October 23, 2015

Members of the Siting Council
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: Notice of Exempt Modification
130 Tatnic Hill Road
Brooklyn, CT 06234
N 41.76727
W 71.97182
T-Mobile Site #: CT11512D_L700

Members of the Siting Council:

On behalf of T-Mobile, SBA Communications is submitting an exempt modification application to the Connecticut Siting council for modification of existing equipment at a tower facility located at 130 Tatnic Hill Road, Brooklyn, CT.

The 130 Tatnic Hill Road facility consists of a 175' Monopole Tower owned and operated by SBA Towers, LLC. In order to accommodate technological changes and enhance system performance in the State of Connecticut, T-Mobile plans to modify the equipment configurations at many of its existing cell sites. Please accept this letter and attachments as notification, pursuant to R.C.S.A. Section 16-50j-73, of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2). In compliance with R.C.S.A. Section 16-50j-73, a copy of this letter and attachments is being sent to the chief elected official of the municipality in which the affected cell site is located, First Selectman Richard Ives, as well as property owners, Sophie and Benjamin Davidson.

As part of T-Mobile's L700 project, T-Mobile desires to upgrade their equipment to meet the new standards of 4G technology. The new equipment will allow customers to download files and browse the internet at a high rate of speed while also allowing their phones to be compatible with the latest 4G technology.

Attached is a summary of the planned modifications, including power density calculations reflecting the change in T-Mobile's operations at the site along with the required fee of $625.

The changes to the facility do not constitute modifications as defined in Connecticut General Statutes ("C.G.S.") Section 16-50i(d) because the general physical characteristics of the facility will not be significantly changed or altered. Rather, the planned changes to the facility fall squarely within those activities explicitly provided for in R.C.S.A. Section 16-50j-72(b)(2).

1. The overall height of the structure will be unaffected.

2. The proposed changes will not extend the site boundaries. There will be no effect on the site compound other than the new equipment cabinet.

3. The proposed changes will not increase the noise level at the existing facility by six decibels or more.

4. The changes in radio frequency power density will not increase the calculated "worst case" power density for the combined operations at the site to a level at or above the applicable standard for uncontrolled environments as calculated for a mixed frequency site.

For the foregoing reasons, SBA Communications on behalf of T-Mobile, respectfully submits that he proposed changes at the referenced site constitute exempt modifications under R.C.S.A. Section 16-50j-72(b)(2).

Please feel free to call me at 508.251.0720 x 3804 with any questions you may have concerning this matter.

Thank you,

Kri Pelletier
SBA Communications Corporation
33 Boston Post Road West Suite 320
Marlborough, MA 01752
508-251-0720 x 3804 + T
508-251-1755 + F
203-446-7700 + C
kpelletier@sbasite.com

T-Mobile

Equipment Modification

130 Tatnic Hill Road, Brooklyn, CT
Site number CT11512D _L700

Tower Owner: SBA Towers, LLC

Equipment Configuration: Monopole

Current and/or approved:

- (6) EMS - RR90-17-02DP - Panel
- (12) 1-5/8" Lines

Final Configuration:

- (3) RFS - APXV18-206516S-C-A20 - Panel
- (3) Commscope - LNX-6515DS-VTM - Panel
- (3) Ericsson - KRY 112 144/1 - TMA
- (3) Kathrein - 782 11056 - Bias T
- (12) 1-5/8" lines

Structural Information:

The attached structural analysis demonstrates that the tower and foundation will have adequate structural capacity to accommodate the proposed modifications.

Power Density:

The anticipated Maximum Composite contributions from the T-Mobile facility are 1.66% of the allowable FCC established general public limit. The anticipated composite MPE value for this site assuming all carriers present is 3.81% of the allowable FCC established general public limit sampled at the ground level.

Site Composite MPE%	
Carrier	MPE%
T-Mobile (Per Sector Max)	1.66 %
Sprint	0.28 %
Nextel	0.24 %
Verizon Wireless	1.63 %
Site Total MPE %:	3.81 %

October 23, 2015

Mr. Richard Ives, First Selectman
Town of Brooklyn
4 Wolf Den Road
Brooklyn, CT 06234

RE: Telecommunications Facility @ 130 Tatnic Hill Road, Brooklyn, CT

Dear Mr. Ives,

In order to accommodate technological changes and enhance system performance in the State of Connecticut, T-Mobile will be changing its equipment configuration at certain cell sites.

As required by Regulations of Connecticut State Agencies (R.C.S.A.) Section 16-50j-73, the Connecticut Siting Council has been notified of the changes and will review T-Mobile's proposal. Please accept this letter as notification under Section 16-50j-73 of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2).

The accompanying letter to the Siting Council fully describes T-Mobile's proposal for the referenced cell site. However, if you have any questions or require any further information on our plans or the Siting Council's procedures, please call me at 508.251.0720 x 3804.

Thank you,

Kri Pelletier
SBA Communications Company
33 Boston Post Road West Suite 320
Marlborough, MA 01752
508-251-0720 x 3804 + T
508-251-1755 + F
203-446-7700 + C
kpelletier@sbasite.com

October 13, 2015

Sophie & Benjamin Davidson
P.O. Box 242
St Helens, Tasmania 7216
Australia

RE: Telecommunications Facility @ 130 Tatnic Hill Road, Brooklyn, CT

Dear Mr. and Mrs. Davidson:

In order to accommodate technological changes and enhance system performance in the State of Connecticut, T-Mobile will be changing its equipment configuration at certain cell sites.

As required by Regulations of Connecticut State Agencies (R.C.S.A.) Section 16-50j-73, the Connecticut Siting Council has been notified of the changes and will review T-Mobile's proposal. Please accept this letter as notification under Section 16-50j-73 of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2).

The accompanying letter to the Siting Council fully describes T-Mobile's proposal for the referenced cell site. However, if you have any questions or require any further information on our plans or the Siting Council's procedures, please call me at 508.251.0720 x 3804.

Thank you,

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

T-Mobile Existing Facility

Site ID: CT11512C

CT512/SBA - S Brooklyn
130 Tatnic Hill Road
Brooklyn, CT 06234

October 21, 2015

EBI Project Number: 6215005334

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	3.81 %

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

EBI Consulting
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October 21, 2015

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

Emissions Analysis for Site: **CT11512C – CT512/SBA - S Brooklyn**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **130 Tatnic Hill Road, Brooklyn, 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 PCS and AWS bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at **130 Tatnic Hill Road, Brooklyn, 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 / 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

2) 2 UMTS channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

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

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

5) Since the radios are ground mounted there are additional cabling losses accounted for. For each RF path the following losses were calculated. 1.07 dB of additional cable loss for all 700 MHz Channels, 1.96 dB of additional cable loss for all 1900 MHz channels and 2.01 dB of additional cable loss at 700 MHz. This is based on manufacturers Specifications for 190 feet of 1-5/8” coax cable on each path.

6) 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.

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

8) The antennas used in this modeling are the **RFS APXV18-206516S-C-A20** for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the **Commscope LNX-6515DS-VTM** for 700 MHz channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **RFS APXV18-206516S-C-A20** has a maximum gain of **16.3 dBd** at their main lobe. The **Commscope LNX-6515DS-VTM** has a maximum gain of **14.6 dBd** at its main lobe. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

9) The antenna mounting height centerline of the proposed antennas is **140 feet** above ground level (AGL).

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

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

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	RFS APXV18-206516S-C-A20	Make / Model:	RFS APXV18-206516S-C-A20	Make / Model:	RFS APXV18-206516S-C-A20
Gain:	16.3 dBd	Gain:	16.3 dBd	Gain:	16.3 dBd
Height (AGL):	140	Height (AGL):	140	Height (AGL):	140
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	8	Channel Count	8	# PCS Channels:	8
Total TX Power:	240	Total TX Power:	240	# AWS Channels:	240
ERP (W):	6,834.18	ERP (W):	6,834.18	ERP (W):	6,834.18
Antenna A1 MPE%	1.37	Antenna B1 MPE%	1.37	Antenna C1 MPE%	1.37
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):	140	Height (AGL):	140	Height (AGL):	140
Frequency Bands	700 MHz	Frequency Bands	700 MHz	Frequency Bands	700 MHz
Channel Count	1	Channel Count	1	Channel Count	1
Total TX Power:	30	Total TX Power:	30	Total TX Power:	30
ERP (W):	676.27	ERP (W):	676.27	ERP (W):	676.27
Antenna A2 MPE%	0.29	Antenna B2 MPE%	0.29	Antenna C2 MPE%	0.29

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile (Per Sector Max)	**1.66 %**
Sprint	0.28 %
Nextel	0.24 %
Verizon Wireless	1.63 %
Site Total MPE %:	**3.81 %**

T-Mobile Sector 1 Total:	1.66 %
T-Mobile Sector 2 Total:	1.66 %
T-Mobile Sector 3 Total:	1.66 %
Site Total:	3.81 %

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 2100 MHz (AWS) LTE	**2**	**1611.21**	**140**	**6.45**	**2100**	**1000**	**0.65 %**
T-Mobile 1900 MHz (PCS) GSM/UMTS	**2**	**1000.28**	**140**	**4.01**	**1900**	**1000**	**0.40 %**
T-Mobile 2100 MHz (AWS) UMTS	**2**	**805.60**	**140**	**3.23**	**2100**	**1000**	**0.32 %**
T-Mobile 700 MHz LTE	**1**	**676.27**	**140**	**1.35**	**700**	**467**	**0.29 %**
						Total:	**1.66%**

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Summary

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

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

T-Mobile Sector	Power Density Value (%)
Sector 1:	1.66 %
Sector 2:	1.66 %
Sector 3 :	1.66 %
T-Mobile Per Sector Maximum:	1.66 %
Site Total:	3.81 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **3.81%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

Scott Heffernan
RF Engineering Director

EBI Consulting
21 B Street
Burlington, MA 01803

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

Structural Analysis Report

Existing 175 ft. SUMMIT Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT01915-S

Customer Site Name: South Brooklyn

Carrier Name: T-Mobile

Carrier Site Number: CT11512C

Carrier Site Name: N/A

Site Location: 100 Old Tatnic Hill Road

Brooklyn, Connecticut

Windham County

Latitude: 41.767160

Longitude: -71.971949

Analysis Result:

Max Structural Usage: 86.7% [Pass]

Max Foundation Usage: 69% [Pass]

Report Prepared By : Stacey Hesselbein

Introduction

The purpose of this report is to summarize the analysis results on the 175 ft. SUMMIT Monopole to support the proposed antennas and transmission lines in addition to those currently installed. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

Sources of Information

Tower Drawings	Tower Drawings prepared by Paul J. Ford and Company, Job # 29200-401 Dated 04/05/2000
Foundation Drawing	Foundation Drawings prepared by Paul J. Ford and Company, Job # 29200-401 Dated 04/05/2000
Geotechnical Report	Geotechnical Report prepared by FDH Engineering, Project # 1201186EG1 Dated 08/16/2012
Modification Drawings	N/A

Analysis Criteria

The rigorous analysis was performed in accordance with the requirements and stipulations of the ANSI/TIA/EIA 222-F**.** 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.

Basic Wind Speed Used in the Analysis:	85.0 mph (fastest mile)
Basic Wind Speed with Ice:	74 mph (fastest mile) with 1/2" radial ice concurrent
Operational Wind Speed:	50 mph + 0" Radial ice
Standard/Codes:	ANSI/TIA/EIA 222-F / 2005 Connecticut State Building Code
Exposure Category:	C
Crest Height:	0 ft.

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	175.0	3	Antel - BXA-70063/6CF - Panel	(1)Low Profile Platform	(12) 1 5/8" (1) 1 5/8" Fiber	Verizon
2		3	Antel - BXA-171085/12CF - Panel			
3		3	Antel - BXA-70080/6CF - Panel			
4		3	Antel - WBX065X19R050 - Panel			
5		3	Alcatel - RRH2x40-AWS - RRH			
6		6	RFS - FD9R6004/2C-3L - Diplexer			
7		1	RFS - DB-T1-6Z-8AB-0Z - Distribution Box			
8	157.0	6	60" x 6.1" x 2.6" - Panel	(1)Low Profile Platform	(6) 1 5/8"	Sprint
9	147.0	9	Allgon - ALP 9212 - Panel	(1)Low Profile Platform	(9) 1 5/8"	Nextel
10	140.0	6	EMS - RR90-17-02DP - Panel	(1)Low Profile Platform	(12) 1 5/8"	T-Mobile

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
11	140.0	3	RFS - APXV18-206516S-C-A20 - Panel	(1) Platform w/Handrails (HRK Commscope P/N MT-195-12)	(12) 1 5/8"	T-Mobile
12		3	Commscope - LNX-6515DS-VTM - Panel			
13		3	Ericsson - KRY 112 144/1 - TMA			
14		3	Kathrein - 782 11056 - Bias T			

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

Analysis Results

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

	Pole shafts	Anchor Bolts	Base Plate	Flange Bolts	Flange Plate
Max. Usage:	**86.7%**	**42.8%**	**86.3%**	**35.6%**	**83.1%**
Pass/Fail	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**

Foundations

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Original Design Reactions	3710.0	29.7	38.3
Analysis Reactions	3501.8	28.4	38.4

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

Operational Condition (Rigidity):

Operational characteristics of the tower are found to be within the limits prescribed by ANSI/TIA/EIA 222-F for the installed antennas. Maximum twist/sway at the elevation of the proposed equipment is 1.9158 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-F 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 or/and 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 Stress 86.7% at 83.8ft

Structure:	CT01915-S-SBA	**Code:**	EIA/TIA-222-F	10/13/2015	
Site Name:	South Brooklyn	**Exposure:**	C		
Height:	175.00 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)			Page: 1	

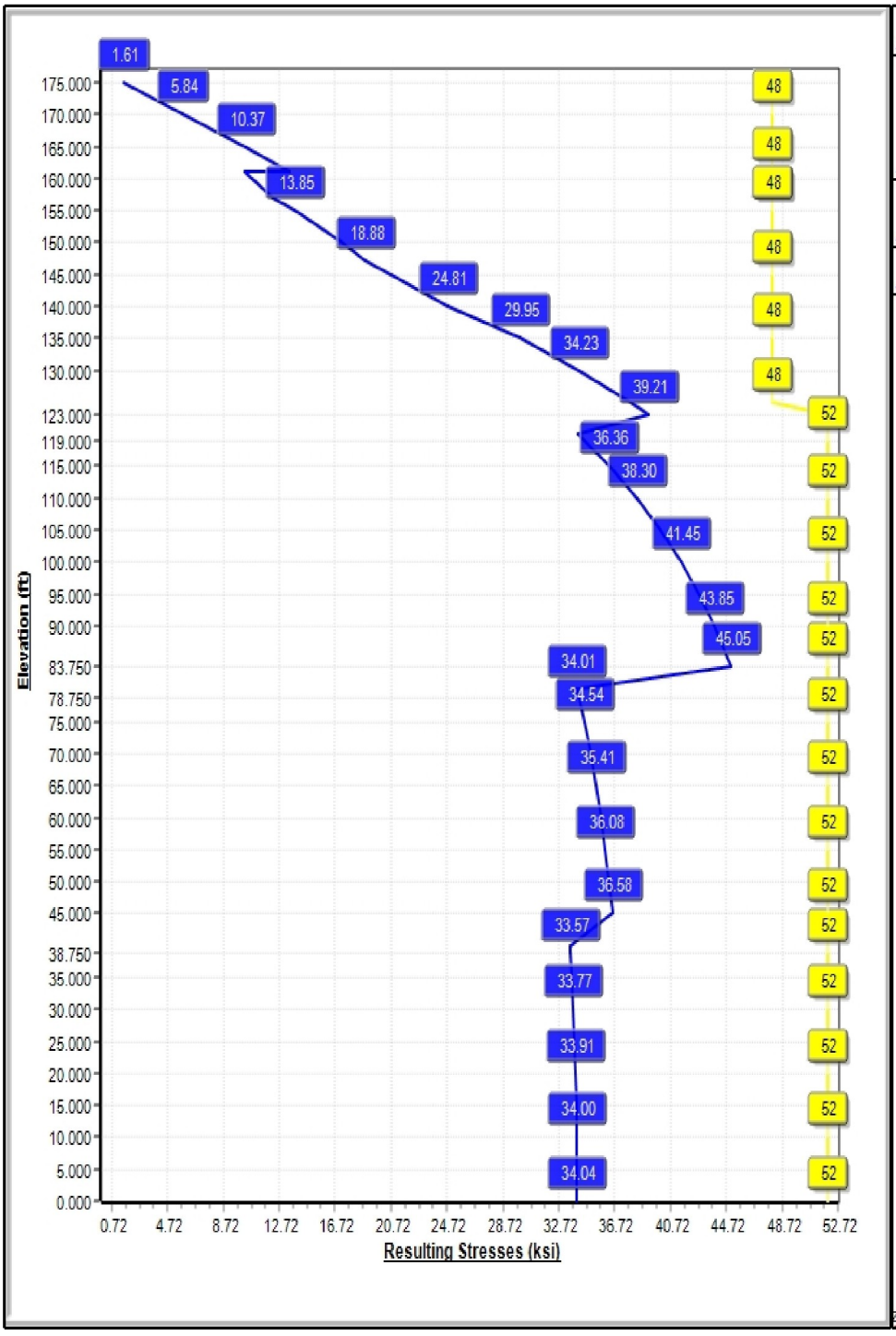
Tower Engineering Solutions

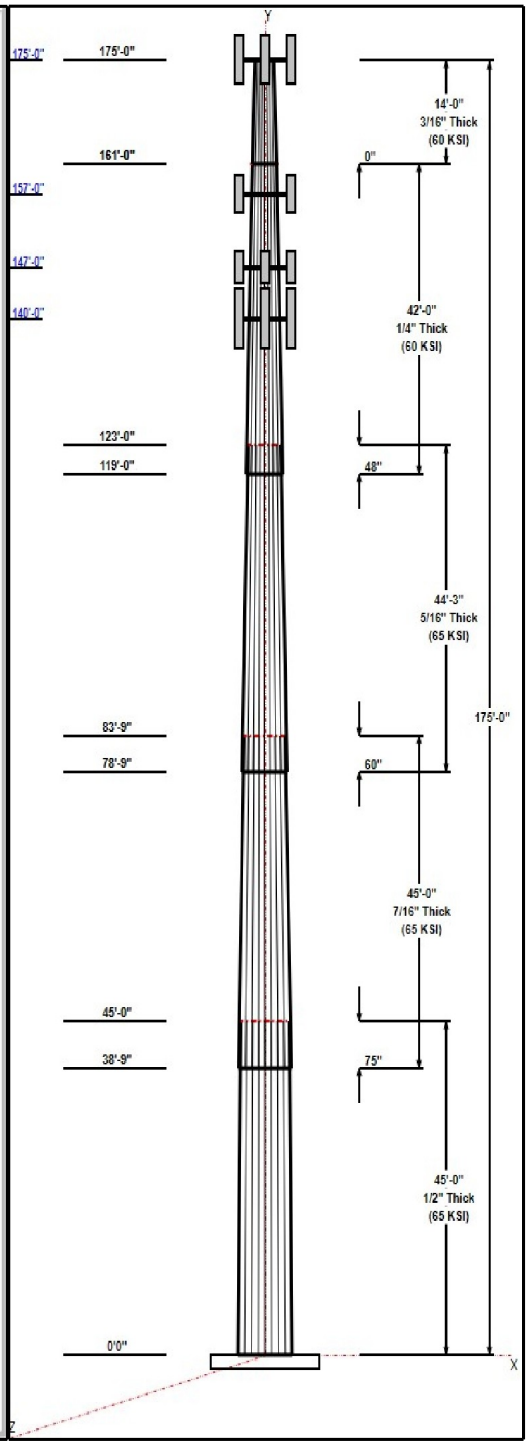
Dead Load Factor: 1.00
Wind Load Factor: 1.00

52 Alllowable Stress
45 Resulting Stress

Load Case : 85 mph Wind with 0 in Ice

Iterations: 25





Structure: CT01915-S-SBA

Type: Tapered
Site Name: South Brooklyn
Height: 175.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.23000

10/13/2015

IES Tower Engineering Solutions

Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	45.00	46.68	57.03	0.500		0.23000	65
2	45.00	38.64	48.99	0.438	Slip	0.23000	65
3	44.25	30.24	40.42	0.313	Slip	0.23000	65
4	42.00	22.00	31.66	0.250	Slip	0.23000	60
5	14.00	18.78	22.00	0.188	Butt	0.23000	60

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
175.00	175.00	1	6' Lightning rod	T-Mobile
175.00	175.00	3	BXA-171085/12CF	Verizon
175.00	175.00	3	BXA-70063/6CF	Verizon
175.00	175.00	3	BXA-70080/6CF	Verizon
175.00	175.00	1	DB-T1-6Z-8AB-0Z	Verizon
175.00	175.00	6	FD9R6004/2C-3L (3.1 lbs)	Verizon
175.00	175.00	1	Low Profile Platform-flat	Verizon
175.00	175.00	3	RRH2x40-AWS	Verizon
175.00	175.00	3	WBX065X19R050	Verizon
157.00	157.00	6	60" x 6.1" x 2.6" Panel	Sprint
157.00	157.00	1	Low Profile Platform-flat	Sprint
147.00	147.00	9	ALP 9212	Nextel
147.00	147.00	1	Low Profile Platform-flat	Nextel
140.00	140.00	3	782 11056	T-Mobile
140.00	140.00	3	APXV18-206516S-C-A20	T-Mobile
140.00	140.00	3	KRY 112 144/1	T-Mobile
140.00	140.00	3	LNX-6515DS-VTM	T-Mobile
140.00	140.00	1	Platform w/ Hand Rails	T-Mobile

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	175.00	Inside	1 5/8" Coax	Verizon
0.00	175.00	Inside	1 5/8" Hybrid	Verizon
0.00	157.00	Inside	1 5/8" Coax	Sprint
0.00	147.00	Inside	1 5/8" Coax	Nextel
0.00	140.00	Inside	1 5/8" Coax	T-Mobile

Anchor Bolts

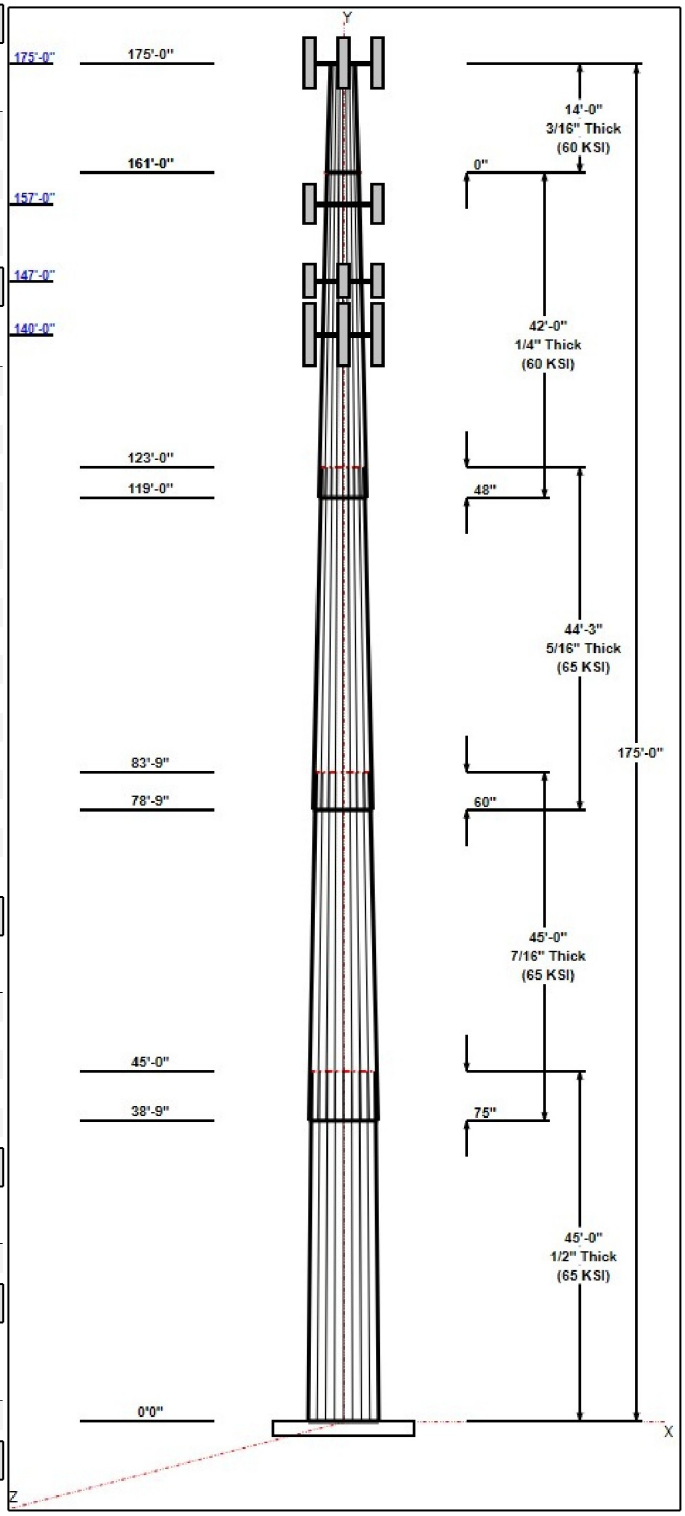
Qty	Specifications	Grade (ksi)	Arrangement
32	2.25" 18J	75.0	Cluster

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
2.5000	68.0	50.0	Clipped

Reactions

Load Case	Moment	Shear	Axial
85 mph Wind with 0" Ice	3501.8	28.4	38.4
73.61 mph Wind with 0.5" Ice	2912.7	23.0	45.3
50 mph Wind with 0" Ice	1213.1	9.8	38.4



Structure: CT01915-S-SBA - Coax Line Placement

Type: Monopole
Site Name: South Brooklyn
Height: 175.00 (ft)

10/13/2015

Tower Engineering Solutions

Shaft Properties

Structure:	CT01915-S-SBA	**Code:**	EIA/TIA-222-F	10/13/2015	
Site Name:	South Brooklyn	**Exposure:**	C		
Height:	175.00 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 4	

Tower Engineering Solutions

Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	45.000	0.5000	65		0.00	12,479
2	18	45.000	0.4375	65	Slip	75.00	9,224
3	18	44.250	0.3125	65	Slip	60.00	5,229
4	18	42.000	0.2500	60	Slip	48.00	3,014
5	18	14.000	0.1875	60	Flange	0.00	573
					Total Shaft Weight:		**30,519**

	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	57.03	0.00	89.71	36220.24	18.70	114.0	46.68	45.00	73.29	19745.8	15.05	93.36	0.230000
2	48.99	38.75	67.42	20082.80	18.33	111.9	38.64	83.75	53.05	9783.25	14.16	88.32	0.230000
3	40.42	78.75	39.78	8083.32	21.39	129.3	30.24	123.0	29.68	3358.97	15.65	96.76	0.230000
4	31.66	119.0	24.92	3106.62	20.91	126.6	22.00	161.0	17.26	1031.48	14.10	88	0.230000
5	22.00	161.0	12.98	780.30	19.27	117.3	18.78	175.0	11.06	483.24	16.25	100.1	0.230000

Loading Summary

Structure:	CT01915-S-SBA	**Code:**	EIA/TIA-222-F	10/13/2015	
Site Name:	South Brooklyn	**Exposure:**	C		
Height:	175.00 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 5	

Tower Engineering Solutions

Discrete Appurtenances

				No Ice			Ice				
No.	**Elev (ft)**	**Description**	**Qty**	**Weight (lb)**	**CaAa (sf)**	**CaAa Factor**	**Weight (lb)**	**CaAa (sf)**	**CaAa Factor**	**Hor. Ecc. (ft)**	**Vert Ecc (ft)**
1	175.0	6' Lightning rod	1	6.50	0.38	1.00	11.80	0.980	1.00	0.00	0.00
2	175.0	BXA-171085/12CF	3	15.00	4.77	0.88	42.40	5.120	0.88	0.00	0.00
3	175.0	BXA-70063/6CF	3	17.00	7.73	0.74	57.60	8.190	0.75	0.00	0.00
4	175.0	BXA-70080/6CF	3	18.00	5.84	0.88	54.00	6.170	0.89	0.00	0.00
5	175.0	DB-T1-6Z-8AB-0Z	1	18.90	5.60	1.00	46.00	5.870	1.00	0.00	0.00
6	175.0	FD9R6004/2C-3L (3.1 lbs)	6	3.10	0.36	0.62	5.40	0.440	0.65	0.00	0.00
7	175.0	Low Profile Platform-flat	1	1200.00	25.00	1.00	1500.00	31.00	1.00	0.00	0.00
8	175.0	RRH2x40-AWS	3	44.00	2.52	0.82	61.40	2.710	0.83	0.00	0.00
9	175.0	WBX065X19R050	3	20.90	5.22	0.78	46.40	5.560	0.80	0.00	0.00
10	157.0	60" x 6.1" x 2.6" Panel	6	30.00	3.75	0.81	50.40	4.030	0.81	0.00	0.00
11	157.0	Low Profile Platform-flat	1	1200.00	25.00	1.00	1500.00	31.00	1.00	0.00	0.00
12	147.0	ALP 9212	9	26.70	5.76	1.00	71.80	6.120	1.00	0.00	0.00
13	147.0	Low Profile Platform-flat	1	1200.00	25.00	1.00	1500.00	31.00	1.00	0.00	0.00
14	140.0	782 11056	3	1.80	0.17	0.78	4.00	0.230	0.82	0.00	0.00
15	140.0	APXV18-206516S-C-A20	3	18.70	3.62	0.78	38.70	3.900	0.79	0.00	0.00
16	140.0	KRY 112 144/1	3	11.00	0.41	0.73	14.10	0.490	0.75	0.00	0.00
17	140.0	LNX-6515DS-VTM	3	50.30	11.45	0.84	115.70	11.92	0.84	0.00	0.00
18	140.0	Platform w/ Hand Rails (flat)	1	2000.00	40.00	1.00	2600.00	48.00	1.00	0.00	0.00
		Totals:	**54**	**6,654.40**			**9,441.70**				

Linear Appurtenances

			No Ice		Ice		
Bottom Elev. (ft)	**Top Elev. (ft)**	**Description**	**Weight (lb/ft)**	**CaAa (sf/ft)**	**Weight (lb/ft)**	**CaAa (sf/ft)**	**Exposed**
0.00	175.0	(12) 1 5/8" Coax	1.04	0.00	0.00	0.00	Inside
0.00	175.0	(1) 1 5/8" Hybrid	3.30	0.00	0.00	0.00	Inside
0.00	157.0	(6) 1 5/8" Coax	1.04	0.00	0.00	0.00	Inside
0.00	147.0	(9) 1 5/8" Coax	1.04	0.00	0.00	0.00	Inside
0.00	140.0	(12) 1 5/8" Coax	1.04	0.00	0.00	0.00	Inside
		Totals:	**1,221.26**		**0.00**		

Shaft Section Properties

Structure: CT01915-S-SBA
Site Name: South Brooklyn
Height: 175.00 (ft)
Base Elev: 0.000 (ft)

Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

10/13/2015

Tower Engineering Solutions

Increment Length: 5 (ft)

Elev (ft)	Description	Thick (in)	Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fy (ksi)	Fb (ksi)	Weight (lb)
0.00		0.5000	57.030	89.710	36220.2	18.70	114.06	65	52	0.0
5.00		0.5000	55.880	87.885	34054.4	18.30	111.76	65	52	1510.8
10.00		0.5000	54.730	86.060	31976.7	17.89	109.46	65	52	1479.7
15.00		0.5000	53.580	84.235	29985.2	17.48	107.16	65	52	1448.7
20.00		0.5000	52.430	82.410	28078.2	17.08	104.86	65	52	1417.6
25.00		0.5000	51.280	80.585	26253.8	16.67	102.56	65	52	1386.6
30.00		0.5000	50.130	78.760	24510.2	16.27	100.26	65	52	1355.5
35.00		0.5000	48.980	76.935	22845.6	15.86	97.96	65	52	1324.5
38.75	Bot - Section 2	0.5000	48.117	75.566	21647.8	15.56	96.23	65	52	973.0
40.00		0.5000	47.830	75.110	21258.1	15.46	95.66	65	52	606.4
45.00	Top - Section 1	0.4375	47.555	65.426	18351.4	17.76	108.70	65	52	2389.1
50.00		0.4375	46.405	63.829	17040.2	17.29	106.07	65	52	1099.6
55.00		0.4375	45.255	62.232	15793.0	16.83	103.44	65	52	1072.4
60.00		0.4375	44.105	60.636	14608.2	16.37	100.81	65	52	1045.2
65.00		0.4375	42.955	59.039	13484.2	15.90	98.18	65	52	1018.1
70.00		0.4375	41.805	57.442	12419.4	15.44	95.55	65	52	990.9
75.00		0.4375	40.655	55.845	11412.2	14.97	92.93	65	52	963.7
78.75	Bot - Section 3	0.4375	39.792	54.647	10693.6	14.63	90.95	65	52	705.0
80.00		0.4375	39.505	54.248	10460.9	14.51	90.30	65	52	400.2
83.75	Top - Section 2	0.3125	39.267	38.637	7407.7	20.75	125.66	65	52	1183.1
85.00		0.3125	38.980	38.352	7244.9	20.58	124.74	65	52	163.7
90.00		0.3125	37.830	37.211	6617.5	19.93	121.06	65	52	642.8
95.00		0.3125	36.680	36.071	6027.5	19.29	117.38	65	52	623.4
100.00		0.3125	35.530	34.930	5473.6	18.64	113.70	65	52	604.0
105.00		0.3125	34.380	33.789	4954.7	17.99	110.02	65	52	584.6
110.00		0.3125	33.230	32.649	4469.7	17.34	106.34	65	52	565.2
115.00		0.3125	32.080	31.508	4017.4	16.69	102.66	65	52	545.8
119.00	Bot - Section 4	0.3125	31.160	30.596	3678.4	16.17	99.71	65	52	422.7
120.00		0.3125	30.930	30.368	3596.7	16.04	98.98	65	52	188.2
123.00	Top - Section 3	0.2500	30.740	24.193	2841.6	20.27	122.96	60	52	556.3
125.00		0.2500	30.280	23.828	2714.9	19.95	121.12	60	48	163.4
130.00		0.2500	29.130	22.915	2414.8	19.14	116.52	60	48	397.6
135.00		0.2500	27.980	22.003	2137.6	18.32	111.92	60	48	382.1
140.00		0.2500	26.830	21.090	1882.6	17.51	107.32	60	48	366.6
145.00		0.2500	25.680	20.178	1648.6	16.70	102.72	60	48	351.1
147.00		0.2500	25.220	19.813	1560.8	16.38	100.88	60	48	136.1
150.00		0.2500	24.530	19.265	1434.9	15.89	98.12	60	48	199.5
155.00		0.2500	23.380	18.353	1240.5	15.08	93.52	60	48	320.0
157.00		0.2500	22.920	17.988	1168.0	14.76	91.68	60	48	123.7
160.00		0.2500	22.230	17.441	1064.6	14.27	88.92	60	48	180.8
161.00	Top - Section 4	0.0000	0.000	0.000	0.0	NAN	NAN	0	0	59.0
161.00	Bot - Section 5	0.2500	22.000	17.258	1031.5	14.11	88.00	60	48	
165.00		0.1875	21.080	12.433	685.7	18.41	112.43	60	48	173.0
170.00		0.1875	19.930	11.749	578.6	17.33	106.29	60	48	205.7
175.00		0.1875	18.780	11.064	483.2	16.25	100.16	60	48	194.1
										30519.4

Wind Loading - Shaft

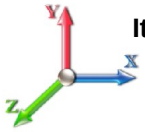
Structure:	CT01915-S-SBA	**Code:**	EIA/TIA-222-F	10/13/2015	
Site Name:	South Brooklyn	**Exposure:**	C		
Height:	175.00 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 7	

Tower Engineering Solutions

Load Case: 85 mph Wind with 0" Ice

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		0.00	1.00	18.496	31.26	403.96	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		0.00	1.00	18.496	31.26	395.82	0.650	0.000	5.00	23.523	15.29	477.9	0.0	1510.8
10.00		0.00	1.00	18.496	31.26	387.67	0.650	0.000	5.00	23.044	14.98	468.2	0.0	1479.7
15.00		0.00	1.00	18.496	31.26	379.52	0.650	0.000	5.00	22.565	14.67	458.5	0.0	1448.7
20.00		0.00	1.00	18.496	31.26	371.38	0.650	0.000	5.00	22.085	14.36	448.7	0.0	1417.6
25.00		0.00	1.00	18.496	31.26	363.23	0.650	0.000	5.00	21.606	14.04	439.0	0.0	1386.6
30.00		0.00	1.00	18.496	31.26	355.09	0.650	0.000	5.00	21.127	13.73	429.3	0.0	1355.5
35.00		0.00	1.02	18.810	31.79	349.87	0.650	0.000	5.00	20.648	13.42	426.6	0.0	1324.5
38.75	Bot - Section 2	0.00	1.05	19.365	32.73	348.74	0.650	0.000	3.75	15.171	9.86	322.7	0.0	973.0
40.00		0.00	1.06	19.541	33.02	348.24	0.650	0.000	1.25	5.088	3.31	109.2	0.0	606.4
45.00	Top - Section 1	0.00	1.09	20.210	34.15	345.63	0.650	0.000	5.00	20.054	13.04	445.2	0.0	2389.1
50.00		0.00	1.13	20.827	35.20	348.80	0.650	0.000	5.00	19.575	12.72	447.9	0.0	1099.6
55.00		0.00	1.16	21.402	36.17	344.82	0.650	0.000	5.00	19.096	12.41	449.0	0.0	1072.4
60.00		0.00	1.19	21.941	37.08	340.26	0.650	0.000	5.00	18.617	12.10	448.7	0.0	1045.2
65.00		0.00	1.21	22.449	37.94	335.20	0.650	0.000	5.00	18.137	11.79	447.3	0.0	1018.1
70.00		0.00	1.24	22.929	38.75	329.70	0.650	0.000	5.00	17.658	11.48	444.8	0.0	990.9
75.00		0.00	1.26	23.386	39.52	323.81	0.650	0.000	5.00	17.179	11.17	441.3	0.0	963.7
78.75	Bot - Section 3	0.00	1.28	23.714	40.08	319.15	0.650	0.000	3.75	12.570	8.17	327.4	0.0	705.0
80.00		0.00	1.29	23.821	40.26	317.56	0.650	0.000	1.25	4.195	2.73	109.8	0.0	400.2
83.75	Top - Section 2	0.00	1.30	24.135	40.79	312.67	0.650	0.000	3.75	12.406	8.06	328.9	0.0	1183.1
85.00		0.00	1.31	24.237	40.96	316.07	0.650	0.000	1.25	4.075	2.65	108.5	0.0	163.7
90.00		0.00	1.33	24.636	41.63	309.26	0.650	0.000	5.00	16.002	10.40	433.1	0.0	642.8
95.00		0.00	1.35	25.020	42.28	302.18	0.650	0.000	5.00	15.523	10.09	426.6	0.0	623.4
100.00		0.00	1.37	25.389	42.91	294.86	0.650	0.000	5.00	15.044	9.78	419.6	0.0	604.0
105.00		0.00	1.39	25.745	43.51	287.31	0.650	0.000	5.00	14.565	9.47	411.9	0.0	584.6
110.00		0.00	1.41	26.090	44.09	279.55	0.650	0.000	5.00	14.085	9.16	403.7	0.0	565.2
115.00		0.00	1.43	26.423	44.66	271.60	0.650	0.000	5.00	13.606	8.84	394.9	0.0	545.8
119.00	Bot - Section 4	0.00	1.44	26.683	45.09	265.10	0.650	0.000	4.00	10.540	6.85	308.9	0.0	422.7
120.00		0.00	1.45	26.747	45.20	263.46	0.650	0.000	1.00	2.629	1.71	77.2	0.0	188.2
123.00	Top - Section 3	0.00	1.46	26.936	45.52	258.49	0.650	0.000	3.00	7.771	5.05	229.9	0.0	556.3
125.00		0.00	1.46	27.060	45.73	259.43	0.650	0.000	2.00	5.085	3.31	151.2	0.0	163.4
130.00		0.00	1.48	27.365	46.25	250.98	0.650	0.000	5.00	12.377	8.05	372.1	0.0	397.6
135.00		0.00	1.50	27.662	46.75	242.38	0.650	0.000	5.00	11.898	7.73	361.5	0.0	382.1
140.00	Appurtenance(s)	0.00	1.51	27.951	47.24	233.62	0.650	0.000	5.00	11.419	7.42	350.6	0.0	366.6
145.00		0.00	1.53	28.233	47.71	224.73	0.650	0.000	5.00	10.940	7.11	339.3	0.0	351.1
147.00	Appurtenance(s)	0.00	1.53	28.343	47.90	221.14	0.650	0.000	2.00	4.242	2.76	132.1	0.0	136.1
150.00		0.00	1.54	28.507	48.18	215.71	0.650	0.000	3.00	6.219	4.04	194.7	0.0	199.5
155.00		0.00	1.56	28.776	48.63	206.56	0.650	0.000	5.00	9.981	6.49	315.5	0.0	320.0
157.00	Appurtenance(s)	0.00	1.56	28.881	48.81	202.87	0.650	0.000	2.00	3.858	2.51	122.4	0.0	123.7
160.00		0.00	1.57	29.038	49.07	197.30	0.650	0.000	3.00	5.644	3.67	180.0	0.0	180.8
161.00	Top - Section 4	0.00	1.57	29.090	49.16	195.43	0.650	0.000	1.00	1.843	1.20	58.9	0.0	59.0
165.00		0.00	1.58	29.294	49.51	187.91	0.650	0.000	4.00	7.180	4.67	231.1	0.0	173.0
170.00		0.00	1.60	29.545	49.93	178.42	0.650	0.000	5.00	8.544	5.55	277.3	0.0	205.7
175.00	Appurtenance(s)	0.00	1.61	29.791	50.35	168.82	0.650	0.000	5.00	8.065	5.24	263.9	0.0	194.1
								Totals:	**175.00**			**14,035.3**		**30,519.4**

Discrete Appurtenance Forces

Structure:	CT01915-S-SB	**Code:**	EIA/TIA-222-F	10/13/2015	
Site Name:	South Brooklyn	**Exposure:**	C		
Height:	175.00 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 8	

Tower Engineering Solutions

Load Case: 85 mph Wind with 0" Ice

Dead Load Factor 1.00

Wind Load Factor 1.00

Iterations: 25

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa Factor	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	175.00	6' Lightning rod	1	29.791	50.347	1.00	0.38	6.50	0.000	0.000	19.13	0.00	0.00
2	175.00	RRH2x40-AWS	3	29.791	50.347	0.82	6.20	132.00	0.000	0.000	312.11	0.00	0.00
3	175.00	Low Profile Platform-flat	1	29.791	50.347	1.00	25.00	1200.00	0.000	0.000	1258.67	0.00	0.00
4	175.00	FD9R6004/2C-3L (3.1 lbs)	6	29.791	50.347	0.62	1.34	18.60	0.000	0.000	67.42	0.00	0.00
5	175.00	DB-T1-6Z-8AB-0Z	1	29.791	50.347	1.00	5.60	18.90	0.000	0.000	281.94	0.00	0.00
6	175.00	BXA-70080/6CF	3	29.791	50.347	0.88	15.42	54.00	0.000	0.000	776.23	0.00	0.00
7	175.00	BXA-70063/6CF	3	29.791	50.347	0.74	17.16	51.00	0.000	0.000	863.98	0.00	0.00
8	175.00	BXA-171085/12CF	3	29.791	50.347	0.88	12.59	45.00	0.000	0.000	634.01	0.00	0.00
9	175.00	WBX065X19R050	3	29.791	50.347	0.78	12.21	62.70	0.000	0.000	614.98	0.00	0.00
10	157.00	Low Profile Platform-flat	1	28.881	48.809	1.00	25.00	1200.00	0.000	0.000	1220.23	0.00	0.00
11	157.00	60" x 6.1" x 2.6" Panel	6	28.881	48.809	0.81	18.23	180.00	0.000	0.000	889.55	0.00	0.00
12	147.00	Low Profile Platform-flat	1	28.343	47.900	1.00	25.00	1200.00	0.000	0.000	1197.50	0.00	0.00
13	147.00	ALP 9212	9	28.343	47.900	1.00	51.84	240.30	0.000	0.000	2483.14	0.00	0.00
14	140.00	Platform w/ Hand Rails (flat)	1	27.951	47.237	1.00	40.00	2000.00	0.000	0.000	1889.48	0.00	0.00
15	140.00	LNX-6515DS-VTM	3	27.951	47.237	0.84	28.85	150.90	0.000	0.000	1362.98	0.00	0.00
16	140.00	KRY 112 144/1	3	27.951	47.237	0.73	0.90	33.00	0.000	0.000	42.41	0.00	0.00
17	140.00	APXV18-206516S-C-A20	3	27.951	47.237	0.78	8.47	56.10	0.000	0.000	400.14	0.00	0.00
18	140.00	782 11056	3	27.951	47.237	0.78	0.40	5.40	0.000	0.000	18.79	0.00	0.00
						Totals:		**6,654.40**			**14,332.70**		

Total Applied Force Summary

Structure:	CT01915-S-SB	**Code:**	EIA/TIA-222-F	10/13/2015	
Site Name:	South Brooklyn	**Exposure:**	C		
Height:	175.00 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 9	

Tower Engineering Solutions

Load Case: 85 mph Wind with 0" Ice

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		477.94	1548.09	0.00	0.00
10.00		468.20	1517.04	0.00	0.00
15.00		458.46	1485.99	0.00	0.00
20.00		448.73	1454.94	0.00	0.00
25.00		438.99	1423.89	0.00	0.00
30.00		429.26	1392.84	0.00	0.00
35.00		426.63	1361.79	0.00	0.00
38.75		322.73	1000.96	0.00	0.00
40.00		109.23	615.70	0.00	0.00
45.00		445.21	2426.43	0.00	0.00
50.00		447.86	1136.87	0.00	0.00
55.00		448.95	1109.70	0.00	0.00
60.00		448.71	1082.53	0.00	0.00
65.00		447.27	1055.36	0.00	0.00
70.00		444.77	1028.19	0.00	0.00
75.00		441.32	1001.03	0.00	0.00
78.75		327.44	732.94	0.00	0.00
80.00		109.78	409.50	0.00	0.00
83.75		328.90	1211.05	0.00	0.00
85.00		108.50	173.06	0.00	0.00
90.00		433.06	680.11	0.00	0.00
95.00		426.63	660.71	0.00	0.00
100.00		419.57	641.30	0.00	0.00
105.00		411.91	621.89	0.00	0.00
110.00		403.68	602.49	0.00	0.00
115.00		394.94	583.08	0.00	0.00
119.00		308.94	452.49	0.00	0.00
120.00		77.24	195.68	0.00	0.00
123.00		229.94	578.65	0.00	0.00
125.00		151.16	178.32	0.00	0.00
130.00		372.07	434.94	0.00	0.00
135.00		361.54	419.42	0.00	0.00
140.00	(13) appurtenances	4064.40	2649.29	0.00	0.00
145.00		339.27	383.17	0.00	0.00
147.00	(10) appurtenances	3812.71	1589.22	0.00	0.00
150.00		194.74	215.60	0.00	0.00
155.00		315.51	346.92	0.00	0.00
157.00	(7) appurtenances	2232.20	1514.42	0.00	0.00
160.00		180.03	193.85	0.00	0.00
161.00		58.89	63.38	0.00	0.00
165.00		231.05	190.32	0.00	0.00
170.00		277.29	227.42	0.00	0.00
175.00	(24) appurtenances	5092.38	1804.47	0.00	0.00
	Totals:	**28,368.02**	**38,395.05**	**0.00**	**0.00**

Resulting Forces and Deflections

Structure:	CT01915-S-SB	**Code:**	EIA/TIA-222-F	10/13/2015	
Site Name:	South Brooklyn	**Exposure:**	C		
Height:	175.00 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 10	

Tower Engineering Solutions

Load Case: 85 mph Wind with 0" Ice

Dead Load Factor 1.00

Wind Load Factor 1.00

Iterations: 25

Elev (ft)	Lateral FX (-) (kips)	Axial FY (-) (kips)	Lateral FZ (kips)	Moment MX (ft-kips)	Torsion MY (ft-kips)	Moment MZ (ft-kips)	Deflect X (in)	Deflect Z (in)	Deflect Resultant (in)	Rotation Sway (deg)	Rotation Twist (deg)
0.00	-28.413	-38.361	0.000	0.000	0.000	-3501.7	0.000	0.000	0.000	0.000	0.000
5.00	-28.020	-36.747	0.000	0.000	0.000	-3359.7	-0.072	0.000	0.072	-0.135	0.000
10.00	-27.632	-35.165	0.000	0.000	0.000	-3219.6	-0.287	0.000	0.287	-0.272	0.000
15.00	-27.248	-33.614	0.000	0.000	0.000	-3081.4	-0.647	0.000	0.647	-0.412	0.000
20.00	-26.868	-32.095	0.000	0.000	0.000	-2945.2	-1.156	0.000	1.156	-0.555	0.000
25.00	-26.492	-30.608	0.000	0.000	0.000	-2810.8	-1.816	0.000	1.816	-0.701	0.000
30.00	-26.120	-29.153	0.000	0.000	0.000	-2678.4	-2.630	0.000	2.630	-0.850	0.000
35.00	-25.737	-27.738	0.000	0.000	0.000	-2547.8	-3.601	0.000	3.601	-1.001	0.000
38.75	-25.432	-26.709	0.000	0.000	0.000	-2451.3	-4.435	0.000	4.435	-1.118	0.000
40.00	-25.356	-26.052	0.000	0.000	0.000	-2419.5	-4.733	0.000	4.733	-1.158	0.000
45.00	-24.924	-23.566	0.000	0.000	0.000	-2292.7	-6.030	0.000	6.030	-1.316	0.000
50.00	-24.514	-22.369	0.000	0.000	0.000	-2168.1	-7.494	0.000	7.494	-1.477	0.000
55.00	-24.101	-21.197	0.000	0.000	0.000	-2045.5	-9.135	0.000	9.135	-1.652	0.000
60.00	-23.683	-20.054	0.000	0.000	0.000	-1925.0	-10.961	0.000	10.961	-1.831	0.000
65.00	-23.261	-18.940	0.000	0.000	0.000	-1806.6	-12.976	0.000	12.976	-2.013	0.000
70.00	-22.837	-17.855	0.000	0.000	0.000	-1690.3	-15.183	0.000	15.183	-2.197	0.000
75.00	-22.404	-16.808	0.000	0.000	0.000	-1576.1	-17.584	0.000	17.584	-2.384	0.000
78.75	-22.072	-16.053	0.000	0.000	0.000	-1492.1	-19.514	0.000	19.514	-2.528	0.000
80.00	-21.971	-15.611	0.000	0.000	0.000	-1464.5	-20.183	0.000	20.183	-2.577	0.000
83.75	-21.611	-14.380	0.000	0.000	0.000	-1382.1	-22.265	0.000	22.265	-2.722	0.000
85.00	-21.533	-14.155	0.000	0.000	0.000	-1355.1	-22.984	0.000	22.984	-2.772	0.000
90.00	-21.126	-13.403	0.000	0.000	0.000	-1247.4	-26.024	0.000	26.024	-3.027	0.000
95.00	-20.720	-12.674	0.000	0.000	0.000	-1141.8	-29.331	0.000	29.331	-3.284	0.000
100.00	-20.317	-11.968	0.000	0.000	0.000	-1038.2	-32.907	0.000	32.907	-3.542	0.000
105.00	-19.917	-11.285	0.000	0.000	0.000	-936.66	-36.752	0.000	36.752	-3.798	0.000
110.00	-19.520	-10.625	0.000	0.000	0.000	-837.08	-40.865	0.000	40.865	-4.053	0.000
115.00	-19.123	-9.998	0.000	0.000	0.000	-739.48	-45.241	0.000	45.241	-4.304	0.000
119.00	-18.801	-9.530	0.000	0.000	0.000	-662.99	-48.930	0.000	48.930	-4.502	0.000
120.00	-18.725	-9.309	0.000	0.000	0.000	-644.19	-49.878	0.000	49.878	-4.553	0.000
123.00	-18.467	-8.711	0.000	0.000	0.000	-588.01	-52.783	0.000	52.783	-4.699	0.000
125.00	-18.329	-8.487	0.000	0.000	0.000	-551.08	-54.771	0.000	54.771	-4.796	0.000
130.00	-17.957	-8.006	0.000	0.000	0.000	-459.44	-59.932	0.000	59.932	-5.060	0.000
135.00	-17.590	-7.550	0.000	0.000	0.000	-369.65	-65.360	0.000	65.360	-5.304	0.000
140.00	-13.312	-5.250	0.000	0.000	0.000	-281.71	-71.028	0.000	71.028	-5.521	0.000
145.00	-12.947	-4.874	0.000	0.000	0.000	-215.15	-76.905	0.000	76.905	-5.709	0.000
147.00	-9.000	-3.661	0.000	0.000	0.000	-189.25	-79.309	0.000	79.309	-5.779	0.000
150.00	-8.792	-3.448	0.000	0.000	0.000	-162.25	-82.965	0.000	82.965	-5.875	0.000
155.00	-8.447	-3.122	0.000	0.000	0.000	-118.30	-89.185	0.000	89.185	-6.014	0.000
157.00	-6.070	-1.845	0.000	0.000	0.000	-101.40	-91.711	0.000	91.711	-6.064	0.000
160.00	-5.871	-1.667	0.000	0.000	0.000	-83.199	-95.536	0.000	95.536	-6.132	0.000
161.00	-5.807	-1.605	0.000	0.000	0.000	-77.328	-96.821	0.000	96.821	-6.153	0.000
165.00	-5.559	-1.433	0.000	0.000	0.000	-54.098	-101.99	0.000	101.999	-6.226	0.000
170.00	-5.260	-1.232	0.000	0.000	0.000	-26.301	-108.55	0.000	108.556	-6.309	0.000
175.00	-5.092	0.000	0.000	0.000	0.000	0.000	0.000	0.000	115.174	-6.341	0.000

Resulting Stresses

Structure:	CT01915-S-SBA	**Code:**	EIA/TIA-222-F	10/13/2015	
Site Name:	South Brooklyn	**Exposure:**	C		
Height:	175.00 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 11	

Tower Engineering Solutions

Load Case: 85 mph Wind with 0" Ice

Dead Load Factor 1.00

Wind Load Factor 1.00

Iterations: 25

Applied Stresses

Elev (ft)	fa Axial (Y) (ksi)	fvx Shear (X) (ksi)	fvz Shear (Z) (ksi)	fvt Torsion (ksi)	fbx Bending (X) (ksi)	fbz Bending (Z) (ksi)	fb Combined (ksi)	Fb Allow Stress (ksi)	f/Fb Stress Ratio
0.00	0.43	0.64	0.00	0.00	0.00	33.59	34.04	52.0	0.655
5.00	0.42	0.64	0.00	0.00	0.00	33.59	34.02	52.0	0.655
10.00	0.41	0.65	0.00	0.00	0.00	33.57	34.00	52.0	0.654
15.00	0.40	0.65	0.00	0.00	0.00	33.55	33.96	52.0	0.653
20.00	0.39	0.66	0.00	0.00	0.00	33.51	33.91	52.0	0.652
25.00	0.38	0.66	0.00	0.00	0.00	33.45	33.85	52.0	0.651
30.00	0.37	0.67	0.00	0.00	0.00	33.38	33.77	52.0	0.650
35.00	0.36	0.67	0.00	0.00	0.00	33.28	33.66	52.0	0.648
38.75	0.35	0.68	0.00	0.00	0.00	33.20	33.57	52.0	0.646
40.00	0.35	0.68	0.00	0.00	0.00	33.17	33.53	52.0	0.645
45.00	0.36	0.77	0.00	0.00	0.00	36.20	36.58	52.0	0.704
50.00	0.35	0.77	0.00	0.00	0.00	35.97	36.35	52.0	0.699
55.00	0.34	0.78	0.00	0.00	0.00	35.71	36.08	52.0	0.694
60.00	0.33	0.79	0.00	0.00	0.00	35.41	35.77	52.0	0.688
65.00	0.32	0.79	0.00	0.00	0.00	35.06	35.41	52.0	0.681
70.00	0.31	0.80	0.00	0.00	0.00	34.67	35.00	52.0	0.673
75.00	0.30	0.81	0.00	0.00	0.00	34.21	34.54	52.0	0.664
78.75	0.29	0.81	0.00	0.00	0.00	33.83	34.15	52.0	0.657
80.00	0.29	0.82	0.00	0.00	0.00	33.70	34.01	52.0	0.654
83.75	0.37	1.13	0.00	0.00	0.00	44.64	45.05	52.0	0.867
85.00	0.37	1.13	0.00	0.00	0.00	44.42	44.83	52.0	0.863
90.00	0.36	1.14	0.00	0.00	0.00	43.45	43.85	52.0	0.844
95.00	0.35	1.16	0.00	0.00	0.00	42.34	42.73	52.0	0.822
100.00	0.34	1.17	0.00	0.00	0.00	41.06	41.45	52.0	0.797
105.00	0.33	1.19	0.00	0.00	0.00	39.60	39.99	52.0	0.769
110.00	0.33	1.20	0.00	0.00	0.00	37.92	38.30	52.0	0.737
115.00	0.32	1.22	0.00	0.00	0.00	35.98	36.36	52.0	0.699
119.00	0.31	1.24	0.00	0.00	0.00	34.22	34.60	52.0	0.666
120.00	0.31	1.24	0.00	0.00	0.00	33.75	34.13	52.0	0.657
123.00	0.36	1.54	0.00	0.00	0.00	38.76	39.21	52.0	0.754
125.00	0.36	1.55	0.00	0.00	0.00	37.45	37.90	48.0	0.790
130.00	0.35	1.58	0.00	0.00	0.00	33.77	34.23	48.0	0.713
135.00	0.34	1.61	0.00	0.00	0.00	29.48	29.95	48.0	0.624
140.00	0.25	1.27	0.00	0.00	0.00	24.46	24.81	48.0	0.517
145.00	0.24	1.29	0.00	0.00	0.00	20.42	20.78	48.0	0.433
147.00	0.18	0.92	0.00	0.00	0.00	18.63	18.88	48.0	0.394
150.00	0.18	0.92	0.00	0.00	0.00	16.90	17.15	48.0	0.357
155.00	0.17	0.93	0.00	0.00	0.00	13.58	13.85	48.0	0.289
157.00	0.10	0.68	0.00	0.00	0.00	12.12	12.28	48.0	0.256
160.00	0.10	0.68	0.00	0.00	0.00	10.58	10.75	48.0	0.224
161.00	0.09	0.68	0.00	0.00	0.00	10.05	10.21	48.0	0.213
161.00	0.09	0.68	0.00	0.00	0.00	10.05	10.21	48.0	0.281
165.00	0.12	0.90	0.00	0.00	0.00	10.13	10.37	48.0	0.216
170.00	0.10	0.90	0.00	0.00	0.00	5.52	5.84	48.0	0.122
175.00	0.00	0.93	0.00	0.00	0.00	0.00	1.61	48.0	0.033

Wind Loading - Shaft

Structure: CT01915-S-SBA
Site Name: South Brooklyn
Height: 175.00 (ft)
Base Elev: 0.000 (ft)

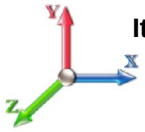
Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

10/13/2015

Tower Engineering Solutions

Load Case: 73.61 mph Wind with 0.5" Ice

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		0.00	1.00	13.871	23.44	349.83	0.650	0.500	0.00	0.000	0.00	0.0	0.0	0.0
5.00		0.00	1.00	13.871	23.44	342.78	0.650	0.500	5.00	23.940	15.56	364.8	174.0	1684.8
10.00		0.00	1.00	13.871	23.44	335.72	0.650	0.500	5.00	23.460	15.25	357.5	170.4	1650.2
15.00		0.00	1.00	13.871	23.44	328.67	0.650	0.500	5.00	22.981	14.94	350.2	166.9	1615.6
20.00		0.00	1.00	13.871	23.44	321.61	0.650	0.500	5.00	22.502	14.63	342.9	163.3	1581.0
25.00		0.00	1.00	13.871	23.44	314.56	0.650	0.500	5.00	22.023	14.31	335.6	159.8	1546.4
30.00		0.00	1.00	13.871	23.44	307.51	0.650	0.500	5.00	21.544	14.00	328.3	156.2	1511.8
35.00		0.00	1.02	14.106	23.84	302.99	0.650	0.500	5.00	21.065	13.69	326.4	152.7	1477.2
38.75	Bot - Section 2	0.00	1.05	14.523	24.54	302.01	0.650	0.500	3.75	15.484	10.06	247.0	112.5	1085.5
40.00		0.00	1.06	14.655	24.77	301.57	0.650	0.500	1.25	5.193	3.38	83.6	38.0	644.3
45.00	Top - Section 1	0.00	1.09	15.156	25.61	299.32	0.650	0.500	5.00	20.471	13.31	340.8	148.3	2537.4
50.00		0.00	1.13	15.620	26.40	302.06	0.650	0.500	5.00	19.992	12.99	343.0	144.7	1244.3
55.00		0.00	1.16	16.051	27.13	298.62	0.650	0.500	5.00	19.512	12.68	344.0	141.2	1213.6
60.00		0.00	1.19	16.455	27.81	294.67	0.650	0.500	5.00	19.033	12.37	344.0	137.6	1182.9
65.00		0.00	1.21	16.836	28.45	290.29	0.650	0.500	5.00	18.554	12.06	343.1	134.1	1152.2
70.00		0.00	1.24	17.196	29.06	285.52	0.650	0.500	5.00	18.075	11.75	341.4	130.5	1121.4
75.00		0.00	1.26	17.538	29.64	280.42	0.650	0.500	5.00	17.596	11.44	339.0	127.0	1090.7
78.75	Bot - Section 3	0.00	1.28	17.784	30.06	276.39	0.650	0.500	3.75	12.882	8.37	251.7	93.2	798.2
80.00		0.00	1.29	17.865	30.19	275.01	0.650	0.500	1.25	4.299	2.79	84.4	31.3	431.5
83.75	Top - Section 2	0.00	1.30	18.100	30.59	270.77	0.650	0.500	3.75	12.718	8.27	252.9	92.0	1275.1
85.00		0.00	1.31	18.177	30.72	273.71	0.650	0.500	1.25	4.180	2.72	83.5	30.5	194.2
90.00		0.00	1.33	18.476	31.22	267.82	0.650	0.500	5.00	16.419	10.67	333.2	118.3	761.1
95.00		0.00	1.35	18.764	31.71	261.69	0.650	0.500	5.00	15.940	10.36	328.5	114.7	738.1
100.00		0.00	1.37	19.041	32.18	255.35	0.650	0.500	5.00	15.460	10.05	323.4	111.2	715.2
105.00		0.00	1.39	19.308	32.63	248.81	0.650	0.500	5.00	14.981	9.74	317.7	107.6	692.2
110.00		0.00	1.41	19.566	33.07	242.09	0.650	0.500	5.00	14.502	9.43	311.7	104.1	669.3
115.00		0.00	1.43	19.816	33.49	235.20	0.650	0.500	5.00	14.023	9.11	305.3	100.5	646.3
119.00	Bot - Section 4	0.00	1.44	20.011	33.82	229.58	0.650	0.500	4.00	10.873	7.07	239.0	78.2	500.8
120.00		0.00	1.45	20.059	33.90	228.16	0.650	0.500	1.00	2.712	1.76	59.8	19.7	207.9
123.00	Top - Section 3	0.00	1.46	20.201	34.14	223.85	0.650	0.500	3.00	8.021	5.21	178.0	57.8	614.1
125.00		0.00	1.46	20.294	34.30	224.67	0.650	0.500	2.00	5.252	3.41	117.1	38.0	201.4
130.00		0.00	1.48	20.523	34.68	217.35	0.650	0.500	5.00	12.794	8.32	288.4	91.4	489.1
135.00		0.00	1.50	20.745	35.06	209.90	0.650	0.500	5.00	12.315	8.00	280.6	87.9	470.0
140.00	Appurtenance(s)	0.00	1.51	20.962	35.43	202.32	0.650	0.500	5.00	11.835	7.69	272.5	84.3	450.9
145.00		0.00	1.53	21.173	35.78	194.62	0.650	0.500	5.00	11.356	7.38	264.1	80.8	431.9
147.00	Appurtenance(s)	0.00	1.53	21.256	35.92	191.51	0.650	0.500	2.00	4.408	2.87	102.9	31.7	167.8
150.00		0.00	1.54	21.379	36.13	186.81	0.650	0.500	3.00	6.469	4.20	151.9	46.3	245.8
155.00		0.00	1.56	21.581	36.47	178.89	0.650	0.500	5.00	10.398	6.76	246.5	73.7	393.7
157.00	Appurtenance(s)	0.00	1.56	21.660	36.60	175.69	0.650	0.500	2.00	4.025	2.62	95.8	28.9	152.6
160.00		0.00	1.57	21.777	36.80	170.86	0.650	0.500	3.00	5.894	3.83	141.0	42.1	222.9
161.00	Top - Section 4	0.00	1.57	21.816	36.87	169.24	0.650	0.500	1.00	1.926	1.25	46.2	13.9	72.9
165.00		0.00	1.58	21.969	37.13	162.73	0.650	0.500	4.00	7.513	4.88	181.3	53.3	226.2
170.00		0.00	1.60	22.158	37.45	154.51	0.650	0.500	5.00	8.960	5.82	218.1	63.0	268.8
175.00	Appurtenance(s)	0.00	1.61	22.342	37.76	146.20	0.650	0.500	5.00	8.481	5.51	208.2	59.5	253.6
								Totals:	**175.00**			**10,815.3**		**34,630.7**

Discrete Appurtenance Forces

Structure:	CT01915-S-SB	**Code:**	EIA/TIA-222-F	10/13/2015	
Site Name:	South Brooklyn	**Exposure:**	C		
Height:	175.00 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 13	

Tower Engineering Solutions

Load Case: 73.61 mph Wind with 0.5" Ice

Dead Load Factor 1.00

Wind Load Factor 1.00

Iterations: 25

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa Factor	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	175.00	6' Lightning rod	1	22.342	37.758	1.00	0.98	11.80	0.000	0.000	37.00	0.00	0.00
2	175.00	RRH2x40-AWS	3	22.342	37.758	0.83	6.75	184.20	0.000	0.000	254.79	0.00	0.00
3	175.00	Low Profile Platform-flat	1	22.342	37.758	1.00	31.00	1500.00	0.000	0.000	1170.49	0.00	0.00
4	175.00	FD9R6004/2C-3L (3.1 lbs)	6	22.342	37.758	0.65	1.72	32.40	0.000	0.000	64.79	0.00	0.00
5	175.00	DB-T1-6Z-8AB-0Z	1	22.342	37.758	1.00	5.87	46.00	0.000	0.000	221.64	0.00	0.00
6	175.00	BXA-70080/6CF	3	22.342	37.758	0.89	16.47	162.00	0.000	0.000	622.02	0.00	0.00
7	175.00	BXA-70063/6CF	3	22.342	37.758	0.75	18.43	172.80	0.000	0.000	695.78	0.00	0.00
8	175.00	BXA-171085/12CF	3	22.342	37.758	0.88	13.52	127.20	0.000	0.000	510.37	0.00	0.00
9	175.00	WBX065X19R050	3	22.342	37.758	0.80	13.34	139.20	0.000	0.000	503.84	0.00	0.00
10	157.00	Low Profile Platform-flat	1	21.660	36.605	1.00	31.00	1500.00	0.000	0.000	1134.75	0.00	0.00
11	157.00	60" x 6.1" x 2.6" Panel	6	21.660	36.605	0.81	19.59	302.40	0.000	0.000	716.94	0.00	0.00
12	147.00	Low Profile Platform-flat	1	21.256	35.923	1.00	31.00	1500.00	0.000	0.000	1113.61	0.00	0.00
13	147.00	ALP 9212	9	21.256	35.923	1.00	55.08	646.20	0.000	0.000	1978.64	0.00	0.00
14	140.00	Platform w/ Hand Rails (flat)	1	20.962	35.426	1.00	48.00	2600.00	0.000	0.000	1700.43	0.00	0.00
15	140.00	LNX-6515DS-VTM	3	20.962	35.426	0.84	30.04	347.10	0.000	0.000	1064.13	0.00	0.00
16	140.00	KRY 112 144/1	3	20.962	35.426	0.75	1.10	42.30	0.000	0.000	39.06	0.00	0.00
17	140.00	APXV18-206516S-C-A20	3	20.962	35.426	0.79	9.24	116.10	0.000	0.000	327.44	0.00	0.00
18	140.00	782 11056	3	20.962	35.426	0.82	0.57	12.00	0.000	0.000	20.04	0.00	0.00
						Totals:		**9,441.70**			**12,175.77**		

Total Applied Force Summary

Structure:	CT01915-S-SB	**Code:**	EIA/TIA-222-F	10/13/2015	
Site Name:	South Brooklyn	**Exposure:**	C		
Height:	175.00 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 14	

Tower Engineering Solutions

Load Case: 73.61 mph Wind with 0.5" Ice

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		364.78	1722.06	0.00	0.00
10.00		357.48	1687.46	0.00	0.00
15.00		350.18	1652.86	0.00	0.00
20.00		342.88	1618.27	0.00	0.00
25.00		335.57	1583.67	0.00	0.00
30.00		328.27	1549.07	0.00	0.00
35.00		326.41	1514.47	0.00	0.00
38.75		247.02	1113.48	0.00	0.00
40.00		83.59	653.66	0.00	0.00
45.00		340.83	2574.71	0.00	0.00
50.00		343.02	1281.61	0.00	0.00
55.00		344.04	1250.89	0.00	0.00
60.00		344.04	1220.17	0.00	0.00
65.00		343.14	1189.45	0.00	0.00
70.00		341.43	1158.74	0.00	0.00
75.00		339.00	1128.02	0.00	0.00
78.75		251.67	826.19	0.00	0.00
80.00		84.37	440.85	0.00	0.00
83.75		252.88	1303.08	0.00	0.00
85.00		83.45	203.52	0.00	0.00
90.00		333.23	798.39	0.00	0.00
95.00		328.54	775.43	0.00	0.00
100.00		323.37	752.48	0.00	0.00
105.00		317.75	729.52	0.00	0.00
110.00		311.70	706.57	0.00	0.00
115.00		305.25	683.61	0.00	0.00
119.00		239.02	530.65	0.00	0.00
120.00		59.76	215.38	0.00	0.00
123.00		178.00	636.49	0.00	0.00
125.00		117.08	216.32	0.00	0.00
130.00		288.43	526.37	0.00	0.00
135.00		280.63	507.30	0.00	0.00
140.00	(13) appurtenances	3423.64	3605.73	0.00	0.00
145.00		264.13	463.95	0.00	0.00
147.00	(10) appurtenances	3195.19	2326.87	0.00	0.00
150.00		151.92	261.94	0.00	0.00
155.00		246.49	420.61	0.00	0.00
157.00	(7) appurtenances	1947.46	1965.73	0.00	0.00
160.00		140.99	235.94	0.00	0.00
161.00		46.16	77.26	0.00	0.00
165.00		181.32	243.59	0.00	0.00
170.00		218.10	290.46	0.00	0.00
175.00	(24) appurtenances	4288.87	2650.86	0.00	0.00
	Totals:	**22,991.08**	**45,293.66**	**0.00**	**0.00**

Resulting Forces and Deflections

Structure:	CT01915-S-SB	**Code:**	EIA/TIA-222-F	10/13/2015	
Site Name:	South Brooklyn	**Exposure:**	C		
Height:	175.00 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 15	

Tower Engineering Solutions

Load Case: 73.61 mph Wind with 0.5" Ice

Iterations: 25

Dead Load Factor 1.00

Wind Load Factor 1.00

Elev (ft)	Lateral FX (-) (kips)	Axial FY (-) (kips)	Lateral FZ (kips)	Moment MX (ft-kips)	Torsion MY (ft-kips)	Moment MZ (ft-kips)	Deflect X (in)	Deflect Z (in)	Deflect Resultant (in)	Rotation Sway (deg)	Rotation Twist (deg)
0.00	-23.035	-45.271	0.000	0.000	0.000	-2912.7	0.000	0.000	0.000	0.000	0.000
5.00	-22.755	-43.504	0.000	0.000	0.000	-2797.5	-0.060	0.000	0.060	-0.112	0.000
10.00	-22.477	-41.772	0.000	0.000	0.000	-2683.8	-0.239	0.000	0.239	-0.227	0.000
15.00	-22.201	-40.075	0.000	0.000	0.000	-2571.4	-0.539	0.000	0.539	-0.344	0.000
20.00	-21.928	-38.414	0.000	0.000	0.000	-2460.4	-0.963	0.000	0.963	-0.463	0.000
25.00	-21.657	-36.787	0.000	0.000	0.000	-2350.7	-1.513	0.000	1.513	-0.585	0.000
30.00	-21.388	-35.194	0.000	0.000	0.000	-2242.5	-2.192	0.000	2.192	-0.709	0.000
35.00	-21.107	-33.643	0.000	0.000	0.000	-2135.5	-3.003	0.000	3.003	-0.836	0.000
38.75	-20.880	-32.510	0.000	0.000	0.000	-2056.4	-3.699	0.000	3.699	-0.934	0.000
40.00	-20.832	-31.827	0.000	0.000	0.000	-2030.3	-3.948	0.000	3.948	-0.968	0.000
45.00	-20.513	-29.211	0.000	0.000	0.000	-1926.1	-5.033	0.000	5.033	-1.100	0.000
50.00	-20.213	-27.887	0.000	0.000	0.000	-1823.5	-6.257	0.000	6.257	-1.235	0.000
55.00	-19.910	-26.593	0.000	0.000	0.000	-1722.5	-7.630	0.000	7.630	-1.383	0.000
60.00	-19.602	-25.330	0.000	0.000	0.000	-1622.9	-9.159	0.000	9.159	-1.534	0.000
65.00	-19.291	-24.098	0.000	0.000	0.000	-1524.9	-10.847	0.000	10.847	-1.687	0.000
70.00	-18.977	-22.899	0.000	0.000	0.000	-1428.5	-12.698	0.000	12.698	-1.843	0.000
75.00	-18.653	-21.738	0.000	0.000	0.000	-1333.6	-14.712	0.000	14.712	-2.001	0.000
78.75	-18.401	-20.895	0.000	0.000	0.000	-1263.6	-16.333	0.000	16.333	-2.122	0.000
80.00	-18.330	-20.431	0.000	0.000	0.000	-1240.6	-16.894	0.000	16.894	-2.164	0.000
83.75	-18.054	-19.113	0.000	0.000	0.000	-1171.9	-18.643	0.000	18.643	-2.287	0.000
85.00	-18.006	-18.872	0.000	0.000	0.000	-1149.3	-19.247	0.000	19.247	-2.329	0.000
90.00	-17.708	-18.021	0.000	0.000	0.000	-1059.3	-21.803	0.000	21.803	-2.546	0.000
95.00	-17.409	-17.195	0.000	0.000	0.000	-970.80	-24.586	0.000	24.586	-2.764	0.000
100.00	-17.111	-16.395	0.000	0.000	0.000	-883.76	-27.598	0.000	27.598	-2.983	0.000
105.00	-16.814	-15.620	0.000	0.000	0.000	-798.20	-30.839	0.000	30.839	-3.202	0.000
110.00	-16.518	-14.870	0.000	0.000	0.000	-714.13	-34.307	0.000	34.307	-3.419	0.000
115.00	-16.219	-14.153	0.000	0.000	0.000	-631.54	-38.002	0.000	38.002	-3.633	0.000
119.00	-15.971	-13.609	0.000	0.000	0.000	-566.67	-41.117	0.000	41.117	-3.803	0.000
120.00	-15.917	-13.375	0.000	0.000	0.000	-550.70	-41.918	0.000	41.918	-3.846	0.000
123.00	-15.719	-12.724	0.000	0.000	0.000	-502.95	-44.374	0.000	44.374	-3.971	0.000
125.00	-15.622	-12.473	0.000	0.000	0.000	-471.51	-46.054	0.000	46.054	-4.053	0.000
130.00	-15.341	-11.911	0.000	0.000	0.000	-393.41	-50.420	0.000	50.420	-4.280	0.000
135.00	-15.062	-11.374	0.000	0.000	0.000	-316.70	-55.014	0.000	55.014	-4.489	0.000
140.00	-11.385	-8.020	0.000	0.000	0.000	-241.39	-59.814	0.000	59.814	-4.675	0.000
145.00	-11.097	-7.559	0.000	0.000	0.000	-184.47	-64.794	0.000	64.794	-4.836	0.000
147.00	-7.723	-5.502	0.000	0.000	0.000	-162.28	-66.831	0.000	66.831	-4.896	0.000
150.00	-7.559	-5.240	0.000	0.000	0.000	-139.11	-69.930	0.000	69.930	-4.978	0.000
155.00	-7.283	-4.833	0.000	0.000	0.000	-101.31	-75.204	0.000	75.204	-5.097	0.000
157.00	-5.171	-3.044	0.000	0.000	0.000	-86.752	-77.346	0.000	77.346	-5.140	0.000
160.00	-5.011	-2.819	0.000	0.000	0.000	-71.240	-80.591	0.000	80.591	-5.198	0.000
161.00	-4.960	-2.743	0.000	0.000	0.000	-66.230	-81.680	0.000	81.680	-5.216	0.000
165.00	-4.760	-2.511	0.000	0.000	0.000	-46.390	-86.073	0.000	86.073	-5.279	0.000
170.00	-4.518	-2.238	0.000	0.000	0.000	-22.590	-91.636	0.000	91.636	-5.350	0.000
175.00	-4.289	0.000	0.000	0.000	0.000	0.000	0.000	0.000	97.251	-5.378	0.000

Resulting Stresses

Structure:	CT01915-S-SBA	**Code:**	EIA/TIA-222-F	10/13/2015	
Site Name:	South Brooklyn	**Exposure:**	C		
Height:	175.00 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 16	

Tower Engineering Solutions

Load Case: 73.61 mph Wind with 0.5" Ice

Dead Load Factor 1.00

Wind Load Factor 1.00

Iterations: 25

Applied Stresses

Elev (ft)	fa Axial (Y) (ksi)	fvx Shear (X) (ksi)	fvz Shear (Z) (ksi)	fvt Torsion (ksi)	fbx Bending (X) (ksi)	fbz Bending (Z) (ksi)	fb Combined (ksi)	Fb Allow Stress (ksi)	f/Fb Stress Ratio
0.00	0.50	0.52	0.00	0.00	0.00	27.94	28.46	52.0	0.548
5.00	0.50	0.52	0.00	0.00	0.00	27.97	28.48	52.0	0.548
10.00	0.49	0.53	0.00	0.00	0.00	27.99	28.49	52.0	0.548
15.00	0.48	0.53	0.00	0.00	0.00	27.99	28.48	52.0	0.548
20.00	0.47	0.54	0.00	0.00	0.00	27.99	28.47	52.0	0.548
25.00	0.46	0.54	0.00	0.00	0.00	27.97	28.45	52.0	0.547
30.00	0.45	0.55	0.00	0.00	0.00	27.94	28.41	52.0	0.546
35.00	0.44	0.55	0.00	0.00	0.00	27.90	28.35	52.0	0.545
38.75	0.43	0.56	0.00	0.00	0.00	27.85	28.29	52.0	0.544
40.00	0.42	0.56	0.00	0.00	0.00	27.83	28.27	52.0	0.544
45.00	0.45	0.63	0.00	0.00	0.00	30.41	30.88	52.0	0.594
50.00	0.44	0.64	0.00	0.00	0.00	30.26	30.71	52.0	0.591
55.00	0.43	0.64	0.00	0.00	0.00	30.07	30.52	52.0	0.587
60.00	0.42	0.65	0.00	0.00	0.00	29.85	30.29	52.0	0.583
65.00	0.41	0.66	0.00	0.00	0.00	29.60	30.03	52.0	0.578
70.00	0.40	0.67	0.00	0.00	0.00	29.30	29.72	52.0	0.572
75.00	0.39	0.67	0.00	0.00	0.00	28.95	29.36	52.0	0.565
78.75	0.38	0.68	0.00	0.00	0.00	28.65	29.06	52.0	0.559
80.00	0.38	0.68	0.00	0.00	0.00	28.55	28.95	52.0	0.557
83.75	0.49	0.94	0.00	0.00	0.00	37.85	38.38	52.0	0.738
85.00	0.49	0.95	0.00	0.00	0.00	37.68	38.20	52.0	0.735
90.00	0.48	0.96	0.00	0.00	0.00	36.90	37.42	52.0	0.720
95.00	0.48	0.97	0.00	0.00	0.00	35.99	36.51	52.0	0.702
100.00	0.47	0.99	0.00	0.00	0.00	34.95	35.46	52.0	0.682
105.00	0.46	1.00	0.00	0.00	0.00	33.74	34.25	52.0	0.659
110.00	0.46	1.02	0.00	0.00	0.00	32.35	32.85	52.0	0.632
115.00	0.45	1.04	0.00	0.00	0.00	30.73	31.23	52.0	0.601
119.00	0.44	1.05	0.00	0.00	0.00	29.25	29.75	52.0	0.572
120.00	0.44	1.06	0.00	0.00	0.00	28.85	29.35	52.0	0.565
123.00	0.53	1.31	0.00	0.00	0.00	33.15	33.75	52.0	0.649
125.00	0.52	1.32	0.00	0.00	0.00	32.04	32.64	48.0	0.680
130.00	0.52	1.35	0.00	0.00	0.00	28.91	29.53	48.0	0.615
135.00	0.52	1.38	0.00	0.00	0.00	25.26	25.88	48.0	0.539
140.00	0.38	1.09	0.00	0.00	0.00	20.96	21.42	48.0	0.447
145.00	0.37	1.11	0.00	0.00	0.00	17.51	17.98	48.0	0.375
147.00	0.28	0.79	0.00	0.00	0.00	15.98	16.31	48.0	0.340
150.00	0.27	0.79	0.00	0.00	0.00	14.49	14.82	48.0	0.309
155.00	0.26	0.80	0.00	0.00	0.00	11.63	11.98	48.0	0.250
157.00	0.17	0.58	0.00	0.00	0.00	10.37	10.59	48.0	0.221
160.00	0.16	0.58	0.00	0.00	0.00	9.06	9.28	48.0	0.193
161.00	0.16	0.58	0.00	0.00	0.00	8.61	8.82	48.0	0.184
161.00	0.16	0.58	0.00	0.00	0.00	8.61	8.82	48.0	0.243
165.00	0.20	0.77	0.00	0.00	0.00	8.69	8.99	48.0	0.187
170.00	0.19	0.78	0.00	0.00	0.00	4.74	5.11	48.0	0.107
175.00	0.00	0.78	0.00	0.00	0.00	0.00	1.35	48.0	0.028

Wind Loading - Shaft

Structure: CT01915-S-SBA
Site Name: South Brooklyn
Height: 175.00 (ft)
Base Elev: 0.000 (ft)

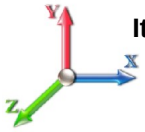
Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

10/13/2015

Tower Engineering Solutions

Load Case: 50 mph Wind with 0" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 24

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		0.00	1.00	6.400	10.82	237.63	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		0.00	1.00	6.400	10.82	232.83	0.650	0.000	5.00	23.523	15.29	165.4	0.0	1510.8
10.00		0.00	1.00	6.400	10.82	228.04	0.650	0.000	5.00	23.044	14.98	162.0	0.0	1479.7
15.00		0.00	1.00	6.400	10.82	223.25	0.650	0.000	5.00	22.565	14.67	158.6	0.0	1448.7
20.00		0.00	1.00	6.400	10.82	218.46	0.650	0.000	5.00	22.085	14.36	155.3	0.0	1417.6
25.00		0.00	1.00	6.400	10.82	213.67	0.650	0.000	5.00	21.606	14.04	151.9	0.0	1386.6
30.00		0.00	1.00	6.400	10.82	208.88	0.650	0.000	5.00	21.127	13.73	148.5	0.0	1355.5
35.00		0.00	1.02	6.509	11.00	205.81	0.650	0.000	5.00	20.648	13.42	147.6	0.0	1324.5
38.75	Bot - Section 2	0.00	1.05	6.701	11.32	205.14	0.650	0.000	3.75	15.171	9.86	111.7	0.0	973.0
40.00		0.00	1.06	6.762	11.43	204.84	0.650	0.000	1.25	5.088	3.31	37.8	0.0	606.4
45.00	Top - Section 1	0.00	1.09	6.993	11.82	203.31	0.650	0.000	5.00	20.054	13.04	154.1	0.0	2389.1
50.00		0.00	1.13	7.207	12.18	205.18	0.650	0.000	5.00	19.575	12.72	155.0	0.0	1099.6
55.00		0.00	1.16	7.406	12.52	202.84	0.650	0.000	5.00	19.096	12.41	155.3	0.0	1072.4
60.00		0.00	1.19	7.592	12.83	200.16	0.650	0.000	5.00	18.617	12.10	155.3	0.0	1045.2
65.00		0.00	1.21	7.768	13.13	197.18	0.650	0.000	5.00	18.137	11.79	154.8	0.0	1018.1
70.00		0.00	1.24	7.934	13.41	193.94	0.650	0.000	5.00	17.658	11.48	153.9	0.0	990.9
75.00		0.00	1.26	8.092	13.68	190.48	0.650	0.000	5.00	17.179	11.17	152.7	0.0	963.7
78.75	Bot - Section 3	0.00	1.28	8.205	13.87	187.74	0.650	0.000	3.75	12.570	8.17	113.3	0.0	705.0
80.00		0.00	1.29	8.242	13.93	186.80	0.650	0.000	1.25	4.195	2.73	38.0	0.0	400.2
83.75	Top - Section 2	0.00	1.30	8.351	14.11	183.92	0.650	0.000	3.75	12.406	8.06	113.8	0.0	1183.1
85.00		0.00	1.31	8.387	14.17	185.92	0.650	0.000	1.25	4.075	2.65	37.5	0.0	163.7
90.00		0.00	1.33	8.525	14.41	181.92	0.650	0.000	5.00	16.002	10.40	149.8	0.0	642.8
95.00		0.00	1.35	8.657	14.63	177.75	0.650	0.000	5.00	15.523	10.09	147.6	0.0	623.4
100.00		0.00	1.37	8.785	14.85	173.45	0.650	0.000	5.00	15.044	9.78	145.2	0.0	604.0
105.00		0.00	1.39	8.908	15.06	169.01	0.650	0.000	5.00	14.565	9.47	142.5	0.0	584.6
110.00		0.00	1.41	9.028	15.26	164.44	0.650	0.000	5.00	14.085	9.16	139.7	0.0	565.2
115.00		0.00	1.43	9.143	15.45	159.76	0.650	0.000	5.00	13.606	8.84	136.7	0.0	545.8
119.00	Bot - Section 4	0.00	1.44	9.233	15.60	155.94	0.650	0.000	4.00	10.540	6.85	106.9	0.0	422.7
120.00		0.00	1.45	9.255	15.64	154.98	0.650	0.000	1.00	2.629	1.71	26.7	0.0	188.2
123.00	Top - Section 3	0.00	1.46	9.320	15.75	152.05	0.650	0.000	3.00	7.771	5.05	79.6	0.0	556.3
125.00		0.00	1.46	9.363	15.82	152.61	0.650	0.000	2.00	5.085	3.31	52.3	0.0	163.4
130.00		0.00	1.48	9.469	16.00	147.64	0.650	0.000	5.00	12.377	8.05	128.7	0.0	397.6
135.00		0.00	1.50	9.572	16.18	142.57	0.650	0.000	5.00	11.898	7.73	125.1	0.0	382.1
140.00	Appurtenance(s)	0.00	1.51	9.672	16.35	137.43	0.650	0.000	5.00	11.419	7.42	121.3	0.0	366.6
145.00		0.00	1.53	9.769	16.51	132.20	0.650	0.000	5.00	10.940	7.11	117.4	0.0	351.1
147.00	Appurtenance(s)	0.00	1.53	9.807	16.57	130.08	0.650	0.000	2.00	4.242	2.76	45.7	0.0	136.1
150.00		0.00	1.54	9.864	16.67	126.89	0.650	0.000	3.00	6.219	4.04	67.4	0.0	199.5
155.00		0.00	1.56	9.957	16.83	121.51	0.650	0.000	5.00	9.981	6.49	109.2	0.0	320.0
157.00	Appurtenance(s)	0.00	1.56	9.994	16.89	119.34	0.650	0.000	2.00	3.858	2.51	42.4	0.0	123.7
160.00		0.00	1.57	10.048	16.98	116.06	0.650	0.000	3.00	5.644	3.67	62.3	0.0	180.8
161.00	Top - Section 4	0.00	1.57	10.066	17.01	114.96	0.650	0.000	1.00	1.843	1.20	20.4	0.0	59.0
165.00		0.00	1.58	10.136	17.13	110.54	0.650	0.000	4.00	7.180	4.67	79.9	0.0	173.0
170.00		0.00	1.60	10.223	17.28	104.95	0.650	0.000	5.00	8.544	5.55	95.9	0.0	205.7
175.00	Appurtenance(s)	0.00	1.61	10.308	17.42	99.31	0.650	0.000	5.00	8.065	5.24	91.3	0.0	194.1
								Totals:	**175.00**			**4,856.5**		**30,519.4**

Discrete Appurtenance Forces

Structure:	CT01915-S-SB	**Code:**	EIA/TIA-222-F	10/13/2015	
Site Name:	South Brooklyn	**Exposure:**	C		
Height:	175.00 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 18	

Tower Engineering Solutions

Load Case: 50 mph Wind with 0" Ice

Dead Load Factor 1.00

Wind Load Factor 1.00

Iterations: 24

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa Factor	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	175.00	6' Lightning rod	1	10.308	17.421	1.00	0.38	6.50	0.000	0.000	6.62	0.00	0.00
2	175.00	RRH2x40-AWS	3	10.308	17.421	0.82	6.20	132.00	0.000	0.000	108.00	0.00	0.00
3	175.00	Low Profile Platform-flat	1	10.308	17.421	1.00	25.00	1200.00	0.000	0.000	435.53	0.00	0.00
4	175.00	FD9R6004/2C-3L (3.1 lbs)	6	10.308	17.421	0.62	1.34	18.60	0.000	0.000	23.33	0.00	0.00
5	175.00	DB-T1-6Z-8AB-0Z	1	10.308	17.421	1.00	5.60	18.90	0.000	0.000	97.56	0.00	0.00
6	175.00	BXA-70080/6CF	3	10.308	17.421	0.88	15.42	54.00	0.000	0.000	268.59	0.00	0.00
7	175.00	BXA-70063/6CF	3	10.308	17.421	0.74	17.16	51.00	0.000	0.000	298.96	0.00	0.00
8	175.00	BXA-171085/12CF	3	10.308	17.421	0.88	12.59	45.00	0.000	0.000	219.38	0.00	0.00
9	175.00	WBX065X19R050	3	10.308	17.421	0.78	12.21	62.70	0.000	0.000	212.79	0.00	0.00
10	157.00	Low Profile Platform-flat	1	9.994	16.889	1.00	25.00	1200.00	0.000	0.000	422.23	0.00	0.00
11	157.00	60" x 6.1" x 2.6" Panel	6	9.994	16.889	0.81	18.23	180.00	0.000	0.000	307.80	0.00	0.00
12	147.00	Low Profile Platform-flat	1	9.807	16.574	1.00	25.00	1200.00	0.000	0.000	414.36	0.00	0.00
13	147.00	ALP 9212	9	9.807	16.574	1.00	51.84	240.30	0.000	0.000	859.22	0.00	0.00
14	140.00	Platform w/ Hand Rails (flat)	1	9.672	16.345	1.00	40.00	2000.00	0.000	0.000	653.80	0.00	0.00
15	140.00	LNX-6515DS-VTM	3	9.672	16.345	0.84	28.85	150.90	0.000	0.000	471.62	0.00	0.00
16	140.00	KRY 112 144/1	3	9.672	16.345	0.73	0.90	33.00	0.000	0.000	14.68	0.00	0.00
17	140.00	APXV18-206516S-C-A20	3	9.672	16.345	0.78	8.47	56.10	0.000	0.000	138.46	0.00	0.00
18	140.00	782 11056	3	9.672	16.345	0.78	0.40	5.40	0.000	0.000	6.50	0.00	0.00
						Totals:		**6,654.40**			**4,959.41**		

Total Applied Force Summary

Structure:	CT01915-S-SB	**Code:**	EIA/TIA-222-F	10/13/2015	
Site Name:	South Brooklyn	**Exposure:**	C		
Height:	175.00 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 19	

Tower Engineering Solutions

Load Case: 50 mph Wind with 0" Ice

Dead Load Factor 1.00

Wind Load Factor 1.00

Iterations: 24

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		165.38	1548.09	0.00	0.00
10.00		162.01	1517.04	0.00	0.00
15.00		158.64	1485.99	0.00	0.00
20.00		155.27	1454.94	0.00	0.00
25.00		151.90	1423.89	0.00	0.00
30.00		148.53	1392.84	0.00	0.00
35.00		147.62	1361.79	0.00	0.00
38.75		111.67	1000.96	0.00	0.00
40.00		37.79	615.70	0.00	0.00
45.00		154.05	2426.43	0.00	0.00
50.00		154.97	1136.87	0.00	0.00
55.00		155.35	1109.70	0.00	0.00
60.00		155.26	1082.53	0.00	0.00
65.00		154.76	1055.36	0.00	0.00
70.00		153.90	1028.19	0.00	0.00
75.00		152.70	1001.03	0.00	0.00
78.75		113.30	732.94	0.00	0.00
80.00		37.98	409.50	0.00	0.00
83.75		113.81	1211.05	0.00	0.00
85.00		37.54	173.06	0.00	0.00
90.00		149.85	680.11	0.00	0.00
95.00		147.62	660.71	0.00	0.00
100.00		145.18	641.30	0.00	0.00
105.00		142.53	621.89	0.00	0.00
110.00		139.68	602.49	0.00	0.00
115.00		136.66	583.08	0.00	0.00
119.00		106.90	452.49	0.00	0.00
120.00		26.73	195.68	0.00	0.00
123.00		79.57	578.65	0.00	0.00
125.00		52.30	178.32	0.00	0.00
130.00		128.74	434.94	0.00	0.00
135.00		125.10	419.42	0.00	0.00
140.00	(13) appurtenances	1406.37	2649.29	0.00	0.00
145.00		117.40	383.17	0.00	0.00
147.00	(10) appurtenances	1319.28	1589.22	0.00	0.00
150.00		67.38	215.60	0.00	0.00
155.00		109.17	346.92	0.00	0.00
157.00	(7) appurtenances	772.39	1514.42	0.00	0.00
160.00		62.29	193.85	0.00	0.00
161.00		20.38	63.38	0.00	0.00
165.00		79.95	190.32	0.00	0.00
170.00		95.95	227.42	0.00	0.00
175.00	(24) appurtenances	1762.07	1804.47	0.00	0.00
	Totals:	**9,815.92**	**38,395.05**	**0.00**	**0.00**

Resulting Forces and Deflections

Structure:	CT01915-S-SB	**Code:**	EIA/TIA-222-F	10/13/2015	
Site Name:	South Brooklyn	**Exposure:**	C		
Height:	175.00 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 20	

Tower Engineering Solutions

Load Case: 50 mph Wind with 0" Ice

Dead Load Factor 1.00

Wind Load Factor 1.00

Iterations: 24

Elev (ft)	Lateral FX (-) (kips)	Axial FY (-) (kips)	Lateral FZ (kips)	Moment MX (ft-kips)	Torsion MY (ft-kips)	Moment MZ (ft-kips)	Deflect X (in)	Deflect Z (in)	Deflect Resultant (in)	Rotation Sway (deg)	Rotation Twist (deg)
0.00	-9.830	-38.391	0.000	0.000	0.000	-1213.1	0.000	0.000	0.000	0.000	0.000
5.00	-9.695	-36.835	0.000	0.000	0.000	-1163.9	-0.025	0.000	0.025	-0.047	0.000
10.00	-9.560	-35.310	0.000	0.000	0.000	-1115.5	-0.100	0.000	0.100	-0.094	0.000
15.00	-9.428	-33.816	0.000	0.000	0.000	-1067.7	-0.224	0.000	0.224	-0.143	0.000
20.00	-9.296	-32.354	0.000	0.000	0.000	-1020.5	-0.400	0.000	0.400	-0.192	0.000
25.00	-9.167	-30.922	0.000	0.000	0.000	-974.08	-0.629	0.000	0.629	-0.243	0.000
30.00	-9.038	-29.522	0.000	0.000	0.000	-928.24	-0.911	0.000	0.911	-0.294	0.000
35.00	-8.906	-28.154	0.000	0.000	0.000	-883.05	-1.248	0.000	1.248	-0.347	0.000
38.75	-8.801	-27.149	0.000	0.000	0.000	-849.66	-1.537	0.000	1.537	-0.387	0.000
40.00	-8.775	-26.529	0.000	0.000	0.000	-838.66	-1.640	0.000	1.640	-0.401	0.000
45.00	-8.626	-24.095	0.000	0.000	0.000	-794.78	-2.090	0.000	2.090	-0.456	0.000
50.00	-8.484	-22.951	0.000	0.000	0.000	-751.66	-2.597	0.000	2.597	-0.512	0.000
55.00	-8.342	-21.834	0.000	0.000	0.000	-709.23	-3.166	0.000	3.166	-0.573	0.000
60.00	-8.198	-20.744	0.000	0.000	0.000	-667.52	-3.799	0.000	3.799	-0.635	0.000
65.00	-8.053	-19.682	0.000	0.000	0.000	-626.54	-4.497	0.000	4.497	-0.698	0.000
70.00	-7.907	-18.647	0.000	0.000	0.000	-586.27	-5.262	0.000	5.262	-0.762	0.000
75.00	-7.758	-17.640	0.000	0.000	0.000	-546.74	-6.095	0.000	6.095	-0.827	0.000
78.75	-7.644	-16.905	0.000	0.000	0.000	-517.65	-6.764	0.000	6.764	-0.876	0.000
80.00	-7.609	-16.491	0.000	0.000	0.000	-508.09	-6.996	0.000	6.996	-0.893	0.000
83.75	-7.485	-15.278	0.000	0.000	0.000	-479.56	-7.718	0.000	7.718	-0.944	0.000
85.00	-7.459	-15.098	0.000	0.000	0.000	-470.20	-7.967	0.000	7.967	-0.961	0.000
90.00	-7.319	-14.410	0.000	0.000	0.000	-432.91	-9.021	0.000	9.021	-1.050	0.000
95.00	-7.180	-13.741	0.000	0.000	0.000	-396.32	-10.169	0.000	10.169	-1.139	0.000
100.00	-7.042	-13.092	0.000	0.000	0.000	-360.41	-11.409	0.000	11.409	-1.228	0.000
105.00	-6.905	-12.462	0.000	0.000	0.000	-325.20	-12.744	0.000	12.744	-1.317	0.000
110.00	-6.770	-11.853	0.000	0.000	0.000	-290.68	-14.171	0.000	14.171	-1.406	0.000
115.00	-6.634	-11.265	0.000	0.000	0.000	-256.83	-15.690	0.000	15.690	-1.493	0.000
119.00	-6.523	-10.810	0.000	0.000	0.000	-230.29	-16.970	0.000	16.970	-1.562	0.000
120.00	-6.497	-10.611	0.000	0.000	0.000	-223.77	-17.299	0.000	17.299	-1.579	0.000
123.00	-6.409	-10.031	0.000	0.000	0.000	-204.28	-18.308	0.000	18.308	-1.630	0.000
125.00	-6.362	-9.847	0.000	0.000	0.000	-191.46	-18.998	0.000	18.998	-1.664	0.000
130.00	-6.235	-9.406	0.000	0.000	0.000	-159.65	-20.791	0.000	20.791	-1.756	0.000
135.00	-6.110	-8.982	0.000	0.000	0.000	-128.47	-22.676	0.000	22.676	-1.840	0.000
140.00	-4.625	-6.375	0.000	0.000	0.000	-97.930	-24.645	0.000	24.645	-1.916	0.000
145.00	-4.499	-5.993	0.000	0.000	0.000	-74.805	-26.688	0.000	26.688	-1.981	0.000
147.00	-3.128	-4.449	0.000	0.000	0.000	-65.806	-27.523	0.000	27.523	-2.005	0.000
150.00	-3.056	-4.233	0.000	0.000	0.000	-56.423	-28.794	0.000	28.794	-2.039	0.000
155.00	-2.937	-3.889	0.000	0.000	0.000	-41.142	-30.956	0.000	30.956	-2.087	0.000
157.00	-2.110	-2.403	0.000	0.000	0.000	-35.269	-31.834	0.000	31.834	-2.105	0.000
160.00	-2.042	-2.211	0.000	0.000	0.000	-28.938	-33.164	0.000	33.164	-2.128	0.000
161.00	-2.020	-2.148	0.000	0.000	0.000	-26.896	-33.610	0.000	33.610	-2.136	0.000
165.00	-1.934	-1.960	0.000	0.000	0.000	-18.818	-35.410	0.000	35.410	-2.161	0.000
170.00	-1.830	-1.736	0.000	0.000	0.000	-9.149	-37.690	0.000	37.690	-2.190	0.000
175.00	-1.762	0.000	0.000	0.000	0.000	0.000	0.000	0.000	39.991	-2.201	0.000

Resulting Stresses

Structure:	CT01915-S-SBA	**Code:**	EIA/TIA-222-F	10/13/2015	
Site Name:	South Brooklyn	**Exposure:**	C		
Height:	175.00 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 21	

Tower Engineering Solutions

Load Case: 50 mph Wind with 0" Ice

Dead Load Factor 1.00

Wind Load Factor 1.00

Iterations: 24

Applied Stresses

Elev (ft)	fa Axial (Y) (ksi)	fvx Shear (X) (ksi)	fvz Shear (Z) (ksi)	fvt Torsion (ksi)	fbx Bending (X) (ksi)	fbz Bending (Z) (ksi)	fb Combined (ksi)	Fb Allow Stress (ksi)	f/Fb Stress Ratio
0.00	0.43	0.22	0.00	0.00	0.00	11.64	12.07	52.0	0.232
5.00	0.42	0.22	0.00	0.00	0.00	11.64	12.06	52.0	0.232
10.00	0.41	0.22	0.00	0.00	0.00	11.63	12.05	52.0	0.232
15.00	0.40	0.23	0.00	0.00	0.00	11.62	12.03	52.0	0.231
20.00	0.39	0.23	0.00	0.00	0.00	11.61	12.01	52.0	0.231
25.00	0.38	0.23	0.00	0.00	0.00	11.59	11.98	52.0	0.231
30.00	0.37	0.23	0.00	0.00	0.00	11.57	11.95	52.0	0.230
35.00	0.37	0.23	0.00	0.00	0.00	11.53	11.91	52.0	0.229
38.75	0.36	0.23	0.00	0.00	0.00	11.51	11.87	52.0	0.228
40.00	0.35	0.24	0.00	0.00	0.00	11.50	11.86	52.0	0.228
45.00	0.37	0.27	0.00	0.00	0.00	12.55	12.92	52.0	0.249
50.00	0.36	0.27	0.00	0.00	0.00	12.47	12.84	52.0	0.247
55.00	0.35	0.27	0.00	0.00	0.00	12.38	12.74	52.0	0.245
60.00	0.34	0.27	0.00	0.00	0.00	12.28	12.63	52.0	0.243
65.00	0.33	0.27	0.00	0.00	0.00	12.16	12.50	52.0	0.241
70.00	0.32	0.28	0.00	0.00	0.00	12.02	12.36	52.0	0.238
75.00	0.32	0.28	0.00	0.00	0.00	11.87	12.19	52.0	0.235
78.75	0.31	0.28	0.00	0.00	0.00	11.74	12.06	52.0	0.232
80.00	0.30	0.28	0.00	0.00	0.00	11.69	12.00	52.0	0.231
83.75	0.40	0.39	0.00	0.00	0.00	15.49	15.90	52.0	0.306
85.00	0.39	0.39	0.00	0.00	0.00	15.41	15.82	52.0	0.304
90.00	0.39	0.40	0.00	0.00	0.00	15.08	15.48	52.0	0.298
95.00	0.38	0.40	0.00	0.00	0.00	14.69	15.09	52.0	0.290
100.00	0.37	0.41	0.00	0.00	0.00	14.25	14.65	52.0	0.282
105.00	0.37	0.41	0.00	0.00	0.00	13.75	14.14	52.0	0.272
110.00	0.36	0.42	0.00	0.00	0.00	13.17	13.55	52.0	0.261
115.00	0.36	0.42	0.00	0.00	0.00	12.50	12.87	52.0	0.248
119.00	0.35	0.43	0.00	0.00	0.00	11.89	12.26	52.0	0.236
120.00	0.35	0.43	0.00	0.00	0.00	11.72	12.10	52.0	0.233
123.00	0.41	0.53	0.00	0.00	0.00	13.46	13.91	52.0	0.268
125.00	0.41	0.54	0.00	0.00	0.00	13.01	13.46	48.0	0.280
130.00	0.41	0.55	0.00	0.00	0.00	11.73	12.18	48.0	0.254
135.00	0.41	0.56	0.00	0.00	0.00	10.25	10.70	48.0	0.223
140.00	0.30	0.44	0.00	0.00	0.00	8.50	8.84	48.0	0.184
145.00	0.30	0.45	0.00	0.00	0.00	7.10	7.44	48.0	0.155
147.00	0.22	0.32	0.00	0.00	0.00	6.48	6.73	48.0	0.140
150.00	0.22	0.32	0.00	0.00	0.00	5.88	6.12	48.0	0.128
155.00	0.21	0.32	0.00	0.00	0.00	4.72	4.97	48.0	0.104
157.00	0.13	0.24	0.00	0.00	0.00	4.22	4.37	48.0	0.091
160.00	0.13	0.24	0.00	0.00	0.00	3.68	3.83	48.0	0.080
161.00	0.12	0.24	0.00	0.00	0.00	3.50	3.64	48.0	0.076
161.00	0.12	0.24	0.00	0.00	0.00	3.50	3.64	48.0	0.100
165.00	0.16	0.31	0.00	0.00	0.00	3.52	3.72	48.0	0.078
170.00	0.15	0.31	0.00	0.00	0.00	1.92	2.14	48.0	0.045
175.00	0.00	0.32	0.00	0.00	0.00	0.00	0.56	48.0	0.012

Final Analysis Summary

Structure:	CT01915-S-SBA	**Code:**	EIA/TIA-222-F	10/13/2015	
Site Name:	South Brooklyn	**Exposure:**	C		
Height:	175.00 (ft)	**Gh:**	1.69		
Base Elev:	0.000 (ft)	**Struct Class:**	II	Page: 22	

Tower Engineering Solutions

Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	t MZ (ft-kips)
85 mph Wind with 0" Ice	28.4	0.00	38.36	0.00	0.00	3501.77
73.61 mph Wind with 0.5" Ice	23.0	0.00	45.27	0.00	0.00	2912.75
50 mph Wind with 0" Ice	9.8	0.00	38.39	0.00	0.00	1213.13

Max Stresses

Load Case	fa Axial (Y) (ksi)	fvx Shear (X) (ksi)	fvz Shear (Z) (ksi)	fvt Torsion (ksi)	fbx Bending (X) (ksi)	fbz Bending (Z) (ksi)	Combined Stress (ksi)	Allowable Stress (ksi)	Elev (ft)	Stress Ratio
85 mph Wind with 0" Ice	0.37	1.13	0.00	0.00	0.00	44.64	45.05	52.0	83.75	0.867
73.61 mph Wind with 0.5" Ice	0.49	0.94	0.00	0.00	0.00	37.85	38.38	52.0	83.75	0.738
50 mph Wind with 0" Ice	0.40	0.39	0.00	0.00	0.00	15.49	15.90	52.0	83.75	0.306

Monopole Mat Foundation Design

			Date: 10/13/2015
Customer Name:	T-Mobile	**EIA/TIA Standard:**	EIA-222-F
Site Name:		**Structure Height (Ft.):**	175
Site Number:	CT01915-S-SBA	**Engineer Name:**	S. Hesselbein
Engr. Number:	17977	**Engineer Login ID:**	

Foundation Info Obtained from: Drawings/Calculations

Structure Type: Monopole

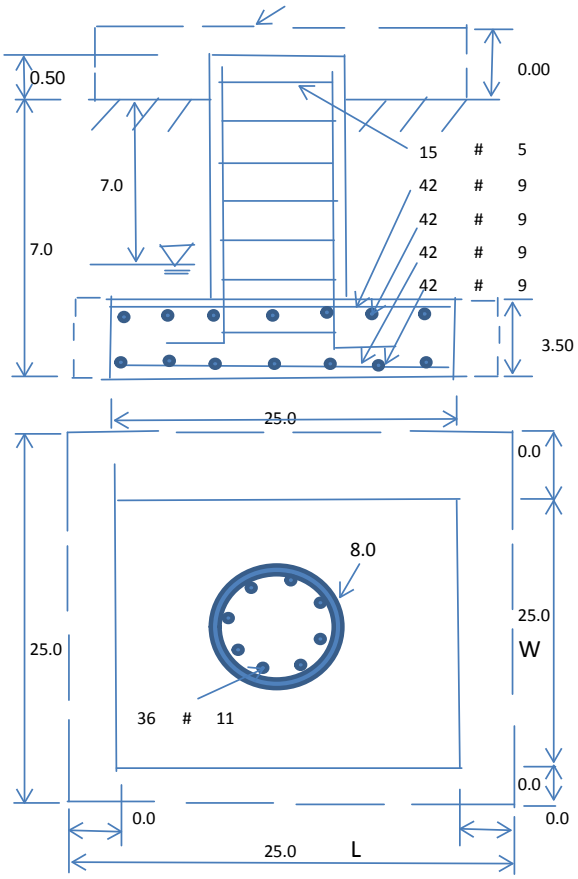
Analysis or Design? Analysis

Base Reactions (Unfactored)

Axial Load (Kips):	38.4	Shear Force (Kips):	28.4
Uplift Force (Kips):	0.0	Moment (Kips-ft):	3501.8
Allowable overstress %:	5.0%		

Foundation Geometries:

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	8.0	Depth of Base BG (ft.):	7.0
Pier Height A. G. (ft.):	0.50	Thickness of Pad (ft):	3.50
Length of Pad (ft.):	25	Width of Pad (ft.):	25
Final Length of pad (ft)	25.0	Final width of pad (ft):	25.0
Control Value for Cell D18:	0	Control Value for Cell F18:	0



Material Properties and Reabr Info:

Concrete Strength (psi):	3000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	40	
Vertical Rebar Size #:	11	Tie / Stirrup Size #:	5	
Qty. of Vertical Rebars:	36	Tie Spacing (in):	6.0	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	9	
Concrete Cover (in.):	3	Unit Weight of Concrete:	150.0	pcf
Rebar at the bottom of the concrete pad:				
Qty. of Rebar in Pad (L):	42	Qty. of Rebar in Pad (W):	42	
Rebar at the top of the concrete pad:				
Qty. of Rebar in Pad (L):	42	Qty. of Rebar in Pad (W):	42	
Apply 1.35 factor for e/w Per G:	1.35			

Soil Design Parameters:

Soil Unit Weight (pcf):	125.0	Soil Buoyant Weight:	50.0	Pcf		
Water Table B.G.S. (ft):	7.0	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad:	30
Allowable Net Soil Bearing (psf):	15000	Allowable Skin Friction:	0	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 hori. force for O.T.M.:	No	Reduction factor on the maximum soil bearing pressure:	1.00			

Foundation Analysis and Design:

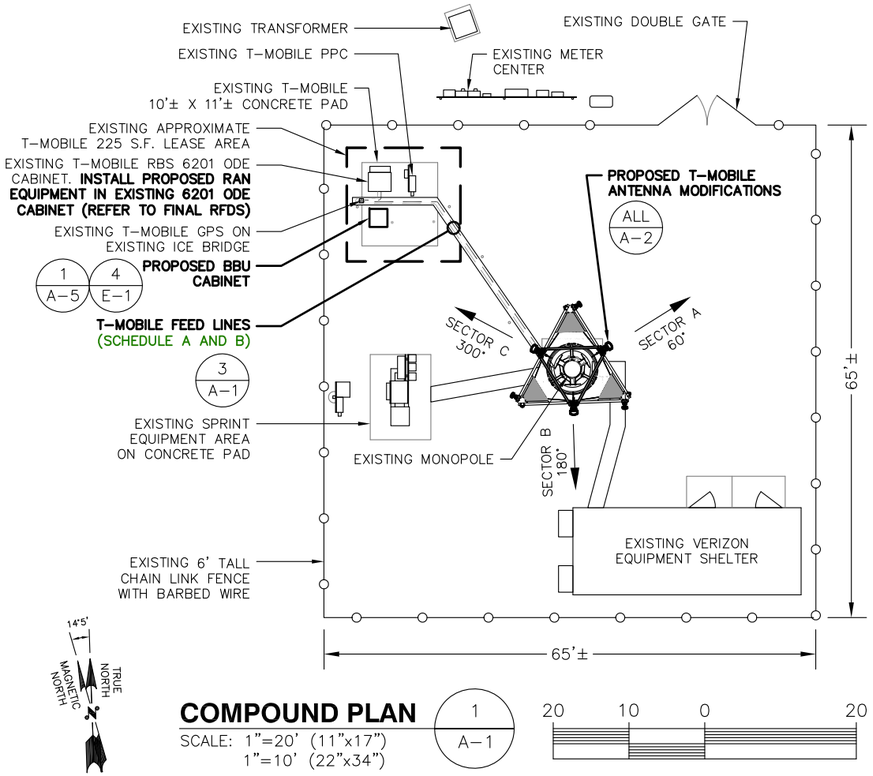
Total Dry Soil Volume (cu. Ft.):	2011.57	Total Dry Soil Weight (Kips):	251.45
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	251.45	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	2388.56	Total Dry Concrete Weight (Kips):	358.28
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	358.28	Total Vertical Load on Base (Kips):	648.09

Check Soil Capacities:

					Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	2927	<	Allowable Soil Bearing (psf):	15000	0.20	OK!
Allowable Foundation Overturning Resistance (SF=1.5, kips-ft.):	5400.8	>	Applied Momont (kips-ft):	3715	0.69	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	2.18	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:	1.30			
					Load/ Capacity Ratio	
(1) Concrete Pier:						
Vertical Steel Rebar Area (sq. in./each):	1.56		Tie / Stirrup Area (sq. in./each):	0.31		
Calculated Moment Capacity (Mn,Kips-Ft):	10388.7	>	Design Factored Moment (Mu, Kips-F	3615.4	0.35	OK!
Calculated Shear Capacity (Kips):	912.1	>	Design Factored Shear (Kips):	36.9	0.04	OK!
Calculated Tension Capacity (Tn, Kips):	3032.6	>	Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	9523.4	>	Design Factored Axial Load (Pu Kips):	49.9	0.01	OK!
Moment & Axial Strength Combination:	0.35	OK!	Check Tie Spacing (Design/Required):		0.5	OK!
Pier Reinforcement Ratio:	0.008	Reinforcement Ratio is satisfied per ACI				
(2).Concrete Pad:						
One-Way Design Shear Capacity (L-Direction, Kips):	947.4	>	One-Way Factored Shear (L-D. Kips):	316.9	0.33	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	947.4	>	One-Way Factored Shear (W-D., Kips)	316.9	0.33	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	1036.6	>	One-Way Factored Shear (C-C, Kips):	552.6	0.53	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0036	OK!	Lower Steel Pad Reinf. Ratio (W-Direc	0.0036		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	6953.4	>	Moment at Bottom (L-Direct. K-Ft):	645.6	0.09	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	6953.4	>	Moment at Bottom (W-Direct. K-Ft):	645.6	0.09	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	9704.8	>	Moment at Bottom (C-C Dir. K-Ft):	913.0	0.09	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0036	OK!	Upper Steel Reinf. Ratio (W-Direct.):	0.0036		
Upper Steel Pad Moment Capacity (L-Direction. Kips-ft):	6953.4	>	Moment at the top (L-Dir Kips-Ft):	220.5	0.03	OK!
Upper Steel Pad Moment Capacity (W-Direction. Kips-ft):	6953.4	>	Moment at the top (W-Dir Kips-Ft):	220.5	0.03	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	9704.8	>	Moment at the top (C-C Direc. K-Ft):	734.1	0.08	OK!



COMPOUND PLAN

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

1 A-1

20 10 0 20

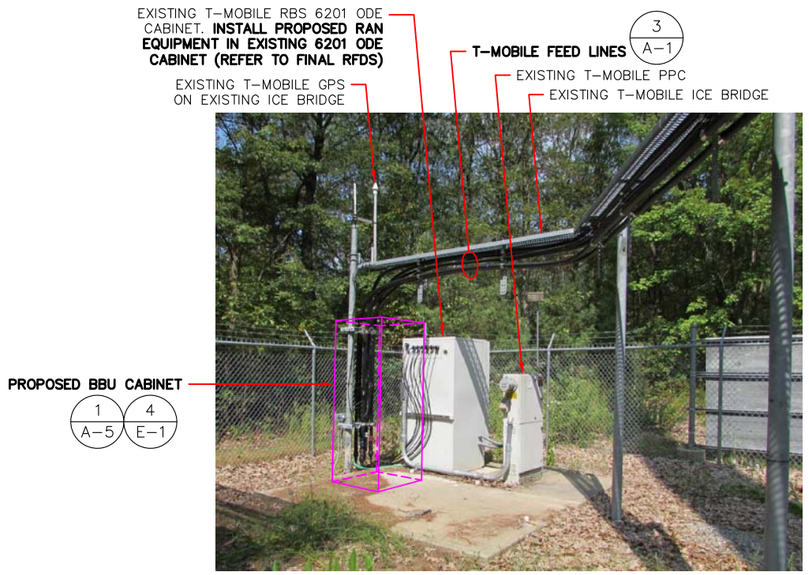


IMAGE SOURCE: PROTERRA 09/04/15

EQUIPMENT PHOTO DETAIL

SCALE: N.T.S.

2 A-1

ANTENNA MOUNT STRUCTURAL ASSESSMENT REQUIREMENT:

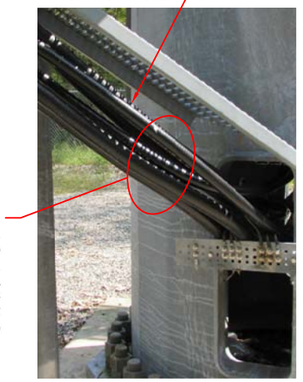
ENGINEER OF RECORD HAS MADE A VISUAL ASSESSMENT ONLY AND DETERMINED THAT THE EXISTING ANTENNA MOUNT SHALL BE REPLACED OR MODIFIED TO ACCOMMODATE ANY ADDITIONAL EQUIPMENT LOADS. STRUCTURAL DESIGNS AND DETAILS AS SHOWN HEREIN FOR STRUCTURAL MODIFICATIONS OF THE EXISTING ANTENNA MOUNT ARE PRELIMINARY ONLY AND FINAL CONSTRUCTION DETAILS ARE SUBJECT TO CHANGE PENDING THE COMPLETION OF AN ANTENNA MOUNT STRUCTURAL ASSESSMENT.

STRUCTURAL NOTES:

PRIOR TO COMMENCING CONSTRUCTION, GC SHALL REFER TO TOWER STRUCTURAL ANALYSIS PROVIDED BY SBA TO DETERMINE IF THERE ARE ANY SUPPLEMENTAL OR SPECIAL INSTALLATION REQUIREMENTS FOR TOWER TOP EQUIPMENT AND FOR CABLE BUNDLING, SHIELDING, MOUNTING, OR RELOCATION ARRANGEMENTS

FEEDLINE SCHEDULE	FEEDLINE DESCRIPTION	LOCATION
A	EXISTING: TO REMAIN (6) 1-5/8" COAX TO 140' RAD	UP MONOPOLE
B	PROPOSED: (6) 1-5/8" COAX TO 140' RAD	UP MONOPOLE

PROPOSED (6) 1-5/8" COAX ACROSS EXISTING ICE BRIDGE & UP MONOPOLE



EXISTING (6) 1-5/8" COAX ACROSS EXISTING ICE BRIDGE & UP MONOPOLE, **ALL TO REMAIN (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 09/04/15

FEEDLINE PHOTO DETAIL AT TOWER BASE

SCALE: N.T.S.

3 A-1

℄ OF PROPOSED T-MOBILE ANTENNAS
ELEV.= 140' ± AGL (SBA DATABASE)

ALL A-2 | ALL A-3 | ALL A-4

EXISTING 175'± MONOPOLE

T-MOBILE FEED LINES
3 A-1

SCHEDULE A
SCHEDULE B
FEEDLINE SCHEDULE A
FEEDLINE SCHEDULE B

IMAGE SOURCE: PROTERRA 09/04/15

PARTIAL ELEVATION PHOTO DETAIL

SCALE: N.T.S.

4 A-1

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

CHECKED BY: JMM/TEJ

APPROVED BY: JMM/TEJ

SUBMITTALS

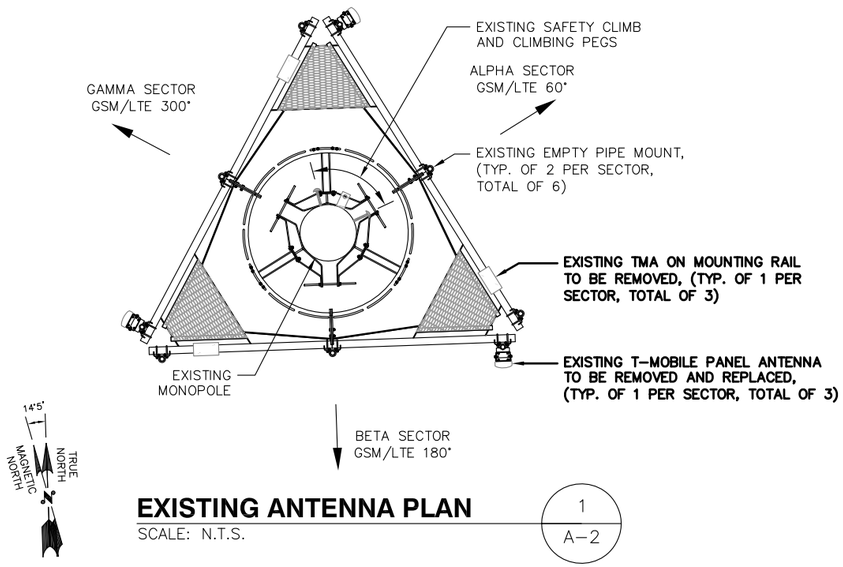
REV.	DATE	DESCRIPTION	BY
0	09/18/15	ISSUED FOR CONSTRUCTION	JEB

SITE NUMBER:
CT11512
SITE NAME:
CT512 / SBA - S BROOKLYN

SITE ADDRESS:
130 OLD TATNIC HILL ROAD
BROOKLYN, CT 06234
WINDHAM COUNTY

SHEET TITLE
COMPOUND & ELEVATION PLAN

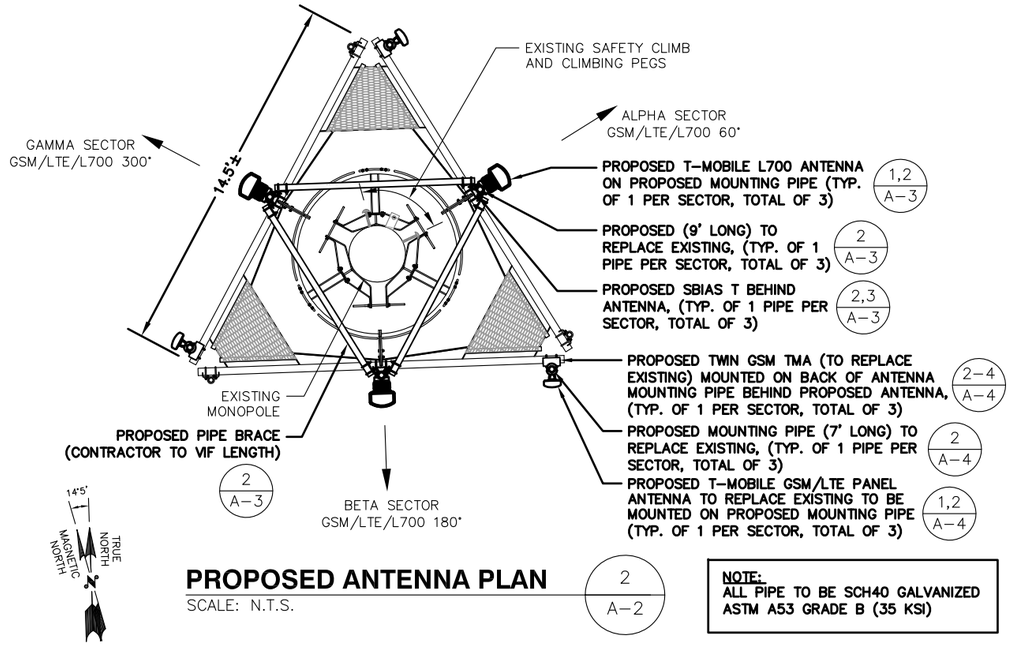
SHEET NUMBER
A-1



EXISTING ANTENNA PLAN

SCALE: N.T.S.

1 / A-2



PROPOSED ANTENNA PLAN

SCALE: N.T.S.

2 / A-2

NOTE:
ALL PIPE TO BE SCH40 GALVANIZED ASTM A53 GRADE B (35 KSI)

ANTENNA MOUNT STRUCTURAL ASSESSMENT REQUIREMENT:

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

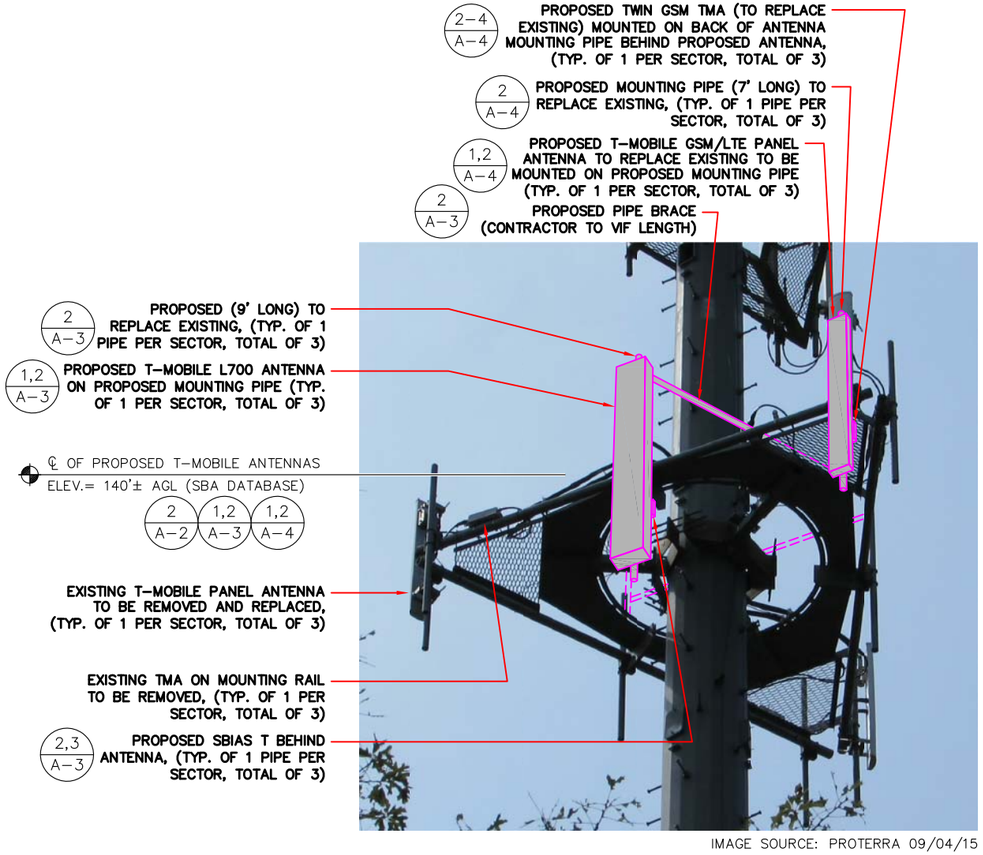

IMAGE SOURCE: PROTERRA 09/04/15
NOTE: ONE SECTOR SHOWN FOR CLARITY

ANTENNA PHOTO DETAIL

SCALE: N.T.S.

3 / A-2

T-MOBILE NORTHEAST LLC
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BLOOMFIELD, CT 06002
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Suite 200
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STATE OF CONNECTICUT
THOMAS E. JOHNSON
No. 28192
LICENSED PROFESSIONAL ENGINEER

CHECKED BY: JMM/TEJ

APPROVED BY: JMM/TEJ

SUBMITTALS

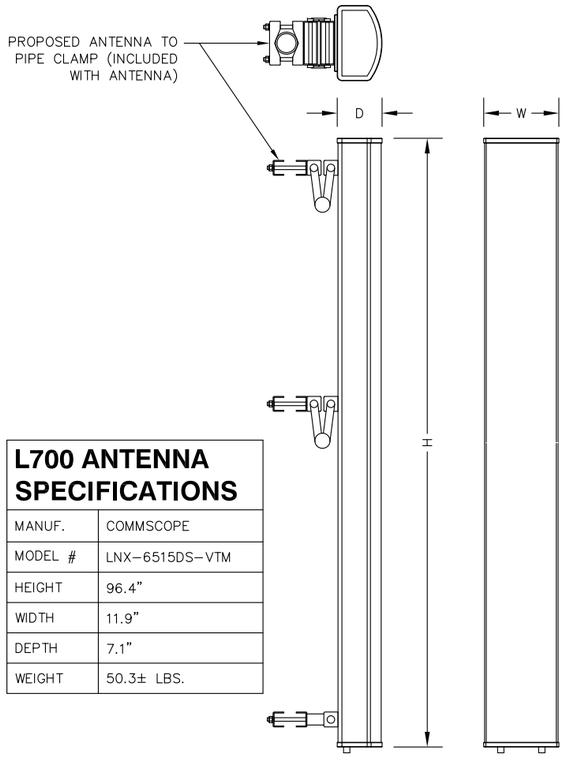
REV.	DATE	DESCRIPTION	BY
0	09/18/15	ISSUED FOR CONSTRUCTION	JEB

SITE NUMBER:
CT11512
SITE NAME:
CT512 / SBA - S BROOKLYN

SITE ADDRESS:
130 OLD TATNIC HILL ROAD
BROOKLYN, CT 06234
WINDHAM COUNTY

SHEET TITLE
EXISTING & PROPOSED ANTENNA PLAN

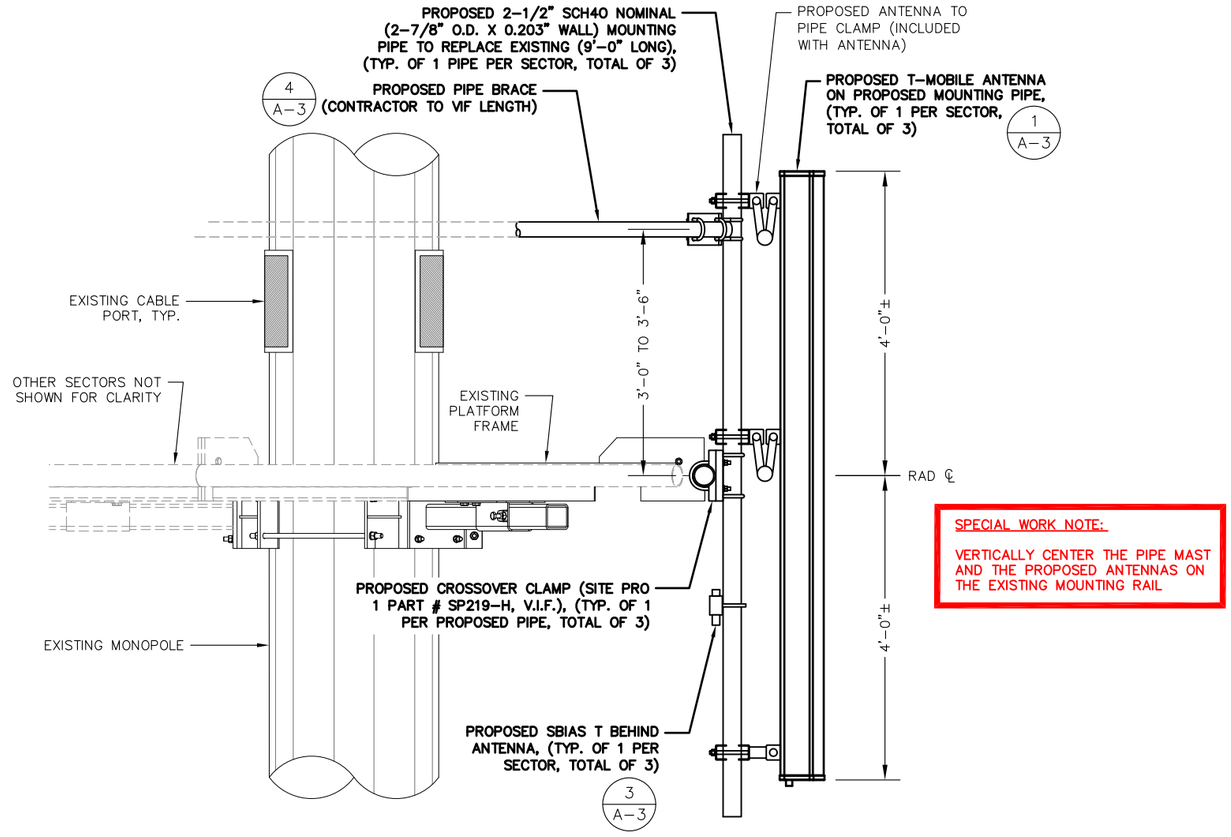
SHEET NUMBER
A-2



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 — SCALE: N.T.S. — 1 / A-3



SPECIAL WORK NOTE:

VERTICALLY CENTER THE PIPE MAST AND THE PROPOSED ANTENNAS ON THE EXISTING MOUNTING RAIL

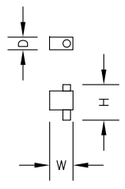
PROPOSED L700 ANTENNA MOUNTING DETAIL — SCALE: N.T.S. — 2 / A-3

ANTENNA MOUNT STRUCTURAL ASSESSMENT REQUIREMENT:

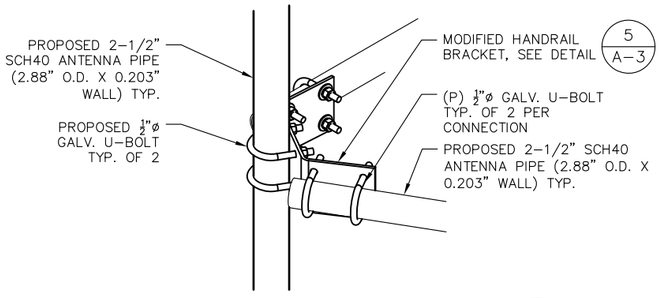
ENGINEER OF RECORD HAS MADE A VISUAL ASSESSMENT ONLY AND DETERMINED THAT THE EXISTING ANTENNA MOUNT SHALL BE REPLACED OR MODIFIED TO ACCOMMODATE ANY ADDITIONAL EQUIPMENT LOADS. STRUCTURAL DESIGNS AND DETAILS AS SHOWN HEREIN FOR STRUCTURAL MODIFICATIONS OF THE EXISTING ANTENNA MOUNT ARE PRELIMINARY ONLY AND FINAL CONSTRUCTION DETAILS ARE SUBJECT TO CHANGE PENDING THE COMPLETION OF AN ANTENNA MOUNT STRUCTURAL ASSESSMENT.

SBT SPECIFICATIONS

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

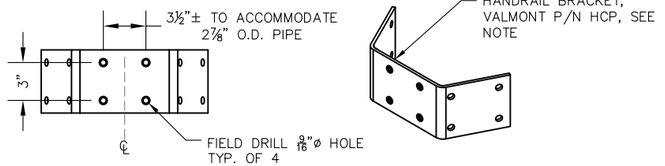


SMART BIAS TEE (SBT) — SCALE: N.T.S. — 3 / A-3



ANTENNA BRACE DETAIL (TOP) — SCALE: N.T.S. — 4 / A-3

NOTE:
HANDRAIL BRACKET IS A COMPONENT OF THE VALMONT HRK12 HANDRAIL KIT, HANDRAIL BRACKET MAY REQ. SPECIAL ORDER



3 EA REQ'D

HANDRAIL BRACKET MODIFICATION DETAIL — SCALE: N.T.S. — 5 / A-3

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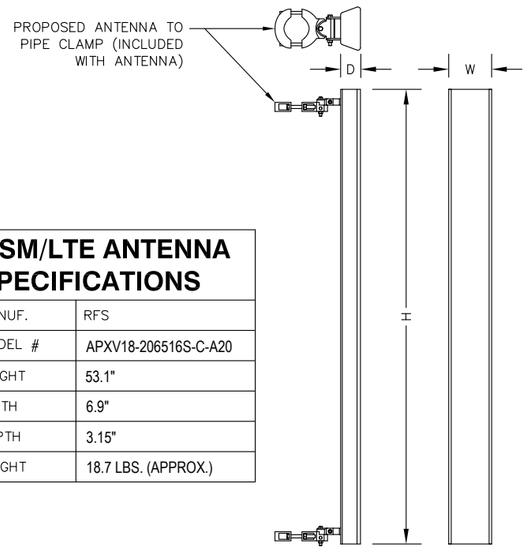
WINDHAM COUNTY

SHEET TITLE
DETAILS

SHEET NUMBER
A-3

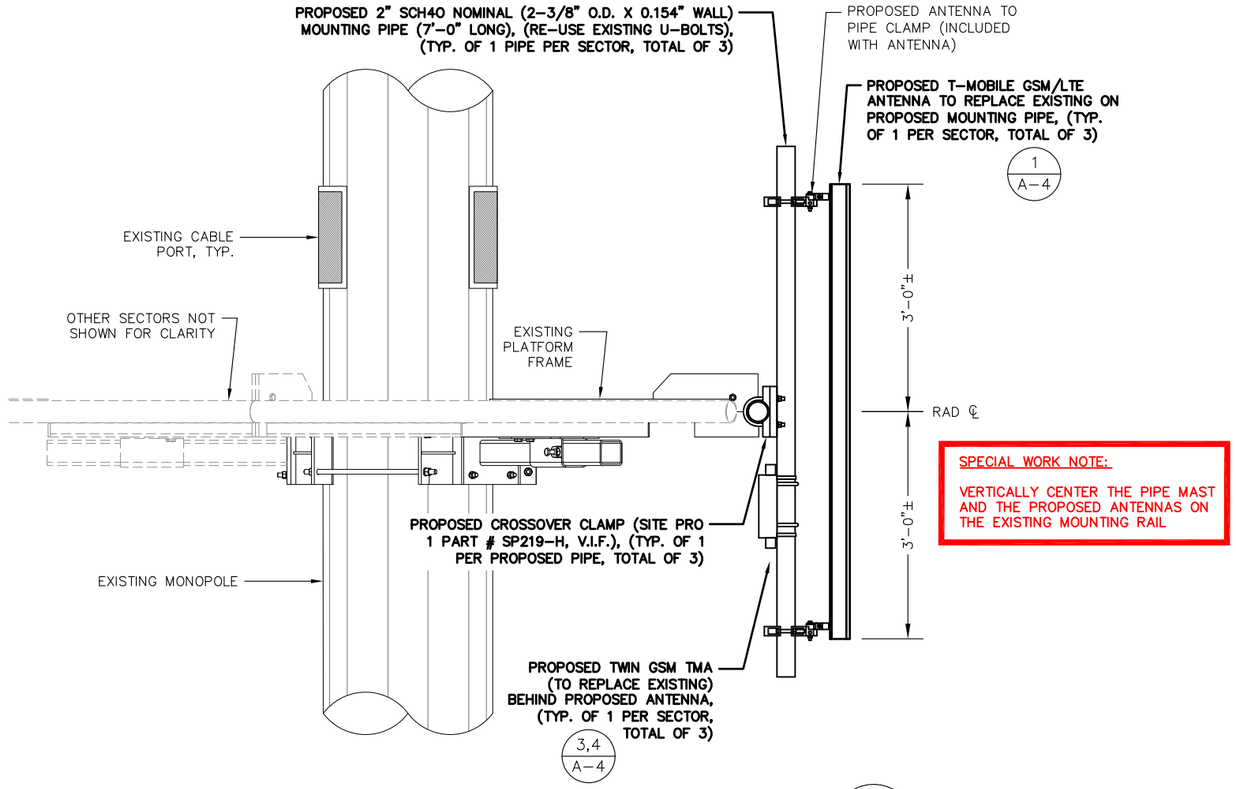


GSM/LTE ANTENNA SPECIFICATIONS	
MANUF.	RFS
MODEL #	APXV18-206516S-C-A20
HEIGHT	53.1"
WIDTH	6.9"
DEPTH	3.15"
WEIGHT	18.7 LBS. (APPROX.)

GSM/LTE ANTENNA DETAIL

SCALE: N.T.S.

1 / A-4



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PROPOSED GSM/LTE ANTENNA MOUNTING DETAIL

SCALE: N.T.S.

2 / A-4

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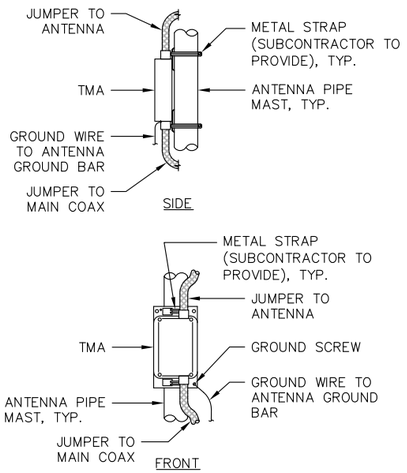
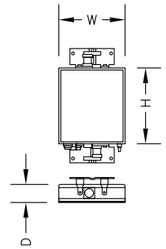


TMA MOUNTING DETAIL

SCALE: N.T.S.

3 / A-4

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



TWIN GSM TMA

SCALE: N.T.S.

4 / A-4

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