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

January 18, 2018

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

Notice of Exempt Modification
1 Deerfield Lane, Ansonia, CT 06401
N 41 21 2.7
W -73 2 57.3
Sprint #: CT52XC067_DO Macro

Dear Ms. Bachman:

Sprint currently maintains three (3) antennas at the 127-foot level of the existing 170-foot Monopole Tower at 1 Deerfield Lane. The tower is owned by SBA Towers IV, LLC. The property is owned by Macabee Properties, LLC. Sprint now intends to swap the three (3) existing antennas with three (3) newer antennas at the 127-foot level. The full scope of work is as follows:

Remove:
(3) 1/4" lines
(3) 5/16" lines
(3) 5/8" lines
(1) Clearwire Junction Box

Remove and Replace:
- Remove (3) Argus - LLPX310R – Panel Antennas and replace with (3) KMW-ETCR-654L12H6 Panel Antennas
- Remove existing Clearwire Sector Frame and associated hardware and replace with modified t-arms, low profile platform, mounting pipes, handrail kit

*On ground - *No change to existing compound or lease area*
- Remove (1) existing Clearwire Equipment Cabinet and replace with (1) Sprint Equipment Cabinet (on existing pad)
- Remove (1) existing Clearwire GPS and replace with (1) Sprint GPS

Install:
(4) Dragonwave Horizon Duo ODUs
(3) ALU 1900 MHz RRUs
(6) ALU 800 MHz RRUs
(3) ALU TD RRH8x20-25 RRUs
(4) 1-1/4" fiber
*On ground: *No change to existing compound or lease area*
(1) PPC Cabinet on H-Frame on existing pad

Existing Equipment to Remain (including Entitlements):
(3) Samsung - 2.5GHz RRH BTS
(3) Andrew - VHLP2-11 - Dish
(1) Andrew - VHLP800-11 – Dish
(3) T-Arms
(4) 1/2" lines

The tower was approved by the CSC in Case/Docket 340 on April 9, 2008, calling for a monopole no taller than necessary to provide proposed telecommunications services, sufficient to accommodate the antennas of T-Mobile and other entities, and not to exceed 170'. The tower was to provide space for any City of Ansonia and Town of Woodbridge public safety services. All antennas were to be attached with T-arms and the Certificate Holder was to provide a recalculated report of RF power density, to be submitted to Council, if there were to be a change in density levels. It is SBA's opinion that this modification complies with all conditions.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16.50j-72(b)(2). In accordance with R.C.S.A. § 16.50j-73, a copy of this letter is being sent to the Honorable David S. Cassetti, Mayor of the City of Ansonia, David Blackwell, Sr., Zoning Enforcement Officer of the City of Ansonia, as well as the property owner, Macabee Properties, LLC. (Separate notice is not being sent to tower owner, as it belongs to SBA.)

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

1. The proposed modifications will not result in an increase in the height of the existing structure.
2. The proposed modification will not require the extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.
5. The proposed modification will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading with certain modifications.

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

Sincerely,

Kri Pelletier
Property Specialist
SBA COMMUNICATIONS CORPORATION
134 Flanders Rd., Suite 125
Westborough, MA 01581
508.251.0720 x3804 + T
508.366.2610 + F
203.446.7700 + C
kpelletier@sbasite.com
Attachments

cc with attachments:

The Honorable David S. Cassetti, Mayor, City of Ansonia
City of Ansonia, 253 Main Street, Ansonia, CT 06401
David Blackwell, Sr., Zoning Enforcement Officer, City of Ansonia
City of Ansonia, 253 Main Street, Ansonia, CT 06401
Macabee Properties, LLC–as property owner
11 Hemlock Hollow Road, Woodbridge, CT 06525

POWER DENSITY

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	KMW ETCR-654L12H6	Make / Model:	KMW ETCR-654L12H6	Make / Model:	KMW ETCR-654L12H6
Gain:	13.35 / 15.25 / 15.05 dBd	Gain:	13.35 / 15.25 / 15.05 dBd	Gain:	13.35 / 15.25 / 15.05 dBd
Height (AGL):	127 feet	Height (AGL):	127 feet	Height (AGL):	127 feet
Frequency Bands	850 MHz / 1900 MHz (PCS) / 2500 MHz (BRS)	Frequency Bands	850 MHz / 1900 MHz (PCS) / 2500 MHz (BRS)	Frequency Bands	850 MHz / 1900 MHz (PCS) / 2500 MHz (BRS)
Channel Count	18	Channel Count	18	Channel Count	18
Total TX Power(W):	380 Watts	Total TX Power(W):	380 Watts	Total TX Power(W):	380 Watts
ERP (W):	11,775.31	ERP (W):	11,775.31	ERP (W):	11,775.31
Antenna A1 MPE%	3.13 %	Antenna B1 MPE%	3.13 %	Antenna C1 MPE%	3.13 %

Site Composite MPE%	
Carrier	MPE%
SPRINT – Max per sector	3.13 %
T-Mobile	1.55 %
Clearwire	0.13 %
Verizon Wireless	2.04 %
MetroPCS	0.40 %
AT&T	3.21 %
Site Total MPE %:	10.46 %

SPRINT Sector A Total:	3.13 %
SPRINT Sector B Total:	3.13 %
SPRINT Sector C Total:	3.13 %
Site Total:	10.46 %

SPRINT _ Frequency Band / Technology (All Sectors)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
Sprint 850 MHz CDMA	1	432.54	127	1.06	850 MHz	567	0.18%
Sprint 850 MHz LTE	2	432.54	127	2.12	850 MHz	567	0.37%
Sprint 1900 MHz (PCS) CDMA	5	535.94	127	6.58	1900 MHz (PCS)	1000	0.66%
Sprint 1900 MHz (PCS) LTE	2	1,339.86	127	6.58	1900 MHz (PCS)	1000	0.66%
Sprint 2500 MHz (BRS) LTE	8	639.78	127	12.57	2500 MHz (BRS)	1000	1.26%
						Total:	3.13%

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City of Ansonia, CT

Property Listing Report | Map Block Lot 10000020000 | Account 16660

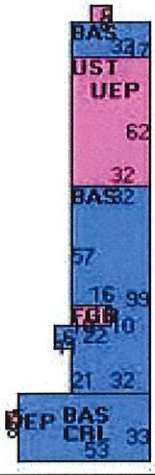
Property Information

Property Location	1 DEERFIELD LA
Owner	MACABEE PROPERTIES LLC
Co-Owner	
Mailing Address	11 HEMLOCK HOLLOW RD WOODBRIDGE CT 06525
Land Use	104 4 Family
Land Class	R
Zoning Code	AA
Census Tract	
Sub Lot	

Neighborhood	
Acreage	16.2
Utilities	Public Water,Septic
Lot Setting/Desc	Level
Survey Map	
Additional Info	

Photo

Sketch



Primary Construction Details

Year Built	1958
Stories	1
Building Style	Family Flat
Building Use	Residential
Building Condition	Below Average
Floors	Carpet
Total Rooms	12

Bedrooms	5 Bedrooms
Full Bathrooms	4
Half Bathrooms	0
Bath Style	Average
Kitchen Style	Average
Roof Style	Flat
Roof Cover	Tar + Gravel

Exterior Walls	Concr/Cinder
Interior Walls	Plaster
Heating Type	Hot Water
Heating Fuel	Oil
AC Type	None
Gross Bldg Area	9364
Total Living Area	5367

Report Created On 1/18/2018

City of Ansonia, CT

Property Listing Report | Map Block Lot 10000020000 | Account 16660

Valuation Summary

(Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings	177400	124200
Extras	0	0
Outbuildings	52900	37100
Land	275300	104390
Total	505600	265690

Outbuilding and Extra Items

Type	Description
Garage poor	1200.00 S.F.
Cell Tower	1.00 UNITS
Stable	800.00 S.F.
Shed	800.00 S.F.
Barn 1 St	384.00 S.F.

Sub Areas

Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
Crawl space	1749	0
Porch, Enclosed, Unfinished	104	0
First Floor	5367	5367
Garage	160	0
Utility, Storage, Unfinished	1984	0
Total Area	9364	5367

Sales History

Owner of Record	Book/ Page	Sale Date	Sale Price
MACABEE PROPERTIES LLC	435/ 195	12/28/2005	0
GELERTNER JOEL & CHERYL	316/ 863	12/2/1998	235000

Report Created On 1/18/2018

EBI Consulting
environmental | engineering | due diligence

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

SPRINT Existing Facility

Site ID: CT52XC067

SBA Osburne Lane
1 Deerfield Lane
Ansonia, CT 06401

December 6, 2017

EBI Project Number: 6217005417

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	10.46 %

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

EBI Consulting
environmental | engineering | due diligence

December 6, 2017

SPRINT
Attn: RF Engineering Manager
1 International Boulevard, Suite 800
Mahwah, NJ 07495

Emissions Analysis for Site: **CT52XC067 – SBA Osburne Lane**

EBI Consulting was directed to analyze the proposed SPRINT facility located at **1 Deerfield Lane, Ansonia, CT**, for the purpose of determining whether the emissions from the Proposed SPRINT Antenna Installation located on this property are within specified federal limits.

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

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

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

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 850 MHz Band is approximately 567 $\mu W/cm^2$. The general population exposure limit for the 1900 MHz (PCS) and 2500 MHz (BRS) 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 SPRINT Wireless antenna facility located at **1 Deerfield Lane, Ansonia, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since SPRINT 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) 1 CDMA channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.

2) 2 LTE channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.

3) 5 CDMA channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 16 Watts per Channel.

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

5) 8 LTE channels (2500 MHz (BRS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.

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

8) The antennas used in this modeling are the **KMW ETCR-654L12H6** for transmission in the 850 MHz, 1900 MHz (PCS) and 2500 MHz (BRS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

9) The antenna mounting height centerlines of the proposed antennas are **127 feet** above ground level (AGL) for **Sector A**, **127 feet** above ground level (AGL) for **Sector B** and **127 feet** above ground level (AGL) for Sector C.

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.

SPRINT Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	KMW ETCR-654L12H6	Make / Model:	KMW ETCR-654L12H6	Make / Model:	KMW ETCR-654L12H6
Gain:	13.35 / 15.25 / 15.05 dBd	Gain:	13.35 / 15.25 / 15.05 dBd	Gain:	13.35 / 15.25 / 15.05 dBd
Height (AGL):	**127 feet**	Height (AGL):	**127 feet**	Height (AGL):	**127 feet**
Frequency Bands	850 MHz / 1900 MHz (PCS) / 2500 MHz (BRS)	Frequency Bands	850 MHz / 1900 MHz (PCS) / 2500 MHz (BRS)	Frequency Bands	850 MHz / 1900 MHz (PCS) / 2500 MHz (BRS)
Channel Count	18	Channel Count	18	Channel Count	18
Total TX Power(W):	380 Watts	Total TX Power(W):	380 Watts	Total TX Power(W):	380 Watts
ERP (W):	11,775.31	ERP (W):	11,775.31	ERP (W):	11,775.31
Antenna A1 MPE%	**3.13 %**	Antenna B1 MPE%	**3.13 %**	Antenna C1 MPE%	**3.13 %**

Site Composite MPE%	
Carrier	**MPE%**
SPRINT – Max per sector	**3.13 %**
T-Mobile	1.55 %
Clearwire	0.13 %
Verizon Wireless	2.04 %
MetroPCS	0.40 %
AT&T	3.21 %
Site Total MPE %:	**10.46 %**

SPRINT Sector A Total:	3.13 %
SPRINT Sector B Total:	3.13 %
SPRINT Sector C Total:	3.13 %
Site Total:	10.46 %

SPRINT _ Frequency Band / Technology (All Sectors)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
Sprint 850 MHz CDMA	1	432.54	127	1.06	850 MHz	567	0.18%
Sprint 850 MHz LTE	2	432.54	127	2.12	850 MHz	567	0.37%
Sprint 1900 MHz (PCS) CDMA	5	535.94	127	6.58	1900 MHz (PCS)	1000	0.66%
Sprint 1900 MHz (PCS) LTE	2	1,339.86	127	6.58	1900 MHz (PCS)	1000	0.66%
Sprint 2500 MHz (BRS) LTE	8	639.78	127	12.57	2500 MHz (BRS)	1000	1.26%
						Total:	**3.13%**

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 SPRINT 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:

SPRINT Sector	Power Density Value (%)
Sector A:	3.13 %
Sector B:	3.13 %
Sector C:	3.13 %
SPRINT Maximum Total (per sector):	3.13 %
Site Total:	10.46 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **10.46 %** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

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

Structural Analysis Report

Existing 169 ft SABRE Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT13071-A

Customer Site Name: Woodbridge

Carrier Name: Sprint Nextel

Carrier Site ID / Name: CT52XC067 / SBA Osburne Lane

Site Location: 1 Deerfield Lane

Ansonia, Connecticut

New Haven County

Latitude: 41.350750

Longitude: -73.049250

Analysis Result:

Max Structural Usage: 69.5% [Pass]

Max Foundation Usage: 70% [Pass]

Report Prepared By : Jarryd Tibbetts

10/25/17

Introduction

The purpose of this report is to summarize the analysis results on the 169 ft SABRE Monopole to support the proposed antennas and transmission lines in addition to those currently installed. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

Sources of Information

Tower Drawings	Sabre, DWG # 08-01016-PE, dated 1/7/2008
Foundation Drawing	Sabre, DWG # 08-01016, dated 1/30/2008
Geotechnical Report	JGI Eastern, Inc., Project # J2085109, dated 1/29/2008
Modification Drawings	TES, Project # 17022, dated 9/1/2015 TES, Project # 19194, dated 12/9/2015 TES, Project # 22848, dated 6/23/2016

Analysis Criteria

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

Wind Speed Used in the Analysis:	Ultimate Design Wind Speed V_{ult} = 125.0 mph (3-Sec. Gust)/ Nominal Design Wind Speed V_{asd} = 97.0 mph (3-Sec. Gust)
Wind Speed with Ice:	50 mph (3-Sec. Gust) with 3/4" radial ice concurrent
Operational Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	ANSI/TIA/EIA 222-G / 2016 Connecticut State Building Code
Exposure Category:	B
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft
Seismic Parameters:	S_S = 0.193g, S_1 = 0.063g

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	167.0	3	Ericsson - AIR B2A B4P - Panel	(3) T-Arms w/Commscope VSR-MS-B stabilizer Pipe	(12) 1 5/8" (1) 1 5/8" Fiber	T-Mobile
2		3	Ericsson - AIR B4A B2P - Panel			
3		3	Commscope - LNX-6515DS - Panel			
4		3	Ericsson S11B12-RRU			
5		3	Ericsson KRY 112 144/1-TMA			
6	157.0	3	ALU RRH2X60-AWS RRH	(3) T-Arms	(6) 1 5/8"* (12) 1 5/8" (1) 1 5/8" Fiber (1) 1/2"	Verizon
7		1	Antel BXA-70063/6CF - Panel			
8		4	Decibel - DB846F65ZAXY - Panel			
9		2	Decibel - DB846H80E-SX - Panel			
10		1	GPS			
11		6	Andrew - HBX-6517DS-VTM - Panel			
12		1	RFS DB T1-6Z-8AB-OZ Distribution Box			
13		2	Swedcom - SLCP 2x6014F - Panel			
14	148.0	3	Powerwave 7770 - Panel	(3) T-Arms	(12) 1 5/8" (1) 1/2" Fiber (Rosenberger 10mm FB-L98B-002 fiber Trunk) (2) 3/4" DC (WR-VG122ST-BRDA 12 gauge DC)	AT&T
15		1	Cci OPA-65R-LCUU-H6 - Panel			
16		2	Cci OPA-65R-LCUU-H8 - Panel			
17		1	CCI HPA-65R-BUU-H6 - Panel			
18		2	CCI HPA-65R-BUU-H8 - Panel			
19		6	Powerwave LGP21401 TMA			
20		3	Ericsson RRUS-11-RRU			
21		3	Ericsson RRUS 12-B2-RRU			
22		3	Ericsson RRUS A2 Module - RRU			
23		3	Ericsson RRUS 32-RRU			
24		6	Powerwave LGP13519 Diplexer			
25		2	Raycap DC6-48-60-18-8F-Surge Supperssor			
26		3	Powerwave 1001940-Bias Ts			
27		1	Commscope - WCS-IMFQ-AMT - Filter			
28	137.0	6	RFS - APXV18-206517S-C - Panel	(3) T-Arms	(6) 1 5/8"	Metro PCS
	127.0	3	Samsung - 2.5GHz RRH BTS	(3) T-Arms	(4) 1/2" (3) 1/4" (3) 5/16" (3) 5/8"	Sprint Nextel
		3	Argus - LLPX310R - Panel			
		3	Andrew - VHLP2-11 - Dish			
		1	Andrew - VHLP800-11 - Dish			
38	117.0	1	L-com - HG2409U-PRO - Omni	Chain Mount (Commscope CM-30S-72)	(1) 1 5/8"	Ingenu

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
30	127.0	3	KMW - ETCR-654L12H6 - Panel	(3) Modified T-Arms	(4) 1 1/4" FIber (4) 1/2"	Sprint Nextel
31		3	Andrew - VHLP2-11 - Dish			
32		1	Andrew - VHLP800-11 - Dish			
33		4	Dragonwave - Horizon Duo - ODU			
35		3	ALU - 1900MHz - RRU			
36		6	ALU - 800 MHz - RRU			
37		3	ALU - TD-RRH8x20-25 - RRU			

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

Analysis Results

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

	Pole shafts	Anchor Bolts	Base Plate
Max. Usage:	**69.5%**	**64.7%**	**53.8%**
Pass/Fail	**Pass**	**Pass**	**Pass**

Foundations

	Moment (Kip-Ft)	Shear (Kips)
Original Design Reactions	4977.0	43.7
Analysis Reactions	3911.1	31.3
Factored Reactions*	6719.0	59.0
% of Design Reactions	58.2%	53.1%

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

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

Operational Condition (Rigidity):

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

Elevation (ft)	Antenna / Dish	Carrier	Twist (deg)	Sway (deg)
127.0	Andrew - VHLP2-11 - Dish	Sprint Nextel	0.001	1.241
	Andrew - VHLP800-11 - Dish			

It is recommended that the carrier reviews the twist and sway values of the microwave dishes.

Conclusions

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

Antenna Mount Note:

The new proposed mount contributes **0.61%** of additional stress to the tower structure.

Standard Conditions

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

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

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

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

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

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

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

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

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

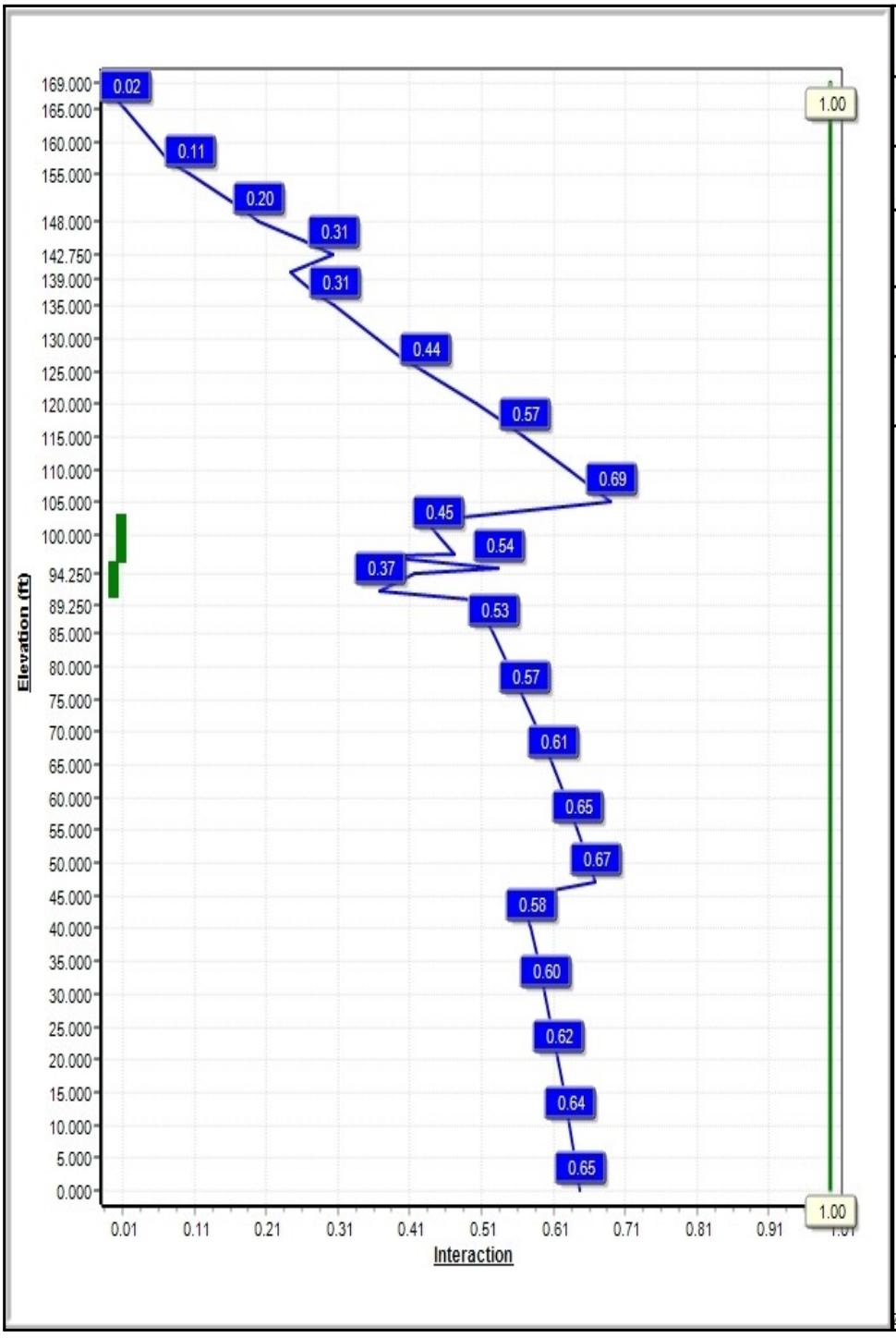
Usage Diagram - Max Ratio 69.45% at 105.0ft

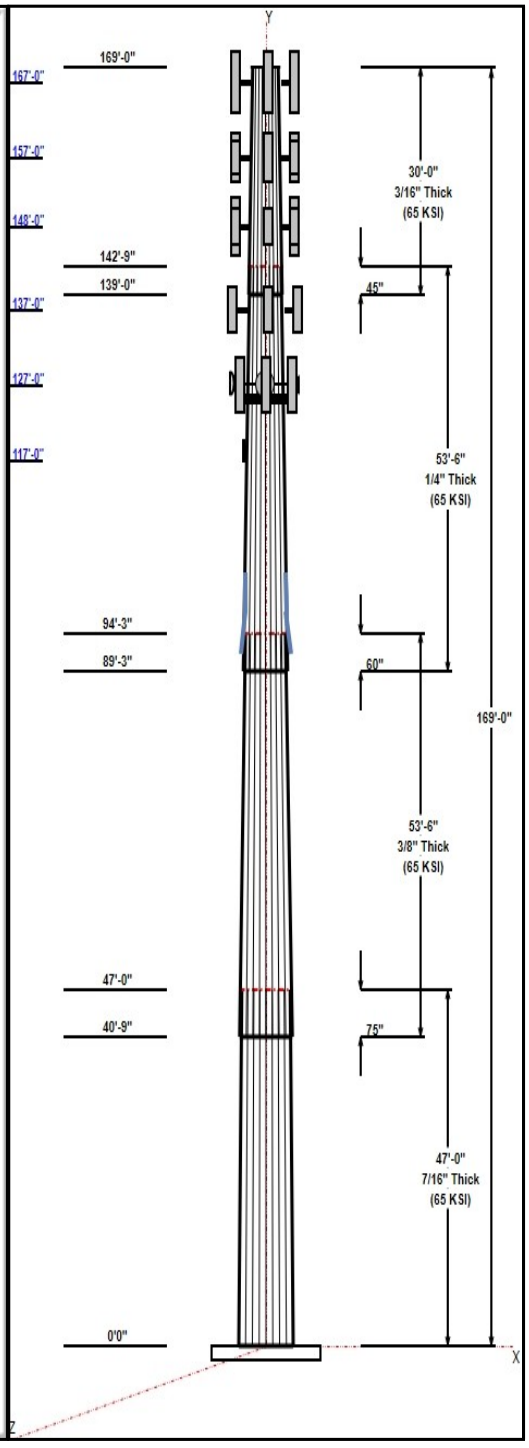
Structure:	CT13071-A-SBA	**Code:**	EIA/TIA-222-G	10/25/2017
Site Name:	Woodbridge	**Exposure:**	B	
Height:	169.00 (ft)	**Gh:**	1.1	
Base Elev:	0.000 (ft)			Page: 1

Tower Engineering Solutions

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

Load Case : 1.2D + 1.6W 97 mph Wind





Structure: CT13071-A-SBA

Type: Tapered
Site Name: Woodbridge
Height: 169.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.20003

10/25/2017

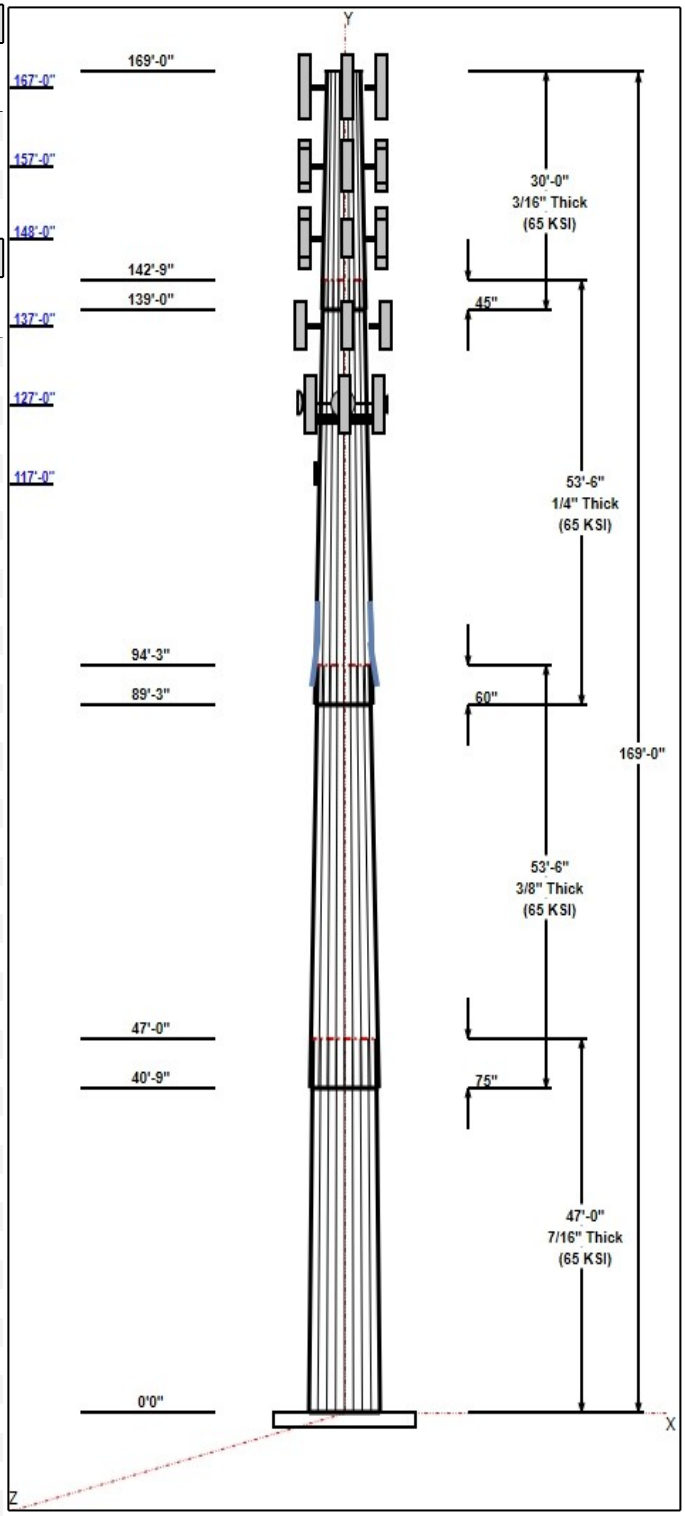
Tower Engineering Solutions

Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	47.00	46.78	56.18	0.438		0.20003	65
2	53.50	38.08	48.78	0.375	Slip	0.20003	65
3	53.50	28.88	39.58	0.250	Slip	0.20003	65
4	30.00	24.00	30.00	0.188	Slip	0.20003	65

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
167.00	167.50	3	T-Arms/Commscope	T-Mobile
167.00	167.00	3	AIR B2A B4P	T-Mobile
167.00	167.00	3	AIR B4A B2P	T-Mobile
167.00	167.00	3	LNX-6515DS	T-Mobile
167.00	167.00	3	Ericsson KRY 112 144/1	T-Mobile
167.00	167.00	3	Ericsson S11B12	T-Mobile
157.00	157.00	1	BXA-70063/6CF	Verizon
157.00	157.00	3	T-Arms	Verizon
157.00	157.00	2	SLCP 2x6014F	Verizon
157.00	157.00	4	DB846F65ZAXY	Verizon
157.00	157.00	2	DB846H80E-SX	Verizon
157.00	157.00	6	HBX-6517DS-VTM	Verizon
157.00	157.00	3	ALU RRH2X60-AWS RRH	Verizon
157.00	157.00	1	RFS DB T1-6Z-8AB-OZ	Verizon
157.00	157.00	1	GPS	Verizon
150.00	150.00	1	Collar Mount	AT&T
148.00	148.00	3	Ericsson RRUS-11-RRU	AT&T
148.00	148.00	2	Raycap	AT&T
148.00	148.00	3	T-Arms	AT&T
148.00	148.00	3	Powerwave 7770	AT&T
148.00	148.00	6	Powerwave LGP21401	AT&T
148.00	148.00	6	Powerwave LGP13519	AT&T
148.00	148.00	1	Cci OPA-65R-LCUU-H6	AT&T
148.00	148.00	2	Cci OPA-65R-LCUU-H8	AT&T
148.00	148.00	3	Ericsson RRUS	AT&T
148.00	148.00	3	Ericsson RRUS A2 Module	AT&T
148.00	148.00	1	CCI HPA-65R-BUU-H6	AT&T
148.00	148.00	2	CCI HPA-65R-BUU-H8	AT&T
148.00	148.00	3	Powerwave 1001940-Bias	AT&T
148.00	148.00	3	Ericsson RRUS 32-RRU	AT&T
148.00	148.00	1	WCS-IMFQ-AMT	AT&T
137.00	137.00	3	T-Arms	Metro PCS
137.00	137.00	6	APXV18-206517S-C	Metro PCS
127.00	127.00	3	Sector Frames	Sprint Nextel
127.00	127.00	3	VHLP2-11	Sprint Nextel
127.00	127.00	1	VHLP800-11	Sprint Nextel
127.00	127.00	3	ETCR-654L12H6	Sprint Nextel
127.00	127.00	4	Horizon Duo	Sprint Nextel
127.00	127.00	3	1900MHz RRH	Sprint Nextel
127.00	127.00	6	800 MHz RRH	Sprint Nextel
127.00	127.00	3	TD-RRH8x20-25	Sprint Nextel
117.00	118.35	1	HG2409U-PRO	Ingenu
117.00	117.00	1	CM-30S-72	Ingenu



Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	167.00	Inside	1 5/8" Coax	T-Mobile
0.00	167.00	Inside	1 5/8" Fiber	T-Mobile
0.00	157.00	Inside	1 5/8" Coax	Verizon
0.00	157.00	Outside	1 5/8" Coax	Verizon
0.00	157.00	Inside	1 5/8" Fiber	Verizon
0.00	157.00	Inside	1/2" Coax	Verizon
0.00	148.00	Inside	1 5/8" Coax	AT&T
0.00	148.00	Inside	1/2" Fiber	AT&T
0.00	148.00	Inside	3/4" DC Power	AT&T
0.00	137.00	Inside	1 5/8" Coax	Metro PCS
0.00	127.00	Inside	1-1/4" Fiber	Sprint Nextel
0.00	127.00	Inside	1/2" Coax	Sprint Nextel
0.00	117.00	Inside	1 5/8" Coax	Ingenu
99.25	104.50	Outside	1" Reinforcing plate	
89.25	99.25	Outside	1" Reinforcing plate	

Anchor Bolts

Qty	Specifications	Grade (ksi)	Arrangement
16	2.25" 18J	75.0	Cluster

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
3.0000	61.3	60.0	Clipped

Reactions

Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 97 mph Wind	3911.1	31.3	55.1
0.9D + 1.6W 97 mph Wind	3863.3	31.3	41.3
1.2D + 1.0Di + 1.0Wi 50 mph Wind	1077.5	8.7	85.7
1.2D + 1.0E	219.9	1.8	55.2
0.9D + 1.0E	216.9	1.8	41.4
1.0D + 1.0W 60 mph Wind	928.9	7.5	46.0

Structure: CT13071-A-SBA - Coax Line Placement

Type: Monopole
Site Name: Woodbridge
Height: 169.00 (ft)

10/25/2017

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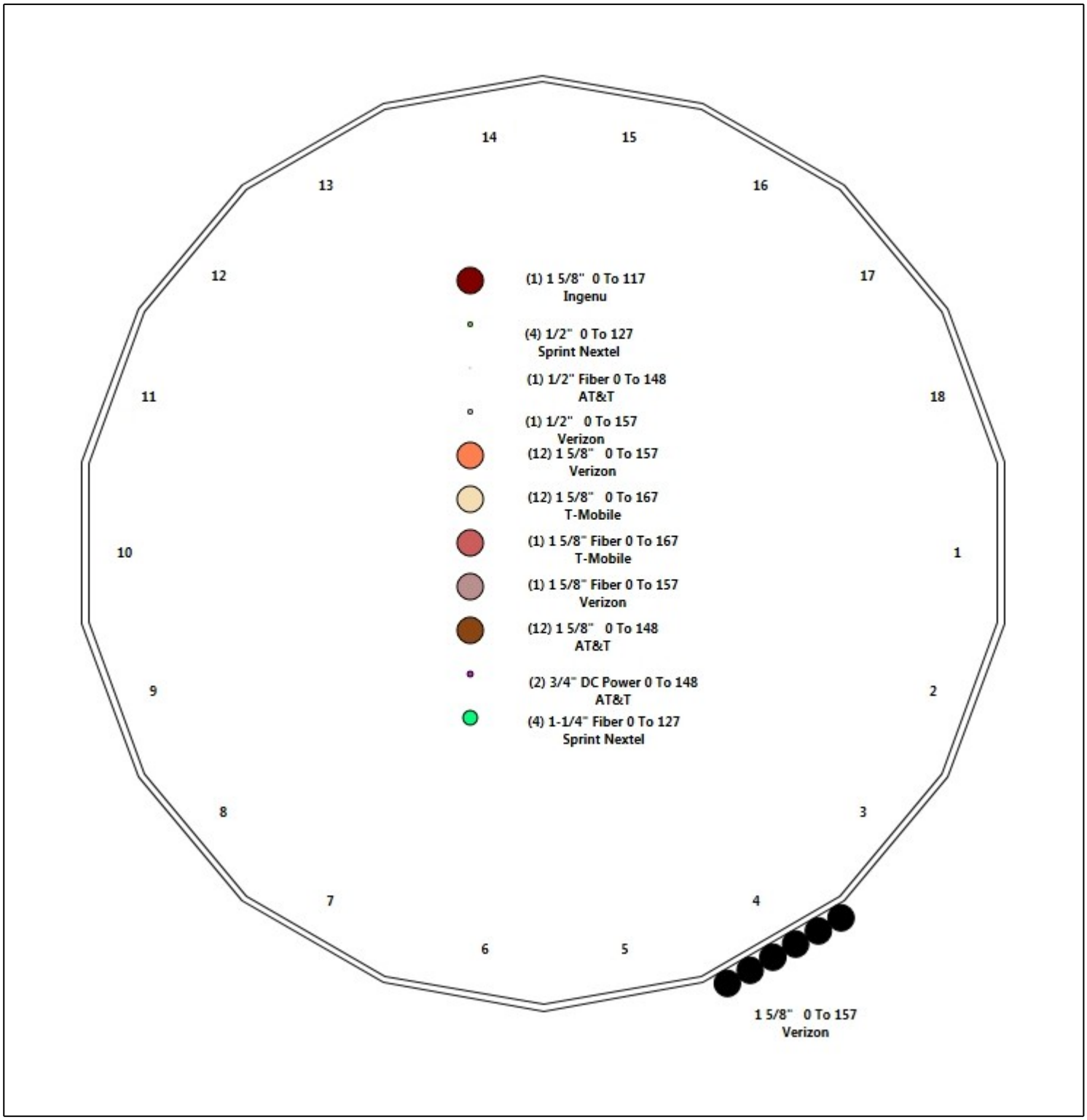


Shaft Properties

Structure:	CT13071-A-SBA		**Code:**	EIA/TIA-222-G	10/25/2017
Site Name:	Woodbridge		**Exposure:**	B	
Height:	169.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 5

Tower Engineering Solutions

Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	47.000	0.4375	65		0.00	11,335
2	18	53.500	0.3750	65	Slip	75.00	9,329
3	18	53.500	0.2500	65	Slip	60.00	4,908
4	18	30.000	0.1875	65	Slip	45.00	1,629
					Total Shaft Weight:		**27,200**

	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	56.18	0.00	77.40	30386.58	21.23	128.41	46.78	47.00	64.35	17459.0	17.44	106.9	0.200030
2	48.78	40.75	57.61	17053.51	21.53	130.08	38.08	94.25	44.87	8058.91	16.49	101.5	0.200030
3	39.58	89.25	31.21	6097.74	26.50	158.31	28.88	142.75	22.71	2351.56	18.96	115.5	0.200030
4	30.00	139.0	17.74	1992.41	26.80	160.00	24.00	169.00	14.17	1015.22	21.16	128.0	0.200030

Additional Steel

							Intermediate Connectors		Termination Connectors			
Elev From (ft)	Elev To (ft)	Qty	Description	Fy (ksi)	Fu (ksi)	Offset (in)	Description	Spacing (in)	Description	Spacing (in)	Lower Qty	Upper Qty
91.50	97.00	3	LNP LP6X100-G-10TT	65	80	0.00	5/8" Hollo Bolt	23.00	5/8" Hollo Bolt		9	9
96.75	102.2	3	LNP LP6X100-G-10TT	65	80	0.00	5/8" Hollo Bolt	23.00	5/8" Hollo Bolt		9	9

Load Summary

Structure:	CT13071-A-SBA		**Code:**	EIA/TIA-222-G	10/25/2017
Site Name:	Woodbridge		**Exposure:**	B	
Height:	169.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 6

Tower Engineering Solutions

Discrete Appurtenances

				No Ice			Ice				
No.	Elev (ft)	Description	Qty	Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor	Hor. Ecc. (ft)	Vert Ecc (ft)
1	167.00	T-Arms/Commscope VSR-MS-B	3	340.00	6.75	0.75	579.91	12.704	0.75	0.00	0.50
2	167.00	AIR B2A B4P	3	91.50	6.09	0.86	262.57	7.200	0.86	0.00	0.00
3	167.00	AIR B4A B2P	3	90.40	6.09	0.86	261.47	7.200	0.86	0.00	0.00
4	167.00	LNX-6515DS	3	50.30	11.47	0.84	284.66	14.772	0.84	0.00	0.00
5	167.00	Ericsson KRY 112 144/1	3	11.00	0.41	0.70	21.90	0.890	0.72	0.00	0.00
6	167.00	Ericsson S11B12	3	51.00	3.31	0.70	138.66	3.528	0.72	0.00	0.00
7	157.00	BXA-70063/6CF	1	17.00	7.57	0.70	159.36	10.346	0.70	0.00	0.00
8	157.00	T-Arms	3	350.00	8.00	0.75	595.45	15.013	0.75	0.00	0.00
9	157.00	SLCP 2x6014F	2	20.00	6.49	0.89	197.04	8.575	0.89	0.00	0.00
10	157.00	DB846F65ZAXY	4	21.00	7.05	0.93	219.47	8.287	0.93	0.00	0.00
11	157.00	DB846H80E-SX	2	16.00	5.01	1.10	176.40	6.231	1.10	0.00	0.00
12	157.00	HBX-6517DS-VTM	6	18.70	5.29	0.75	140.62	6.584	0.75	0.00	0.00
13	157.00	ALU RRH2X60-AWS RRH	3	60.00	3.50	0.76	147.69	4.293	0.78	0.00	0.00
14	157.00	RFS DB T1-6Z-8AB-OZ Distribution	1	19.00	3.20	1.00	94.95	4.035	1.00	0.00	0.00
15	157.00	GPS	1	10.00	1.00	1.00	39.45	1.715	1.00	0.00	0.00
16	150.00	Collar Mount	1	100.00	3.50	1.00	183.77	5.943	1.00	0.00	0.00
17	148.00	Ericsson RRUS-11-RRU	3	50.00	2.52	0.76	140.08	3.220	0.78	0.00	0.00
18	148.00	Raycap DC6-48-60-18-8F-Surge	2	32.80	1.47	0.80	96.48	2.169	0.82	0.00	0.00
19	148.00	T-Arms	3	350.00	8.00	0.75	594.00	14.972	0.75	0.00	0.00
20	148.00	Powerwave 7770	3	35.00	5.51	0.77	169.93	6.566	0.80	0.00	0.00
21	148.00	Powerwave LGP21401 TMA	6	14.10	1.29	0.75	39.07	2.125	0.77	0.00	0.00
22	148.00	Powerwave LGP13519	6	5.30	0.34	0.75	14.78	0.793	0.77	0.00	0.00
23	148.00	Cci OPA-65R-LCUU-H6	1	73.00	9.66	0.79	304.40	11.024	0.79	0.00	0.00
24	148.00	Cci OPA-65R-LCUU-H8	2	88.00	12.75	0.79	373.59	14.593	0.79	0.00	0.00
25	148.00	Ericsson RRUS 12-B2-RRU	3	58.00	3.15	0.70	153.23	3.863	0.72	0.00	0.00
26	148.00	Ericsson RRUS A2 Module	3	21.20	1.86	0.62	57.26	2.833	0.64	0.00	0.00
27	148.00	CCI HPA-65R-BUU-H6	1	51.00	9.66	0.85	298.72	11.024	0.85	0.00	0.00
28	148.00	CCI HPA-65R-BUU-H8	2	68.00	12.98	0.79	358.59	14.593	0.79	0.00	0.00
29	148.00	Powerwave 1001940-Bias Ts	3	2.00	0.07	0.90	9.46	0.300	0.91	0.00	0.00
30	148.00	Ericsson RRUS 32-RRU	3	77.00	1.65	0.70	125.40	2.229	0.72	0.00	0.00
31	148.00	WCS-IMFQ-AMT	1	6.60	1.19	0.63	30.81	1.976	0.65	0.00	0.00
32	137.00	T-Arms	3	242.00	8.19	0.75	446.08	18.359	0.75	0.00	0.00
33	137.00	APXV18-206517S-C	6	26.40	5.17	0.74	118.41	7.523	0.74	0.00	0.00
34	127.00	Sector Frames	3	500.00	20.00	0.75	1186.56	35.654	0.75	0.00	0.00
35	127.00	VHLP2-11	3	27.00	4.68	1.00	123.25	5.933	1.00	0.10	0.00
36	127.00	VHLP800-11	1	48.00	8.43	1.00	219.27	10.108	1.00	0.10	0.00
37	127.00	ETCR-654L12H6	3	99.00	15.71	0.71	415.73	17.360	0.73	0.00	0.00
38	127.00	Horizon Duo	4	7.00	0.59	0.50	22.26	1.143	0.50	0.00	0.00
39	127.00	1900MHz RRH	3	60.00	2.77	0.99	142.06	4.018	0.99	0.00	0.00
40	127.00	800 MHz RRH	6	53.00	2.49	0.92	125.74	3.615	0.92	0.00	0.00
41	127.00	TD-RRH8x20-25	3	70.00	4.05	0.69	178.26	4.849	0.71	0.00	0.00
42	117.00	HG2409U-PRO	1	2.80	0.38	1.00	28.28	0.981	1.00	0.00	1.35
43	117.00	CM-30S-72	1	350.00	5.00	1.00	636.00	8.405	1.00	0.00	0.00
		Totals:	**121**	**9,850.20**			**26,098.72**				

Linear Appurtenances

Discrete Appurtenances

No.	Elev (ft)	Description	Qty	No Ice Weight (lb)	No Ice CaAa (sf)	No Ice CaAa Factor	Ice Weight (lb)	Ice CaAa (sf)	Ice CaAa Factor	Hor. Ecc. (ft)	Vert Ecc (ft)
Bottom Elev. (ft)	Top Elev. (ft)	Description		Exposed Width		Exposed					
0.00	167.00	(12) 1 5/8" Coax		0.00		Inside					
0.00	167.00	(1) 1 5/8" Fiber		0.00		Inside					
0.00	157.00	(12) 1 5/8" Coax		0.00		Inside					
0.00	157.00	(6) 1 5/8" Coax		2.00		Outside					
0.00	157.00	(1) 1 5/8" Fiber		0.00		Inside					
0.00	157.00	(1) 1/2" Coax		0.00		Inside					
0.00	148.00	(12) 1 5/8" Coax		0.00		Inside					
0.00	148.00	(1) 1/2" Fiber		0.00		Inside					
0.00	148.00	(2) 3/4" DC Power		0.00		Inside					
0.00	137.00	(6) 1 5/8" Coax		0.00		Inside					
0.00	127.00	(4) 1-1/4" Fiber		0.00		Inside					
0.00	127.00	(4) 1/2" Coax		0.00		Inside					
0.00	117.00	(1) 1 5/8" Coax		0.00		Inside					
99.25	104.50	(1) 1" Reinforcing plate		1.00		Outside					
89.25	99.25	(1) 1" Reinforcing plate		1.00		Outside					

Shaft Section Properties

Structure: CT13071-A-SBA | **Code:** EIA/TIA-222-G | 10/25/2017
Site Name: Woodbridge | **Exposure:** B
Height: 169.00 (ft) | **Crest Height:** 0.00
Base Elev: 0.000 (ft) | **Site Class:** D - Stiff Soil
Gh: 1.1 | **Topography:** 1 | **Struct Class:** II | Page: 8

Increment Length: 5 (ft)

Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fy (ksi)	Fb (ksi)	Weight (lb)	Additional Reinforcing Area (in^2)	Ixp (in^4)	Iyp (in^4)	Weight (lb)
0.00		0.4375	56.180	77.403	30386.6	21.23	128.41	65	76	0.0				
5.00		0.4375	55.180	76.014	28780.1	20.83	126.13	65	77	1305.1				
10.00		0.4375	54.180	74.625	27231.3	20.43	123.84	65	77	1281.5				
15.00		0.4375	53.180	73.236	25739.1	20.02	121.55	65	78	1257.8				
20.00		0.4375	52.179	71.848	24302.4	19.62	119.27	65	78	1234.2				
25.00		0.4375	51.179	70.459	22920.2	19.22	116.98	65	79	1210.6				
30.00		0.4375	50.179	69.070	21591.5	18.81	114.70	65	79	1187.0				
35.00		0.4375	49.179	67.681	20315.1	18.41	112.41	65	80	1163.3				
40.00		0.4375	48.179	66.292	19090.0	18.01	110.12	65	80	1139.7				
40.75	Bot - Section 2	0.4375	48.029	66.084	18910.6	17.95	109.78	65	80	168.9				
45.00		0.4375	47.179	64.904	17915.2	17.60	107.84	65	81	1773.0				
47.00	Top - Section 1	0.3750	47.529	56.123	15766.0	20.94	126.74	65	77	823.4				
50.00		0.3750	46.929	55.408	15171.7	20.66	125.14	65	77	569.3				
55.00		0.3750	45.928	54.218	14214.7	20.19	122.48	65	78	932.6				
60.00		0.3750	44.928	53.028	13298.8	19.71	119.81	65	78	912.3				
65.00		0.3750	43.928	51.837	12423.2	19.24	117.14	65	79	892.1				
70.00		0.3750	42.928	50.647	11586.8	18.77	114.47	65	79	871.8				
75.00		0.3750	41.928	49.456	10788.9	18.30	111.81	65	80	851.6				
80.00		0.3750	40.928	48.266	10028.4	17.83	109.14	65	80	831.3				
85.00		0.3750	39.927	47.076	9304.6	17.36	106.47	65	81	811.1				
89.25	Bot - Section 3	0.3750	39.077	46.064	8717.4	16.96	104.21	65	81	673.5				
90.00		0.3750	38.927	45.885	8616.4	16.89	103.81	65	82	196.8				
91.50	RB1	0.3750	38.627	45.528	8416.8	16.75	103.01	65	82	391.4	18.00	4449.0	2805.1	91.9
94.25	Top - Section 2	0.2500	38.577	30.412	5644.2	25.80	154.31	65	71	709.6	18.00	4328.3	2729.4	168.4
95.00		0.2500	38.427	30.293	5578.2	25.69	153.71	65	71	77.5	18.00	4290.5	2703.4	45.9
96.75	RB2	0.2500	38.077	30.015	5426.2	25.45	152.31	65	71	179.6	36.00	7688.0	6129.7	214.4
97.00	RT1	0.2500	38.027	29.975	5404.7	25.41	152.11	65	72	25.5	18.00	3454.8	3454.8	15.3
100.00		0.2500	37.427	29.499	5151.2	24.99	149.71	65	72	303.6	18.00	3350.2	3350.2	183.7
102.25	RT2	0.2500	36.977	29.142	4966.4	24.67	147.91	65	72	224.5	18.00	3272.8	3272.8	137.8
105.00		0.2500	36.427	28.705	4746.6	24.28	145.71	65	73	270.7				
110.00		0.2500	35.427	27.912	4363.7	23.58	141.71	65	74	481.6				
115.00		0.2500	34.427	27.118	4001.9	22.87	137.71	65	75	468.1				
117.00		0.2500	34.027	26.801	3863.0	22.59	136.11	65	75	183.5				
120.00		0.2500	33.426	26.325	3660.8	22.17	133.71	65	75	271.2				
125.00		0.2500	32.426	25.531	3339.6	21.46	129.71	65	76	441.1				
127.00		0.2500	32.026	25.214	3216.6	21.18	128.10	65	76	172.7				
130.00		0.2500	31.426	24.737	3037.7	20.75	125.70	65	77	255.0				
135.00		0.2500	30.426	23.944	2754.7	20.05	121.70	65	78	414.1				
137.00		0.2500	30.026	23.626	2646.6	19.77	120.10	65	78	161.9				
139.00	Bot - Section 4	0.2500	29.626	23.309	2541.3	19.48	118.50	65	78	159.7				
140.00		0.2500	29.426	23.150	2489.7	19.34	117.70	65	79	139.2				
142.75	Top - Section 3	0.1875	29.251	17.296	1845.8	26.10	156.00	65	71	378.0				
145.00		0.1875	28.801	17.028	1761.3	25.67	153.60	65	71	131.4				
148.00		0.1875	28.201	16.671	1652.8	25.11	150.40	65	72	172.0				
150.00		0.1875	27.801	16.433	1583.0	24.73	148.27	65	72	112.6				
155.00		0.1875	26.800	15.837	1417.2	23.79	142.94	65	73	274.5				
157.00		0.1875	26.400	15.599	1354.2	23.42	140.80	65	74	107.0				
160.00		0.1875	25.800	15.242	1263.3	22.85	137.60	65	75	157.4				
165.00		0.1875	24.800	14.647	1121.0	21.91	132.27	65	76	254.3				
167.00		0.1875	24.400	14.409	1067.3	21.54	130.13	65	76	98.9				

Increment Length: **5 (ft)**

Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fy (ksi)	Fb (ksi)	Weight (lb)	Additional Reinforcing Area (in^2)	Additional Reinforcing Ixp (in^4)	Additional Reinforcing Iyp (in^4)	Additional Reinforcing Weight (lb)
169.00		0.1875	24.000	14.171	1015.2	21.16	128.00	65	77	97.3				
									Total Weight	**27200.5**				**857.5**

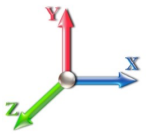
Wind Loading - Shaft

Structure:	CT13071-A-SBA	**Code:**	EIA/TIA-222-G	10/25/2017	
Site Name:	Woodbridge	**Exposure:**	B		
Height:	169.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 10	

Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 27

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.70	16.018	17.62	385.81	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	16.018	17.62	378.94	0.650	0.000	5.00	23.558	15.31	431.7	0.0	1566.1
10.00		1.00	0.70	16.018	17.62	372.07	0.650	0.000	5.00	23.135	15.04	423.9	0.0	1537.8
15.00		1.00	0.70	16.018	17.62	365.20	0.650	0.000	5.00	22.712	14.76	416.2	0.0	1509.4
20.00		1.00	0.70	16.018	17.62	358.33	0.650	0.000	5.00	22.288	14.49	408.4	0.0	1481.1
25.00		1.00	0.70	16.018	17.62	351.46	0.650	0.000	5.00	21.865	14.21	400.7	0.0	1452.7
30.00		1.00	0.70	16.031	17.63	344.74	0.650	0.000	5.00	21.442	13.94	393.2	0.0	1424.4
35.00		1.00	0.73	16.753	18.43	345.39	0.650	0.000	5.00	21.019	13.66	402.8	0.0	1396.0
40.00		1.00	0.76	17.405	19.15	344.89	0.650	0.000	5.00	20.596	13.39	410.1	0.0	1367.6
40.75	Bot - Section 2	1.00	0.76	17.497	19.25	344.73	0.650	0.000	0.75	3.053	1.98	61.1	0.0	202.7
45.00		1.00	0.79	18.000	19.80	343.46	0.650	0.000	4.25	17.389	11.30	358.1	0.0	2127.6
47.00	Top - Section 1	1.00	0.80	18.225	20.05	342.67	0.650	0.000	2.00	8.077	5.25	168.4	0.0	988.1
50.00		1.00	0.81	18.551	20.41	346.82	0.650	0.000	3.00	11.989	7.79	254.4	0.0	683.1
55.00		1.00	0.83	19.063	20.97	344.08	0.650	0.000	5.00	19.644	12.77	428.4	0.0	1119.1
60.00		1.00	0.85	19.543	21.50	340.80	0.650	0.000	5.00	19.220	12.49	429.7	0.0	1094.8
65.00		1.00	0.87	19.995	21.99	337.04	0.650	0.000	5.00	18.797	12.22	430.0	0.0	1070.5
70.00		1.00	0.89	20.422	22.46	332.87	0.650	0.000	5.00	18.374	11.94	429.3	0.0	1046.2
75.00		1.00	0.91	20.829	22.91	328.34	0.650	0.000	5.00	17.951	11.67	427.7	0.0	1021.9
80.00		1.00	0.93	21.217	23.34	323.47	0.650	0.000	5.00	17.528	11.39	425.4	0.0	997.6
85.00		1.00	0.94	21.587	23.75	318.32	0.650	0.000	5.00	17.105	11.12	422.4	0.0	973.3
89.25	Bot - Section 3	1.00	0.96	21.890	24.08	313.72	0.650	0.000	4.25	14.206	9.23	355.8	0.0	808.2
90.00		1.00	0.96	21.943	24.14	312.89	0.650	0.000	0.75	2.507	1.63	62.9	0.0	236.2
91.50	RB1	1.00	0.96	22.047	24.25	311.21	0.650	0.000	1.50	4.985	3.24	125.7	0.0	469.6
94.25	Top - Section 2	1.00	0.97	22.234	24.46	308.08	0.650	0.000	2.75	9.041	5.88	230.0	0.0	851.5
95.00		1.00	0.97	22.284	24.51	311.26	0.650	0.000	0.75	2.444	1.59	62.3	0.0	93.0
96.75	RB2	1.00	0.98	22.401	24.64	309.23	0.650	0.000	1.75	5.664	3.68	145.2	0.0	215.5
97.00	RT1	1.00	0.98	22.417	24.66	308.94	0.650	0.000	0.25	0.805	0.52	20.6	0.0	30.6
100.00		1.00	0.99	22.613	24.87	305.39	0.650	0.000	3.00	9.577	6.23	247.8	0.0	364.3
102.25	RT2	1.00	0.99	22.758	25.03	302.68	0.650	0.000	2.25	7.083	4.60	184.4	0.0	269.4
105.00		1.00	1.00	22.931	25.22	299.31	0.650	0.000	2.75	8.541	5.55	224.0	0.0	324.8
110.00		1.00	1.02	23.238	25.56	293.03	0.650	0.000	5.00	15.200	9.88	404.1	0.0	578.0
115.00		1.00	1.03	23.535	25.89	286.57	0.650	0.000	5.00	14.777	9.61	397.9	0.0	561.8
117.00	Appurtenance(s)	1.00	1.03	23.651	26.02	283.94	0.650	0.000	2.00	5.792	3.77	156.7	0.0	220.2
120.00		1.00	1.04	23.823	26.20	279.94	0.650	0.000	3.00	8.562	5.57	233.3	0.0	325.4
125.00		1.00	1.05	24.102	26.51	273.16	0.650	0.000	5.00	13.931	9.06	384.1	0.0	529.4
127.00	Appurtenance(s)	1.00	1.06	24.212	26.63	270.40	0.650	0.000	2.00	5.454	3.55	151.1	0.0	207.2
130.00		1.00	1.07	24.374	26.81	266.22	0.650	0.000	3.00	8.054	5.24	224.6	0.0	305.9
135.00		1.00	1.08	24.638	27.10	259.14	0.650	0.000	5.00	13.085	8.51	368.8	0.0	497.0
137.00	Appurtenance(s)	1.00	1.08	24.742	27.22	256.27	0.650	0.000	2.00	5.115	3.32	144.8	0.0	194.2
139.00	Bot - Section 4	1.00	1.09	24.844	27.33	253.38	0.650	0.000	2.00	5.048	3.28	143.5	0.0	191.7
140.00		1.00	1.09	24.895	27.38	251.93	0.650	0.000	1.00	2.530	1.64	72.1	0.0	167.1
142.75	Top - Section 3	1.00	1.09	25.034	27.54	247.90	0.650	0.000	2.75	6.871	4.47	196.8	0.0	453.6
145.00		1.00	1.10	25.146	27.66	247.81	0.650	0.000	2.25	5.526	3.59	159.0	0.0	157.7
148.00	Appurtenance(s)	1.00	1.11	25.294	27.82	243.36	0.650	0.000	3.00	7.235	4.70	209.4	0.0	206.4
150.00	Appurtenance(s)	1.00	1.11	25.391	27.93	240.37	0.650	0.000	2.00	4.739	3.08	137.6	0.0	135.2
155.00		1.00	1.12	25.630	28.19	232.81	0.650	0.000	5.00	11.551	7.51	338.7	0.0	329.4
157.00	Appurtenance(s)	1.00	1.12	25.724	28.30	229.75	0.650	0.000	2.00	4.502	2.93	132.5	0.0	128.4

Wind Loading - Shaft

Structure: CT13071-A-SBA
Site Name: Woodbridge
Height: 169.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1
Topography: 1

Code: EIA/TIA-222-G
Exposure: B
Crest Height: 0.00
Site Class: D - Stiff Soil
Struct Class: II

10/25/2017

Tower Engineering Solutions

160.00	1.00	1.13	25.863	28.45	225.14	0.650	0.000	3.00	6.626	4.31	196.0	0.0	188.9
165.00	1.00	1.14	26.092	28.70	217.37	0.650	0.000	5.00	10.704	6.96	319.5	0.0	305.1
167.00 Appurtenance(s)	1.00	1.14	26.182	28.80	214.23	0.650	0.000	2.00	4.163	2.71	124.7	0.0	118.6
169.00	1.00	1.15	26.271	28.90	211.07	0.650	0.000	2.00	4.096	2.66	123.1	0.0	116.7
							Totals:	**169.00**			**13,398.8**		**32,640.6**

Discrete Appurtenance Forces

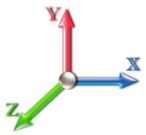
Structure:	CT13071-A-SBA	**Code:**	EIA/TIA-222-G	10/25/2017	
Site Name:	Woodbridge	**Exposure:**	B		
Height:	169.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 12	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 27

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	167.00	Ericsson S11B12	3	26.182	28.800	0.63	0.90	6.26	183.60	0.000	0.000	288.27	0.00	0.00
2	167.00	Ericsson KRY 112 144/1	3	26.182	28.800	0.63	0.90	0.77	39.60	0.000	0.000	35.71	0.00	0.00
3	167.00	LNX-6515DS	3	26.182	28.800	0.76	0.90	26.01	181.08	0.000	0.000	1198.72	0.00	0.00
4	167.00	AIR B4A B2P	3	26.182	28.800	0.77	0.90	14.14	325.44	0.000	0.000	651.61	0.00	0.00
5	167.00	AIR B2A B4P	3	26.182	28.800	0.77	0.90	14.14	329.40	0.000	0.000	651.61	0.00	0.00
6	167.00	T-Arms/Commscope	3	26.204	28.825	0.56	0.75	11.39	1224.00	0.000	0.500	525.33	0.00	262.66
7	157.00	BXA-70063/6CF	1	25.724	28.296	0.63	0.90	4.77	20.40	0.000	0.000	215.92	0.00	0.00
8	157.00	T-Arms	3	25.724	28.296	0.56	0.75	13.50	1260.00	0.000	0.000	611.20	0.00	0.00
9	157.00	SLCP 2x6014F	2	25.724	28.296	0.71	0.80	9.24	48.00	0.000	0.000	418.41	0.00	0.00
10	157.00	DB846F65ZAXY	4	25.724	28.296	0.74	0.80	20.98	100.80	0.000	0.000	949.89	0.00	0.00
11	157.00	DB846H80E-SX	2	25.724	28.296	0.88	0.80	8.82	38.40	0.000	0.000	399.21	0.00	0.00
12	157.00	HBX-6517DS-VTM	6	25.724	28.296	0.60	0.80	19.04	134.64	0.000	0.000	862.20	0.00	0.00
13	157.00	ALU RRH2X60-AWS RRH	3	25.724	28.296	0.61	0.80	6.38	216.00	0.000	0.000	289.03	0.00	0.00
14	157.00	RFS DB T1-6Z-8AB-OZ	1	25.724	28.296	0.80	0.80	2.56	22.80	0.000	0.000	115.90	0.00	0.00
15	157.00	GPS	1	25.724	28.296	0.80	0.80	0.80	12.00	0.000	0.000	36.22	0.00	0.00
16	150.00	Collar Mount	1	25.391	27.930	1.00	1.00	3.50	120.00	0.000	0.000	156.41	0.00	0.00
17	148.00	WCS-IMFQ-AMT	1	25.294	27.823	0.50	0.80	0.60	7.92	0.000	0.000	26.70	0.00	0.00
18	148.00	Ericsson RRUS 32-RRU	3	25.294	27.823	0.56	0.80	2.77	277.20	0.000	0.000	123.40	0.00	0.00
19	148.00	Powerwave 1001940-Bias	3	25.294	27.823	0.72	0.80	0.15	7.20	0.000	0.000	6.73	0.00	0.00
20	148.00	CCI HPA-65R-BUU-H8	2	25.294	27.823	0.63	0.80	16.41	163.20	0.000	0.000	730.38	0.00	0.00
21	148.00	CCI HPA-65R-BUU-H6	1	25.294	27.823	0.68	0.80	6.57	61.20	0.000	0.000	292.42	0.00	0.00
22	148.00	Ericsson RRUS A2	3	25.294	27.823	0.50	0.80	2.77	76.32	0.000	0.000	123.21	0.00	0.00
23	148.00	Ericsson RRUS	3	25.294	27.823	0.56	0.80	5.29	208.80	0.000	0.000	235.58	0.00	0.00
24	148.00	Cci OPA-65R-LCUU-H8	2	25.294	27.823	0.63	0.80	16.12	211.20	0.000	0.000	717.43	0.00	0.00
25	148.00	Cci OPA-65R-LCUU-H6	1	25.294	27.823	0.63	0.80	6.11	87.60	0.000	0.000	271.78	0.00	0.00
26	148.00	Powerwave LGP13519	6	25.294	27.823	0.60	0.80	1.22	38.16	0.000	0.000	54.49	0.00	0.00
27	148.00	Powerwave LGP21401	6	25.294	27.823	0.60	0.80	4.64	101.52	0.000	0.000	206.74	0.00	0.00
28	148.00	Powerwave 7770	3	25.294	27.823	0.61	0.80	10.13	126.00	0.000	0.000	450.94	0.00	0.00
29	148.00	T-Arms	3	25.294	27.823	0.60	0.80	14.40	1260.00	0.000	0.000	641.04	0.00	0.00
30	148.00	Raycap	2	25.294	27.823	0.64	0.80	1.88	78.72	0.000	0.000	83.76	0.00	0.00
31	148.00	Ericsson RRUS-11-RRU	3	25.294	27.823	0.61	0.80	4.60	180.00	0.000	0.000	204.62	0.00	0.00
32	137.00	T-Arms	3	24.742	27.216	0.56	0.75	13.82	871.20	0.000	0.000	601.82	0.00	0.00
33	137.00	APXV18-206517S-C	6	24.742	27.216	0.59	0.80	18.36	190.08	0.000	0.000	799.66	0.00	0.00
34	127.00	Sector Frames	3	24.212	26.633	0.56	0.75	33.75	1800.00	0.000	0.000	1438.17	0.00	0.00
35	127.00	VHLP2-11	3	24.212	26.633	1.00	1.00	14.04	97.20	1.455	0.000	598.28	544.06	0.00
36	127.00	VHLP800-11	1	24.212	26.633	1.00	1.00	8.43	57.60	1.455	0.000	359.22	326.67	0.00
37	127.00	ETCR-654L12H6	3	24.212	26.633	0.57	0.80	26.77	356.40	0.000	0.000	1140.73	0.00	0.00
38	127.00	Horizon Duo	4	24.212	26.633	0.50	1.00	1.18	33.60	0.000	0.000	50.28	0.00	0.00
39	127.00	1900MHz RRH	3	24.212	26.633	0.79	0.80	6.58	216.00	0.000	0.000	280.45	0.00	0.00
40	127.00	800 MHz RRH	6	24.212	26.633	0.74	0.80	11.00	381.60	0.000	0.000	468.56	0.00	0.00
41	127.00	TD-RRH8x20-25	3	24.212	26.633	0.55	0.80	6.71	252.00	0.000	0.000	285.79	0.00	0.00
42	117.00	CM-30S-72	1	23.651	26.016	1.00	1.00	5.00	420.00	0.000	0.000	208.13	0.00	0.00
43	117.00	HG2409U-PRO	1	23.728	26.101	1.00	1.00	0.38	3.36	0.000	1.346	15.87	0.00	21.36
							Totals:		**11,820.24**			**17,821.83**		

Total Applied Force Summary

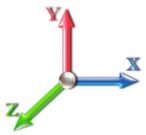
Structure:	CT13071-A-SBA		**Code:**	EIA/TIA-222-G	10/25/2017
Site Name:	Woodbridge		**Exposure:**	B	
Height:	169.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 13

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 27

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		431.69	1917.94	0.00	0.00
10.00		423.93	1889.59	0.00	0.00
15.00		416.18	1861.23	0.00	0.00
20.00		408.42	1832.88	0.00	0.00
25.00		400.67	1804.53	0.00	0.00
30.00		393.25	1776.17	0.00	0.00
35.00		402.84	1747.82	0.00	0.00
40.00		410.08	1719.46	0.00	0.00
40.75		61.11	255.47	0.00	0.00
45.00		358.09	2426.64	0.00	0.00
47.00		168.42	1128.78	0.00	0.00
50.00		254.43	894.22	0.00	0.00
55.00		428.38	1470.92	0.00	0.00
60.00		429.70	1446.61	0.00	0.00
65.00		429.97	1422.31	0.00	0.00
70.00		429.28	1398.01	0.00	0.00
75.00		427.74	1373.70	0.00	0.00
80.00		425.43	1349.40	0.00	0.00
85.00		422.42	1325.10	0.00	0.00
89.25		355.76	1107.22	0.00	0.00
90.00		62.93	288.95	0.00	0.00
91.50		125.74	575.17	0.00	0.00
94.25		229.96	1045.01	0.00	0.00
95.00		62.29	145.73	0.00	0.00
96.75		145.16	338.61	0.00	0.00
97.00		20.64	48.21	0.00	0.00
100.00		247.76	575.37	0.00	0.00
102.25		184.40	427.70	0.00	0.00
105.00		224.04	518.29	0.00	0.00
110.00		404.09	929.78	0.00	0.00
115.00		397.86	913.58	0.00	0.00
117.00	(2) attachments	380.72	784.26	0.00	21.36
120.00		233.33	532.74	0.00	0.00
125.00		384.12	874.93	0.00	0.00
127.00	(26) attachments	4772.55	3539.84	870.74	0.00
130.00		224.57	497.25	0.00	0.00
135.00		368.80	815.79	0.00	0.00
137.00	(9) attachments	1546.27	1383.06	0.00	0.00
139.00		143.46	304.21	0.00	0.00
140.00		72.06	223.34	0.00	0.00
142.75		196.77	608.33	0.00	0.00
145.00		158.98	284.30	0.00	0.00
148.00	(42) attachments	4378.58	3260.28	0.00	0.00
150.00	(1) attachments	294.06	335.72	0.00	0.00
155.00		338.67	530.78	0.00	0.00
157.00	(23) attachments	4030.45	2061.95	0.00	0.00

Total Applied Force Summary

Structure:	CT13071-A-SBA		**Code:**	EIA/TIA-222-G	10/25/2017
Site Name:	Woodbridge		**Exposure:**	B	
Height:	169.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 14

160.00		196.04	237.79	0.00	0.00
165.00		319.51	386.60	0.00	0.00
167.00	(18) attachments	3475.95	2434.36	0.00	262.66
169.00		123.09	116.70	0.00	0.00
	Totals:	**31,220.67**	**55,166.64**	**870.74**	**284.02**

Linear Appurtenance Segment Forces (Factored)

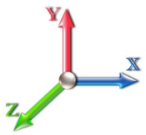
Structure:	CT13071-A-SBA	**Code:**	EIA/TIA-222-G	10/25/2017	
Site Name:	Woodbridge	**Exposure:**	B		
Height:	169.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 15	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 27

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.035	0.000	16.018	0.00	37.44
10.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.036	0.000	16.018	0.00	37.44
15.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.036	0.000	16.018	0.00	37.44
20.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.037	0.000	16.018	0.00	37.44
25.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.038	0.000	16.018	0.00	37.44
30.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.038	0.000	16.031	0.00	37.44
35.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.039	0.000	16.753	0.00	37.44
40.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.040	0.000	17.405	0.00	37.44
40.75	1 5/8" Coax	Yes	0.75	0.000	1.98	0.12	0.00	0.041	0.000	17.497	0.00	5.62
45.00	1 5/8" Coax	Yes	4.25	0.000	1.98	0.70	0.00	0.041	0.000	18.000	0.00	31.82
47.00	1 5/8" Coax	Yes	2.00	0.000	1.98	0.33	0.00	0.042	0.000	18.225	0.00	14.98
50.00	1 5/8" Coax	Yes	3.00	0.000	1.98	0.49	0.00	0.041	0.000	18.551	0.00	22.46
55.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.042	0.000	19.063	0.00	37.44
60.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.043	0.000	19.543	0.00	37.44
65.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.044	0.000	19.995	0.00	37.44
70.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.045	0.000	20.422	0.00	37.44
75.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.046	0.000	20.829	0.00	37.44
80.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.047	0.000	21.217	0.00	37.44
85.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.048	0.000	21.587	0.00	37.44
89.25	1 5/8" Coax	Yes	4.25	0.000	1.98	0.70	0.00	0.049	0.000	21.890	0.00	31.82
90.00	1 5/8" Coax	Yes	0.75	0.000	1.98	0.12	0.00	0.075	0.000	21.943	0.00	5.62
90.00	1" Reinforcing plate	Yes	0.75	0.000	1.00	0.06	0.00	0.075	0.000	21.943	0.00	0.00
91.50	1 5/8" Coax	Yes	1.50	0.000	1.98	0.25	0.00	0.076	0.000	22.047	0.00	11.23
91.50	1" Reinforcing plate	Yes	1.50	0.000	1.00	0.13	0.00	0.076	0.000	22.047	0.00	0.00
94.25	1 5/8" Coax	Yes	2.75	0.000	1.98	0.45	0.00	0.077	0.000	22.234	0.00	20.59
94.25	1" Reinforcing plate	Yes	2.75	0.000	1.00	0.23	0.00	0.077	0.000	22.234	0.00	0.00
95.00	1 5/8" Coax	Yes	0.75	0.000	1.98	0.12	0.00	0.076	0.000	22.284	0.00	5.62
95.00	1" Reinforcing plate	Yes	0.75	0.000	1.00	0.06	0.00	0.076	0.000	22.284	0.00	0.00
96.75	1 5/8" Coax	Yes	1.75	0.000	1.98	0.29	0.00	0.077	0.000	22.401	0.00	13.10
96.75	1" Reinforcing plate	Yes	1.75	0.000	1.00	0.15	0.00	0.077	0.000	22.401	0.00	0.00
97.00	1 5/8" Coax	Yes	0.25	0.000	1.98	0.04	0.00	0.077	0.000	22.417	0.00	1.87
97.00	1" Reinforcing plate	Yes	0.25	0.000	1.00	0.02	0.00	0.077	0.000	22.417	0.00	0.00
100.00	1 5/8" Coax	Yes	3.00	0.000	1.98	0.49	0.00	0.078	0.000	22.613	0.00	22.46
100.00	1" Reinforcing plate	Yes	0.75	0.000	1.00	0.06	0.00	0.078	0.000	22.613	0.00	0.00
100.00	1" Reinforcing plate	Yes	2.25	0.000	1.00	0.19	0.00	0.078	0.000	22.613	0.00	0.00
102.25	1 5/8" Coax	Yes	2.25	0.000	1.98	0.37	0.00	0.079	0.000	22.758	0.00	16.85
102.25	1" Reinforcing plate	Yes	2.25	0.000	1.00	0.19	0.00	0.079	0.000	22.758	0.00	0.00
105.00	1 5/8" Coax	Yes	2.75	0.000	1.98	0.45	0.00	0.075	0.000	22.931	0.00	20.59
105.00	1" Reinforcing plate	Yes	2.25	0.000	1.00	0.19	0.00	0.075	0.000	22.931	0.00	0.00
110.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.054	0.000	23.238	0.00	37.44
115.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.056	0.000	23.535	0.00	37.44
117.00	1 5/8" Coax	Yes	2.00	0.000	1.98	0.33	0.00	0.057	0.000	23.651	0.00	14.98
120.00	1 5/8" Coax	Yes	3.00	0.000	1.98	0.49	0.00	0.058	0.000	23.823	0.00	22.46
125.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.059	0.000	24.102	0.00	37.44
127.00	1 5/8" Coax	Yes	2.00	0.000	1.98	0.33	0.00	0.061	0.000	24.212	0.00	14.98
130.00	1 5/8" Coax	Yes	3.00	0.000	1.98	0.49	0.00	0.061	0.000	24.374	0.00	22.46
135.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.063	0.000	24.638	0.00	37.44

Linear Appurtenance Segment Forces (Factored)

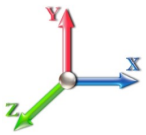
Structure:	CT13071-A-SBA	**Code:**	EIA/TIA-222-G	10/25/2017	
Site Name:	Woodbridge	**Exposure:**	B		
Height:	169.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 16	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 27

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
137.00	1 5/8" Coax	Yes	2.00	0.000	1.98	0.33	0.00	0.065	0.000	24.742	0.00	14.98
139.00	1 5/8" Coax	Yes	2.00	0.000	1.98	0.33	0.00	0.065	0.000	24.844	0.00	14.98
140.00	1 5/8" Coax	Yes	1.00	0.000	1.98	0.17	0.00	0.066	0.000	24.895	0.00	7.49
142.75	1 5/8" Coax	Yes	2.75	0.000	1.98	0.45	0.00	0.067	0.000	25.034	0.00	20.59
145.00	1 5/8" Coax	Yes	2.25	0.000	1.98	0.37	0.00	0.067	0.000	25.146	0.00	16.85
148.00	1 5/8" Coax	Yes	3.00	0.000	1.98	0.49	0.00	0.068	0.000	25.294	0.00	22.46
150.00	1 5/8" Coax	Yes	2.00	0.000	1.98	0.33	0.00	0.070	0.000	25.391	0.00	14.98
155.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.071	0.000	25.630	0.00	37.44
157.00	1 5/8" Coax	Yes	2.00	0.000	1.98	0.33	0.00	0.073	0.000	25.724	0.00	14.98
										Totals:	**0.0**	**1,175.6**

Calculated Forces

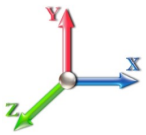
Structure:	CT13071-A-SBA	**Code:**	EIA/TIA-222-G	10/25/2017	
Site Name:	Woodbridge	**Exposure:**	B		
Height:	169.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 17	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 97 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 27

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-55.12	-31.31	-0.86	-3911.1	-0.01	3911.13	5324.18	2662.09	12195.0	6106.56	0.00	0.000	0.000	0.651
5.00	-53.10	-31.04	-0.86	-3754.5	-0.01	3754.59	5261.08	2630.54	11832.5	5925.09	0.10	-0.179	0.000	0.644
10.00	-51.12	-30.77	-0.86	-3599.3	-0.01	3599.39	5196.80	2598.40	11472.7	5744.92	0.38	-0.361	0.000	0.637
15.00	-49.16	-30.50	-0.86	-3445.5	-0.01	3445.53	5131.34	2565.67	11115.7	5566.13	0.86	-0.545	0.000	0.629
20.00	-47.23	-30.23	-0.86	-3293.0	-0.02	3293.03	5064.69	2532.35	10761.6	5388.80	1.53	-0.731	0.000	0.621
25.00	-45.34	-29.95	-0.86	-3141.9	-0.02	3141.91	4996.86	2498.43	10410.5	5212.99	2.40	-0.920	0.000	0.612
30.00	-43.47	-29.67	-0.86	-2992.1	-0.02	2992.17	4927.84	2463.92	10062.6	5038.79	3.46	-1.110	0.000	0.603
35.00	-41.63	-29.37	-0.86	-2843.8	-0.02	2843.82	4857.63	2428.82	9718.08	4866.26	4.73	-1.302	0.000	0.593
40.00	-39.87	-29.00	-0.86	-2696.9	-0.02	2696.97	4786.24	2393.12	9377.03	4695.49	6.20	-1.496	0.000	0.583
40.75	-39.56	-29.00	-0.86	-2675.2	-0.02	2675.23	4775.43	2387.72	9326.19	4670.03	6.43	-1.526	0.000	0.581
45.00	-37.08	-28.65	-0.86	-2551.9	-0.02	2551.99	4713.67	2356.83	9039.63	4526.53	7.87	-1.693	0.000	0.572
47.00	-35.91	-28.51	-0.86	-2494.6	-0.02	2494.69	3877.89	1938.95	7512.92	3762.05	8.59	-1.774	0.000	0.673
50.00	-34.94	-28.33	-0.86	-2409.1	-0.02	2409.16	3845.09	1922.55	7353.82	3682.38	9.75	-1.893	-0.001	0.664
55.00	-33.38	-27.98	-0.86	-2267.5	-0.02	2267.51	3789.47	1894.74	7090.51	3550.52	11.85	-2.113	-0.001	0.648
60.00	-31.84	-27.62	-0.86	-2127.6	-0.02	2127.61	3732.67	1866.34	6829.63	3419.89	14.18	-2.333	-0.001	0.631
65.00	-30.34	-27.24	-0.86	-1989.5	-0.02	1989.53	3674.68	1837.34	6571.34	3290.55	16.74	-2.553	-0.001	0.613
70.00	-28.86	-26.86	-0.86	-1853.3	-0.03	1853.31	3615.51	1807.76	6315.78	3162.58	19.53	-2.773	-0.001	0.594
75.00	-27.41	-26.47	-0.86	-1719.0	-0.03	1719.01	3555.15	1777.58	6063.10	3036.06	22.55	-2.992	-0.001	0.574
80.00	-25.98	-26.07	-0.86	-1586.6	-0.03	1586.66	3493.61	1746.80	5813.45	2911.05	25.80	-3.210	-0.001	0.553
85.00	-24.60	-25.66	-0.86	-1456.3	-0.03	1456.32	3430.88	1715.44	5566.98	2787.63	29.28	-3.426	-0.001	0.530
89.25	-23.47	-25.28	-0.86	-1347.2	-0.03	1347.28	3376.63	1688.32	5360.08	2684.02	32.41	-3.608	-0.001	0.509
90.00	-23.16	-25.22	-0.86	-1328.3	-0.03	1328.32	3366.97	1683.48	5323.83	2665.87	32.98	-3.641	-0.001	0.505
91.50	-22.56	-25.08	-0.86	-1290.4	-0.03	1290.49	3347.56	1673.78	5251.55	2629.68	34.13	-3.706	-0.001	0.373
94.25	-21.51	-24.81	-0.86	-1221.5	-0.03	1221.52	1944.87	972.44	3066.99	1535.78	36.29	-3.793	-0.001	0.422
95.00	-21.35	-24.75	-0.86	-1202.9	-0.04	1202.91	1940.65	970.33	3048.28	1526.41	36.89	-3.817	-0.002	0.538
96.75	-21.00	-24.60	-0.86	-1159.5	-0.04	1159.59	1930.70	965.35	3004.67	1504.57	38.30	-3.888	-0.002	0.367
97.00	-20.93	-24.60	-0.86	-1153.4	-0.04	1153.44	1929.27	964.63	2998.44	1501.45	38.50	-3.895	-0.002	0.476
100.00	-20.34	-24.34	-0.86	-1079.6	-0.04	1079.65	1911.84	955.92	2923.84	1464.09	40.98	-4.003	-0.002	0.454
102.25	-19.89	-24.16	-0.87	-1024.8	-0.04	1024.88	1898.49	949.24	2868.04	1436.15	42.89	-4.082	-0.002	0.437
102.25	-19.89	-24.16	-0.87	-1024.8	-0.04	1024.88	1898.49	949.24	2868.04	1436.15	42.89	-4.082	-0.002	0.437
105.00	-19.31	-23.96	-0.87	-958.45	-0.04	958.45	1881.84	940.92	2800.02	1402.09	45.27	-4.176	-0.002	0.695
110.00	-18.30	-23.57	-0.87	-838.65	-0.04	838.65	1850.66	925.33	2676.97	1340.48	49.78	-4.445	-0.002	0.636
115.00	-17.35	-23.16	-0.87	-720.79	-0.05	720.79	1818.29	909.14	2554.84	1279.32	54.57	-4.700	-0.003	0.574
117.00	-16.56	-22.75	-0.87	-674.46	-0.05	674.46	1805.01	902.50	2506.28	1255.00	56.56	-4.799	-0.003	0.547
120.00	-15.97	-22.52	-0.87	-606.22	-0.05	606.22	1784.73	892.37	2433.78	1218.70	59.62	-4.940	-0.003	0.507
125.00	-15.08	-22.10	-0.87	-493.63	-0.05	493.63	1749.99	875.00	2313.93	1158.68	64.91	-5.154	-0.003	0.435
127.00	-11.96	-17.04	0.00	-449.44	0.02	449.44	1735.77	867.88	2266.36	1134.86	67.08	-5.234	-0.003	0.403
130.00	-11.44	-16.80	0.00	-398.31	0.02	398.31	1714.07	857.04	2195.44	1099.35	70.40	-5.347	-0.003	0.369
135.00	-10.63	-16.38	0.00	-314.30	0.02	314.30	1676.96	838.48	2078.45	1040.77	76.09	-5.514	-0.003	0.309
137.00	-9.39	-14.72	0.00	-281.55	0.01	281.55	1661.79	830.89	2032.11	1017.57	78.41	-5.575	-0.003	0.283
139.00	-9.09	-14.55	0.00	-252.11	0.01	252.11	1646.42	823.21	1986.05	994.50	80.75	-5.632	-0.003	0.259
140.00	-8.86	-14.46	0.00	-237.57	0.01	237.57	1638.67	819.33	1963.12	983.02	81.93	-5.660	-0.003	0.247
142.75	-8.26	-14.22	0.00	-197.79	0.01	197.79	1100.62	550.31	1316.21	659.08	85.21	-5.728	-0.003	0.308
145.00	-7.98	-14.04	0.00	-165.81	0.01	165.81	1091.20	545.60	1284.61	643.26	87.92	-5.778	-0.003	0.266
148.00	-5.17	-9.36	0.00	-123.69	0.01	123.69	1078.27	539.14	1242.60	622.22	91.56	-5.848	-0.003	0.204
150.00	-4.86	-9.03	0.00	-104.98	0.01	104.98	1069.42	534.71	1214.68	608.24	94.02	-5.887	-0.003	0.177
155.00	-4.36	-8.65	0.00	-59.81	0.00	59.81	1046.45	523.23	1145.25	573.48	100.22	-5.961	-0.003	0.109
157.00	-2.73	-4.42	0.00	-42.52	0.00	42.52	1036.93	518.47	1117.66	559.66	102.72	-5.982	-0.003	0.079

Calculated Forces

Structure:	CT13071-A-SBA	**Code:**	EIA/TIA-222-G	10/25/2017	
Site Name:	Woodbridge	**Exposure:**	B		
Height:	169.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 18	

160.00	-2.51	-4.20	0.00	-29.25	0.00	29.25	1022.30	511.15	1076.48	539.04	106.48	-6.004	-0.003	0.057
165.00	-2.16	-3.85	0.00	-8.23	0.00	8.23	996.96	498.48	1008.51	505.00	112.77	-6.026	-0.003	0.019
167.00	-0.10	-0.13	0.00	-0.27	0.00	0.27	986.50	493.25	981.58	491.52	115.29	-6.028	-0.003	0.001
169.00	0.00	-0.12	0.00	0.00	0.00	0.00	975.84	487.92	954.81	478.11	117.81	-6.028	-0.003	0.000

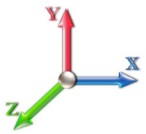
Wind Loading - Shaft

Structure: CT13071-A-SBA
Site Name: Woodbridge
Height: 169.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1 **Topography:** 1

Code: EIA/TIA-222-G 10/25/2017
Exposure: B
Crest Height: 0.00
Site Class: D - Stiff Soil
Struct Class: II

TES Tower Engineering Solutions

Load Case: 0.9D + 1.6W 97 mph Wind
Dead Load Factor 0.90
Wind Load Factor 1.60



Iterations 27

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.70	16.018	17.62	385.81	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	16.018	17.62	378.94	0.650	0.000	5.00	23.558	15.31	431.7	0.0	1174.6
10.00		1.00	0.70	16.018	17.62	372.07	0.650	0.000	5.00	23.135	15.04	423.9	0.0	1153.3
15.00		1.00	0.70	16.018	17.62	365.20	0.650	0.000	5.00	22.712	14.76	416.2	0.0	1132.1
20.00		1.00	0.70	16.018	17.62	358.33	0.650	0.000	5.00	22.288	14.49	408.4	0.0	1110.8
25.00		1.00	0.70	16.018	17.62	351.46	0.650	0.000	5.00	21.865	14.21	400.7	0.0	1089.5
30.00		1.00	0.70	16.031	17.63	344.74	0.650	0.000	5.00	21.442	13.94	393.2	0.0	1068.3
35.00		1.00	0.73	16.753	18.43	345.39	0.650	0.000	5.00	21.019	13.66	402.8	0.0	1047.0
40.00		1.00	0.76	17.405	19.15	344.89	0.650	0.000	5.00	20.596	13.39	410.1	0.0	1025.7
40.75	Bot - Section 2	1.00	0.76	17.497	19.25	344.73	0.650	0.000	0.75	3.053	1.98	61.1	0.0	152.0
45.00		1.00	0.79	18.000	19.80	343.46	0.650	0.000	4.25	17.389	11.30	358.1	0.0	1595.7
47.00	Top - Section 1	1.00	0.80	18.225	20.05	342.67	0.650	0.000	2.00	8.077	5.25	168.4	0.0	741.0
50.00		1.00	0.81	18.551	20.41	346.82	0.650	0.000	3.00	11.989	7.79	254.4	0.0	512.3
55.00		1.00	0.83	19.063	20.97	344.08	0.650	0.000	5.00	19.644	12.77	428.4	0.0	839.3
60.00		1.00	0.85	19.543	21.50	340.80	0.650	0.000	5.00	19.220	12.49	429.7	0.0	821.1
65.00		1.00	0.87	19.995	21.99	337.04	0.650	0.000	5.00	18.797	12.22	430.0	0.0	802.9
70.00		1.00	0.89	20.422	22.46	332.87	0.650	0.000	5.00	18.374	11.94	429.3	0.0	784.6
75.00		1.00	0.91	20.829	22.91	328.34	0.650	0.000	5.00	17.951	11.67	427.7	0.0	766.4
80.00		1.00	0.93	21.217	23.34	323.47	0.650	0.000	5.00	17.528	11.39	425.4	0.0	748.2
85.00		1.00	0.94	21.587	23.75	318.32	0.650	0.000	5.00	17.105	11.12	422.4	0.0	730.0
89.25	Bot - Section 3	1.00	0.96	21.890	24.08	313.72	0.650	0.000	4.25	14.206	9.23	355.8	0.0	606.1
90.00		1.00	0.96	21.943	24.14	312.89	0.650	0.000	0.75	2.507	1.63	62.9	0.0	177.1
91.50	RB1	1.00	0.96	22.047	24.25	311.21	0.650	0.000	1.50	4.985	3.24	125.7	0.0	352.2
94.25	Top - Section 2	1.00	0.97	22.234	24.46	308.08	0.650	0.000	2.75	9.041	5.88	230.0	0.0	638.6
95.00		1.00	0.97	22.284	24.51	311.26	0.650	0.000	0.75	2.444	1.59	62.3	0.0	69.7
96.75	RB2	1.00	0.98	22.401	24.64	309.23	0.650	0.000	1.75	5.664	3.68	145.2	0.0	161.6
97.00	RT1	1.00	0.98	22.417	24.66	308.94	0.650	0.000	0.25	0.805	0.52	20.6	0.0	23.0
100.00		1.00	0.99	22.613	24.87	305.39	0.650	0.000	3.00	9.577	6.23	247.8	0.0	273.2
102.25	RT2	1.00	0.99	22.758	25.03	302.68	0.650	0.000	2.25	7.083	4.60	184.4	0.0	202.0
105.00		1.00	1.00	22.931	25.22	299.31	0.650	0.000	2.75	8.541	5.55	224.0	0.0	243.6
110.00		1.00	1.02	23.238	25.56	293.03	0.650	0.000	5.00	15.200	9.88	404.1	0.0	433.5
115.00		1.00	1.03	23.535	25.89	286.57	0.650	0.000	5.00	14.777	9.61	397.9	0.0	421.3
117.00	Appurtenance(s)	1.00	1.03	23.651	26.02	283.94	0.650	0.000	2.00	5.792	3.77	156.7	0.0	165.1
120.00		1.00	1.04	23.823	26.20	279.94	0.650	0.000	3.00	8.562	5.57	233.3	0.0	244.0
125.00		1.00	1.05	24.102	26.51	273.16	0.650	0.000	5.00	13.931	9.06	384.1	0.0	397.0
127.00	Appurtenance(s)	1.00	1.06	24.212	26.63	270.40	0.650	0.000	2.00	5.454	3.55	151.1	0.0	155.4
130.00		1.00	1.07	24.374	26.81	266.22	0.650	0.000	3.00	8.054	5.24	224.6	0.0	229.5
135.00		1.00	1.08	24.638	27.10	259.14	0.650	0.000	5.00	13.085	8.51	368.8	0.0	372.7
137.00	Appurtenance(s)	1.00	1.08	24.742	27.22	256.27	0.650	0.000	2.00	5.115	3.32	144.8	0.0	145.7
139.00	Bot - Section 4	1.00	1.09	24.844	27.33	253.38	0.650	0.000	2.00	5.048	3.28	143.5	0.0	143.7
140.00		1.00	1.09	24.895	27.38	251.93	0.650	0.000	1.00	2.530	1.64	72.1	0.0	125.3
142.75	Top - Section 3	1.00	1.09	25.034	27.54	247.90	0.650	0.000	2.75	6.871	4.47	196.8	0.0	340.2
145.00		1.00	1.10	25.146	27.66	247.81	0.650	0.000	2.25	5.526	3.59	159.0	0.0	118.3
148.00	Appurtenance(s)	1.00	1.11	25.294	27.82	243.36	0.650	0.000	3.00	7.235	4.70	209.4	0.0	154.8
150.00	Appurtenance(s)	1.00	1.11	25.391	27.93	240.37	0.650	0.000	2.00	4.739	3.08	137.6	0.0	101.4
155.00		1.00	1.12	25.630	28.19	232.81	0.650	0.000	5.00	11.551	7.51	338.7	0.0	247.1
157.00	Appurtenance(s)	1.00	1.12	25.724	28.30	229.75	0.650	0.000	2.00	4.502	2.93	132.5	0.0	96.3

Wind Loading - Shaft

Structure: CT13071-A-SBA
Site Name: Woodbridge
Height: 169.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1
Topography: 1

Code: EIA/TIA-222-G
Exposure: B
Crest Height: 0.00
Site Class: D - Stiff Soil
Struct Class: II

10/25/2017

Tower Engineering Solutions

160.00	1.00	1.13	25.863	28.45	225.14	0.650	0.000	3.00	6.626	4.31	196.0	0.0	141.7
165.00	1.00	1.14	26.092	28.70	217.37	0.650	0.000	5.00	10.704	6.96	319.5	0.0	228.8
167.00 Appurtenance(s)	1.00	1.14	26.182	28.80	214.23	0.650	0.000	2.00	4.163	2.71	124.7	0.0	89.0
169.00	1.00	1.15	26.271	28.90	211.07	0.650	0.000	2.00	4.096	2.66	123.1	0.0	87.5
							Totals:	**169.00**			**13,398.8**		**24,480.4**

Discrete Appurtenance Forces

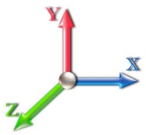
Structure:	CT13071-A-SBA	**Code:**	EIA/TIA-222-G	10/25/2017	
Site Name:	Woodbridge	**Exposure:**	B		
Height:	169.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 21	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 27

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	167.00	Ericsson S11B12	3	26.182	28.800	0.63	0.90	6.26	137.70	0.000	0.000	288.27	0.00	0.00
2	167.00	Ericsson KRY 112 144/1	3	26.182	28.800	0.63	0.90	0.77	29.70	0.000	0.000	35.71	0.00	0.00
3	167.00	LNX-6515DS	3	26.182	28.800	0.76	0.90	26.01	135.81	0.000	0.000	1198.72	0.00	0.00
4	167.00	AIR B4A B2P	3	26.182	28.800	0.77	0.90	14.14	244.08	0.000	0.000	651.61	0.00	0.00
5	167.00	AIR B2A B4P	3	26.182	28.800	0.77	0.90	14.14	247.05	0.000	0.000	651.61	0.00	0.00
6	167.00	T-Arms/Commscope	3	26.204	28.825	0.56	0.75	11.39	918.00	0.000	0.500	525.33	0.00	262.66
7	157.00	BXA-70063/6CF	1	25.724	28.296	0.63	0.90	4.77	15.30	0.000	0.000	215.92	0.00	0.00
8	157.00	T-Arms	3	25.724	28.296	0.56	0.75	13.50	945.00	0.000	0.000	611.20	0.00	0.00
9	157.00	SLCP 2x6014F	2	25.724	28.296	0.71	0.80	9.24	36.00	0.000	0.000	418.41	0.00	0.00
10	157.00	DB846F65ZAXY	4	25.724	28.296	0.74	0.80	20.98	75.60	0.000	0.000	949.89	0.00	0.00
11	157.00	DB846H80E-SX	2	25.724	28.296	0.88	0.80	8.82	28.80	0.000	0.000	399.21	0.00	0.00
12	157.00	HBX-6517DS-VTM	6	25.724	28.296	0.60	0.80	19.04	100.98	0.000	0.000	862.20	0.00	0.00
13	157.00	ALU RRH2X60-AWS RRH	3	25.724	28.296	0.61	0.80	6.38	162.00	0.000	0.000	289.03	0.00	0.00
14	157.00	RFS DB T1-6Z-8AB-OZ	1	25.724	28.296	0.80	0.80	2.56	17.10	0.000	0.000	115.90	0.00	0.00
15	157.00	GPS	1	25.724	28.296	0.80	0.80	0.80	9.00	0.000	0.000	36.22	0.00	0.00
16	150.00	Collar Mount	1	25.391	27.930	1.00	1.00	3.50	90.00	0.000	0.000	156.41	0.00	0.00
17	148.00	WCS-IMFQ-AMT	1	25.294	27.823	0.50	0.80	0.60	5.94	0.000	0.000	26.70	0.00	0.00
18	148.00	Ericsson RRUS 32-RRU	3	25.294	27.823	0.56	0.80	2.77	207.90	0.000	0.000	123.40	0.00	0.00
19	148.00	Powerwave 1001940-Bias	3	25.294	27.823	0.72	0.80	0.15	5.40	0.000	0.000	6.73	0.00	0.00
20	148.00	CCI HPA-65R-BUU-H8	2	25.294	27.823	0.63	0.80	16.41	122.40	0.000	0.000	730.38	0.00	0.00
21	148.00	CCI HPA-65R-BUU-H6	1	25.294	27.823	0.68	0.80	6.57	45.90	0.000	0.000	292.42	0.00	0.00
22	148.00	Ericsson RRUS A2	3	25.294	27.823	0.50	0.80	2.77	57.24	0.000	0.000	123.21	0.00	0.00
23	148.00	Ericsson RRUS	3	25.294	27.823	0.56	0.80	5.29	156.60	0.000	0.000	235.58	0.00	0.00
24	148.00	Cci OPA-65R-LCUU-H8	2	25.294	27.823	0.63	0.80	16.12	158.40	0.000	0.000	717.43	0.00	0.00
25	148.00	Cci OPA-65R-LCUU-H6	1	25.294	27.823	0.63	0.80	6.11	65.70	0.000	0.000	271.78	0.00	0.00
26	148.00	Powerwave LGP13519	6	25.294	27.823	0.60	0.80	1.22	28.62	0.000	0.000	54.49	0.00	0.00
27	148.00	Powerwave LGP21401	6	25.294	27.823	0.60	0.80	4.64	76.14	0.000	0.000	206.74	0.00	0.00
28	148.00	Powerwave 7770	3	25.294	27.823	0.61	0.80	10.13	94.50	0.000	0.000	450.94	0.00	0.00
29	148.00	T-Arms	3	25.294	27.823	0.60	0.80	14.40	945.00	0.000	0.000	641.04	0.00	0.00
30	148.00	Raycap	2	25.294	27.823	0.64	0.80	1.88	59.04	0.000	0.000	83.76	0.00	0.00
31	148.00	Ericsson RRUS-11-RRU	3	25.294	27.823	0.61	0.80	4.60	135.00	0.000	0.000	204.62	0.00	0.00
32	137.00	T-Arms	3	24.742	27.216	0.56	0.75	13.82	653.40	0.000	0.000	601.82	0.00	0.00
33	137.00	APXV18-206517S-C	6	24.742	27.216	0.59	0.80	18.36	142.56	0.000	0.000	799.66	0.00	0.00
34	127.00	Sector Frames	3	24.212	26.633	0.56	0.75	33.75	1350.00	0.000	0.000	1438.17	0.00	0.00
35	127.00	VHLP2-11	3	24.212	26.633	1.00	1.00	14.04	72.90	1.455	0.000	598.28	544.06	0.00
36	127.00	VHLP800-11	1	24.212	26.633	1.00	1.00	8.43	43.20	1.455	0.000	359.22	326.67	0.00
37	127.00	ETCR-654L12H6	3	24.212	26.633	0.57	0.80	26.77	267.30	0.000	0.000	1140.73	0.00	0.00
38	127.00	Horizon Duo	4	24.212	26.633	0.50	1.00	1.18	25.20	0.000	0.000	50.28	0.00	0.00
39	127.00	1900MHz RRH	3	24.212	26.633	0.79	0.80	6.58	162.00	0.000	0.000	280.45	0.00	0.00
40	127.00	800 MHz RRH	6	24.212	26.633	0.74	0.80	11.00	286.20	0.000	0.000	468.56	0.00	0.00
41	127.00	TD-RRH8x20-25	3	24.212	26.633	0.55	0.80	6.71	189.00	0.000	0.000	285.79	0.00	0.00
42	117.00	CM-30S-72	1	23.651	26.016	1.00	1.00	5.00	315.00	0.000	0.000	208.13	0.00	0.00
43	117.00	HG2409U-PRO	1	23.728	26.101	1.00	1.00	0.38	2.52	0.000	1.346	15.87	0.00	21.36
							Totals:		**8,865.18**			**17,821.83**		

Total Applied Force Summary

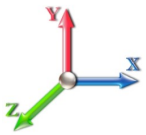
Structure:	CT13071-A-SBA		**Code:**	EIA/TIA-222-G	10/25/2017
Site Name:	Woodbridge		**Exposure:**	B	
Height:	169.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 22

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 27

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		431.69	1438.46	0.00	0.00
10.00		423.93	1417.19	0.00	0.00
15.00		416.18	1395.93	0.00	0.00
20.00		408.42	1374.66	0.00	0.00
25.00		400.67	1353.39	0.00	0.00
30.00		393.25	1332.13	0.00	0.00
35.00		402.84	1310.86	0.00	0.00
40.00		410.08	1289.60	0.00	0.00
40.75		61.11	191.61	0.00	0.00
45.00		358.09	1819.98	0.00	0.00
47.00		168.42	846.59	0.00	0.00
50.00		254.43	670.66	0.00	0.00
55.00		428.38	1103.19	0.00	0.00
60.00		429.70	1084.96	0.00	0.00
65.00		429.97	1066.73	0.00	0.00
70.00		429.28	1048.50	0.00	0.00
75.00		427.74	1030.28	0.00	0.00
80.00		425.43	1012.05	0.00	0.00
85.00		422.42	993.82	0.00	0.00
89.25		355.76	830.42	0.00	0.00
90.00		62.93	216.71	0.00	0.00
91.50		125.74	431.38	0.00	0.00
94.25		229.96	783.76	0.00	0.00
95.00		62.29	109.29	0.00	0.00
96.75		145.16	253.96	0.00	0.00
97.00		20.64	36.16	0.00	0.00
100.00		247.76	431.53	0.00	0.00
102.25		184.40	320.77	0.00	0.00
105.00		224.04	388.71	0.00	0.00
110.00		404.09	697.34	0.00	0.00
115.00		397.86	685.18	0.00	0.00
117.00	(2) attachments	380.72	588.19	0.00	21.36
120.00		233.33	399.55	0.00	0.00
125.00		384.12	656.20	0.00	0.00
127.00	(26) attachments	4772.55	2654.88	870.74	0.00
130.00		224.57	372.94	0.00	0.00
135.00		368.80	611.85	0.00	0.00
137.00	(9) attachments	1546.27	1037.30	0.00	0.00
139.00		143.46	228.16	0.00	0.00
140.00		72.06	167.50	0.00	0.00
142.75		196.77	456.25	0.00	0.00
145.00		158.98	213.23	0.00	0.00
148.00	(42) attachments	4378.58	2445.21	0.00	0.00
150.00	(1) attachments	294.06	251.79	0.00	0.00
155.00		338.67	398.09	0.00	0.00
157.00	(23) attachments	4030.45	1546.46	0.00	0.00

Total Applied Force Summary

Structure:	CT13071-A-SBA		**Code:**	EIA/TIA-222-G	10/25/2017
Site Name:	Woodbridge		**Exposure:**	B	
Height:	169.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 23

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160.00		196.04	178.34	0.00	0.00
165.00		319.51	289.95	0.00	0.00
167.00	(18) attachments	3475.95	1825.77	0.00	262.66
169.00		123.09	87.53	0.00	0.00
	Totals:	**31,220.67**	**41,374.98**	**870.74**	**284.02**

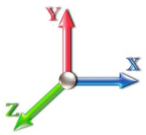
Linear Appurtenance Segment Forces (Factored)

Structure:	CT13071-A-SBA	**Code:**	EIA/TIA-222-G	10/25/2017	
Site Name:	Woodbridge	**Exposure:**	B		
Height:	169.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 24	

Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 27

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.035	0.000	16.018	0.00	28.08
10.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.036	0.000	16.018	0.00	28.08
15.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.036	0.000	16.018	0.00	28.08
20.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.037	0.000	16.018	0.00	28.08
25.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.038	0.000	16.018	0.00	28.08
30.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.038	0.000	16.031	0.00	28.08
35.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.039	0.000	16.753	0.00	28.08
40.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.040	0.000	17.405	0.00	28.08
40.75	1 5/8" Coax	Yes	0.75	0.000	1.98	0.12	0.00	0.041	0.000	17.497	0.00	4.21
45.00	1 5/8" Coax	Yes	4.25	0.000	1.98	0.70	0.00	0.041	0.000	18.000	0.00	23.87
47.00	1 5/8" Coax	Yes	2.00	0.000	1.98	0.33	0.00	0.042	0.000	18.225	0.00	11.23
50.00	1 5/8" Coax	Yes	3.00	0.000	1.98	0.49	0.00	0.041	0.000	18.551	0.00	16.85
55.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.042	0.000	19.063	0.00	28.08
60.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.043	0.000	19.543	0.00	28.08
65.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.044	0.000	19.995	0.00	28.08
70.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.045	0.000	20.422	0.00	28.08
75.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.046	0.000	20.829	0.00	28.08
80.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.047	0.000	21.217	0.00	28.08
85.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.048	0.000	21.587	0.00	28.08
89.25	1 5/8" Coax	Yes	4.25	0.000	1.98	0.70	0.00	0.049	0.000	21.890	0.00	23.87
90.00	1 5/8" Coax	Yes	0.75	0.000	1.98	0.12	0.00	0.075	0.000	21.943	0.00	4.21
90.00	1" Reinforcing plate	Yes	0.75	0.000	1.00	0.06	0.00	0.075	0.000	21.943	0.00	0.00
91.50	1 5/8" Coax	Yes	1.50	0.000	1.98	0.25	0.00	0.076	0.000	22.047	0.00	8.42
91.50	1" Reinforcing plate	Yes	1.50	0.000	1.00	0.13	0.00	0.076	0.000	22.047	0.00	0.00
94.25	1 5/8" Coax	Yes	2.75	0.000	1.98	0.45	0.00	0.077	0.000	22.234	0.00	15.44
94.25	1" Reinforcing plate	Yes	2.75	0.000	1.00	0.23	0.00	0.077	0.000	22.234	0.00	0.00
95.00	1 5/8" Coax	Yes	0.75	0.000	1.98	0.12	0.00	0.076	0.000	22.284	0.00	4.21
95.00	1" Reinforcing plate	Yes	0.75	0.000	1.00	0.06	0.00	0.076	0.000	22.284	0.00	0.00
96.75	1 5/8" Coax	Yes	1.75	0.000	1.98	0.29	0.00	0.077	0.000	22.401	0.00	9.83
96.75	1" Reinforcing plate	Yes	1.75	0.000	1.00	0.15	0.00	0.077	0.000	22.401	0.00	0.00
97.00	1 5/8" Coax	Yes	0.25	0.000	1.98	0.04	0.00	0.077	0.000	22.417	0.00	1.40
97.00	1" Reinforcing plate	Yes	0.25	0.000	1.00	0.02	0.00	0.077	0.000	22.417	0.00	0.00
100.00	1 5/8" Coax	Yes	3.00	0.000	1.98	0.49	0.00	0.078	0.000	22.613	0.00	16.85
100.00	1" Reinforcing plate	Yes	0.75	0.000	1.00	0.06	0.00	0.078	0.000	22.613	0.00	0.00
100.00	1" Reinforcing plate	Yes	2.25	0.000	1.00	0.19	0.00	0.078	0.000	22.613	0.00	0.00
102.25	1 5/8" Coax	Yes	2.25	0.000	1.98	0.37	0.00	0.079	0.000	22.758	0.00	12.64
102.25	1" Reinforcing plate	Yes	2.25	0.000	1.00	0.19	0.00	0.079	0.000	22.758	0.00	0.00
105.00	1 5/8" Coax	Yes	2.75	0.000	1.98	0.45	0.00	0.075	0.000	22.931	0.00	15.44
105.00	1" Reinforcing plate	Yes	2.25	0.000	1.00	0.19	0.00	0.075	0.000	22.931	0.00	0.00
110.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.054	0.000	23.238	0.00	28.08
115.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.056	0.000	23.535	0.00	28.08
117.00	1 5/8" Coax	Yes	2.00	0.000	1.98	0.33	0.00	0.057	0.000	23.651	0.00	11.23
120.00	1 5/8" Coax	Yes	3.00	0.000	1.98	0.49	0.00	0.058	0.000	23.823	0.00	16.85
125.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.059	0.000	24.102	0.00	28.08
127.00	1 5/8" Coax	Yes	2.00	0.000	1.98	0.33	0.00	0.061	0.000	24.212	0.00	11.23
130.00	1 5/8" Coax	Yes	3.00	0.000	1.98	0.49	0.00	0.061	0.000	24.374	0.00	16.85
135.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.063	0.000	24.638	0.00	28.08

Linear Appurtenance Segment Forces (Factored)

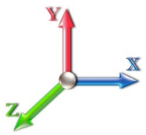
Structure:	CT13071-A-SBA	**Code:**	EIA/TIA-222-G	10/25/2017	
Site Name:	Woodbridge	**Exposure:**	B		
Height:	169.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 25	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 27

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
137.00	1 5/8" Coax	Yes	2.00	0.000	1.98	0.33	0.00	0.065	0.000	24.742	0.00	11.23
139.00	1 5/8" Coax	Yes	2.00	0.000	1.98	0.33	0.00	0.065	0.000	24.844	0.00	11.23
140.00	1 5/8" Coax	Yes	1.00	0.000	1.98	0.17	0.00	0.066	0.000	24.895	0.00	5.62
142.75	1 5/8" Coax	Yes	2.75	0.000	1.98	0.45	0.00	0.067	0.000	25.034	0.00	15.44
145.00	1 5/8" Coax	Yes	2.25	0.000	1.98	0.37	0.00	0.067	0.000	25.146	0.00	12.64
148.00	1 5/8" Coax	Yes	3.00	0.000	1.98	0.49	0.00	0.068	0.000	25.294	0.00	16.85
150.00	1 5/8" Coax	Yes	2.00	0.000	1.98	0.33	0.00	0.070	0.000	25.391	0.00	11.23
155.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.071	0.000	25.630	0.00	28.08
157.00	1 5/8" Coax	Yes	2.00	0.000	1.98	0.33	0.00	0.073	0.000	25.724	0.00	11.23
									Totals:		**0.0**	**881.7**

Calculated Forces

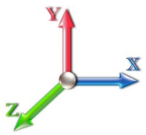
Structure:	CT13071-A-SBA	**Code:**	EIA/TIA-222-G	10/25/2017	
Site Name:	Woodbridge	**Exposure:**	B		
Height:	169.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 26	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 97 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 27

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-41.33	-31.29	-0.86	-3863.2	-0.01	3863.27	5324.18	2662.09	12195.0	6106.56	0.00	0.000	0.000	0.641
5.00	-39.79	-30.98	-0.86	-3706.8	-0.01	3706.85	5261.08	2630.54	11832.5	5925.09	0.10	-0.177	0.000	0.633
10.00	-38.28	-30.67	-0.86	-3551.9	-0.01	3551.97	5196.80	2598.40	11472.7	5744.92	0.38	-0.357	0.000	0.626
15.00	-36.79	-30.36	-0.86	-3398.6	-0.01	3398.64	5131.34	2565.67	11115.7	5566.13	0.85	-0.538	0.000	0.618
20.00	-35.32	-30.05	-0.86	-3246.8	-0.01	3246.86	5064.69	2532.35	10761.6	5388.80	1.51	-0.722	0.000	0.610
25.00	-33.88	-29.74	-0.86	-3096.6	-0.01	3096.63	4996.86	2498.43	10410.5	5212.99	2.37	-0.907	0.000	0.601
30.00	-32.46	-29.43	-0.86	-2947.9	-0.01	2947.95	4927.84	2463.92	10062.6	5038.79	3.42	-1.095	0.000	0.592
35.00	-31.06	-29.10	-0.86	-2800.8	-0.01	2800.81	4857.63	2428.82	9718.08	4866.26	4.66	-1.284	0.000	0.582
40.00	-29.73	-28.72	-0.86	-2655.3	-0.01	2655.31	4786.24	2393.12	9377.03	4695.49	6.11	-1.475	0.000	0.572
40.75	-29.49	-28.70	-0.86	-2633.7	-0.01	2633.77	4775.43	2387.72	9326.19	4670.03	6.35	-1.505	0.000	0.570
45.00	-27.62	-28.35	-0.86	-2511.7	-0.01	2511.79	4713.67	2356.83	9039.63	4526.53	7.76	-1.669	0.000	0.561
47.00	-26.73	-28.20	-0.86	-2455.0	-0.02	2455.09	3877.89	1938.95	7512.92	3762.05	8.48	-1.748	0.000	0.660
50.00	-25.98	-28.00	-0.86	-2370.4	-0.02	2370.48	3845.09	1922.55	7353.82	3682.38	9.61	-1.866	-0.001	0.651
55.00	-24.79	-27.63	-0.86	-2230.4	-0.02	2230.46	3789.47	1894.74	7090.51	3550.52	11.68	-2.082	-0.001	0.635
60.00	-23.62	-27.25	-0.86	-2092.3	-0.02	2092.31	3732.67	1866.34	6829.63	3419.89	13.98	-2.298	-0.001	0.618
65.00	-22.47	-26.86	-0.86	-1956.0	-0.02	1956.06	3674.68	1837.34	6571.34	3290.55	16.50	-2.515	-0.001	0.601
70.00	-21.34	-26.46	-0.86	-1821.7	-0.02	1821.75	3615.51	1807.76	6315.78	3162.58	19.25	-2.731	-0.001	0.582
75.00	-20.24	-26.06	-0.86	-1689.4	-0.02	1689.43	3555.15	1777.58	6063.10	3036.06	22.23	-2.947	-0.001	0.562
80.00	-19.16	-25.66	-0.86	-1559.1	-0.03	1559.12	3493.61	1746.80	5813.45	2911.05	25.43	-3.161	-0.001	0.541
85.00	-18.10	-25.24	-0.86	-1430.8	-0.03	1430.84	3430.88	1715.44	5566.98	2787.63	28.85	-3.373	-0.001	0.519
89.25	-17.25	-24.86	-0.86	-1323.5	-0.03	1323.58	3376.63	1688.32	5360.08	2684.02	31.93	-3.552	-0.001	0.498
90.00	-17.02	-24.80	-0.86	-1304.9	-0.03	1304.93	3366.97	1683.48	5323.83	2665.87	32.49	-3.584	-0.001	0.495
91.50	-16.56	-24.67	-0.86	-1267.7	-0.03	1267.73	3347.56	1673.78	5251.55	2629.68	33.63	-3.648	-0.001	0.365
94.25	-15.77	-24.41	-0.86	-1199.8	-0.03	1199.88	1944.87	972.44	3066.99	1535.78	35.76	-3.734	-0.001	0.413
95.00	-15.65	-24.35	-0.86	-1181.5	-0.03	1181.58	1940.65	970.33	3048.28	1526.41	36.34	-3.757	-0.002	0.526
96.75	-15.39	-24.20	-0.86	-1138.9	-0.03	1138.96	1930.70	965.35	3004.67	1504.57	37.73	-3.827	-0.002	0.360
97.00	-15.33	-24.19	-0.86	-1132.9	-0.03	1132.92	1929.27	964.63	2998.44	1501.45	37.93	-3.834	-0.002	0.466
100.00	-14.88	-23.94	-0.87	-1060.3	-0.03	1060.34	1911.84	955.92	2923.84	1464.09	40.38	-3.939	-0.002	0.444
102.25	-14.53	-23.75	-0.87	-1006.4	-0.03	1006.48	1898.49	949.24	2868.04	1436.15	42.25	-4.017	-0.002	0.428
102.25	-14.53	-23.75	-0.87	-1006.4	-0.03	1006.48	1898.49	949.24	2868.04	1436.15	42.25	-4.017	-0.002	0.428
105.00	-14.09	-23.55	-0.87	-941.16	-0.04	941.16	1881.84	940.92	2800.02	1402.09	44.59	-4.110	-0.002	0.679
110.00	-13.32	-23.15	-0.87	-823.42	-0.04	823.42	1850.66	925.33	2676.97	1340.48	49.03	-4.374	-0.002	0.622
115.00	-12.60	-22.74	-0.87	-707.66	-0.04	707.66	1818.29	909.14	2554.84	1279.32	53.75	-4.624	-0.003	0.561
117.00	-12.00	-22.34	-0.87	-662.16	-0.05	662.16	1805.01	902.50	2506.28	1255.00	55.70	-4.721	-0.003	0.535
120.00	-11.55	-22.11	-0.87	-595.14	-0.05	595.14	1784.73	892.37	2433.78	1218.70	58.71	-4.860	-0.003	0.495
125.00	-10.88	-21.70	-0.87	-484.61	-0.05	484.61	1749.99	875.00	2313.93	1158.68	63.91	-5.070	-0.003	0.425
127.00	-8.63	-16.72	0.00	-441.22	0.02	441.22	1735.77	867.88	2266.36	1134.86	66.05	-5.149	-0.003	0.394
130.00	-8.24	-16.48	0.00	-391.06	0.02	391.06	1714.07	857.04	2195.44	1099.35	69.32	-5.259	-0.003	0.361
135.00	-7.63	-16.07	0.00	-308.65	0.02	308.65	1676.96	838.48	2078.45	1040.77	74.91	-5.423	-0.003	0.301
137.00	-6.73	-14.44	0.00	-276.51	0.02	276.51	1661.79	830.89	2032.11	1017.57	77.19	-5.483	-0.003	0.276
139.00	-6.51	-14.28	0.00	-247.63	0.01	247.63	1646.42	823.21	1986.05	994.50	79.50	-5.540	-0.003	0.253
140.00	-6.34	-14.20	0.00	-233.34	0.01	233.34	1638.67	819.33	1963.12	983.02	80.66	-5.567	-0.003	0.242
142.75	-5.89	-13.96	0.00	-194.30	0.01	194.30	1100.62	550.31	1316.21	659.08	83.88	-5.634	-0.003	0.301
145.00	-5.68	-13.79	0.00	-162.88	0.01	162.88	1091.20	545.60	1284.61	643.26	86.55	-5.682	-0.003	0.259
148.00	-3.67	-9.19	0.00	-121.51	0.01	121.51	1078.27	539.14	1242.60	622.22	90.13	-5.751	-0.003	0.199
150.00	-3.44	-8.88	0.00	-103.12	0.01	103.12	1069.42	534.71	1214.68	608.24	92.55	-5.790	-0.003	0.173
155.00	-3.07	-8.50	0.00	-58.72	0.00	58.72	1046.45	523.23	1145.25	573.48	98.65	-5.863	-0.003	0.106
157.00	-1.95	-4.34	0.00	-41.72	0.00	41.72	1036.93	518.47	1117.66	559.66	101.10	-5.883	-0.003	0.076

Calculated Forces

Structure:	CT13071-A-SBA	**Code:**	EIA/TIA-222-G	10/25/2017	
Site Name:	Woodbridge	**Exposure:**	B		
Height:	169.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 27	

160.00	-1.79	-4.12	0.00	-28.70	0.00	28.70	1022.30	511.15	1076.48	539.04	104.80	-5.905	-0.003	0.055
165.00	-1.53	-3.78	0.00	-8.08	0.00	8.08	996.96	498.48	1008.51	505.00	110.99	-5.926	-0.003	0.018
167.00	-0.07	-0.13	0.00	-0.26	0.00	0.26	986.50	493.25	981.58	491.52	113.47	-5.928	-0.003	0.001
169.00	0.00	-0.12	0.00	0.00	0.00	0.00	975.84	487.92	954.81	478.11	115.94	-5.928	-0.003	0.000

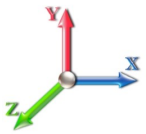
Wind Loading - Shaft

Structure: CT13071-A-SBA
Site Name: Woodbridge
Height: 169.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1 **Topography:** 1

Code: EIA/TIA-222-G 10/25/2017
Exposure: B
Crest Height: 0.00
Site Class: D - Stiff Soil
Struct Class: II

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind
Dead Load Factor 1.20
Wind Load Factor 1.00



Iterations 26

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.70	4.256	4.68	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	4.256	4.68	0.00	1.200	1.242	5.00	24.593	29.51	138.2	439.0	2005.1
10.00		1.00	0.70	4.256	4.68	0.00	1.200	1.331	5.00	24.244	29.09	136.2	462.9	2000.7
15.00		1.00	0.70	4.256	4.68	0.00	1.200	1.386	5.00	23.867	28.64	134.1	473.8	1983.3
20.00		1.00	0.70	4.256	4.68	0.00	1.200	1.427	5.00	23.477	28.17	131.9	479.1	1960.2
25.00		1.00	0.70	4.256	4.68	0.00	1.200	1.459	5.00	23.081	27.70	129.7	481.0	1933.8
30.00		1.00	0.70	4.260	4.69	0.00	1.200	1.486	5.00	22.680	27.22	127.5	480.8	1905.2
35.00		1.00	0.73	4.451	4.90	0.00	1.200	1.509	5.00	22.276	26.73	130.9	479.1	1875.1
40.00		1.00	0.76	4.625	5.09	0.00	1.200	1.529	5.00	21.870	26.24	133.5	476.1	1843.8
40.75	Bot - Section 2	1.00	0.76	4.649	5.11	0.00	1.200	1.532	0.75	3.244	3.89	19.9	71.3	274.0
45.00		1.00	0.79	4.783	5.26	0.00	1.200	1.547	4.25	18.485	22.18	116.7	407.6	2535.2
47.00	Top - Section 1	1.00	0.80	4.843	5.33	0.00	1.200	1.554	2.00	8.595	10.31	54.9	191.1	1179.2
50.00		1.00	0.81	4.929	5.42	0.00	1.200	1.564	3.00	12.771	15.33	83.1	285.0	968.1
55.00		1.00	0.83	5.065	5.57	0.00	1.200	1.579	5.00	20.959	25.15	140.1	469.7	1588.8
60.00		1.00	0.85	5.193	5.71	0.00	1.200	1.592	5.00	20.547	24.66	140.8	464.0	1558.8
65.00		1.00	0.87	5.313	5.84	0.00	1.200	1.605	5.00	20.135	24.16	141.2	457.8	1528.3
70.00		1.00	0.89	5.426	5.97	0.00	1.200	1.617	5.00	19.722	23.67	141.3	451.2	1497.4
75.00		1.00	0.91	5.534	6.09	0.00	1.200	1.628	5.00	19.308	23.17	141.1	444.2	1466.1
80.00		1.00	0.93	5.637	6.20	0.00	1.200	1.639	5.00	18.894	22.67	140.6	436.9	1434.5
85.00		1.00	0.94	5.736	6.31	0.00	1.200	1.649	5.00	18.479	22.17	139.9	429.3	1402.6
89.25	Bot - Section 3	1.00	0.96	5.816	6.40	0.00	1.200	1.657	4.25	15.380	18.46	118.1	359.3	1167.5
90.00		1.00	0.96	5.830	6.41	0.00	1.200	1.658	0.75	2.714	3.26	20.9	64.0	300.2
91.50	RB1	1.00	0.96	5.858	6.44	0.00	1.200	1.661	1.50	5.401	6.48	41.8	127.3	596.9
94.25	Top - Section 2	1.00	0.97	5.908	6.50	0.00	1.200	1.666	2.75	9.805	11.77	76.5	230.9	1082.4
95.00		1.00	0.97	5.921	6.51	0.00	1.200	1.667	0.75	2.652	3.18	20.7	62.8	155.8
96.75	RB2	1.00	0.98	5.952	6.55	0.00	1.200	1.670	1.75	6.152	7.38	48.3	145.5	361.0
97.00	RT1	1.00	0.98	5.956	6.55	0.00	1.200	1.671	0.25	0.875	1.05	6.9	20.8	51.4
100.00		1.00	0.99	6.008	6.61	0.00	1.200	1.676	3.00	10.415	12.50	82.6	246.2	610.5
102.25	RT2	1.00	0.99	6.047	6.65	0.00	1.200	1.680	2.25	7.713	9.26	61.6	183.0	452.4
105.00		1.00	1.00	6.093	6.70	0.00	1.200	1.684	2.75	9.312	11.17	74.9	221.1	545.9
110.00		1.00	1.02	6.174	6.79	0.00	1.200	1.692	5.00	16.610	19.93	135.4	393.3	971.2
115.00		1.00	1.03	6.253	6.88	0.00	1.200	1.699	5.00	16.193	19.43	133.7	384.5	946.2
117.00	Appurtenance(s)	1.00	1.03	6.284	6.91	0.00	1.200	1.702	2.00	6.360	7.63	52.8	152.4	372.5
120.00		1.00	1.04	6.330	6.96	0.00	1.200	1.707	3.00	9.415	11.30	78.7	225.3	550.7
125.00		1.00	1.05	6.404	7.04	0.00	1.200	1.714	5.00	15.359	18.43	129.8	366.4	895.7
127.00	Appurtenance(s)	1.00	1.06	6.433	7.08	0.00	1.200	1.716	2.00	6.026	7.23	51.2	145.1	352.3
130.00		1.00	1.07	6.476	7.12	0.00	1.200	1.720	3.00	8.914	10.70	76.2	214.2	520.2
135.00		1.00	1.08	6.546	7.20	0.00	1.200	1.727	5.00	14.524	17.43	125.5	347.7	844.6
137.00	Appurtenance(s)	1.00	1.08	6.574	7.23	0.00	1.200	1.729	2.00	5.692	6.83	49.4	137.6	331.8
139.00	Bot - Section 4	1.00	1.09	6.601	7.26	0.00	1.200	1.732	2.00	5.625	6.75	49.0	136.0	327.7
140.00		1.00	1.09	6.615	7.28	0.00	1.200	1.733	1.00	2.819	3.38	24.6	68.4	235.5
142.75	Top - Section 3	1.00	1.09	6.652	7.32	0.00	1.200	1.737	2.75	7.667	9.20	67.3	185.3	638.9
145.00		1.00	1.10	6.681	7.35	0.00	1.200	1.739	2.25	6.179	7.41	54.5	149.7	307.3
148.00	Appurtenance(s)	1.00	1.11	6.721	7.39	0.00	1.200	1.743	3.00	8.107	9.73	71.9	196.1	402.5
150.00	Appurtenance(s)	1.00	1.11	6.746	7.42	0.00	1.200	1.745	2.00	5.320	6.38	47.4	129.1	264.3
155.00		1.00	1.12	6.810	7.49	0.00	1.200	1.751	5.00	13.010	15.61	116.9	313.0	642.4
157.00	Appurtenance(s)	1.00	1.12	6.835	7.52	0.00	1.200	1.753	2.00	5.086	6.10	45.9	123.6	252.0

Wind Loading - Shaft

Structure: CT13071-A-SBA
Site Name: Woodbridge
Height: 169.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1
Topography: 1

Code: EIA/TIA-222-G
Exposure: B
Crest Height: 0.00
Site Class: D - Stiff Soil
Struct Class: II

10/25/2017

Tower Engineering Solutions

160.00	1.00	1.13	6.872	7.56	0.00	1.200	1.757	3.00	7.504	9.00	68.1	181.8	370.7
165.00	1.00	1.14	6.933	7.63	0.00	1.200	1.762	5.00	12.173	14.61	111.4	293.0	598.1
167.00 Appurtenance(s)	1.00	1.14	6.957	7.65	0.00	1.200	1.764	2.00	4.751	5.70	43.6	115.6	234.2
169.00	1.00	1.15	6.980	7.68	0.00	1.200	1.766	2.00	4.684	5.62	43.2	114.0	230.7
							Totals:	**169.00**			**4,450.1**		**46,553.3**

Discrete Appurtenance Forces

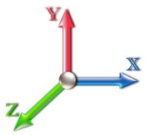
Structure:	CT13071-A-SBA	**Code:**	EIA/TIA-222-G	10/25/2017	
Site Name:	Woodbridge	**Exposure:**	B		
Height:	169.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 30	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 26

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	167.00	Ericsson S11B12	3	6.957	7.652	0.65	0.90	6.86	446.58	0.000	0.000	52.49	0.00	0.00
2	167.00	Ericsson KRY 112 144/1	3	6.957	7.652	0.65	0.90	1.73	62.99	0.000	0.000	13.24	0.00	0.00
3	167.00	LNX-6515DS	3	6.957	7.652	0.76	0.90	33.50	688.26	0.000	0.000	256.37	0.00	0.00
4	167.00	AIR B4A B2P	3	6.957	7.652	0.77	0.90	16.72	838.64	0.000	0.000	127.93	0.00	0.00
5	167.00	AIR B2A B4P	3	6.957	7.652	0.77	0.90	16.72	842.60	0.000	0.000	127.93	0.00	0.00
6	167.00	T-Arms/Commscope	3	6.963	7.659	0.56	0.75	21.44	1703.73	0.000	0.500	164.18	0.00	82.09
7	157.00	BXA-70063/6CF	1	6.835	7.518	0.63	0.90	6.52	122.16	0.000	0.000	49.01	0.00	0.00
8	157.00	T-Arms	3	6.835	7.518	0.56	0.75	25.33	1786.34	0.000	0.000	190.47	0.00	0.00
9	157.00	SLCP 2x6014F	2	6.835	7.518	0.71	0.80	12.21	301.29	0.000	0.000	91.80	0.00	0.00
10	157.00	DB846F65ZAXY	4	6.835	7.518	0.74	0.80	24.66	894.70	0.000	0.000	185.42	0.00	0.00
11	157.00	DB846H80E-SX	2	6.835	7.518	0.88	0.80	10.97	359.21	0.000	0.000	82.45	0.00	0.00
12	157.00	HBX-6517DS-VTM	6	6.835	7.518	0.60	0.80	23.70	866.16	0.000	0.000	178.19	0.00	0.00
13	157.00	ALU RRH2X60-AWS RRH	3	6.835	7.518	0.62	0.80	8.04	418.76	0.000	0.000	60.42	0.00	0.00
14	157.00	RFS DB T1-6Z-8AB-OZ	1	6.835	7.518	0.80	0.80	3.23	81.95	0.000	0.000	24.27	0.00	0.00
15	157.00	GPS	1	6.835	7.518	0.80	0.80	1.37	33.45	0.000	0.000	10.32	0.00	0.00
16	150.00	Collar Mount	1	6.746	7.421	1.00	1.00	5.94	-146.23	0.000	0.000	44.11	0.00	0.00
17	148.00	WCS-IMFQ-AMT	1	6.721	7.393	0.52	0.80	1.03	25.23	0.000	0.000	7.59	0.00	0.00
18	148.00	Ericsson RRUS 32-RRU	3	6.721	7.393	0.58	0.80	3.85	422.41	0.000	0.000	28.47	0.00	0.00
19	148.00	Powerwave 1001940-Bias	3	6.721	7.393	0.73	0.80	0.65	31.38	0.000	0.000	4.84	0.00	0.00
20	148.00	CCI HPA-65R-BUU-H8	2	6.721	7.393	0.63	0.80	18.45	744.38	0.000	0.000	136.36	0.00	0.00
21	148.00	CCI HPA-65R-BUU-H6	1	6.721	7.393	0.68	0.80	7.50	308.92	0.000	0.000	55.42	0.00	0.00
22	148.00	Ericsson RRUS A2	3	6.721	7.393	0.51	0.80	4.35	153.91	0.000	0.000	32.16	0.00	0.00
23	148.00	Ericsson RRUS	3	6.721	7.393	0.58	0.80	6.68	494.50	0.000	0.000	49.35	0.00	0.00
24	148.00	Cci OPA-65R-LCUU-H8	2	6.721	7.393	0.63	0.80	18.45	782.38	0.000	0.000	136.36	0.00	0.00
25	148.00	Cci OPA-65R-LCUU-H6	1	6.721	7.393	0.63	0.80	6.97	319.00	0.000	0.000	51.51	0.00	0.00
26	148.00	Powerwave LGP13519	6	6.721	7.393	0.62	0.80	2.93	78.87	0.000	0.000	21.68	0.00	0.00
27	148.00	Powerwave LGP21401	6	6.721	7.393	0.62	0.80	7.85	208.73	0.000	0.000	58.05	0.00	0.00
28	148.00	Powerwave 7770	3	6.721	7.393	0.64	0.80	12.54	635.80	0.000	0.000	92.74	0.00	0.00
29	148.00	T-Arms	3	6.721	7.393	0.60	0.80	26.95	1782.01	0.000	0.000	199.22	0.00	0.00
30	148.00	Raycap	2	6.721	7.393	0.66	0.80	2.85	172.69	0.000	0.000	21.04	0.00	0.00
31	148.00	Ericsson RRUS-11-RRU	3	6.721	7.393	0.62	0.80	6.03	450.24	0.000	0.000	44.56	0.00	0.00
32	137.00	T-Arms	3	6.574	7.231	0.56	0.75	30.98	1306.43	0.000	0.000	224.04	0.00	0.00
33	137.00	APXV18-206517S-C	6	6.574	7.231	0.59	0.80	26.72	582.54	0.000	0.000	193.24	0.00	0.00
34	127.00	Sector Frames	3	6.433	7.076	0.56	0.75	60.17	3259.69	0.000	0.000	425.76	0.00	0.00
35	127.00	VHLP2-11	3	6.433	7.076	1.00	1.00	17.80	301.94	1.455	0.000	125.96	183.27	0.00
36	127.00	VHLP800-11	1	6.433	7.076	1.00	1.00	10.11	179.87	1.455	0.000	71.53	104.08	0.00
37	127.00	ETCR-654L12H6	3	6.433	7.076	0.58	0.80	30.42	1306.58	0.000	0.000	215.23	0.00	0.00
38	127.00	Horizon Duo	4	6.433	7.076	0.50	1.00	2.29	77.05	0.000	0.000	16.17	0.00	0.00
39	127.00	1900MHz RRH	3	6.433	7.076	0.79	0.80	9.55	390.47	0.000	0.000	67.55	0.00	0.00
40	127.00	800 MHz RRH	6	6.433	7.076	0.74	0.80	15.96	691.44	0.000	0.000	112.96	0.00	0.00
41	127.00	TD-RRH8x20-25	3	6.433	7.076	0.57	0.80	8.26	576.79	0.000	0.000	58.47	0.00	0.00
42	117.00	CM-30S-72	1	6.284	6.913	1.00	1.00	8.40	606.00	0.000	0.000	58.10	0.00	0.00
43	117.00	HG2409U-PRO	1	6.305	6.935	1.00	1.00	0.98	28.84	0.000	1.346	6.80	0.00	9.15
							Totals:		**25,218.66**			**4,173.77**		

Total Applied Force Summary

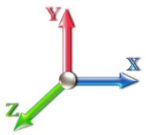
Structure:	CT13071-A-SBA		**Code:**	EIA/TIA-222-G	10/25/2017
Site Name:	Woodbridge		**Exposure:**	B	
Height:	169.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 31

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 26

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		138.16	2433.57	0.00	0.00
10.00		136.20	2434.64	0.00	0.00
15.00		134.08	2420.68	0.00	0.00
20.00		131.89	2400.14	0.00	0.00
25.00		129.67	2375.79	0.00	0.00
30.00		127.52	2348.95	0.00	0.00
35.00		130.89	2320.31	0.00	0.00
40.00		133.50	2290.31	0.00	0.00
40.75		19.91	341.05	0.00	0.00
45.00		116.70	2915.74	0.00	0.00
47.00		54.94	1358.43	0.00	0.00
50.00		83.09	1237.37	0.00	0.00
55.00		140.13	2038.62	0.00	0.00
60.00		140.83	2009.48	0.00	0.00
65.00		141.20	1979.81	0.00	0.00
70.00		141.26	1949.68	0.00	0.00
75.00		141.05	1919.15	0.00	0.00
80.00		140.59	1888.26	0.00	0.00
85.00		139.91	1857.04	0.00	0.00
89.25		118.08	1554.18	0.00	0.00
90.00		20.89	371.99	0.00	0.00
91.50		41.76	740.61	0.00	0.00
94.25		76.46	1346.12	0.00	0.00
95.00		20.73	227.68	0.00	0.00
96.75		48.33	528.93	0.00	0.00
97.00		6.88	75.38	0.00	0.00
100.00		82.60	898.70	0.00	0.00
102.25		61.56	668.65	0.00	0.00
105.00		74.90	808.00	0.00	0.00
110.00		135.38	1428.53	0.00	0.00
115.00		133.67	1404.02	0.00	0.00
117.00	(2) attachments	117.65	1190.56	0.00	9.15
120.00		78.67	821.90	0.00	0.00
125.00		129.83	1348.21	0.00	0.00
127.00	(26) attachments	1144.79	7317.17	287.35	0.00
130.00		76.20	775.93	0.00	0.00
135.00		125.50	1271.29	0.00	0.00
137.00	(9) attachments	466.67	2391.50	0.00	0.00
139.00		49.01	483.50	0.00	0.00
140.00		24.61	313.43	0.00	0.00
142.75		67.31	853.30	0.00	0.00
145.00		54.49	482.86	0.00	0.00
148.00	(42) attachments	1011.27	7247.06	0.00	0.00
150.00	(1) attachments	91.49	242.24	0.00	0.00
155.00		116.95	953.21	0.00	0.00
157.00	(23) attachments	918.24	5240.37	0.00	0.00

Total Applied Force Summary

Structure:	CT13071-A-SBA		**Code:**	EIA/TIA-222-G	10/25/2017
Site Name:	Woodbridge		**Exposure:**	B	
Height:	169.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 32

Tower Engineering Solutions

160.00		68.07	419.61	0.00	0.00
165.00		111.39	679.59	0.00	0.00
167.00	(18) attachments	785.78	4849.62	0.00	82.09
169.00		43.16	230.65	0.00	0.00
	Totals:	**8,623.87**	**85,683.82**	**287.35**	**91.24**

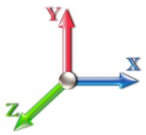
Linear Appurtenance Segment Forces (Factored)

Structure:	CT13071-A-SBA	**Code:**	EIA/TIA-222-G	10/25/2017	
Site Name:	Woodbridge	**Exposure:**	B		
Height:	169.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 33	

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 26

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	1 5/8" Coax	Yes	5.00	0.000	1.98	1.86	0.00	0.035	0.000	4.256	0.00	114.06
10.00	1 5/8" Coax	Yes	5.00	0.000	1.98	1.93	0.00	0.036	0.000	4.256	0.00	119.58
15.00	1 5/8" Coax	Yes	5.00	0.000	1.98	1.98	0.00	0.036	0.000	4.256	0.00	123.04
20.00	1 5/8" Coax	Yes	5.00	0.000	1.98	2.01	0.00	0.037	0.000	4.256	0.00	125.61
25.00	1 5/8" Coax	Yes	5.00	0.000	1.98	2.04	0.00	0.038	0.000	4.256	0.00	127.66
30.00	1 5/8" Coax	Yes	5.00	0.000	1.98	2.06	0.00	0.038	0.000	4.260	0.00	129.38
35.00	1 5/8" Coax	Yes	5.00	0.000	1.98	2.08	0.00	0.039	0.000	4.451	0.00	130.87
40.00	1 5/8" Coax	Yes	5.00	0.000	1.98	2.10	0.00	0.040	0.000	4.625	0.00	132.19
40.75	1 5/8" Coax	Yes	0.75	0.000	1.98	0.32	0.00	0.041	0.000	4.649	0.00	19.86
45.00	1 5/8" Coax	Yes	4.25	0.000	1.98	1.80	0.00	0.041	0.000	4.783	0.00	113.36
47.00	1 5/8" Coax	Yes	2.00	0.000	1.98	0.85	0.00	0.042	0.000	4.843	0.00	53.52
50.00	1 5/8" Coax	Yes	3.00	0.000	1.98	1.28	0.00	0.041	0.000	4.929	0.00	80.66
55.00	1 5/8" Coax	Yes	5.00	0.000	1.98	2.14	0.00	0.042	0.000	5.065	0.00	135.41
60.00	1 5/8" Coax	Yes	5.00	0.000	1.98	2.15	0.00	0.043	0.000	5.193	0.00	136.31
65.00	1 5/8" Coax	Yes	5.00	0.000	1.98	2.16	0.00	0.044	0.000	5.313	0.00	137.16
70.00	1 5/8" Coax	Yes	5.00	0.000	1.98	2.17	0.00	0.045	0.000	5.426	0.00	137.94
75.00	1 5/8" Coax	Yes	5.00	0.000	1.98	2.18	0.00	0.046	0.000	5.534	0.00	138.68
80.00	1 5/8" Coax	Yes	5.00	0.000	1.98	2.19	0.00	0.047	0.000	5.637	0.00	139.38
85.00	1 5/8" Coax	Yes	5.00	0.000	1.98	2.20	0.00	0.048	0.000	5.736	0.00	140.04
89.25	1 5/8" Coax	Yes	4.25	0.000	1.98	1.87	0.00	0.049	0.000	5.816	0.00	119.49
90.00	1 5/8" Coax	Yes	0.75	0.000	1.98	0.33	0.00	0.075	0.000	5.830	0.00	21.10
90.00	1" Reinforcing plate	Yes	0.75	0.000	1.00	0.27	0.00	0.075	0.000	5.830	0.00	3.55
91.50	1 5/8" Coax	Yes	1.50	0.000	1.98	0.66	0.00	0.076	0.000	5.858	0.00	42.26
91.50	1" Reinforcing plate	Yes	1.50	0.000	1.00	0.54	0.00	0.076	0.000	5.858	0.00	7.12
94.25	1 5/8" Coax	Yes	2.75	0.000	1.98	1.22	0.00	0.077	0.000	5.908	0.00	77.65
94.25	1" Reinforcing plate	Yes	2.75	0.000	1.00	0.99	0.00	0.077	0.000	5.908	0.00	13.12
95.00	1 5/8" Coax	Yes	0.75	0.000	1.98	0.33	0.00	0.076	0.000	5.921	0.00	21.19
95.00	1" Reinforcing plate	Yes	0.75	0.000	1.00	0.27	0.00	0.076	0.000	5.921	0.00	3.58
96.75	1 5/8" Coax	Yes	1.75	0.000	1.98	0.78	0.00	0.077	0.000	5.952	0.00	49.51
96.75	1" Reinforcing plate	Yes	1.75	0.000	1.00	0.63	0.00	0.077	0.000	5.952	0.00	8.38
97.00	1 5/8" Coax	Yes	0.25	0.000	1.98	0.11	0.00	0.077	0.000	5.956	0.00	7.07
97.00	1" Reinforcing plate	Yes	0.25	0.000	1.00	0.09	0.00	0.077	0.000	5.956	0.00	1.20
100.00	1 5/8" Coax	Yes	3.00	0.000	1.98	1.33	0.00	0.078	0.000	6.008	0.00	85.10
100.00	1" Reinforcing plate	Yes	0.75	0.000	1.00	0.27	0.00	0.078	0.000	6.008	0.00	3.61
100.00	1" Reinforcing plate	Yes	2.25	0.000	1.00	0.82	0.00	0.078	0.000	6.008	0.00	10.84
102.25	1 5/8" Coax	Yes	2.25	0.000	1.98	1.00	0.00	0.079	0.000	6.047	0.00	63.94
102.25	1" Reinforcing plate	Yes	2.25	0.000	1.00	0.82	0.00	0.079	0.000	6.047	0.00	10.88
105.00	1 5/8" Coax	Yes	2.75	0.000	1.98	1.23	0.00	0.075	0.000	6.093	0.00	78.31
105.00	1" Reinforcing plate	Yes	2.25	0.000	1.00	0.82	0.00	0.075	0.000	6.093	0.00	10.93
110.00	1 5/8" Coax	Yes	5.00	0.000	1.98	2.23	0.00	0.054	0.000	6.174	0.00	142.91
115.00	1 5/8" Coax	Yes	5.00	0.000	1.98	2.24	0.00	0.056	0.000	6.253	0.00	143.41
117.00	1 5/8" Coax	Yes	2.00	0.000	1.98	0.90	0.00	0.057	0.000	6.284	0.00	57.44
120.00	1 5/8" Coax	Yes	3.00	0.000	1.98	1.35	0.00	0.058	0.000	6.330	0.00	86.34
125.00	1 5/8" Coax	Yes	5.00	0.000	1.98	2.25	0.00	0.059	0.000	6.404	0.00	144.37
127.00	1 5/8" Coax	Yes	2.00	0.000	1.98	0.90	0.00	0.061	0.000	6.433	0.00	57.82
130.00	1 5/8" Coax	Yes	3.00	0.000	1.98	1.36	0.00	0.061	0.000	6.476	0.00	86.89
135.00	1 5/8" Coax	Yes	5.00	0.000	1.98	2.26	0.00	0.063	0.000	6.546	0.00	145.26

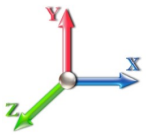
Linear Appurtenance Segment Forces (Factored)

Structure:	CT13071-A-SBA	**Code:**	EIA/TIA-222-G	10/25/2017	
Site Name:	Woodbridge	**Exposure:**	B		
Height:	169.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 34	

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 26

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
137.00	1 5/8" Coax	Yes	2.00	0.000	1.98	0.91	0.00	0.065	0.000	6.574	0.00	58.17
139.00	1 5/8" Coax	Yes	2.00	0.000	1.98	0.91	0.00	0.065	0.000	6.601	0.00	58.24
140.00	1 5/8" Coax	Yes	1.00	0.000	1.98	0.45	0.00	0.066	0.000	6.615	0.00	29.14
142.75	1 5/8" Coax	Yes	2.75	0.000	1.98	1.25	0.00	0.067	0.000	6.652	0.00	80.25
145.00	1 5/8" Coax	Yes	2.25	0.000	1.98	1.02	0.00	0.067	0.000	6.681	0.00	65.74
148.00	1 5/8" Coax	Yes	3.00	0.000	1.98	1.37	0.00	0.068	0.000	6.721	0.00	87.80
150.00	1 5/8" Coax	Yes	2.00	0.000	1.98	0.91	0.00	0.070	0.000	6.746	0.00	58.60
155.00	1 5/8" Coax	Yes	5.00	0.000	1.98	2.28	0.00	0.071	0.000	6.810	0.00	146.88
157.00	1 5/8" Coax	Yes	2.00	0.000	1.98	0.91	0.00	0.073	0.000	6.835	0.00	58.81
										Totals:	**0.0**	**4,381.6**

Calculated Forces

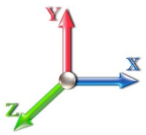
Structure:	CT13071-A-SBA	**Code:**	EIA/TIA-222-G	10/25/2017	
Site Name:	Woodbridge	**Exposure:**	B		
Height:	169.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 35	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 26

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-85.68	-8.66	-0.29	-1077.5	0.00	1077.53	5324.18	2662.09	12195.0	6106.56	0.00	0.000	0.000	0.193
5.00	-83.24	-8.59	-0.29	-1034.2	0.00	1034.23	5261.08	2630.54	11832.5	5925.09	0.03	-0.049	0.000	0.190
10.00	-80.80	-8.53	-0.29	-991.26	0.00	991.26	5196.80	2598.40	11472.7	5744.92	0.11	-0.099	0.000	0.188
15.00	-78.37	-8.46	-0.29	-948.63	0.00	948.63	5131.34	2565.67	11115.7	5566.13	0.24	-0.150	0.000	0.186
20.00	-75.96	-8.39	-0.29	-906.35	0.00	906.35	5064.69	2532.35	10761.6	5388.80	0.42	-0.201	0.000	0.183
25.00	-73.58	-8.31	-0.29	-864.43	0.00	864.43	4996.86	2498.43	10410.5	5212.99	0.66	-0.253	0.000	0.181
30.00	-71.22	-8.24	-0.29	-822.86	0.00	822.86	4927.84	2463.92	10062.6	5038.79	0.95	-0.306	0.000	0.178
35.00	-68.90	-8.16	-0.29	-781.67	0.00	781.67	4857.63	2428.82	9718.08	4866.26	1.30	-0.358	0.000	0.175
40.00	-66.60	-8.05	-0.29	-740.87	0.00	740.87	4786.24	2393.12	9377.03	4695.49	1.71	-0.412	0.000	0.172
40.75	-66.26	-8.05	-0.29	-734.84	0.00	734.84	4775.43	2387.72	9326.19	4670.03	1.77	-0.420	0.000	0.171
45.00	-63.34	-7.95	-0.29	-700.61	0.00	700.61	4713.67	2356.83	9039.63	4526.53	2.17	-0.466	0.000	0.168
47.00	-61.98	-7.92	-0.29	-684.70	0.00	684.70	3877.89	1938.95	7512.92	3762.05	2.37	-0.488	0.000	0.198
50.00	-60.73	-7.87	-0.29	-660.95	0.00	660.95	3845.09	1922.55	7353.82	3682.38	2.68	-0.521	0.000	0.195
55.00	-58.69	-7.77	-0.29	-621.60	0.00	621.60	3789.47	1894.74	7090.51	3550.52	3.26	-0.581	0.000	0.191
60.00	-56.67	-7.67	-0.29	-582.73	0.00	582.73	3732.67	1866.34	6829.63	3419.89	3.90	-0.641	0.000	0.186
65.00	-54.69	-7.56	-0.29	-544.37	0.00	544.37	3674.68	1837.34	6571.34	3290.55	4.61	-0.701	0.000	0.180
70.00	-52.73	-7.45	-0.29	-506.55	0.00	506.55	3615.51	1807.76	6315.78	3162.58	5.37	-0.762	0.000	0.175
75.00	-50.81	-7.34	-0.29	-469.29	0.00	469.29	3555.15	1777.58	6063.10	3036.06	6.20	-0.822	0.000	0.169
80.00	-48.91	-7.22	-0.29	-432.59	0.00	432.59	3493.61	1746.80	5813.45	2911.05	7.09	-0.881	0.000	0.163
85.00	-47.05	-7.10	-0.29	-396.49	0.00	396.49	3430.88	1715.44	5566.98	2787.63	8.05	-0.940	0.000	0.156
89.25	-45.50	-6.97	-0.29	-366.33	0.00	366.33	3376.63	1688.32	5360.08	2684.02	8.91	-0.989	0.000	0.150
90.00	-45.12	-6.96	-0.29	-361.10	0.00	361.10	3366.97	1683.48	5323.83	2665.87	9.06	-0.998	0.000	0.149
91.50	-44.38	-6.92	-0.29	-350.67	0.00	350.67	3347.56	1673.78	5251.55	2629.68	9.38	-1.016	0.000	0.109
94.25	-43.03	-6.83	-0.29	-331.64	0.00	331.64	1944.87	972.44	3066.99	1535.78	9.97	-1.040	0.000	0.124
95.00	-42.81	-6.81	-0.29	-326.52	0.00	326.52	1940.65	970.33	3048.28	1526.41	10.14	-1.046	-0.001	0.158
96.75	-42.28	-6.76	-0.29	-314.60	0.00	314.60	1930.70	965.35	3004.67	1504.57	10.52	-1.065	-0.001	0.108
97.00	-42.20	-6.77	-0.29	-312.90	0.00	312.90	1929.27	964.63	2998.44	1501.45	10.58	-1.067	-0.001	0.141
100.00	-41.30	-6.69	-0.29	-292.60	0.00	292.60	1911.84	955.92	2923.84	1464.09	11.26	-1.096	-0.001	0.135
102.25	-40.63	-6.63	-0.29	-277.56	0.00	277.56	1898.49	949.24	2868.04	1436.15	11.78	-1.118	-0.001	0.130
102.25	-40.63	-6.63	-0.29	-277.56	0.00	277.56	1898.49	949.24	2868.04	1436.15	11.78	-1.118	-0.001	0.130
105.00	-39.82	-6.57	-0.29	-259.33	0.00	259.33	1881.84	940.92	2800.02	1402.09	12.43	-1.143	-0.001	0.206
110.00	-38.38	-6.45	-0.29	-226.47	0.00	226.47	1850.66	925.33	2676.97	1340.48	13.67	-1.216	-0.001	0.190
115.00	-36.98	-6.32	-0.29	-194.20	0.00	194.20	1818.29	909.14	2554.84	1279.32	14.98	-1.285	-0.001	0.172
117.00	-35.79	-6.20	-0.29	-181.55	0.00	181.55	1805.01	902.50	2506.28	1255.00	15.53	-1.312	-0.001	0.165
120.00	-34.96	-6.13	-0.29	-162.96	-0.01	162.96	1784.73	892.37	2433.78	1218.70	16.36	-1.350	-0.001	0.153
125.00	-33.61	-5.99	-0.29	-132.32	-0.01	132.32	1749.99	875.00	2313.93	1158.68	17.81	-1.407	-0.001	0.133
127.00	-26.32	-4.67	0.00	-120.35	0.00	120.35	1735.77	867.88	2266.36	1134.86	18.40	-1.428	-0.001	0.121
130.00	-25.55	-4.60	0.00	-106.32	0.00	106.32	1714.07	857.04	2195.44	1099.35	19.31	-1.459	-0.001	0.112
135.00	-24.28	-4.45	0.00	-83.34	0.00	83.34	1676.96	838.48	2078.45	1040.77	20.86	-1.503	-0.001	0.095
137.00	-21.90	-3.93	0.00	-74.44	0.00	74.44	1661.79	830.89	2032.11	1017.57	21.50	-1.519	-0.001	0.086
139.00	-21.42	-3.87	0.00	-66.59	0.00	66.59	1646.42	823.21	1986.05	994.50	22.14	-1.534	-0.001	0.080
140.00	-21.10	-3.84	0.00	-62.72	0.00	62.72	1638.67	819.33	1963.12	983.02	22.46	-1.542	-0.001	0.077
142.75	-20.25	-3.76	0.00	-52.16	0.00	52.16	1100.62	550.31	1316.21	659.08	23.35	-1.560	-0.001	0.098
145.00	-19.77	-3.69	0.00	-43.71	0.00	43.71	1091.20	545.60	1284.61	643.26	24.09	-1.573	-0.001	0.086
148.00	-12.55	-2.49	0.00	-32.63	0.00	32.63	1078.27	539.14	1242.60	622.22	25.08	-1.591	-0.001	0.064
150.00	-12.31	-2.39	0.00	-27.65	0.00	27.65	1069.42	534.71	1214.68	608.24	25.75	-1.602	-0.001	0.057
155.00	-11.36	-2.25	0.00	-15.70	0.00	15.70	1046.45	523.23	1145.25	573.48	27.44	-1.621	-0.001	0.038
157.00	-6.15	-1.18	0.00	-11.20	0.00	11.20	1036.93	518.47	1117.66	559.66	28.12	-1.627	-0.001	0.026

Calculated Forces

Structure:	CT13071-A-SBA	**Code:**	EIA/TIA-222-G	10/25/2017	
Site Name:	Woodbridge	**Exposure:**	B		
Height:	169.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 36

160.00	-5.73	-1.10	0.00	-7.65	0.00	7.65	1022.30	511.15	1076.48	539.04	29.15	-1.632	-0.001	0.020
165.00	-5.05	-0.97	0.00	-2.13	0.00	2.13	996.96	498.48	1008.51	505.00	30.86	-1.638	-0.001	0.009
167.00	-0.23	-0.05	0.00	-0.10	0.00	0.10	986.50	493.25	981.58	491.52	31.55	-1.639	-0.001	0.000
169.00	0.00	-0.04	0.00	0.00	0.00	0.00	975.84	487.92	954.81	478.11	32.23	-1.639	-0.001	0.000

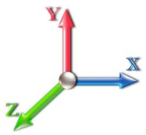
Seismic Segment Forces (Factored)

Structure:	CT13071-A-SBA	**Code:**	EIA/TIA-222-G	10/25/2017	
Site Name:	Woodbridge	**Exposure:**	B		
Height:	169.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 37	

Tower Engineering Solutions

Load Case: 1.2D + 1.0E

Gust Response Factor	1.10			**Sds**	0.21	**Iterations**	24
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.10	**Ss**	0.19
Wind Load Factor	0.00	**Structure Frequency**	0.31	**SA**	0.03	**S1**	0.06
						Seismic Importance Factor	1.00



Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		1305.1	0.00	0.03	0.02	26.66	
10.00		1281.4	0.01	0.05	0.03	37.99	
15.00		1257.8	0.01	0.06	0.04	43.23	
20.00		1234.2	0.03	0.07	0.04	45.53	
25.00		1210.5	0.04	0.07	0.04	46.41	
30.00		1186.9	0.06	0.07	0.04	46.68	
35.00		1163.3	0.08	0.07	0.04	46.75	
40.00		1139.7	0.11	0.07	0.04	46.79	
40.75	Bot - Section 2	168.92	0.11	0.07	0.04	6.96	
45.00		1773.0	0.13	0.07	0.03	74.35	
47.00	Top - Section 1	823.38	0.15	0.07	0.03	34.79	
50.00		569.27	0.17	0.07	0.03	24.27	
55.00		932.58	0.20	0.06	0.02	39.98	
60.00		912.33	0.24	0.06	0.02	38.45	
65.00		892.08	0.28	0.05	0.01	35.54	
70.00		871.83	0.32	0.04	0.01	30.68	
75.00		851.57	0.37	0.03	0.01	23.40	
80.00		831.32	0.42	0.01	0.01	13.59	
85.00		811.07	0.48	-0.01	0.01	1.92	
89.25	Bot - Section 3	673.48	0.53	-0.03	0.01	-7.10	
90.00		196.82	0.54	-0.03	0.01	-2.52	
91.50	RB1	391.36	0.55	-0.04	0.01	-6.74	
94.25	Top - Section 2	709.60	0.59	-0.05	0.01	-17.64	
95.00		77.46	0.60	-0.05	0.01	-2.08	
96.75	RB2	179.56	0.62	-0.06	0.02	-5.57	
97.00	RT1	25.52	0.62	-0.06	0.02	-0.81	
100.00		303.57	0.66	-0.07	0.02	-11.42	
102.25	RT2	224.48	0.69	-0.08	0.03	-9.23	
105.00		270.66	0.73	-0.10	0.04	-11.94	
110.00		481.64	0.80	-0.11	0.05	-22.14	
115.00		468.14	0.88	-0.12	0.08	-20.27	
117.00	Appurtenance(s)	536.27	0.91	-0.12	0.09	-21.98	
120.00		271.16	0.95	-0.12	0.11	-9.83	
125.00		441.13	1.03	-0.10	0.15	-11.02	
127.00	Appurtenance(s)	2834.6	1.07	-0.09	0.17	-54.71	
130.00		254.96	1.12	-0.06	0.20	-2.43	
135.00		414.13	1.21	0.01	0.26	4.14	
137.00	Appurtenance(s)	1046.2	1.24	0.05	0.29	19.87	
139.00	Bot - Section 4	159.71	1.28	0.09	0.32	4.58	
140.00		139.21	1.30	0.12	0.33	4.70	
142.75	Top - Section 3	377.97	1.35	0.19	0.38	18.36	
145.00		131.39	1.39	0.27	0.42	8.10	
148.00	Appurtenance(s)	2576.2	1.45	0.38	0.48	207.43	
150.00	Appurtenance(s)	212.64	1.49	0.47	0.53	19.98	
155.00		274.52	1.59	0.75	0.66	35.86	

Seismic Segment Forces (Factored)

Structure:	CT13071-A-SBA	**Code:**	EIA/TIA-222-G	10/25/2017	
Site Name:	Woodbridge	**Exposure:**	B		
Height:	169.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 38	

157.00	Appurtenance(s)	1651.1	1.63	0.88	0.71	241.96			
160.00		157.42	1.69	1.10	0.81	27.04			
165.00		254.27	1.80	1.55	0.98	55.32			
167.00	Appurtenance(s)	2001.4	1.85	1.75	1.06	474.73			
169.00		97.25	1.89	1.98	1.14	25.05			
	Totals:	**37,050.7**				**1,593.7**	**Total Wind:**	**31,220.7**	

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

Calculated Forces

Structure:	CT13071-A-SBA	**Code:**	EIA/TIA-222-G	10/25/2017	
Site Name:	Woodbridge	**Exposure:**	B		
Height:	169.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 39	

Tower Engineering Solutions

Load Case: 1.2D + 1.0E

Gust Response Factor	1.10			**Sds**	0.21			**Iterations**	24
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.10			**Ss**	0.19
Wind Load Factor	0.00	**Structure Frequency**	0.31	**SA**	0.03			**S1**	0.06
								Seismic Importance Factor	1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-55.17	-1.82	0.00	-219.90	0.00	219.90	5324.18	2662.09	12195.0	6106.56		0.00	0.00	0.046
5.00	-53.25	-1.80	0.00	-210.83	0.00	210.83	5261.08	2630.54	11832.5	5925.09		0.01	-0.01	0.046
10.00	-51.36	-1.77	0.00	-201.84	0.00	201.84	5196.80	2598.40	11472.7	5744.92		0.02	-0.02	0.045
15.00	-49.50	-1.73	0.00	-193.00	0.00	193.00	5131.34	2565.67	11115.7	5566.13		0.05	-0.03	0.044
20.00	-47.66	-1.70	0.00	-184.33	0.00	184.33	5064.69	2532.35	10761.6	5388.80		0.09	-0.04	0.044
25.00	-45.86	-1.66	0.00	-175.85	0.00	175.85	4996.86	2498.43	10410.5	5212.99		0.13	-0.05	0.043
30.00	-44.08	-1.62	0.00	-167.57	0.00	167.57	4927.84	2463.92	10062.6	5038.79		0.19	-0.06	0.042
35.00	-42.33	-1.58	0.00	-159.49	0.00	159.49	4857.63	2428.82	9718.08	4866.26		0.27	-0.07	0.041
40.00	-40.61	-1.53	0.00	-151.62	0.00	151.62	4786.24	2393.12	9377.03	4695.49		0.35	-0.08	0.041
40.75	-40.36	-1.53	0.00	-150.47	0.00	150.47	4775.43	2387.72	9326.19	4670.03		0.36	-0.09	0.041
45.00	-37.93	-1.45	0.00	-143.98	0.00	143.98	4713.67	2356.83	9039.63	4526.53		0.44	-0.09	0.040
47.00	-36.80	-1.42	0.00	-141.07	0.00	141.07	3877.89	1938.95	7512.92	3762.05		0.48	-0.10	0.047
50.00	-35.91	-1.40	0.00	-136.81	0.00	136.81	3845.09	1922.55	7353.82	3682.38		0.55	-0.11	0.046
55.00	-34.44	-1.37	0.00	-129.81	0.00	129.81	3789.47	1894.74	7090.51	3550.52		0.66	-0.12	0.046
60.00	-32.99	-1.33	0.00	-122.98	0.00	122.98	3732.67	1866.34	6829.63	3419.89		0.80	-0.13	0.045
65.00	-31.57	-1.30	0.00	-116.33	0.00	116.33	3674.68	1837.34	6571.34	3290.55		0.94	-0.14	0.044
70.00	-30.17	-1.27	0.00	-109.83	0.00	109.83	3615.51	1807.76	6315.78	3162.58		1.10	-0.16	0.043
75.00	-28.80	-1.25	0.00	-103.47	0.00	103.47	3555.15	1777.58	6063.10	3036.06		1.27	-0.17	0.042
80.00	-27.45	-1.24	0.00	-97.22	0.00	97.22	3493.61	1746.80	5813.45	2911.05		1.46	-0.18	0.041
85.00	-26.12	-1.24	0.00	-91.02	0.00	91.02	3430.88	1715.44	5566.98	2787.63		1.65	-0.20	0.040
89.25	-25.01	-1.24	0.00	-85.76	0.00	85.76	3376.63	1688.32	5360.08	2684.02		1.84	-0.21	0.039
90.00	-24.73	-1.24	0.00	-84.83	0.00	84.83	3366.97	1683.48	5323.83	2665.87		1.87	-0.21	0.039
91.50	-24.15	-1.24	0.00	-82.97	0.00	82.97	3347.56	1673.78	5251.55	2629.68		1.94	-0.21	0.029
94.25	-23.10	-1.24	0.00	-79.56	0.00	79.56	1944.87	972.44	3066.99	1535.78		2.06	-0.22	0.033
95.00	-22.96	-1.24	0.00	-78.64	0.00	78.64	1940.65	970.33	3048.28	1526.41		2.10	-0.22	0.042
96.75	-22.62	-1.24	0.00	-76.47	0.00	76.47	1930.70	965.35	3004.67	1504.57		2.18	-0.23	0.029
97.00	-22.57	-1.24	0.00	-76.17	0.00	76.17	1929.27	964.63	2998.44	1501.45		2.19	-0.23	0.038
100.00	-22.00	-1.24	0.00	-72.45	0.00	72.45	1911.84	955.92	2923.84	1464.09		2.33	-0.23	0.037
102.25	-21.57	-1.24	0.00	-69.67	0.00	69.67	1898.49	949.24	2868.04	1436.15		2.45	-0.24	0.036
102.25	-21.57	-1.24	0.00	-69.67	0.00	69.67	1898.49	949.24	2868.04	1436.15		2.45	-0.24	0.036
105.00	-21.05	-1.24	0.00	-66.26	0.00	66.26	1881.84	940.92	2800.02	1402.09		2.59	-0.25	0.058
110.00	-20.12	-1.24	0.00	-60.06	0.00	60.06	1850.66	925.33	2676.97	1340.48		2.85	-0.26	0.056
115.00	-19.21	-1.24	0.00	-53.85	0.00	53.85	1818.29	909.14	2554.84	1279.32		3.14	-0.28	0.053
117.00	-18.42	-1.24	0.00	-51.36	0.00	51.36	1805.01	902.50	2506.28	1255.00		3.26	-0.29	0.051
120.00	-17.89	-1.24	0.00	-47.64	0.00	47.64	1784.73	892.37	2433.78	1218.70		3.45	-0.30	0.049
125.00	-17.01	-1.24	0.00	-41.42	0.00	41.42	1749.99	875.00	2313.93	1158.68		3.77	-0.32	0.045
127.00	-13.47	-1.22	0.00	-38.93	0.00	38.93	1735.77	867.88	2266.36	1134.86		3.91	-0.33	0.042
130.00	-12.98	-1.22	0.00	-35.26	0.00	35.26	1714.07	857.04	2195.44	1099.35		4.12	-0.34	0.040
135.00	-12.16	-1.22	0.00	-29.14	0.00	29.14	1676.96	838.48	2078.45	1040.77		4.48	-0.35	0.035
137.00	-10.78	-1.19	0.00	-26.70	0.00	26.70	1661.79	830.89	2032.11	1017.57		4.62	-0.36	0.033
139.00	-10.47	-1.18	0.00	-24.32	0.00	24.32	1646.42	823.21	1986.05	994.50		4.78	-0.36	0.031
140.00	-10.25	-1.18	0.00	-23.13	0.00	23.13	1638.67	819.33	1963.12	983.02		4.85	-0.36	0.030
142.75	-9.64	-1.16	0.00	-19.89	0.00	19.89	1100.62	550.31	1316.21	659.08		5.06	-0.37	0.039
145.00	-9.36	-1.15	0.00	-17.29	0.00	17.29	1091.20	545.60	1284.61	643.26		5.24	-0.38	0.035
148.00	-6.10	-0.92	0.00	-13.84	0.00	13.84	1078.27	539.14	1242.60	622.22		5.48	-0.38	0.028
150.00	-5.76	-0.90	0.00	-12.00	0.00	12.00	1069.42	534.71	1214.68	608.24		5.64	-0.39	0.025
155.00	-5.23	-0.86	0.00	-7.50	0.00	7.50	1046.45	523.23	1145.25	573.48		6.05	-0.40	0.018

Calculated Forces

Structure:	CT13071-A-SBA	**Code:**	EIA/TIA-222-G	10/25/2017	
Site Name:	Woodbridge	**Exposure:**	B		
Height:	169.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 40	

157.00	-3.17	-0.60	0.00	-5.78	0.00	5.78	1036.93	518.47	1117.66	559.66	6.22	-0.40	0.013
160.00	-2.93	-0.58	0.00	-3.97	0.00	3.97	1022.30	511.15	1076.48	539.04	6.47	-0.40	0.010
165.00	-2.55	-0.52	0.00	-1.09	0.00	1.09	996.96	498.48	1008.51	505.00	6.90	-0.41	0.005
167.00	-0.12	-0.03	0.00	-0.05	0.00	0.05	986.50	493.25	981.58	491.52	7.07	-0.41	0.000
169.00	0.00	-0.03	0.00	0.00	0.00	0.00	975.84	487.92	954.81	478.11	7.24	-0.41	0.000

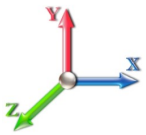
Seismic Segment Forces (Factored)

Structure:	CT13071-A-SBA	**Code:**	EIA/TIA-222-G	10/25/2017	
Site Name:	Woodbridge	**Exposure:**	B		
Height:	169.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 41	

Tower Engineering Solutions

Load Case: 0.9D + 1.0E

Gust Response Factor	1.10			**Sds**	0.21	**Iterations**	23
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.10	**Ss**	0.19
Wind Load Factor	0.00	**Structure Frequency**	0.31	**SA**	0.03	**S1**	0.06
						Seismic Importance Factor	1.00



Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		1305.1	0.00	0.03	0.02	26.66	
10.00		1281.4	0.01	0.05	0.03	37.99	
15.00		1257.8	0.01	0.06	0.04	43.23	
20.00		1234.2	0.03	0.07	0.04	45.53	
25.00		1210.5	0.04	0.07	0.04	46.41	
30.00		1186.9	0.06	0.07	0.04	46.68	
35.00		1163.3	0.08	0.07	0.04	46.75	
40.00		1139.7	0.11	0.07	0.04	46.79	
40.75	Bot - Section 2	168.92	0.11	0.07	0.04	6.96	
45.00		1773.0	0.13	0.07	0.03	74.35	
47.00	Top - Section 1	823.38	0.15	0.07	0.03	34.79	
50.00		569.27	0.17	0.07	0.03	24.27	
55.00		932.58	0.20	0.06	0.02	39.98	
60.00		912.33	0.24	0.06	0.02	38.45	
65.00		892.08	0.28	0.05	0.01	35.54	
70.00		871.83	0.32	0.04	0.01	30.68	
75.00		851.57	0.37	0.03	0.01	23.40	
80.00		831.32	0.42	0.01	0.01	13.59	
85.00		811.07	0.48	-0.01	0.01	1.92	
89.25	Bot - Section 3	673.48	0.53	-0.03	0.01	-7.10	
90.00		196.82	0.54	-0.03	0.01	-2.52	
91.50	RB1	391.36	0.55	-0.04	0.01	-6.74	
94.25	Top - Section 2	709.60	0.59	-0.05	0.01	-17.64	
95.00		77.46	0.60	-0.05	0.01	-2.08	
96.75	RB2	179.56	0.62	-0.06	0.02	-5.57	
97.00	RT1	25.52	0.62	-0.06	0.02	-0.81	
100.00		303.57	0.66	-0.07	0.02	-11.42	
102.25	RT2	224.48	0.69	-0.08	0.03	-9.23	
105.00		270.66	0.73	-0.10	0.04	-11.94	
110.00		481.64	0.80	-0.11	0.05	-22.14	
115.00		468.14	0.88	-0.12	0.08	-20.27	
117.00	Appurtenance(s)	536.27	0.91	-0.12	0.09	-21.98	
120.00		271.16	0.95	-0.12	0.11	-9.83	
125.00		441.13	1.03	-0.10	0.15	-11.02	
127.00	Appurtenance(s)	2834.6	1.07	-0.09	0.17	-54.71	
130.00		254.96	1.12	-0.06	0.20	-2.43	
135.00		414.13	1.21	0.01	0.26	4.14	
137.00	Appurtenance(s)	1046.2	1.24	0.05	0.29	19.87	
139.00	Bot - Section 4	159.71	1.28	0.09	0.32	4.58	
140.00		139.21	1.30	0.12	0.33	4.70	
142.75	Top - Section 3	377.97	1.35	0.19	0.38	18.36	
145.00		131.39	1.39	0.27	0.42	8.10	
148.00	Appurtenance(s)	2576.2	1.45	0.38	0.48	207.43	
150.00	Appurtenance(s)	212.64	1.49	0.47	0.53	19.98	
155.00		274.52	1.59	0.75	0.66	35.86	

Seismic Segment Forces (Factored)

Structure:	CT13071-A-SBA	**Code:**	EIA/TIA-222-G	10/25/2017	
Site Name:	Woodbridge	**Exposure:**	B		
Height:	169.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 42	

157.00	Appurtenance(s)	1651.1	1.63	0.88	0.71	241.96			
160.00		157.42	1.69	1.10	0.81	27.04			
165.00		254.27	1.80	1.55	0.98	55.32			
167.00	Appurtenance(s)	2001.4	1.85	1.75	1.06	474.73			
169.00		97.25	1.89	1.98	1.14	25.05			
	Totals:	**37,050.7**				**1,593.7**	**Total Wind:**	**31,220.7**	

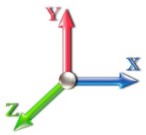
Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

Calculated Forces

Structure:	CT13071-A-SBA	**Code:**	EIA/TIA-222-G	10/25/2017	
Site Name:	Woodbridge	**Exposure:**	B		
Height:	169.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 43	

Tower Engineering Solutions

Load Case: 0.9D + 1.0E



Gust Response Factor	1.10			**Sds**	0.21	**Iterations**	23		
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.10	**Ss**	0.19		
Wind Load Factor	0.00	**Structure Frequency**	0.31	**SA**	0.03	**S1**	0.06	**Seismic Importance Factor**	1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-41.37	-1.81	0.00	-216.91	0.00	216.91	5324.18	2662.09	12195.0	6106.56		0.00	0.00	0.043
5.00	-39.94	-1.79	0.00	-207.85	0.00	207.85	5261.08	2630.54	11832.5	5925.09		0.01	-0.01	0.043
10.00	-38.52	-1.76	0.00	-198.88	0.00	198.88	5196.80	2598.40	11472.7	5744.92		0.02	-0.02	0.042
15.00	-37.12	-1.72	0.00	-190.08	0.00	190.08	5131.34	2565.67	11115.7	5566.13		0.05	-0.03	0.041
20.00	-35.75	-1.68	0.00	-181.45	0.00	181.45	5064.69	2532.35	10761.6	5388.80		0.08	-0.04	0.041
25.00	-34.39	-1.64	0.00	-173.03	0.00	173.03	4996.86	2498.43	10410.5	5212.99		0.13	-0.05	0.040
30.00	-33.06	-1.60	0.00	-164.82	0.00	164.82	4927.84	2463.92	10062.6	5038.79		0.19	-0.06	0.039
35.00	-31.75	-1.56	0.00	-156.81	0.00	156.81	4857.63	2428.82	9718.08	4866.26		0.26	-0.07	0.039
40.00	-30.46	-1.51	0.00	-149.02	0.00	149.02	4786.24	2393.12	9377.03	4695.49		0.34	-0.08	0.038
40.75	-30.27	-1.51	0.00	-147.88	0.00	147.88	4775.43	2387.72	9326.19	4670.03		0.36	-0.08	0.038
45.00	-28.45	-1.44	0.00	-141.47	0.00	141.47	4713.67	2356.83	9039.63	4526.53		0.43	-0.09	0.037
47.00	-27.60	-1.40	0.00	-138.60	0.00	138.60	3877.89	1938.95	7512.92	3762.05		0.47	-0.10	0.044
50.00	-26.93	-1.38	0.00	-134.39	0.00	134.39	3845.09	1922.55	7353.82	3682.38		0.54	-0.10	0.044
55.00	-25.83	-1.34	0.00	-127.49	0.00	127.49	3789.47	1894.74	7090.51	3550.52		0.65	-0.12	0.043
60.00	-24.74	-1.31	0.00	-120.77	0.00	120.77	3732.67	1866.34	6829.63	3419.89		0.78	-0.13	0.042
65.00	-23.68	-1.28	0.00	-114.22	0.00	114.22	3674.68	1837.34	6571.34	3290.55		0.93	-0.14	0.041
70.00	-22.63	-1.25	0.00	-107.84	0.00	107.84	3615.51	1807.76	6315.78	3162.58		1.08	-0.15	0.040
75.00	-21.60	-1.23	0.00	-101.60	0.00	101.60	3555.15	1777.58	6063.10	3036.06		1.25	-0.17	0.040
80.00	-20.58	-1.21	0.00	-95.47	0.00	95.47	3493.61	1746.80	5813.45	2911.05		1.43	-0.18	0.039
85.00	-19.59	-1.21	0.00	-89.40	0.00	89.40	3430.88	1715.44	5566.98	2787.63		1.63	-0.19	0.038
89.25	-18.76	-1.21	0.00	-84.24	0.00	84.24	3376.63	1688.32	5360.08	2684.02		1.81	-0.20	0.037
90.00	-18.54	-1.21	0.00	-83.33	0.00	83.33	3366.97	1683.48	5323.83	2665.87		1.84	-0.21	0.037
91.50	-18.11	-1.21	0.00	-81.51	0.00	81.51	3347.56	1673.78	5251.55	2629.68		1.90	-0.21	0.027
94.25	-17.33	-1.21	0.00	-78.17	0.00	78.17	1944.87	972.44	3066.99	1535.78		2.03	-0.22	0.031
95.00	-17.22	-1.21	0.00	-77.26	0.00	77.26	1940.65	970.33	3048.28	1526.41		2.06	-0.22	0.040
96.75	-16.96	-1.21	0.00	-75.14	0.00	75.14	1930.70	965.35	3004.67	1504.57		2.14	-0.22	0.027
97.00	-16.93	-1.21	0.00	-74.84	0.00	74.84	1929.27	964.63	2998.44	1501.45		2.15	-0.22	0.036
100.00	-16.50	-1.21	0.00	-71.20	0.00	71.20	1911.84	955.92	2923.84	1464.09		2.30	-0.23	0.035
102.25	-16.18	-1.21	0.00	-68.48	0.00	68.48	1898.49	949.24	2868.04	1436.15		2.41	-0.24	0.034
102.25	-16.18	-1.21	0.00	-68.48	0.00	68.48	1898.49	949.24	2868.04	1436.15		2.41	-0.24	0.034
105.00	-15.79	-1.21	0.00	-65.14	0.00	65.14	1881.84	940.92	2800.02	1402.09		2.54	-0.24	0.055
110.00	-15.09	-1.22	0.00	-59.06	0.00	59.06	1850.66	925.33	2676.97	1340.48		2.81	-0.26	0.052
115.00	-14.40	-1.22	0.00	-52.98	0.00	52.98	1818.29	909.14	2554.84	1279.32		3.09	-0.28	0.049
117.00	-13.81	-1.22	0.00	-50.55	0.00	50.55	1805.01	902.50	2506.28	1255.00		3.21	-0.29	0.048
120.00	-13.42	-1.22	0.00	-46.90	0.00	46.90	1784.73	892.37	2433.78	1218.70		3.39	-0.30	0.046
125.00	-12.76	-1.22	0.00	-40.81	0.00	40.81	1749.99	875.00	2313.93	1158.68		3.71	-0.31	0.043
127.00	-10.10	-1.20	0.00	-38.38	0.00	38.38	1735.77	867.88	2266.36	1134.86		3.84	-0.32	0.040
130.00	-9.73	-1.20	0.00	-34.77	0.00	34.77	1714.07	857.04	2195.44	1099.35		4.05	-0.33	0.037
135.00	-9.12	-1.20	0.00	-28.75	0.00	28.75	1676.96	838.48	2078.45	1040.77		4.40	-0.35	0.033
137.00	-8.08	-1.17	0.00	-26.36	0.00	26.36	1661.79	830.89	2032.11	1017.57		4.55	-0.35	0.031
139.00	-7.85	-1.17	0.00	-24.01	0.00	24.01	1646.42	823.21	1986.05	994.50		4.70	-0.36	0.029
140.00	-7.69	-1.16	0.00	-22.85	0.00	22.85	1638.67	819.33	1963.12	983.02		4.77	-0.36	0.028
142.75	-7.23	-1.14	0.00	-19.65	0.00	19.65	1100.62	550.31	1316.21	659.08		4.98	-0.37	0.036
145.00	-7.02	-1.13	0.00	-17.08	0.00	17.08	1091.20	545.60	1284.61	643.26		5.15	-0.37	0.033
148.00	-4.57	-0.91	0.00	-13.69	0.00	13.69	1078.27	539.14	1242.60	622.22		5.39	-0.38	0.026
150.00	-4.32	-0.89	0.00	-11.87	0.00	11.87	1069.42	534.71	1214.68	608.24		5.55	-0.38	0.024
155.00	-3.92	-0.85	0.00	-7.42	0.00	7.42	1046.45	523.23	1145.25	573.48		5.95	-0.39	0.017

Calculated Forces

Structure:	CT13071-A-SBA	**Code:**	EIA/TIA-222-G	10/25/2017	
Site Name:	Woodbridge	**Exposure:**	B		
Height:	169.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 44

Tower Engineering Solutions

157.00	-2.38	-0.60	0.00	-5.72	0.00	5.72	1036.93	518.47	1117.66	559.66	6.12	-0.39	0.013
160.00	-2.20	-0.57	0.00	-3.93	0.00	3.93	1022.30	511.15	1076.48	539.04	6.37	-0.40	0.009
165.00	-1.91	-0.51	0.00	-1.08	0.00	1.08	996.96	498.48	1008.51	505.00	6.78	-0.40	0.004
167.00	-0.09	-0.03	0.00	-0.05	0.00	0.05	986.50	493.25	981.58	491.52	6.95	-0.40	0.000
169.00	0.00	-0.02	0.00	0.00	0.00	0.00	975.84	487.92	954.81	478.11	7.12	-0.40	0.000

Wind Loading - Shaft

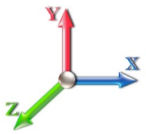
Structure:	CT13071-A-SBA	**Code:**	EIA/TIA-222-G	10/25/2017	
Site Name:	Woodbridge	**Exposure:**	B		
Height:	169.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 45	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 25

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.70	6.129	6.74	238.64	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	6.129	6.74	234.39	0.650	0.000	5.00	23.558	15.31	103.2	0.0	1305.1
10.00		1.00	0.70	6.129	6.74	230.15	0.650	0.000	5.00	23.135	15.04	101.4	0.0	1281.5
15.00		1.00	0.70	6.129	6.74	225.90	0.650	0.000	5.00	22.712	14.76	99.5	0.0	1257.8
20.00		1.00	0.70	6.129	6.74	221.65	0.650	0.000	5.00	22.288	14.49	97.7	0.0	1234.2
25.00		1.00	0.70	6.129	6.74	217.40	0.650	0.000	5.00	21.865	14.21	95.8	0.0	1210.6
30.00		1.00	0.70	6.134	6.75	213.24	0.650	0.000	5.00	21.442	13.94	94.0	0.0	1187.0
35.00		1.00	0.73	6.410	7.05	213.65	0.650	0.000	5.00	21.019	13.66	96.3	0.0	1163.3
40.00		1.00	0.76	6.659	7.33	213.33	0.650	0.000	5.00	20.596	13.39	98.1	0.0	1139.7
40.75	Bot - Section 2	1.00	0.76	6.695	7.36	213.23	0.650	0.000	0.75	3.053	1.98	14.6	0.0	168.9
45.00		1.00	0.79	6.887	7.58	212.45	0.650	0.000	4.25	17.389	11.30	85.6	0.0	1773.0
47.00	Top - Section 1	1.00	0.80	6.973	7.67	211.96	0.650	0.000	2.00	8.077	5.25	40.3	0.0	823.4
50.00		1.00	0.81	7.098	7.81	214.53	0.650	0.000	3.00	11.989	7.79	60.8	0.0	569.3
55.00		1.00	0.83	7.294	8.02	212.83	0.650	0.000	5.00	19.644	12.77	102.4	0.0	932.6
60.00		1.00	0.85	7.477	8.22	210.80	0.650	0.000	5.00	19.220	12.49	102.8	0.0	912.3
65.00		1.00	0.87	7.650	8.42	208.48	0.650	0.000	5.00	18.797	12.22	102.8	0.0	892.1
70.00		1.00	0.89	7.814	8.60	205.90	0.650	0.000	5.00	18.374	11.94	102.7	0.0	871.8
75.00		1.00	0.91	7.969	8.77	203.10	0.650	0.000	5.00	17.951	11.67	102.3	0.0	851.6
80.00		1.00	0.93	8.118	8.93	200.09	0.650	0.000	5.00	17.528	11.39	101.7	0.0	831.3
85.00		1.00	0.94	8.260	9.09	196.90	0.650	0.000	5.00	17.105	11.12	101.0	0.0	811.1
89.25	Bot - Section 3	1.00	0.96	8.376	9.21	194.05	0.650	0.000	4.25	14.206	9.23	85.1	0.0	673.5
90.00		1.00	0.96	8.396	9.24	193.54	0.650	0.000	0.75	2.507	1.63	15.0	0.0	196.8
91.50	RB1	1.00	0.96	8.435	9.28	192.50	0.650	0.000	1.50	4.985	3.24	30.1	0.0	391.4
94.25	Top - Section 2	1.00	0.97	8.507	9.36	190.56	0.650	0.000	2.75	9.041	5.88	55.0	0.0	709.6
95.00		1.00	0.97	8.526	9.38	192.53	0.650	0.000	0.75	2.444	1.59	14.9	0.0	77.5
96.75	RB2	1.00	0.98	8.571	9.43	191.28	0.650	0.000	1.75	5.664	3.68	34.7	0.0	179.6
97.00	RT1	1.00	0.98	8.577	9.43	191.10	0.650	0.000	0.25	0.805	0.52	4.9	0.0	25.5
100.00		1.00	0.99	8.652	9.52	188.90	0.650	0.000	3.00	9.577	6.23	59.2	0.0	303.6
102.25	RT2	1.00	0.99	8.707	9.58	187.22	0.650	0.000	2.25	7.083	4.60	44.1	0.0	224.5
105.00		1.00	1.00	8.774	9.65	185.14	0.650	0.000	2.75	8.541	5.55	53.6	0.0	270.7
110.00		1.00	1.02	8.891	9.78	181.26	0.650	0.000	5.00	15.200	9.88	96.6	0.0	481.6
115.00		1.00	1.03	9.005	9.91	177.26	0.650	0.000	5.00	14.777	9.61	95.1	0.0	468.1
117.00	Appurtenance(s)	1.00	1.03	9.049	9.95	175.63	0.650	0.000	2.00	5.792	3.77	37.5	0.0	183.5
120.00		1.00	1.04	9.115	10.03	173.16	0.650	0.000	3.00	8.562	5.57	55.8	0.0	271.2
125.00		1.00	1.05	9.222	10.14	168.96	0.650	0.000	5.00	13.931	9.06	91.9	0.0	441.1
127.00	Appurtenance(s)	1.00	1.06	9.264	10.19	167.26	0.650	0.000	2.00	5.454	3.55	36.1	0.0	172.7
130.00		1.00	1.07	9.326	10.26	164.67	0.650	0.000	3.00	8.054	5.24	53.7	0.0	255.0
135.00		1.00	1.08	9.427	10.37	160.29	0.650	0.000	5.00	13.085	8.51	88.2	0.0	414.1
137.00	Appurtenance(s)	1.00	1.08	9.466	10.41	158.52	0.650	0.000	2.00	5.115	3.32	34.6	0.0	161.9
139.00	Bot - Section 4	1.00	1.09	9.506	10.46	156.73	0.650	0.000	2.00	5.048	3.28	34.3	0.0	159.7
140.00		1.00	1.09	9.525	10.48	155.83	0.650	0.000	1.00	2.530	1.64	17.2	0.0	139.2
142.75	Top - Section 3	1.00	1.09	9.578	10.54	153.34	0.650	0.000	2.75	6.871	4.47	47.1	0.0	378.0
145.00		1.00	1.10	9.621	10.58	153.29	0.650	0.000	2.25	5.526	3.59	38.0	0.0	131.4
148.00	Appurtenance(s)	1.00	1.11	9.678	10.65	150.53	0.650	0.000	3.00	7.235	4.70	50.1	0.0	172.0
150.00	Appurtenance(s)	1.00	1.11	9.715	10.69	148.68	0.650	0.000	2.00	4.739	3.08	32.9	0.0	112.6
155.00		1.00	1.12	9.806	10.79	144.01	0.650	0.000	5.00	11.551	7.51	81.0	0.0	274.5
157.00	Appurtenance(s)	1.00	1.12	9.842	10.83	142.12	0.650	0.000	2.00	4.502	2.93	31.7	0.0	107.0

Wind Loading - Shaft

Structure: CT13071-A-SBA
Site Name: Woodbridge
Height: 169.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1
Topography: 1
Code: EIA/TIA-222-G
Exposure: B
Crest Height: 0.00
Site Class: D - Stiff Soil
Struct Class: II

10/25/2017

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160.00	1.00	1.13	9.896	10.89	139.26	0.650	0.000	3.00	6.626	4.31	46.9	0.0	157.4
165.00	1.00	1.14	9.983	10.98	134.45	0.650	0.000	5.00	10.704	6.96	76.4	0.0	254.3
167.00 Appurtenance(s)	1.00	1.14	10.017	11.02	132.51	0.650	0.000	2.00	4.163	2.71	29.8	0.0	98.9
169.00	1.00	1.15	10.052	11.06	130.56	0.650	0.000	2.00	4.096	2.66	29.4	0.0	97.3
							Totals:	**169.00**			**3,204.1**		**27,200.5**

Discrete Appurtenance Forces

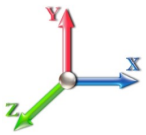
Structure:	CT13071-A-SBA	**Code:**	EIA/TIA-222-G	10/25/2017	
Site Name:	Woodbridge	**Exposure:**	B		
Height:	169.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 47	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 25

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	167.00	Ericsson S11B12	3	10.017	11.019	0.63	0.90	6.26	153.00	0.000	0.000	68.94	0.00	0.00
2	167.00	Ericsson KRY 112 144/1	3	10.017	11.019	0.63	0.90	0.77	33.00	0.000	0.000	8.54	0.00	0.00
3	167.00	LNX-6515DS	3	10.017	11.019	0.76	0.90	26.01	150.90	0.000	0.000	286.65	0.00	0.00
4	167.00	AIR B4A B2P	3	10.017	11.019	0.77	0.90	14.14	271.20	0.000	0.000	155.82	0.00	0.00
5	167.00	AIR B2A B4P	3	10.017	11.019	0.77	0.90	14.14	274.50	0.000	0.000	155.82	0.00	0.00
6	167.00	T-Arms/Commscope	3	10.026	11.029	0.56	0.75	11.39	1020.00	0.000	0.500	125.62	0.00	62.81
7	157.00	BXA-70063/6CF	1	9.842	10.827	0.63	0.90	4.77	17.00	0.000	0.000	51.63	0.00	0.00
8	157.00	T-Arms	3	9.842	10.827	0.56	0.75	13.50	1050.00	0.000	0.000	146.16	0.00	0.00
9	157.00	SLCP 2x6014F	2	9.842	10.827	0.71	0.80	9.24	40.00	0.000	0.000	100.06	0.00	0.00
10	157.00	DB846F65ZAXY	4	9.842	10.827	0.74	0.80	20.98	84.00	0.000	0.000	227.15	0.00	0.00
11	157.00	DB846H80E-SX	2	9.842	10.827	0.88	0.80	8.82	32.00	0.000	0.000	95.46	0.00	0.00
12	157.00	HBX-6517DS-VTM	6	9.842	10.827	0.60	0.80	19.04	112.20	0.000	0.000	206.18	0.00	0.00
13	157.00	ALU RRH2X60-AWS RRH	3	9.842	10.827	0.61	0.80	6.38	180.00	0.000	0.000	69.12	0.00	0.00
14	157.00	RFS DB T1-6Z-8AB-OZ	1	9.842	10.827	0.80	0.80	2.56	19.00	0.000	0.000	27.72	0.00	0.00
15	157.00	GPS	1	9.842	10.827	0.80	0.80	0.80	10.00	0.000	0.000	8.66	0.00	0.00
16	150.00	Collar Mount	1	9.715	10.686	1.00	1.00	3.50	100.00	0.000	0.000	37.40	0.00	0.00
17	148.00	WCS-IMFQ-AMT	1	9.678	10.645	0.50	0.80	0.60	6.60	0.000	0.000	6.38	0.00	0.00
18	148.00	Ericsson RRUS 32-RRU	3	9.678	10.645	0.56	0.80	2.77	231.00	0.000	0.000	29.51	0.00	0.00
19	148.00	Powerwave 1001940-Bias	3	9.678	10.645	0.72	0.80	0.15	6.00	0.000	0.000	1.61	0.00	0.00
20	148.00	CCI HPA-65R-BUU-H8	2	9.678	10.645	0.63	0.80	16.41	136.00	0.000	0.000	174.66	0.00	0.00
21	148.00	CCI HPA-65R-BUU-H6	1	9.678	10.645	0.68	0.80	6.57	51.00	0.000	0.000	69.93	0.00	0.00
22	148.00	Ericsson RRUS A2	3	9.678	10.645	0.50	0.80	2.77	63.60	0.000	0.000	29.46	0.00	0.00
23	148.00	Ericsson RRUS	3	9.678	10.645	0.56	0.80	5.29	174.00	0.000	0.000	56.34	0.00	0.00
24	148.00	Cci OPA-65R-LCUU-H8	2	9.678	10.645	0.63	0.80	16.12	176.00	0.000	0.000	171.56	0.00	0.00
25	148.00	Cci OPA-65R-LCUU-H6	1	9.678	10.645	0.63	0.80	6.11	73.00	0.000	0.000	64.99	0.00	0.00
26	148.00	Powerwave LGP13519	6	9.678	10.645	0.60	0.80	1.22	31.80	0.000	0.000	13.03	0.00	0.00
27	148.00	Powerwave LGP21401	6	9.678	10.645	0.60	0.80	4.64	84.60	0.000	0.000	49.44	0.00	0.00
28	148.00	Powerwave 7770	3	9.678	10.645	0.61	0.80	10.13	105.00	0.000	0.000	107.83	0.00	0.00
29	148.00	T-Arms	3	9.678	10.645	0.60	0.80	14.40	1050.00	0.000	0.000	153.29	0.00	0.00
30	148.00	Raycap	2	9.678	10.645	0.64	0.80	1.88	65.60	0.000	0.000	20.03	0.00	0.00
31	148.00	Ericsson RRUS-11-RRU	3	9.678	10.645	0.61	0.80	4.60	150.00	0.000	0.000	48.93	0.00	0.00
32	137.00	T-Arms	3	9.466	10.413	0.56	0.75	13.82	726.00	0.000	0.000	143.92	0.00	0.00
33	137.00	APXV18-206517S-C	6	9.466	10.413	0.59	0.80	18.36	158.40	0.000	0.000	191.22	0.00	0.00
34	127.00	Sector Frames	3	9.264	10.190	0.56	0.75	33.75	1500.00	0.000	0.000	343.91	0.00	0.00
35	127.00	VHLP2-11	3	9.264	10.190	1.00	1.00	14.04	81.00	1.455	0.000	143.07	208.17	0.00
36	127.00	VHLP800-11	1	9.264	10.190	1.00	1.00	8.43	48.00	1.455	0.000	85.90	124.99	0.00
37	127.00	ETCR-654L12H6	3	9.264	10.190	0.57	0.80	26.77	297.00	0.000	0.000	272.79	0.00	0.00
38	127.00	Horizon Duo	4	9.264	10.190	0.50	1.00	1.18	28.00	0.000	0.000	12.02	0.00	0.00
39	127.00	1900MHz RRH	3	9.264	10.190	0.79	0.80	6.58	180.00	0.000	0.000	67.07	0.00	0.00
40	127.00	800 MHz RRH	6	9.264	10.190	0.74	0.80	11.00	318.00	0.000	0.000	112.05	0.00	0.00
41	127.00	TD-RRH8x20-25	3	9.264	10.190	0.55	0.80	6.71	210.00	0.000	0.000	68.34	0.00	0.00
42	117.00	CM-30S-72	1	9.049	9.954	1.00	1.00	5.00	350.00	0.000	0.000	49.77	0.00	0.00
43	117.00	HG2409U-PRO	1	9.079	9.987	1.00	1.00	0.38	2.80	0.000	1.346	3.79	0.00	5.11
							Totals:		**9,850.20**			**4,261.78**		

Total Applied Force Summary

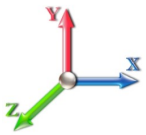
Structure:	CT13071-A-SBA		**Code:**	EIA/TIA-222-G	10/25/2017
Site Name:	Woodbridge		**Exposure:**	B	
Height:	169.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 48

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 25

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		103.23	1598.29	0.00	0.00
10.00		101.38	1574.66	0.00	0.00
15.00		99.52	1551.03	0.00	0.00
20.00		97.67	1527.40	0.00	0.00
25.00		95.81	1503.77	0.00	0.00
30.00		94.04	1480.14	0.00	0.00
35.00		96.33	1456.51	0.00	0.00
40.00		98.06	1432.89	0.00	0.00
40.75		14.61	212.89	0.00	0.00
45.00		85.63	2022.20	0.00	0.00
47.00		40.27	940.65	0.00	0.00
50.00		60.84	745.18	0.00	0.00
55.00		102.44	1225.76	0.00	0.00
60.00		102.76	1205.51	0.00	0.00
65.00		102.82	1185.26	0.00	0.00
70.00		102.66	1165.01	0.00	0.00
75.00		102.29	1144.75	0.00	0.00
80.00		101.73	1124.50	0.00	0.00
85.00		101.01	1104.25	0.00	0.00
89.25		85.07	922.69	0.00	0.00
90.00		15.05	240.79	0.00	0.00
91.50		30.07	479.31	0.00	0.00
94.25		54.99	870.84	0.00	0.00
95.00		14.90	121.44	0.00	0.00
96.75		34.71	282.17	0.00	0.00
97.00		4.94	40.18	0.00	0.00
100.00		59.25	479.47	0.00	0.00
102.25		44.10	356.42	0.00	0.00
105.00		53.58	431.91	0.00	0.00
110.00		96.63	774.82	0.00	0.00
115.00		95.14	761.32	0.00	0.00
117.00	(2) attachments	91.04	653.55	0.00	5.11
120.00		55.80	443.95	0.00	0.00
125.00		91.85	729.11	0.00	0.00
127.00	(26) attachments	1141.27	2949.86	333.15	0.00
130.00		53.70	414.38	0.00	0.00
135.00		88.19	679.83	0.00	0.00
137.00	(9) attachments	369.76	1152.55	0.00	0.00
139.00		34.31	253.51	0.00	0.00
140.00		17.23	186.11	0.00	0.00
142.75		47.05	506.94	0.00	0.00
145.00		38.02	236.92	0.00	0.00
148.00	(42) attachments	1047.06	2716.90	0.00	0.00
150.00	(1) attachments	70.32	279.76	0.00	0.00
155.00		80.99	442.32	0.00	0.00
157.00	(23) attachments	963.81	1718.29	0.00	0.00

Total Applied Force Summary

Structure:	CT13071-A-SBA		**Code:**	EIA/TIA-222-G	10/25/2017
Site Name:	Woodbridge		**Exposure:**	B	
Height:	169.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 49

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160.00		46.88	198.16	0.00	0.00
165.00		76.41	322.17	0.00	0.00
167.00	(18) attachments	831.21	2028.63	0.00	62.81
169.00		29.43	97.25	0.00	0.00
	Totals:	**7,465.89**	**45,972.20**	**333.15**	**67.92**

Linear Appurtenance Segment Forces (Factored)

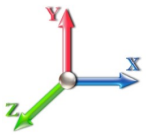
Structure:	CT13071-A-SBA	**Code:**	EIA/TIA-222-G	10/25/2017	
Site Name:	Woodbridge	**Exposure:**	B		
Height:	169.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 50	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 25

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.035	0.000	6.129	0.00	31.20
10.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.036	0.000	6.129	0.00	31.20
15.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.036	0.000	6.129	0.00	31.20
20.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.037	0.000	6.129	0.00	31.20
25.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.038	0.000	6.129	0.00	31.20
30.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.038	0.000	6.134	0.00	31.20
35.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.039	0.000	6.410	0.00	31.20
40.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.040	0.000	6.659	0.00	31.20
40.75	1 5/8" Coax	Yes	0.75	0.000	1.98	0.12	0.00	0.041	0.000	6.695	0.00	4.68
45.00	1 5/8" Coax	Yes	4.25	0.000	1.98	0.70	0.00	0.041	0.000	6.887	0.00	26.52
47.00	1 5/8" Coax	Yes	2.00	0.000	1.98	0.33	0.00	0.042	0.000	6.973	0.00	12.48
50.00	1 5/8" Coax	Yes	3.00	0.000	1.98	0.49	0.00	0.041	0.000	7.098	0.00	18.72
55.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.042	0.000	7.294	0.00	31.20
60.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.043	0.000	7.477	0.00	31.20
65.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.044	0.000	7.650	0.00	31.20
70.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.045	0.000	7.814	0.00	31.20
75.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.046	0.000	7.969	0.00	31.20
80.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.047	0.000	8.118	0.00	31.20
85.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.048	0.000	8.260	0.00	31.20
89.25	1 5/8" Coax	Yes	4.25	0.000	1.98	0.70	0.00	0.049	0.000	8.376	0.00	26.52
90.00	1 5/8" Coax	Yes	0.75	0.000	1.98	0.12	0.00	0.075	0.000	8.396	0.00	4.68
90.00	1" Reinforcing plate	Yes	0.75	0.000	1.00	0.06	0.00	0.075	0.000	8.396	0.00	0.00
91.50	1 5/8" Coax	Yes	1.50	0.000	1.98	0.25	0.00	0.076	0.000	8.435	0.00	9.36
91.50	1" Reinforcing plate	Yes	1.50	0.000	1.00	0.13	0.00	0.076	0.000	8.435	0.00	0.00
94.25	1 5/8" Coax	Yes	2.75	0.000	1.98	0.45	0.00	0.077	0.000	8.507	0.00	17.16
94.25	1" Reinforcing plate	Yes	2.75	0.000	1.00	0.23	0.00	0.077	0.000	8.507	0.00	0.00
95.00	1 5/8" Coax	Yes	0.75	0.000	1.98	0.12	0.00	0.076	0.000	8.526	0.00	4.68
95.00	1" Reinforcing plate	Yes	0.75	0.000	1.00	0.06	0.00	0.076	0.000	8.526	0.00	0.00
96.75	1 5/8" Coax	Yes	1.75	0.000	1.98	0.29	0.00	0.077	0.000	8.571	0.00	10.92
96.75	1" Reinforcing plate	Yes	1.75	0.000	1.00	0.15	0.00	0.077	0.000	8.571	0.00	0.00
97.00	1 5/8" Coax	Yes	0.25	0.000	1.98	0.04	0.00	0.077	0.000	8.577	0.00	1.56
97.00	1" Reinforcing plate	Yes	0.25	0.000	1.00	0.02	0.00	0.077	0.000	8.577	0.00	0.00
100.00	1 5/8" Coax	Yes	3.00	0.000	1.98	0.49	0.00	0.078	0.000	8.652	0.00	18.72
100.00	1" Reinforcing plate	Yes	0.75	0.000	1.00	0.06	0.00	0.078	0.000	8.652	0.00	0.00
100.00	1" Reinforcing plate	Yes	2.25	0.000	1.00	0.19	0.00	0.078	0.000	8.652	0.00	0.00
102.25	1 5/8" Coax	Yes	2.25	0.000	1.98	0.37	0.00	0.079	0.000	8.707	0.00	14.04
102.25	1" Reinforcing plate	Yes	2.25	0.000	1.00	0.19	0.00	0.079	0.000	8.707	0.00	0.00
105.00	1 5/8" Coax	Yes	2.75	0.000	1.98	0.45	0.00	0.075	0.000	8.774	0.00	17.16
105.00	1" Reinforcing plate	Yes	2.25	0.000	1.00	0.19	0.00	0.075	0.000	8.774	0.00	0.00
110.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.054	0.000	8.891	0.00	31.20
115.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.056	0.000	9.005	0.00	31.20
117.00	1 5/8" Coax	Yes	2.00	0.000	1.98	0.33	0.00	0.057	0.000	9.049	0.00	12.48
120.00	1 5/8" Coax	Yes	3.00	0.000	1.98	0.49	0.00	0.058	0.000	9.115	0.00	18.72
125.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.059	0.000	9.222	0.00	31.20
127.00	1 5/8" Coax	Yes	2.00	0.000	1.98	0.33	0.00	0.061	0.000	9.264	0.00	12.48
130.00	1 5/8" Coax	Yes	3.00	0.000	1.98	0.49	0.00	0.061	0.000	9.326	0.00	18.72
135.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.063	0.000	9.427	0.00	31.20

Linear Appurtenance Segment Forces (Factored)

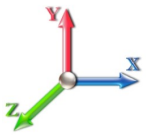
Structure:	CT13071-A-SBA	**Code:**	EIA/TIA-222-G	10/25/2017	
Site Name:	Woodbridge	**Exposure:**	B		
Height:	169.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 51	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 25

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
137.00	1 5/8" Coax	Yes	2.00	0.000	1.98	0.33	0.00	0.065	0.000	9.466	0.00	12.48
139.00	1 5/8" Coax	Yes	2.00	0.000	1.98	0.33	0.00	0.065	0.000	9.506	0.00	12.48
140.00	1 5/8" Coax	Yes	1.00	0.000	1.98	0.17	0.00	0.066	0.000	9.525	0.00	6.24
142.75	1 5/8" Coax	Yes	2.75	0.000	1.98	0.45	0.00	0.067	0.000	9.578	0.00	17.16
145.00	1 5/8" Coax	Yes	2.25	0.000	1.98	0.37	0.00	0.067	0.000	9.621	0.00	14.04
148.00	1 5/8" Coax	Yes	3.00	0.000	1.98	0.49	0.00	0.068	0.000	9.678	0.00	18.72
150.00	1 5/8" Coax	Yes	2.00	0.000	1.98	0.33	0.00	0.070	0.000	9.715	0.00	12.48
155.00	1 5/8" Coax	Yes	5.00	0.000	1.98	0.82	0.00	0.071	0.000	9.806	0.00	31.20
157.00	1 5/8" Coax	Yes	2.00	0.000	1.98	0.33	0.00	0.073	0.000	9.842	0.00	12.48
										Totals:	**0.0**	**979.7**

Calculated Forces

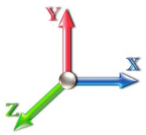
Structure:	CT13071-A-SBA	**Code:**	EIA/TIA-222-G	10/25/2017	
Site Name:	Woodbridge	**Exposure:**	B		
Height:	169.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 52	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 25

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-45.97	-7.48	-0.33	-928.92	0.00	928.92	5324.18	2662.09	12195.0	6106.56	0.00	0.000	0.000	0.161
5.00	-44.37	-7.41	-0.33	-891.51	0.00	891.51	5261.08	2630.54	11832.5	5925.09	0.02	-0.043	0.000	0.159
10.00	-42.79	-7.34	-0.33	-854.45	0.00	854.45	5196.80	2598.40	11472.7	5744.92	0.09	-0.086	0.000	0.157
15.00	-41.23	-7.27	-0.33	-817.74	0.00	817.74	5131.34	2565.67	11115.7	5566.13	0.20	-0.129	0.000	0.155
20.00	-39.70	-7.20	-0.33	-781.39	0.00	781.39	5064.69	2532.35	10761.6	5388.80	0.36	-0.174	0.000	0.153
25.00	-38.19	-7.13	-0.33	-745.40	0.00	745.40	4996.86	2498.43	10410.5	5212.99	0.57	-0.218	0.000	0.151
30.00	-36.70	-7.06	-0.33	-709.76	0.00	709.76	4927.84	2463.92	10062.6	5038.79	0.82	-0.263	0.000	0.148
35.00	-35.24	-6.98	-0.33	-674.47	0.00	674.47	4857.63	2428.82	9718.08	4866.26	1.12	-0.309	0.000	0.146
40.00	-33.80	-6.89	-0.33	-639.56	0.00	639.56	4786.24	2393.12	9377.03	4695.49	1.47	-0.355	0.000	0.143
40.75	-33.59	-6.89	-0.33	-634.40	0.00	634.40	4775.43	2387.72	9326.19	4670.03	1.53	-0.362	0.000	0.143
45.00	-31.56	-6.81	-0.33	-605.12	0.00	605.12	4713.67	2356.83	9039.63	4526.53	1.87	-0.402	0.000	0.140
47.00	-30.62	-6.77	-0.33	-591.51	0.00	591.51	3877.89	1938.95	7512.92	3762.05	2.04	-0.421	0.000	0.165
50.00	-29.87	-6.73	-0.33	-571.20	0.00	571.20	3845.09	1922.55	7353.82	3682.38	2.31	-0.449	0.000	0.163
55.00	-28.64	-6.64	-0.33	-537.57	0.00	537.57	3789.47	1894.74	7090.51	3550.52	2.81	-0.501	0.000	0.159
60.00	-27.43	-6.55	-0.33	-504.37	0.00	504.37	3732.67	1866.34	6829.63	3419.89	3.37	-0.553	0.000	0.155
65.00	-26.24	-6.46	-0.33	-471.62	0.00	471.62	3674.68	1837.34	6571.34	3290.55	3.97	-0.606	0.000	0.150
70.00	-25.07	-6.37	-0.33	-439.32	0.00	439.32	3615.51	1807.76	6315.78	3162.58	4.63	-0.658	0.000	0.146
75.00	-23.92	-6.27	-0.33	-407.49	0.00	407.49	3555.15	1777.58	6063.10	3036.06	5.35	-0.710	0.000	0.141
80.00	-22.79	-6.18	-0.33	-376.12	0.00	376.12	3493.61	1746.80	5813.45	2911.05	6.12	-0.761	0.000	0.136
85.00	-21.69	-6.08	-0.33	-345.24	0.00	345.24	3430.88	1715.44	5566.98	2787.63	6.95	-0.813	0.000	0.130
89.25	-20.76	-5.99	-0.33	-319.41	0.00	319.41	3376.63	1688.32	5360.08	2684.02	7.69	-0.856	-0.001	0.125
90.00	-20.52	-5.97	-0.33	-314.92	0.00	314.92	3366.97	1683.48	5323.83	2665.87	7.83	-0.863	-0.001	0.124
91.50	-20.04	-5.94	-0.33	-305.95	0.00	305.95	3347.56	1673.78	5251.55	2629.68	8.10	-0.879	-0.001	0.091
94.25	-19.17	-5.88	-0.33	-289.61	0.00	289.61	1944.87	972.44	3066.99	1535.78	8.61	-0.900	-0.001	0.103
95.00	-19.05	-5.87	-0.33	-285.20	0.00	285.20	1940.65	970.33	3048.28	1526.41	8.75	-0.905	-0.001	0.132
96.75	-18.76	-5.83	-0.33	-274.93	0.00	274.93	1930.70	965.35	3004.67	1504.57	9.09	-0.922	-0.001	0.090
97.00	-18.72	-5.83	-0.33	-273.48	0.00	273.48	1929.27	964.63	2998.44	1501.45	9.14	-0.924	-0.001	0.117
100.00	-18.24	-5.77	-0.33	-255.99	0.00	255.99	1911.84	955.92	2923.84	1464.09	9.73	-0.949	-0.001	0.112
102.25	-17.88	-5.73	-0.33	-243.01	0.00	243.01	1898.49	949.24	2868.04	1436.15	10.18	-0.968	-0.001	0.108
102.25	-17.88	-5.73	-0.33	-243.01	0.00	243.01	1898.49	949.24	2868.04	1436.15	10.18	-0.968	-0.001	0.108
105.00	-17.45	-5.68	-0.33	-227.26	0.00	227.26	1881.84	940.92	2800.02	1402.09	10.74	-0.990	-0.001	0.171
110.00	-16.67	-5.59	-0.33	-198.87	0.00	198.87	1850.66	925.33	2676.97	1340.48	11.81	-1.054	-0.001	0.157
115.00	-15.91	-5.49	-0.33	-170.95	0.00	170.95	1818.29	909.14	2554.84	1279.32	12.95	-1.115	-0.001	0.142
117.00	-15.25	-5.39	-0.33	-159.97	0.00	159.97	1805.01	902.50	2506.28	1255.00	13.42	-1.138	-0.001	0.136
120.00	-14.80	-5.34	-0.33	-143.79	0.00	143.79	1784.73	892.37	2433.78	1218.70	14.15	-1.172	-0.001	0.126
125.00	-14.07	-5.24	-0.33	-117.10	0.00	117.10	1749.99	875.00	2313.93	1158.68	15.40	-1.222	-0.001	0.109
127.00	-11.15	-4.04	0.00	-106.63	0.00	106.63	1735.77	867.88	2266.36	1134.86	15.92	-1.241	-0.001	0.100
130.00	-10.73	-3.98	0.00	-94.51	0.00	94.51	1714.07	857.04	2195.44	1099.35	16.71	-1.268	-0.001	0.092
135.00	-10.05	-3.88	0.00	-74.60	0.00	74.60	1676.96	838.48	2078.45	1040.77	18.06	-1.308	-0.001	0.078
137.00	-8.91	-3.49	0.00	-66.83	0.00	66.83	1661.79	830.89	2032.11	1017.57	18.61	-1.322	-0.001	0.071
139.00	-8.66	-3.45	0.00	-59.85	0.00	59.85	1646.42	823.21	1986.05	994.50	19.17	-1.336	-0.001	0.065
140.00	-8.47	-3.43	0.00	-56.40	0.00	56.40	1638.67	819.33	1963.12	983.02	19.45	-1.342	-0.001	0.063
142.75	-7.96	-3.37	0.00	-46.96	0.00	46.96	1100.62	550.31	1316.21	659.08	20.23	-1.359	-0.001	0.079
145.00	-7.73	-3.33	0.00	-39.37	0.00	39.37	1091.20	545.60	1284.61	643.26	20.87	-1.370	-0.001	0.068
148.00	-5.03	-2.22	0.00	-29.37	0.00	29.37	1078.27	539.14	1242.60	622.22	21.74	-1.387	-0.001	0.052
150.00	-4.76	-2.15	0.00	-24.93	0.00	24.93	1069.42	534.71	1214.68	608.24	22.32	-1.396	-0.001	0.045
155.00	-4.32	-2.05	0.00	-14.20	0.00	14.20	1046.45	523.23	1145.25	573.48	23.79	-1.414	-0.001	0.029
157.00	-2.62	-1.05	0.00	-10.09	0.00	10.09	1036.93	518.47	1117.66	559.66	24.39	-1.419	-0.001	0.021

Calculated Forces

Structure:	CT13071-A-SBA	**Code:**	EIA/TIA-222-G	10/25/2017	
Site Name:	Woodbridge	**Exposure:**	B		
Height:	169.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 53

160.00	-2.42	-1.00	0.00	-6.94	0.00	6.94	1022.30	511.15	1076.48	539.04	25.28	-1.424	-0.001	0.015
165.00	-2.10	-0.91	0.00	-1.95	0.00	1.95	996.96	498.48	1008.51	505.00	26.77	-1.429	-0.001	0.006
167.00	-0.10	-0.03	0.00	-0.06	0.00	0.06	986.50	493.25	981.58	491.52	27.37	-1.430	-0.001	0.000
169.00	0.00	-0.03	0.00	0.00	0.00	0.00	975.84	487.92	954.81	478.11	27.97	-1.430	-0.001	0.000

Final Analysis Summary

Structure:	CT13071-A-SBA	**Code:**	EIA/TIA-222-G	10/25/2017	
Site Name:	Woodbridge	**Exposure:**	B		
Height:	169.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 54	

Tower Engineering Solutions

Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)
1.2D + 1.6W 97 mph Wind	31.3	0.00	55.12	0.01	0.86	3911.13
0.9D + 1.6W 97 mph Wind	31.3	0.00	41.33	0.01	0.86	3863.27
1.2D + 1.0Di + 1.0Wi 50 mph Wind	8.7	0.00	85.68	0.00	0.29	1077.53
1.2D + 1.0E	1.8	0.00	55.17	0.00	0.00	219.90
0.9D + 1.0E	1.8	0.00	41.37	0.00	0.00	216.91
1.0D + 1.0W 60 mph Wind	7.5	0.00	45.97	0.00	0.33	928.92

Max Stresses

Load Case	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Elev (ft)	Stress Ratio
1.2D + 1.6W 97 mph Wind	-19.31	-23.96	-0.87	-958.45	-0.04	-958.45	1881.84	940.92	2800.02	1402.09	105.00	0.695
0.9D + 1.6W 97 mph Wind	-14.09	-23.55	-0.87	-941.16	-0.04	-941.16	1881.84	940.92	2800.02	1402.09	105.00	0.679
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-39.82	-6.57	-0.29	-259.33	0.00	-259.33	1881.84	940.92	2800.02	1402.09	105.00	0.206
1.2D + 1.0E	-21.05	-1.24	0.00	-66.26	0.00	-66.26	1881.84	940.92	2800.02	1402.09	105.00	0.058
0.9D + 1.0E	-15.79	-1.21	0.00	-65.14	0.00	-65.14	1881.84	940.92	2800.02	1402.09	105.00	0.055
1.0D + 1.0W 60 mph Wind	-17.45	-5.68	-0.33	-227.26	0.00	-227.26	1881.84	940.92	2800.02	1402.09	105.00	0.171

Additional Steel Summary

			Intermediate Connectors			Lower Termination				Upper Termination				Max Member			
Elev From (ft)	Elev To (ft)	Member	VQ/I (lb/in)	Vu (kips)	phi Vn (kips)	MQ/I (kips)	phi Vn (kips)	Num Reqd	Num Actual	MQ/I (kips)	phi Vn (kips)	Num Reqd	Num Actual	Pu (kips)	phi Pn (kips)	phi Tn (kips)	Ratio
91.5	97.0	(3) LNP-LP6X100-G-10TT	-333.7	-7.68	25.3	157.7	25.3	7	9	133.9	25.3	6	9	192.90	301.8	292.50	0.659
96.8	102.3	(3) LNP-LP6X100-G-10TT	334.1	7.68	25.3	137.6	25.3	6	9	170.1	25.3	7	9	182.92	301.8	292.50	0.625

Monopole Mat Foundation Design

			Date: 10/25/2017
Customer Name:	Sprint Nextel	**EIA/TIA Standard:**	EIA-222-G
Site Name:	Woodbridge	**Structure Height (Ft.):**	169
Site Number:	CT13071-A-SBA	**Engineer Name:**	J. Tibbetts
Engr. Number:	41813	**Engineer Login ID:**	

Foundation Info Obtained from: Drawings/Calculations

Structure Type: Monopole

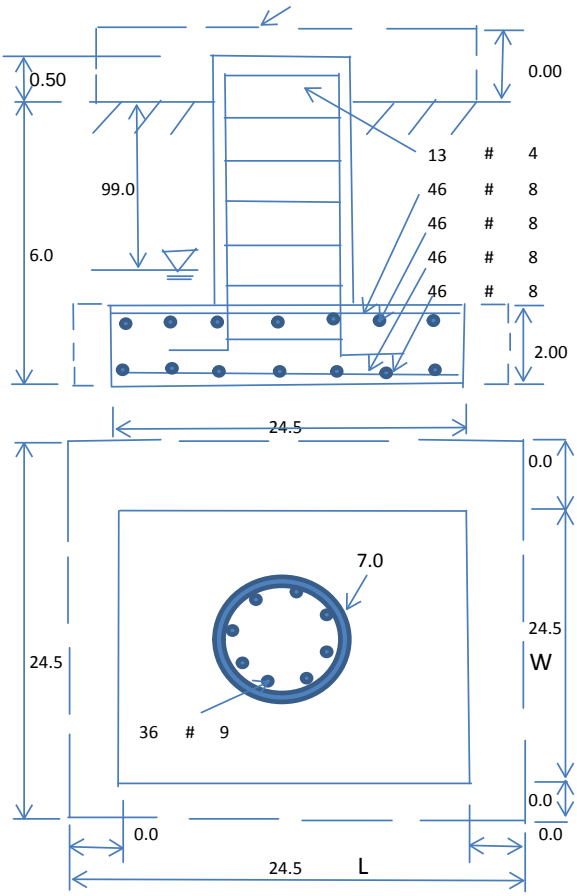
Analysis or Design? Analysis

Base Reactions (Factored):

Axial Load (Kips):	55.1	Shear Force (Kips):	31.3
Uplift Force (Kips):	0.0	Moment (Kips-ft):	3911.1
Allowable overstress %:	5.0%		

Foundation Geometries:

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	7.0	Depth of Base BG (ft.):	6.0
Pier Height A. G. (ft.):	0.50	Thickness of Pad (ft):	2.00
Length of Pad (ft.):	24.5	Width of Pad (ft.):	24.5
Final Length of pad (ft)	24.5	Final width of pad (ft):	24.5
Control Value for Cell D18:	0	Control Value for Cell F18:	0



Material Properties and Reabr Info:

Concrete Strength (psi):	4000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:	9	Tie / Stirrup Size #:	4	
Qty. of Vertical Rebars:	36	Tie Spacing (in):	6.0	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	8	
Concrete Cover (in.):	3	Unit Weight of Concrete:	150.0	pcf
Rebar at the bottom of the concrete pad:				
Qty. of Rebar in Pad (L):	46	Qty. of Rebar in Pad (W):	46	
Rebar at the top of the concrete pad:				
Qty. of Rebar in Pad (L):	46	Qty. of Rebar in Pad (W):	46	
Apply 1.35 factor for e/w Per G:	1.35			

Soil Design Parameters:

Soil Unit Weight (pcf):	120.0	Soil Buoyant Weight:	50.0	Pcf		
Water Table B.G.S. (ft):	99.0	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad:	30
Ultimate Bearing Pressure (psf):	10000	Ultimate Skin Friction:	200	Psf	Angle from Bottm of Pad:	25
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	No		Angle from Bottm of Pad:	25
Consider soil hor. resist. for OTM.:	No	Reduction factor on the maximum soil bearing pressure:	1.00			

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

Total Dry Soil Volume (cu. Ft.):	2247.06	Total Dry Soil Weight (Kips):	269.65
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	269.65	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	1373.68	Total Dry Concrete Weight (Kips):	206.05
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	206.05	Total Vertical Load on Base (Kips):	530.82

Check Soil Capacities:

				Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	3178	<	Allowable Factored Soil Bearing (psf): 7500	0.42	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	5919.8	>	Design Factored Momont (kips-ft): 4115	0.70	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	1.44	OK!			

Check the capacities of Reinforceing Concrete:

Strength reduction factor (Flexure and axial tension):	0.90	Strength reduction factor (Shear):	0.75		
Strength reduction factor (Axial compresion):	0.65	Wind Load Factor on Concrete Design:	1.00		

(1) Concrete Pier:

					Load/ Capacity Ratio	
Vertical Steel Rebar Area (sq. in./each):	1.00		Tie / Stirrup Area (sq. in./each):	0.20		
Calculated Moment Capacity (Mn,Kips-Ft):	6026.1	>	Design Factored Moment (Mu, Kips-Ft	4052.0	0.67	OK!
Calculated Shear Capacity (Kips):	794.5	>	Design Factored Shear (Kips):	31.3	0.04	OK!
Calculated Tension Capacity (Tn, Kips):	1944.0	>	Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	9734.2	>	Design Factored Axial Load (Pu Kips):	55.1	0.01	OK!
Moment & Axial Strength Combination:	0.67	OK!	Check Tie Spacing (Design/Required):		0.5	OK!
Pier Reinforcement Ratio:	0.006	Reinforcement Ratio is satisfied per ACI				

(2).Concrete Pad:

One-Way Design Shear Capacity (L-Direction, Kips):	571.8	>	One-Way Factored Shear (L-D. Kips):	262.9	0.46	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	571.8	>	One-Way Factored Shear (W-D., Kips)	262.9	0.46	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	645.2	>	One-Way Factored Shear (C-C, Kips):	281.4	0.44	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0060	OK!	Lower Steel Pad Reinf. Ratio (W-Direc	0.0060		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	3174.0	>	Moment at Bottom (L-Direct. K-Ft):	925.6	0.29	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	3174.0	>	Moment at Bottom (W-Direct. K-Ft):	925.6	0.29	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	4424.9	>	Moment at Bottom (C-C Dir. K-Ft):	1309.1	0.30	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0060	OK!	Upper Steel Reinf. Ratio (W-Direct.):	0.0060		
Upper Steel Pad Moment Capacity (L-Direction. Kips-ft):	3174.0	>	Moment at the top (L-Dir Kips-Ft):	310.0	0.10	OK!
Upper Steel Pad Moment Capacity (W-Direction. Kips-ft):	3174.0	>	Moment at the top (W-Dir Kips-Ft):	310.0	0.10	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	4424.9	>	Moment at the top (C-C Direc. K-Ft):	477.4	0.11	OK!

SPECIAL CONSTRUCTION NOTE:
SPRINT WORK IS CONTINGENT ON THE FOLLOWING:
* COMPLETION OF A GLOBAL STRUCTURAL STABILITY ANALYSIS.
* COMPLETION OF A MOUNT STRUCTURAL ANALYSIS.
* GC SHALL FURNISH, INSTALL AND COMPLETE ALL REQUIRED STRUCTURAL MODIFICATIONS AS INDICATED IN BEFORE-MENTIONED GLOBAL AND MOUNT ANALYSIS.

Sprint®

SITE NAME: SBA OSBURNE LANE

SITE NUMBER: CT52XC067

AUGMENT ID: CT-NHN0065Q17.1

SITE ADDRESS: 1 DEERFIELD LANE
ANSONIA, CT 06401

JURISDICTION: CITY OF ANSONIA/ CT SITING COUNCIL

SITE TYPE: EXISTING 169' MONOPOLE

PROGRAM: DO MACRO UPGRADE EQUIPMENT DEPLOYMENT

PROJECT INFORMATION

SITE INFORMATION

LATTITUDE: (PER SBA RECORD)	41° 21' 02.70" N (41.35075°)
LONGITUDE: (PER SBA RECORD)	73° 02' 57.30" W (-73.04925°)
GROUND ELEVATION:	488'± AMSL (PER GOOGLE EARTH)
STRUCTURE HEIGHT:	169'± AGL (FROM RECORD STRUCTURAL)
STRUCTURE TYPE:	MONOPOLE
ZONING JURISDICTION	CITY OF ANSONIA/ CT SITING COUNCIL
ZONING DISTRICT/ OCCUPANCY:	AAA (RESIDENCE DISTRICT)
COUNTY:	NEW HAVEN

APPLICANT

SPRINT
1 INTERNATIONAL BLVD. SUITE 800
MAHWAH, NJ 07495

PROPERTY OWNER:

N/F MACABEE PROPERTIES LLC
11 HEMLOCK HOLLOW ROAD
WOODBRIDGE, CT 06525

TOWER OWNER:

SBA TOWERS IV, LLC
8051 CONGRESS AVENUE
BOCA RATON, FL 33487
(561) 995-7670

SBA SITE ID:	CT13071-A
SBA SITE NAME:	WOODBRIDGE

SBA CONTACT:

STEPHEN ROTH
(860) 539-4920
SRoth@sbasite.com

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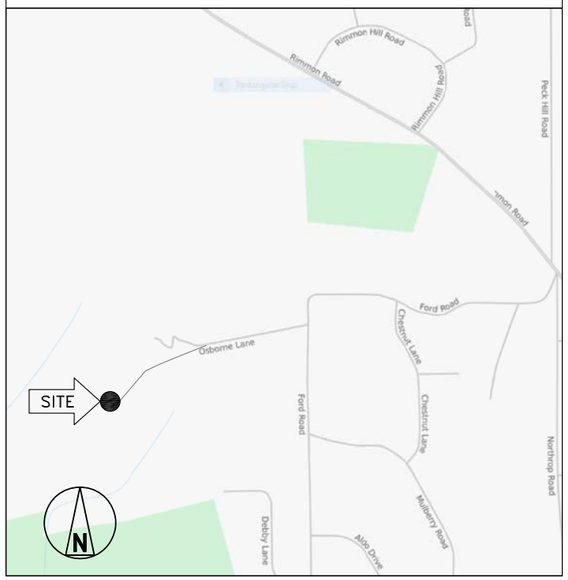
LOCATION MAP

AREA MAP N.T.S.



SCOPE OF WORK

1. REMOVE (1) EXISTING SPRINT (CLEARWIRE) TOWER TOP JUNCTION BOX.
2. REMOVE EXISTING CABLING AND REPLACE WITH (4) HYBRID CABLES.
3. REMOVE EXISTING SPRINT (CLEARWIRE) ANTENNA SUPPORT ASSEMBLY AND REPLACE WITH NEW ANTENNA SUPPORT ASSEMBLY.
4. REMOVE (3) EXISTING SPRINT (CLEARWIRE) PANEL ANTENNAS AND REPLACE WITH (3) NEW SPRINT TRI-BAND PANEL ANTENNAS.
5. REMOVE (3) EXISTING SPRINT (CLEARWIRE) RRHS.
6. INSTALL (6) NEW SPRINT 800 MHZ RRHS.
7. INSTALL (3) NEW SPRINT 1900 MHZ RRHS.
8. INSTALL (3) NEW SPRINT 2500 MHZ RRHS.
9. REMOVE EXISTING SPRINT (CLEARWIRE) EQUIPMENT CABINET AND REPLACE WITH NEW SPRINT EQUIPMENT CABINET WITH CABLING CABINET.
10. REMOVE EXISTING SPRINT (CLEARWIRE) GPS ANTENNA AND REPLACE WITH NEW SPRINT GPS ANTENNA.
11. INSTALL NEW SPRINT PPC MOUNTED TO A NEW H-FRAME.

GENERAL NOTES

1. THIS IS AN UNMANNED TELECOMMUNICATION FACILITY AND NOT FOR HUMAN HABITATION:
   - ADA COMPLIANCE NOT REQUIRED.
   - POTABLE WATER OR SANITARY SERVICE IS NOT REQUIRED.
   - NO OUTDOOR STORAGE OR ANY SOLID WASTE RECEPTACLES REQUIRED.
2. CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, AND CONDITIONS ON JOB SITE. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT/ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK. FAILURE TO NOTIFY THE ARCHITECT/ENGINEER PLACE THE RESPONSIBILITY ON THE CONTRACTOR TO CORRECT THE DISCREPANCIES AT THE CONTRACTOR'S EXPENSE.

DRAWING INDEX

SHEET NO.	SHEET DESCRIPTION	REV. NO.
T-1	TITLE SHEET	1
SP-1	OUTLINE SPECIFICATIONS	1
SP-2	OUTLINE SPECIFICATIONS	1
SP-3	OUTLINE SPECIFICATIONS	1
A-1	COMPOUND PLAN	1
A-2	ELEVATION AND ANTENNA PLANS	1
A-3	TOWER EQUIPMENT DETAILS	1
S-1	ANTENNA AND RRH MOUNTING DETAILS	1
S-2	GROUND EQUIPMENT DETAILS	1
E-1	ELECTRICAL AND GROUNDING DETAILS	1
RF-1	RF DATA SHEET	1
RF-2	PLUMBING DIAGRAM AND RAN WIRING	1

CODE COMPLIANCE

1. 2016 CONNECTICUT STATE BUILDING CODE WITH AMENDMENTS.
2. 2014 NATIONAL ELECTRICAL CODE WITH AMENDMENTS
3. TIA-EIA-222-G

BASED ON INFORMATION PROVIDED BY SPRINT, THIS TELECOMMUNICATIONS EQUIPMENT DEPLOYMENT IS CONSIDERED AN ELIGIBLE FACILITY UNDER THE TAX RELIEF ACT OF 2012, 47 USC 1455(A), AND IS SUBJECT TO AN EXPEDITED ELIGIBLE FACILITIES REQUEST/REVIEW AND ZONING PRE-EMPTION FOR LOCAL DISCRETIONARY PERMITS (VARIANCE, SPECIAL PERMIT, SITE PLAN REVIEW).

APPROVALS

TITLE	SIGNATURE	DATE
PROJECT MANAGER:		
CONSTRUCTION:		
RF ENGINEER:		
ZONING/SITE ACQ:		
OPERATIONS:		
TOWER OWNER:		

THE FOLLOWING PARTIES HEREBY APPROVE AND ACCEPT THESE DOCUMENTS AND AUTHORIZE THE CONTRACTOR TO PROCEED WITH THE CONSTRUCTION DESCRIBED HEREIN. ALL DOCUMENTS ARE SUBJECT TO REVIEW BY THE LOCAL BUILDING DEPARTMENT AND MAY IMPOSE CHANGES OR MODIFICATIONS.

Sprint®
1 INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495
TEL: (800) 357-7641

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

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

STATE OF CONNECTICUT
THOMAS E. JOHNSON
No. 28192
LICENSED PROFESSIONAL ENGINEER
1-12-18

CHECKED BY: JMM/TEJ

APPROVED BY: JMM/TEJ

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	01/12/18	ISSUED FOR CONSTRUCTION	PN
0	11/22/17	ISSUED FOR REVIEW	JEB

SITE NUMBER:
CT52XC067
SITE NAME:
SBA OSBURNE LANE
SITE ADDRESS:
1 DEERFIELD LANE
ANSONIA, CT 06401

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

THESE OUTLINE SPECIFICATIONS IN CONJUNCTION WITH THE SPRINT STANDARD CONSTRUCTION SPECIFICATIONS, INCLUDING CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

SECTION 01 100 - SCOPE OF WORK

PART 1 – GENERAL

1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE SPRINT CONSTRUCTION STANDARDS FOR WIRELESS SITES, CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

1.2 RELATED DOCUMENTS:

A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.

B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

1.3 PRECEDENCE: SHOULD CONFLICTS OCCUR BETWEEN THE STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES INCLUDING THE STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES AND THE CONSTRUCTION DRAWINGS, INFORMATION ON THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE. NOTIFY SPRINT CONSTRUCTION MANAGER IF THIS OCCURS.

1.4 NATIONALLY RECOGNIZED CODES AND STANDARDS:

A. THE WORK SHALL COMPLY WITH APPLICABLE NATIONAL AND LOCAL CODES AND STANDARDS, LATEST EDITION, AND PORTIONS THEREOF, INCLUDED BUT NOT LIMITED TO THE FOLLOWING:

1. GR–78–CORE GENERIC REQUIREMENTS FOR THE PHYSICAL DESIGN AND MANUFACTURE OF TELECOMMUNICATIONS EQUIPMENT.
2. GR–1089 CORE, ELECTROMAGNETIC COMPATIBILITY AND ELECTRICAL SAFETY –GENERIC CRITERIA FOR NETWORK TELECOMMUNICATIONS EQUIPMENT.
3. NATIONAL FIRE PROTECTION ASSOCIATION CODES AND STANDARDS (NFPA) INCLUDING NFPA 70 (NATIONAL ELECTRICAL CODE – "NEC") AND NFPA 101 (LIFE SAFETY CODE).
4. AMERICAN SOCIETY FOR TESTING OF MATERIALS (ASTM)
5. INSTITUTE OF ELECTRONIC AND ELECTRICAL ENGINEERS (IEEE)
6. AMERICAN CONCRETE INSTITUTE (ACI)
7. AMERICAN WIRE PRODUCERS ASSOCIATION (AWPA)
8. CONCRETE REINFORCING STEEL INSTITUTE (CRSI)
9. AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)
10. PORTLAND CEMENT ASSOCIATION (PCA)
11. NATIONAL CONCRETE MASONRY ASSOCIATION (NCMA)
12. BRICK INDUSTRY ASSOCIATION (BIA)
13. AMERICAN WELDING SOCIETY (AWS)
14. NATIONAL ROOFING CONTRACTORS ASSOCIATION (NRCA)
15. SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA)
16. DOOR AND HARDWARE INSTITUTE (DHI)
17. OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA)
18. APPLICABLE BUILDING CODES INCLUDING UNIFORM BUILDING CODE, SOUTHERN BUILDING CODE, BOCA, AND THE INTERNATIONAL BUILDING CODE.

1.5 DEFINITIONS:

A. WORK: THE SUM OF TASKS AND RESPONSIBILITIES IDENTIFIED IN THE CONTRACT DOCUMENTS.
B. COMPANY: SPRINT CORPORATION
C. ENGINEER: SYNONYMOUS WITH ARCHITECT & ENGINEER AND "A&E". THE DESIGN PROFESSIONAL HAVING PROFESSIONAL RESPONSIBILITY FOR DESIGN OF THE PROJECT.
D. CONTRACTOR: CONSTRUCTION CONTRACTOR; CONSTRUCTION VENDOR; INDIVIDUAL OR ENTITY WHO AFTER EXECUTION OF A CONTRACT IS BOUND TO ACCOMPLISH THE WORK.
E. THIRD PARTY VENDOR OR AGENCY: A VENDOR OR AGENCY ENGAGED SEPARATELY BY THE COMPANY, A&E, OR CONTRACTOR TO PROVIDE MATERIALS OR TO ACCOMPLISH SPECIFIC TASKS RELATED TO BUT NOT INCLUDED IN THE WORK.
F. OFCI: OWNER FURNISHED, CONTRACTOR INSTALLED EQUIPMENT.
G. CONSTRUCTION MANAGER – ALL PROJECTS RELATED COMMUNICATION TO FLOW THROUGH SPRINT REPRESENTATIVE IN CHARGE OF PROJECT...

1.6 SITE FAMILIARITY: CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE SPRINT CONSTRUCTION MANAGER PRIOR TO THE COMMENCEMENT OF WORK. NO COMPENSATION WILL BE AWARDED BASED ON CLAIM OF LACK OF KNOWLEDGE OR FIELD CONDITIONS.

1.7 POINT OF CONTACT: COMMUNICATION BETWEEN SPRINT AND THE CONTRACTOR SHALL FLOW THROUGH THE SINGLE SPRINT CONSTRUCTION MANAGER APPOINTED TO MANAGE THE PROJECT FOR SPRINT.

1.8 ON–SITE SUPERVISION: THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL EMPLOY A COMPETENT SUPERINTENDENT WHO SHALL BE IN ATTENDANCE AT THE SITE AT ALL TIMES DURING PERFORMANCE OF THE WORK.

1.9 DRAWINGS, SPECIFICATIONS AND DETAILS REQUIRED AT JOBSITE: THE CONSTRUCTION CONTRACTOR SHALL MAINTAIN A FULL SET OF THE CONSTRUCTION DRAWINGS, STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES AND THE STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES AT THE JOBSITE FROM MOBILIZATION THROUGH CONSTRUCTION COMPLETION.

A. THE JOBSITE DRAWINGS, SPECIFICATIONS AND DETAILS SHALL BE CLEARLY MARKED DAILY IN RED PENCIL WITH ANY CHANGES IN CONSTRUCTION OVER WHAT IS DEPICTED IN THE DOCUMENTS. AT CONSTRUCTION COMPLETION, THIS JOBSITE MARKUP SET SHALL BE DELIVERED TO THE COMPANY OR COMPANY'S DESIGNATED REPRESENTATIVE TO BE FORWARDED TO THE COMPANY'S A&E VENDOR FOR PRODUCTION OF "AS–BUILT" DRAWINGS.
B. DETAILS ARE INTENDED TO SHOW DESIGN INTENT. MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE WORK. CONTRACTOR SHALL NOTIFY SPRINT CONSTRUCTION MANAGER OF ANY VARIATIONS PRIOR TO PROCEEDING WITH THE WORK.
C . DIMENSIONS SHOWN ARE TO FINISH SURFACES UNLESS NOTED OTHERWISE. SPACING BETWEEN EQUIPMENT IS THE REQUIRED CLEARANCE. SHOULD THERE BE ANY QUESTIONS REGARDING THE CONTRACT DOCUMENTS, EXISTING CONDITIONS AND/OR DESIGN INTENT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A CLARIFICATION FROM THE SPRINT CONSTRUCTION MANAGER PRIOR TO PROCEEDING WITH THE WORK.

1.10 USE OF JOB SITE: THE CONTRACTOR SHALL CONFINE ALL CONSTRUCTION AND RELATED OPERATIONS INCLUDING STAGING AND STORAGE OF MATERIALS AND EQUIPMENT, PARKING, TEMPORARY FACILITIES, AND WASTE STORAGE TO THE LEASE PARCEL UNLESS OTHERWISE PERMITTED BY THE CONTRACT DOCUMENTS.

1.11 UTILITIES SERVICES: WHERE NECESSARY TO CUT EXISTING PIPES, ELECTRICAL WIRES, CONDUITS, CABLES, ETC., OF UTILITY SERVICES, OR OF FIRE PROTECTION OR COMMUNICATIONS SYSTEMS, THEY SHALL BE CUT AND CAPPED AT SUITABLE PLACES OR WHERE SHOWN. ALL SUCH ACTIONS SHALL BE COORDINATED WITH THE UTILITY COMPANY INVOLVED:

1.12 PERMITS / FEES: WHEN REQUIRED THAT A PERMIT OR CONNECTION FEE BE PAID TO A PUBLIC UTILITY PROVIDER FOR NEW SERVICE TO THE CONSTRUCTION PROJECT, PAYMENT OF SUCH FEE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

1.13 CONTRACTOR SHALL TAKE ALL MEASURES AND PROVIDE ALL MATERIAL NECESSARY FOR PROTECTING EXISTING EQUIPMENT AND PROPERTY.

1.14 METHODS OF PROCEDURE (MOPS) FOR CONSTRUCTION: CONTRACTOR SHALL PERFORM WORK AS DESCRIBED IN THE FOLLOWING INSTALLATION AND COMMISSIONING MOPS.

A. TOP HAT
B. HOW TO INSTALL A NEW CABINET
C. BASE BAND UNIT IN EXISTING UNIT
D. INSTALLATION OF BATTERIES
E. INSTALLATION OF HYBRID CABLE
F. INSTALLATION OF RRH'S
G. CABLING
H. TS–0200 REV 4 – ANTENNA LINE ACCEPTANCE STANDARDS
I. SPRINT CELL SITE ENGINEERING NOTICE – EN 2012–001, REV 1.
J. COMMISSIONING MOPS
K. SPRINT CELL SITE ENGINEERING NOTICE – EN–2013–002
L. SPRINT ENGINEERING LETTER – EL–0504
M. SPRINT ENGINEERING LETTER – EL–0568
N. SPRINT TECHNICAL SPECIFICATION – TS–0193

1.15 USE OF ELECTRONIC PROJECT MANAGEMENT SYSTEMS:

A. CONTRACTOR WILL UTILIZE ITS BEST EFFORTS TO WORK WITH SPRINT ELECTRONIC PROJECT MANAGEMENT SYSTEMS. CONTRACTOR UNDERSTANDS THAT SUFFICIENT INTERNET ACCESS, EQUIVALENT TO "BROADBAND" OR BETTER, IS REQUIRED TO TIMELY AND EFFECTIVELY UTILIZE SPRINT DATA AND DOCUMENT MANAGEMENT SYSTEMS AND AGREES TO MAINTAIN APPROPRIATE CONNECTIONS FOR CONTRACTOR'S STAFF AND OFFICES THAT ARE COMPATIBLE WITH SPRINT DATA AND DOCUMENT MANAGEMENT SYSTEMS

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 TEMPORARY UTILITIES AND FACILITIES: THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY UTILITIES AND FACILITIES NECESSARY EXCEPT AS OTHERWISE INDICATED IN THE CONSTRUCTION DOCUMENTS. TEMPORARY UTILITIES AND FACILITIES INCLUDE POTABLE WATER, HEAT, HVAC, ELECTRICITY, SANITARY FACILITIES, WASTE DISPOSAL FACILITIES, AND TELEPHONE/COMMUNICATION SERVICES. PROVIDE TEMPORARY UTILITIES AND FACILITIES IN ACCORDANCE WITH OSHA AND THE AUTHORITY HAVING JURISDICTION. CONTRACTOR MAY UTILIZE THE COMPANY ELECTRICAL SERVICE IN THE COMPLETION OF THE WORK WHEN IT BECOMES AVAILABLE. USE OF THE LESSORS OR SITE OWNER'S UTILITIES OR FACILITIES IS EXPRESSLY FORBIDDEN EXCEPT AS OTHERWISE ALLOWED IN THE CONTRACT DOCUMENTS.

3.2 ACCESS TO WORK: THE CONTRACTOR SHALL PROVIDE ACCESS TO THE JOB SITE FOR AUTHORIZED COMPANY PERSONNEL AND AUTHORIZED REPRESENTATIVES OF THE ARCHITECT/ENGINEER DURING ALL PHASES OF THE WORK.

3.3 TESTING: REQUIREMENTS FOR TESTING BY THIS CONTRACTOR SHALL BE AS INDICATED HEREWITH, ON THE CONSTRUCTION DRAWINGS, AND IN THE INDIVIDUAL SECTIONS OF THESE SPECIFICATIONS. SHOULD COMPANY CHOOSE TO ENGAGE ANY THIRD–PARTY TO CONDUCT ADDITIONAL TESTING, THE CONTRACTOR SHALL COOPERATE WITH AND PROVIDE A WORK AREA FOR COMPANY'S TEST AGENCY.

3.4 DIMENSIONS: VERIFY DIMENSIONS INDICATED ON DRAWINGS WITH FIELD DIMENSIONS BEFORE FABRICATION OR ORDERING OF MATERIALS. DO NOT SCALE DRAWINGS.

3.5 EXISTING CONDITIONS: NOTIFY THE SPRINT CONSTRUCTION MANAGER OF EXISTING CONDITIONS DIFFERING FROM THOSE INDICATED ON THE DRAWINGS. DO NOT REMOVE OR ALTER STRUCTURAL COMPONENTS WITHOUT PRIOR WRITTEN APPROVAL FROM THE ARCHITECT AND ENGINEER.

SECTION 01 200 - COMPANY FURNISHED MATERIAL AND EQUIPMENT

PART 1 – GENERAL

1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

1.2 RELATED DOCUMENTS:

A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.

B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 RECEIPT OF MATERIAL AND EQUIPMENT:

A. COMPANY FURNISHED MATERIAL AND EQUIPMENT IS IDENTIFIED ON THE RF DATA SHEET IN THE CONSTRUCTION DOCUMENTS.

B. THE CONTRACTOR IS RESPONSIBLE FOR SPRINT PROVIDED MATERIAL AND EQUIPMENT AND UPON RECEIPT SHALL:

1. ACCEPT DELIVERIES AS SHIPPED AND TAKE RECEIPT.
2. VERIFY COMPLETENESS AND CONDITION OF ALL DELIVERIES.
3. TAKE RESPONSIBILITY FOR EQUIPMENT AND PROVIDE INSURANCE PROTECTION AS REQUIRED IN AGREEMENT.
4. RECORD ANY DEFECTS OR DAMAGES AND WITHIN TWENTY–FOUR HOURS AFTER RECEIPT, REPORT TO SPRINT OR ITS DESIGNATED PROJECT REPRESENTATIVE OF SUCH.
5. PROVIDE SECURE AND NECESSARY WEATHER PROTECTED WAREHOUSING.
6. COORDINATE SAFE AND SECURE TRANSPORTATION OF MATERIAL AND EQUIPMENT, DELIVERING AND OFF–LOADING FROM CONTRACTOR'S WAREHOUSE TO SITE.

3.2 DELIVERABLES:

A. COMPLETE SHIPPING AND RECEIPT DOCUMENTATION IN ACCORDANCE WITH COMPANY PRACTICE.

B. IF APPLICABLE, COMPLETE LOST/STOLEN/DAMAGED DOCUMENTATION REPORT AS NECESSARY IN ACCORDANCE WITH COMPANY PRACTICE, AND AS DIRECTED BY COMPANY.

C. UPLOAD DOCUMENTATION INTO SPRINT SITE MANAGEMENT SYSTEM (SMS) AND/OR PROVIDE HARD COPY DOCUMENTATION AS REQUESTED.

SECTION 01 300 - CELL SITE CONSTRUCTION

PART 1 – GENERAL

1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

1.2 RELATED DOCUMENTS:

A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.

B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

1.3 NOTICE TO PROCEED:

A. NO WORK SHALL COMMENCE PRIOR TO COMPANY'S WRITTEN NOTICE TO PROCEED AND THE ISSUANCE OF THE WORK ORDER.

B. UPON RECEIVING NOTICE TO PROCEED, CONTRACTOR SHALL FULLY PERFORM ALL WORK NECESSARY TO PROVIDE SPRINT WITH AN OPERATIONAL WIRELESS FACILITY.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 FUNCTIONAL REQUIREMENTS:

A. THE ACTIVITIES DESCRIBED IN THIS PARAGRAPH REPRESENT MINIMUM ACTIONS AND PROCESSES REQUIRED TO SUCCESSFULLY COMPLETE THE WORK. THE ACTIVITIES DESCRIBED ARE NOT EXHAUSTIVE, AND CONTRACTOR SHALL TAKE ANY AND ALL ACTIONS AS NECESSARY TO SUCCESSFULLY COMPLETE THE CONSTRUCTION OF A FULLY FUNCTIONING WIRELESS FACILITY AT THE SITE IN ACCORDANCE WITH COMPANY PROCESSES.

B. SUBMIT SPECIFIC DOCUMENTATION AS INDICATED HEREIN, AND OBTAIN REQUIRED APPROVALS WHILE THE WORK IS BEING PERFORMED.

C. MANAGE AND CONDUCT ALL FIELD CONSTRUCTION SERVICE RELATED ACTIVITIES

D. PROVIDE CONSTRUCTION ACTIVITIES TO THE EXTENT REQUIRED BY THE CONTRACT DOCUMENTS, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

1. PERFORM ANY REQUIRED SITE ENVIRONMENTAL MITIGATION.
2. PREPARE GROUND SITES; PROVIDE DE–GRUBBING; AND ROUGH AND FINAL GRADING, AND COMPOUND SURFACE TREATMENTS.
3. MANAGE AND CONDUCT ALL ACTIVITIES FOR INSTALLATION OF UTILITIES INCLUDING ELECTRICAL AND TELCO BACKHAUL.
4. INSTALL UNDERGROUND FACILITIES INCLUDING UNDERGROUND POWER AND COMMUNICATIONS CONDUITS, AND UNDERGROUND GROUNDING SYSTEM.
5. INSTALL ABOVE GROUND GROUNDING SYSTEMS.
6. PROVIDE NEW HVAC INSTALLATIONS AND MODIFICATIONS.
7. INSTALL "H–FRAMES", CABINETS AND SHELTERS AS INDICATED.
8. INSTALL ROADS, ACCESS WAYS, CURBS AND DRAINS AS INDICATED.
9. ACCOMPLISH REQUIRED MODIFICATION OF EXISTING FACILITIES.
10. PROVIDE ANTENNA SUPPORT STRUCTURE FOUNDATIONS.
11. PROVIDE SLABS AND EQUIPMENT PLATFORMS.
12. INSTALL COMPOUND FENCING, SIGHT SHIELDING, LANDSCAPING AND ACCESS BARRIERS.
13. PERFORM INSPECTION AND MATERIAL TESTING AS REQUIRED HEREINAFTER.
14. CONDUCT SITE RESISTANCE TO EARTH TESTING AS REQUIRED HEREINAFTER
15. INSTALL FIXED GENERATOR SETS AND OTHER STANDBY POWER SOLUTIONS.
16. INSTALL TOWERS, ANTENNA SUPPORT STRUCTURES AND PLATFORMS ON EXISTING TOWERS AS REQUIRED.
17. INSTALL CELL SITE RADIOS, MICROWAVE, GPS, COAXIAL MAINLINE, ANTENNAS, CROSS BAND COUPLERS, TOWER TOP AMPLIFIERS, LOW NOISE AMPLIFIERS AND RELATED EQUIPMENT.
18. PERFORM, DOCUMENT, AND CLOSE OUT ANY CONSTRUCTION CONTROL DOCUMENTS THAT MAY BE REQUIRED BY GOVERNMENT AGENCIES AND LANDLORDS.
19. PERFORM ANTENNAL AND COAX SWEEP TESTING AND MAKE ANY AND ALL NECESSARY CORRECTIONS.
20. REMAIN ON SITE MOBILIZED THROUGHOUT HAND–OFF AND INTEGRATION TO ASSIST AS NEEDED UNTIL SITE IS DEEMED SUBSTANTIALLY COMPLETE AND PLACED "ON AIR."

3.2 GENERAL REQUIREMENTS FOR CIVIL CONSTRUCTION:

A. CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH. AT THE COMPLETION OF THE WORK, CONTRACTOR SHALL REMOVE FROM THE SITE ALL REMAINING RUBBISH, IMPLEMENTS, TEMPORARY FACILITIES, AND SURPLUS MATERIALS.

B. EQUIPMENT ROOMS SHALL AT ALL TIMES BE MAINTAINED "BROOM CLEAN" AND CLEAR OF DEBRIS.

C. CONTRACTOR SHALL TAKE ALL REASONABLE PRECAUTIONS TO DISCOVER AND LOCATE ANY HAZARDOUS CONDITION.

1. IN THE EVENT CONTRACTOR ENCOUNTERS ANY HAZARDOUS CONDITION WHICH HAS NOT BEEN ABATED OR OTHERWISE MITIGATED, CONTRACTOR AND ALL OTHER PERSONS SHALL IMMEDIATELY STOP WORK IN THE AFFECTED AREA AND NOTIFY COMPANY IN WRITING. THE WORK IN THE AFFECTED AREA SHALL NOT BE RESUMED EXCEPT BY WRITTEN NOTIFICATION BY COMPANY.
2. CONTRACTOR AGREES TO USE CARE WHILE ON THE SITE AND SHALL NOT TAKE ANY ACTION THAT WILL OR MAY RESULT IN OR CAUSE THE HAZARDOUS CONDITION TO BE FURTHER RELEASED IN THE ENVIRONMENT, OR TO FURTHER EXPOSE INDIVIDUALS TO THE HAZARD.

D. CONTRACTOR'S ACTIVITIES SHALL BE RESTRICTED TO THE PROJECT LIMITS. SHOULD AREAS OUTSIDE THE PROJECT LIMITS BE AFFECTED BY CONTRACTOR'S ACTIVITIES, CONTRACTOR SHALL IMMEDIATELY RETURN THEM TO ORIGINAL CONDITION

E. CONDUCT TESTING AS REQUIRED HEREIN.

3.3 DELIVERABLES:

A. CONTRACTOR SHALL REVIEW, APPROVE, AND SUBMIT TO SPRINT SHOP DRAWINGS, PRODUCT DATA, SAMPLES, AND SIMILAR SUBMITTALS AS REQUIRED HEREINAFTER

B. PROVIDE DOCUMENTATION INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING. DOCUMENTATION SHALL BE FORWARDED IN ORIGINAL FORMAT AND/OR UPLOADED INTO SMS.

1. ALL CORRESPONDENCE AND PRELIMINARY CONSTRUCTION REPORTS.
2. PROJECT PROGRESS REPORTS.
3. CIVIL CONSTRUCTION START DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
4. ELECTRICAL SERVICE COMPLETION DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
5. LINES AND ANTENNA INSTALL DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
6. POWER INSTALL DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
7. TELCO READY DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
8. PPC (OR SHELTER) INSTALL DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
9. TOWER CONSTRUCTION START DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
10. TOWER CONSTRUCTION COMPLETE DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
11. BTS AND RADIO EQUIPMENT DELIVERED AT SITE DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
12. NETWORK OPERATIONS HANDOFF CHECKLIST (HOC WALK) COMPLETE (UPLOAD FORM IN SMS)
13. CIVIL CONSTRUCTION COMPLETE DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
14. SITE CONSTRUCTION PROGRESS PHOTOS UNLOADED INTO SMS.

CONTINUE SHEET SP-2

Sprint
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MAHWAH, NJ 07495
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SBA COMMUNICATIONS CORP.
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STATE OF CONNECTICUT
THOMAS E. JOHNSON
No. 28192
LICENSED PROFESSIONAL ENGINEER
1-12-18

CHECKED BY: JMM/TEJ

APPROVED BY: JMM/TEJ

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	01/12/18	ISSUED FOR CONSTRUCTION	PN
0	11/22/17	ISSUED FOR REVIEW	JEB

SITE NUMBER:
CT52XC067
SITE NAME:
SBA OSBURNE LANE
SITE ADDRESS:
1 DEERFIELD LANE
ANSONIA, CT 06401

SHEET TITLE
OUTLINE SPECIFICATIONS

SHEET NUMBER
SP–1

CONTINUED FROM SP-1:

SECTION 01 400 - SUBMITTALS, TESTS, AND INSPECTIONS

PART 1 – GENERAL

1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

1.2 RELATED DOCUMENTS:

A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.

B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

1.3 SUBMITTALS:

A. THE WORK IN ALL ASPECTS SHALL COMPLY WITH THE CONSTRUCTION DRAWINGS AND THESE SPECIFICATIONS.

B. SUBMIT THE FOLLOWING TO COMPANY REPRESENTATIVE FOR APPROVAL.
1. CONCRETE MIX–DESIGNS FOR TOWER FOUNDATIONS, ANCHORS PIERS, AND CONCRETE PAVING.
2. CONCRETE BREAK TESTS AS SPECIFIED HEREIN.
3. SPECIAL FINISHES FOR INTERIOR SPACES, IF ANY.
4. ALL EQUIPMENT AND MATERIALS SO IDENTIFIED ON THE CONSTRUCTION DRAWINGS.
5. CHEMICAL GROUNDING DESIGN.

C. ALTERNATES: AT THE COMPANY'S REQUEST, ANY ALTERNATIVES TO THE MATERIALS OR METHODS SPECIFIED SHALL BE SUBMITTED TO SPRINT'S CONSTRUCTION MANAGER FOR APPROVAL PRIOR TO BEING SHIPPED TO SITE. SPRINT WILL REVIEW AND APPROVE ONLY THOSE REQUESTS MADE IN WRITING. NO VERBAL APPROVALS WILL BE CONSIDERED. SUBMITTAL FOR APPROVAL SHALL INCLUDE A STATEMENT OF COST REDUCTION PROPOSED FOR USE OF ALTERNATE PRODUCT.

1.4 TESTS AND INSPECTIONS:

A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION TESTS, INSPECTIONS AND PROJECT DOCUMENTATION.

B. CONTRACTOR SHALL ACCOMPLISH TESTING INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
1. COAX SWEEPS AND FIBER TESTS PER SPRINT TS–0200 CURRENT VERSION ANTENNA LINE ACCEPTANCE STANDARDS.
2. AGL, AZIMUTH AND DOWNTILT USING ELECTRONIC COMMERCIAL MADE–FOR–THE–PURPOSE ANTENNA ALIGNMENT TOOL.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CORRECTIONS TO ANY WORK IDENTIFIED AS UNACCEPTABLE IN SITE INSPECTION ACTIVITIES AND/OR AS A RESULT OF TESTING.

C. REQUIRED CLOSEOUT DOCUMENTATION INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING;
1. AZIMUTH, DOWNTILT, AGL – UPLOAD REPORT FROM ANTENNA ALIGNMENT TOOL TO SITERRA TASK 465. INSTALLED AZIMUTH, DOWNTILT, AND AGL MUST CONFORM TO THE RF DATA SHEETS. SWEEP AND FIBER TESTS
2. SCANABLE BARCODE PHOTOGRAPHS OF TOWER TOP AND INACCESSIBLE SERIALIZED EQUIPMENT
3. ALL AVAILABLE JURISDICTIONAL INFORMATION
4. PDF SCAN OF REDLINES PRODUCED IN FIELD
5. ELECTRONIC AS–BUILT DRAWINGS IN AUTOCAD AND PDF FORMATS. ANY FIELD CHANGE MUST BE REFLECTED BY MODIFYING THE PLANS, ELEVATIONS, AND DETAILS IN THE DRAWING SETS. GENERAL NOTES INDICATING MODIFICATIONS WILL NOT BE ACCEPTED. CHANGES SHALL BE HIGHLIGHTED AS "CLOUDS" IDENTIFIED AS THE "AS–BUILT" CONDITION.
6. LIEN WAIVERS
7. FINAL PAYMENT APPLICATION
8. REQUIRED FINAL CONSTRUCTION PHOTOS
9. CONSTRUCTION AND COMMISSIONING CHECKLIST COMPLETE WITH NO DEFICIENT ITEMS
10. ALL POST NTP TASKS INCLUDING DOCUMENT UPLOADS COMPLETED IN SITERRA (SPRINTS DOCUMENT REPOSITORY OF RECORD).

1.5 COMMISSIONING: PERFORM ALL COMMISSIONING AS REQUIRED BY APPLICABLE MOPS

1.6 INTEGRATION: PERFORM ALL INTEGRATION ACTIVITIES AS REQUIRED BY APPLICABLE MOPS

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 REQUIREMENTS FOR TESTING:

A. THIRD PARTY TESTING AGENCY: WHEN THE USE OF A THIRD PARTY INDEPENDENT TESTING AGENCY IS REQUIRED, THE AGENCY THAT IS SELECTED MUST PERFORM SUCH WORK ON A REGULAR BASIS IN THE STATE WHERE THE PROJECT IS LOCATED AND HAVE A THOROUGH UNDERSTANDING OF LOCAL AVAILABLE MATERIALS, INCLUDING THE SOIL, ROCK, AND GROUNDWATER CONDITIONS.
1. THE THIRD PARTY TESTING AGENCY IS TO BE FAMILIAR WITH THE APPLICABLE REQUIREMENTS FOR THE TESTS TO BE DONE, EQUIPMENT TO BE USED, AND ASSOCIATED HEALTH AND SAFETY ISSUES.
2. EXPERIENCE IN SOILS, CONCRETE, MASONRY, AGGREGATE, AND ASPHALT TESTING USING ASTM, AASJTO, AND OTHER METHODS IS NEEDED.
3. EXPERIENCE IN SOILS, CONCRETE, MASONRY, AGGREGATE, AND ASPHALT TESTING USING ASTM, AASJTO, AND OTHER METHODS IS NEEDED.

3.2 REQUIRED TESTS:

A. CONTRACTOR SHALL ACCOMPLISH TESTING INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
1. CONCRETE CYLINDER BREAK TESTS FOR THE TOWER AND ANCHOR FOUNDATIONS AS SPECIFIED IN SECTION: PORTLAND CEMENT CONCRETE PAVING.
2. ASPHALT ROADWAY COMPACTED THICKNESS, SURFACE SMOOTHNESS, AND COMPACTED DENSITY TESTING AS SPECIFIED IN SECTION: HOT MIX ASPHALT PAVING.
3. FIELD QUALITY CONTROL TESTING AS SPECIFIED IN SECTION: PORTLAND CEMENT CONCRETE PAVING.
4. TESTING REQUIRED UNDER SECTION: AGGREGATE BASE FOR ACCESS ROADS, PADS AND ANCHOR LOCATIONS
5. STRUCTURAL BACKFILL COMPACTION TESTS FOR THE TOWER FOUNDATION.
6. SITE RESISTANCE TO EARTH TESTING PER EXHIBIT: CELL SITE GROUNDING SYSTEM DESIGN.
7. ANTENNA AND COAX SWEEP TESTS PER EXHIBIT: ANTENNA TRANSMISSION LINE ACCEPTANCE STANDARDS.
8. GROUNDING AT ANTENNA MASTS FOR GPS AND ANTENNAS
9. ALL OTHER TESTS REQUIRED BY COMPANY OR JURISDICTION.

3.3 REQUIRED INSPECTIONS:

A. SCHEDULE INSPECTIONS WITH COMPANY REPRESENTATIVE.

B. CONDUCT INSPECTIONS INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
1. GROUNDING SYSTEM INSTALLATION PRIOR TO EARTH CONCEALMENT DOCUMENTED WITH DIGITAL PHOTOGRAPHS BY CONTRACTOR, APPROVED BY A&E OR SPRINT REPRESENTATIVE.
2. FORMING FOR CONCRETE AND REBAR PLACEMENT PRIOR TO POUR DOCUMENTED WITH DIGITAL PHOTOGRAPHS BY CONTRACTOR, APPROVED BY A&E OR SPRINT REPRESENTATIVE.
3. COMPACTION OF BACKFILL MATERIALS; AGGREGATE BASE FOR ROADS, PADS, AND ANCHORS; ASPHALT PAVING; AND SHAFT BACKFILL FOR CONCRETE AND WOOD POLES, BY INDEPENDENT THIRD PARTY AGENCY.
4. PRE– AND POST–CONSTRUCTION ROOFTOP AND STRUCTURAL INSPECTIONS ON EXISTING FACILITIES.
5. TOWER ERECTION SECTION STACKING AND PLATFORM ATTACHMENT DOCUMENTED BY DIGITAL PHOTOGRAPHS BY THIRD PARTY AGENCY.
6. ANTENNA AZIMUTH , DOWN TILT AND PER SUNLIGHT TOOL SUNSIGHT INSTRUMENTS – ANTENNALIGN ALIGNMENT TOOL (AAT)
7. VERIFICATION DOCUMENTED WITH THE ANTENNA CHECKLIST REPORT, BY A&E, SITE DEVELOPMENT REP, OR RF REP.
8. FINAL INSPECTION CHECKLIST AND HANDOFF WALK (HOC.). SIGNED FORM SHOWING ACCEPTANCE BY FIELD OPS IS TO BE UPLOADED INTO SMS.
9. COAX SWEEP AND FIBER TESTING DOCUMENTS SUBMITTED VIA SMS FOR RF APPROVAL.
10. SCAN–ABLE BARCODE PHOTOGRAPHS OF TOWER TOP AND INACCESSIBLE SERIALIZED EQUIPMENT
11. ALL AVAILABLE JURISDICTIONAL INFORMATION
12. PDF SCAN OF REDLINES PRODUCED IN FIELD

E. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CORRECTIONS TO ANY WORK IDENTIFIED AS UNACCEPTABLE IN SITE INSPECTION ACTIVITIES AND/OR AS A RESULT OF TESTING.

F. CONSTRUCTION INSPECTIONS AND CORRECTIVE MEASURES SHALL BE DOCUMENTED BY THE CONTRACTOR WITH WRITTEN REPORTS AND PHOTOGRAPHS. PHOTOGRAPHS MUST BE DIGITAL AND OF SUFFICIENT QUALITY TO CLEARLY SHOW THE SITE CONSTRUCTION. PHOTOGRAPHS MUST CLEARLY IDENTIFY THE PHOTOGRAPHED ITEM AND BE LABELED WITH THE SITE CASCADE NUMBER, SITE NAME, DESCRIPTION, AND DATE.

3.4 DELIVERABLES: TEST AND INSPECTION REPORTS AND CLOSEOUT DOCUMENTATION SHALL BE UPLOADED TO THE SMS AND/OR FORWARDED TO SPRINT FOR INCLUSION INTO THE PERMANENT SITE FILES.

A. THE FOLLOWING TEST AND INSPECTION REPORTS SHALL BE PROVIDED AS APPLICABLE.
1. CONCRETE MIX AND CYLINDER BREAK REPORTS.
2. STRUCTURAL BACKFILL COMPACTION REPORTS.
3. SITE RESISTANCE TO EARTH TEST.
4. ANTENNA AZIMUTH AND DOWN TILT VERIFICATION
5. TOWER ERECTION INSPECTIONS AND MEASUREMENTS DOCUMENTING TOWER INSTALLED PER SUPPLIER'S REQUIREMENTS AND THE APPLICABLE SECTIONS HEREIN.
6. COAX CABLE SWEEP TESTS PER COMPANY'S "ANTENNA LINE ACCEPTANCE STANDARDS".

B. REQUIRED CLOSEOUT DOCUMENTATION INCLUDES THE FOLLOWING;
1. TEST WELLS AND TRENCHES: PHOTOGRAPHS OF ALL TEST WELLS; PHOTOGRAPHS SHOWING ALL OPEN EXCAVATIONS AND TRENCHING PRIOR TO BACKFILLING SHOWING A TAPE MEASURE VISIBLE IN THE EXCAVATIONS INDICATING DEPTH.
2. CONDUITS, CONDUCTORS AND GROUNDING: PHOTOGRAPHS SHOWING TYPICAL INSTALLATION OF CONDUCTORS AND CONNECTORS; PHOTOGRAPHS SHOWING TYPICAL BEND RADIUS OF INSTALLED GROUND WIRES AND GROUND ROD SPACING;
3. CONCRETE FORMS AND REINFORCING: CONCRETE FORMING AT TOWER AND EQUIPMENT/SHELTER PAD/FOUNDATIONS – PHOTOGRAPHS SHOWING ALL REINFORCING STEEL, UTILITY AND CONDUIT STUB OUTS; PHOTOGRAPHS SHOWING CONCRETE POUR OF SHELTER SLAB/FOUNDATION, TOWER FOUNDATION AND GUY ANCHORS WITH VIBRATOR IN USE; PHOTOGRAPHS SHOWING EACH ANCHOR ON GUYED TOWERS, BEFORE CONCRETE POUR.
4. TOWER, ANTENNAS AND MAINLINE: INSPECTION AND PHOTOGRAPHS OF SECTION STACKING; INSPECTION AND PHOTOGRAPHS OF PLATFORM COMPONENT ATTACHMENT POINTS; PHOTOGRAPHS OF TOWER TOP GROUNDING; PHOTOS OF TOWER COAX LINE COLOR CODING AT THE TOP AND AT GROUND LEVEL; INSPECTION AND PHOTOGRAPHS OF OPERATIONAL OF TOWER LIGHTING, AND PLACEMENT OF FAA REGISTRATION SIGN; PHOTOGRAPHS SHOWING ADDITIONAL GROUNDING POINTS FOR TOWERS GREATER THAN 200 FEET.; PHOTOS OF ANTENNA GROUND BAR, EQUIPMENT GROUND BAR, AND MASTER GROUND BAR; PHOTOS OF GPS ANTENNA(S); PHOTOS OF EACH SECTOR OF ANTENNAS; ONE PHOTOGRAPH LOOKING AT THE SECTOR AND ONE FROM BEHIND SHOWING THE PROJECTED COVERAGE AREA; PHOTOS OF COAX WEATHERPROOFING – TOP AND BOTTOM; PHOTOS OF COAX GROUNDING––TOP AND BOTTOM; PHOTOS OF ANTENNA AND MAST GROUNDING; PHOTOS OF COAX CABLE ENTRY INTO SHELTER; PHOTOS OF PLATFORM MECHANICAL CONNECTIONS TO TOWER/MONOPOLE.
5. ROOF TOPS: PRE–CONSTRUCTION AND POST–CONSTRUCTION VISUAL INSPECTION AND PHOTOGRAPHS OF THE ROOF AND INTERIOR TO DETERMINE AND DOCUMENT CONDITIONS; ROOF TOP CONSTRUCTION INSPECTIONS AS REQUIRED BY THE JURISDICTION; PHOTOGRAPHS OF CABLE TRAY AND/OR ICE BRIDGE; PHOTOGRAPHS OF DOGHOUSE/CABLE EXIT FROM ROOF;
6. SITE LAYOUT – PHOTOGRAPHS OF THE OVERALL COMPOUND, INCLUDING EQUIPMENT PLATFORM FROM ALL FOUR CORNERS.
7. FINISHED UTILITIES: CLOSE–UP PHOTOGRAPHS OF THE PPC BREAKER PANEL; CLOSE–UP PHOTOGRAPH OF THE INSIDE OF THE TELCO PANEL AND NIU; CLOSE–UP PHOTOGRAPH OF THE POWER METER AND DISCONNECT; PHOTOS OF POWER AND TELCO ENTRANCE TO COMPANY ENCLOSURE; PHOTOGRAPHS AT METER BOX AND/OR FACILITY DISTRIBUTION PANEL.
8. REQUIRED MATERIALS CERTIFICATIONS: CONCRETE MIX DESIGNS; MILL CERTIFICATION FOR ALL REINFORCING AND STRUCTURAL STEEL; AND ASPHALT PAVING MIX DESIGN.
9. ANY AND ALL SUBMITTALS BY THE JURISDICTION OR COMPANY.

SECTION 01 500 - PROJECT REPORTING

PART 1 – GENERAL

1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

1.2 RELATED DOCUMENTS:

A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.

B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 WEEKLY REPORTS:

A. CONTRACTOR SHALL PROVIDE SPRINT WITH WEEKLY REPORTS SHOWING PROJECT STATUS. THIS STATUS REPORT FORMAT WILL BE PROVIDED TO THE CONTRACTOR BY SPRINT. THE REPORT WILL CONTAIN SITE ID NUMBER, THE MILESTONES FOR EACH SITE, INCLUDING THE BASELINE DATE, ESTIMATED COMPLETION DATE AND ACTUAL COMPLETION DATE.

B. REPORT INFORMATION WILL BE TRANSMITTED TO SPRINT VIA ELECTRONIC MEANS AS REQUIRED. THIS INFORMATION WILL PROVIDE A BASIS FOR PROGRESS MONITORING AND PAYMENT.

3.2 PROJECT CONFERENCE CALLS:

A. SPRINT MAY HOLD WEEKLY PROJECT CONFERENCE CALLS. CONTRACTOR WILL BE REQUIRED TO COMMUNICATE SITE STATUS, MILESTONE COMPLETIONS AND UPCOMING MILESTONE PROJECTIONS, AND ANSWER ANY OTHER SITE STATUS QUESTIONS AS NECESSARY.

3.3 PROJECT TRACKING IN SMS:

A. CONTRACTOR SHALL PROVIDE SCHEDULE UPDATES AND PROJECTIONS IN THE SMS SYSTEM ON A WEEKLY BASIS.

3.4 ADDITIONAL REPORTING:

A. ADDITIONAL OR ALTERNATE REPORTING REQUIREMENTS MAY BE ADDED TO THE REPORT AS DETERMINED TO BE REASONABLY NECESSARY BY COMPANY.

3.5 PROJECT PHOTOGRAPHS:

A. FILE DIGITAL PHOTOGRAPHS OF COMPLETED SITE IN JPEG FORMAT IN THE SMS PHOTO LIBRARY FOR THE RESPECTIVE SITE. PHOTOGRAPHS SHALL BE CLEARLY LABELED WITH SITE NUMBER, NAME AND DESCRIPTION, AND SHALL INCLUDE AT A MINIMUM THE FOLLOWING AS APPLICABLE:
1. SHELTER AND TOWER OVERVIEW.
2. TOWER FOUNDATION(S) – FORMS AND STEEL BEFORE POUR (EACH ANCHOR ON GUYED TOWERS).
3. TOWER FOUNDATION(S) POUR WITH VIBRATOR IN USE (EACH ANCHOR ON GUYED TOWERS).
4. TOWER STEEL AS BEING INSTALLED INTO HOLE (SHOW ANCHOR STEEL ON GUYED TOWERS).
5. PHOTOS OF TOWER SECTION STACKING.
6. CONCRETE TESTING / SAMPLES.
7. PLACING OF ANCHOR BOLTS IN TOWER FOUNDATION.
8. BUILDING/WATER TANK FROM ROAD FOR TENANT IMPROVEMENTS OR COMMENTS.
9. SHELTER FOUNDATION––FORMS AND STEEL BEFORE POURING.
10. SHELTER FOUNDATION POUR WITH VIBRATOR IN USE.
11. COAX CABLE ENTRY INTO SHELTER.
12. PLATFORM MECHANICAL CONNECTIONS TO TOWER/MONOPOLE.
13. ROOFTOP PRE AND POST CONSTRUCTION PHOTOS TO INCLUDE PENETRATIONS AND INTERIOR CEILING.
14. PHOTOS OF TOWER TOP COAX LINE COLOR CODING AND COLOR CODING AT GROUND LEVEL.
15. PHOTOS OF ALL APPROPRIATE COMPANY OR REGULATORY SIGNAGE.
16. PHOTOS OF EQUIPMENT BOLT DOWN INSIDE SHELTER.
17. POWER AND TELCO ENTRANCE TO COMPANY ENCLOSURE AND POWER AND TELCO SUPPLY LOCATIONS INCLUDING METER/DISCONNECT.
18. ELECTRICAL TRENCH(S) WITH ELECTRICAL / CONDUIT BEFORE BACKFILL.
19. ELECTRICAL TRENCH(S) WITH FOIL–BACKED TAPE BEFORE FURTHER BACKFILL.
20. TELCO TRENCH WITH TELEPHONE / CONDUIT BEFORE BACKFILL.
21. TELCO TRENCH WITH FOIL–BACKED TAPE BEFORE FURTHER BACKFILL.
22. SHELTER GROUND–RING TRENCH WITH GROUND–WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADII).
23. TOWER GROUND–RING TRENCH WITH GROUND–WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADII).
24. FENCE GROUND–RING TRENCH WITH GROUND–WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADII).
25. ALL BTS GROUND CONNECTIONS.
26. ALL GROUND TEST WELLS.
27. ANTENNA GROUND BAR AND EQUIPMENT GROUND BAR.
28. ADDITIONAL GROUNDING POINTS ON TOWERS ABOVE 200'.
29. HVAC UNITS INCLUDING CONDENSERS ON SPLIT SYSTEMS.
30. GPS ANTENNAS.
31. CABLE TRAY AND/OR WAVEGUIDE BRIDGE.
32. DOGHOUSE/CABLE EXIT FROM ROOF.
33. EACH SECTOR OF ANTENNAS; ONE PHOTOGRAPH LOOKING AT THE SECTOR AND ONE FROM BEHIND SHOWING THE PROJECTED COVERAGE AREA.
34. MASTER BUS BAR.
35. TELCO BOARD AND NIU.
36. ELECTRICAL DISTRIBUTION WALL.
37. CABLE ENTRY WITH SURGE SUPPRESSION.
38. ENTRANCE TO EQUIPMENT ROOM.
39. COAX WEATHERPROOFING–TOP AND BOTTOM OF TOWER.
40. COAX GROUNDING –TOP AND BOTTOM OF TOWER.
41. ANTENNA AND MAST GROUNDING.
42. LANDSCAPING – WHERE APPLICABLE.

3.6 FINAL PROJECT ACCEPTANCE: COMPLETE ALL REQUIRED REPORTING TASKS PER CONTRACT, CONTRACT DOCUMENTS OR THE SPRINT INTEGRATED CONSTRUCTION STANDARDS FOR WIRELESS SITES AND UPLOAD INTO SITERRA.

SECTION 07 500 - ROOF CUTTING, PATCHING AND REPAIR

SUMMARY:
THIS SECTION SPECIFIES CUTTING AND PATCHING EXISTING ROOFING SYSTEMS WHERE CONDUIT OR CABLES EXIT THE BUILDING ONTO THE ROOF OR BUILDING–MOUNTED ANTENNAS, AND AS REQUIRED FOR WATERTIGHT PERFORMANCE. ROOFTOP ENTRY OPENINGS IN MEMBRANE ROOFTOPS SHALL BE CONSTRUCTED TO COMPLY WITH LANDLORD, ANY EXISTING WARRANTY, AND LOCAL JURISDICTIONAL STANDARDS.

1.4 SUBMITTALS:

A. PRE–CONSTRUCTION ROOF PHOTOS: COMPLETE A ROOF INSPECTION PRIOR TO THE INSTALLATION OF SPRINT EQUIPMENT ON ANY ROOFTOP BUILD. AT A MINIMUM INSPECT AND PHOTOGRAPH (MINIMUM 3 EA.) ALL AREAS IMPACTED BY THE ADDITION OF THE SPRINT EQUIPMENT.

B. PROVIDE SIMILAR PHOTOGRAPHS SHOWING ROOF CONDITIONS AFTER CONSTRUCTION (MINIMUM 3 EA.)

C. ROOF INSPECTION PHOTOGRAPHS SHOULD BE UPLOADED WITH CLOSEOUT PHOTOGRAPHS.

SECTION 09 900 - PAINTING

QUALITY ASSURANCE:

A. COMPLY WITH GOVERNING CODES AND REGULATIONS. PROVIDE PRODUCTS OF ACCEPTABLE MANUFACTURERS WHICH HAVE BEEN IN SATISFACTORY USE IN SIMILAR SERVICE FOR THREE YEARS. USE EXPERIENCED INSTALLERS. DELIVER, HANDLE, AND STORE MATERIALS IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

B. COMPLY WITH ALL ENVIRONMENTAL REGULATIONS FOR VOLATILE ORGANIC COMPOUNDS.

CONTINUE SHEET SP-3

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STATE OF CONNECTICUT
THOMAS E. JOHNSON
No. 28192
LICENSED PROFESSIONAL ENGINEER
1-12-18

CHECKED BY: JMM/TEJ

APPROVED BY: JMM/TEJ

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	01/12/18	ISSUED FOR CONSTRUCTION	PN
0	11/22/17	ISSUED FOR REVIEW	JEB

SITE NUMBER:
CT52XC067
SITE NAME:
SBA OSBURNE LANE
SITE ADDRESS:
1 DEERFIELD LANE
ANSONIA, CT 06401

SHEET TITLE
OUTLINE SPECIFICATIONS

SHEET NUMBER
SP–2

CONTINUED FROM SP-2:

MATERIALS:

A. MANUFACTURERS: BENJAMIN MOORE, ICI DEVOE COATINGS, PPG, SHERWIN WILLIAMS OR APPROVED EQUAL. PROVIDE PREMIUM GRADE, PROFESSIONAL-QUALITY PRODUCTS FOR COATING SYSTEMS.

PAINT SCHEDULE:

A. EXTERIOR ANTENNAE AND ANTENNA MOUNTING HARDWARE: ONE COAT OF PRIMER AND TWO FINISH COATS. PAINT FOR ANTENNAE SHALL BE NON-METALLIC BASED AND CONTAIN NO METALLIC PARTICLES. PROVIDE COLORS AND PATTERNS AS REQUIRED TO MASK APPEARANCE OF ANTENNAE ON ADJACENT BUILDING SURFACES AND AS ACCEPTABLE TO THE OWNER. REFER TO ANTENNA MANUFACTURER'S INSTRUCTIONS WHENEVER POSSIBLE.

B. ROOF TOP CONSTRUCTION: TOUCH UP - PREPARE SURFACES TO BE REPAIRED. FOLLOW INDUSTRY STANDARDS AND REQUIREMENTS OF OWNER TO MATCH EXISTING COATING AND FINISH.

PAINTING APPLICATION:

1. INSPECT SURFACES, REPORT UNSATISFACTORY CONDITIONS IN WRITING; BEGINNING WORK MEANS ACCEPTANCE OF SUBSTRATE.
2. COMPLY WITH MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS FOR PREPARATION, PRIMING AND COATING WORK. COORDINATE WITH WORK OF OTHER SECTIONS.
3. MATCH APPROVED MOCK-UPS FOR COLOR, TEXTURE, AND PATTERN. RE-COAT OR REMOVE AND REPLACE WORK WHICH DOES NOT MATCH OR SHOWS LOSS OF ADHESION.
4. CLEAN UP, TOUCH UP AND PROTECT WORK.

TOUCHUP PAINTING:

1. GALVANIZING DAMAGE AND ALL BOLTS AND NUTS SHALL BE TOUCHED UP AFTER TOWER ERECTION WITH "GALVANOX," "DRY GALV," OR "ZINC-IT."
2. FIELD TOUCHUP PAINT SHALL BE DONE IN ACCORDANCE WITH THE MANUFACTURER'S WRITTEN INSTRUCTIONS.
3. ALL METAL COMPONENTS SHALL BE HANDLED WITH CARE TO PREVENT DAMAGE TO THE COMPONENTS, THEIR PRESERVATIVE TREATMENT, OR THEIR PROTECTIVE COATINGS.

SECTION 11 700 - ANTENNA ASSEMBLY, REMOTE RADIO HEADS AND CABLE INSTALLATION

SUMMARY:
THIS SECTION SPECIFIES INSTALLATION OF ANTENNAS, RRH'S, AND CABLE EQUIPMENT, INSTALLATION, AND TESTING OF COAXIAL FIBER CABLE.

ANTENNAS AND RRH'S:
THE NUMBER AND TYPE OF ANTENNAS AND RRH'S TO BE INSTALLED IS DETAILED ON THE CONSTRUCTION DRAWINGS.

HYBRID CABLE:
HYBRID CABLE WILL BE DC/FIBER AND FURNISHED FOR INSTALLATION AT EACH SITE. CABLE SHALL BE INSTALLED PER THE CONSTRUCTION DRAWINGS AND THE APPLICABLE MANUFACTURER'S REQUIREMENTS.

JUMPERS AND CONNECTORS:
FURNISH AND INSTALL 1/2" COAX JUMPER CABLES BETWEEN THE RRH'S AND ANTENNAS. JUMPERS SHALL BE TYPE LDF 4, FLC 12-50, CR 540, OR FXL 540. SUPER-FLEX CABLES ARE NOT ACCEPTABLE. JUMPERS BETWEEN THE RRH'S AND ANTENNAS OR TOWER TOP AMPLIFIERS SHALL CONSIST OF 1/2 INCH FOAM DIELECTRIC, OUTDOOR RATED COAXIAL CABLE. DO NOT USE SUPERFLEX OUTDOORS. JUMPERS SHALL BE FACTORY FABRICATED IN APPROPRIATE LENGTHS WITH A MAXIMUM OF 4 FEET EXCESS PER JUMPER AND HAVE CONNECTORS AT EACH END, MANUFACTURED BY SUPPLIER. IF JUMPERS ARE FIELD FABRICATED, FOLLOW MANUFACTURER'S REQUIREMENTS FOR INSTALLATION OF CONNECTORS

REMOTE ELECTRICAL TILT (RET) CABLES:

MISCELLANEOUS:
INSTALL SPLITTERS, COMBINERS, FILTERS PER RF DATA SHEET, FURNISHED BY SPRINT.

ANTENNA INSTALLATION:
THE CONTRACTOR SHALL ASSEMBLE ALL ANTENNAS ONSITE IN ACCORDANCE WITH THE INSTRUCTIONS SUPPLIED BY THE MANUFACTURER. ANTENNA HEIGHT, AZIMUTH, AND FEED ORIENTATION INFORMATION SHALL BE A DESIGNATED ON THE CONSTRUCTION DRAWINGS.

A. THE CONTRACTOR SHALL POSITION THE ANTENNA ON TOWER PIPE MOUNTS SO THAT THE BOTTOM STRUT IS LEVEL. THE PIPE MOUNTS SHALL BE PLUMB TO WITHIN 1 DEGREE.

B. ANTENNA MOUNTING REQUIREMENTS: PROVIDE ANTENNA MOUNTING HARDWARE AS INDICATED ON THE DRAWINGS.

HYBRID CABLES INSTALLATION:

A. THE CONTRACTOR SHALL ROUTE, TEST, AND INSTALL ALL CABLES AS INDICATED ON THE CONSTRUCTION DRAWINGS AND IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS.

B. THE INSTALLED RADIUS OF THE CABLES SHALL NOT BE LESS THAN THE MANUFACTURER'S SPECIFICATIONS FOR BENDING RADII.

C. EXTREME CARE SHALL BE TAKEN TO AVOID DAMAGE TO THE CABLES DURING HANDLING AND INSTALLATION.

1. FASTENING MAIN HYBRID CABLES: ALL CABLES SHALL BE PERMANENTLY FASTENED TO THE COAX LADDER AT 4'-0" OC USING NON-MAGNETIC STAINLESS STEEL CLIPS.
2. FASTENING INDIVIDUAL FIBER AND DC CABLES ABOVE BREAKOUT ENCLOSURE (MEDUSA), WITHIN THE MMBTS CABINET AND ANY INTERMEDIATE DISTRIBUTION BOXES:
   a. FIBER: SUPPORT FIBER BUNDLES USING ½" VELCRO STRAPS OF THE REQUIRED LENGTH @ 18" OC. STRAPS SHALL BE UV, OIL AND WATER RESISTANT AND SUITABLE FOR INDUSTRIAL INSTALLATIONS AS MANUFACTURED BY TEXTOL OR APPROVED EQUAL.
   b. DC: SUPPORT DC BUNDLES WITH ZIP TIES OF THE ADEQUATE LENGTH. ZIP TIES TO BE UV STABILIZED, BLACK NYLON, WITH TENSILE STRENGTH AT 12,000 PSI AS MANUFACTURED BY NELCO PRODUCTS OR EQUAL.
3. FASTENING JUMPERS: SECURE JUMPERS TO THE SIDE ARMS OR HEAD FRAMES USING STAINLESS STEEL TIE WRAPS OR STAINLESS STEEL BUTTERFLY CLIPS.
4. CABLE INSTALLATION:
   a. INSPECT CABLE PRIOR TO USE FOR SHIPPING DAMAGE, NOTIFY THE CONSTRUCTION MANAGER.
   b. CABLE ROUTING: CABLE INSTALLATION SHALL BE PLANNED TO ENSURE THAT THE LINES WILL BE PROPERLY ROUTED IN THE CABLE ENVELOP AS INDICATED ON THE DRAWINGS. AVOID TWISTING AND CROSSOVERS.
   c. HOIST CABLE USING PROPER HOISTING GRIPS. DO NOT EXCEED MANUFACTURES RECOMMENDED MAXIMUM BEND RADIUS.
5. GROUNDING OF TRANSMISSION LINES: ALL TRANSMISSION LINES SHALL BE GROUNDED AS INDICATED ON DRAWINGS.
6. HYBRID CABLE COLOR CODING: ALL COLOR CODING SHALL BE AS REQUIRED PER SPRINT TS 0200 CURRENT VERSION.
7. HYBRID CABLE LABELING: INDIVIDUAL HYBRID AND DC BUNDLES SHALL BE LABELED ALPHA-NUMERICALLY ACCORDING TO SPRINT CELL SITE ENGINEERING NOTICE-EN 2012-001, REV 1

WEATHERPROOFING EXTERIOR CONNECTORS AND HYBRID CABLE GROUND KITS:

A. ALL FIBER & COAX CONNECTORS AND GROUND KITS SHALL BE WEATHERPROOFED.

B. WEATHERPROOFED USING ONE OF THE FOLLOWING METHODS. ALL INSTALLATIONS MUST BE DONE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND INDUSTRY BEST PRACTICES.

1. COLD SHRINK: ENCOMPASS CONNECTOR IN COLD SHRINK TUBING AND PROVIDE A DOUBLE WRAP OF 2" ELECTRICAL TAPE EXTENDING 2" BEYOND TUBING. PROVIDE 3M COLD SHRINK CXS SERIES OR EQUAL.
2. SELF-AMALGAMATING TAPE: CLEAN SURFACES. APPLY A DOUBLE WRAP OF SELF-AMALGAMATING TAPE 2" BEYOND CONNECTOR. APPLY A SECOND WRAP OF SELF-AMALGAMATING TAPE IN OPPOSITE DIRECTION. APPLY DOUBLE WRAP OF 2" WIDE ELECTRICAL TAPE EXTENDING 2" BEYOND THE SELF-AMALGAMATING TAPE.
3. 3M SLIM LOCK CLOSURE 716: SUBSTITUTIONS WILL NOT BE ALLOWED.
4. OPEN FLAME ON JOB SITE IS NOT ACCEPTABLE

SECTION 11 800 - INSTALLATION OF MULTIMODAL BASE STATIONS (MMBTS) AND RELATED EQUIPMENT

SUMMARY:

A. THIS SECTION SPECIFIES MMBTS CABINETS, POWER CABINETS, AND INTERNAL EQUIPMENT INCLUDING BY NOT LIMITED TO RECTIFIERS, POWER DISTRIBUTION UNITS, BASE BAND UNITS, SURGE ARRESTORS, BATTERIES, AND SIMILAR EQUIPMENT FURNISHED BY THE COMPANY FOR INSTALLATION BY THE CONTRACTOR (OFCI).

B. CONTRACTOR SHALL PROVIDE AND INSTALL ALL MISCELLANEOUS MATERIALS AND PROVIDE ALL LABOR REQUIRED FOR INSTALLATION EQUIPMENT IN EXISTING CABINET OR NEW CABINET AS SHOWN ON DRAWINGS AND AS REQUIRE BY THE APPLICABLE INSTALLATION MOPS.

C. COMPLY WITH MANUFACTURERS INSTALLATION AND START-UP REQUIREMENTS

DC CIRCUIT BREAKER LABELING

A. LABEL CIRCUIT BREAKERS ACCORDING TO SPRINT CELL SITE ENGINEERING NOTICE - EN 2012-001, REV 1.

SECTION 11 800 - INSTALLATION OF MULTIMODAL BASE TRANSCIEVER STATIONS (MMBTS) AND RELATED EQUIPMENT

SUMMARY:

A. THIS SECTION SPECIFIES MMBTS CABINETS, POWER CABINETS, AND INTERNAL EQUIPMENT INCLUDING BY NOT LIMITED TO RECTIFIERS, POWER DISTRIBUTION UNITS, BASE BAND UNITS, SURGE ARRESTORS, BATTERIES, AND SIMILAR EQUIPMENT FURNISHED BY THE COMPANY FOR INSTALLATION BY THE CONTRACTOR (OFCI).

B. CONTRACTOR SHALL PROVIDE AND INSTALL ALL MISCELLANEOUS MATERIALS AND PROVIDE ALL LABOR REQUIRED FOR INSTALLATION EQUIPMENT IN EXISTING CABINET OR NEW CABINET AS SHOWN ON DRAWINGS AND AS REQUIRE BY THE APPLICABLE INSTALLATION MOPS.

C. COMPLY WITH MANUFACTURERS INSTALLATION AND START-UP REQUIREMENTS

SUPPORTING DEVICES:

A. MANUFACTURED STRUCTURAL SUPPORT MATERIALS: SUBJECT TO COMPLIANCE WITH REQUIREMENTS, PROVIDE PRODUCTS BY THE FOLLOWING:
1. ALLIED TUBE AND CONDUIT
2. B-LINE SYSTEM
3. UNISTRUT DIVERSIFIED PRODUCTS
4. THOMAS & BETTS

B. FASTENERS: TYPES, MATERIALS, AND CONSTRUCTION FEATURES AS FOLLOWS:
1. EXPANSION ANCHORS: CARBON STEEL WEDGE OR SLEEVE TYPE.
2. POWER-DRIVEN THREADED STUDS: HEAT-TREATED STEEL, DESIGNED SPECIFICALLY FOR THE INTENDED SERVICE.
3. FASTEN BY MEANS OF WOOD SCREWS ON WOOD.
4. TOGGLE BOLTS ON HOLLOW MASONRY UNITS.
5. CONCRETE INSERTS OR EXPANSION BOLTS ON CONCRETE OR SOLID MASONRY.
6. MACHINE SCREWS, WELDED THREADED STUDS, OR SPRING-TENSION CLAMPS ON STEEL.
7. EXPLOSIVE DEVICES FOR ATTACHING HANGERS TO STRUCTURE SHALL NOT BE PERMITTED.
8. DO NOT WELD CONDUIT, PIPE STRAPS, OR ITEMS OTHER THAN THREADED STUDS TO STEEL STRUCTURES.
9. IN PARTITIONS OF LIGHT STEEL CONSTRUCTION, USE SHEET METAL SCREWS.

SUPPORTING DEVICES:

A. INSTALL SUPPORTING DEVICES TO FASTEN ELECTRICAL COMPONENTS SECURELY AND PERMANENTLY IN ACCORDANCE WITH NEC.

B. COORDINATE WITH THE BUILDING STRUCTURAL SYSTEM AND WITH OTHER TRADES.

C. UNLESS OTHERWISE INDICATED ON THE DRAWINGS, FASTEN ELECTRICAL ITEMS AND THEIR SUPPORTING HARDWARE SECURELY TO THE STRUCTURE IN ACCORDANCE WITH THE FOLLOWING:

D. ENSURE THAT THE LOAD APPLIED BY ANY FASTENER DOES NOT EXCEED 25 PERCENT OF THE PROOF TEST LOAD.

E. USE VIBRATION AND SHOCK-RESISTANT FASTENERS FOR ATTACHMENTS TO CONCRETE SLABS.

ELECTRICAL IDENTIFICATION:

A. UPDATE AND PROVIDE TYPED CIRCUIT BREAKER SCHEDULES IN THE MOUNTING BRACKET, INSIDE DOORS OF AC PANEL BOARDS WITH ANY CHANGES MADE TO THE AC SYSTEM.

B. BRANCH CIRCUITS FEEDING AVIATION OBSTRUCTION LIGHTING EQUIPMENT SHALL BE CLEARLY IDENTIFIED AS SUCH AT THE BRANCH CIRCUIT PANELBOARD.

SECTION 26 200 - ELECTRICAL MATERIALS AND EQUIPMENT

CONDUIT:

A. RIGID GALVANIZED STEEL (RGS) CONDUIT SHALL BE USED FOR EXTERIOR LOCATIONS ABOVE GROUND AND IN UNFINISHED INTERIOR LOCATIONS AND FOR ENCASED RUNS IN CONCRETE. RIGID CONDUIT AND FITTINGS SHALL BE STEEL, COATED WITH ZINC EXTERIOR AND INTERIOR BY THE HOT DIP GALVANIZING PROCESS. CONDUIT SHALL BE PRODUCED TO ANSI SPECIFICATIONS C80.1, FEDERAL SPECIFICATION WW-C-581 AND SHALL BE LISTED WITH THE UNDERWRITERS' LABORATORIES. FITTINGS SHALL BE THREADED - SET SCREW OR COMPRESSION FITTINGS WILL NOT BE ACCEPTABLE. RGS CONDUITS SHALL BE MANUFACTURED BY ALLIED, REPUBLIC OR WHEATLAND.

B. UNDERGROUND CONDUIT IN CONCRETE SHALL BE POLYVINYLCHLORIDE (PVC) SUITABLE FOR DIRECT BURIAL AS APPLICABLE. JOINTS SHALL BE BELLED, AND FLUSH SOLVENT WELDED IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. CONDUIT SHALL BE CARLON ELECTRICAL PRODUCTS OR APPROVED EQUAL.

C. TRANSITIONS BETWEEN PVC AND RIGID (RGS) SHALL BE MADE WITH PVC COATED METALLIC LONG SWEEP RADIUS ELBOWS.

D. EMT OR RIGID GALVANIZED STEEL CONDUIT MAY BE USED IN FINISHED SPACES CONCEALED IN WALLS AND CEILINGS. EMT SHALL BE MILD STEEL, ELECTRICALLY WELDED, ELECTRO-GALVANIZED OR HOT-DIPPED GALVANIZED AND PRODUCED TO ANSI SPECIFICATION C80.3, FEDERAL SPECIFICATION WW-C-563, AND SHALL BE UL LISTED. EMT SHALL BE MANUFACTURED BY ALLIED, REPUBLIC OR WHEATLAND, OR APPROVED EQUAL. FITTINGS SHALL BE METALLIC COMPRESSION. SET SCREW CONNECTIONS SHALL NOT BE ACCEPTABLE.

E. LIQUID TIGHT FLEXIBLE METALLIC CONDUIT SHALL BE USED FOR FINAL CONNECTION TO EQUIPMENT. FITTINGS SHALL BE METALLIC GLAND TYPE COMPRESSION FITTINGS, MAINTAINING THE INTEGRITY OF CONDUIT SYSTEM. SET SCREW CONNECTIONS SHALL NOT BE ACCEPTABLE. MAXIMUM LENGTH OF FLEXIBLE CONDUIT SHALL NOT EXCEED 6-FEET. LFMC SHALL BE PROTECTED AND SUPPORTED AS REQUIRE BY NEC. MANUFACTURERS OF FLEXIBLE CONDUITS SHALL BE CAROL, ANACONDA METAL HOSE OR UNIVERSAL METAL HOSE, OR APPROVED EQUAL.

F. MINIMUM SIZE CONDUIT SHALL BE 3/4 INCH (21MM).

HUBS AND BOXES:

A. AT ENTRANCES TO CABINETS OR OTHER EQUIPMENT NOT HAVING INTEGRAL THREADED HUBS PROVIDE METALLIC THREADED HUBS OF THE SIZE AND CONFIGURATION REQUIRED. HUB SHALL INCLUDE LOCKNUT AND NEOPRENE O-RING SEAL. PROVIDE IMPACT RESISTANT 105 DEGREE C PLASTIC BUSHINGS TO PROTECT CABLE INSULATION.

B. CABLE TERMINATION FITTINGS FOR CONDUIT
1. CABLE TERMINATORS FOR RGS CONDUITS SHALL BE TYPE CRC BY O-Z/GEDNEY OR EQUAL.
2. CABLE TERMINATORS FOR LFMC SHALL BE ETCO - CL2075; OR MADE FOR THE PURPOSE PRODUCTS BY ROXTEC.

C. EXTERIOR PULL BOXES AND PULL BOXES IN INTERIOR INDUSTRIAL AREAS SHALL BE PLATED CAST ALLOY, HEAVY DUTY, WEATHERPROOF, DUST PROOF, WITH GASKET, PLATED IRON ALLOY COVER AND STAINLESS STEEL COVER SCREWS, CROUSE-HINDS WAB SERIES OR EQUAL.

D. CONDUIT OUTLET BODIES SHALL BE PLATED CAST ALLOY WITH SIMILAR GASKETED COVERS. OUTLET BODIES SHALL BE OF THE CONFIGURATION AND SIZE SUITABLE FOR THE APPLICATION. PROVIDE CROUSE-HINDS FORM 8 OR EQUAL.

E. MANUFACTURER FOR BOXES AND COVERS SHALL BE HOFFMAN, SQUARE "D", CROUSE-HINDS, COOPER, ADALET, APPLETON, O-Z GEDNEY, RACO, OR APPROVED EQUAL.

SUPPLEMENTAL GROUNDING SYSTEM

A. FURNISH AND INSTALL A SUPPLEMENTAL GROUNDING SYSTEM AS INDICATED ON THE DRAWINGS. SUPPORT SYSTEM WITH NON-MAGNETIC STAINLESS STEEL CLIPS WITH RUBBER GROMMETS. GROUNDING CONNECTORS SHALL BE TINNED COPPER WIRE, SIZES AS INDICATED ON THE DRAWINGS. PROVIDE STRANDED OR SOLID BARE OR INSULATED CONDUCTORS AS INDICATED.

B. SUPPLEMENTAL GROUNDING SYSTEM: ALL CONNECTIONS TO BE MADE WITH CAD WELDS, EXCEPT AT EQUIPMENT USE LUGS OR OTHER AVAILABLE GROUNDING MEANS AS REQUIRED BY MANUFACTURER; AT GROUND BARS USE TWO HOLE SPADES WITH NO OX.

C. STOLEN GROUND-BARS: IN THE EVENT OF STOLEN GROUND BARS, CONTACT SPRINT CM FOR REPLACEMENT INSTRUCTION USING THREADED ROD KITS.

EXISTING STRUCTURE:

A. EXISTING EXPOSED WIRING AND ALL EXPOSED OUTLETS, RECEPTACLES, SWITCHES, DEVICES, BOXES, AND OTHER EQUIPMENT THAT ARE NOT TO BE UTILIZED IN THE COMPLETED PROJECT SHALL BE REMOVED OR DE-ENERGIZED AND CAPPED IN THE WALL, CEILING, OR FLOOR SO THAT THEY ARE CONCEALED AND SAFE. WALL, CEILING, OR FLOOR SHALL BE PATCHED TO MATCH THE ADJACENT CONSTRUCTION.

CONDUIT AND CONDUCTOR INSTALLATION:

A. CONDUITS SHALL BE FASTENED SECURELY IN PLACE WITH APPROVED NON-PERFORATED STRAPS AND HANGERS. EXPLOSIVE DEVICES FOR ATTACHING HANGERS TO STRUCTURE WILL NOT BE PERMITTED. CLOSELY FOLLOW THE LINES OF THE STRUCTURE, MAINTAIN CLOSE PROXIMITY TO THE STRUCTURE AND KEEP CONDUITS IN TIGHT ENVELOPES. CHANGES IN DIRECTION TO ROUTE AROUND OBSTACLES SHALL BE MADE WITH CONDUIT OUTLET BODIES. CONDUIT SHALL BE INSTALLED IN A NEAT AND WORKMANLIKE MANNER, PARALLEL AND PERPENDICULAR TO STRUCTURE WALL AND CEILING LINES. ALL CONDUIT SHALL BE FISHED TO CLEAR OBSTRUCTIONS. ENDS OF CONDUITS SHALL BE TEMPORARILY CAPPED TO PREVENT CONCRETE, PLASTER OR DIRT FROM ENTERING. CONDUITS SHALL BE RIGIDLY CLAMPED TO BOXES BY GALVANIZED MALLEABLE IRON BUSHING ON INSIDE AND GALVANIZED MALLEABLE IRON LOCKNUT ON OUTSIDE AND INSIDE.

B. CONDUCTORS SHALL BE PULLED IN ACCORDANCE WITH ACCEPTED GOOD PRACTICE.

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STATE OF CONNECTICUT
THOMAS E. JOHNSON
No. 28192
LICENSED PROFESSIONAL ENGINEER
1-12-18

CHECKED BY: JMM/TEJ

APPROVED BY: JMM/TEJ

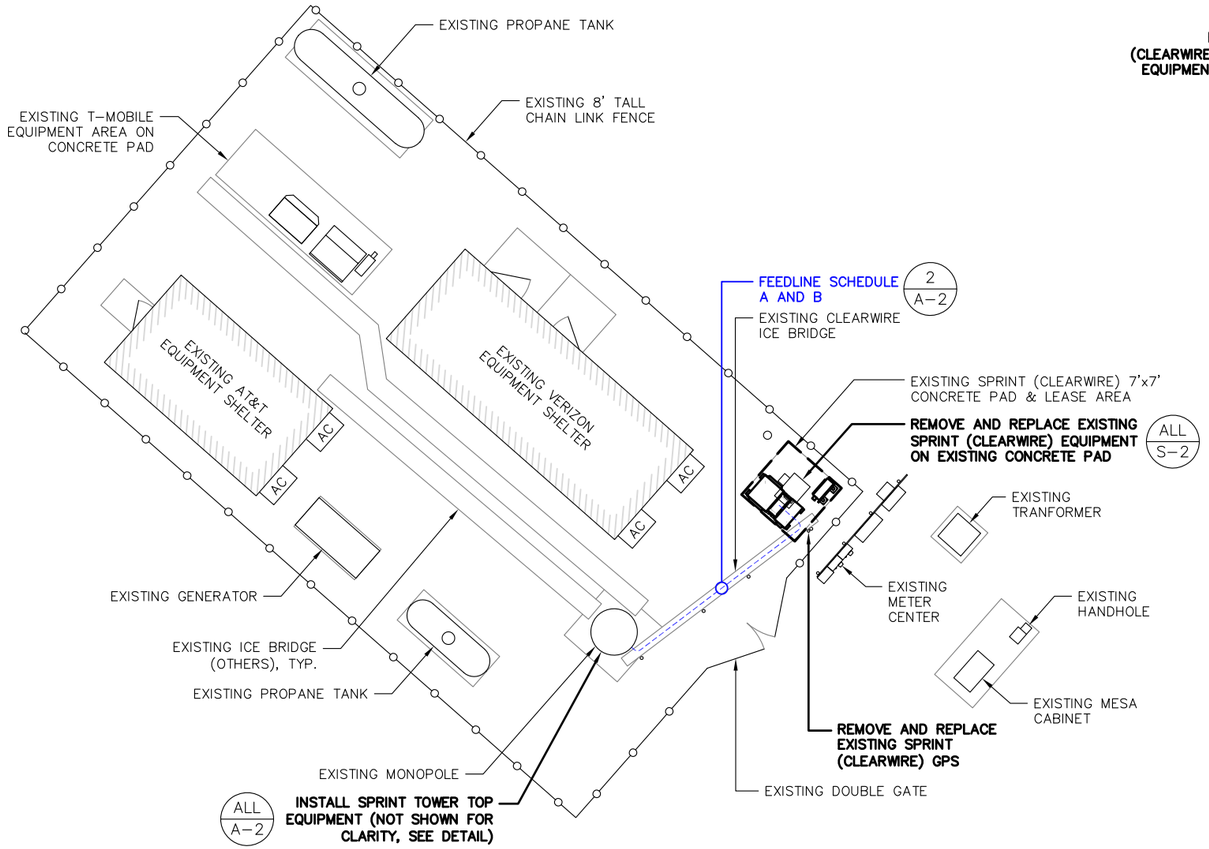
SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	01/12/18	ISSUED FOR CONSTRUCTION	PN
0	11/22/17	ISSUED FOR REVIEW	JEB

SITE NUMBER:
CT52XC067
SITE NAME:
SBA OSBURNE LANE
SITE ADDRESS:
1 DEERFIELD LANE
ANSONIA, CT 06401

SHEET TITLE
OUTLINE SPECIFICATIONS

SHEET NUMBER
SP-3



13°31'
MAGNETIC NORTH
TRUE NORTH

COMPOUND PLAN
1 A-1

SCALE: 1"=15' (11"x17")
1"=7.5' (22"x34")

15 7.5 0 15

IMAGE SOURCE: PROTERRA 10/19/2017
(VIEW FROM SOUTHWEST)

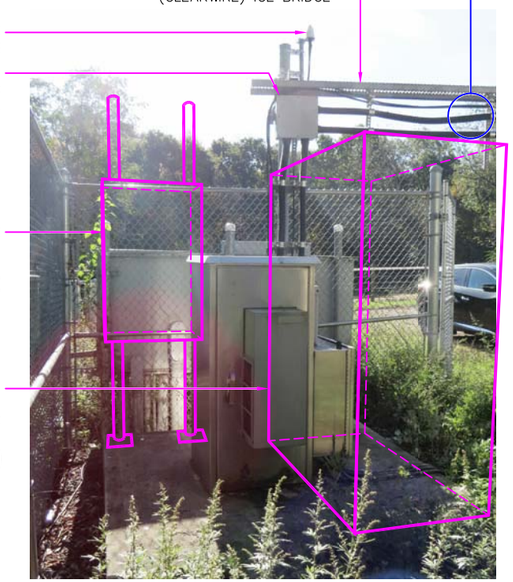


IMAGE SOURCE: PROTERRA 10/19/2017
(VIEW FROM NORTHWEST)

EQUIPMENT PLAN PHOTO DETAIL
2 A-1

SCALE: N.T.S.

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

STATE OF CONNECTICUT
THOMAS E. JOHNSON
No. 28192
LICENSED PROFESSIONAL ENGINEER
1-12-18

CHECKED BY: JMM/TEJ

APPROVED BY: JMM/TEJ

SUBMITTALS

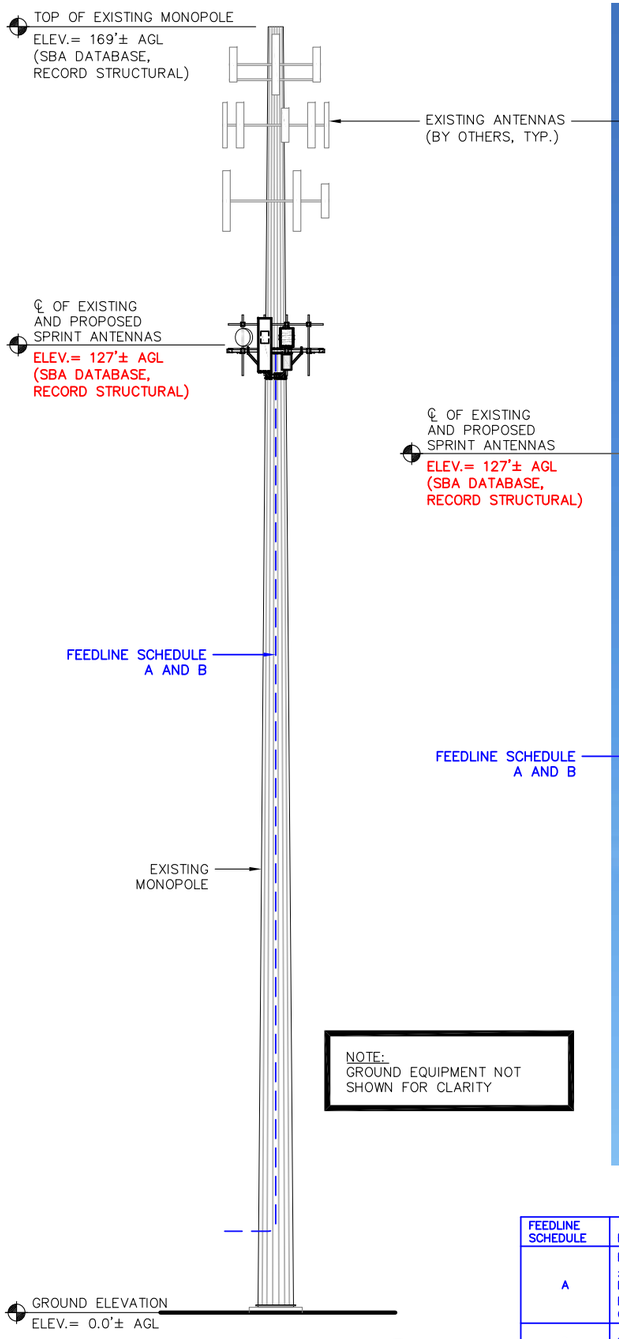
REV.	DATE	DESCRIPTION	BY
1	01/12/18	ISSUED FOR CONSTRUCTION	PN
0	11/22/17	ISSUED FOR REVIEW	JEB

SITE NUMBER:
CT52XC067
SITE NAME:
SBA OSBURNE LANE

SITE ADDRESS:
1 DEERFIELD LANE
ANSONIA, CT 06401

SHEET TITLE
COMPOUND PLAN

SHEET NUMBER
A-1



ELEVATION

1 / A-2

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

20 10 0 20

NOTE:
GROUND EQUIPMENT NOT SHOWN FOR CLARITY

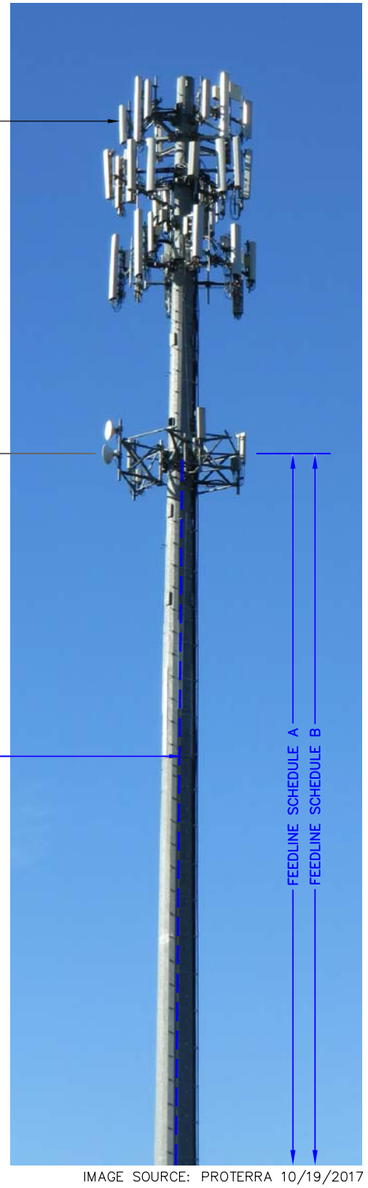


IMAGE SOURCE: PROTERRA 10/19/2017

FEEDLINE SCHEDULE	FEEDLINE DESCRIPTION	LOCATION
A	EXISTING TO BE REMOVED: (3) 3/8" COAX, (3) 1/2" COAX, AND (6) 5/8" COAX (PER COLO-APP, IN FLEX CONDUIT) TO 127' RAD EXISTING TO REMAIN: (3) 1/2" MICROWAVE DISH CABLE TO 127' RAD	UP INSIDE MONOPOLE TO RAD
B	PROPOSED: (4) HYBRID TO 127' RAD;	UP INSIDE MONOPOLE TO RAD

NOTE:
EXISTING SPRINT EQUIPMENT FEEDLINE INVENTORY BASED ON COLOCATION APPLICATION AND SBA RECORD, NOT FIELD OBSERVATIONS. RFDS AND FEEDLINE LEASING ENTITLEMENTS MAY DIFFER

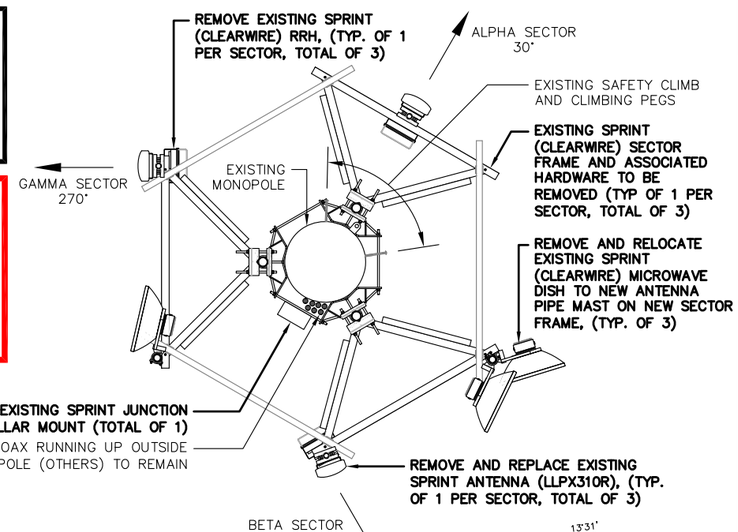
TOWER ELEVATION PHOTO DETAIL

2 / A-2

SCALE: N.T.S.

SPECIAL CONSTRUCTION NOTE:
SPRINT WORK IS CONTINGENT ON THE FOLLOWING:
* COMPLETION OF A GLOBAL STRUCTURAL STABILITY ANALYSIS.
* COMPLETION OF A MOUNT STRUCTURAL ANALYSIS.
* GC SHALL FURNISH, INSTALL AND COMPLETE ALL REQUIRED STRUCTURAL MODIFICATIONS AS INDICATED IN BEFORE-MENTIONED GLOBAL AND MOUNT ANALYSIS.

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



EXISTING ANTENNA PLAN

3 / A-2

SCALE: N.T.S.

ALL / S-1 — 6 / A-3 REMOVE AND REPLACE EXISTING SPRINT (CLEARWIRE) SECTOR MOUNT: FURNISH AND INSTALL LOW PROFILE PLATFORM WITH MOUNTING PIPES, HANDRAIL KIT, AND KICKER (SITE RPO 1 PART # RMQP-4096-HK)

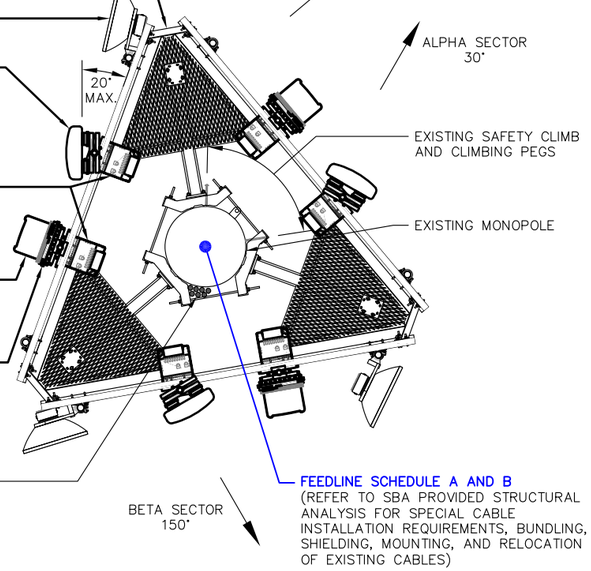
REMOVE AND RELOCATE EXISTING SPRINT (CLEARWIRE) MICROWAVE DISH TO NEW ANTENNA PIPE MAST ON NEW SECTOR FRAME, (TYP. OF 3)

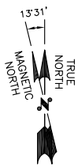
ALL / S-1 — 1 / A-3 REMOVE AND REPLACE EXISTING SPRINT ANTENNA: INSTALL SPRINT ANTENNA (ETCR-654L12H6), (TYP. OF 1 PER SECTOR, TOTAL OF 3) MOUNTED TO PROPOSED PIPE MAST

ALL / S-1 — 2 / A-3 INSTALL SPRINT RRH (800MHZ 2X50), (TYP. OF 2 PER SECTOR, TOTAL OF 6) MOUNTED ON BACK OF ANTENNA MOUNTING PIPE ABOVE SECTOR FRAME

ALL / S-1 — 3 / A-3 INSTALL SPRINT RRH (1900 4X45 65MHZ) (TYP. OF 1 PER SECTOR, TOTAL OF 3) MOUNTED ON NEW PIPE MAST ON SECTOR FRAME (INSTALL RRH CENTERED ON THE FRONT SIDE OF THE LOWER MOUNTING RAIL SECTOR FRAME)

ALL / S-1 — 4 / A-3 INSTALL SPRINT RRH (TD-RRH8X20-25), (TYP. OF 1 PER SECTOR, TOTAL OF 3) MOUNTED ON NEW PIPE MAST ON SECTOR FRAME (INSTALL RRH ON FRONT SIDE OF SECTOR FRAME)





PROPOSED ANTENNA PLAN

4 / A-2

SCALE: N.T.S.

SPECIAL INSTALLATION NOTE:
JUMPERS FROM RRHs TO ANTENNA SHALL NOT EXCEED 15'. NOTIFY SPRINT CONSTRUCTION MANAGER OF ANY DISCREPANCY

NOTE:
VERIFY PROPOSED AZIMUTHS WITH RF ENGINEER PRIOR TO INSTALLATION

Sprint
1 INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495
TEL: (800) 357-7641

SBA
SBA COMMUNICATIONS CORP.
134 FLANDERS ROAD, SUITE 125
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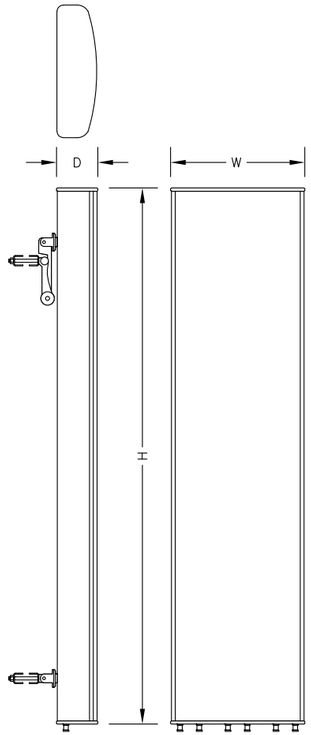
1 DEERFIELD LANE
ANSONIA, CT 06401

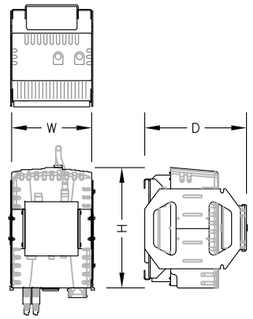
SHEET TITLE
ELEVATION AND ANTENNA PLANS

SHEET NUMBER
A-2



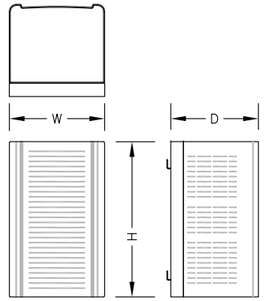
ANTENNA SPECIFICATIONS	
MANUF.	KMW
MODEL #	ETCR-654L12H6
HEIGHT	84.9"
WIDTH	21.0"
DEPTH	6.3"
WEIGHT	84.9± LBS.

ANTENNA DETAIL 1 / A-3
SCALE: N.T.S.



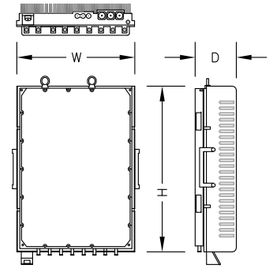
800 MHZ RRH SPECIFICATIONS	
MANUF.	NOKIA (ALU)
MODEL #	800MHZ 2X50W
HEIGHT	19.7"
WIDTH	13"
DEPTH	10.8"
WEIGHT	53± LBS

800 MHz RRH DETAIL 2 / A-3
SCALE: N.T.S.



1900 MHZ RRH SPECIFICATIONS	
MANUF.	NOKIA (ALU)
MODEL #	1900 4X45 65MHZ
HEIGHT	25"
WIDTH	11.1"
DEPTH	11.4"
WEIGHT	60± LBS

1900 MHz RRH DETAIL 3 / A-3
SCALE: N.T.S.



2.5 GHZ RRH SPECIFICATIONS	
MANUF.	NOKIA (ALU)
MODEL #	TD-RRH8X20-25
HEIGHT	26.1"
WIDTH	18.6"
DEPTH	6.7"
WEIGHT	70± LBS

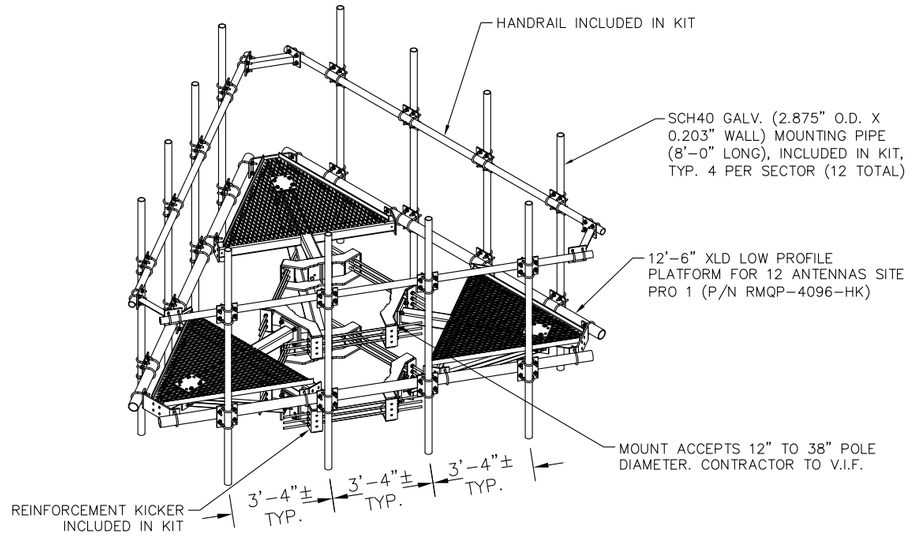
2.5 GHz RRH DETAIL 4 / A-3
SCALE: N.T.S.

MAJOR RF EQUIPMENT LIST

(GC SHALL FURNISH AND INSTALL ALL OTHER MATERIALS AND EQUIPMENT NOT SUPPLIED BY SPRINT)

DESCRIPTION	QUANTITY	UNITS	MAKE/MODEL/MATERIAL	PROVIDED BY
ANTENNA	3	EA	KMW ETCR-654L12H6	SPRINT
2500 RRH	3	EA	NOKIA (ALU) TD-RRH8x20-25	SPRINT
1900 RRH	3	EA	NOKIA (ALU) 1900 4X45 65MHZ	SPRINT
800 RRH	6	EA	NOKIA (ALU) 800MHz 2x50W	SPRINT
FIBER	4 @ 205'± FROM FIBER CABINET	LINEAR FEET LISTED [INCLUDES (2) 10' COILS]	1-1/4" HYBRIFLEX	SPRINT

SPRINT-PROVIDED EQUIPMENT SCHEDULE 5 / A-3
SCALE: N.T.S.



PLATFORM ISOMETRIC DETAIL 6 / A-3
SCALE: N.T.S.

Sprint
1 INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495
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SBA OSBURNE LANE

SITE ADDRESS:
1 DEERFIELD LANE
ANSONIA, CT 06401

SHEET TITLE
TOWER EQUIPMENT DETAILS

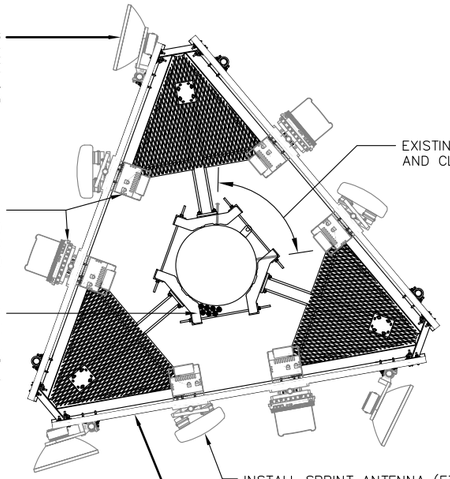
SHEET NUMBER
A-3

REMOVE AND RELOCATE EXISTING SPRINT (CLEARWIRE) MICROWAVE DISH TO NEW ANTENNA PIPE MAST ON NEW SECTOR FRAME, (TYP. OF 3)

1 / A-3

INSTALL SPRINT RRHS (TYP. OF 4 PER SECTOR, TOTAL OF 12) (SHOWN IN BACKGROUND FOR REFERENCE)

EXISTING COAX RUNNING UP OUTSIDE OF MONOPOLE (OTHERS) TO REMAIN. **ADJUST AS REQUIRED TO FIT NEW RING MOUNT.**



EXISTING SAFETY CLIMB AND CLIMBING PEGS

INSTALL SPRINT ANTENNA (ETCR-654L12H6), (TYP. OF 1 PER SECTOR, TOTAL OF 3) SHOWN FOR REFERENCE — 1 / A-3

REMOVE AND REPLACE EXISTING SPRINT (CLEARWIRE) SECTOR MOUNT: FURNISH AND INSTALL LOW PROFILE PLATFORM WITH MOUNTING PIPES, HANDRAIL KIT, AND KICKER (SITE RPO 1 PART # RMQP-4096-HK) — 6 / A-3

13°31'
MAGNETIC NORTH
TRUE NORTH

SECTOR FRAME PLAN DETAIL — 1 / S-1
SCALE: N.T.S.

EXISTING CABLE PORT, TYP.

2½" SCH40 PIPE (2.875" O.D., 0.203" WALL, 8'-0" LONG), AND U-BOLTS INCLUDED IN LOW PROFILE PLATFORM KIT, (SITE RPO 1 PART # RMQP-4096-HK)

REMOVE AND REPLACE EXISTING SPRINT (CLEARWIRE) SECTOR MOUNT: FURNISH AND INSTALL LOW PROFILE PLATFORM WITH MOUNTING PIPES, HANDRAIL KIT, AND KICKER (SITE RPO 1 PART # RMQP-4096-HK) — 6 / A-3

(EQUAL)
(EQUAL)
2'-6"±
30° MIN.
45° MAX.
1'-3"±

SPECIAL TOWER TOP EQUIPMENT INSTALLATION WORK NOTE (SAFETY-CLIMB ALIGNMENT REQUIREMENTS): GENERAL CONTRACTOR SHALL ORIENT PROPOSED SPRINT COLLAR-MOUNTS SO THAT EXISTING SAFETY CLIMB CABLE IS NOT OBSTRUCTED/RE-ROUTED FROM VERTICAL ALIGNMENT AND IS NOT IN PHYSICAL CONTACT WITH EXISTING OR PROPOSED COLLAR-MOUNT HARDWARE. GENERAL CONTRACTOR SHALL INSTALL NEW OR ADDITIONAL SAFETY-CLIMB CABLE GUIDES IF ADDITIONAL CLEARANCE IS REQUIRED. ADDITIONAL CABLE GUIDES SHALL BE ATTACHED SECURELY TO THE POLE USING MECHANICAL FASTENERS OR FIELD WELDED BY A CERTIFIED WELDING TECHNICIAN.

SPECIAL CONSTRUCTION NOTE:
SPRINT WORK IS CONTINGENT ON THE FOLLOWING:
* COMPLETION OF A GLOBAL STRUCTURAL STABILITY ANALYSIS.
* COMPLETION OF A MOUNT STRUCTURAL ANALYSIS.
* GC SHALL FURNISH, INSTALL AND COMPLETE ALL REQUIRED STRUCTURAL MODIFICATIONS AS INDICATED IN BEFORE-MENTIONED GLOBAL AND MOUNT ANALYSIS.

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

NOTE:
VERIFY PROPOSED AZIMUTHS WITH RF ENGINEER PRIOR TO INSTALLATION

INSTALL SPRINT ANTENNA (ETCR-654L12H6), (TYP. OF 1 PER SECTOR, TOTAL OF 3) — 1 / A-3

INSTALL SPRINT RRH (800MHZ 2X50), (TYP. OF 2 PER SECTOR, TOTAL OF 6) MOUNTED ON BACK OF ANTENNA MOUNTING PIPE ABOVE SECTOR FRAME — 2 / A-3

REMOVE EXISTING SPRINT ANTENNA (LLPX310R) AND PIPE MAST WITH HARDWARE,, (TYP. OF 1 EACH PER SECTOR, TOTAL OF 3 EACH)

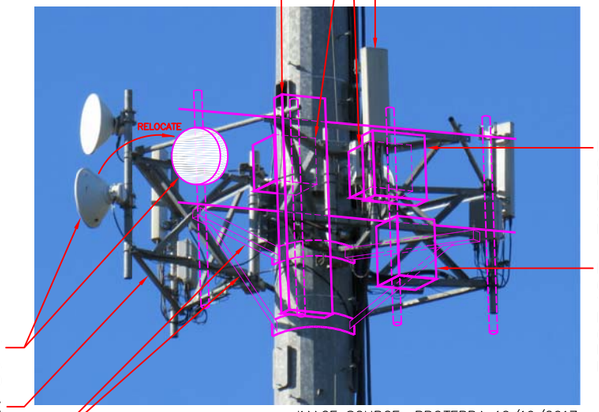


IMAGE SOURCE: PROTERRA 10/19/2017

INSTALL SPRINT RRH (TD-RRH8X20-25), (TYP. OF 1 PER SECTOR, TOTAL OF 3) MOUNTED ON NEW PIPE MAST ON SECTOR FRAME (INSTALL RRH ON FRONT SIDE OF SECTOR FRAME) — 4 / A-3

INSTALL SPRINT RRH (1900 4X45 65MHZ) (TYP. OF 1 PER SECTOR, TOTAL OF 3) MOUNTED ON NEW PIPE MAST ON SECTOR FRAME (INSTALL RRH CENTERED ON THE FRONT SIDE OF THE LOWER MOUNTING RAIL SECTOR FRAME) — 3 / A-3

REMOVE AND RELOCATE EXISTING SPRINT (CLEARWIRE) MICROWAVE DISH TO NEW ANTENNA PIPE MAST ON NEW SECTOR FRAME, (TYP. OF 3)

EXISTING SPRINT (CLEARWIRE) SECTOR FRAME AND ASSOCIATED HARDWARE TO BE REMOVED (TYP OF 1 PER SECTOR, TOTAL OF 3)

REMOVE AND REPLACE EXISTING SPRINT (CLEARWIRE) SECTOR MOUNT: FURNISH AND INSTALL LOW PROFILE PLATFORM WITH MOUNTING PIPES, HANDRAIL KIT, AND KICKER (SITE RPO 1 PART # RMQP-4096-HK) — 6 / A-3

ANTENNA AND RRH MOUNT PHOTO DETAIL — 3 / S-1
SCALE: N.T.S.

INSTALL SPRINT RRH (TD-RRH8X20-25), (TYP. OF 1 PER SECTOR, TOTAL OF 3) MOUNTED ON NEW SEPARATE PIPE MAST (SHOWN FOR REFERENCE - SEE DETAILS) — 4 / A-3

REMOVE AND RELOCATE EXISTING SPRINT (CLEARWIRE) MICROWAVE DISH TO TO NEW ANTENNA PIPE MAST ON NEW SECTOR FRAME, (GAMMA SECTOR SHOWN FOR REFERENCE)

TOP NEW PIPE MAST
TOP ANTENNA
WORKING POINT: UPPER MOUNTING RAIL ATTACHMENT
3'
(EQUAL)
(EQUAL)
℄ OF PROPOSED ANTENNA
6"
WORKING POINT: LOWER MOUNTING RAIL ATTACHMENT
(EQUAL)
(EQUAL)
BOTTOM ANTENNA
BOTTOM NEW PIPE MAST

INSTALL SPRINT RRH (1900 4X45 65MHZ) (TYP. OF 1 PER SECTOR, TOTAL OF 3) MOUNTED ON NEW SEPARATE PIPE MAST (SHOWN FOR REFERENCE - SEE DETAILS) — 3 / A-3

INSTALL SPRINT ANTENNA (ETCR-654L12H6), (TYP. OF 1 PER SECTOR, TOTAL OF 3) — 1 / A-3

INSTALL SPRINT RRH (800MHZ 2X50), (TYP. OF 2 PER SECTOR, TOTAL OF 6) MOUNTED ON BACK OF ANTENNA MOUNTING PIPE ABOVE SECTOR FRAME — 2 / A-3

ANTENNA AND RRH MOUNTING DETAIL — 2 / S-1
SCALE: N.T.S.

INSTALL SPRINT RRH (TD-RRH8X20-25), (TYP. OF 1 PER SECTOR, TOTAL OF 3) MOUNTED ON NEW PIPE MAST ON SECTOR FRAME (INSTALL RRH ON FRONT SIDE OF SECTOR FRAME) — 4 / A-2, 4 / A-3

REMOVE AND RELOCATE EXISTING SPRINT (CLEARWIRE) MICROWAVE DISH TO TO NEW ANTENNA PIPE MAST ON NEW SECTOR FRAME, (GAMMA SECTOR SHOWN FOR REFERENCE)

TOP NEW PIPE MAST
WORKING POINT: UPPER MOUNTING RAIL ATTACHMENT
(EQUAL)
℄ RRH
4'-6"
3'-6"
(EQUAL)
WORKING POINT: LOWER MOUNTING RAIL ATTACHMENT
1'-9"
℄ RRH
3'-6"
BOTTOM NEW PIPE MAST

INSTALL SPRINT RRH (1900 4X45 65MHZ) (TYP. OF 1 PER SECTOR, TOTAL OF 3) MOUNTED ON NEW PIPE MAST ON SECTOR FRAME (INSTALL RRH CENTERED ON THE FRONT SIDE OF THE LOWER MOUNTING RAIL SECTOR FRAME) — 4 / A-2, 3 / A-3

2½" SCH40 PIPE (2.875" O.D., 0.203" WALL, 8'-0" LONG), AND U-BOLTS INCLUDED IN LOW PROFILE PLATFORM KIT, (SITE RPO 1 PART # RMQP-4096-HK)

INSTALL SPRINT RRH (800MHZ 2X50), (TYP. OF 2 PER SECTOR, TOTAL OF 6) MOUNTED ON BACK OF ANTENNA MOUNTING PIPE ABOVE SECTOR FRAME — 4 / A-2, 2 / A-3

RRH MOUNTING DETAIL — 4 / S-1
SCALE: N.T.S.

Sprint
1 INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495
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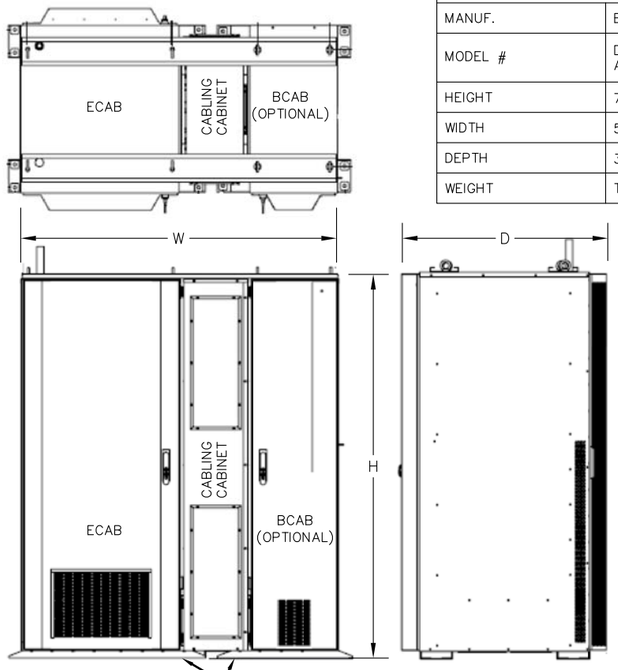
ANSONIA, CT 06401

SHEET TITLE
ANTENNA AND RRH MOUNTING DETAILS

SHEET NUMBER
S-1

ELTEK EQUIPMENT CABINET	
MANUF.	ELTEK
MODEL #	DO EXTERNAL ECAB & BCAB ASSEMBLY
HEIGHT	72.3"
WIDTH	59.5"
DEPTH	38"
WEIGHT	TBD

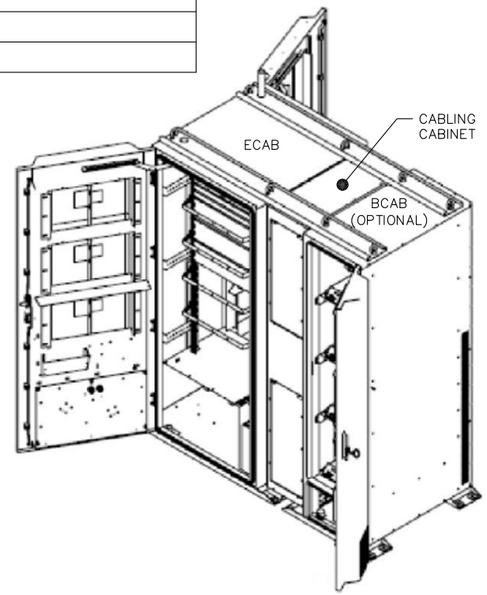


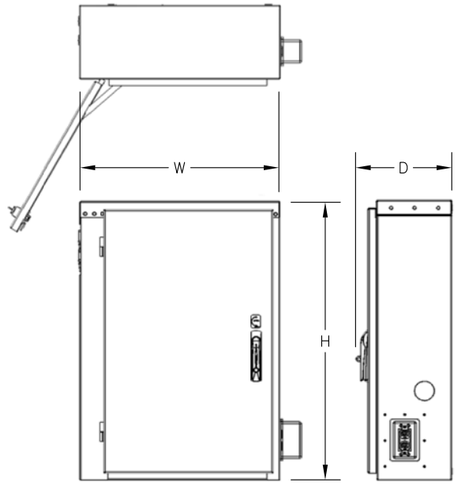
ANCHOR PER MANUFACTURER SPECIFICATIONS OR MINIMUM OF ½"ø HDG HILTI KWIK BOLT SS 304 2¾" LONG WITH 2¼" NOMINAL EMBEDMENT PER CABINET, (TYP OF 4 ANCHORS PER SKID, TOTAL OF 16)

ELTEK EQUIPMENT CABINET DETAIL

1 / S-2

SCALE: N.T.S.





PPC CABINET	
MANUF.	PURCELL SYSTEMS, INC.
MODEL #	PPC (VERIFY WITH SPRINT MODEL)
HEIGHT	36"
WIDTH	26"
DEPTH	12.2"
WEIGHT	67± LBS

PPC DETAIL

2 / S-2

SCALE: N.T.S.

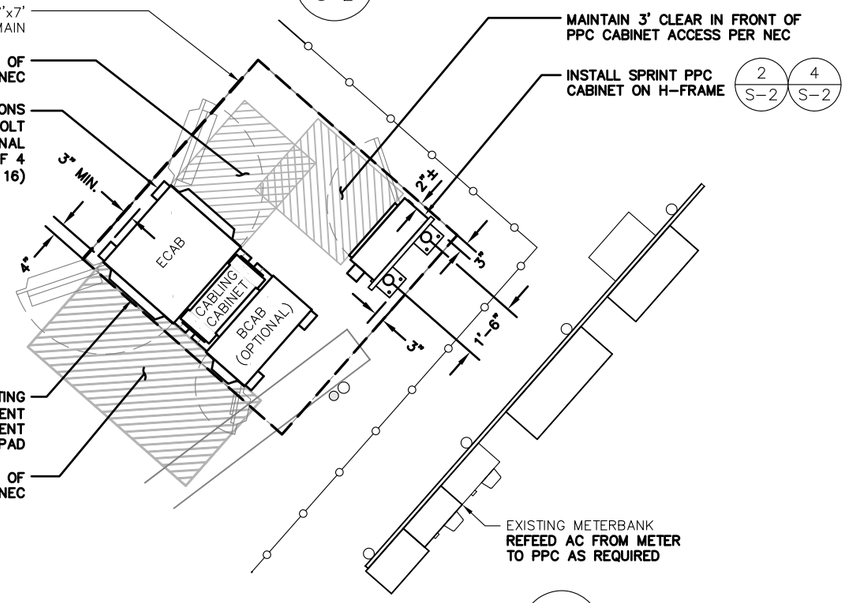
EXISTING SPRINT (CLEARWIRE) 7'x7' CONCRETE PAD AND LEASE AREA TO REMAIN

MAINTAIN 3' CLEAR IN FRONT OF EQUIPMENT CABINET ACCESS PER NEC

ANCHOR PER MANUFACTURER SPECIFICATIONS OR MINIMUM OF ½"ø HDG HILTI KWIK BOLT SS 304 2¾" LONG WITH 2¼" NOMINAL EMBEDMENT PER CABINET, (TYP OF 4 ANCHORS PER SKID, TOTAL OF 16)

MAINTAIN 3' CLEAR IN FRONT OF PPC CABINET ACCESS PER NEC

INSTALL SPRINT PPC CABINET ON H-FRAME (2/S-2, 4/S-2)



REMOVE AND REPLACE EXISTING SPRINT (CLEARWIRE) EQUIPMENT CABINET: INSTALL SPRINT EQUIPMENT CABINET ON EXISTING CONCRETE PAD

(1/S-2)

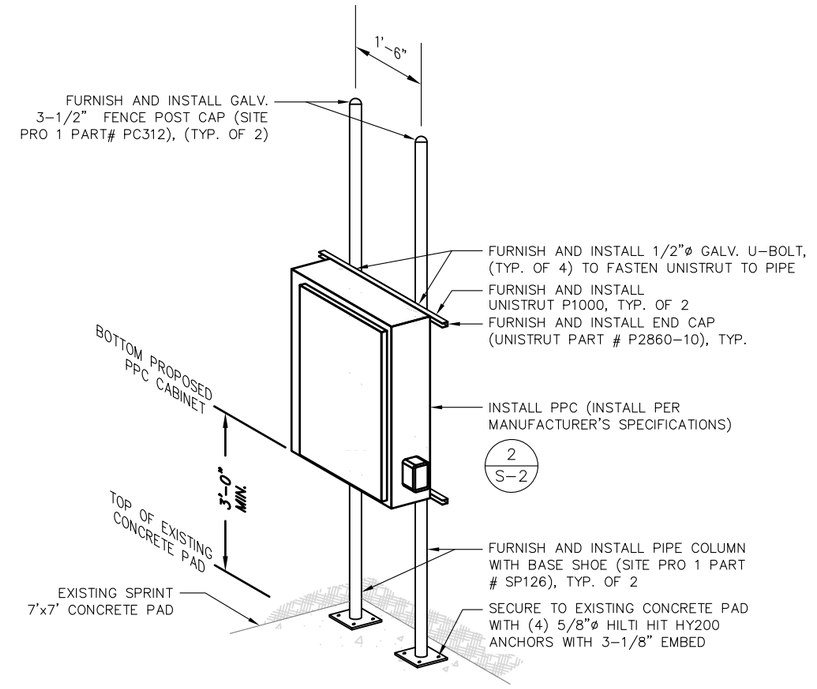
MAINTAIN 3' CLEAR IN FRONT OF EQUIPMENT CABINET ACCESS PER NEC

EXISTING METERBANK
REFEED AC FROM METER TO PPC AS REQUIRED

GROUND LEVEL EQUIPMENT PLAN

3 / S-2

SCALE: N.T.S.



PPC H-FRAME MOUNTING DETAIL

4 / S-2

SCALE: N.T.S.

Sprint

1 INTERNATIONAL BLVD, SUITE 800
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4 Bay Road, Building A
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Hadley, MA 01035 (413) 320-4918

STATE OF CONNECTICUT
THOMAS E. JOHNSON
No. 28192
LICENSED PROFESSIONAL ENGINEER
1-12-18

CHECKED BY:	JMM/TEJ
APPROVED BY:	JMM/TEJ

SUBMITTALS

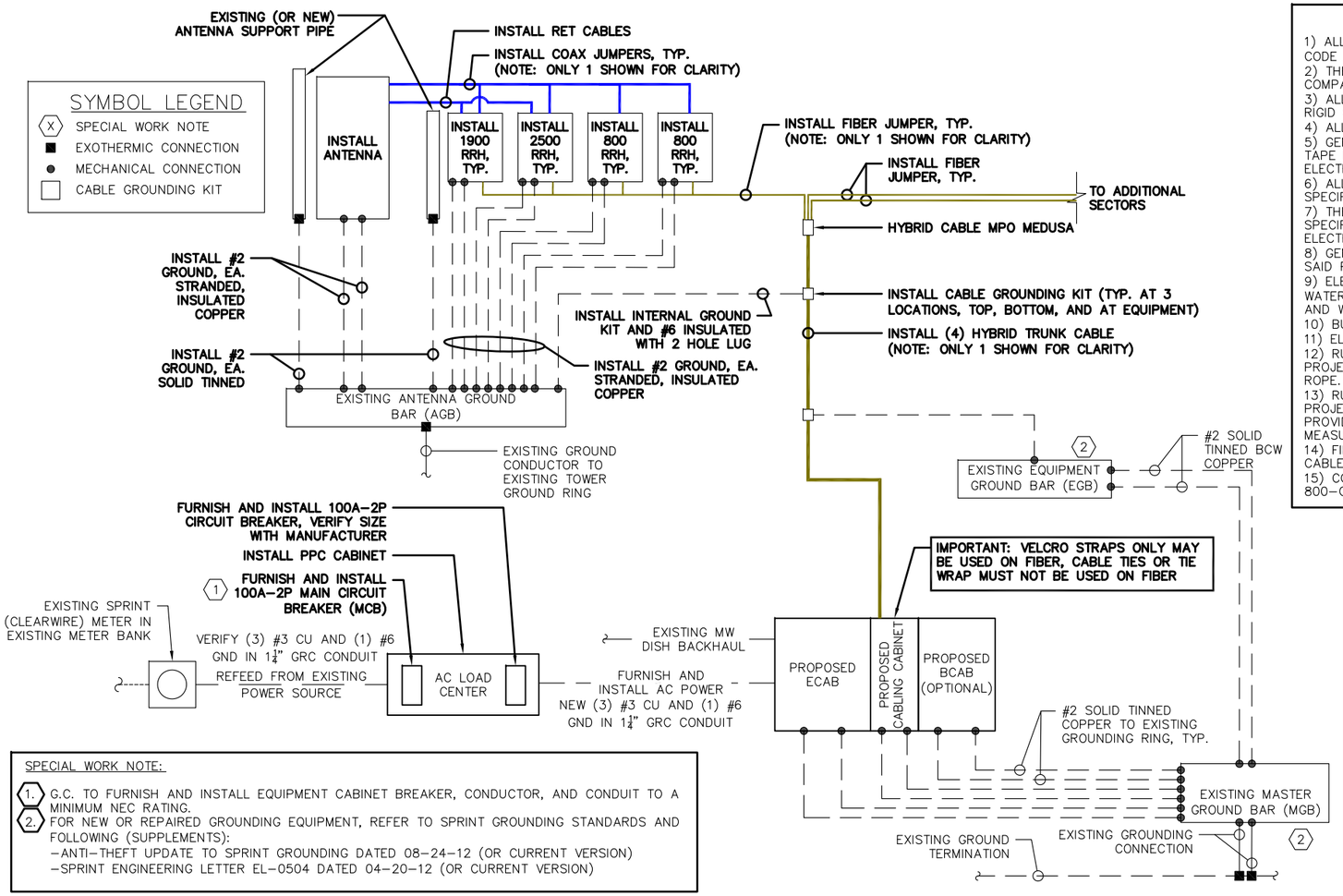
REV.	DATE	DESCRIPTION	BY
1	01/12/18	ISSUED FOR CONSTRUCTION	PN
0	11/22/17	ISSUED FOR REVIEW	JEB

SITE NUMBER:
CT52XC067
SITE NAME:
SBA OSBURNE LANE

SITE ADDRESS:
1 DEERFIELD LANE
ANSONIA, CT 06401

SHEET TITLE
ANTENNA AND RRH MOUNTING DETAILS

SHEET NUMBER
S-2



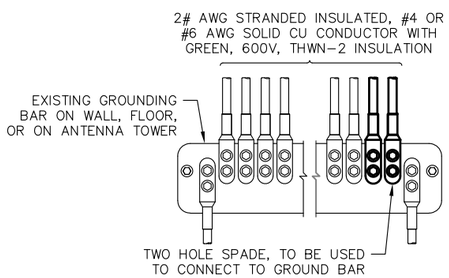
SPECIAL WORK NOTE:

1. G.C. TO FURNISH AND INSTALL EQUIPMENT CABINET BREAKER, CONDUCTOR, AND CONDUIT TO A MINIMUM NEC RATING.
2. FOR NEW OR REPAIRED GROUNDING EQUIPMENT, REFER TO SPRINT GROUNDING STANDARDS AND FOLLOWING (SUPPLEMENTS):
   - –ANTI–THEFT UPDATE TO SPRINT GROUNDING DATED 08–24–12 (OR CURRENT VERSION)
   - –SPRINT ENGINEERING LETTER EL–0504 DATED 04–20–12 (OR CURRENT VERSION)

TYPICAL POWER AND GROUNDING ONE LINE DIAGRAMS

SCALE: N.T.S.

1 / E–1

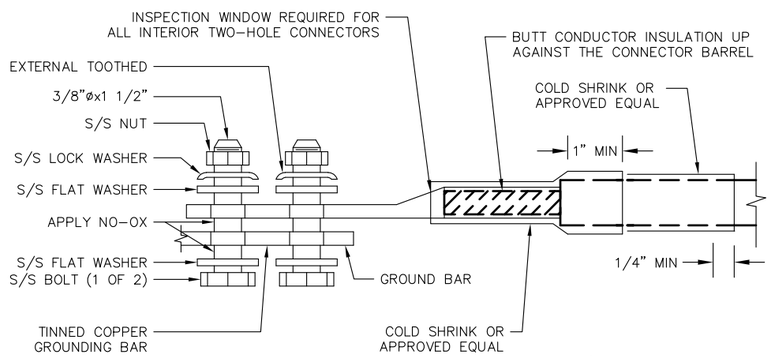


1. APPLY NO–OX TO LUG AND BAR CONTACT SURFACE. DO NOT COAT INLINE LUG.
2. IF STOLEN GROUND BARS ARE ENCOUNTERED, CONTACT SPRINT CM FOR REPLACEMENT THREADED ROD KIT.

INSTALLATION OF GROUNDING CONDUCTOR TO GROUNDING BAR

SCALE: N.T.S.

2 / E–1



TWO HOLE LUG

SCALE: N.T.S.

3 / E–1

ELECTRICAL NOTES

1) ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
2) THE ELECTRICAL CONTRACTOR SHALL COORDINATE ALL CONDUIT ROUTING WITH LOCAL UTILITY COMPANIES AND SPRINT CONSTRUCTION MANAGER.
3) ALL CONDUITS ROUTED BELOW GRADE SHALL TRANSITION TO RIGID GALVANIZED ELBOWS WITH RIGID GALVANIZED STEEL CONDUIT ABOVE GRADE.
4) ALL METAL CONDUITS SHALL BE PROVIDED WITH GROUNDING BUSHINGS.
5) GENERAL CONTRACTOR SHALL PROVIDE ALL DIRECT BURIED CONDUITS WITH PLASTIC WARNING TAPE IDENTIFYING CONTENTS. TAPE COLORS SHALL BE ORANGE FOR TELEPHONE AND RED FOR ELECTRIC.
6) ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
7) THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIALS DESCRIBED BY DRAWINGS AND SPECIFICATIONS INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
8) GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
9) ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
10) BURIED CONDUIT SHALL BE SCHEDULE 40 PVC.
11) ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THIN INSULATION.
12) RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE PPC AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
13) RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON THIS DRAWING PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
14) FIBER OPTIC CIRCUITS SHALL BE IN ACCORDANCE WITH NEC ARTICLE 770–OPTICAL FIBER CABLES AND RACEWAYS.
15) COMMUNICATIONS CIRCUITS SHALL BE IN ACCORDANCE WITH NEC ARTICLE 800–COMMUNICATIONS SYSTEMS.

PROTECTIVE GROUNDING SYSTEMS GENERAL NOTES:

1. GROUNDING SHALL BE IN ACCORDANCE WITH NEC ARTICLE 250–GROUNDING AND BONDING.
2. GROUNDING SHALL BE IN ACCORDANCE WITH SPRINT SSEO DOCUMENTS 3.018.02.004 "BONDING, GROUNDING AND TRANSIENT PROTECTION FOR CELL SITES" AND 3.018.10.002 "SITE RESISTANCE TO EARTH TESTING".
3. PROVIDE GROUND CONNECTIONS FOR ALL METALLIC STRUCTURES, ENCLOSURES, RACEWAYS AND OTHER CONDUCTIVE ITEMS ASSOCIATED WITH THE INSTALLATION OF CARRIER'S EQUIPMENT.
4. GROUND CONNECTIONS: CLEAN SURFACES THOROUGHLY BEFORE APPLYING GROUND LUGS OR CLAMPS. IF SURFACE IS COATED, REMOVE THE COATING, APPLY A NON–CORROSIVE APPROVED COMPOUND TO CLEAN SURFACE AND INSTALL LUGS OR CLAMPS. WHERE GALVANIZING IS REMOVED FROM METAL, IT SHALL BE PAINTED OR TOUCHED UP WITH "GALVAMOX" OR EQUAL.
5. ALL GROUNDING WIRES SHALL PROVIDE A STRAIGHT, DOWNWARD PATH TO GROUND WITH GRADUAL BENDS AS REQUIRED. GROUND WIRES SHALL NOT BE LOOPED OR SHARPLY BENT.
6. ALL CLAMPS AND SUPPORTS USED TO SUPPORT THE GROUNDING SYSTEM CONDUCTORS AND PVC CONDUITS SHALL BE PVC TYPE (NON CONDUCTIVE). DO NOT USE METAL BRACKETS OR SUPPORTS WHICH WOULD FORM A COMPLETE RING AROUND ANY GROUNDING CONDUCTOR.
7. ALL GROUND WIRES SHALL BE #2 SOLID TINNED BCW UNLESS NOTED OTHERWISE.
8. PROVIDE DEDICATED #2 AWG COPPER GROUND WIRE FROM EACH ANTENNA MOUNTING PIPE TO ASSOCIATED CIGBE.
9. GROUND ANTENNA BASES, FRAMES, CABLE RACKS, AND OTHER METALLIC COMPONENTS WITH #2 INSULATED TINNED STRANDED COPPER GROUNDING CONDUCTORS AND CONNECT TO INSULATED SURFACE MOUNTED GROUND BARS. CONNECTION DETAILS SHALL FOLLOW MANUFACTURER'S SPECIFICATIONS FOR GROUNDING.
10. EACH EQUIPMENT CABINET SHALL BE CONNECTED TO THE MASTER ISOLATION GROUND BAR (MGB) WITH #2 SOLID TINNED BCW EQUIPMENT CABINETS WALL HAVE (2) CONNECTIONS.
11. GROUND HYBRIFLEX SHIELD AT TOP, BOTTOM AND AT TRANSITION TO HYBRIFLEX JUMPER CABLES AT EQUIPMENT CABINET ENTRANCE USING MANUFACTURER'S GUIDELINES. WHEN HYBRIFLEX CABLE EXCEEDS 200', GROUND AT INTERVALS NOT EXCEEDING 100'.
12. THE CONTRACTOR SHALL VERIFY THAT THE EXISTING GROUND BARS HAVE ENOUGH SPACE/HOLES FOR ADDITIONAL TWO HOLE LUGS.
13. EXOTHERMIC WELDING IS RECOMMENDED FOR GROUNDING CONNECTION WHERE PRACTICAL OTHERWISE. THE CONNECTION SHALL BE MADE USING COMPRESSION TYPE–2 HOLES, LONG BARREL LUGS OR DOUBLE CRIMP "C" CLAMP. THE COPPER CABLES SHALL BE COATED WITH AN ANTI–OXIDANT (THOMAS BETTS KOPR–SHILD) BEFORE MAKING THE CRIMP CONNECTIONS THE CONTRACTOR SHALL FOLLOW MANUFACTURER'S RECOMMENDED TORQUES ON THE BOLT ASSEMBLY TO SECURE CONNECTIONS.
14. AT ALL TERMINATIONS AT EQUIPMENT ENCLOSURES, PANEL, AND FRAMES OF EQUIPMENT AND WHERE EXPOSED FOR GROUNDING. CONDUCTOR TERMINATION SHALL BE PERFORMED UTILIZING TWO HOLE BOLTED TONGUE COMPRESSION TYPE LUGS WITH STAINLESS STEEL SELF–TAPPING SCREWS.
15. THE MASTER GROUND BAR (MGB) SHALL BE MADE OF BARE 1/4"x2" COPPER (FOR OUTDOOR APPLICATIONS IT SHALL BE TINNED COPPER) AND LARGE ENOUGH TO ACCOMMODATE THE REQUIRED NUMBER OF GROUND CONNECTIONS. THE HARDWARE SECURING THE MGB SHALL ELECTRICAL INSULATE THE MGB FROM ANY STRUCTURE TO WHICH IT IS FASTENED.
16. ALL BOLTS, WASHERS, AND NUTS USED ON GROUNDING CONNECTIONS SHALL BE STAINLESS STEEL.
17. ALL GROUNDING CONNECTIONS SHALL BE COATED WITH A COPPER SHIELD ANTI–CORROSIVE AGENT SUCH AS T&B KOPR SHIELD. VERIFY PRODUCT WITH SPRINT CONSTRUCTION MANAGER.
18. FOR NEW OR REPAIRED GROUNDING EQUIPMENT. REFER TO SPRINT GROUNDING STANDARDS AND FOLLOWING (SUPPLEMENTS):
    - –ANTI–THEFT UPDATE TO SPRINT GROUNDING DATED 08–24–12 (OR CURRENT VERSION)
    - –SPRINT ENGINEERING LETTER EL–0504 DATED 04–20–12 (OR CURRENT VERSION)

Sprint
1 INTERNATIONAL BLVD, SUITE 800
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STATE OF CONNECTICUT
THOMAS E. JOHNSON
No. 28192
LICENSED PROFESSIONAL ENGINEER
FOR SCHEMATIC ONLY
12/18

CHECKED BY: JMM/TEJ

APPROVED BY: JMM/TEJ

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	01/12/18	ISSUED FOR CONSTRUCTION	PN
0	11/22/17	ISSUED FOR REVIEW	JEB

SITE NUMBER:
CT52XC067
SITE NAME:
SBA OSBURNE LANE

SITE ADDRESS:
1 DEERFIELD LANE
ANSONIA, CT 06401

SHEET TITLE
ELECTRICAL AND GROUNDING DETAILS

SHEET NUMBER
E–1

Augment ID: CT-NHN0065Q17.1

RFDS ID: 63887

SprintVision

RF Design Sheet

Site Identification	
Cascade	CTNHN0065
SMS Schedule ID	12323434
SMS Schedule Name	DO Macro Upgrade
PID	DOKU_CTSZXC067
RRU OEM	Alcatel Lucent
Switch OEM	ALU
RFDS Issue Date	
RFDS Revision Date	2017-04-11 00:00:00.0
RFDS Revision	1

Filter Analysis Complete	YES
RFDS - Issue Date	
Design Status	Complete
Border Analysis Complete	YES
Project Description	DO Macro Upgrade - Add 800MHz (3G + 4G) and 1900 MHz

BTS #2 Model	
Model Number	
Weight (Lbs.)	
Dimensions (In.)	
Manufacturer	
Needed at site	1

Contact Information	
Engineer Email	Bill.M.Hastings@sprint.com
Sprint Badged RF Engineer	Bill Hastings
RF Engineer Email	Bill.M.Hastings@sprint.com
RF Engineer Phone	978-590-9700
RF Manager	Jonathan Hull
RF Manager Email	Jonathan.B.Hull@Sprint.com
RF Manager Phone	617-233-2920

Carrier Count	
2500 LTE	3
1900 LTE	1
1900 EVDO	
1900 Voice	1
800 LTE	1
800 Voice	1

Power Protection Cabinet Model	
Model Number	PPC w/ATS cabinet
Weight (Lbs.)	175
Dimensions (In.)	64.00 x 30.18 x 12.28
Manufacturer	
Power Protection Cabinet	1

Location Details	
Latitude	41.3508
Longitude	-73.0492
Market	Southern Connecticut
Region	Northeast
City	Woodbridge
State	CT
Zip Code	CT/06401
County	NEW HAVEN

2500MHz	
1900MHz	3
800MHz	3

GPS Antenna Model	
Model Number	
Weight (Lbs.)	
Dimensions (In.)	
Manufacturer	
GPS Antenna needed at site	1

BTS #1 Model	
Model Number	Ecab Eltek
Weight (Lbs.)	505
Dimensions (In.)	73.5 x 30 x 38
Manufacturer	Eltek
Number of BTS #1	1

Additional RF Notes

Replace Existing Antenna with 16 port KMW Panel Antenna for 1900 4T4R, 800 2T4R and 2500 8T8R.

Band: 2500	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
Radio Model						
Model Number	TD-RRH8x20-25	TD-RRH8x20-25	TD-RRH8x20-25	N/A	N/A	N/A
Weight (lbs)	76.2	76.2	76.2	N/A	N/A	N/A
Dimensions	26 x 18.6 x 6.7	26 x 18.6 x 6.7	26 x 18.6 x 6.7	N/A	N/A	N/A
Manufacturer	ALU	ALU	ALU	N/A	N/A	N/A
Number of RRUs needed	1	1	1	0	0	0
Trunk Cable 1						
Model Number	Hybriflex	N/A	N/A	N/A	N/A	N/A
Weight (Lbs.)	1	N/A	N/A	N/A	N/A	N/A
Dimensions (In.)	1.54	N/A	N/A	N/A	N/A	N/A
Manufacturer	ALU	N/A	N/A	N/A	N/A	N/A

Band: 1900	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
Radio Model						
Model Number	RRH-4x45-1900	RRH-4x45-1900	RRH-4x45-1900	N/A	N/A	N/A
Weight (lbs)	69.5	69.5	69.5	N/A	N/A	N/A
Dimensions	25 x 12 x 12	25 x 12 x 12	25 x 12 x 12	N/A	N/A	N/A
Manufacturer	ALU	ALU	ALU	N/A	N/A	N/A
Number of RRUs needed	1	1	1	0	0	0
Trunk Cable 1						
Model Number	1900 Hybrid_ALU	1900 Hybrid_ALU	1900 Hybrid_ALU	N/A	N/A	N/A
Weight (Lbs.)	1.1	1.1	1.1	N/A	N/A	N/A
Dimensions (In.)	1.25	1.25	1.25	N/A	N/A	N/A
Manufacturer	ALU	ALU	ALU	N/A	N/A	N/A

Band: 800	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
Radio Model						
Model Number	RRH-2x50-800	RRH-2x50-800	RRH-2x50-800	N/A	N/A	N/A
Weight (lbs)	69.1	69.1	69.1	N/A	N/A	N/A
Dimensions	16 x 13 x 10	16 x 13 x 10	16 x 13 x 10	N/A	N/A	N/A
Manufacturer	ALU	ALU	ALU	N/A	N/A	N/A
Number of RRUs needed	2	2	2	0	0	0

NOTE: RFDS PROVIDED BY SPRINT DATED 04/11/2017. EXCERPTS TAKEN DEPICT RELEVANT RF DESIGN INFORMATION.
A&E VENDOR SCOPE OF WORK LIMITED TO DESIGN OF MECHANICAL/STRUCUTRAL EQUIPMENT ATTACHMENTS.

RF DATA SHEET

SCALE: N.T.S.

1
RF-1

SPRINT CONSTRUCTION STANDARDS:

GENERAL CONTRACTOR SHALL ADHERE TO THE FOLLOWING SPRINT CONSTRUCTION STANDARDS.

- CONSTRUCTION STANDARDS: INTEGRATED CONSTRUCTION STANDARDS FOR WIRELESS SITES – CURRENT VERSION, INCLUDING EXHIBITS A–M.
- CONSTRUCTION SPECIFICATIONS: CONSTRUCTION STANDARDS EXHIBIT A – STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES (CURRENT VERSION).
- GROUNDING STANDARDS: EXTERIOR GROUNDING SYSTEM DESIGN. GROUNDING STANDARDS (SUPPLEMENT): ANTI–THEFT UPDATE TO SPRINT GROUNDING 082412 AND SPRINT ENGINEERING LETTER EL–0504 DATED 04.20.12.
- WEATHER PROOFING STANDARDS: EXCERPT FROM CONSTRUCTION STANDARDS EXHIBIT A, SECTION 3.6 WEATHERPROOFING CONNECTORS AND GROUND KITS.
- COLOR CODING: SPRINT NEXTEL ANT AND LINE COLOR CODING PER SPRINT TS–0200 CURRENT VERSION.
- GENERAL CONTRACTOR TO FIELD VERIFY AZIMUTH AND CL HEIGHT AND MECHANICAL DOWNTILT. IF DIFFERENT THAN CALLED OUT IN RFDS, HALT ANTENNA WORK FOR ONE HOUR, CALL SPRINT RF ENGINEER (OR MANAGER IF RF ENGINEER DOES NOT ANSWER, BUT STILL LEAVE A MESSAGE TO RF ENGINEER) USING SPRINT–PROVIDED CONTACT INFORMATION FOR FURTHER INSTRUCTIONS. IF SPRINT DOES NOT RESPOND WITHIN ONE HOUR, PLACE ANTENNA AT SAME CL HEIGHT AS PLAN AND EMAIL CORRECT CL HEIGHT AND AZIMUTH TO SPRINT RF ENGINEER. UPDATE AS–BUILT DRAWING WITH CORRECT CL HEIGHT. ALSO EMAIL CORRECT ANTENNA CL HEIGHT, AZIMUTH AND MECHANICAL DOWNTILT TO RF ENGINEER.
- AISG TESTS TO VERIFY OPERATION IS TO BE PERFORMED AFTER FINAL INSTALLATION OF ANTENNAS AND AISG CABLES HAVE BEEN CONNECTED. VERIFY OPERATION OF ALL EXISTING SPRINT AISG EQUIPMENT INCLUDING 800MHZ, 1.9GHZ AND 2.5G. TEST INCLUDE COMPLETE DOWNTILT, AZIMUTH (IF APPLICABLE) AND BEAMWIDTH SWINGS (IF APPLICABLE). DOCUMENT AISG TEST RESULTS IN COAX SWEEP TEST SPREADSHEET.
- GENERAL CONTRACTOR MUST INSURE THAT NO OBJECT IS LOCATED IN FRONT OF ANTENNA. THIS MEANS NO OBJECT IS TO BE LOCATED 45 DEGREES LEFT AND RIGHT OF FRONT OF ANTENNA OR 7 DEGREES UP AND DOWN FROM CENTER OF ANTENNA. IF THIS IS NOT POSSIBLE, CONTACT RF ENGINEER FOR FURTHER INSTRUCTION.
- GENERAL CONTRACT IS REQUIRED TO USE A DIGITAL ALIGNMENT TOOL TO SET AZIMUTH, ROLL AND DOWNTILT. AZIMUTH ACCURACY IS TO BE WITHIN 1 DEGREES. DOWNTILT AND ROLL (LEFT TO RIGHT TILT) IS TO BE WITHIN 0.1 DEGREES. IF FOR SOME REASON THIS ACCURACY CANNOT BE ACHIEVED, UPDATE AS–BUILT DRAWINGS AND EMAIL SPRINT RF ENGINEER WITH AS–BUILT SETTINGS. USE 3Z RF ALIGNMENT TOOL OR EQUIVALENT TOOL. HTTP://WWW.3ZTELECOM.COM/ANTENNA–ALIGNMENT–TOOL/.

NOTE:
VERIFY PROPOSED AZIMUTHS WITH RF ENGINEER PRIOR TO INSTALLATION

Band: 2500	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
Antenna1						
Model Number	Antenna assigned on a different band	Antenna assigned on a different band	Antenna assigned on a different band			
Weight (lbs)	0	0	0	N/A	N/A	N/A
Dimensions	0 x 0 x 0	0 x 0 x 0	0 x 0 x 0	N/A	N/A	N/A
Manufacturer	-	-	-	N/A	N/A	N/A
Ant1 Top Jumper Make/Model/Qty	2.5 Jumper | 8	2.5 Jumper | 8	2.5 Jumper | 8	N/A | 0	N/A | 0	N/A | 0
Ant 1 RF requested Diameter	1/2"	1/2"	1/2"	N/A	N/A	N/A
Ant 1 RF requested Top Jumper Length(ft)	8	8	8	N/A	N/A	N/A
Antenna 1 Azimuth	30	150	270	N/A	N/A	N/A
Antenna 1 Mechanical DT	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Center Line (ft)	127.0013164	127.0013164	127.0013164	N/A	N/A	N/A
Antenna 1 Electrical DT	2	2	2	N/A	N/A	N/A
Antenna 1 Electrical DT 2	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Electrical DT 3	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Twist	N/A	N/A	N/A	N/A	N/A	N/A

Band: 1900	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
Antenna1						
Model Number	ETCR-654L12H6	ETCR-654L12H6	ETCR-654L12H6			
Weight (lbs)	85	85	85	N/A	N/A	N/A
Dimensions	84.9 x 21 x 6.3	84.9 x 21 x 6.3	84.9 x 21 x 6.3	N/A	N/A	N/A
Manufacturer	KMW	KMW	KMW	N/A	N/A	N/A
Ant1 Top Jumper Make/Model/Qty	800/1900 Jumper | 4	800/1900 Jumper | 4	800/1900 Jumper | 4	N/A | 0	N/A | 0	N/A | 0
Ant 1 RF requested Diameter	1/2"	1/2"	1/2"	N/A	N/A	N/A
Ant 1 RF requested Top Jumper Length(ft)	8	8	8	N/A	N/A	N/A
Antenna 1 Azimuth	30	150	270	N/A	N/A	N/A
Antenna 1 Mechanical DT	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Center Line (ft)	127.0013164	127.0013164	127.0013164	N/A	N/A	N/A
Antenna 1 Electrical DT	3	3	3	N/A	N/A	N/A
Antenna 1 Electrical DT 2	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Electrical DT 3	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Twist	N/A	N/A	N/A	N/A	N/A	N/A

Band: 800	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
Antenna1						
Model Number	Antenna assigned on a different band	Antenna assigned on a different band	Antenna assigned on a different band			
Weight (lbs)	0	0	0	N/A	N/A	N/A
Dimensions	0 x 0 x 0	0 x 0 x 0	0 x 0 x 0	N/A	N/A	N/A
Manufacturer	-	-	-	N/A	N/A	N/A
Ant1 Top Jumper Make/Model/Qty	800/1900 Jumper | 4	800/1900 Jumper | 4	800/1900 Jumper | 4	N/A | 0	N/A | 0	N/A | 0
Ant 1 RF requested Diameter	1/2"	1/2"	1/2"	N/A	N/A	N/A
Ant 1 RF requested Top Jumper Length(ft)	8	8	8	N/A	N/A	N/A
Antenna 1 Azimuth	30	150	270	N/A	N/A	N/A
Antenna 1 Mechanical DT	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Center Line (ft)	127.0013164	127.0013164	127.0013164	N/A	N/A	N/A
Antenna 1 Electrical DT	5	5	5	N/A	N/A	N/A
Antenna 1 Electrical DT 2	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Electrical DT 3	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Twist	N/A	N/A	N/A	N/A	N/A	N/A

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1-12-18

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APPROVED BY: JMM/TEJ

SUBMITTALS

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1	01/12/18	ISSUED FOR CONSTRUCTION	PN
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SITE NUMBER:
CT52XC067
SITE NAME:
SBA OSBURNE LANE

SITE ADDRESS:
1 DEERFIELD LANE
ANSONIA, CT 06401

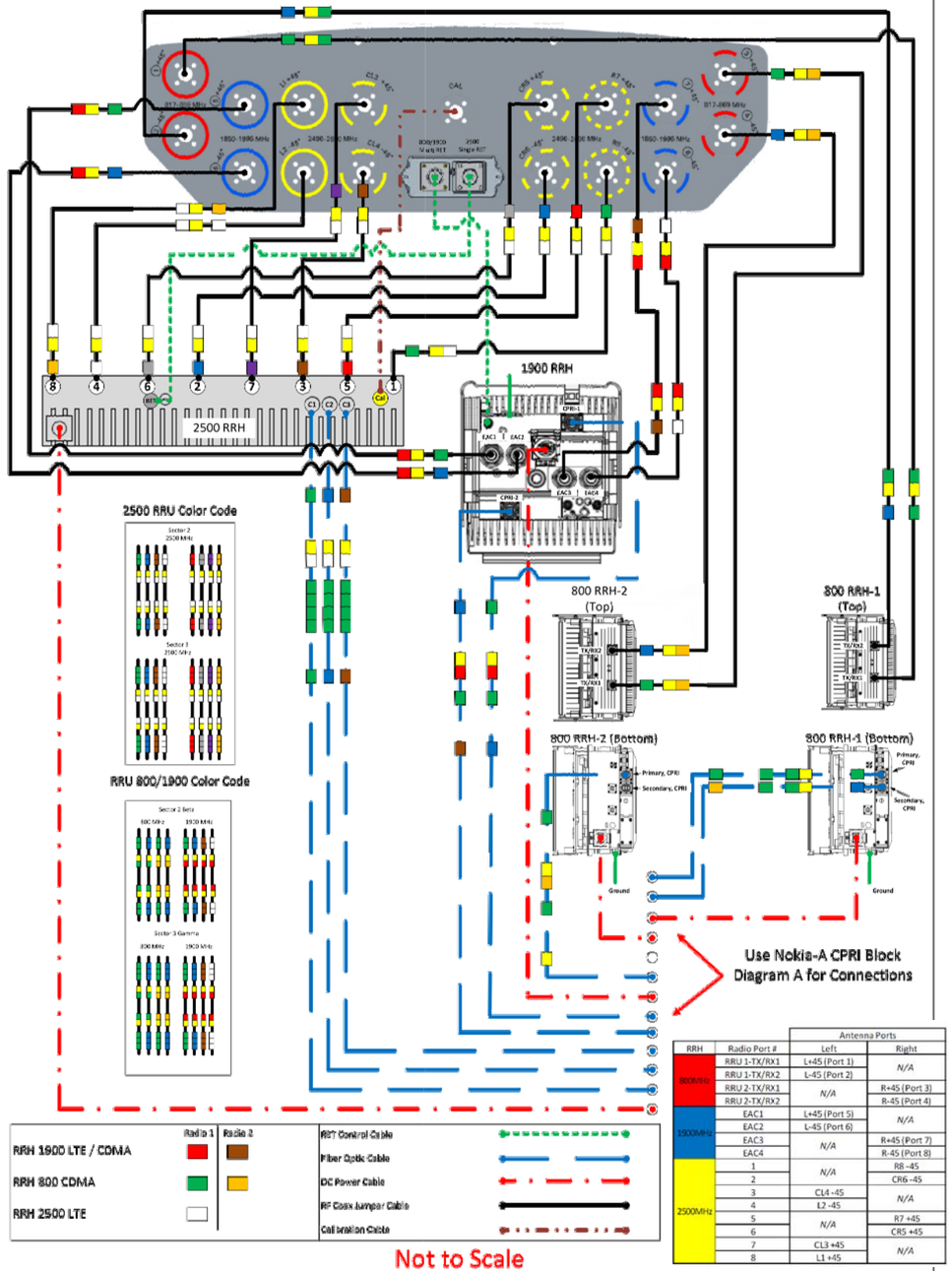
SHEET TITLE
RF DATA SHEET

SHEET NUMBER
RF-1

Prepared By	Creation Date / Revision Number	
Mark Elliott	September 12, 2016	R-4
Approved By	Approval Date	
TBD	TBD	

Sprint

KMW 16 Port Nokia-A RRH 800, 1900, and 2500 (Sprint Scenario 4)

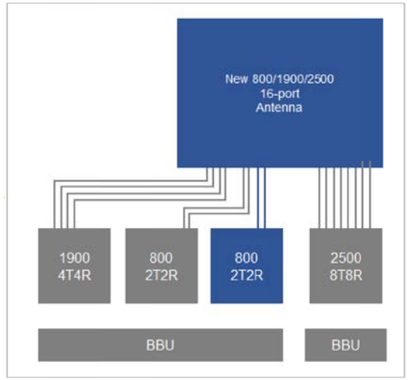


Not to Scale

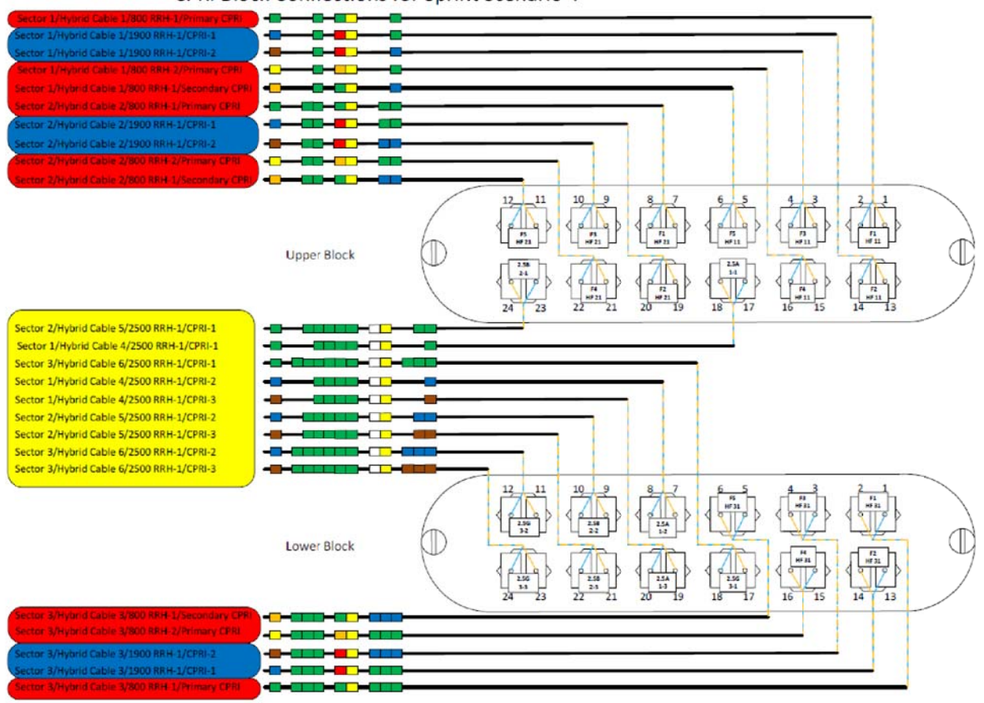
RRH	Radio Port #	Antenna Ports Left	Antenna Ports Right
800MHz	RRU 1-TX/RX1	L+45 (Port 1)	N/A
	RRU 1-TX/RX2	L-45 (Port 2)	
	RRU 2-TX/RX1	N/A	R+45 (Port 3)
	RRU 2-TX/RX2		R-45 (Port 4)
1900MHz	EAC1	L+45 (Port 5)	N/A
	EAC2	L-45 (Port 6)	
	EAC3	N/A	R+45 (Port 7)
	EAC4		R-45 (Port 8)
2500MHz	1	N/A	RB -45
	2		CR6 -45
	3	CL4 -45	N/A
	4	L2 -45	
	5	N/A	R7 +45
	6		CR5 +45
	7	CL3 +45	N/A
	8	L1 +45	

Sector	Cable	First Ring	Second Ring	Third Ring
1 Alpha	1	Green	No Tape	No Tape
1	2	Blue	No Tape	No Tape
1	3	Brown	No Tape	No Tape
1	4	White	No Tape	No Tape
1	5	Red	No Tape	No Tape
1	6	Gray	No Tape	No Tape
1	7	Purple	No Tape	No Tape
1	8	Orange	No Tape	No Tape
2 Beta	1	Green	Green	No Tape
2	2	Blue	Blue	No Tape
2	3	Brown	Brown	No Tape
2	4	White	White	No Tape
2	5	Red	Red	No Tape
2	6	Gray	Gray	No Tape
2	7	Purple	Purple	No Tape
2	8	Orange	Orange	No Tape
3 Gamma	1	Green	Green	Green
3	2	Blue	Blue	Blue
3	3	Brown	Brown	Brown
3	4	White	White	White
3	5	Red	Red	Red
3	6	Gray	Gray	Gray

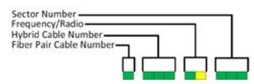
Future



CPRI Block Connections for Sprint Scenario 4



Frequency/Radio	Indicator	ID
800 #1	Yellow	Green
800 #2	Yellow	Orange
1900 #1	Yellow	Red
1900 #2	Yellow	Brown
1900 #3	Yellow	Blue
1900 #4	Yellow	Grey
2500 #1	Yellow	White
2500 #2	Yellow	Purple



Sprint
1 INTERNATIONAL BLVD, SUITE 800
MAHWAH, NJ 07495
TEL: (800) 357-7641

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

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

STATE OF CONNECTICUT
THOMAS E. JOHNSON
No. 28192
LICENSED PROFESSIONAL ENGINEER
1-12-18

CHECKED BY: JMM/TEJ

APPROVED BY: JMM/TEJ

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	01/12/18	ISSUED FOR CONSTRUCTION	PN
0	11/22/17	ISSUED FOR REVIEW	JEB

SITE NUMBER:
CT52XC067
SITE NAME:
SBA OSBURNE LANE
SITE ADDRESS:
1 DEERFIELD LANE
ANSONIA, CT 06401

SHEET TITLE
PLUMBING DIAGRAM AND RAN WIRING

SHEET NUMBER
RF-2