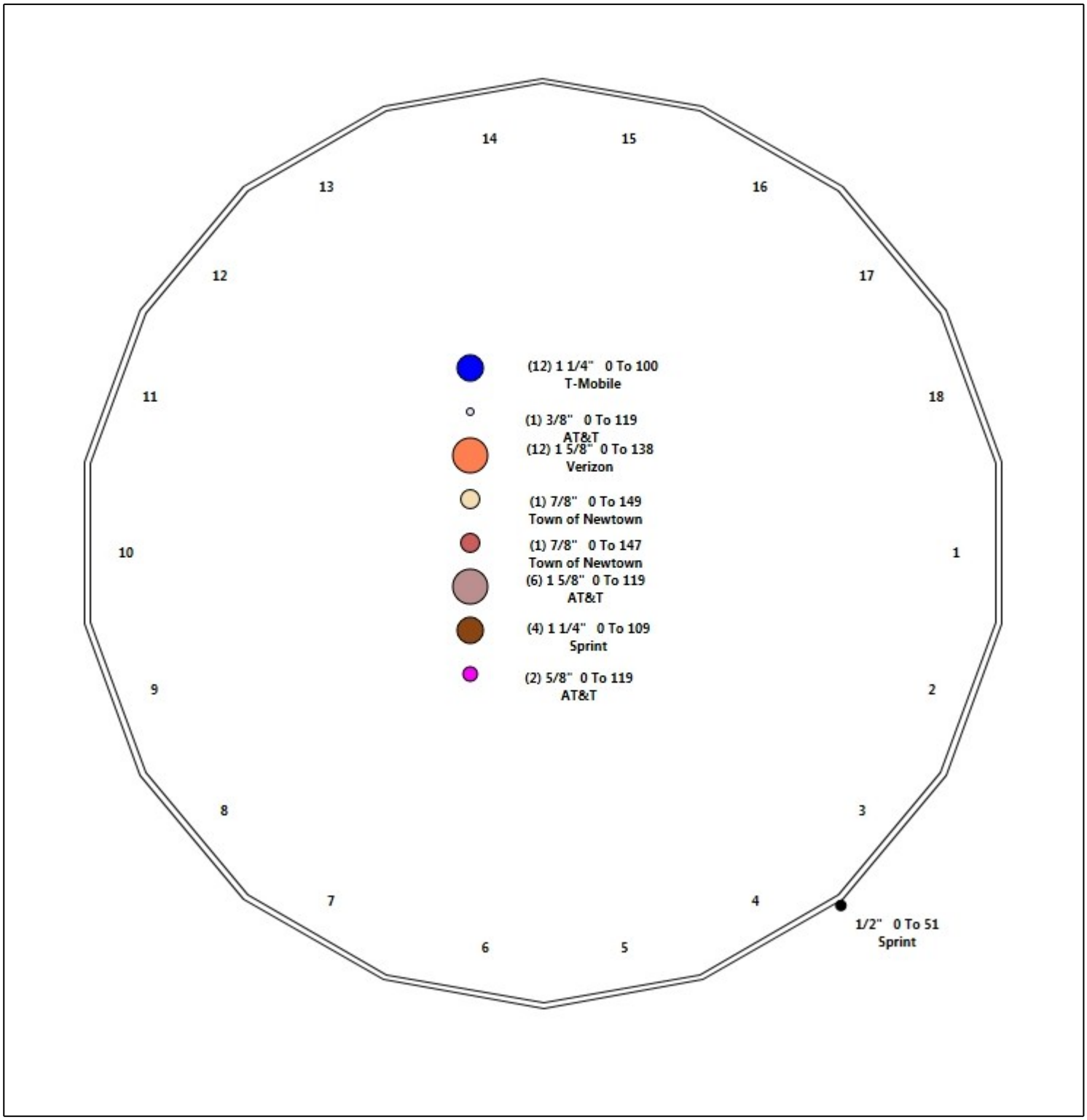
Load Case	Moment	Shear	Axial
1.2D + 1.6W 93 mph Wind	2497.7	25.5	34.2
0.9D + 1.6W 93 mph Wind	2473.0	25.5	25.6
1.2D + 1.0Di + 1.0Wi 50 mph Wind	817.3	8.2	54.3
1.2D + 1.0E	82.7	0.9	34.2
0.9D + 1.0E	81.9	0.9	25.7
1.0D + 1.0W 60 mph Wind	646.0	6.6	28.5

Structure: CT13057-A-SBA - Coax Line Placement

Type: Monopole
Site Name: Newtown
Height: 149.00 (ft)

1/23/2017

Tower Engineering Solutions



Shaft Properties

Structure:	CT13057-A-SBA		**Code:**	EIA/TIA-222-G	1/23/2017
Site Name:	Newtown		**Exposure:**	C	
Height:	149.00 (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

Tower Engineering Solutions

Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	53.250	0.3125	65		0.00	8,077
2	18	53.500	0.3125	65	Slip	63.00	6,186
3	18	31.250	0.1875	65	Slip	45.00	1,625
4	18	10.000	0.1875	65	Flange	0.00	422
5	18	10.000	0.1875	65	Flange	0.00	374
					Total Shaft Weight:		**16,684**

	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	51.51	0.00	50.78	16816.70	27.65	164.83	39.00	53.25	38.37	7255.05	20.59	124.7	0.234966
2	40.86	48.00	40.21	8351.75	21.64	130.74	28.29	101.50	27.75	2743.03	14.55	90.51	0.234966
3	29.54	97.75	17.47	1901.83	26.37	157.56	22.20	129.00	13.10	801.89	19.47	118.4	0.234966
4	22.20	129.0	13.10	801.89	19.47	118.40	19.85	139.00	11.70	571.53	17.26	105.8	0.234966
5	19.85	139.0	11.70	571.53	17.26	105.86	17.50	149.00	10.30	390.14	15.05	93.33	0.234966

Load Summary

Structure:	CT13057-A-SBA		**Code:**	EIA/TIA-222-G	1/23/2017
Site Name:	Newtown		**Exposure:**	C	
Height:	149.00 (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.	Elev (ft)	Description	Qty	No Ice Weight (lb)	No Ice CaAa (sf)	No Ice CaAa Factor	Ice Weight (lb)	Ice CaAa (sf)	Ice CaAa Factor	Hor. Ecc. (ft)	Vert Ecc (ft)
1	149.00	6' Lightning rod	1	6.50	0.38	1.00	42.78	1.467	1.00	0.00	0.00
2	149.00	DB-TDD6492A-A	1	21.00	2.41	1.00	82.38	5.196	1.00	0.00	4.02
3	149.00	Pipe Mount	1	40.00	2.63	1.00	120.23	8.595	1.00	0.00	0.00
4	147.00	Standoff	1	40.00	2.63	1.00	120.12	8.587	1.00	0.00	0.00
5	147.00	Trombone	1	6.00	1.00	1.00	14.68	2.712	1.00	0.00	1.46
6	137.50	BXA-171063-8BF	3	10.50	2.94	0.86	75.48	4.584	0.86	0.00	0.00
7	137.50	SLCP2x6014	3	20.00	6.49	0.82	194.71	8.547	0.82	0.00	0.00
8	137.50	SC-E 6014 Rev2W	6	15.00	3.33	0.85	108.97	4.985	0.85	0.00	0.00
9	137.50	FD9R6004/2C-3L - Diplexer	6	3.10	0.36	0.70	11.06	0.799	0.70	0.00	0.00
10	137.50	Low Profile Platform	1	1500.00	22.00	1.00	2797.57	39.509	1.00	0.00	0.00
11	118.50	7770	3	35.00	5.50	0.84	166.32	6.539	0.84	0.00	0.00
12	118.50	P65-16	3	33.00	8.16	0.85	184.81	10.897	0.85	0.00	0.00
13	118.50	LGP21401 - TMA	6	14.10	1.29	0.70	38.52	2.106	0.70	0.00	0.00
14	118.50	Low Profile Platform	1	1500.00	22.00	1.00	2778.42	39.250	1.00	0.00	0.00
15	118.50	RRUS-11 - RRU	6	51.00	2.52	0.67	121.59	3.139	0.67	0.00	0.00
16	118.50	DC6-48-60-18-8F - SP	1	31.80	0.92	1.00	92.18	1.348	1.00	0.00	0.00
17	118.50	RRH Collar Mount	1	250.00	5.00	0.75	846.60	13.523	0.75	0.00	0.00
18	109.00	APXVSPP18-C-A20	3	57.00	8.02	0.83	224.42	10.726	0.83	0.00	0.00
19	109.00	APXVTM14-C-I20	3	56.00	6.34	0.85	210.38	7.416	0.85	0.00	0.00
20	109.00	1900MHz RRH - RRU	3	44.00	3.80	0.67	149.73	5.146	0.67	0.00	0.00
21	109.00	800 MHz RRH - RRU	3	53.00	2.49	0.67	124.64	3.598	0.67	0.00	0.00
22	109.00	800MHz RRH Filter	3	8.80	0.78	0.67	25.89	1.407	0.67	0.00	0.00
23	109.00	TD-RRH8x20 - RRU	3	70.00	4.05	0.67	176.29	4.836	0.67	0.00	0.00
24	109.00	ACU-A20-N - RET	4	1.00	0.14	0.50	5.16	0.427	0.50	0.00	0.00
25	109.00	T-Arms w/ Working Platforms	3	350.00	12.00	0.75	586.65	22.142	0.75	0.00	0.00
26	99.50	Platform w/ Hand Rail (round)	1	1600.00	32.00	1.00	3615.39	58.800	1.00	0.00	0.00
27	99.50	RR65-18-00DPL2	6	13.50	4.36	0.85	107.11	5.303	0.85	0.00	0.00
28	99.50	APXV18-206513-C-A20	3	26.40	5.17	0.84	115.94	7.449	0.84	0.00	0.00
29	99.50	LNX-6515DS-A1M	3	49.80	11.47	0.80	270.12	14.605	0.80	0.00	0.00
30	99.50	ATMAA1412D-1A2 - TMA	3	13.00	1.17	0.70	38.51	1.921	0.74	0.00	0.00
31	99.50	782 11054 - Bias Ts	3	2.60	0.28	0.70	8.87	0.665	0.71	0.00	0.00
32	50.50	260B	1	1.00	0.09	1.00	5.86	0.248	1.00	0.00	0.00
33	50.50	3 ft Standoff	1	40.00	2.63	1.00	112.00	7.983	1.00	0.00	0.00
		Totals:	**91**	**8,107.80**			**20,630.57**				

Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
0.00	149.00	(1) 7/8" Coax	0.00	Inside
0.00	147.00	(1) 7/8" Coax	0.00	Inside
0.00	137.50	(12) 1 5/8" Coax	0.00	Inside
0.00	118.50	(6) 1 5/8" Coax	0.00	Inside
0.00	118.50	(1) 3/8" Coax	0.00	Inside
0.00	118.50	(2) 5/8" Coax	0.00	Inside
0.00	109.00	(4) 1 1/4" Coax	0.00	Inside
0.00	99.50	(12) 1 1/4" Coax	0.00	Inside

Discrete Appurtenances

No.	Elev (ft)	Description	Qty	No Ice Weight (lb)	No Ice CaAa (sf)	No Ice CaAa Factor	Ice Weight (lb)	Ice CaAa (sf)	Ice CaAa Factor	Hor. Ecc. (ft)	Vert Ecc (ft)
0.00	50.50	(1) 1/2" Coax			1.00	Outside					

Shaft Section Properties

Structure:	CT13057-A-SBA	**Code:**	EIA/TIA-222-G	1/23/2017	
Site Name:	Newtown	**Exposure:**	C		
Height:	149.00 (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	

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		0.3125	51.510	50.780	16816.7	27.65	164.83	68.9	643.0	0.0
5.00		0.3125	50.335	49.614	15685.4	26.99	161.07	69.7	613.8	854.0
10.00		0.3125	49.160	48.449	14606.0	26.33	157.31	70.4	585.2	834.2
15.00		0.3125	47.986	47.284	13577.3	25.67	153.55	71.2	557.3	814.4
20.00		0.3125	46.811	46.119	12598.0	25.00	149.79	72.0	530.1	794.6
25.00		0.3125	45.636	44.953	11667.0	24.34	146.03	72.8	503.5	774.7
30.00		0.3125	44.461	43.788	10783.1	23.68	142.28	73.6	477.7	754.9
35.00		0.3125	43.286	42.623	9944.9	23.01	138.52	74.3	452.5	735.1
40.00		0.3125	42.111	41.458	9151.4	22.35	134.76	75.1	428.0	715.3
45.00		0.3125	40.937	40.292	8401.2	21.69	131.00	75.9	404.2	695.4
48.00	Bot - Section 2	0.3125	40.232	39.593	7971.4	21.29	128.74	76.4	390.3	407.8
50.00		0.3125	39.762	39.127	7693.2	21.02	127.24	76.7	381.1	540.0
50.50		0.3125	39.644	39.011	7624.7	20.96	126.86	76.7	378.8	134.0
53.25	Top - Section 1	0.3125	39.623	38.990	7612.4	20.95	126.79	0.0	0.0	729.9
55.00		0.3125	39.212	38.582	7376.0	20.71	125.48	77.0	370.5	231.0
60.00		0.3125	38.037	37.417	6727.7	20.05	121.72	77.8	348.4	646.5
65.00		0.3125	36.862	36.251	6118.5	19.39	117.96	78.6	326.9	626.7
70.00		0.3125	35.687	35.086	5547.3	18.73	114.20	79.4	306.2	606.9
75.00		0.3125	34.513	33.921	5012.7	18.06	110.44	80.2	286.1	587.0
80.00		0.3125	33.338	32.756	4513.7	17.40	106.68	80.9	266.7	567.2
85.00		0.3125	32.163	31.590	4048.9	16.74	102.92	81.7	247.9	547.4
90.00		0.3125	30.988	30.425	3617.2	16.07	99.16	82.5	229.9	527.6
95.00		0.3125	29.813	29.260	3217.3	15.41	95.40	82.5	212.6	507.7
97.75	Bot - Section 3	0.3125	29.167	28.619	3010.5	15.05	93.33	82.5	203.3	270.8
99.50		0.3125	28.756	28.211	2883.6	14.81	92.02	82.5	197.5	272.5
100.00		0.3125	28.638	28.095	2848.0	14.75	91.64	82.5	195.9	77.1
101.50	Top - Section 2	0.1875	28.661	16.945	1735.7	25.54	152.86	0.0	0.0	229.5
105.00		0.1875	27.839	16.455	1589.6	24.77	148.47	72.3	112.5	198.9
109.00		0.1875	26.899	15.896	1432.9	23.89	143.46	73.3	104.9	220.2
110.00		0.1875	26.664	15.756	1395.4	23.66	142.21	73.6	103.1	53.9
115.00		0.1875	25.489	15.057	1217.8	22.56	135.94	74.9	94.1	262.1
118.50		0.1875	24.666	14.568	1102.9	21.79	131.55	75.8	88.1	176.4
120.00		0.1875	24.314	14.358	1055.9	21.45	129.67	76.2	85.5	73.8
125.00		0.1875	23.139	13.659	909.1	20.35	123.41	77.5	77.4	238.3
129.00	Top - Section 3	0.1875	22.199	13.099	801.9	19.47	118.40	78.5	71.1	182.1
129.00	Bot - Section 4	0.1875	22.199	13.099	801.9	19.47	118.40	78.5	71.1	
130.00		0.1875	21.964	12.959	776.5	19.24	117.14	78.8	69.6	44.3
135.00		0.1875	20.790	12.260	657.5	18.14	110.88	80.1	62.3	214.5
137.50		0.1875	20.202	11.911	602.8	17.59	107.74	80.7	58.8	102.8
139.00	Top - Section 4	0.1875	19.850	11.701	571.5	17.26	105.86	81.1	56.7	60.3
139.00	Bot - Section 5	0.1875	19.850	11.701	571.5	17.26	105.86	81.1	56.7	
140.00		0.1875	19.615	11.561	551.3	17.04	104.61	81.4	55.4	39.6
145.00		0.1875	18.440	10.862	457.2	15.93	98.35	82.5	48.8	190.8
147.00		0.1875	17.970	10.582	422.8	15.49	95.84	82.5	46.3	73.0
149.00		0.1875	17.500	10.303	390.1	15.05	93.33	82.5	43.9	71.1
										16684.3

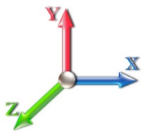
Wind Loading - Shaft

Structure:	CT13057-A-SBA	**Code:**	EIA/TIA-222-G	1/23/2017	
Site Name:	Newtown	**Exposure:**	C		
Height:	149.00 (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	

Load Case: 1.2D + 1.6W 93 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 27

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	17.879	19.67	373.72	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	17.879	19.67	365.20	0.650	0.000	5.00	21.545	14.00	440.7	0.0	1024.9
10.00		1.00	0.85	17.879	19.67	356.68	0.650	0.000	5.00	21.048	13.68	430.5	0.0	1001.1
15.00		1.00	0.85	17.879	19.67	348.15	0.650	0.000	5.00	20.551	13.36	420.3	0.0	977.3
20.00		1.00	0.90	18.971	20.87	349.84	0.650	0.000	5.00	20.054	13.04	435.2	0.0	953.5
25.00		1.00	0.95	19.883	21.87	349.17	0.650	0.000	5.00	19.557	12.71	444.8	0.0	929.7
30.00		1.00	0.98	20.661	22.73	346.77	0.650	0.000	5.00	19.060	12.39	450.5	0.0	905.9
35.00		1.00	1.01	21.343	23.48	343.13	0.650	0.000	5.00	18.563	12.07	453.2	0.0	882.1
40.00		1.00	1.04	21.951	24.15	338.54	0.650	0.000	5.00	18.066	11.74	453.7	0.0	858.3
45.00		1.00	1.07	22.502	24.75	333.20	0.650	0.000	5.00	17.569	11.42	452.3	0.0	834.5
48.00	Bot - Section 2	1.00	1.08	22.810	25.09	329.70	0.650	0.000	3.00	10.303	6.70	268.8	0.0	489.3
50.00		1.00	1.09	23.007	25.31	327.25	0.650	0.000	2.00	6.875	4.47	180.9	0.0	647.9
50.50	Appurtenance(s)	1.00	1.10	23.055	25.36	326.62	0.650	0.000	0.50	1.706	1.11	45.0	0.0	160.8
53.25	Top - Section 1	1.00	1.11	23.314	25.65	323.10	0.650	0.000	2.75	9.296	6.04	247.9	0.0	875.9
55.00		1.00	1.12	23.473	25.82	325.98	0.650	0.000	1.75	5.837	3.79	156.7	0.0	277.2
60.00		1.00	1.14	23.907	26.30	319.12	0.650	0.000	5.00	16.342	10.62	446.9	0.0	775.8
65.00		1.00	1.16	24.313	26.74	311.88	0.650	0.000	5.00	15.845	10.30	440.7	0.0	752.0
70.00		1.00	1.17	24.696	27.17	304.31	0.650	0.000	5.00	15.348	9.98	433.6	0.0	728.2
75.00		1.00	1.19	25.057	27.56	296.43	0.650	0.000	5.00	14.851	9.65	425.7	0.0	704.4
80.00		1.00	1.21	25.400	27.94	288.29	0.650	0.000	5.00	14.354	9.33	417.1	0.0	680.7
85.00		1.00	1.22	25.726	28.30	279.92	0.650	0.000	5.00	13.856	9.01	407.8	0.0	656.9
90.00		1.00	1.24	26.037	28.64	271.32	0.650	0.000	5.00	13.359	8.68	397.9	0.0	633.1
95.00		1.00	1.25	26.336	28.97	262.52	0.650	0.000	5.00	12.862	8.36	387.5	0.0	609.3
97.75	Bot - Section 3	1.00	1.26	26.494	29.14	257.60	0.650	0.000	2.75	6.862	4.46	208.0	0.0	325.0
99.50	Appurtenance(s)	1.00	1.26	26.593	29.25	254.45	0.650	0.000	1.75	4.344	2.82	132.2	0.0	327.0
100.00		1.00	1.27	26.621	29.28	253.54	0.650	0.000	0.50	1.230	0.80	37.5	0.0	92.6
101.50	Top - Section 2	1.00	1.27	26.705	29.38	250.81	0.650	0.000	1.50	3.660	2.38	111.8	0.0	275.4
105.00		1.00	1.28	26.896	29.59	247.73	0.650	0.000	3.50	8.367	5.44	257.4	0.0	238.7
109.00	Appurtenance(s)	1.00	1.29	27.109	29.82	240.31	0.650	0.000	4.00	9.264	6.02	287.3	0.0	264.2
110.00		1.00	1.29	27.161	29.88	238.44	0.650	0.000	1.00	2.266	1.47	70.4	0.0	64.6
115.00		1.00	1.30	27.416	30.16	229.00	0.650	0.000	5.00	11.033	7.17	346.0	0.0	314.5
118.50	Appurtenance(s)	1.00	1.31	27.590	30.35	222.31	0.650	0.000	3.50	7.427	4.83	234.4	0.0	211.7
120.00		1.00	1.32	27.663	30.43	219.43	0.650	0.000	1.50	3.109	2.02	98.4	0.0	88.6
125.00		1.00	1.33	27.902	30.69	209.73	0.650	0.000	5.00	10.039	6.53	320.4	0.0	286.0
129.00	Top - Section 3	1.00	1.34	28.088	30.90	201.88	0.650	0.000	4.00	7.673	4.99	246.6	0.0	218.5
130.00		1.00	1.34	28.133	30.95	199.90	0.650	0.000	1.00	1.869	1.21	60.1	0.0	53.2
135.00		1.00	1.35	28.358	31.19	189.96	0.650	0.000	5.00	9.044	5.88	293.4	0.0	257.5
137.50	Appurtenance(s)	1.00	1.35	28.467	31.31	184.95	0.650	0.000	2.50	4.336	2.82	141.2	0.0	123.4
139.00	Top - Section 4	1.00	1.36	28.533	31.39	181.93	0.650	0.000	1.50	2.542	1.65	83.0	0.0	72.3
140.00		1.00	1.36	28.576	31.43	179.91	0.650	0.000	1.00	1.670	1.09	54.6	0.0	47.5
145.00		1.00	1.37	28.788	31.67	169.76	0.650	0.000	5.00	8.050	5.23	265.1	0.0	228.9
147.00	Appurtenance(s)	1.00	1.37	28.871	31.76	165.68	0.650	0.000	2.00	3.081	2.00	101.8	0.0	87.6
149.00	Appurtenance(s)	1.00	1.38	28.953	31.85	161.57	0.650	0.000	2.00	3.001	1.95	99.4	0.0	85.3
								Totals:	**149.00**			**11,687.0**		**20,021.2**

Discrete Appurtenance Forces

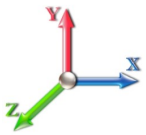
Structure:	CT13057-A-SBA	**Code:**	EIA/TIA-222-G	1/23/2017	
Site Name:	Newtown	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 10	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 93 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 27

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	149.00	Pipe Mount	1	28.953	31.848	1.00	1.00	2.63	48.00	0.000	0.000	134.02	0.00	0.00
2	149.00	DB-TDD6492A-A	1	29.116	32.027	1.00	1.00	2.41	25.20	0.000	4.021	123.50	0.00	496.56
3	149.00	6' Lightning rod	1	28.953	31.848	1.00	1.00	0.38	7.80	0.000	0.000	19.36	0.00	0.00
4	147.00	Trombone	1	28.931	31.824	1.00	1.00	1.00	7.20	0.000	1.458	50.92	0.00	74.26
5	147.00	Standoff	1	28.871	31.758	1.00	1.00	2.63	48.00	0.000	0.000	133.64	0.00	0.00
6	137.50	BXA-171063-8BF	3	28.467	31.314	0.69	0.80	6.07	37.80	0.000	0.000	304.03	0.00	0.00
7	137.50	SLCP2x6014	3	28.467	31.314	0.66	0.80	12.77	72.00	0.000	0.000	639.93	0.00	0.00
8	137.50	SC-E 6014 Rev2W	6	28.467	31.314	0.68	0.80	13.59	108.00	0.000	0.000	680.72	0.00	0.00
9	137.50	FD9R6004/2C-3L -	6	28.467	31.314	0.56	0.80	1.21	22.32	0.000	0.000	60.60	0.00	0.00
10	137.50	Low Profile Platform	1	28.467	31.314	1.00	1.00	22.00	1800.00	0.000	0.000	1102.26	0.00	0.00
11	118.50	RRH Collar Mount	1	27.590	30.349	0.56	0.75	2.81	300.00	0.000	0.000	136.57	0.00	0.00
12	118.50	DC6-48-60-18-8F - SP	1	27.590	30.349	0.80	0.80	0.74	38.16	0.000	0.000	35.74	0.00	0.00
13	118.50	RRUS-11 - RRU	6	27.590	30.349	0.54	0.80	8.10	367.20	0.000	0.000	393.53	0.00	0.00
14	118.50	Low Profile Platform	1	27.590	30.349	1.00	1.00	22.00	1800.00	0.000	0.000	1068.29	0.00	0.00
15	118.50	LGP21401 - TMA	6	27.590	30.349	0.56	0.80	4.33	101.52	0.000	0.000	210.47	0.00	0.00
16	118.50	P65-16	3	27.590	30.349	0.68	0.80	16.65	118.80	0.000	0.000	808.32	0.00	0.00
17	118.50	7770	3	27.590	30.349	0.67	0.80	11.09	126.00	0.000	0.000	538.42	0.00	0.00
18	109.00	800 MHz RRH - RRU	3	27.109	29.820	0.54	0.80	4.00	190.80	0.000	0.000	191.03	0.00	0.00
19	109.00	APXVSPP18-C-A20	3	27.109	29.820	0.66	0.80	15.98	205.20	0.000	0.000	762.23	0.00	0.00
20	109.00	APXVTM14-C-I20	3	27.109	29.820	0.68	0.80	12.93	201.60	0.000	0.000	617.08	0.00	0.00
21	109.00	1900MHz RRH - RRU	3	27.109	29.820	0.54	0.80	6.11	158.40	0.000	0.000	291.54	0.00	0.00
22	109.00	T-Arms w/ Working	3	27.109	29.820	0.56	0.75	20.25	1260.00	0.000	0.000	966.16	0.00	0.00
23	109.00	TD-RRH8x20 - RRU	3	27.109	29.820	0.54	0.80	6.51	252.00	0.000	0.000	310.72	0.00	0.00
24	109.00	ACU-A20-N - RET	4	27.109	29.820	0.40	0.80	0.22	4.80	0.000	0.000	10.69	0.00	0.00
25	109.00	800MHz RRH Filter	3	27.109	29.820	0.54	0.80	1.25	31.68	0.000	0.000	59.84	0.00	0.00
26	99.50	APXV18-206513-C-A20	3	26.593	29.253	0.67	0.80	10.42	95.04	0.000	0.000	487.83	0.00	0.00
27	99.50	Platform w/ Hand Rail	1	26.593	29.253	1.00	1.00	32.00	1920.00	0.000	0.000	1497.74	0.00	0.00
28	99.50	RR65-18-00DPL2	6	26.593	29.253	0.68	0.80	17.79	97.20	0.000	0.000	832.59	0.00	0.00
29	99.50	LNX-6515DS-A1M	3	26.593	29.253	0.64	0.80	22.02	179.28	0.000	0.000	1030.75	0.00	0.00
30	99.50	ATMAA1412D-1A2 - TMA	3	26.593	29.253	0.56	0.80	1.97	46.80	0.000	0.000	92.00	0.00	0.00
31	99.50	782 11054 - Bias Ts	3	26.593	29.253	0.56	0.80	0.47	9.36	0.000	0.000	22.02	0.00	0.00
32	50.50	3 ft Standoff	1	23.055	25.361	1.00	1.00	2.63	48.00	0.000	0.000	106.72	0.00	0.00
33	50.50	260B	1	23.055	25.361	1.00	1.00	0.09	1.20	0.000	0.000	3.65	0.00	0.00
							Totals:		**9,729.36**			**13,722.90**		

Total Applied Force Summary

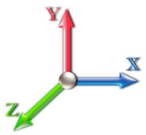
Structure:	CT13057-A-SBA		**Code:**	EIA/TIA-222-G	1/23/2017
Site Name:	Newtown		**Exposure:**	C	
Height:	149.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 11

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 93 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 27

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		440.68	1210.02	0.00	0.00
10.00		430.51	1186.23	0.00	0.00
15.00		420.35	1162.44	0.00	0.00
20.00		435.22	1138.65	0.00	0.00
25.00		444.84	1114.86	0.00	0.00
30.00		450.50	1091.06	0.00	0.00
35.00		453.22	1067.27	0.00	0.00
40.00		453.66	1043.48	0.00	0.00
45.00		452.26	1019.69	0.00	0.00
48.00		268.84	600.40	0.00	0.00
50.00		180.94	722.01	0.00	0.00
50.50	(2) attachments	155.37	228.51	0.00	0.00
53.25		247.92	977.19	0.00	0.00
55.00		156.74	341.63	0.00	0.00
60.00		446.94	960.02	0.00	0.00
65.00		440.71	936.23	0.00	0.00
70.00		433.60	912.44	0.00	0.00
75.00		425.70	888.65	0.00	0.00
80.00		417.08	864.86	0.00	0.00
85.00		407.80	841.07	0.00	0.00
90.00		397.93	817.28	0.00	0.00
95.00		387.51	793.49	0.00	0.00
97.75		208.00	426.28	0.00	0.00
99.50	(19) attachments	4095.09	2739.16	0.00	0.00
100.00		37.46	106.24	0.00	0.00
101.50		111.82	316.44	0.00	0.00
105.00		257.44	334.35	0.00	0.00
109.00	(25) attachments	3496.58	2678.02	0.00	0.00
110.00		70.42	88.79	0.00	0.00
115.00		346.03	435.39	0.00	0.00
118.50	(21) attachments	3425.76	3147.96	0.00	0.00
120.00		98.37	112.92	0.00	0.00
125.00		320.43	367.12	0.00	0.00
129.00		246.55	283.42	0.00	0.00
130.00		60.14	69.43	0.00	0.00
135.00		293.41	338.57	0.00	0.00
137.50	(19) attachments	2928.74	2204.05	0.00	0.00
139.00		82.97	74.18	0.00	0.00
140.00		54.58	48.74	0.00	0.00
145.00		265.12	235.14	0.00	0.00
147.00	(2) attachments	286.31	145.26	0.00	74.26
149.00	(3) attachments	376.29	167.53	0.00	496.56
	Totals:	**25,409.87**	**34,236.45**	**0.00**	**570.82**

Linear Appurtenance Segment Forces (Factored)

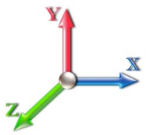
Structure:	CT13057-A-SBA	**Code:**	EIA/TIA-222-G	1/23/2017	
Site Name:	Newtown	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 12	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 93 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 27

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.013	0.000	17.879	0.00	0.96
10.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.013	0.000	17.879	0.00	0.96
15.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.013	0.000	17.879	0.00	0.96
20.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.014	0.000	18.971	0.00	0.96
25.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.014	0.000	19.883	0.00	0.96
30.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.014	0.000	20.661	0.00	0.96
35.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.015	0.000	21.343	0.00	0.96
40.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.015	0.000	21.951	0.00	0.96
45.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.015	0.000	22.502	0.00	0.96
48.00	1/2" Coax	Yes	3.00	0.000	0.65	0.16	0.00	0.016	0.000	22.810	0.00	0.58
50.00	1/2" Coax	Yes	2.00	0.000	0.65	0.11	0.00	0.016	0.000	23.007	0.00	0.38
50.50	1/2" Coax	Yes	0.50	0.000	0.65	0.03	0.00	0.016	0.000	23.055	0.00	0.10
										Totals:	**0.0**	**9.7**

Calculated Forces

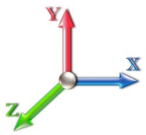
Structure:	CT13057-A-SBA	**Code:**	EIA/TIA-222-G	1/23/2017	
Site Name:	Newtown	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 13	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 93 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 27

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	-34.19	-25.47	0.00	-2497.6	0.00	2497.68	3147.71	1573.86	6633.45	3321.65	0.00	0.000	0.000	0.763
5.00	-32.89	-25.15	0.00	-2370.3	0.00	2370.32	3110.30	1555.15	6403.28	3206.40	0.11	-0.206	0.000	0.750
10.00	-31.61	-24.83	0.00	-2244.5	0.00	2244.58	3071.25	1535.62	6173.46	3091.32	0.44	-0.415	0.000	0.737
15.00	-30.36	-24.51	0.00	-2120.4	0.00	2120.44	3030.56	1515.28	5944.23	2976.53	0.99	-0.628	0.000	0.723
20.00	-29.14	-24.17	0.00	-1997.8	0.00	1997.89	2988.24	1494.12	5715.84	2862.17	1.76	-0.843	0.000	0.708
25.00	-27.94	-23.82	0.00	-1877.0	0.00	1877.03	2944.28	1472.14	5488.51	2748.34	2.76	-1.062	0.000	0.693
30.00	-26.77	-23.45	0.00	-1757.9	0.00	1757.95	2898.68	1449.34	5262.50	2635.16	3.99	-1.284	0.000	0.677
35.00	-25.62	-23.07	0.00	-1640.7	0.00	1640.72	2851.46	1425.73	5038.03	2522.76	5.46	-1.508	0.000	0.660
40.00	-24.50	-22.68	0.00	-1525.3	0.00	1525.37	2802.59	1401.30	4815.35	2411.25	7.16	-1.734	0.000	0.642
45.00	-23.43	-22.27	0.00	-1411.9	0.00	1411.95	2752.09	1376.05	4594.69	2300.76	9.10	-1.963	0.000	0.622
48.00	-22.79	-22.03	0.00	-1345.1	0.00	1345.13	2721.01	1360.50	4463.37	2235.00	10.38	-2.103	0.000	0.610
50.00	-22.05	-21.85	0.00	-1301.0	0.00	1301.07	2699.96	1349.98	4376.30	2191.40	11.28	-2.197	0.000	0.602
50.50	-21.80	-21.71	0.00	-1290.1	0.00	1290.15	2694.66	1347.33	4354.59	2180.53	11.51	-2.221	0.000	0.600
53.25	-20.80	-21.46	0.00	-1230.4	0.00	1230.44	2693.70	1346.85	4350.68	2178.58	12.83	-2.351	0.000	0.573
55.00	-20.40	-21.35	0.00	-1192.8	0.00	1192.88	2675.00	1337.50	4274.93	2140.64	13.71	-2.434	0.000	0.565
60.00	-19.39	-20.93	0.00	-1086.1	0.00	1086.16	2620.46	1310.23	4060.29	2033.16	16.37	-2.653	0.000	0.542
65.00	-18.39	-20.52	0.00	-981.50	0.00	981.50	2564.29	1282.15	3848.51	1927.11	19.27	-2.872	0.000	0.517
70.00	-17.43	-20.10	0.00	-878.92	0.00	878.92	2506.49	1253.24	3639.81	1822.61	22.39	-3.088	0.000	0.489
75.00	-16.49	-19.69	0.00	-778.42	0.00	778.42	2447.05	1223.52	3434.45	1719.78	25.74	-3.301	0.000	0.460
80.00	-15.59	-19.27	0.00	-679.99	0.00	679.99	2385.97	1192.99	3232.65	1618.73	29.31	-3.508	0.000	0.427
85.00	-14.71	-18.86	0.00	-583.62	0.00	583.62	2323.26	1161.63	3034.66	1519.59	33.09	-3.707	0.000	0.391
90.00	-13.86	-18.46	0.00	-489.29	0.00	489.29	2258.91	1129.46	2840.72	1422.47	37.07	-3.895	0.000	0.350
95.00	-13.06	-18.05	0.00	-397.01	0.00	397.01	2173.87	1086.93	2628.01	1315.96	41.24	-4.070	0.000	0.308
97.75	-12.62	-17.82	0.00	-347.39	0.00	347.39	2126.25	1063.13	2513.56	1258.65	43.61	-4.160	0.000	0.282
99.50	-10.18	-13.54	0.00	-316.20	0.00	316.20	2095.95	1047.98	2442.05	1222.84	45.15	-4.215	0.000	0.264
100.00	-10.07	-13.51	0.00	-309.42	0.00	309.42	2087.30	1043.65	2421.81	1212.71	45.59	-4.230	0.000	0.260
101.50	-9.75	-13.38	0.00	-289.17	0.00	289.17	1088.23	544.11	1274.81	638.35	46.93	-4.275	0.000	0.463
105.00	-9.41	-13.12	0.00	-242.33	0.00	242.33	1070.27	535.13	1217.33	609.57	50.10	-4.372	0.000	0.407
109.00	-6.99	-9.44	0.00	-189.84	0.00	189.84	1048.76	524.38	1152.04	576.88	53.82	-4.526	0.000	0.336
110.00	-6.89	-9.37	0.00	-180.40	0.00	180.40	1043.22	521.61	1135.81	568.75	54.78	-4.563	0.000	0.324
115.00	-6.47	-9.01	0.00	-133.53	0.00	133.53	1014.54	507.27	1055.22	528.40	59.64	-4.723	0.000	0.259
118.50	-3.61	-5.34	0.00	-102.01	0.00	102.01	993.49	496.74	999.49	500.49	63.14	-4.819	0.000	0.208
120.00	-3.50	-5.23	0.00	-94.00	0.00	94.00	984.22	492.11	975.81	488.63	64.65	-4.857	0.000	0.196
125.00	-3.15	-4.89	0.00	-67.84	0.00	67.84	952.27	476.13	897.80	449.57	69.80	-4.966	0.000	0.154
129.00	-2.89	-4.62	0.00	-48.29	0.00	48.29	925.53	462.76	836.57	418.91	73.99	-5.039	0.000	0.118
129.00	-2.89	-4.62	0.00	-48.29	0.00	48.29	925.53	462.76	836.57	418.91	73.99	-5.039	0.000	0.118
130.00	-2.82	-4.56	0.00	-43.67	0.00	43.67	918.68	459.34	821.44	411.33	75.04	-5.055	0.000	0.109
135.00	-2.51	-4.23	0.00	-20.89	0.00	20.89	883.46	441.73	746.96	374.04	80.36	-5.115	0.000	0.059
137.50	-0.57	-1.12	0.00	-10.30	0.00	10.30	865.23	432.62	710.51	355.78	83.04	-5.131	0.000	0.030
139.00	-0.51	-1.03	0.00	-8.62	0.00	8.62	854.10	427.05	688.90	344.96	84.66	-5.138	0.000	0.026
139.00	-0.51	-1.03	0.00	-8.62	0.00	8.62	854.10	427.05	688.90	344.96	84.66	-5.138	0.000	0.026
140.00	-0.46	-0.97	0.00	-7.59	0.00	7.59	846.60	423.30	674.61	337.81	85.73	-5.142	0.000	0.023
145.00	-0.25	-0.69	0.00	-2.73	0.00	2.73	807.00	403.50	603.80	302.35	91.12	-5.155	0.000	0.009
147.00	-0.13	-0.39	0.00	-1.28	0.00	1.28	786.22	393.11	572.95	286.90	93.27	-5.158	0.000	0.005
149.00	0.00	-0.38	0.00	-0.50	0.00	0.50	765.44	382.72	542.91	271.86	95.43	-5.159	0.000	0.002

Wind Loading - Shaft

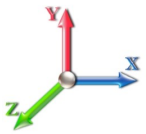
Structure:	CT13057-A-SBA	**Code:**	EIA/TIA-222-G	1/23/2017	
Site Name:	Newtown	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 14	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 93 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 27

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	17.879	19.67	373.72	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	17.879	19.67	365.20	0.650	0.000	5.00	21.545	14.00	440.7	0.0	768.6
10.00		1.00	0.85	17.879	19.67	356.68	0.650	0.000	5.00	21.048	13.68	430.5	0.0	750.8
15.00		1.00	0.85	17.879	19.67	348.15	0.650	0.000	5.00	20.551	13.36	420.3	0.0	733.0
20.00		1.00	0.90	18.971	20.87	349.84	0.650	0.000	5.00	20.054	13.04	435.2	0.0	715.1
25.00		1.00	0.95	19.883	21.87	349.17	0.650	0.000	5.00	19.557	12.71	444.8	0.0	697.3
30.00		1.00	0.98	20.661	22.73	346.77	0.650	0.000	5.00	19.060	12.39	450.5	0.0	679.4
35.00		1.00	1.01	21.343	23.48	343.13	0.650	0.000	5.00	18.563	12.07	453.2	0.0	661.6
40.00		1.00	1.04	21.951	24.15	338.54	0.650	0.000	5.00	18.066	11.74	453.7	0.0	643.7
45.00		1.00	1.07	22.502	24.75	333.20	0.650	0.000	5.00	17.569	11.42	452.3	0.0	625.9
48.00	Bot - Section 2	1.00	1.08	22.810	25.09	329.70	0.650	0.000	3.00	10.303	6.70	268.8	0.0	367.0
50.00		1.00	1.09	23.007	25.31	327.25	0.650	0.000	2.00	6.875	4.47	180.9	0.0	486.0
50.50	Appurtenance(s)	1.00	1.10	23.055	25.36	326.62	0.650	0.000	0.50	1.706	1.11	45.0	0.0	120.6
53.25	Top - Section 1	1.00	1.11	23.314	25.65	323.10	0.650	0.000	2.75	9.296	6.04	247.9	0.0	656.9
55.00		1.00	1.12	23.473	25.82	325.98	0.650	0.000	1.75	5.837	3.79	156.7	0.0	207.9
60.00		1.00	1.14	23.907	26.30	319.12	0.650	0.000	5.00	16.342	10.62	446.9	0.0	581.9
65.00		1.00	1.16	24.313	26.74	311.88	0.650	0.000	5.00	15.845	10.30	440.7	0.0	564.0
70.00		1.00	1.17	24.696	27.17	304.31	0.650	0.000	5.00	15.348	9.98	433.6	0.0	546.2
75.00		1.00	1.19	25.057	27.56	296.43	0.650	0.000	5.00	14.851	9.65	425.7	0.0	528.3
80.00		1.00	1.21	25.400	27.94	288.29	0.650	0.000	5.00	14.354	9.33	417.1	0.0	510.5
85.00		1.00	1.22	25.726	28.30	279.92	0.650	0.000	5.00	13.856	9.01	407.8	0.0	492.6
90.00		1.00	1.24	26.037	28.64	271.32	0.650	0.000	5.00	13.359	8.68	397.9	0.0	474.8
95.00		1.00	1.25	26.336	28.97	262.52	0.650	0.000	5.00	12.862	8.36	387.5	0.0	457.0
97.75	Bot - Section 3	1.00	1.26	26.494	29.14	257.60	0.650	0.000	2.75	6.862	4.46	208.0	0.0	243.7
99.50	Appurtenance(s)	1.00	1.26	26.593	29.25	254.45	0.650	0.000	1.75	4.344	2.82	132.2	0.0	245.3
100.00		1.00	1.27	26.621	29.28	253.54	0.650	0.000	0.50	1.230	0.80	37.5	0.0	69.4
101.50	Top - Section 2	1.00	1.27	26.705	29.38	250.81	0.650	0.000	1.50	3.660	2.38	111.8	0.0	206.6
105.00		1.00	1.28	26.896	29.59	247.73	0.650	0.000	3.50	8.367	5.44	257.4	0.0	179.0
109.00	Appurtenance(s)	1.00	1.29	27.109	29.82	240.31	0.650	0.000	4.00	9.264	6.02	287.3	0.0	198.2
110.00		1.00	1.29	27.161	29.88	238.44	0.650	0.000	1.00	2.266	1.47	70.4	0.0	48.5
115.00		1.00	1.30	27.416	30.16	229.00	0.650	0.000	5.00	11.033	7.17	346.0	0.0	235.9
118.50	Appurtenance(s)	1.00	1.31	27.590	30.35	222.31	0.650	0.000	3.50	7.427	4.83	234.4	0.0	158.8
120.00		1.00	1.32	27.663	30.43	219.43	0.650	0.000	1.50	3.109	2.02	98.4	0.0	66.4
125.00		1.00	1.33	27.902	30.69	209.73	0.650	0.000	5.00	10.039	6.53	320.4	0.0	214.5
129.00	Top - Section 3	1.00	1.34	28.088	30.90	201.88	0.650	0.000	4.00	7.673	4.99	246.6	0.0	163.9
130.00		1.00	1.34	28.133	30.95	199.90	0.650	0.000	1.00	1.869	1.21	60.1	0.0	39.9
135.00		1.00	1.35	28.358	31.19	189.96	0.650	0.000	5.00	9.044	5.88	293.4	0.0	193.1
137.50	Appurtenance(s)	1.00	1.35	28.467	31.31	184.95	0.650	0.000	2.50	4.336	2.82	141.2	0.0	92.5
139.00	Top - Section 4	1.00	1.36	28.533	31.39	181.93	0.650	0.000	1.50	2.542	1.65	83.0	0.0	54.2
140.00		1.00	1.36	28.576	31.43	179.91	0.650	0.000	1.00	1.670	1.09	54.6	0.0	35.6
145.00		1.00	1.37	28.788	31.67	169.76	0.650	0.000	5.00	8.050	5.23	265.1	0.0	171.7
147.00	Appurtenance(s)	1.00	1.37	28.871	31.76	165.68	0.650	0.000	2.00	3.081	2.00	101.8	0.0	65.7
149.00	Appurtenance(s)	1.00	1.38	28.953	31.85	161.57	0.650	0.000	2.00	3.001	1.95	99.4	0.0	64.0
								Totals:	**149.00**			**11,687.0**		**15,015.9**

Discrete Appurtenance Forces

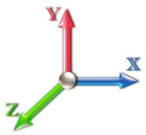
Structure:	CT13057-A-SBA	**Code:**	EIA/TIA-222-G	1/23/2017	
Site Name:	Newtown	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 15	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 93 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 27

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	149.00	Pipe Mount	1	28.953	31.848	1.00	1.00	2.63	36.00	0.000	0.000	134.02	0.00	0.00
2	149.00	DB-TDD6492A-A	1	29.116	32.027	1.00	1.00	2.41	18.90	0.000	4.021	123.50	0.00	496.56
3	149.00	6' Lightning rod	1	28.953	31.848	1.00	1.00	0.38	5.85	0.000	0.000	19.36	0.00	0.00
4	147.00	Trombone	1	28.931	31.824	1.00	1.00	1.00	5.40	0.000	1.458	50.92	0.00	74.26
5	147.00	Standoff	1	28.871	31.758	1.00	1.00	2.63	36.00	0.000	0.000	133.64	0.00	0.00
6	137.50	BXA-171063-8BF	3	28.467	31.314	0.69	0.80	6.07	28.35	0.000	0.000	304.03	0.00	0.00
7	137.50	SLCP2x6014	3	28.467	31.314	0.66	0.80	12.77	54.00	0.000	0.000	639.93	0.00	0.00
8	137.50	SC-E 6014 Rev2W	6	28.467	31.314	0.68	0.80	13.59	81.00	0.000	0.000	680.72	0.00	0.00
9	137.50	FD9R6004/2C-3L -	6	28.467	31.314	0.56	0.80	1.21	16.74	0.000	0.000	60.60	0.00	0.00
10	137.50	Low Profile Platform	1	28.467	31.314	1.00	1.00	22.00	1350.00	0.000	0.000	1102.26	0.00	0.00
11	118.50	RRH Collar Mount	1	27.590	30.349	0.56	0.75	2.81	225.00	0.000	0.000	136.57	0.00	0.00
12	118.50	DC6-48-60-18-8F - SP	1	27.590	30.349	0.80	0.80	0.74	28.62	0.000	0.000	35.74	0.00	0.00
13	118.50	RRUS-11 - RRU	6	27.590	30.349	0.54	0.80	8.10	275.40	0.000	0.000	393.53	0.00	0.00
14	118.50	Low Profile Platform	1	27.590	30.349	1.00	1.00	22.00	1350.00	0.000	0.000	1068.29	0.00	0.00
15	118.50	LGP21401 - TMA	6	27.590	30.349	0.56	0.80	4.33	76.14	0.000	0.000	210.47	0.00	0.00
16	118.50	P65-16	3	27.590	30.349	0.68	0.80	16.65	89.10	0.000	0.000	808.32	0.00	0.00
17	118.50	7770	3	27.590	30.349	0.67	0.80	11.09	94.50	0.000	0.000	538.42	0.00	0.00
18	109.00	800 MHz RRH - RRU	3	27.109	29.820	0.54	0.80	4.00	143.10	0.000	0.000	191.03	0.00	0.00
19	109.00	APXVSPP18-C-A20	3	27.109	29.820	0.66	0.80	15.98	153.90	0.000	0.000	762.23	0.00	0.00
20	109.00	APXVTM14-C-I20	3	27.109	29.820	0.68	0.80	12.93	151.20	0.000	0.000	617.08	0.00	0.00
21	109.00	1900MHz RRH - RRU	3	27.109	29.820	0.54	0.80	6.11	118.80	0.000	0.000	291.54	0.00	0.00
22	109.00	T-Arms w/ Working	3	27.109	29.820	0.56	0.75	20.25	945.00	0.000	0.000	966.16	0.00	0.00
23	109.00	TD-RRH8x20 - RRU	3	27.109	29.820	0.54	0.80	6.51	189.00	0.000	0.000	310.72	0.00	0.00
24	109.00	ACU-A20-N - RET	4	27.109	29.820	0.40	0.80	0.22	3.60	0.000	0.000	10.69	0.00	0.00
25	109.00	800MHz RRH Filter	3	27.109	29.820	0.54	0.80	1.25	23.76	0.000	0.000	59.84	0.00	0.00
26	99.50	APXV18-206513-C-A20	3	26.593	29.253	0.67	0.80	10.42	71.28	0.000	0.000	487.83	0.00	0.00
27	99.50	Platform w/ Hand Rail	1	26.593	29.253	1.00	1.00	32.00	1440.00	0.000	0.000	1497.74	0.00	0.00
28	99.50	RR65-18-00DPL2	6	26.593	29.253	0.68	0.80	17.79	72.90	0.000	0.000	832.59	0.00	0.00
29	99.50	LNX-6515DS-A1M	3	26.593	29.253	0.64	0.80	22.02	134.46	0.000	0.000	1030.75	0.00	0.00
30	99.50	ATMAA1412D-1A2 - TMA	3	26.593	29.253	0.56	0.80	1.97	35.10	0.000	0.000	92.00	0.00	0.00
31	99.50	782 11054 - Bias Ts	3	26.593	29.253	0.56	0.80	0.47	7.02	0.000	0.000	22.02	0.00	0.00
32	50.50	3 ft Standoff	1	23.055	25.361	1.00	1.00	2.63	36.00	0.000	0.000	106.72	0.00	0.00
33	50.50	260B	1	23.055	25.361	1.00	1.00	0.09	0.90	0.000	0.000	3.65	0.00	0.00
							Totals:		**7,297.02**			**13,722.90**		

Total Applied Force Summary

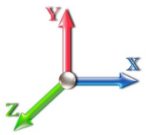
Structure:	CT13057-A-SBA		**Code:**	EIA/TIA-222-G	1/23/2017
Site Name:	Newtown		**Exposure:**	C	
Height:	149.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 16

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 93 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 27

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		440.68	907.51	0.00	0.00
10.00		430.51	889.67	0.00	0.00
15.00		420.35	871.83	0.00	0.00
20.00		435.22	853.98	0.00	0.00
25.00		444.84	836.14	0.00	0.00
30.00		450.50	818.30	0.00	0.00
35.00		453.22	800.46	0.00	0.00
40.00		453.66	782.61	0.00	0.00
45.00		452.26	764.77	0.00	0.00
48.00		268.84	450.30	0.00	0.00
50.00		180.94	541.51	0.00	0.00
50.50	(2) attachments	155.37	171.38	0.00	0.00
53.25		247.92	732.89	0.00	0.00
55.00		156.74	256.22	0.00	0.00
60.00		446.94	720.01	0.00	0.00
65.00		440.71	702.17	0.00	0.00
70.00		433.60	684.33	0.00	0.00
75.00		425.70	666.49	0.00	0.00
80.00		417.08	648.64	0.00	0.00
85.00		407.80	630.80	0.00	0.00
90.00		397.93	612.96	0.00	0.00
95.00		387.51	595.11	0.00	0.00
97.75		208.00	319.71	0.00	0.00
99.50	(19) attachments	4095.09	2054.37	0.00	0.00
100.00		37.46	79.68	0.00	0.00
101.50		111.82	237.33	0.00	0.00
105.00		257.44	250.76	0.00	0.00
109.00	(25) attachments	3496.58	2008.52	0.00	0.00
110.00		70.42	66.59	0.00	0.00
115.00		346.03	326.54	0.00	0.00
118.50	(21) attachments	3425.76	2360.97	0.00	0.00
120.00		98.37	84.69	0.00	0.00
125.00		320.43	275.34	0.00	0.00
129.00		246.55	212.56	0.00	0.00
130.00		60.14	52.07	0.00	0.00
135.00		293.41	253.93	0.00	0.00
137.50	(19) attachments	2928.74	1653.04	0.00	0.00
139.00		82.97	55.64	0.00	0.00
140.00		54.58	36.56	0.00	0.00
145.00		265.12	176.36	0.00	0.00
147.00	(2) attachments	286.31	108.95	0.00	74.26
149.00	(3) attachments	376.29	125.65	0.00	496.56
	Totals:	**25,409.87**	**25,677.34**	**0.00**	**570.82**

Linear Appurtenance Segment Forces (Factored)

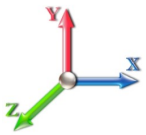
Structure:	CT13057-A-SBA	**Code:**	EIA/TIA-222-G	1/23/2017	
Site Name:	Newtown	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 17	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 93 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 27

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.013	0.000	17.879	0.00	0.72
10.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.013	0.000	17.879	0.00	0.72
15.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.013	0.000	17.879	0.00	0.72
20.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.014	0.000	18.971	0.00	0.72
25.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.014	0.000	19.883	0.00	0.72
30.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.014	0.000	20.661	0.00	0.72
35.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.015	0.000	21.343	0.00	0.72
40.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.015	0.000	21.951	0.00	0.72
45.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.015	0.000	22.502	0.00	0.72
48.00	1/2" Coax	Yes	3.00	0.000	0.65	0.16	0.00	0.016	0.000	22.810	0.00	0.43
50.00	1/2" Coax	Yes	2.00	0.000	0.65	0.11	0.00	0.016	0.000	23.007	0.00	0.29
50.50	1/2" Coax	Yes	0.50	0.000	0.65	0.03	0.00	0.016	0.000	23.055	0.00	0.07
										Totals:	**0.0**	**7.3**

Calculated Forces

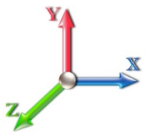
Structure:	CT13057-A-SBA	**Code:**	EIA/TIA-222-G	1/23/2017	
Site Name:	Newtown	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 18	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 93 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 27

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	-25.63	-25.46	0.00	-2473.0	0.00	2473.02	3147.71	1573.86	6633.45	3321.65	0.00	0.000	0.000	0.753
5.00	-24.63	-25.10	0.00	-2345.7	0.00	2345.75	3110.30	1555.15	6403.28	3206.40	0.11	-0.204	0.000	0.740
10.00	-23.66	-24.75	0.00	-2220.2	0.00	2220.24	3071.25	1535.62	6173.46	3091.32	0.43	-0.411	0.000	0.726
15.00	-22.70	-24.41	0.00	-2096.4	0.00	2096.47	3030.56	1515.28	5944.23	2976.53	0.98	-0.621	0.000	0.712
20.00	-21.76	-24.04	0.00	-1974.4	0.00	1974.43	2988.24	1494.12	5715.84	2862.17	1.74	-0.834	0.000	0.697
25.00	-20.84	-23.67	0.00	-1854.2	0.00	1854.20	2944.28	1472.14	5488.51	2748.34	2.73	-1.050	0.000	0.682
30.00	-19.94	-23.28	0.00	-1735.8	0.00	1735.88	2898.68	1449.34	5262.50	2635.16	3.95	-1.269	0.000	0.666
35.00	-19.07	-22.88	0.00	-1619.5	0.00	1619.50	2851.46	1425.73	5038.03	2522.76	5.40	-1.491	0.000	0.649
40.00	-18.21	-22.47	0.00	-1505.1	0.00	1505.12	2802.59	1401.30	4815.35	2411.25	7.08	-1.714	0.000	0.631
45.00	-17.39	-22.05	0.00	-1392.7	0.00	1392.75	2752.09	1376.05	4594.69	2300.76	9.00	-1.939	0.000	0.612
48.00	-16.90	-21.80	0.00	-1326.6	0.00	1326.60	2721.01	1360.50	4463.37	2235.00	10.26	-2.077	0.000	0.600
50.00	-16.35	-21.62	0.00	-1283.0	0.00	1283.00	2699.96	1349.98	4376.30	2191.40	11.15	-2.171	0.000	0.592
50.50	-16.15	-21.48	0.00	-1272.1	0.00	1272.19	2694.66	1347.33	4354.59	2180.53	11.38	-2.194	0.000	0.590
53.25	-15.39	-21.23	0.00	-1213.1	0.00	1213.13	2693.70	1346.85	4350.68	2178.58	12.68	-2.322	0.000	0.563
55.00	-15.09	-21.10	0.00	-1175.9	0.00	1175.98	2675.00	1337.50	4274.93	2140.64	13.55	-2.404	0.000	0.555
60.00	-14.31	-20.68	0.00	-1070.4	0.00	1070.47	2620.46	1310.23	4060.29	2033.16	16.18	-2.620	0.000	0.532
65.00	-13.55	-20.25	0.00	-967.09	0.00	967.09	2564.29	1282.15	3848.51	1927.11	19.04	-2.836	0.000	0.507
70.00	-12.82	-19.83	0.00	-865.82	0.00	865.82	2506.49	1253.24	3639.81	1822.61	22.13	-3.049	0.000	0.480
75.00	-12.11	-19.42	0.00	-766.66	0.00	766.66	2447.05	1223.52	3434.45	1719.78	25.43	-3.258	0.000	0.451
80.00	-11.42	-19.00	0.00	-669.58	0.00	669.58	2385.97	1192.99	3232.65	1618.73	28.95	-3.462	0.000	0.419
85.00	-10.75	-18.59	0.00	-574.58	0.00	574.58	2323.26	1161.63	3034.66	1519.59	32.68	-3.658	0.000	0.383
90.00	-10.11	-18.19	0.00	-481.62	0.00	481.62	2258.91	1129.46	2840.72	1422.47	36.61	-3.844	0.000	0.343
95.00	-9.50	-17.78	0.00	-390.70	0.00	390.70	2173.87	1086.93	2628.01	1315.96	40.73	-4.015	0.000	0.302
97.75	-9.18	-17.56	0.00	-341.81	0.00	341.81	2126.25	1063.13	2513.56	1258.65	43.07	-4.104	0.000	0.276
99.50	-7.42	-13.33	0.00	-311.08	0.00	311.08	2095.95	1047.98	2442.05	1222.84	44.58	-4.158	0.000	0.258
100.00	-7.33	-13.29	0.00	-304.41	0.00	304.41	2087.30	1043.65	2421.81	1212.71	45.02	-4.173	0.000	0.255
101.50	-7.09	-13.17	0.00	-284.47	0.00	284.47	1088.23	544.11	1274.81	638.35	46.34	-4.217	0.000	0.453
105.00	-6.83	-12.91	0.00	-238.37	0.00	238.37	1070.27	535.13	1217.33	609.57	49.46	-4.312	0.000	0.398
109.00	-5.08	-9.28	0.00	-186.72	0.00	186.72	1048.76	524.38	1152.04	576.88	53.14	-4.464	0.000	0.329
110.00	-5.00	-9.21	0.00	-177.44	0.00	177.44	1043.22	521.61	1135.81	568.75	54.08	-4.501	0.000	0.317
115.00	-4.68	-8.85	0.00	-131.37	0.00	131.37	1014.54	507.27	1055.22	528.40	58.88	-4.658	0.000	0.254
118.50	-2.61	-5.25	0.00	-100.38	0.00	100.38	993.49	496.74	999.49	500.49	62.32	-4.753	0.000	0.203
120.00	-2.52	-5.15	0.00	-92.51	0.00	92.51	984.22	492.11	975.81	488.63	63.82	-4.790	0.000	0.192
125.00	-2.27	-4.81	0.00	-66.78	0.00	66.78	952.27	476.13	897.80	449.57	68.89	-4.897	0.000	0.151
129.00	-2.08	-4.54	0.00	-47.56	0.00	47.56	925.53	462.76	836.57	418.91	73.02	-4.969	0.000	0.116
129.00	-2.08	-4.54	0.00	-47.56	0.00	47.56	925.53	462.76	836.57	418.91	73.02	-4.969	0.000	0.116
130.00	-2.03	-4.48	0.00	-43.01	0.00	43.01	918.68	459.34	821.44	411.33	74.06	-4.985	0.000	0.107
135.00	-1.80	-4.17	0.00	-20.60	0.00	20.60	883.46	441.73	746.96	374.04	79.31	-5.043	0.000	0.057
137.50	-0.41	-1.11	0.00	-10.18	0.00	10.18	865.23	432.62	710.51	355.78	81.96	-5.060	0.000	0.029
139.00	-0.36	-1.02	0.00	-8.52	0.00	8.52	854.10	427.05	688.90	344.96	83.55	-5.067	0.000	0.025
139.00	-0.36	-1.02	0.00	-8.52	0.00	8.52	854.10	427.05	688.90	344.96	83.55	-5.067	0.000	0.025
140.00	-0.33	-0.96	0.00	-7.51	0.00	7.51	846.60	423.30	674.61	337.81	84.61	-5.071	0.000	0.023
145.00	-0.17	-0.68	0.00	-2.70	0.00	2.70	807.00	403.50	603.80	302.35	89.92	-5.084	0.000	0.009
147.00	-0.09	-0.39	0.00	-1.27	0.00	1.27	786.22	393.11	572.95	286.90	92.04	-5.086	0.000	0.005
149.00	0.00	-0.38	0.00	-0.50	0.00	0.50	765.44	382.72	542.91	271.86	94.17	-5.087	0.000	0.002

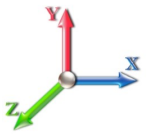
Wind Loading - Shaft

Structure:	CT13057-A-SBA	**Code:**	EIA/TIA-222-G	1/23/2017	
Site Name:	Newtown	**Exposure:**	C		
Height:	149.00 (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	

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 26

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	22.580	27.10	154.0	401.3	1426.2
10.00		1.00	0.85	5.168	5.68	0.00	1.200	1.331	5.00	22.157	26.59	151.2	421.0	1422.1
15.00		1.00	0.85	5.168	5.68	0.00	1.200	1.386	5.00	21.706	26.05	148.1	428.7	1406.0
20.00		1.00	0.90	5.483	6.03	0.00	1.200	1.427	5.00	21.243	25.49	153.8	431.1	1384.6
25.00		1.00	0.95	5.747	6.32	0.00	1.200	1.459	5.00	20.773	24.93	157.6	430.4	1360.1
30.00		1.00	0.98	5.972	6.57	0.00	1.200	1.486	5.00	20.298	24.36	160.0	427.6	1333.5
35.00		1.00	1.01	6.169	6.79	0.00	1.200	1.509	5.00	19.820	23.78	161.4	423.3	1305.5
40.00		1.00	1.04	6.345	6.98	0.00	1.200	1.529	5.00	19.340	23.21	162.0	418.0	1276.3
45.00		1.00	1.07	6.504	7.15	0.00	1.200	1.547	5.00	18.858	22.63	161.9	411.7	1246.2
48.00	Bot - Section 2	1.00	1.08	6.593	7.25	0.00	1.200	1.557	3.00	11.081	13.30	96.4	244.5	733.8
50.00		1.00	1.09	6.650	7.32	0.00	1.200	1.564	2.00	7.396	8.88	64.9	164.3	812.3
50.50	Appurtenance(s)	1.00	1.10	6.664	7.33	0.00	1.200	1.565	0.50	1.837	2.20	16.2	41.0	201.8
53.25	Top - Section 1	1.00	1.11	6.739	7.41	0.00	1.200	1.574	2.75	10.017	12.02	89.1	223.3	1099.2
55.00		1.00	1.12	6.785	7.46	0.00	1.200	1.579	1.75	6.297	7.56	56.4	141.2	418.3
60.00		1.00	1.14	6.910	7.60	0.00	1.200	1.592	5.00	17.669	21.20	161.2	395.2	1171.0
65.00		1.00	1.16	7.028	7.73	0.00	1.200	1.605	5.00	17.182	20.62	159.4	386.7	1138.7
70.00		1.00	1.17	7.138	7.85	0.00	1.200	1.617	5.00	16.695	20.03	157.3	377.8	1106.0
75.00		1.00	1.19	7.243	7.97	0.00	1.200	1.628	5.00	16.208	19.45	155.0	368.5	1073.0
80.00		1.00	1.21	7.342	8.08	0.00	1.200	1.639	5.00	15.719	18.86	152.3	359.0	1039.6
85.00		1.00	1.22	7.436	8.18	0.00	1.200	1.649	5.00	15.230	18.28	149.5	349.1	1006.0
90.00		1.00	1.24	7.526	8.28	0.00	1.200	1.658	5.00	14.741	17.69	146.4	339.0	972.1
95.00		1.00	1.25	7.612	8.37	0.00	1.200	1.667	5.00	14.252	17.10	143.2	328.7	937.9
97.75	Bot - Section 3	1.00	1.26	7.658	8.42	0.00	1.200	1.672	2.75	7.629	9.15	77.1	177.6	502.5
99.50	Appurtenance(s)	1.00	1.26	7.687	8.46	0.00	1.200	1.675	1.75	4.833	5.80	49.0	113.1	440.1
100.00		1.00	1.27	7.695	8.46	0.00	1.200	1.676	0.50	1.370	1.64	13.9	32.2	124.8
101.50	Top - Section 2	1.00	1.27	7.719	8.49	0.00	1.200	1.678	1.50	4.080	4.90	41.6	95.6	371.1
105.00		1.00	1.28	7.774	8.55	0.00	1.200	1.684	3.50	9.349	11.22	95.9	217.9	456.6
109.00	Appurtenance(s)	1.00	1.29	7.836	8.62	0.00	1.200	1.690	4.00	10.391	12.47	107.5	242.1	506.3
110.00		1.00	1.29	7.851	8.64	0.00	1.200	1.692	1.00	2.548	3.06	26.4	60.1	124.7
115.00		1.00	1.30	7.925	8.72	0.00	1.200	1.699	5.00	12.449	14.94	130.2	289.3	603.8
118.50	Appurtenance(s)	1.00	1.31	7.975	8.77	0.00	1.200	1.705	3.50	8.421	10.11	88.7	197.0	408.7
120.00		1.00	1.32	7.996	8.80	0.00	1.200	1.707	1.50	3.535	4.24	37.3	83.4	172.0
125.00		1.00	1.33	8.065	8.87	0.00	1.200	1.714	5.00	11.467	13.76	122.1	266.6	552.6
129.00	Top - Section 3	1.00	1.34	8.119	8.93	0.00	1.200	1.719	4.00	8.819	10.58	94.5	205.9	424.4
130.00		1.00	1.34	8.132	8.95	0.00	1.200	1.720	1.00	2.155	2.59	23.1	51.0	104.2
135.00		1.00	1.35	8.197	9.02	0.00	1.200	1.727	5.00	10.484	12.58	113.4	243.4	500.8
137.50	Appurtenance(s)	1.00	1.35	8.229	9.05	0.00	1.200	1.730	2.50	5.057	6.07	54.9	118.8	242.1
139.00	Top - Section 4	1.00	1.36	8.247	9.07	0.00	1.200	1.732	1.50	2.975	3.57	32.4	70.2	142.5
140.00		1.00	1.36	8.260	9.09	0.00	1.200	1.733	1.00	1.959	2.35	21.4	46.3	93.8
145.00		1.00	1.37	8.321	9.15	0.00	1.200	1.739	5.00	9.500	11.40	104.3	219.7	448.6
147.00	Appurtenance(s)	1.00	1.37	8.345	9.18	0.00	1.200	1.742	2.00	3.662	4.39	40.3	85.9	173.5
149.00	Appurtenance(s)	1.00	1.38	8.369	9.21	0.00	1.200	1.744	2.00	3.583	4.30	39.6	84.0	169.3
								Totals:	**149.00**			**4,271.0**		**30,432.6**

Discrete Appurtenance Forces

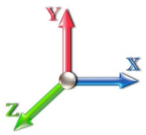
Structure:	CT13057-A-SBA	**Code:**	EIA/TIA-222-G	1/23/2017	
Site Name:	Newtown	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 20	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 26

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	149.00	Pipe Mount	1	8.369	9.206	1.00	1.00	8.59	105.23	0.000	0.000	79.12	0.00	0.00
2	149.00	DB-TDD6492A-A	1	8.416	9.258	1.00	1.00	5.20	68.98	0.000	4.021	48.10	0.00	193.40
3	149.00	6' Lightning rod	1	8.369	9.206	1.00	1.00	1.47	38.78	0.000	0.000	13.50	0.00	0.00
4	147.00	Trombone	1	8.362	9.199	1.00	1.00	2.71	-5.02	0.000	1.458	24.95	0.00	36.39
5	147.00	Standoff	1	8.345	9.180	1.00	1.00	8.59	105.12	0.000	0.000	78.82	0.00	0.00
6	137.50	BXA-171063-8BF	3	8.229	9.051	0.69	0.80	9.46	176.33	0.000	0.000	85.64	0.00	0.00
7	137.50	SLCP2x6014	3	8.229	9.051	0.66	0.80	16.82	444.94	0.000	0.000	152.25	0.00	0.00
8	137.50	SC-E 6014 Rev2W	6	8.229	9.051	0.68	0.80	20.34	509.19	0.000	0.000	184.08	0.00	0.00
9	137.50	FD9R6004/2C-3L -	6	8.229	9.051	0.56	0.80	2.69	56.26	0.000	0.000	24.31	0.00	0.00
10	137.50	Low Profile Platform	1	8.229	9.051	1.00	1.00	39.51	2797.57	0.000	0.000	357.61	0.00	0.00
11	118.50	RRH Collar Mount	1	7.975	8.772	0.56	0.75	7.61	721.60	0.000	0.000	66.73	0.00	0.00
12	118.50	DC6-48-60-18-8F - SP	1	7.975	8.772	0.80	0.80	1.08	80.84	0.000	0.000	9.46	0.00	0.00
13	118.50	RRUS-11 - RRU	6	7.975	8.772	0.54	0.80	10.09	694.73	0.000	0.000	88.54	0.00	0.00
14	118.50	Low Profile Platform	1	7.975	8.772	1.00	1.00	39.25	2778.42	0.000	0.000	344.32	0.00	0.00
15	118.50	LGP21401 - TMA	6	7.975	8.772	0.56	0.80	7.08	205.43	0.000	0.000	62.08	0.00	0.00
16	118.50	P65-16	3	7.975	8.772	0.68	0.80	22.23	440.73	0.000	0.000	195.02	0.00	0.00
17	118.50	7770	3	7.975	8.772	0.67	0.80	13.18	519.97	0.000	0.000	115.64	0.00	0.00
18	109.00	800 MHz RRH - RRU	3	7.836	8.619	0.54	0.80	5.79	342.41	0.000	0.000	49.87	0.00	0.00
19	109.00	APXVSPP18-C-A20	3	7.836	8.619	0.66	0.80	21.37	558.96	0.000	0.000	184.16	0.00	0.00
20	109.00	APXVTM14-C-I20	3	7.836	8.619	0.68	0.80	15.13	664.75	0.000	0.000	130.40	0.00	0.00
21	109.00	1900MHz RRH - RRU	3	7.836	8.619	0.54	0.80	8.28	382.00	0.000	0.000	71.33	0.00	0.00
22	109.00	T-Arms w/ Working	3	7.836	8.619	0.56	0.75	37.37	1759.96	0.000	0.000	322.07	0.00	0.00
23	109.00	TD-RRH8x20 - RRU	3	7.836	8.619	0.54	0.80	7.78	570.87	0.000	0.000	67.02	0.00	0.00
24	109.00	ACU-A20-N - RET	4	7.836	8.619	0.40	0.80	0.68	16.24	0.000	0.000	5.89	0.00	0.00
25	109.00	800MHz RRH Filter	3	7.836	8.619	0.54	0.80	2.26	67.95	0.000	0.000	19.49	0.00	0.00
26	99.50	APXV18-206513-C-A20	3	7.687	8.456	0.67	0.80	15.02	283.55	0.000	0.000	126.98	0.00	0.00
27	99.50	Platform w/ Hand Rail	1	7.687	8.456	1.00	1.00	58.80	3335.39	0.000	0.000	497.19	0.00	0.00
28	99.50	RR65-18-00DPL2	6	7.687	8.456	0.68	0.80	21.63	658.84	0.000	0.000	182.93	0.00	0.00
29	99.50	LNX-6515DS-A1M	3	7.687	8.456	0.64	0.80	28.04	642.84	0.000	0.000	237.11	0.00	0.00
30	99.50	ATMAA1412D-1A2 - TMA	3	7.687	8.456	0.59	0.80	3.41	100.54	0.000	0.000	28.85	0.00	0.00
31	99.50	782 11054 - Bias Ts	3	7.687	8.456	0.57	0.80	1.13	22.47	0.000	0.000	9.58	0.00	0.00
32	50.50	3 ft Standoff	1	6.664	7.331	1.00	1.00	7.98	97.00	0.000	0.000	58.52	0.00	0.00
33	50.50	260B	1	6.664	7.331	1.00	1.00	0.25	4.56	0.000	0.000	1.82	0.00	0.00
							Totals:		**19,247.43**			**3,923.40**		

Total Applied Force Summary

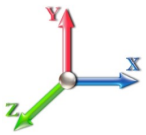
Structure:	CT13057-A-SBA		**Code:**	EIA/TIA-222-G	1/23/2017
Site Name:	Newtown		**Exposure:**	C	
Height:	149.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 21

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 26

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		154.04	1624.06	0.00	0.00
10.00		151.15	1621.63	0.00	0.00
15.00		148.07	1606.58	0.00	0.00
20.00		153.76	1585.95	0.00	0.00
25.00		157.59	1562.09	0.00	0.00
30.00		160.01	1536.07	0.00	0.00
35.00		161.40	1508.51	0.00	0.00
40.00		161.98	1479.77	0.00	0.00
45.00		161.91	1450.10	0.00	0.00
48.00		96.44	856.30	0.00	0.00
50.00		64.92	893.97	0.00	0.00
50.50	(2) attachments	76.50	323.79	0.00	0.00
53.25		89.10	1200.48	0.00	0.00
55.00		56.40	482.78	0.00	0.00
60.00		161.17	1355.24	0.00	0.00
65.00		159.40	1322.94	0.00	0.00
70.00		157.31	1290.24	0.00	0.00
75.00		154.95	1257.19	0.00	0.00
80.00		152.34	1223.82	0.00	0.00
85.00		149.50	1190.18	0.00	0.00
90.00		146.45	1156.28	0.00	0.00
95.00		143.21	1122.14	0.00	0.00
97.75		77.12	603.86	0.00	0.00
99.50	(19) attachments	1131.68	5548.19	0.00	0.00
100.00		13.91	138.45	0.00	0.00
101.50		41.57	412.09	0.00	0.00
105.00		95.94	552.25	0.00	0.00
109.00	(25) attachments	957.71	4978.74	0.00	0.00
110.00		26.41	148.87	0.00	0.00
115.00		130.22	724.67	0.00	0.00
118.50	(21) attachments	970.44	5935.00	0.00	0.00
120.00		37.31	196.33	0.00	0.00
125.00		122.07	633.74	0.00	0.00
129.00		94.51	489.33	0.00	0.00
130.00		23.14	120.44	0.00	0.00
135.00		113.43	581.96	0.00	0.00
137.50	(19) attachments	858.81	4266.97	0.00	0.00
139.00		32.39	144.37	0.00	0.00
140.00		21.35	95.06	0.00	0.00
145.00		104.34	454.80	0.00	0.00
147.00	(2) attachments	144.11	276.10	0.00	36.39
149.00	(3) attachments	180.30	383.53	0.00	193.40
	Totals:	**8,194.36**	**54,334.84**	**0.00**	**229.79**

Linear Appurtenance Segment Forces (Factored)

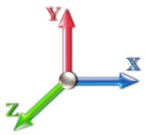
Structure:	CT13057-A-SBA	**Code:**	EIA/TIA-222-G	1/23/2017	
Site Name:	Newtown	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 22	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 26

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	1/2" Coax	Yes	5.00	0.000	0.65	1.31	0.00	0.013	0.000	5.168	0.00	13.70
10.00	1/2" Coax	Yes	5.00	0.000	0.65	1.38	0.00	0.013	0.000	5.168	0.00	15.33
15.00	1/2" Coax	Yes	5.00	0.000	0.65	1.43	0.00	0.013	0.000	5.168	0.00	16.38
20.00	1/2" Coax	Yes	5.00	0.000	0.65	1.46	0.00	0.014	0.000	5.483	0.00	17.18
25.00	1/2" Coax	Yes	5.00	0.000	0.65	1.49	0.00	0.014	0.000	5.747	0.00	17.83
30.00	1/2" Coax	Yes	5.00	0.000	0.65	1.51	0.00	0.014	0.000	5.972	0.00	18.38
35.00	1/2" Coax	Yes	5.00	0.000	0.65	1.53	0.00	0.015	0.000	6.169	0.00	18.86
40.00	1/2" Coax	Yes	5.00	0.000	0.65	1.55	0.00	0.015	0.000	6.345	0.00	19.29
45.00	1/2" Coax	Yes	5.00	0.000	0.65	1.56	0.00	0.015	0.000	6.504	0.00	19.67
48.00	1/2" Coax	Yes	3.00	0.000	0.65	0.94	0.00	0.016	0.000	6.593	0.00	11.93
50.00	1/2" Coax	Yes	2.00	0.000	0.65	0.63	0.00	0.016	0.000	6.650	0.00	8.01
50.50	1/2" Coax	Yes	0.50	0.000	0.65	0.16	0.00	0.016	0.000	6.664	0.00	2.01
										Totals:	**0.0**	**178.5**

Calculated Forces

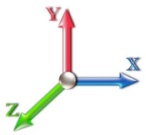
Structure:	CT13057-A-SBA	**Code:**	EIA/TIA-222-G	1/23/2017	
Site Name:	Newtown	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 23	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 26

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	-54.33	-8.23	0.00	-817.29	0.00	817.29	3147.71	1573.86	6633.45	3321.65	0.00	0.000	0.000	0.263
5.00	-52.70	-8.13	0.00	-776.15	0.00	776.15	3110.30	1555.15	6403.28	3206.40	0.04	-0.067	0.000	0.259
10.00	-51.07	-8.04	0.00	-735.49	0.00	735.49	3071.25	1535.62	6173.46	3091.32	0.14	-0.136	0.000	0.255
15.00	-49.45	-7.95	0.00	-695.28	0.00	695.28	3030.56	1515.28	5944.23	2976.53	0.32	-0.206	0.000	0.250
20.00	-47.85	-7.85	0.00	-655.54	0.00	655.54	2988.24	1494.12	5715.84	2862.17	0.58	-0.276	0.000	0.245
25.00	-46.28	-7.74	0.00	-616.30	0.00	616.30	2944.28	1472.14	5488.51	2748.34	0.91	-0.348	0.000	0.240
30.00	-44.74	-7.63	0.00	-577.59	0.00	577.59	2898.68	1449.34	5262.50	2635.16	1.31	-0.421	0.000	0.235
35.00	-43.22	-7.51	0.00	-539.46	0.00	539.46	2851.46	1425.73	5038.03	2522.76	1.79	-0.495	0.000	0.229
40.00	-41.73	-7.39	0.00	-501.91	0.00	501.91	2802.59	1401.30	4815.35	2411.25	2.35	-0.569	0.000	0.223
45.00	-40.28	-7.25	0.00	-464.97	0.00	464.97	2752.09	1376.05	4594.69	2300.76	2.98	-0.644	0.000	0.217
48.00	-39.42	-7.17	0.00	-443.20	0.00	443.20	2721.01	1360.50	4463.37	2235.00	3.40	-0.690	0.000	0.213
50.00	-38.52	-7.11	0.00	-428.86	0.00	428.86	2699.96	1349.98	4376.30	2191.40	3.70	-0.722	0.000	0.210
50.50	-38.20	-7.05	0.00	-425.30	0.00	425.30	2694.66	1347.33	4354.59	2180.53	3.78	-0.729	0.000	0.209
53.25	-36.99	-6.97	0.00	-405.92	0.00	405.92	2693.70	1346.85	4350.68	2178.58	4.21	-0.772	0.000	0.200
55.00	-36.51	-6.93	0.00	-393.73	0.00	393.73	2675.00	1337.50	4274.93	2140.64	4.50	-0.800	0.000	0.198
60.00	-35.14	-6.80	0.00	-359.06	0.00	359.06	2620.46	1310.23	4060.29	2033.16	5.37	-0.872	0.000	0.190
65.00	-33.82	-6.66	0.00	-325.07	0.00	325.07	2564.29	1282.15	3848.51	1927.11	6.33	-0.944	0.000	0.182
70.00	-32.52	-6.52	0.00	-291.77	0.00	291.77	2506.49	1253.24	3639.81	1822.61	7.35	-1.016	0.000	0.173
75.00	-31.26	-6.38	0.00	-259.17	0.00	259.17	2447.05	1223.52	3434.45	1719.78	8.46	-1.087	0.000	0.163
80.00	-30.03	-6.24	0.00	-227.26	0.00	227.26	2385.97	1192.99	3232.65	1618.73	9.63	-1.156	0.000	0.153
85.00	-28.84	-6.10	0.00	-196.06	0.00	196.06	2323.26	1161.63	3034.66	1519.59	10.88	-1.223	0.000	0.141
90.00	-27.68	-5.96	0.00	-165.57	0.00	165.57	2258.91	1129.46	2840.72	1422.47	12.19	-1.286	0.000	0.129
95.00	-26.55	-5.81	0.00	-135.78	0.00	135.78	2173.87	1086.93	2628.01	1315.96	13.57	-1.345	0.000	0.115
97.75	-25.95	-5.73	0.00	-119.81	0.00	119.81	2126.25	1063.13	2513.56	1258.65	14.36	-1.376	0.000	0.107
99.50	-20.43	-4.47	0.00	-109.78	0.00	109.78	2095.95	1047.98	2442.05	1222.84	14.87	-1.395	0.000	0.100
100.00	-20.29	-4.45	0.00	-107.55	0.00	107.55	2087.30	1043.65	2421.81	1212.71	15.01	-1.401	0.000	0.098
101.50	-19.88	-4.41	0.00	-100.87	0.00	100.87	1088.23	544.11	1274.81	638.35	15.46	-1.416	0.000	0.176
105.00	-19.32	-4.32	0.00	-85.43	0.00	85.43	1070.27	535.13	1217.33	609.57	16.51	-1.450	0.000	0.158
109.00	-14.37	-3.24	0.00	-68.16	0.00	68.16	1048.76	524.38	1152.04	576.88	17.75	-1.505	0.000	0.132
110.00	-14.22	-3.22	0.00	-64.93	0.00	64.93	1043.22	521.61	1135.81	568.75	18.06	-1.518	0.000	0.128
115.00	-13.50	-3.08	0.00	-48.84	0.00	48.84	1014.54	507.27	1055.22	528.40	19.68	-1.576	0.000	0.106
118.50	-7.59	-1.95	0.00	-38.06	0.00	38.06	993.49	496.74	999.49	500.49	20.85	-1.612	0.000	0.084
120.00	-7.39	-1.91	0.00	-35.14	0.00	35.14	984.22	492.11	975.81	488.63	21.36	-1.626	0.000	0.079
125.00	-6.76	-1.77	0.00	-25.60	0.00	25.60	952.27	476.13	897.80	449.57	23.09	-1.667	0.000	0.064
129.00	-6.28	-1.66	0.00	-18.52	0.00	18.52	925.53	462.76	836.57	418.91	24.50	-1.695	0.000	0.051
129.00	-6.28	-1.66	0.00	-18.52	0.00	18.52	925.53	462.76	836.57	418.91	24.50	-1.695	0.000	0.051
130.00	-6.16	-1.64	0.00	-16.86	0.00	16.86	918.68	459.34	821.44	411.33	24.85	-1.701	0.000	0.048
135.00	-5.58	-1.51	0.00	-8.66	0.00	8.66	883.46	441.73	746.96	374.04	26.65	-1.724	0.000	0.029
137.50	-1.34	-0.52	0.00	-4.88	0.00	4.88	865.23	432.62	710.51	355.78	27.55	-1.732	0.000	0.015
139.00	-1.20	-0.49	0.00	-4.10	0.00	4.10	854.10	427.05	688.90	344.96	28.10	-1.735	0.000	0.013
139.00	-1.20	-0.49	0.00	-4.10	0.00	4.10	854.10	427.05	688.90	344.96	28.10	-1.735	0.000	0.013
140.00	-1.10	-0.46	0.00	-3.61	0.00	3.61	846.60	423.30	674.61	337.81	28.46	-1.737	0.000	0.012
145.00	-0.65	-0.34	0.00	-1.30	0.00	1.30	807.00	403.50	603.80	302.35	30.28	-1.743	0.000	0.005
147.00	-0.38	-0.19	0.00	-0.58	0.00	0.58	786.22	393.11	572.95	286.90	31.01	-1.744	0.000	0.002
149.00	0.00	-0.18	0.00	-0.19	0.00	0.19	765.44	382.72	542.91	271.86	31.74	-1.745	0.000	0.001

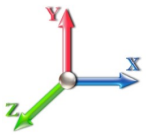
Seismic Segment Forces (Factored)

Structure:	CT13057-A-SBA	**Code:**	EIA/TIA-222-G	1/23/2017	
Site Name:	Newtown	**Exposure:**	C		
Height:	149.00 (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: 1.2D + 1.0E

Gust Response Factor	1.10			**Sds**	0.22	**Iterations**	23
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.10	**Ss**	0.20
Wind Load Factor	0.00	**Structure Frequency**	0.33	**SA**	0.03	**S1**	0.07
						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		854.05	0.00	0.03	0.02	19.60	
10.00		834.22	0.01	0.05	0.03	27.15	
15.00		814.40	0.02	0.06	0.04	30.24	
20.00		794.57	0.03	0.07	0.04	31.33	
25.00		774.75	0.05	0.07	0.04	31.59	
30.00		754.92	0.08	0.07	0.04	31.56	
35.00		735.10	0.10	0.07	0.04	31.49	
40.00		715.27	0.14	0.07	0.03	31.38	
45.00		695.44	0.17	0.07	0.03	31.04	
48.00	Bot - Section 2	407.75	0.20	0.06	0.02	18.25	
50.00		539.96	0.21	0.06	0.02	24.10	
50.50	Appurtenance(s)	175.00	0.22	0.06	0.02	7.80	
53.25	Top - Section 1	729.90	0.24	0.06	0.02	32.01	
55.00		230.96	0.26	0.05	0.02	9.95	
60.00		646.52	0.31	0.04	0.01	25.18	
65.00		626.69	0.36	0.03	0.01	19.50	
70.00		606.86	0.42	0.01	0.01	11.43	
75.00		587.04	0.48	-0.01	0.01	1.54	
80.00		567.21	0.54	-0.03	0.01	-8.58	
85.00		547.39	0.62	-0.06	0.02	-16.96	
90.00		527.56	0.69	-0.08	0.03	-22.24	
95.00		507.74	0.77	-0.11	0.05	-24.03	
97.75	Bot - Section 3	270.81	0.81	-0.11	0.06	-12.87	
99.50	Appurtenance(s)	2228.9	0.84	-0.12	0.07	-104.03	
100.00		77.14	0.85	-0.12	0.07	-3.57	
101.50	Top - Section 2	229.53	0.88	-0.12	0.08	-10.28	
105.00		198.89	0.94	-0.12	0.10	-7.81	
109.00	Appurtenance(s)	2140.5	1.01	-0.11	0.14	-63.15	
110.00		53.85	1.03	-0.10	0.15	-1.43	
115.00		262.12	1.13	-0.05	0.20	-2.12	
118.50	Appurtenance(s)	2552.8	1.20	0.00	0.25	20.84	
120.00		73.82	1.23	0.03	0.27	1.18	
125.00		238.33	1.33	0.16	0.36	10.88	
129.00	Top - Section 3	182.10	1.42	0.32	0.45	13.40	
130.00		44.34	1.44	0.36	0.47	3.60	
135.00		214.54	1.55	0.64	0.61	26.29	
137.50	Appurtenance(s)	1802.9	1.61	0.81	0.68	262.26	
139.00	Top - Section 4	60.26	1.64	0.92	0.73	9.64	
140.00		39.58	1.67	1.01	0.77	6.73	
145.00		190.75	1.79	1.49	0.96	42.65	
147.00	Appurtenance(s)	118.97	1.84	1.72	1.05	29.36	
149.00	Appurtenance(s)	138.57	1.89	1.98	1.14	37.56	
	Totals:	**24,792.1**				**602.5**	**Total Wind:** **25,409.9**

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

Calculated Forces

Structure:	CT13057-A-SBA	**Code:**	EIA/TIA-222-G	1/23/2017	
Site Name:	Newtown	**Exposure:**	C		
Height:	149.00 (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: 1.2D + 1.0E

Gust Response Factor	1.10			**Sds**	0.22			**Iterations**	23
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.10			**Ss**	0.20
Wind Load Factor	0.00	**Structure Frequency**	0.33	**SA**	0.03			**S1**	0.07
								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	-34.24	-0.88	0.00	-82.72	0.00	82.72	3147.71	1573.86	6633.45	3321.65		0.00	0.00	0.036
5.00	-33.03	-0.86	0.00	-78.32	0.00	78.32	3110.30	1555.15	6403.28	3206.40		0.00	-0.01	0.035
10.00	-31.84	-0.84	0.00	-73.99	0.00	73.99	3071.25	1535.62	6173.46	3091.32		0.01	-0.01	0.034
15.00	-30.68	-0.81	0.00	-69.79	0.00	69.79	3030.56	1515.28	5944.23	2976.53		0.03	-0.02	0.034
20.00	-29.54	-0.79	0.00	-65.72	0.00	65.72	2988.24	1494.12	5715.84	2862.17		0.06	-0.03	0.033
25.00	-28.42	-0.76	0.00	-61.79	0.00	61.79	2944.28	1472.14	5488.51	2748.34		0.09	-0.04	0.032
30.00	-27.33	-0.73	0.00	-58.00	0.00	58.00	2898.68	1449.34	5262.50	2635.16		0.13	-0.04	0.031
35.00	-26.27	-0.70	0.00	-54.36	0.00	54.36	2851.46	1425.73	5038.03	2522.76		0.18	-0.05	0.031
40.00	-25.22	-0.67	0.00	-50.86	0.00	50.86	2802.59	1401.30	4815.35	2411.25		0.24	-0.06	0.030
45.00	-24.20	-0.64	0.00	-47.51	0.00	47.51	2752.09	1376.05	4594.69	2300.76		0.30	-0.06	0.029
48.00	-23.60	-0.62	0.00	-45.58	0.00	45.58	2721.01	1360.50	4463.37	2235.00		0.34	-0.07	0.029
50.00	-22.88	-0.60	0.00	-44.34	0.00	44.34	2699.96	1349.98	4376.30	2191.40		0.37	-0.07	0.029
50.50	-22.65	-0.59	0.00	-44.04	0.00	44.04	2694.66	1347.33	4354.59	2180.53		0.38	-0.07	0.029
53.25	-21.67	-0.56	0.00	-42.41	0.00	42.41	2693.70	1346.85	4350.68	2178.58		0.42	-0.08	0.028
55.00	-21.33	-0.55	0.00	-41.42	0.00	41.42	2675.00	1337.50	4274.93	2140.64		0.45	-0.08	0.027
60.00	-20.37	-0.53	0.00	-38.66	0.00	38.66	2620.46	1310.23	4060.29	2033.16		0.54	-0.09	0.027
65.00	-19.44	-0.51	0.00	-36.02	0.00	36.02	2564.29	1282.15	3848.51	1927.11		0.64	-0.10	0.026
70.00	-18.52	-0.50	0.00	-33.47	0.00	33.47	2506.49	1253.24	3639.81	1822.61		0.74	-0.10	0.026
75.00	-17.63	-0.50	0.00	-30.97	0.00	30.97	2447.05	1223.52	3434.45	1719.78		0.86	-0.11	0.025
80.00	-16.77	-0.50	0.00	-28.47	0.00	28.47	2385.97	1192.99	3232.65	1618.73		0.98	-0.12	0.025
85.00	-15.93	-0.50	0.00	-25.97	0.00	25.97	2323.26	1161.63	3034.66	1519.59		1.11	-0.13	0.024
90.00	-15.11	-0.50	0.00	-23.47	0.00	23.47	2258.91	1129.46	2840.72	1422.47		1.25	-0.14	0.023
95.00	-14.32	-0.50	0.00	-20.97	0.00	20.97	2173.87	1086.93	2628.01	1315.96		1.40	-0.15	0.023
97.75	-13.89	-0.50	0.00	-19.59	0.00	19.59	2126.25	1063.13	2513.56	1258.65		1.49	-0.15	0.022
99.50	-11.15	-0.49	0.00	-18.71	0.00	18.71	2095.95	1047.98	2442.05	1222.84		1.55	-0.16	0.021
100.00	-11.05	-0.49	0.00	-18.47	0.00	18.47	2087.30	1043.65	2421.81	1212.71		1.56	-0.16	0.021
101.50	-10.73	-0.49	0.00	-17.73	0.00	17.73	1088.23	544.11	1274.81	638.35		1.61	-0.16	0.038
105.00	-10.40	-0.49	0.00	-16.00	0.00	16.00	1070.27	535.13	1217.33	609.57		1.73	-0.17	0.036
109.00	-7.72	-0.49	0.00	-14.02	0.00	14.02	1048.76	524.38	1152.04	576.88		1.87	-0.18	0.032
110.00	-7.63	-0.49	0.00	-13.53	0.00	13.53	1043.22	521.61	1135.81	568.75		1.91	-0.18	0.031
115.00	-7.19	-0.49	0.00	-11.09	0.00	11.09	1014.54	507.27	1055.22	528.40		2.11	-0.19	0.028
118.50	-4.04	-0.46	0.00	-9.38	0.00	9.38	993.49	496.74	999.49	500.49		2.25	-0.20	0.023
120.00	-3.93	-0.46	0.00	-8.70	0.00	8.70	984.22	492.11	975.81	488.63		2.31	-0.20	0.022
125.00	-3.56	-0.44	0.00	-6.42	0.00	6.42	952.27	476.13	897.80	449.57		2.53	-0.21	0.018
129.00	-3.28	-0.43	0.00	-4.64	0.00	4.64	925.53	462.76	836.57	418.91		2.71	-0.22	0.015
129.00	-3.28	-0.43	0.00	-4.64	0.00	4.64	925.53	462.76	836.57	418.91		2.71	-0.22	0.015
130.00	-3.21	-0.43	0.00	-4.21	0.00	4.21	918.68	459.34	821.44	411.33		2.76	-0.22	0.014
135.00	-2.87	-0.40	0.00	-2.08	0.00	2.08	883.46	441.73	746.96	374.04		2.99	-0.23	0.009
137.50	-0.67	-0.13	0.00	-1.08	0.00	1.08	865.23	432.62	710.51	355.78		3.11	-0.23	0.004
139.00	-0.60	-0.12	0.00	-0.89	0.00	0.89	854.10	427.05	688.90	344.96		3.19	-0.23	0.003
139.00	-0.60	-0.12	0.00	-0.89	0.00	0.89	854.10	427.05	688.90	344.96		3.19	-0.23	0.003
140.00	-0.55	-0.11	0.00	-0.77	0.00	0.77	846.60	423.30	674.61	337.81		3.23	-0.23	0.003
145.00	-0.31	-0.07	0.00	-0.21	0.00	0.21	807.00	403.50	603.80	302.35		3.48	-0.23	0.001
147.00	-0.17	-0.04	0.00	-0.08	0.00	0.08	786.22	393.11	572.95	286.90		3.57	-0.23	0.000
149.00	0.00	-0.04	0.00	0.00	0.00	0.00	765.44	382.72	542.91	271.86		3.67	-0.23	0.000

Seismic Segment Forces (Factored)

Structure:	CT13057-A-SBA	**Code:**	EIA/TIA-222-G	1/23/2017	
Site Name:	Newtown	**Exposure:**	C		
Height:	149.00 (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: 0.9D + 1.0E

Gust Response Factor	1.10			**Sds**	0.22	**Iterations**	23
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.10	**Ss**	0.20
Wind Load Factor	0.00	**Structure Frequency**	0.33	**SA**	0.03	**S1**	0.07
						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		854.05	0.00	0.03	0.02	19.60	
10.00		834.22	0.01	0.05	0.03	27.15	
15.00		814.40	0.02	0.06	0.04	30.24	
20.00		794.57	0.03	0.07	0.04	31.33	
25.00		774.75	0.05	0.07	0.04	31.59	
30.00		754.92	0.08	0.07	0.04	31.56	
35.00		735.10	0.10	0.07	0.04	31.49	
40.00		715.27	0.14	0.07	0.03	31.38	
45.00		695.44	0.17	0.07	0.03	31.04	
48.00	Bot - Section 2	407.75	0.20	0.06	0.02	18.25	
50.00		539.96	0.21	0.06	0.02	24.10	
50.50	Appurtenance(s)	175.00	0.22	0.06	0.02	7.80	
53.25	Top - Section 1	729.90	0.24	0.06	0.02	32.01	
55.00		230.96	0.26	0.05	0.02	9.95	
60.00		646.52	0.31	0.04	0.01	25.18	
65.00		626.69	0.36	0.03	0.01	19.50	
70.00		606.86	0.42	0.01	0.01	11.43	
75.00		587.04	0.48	-0.01	0.01	1.54	
80.00		567.21	0.54	-0.03	0.01	-8.58	
85.00		547.39	0.62	-0.06	0.02	-16.96	
90.00		527.56	0.69	-0.08	0.03	-22.24	
95.00		507.74	0.77	-0.11	0.05	-24.03	
97.75	Bot - Section 3	270.81	0.81	-0.11	0.06	-12.87	
99.50	Appurtenance(s)	2228.9	0.84	-0.12	0.07	-104.03	
100.00		77.14	0.85	-0.12	0.07	-3.57	
101.50	Top - Section 2	229.53	0.88	-0.12	0.08	-10.28	
105.00		198.89	0.94	-0.12	0.10	-7.81	
109.00	Appurtenance(s)	2140.5	1.01	-0.11	0.14	-63.15	
110.00		53.85	1.03	-0.10	0.15	-1.43	
115.00		262.12	1.13	-0.05	0.20	-2.12	
118.50	Appurtenance(s)	2552.8	1.20	0.00	0.25	20.84	
120.00		73.82	1.23	0.03	0.27	1.18	
125.00		238.33	1.33	0.16	0.36	10.88	
129.00	Top - Section 3	182.10	1.42	0.32	0.45	13.40	
130.00		44.34	1.44	0.36	0.47	3.60	
135.00		214.54	1.55	0.64	0.61	26.29	
137.50	Appurtenance(s)	1802.9	1.61	0.81	0.68	262.26	
139.00	Top - Section 4	60.26	1.64	0.92	0.73	9.64	
140.00		39.58	1.67	1.01	0.77	6.73	
145.00		190.75	1.79	1.49	0.96	42.65	
147.00	Appurtenance(s)	118.97	1.84	1.72	1.05	29.36	
149.00	Appurtenance(s)	138.57	1.89	1.98	1.14	37.56	
	Totals:	**24,792.1**				**602.5**	**Total Wind:** **25,409.9**

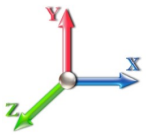
Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

Calculated Forces

Structure:	CT13057-A-SBA	**Code:**	EIA/TIA-222-G	1/23/2017	
Site Name:	Newtown	**Exposure:**	C		
Height:	149.00 (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	

Tower Engineering Solutions

Load Case: 0.9D + 1.0E



Gust Response Factor	1.10			**Sds**	0.22	**Iterations**	23		
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.10	**Ss**	0.20		
Wind Load Factor	0.00	**Structure Frequency**	0.33	**SA**	0.03	**S1**	0.07	**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	-25.68	-0.88	0.00	-81.85	0.00	81.85	3147.71	1573.86	6633.45	3321.65		0.00	0.00	0.033
5.00	-24.77	-0.86	0.00	-77.46	0.00	77.46	3110.30	1555.15	6403.28	3206.40		0.00	-0.01	0.032
10.00	-23.88	-0.84	0.00	-73.14	0.00	73.14	3071.25	1535.62	6173.46	3091.32		0.01	-0.01	0.031
15.00	-23.01	-0.81	0.00	-68.95	0.00	68.95	3030.56	1515.28	5944.23	2976.53		0.03	-0.02	0.031
20.00	-22.15	-0.78	0.00	-64.89	0.00	64.89	2988.24	1494.12	5715.84	2862.17		0.06	-0.03	0.030
25.00	-21.32	-0.75	0.00	-60.98	0.00	60.98	2944.28	1472.14	5488.51	2748.34		0.09	-0.03	0.029
30.00	-20.50	-0.72	0.00	-57.22	0.00	57.22	2898.68	1449.34	5262.50	2635.16		0.13	-0.04	0.029
35.00	-19.70	-0.69	0.00	-53.61	0.00	53.61	2851.46	1425.73	5038.03	2522.76		0.18	-0.05	0.028
40.00	-18.92	-0.66	0.00	-50.14	0.00	50.14	2802.59	1401.30	4815.35	2411.25		0.23	-0.06	0.028
45.00	-18.15	-0.63	0.00	-46.82	0.00	46.82	2752.09	1376.05	4594.69	2300.76		0.30	-0.06	0.027
48.00	-17.70	-0.62	0.00	-44.92	0.00	44.92	2721.01	1360.50	4463.37	2235.00		0.34	-0.07	0.027
50.00	-17.16	-0.59	0.00	-43.68	0.00	43.68	2699.96	1349.98	4376.30	2191.40		0.37	-0.07	0.026
50.50	-16.99	-0.58	0.00	-43.39	0.00	43.39	2694.66	1347.33	4354.59	2180.53		0.38	-0.07	0.026
53.25	-16.26	-0.55	0.00	-41.78	0.00	41.78	2693.70	1346.85	4350.68	2178.58		0.42	-0.08	0.025
55.00	-16.00	-0.54	0.00	-40.81	0.00	40.81	2675.00	1337.50	4274.93	2140.64		0.45	-0.08	0.025
60.00	-15.28	-0.52	0.00	-38.09	0.00	38.09	2620.46	1310.23	4060.29	2033.16		0.54	-0.09	0.025
65.00	-14.58	-0.50	0.00	-35.49	0.00	35.49	2564.29	1282.15	3848.51	1927.11		0.63	-0.10	0.024
70.00	-13.89	-0.49	0.00	-32.98	0.00	32.98	2506.49	1253.24	3639.81	1822.61		0.74	-0.10	0.024
75.00	-13.23	-0.49	0.00	-30.53	0.00	30.53	2447.05	1223.52	3434.45	1719.78		0.85	-0.11	0.023
80.00	-12.58	-0.49	0.00	-28.08	0.00	28.08	2385.97	1192.99	3232.65	1618.73		0.97	-0.12	0.023
85.00	-11.95	-0.49	0.00	-25.63	0.00	25.63	2323.26	1161.63	3034.66	1519.59		1.10	-0.13	0.022
90.00	-11.33	-0.49	0.00	-23.17	0.00	23.17	2258.91	1129.46	2840.72	1422.47		1.24	-0.14	0.021
95.00	-10.74	-0.49	0.00	-20.72	0.00	20.72	2173.87	1086.93	2628.01	1315.96		1.39	-0.15	0.021
97.75	-10.42	-0.49	0.00	-19.37	0.00	19.37	2126.25	1063.13	2513.56	1258.65		1.47	-0.15	0.020
99.50	-8.36	-0.49	0.00	-18.51	0.00	18.51	2095.95	1047.98	2442.05	1222.84		1.53	-0.15	0.019
100.00	-8.28	-0.49	0.00	-18.27	0.00	18.27	2087.30	1043.65	2421.81	1212.71		1.54	-0.15	0.019
101.50	-8.05	-0.49	0.00	-17.54	0.00	17.54	1088.23	544.11	1274.81	638.35		1.59	-0.16	0.035
105.00	-7.80	-0.49	0.00	-15.84	0.00	15.84	1070.27	535.13	1217.33	609.57		1.71	-0.16	0.033
109.00	-5.79	-0.48	0.00	-13.89	0.00	13.89	1048.76	524.38	1152.04	576.88		1.85	-0.17	0.030
110.00	-5.72	-0.48	0.00	-13.41	0.00	13.41	1043.22	521.61	1135.81	568.75		1.89	-0.18	0.029
115.00	-5.39	-0.48	0.00	-11.00	0.00	11.00	1014.54	507.27	1055.22	528.40		2.08	-0.19	0.026
118.50	-3.03	-0.45	0.00	-9.31	0.00	9.31	993.49	496.74	999.49	500.49		2.22	-0.20	0.022
120.00	-2.95	-0.45	0.00	-8.63	0.00	8.63	984.22	492.11	975.81	488.63		2.28	-0.20	0.021
125.00	-2.67	-0.44	0.00	-6.37	0.00	6.37	952.27	476.13	897.80	449.57		2.50	-0.21	0.017
129.00	-2.46	-0.43	0.00	-4.61	0.00	4.61	925.53	462.76	836.57	418.91		2.68	-0.22	0.014
129.00	-2.46	-0.43	0.00	-4.61	0.00	4.61	925.53	462.76	836.57	418.91		2.68	-0.22	0.014
130.00	-2.41	-0.42	0.00	-4.18	0.00	4.18	918.68	459.34	821.44	411.33		2.72	-0.22	0.013
135.00	-2.15	-0.40	0.00	-2.07	0.00	2.07	883.46	441.73	746.96	374.04		2.96	-0.22	0.008
137.50	-0.50	-0.13	0.00	-1.08	0.00	1.08	865.23	432.62	710.51	355.78		3.07	-0.23	0.004
139.00	-0.45	-0.12	0.00	-0.88	0.00	0.88	854.10	427.05	688.90	344.96		3.15	-0.23	0.003
139.00	-0.45	-0.12	0.00	-0.88	0.00	0.88	854.10	427.05	688.90	344.96		3.15	-0.23	0.003
140.00	-0.41	-0.11	0.00	-0.77	0.00	0.77	846.60	423.30	674.61	337.81		3.19	-0.23	0.003
145.00	-0.23	-0.07	0.00	-0.21	0.00	0.21	807.00	403.50	603.80	302.35		3.43	-0.23	0.001
147.00	-0.13	-0.04	0.00	-0.08	0.00	0.08	786.22	393.11	572.95	286.90		3.53	-0.23	0.000
149.00	0.00	-0.04	0.00	0.00	0.00	0.00	765.44	382.72	542.91	271.86		3.62	-0.23	0.000

Wind Loading - Shaft

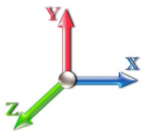
Structure:	CT13057-A-SBA	**Code:**	EIA/TIA-222-G	1/23/2017	
Site Name:	Newtown	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 28	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 25

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	241.11	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	235.61	0.650	0.000	5.00	21.545	14.00	114.6	0.0	854.0
10.00		1.00	0.85	7.442	8.19	230.11	0.650	0.000	5.00	21.048	13.68	112.0	0.0	834.2
15.00		1.00	0.85	7.442	8.19	224.61	0.650	0.000	5.00	20.551	13.36	109.4	0.0	814.4
20.00		1.00	0.90	7.896	8.69	225.70	0.650	0.000	5.00	20.054	13.04	113.2	0.0	794.6
25.00		1.00	0.95	8.276	9.10	225.27	0.650	0.000	5.00	19.557	12.71	115.7	0.0	774.7
30.00		1.00	0.98	8.600	9.46	223.72	0.650	0.000	5.00	19.060	12.39	117.2	0.0	754.9
35.00		1.00	1.01	8.883	9.77	221.37	0.650	0.000	5.00	18.563	12.07	117.9	0.0	735.1
40.00		1.00	1.04	9.137	10.05	218.41	0.650	0.000	5.00	18.066	11.74	118.0	0.0	715.3
45.00		1.00	1.07	9.366	10.30	214.97	0.650	0.000	5.00	17.569	11.42	117.7	0.0	695.4
48.00	Bot - Section 2	1.00	1.08	9.494	10.44	212.71	0.650	0.000	3.00	10.303	6.70	69.9	0.0	407.8
50.00		1.00	1.09	9.576	10.53	211.13	0.650	0.000	2.00	6.875	4.47	47.1	0.0	540.0
50.50	Appurtenance(s)	1.00	1.10	9.596	10.56	210.73	0.650	0.000	0.50	1.706	1.11	11.7	0.0	134.0
53.25	Top - Section 1	1.00	1.11	9.704	10.67	208.45	0.650	0.000	2.75	9.296	6.04	64.5	0.0	729.9
55.00		1.00	1.12	9.770	10.75	210.31	0.650	0.000	1.75	5.837	3.79	40.8	0.0	231.0
60.00		1.00	1.14	9.951	10.95	205.88	0.650	0.000	5.00	16.342	10.62	116.3	0.0	646.5
65.00		1.00	1.16	10.120	11.13	201.21	0.650	0.000	5.00	15.845	10.30	114.6	0.0	626.7
70.00		1.00	1.17	10.279	11.31	196.33	0.650	0.000	5.00	15.348	9.98	112.8	0.0	606.9
75.00		1.00	1.19	10.430	11.47	191.25	0.650	0.000	5.00	14.851	9.65	110.7	0.0	587.0
80.00		1.00	1.21	10.572	11.63	186.00	0.650	0.000	5.00	14.354	9.33	108.5	0.0	567.2
85.00		1.00	1.22	10.708	11.78	180.59	0.650	0.000	5.00	13.856	9.01	106.1	0.0	547.4
90.00		1.00	1.24	10.838	11.92	175.04	0.650	0.000	5.00	13.359	8.68	103.5	0.0	527.6
95.00		1.00	1.25	10.962	12.06	169.37	0.650	0.000	5.00	12.862	8.36	100.8	0.0	507.7
97.75	Bot - Section 3	1.00	1.26	11.028	12.13	166.20	0.650	0.000	2.75	6.862	4.46	54.1	0.0	270.8
99.50	Appurtenance(s)	1.00	1.26	11.069	12.18	164.16	0.650	0.000	1.75	4.344	2.82	34.4	0.0	272.5
100.00		1.00	1.27	11.081	12.19	163.58	0.650	0.000	0.50	1.230	0.80	9.7	0.0	77.1
101.50	Top - Section 2	1.00	1.27	11.116	12.23	161.82	0.650	0.000	1.50	3.660	2.38	29.1	0.0	229.5
105.00		1.00	1.28	11.195	12.31	159.83	0.650	0.000	3.50	8.367	5.44	67.0	0.0	198.9
109.00	Appurtenance(s)	1.00	1.29	11.284	12.41	155.04	0.650	0.000	4.00	9.264	6.02	74.7	0.0	220.2
110.00		1.00	1.29	11.305	12.44	153.83	0.650	0.000	1.00	2.266	1.47	18.3	0.0	53.9
115.00		1.00	1.30	11.412	12.55	147.74	0.650	0.000	5.00	11.033	7.17	90.0	0.0	262.1
118.50	Appurtenance(s)	1.00	1.31	11.484	12.63	143.43	0.650	0.000	3.50	7.427	4.83	61.0	0.0	176.4
120.00		1.00	1.32	11.514	12.67	141.57	0.650	0.000	1.50	3.109	2.02	25.6	0.0	73.8
125.00		1.00	1.33	11.614	12.78	135.31	0.650	0.000	5.00	10.039	6.53	83.4	0.0	238.3
129.00	Top - Section 3	1.00	1.34	11.691	12.86	130.24	0.650	0.000	4.00	7.673	4.99	64.1	0.0	182.1
130.00		1.00	1.34	11.710	12.88	128.97	0.650	0.000	1.00	1.869	1.21	15.6	0.0	44.3
135.00		1.00	1.35	11.803	12.98	122.56	0.650	0.000	5.00	9.044	5.88	76.3	0.0	214.5
137.50	Appurtenance(s)	1.00	1.35	11.849	13.03	119.32	0.650	0.000	2.50	4.336	2.82	36.7	0.0	102.8
139.00	Top - Section 4	1.00	1.36	11.876	13.06	117.38	0.650	0.000	1.50	2.542	1.65	21.6	0.0	60.3
140.00		1.00	1.36	11.894	13.08	116.07	0.650	0.000	1.00	1.670	1.09	14.2	0.0	39.6
145.00		1.00	1.37	11.982	13.18	109.53	0.650	0.000	5.00	8.050	5.23	69.0	0.0	190.8
147.00	Appurtenance(s)	1.00	1.37	12.017	13.22	106.89	0.650	0.000	2.00	3.081	2.00	26.5	0.0	73.0
149.00	Appurtenance(s)	1.00	1.38	12.051	13.26	104.24	0.650	0.000	2.00	3.001	1.95	25.9	0.0	71.1
								Totals:	**149.00**			**3,040.3**		**16,684.3**

Discrete Appurtenance Forces

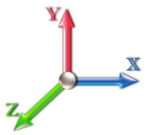
Structure:	CT13057-A-SBA	**Code:**	EIA/TIA-222-G	1/23/2017	
Site Name:	Newtown	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 29	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 25

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	149.00	Pipe Mount	1	12.051	13.256	1.00	1.00	2.63	40.00	0.000	0.000	34.86	0.00	0.00
2	149.00	DB-TDD6492A-A	1	12.119	13.331	1.00	1.00	2.41	21.00	0.000	4.021	32.13	0.00	129.18
3	149.00	6' Lightning rod	1	12.051	13.256	1.00	1.00	0.38	6.50	0.000	0.000	5.04	0.00	0.00
4	147.00	Trombone	1	12.042	13.246	1.00	1.00	1.00	6.00	0.000	1.458	13.25	0.00	19.32
5	147.00	Standoff	1	12.017	13.219	1.00	1.00	2.63	40.00	0.000	0.000	34.76	0.00	0.00
6	137.50	BXA-171063-8BF	3	11.849	13.034	0.69	0.80	6.07	31.50	0.000	0.000	79.09	0.00	0.00
7	137.50	SLCP2x6014	3	11.849	13.034	0.66	0.80	12.77	60.00	0.000	0.000	166.47	0.00	0.00
8	137.50	SC-E 6014 Rev2W	6	11.849	13.034	0.68	0.80	13.59	90.00	0.000	0.000	177.09	0.00	0.00
9	137.50	FD9R6004/2C-3L -	6	11.849	13.034	0.56	0.80	1.21	18.60	0.000	0.000	15.77	0.00	0.00
10	137.50	Low Profile Platform	1	11.849	13.034	1.00	1.00	22.00	1500.00	0.000	0.000	286.75	0.00	0.00
11	118.50	RRH Collar Mount	1	11.484	12.632	0.56	0.75	2.81	250.00	0.000	0.000	35.53	0.00	0.00
12	118.50	DC6-48-60-18-8F - SP	1	11.484	12.632	0.80	0.80	0.74	31.80	0.000	0.000	9.30	0.00	0.00
13	118.50	RRUS-11 - RRU	6	11.484	12.632	0.54	0.80	8.10	306.00	0.000	0.000	102.38	0.00	0.00
14	118.50	Low Profile Platform	1	11.484	12.632	1.00	1.00	22.00	1500.00	0.000	0.000	277.91	0.00	0.00
15	118.50	LGP21401 - TMA	6	11.484	12.632	0.56	0.80	4.33	84.60	0.000	0.000	54.75	0.00	0.00
16	118.50	P65-16	3	11.484	12.632	0.68	0.80	16.65	99.00	0.000	0.000	210.28	0.00	0.00
17	118.50	7770	3	11.484	12.632	0.67	0.80	11.09	105.00	0.000	0.000	140.07	0.00	0.00
18	109.00	800 MHz RRH - RRU	3	11.284	12.412	0.54	0.80	4.00	159.00	0.000	0.000	49.70	0.00	0.00
19	109.00	APXVSPP18-C-A20	3	11.284	12.412	0.66	0.80	15.98	171.00	0.000	0.000	198.29	0.00	0.00
20	109.00	APXVTM14-C-I20	3	11.284	12.412	0.68	0.80	12.93	168.00	0.000	0.000	160.53	0.00	0.00
21	109.00	1900MHz RRH - RRU	3	11.284	12.412	0.54	0.80	6.11	132.00	0.000	0.000	75.84	0.00	0.00
22	109.00	T-Arms w/ Working	3	11.284	12.412	0.56	0.75	20.25	1050.00	0.000	0.000	251.34	0.00	0.00
23	109.00	TD-RRH8x20 - RRU	3	11.284	12.412	0.54	0.80	6.51	210.00	0.000	0.000	80.83	0.00	0.00
24	109.00	ACU-A20-N - RET	4	11.284	12.412	0.40	0.80	0.22	4.00	0.000	0.000	2.78	0.00	0.00
25	109.00	800MHz RRH Filter	3	11.284	12.412	0.54	0.80	1.25	26.40	0.000	0.000	15.57	0.00	0.00
26	99.50	APXV18-206513-C-A20	3	11.069	12.176	0.67	0.80	10.42	79.20	0.000	0.000	126.91	0.00	0.00
27	99.50	Platform w/ Hand Rail	1	11.069	12.176	1.00	1.00	32.00	1600.00	0.000	0.000	389.63	0.00	0.00
28	99.50	RR65-18-00DPL2	6	11.069	12.176	0.68	0.80	17.79	81.00	0.000	0.000	216.60	0.00	0.00
29	99.50	LNX-6515DS-A1M	3	11.069	12.176	0.64	0.80	22.02	149.40	0.000	0.000	268.14	0.00	0.00
30	99.50	ATMAA1412D-1A2 - TMA	3	11.069	12.176	0.56	0.80	1.97	39.00	0.000	0.000	23.93	0.00	0.00
31	99.50	782 11054 - Bias Ts	3	11.069	12.176	0.56	0.80	0.47	7.80	0.000	0.000	5.73	0.00	0.00
32	50.50	3 ft Standoff	1	9.596	10.556	1.00	1.00	2.63	40.00	0.000	0.000	27.76	0.00	0.00
33	50.50	260B	1	9.596	10.556	1.00	1.00	0.09	1.00	0.000	0.000	0.95	0.00	0.00
							Totals:		**8,107.80**			**3,569.95**		

Total Applied Force Summary

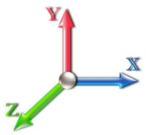
Structure:	CT13057-A-SBA		**Code:**	EIA/TIA-222-G	1/23/2017
Site Name:	Newtown		**Exposure:**	C	
Height:	149.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 30

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 25

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		114.64	1008.35	0.00	0.00
10.00		112.00	988.52	0.00	0.00
15.00		109.35	968.70	0.00	0.00
20.00		113.22	948.87	0.00	0.00
25.00		115.72	929.05	0.00	0.00
30.00		117.20	909.22	0.00	0.00
35.00		117.90	889.40	0.00	0.00
40.00		118.02	869.57	0.00	0.00
45.00		117.65	849.74	0.00	0.00
48.00		69.94	500.33	0.00	0.00
50.00		47.07	601.68	0.00	0.00
50.50	(2) attachments	40.42	190.43	0.00	0.00
53.25		64.50	814.33	0.00	0.00
55.00		40.78	284.69	0.00	0.00
60.00		116.27	800.02	0.00	0.00
65.00		114.65	780.19	0.00	0.00
70.00		112.80	760.36	0.00	0.00
75.00		110.74	740.54	0.00	0.00
80.00		108.50	720.71	0.00	0.00
85.00		106.09	700.89	0.00	0.00
90.00		103.52	681.06	0.00	0.00
95.00		100.81	661.24	0.00	0.00
97.75		54.11	355.23	0.00	0.00
99.50	(19) attachments	1065.32	2282.63	0.00	0.00
100.00		9.75	88.53	0.00	0.00
101.50		29.09	263.70	0.00	0.00
105.00		66.97	278.62	0.00	0.00
109.00	(25) attachments	909.62	2231.69	0.00	0.00
110.00		18.32	73.99	0.00	0.00
115.00		90.02	362.82	0.00	0.00
118.50	(21) attachments	891.20	2623.30	0.00	0.00
120.00		25.59	94.10	0.00	0.00
125.00		83.36	305.93	0.00	0.00
129.00		64.14	236.18	0.00	0.00
130.00		15.64	57.86	0.00	0.00
135.00		76.33	282.14	0.00	0.00
137.50	(19) attachments	761.90	1836.71	0.00	0.00
139.00		21.58	61.82	0.00	0.00
140.00		14.20	40.62	0.00	0.00
145.00		68.97	195.95	0.00	0.00
147.00	(2) attachments	74.48	121.05	0.00	19.32
149.00	(3) attachments	97.89	139.61	0.00	129.18
	Totals:	**6,610.27**	**28,530.37**	**0.00**	**148.50**

Linear Appurtenance Segment Forces (Factored)

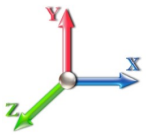
Structure:	CT13057-A-SBA	**Code:**	EIA/TIA-222-G	1/23/2017	
Site Name:	Newtown	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 31	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 25

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.013	0.000	7.442	0.00	0.80
10.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.013	0.000	7.442	0.00	0.80
15.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.013	0.000	7.442	0.00	0.80
20.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.014	0.000	7.896	0.00	0.80
25.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.014	0.000	8.276	0.00	0.80
30.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.014	0.000	8.600	0.00	0.80
35.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.015	0.000	8.883	0.00	0.80
40.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.015	0.000	9.137	0.00	0.80
45.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.015	0.000	9.366	0.00	0.80
48.00	1/2" Coax	Yes	3.00	0.000	0.65	0.16	0.00	0.016	0.000	9.494	0.00	0.48
50.00	1/2" Coax	Yes	2.00	0.000	0.65	0.11	0.00	0.016	0.000	9.576	0.00	0.32
50.50	1/2" Coax	Yes	0.50	0.000	0.65	0.03	0.00	0.016	0.000	9.596	0.00	0.08
										Totals:	**0.0**	**8.1**

Calculated Forces

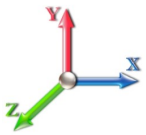
Structure:	CT13057-A-SBA	**Code:**	EIA/TIA-222-G	1/23/2017	
Site Name:	Newtown	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 32	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 25

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	-28.53	-6.62	0.00	-646.03	0.00	646.03	3147.71	1573.86	6633.45	3321.65	0.00	0.000	0.000	0.204
5.00	-27.51	-6.53	0.00	-612.92	0.00	612.92	3110.30	1555.15	6403.28	3206.40	0.03	-0.053	0.000	0.200
10.00	-26.52	-6.45	0.00	-580.25	0.00	580.25	3071.25	1535.62	6173.46	3091.32	0.11	-0.107	0.000	0.196
15.00	-25.54	-6.36	0.00	-548.03	0.00	548.03	3030.56	1515.28	5944.23	2976.53	0.26	-0.162	0.000	0.193
20.00	-24.59	-6.27	0.00	-516.24	0.00	516.24	2988.24	1494.12	5715.84	2862.17	0.46	-0.218	0.000	0.189
25.00	-23.65	-6.17	0.00	-484.91	0.00	484.91	2944.28	1472.14	5488.51	2748.34	0.71	-0.275	0.000	0.184
30.00	-22.74	-6.07	0.00	-454.06	0.00	454.06	2898.68	1449.34	5262.50	2635.16	1.03	-0.332	0.000	0.180
35.00	-21.85	-5.97	0.00	-423.71	0.00	423.71	2851.46	1425.73	5038.03	2522.76	1.41	-0.390	0.000	0.176
40.00	-20.97	-5.87	0.00	-393.87	0.00	393.87	2802.59	1401.30	4815.35	2411.25	1.85	-0.448	0.000	0.171
45.00	-20.12	-5.76	0.00	-364.53	0.00	364.53	2752.09	1376.05	4594.69	2300.76	2.35	-0.507	0.000	0.166
48.00	-19.61	-5.69	0.00	-347.26	0.00	347.26	2721.01	1360.50	4463.37	2235.00	2.68	-0.543	0.000	0.163
50.00	-19.01	-5.65	0.00	-335.87	0.00	335.87	2699.96	1349.98	4376.30	2191.40	2.92	-0.568	0.000	0.160
50.50	-18.82	-5.61	0.00	-333.05	0.00	333.05	2694.66	1347.33	4354.59	2180.53	2.98	-0.574	0.000	0.160
53.25	-18.00	-5.55	0.00	-317.62	0.00	317.62	2693.70	1346.85	4350.68	2178.58	3.32	-0.607	0.000	0.152
55.00	-17.72	-5.51	0.00	-307.92	0.00	307.92	2675.00	1337.50	4274.93	2140.64	3.54	-0.629	0.000	0.150
60.00	-16.91	-5.41	0.00	-280.34	0.00	280.34	2620.46	1310.23	4060.29	2033.16	4.23	-0.685	0.000	0.144
65.00	-16.13	-5.30	0.00	-253.32	0.00	253.32	2564.29	1282.15	3848.51	1927.11	4.98	-0.742	0.000	0.138
70.00	-15.36	-5.19	0.00	-226.83	0.00	226.83	2506.49	1253.24	3639.81	1822.61	5.79	-0.798	0.000	0.131
75.00	-14.62	-5.08	0.00	-200.89	0.00	200.89	2447.05	1223.52	3434.45	1719.78	6.65	-0.852	0.000	0.123
80.00	-13.90	-4.97	0.00	-175.48	0.00	175.48	2385.97	1192.99	3232.65	1618.73	7.57	-0.906	0.000	0.114
85.00	-13.19	-4.87	0.00	-150.61	0.00	150.61	2323.26	1161.63	3034.66	1519.59	8.55	-0.957	0.000	0.105
90.00	-12.51	-4.76	0.00	-126.26	0.00	126.26	2258.91	1129.46	2840.72	1422.47	9.58	-1.006	0.000	0.094
95.00	-11.85	-4.66	0.00	-102.45	0.00	102.45	2173.87	1086.93	2628.01	1315.96	10.66	-1.051	0.000	0.083
97.75	-11.49	-4.60	0.00	-89.64	0.00	89.64	2126.25	1063.13	2513.56	1258.65	11.27	-1.074	0.000	0.077
99.50	-9.23	-3.49	0.00	-81.58	0.00	81.58	2095.95	1047.98	2442.05	1222.84	11.67	-1.088	0.000	0.071
100.00	-9.14	-3.48	0.00	-79.84	0.00	79.84	2087.30	1043.65	2421.81	1212.71	11.78	-1.092	0.000	0.070
101.50	-8.88	-3.45	0.00	-74.61	0.00	74.61	1088.23	544.11	1274.81	638.35	12.13	-1.104	0.000	0.125
105.00	-8.60	-3.39	0.00	-62.53	0.00	62.53	1070.27	535.13	1217.33	609.57	12.95	-1.129	0.000	0.111
109.00	-6.38	-2.43	0.00	-48.98	0.00	48.98	1048.76	524.38	1152.04	576.88	13.91	-1.169	0.000	0.091
110.00	-6.31	-2.42	0.00	-46.55	0.00	46.55	1043.22	521.61	1135.81	568.75	14.16	-1.178	0.000	0.088
115.00	-5.95	-2.32	0.00	-34.46	0.00	34.46	1014.54	507.27	1055.22	528.40	15.41	-1.220	0.000	0.071
118.50	-3.34	-1.38	0.00	-26.33	0.00	26.33	993.49	496.74	999.49	500.49	16.32	-1.244	0.000	0.056
120.00	-3.25	-1.35	0.00	-24.27	0.00	24.27	984.22	492.11	975.81	488.63	16.71	-1.254	0.000	0.053
125.00	-2.94	-1.26	0.00	-17.52	0.00	17.52	952.27	476.13	897.80	449.57	18.04	-1.282	0.000	0.042
129.00	-2.71	-1.19	0.00	-12.47	0.00	12.47	925.53	462.76	836.57	418.91	19.12	-1.301	0.000	0.033
129.00	-2.71	-1.19	0.00	-12.47	0.00	12.47	925.53	462.76	836.57	418.91	19.12	-1.301	0.000	0.033
130.00	-2.65	-1.18	0.00	-11.28	0.00	11.28	918.68	459.34	821.44	411.33	19.39	-1.305	0.000	0.030
135.00	-2.37	-1.09	0.00	-5.40	0.00	5.40	883.46	441.73	746.96	374.04	20.77	-1.321	0.000	0.017
137.50	-0.55	-0.29	0.00	-2.67	0.00	2.67	865.23	432.62	710.51	355.78	21.46	-1.325	0.000	0.008
139.00	-0.49	-0.27	0.00	-2.23	0.00	2.23	854.10	427.05	688.90	344.96	21.88	-1.327	0.000	0.007
139.00	-0.49	-0.27	0.00	-2.23	0.00	2.23	854.10	427.05	688.90	344.96	21.88	-1.327	0.000	0.007
140.00	-0.45	-0.25	0.00	-1.97	0.00	1.97	846.60	423.30	674.61	337.81	22.16	-1.328	0.000	0.006
145.00	-0.26	-0.18	0.00	-0.71	0.00	0.71	807.00	403.50	603.80	302.35	23.55	-1.331	0.000	0.003
147.00	-0.14	-0.10	0.00	-0.33	0.00	0.33	786.22	393.11	572.95	286.90	24.11	-1.332	0.000	0.001
149.00	0.00	-0.10	0.00	-0.13	0.00	0.13	765.44	382.72	542.91	271.86	24.67	-1.332	0.000	0.000

Final Analysis Summary

Structure:	CT13057-A-SBA		**Code:**	EIA/TIA-222-G	1/23/2017
Site Name:	Newtown		**Exposure:**	C	
Height:	149.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 33

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 93 mph Wind	25.5	0.00	34.19	0.00	0.00	2497.68
0.9D + 1.6W 93 mph Wind	25.5	0.00	25.63	0.00	0.00	2473.02
1.2D + 1.0Di + 1.0Wi 50 mph Wind	8.2	0.00	54.33	0.00	0.00	817.29
1.2D + 1.0E	0.9	0.00	34.24	0.00	0.00	82.72
0.9D + 1.0E	0.9	0.00	25.68	0.00	0.00	81.85
1.0D + 1.0W 60 mph Wind	6.6	0.00	28.53	0.00	0.00	646.03

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 93 mph Wind	-34.19	-25.47	0.00	-2497.6	0.00	-2497.6	3147.71	1573.8	6633.45	3321.65	0.00	0.763
0.9D + 1.6W 93 mph Wind	-25.63	-25.46	0.00	-2473.0	0.00	-2473.0	3147.71	1573.8	6633.45	3321.65	0.00	0.753
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-54.33	-8.23	0.00	-817.29	0.00	-817.29	3147.71	1573.8	6633.45	3321.65	0.00	0.263
1.2D + 1.0E	-10.73	-0.49	0.00	-17.73	0.00	-17.73	1088.23	544.11	1274.81	638.35	101.50	0.038
0.9D + 1.0E	-8.05	-0.49	0.00	-17.54	0.00	-17.54	1088.23	544.11	1274.81	638.35	101.50	0.035
1.0D + 1.0W 60 mph Wind	-28.53	-6.62	0.00	-646.03	0.00	-646.03	3147.71	1573.8	6633.45	3321.65	0.00	0.204

Base Plate Summary

Structure:	CT13057-A-SB		**Code:**	EIA/TIA-222-G	1/23/2017
Site Name:	Newtown		**Exposure:**	C	
Height:	149.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 34

Tower Engineering Solutions

Reactions		Base Plate		Anchor Bolts	
Original Design		**Yield (ksi):**	60.00	**Bolt Circle:**	58.00
Moment (kip-ft):	2662.00	**Width (in):**	56.00	**Number Bolts:**	12.00
Axial (kip):	32.90	**Style:**	Clipped	**Bolt Type:**	2.25" 18J
Shear (kip):	24.40	**Polygon Sides:**	0.00	**Bolt Diameter (in):**	2.25
Analysis		**Clip Length (in):**	10.00	**Yield (ksi):**	75.00
Moment (kip-ft):	2497.68	**Effective Len (in):**	10.31	**Ultimate (ksi):**	100.00
Axial (kip):	54.33	**Moment (kip-in):**	573.66	**Arrangement:**	Clustered
Shear (kip):	25.47	**Allow Stress (ksi):**	81.00	**Cluster Dist (in):**	6.00
		Applied Stress (ksi):	44.45	**Start Angle (deg):**	45.00
Moment Design %:	93.83	**Stress Ratio:**	0.55	Compression	
				Force (kip):	176.78
				Allowable (kip):	260.00
				Ratio:	0.70
				Tension	
				Force (kip):	167.73
				Allowable (kip):	260.00
				Ratio:	0.66

Monopole Mat Foundation Design

			Date: 1/23/2017
Customer Name:	T-Mobile	**EIA/TIA Standard:**	EIA-222-G
Site Name:	Newtown	**Structure Height (Ft.):**	149
Site Number:	CT13057-A-SBA	**Engineer Name:**	S. Hesselbein
Engr. Number:	29208	**Engineer Login ID:**	

Foundation Info Obtained from: Drawings/Calculations

Structure Type: Monopole

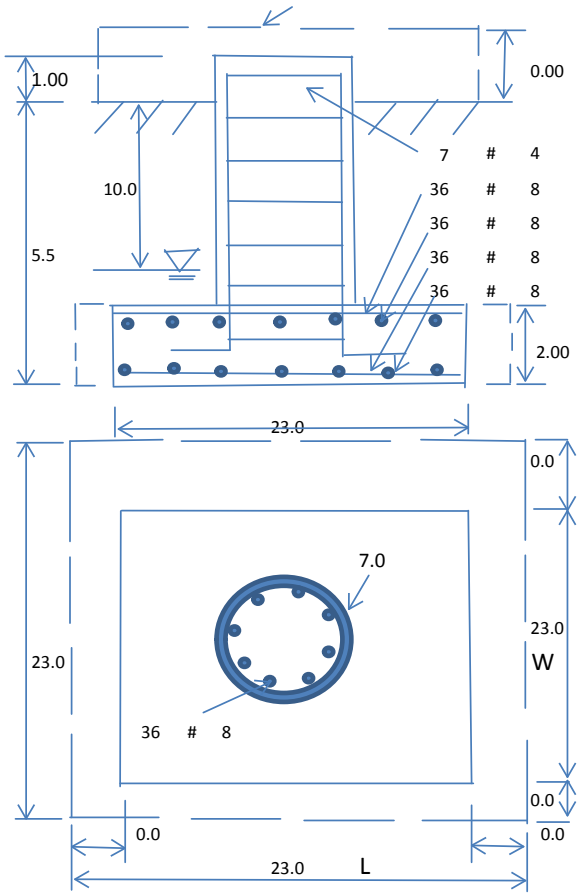
Analysis or Design? Analysis

Base Reactions (Factored):

Axial Load (Kips):	34.2	Shear Force (Kips):	25.5
Uplift Force (Kips):	0.0	Moment (Kips-ft):	2497.7
Allowable overstress %:	5.0%		

Foundation Geometries:

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	7.0	Depth of Base BG (ft.):	5.5
Pier Height A. G. (ft.):	1.00	Thickness of Pad (ft):	2.00
Length of Pad (ft.):	23	Width of Pad (ft.):	23
Final Length of pad (ft)	23.0	Final width of pad (ft):	23.0
Control Value for Cell D18:	0	Control Value for Cell F18:	0



Material Properties and Reabr Info:

Concrete Strength (psi):	4000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:	8	Tie / Stirrup Size #:	4	
Qty. of Vertical Rebars:	36	Tie Spacing (in):	12.0	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	8	
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):	36	Qty. of Rebar in Pad (W):	36	
Rebar at the top of the concrete pad:				
Qty. of Rebar in Pad (L):	36	Qty. of Rebar in Pad (W):	36	
Apply 1.35 factor for e/w Per G:	1.35			

Soil Design Parameters:

Soil Unit Weight (pcf):	100.0	Soil Buoyant Weight:	50.0	Pcf		
Water Table B.G.S. (ft):	10.0	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad:	30
Ultimate Bearing Pressure (psf):	12000	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.):	1716.80	Total Dry Soil Weight (Kips):	171.68
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	171.68	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	1231.18	Total Dry Concrete Weight (Kips):	184.68
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	184.68	Total Vertical Load on Base (Kips):	390.55

Check Soil Capacities:

					Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	2505	<	Allowable Factored Soil Bearing (psf):	9000	0.28	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	4081.5	>	Design Factored Momont (kips-ft):	2663	0.65	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	1.53	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 Pier:

					Load/ Capacity Ratio	
Vertical Steel Rebar Area (sq. in./each):	0.79		Tie / Stirrup Area (sq. in./each):	0.20		
Calculated Moment Capacity (Mn,Kips-Ft):	4845.7	>	Design Factored Moment (Mu, Kips-Ft	2612.5	0.54	OK!
Calculated Shear Capacity (Kips):	660.1	>	Design Factored Shear (Kips):	25.5	0.04	OK!
Calculated Tension Capacity (Tn, Kips):	1535.8	>	Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	9747.6	>	Design Factored Axial Load (Pu Kips):	34.2	0.00	OK!
Moment & Axial Strength Combination:	0.54	OK!	Check Tie Spacing (Design/Required):		1	OK!
Pier Reinforcement Ratio:	0.005	Reinforcement Ratio is satisfied per ACI				

(2).Concrete Pad:

One-Way Design Shear Capacity (L-Direction, Kips):	536.8	>	One-Way Factored Shear (L-D. Kips):	185.3	0.35	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	536.8	>	One-Way Factored Shear (W-D., Kips)	185.3	0.35	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	595.7	>	One-Way Factored Shear (C-C, Kips):	191.5	0.32	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0050	OK!	Lower Steel Pad Reinf. Ratio (W-Direc	0.0050		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	2507.2	>	Moment at Bottom (L-Direct. K-Ft):	582.8	0.23	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	2507.2	>	Moment at Bottom (W-Direct. K-Ft):	582.8	0.23	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	3500.6	>	Moment at Bottom (C-C Dir. K-Ft):	824.2	0.24	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0050	OK!	Upper Steel Reinf. Ratio (W-Direct.):	0.0050		
Upper Steel Pad Moment Capacity (L-Direction. Kips-ft):	2507.2	>	Moment at the top (L-Dir Kips-Ft):	133.1	0.05	OK!
Upper Steel Pad Moment Capacity (W-Direction. Kips-ft):	2507.2	>	Moment at the top (W-Dir Kips-Ft):	133.1	0.05	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	3500.6	>	Moment at the top (C-C Direc. K-Ft):	294.0	0.08	OK!

SITE NAME: CT668/ARCH TWRS - NEWTWN

151 BERKSHIRE ROAD
NEWTOWN, CT 06470
FAIRFIELD COUNTY

SITE NUMBER: CT11668B

PROJECT: T-MOBILE L700

CONFIGURATION: 704G

T-MOBILE TECHNICIAN SITE SAFETY NOTES

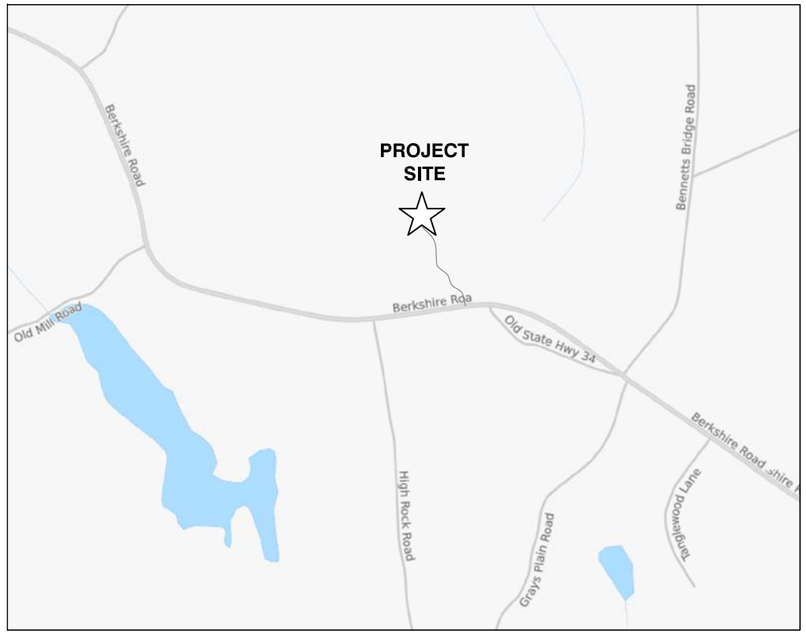
LOCATION	SPECIAL RESTRICTIONS
ANTENNA/TMA	
SECTOR A:	ACCESS NOT PERMITTED
SECTOR B:	ACCESS NOT PERMITTED
SECTOR C:	ACCESS NOT PERMITTED
GPS/LMU:	UNRESTRICTED*
(*CAUTION: OSHA-APPROVED PORTABLE 8' STEP-LADDER REQUIRED)	
RADIO CABINETS:	UNRESTRICTED
PPC DISCONNECT:	UNRESTRICTED
MAIN CIRCUIT D/C:	UNRESTRICTED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

GENERAL NOTES

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

SPECIAL CONSTRUCTION NOTES

1. TOWER OWNER SHALL PROVIDE GLOBAL STRUCTURAL STABILITY ANALYSIS OF EXISTING ANTENNA SUPPORT STRUCTURE. GENERAL CONTRACTOR SCOPE OF WORK SHALL INCLUDE ALL REQUIRED STRUCTURAL MODIFICATIONS, RE-BUNDLING OF COAXIAL CABLES OR OTHER SPECIAL MODIFICATIONS AS OUTLINED THEREIN.
2. ENGINEER-OF-RECORD HAS MADE A VISUAL ASSESSMENT ONLY OF EXISTING ANTENNA MOUNT ASSEMBLIES, WITHOUT THE BENEFIT OF A RIGOROUS ANTENNA MOUNT STRUCTURAL ANALYSIS, AND RECOMMENDS THAT EXISTING AND PROPOSED TOWER TOP EQUIPMENT BE INSTALLED AS DEPICTED HEREIN. STRUCTURAL DETAILS AS DEPICTED HEREIN FOR MODIFICATION OF EXISTING ANTENNA MOUNT ASSEMBLIES ARE PRELIMINARY ONLY AND THAT FINAL CONSTRUCTION DETAILS MAY BE SUBJECT TO CHANGE PENDING THE COMPLETION OF A SEPARATE SUPPLEMENTAL ANTENNA MOUNT STRUCTURAL ASSESSMENT, SUPPLEMENTAL STRUCTURAL MAPPING/CONDITIONS ASSESSMENT REPORT AND/OR SUPPLEMENTAL RIGOROUS ANTENNA MOUNT STRUCTURAL ANALYSIS.
3. PROTERRA DESIGN GROUP ASSUMES THAT THE TOWER IS PROPERLY CONSTRUCTED AND MAINTAINED. ALL STRUCTURAL MEMBERS AND THEIR CONNECTION ARE ASSUMED TO BE IN GOOD CONDITION AND ARE FREE FROM DEFECTS WITH NO DETERIORATION TO ITS MEMBER CAPACITIES



PROJECT INFORMATION

SCOPE OF WORK:	UNMANNED TELECOMMUNICATIONS FACILITY T-MOBILE EQUIPMENT MODERNIZATION
ZONING JURISDICTION:	SPECIAL ZONING NOTE (ELIGIBLE FACILITY REQUEST): BASED ON INFORMATION PROVIDED BY T-MOBILE REGULATORY COMPLIANCE PROFESSIONALS AND LEGAL COUNSEL, THIS TELECOMMUNICATIONS EQUIPMENT DEPLOYMENT IS CONSIDERED AN ELIGIBLE FACILITY UNDER THE MIDDLE CLASS TAX RELIEF AND JOB CREATION ACT OF 2012, 47 USC 1455(A), SECTION 6409(A), AND IS SUBJECT TO AN ELIGIBLE FACILITY REQUEST, EXPEDITED REVIEW AND LIMITED/PARTIAL ZONING PRE-EMPTION FOR LOCAL DISCRETIONARY PERMITS (VARIANCE, SPECIAL PERMIT, SITE PLAN REVIEW OR ADMINISTRATIVE REVIEW).
T-MOBILE E911 ADDRESS:	151 BERKSHIRE ROAD NEWTOWN, CT 06470
SBA BUSINESS ADDRESS:	151 BERKSHIRE ROAD NEWTOWN, CT 06470
LATITUDE:	41.397222 (FROM T-MOBLE RFDS)
LONGITUDE:	-73.235833 (FROM T-MOBLE RFDS)
JURISDICTION:	TOWN OF NEWTOWN
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY
TOWER OWNER:	SBA INFRASTRUCTURE, LLC
SBA SITE ID:	CT13057-A
SBA SITE NAME:	NEWTOWN
SBA REGIONAL SITE MANAGER:	STEPHEN ROTH (860) 539-4920

APPROVALS

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

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

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

UNDERGROUND SERVICE ALERT

DRAWING INDEX

SHEET NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	0
GN-1	GENERAL NOTES	0
A-1	COMPOUND & ELEVATION PLAN	0
A-2	EXISTING & PROPOSED ANTENNA PLAN	0
A-3	DETAILS	0
A-4	DETAILS	0
A-5	DETAILS	0
E-1	ONE-LINE DIAGRAM & GROUNDING DETAILS	0

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

SBA COMMUNICATIONS CORP.
33 BOSTON POST ROAD WEST, SUITE 320
MARLBOROUGH, MA 01752 TEL: (508) 251-0720

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

STATE OF CONNECTICUT
THOMAS E. JOHNSON
No. 28192
LICENSED PROFESSIONAL ENGINEER
1/27/17

CHECKED BY: JMM/TEJ

APPROVED BY: JMM/TEJ

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
0	01/27/17	ISSUED FOR CONSTRUCTION	TBD

SITE NUMBER:
CT11668B
SITE NAME:
CT668/ARCH TWRS - NEWTWN
SITE ADDRESS:
151 BERKSHIRE ROAD
NEWTOWN, CT 06470
FAIRFIELD COUNTY

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

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) LIGHTNING 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.
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 SURCUITS 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 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 ELECTRICL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWS COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

   CONTRACTOR – SBA COMMUNICATIONS CORP.
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – T-MOBILE

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. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.
7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
8. 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.
9. 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.
10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CUR\BS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.
11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.
14. ANY NEW CONCRETE NEEDED FOR CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (FY = 36 KSI) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (FY = 35 KSI). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
16. CONSTRUCTION SHALL COMPLY WITH UMTS SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF T-MOBILE SITES."
17. 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.
18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
19. SINCE THE CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.
20. APPLICABLE BUILDING CODES:
    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.

    BUILDING CODE: 2016 CONNECTICUT STATE BUILDING CODE WITH AMENDMENTS

    ELECTRICAL CODE: 2014 NATIONAL ELECTRICAL CODE AND AMENDMENTS

    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, ASD, NINTH EDITION;

    TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-G, STRUCTURAL STANDARDS FOR STEEL

    ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES; REFER TO ELECTRICAL DRAWINGS FOR SPECIFIC ELECTRICAL STANDARDS.

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.

ABBREVIATIONS

AGL	ABOVE GRADE LEVEL	EQ	EQUAL	REQ	REQUIRED
AWG	AMERICAN WIRE GAUGE	G.C.	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
BTCW	BARE TINNED SOLID COPPER WIRE	GRC	GALVANIZED RIGID CONDUIT	TBD	TO BE DETERMINED
		MGB	MASTER GROUND BAR	TBR	TO BE REMOVED
BGR	BURIED GROUND RING	MIN	MINIMUM	TBRR	TO BE REMOVED AND REPLACED
BTS	BASE TRANSCEIVER STATION	PROPOSED	NEW OR (P)	TYP	TYPICAL
EXISTING	EXISTING OR (E)	N.T.S.	NOT TO SCALE	VIF	VERIFY IN FIELD
EGB	EQUIPMENT GROUND BAR	RAD	RADIATION CENTERLINE (ANTENNA)		
EGR	EQUIPMENT GROUND RING	REF	REFERENCE		

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

SBA COMMUNICATIONS CORP.
33 BOSTON POST ROAD WEST, SUITE 320
MARLBOROUGH, MA 01752 TEL: (508) 251-0720

ProTerra DESIGN GROUP, LLC
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Suite 200
Hadley, MA 01035 Ph: (413)320-4918

STATE OF CONNECTICUT
THOMAS E. JOHNSON
No. 28192
LICENSED PROFESSIONAL ENGINEER
1/27/17

CHECKED BY: JMM/TEJ

APPROVED BY: JMM/TEJ

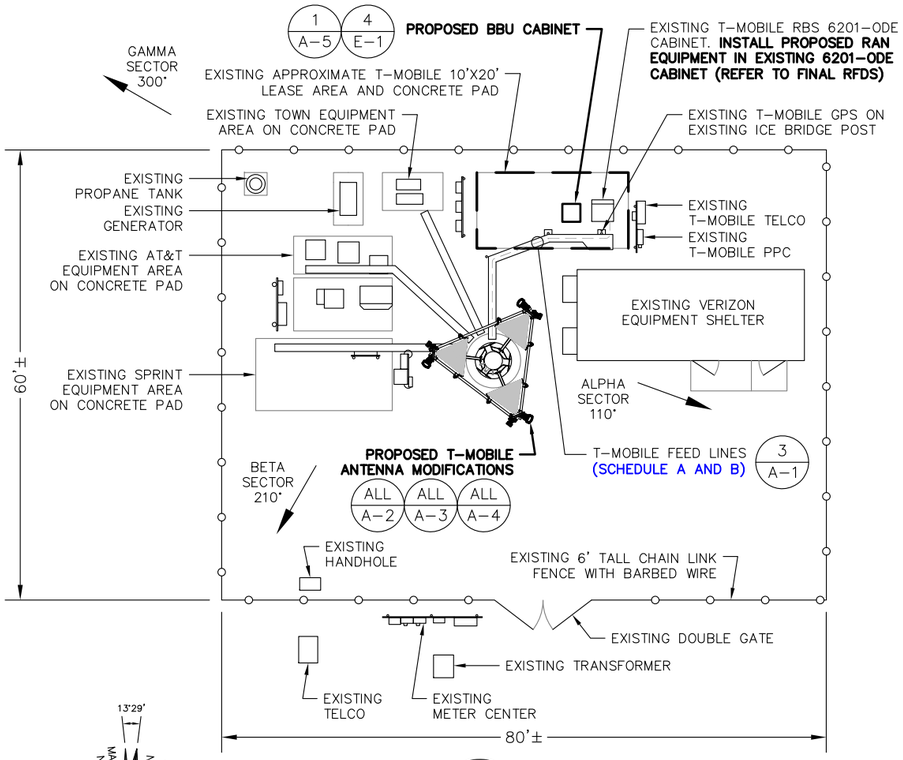
SUBMITTALS

REV.	DATE	DESCRIPTION	BY
0	01/27/17	ISSUED FOR CONSTRUCTION	TBD

SITE NUMBER:
CT11668B
SITE NAME:
CT668/ARCH TWRS - NEWTWN
SITE ADDRESS:
151 BERKSHIRE ROAD
NEWTOWN, CT 06470
FAIRFIELD COUNTY

SHEET TITLE
GENERAL NOTES

SHEET NUMBER
GN-1



COMPOUND PLAN

SCALE: 1"=20' (11"x17")
1"=10' (22"x34")

1
A-1

IMAGE SOURCE: PROTERRA 01/20/17

EQUIPMENT PHOTO DETAIL

SCALE: N.T.S.

2
A-1

ANTENNA MOUNT STRUCTURAL DESIGN NOTE:
ENGINEER-OF-RECORD HAS MADE A VISUAL ASSESSMENT ONLY OF EXISTING ANTENNA MOUNT ASSEMBLIES, WITHOUT THE BENEFIT OF A RIGOROUS ANTENNA MOUNT STRUCTURAL ANALYSIS, AND RECOMMENDS THAT EXISTING AND PROPOSED TOWER TOP EQUIPMENT BE INSTALLED AS DEPICTED HEREIN. STRUCTURAL DETAILS AS DEPICTED HEREIN FOR MODIFICATION OF EXISTING ANTENNA MOUNT ASSEMBLIES ARE PRELIMINARY ONLY AND THAT FINAL CONSTRUCTION DETAILS MAY BE SUBJECT TO CHANGE PENDING THE COMPLETION OF A SEPARATE SUPPLEMENTAL ANTENNA MOUNT STRUCTURAL ASSESSMENT, SUPPLEMENTAL STRUCTURAL MAPPING/CONDITIONS ASSESSMENT REPORT AND/OR SUPPLEMENTAL RIGOROUS ANTENNA MOUNT STRUCTURAL ANALYSIS.

SPECIAL PRE-CONSTRUCTION WORK NOTE (SBA-PROVIDED TOWER STRUCTURAL ANALYSIS SPECIAL EQUIPMENT INSTALLATION REQUIREMENTS):
GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL SPECIAL OR SUPPLEMENTAL ADDITIONAL TOWER-MOUNTED EQUIPMENT PER RECOMMENDATIONS FROM SBA-PROVIDED TOWER STRUCTURAL ANALYSIS FOR ANY SPECIAL SHIELDING OF TOWER TOP EQUIPMENT AND FOR ANY SPECIAL FEEDLINE BUNDLING OR RELOCATION.

FEEDLINE SCHEDULE	FEEDLINE DESCRIPTION	LOCATION
A	EXISTING: TO REMAIN: (12) 1¼" COAX TO 99.5' RAD; [(6) IN USE, (6) CAPPED & WRAPPED]	UP INSIDE MONOPOLE TO RAD
B	PROPOSED: RECONNECT (6) UNUSED 1¼" COAX TO 99.5' RAD	UP INSIDE MONOPOLE TO RAD

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

T-MOBILE FEED LINES (REFER TO SBA-PROVIDED STRUCTURAL ANALYSIS FOR SPECIAL FEEDLINE INSTALLATION REQUIREMENTS, STACKING, BUNDLING, SHIELDING, MOUNTING AND RELOCATION OF EXISTING OR PROPOSED FEEDLINES)

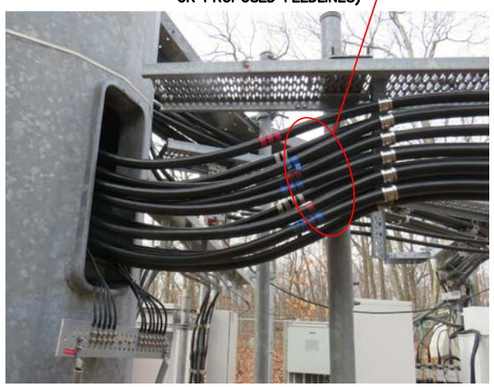


IMAGE SOURCE: PROTERRA 01/20/17

FEEDLINE PHOTO DETAIL AT TOWER BASE

SCALE: N.T.S.

3
A-1

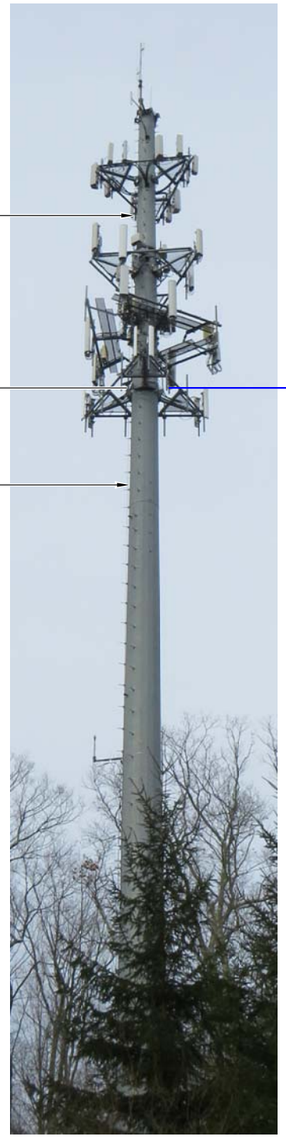


IMAGE SOURCE: PROTERRA 01/20/17

PARTIAL ELEVATION PHOTO DETAIL

SCALE: N.T.S.

4
A-1

T-Mobile
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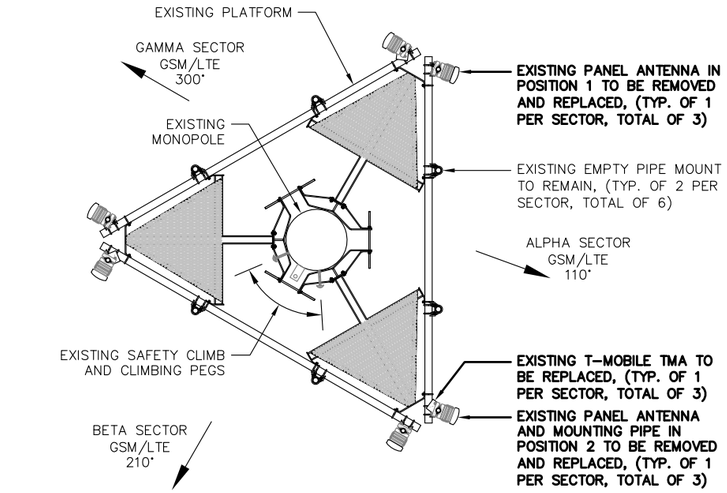
FAIRFIELD COUNTY

SHEET TITLE
COMPOUND & ELEVATION PLAN

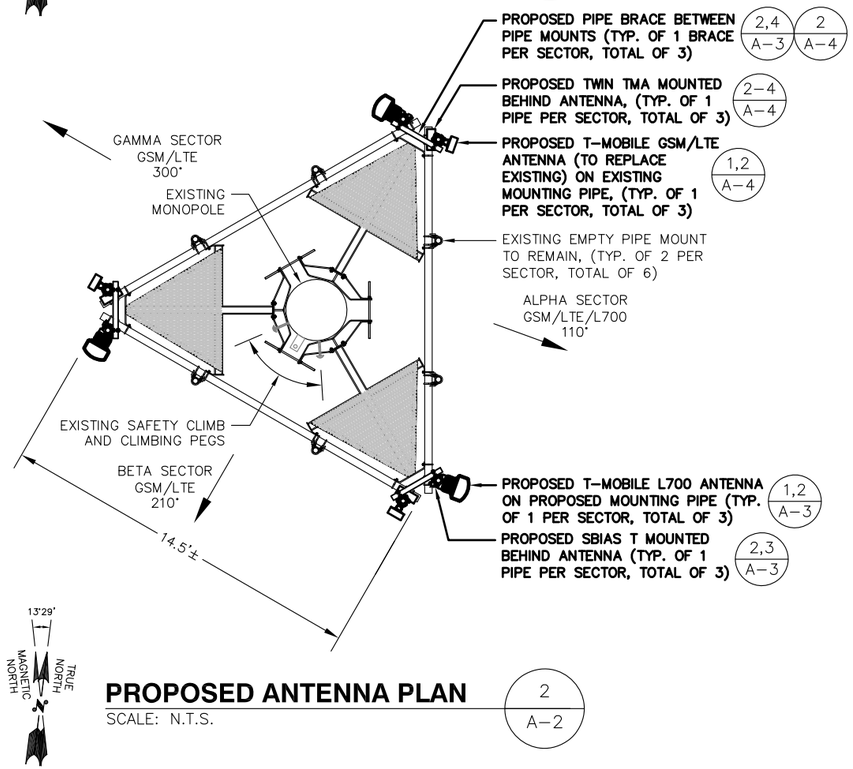
SHEET NUMBER
A-1



EXISTING ANTENNA PLAN

SCALE: N.T.S.

1 / A-2



PROPOSED ANTENNA PLAN

SCALE: N.T.S.

2 / A-2

ANTENNA MOUNT STRUCTURAL DESIGN NOTE:
ENGINEER-OF-RECORD HAS MADE A VISUAL ASSESSMENT ONLY OF EXISTING ANTENNA MOUNT ASSEMBLIES, WITHOUT THE BENEFIT OF A RIGOROUS ANTENNA MOUNT STRUCTURAL ANALYSIS, AND RECOMMENDS THAT EXISTING AND PROPOSED TOWER TOP EQUIPMENT BE INSTALLED AS DEPICTED HEREIN. STRUCTURAL DETAILS AS DEPICTED HEREIN FOR MODIFICATION OF EXISTING ANTENNA MOUNT ASSEMBLIES ARE PRELIMINARY ONLY AND THAT FINAL CONSTRUCTION DETAILS MAY BE SUBJECT TO CHANGE PENDING THE COMPLETION OF A SEPARATE SUPPLEMENTAL ANTENNA MOUNT STRUCTURAL ASSESSMENT, SUPPLEMENTAL STRUCTURAL MAPPING/CONDITIONS ASSESSMENT REPORT AND/OR SUPPLEMENTAL RIGOROUS ANTENNA MOUNT STRUCTURAL ANALYSIS.

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NOTE:
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

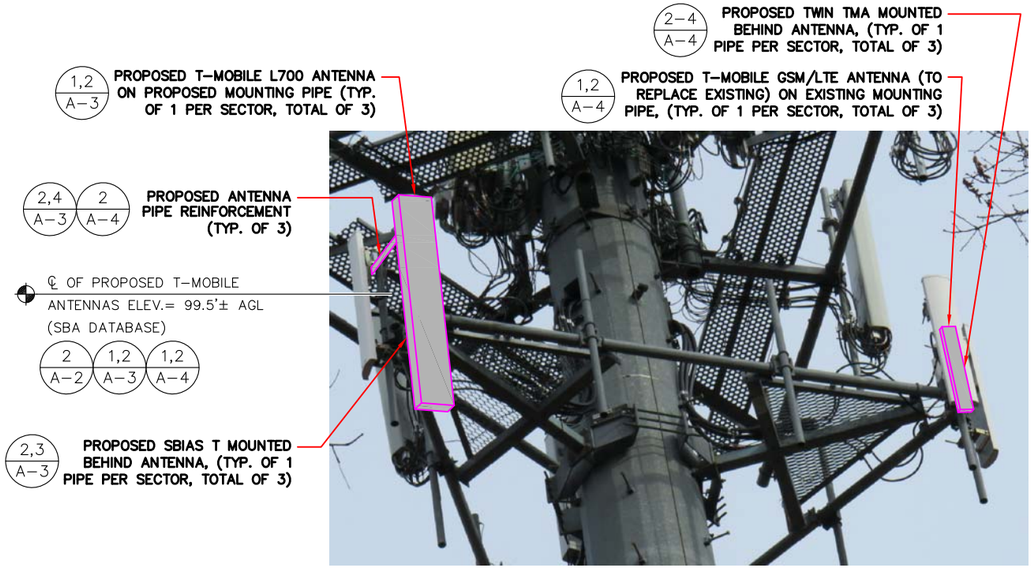

IMAGE SOURCE: PROTERRA 01/20/17
NOTE: ONE SECTOR SHOWN FOR CLARITY

ANTENNA PHOTO DETAIL

SCALE: N.T.S.

3 / A-2

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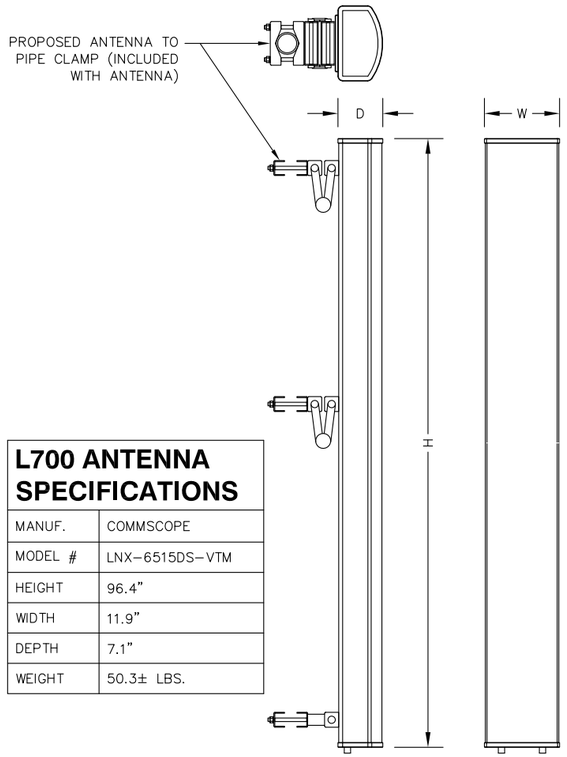
FAIRFIELD COUNTY

SHEET TITLE
EXISTING & PROPOSED ANTENNA PLAN

SHEET NUMBER
A-2

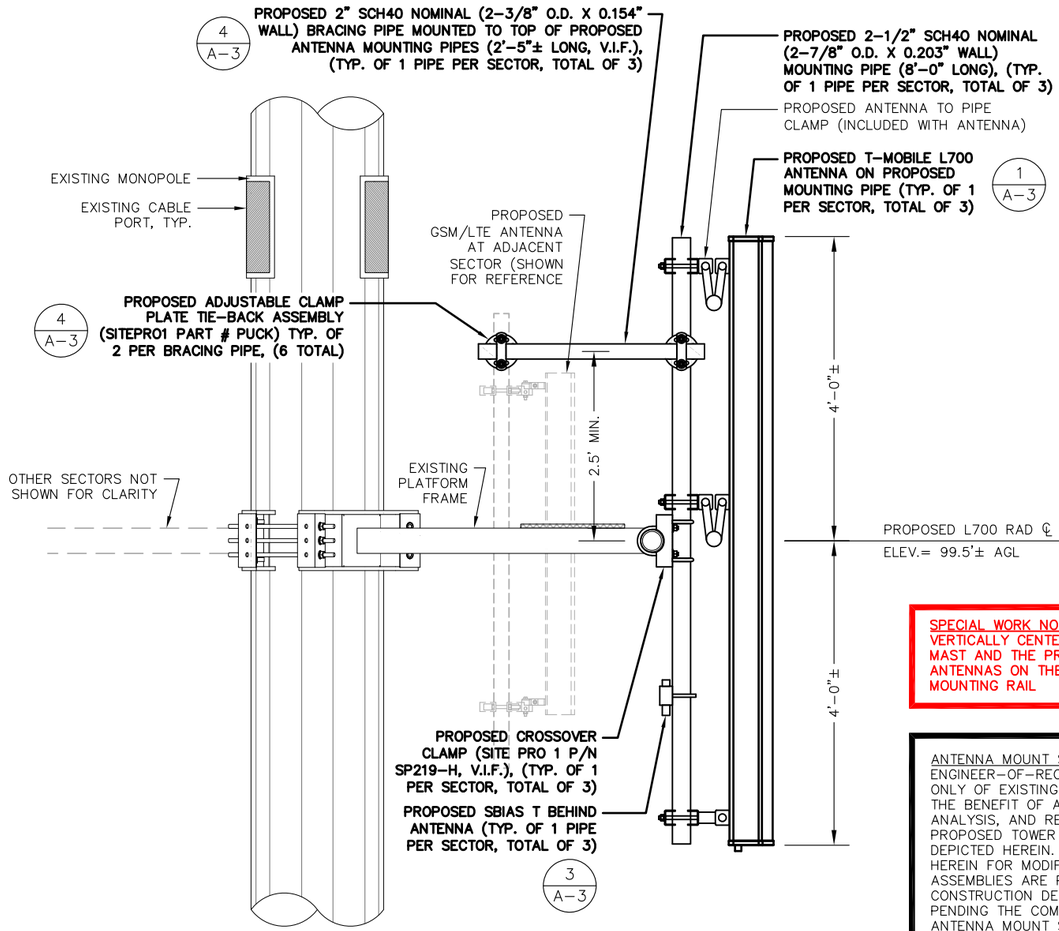


L700 ANTENNA SPECIFICATIONS

MANUF.	COMMSCOPE
MODEL #	LNX-6515DS-VTM
HEIGHT	96.4"
WIDTH	11.9"
DEPTH	7.1"
WEIGHT	50.3± LBS.

L700 ANTENNA DETAIL (1/A-3)

SCALE: N.T.S.



PROPOSED ANTENNA MOUNTING DETAIL (2/A-3)

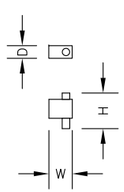
SCALE: N.T.S.

SPECIAL WORK NOTE:
VERTICALLY CENTER THE PIPE MAST AND THE PROPOSED ANTENNAS ON THE EXISTING MOUNTING RAIL

ANTENNA MOUNT STRUCTURAL DESIGN NOTE:
ENGINEER-OF-RECORD HAS MADE A VISUAL ASSESSMENT ONLY OF EXISTING ANTENNA MOUNT ASSEMBLIES, WITHOUT THE BENEFIT OF A RIGOROUS ANTENNA MOUNT STRUCTURAL ANALYSIS, AND RECOMMENDS THAT EXISTING AND PROPOSED TOWER TOP EQUIPMENT BE INSTALLED AS DEPICTED HEREIN. STRUCTURAL DETAILS AS DEPICTED HEREIN FOR MODIFICATION OF EXISTING ANTENNA MOUNT ASSEMBLIES ARE PRELIMINARY ONLY AND THAT FINAL CONSTRUCTION DETAILS MAY BE SUBJECT TO CHANGE PENDING THE COMPLETION OF A SEPARATE SUPPLEMENTAL ANTENNA MOUNT STRUCTURAL ASSESSMENT, SUPPLEMENTAL STRUCTURAL MAPPING/CONDITIONS ASSESSMENT REPORT AND/OR SUPPLEMENTAL RIGOROUS ANTENNA MOUNT STRUCTURAL ANALYSIS.

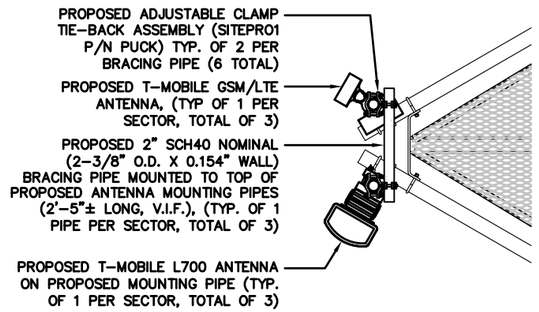
SBT SPECIFICATIONS

MANUF.	COMMSCOPE
MODEL #	ATSBT-TOP-FM-4G
HEIGHT	5.63"
WIDTH	3.7"
DEPTH	2.0"
WEIGHT	1.8 LBS.



SMART BIAS TEE (SBT) (3/A-3)

SCALE: N.T.S.



PROPOSED ANTENNA PIPE BRACE DETAIL (4/A-3)

SCALE: N.T.S.

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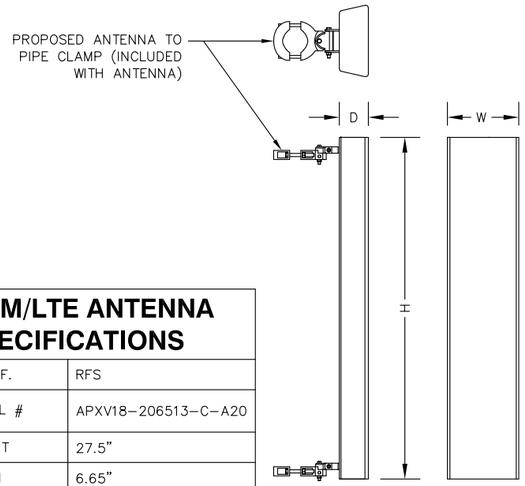
FAIRFIELD COUNTY

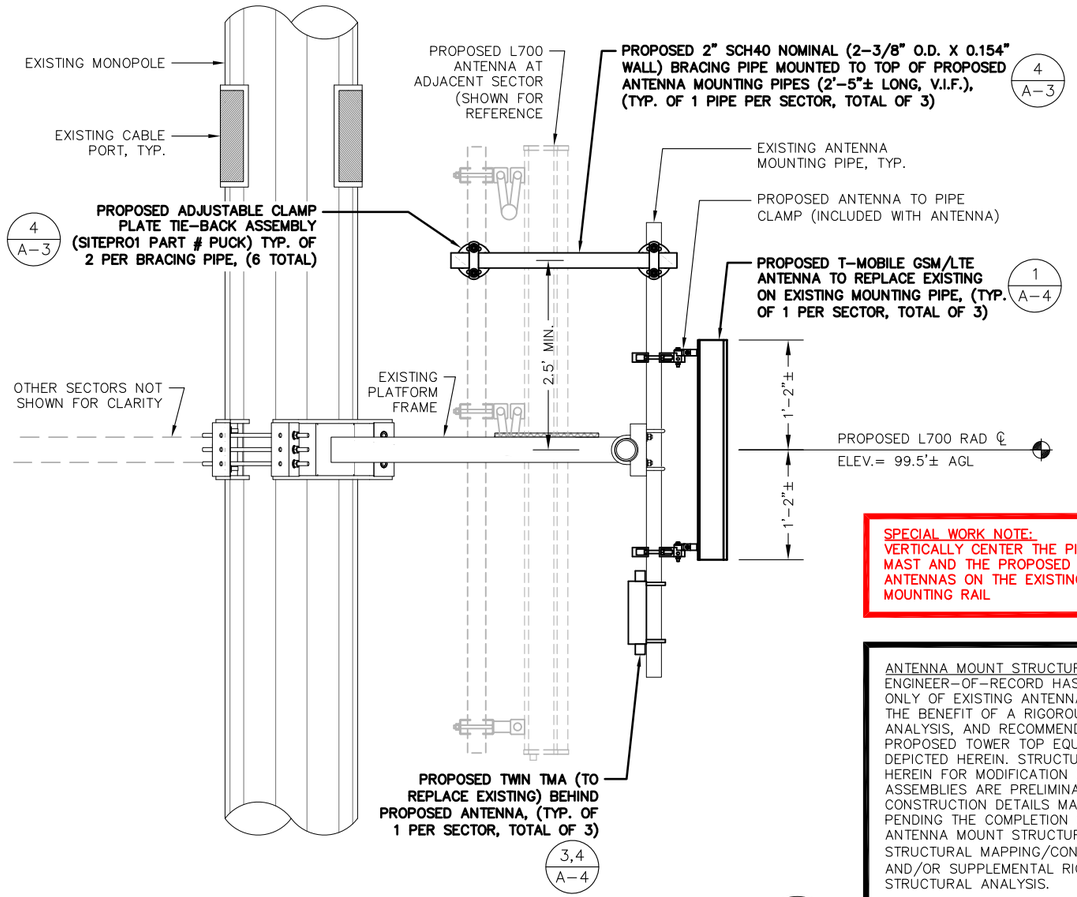
SHEET TITLE
DETAILS

SHEET NUMBER
A-3



GSM/LTE ANTENNA SPECIFICATIONS	
MANUF.	RFS
MODEL #	APXV18-206513-C-A20
HEIGHT	27.5"
WIDTH	6.65"
DEPTH	3.15"
WEIGHT	19.4± LBS.

GSM/LTE ANTENNA DETAIL (1/A-4)
SCALE: N.T.S.



SPECIAL WORK NOTE:
VERTICALLY CENTER THE PIPE MAST AND THE PROPOSED ANTENNAS ON THE EXISTING MOUNTING RAIL

ANTENNA MOUNT STRUCTURAL DESIGN NOTE:
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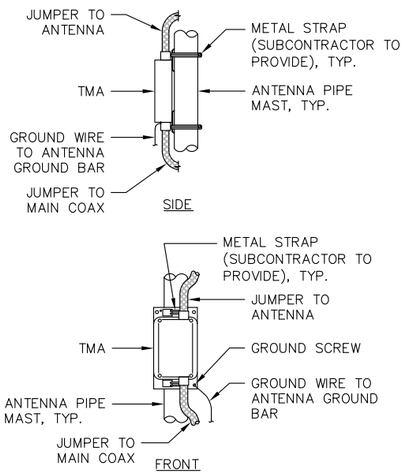
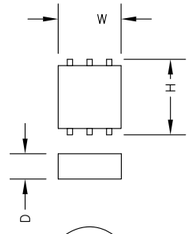
PROPOSED GSM/LTE ANTENNA MOUNTING DETAIL (2/A-4)
SCALE: N.T.S.



TMA MOUNTING DETAIL (3/A-4)
SCALE: N.T.S.

TWIN TMA SPECIFICATIONS	
MANUF.	RFS
MODEL #	ATMAA1412D-1A20
HEIGHT	12"
WIDTH	10"
DEPTH	4"
WEIGHT	13 LBS



TWIN TMA (4/A-4)
SCALE: N.T.S.

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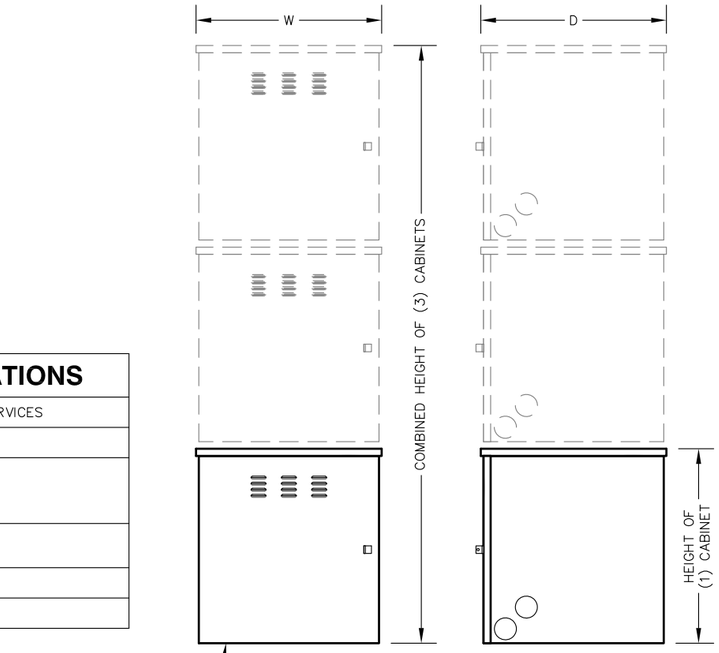
SHEET TITLE
DETAILS

SHEET NUMBER
A-4

BBU SPECIFICATIONS

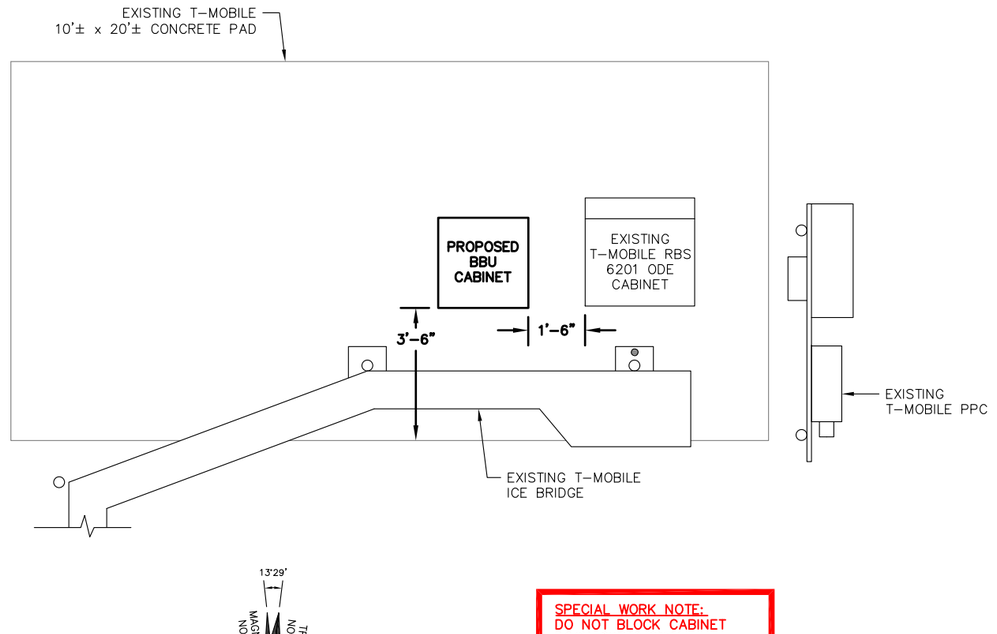
MANUF.	MFS DATA SERVICES
MODEL #	DUBBM-2ALM
HEIGHT (1) CABINET	29.67"
HEIGHT (3) CABINETS	89.01"
WIDTH	28.54"
DEPTH	28.54"



FRONT VIEW

SIDE VIEW

NOTE:
MFS DATA SERVICES BBU CABINET, MODEL DUBBM-2ALM
(STACKABLE - 3 TOTAL PROPOSED)



PLAN VIEW

SPECIAL WORK NOTE:
DO NOT BLOCK CABINET DOOR SWING WITH PROPOSED BBU CABINET.

SPECIAL WORK NOTE:
MAINTAIN MINIMUM NEC-COMPLIANT WORKSPACE CLEARANCE 30" WIDE, 36" DEEP, 6'-6" HEIGHT

PROPOSED BBU CABINET DETAIL

1 / A-5

SCALE: N.T.S.

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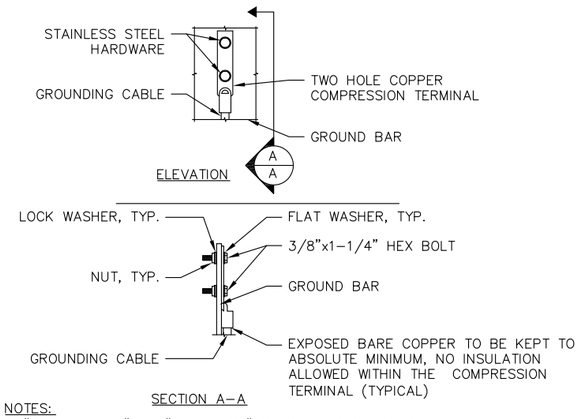
A-5

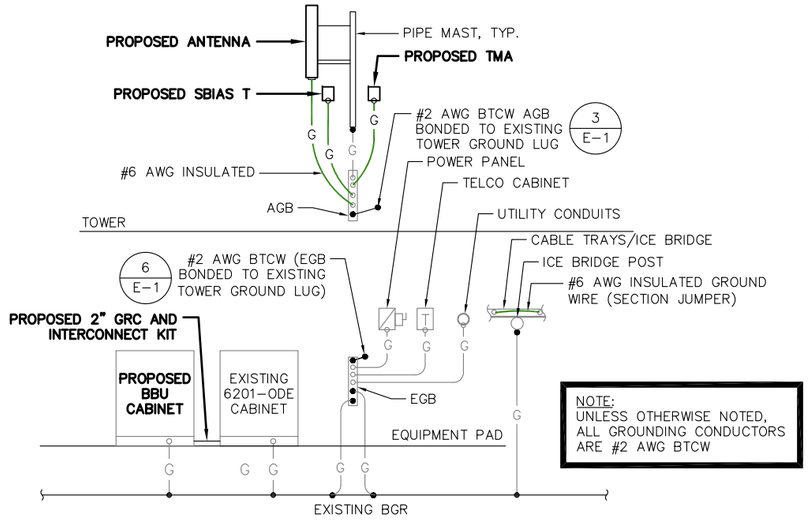


NOTES:
1. "DOUBLING UP" OR "STACKING " OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB.

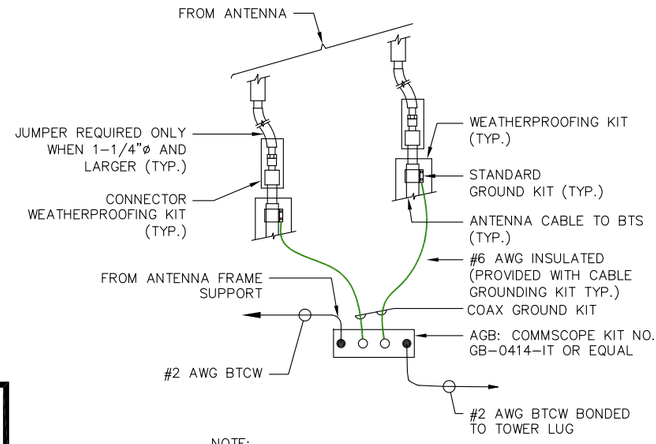
TYPICAL GROUND BAR CONNECTION DETAIL

SCALE: N.T.S.

1 / E-1



NOTE:
UNLESS OTHERWISE NOTED, ALL GROUNDING CONDUCTORS ARE #2 AWG BTCW

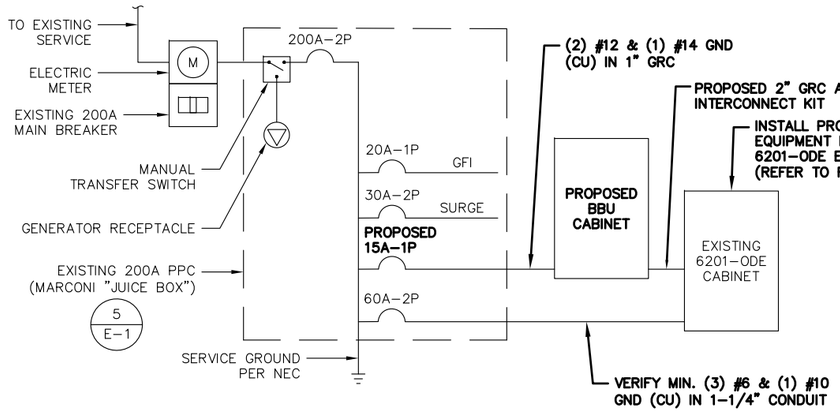


NOTE:
INSTALL CABLE GROUND KIT ABOVE HORIZONTAL BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO AGB/EGB.

TYPICAL GROUNDING RISER DIAGRAM

SCALE: N.T.S.

2 / E-1



ONE LINE POWER SCHEMATIC

SCALE: N.T.S.

4 / E-1

IMAGE SOURCE: PROTERRA 01/20/17

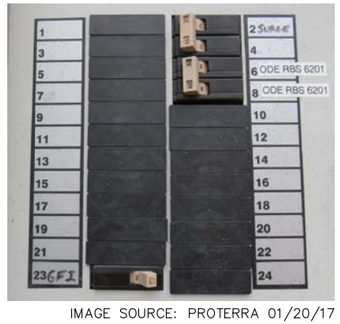


IMAGE SOURCE: PROTERRA 01/20/17

PHOTO DETAIL: PPC PANEL

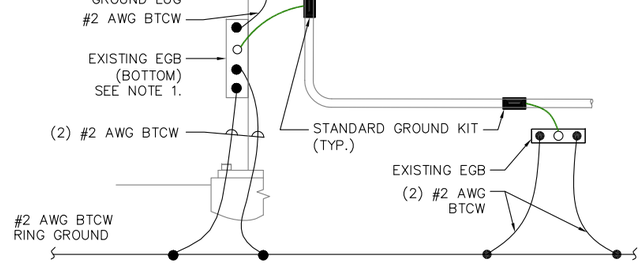
SCALE: N.T.S.

5 / E-1

TOWER TOP CABLE GROUNDING DETAIL

SCALE: N.T.S.

3 / E-1



NOTE:
1. NUMBER OF GROUND BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, ANTENNA LOCATION, AND CONNECTION ORIENTATION. PROVIDE ADDITIONAL AGB/EGB AS REQUIRED.
2. A SEPARATE GROUND BAR TO BE USED FOR GPS ANTENNA IF REQUIRED

TOWER BOTTOM CABLE GROUNDING DETAIL

SCALE: N.T.S.

6 / E-1

ELECTRICAL LEGEND

A	AMPERE
V	VOLT
KWH	KILOWATT - HOUR
C	CONDUIT
GRC	GALVANIZED RIGID CONDUIT
BTCW	BARE TINNED (SOLID) COPPER WIRE (#2 AWG, UNLESS NOTES OTHERWISE)
G	GROUND
	GROUND
MGB	MASTER GROUND BAR — ○ MECHANICAL CONNECTION ● CADWELD CONNECTION
AGB/EGB	EQUIPMENT GROUND BAR/ANTENNA GROUND BAR
G	GROUND COPPER WIRE, SIZE AS NOTED
	EXPOSED WIRING
	INSULATED GROUNDING CONDUCTOR (#6 AWG STRANDED, UNLESS NOTED OTHERWISE)
	5/8"x10' COPPER CLAD STAINLESS STEEL GROUND ROD
	● EXOTHERMIC (CAD WELD) OR ○ MECHANICAL (COMPRESSION TYPE) CONNECTION
PPC	POWER PROTECTION CABINET
	OMNI-DIRECTIONAL ELECTRONIC MARKER SYSTEM (EMS) BALL

CONTRACTOR NOTE:
G.C. TO VERIFY THAT THE EXISTING CONDUITS AND WIRE SIZES ARE ADEQUATE FOR THE PROPOSED LOADING IN ACCORDANCE WITH NEC AND INCLUDE ELECTRICAL UPGRADES IN THE SCOPE OF WORK AS REQUIRED.

ELECTRICAL & GROUNDING NOTES:

1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) 2014 AS WELL AS APPLICABLE STATE AND LOCAL CODES.
2. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
3. THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATIONS INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
4. GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
5. ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
6. RIGID STEEL CONDUITS SHALL BE GROUNDED AT BOTH ENDS.
7. ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THHN INSULATION AS REQUIRED BY NEC.
8. RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL ROOM AND PROPOSED CELL SITE POWER PEDESTAL AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
9. RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROPOSED CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON DRAWING A-1. PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
10. ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.
11. GROUNDING SHALL COMPLY WITH NEC ART. 250.
12. GROUND COAXIAL CABLE SHIELDS MINIMUM AT BOTH ENDS USING MANUFACTURERS COAX CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.
13. USE #6 COPPER STRANDED WIRE WITH GREEN COLOR INSULATION FOR ABOVE GRADE GROUNDING (UNLESS OTHERWISE SPECIFIED) AND #2 SOLID TINNED BARE COPPER WIRE FOR BELOW GRADE GROUNDING AS INDICATED ON THE DRAWING.
14. ALL GROUND CONNECTIONS TO BE BURNDY HYGROUND COMPRESSION TYPE CONNECTORS OR CADWELD EXOTHERMIC WELD. DO NOT ALLOW BARE COPPER WIRE TO BE IN CONTACT WITH GALVANIZED STEEL.
15. ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE, EXCEPT AS OTHERWISE INDICATED. GROUNDING LEADS SHOULD NEVER BE BENT AT RIGHT ANGLE. ALWAYS MAKE AT LEAST 12" RADIUS BENDS. #6 WIRE CAN BE BENT AT 6" RADIUS WHEN NECESSARY. BOND ANY METAL OBJECTS WITHIN 7 FEET OF PROPOSED EQUIPMENT OR CABINET TO MASTER GROUND BAR.
16. CONNECTIONS TO MGB SHALL BE ARRANGED IN THREE MAIN GROUPS: SURGE PRODUCERS (COAXIAL CABLE GROUND KITS, TELCO AND POWER PANEL GROUND); (GROUNDING ELECTRODE RING OR BUILDING STEEL); NON-SURGING OBJECTS (EGB GROUND IN BTS UNIT).
17. CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LYGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.
18. APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTIONS.
19. BOMD ANTENNA MOUNTING BRACKETS, COAXIAL CABLE GROUND KITS, AND ALNA TO EGB PLACED NEAR THE ANTENNA LOCATION.
20. BOND ANTENNA EGB'S AND MGB TO WATER MAIN/GROUND RING.
21. TEST COMPLETED GROUND SYSTEM AND RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION.
22. BOND ANY METAL OBJECTS WITHIN 7 FEET OF PROPOSED EQUIPMENT OR CABINET TO MASTER GROUND BAR.
23. VERIFY PROPOSED SERVICE UPGRADE WITH LOCAL UTILITY COMPANY PRIOR TO CONSTRUCTION.

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STATE OF CONNECTICUT · THOMAS E. JOHNSON · No. 28192 · LICENSED PROFESSIONAL ENGINEER
1/27/17

CHECKED BY: JMM/TEJ

APPROVED BY: JMM/TEJ

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
0	01/27/17	ISSUED FOR CONSTRUCTION	TBD

SITE NUMBER:
CT11668B
SITE NAME:
CT668/ARCH TWRS - NEWTWN
SITE ADDRESS:
151 BERKSHIRE ROAD
NEWTOWN, CT 06470
FAIRFIELD COUNTY

SHEET TITLE
ONE-LINE DIAGRAM & GROUNDING DETAILS

SHEET NUMBER
E-1