



Filed by:

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

December 15, 2016

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

**Notice of Exempt Modification**

**1279 Long Hill Road (1825 So. Main Street), Middletown, CT 06457**

**41.5112231 N**

**-72.6707431 W**

**AT&T #: 10042329\_LTE – CT1208**

Dear Ms. Bachman:

AT&T currently maintains nine (9) antennas at the 107-foot level of the existing 158-foot Monopole Tower at 1825 So. Main Street or alternately referred to as 1279 Long Hill Road. The tower and property are owned by SBA Properties, LLC. AT&T does not propose any antennas work. Instead, it proposes to remove and replace (3) RRUs. The full scope of work is as follows:

Remove:

- None

Remove and Replace:

- Remove (3) Ericsson RRUS A2 Module and replace with (3) RRUs-32 B2

Install:

- (6) Powerwave 7020 RETs
- (1) ¾" CD line
- (1) 3" Conduit

Existing Equipment to Remain (Including entitlements):

- (3) CCI HPA-65R-BUU-H6 Panel Antennas
- (3) Powerwave 7770.00 Panel Antennas
- (3) KMW AM-X-CD-16-65-OOT-RET Panel Antennas
- (3) Powerwave TT19-08BP111-001 TMAs
- (3) CCI DTMAP7819VG12A TMAs
- (6) Ericsson RRUS 11
- (6) Powerwave LGP21903 Diplexers
- (1) Raycap DC6-48-60-18-8F
- (12) 1-5/8" lines
- (1) ½" Fiber
- (2) ¾" DC lines



This facility was approved by the City of Middletown's Planning and Zoning Commission on 9/8/99 granting special exception for the wireless communication facility. Associated drawings show a maximum number of four panel antennas per sector per tenant. This modification complies with the aforementioned condition.

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 Daniel T. Drew, Mayor of the City of Middletown. (Separate notice is not being sent to the tower or property owner, as they belong to SBA.)

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

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

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

Sincerely,

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

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

Attachments

cc: The Honorable Daniel T. Drew—as elected official  
*The City of Middletown, 245 deKoven Drive, Middletown, CT 06457*



## POWER DENSITY

### AT&T Site Inventory and Power Data

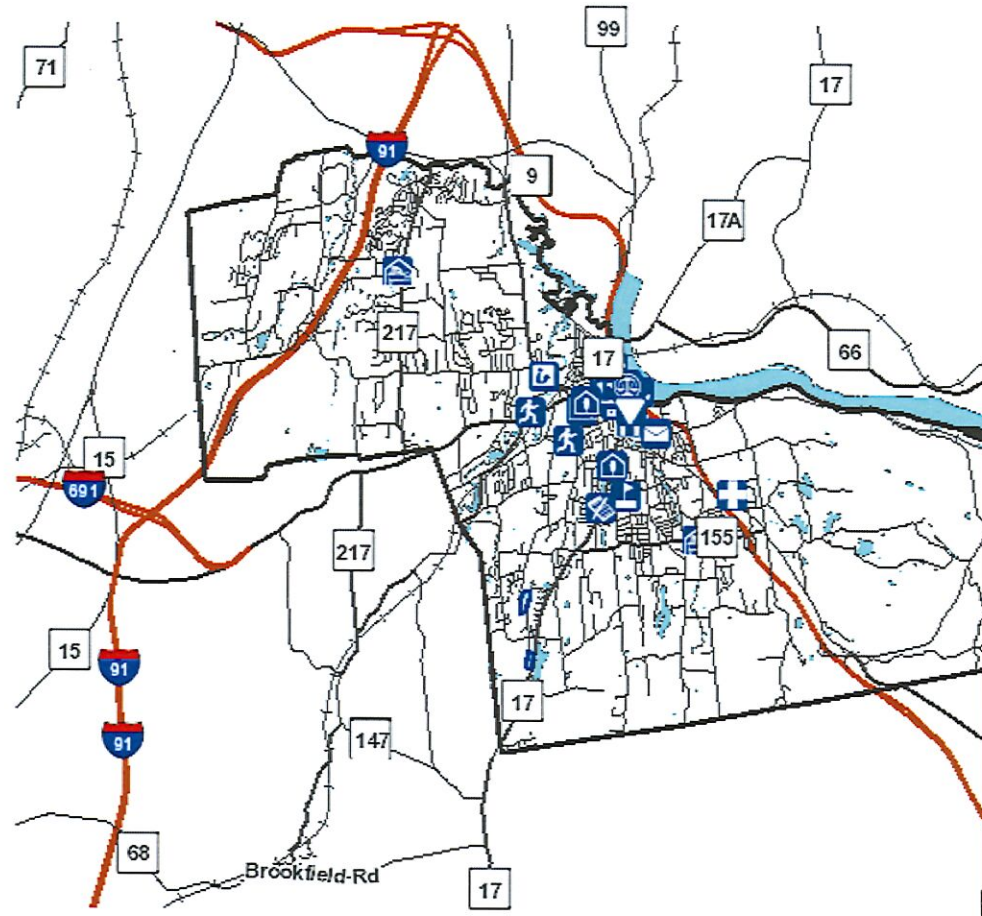
Sector:	Sector:	Sector:
Antenna #:	Antenna #:	Antenna #:
Make / Model:	Make / Model:	Make / Model:
Gain:	Gain:	Gain:
Height (AGL):	Height (AGL):	Height (AGL):
Frequency Bands	Frequency Bands	Frequency Bands
Channel Count	Channel Count	Channel Count
Total TX Power(W):	Total TX Power(W):	Total TX Power(W):
ERP (W):	ERP (W):	ERP (W):
Antenna A1 MPE%	Antenna B1 MPE%	Antenna C1 MPE%
Antenna #:	Antenna #:	Antenna #:
Make / Model:	Make / Model:	Make / Model:
Gain:	Gain:	Gain:
Height (AGL):	Height (AGL):	Height (AGL):
Frequency Bands	Frequency Bands	Frequency Bands
Channel Count	Channel Count	Channel Count
Total TX Power(W):	Total TX Power(W):	Total TX Power(W):
ERP (W):	ERP (W):	ERP (W):
Antenna A2 MPE%	Antenna B2 MPE%	Antenna C2 MPE%
Antenna #:	Antenna #:	Antenna #:
Make / Model:	Make / Model:	Make / Model:
Gain:	Gain:	Gain:
Height (AGL):	Height (AGL):	Height (AGL):
Frequency Bands	Frequency Bands	Frequency Bands
Channel Count	Channel Count	Channel Count
Total TX Power(W):	Total TX Power(W):	Total TX Power(W):
ERP (W):	ERP (W):	ERP (W):
Antenna A3 MPE%	Antenna B3 MPE%	Antenna C3 MPE%

Site Composite MPE%	
Carrier	MPE%
AT&T – Max per sector	3.97 %
T-Mobile	1.77 %
Nextel	0.40 %
Sprint	0.32 %
Clearwire	0.09 %
Verizon	2.26 %
Pocket (now MetroPCS)	0.56 %
Site Total MPE %:	9.37 %

AT&T Sector A Total:	3.97 %
AT&T Sector B Total:	3.97 %
AT&T Sector C Total:	3.97 %
Site Total:	9.37 %

AT&T_Frequency Band / Technology	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ( $\mu\text{W}/\text{cm}^2$ )	Frequency (MHz)	Allowable MPE ( $\mu\text{W}/\text{cm}^2$ )	Calculated % MPE
AT&T 850 MHz UMTS	2	414.12	139	1.68	850 MHz	567	0.30%
AT&T 1900 MHz (PCS) UMTS	2	656.33	139	2.67	1900 MHz (PCS)	1000	0.27%
AT&T 850 MHz LTE	2	1,455.97	139	5.92	850 MHz	567	1.04%
AT&T 1900 MHz (PCS) LTE	2	2,009.79	139	8.17	1900 MHz (PCS)	1000	0.82%
AT&T 700 MHz LTE	2	940.05	139	3.82	700 MHz	467	0.82%
AT&T 1900 MHz (PCS) LTE	2	1,791.23	139	7.28	1900 MHz (PCS)	1000	0.73%
						Total:	3.97%

# wn Tax Assessor GIS Application



## City Of Middletown

### About Us

### Property Search

Basic Advanced Graphics

Enter terms and press "Search". Select a row to zoom to a... about the parcel, click the parcel on the map. Queries are li... disable your pop-up blocker to download reports.

Hydrant

[Excel](#) [Labels-5160 \(PDF\)](#) [Labels-5193 \(PDF\)](#)

Owner Name	Location
SBA PROPERTIES INC	1825 SOUTH M
BROOKSBANK LINDSEY W	803 LONG HILL

### Buffer

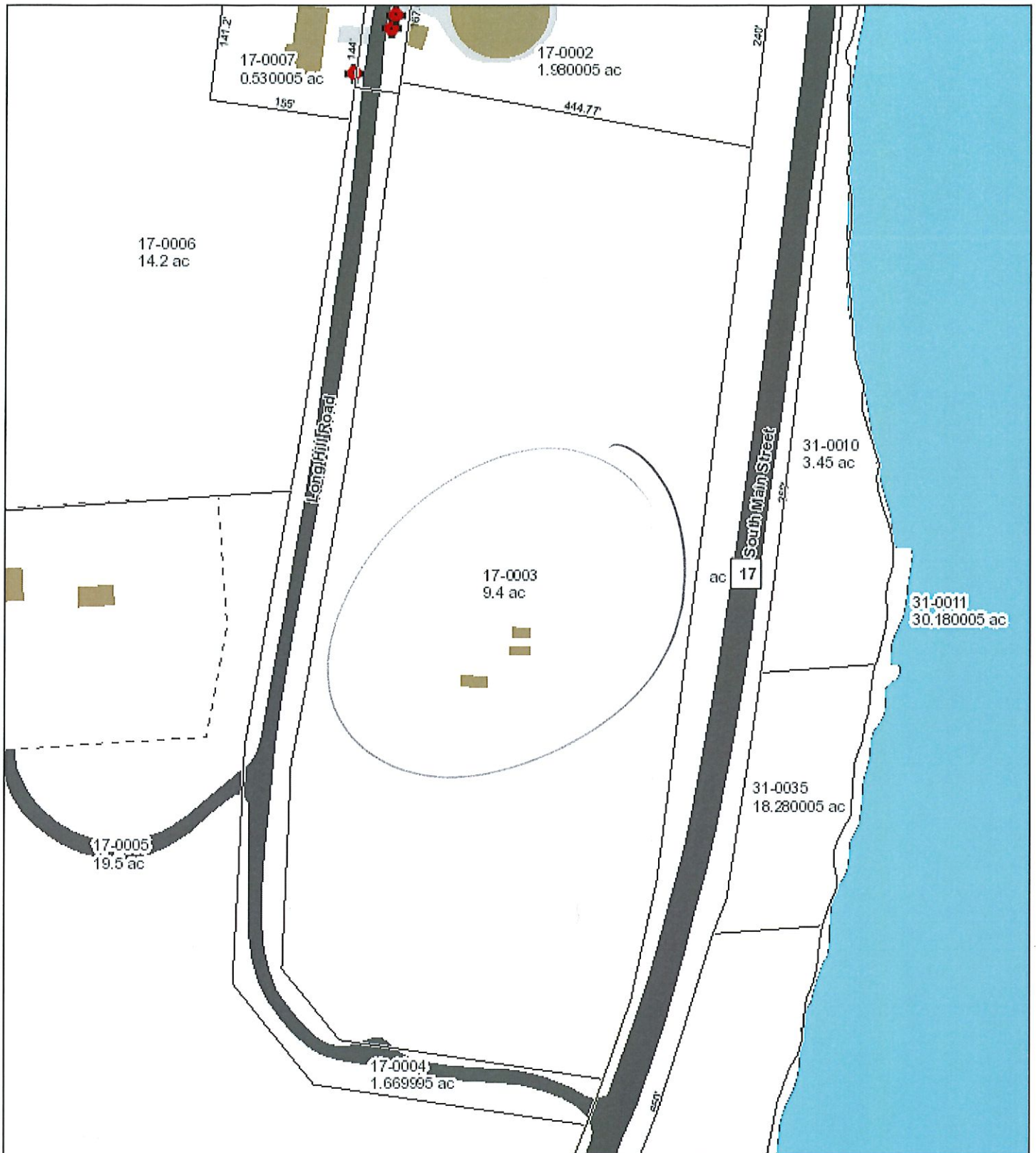
### Base Maps

### Print

### Legend

### Annotation Tools



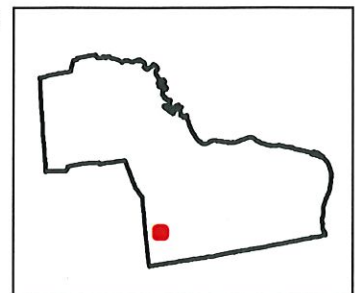


City of Middletown, Connecticut

Map generated 12/14/2016

Map Legend: <http://gis.cityofmiddletown.com/middletownct/legend.pdf>

Property Card: <http://gis.vgsi.com/MiddletownCT/Parcel.aspx?pid=3758>



1 in = 152 ft

**MAP FOR REFERENCE ONLY - NOT A LEGAL DOCUMENT**

Because of different update schedules, current property assessments may not reflect recent changes to property boundaries. Check with the Board of Assessors to confirm boundaries uses at the time of assessment.

Owner Name	Map-Lot	Address Number	Street	Account	Lot Size	Assess Value	Sale Price	Sale Date	Built Year	Building Style	Build Area	Use Code	Zoning Code
SBA PROPERTIES INC	17-0003	1825	SOUTH MAIN ST	R02249	9.4	256670	0		37246	Null	Null	R	I-4
BROOKSBANK LINDSE	16-0215	803	LONG HILL RD	R07574	0	120760	0		31923	1986	Condominium	R	R-15



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

AT&T Existing Facility

Site ID: CT1208

Middletown So Main  
1825 South Main Street  
Middletown, CT 06457

**December 7, 2016**

**EBI Project Number: 6216005601**

Site Compliance Summary	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general public allowable limit:	<b>9.37 %</b>



December 7, 2016

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

## Emissions Analysis for Site: **CT1208 – Middletown So Main**

EBI Consulting was directed to analyze the proposed AT&T facility located at **1825 South Main Street, Middletown, CT**, for the purpose of determining whether the emissions from the Proposed AT&T Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The number of  $\mu\text{W}/\text{cm}^2$  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 ( $\mu\text{W}/\text{cm}^2$ ). The general population exposure limits for the 700 and 850 MHz Bands are approximately  $467 \mu\text{W}/\text{cm}^2$  and  $567 \mu\text{W}/\text{cm}^2$  respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 2300 MHz (WCS) bands is  $1000 \mu\text{W}/\text{cm}^2$ . Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.





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

Additional details can be found in FCC OET 65.

## CALCULATIONS

Calculations were done for the proposed AT&T Wireless antenna facility located at **1825 South Main Street, Middletown, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since AT&T is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

- 1) 2 UMTS channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 2) 2 UMTS channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 3) 2 GSM channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 4) 2 GSM channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 5) 2 LTE channels (700 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 6) 2 LTE channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.



- 7) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 8) For the following calculations the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 9) The antennas used in this modeling are the **Powerwave 7770, KMW AM-X-CD-16-65-00T-RET and the CCI HPA-65R-BUU-H6** for transmission in the 700 MHz, 850 MHz and 1900 MHz (PCS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 10) The antenna mounting height centerlines of the proposed antennas are **139 feet** above ground level (AGL) for **Sector A**, **139 feet** above ground level (AGL) for **Sector B** and **139 feet** above ground level (AGL) for Sector C.
- 11) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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



## AT&T Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Powerwave 7770	Make / Model:	Powerwave 7770	Make / Model:	Powerwave 7770
Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd	Gain:	11.4 / 13.4 dBd
Height (AGL):	139 feet	Height (AGL):	139 feet	Height (AGL):	139 feet
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts	Total TX Power(W):	120 Watts
ERP (W):	2,140.89	ERP (W):	2,140.89	ERP (W):	2,140.89
Antenna A1 MPE%	0.56 %	Antenna B1 MPE%	0.56 %	Antenna C1 MPE%	0.56 %
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	KMW AM-X-CD-16-65-00T-RET	Make / Model:	KMW AM-X-CD-16-65-00T-RET	Make / Model:	KMW AM-X-CD-16-65-00T-RET
Gain:	13.85 / 15.25 dBd	Gain:	13.85 / 15.25 dBd	Gain:	13.85 / 15.25 dBd
Height (AGL):	139 feet	Height (AGL):	139 feet	Height (AGL):	139 feet
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts
ERP (W):	6,931.52	ERP (W):	6,931.52	ERP (W):	6,931.52
Antenna A2 MPE%	1.86 %	Antenna B2 MPE%	1.86 %	Antenna C2 MPE%	1.86 %
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	CCI HPA-65R-BUU-H6	Make / Model:	CCI HPA-65R-BUU-H6	Make / Model:	CCI HPA-65R-BUU-H6
Gain:	11.95 / 14.75 dBd	Gain:	11.95 / 14.75 dBd	Gain:	11.95 / 14.75 dBd
Height (AGL):	139 feet	Height (AGL):	139 feet	Height (AGL):	139 feet
Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)	Frequency Bands	700 MHz / 1900 MHz (PCS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts
ERP (W):	5,462.56	ERP (W):	5,462.56	ERP (W):	5,462.56
Antenna A3 MPE%	1.55 %	Antenna B3 MPE%	1.55 %	Antenna C3 MPE%	1.55 %

Site Composite MPE%	
Carrier	MPE%
AT&T – Max per sector	3.97 %
T-Mobile	1.77 %
Nextel	0.40 %
Sprint	0.32 %
Clearwire	0.09 %
Verizon	2.26 %
Pocket (now MetroPCS)	0.56 %
<b>Site Total MPE %:</b>	<b>9.37 %</b>

AT&T Sector A Total:	3.97 %
AT&T Sector B Total:	3.97 %
AT&T Sector C Total:	3.97 %
<b>Site Total:</b>	<b>9.37 %</b>

AT&T Frequency Band / Technology	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ( $\mu\text{W}/\text{cm}^2$ )	Frequency (MHz)	Allowable MPE ( $\mu\text{W}/\text{cm}^2$ )	Calculated % MPE
AT&T 850 MHz UMTS	2	414.12	139	1.68	850 MHz	567	0.30%
AT&T 1900 MHz (PCS) UMTS	2	656.33	139	2.67	1900 MHz (PCS)	1000	0.27%
AT&T 850 MHz LTE	2	1,455.97	139	5.92	850 MHz	567	1.04%
AT&T 1900 MHz (PCS) LTE	2	2,009.79	139	8.17	1900 MHz (PCS)	1000	0.82%
AT&T 700 MHz LTE	2	940.05	139	3.82	700 MHz	467	0.82%
AT&T 1900 MHz (PCS) LTE	2	1,791.23	139	7.28	1900 MHz (PCS)	1000	0.73%
						<b>Total:</b>	<b>3.97%</b>



## Summary

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

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

AT&T Sector	Power Density Value (%)
Sector A:	3.97 %
Sector B:	3.97 %
Sector C:	3.97 %
AT&T Maximum Total (per sector):	3.97 %
Site Total:	9.37 %
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **9.37 %** 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% thre



**Tower Engineering Solutions**

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

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## Structural Analysis Report

**Existing 158 ft. SUMMIT Monopole**

**Customer Name: SBA Communications Corp**

**Customer Site Number: CT01080-S**

**Customer Site Name: Long Hill #1**

**Carrier Name: AT&T**

**Carrier Site ID / Name: Site ID# 59438 FA# 10042329 / Middletown South Mai**

**Site Location: 1279 Long Hill Road**

**Middletown, Connecticut**

**Middlesex County**

**Latitude: 41.511231**

**Longitude: -72.670744**

### Analysis Result:

**Max Structural Usage: 82.4% [Pass]**

**Max Foundation Usage: 55.0% [Pass]**

**Report Prepared By : Walter Velez**



## Introduction

The purpose of this report is to summarize the analysis results on the 158 ft. SUMMIT Monopole to support the proposed antennas and transmission lines in addition to those currently installed. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

## Sources of Information

<b>Tower Drawings</b>	Tower drawings prepared by Summit Manufacturing, Inc., Job No. 5173 dated 11/08/1999. Previous structural report by Tower Engineering Solutions. TES Project No 28292 dated 12/08/2016.
<b>Foundation Drawing</b>	Foundation drawings prepared by Paul J. Ford & Company, Job No. 29299-641 dated 10/22/1999.
<b>Geotechnical Report</b>	Geotechnical report prepared by Jawarski Geotech, Inc., Project No. C98590G dated 02/04/1999.
<b>Modification Drawings</b>	N/A

## Analysis Criteria

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

<b>Wind Speed Used in the Analysis: (Based on IBC 2012)</b>	Ultimate Design Wind Speed $V_{ult} = 130.0$ mph (3-Sec. Gust) Nominal Design Wind Speed $V_{asd} = 101.0$ mph (3-Sec. Gust)
<b>Wind Speed with Ice:</b>	50 mph (3-Sec. Gust) with 3/4" radial ice concurrent
<b>Operational Wind Speed:</b>	60 mph + 0" Radial ice
<b>Standard/Codes:</b>	ANSI/TIA-222-G, 2012 IBC & 2016 Connecticut State Building Code
<b>Exposure Category:</b>	C
<b>Structure Class:</b>	II
<b>Topographic Category:</b>	1
<b>Crest Height:</b>	0 ft.
<b>Seismic Parameters:</b>	$S_s = 0.180$ , $S_1 = 0.062$

## Existing Antennas, Mounts and Transmission Lines

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

Items	Elevation (ft.)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	158.0	6	Commscope SBNHH-1D65B - Panel	(1) Low Profile Platform	(10) 1 5/8"; (2) 1 5/8" Hybrid <sup>1</sup>	Verizon
2		2	Amphenol LPA-80063-6CF-EDIN-5 - Panel			
3		4	RFS APL866513-42T0 w/ Mount Pipe - Panel			
4		3	Alcatel RRH2X60-AWS			
5		3	Alcatel RRH2X60-700			
6		3	Alcatel RRH2X60-PCS			
7		6	RFS FD9R6004/2CL-3CL Diplexer			
8		2	RFS DB-T1-6C-8AB-0Z Distribution Box			
9	151.0	1	Andrew VHLP2.5 - Dish	(1) Pipe Mount	(1) 1/2"	Clearwire
10		1	ODU			
11	146.0	3	RFS APXVSP18-C-A20 w/ Mount Pipe - Panel	(1) Low Profile Platform	(3) 1 1/4"; (1) 1-1/4" Power / Fiber	Sprint
12		3	RFS APXVTM14-C-120 w/ Mount Pipe - Panel			
13		3	Alcatel TD-RRH8x20-25			
14		3	Alcatel 1900MHz RRH			
15		3	Alcatel 800 MHz RRH			
16		3	Alcatel 800MHz Filters			
17		4	RFS ACU-A20-N RET			
18		1	GPS			
19		3	Kathrein Scala 840 10054 - Panel			
20		3	RRUs			
21	137.0	3	RFS APXV18-209014-02 - Panel	(1) Low Profile Platform w/ Support Kit	(12) 1 5/8"	T-Mobile
22		3	Commscope LNX-6515DS - Panel			
23		12	Allen Telecom FE15S01P77/75 TMA's			
24		3	Kathrein 782 11056 Diplexer			
25	116.0	3	Kathrein 742 213 - Panel <sup>2</sup>	(1) Low Profile Platform (Assumed)	(6) 1 5/8"	Metro PCS
-	107.0	3	CCI HPA-65R-BUU-H6 - Panel	(1) Low Profile Platform	(12) 1 5/8"; (1) 1/2" Fiber <sup>3</sup> ; (2) 3/4" DC <sup>3</sup>	AT&T
-		6	Powerwave 7770.00 - Panel			
-		3	Powerwave TT19-08BP111-001 TMA's			
-		3	CCI DTMAP7819VG12A TMA's			
-		6	Ericsson RRUS 11			
-		3	Ericsson RRUS A2 Module			
-		6	Powerwave LGP21901 Diplexer			
-		1	Raycap DC6-48-60-18-8F			

1. Lines considered outside of the pole shaft

2. Equipment removed from tower, lease still active. Equipment considered in current analysis.

3. Lines considered inside (1) 3" Conduit running inside of the pole shaft.

## 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
26	107.0	3	CCI HPA-65R-BUU-H6 - Panel	(1) Low Profile Platform	(12) 1 5/8"; (3) 3/4" DC; (1) 1/2" Fiber; (1) 3" Conduit	AT&T
27		3	Powerwave 7770.00 - Panel			
28		3	KMW AM-X-CD-16-65-00T-RET - Panel			
29		3	Powerwave TT19-08BP111-0011 TMA's			
30		3	CCI DTMAP7819VG12A TMA's			
31		6	Powerwave 7020.00 RET's			
32		6	Ericsson RRUS 11			
33		3	Ericsson RRUS-32 B2			
34		6	Powerwave LGP21903 Diplexer			
35		1	Raycap DC6-48-60-18-8F			

All transmission lines are considered running inside of the pole shafts. The proposed (3) 3/4" DC & (1) 1/2" Fiber lines were considered housed inside (1) 3" Conduit.



## **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:	<b>82.4%</b>	<b>56.2%</b>	<b>82.4%</b>
Pass/Fail	<b>Pass</b>	<b>Pass</b>	<b>Pass</b>

## **Foundations**

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Original Design Reactions	4350.0	37.5	51.0
Analysis Reactions	4597.3	40.1	52.8
Factored Reactions*	5872.5	50.6	68.9

\* 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):**

Operational characteristics of the tower are found to be within the limits prescribed by ANSI/TIA-222-G for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 1.0479 degrees under the operational wind speed as specified in the Analysis Criteria.

## **Conclusions**

Based on the analysis results, the existing structure and its foundation were found to be adequate to safely support the existing and proposed equipment and meet the minimum requirements per the ANSI/TIA-222-G standards, the 2012 IBC and the 2016 Connecticut State Building Code under the design basic wind speed specified in the Analysis Criteria.

## Standard Conditions

1. This analysis was performed based on the information supplied to **(TES) Tower Engineering Solutions, LLC**. Verification of the information provided was not included in the Scope of Work for **TES**. The accuracy of the analysis is dependent on the accuracy of the information provided.
2. The analysis is based on the presumption that the tower members and components along with any existing reinforcement items have been correctly and properly designed, manufactured, installed and maintained.
3. All the existing structural members were assumed to be in good condition with no physical damage or deterioration associated with corrosion.
4. An initial tension of 10% of the break strength on all the existing guy wires was assumed in all the structural analyses of guyed towers unless different values were provided by the client. **TES** cannot take responsibility for the deviations in the analysis results because of differences in the initial tension forces of the existing guy wires.
5. Secondary component or connection secondary components, welds and bolts are assumed to be able to carry their intended original design loads. **TES** cannot take responsibility for verification of the adequacy on the connections, bolts and welds present in the structure.
6. The analyses will be performed based on the codes as specified by the client or based on the best knowledge of the engineering staff of **TES**. In the absence of information to the contrary, all work will be performed in accordance with the latest relevant revision of ANSI/TIA-222. If wind speed and/or ice loads are different from the minimum values recommended by the EIA/TIA-222 standard or other codes, **TES** should be notified in writing and the applicable minimum values provided by the client.
7. The configuration of the existing mounts, antennas, coax and other appurtenances were supplied by the customer for the current structural analysis. **TES** has not visited the tower site to verify the adequacy of the information provided. If there is any discrepancy found in the report regarding the existing conditions, **TES** should be notified immediately to evaluate the effect of the discrepancy on the analysis results.
8. The client will assume responsibility for rework associated with the differences in initially provided information, including tower and foundation information, existing and/or proposed equipment and transmission lines.
9. If a feasibility analysis was performed, final acceptance of changed conditions shall be based upon a rigorous structural analysis.

# Usage Diagram - Max Ratio 82.41% at 96.5ft

**Structure:** CT01080-S-SBA  
**Site Name:** Long Hill #1  
**Height:** 158.00 (ft)  
**Base Elev:** 0.000 (ft)

**Code:** EIA/TIA-222-G  
**Exposure:** C  
**Gh:** 1.1

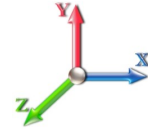
12/8/2016



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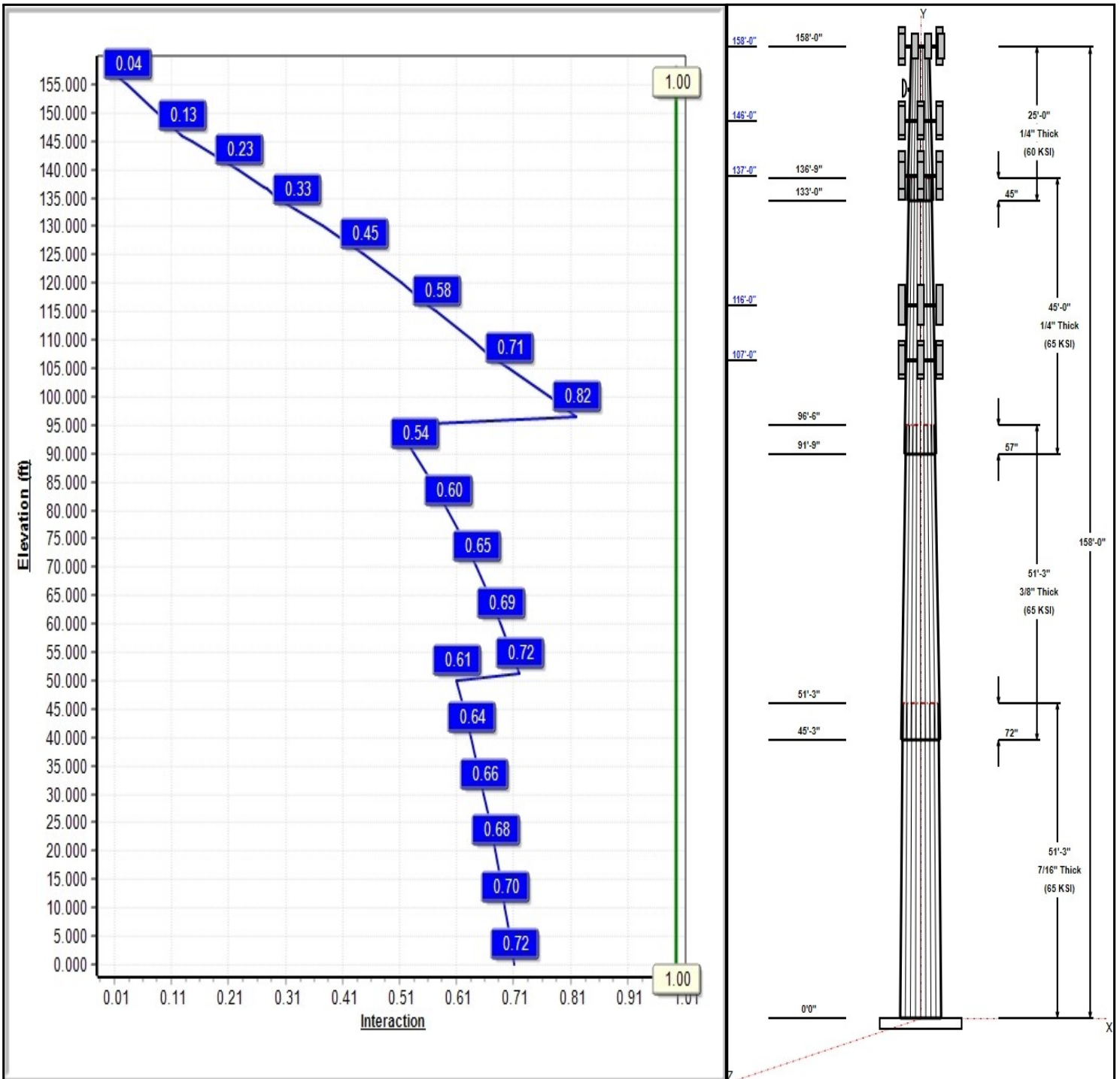
Dead Load Factor: 1.20  
 Wind Load Factor: 1.60

**Load Case : 1.2D + 1.6W 101 mph Wind**



**Iterations:** 25

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## Structure: CT01080-S-SBA

**Type:** Tapered  
**Site Name:** Long Hill #1  
**Height:** 158.00 (ft)  
**Base Elev:** 0.00 (ft)

**Base Shape:** 18 Sided  
**Taper:** 0.23500

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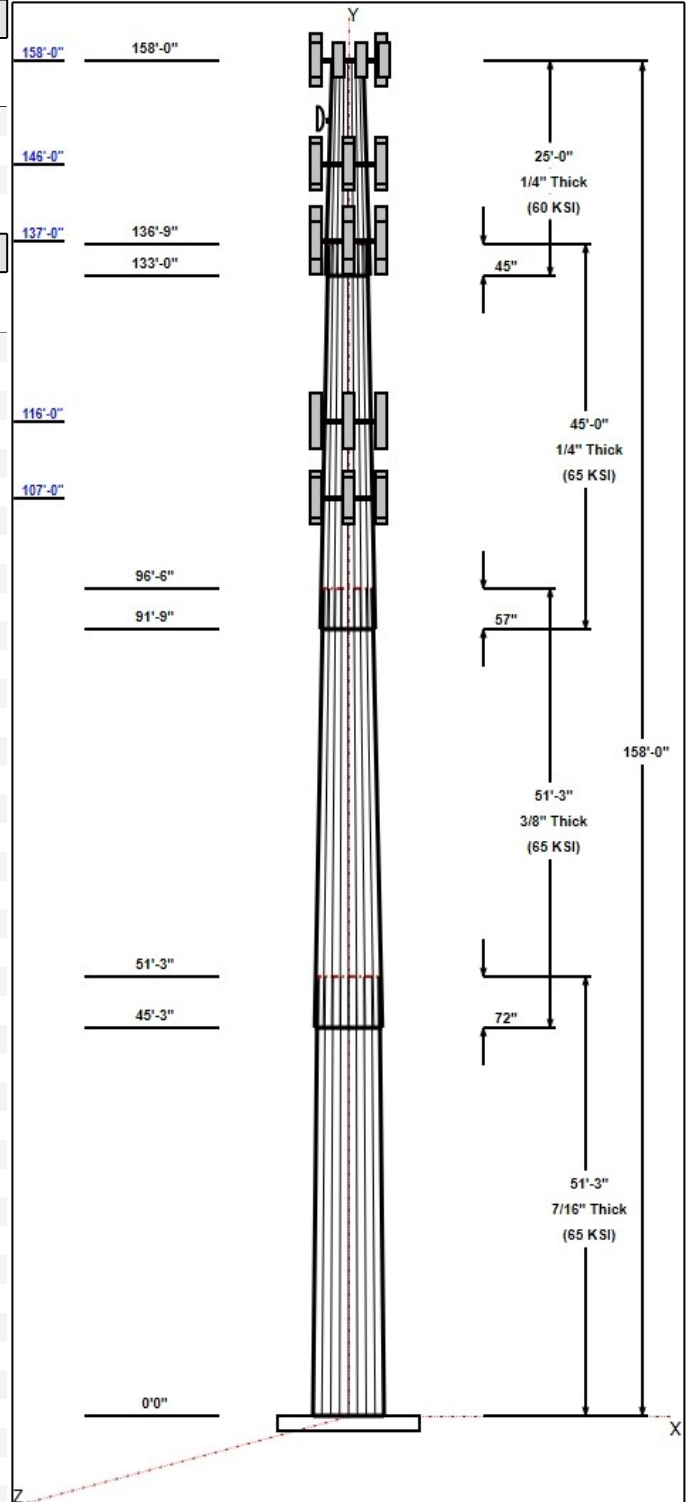


### Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	51.25	46.34	58.38	0.438		0.23500	65
2	51.25	36.45	48.50	0.375	Slip	0.23500	65
3	45.00	27.49	38.07	0.250	Slip	0.23500	65
4	25.00	23.00	28.88	0.250	Slip	0.23500	60

### Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
158.00	158.00	6	Commscope	Verizon
158.00	158.00	2	Amphenol	Verizon
158.00	158.00	4	RFS APL866513-42T0 w/	Verizon
158.00	158.00	3	Alcatel RRH2X60-AWS	Verizon
158.00	158.00	3	Alcatel RRH2X60-700	Verizon
158.00	158.00	3	Alcatel RRH2X60-PCS	Verizon
158.00	158.00	6	RFS FD9R6004/2CL-3CL	Verizon
158.00	158.00	2	RFS DB-T1-6C-8AB-0Z	Verizon
158.00	158.00	1	Low Profile Platform	Verizon
158.00	158.00	1	6' Lightning rod	
151.00	151.00	1	Andrew VHLP2.5	Clearwire
151.00	151.00	1	Pipe Mount	Clearwire
151.00	151.00	1	ODU	Clearwire
146.00	146.00	3	RFS APXVTM14-C-120 w/	Sprint
146.00	146.00	3	Alcatel TD-RRH8x20-25	Sprint
146.00	146.00	3	Alcatel 1900MHz RRH	Sprint
146.00	146.00	3	Alcatel 800 MHz RRH	Sprint
146.00	146.00	3	Alcatel 800MHz Filters	Sprint
146.00	146.00	4	RFS ACU-A20-N RET	Sprint
146.00	146.00	1	GPS	Sprint
146.00	146.00	3	Kathrein Scala 840 10054	Clearwire
146.00	146.00	3	RRUs	Clearwire
146.00	146.00	1	Low Profile Platform	Sprint
146.00	146.00	3	RFS APXVSP18-C-A20	Sprint
137.00	137.00	3	RFS APXV18-209014-02	T-Mobile
137.00	137.00	3	Commscope LNX-6515DS	T-Mobile
137.00	137.00	3	Kathrein 782 11056	T-Mobile
137.00	137.00	12	Allen Telecom	T-Mobile
137.00	137.00	1	Low Profile Platform w/	T-Mobile
116.00	116.00	3	Kathrein 742 213	Metro PCS
116.00	116.00	1	Low Profile Platform	Metro PCS
107.00	107.00	3	CCI HPA-65R-BUU-H6	AT&T
107.00	107.00	3	Powerwave 7770.00	AT&T
107.00	107.00	3	Powerwave	AT&T
107.00	107.00	6	Powerwave LGP21903	AT&T
107.00	107.00	3	KMW	AT&T
107.00	107.00	6	Powerwave 7020.00 RET's	AT&T
107.00	107.00	3	Ericsson RRUS-32 B2	AT&T
107.00	107.00	3	CCI DTMAP7819VG12A	AT&T
107.00	107.00	1	Low Profile Platform	AT&T
107.00	107.00	6	Ericsson RRUS 11	AT&T
107.00	107.00	1	Raycap DC6-48-60-18-8F	AT&T



### Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
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**Structure: CT01080-S-SBA**

**Type:** Tapered  
**Site Name:** Long Hill #1  
**Height:** 158.00 (ft)  
**Base Elev:** 0.00 (ft)

**Base Shape:** 18 Sided  
**Taper:** 0.23500

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3.00	158.00	Inside	1 5/8" Coax	Verizon
3.00	158.00	Outside	1 5/8" Hybrid	Verizon
3.00	151.00	Inside	1/2" Coax	Clearwire
3.00	146.00	Inside	1 1/4" Coax	Sprint
3.00	146.00	Inside	1-1/4" Power / Fiber	Sprint
3.00	146.00	Inside	1/2" Coax	Clearwire
3.00	146.00	Inside	5/16" Coax	Clearwire
3.00	137.00	Inside	1 5/8" Coax	T-Mobile
3.00	116.00	Inside	1 5/8" Coax	Metro PCS
3.00	107.00	Inside	1 5/8" Coax	AT&T
3.00	107.00	Inside	1/2" Fiber	AT&T
3.00	107.00	Inside	3" Conduit	AT&T
3.00	107.00	Inside	3/4" DC	AT&T

**Anchor Bolts**

Qty	Specifications	Grade (ksi)	Arrangement
24	2.25" 18J	75.0	Cluster

**Base Plate**

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
2.7500	67.0	50.0	Clipped

**Reactions**

Load Case	Moment	Shear	Axial
1.2D + 1.6W 101 mph Wind	4597.3	40.1	52.8
0.9D + 1.6W 101 mph Wind	4553.2	40.1	39.6
1.2D + 1.0Di + 1.0Wi 50 mph Wind	1185.9	10.4	81.5
1.2D + 1.0E	228.1	1.9	52.9
0.9D + 1.0E	225.7	1.9	39.7
1.0D + 1.0W 60 mph Wind	1009.0	8.8	44.1

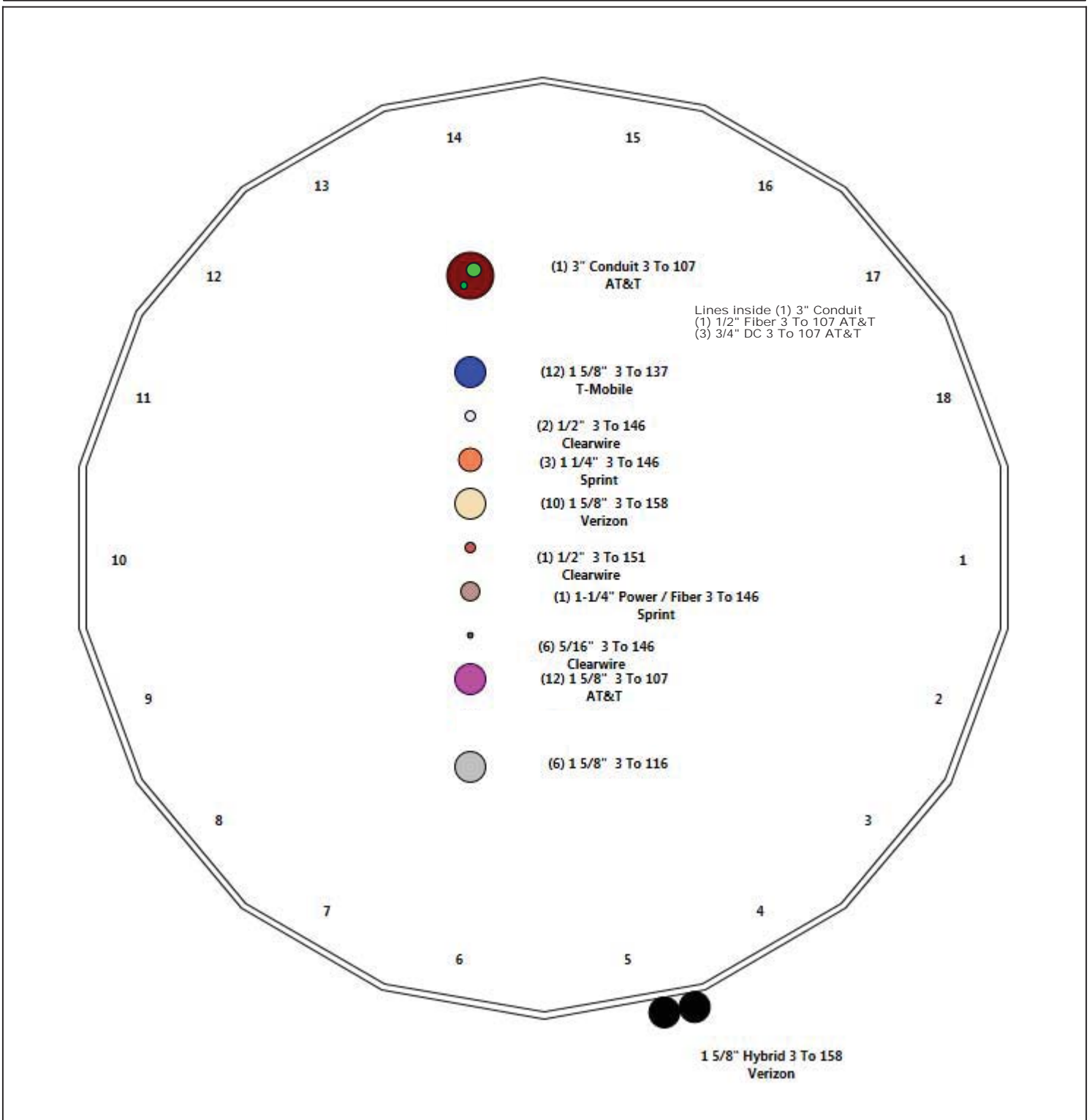
# Structure: CT01080-S-SBA - Coax Line Placement

Type: Monopole  
Site Name: Long Hill #1  
Height: 158.00 (ft)

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## Shaft Properties

<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> EIA/TIA-222-G	12/8/2016
<b>Site Name:</b> Long Hill #1	<b>Exposure:</b> C	
<b>Height:</b> 158.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	51.250	0.4375	65		0.00	12,573
2	18	51.250	0.3750	65	Slip	72.00	8,738
3	18	45.000	0.2500	65	Slip	57.00	3,953
4	18	25.000	0.2500	60	Slip	45.00	1,734
<b>Total Shaft Weight:</b>							<b>26,998</b>

Bottom

Top

Sec. No.	Dia (in)	Elev (ft)	Area (sqin)	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (sqin)	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	Taper
1	58.38	0.00	80.46	34128.26	22.12	133.44	46.34	51.25	63.73	16963.8	17.26	105.9	0.235000
2	48.50	45.25	57.27	16756.62	21.39	129.32	36.45	96.50	42.94	7061.30	15.73	97.21	0.235000
3	38.07	91.75	30.01	5422.58	25.44	152.28	27.49	136.75	21.62	2027.15	17.98	109.9	0.235000
4	28.88	133.0	22.71	2351.37	18.96	115.50	23.00	158.00	18.05	1180.40	14.81	92.00	0.235000

## Load Summary

<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> EIA/TIA-222-G	12/8/2016
<b>Site Name:</b> Long Hill #1	<b>Exposure:</b> C	
<b>Height:</b> 158.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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### Discrete Appurtenances

No.	Elev (ft)	Description	Qty	No Ice			Ice			Hor. Ecc. (ft)	Vert Ecc (ft)
				Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor		
1	158.00	Commscope SBNHH-1D65B	6	50.71	8.05	0.83	253.10	9.351	0.83	0.00	0.00
2	158.00	Amphenol LPA-80063-6CF-EDIN-5	2	27.00	9.73	0.94	289.85	12.488	0.94	0.00	0.00
3	158.00	RFS APL866513-42T0 w/ Mount	4	48.70	5.65	0.95	389.21	8.263	0.95	0.00	0.00
4	158.00	Alcatel RRH2X60-AWS	3	60.00	3.50	0.67	147.74	4.293	0.67	0.00	0.00
5	158.00	Alcatel RRH2X60-700	3	60.00	3.50	0.67	147.74	4.293	0.67	0.00	0.00
6	158.00	Alcatel RRH2X60-PCS	3	55.00	2.20	0.67	135.43	2.699	0.67	0.00	0.00
7	158.00	RFS FD9R6004/2CL-3CL Diplexer	6	3.00	0.31	0.60	10.81	0.694	0.60	0.00	0.00
8	158.00	RFS DB-T1-6C-8AB-0Z Distribution	2	44.00	4.80	0.60	289.15	5.743	0.60	0.00	0.00
9	158.00	Low Profile Platform	1	1200.00	25.00	1.00	2252.58	46.052	1.00	0.00	0.00
10	158.00	6' Lightning rod	1	6.50	0.38	1.00	42.99	1.473	1.00	0.00	0.00
11	151.00	Andrew VHLP2.5	1	47.60	8.43	1.00	220.41	10.138	1.00	1.00	0.00
12	151.00	Pipe Mount	1	40.00	2.63	1.00	120.33	8.603	1.00	0.00	0.00
13	151.00	ODU	1	13.20	1.24	0.60	42.82	2.041	0.60	0.00	0.00
14	146.00	RFS APXVTM14-C-120 w/ Mount	3	89.00	7.94	0.78	248.89	7.450	0.78	0.00	0.00
15	146.00	Alcatel TD-RRH8x20-25	3	70.00	4.05	0.67	180.10	4.861	0.67	0.00	0.00
16	146.00	Alcatel 1900MHz RRH	3	44.00	2.38	0.67	152.87	3.248	0.67	0.00	0.00
17	146.00	Alcatel 800 MHz RRH	3	53.00	2.13	0.67	126.76	3.106	0.67	0.00	0.00
18	146.00	Alcatel 800MHz Filters	3	8.80	0.67	0.60	26.40	1.224	0.60	0.00	0.00
19	146.00	RFS ACU-A20-N RET	4	1.00	0.12	0.60	5.28	0.374	0.60	0.00	0.00
20	146.00	GPS	1	10.00	1.00	1.00	39.24	1.710	1.00	0.00	0.00
21	146.00	Kathrein Scala 840 10054	3	35.00	4.59	0.61	119.04	6.258	0.61	0.00	0.00
22	146.00	RRUs	3	3.13	2.92	0.67	8.71	4.207	0.67	0.00	0.00
23	146.00	Low Profile Platform	1	1200.00	25.00	1.00	2244.30	45.886	1.00	0.00	0.00
24	146.00	RFS APXVSP18-C-A20 w/ Mount	3	90.00	9.62	0.83	362.19	12.962	0.83	0.00	0.00
25	137.00	RFS APXV18-209014-02	3	18.70	3.51	0.77	104.96	4.438	0.77	0.00	0.00
26	137.00	Commscope LNX-6515DS	3	49.80	11.45	0.84	277.28	14.682	0.84	0.00	0.00
27	137.00	Kathrein 782 11056 Diplexer	3	11.00	0.15	0.60	28.48	0.312	0.60	0.00	0.00
28	137.00	Allen Telecom FE15S01P7775	12	8.20	0.54	0.60	21.98	1.076	0.60	0.00	0.00
29	137.00	Low Profile Platform w/ Support Kit	1	1200.00	25.00	1.00	2237.68	45.754	1.00	0.00	0.00
30	116.00	Kathrein 742 213	3	22.00	5.14	0.78	131.30	6.378	0.78	0.00	0.00
31	116.00	Low Profile Platform (Assumed)	1	1500.00	22.00	1.00	2775.70	39.213	1.00	0.00	0.00
32	107.00	CCI HPA-65R-BUU-H6	3	51.00	11.84	0.77	326.47	13.245	0.77	0.00	0.00
33	107.00	Powerwave 7770.00	3	35.00	5.51	0.77	164.70	6.527	0.70	0.00	0.00
34	107.00	Powerwave TT19-08BP111-001	3	16.00	0.55	0.60	35.57	1.043	0.60	0.00	0.00
35	107.00	Powerwave LGP21903 Diplexer	6	5.30	0.23	0.60	13.15	0.557	0.60	0.00	0.00
36	107.00	KMW AM-X-CD-16-65-00T-RET	3	48.50	8.02	0.79	205.39	10.721	0.79	0.00	0.00
37	107.00	Powerwave 7020.00 RET's	6	2.20	0.34	0.60	12.10	0.738	0.60	0.00	0.00
38	107.00	Ericsson RRUS-32 B2	3	53.00	3.01	0.67	154.33	3.734	0.67	0.00	0.00
39	107.00	CCI DTMAP7819VG12A TMA's	3	19.18	0.98	0.60	43.83	1.620	0.60	0.00	0.00
40	107.00	Low Profile Platform	1	1500.00	22.00	0.00	2765.43	39.075	0.00	0.00	0.00
41	107.00	Ericsson RRUS 11	6	55.00	2.52	0.67	132.24	3.148	0.67	0.00	0.00
42	107.00	Raycap DC6-48-60-18-8F	1	32.80	2.20	0.67	94.45	3.213	0.67	0.00	0.00
<b>Totals:</b>			<b>128</b>	<b>10,562.89</b>			<b>27,748.54</b>				

### Linear Appurtenances



## Discrete Appurtenances

No.	Elev (ft)	Description	Qty	No Ice			Ice			Hor. Ecc. (ft)	Vert Ecc (ft)
				Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor		
<b>Bottom</b>	<b>Top</b>			<b>Exposed</b>							
<b>Elev.</b>	<b>Elev.</b>	<b>Description</b>		<b>Width</b>	<b>Exposed</b>						
<b>(ft)</b>	<b>(ft)</b>										
3.00	158.00	(10) 1 5/8" Coax		0.00	Inside						
3.00	158.00	(2) 1 5/8" Hybrid		0.00	Outside						
3.00	151.00	(1) 1/2" Coax		0.00	Inside						
3.00	146.00	(3) 1 1/4" Coax		0.00	Inside						
3.00	146.00	(1) 1-1/4" Power / Fiber		0.00	Inside						
3.00	146.00	(2) 1/2" Coax		0.00	Inside						
3.00	146.00	(6) 5/16" Coax		0.00	Inside						
3.00	137.00	(12) 1 5/8" Coax		0.00	Inside						
3.00	116.00	(6) 1 5/8" Coax		0.00	Inside						
3.00	107.00	(12) 1 5/8" Coax		0.00	Inside						
3.00	107.00	(1) 1/2" Fiber		0.00	Inside						
3.00	107.00	(1) 3" Conduit		0.00	Inside						
3.00	107.00	(3) 3/4" DC		0.00	Inside						

## Shaft Section Properties

<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> EIA/TIA-222-G	12/8/2016
<b>Site Name:</b> Long Hill #1	<b>Exposure:</b> C	
<b>Height:</b> 158.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Increment Length:** 5 (ft)

Elev (ft)	Description	Thick (in)	Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fpy (ksi)	S (in^3)	Weight (lb)
0.00		0.4375	58.380	80.458	34128.3	22.12	133.44	75.4	1151.	0.0
5.00		0.4375	57.205	78.826	32093.8	21.64	130.75	75.9	1105.	1355.0
10.00		0.4375	56.030	77.194	30141.9	21.17	128.07	76.5	1059.	1327.3
15.00		0.4375	54.855	75.563	28270.8	20.70	125.38	77.1	1015.	1299.5
20.00		0.4375	53.680	73.931	26478.8	20.22	122.70	77.6	971.6	1271.7
25.00		0.4375	52.505	72.300	24764.1	19.75	120.01	78.2	929.0	1244.0
30.00		0.4375	51.330	70.668	23125.1	19.28	117.33	78.7	887.3	1216.2
35.00		0.4375	50.155	69.036	21560.1	18.80	114.64	79.3	846.7	1188.5
40.00		0.4375	48.980	67.405	20067.3	18.33	111.95	79.8	807.0	1160.7
45.00		0.4375	47.805	65.773	18645.1	17.86	109.27	80.4	768.2	1132.9
45.25	Bot - Section 2	0.4375	47.746	65.692	18575.8	17.83	109.13	80.4	766.3	55.9
50.00		0.4375	46.630	64.142	17291.7	17.38	106.58	81.0	730.4	1964.3
51.25	Top - Section 1	0.3750	47.086	55.596	15326.4	20.73	125.56	0.0	0.0	509.2
55.00		0.3750	46.205	54.547	14475.2	20.32	123.21	77.5	617.0	702.7
60.00		0.3750	45.030	53.149	13390.2	19.76	120.08	78.2	585.7	916.2
65.00		0.3750	43.855	51.750	12360.7	19.21	116.95	78.8	555.1	892.4
70.00		0.3750	42.680	50.352	11385.5	18.66	113.81	79.5	525.4	868.6
75.00		0.3750	41.505	48.953	10462.9	18.11	110.68	80.1	496.5	844.8
80.00		0.3750	40.330	47.555	9591.6	17.55	107.55	80.8	468.4	821.0
85.00		0.3750	39.155	46.156	8770.0	17.00	104.41	81.4	441.2	797.2
90.00		0.3750	37.980	44.758	7996.7	16.45	101.28	82.1	414.7	773.4
91.75	Bot - Section 3	0.3750	37.569	44.268	7737.2	16.25	100.18	82.3	405.6	265.1
95.00		0.3750	36.805	43.359	7270.3	15.90	98.15	82.5	389.1	813.0
96.50	Top - Section 2	0.2500	36.953	29.122	4956.5	24.65	147.81	0.0	0.0	369.6
100.00		0.2500	36.130	28.470	4630.6	24.07	144.52	73.1	252.4	343.0
105.00		0.2500	34.955	27.537	4190.4	23.24	139.82	74.1	236.1	476.4
107.00		0.2500	34.485	27.164	4022.5	22.91	137.94	74.5	229.7	186.1
110.00		0.2500	33.780	26.605	3779.1	22.41	135.12	75.0	220.3	274.4
115.00		0.2500	32.605	25.673	3395.5	21.59	130.42	76.0	205.1	444.7
116.00		0.2500	32.370	25.486	3322.1	21.42	129.48	76.2	202.1	87.0
120.00		0.2500	31.430	24.740	3038.9	20.76	125.72	77.0	190.4	341.8
125.00		0.2500	30.255	23.808	2708.1	19.93	121.02	78.0	176.3	413.0
130.00		0.2500	29.080	22.876	2402.3	19.10	116.32	78.9	162.7	397.1
133.00	Bot - Section 4	0.2500	28.375	22.316	2230.3	18.60	113.50	79.5	154.8	230.7
135.00		0.2500	27.905	21.943	2120.3	18.27	111.62	79.9	149.7	303.9
136.75	Top - Section 3	0.2500	27.994	22.014	2140.8	18.33	111.97	0.0	0.0	261.8
137.00		0.2500	27.935	21.967	2127.2	18.29	111.74	74.5	150.0	18.7
140.00		0.2500	27.230	21.408	1968.8	17.79	108.92	75.0	142.4	221.4
145.00		0.2500	26.055	20.476	1722.6	16.97	104.22	75.9	130.2	356.3
146.00		0.2500	25.820	20.289	1676.0	16.80	103.28	76.1	127.9	69.4
150.00		0.2500	24.880	19.543	1497.9	16.14	99.52	76.2	118.6	271.1
151.00		0.2500	24.645	19.357	1455.4	15.97	98.58	76.2	116.3	66.2
155.00		0.2500	23.705	18.611	1293.6	15.31	94.82	76.2	107.5	258.4
158.00		0.2500	23.000	18.051	1180.4	14.81	92.00	76.2	101.1	187.1
<b>26997.7</b>										



## Discrete Appurtenance Forces

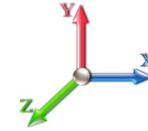
<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> EIA/TIA-222-G	12/8/2016
<b>Site Name:</b> Long Hill #1	<b>Exposure:</b> C	
<b>Height:</b> 158.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 1.2D + 1.6W 101 mph Wind

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.60



**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	158.00	Alcatel RRH2X60-700	3	34.573	38.030	0.54	0.80	5.63	216.00	0.000	0.000	342.45	0.00	0.00
2	158.00	Commscope	6	34.573	38.030	0.66	0.80	32.07	365.11	0.000	0.000	1951.46	0.00	0.00
3	158.00	Amphenol	2	34.573	38.030	0.75	0.80	14.63	64.80	0.000	0.000	890.44	0.00	0.00
4	158.00	RFS APL866513-42T0 w/	4	34.573	38.030	0.76	0.80	17.18	233.76	0.000	0.000	1045.12	0.00	0.00
5	158.00	Alcatel RRH2X60-AWS	3	34.573	38.030	0.54	0.80	5.63	216.00	0.000	0.000	342.45	0.00	0.00
6	158.00	6' Lightning rod	1	34.573	38.030	1.00	1.00	0.38	7.80	0.000	0.000	23.12	0.00	0.00
7	158.00	Alcatel RRH2X60-PCS	3	34.573	38.030	0.54	0.80	3.54	198.00	0.000	0.000	215.25	0.00	0.00
8	158.00	RFS FD9R6004/2CL-3CL	6	34.573	38.030	0.48	0.80	0.89	21.60	0.000	0.000	54.32	0.00	0.00
9	158.00	RFS DB-T1-6C-8AB-0Z	2	34.573	38.030	0.48	0.80	4.61	105.60	0.000	0.000	280.39	0.00	0.00
10	158.00	Low Profile Platform	1	34.573	38.030	1.00	1.00	25.00	1440.00	0.000	0.000	1521.19	0.00	0.00
11	151.00	Andrew VHLP2.5	1	34.244	37.669	0.80	0.80	6.74	57.12	2.043	0.000	406.46	518.93	0.00
12	151.00	ODU	1	34.244	37.669	0.60	1.00	0.74	15.84	0.000	0.000	44.84	0.00	0.00
13	151.00	Pipe Mount	1	34.244	37.669	1.00	1.00	2.63	48.00	0.000	0.000	158.51	0.00	0.00
14	146.00	RFS APXVSP18-C-A20	3	34.002	37.403	0.66	0.80	19.16	324.00	0.000	0.000	1146.80	0.00	0.00
15	146.00	Low Profile Platform	1	34.002	37.403	1.00	1.00	25.00	1440.00	0.000	0.000	1496.11	0.00	0.00
16	146.00	RRUs	3	34.002	37.403	0.54	0.80	4.70	11.27	0.000	0.000	280.99	0.00	0.00
17	146.00	Kathrein Scala 840 10054	3	34.002	37.403	0.49	0.80	6.72	126.00	0.000	0.000	402.14	0.00	0.00
18	146.00	GPS	1	34.002	37.403	1.00	1.00	1.00	12.00	0.000	0.000	59.84	0.00	0.00
19	146.00	RFS ACU-A20-N RET	4	34.002	37.403	0.48	0.80	0.23	4.80	0.000	0.000	13.79	0.00	0.00
20	146.00	Alcatel 800MHz Filters	3	34.002	37.403	0.48	0.80	0.96	31.68	0.000	0.000	57.74	0.00	0.00
21	146.00	Alcatel 800 MHz RRH	3	34.002	37.403	0.54	0.80	3.43	190.80	0.000	0.000	204.97	0.00	0.00
22	146.00	Alcatel 1900MHz RRH	3	34.002	37.403	0.54	0.80	3.83	158.40	0.000	0.000	229.03	0.00	0.00
23	146.00	RFS APXVTM14-C-120 w/	3	34.002	37.403	0.62	0.80	14.86	320.40	0.000	0.000	889.51	0.00	0.00
24	146.00	Alcatel TD-RRH8x20-25	3	34.002	37.403	0.54	0.80	6.51	252.00	0.000	0.000	389.73	0.00	0.00
25	137.00	Low Profile Platform w/	1	33.550	36.905	1.00	1.00	25.00	1440.00	0.000	0.000	1476.20	0.00	0.00
26	137.00	Allen Telecom	12	33.550	36.905	0.48	0.80	3.11	118.08	0.000	0.000	183.66	0.00	0.00
27	137.00	Kathrein 782 11056	3	33.550	36.905	0.48	0.80	0.22	39.60	0.000	0.000	12.75	0.00	0.00
28	137.00	Commscope LNX-6515DS	3	33.550	36.905	0.67	0.80	23.08	179.28	0.000	0.000	1363.02	0.00	0.00
29	137.00	RFS APXV18-209014-02	3	33.550	36.905	0.62	0.80	6.49	67.32	0.000	0.000	383.01	0.00	0.00
30	116.00	Low Profile Platform	1	32.395	35.635	1.00	1.00	22.00	1800.00	0.000	0.000	1254.34	0.00	0.00
31	116.00	Kathrein 742 213	3	32.395	35.635	0.62	0.80	9.62	79.20	0.000	0.000	548.61	0.00	0.00
32	107.00	Powerwave LGP21903	6	31.849	35.034	0.48	0.80	0.66	38.16	0.000	0.000	37.13	0.00	0.00
33	107.00	Powerwave	3	31.849	35.034	0.48	0.80	0.79	57.60	0.000	0.000	44.39	0.00	0.00
34	107.00	KMW	3	31.849	35.034	0.63	0.80	15.21	174.60	0.000	0.000	852.36	0.00	0.00
35	107.00	Powerwave 7770.00	3	31.849	35.034	0.62	0.80	10.18	126.00	0.000	0.000	570.77	0.00	0.00
36	107.00	CCI HPA-65R-BUU-H6	3	31.849	35.034	0.62	0.80	21.88	183.60	0.000	0.000	1226.48	0.00	0.00
37	107.00	Raycap DC6-48-60-18-8F	1	31.849	35.034	0.54	0.80	1.18	39.36	0.000	0.000	66.10	0.00	0.00
38	107.00	Powerwave 7020.00	6	31.849	35.034	0.48	0.80	0.98	15.84	0.000	0.000	54.89	0.00	0.00
39	107.00	Ericsson RRUS-32 B2	3	31.849	35.034	0.54	0.80	4.84	190.80	0.000	0.000	271.31	0.00	0.00
40	107.00	CCI DTMAP7819VG12A	3	31.849	35.034	0.48	0.80	1.41	69.05	0.000	0.000	79.10	0.00	0.00
41	107.00	Low Profile Platform	1	31.849	35.034	0.00	1.00	22.00	1800.00	0.000	0.000	1233.19	0.00	0.00
42	107.00	Ericsson RRUS 11	6	31.849	35.034	0.54	0.80	8.10	396.00	0.000	0.000	454.28	0.00	0.00
<b>Totals:</b>									<b>12,675.47</b>			<b>22,558.25</b>		

## Total Applied Force Summary

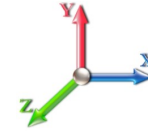
<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> EIA/TIA-222-G	12/8/2016
<b>Site Name:</b> Long Hill #1	<b>Exposure:</b> C	
<b>Height:</b> 158.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 1.2D + 1.6W 101 mph Wind

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.60



**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		589.88	1747.78	0.00	0.00
10.00		577.88	1897.11	0.00	0.00
15.00		565.89	1863.80	0.00	0.00
20.00		587.71	1830.49	0.00	0.00
25.00		602.64	1797.18	0.00	0.00
30.00		612.36	1763.87	0.00	0.00
35.00		618.24	1730.55	0.00	0.00
40.00		621.14	1697.24	0.00	0.00
45.00		621.65	1663.93	0.00	0.00
45.25		30.72	82.32	0.00	0.00
50.00		598.14	2646.30	0.00	0.00
51.25		155.90	687.11	0.00	0.00
55.00		468.80	1071.59	0.00	0.00
60.00		622.59	1403.80	0.00	0.00
65.00		616.86	1375.25	0.00	0.00
70.00		609.99	1346.69	0.00	0.00
75.00		602.11	1318.14	0.00	0.00
80.00		593.31	1289.59	0.00	0.00
85.00		583.67	1261.04	0.00	0.00
90.00		573.27	1232.48	0.00	0.00
91.75		197.32	424.62	0.00	0.00
95.00		368.29	1173.52	0.00	0.00
96.50		168.01	534.84	0.00	0.00
100.00		388.74	624.63	0.00	0.00
105.00		545.73	876.14	0.00	0.00
107.00	(38) attachments	5104.10	3436.14	0.00	0.00
110.00		317.55	456.11	0.00	0.00
115.00		519.51	744.95	0.00	0.00
116.00	(4) attachments	1904.82	2025.91	0.00	0.00
120.00		403.02	549.26	0.00	0.00
125.00		491.27	669.44	0.00	0.00
130.00		476.48	650.41	0.00	0.00
133.00		278.16	381.11	0.00	0.00
135.00		185.46	434.23	0.00	0.00
136.75		160.21	374.96	0.00	0.00
137.00	(22) attachments	3441.35	1875.42	0.00	0.00
140.00		269.97	325.05	0.00	0.00
145.00		437.84	526.52	0.00	0.00
146.00	(30) attachments	5256.01	2974.37	0.00	0.00
150.00		335.67	386.54	0.00	0.00
151.00	(3) attachments	691.90	215.69	518.93	0.00
155.00		322.33	370.55	0.00	0.00
158.00	(31) attachments	6900.67	3138.59	0.00	0.00
Totals:		40,017.14	52,875.28	518.93	0.00

## Linear Appurtenance Segment Forces (Factored)

<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> EIA/TIA-222-G	12/8/2016
<b>Site Name:</b> Long Hill #1	<b>Exposure:</b> C	
<b>Height:</b> 158.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II

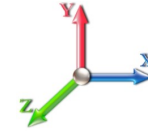


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**Load Case:** 1.2D + 1.6W 101 mph Wind

**Dead Load Factor** 1.20

**Wind Load Factor** 1.60



**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" Hybrid	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	21.088	0.00	5.28
10.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.088	0.00	13.20
15.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.088	0.00	13.20
20.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	22.375	0.00	13.20
25.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	23.451	0.00	13.20
30.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	24.369	0.00	13.20
35.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	25.172	0.00	13.20
40.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	25.890	0.00	13.20
45.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	26.540	0.00	13.20
45.25	1 5/8" Hybrid	Yes	0.25	0.000	0.00	0.00	0.00	0.000	0.000	26.571	0.00	0.66
50.00	1 5/8" Hybrid	Yes	4.75	0.000	0.00	0.00	0.00	0.000	0.000	27.135	0.00	12.54
51.25	1 5/8" Hybrid	Yes	1.25	0.000	0.00	0.00	0.00	0.000	0.000	27.277	0.00	3.30
55.00	1 5/8" Hybrid	Yes	3.75	0.000	0.00	0.00	0.00	0.000	0.000	27.685	0.00	9.90
60.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	28.197	0.00	13.20
65.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	28.676	0.00	13.20
70.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	29.127	0.00	13.20
75.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	29.553	0.00	13.20
80.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	29.958	0.00	13.20
85.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	30.342	0.00	13.20
90.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	30.710	0.00	13.20
91.75	1 5/8" Hybrid	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	30.834	0.00	4.62
95.00	1 5/8" Hybrid	Yes	3.25	0.000	0.00	0.00	0.00	0.000	0.000	31.061	0.00	8.58
96.50	1 5/8" Hybrid	Yes	1.50	0.000	0.00	0.00	0.00	0.000	0.000	31.164	0.00	3.96
100.00	1 5/8" Hybrid	Yes	3.50	0.000	0.00	0.00	0.00	0.000	0.000	31.399	0.00	9.24
105.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	31.723	0.00	13.20
107.00	1 5/8" Hybrid	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	31.849	0.00	5.28
110.00	1 5/8" Hybrid	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	32.035	0.00	7.92
115.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	32.336	0.00	13.20
116.00	1 5/8" Hybrid	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	32.395	0.00	2.64
120.00	1 5/8" Hybrid	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	32.627	0.00	10.56
125.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	32.909	0.00	13.20
130.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	33.182	0.00	13.20
133.00	1 5/8" Hybrid	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	33.341	0.00	7.92
135.00	1 5/8" Hybrid	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	33.446	0.00	5.28
136.75	1 5/8" Hybrid	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	33.537	0.00	4.62
137.00	1 5/8" Hybrid	Yes	0.25	0.000	0.00	0.00	0.00	0.000	0.000	33.550	0.00	0.66
140.00	1 5/8" Hybrid	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	33.703	0.00	7.92
145.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	33.953	0.00	13.20
146.00	1 5/8" Hybrid	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	34.002	0.00	2.64
150.00	1 5/8" Hybrid	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	34.196	0.00	10.56
151.00	1 5/8" Hybrid	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	34.244	0.00	2.64
155.00	1 5/8" Hybrid	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	34.433	0.00	10.56
158.00	1 5/8" Hybrid	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	34.573	0.00	7.92
<b>Totals:</b>											<b>0.0</b>	<b>409.2</b>







## Discrete Appurtenance Forces

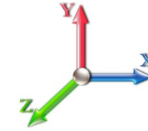
<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> EIA/TIA-222-G	12/8/2016
<b>Site Name:</b> Long Hill #1	<b>Exposure:</b> C	
<b>Height:</b> 158.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 0.9D + 1.6W 101 mph Wind

**Dead Load Factor** 0.90  
**Wind Load Factor** 1.60



**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	158.00	Alcatel RRH2X60-700	3	34.573	38.030	0.54	0.80	5.63	162.00	0.000	0.000	342.45	0.00	0.00
2	158.00	Commscope	6	34.573	38.030	0.66	0.80	32.07	273.83	0.000	0.000	1951.46	0.00	0.00
3	158.00	Amphenol	2	34.573	38.030	0.75	0.80	14.63	48.60	0.000	0.000	890.44	0.00	0.00
4	158.00	RFS APL866513-42T0 w/	4	34.573	38.030	0.76	0.80	17.18	175.32	0.000	0.000	1045.12	0.00	0.00
5	158.00	Alcatel RRH2X60-AWS	3	34.573	38.030	0.54	0.80	5.63	162.00	0.000	0.000	342.45	0.00	0.00
6	158.00	6' Lightning rod	1	34.573	38.030	1.00	1.00	0.38	5.85	0.000	0.000	23.12	0.00	0.00
7	158.00	Alcatel RRH2X60-PCS	3	34.573	38.030	0.54	0.80	3.54	148.50	0.000	0.000	215.25	0.00	0.00
8	158.00	RFS FD9R6004/2CL-3CL	6	34.573	38.030	0.48	0.80	0.89	16.20	0.000	0.000	54.32	0.00	0.00
9	158.00	RFS DB-T1-6C-8AB-0Z	2	34.573	38.030	0.48	0.80	4.61	79.20	0.000	0.000	280.39	0.00	0.00
10	158.00	Low Profile Platform	1	34.573	38.030	1.00	1.00	25.00	1080.00	0.000	0.000	1521.19	0.00	0.00
11	151.00	Andrew VHLP2.5	1	34.244	37.669	0.80	0.80	6.74	42.84	2.043	0.000	406.46	518.93	0.00
12	151.00	ODU	1	34.244	37.669	0.60	1.00	0.74	11.88	0.000	0.000	44.84	0.00	0.00
13	151.00	Pipe Mount	1	34.244	37.669	1.00	1.00	2.63	36.00	0.000	0.000	158.51	0.00	0.00
14	146.00	RFS APXVSP18-C-A20	3	34.002	37.403	0.66	0.80	19.16	243.00	0.000	0.000	1146.80	0.00	0.00
15	146.00	Low Profile Platform	1	34.002	37.403	1.00	1.00	25.00	1080.00	0.000	0.000	1496.11	0.00	0.00
16	146.00	RRUs	3	34.002	37.403	0.54	0.80	4.70	8.45	0.000	0.000	280.99	0.00	0.00
17	146.00	Kathrein Scala 840 10054	3	34.002	37.403	0.49	0.80	6.72	94.50	0.000	0.000	402.14	0.00	0.00
18	146.00	GPS	1	34.002	37.403	1.00	1.00	1.00	9.00	0.000	0.000	59.84	0.00	0.00
19	146.00	RFS ACU-A20-N RET	4	34.002	37.403	0.48	0.80	0.23	3.60	0.000	0.000	13.79	0.00	0.00
20	146.00	Alcatel 800MHz Filters	3	34.002	37.403	0.48	0.80	0.96	23.76	0.000	0.000	57.74	0.00	0.00
21	146.00	Alcatel 800 MHz RRH	3	34.002	37.403	0.54	0.80	3.43	143.10	0.000	0.000	204.97	0.00	0.00
22	146.00	Alcatel 1900MHz RRH	3	34.002	37.403	0.54	0.80	3.83	118.80	0.000	0.000	229.03	0.00	0.00
23	146.00	RFS APXVTM14-C-120 w/	3	34.002	37.403	0.62	0.80	14.86	240.30	0.000	0.000	889.51	0.00	0.00
24	146.00	Alcatel TD-RRH8x20-25	3	34.002	37.403	0.54	0.80	6.51	189.00	0.000	0.000	389.73	0.00	0.00
25	137.00	Low Profile Platform w/	1	33.550	36.905	1.00	1.00	25.00	1080.00	0.000	0.000	1476.20	0.00	0.00
26	137.00	Allen Telecom	12	33.550	36.905	0.48	0.80	3.11	88.56	0.000	0.000	183.66	0.00	0.00
27	137.00	Kathrein 782 11056	3	33.550	36.905	0.48	0.80	0.22	29.70	0.000	0.000	12.75	0.00	0.00
28	137.00	Commscope LNX-6515DS	3	33.550	36.905	0.67	0.80	23.08	134.46	0.000	0.000	1363.02	0.00	0.00
29	137.00	RFS APXV18-209014-02	3	33.550	36.905	0.62	0.80	6.49	50.49	0.000	0.000	383.01	0.00	0.00
30	116.00	Low Profile Platform	1	32.395	35.635	1.00	1.00	22.00	1350.00	0.000	0.000	1254.34	0.00	0.00
31	116.00	Kathrein 742 213	3	32.395	35.635	0.62	0.80	9.62	59.40	0.000	0.000	548.61	0.00	0.00
32	107.00	Powerwave LGP21903	6	31.849	35.034	0.48	0.80	0.66	28.62	0.000	0.000	37.13	0.00	0.00
33	107.00	Powerwave	3	31.849	35.034	0.48	0.80	0.79	43.20	0.000	0.000	44.39	0.00	0.00
34	107.00	KMW	3	31.849	35.034	0.63	0.80	15.21	130.95	0.000	0.000	852.36	0.00	0.00
35	107.00	Powerwave 7770.00	3	31.849	35.034	0.62	0.80	10.18	94.50	0.000	0.000	570.77	0.00	0.00
36	107.00	CCI HPA-65R-BUU-H6	3	31.849	35.034	0.62	0.80	21.88	137.70	0.000	0.000	1226.48	0.00	0.00
37	107.00	Raycap DC6-48-60-18-8F	1	31.849	35.034	0.54	0.80	1.18	29.52	0.000	0.000	66.10	0.00	0.00
38	107.00	Powerwave 7020.00	6	31.849	35.034	0.48	0.80	0.98	11.88	0.000	0.000	54.89	0.00	0.00
39	107.00	Ericsson RRUS-32 B2	3	31.849	35.034	0.54	0.80	4.84	143.10	0.000	0.000	271.31	0.00	0.00
40	107.00	CCI DTMAP7819VG12A	3	31.849	35.034	0.48	0.80	1.41	51.79	0.000	0.000	79.10	0.00	0.00
41	107.00	Low Profile Platform	1	31.849	35.034	0.00	1.00	22.00	1350.00	0.000	0.000	1233.19	0.00	0.00
42	107.00	Ericsson RRUS 11	6	31.849	35.034	0.54	0.80	8.10	297.00	0.000	0.000	454.28	0.00	0.00
<b>Totals:</b>									<b>9,506.60</b>			<b>22,558.25</b>		

## Total Applied Force Summary

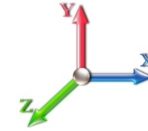
<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> EIA/TIA-222-G	12/8/2016
<b>Site Name:</b> Long Hill #1	<b>Exposure:</b> C	
<b>Height:</b> 158.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 0.9D + 1.6W 101 mph Wind

**Dead Load Factor** 0.90  
**Wind Load Factor** 1.60



**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		589.88	1310.84	0.00	0.00
10.00		577.88	1422.83	0.00	0.00
15.00		565.89	1397.85	0.00	0.00
20.00		587.71	1372.87	0.00	0.00
25.00		602.64	1347.88	0.00	0.00
30.00		612.36	1322.90	0.00	0.00
35.00		618.24	1297.92	0.00	0.00
40.00		621.14	1272.93	0.00	0.00
45.00		621.65	1247.95	0.00	0.00
45.25		30.72	61.74	0.00	0.00
50.00		598.14	1984.72	0.00	0.00
51.25		155.90	515.34	0.00	0.00
55.00		468.80	803.69	0.00	0.00
60.00		622.59	1052.85	0.00	0.00
65.00		616.86	1031.44	0.00	0.00
70.00		609.99	1010.02	0.00	0.00
75.00		602.11	988.61	0.00	0.00
80.00		593.31	967.19	0.00	0.00
85.00		583.67	945.78	0.00	0.00
90.00		573.27	924.36	0.00	0.00
91.75		197.32	318.47	0.00	0.00
95.00		368.29	880.14	0.00	0.00
96.50		168.01	401.13	0.00	0.00
100.00		388.74	468.47	0.00	0.00
105.00		545.73	657.11	0.00	0.00
107.00	(38) attachments	5104.10	2577.10	0.00	0.00
110.00		317.55	342.08	0.00	0.00
115.00		519.51	558.72	0.00	0.00
116.00	(4) attachments	1904.82	1519.43	0.00	0.00
120.00		403.02	411.95	0.00	0.00
125.00		491.27	502.08	0.00	0.00
130.00		476.48	487.81	0.00	0.00
133.00		278.16	285.83	0.00	0.00
135.00		185.46	325.67	0.00	0.00
136.75		160.21	281.22	0.00	0.00
137.00	(22) attachments	3441.35	1406.57	0.00	0.00
140.00		269.97	243.79	0.00	0.00
145.00		437.84	394.89	0.00	0.00
146.00	(30) attachments	5256.01	2230.78	0.00	0.00
150.00		335.67	289.91	0.00	0.00
151.00	(3) attachments	691.90	161.77	518.93	0.00
155.00		322.33	277.91	0.00	0.00
158.00	(31) attachments	6900.67	2353.94	0.00	0.00
	<b>Totals:</b>	<b>40,017.14</b>	<b>39,656.46</b>	<b>518.93</b>	<b>0.00</b>

## Linear Appurtenance Segment Forces (Factored)

<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> EIA/TIA-222-G	12/8/2016
<b>Site Name:</b> Long Hill #1	<b>Exposure:</b> C	
<b>Height:</b> 158.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II

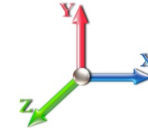


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**Load Case:** 0.9D + 1.6W 101 mph Wind

**Dead Load Factor** 0.90

**Wind Load Factor** 1.60



**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" Hybrid	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	21.088	0.00	3.96
10.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.088	0.00	9.90
15.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	21.088	0.00	9.90
20.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	22.375	0.00	9.90
25.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	23.451	0.00	9.90
30.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	24.369	0.00	9.90
35.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	25.172	0.00	9.90
40.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	25.890	0.00	9.90
45.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	26.540	0.00	9.90
45.25	1 5/8" Hybrid	Yes	0.25	0.000	0.00	0.00	0.00	0.000	0.000	26.571	0.00	0.50
50.00	1 5/8" Hybrid	Yes	4.75	0.000	0.00	0.00	0.00	0.000	0.000	27.135	0.00	9.41
51.25	1 5/8" Hybrid	Yes	1.25	0.000	0.00	0.00	0.00	0.000	0.000	27.277	0.00	2.48
55.00	1 5/8" Hybrid	Yes	3.75	0.000	0.00	0.00	0.00	0.000	0.000	27.685	0.00	7.43
60.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	28.197	0.00	9.90
65.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	28.676	0.00	9.90
70.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	29.127	0.00	9.90
75.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	29.553	0.00	9.90
80.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	29.958	0.00	9.90
85.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	30.342	0.00	9.90
90.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	30.710	0.00	9.90
91.75	1 5/8" Hybrid	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	30.834	0.00	3.47
95.00	1 5/8" Hybrid	Yes	3.25	0.000	0.00	0.00	0.00	0.000	0.000	31.061	0.00	6.44
96.50	1 5/8" Hybrid	Yes	1.50	0.000	0.00	0.00	0.00	0.000	0.000	31.164	0.00	2.97
100.00	1 5/8" Hybrid	Yes	3.50	0.000	0.00	0.00	0.00	0.000	0.000	31.399	0.00	6.93
105.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	31.723	0.00	9.90
107.00	1 5/8" Hybrid	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	31.849	0.00	3.96
110.00	1 5/8" Hybrid	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	32.035	0.00	5.94
115.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	32.336	0.00	9.90
116.00	1 5/8" Hybrid	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	32.395	0.00	1.98
120.00	1 5/8" Hybrid	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	32.627	0.00	7.92
125.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	32.909	0.00	9.90
130.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	33.182	0.00	9.90
133.00	1 5/8" Hybrid	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	33.341	0.00	5.94
135.00	1 5/8" Hybrid	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	33.446	0.00	3.96
136.75	1 5/8" Hybrid	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	33.537	0.00	3.47
137.00	1 5/8" Hybrid	Yes	0.25	0.000	0.00	0.00	0.00	0.000	0.000	33.550	0.00	0.50
140.00	1 5/8" Hybrid	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	33.703	0.00	5.94
145.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	33.953	0.00	9.90
146.00	1 5/8" Hybrid	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	34.002	0.00	1.98
150.00	1 5/8" Hybrid	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	34.196	0.00	7.92
151.00	1 5/8" Hybrid	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	34.244	0.00	1.98
155.00	1 5/8" Hybrid	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	34.433	0.00	7.92
158.00	1 5/8" Hybrid	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	34.573	0.00	5.94
<b>Totals:</b>											<b>0.0</b>	<b>306.9</b>



## Wind Loading - Shaft

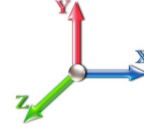
<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> EIA/TIA-222-G	12/8/2016
<b>Site Name:</b> Long Hill #1	<b>Exposure:</b> C	
<b>Height:</b> 158.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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

**Iterations** 24

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.00



Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	5.168	5.68	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	5.168	5.68	0.00	1.200	1.242	5.00	25.487	30.58	173.9	454.8	2080.8
10.00		1.00	0.85	5.168	5.68	0.00	1.200	1.331	5.00	25.064	30.08	171.0	478.3	2071.1
15.00		1.00	0.85	5.168	5.68	0.00	1.200	1.386	5.00	24.613	29.54	167.9	488.4	2047.8
20.00		1.00	0.90	5.483	6.03	0.00	1.200	1.427	5.00	24.149	28.98	174.8	492.5	2018.6
25.00		1.00	0.95	5.747	6.32	0.00	1.200	1.459	5.00	23.679	28.41	179.6	493.2	1985.9
30.00		1.00	0.98	5.972	6.57	0.00	1.200	1.486	5.00	23.204	27.84	182.9	491.5	1951.0
35.00		1.00	1.01	6.169	6.79	0.00	1.200	1.509	5.00	22.726	27.27	185.1	488.3	1914.4
40.00		1.00	1.04	6.345	6.98	0.00	1.200	1.529	5.00	22.246	26.70	186.3	483.8	1876.6
45.00		1.00	1.07	6.504	7.15	0.00	1.200	1.547	5.00	21.764	26.12	186.9	478.3	1837.8
45.25 Bot - Section 2		1.00	1.07	6.512	7.16	0.00	1.200	1.548	0.25	1.075	1.29	9.2	23.9	91.0
50.00		1.00	1.09	6.650	7.32	0.00	1.200	1.564	4.75	20.506	24.61	180.0	455.4	2812.5
51.25 Top - Section 1		1.00	1.10	6.685	7.35	0.00	1.200	1.568	1.25	5.323	6.39	47.0	119.4	730.4
55.00		1.00	1.12	6.785	7.46	0.00	1.200	1.579	3.75	15.788	18.95	141.4	354.4	1197.6
60.00		1.00	1.14	6.910	7.60	0.00	1.200	1.592	5.00	20.628	24.75	188.2	465.0	1564.4
65.00		1.00	1.16	7.028	7.73	0.00	1.200	1.605	5.00	20.141	24.17	186.8	457.1	1527.9
70.00		1.00	1.17	7.138	7.85	0.00	1.200	1.617	5.00	19.654	23.58	185.2	448.7	1491.0
75.00		1.00	1.19	7.243	7.97	0.00	1.200	1.628	5.00	19.166	23.00	183.2	439.9	1453.6
80.00		1.00	1.21	7.342	8.08	0.00	1.200	1.639	5.00	18.678	22.41	181.0	430.8	1416.0
85.00		1.00	1.22	7.436	8.18	0.00	1.200	1.649	5.00	18.189	21.83	178.5	421.4	1378.0
90.00		1.00	1.24	7.526	8.28	0.00	1.200	1.658	5.00	17.700	21.24	175.8	411.7	1339.7
91.75 Bot - Section 3		1.00	1.24	7.557	8.31	0.00	1.200	1.662	1.75	6.078	7.29	60.6	142.9	461.0
95.00		1.00	1.25	7.612	8.37	0.00	1.200	1.667	3.25	11.267	13.52	113.2	264.5	1240.2
96.50 Top - Section 2		1.00	1.26	7.637	8.40	0.00	1.200	1.670	1.50	5.130	6.16	51.7	121.2	564.7
100.00		1.00	1.27	7.695	8.46	0.00	1.200	1.676	3.50	11.800	14.16	119.9	277.7	689.3
105.00		1.00	1.28	7.774	8.55	0.00	1.200	1.684	5.00	16.441	19.73	168.7	386.4	958.1
107.00 Appurtenance(s)		1.00	1.28	7.805	8.59	0.00	1.200	1.687	2.00	6.438	7.73	66.3	152.9	376.2
110.00		1.00	1.29	7.851	8.64	0.00	1.200	1.692	3.00	9.511	11.41	98.6	225.5	554.8
115.00		1.00	1.30	7.925	8.72	0.00	1.200	1.699	5.00	15.460	18.55	161.7	365.1	898.7
116.00 Appurtenance(s)		1.00	1.31	7.939	8.73	0.00	1.200	1.701	1.00	3.033	3.64	31.8	72.6	177.0
120.00		1.00	1.32	7.996	8.80	0.00	1.200	1.707	4.00	11.935	14.32	126.0	283.3	693.5
125.00		1.00	1.33	8.065	8.87	0.00	1.200	1.714	5.00	14.477	17.37	154.1	343.0	838.6
130.00		1.00	1.34	8.132	8.95	0.00	1.200	1.720	5.00	13.986	16.78	150.1	331.8	808.4
133.00 Bot - Section 4		1.00	1.34	8.171	8.99	0.00	1.200	1.724	3.00	8.155	9.79	88.0	195.0	471.8
135.00		1.00	1.35	8.197	9.02	0.00	1.200	1.727	2.00	5.423	6.51	58.7	130.3	495.0
136.75 Top - Section 3		1.00	1.35	8.219	9.04	0.00	1.200	1.729	1.75	4.680	5.62	50.8	112.6	426.7
137.00 Appurtenance(s)		1.00	1.35	8.222	9.04	0.00	1.200	1.729	0.25	0.664	0.80	7.2	16.1	38.5
140.00		1.00	1.36	8.260	9.09	0.00	1.200	1.733	3.00	7.869	9.44	85.8	188.6	454.3
145.00		1.00	1.37	8.321	9.15	0.00	1.200	1.739	5.00	12.722	15.27	139.7	302.7	730.2
146.00 Appurtenance(s)		1.00	1.37	8.333	9.17	0.00	1.200	1.741	1.00	2.485	2.98	27.3	60.1	143.3
150.00		1.00	1.38	8.381	9.22	0.00	1.200	1.745	4.00	9.744	11.69	107.8	232.7	558.0
151.00 Appurtenance(s)		1.00	1.38	8.392	9.23	0.00	1.200	1.746	1.00	2.386	2.86	26.4	57.7	137.1
155.00		1.00	1.39	8.439	9.28	0.00	1.200	1.751	4.00	9.350	11.22	104.1	223.2	533.3
158.00 Appurtenance(s)		1.00	1.39	8.473	9.32	0.00	1.200	1.754	3.00	6.805	8.17	76.1	163.1	387.7
<b>Totals:</b>								<b>158.00</b>				<b>5,339.5</b>		<b>45,422.7</b>

## Discrete Appurtenance Forces

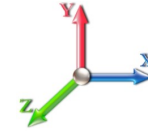
<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> EIA/TIA-222-G	12/8/2016
<b>Site Name:</b> Long Hill #1	<b>Exposure:</b> C	
<b>Height:</b> 158.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.00



**Iterations** 24

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	158.00	Alcatel RRH2X60-700	3	8.473	9.320	0.54	0.80	6.90	418.93	0.000	0.000	64.34	0.00	0.00
2	158.00	Commscope	6	8.473	9.320	0.66	0.80	37.25	1579.45	0.000	0.000	347.20	0.00	0.00
3	158.00	Amphenol	2	8.473	9.320	0.75	0.80	18.78	440.69	0.000	0.000	175.06	0.00	0.00
4	158.00	RFS APL866513-42T0 w/	4	8.473	9.320	0.76	0.80	25.12	1602.59	0.000	0.000	234.11	0.00	0.00
5	158.00	Alcatel RRH2X60-AWS	3	8.473	9.320	0.54	0.80	6.90	418.93	0.000	0.000	64.34	0.00	0.00
6	158.00	6' Lightning rod	1	8.473	9.320	1.00	1.00	1.47	38.99	0.000	0.000	13.73	0.00	0.00
7	158.00	Alcatel RRH2X60-PCS	3	8.473	9.320	0.54	0.80	4.34	363.99	0.000	0.000	40.44	0.00	0.00
8	158.00	RFS FD9R6004/2CL-3CL	6	8.473	9.320	0.48	0.80	2.00	54.05	0.000	0.000	18.62	0.00	0.00
9	158.00	RFS DB-T1-6C-8AB-0Z	2	8.473	9.320	0.48	0.80	5.51	581.71	0.000	0.000	51.39	0.00	0.00
10	158.00	Low Profile Platform	1	8.473	9.320	1.00	1.00	46.05	2192.58	0.000	0.000	429.21	0.00	0.00
11	151.00	Andrew VHLP2.5	1	8.392	9.232	0.80	0.80	8.11	180.53	2.043	0.000	74.87	152.94	0.00
12	151.00	ODU	1	8.392	9.232	0.60	1.00	1.22	36.96	0.000	0.000	11.31	0.00	0.00
13	151.00	Pipe Mount	1	8.392	9.232	1.00	1.00	8.60	105.33	0.000	0.000	79.42	0.00	0.00
14	146.00	RFS APXVSP18-C-A20	3	8.333	9.166	0.66	0.80	25.82	1091.06	0.000	0.000	236.68	0.00	0.00
15	146.00	Low Profile Platform	1	8.333	9.166	1.00	1.00	45.89	2184.30	0.000	0.000	420.61	0.00	0.00
16	146.00	RRUs	3	8.333	9.166	0.54	0.80	6.76	-157.59	0.000	0.000	62.01	0.00	0.00
17	146.00	Kathrein Scala 840 10054	3	8.333	9.166	0.49	0.80	9.16	305.83	0.000	0.000	83.98	0.00	0.00
18	146.00	GPS	1	8.333	9.166	1.00	1.00	1.71	33.24	0.000	0.000	15.68	0.00	0.00
19	146.00	RFS ACU-A20-N RET	4	8.333	9.166	0.48	0.80	0.72	16.74	0.000	0.000	6.58	0.00	0.00
20	146.00	Alcatel 800MHz Filters	3	8.333	9.166	0.48	0.80	1.76	69.47	0.000	0.000	16.16	0.00	0.00
21	146.00	Alcatel 800 MHz RRH	3	8.333	9.166	0.54	0.80	4.99	348.78	0.000	0.000	45.78	0.00	0.00
22	146.00	Alcatel 1900MHz RRH	3	8.333	9.166	0.54	0.80	5.22	391.41	0.000	0.000	47.88	0.00	0.00
23	146.00	RFS APXVTM14-C-120 w/	3	8.333	9.166	0.62	0.80	13.95	800.07	0.000	0.000	127.84	0.00	0.00
24	146.00	Alcatel TD-RRH8x20-25	3	8.333	9.166	0.54	0.80	7.82	582.31	0.000	0.000	71.65	0.00	0.00
25	137.00	Low Profile Platform w/	1	8.222	9.044	1.00	1.00	45.75	2177.68	0.000	0.000	413.82	0.00	0.00
26	137.00	Allen Telecom	12	8.222	9.044	0.48	0.80	6.20	236.63	0.000	0.000	56.06	0.00	0.00
27	137.00	Kathrein 782 11056	3	8.222	9.044	0.48	0.80	0.45	77.04	0.000	0.000	4.06	0.00	0.00
28	137.00	Commscope LNX-6515DS	3	8.222	9.044	0.67	0.80	29.60	664.32	0.000	0.000	267.70	0.00	0.00
29	137.00	RFS APXV18-209014-02	3	8.222	9.044	0.62	0.80	8.20	326.10	0.000	0.000	74.17	0.00	0.00
30	116.00	Low Profile Platform	1	7.939	8.733	1.00	1.00	39.21	2775.70	0.000	0.000	342.46	0.00	0.00
31	116.00	Kathrein 742 213	3	7.939	8.733	0.62	0.80	11.94	407.10	0.000	0.000	104.27	0.00	0.00
32	107.00	Powerwave LGP21903	6	7.805	8.586	0.48	0.80	1.61	69.67	0.000	0.000	13.79	0.00	0.00
33	107.00	Powerwave	3	7.805	8.586	0.48	0.80	1.50	98.90	0.000	0.000	12.89	0.00	0.00
34	107.00	KMW	3	7.805	8.586	0.63	0.80	20.33	505.76	0.000	0.000	174.52	0.00	0.00
35	107.00	Powerwave 7770.00	3	7.805	8.586	0.56	0.80	10.97	515.09	0.000	0.000	94.16	0.00	0.00
36	107.00	CCI HPA-65R-BUU-H6	3	7.805	8.586	0.62	0.80	24.48	1010.01	0.000	0.000	210.15	0.00	0.00
37	107.00	Raycap DC6-48-60-18-8F	1	7.805	8.586	0.54	0.80	1.72	84.31	0.000	0.000	14.78	0.00	0.00
38	107.00	Powerwave 7020.00	6	7.805	8.586	0.48	0.80	2.12	57.82	0.000	0.000	18.24	0.00	0.00
39	107.00	Ericsson RRUS-32 B2	3	7.805	8.586	0.54	0.80	6.00	494.80	0.000	0.000	51.56	0.00	0.00
40	107.00	CCI DTMAP7819VG12A	3	7.805	8.586	0.48	0.80	2.33	121.03	0.000	0.000	20.02	0.00	0.00
41	107.00	Low Profile Platform	1	7.805	8.586	0.00	1.00	39.07	2765.43	0.000	0.000	335.49	0.00	0.00
42	107.00	Ericsson RRUS 11	6	7.805	8.586	0.54	0.80	10.12	859.42	0.000	0.000	86.92	0.00	0.00

**Totals: 26,927.15 5,033.92**

## Total Applied Force Summary

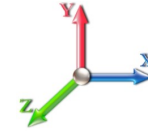
<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> EIA/TIA-222-G	12/8/2016
<b>Site Name:</b> Long Hill #1	<b>Exposure:</b> C	
<b>Height:</b> 158.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.00



**Iterations** 24

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		173.86	2215.39	0.00	0.00
10.00		170.98	2410.33	0.00	0.00
15.00		167.90	2388.84	0.00	0.00
20.00		174.80	2360.96	0.00	0.00
25.00		179.64	2329.38	0.00	0.00
30.00		182.92	2295.35	0.00	0.00
35.00		185.06	2259.56	0.00	0.00
40.00		186.32	2222.44	0.00	0.00
45.00		186.86	2184.26	0.00	0.00
45.25		9.24	108.33	0.00	0.00
50.00		180.01	3142.15	0.00	0.00
51.25		46.97	817.22	0.00	0.00
55.00		141.40	1458.28	0.00	0.00
60.00		188.16	1912.41	0.00	0.00
65.00		186.84	1876.35	0.00	0.00
70.00		185.19	1839.83	0.00	0.00
75.00		183.24	1802.90	0.00	0.00
80.00		181.01	1765.61	0.00	0.00
85.00		178.54	1727.99	0.00	0.00
90.00		175.84	1690.08	0.00	0.00
91.75		60.63	583.61	0.00	0.00
95.00		113.22	1468.09	0.00	0.00
96.50		51.72	669.92	0.00	0.00
100.00		119.86	934.96	0.00	0.00
105.00		168.72	1309.40	0.00	0.00
107.00	(38) attachments	1098.86	7099.04	0.00	0.00
110.00		98.56	709.89	0.00	0.00
115.00		161.72	1157.43	0.00	0.00
116.00	(4) attachments	478.51	3411.57	0.00	0.00
120.00		125.97	870.71	0.00	0.00
125.00		154.12	1060.41	0.00	0.00
130.00		150.13	1030.38	0.00	0.00
133.00		87.96	605.08	0.00	0.00
135.00		58.67	583.92	0.00	0.00
136.75		50.78	504.56	0.00	0.00
137.00	(22) attachments	823.01	3531.39	0.00	0.00
140.00		85.79	542.82	0.00	0.00
145.00		139.73	878.06	0.00	0.00
146.00	(30) attachments	1162.17	5838.48	0.00	0.00
150.00		107.79	658.54	0.00	0.00
151.00	(3) attachments	192.03	485.08	152.94	0.00
155.00		104.15	633.21	0.00	0.00
158.00	(31) attachments	1514.55	8154.60	0.00	0.00
	<b>Totals:</b>	<b>10,373.41</b>	<b>81,528.78</b>	<b>152.94</b>	<b>0.00</b>

## Linear Appurtenance Segment Forces (Factored)

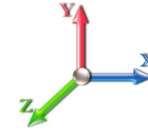
<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> EIA/TIA-222-G	12/8/2016
<b>Site Name:</b> Long Hill #1	<b>Exposure:</b> C	
<b>Height:</b> 158.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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

**Dead Load Factor** 1.20  
**Wind Load Factor** 1.00



**Iterations** 24

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" Hybrid	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	5.168	0.00	18.11
10.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.168	0.00	48.07
15.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.168	0.00	49.84
20.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.483	0.00	51.17
25.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.747	0.00	52.23
30.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.972	0.00	53.14
35.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.169	0.00	53.92
40.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.345	0.00	54.61
45.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.504	0.00	55.23
45.25	1 5/8" Hybrid	Yes	0.25	0.000	0.00	0.00	0.00	0.000	0.000	6.512	0.00	2.76
50.00	1 5/8" Hybrid	Yes	4.75	0.000	0.00	0.00	0.00	0.000	0.000	6.650	0.00	53.01
51.25	1 5/8" Hybrid	Yes	1.25	0.000	0.00	0.00	0.00	0.000	0.000	6.685	0.00	13.98
55.00	1 5/8" Hybrid	Yes	3.75	0.000	0.00	0.00	0.00	0.000	0.000	6.785	0.00	42.24
60.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	6.910	0.00	56.80
65.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.028	0.00	57.25
70.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.138	0.00	57.67
75.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.243	0.00	58.07
80.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.342	0.00	58.44
85.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.436	0.00	58.79
90.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.526	0.00	59.13
91.75	1 5/8" Hybrid	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	7.557	0.00	20.74
95.00	1 5/8" Hybrid	Yes	3.25	0.000	0.00	0.00	0.00	0.000	0.000	7.612	0.00	38.65
96.50	1 5/8" Hybrid	Yes	1.50	0.000	0.00	0.00	0.00	0.000	0.000	7.637	0.00	17.86
100.00	1 5/8" Hybrid	Yes	3.50	0.000	0.00	0.00	0.00	0.000	0.000	7.695	0.00	41.83
105.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.774	0.00	60.06
107.00	1 5/8" Hybrid	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.805	0.00	24.07
110.00	1 5/8" Hybrid	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	7.851	0.00	36.21
115.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.925	0.00	60.62
116.00	1 5/8" Hybrid	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	7.939	0.00	12.13
120.00	1 5/8" Hybrid	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	7.996	0.00	48.70
125.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.065	0.00	61.13
130.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.132	0.00	61.38
133.00	1 5/8" Hybrid	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	8.171	0.00	36.91
135.00	1 5/8" Hybrid	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	8.197	0.00	24.65
136.75	1 5/8" Hybrid	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	8.219	0.00	21.60
137.00	1 5/8" Hybrid	Yes	0.25	0.000	0.00	0.00	0.00	0.000	0.000	8.222	0.00	3.09
140.00	1 5/8" Hybrid	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	8.260	0.00	37.11
145.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.321	0.00	62.07
146.00	1 5/8" Hybrid	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	8.333	0.00	12.42
150.00	1 5/8" Hybrid	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	8.381	0.00	49.83
151.00	1 5/8" Hybrid	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	8.392	0.00	12.47
155.00	1 5/8" Hybrid	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	8.439	0.00	50.00
158.00	1 5/8" Hybrid	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	8.473	0.00	37.58
<b>Totals:</b>											<b>0.0</b>	<b>1,785.6</b>





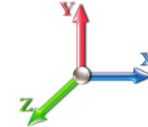
## Seismic Segment Forces (Factored)

<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> EIA/TIA-222-G	12/8/2016
<b>Site Name:</b> Long Hill #1	<b>Exposure:</b> C	
<b>Height:</b> 158.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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<b>Load Case:</b> 1.2D + 1.0E					<b>Iterations</b> 22
<b>Gust Response Factor</b>	1.10	<b>Sds</b>	0.19	<b>Ss</b>	0.18
<b>Dead Load Factor</b>	1.20	<b>Seismic Load Factor</b>	1.00	<b>Sd1</b>	0.10
<b>Wind Load Factor</b>	0.00	<b>Structure Frequency</b>	0.36	<b>SA</b>	0.04
					<b>Seismic Importance Factor</b> 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		1355.0	0.00	0.03	0.02	23.89	
10.00		1327.2	0.01	0.05	0.03	34.37	
15.00		1299.5	0.02	0.06	0.04	39.13	
20.00		1271.7	0.03	0.07	0.04	41.13	
25.00		1243.9	0.05	0.07	0.04	41.83	
30.00		1216.2	0.07	0.07	0.04	42.00	
35.00		1188.4	0.09	0.07	0.04	42.01	
40.00		1160.7	0.12	0.07	0.03	41.96	
45.00		1132.9	0.15	0.07	0.03	41.74	
45.25	Bot - Section 2	55.92	0.16	0.07	0.03	2.06	
50.00		1964.2	0.19	0.06	0.02	72.98	
51.25	Top - Section 1	509.18	0.20	0.06	0.02	18.91	
55.00		702.74	0.23	0.06	0.02	25.78	
60.00		916.16	0.27	0.05	0.01	31.96	
65.00		892.37	0.32	0.04	0.01	27.75	
70.00		868.58	0.37	0.03	0.01	21.50	
75.00		844.78	0.43	0.01	0.01	13.14	
80.00		820.99	0.48	-0.01	0.01	3.21	
85.00		797.19	0.55	-0.03	0.01	-7.05	
90.00		773.40	0.61	-0.06	0.02	-16.07	
91.75	Bot - Section 3	265.07	0.64	-0.07	0.02	-6.47	
95.00		813.05	0.68	-0.08	0.03	-24.41	
96.50	Top - Section 2	369.60	0.71	-0.09	0.03	-11.85	
100.00		342.95	0.76	-0.10	0.04	-12.11	
105.00		476.45	0.83	-0.12	0.06	-17.17	
107.00	Appurtenance(s)	2761.9	0.87	-0.12	0.08	-96.75	
110.00		274.45	0.92	-0.12	0.09	-8.81	
115.00		444.72	1.00	-0.11	0.13	-10.46	
116.00	Appurtenance(s)	1653.0	1.02	-0.10	0.14	-35.14	
120.00		341.82	1.09	-0.08	0.18	-3.54	
125.00		413.00	1.18	-0.01	0.24	3.03	
130.00		397.14	1.28	0.09	0.32	11.75	
133.00	Bot - Section 4	230.67	1.34	0.18	0.37	10.41	
135.00		303.91	1.38	0.25	0.41	17.15	
136.75	Top - Section 3	261.76	1.42	0.31	0.45	17.52	
137.00	Appurtenance(s)	1555.6	1.42	0.32	0.45	106.53	
140.00		221.39	1.48	0.46	0.52	19.47	
145.00		356.30	1.59	0.75	0.66	44.26	
146.00	Appurtenance(s)	2462.1	1.61	0.82	0.69	325.18	
150.00		271.08	1.70	1.14	0.82	44.83	
151.00	Appurtenance(s)	166.98	1.73	1.22	0.86	29.09	
155.00		258.39	1.82	1.63	1.01	54.64	
158.00	Appurtenance(s)	2577.6	1.89	1.98	1.14	622.68	
<b>Totals:</b>		<b>37,560.6</b>				<b>1,622.0</b>	<b>Total Wind: 40,017.1</b>

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

## Calculated Forces

**Structure:** CT01080-S-SBA  
**Site Name:** Long Hill #1  
**Height:** 158.00 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 1.1

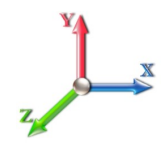
**Topography:** 1

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

12/8/2016  
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<b>Load Case:</b> 1.2D + 1.0E										<b>Iterations</b> 22
<b>Gust Response Factor</b>	1.10	<b>Sds</b>	0.19	<b>Ss</b>	0.18					
<b>Dead Load Factor</b>	1.20	<b>Seismic Load Factor</b>	1.00	<b>Sd1</b>	0.10					
<b>Wind Load Factor</b>	0.00	<b>Structure Frequency</b>	0.36	<b>SA</b>	0.04					
					<b>Seismic Importance Factor</b> 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	-52.88	-1.88	0.00	-228.10	0.00	228.10	5458.79	2729.40	13000.6	6509.99	0.00	0.00	0.00	0.045
5.00	-51.13	-1.86	0.00	-218.72	0.00	218.72	5387.61	2693.80	12568.9	6293.83	0.01	-0.01	0.044	
10.00	-49.23	-1.83	0.00	-209.42	0.00	209.42	5314.79	2657.39	12140.4	6079.27	0.02	-0.02	0.044	
15.00	-47.37	-1.80	0.00	-200.26	0.00	200.26	5240.33	2620.17	11715.4	5866.42	0.04	-0.03	0.043	
20.00	-45.53	-1.77	0.00	-191.25	0.00	191.25	5164.24	2582.12	11294.0	5655.41	0.08	-0.04	0.043	
25.00	-43.74	-1.73	0.00	-182.41	0.00	182.41	5086.52	2543.26	10876.5	5446.36	0.13	-0.05	0.042	
30.00	-41.97	-1.70	0.00	-173.76	0.00	173.76	5007.16	2503.58	10463.2	5239.39	0.18	-0.06	0.042	
35.00	-40.24	-1.66	0.00	-165.28	0.00	165.28	4926.16	2463.08	10054.2	5034.61	0.25	-0.07	0.041	
40.00	-38.54	-1.62	0.00	-156.98	0.00	156.98	4843.52	2421.76	9649.95	4832.15	0.33	-0.08	0.040	
45.00	-36.88	-1.58	0.00	-148.87	0.00	148.87	4759.26	2379.63	9250.49	4632.12	0.42	-0.09	0.040	
45.25	-36.80	-1.58	0.00	-148.48	0.00	148.48	4755.00	2377.50	9230.65	4622.19	0.42	-0.09	0.040	
50.00	-34.15	-1.51	0.00	-140.96	0.00	140.96	4673.35	2336.67	8856.13	4434.65	0.52	-0.10	0.039	
51.25	-33.46	-1.49	0.00	-139.07	0.00	139.07	3853.76	1926.88	7395.56	3703.28	0.54	-0.10	0.046	
55.00	-32.39	-1.47	0.00	-133.47	0.00	133.47	3804.98	1902.49	7163.10	3586.87	0.63	-0.11	0.046	
60.00	-30.99	-1.44	0.00	-126.12	0.00	126.12	3738.51	1869.25	6856.06	3433.13	0.75	-0.13	0.045	
65.00	-29.61	-1.42	0.00	-118.91	0.00	118.91	3670.40	1835.20	6552.57	3281.16	0.89	-0.14	0.044	
70.00	-28.27	-1.40	0.00	-111.81	0.00	111.81	3600.66	1800.33	6252.87	3131.08	1.05	-0.15	0.044	
75.00	-26.95	-1.39	0.00	-104.81	0.00	104.81	3529.28	1764.64	5957.19	2983.02	1.21	-0.17	0.043	
80.00	-25.66	-1.39	0.00	-97.86	0.00	97.86	3456.27	1728.13	5665.78	2837.10	1.39	-0.18	0.042	
85.00	-24.40	-1.39	0.00	-90.91	0.00	90.91	3381.62	1690.81	5378.88	2693.44	1.59	-0.19	0.041	
90.00	-23.16	-1.39	0.00	-83.95	0.00	83.95	3305.34	1652.67	5096.71	2552.14	1.80	-0.21	0.040	
91.75	-22.74	-1.39	0.00	-81.52	0.00	81.52	3278.25	1639.13	4999.12	2503.28	1.88	-0.21	0.040	
95.00	-21.57	-1.39	0.00	-77.00	0.00	77.00	3221.38	1610.69	4810.51	2408.83	2.02	-0.22	0.039	
96.50	-21.03	-1.39	0.00	-74.91	0.00	74.91	1897.75	948.88	2865.01	1434.63	2.09	-0.23	0.063	
100.00	-20.41	-1.39	0.00	-70.04	0.00	70.04	1872.71	936.35	2763.41	1383.76	2.26	-0.24	0.062	
105.00	-19.53	-1.40	0.00	-63.07	0.00	63.07	1835.54	917.77	2619.24	1311.57	2.52	-0.26	0.059	
107.00	-16.09	-1.38	0.00	-60.28	0.00	60.28	1820.21	910.11	2561.95	1282.88	2.63	-0.27	0.056	
110.00	-15.64	-1.38	0.00	-56.14	0.00	56.14	1796.73	898.37	2476.44	1240.06	2.80	-0.28	0.054	
115.00	-14.89	-1.38	0.00	-49.21	0.00	49.21	1756.29	878.14	2335.25	1169.36	3.11	-0.30	0.051	
116.00	-12.86	-1.38	0.00	-47.83	0.00	47.83	1748.00	874.00	2307.22	1155.32	3.17	-0.30	0.049	
120.00	-12.32	-1.38	0.00	-42.33	0.00	42.33	1714.21	857.11	2195.89	1099.58	3.43	-0.32	0.046	
125.00	-11.65	-1.37	0.00	-35.44	0.00	35.44	1670.50	835.25	2058.61	1030.84	3.77	-0.34	0.041	
130.00	-10.99	-1.36	0.00	-28.58	0.00	28.58	1625.15	812.57	1923.65	963.25	4.13	-0.35	0.036	
133.00	-10.61	-1.35	0.00	-24.50	0.00	24.50	1597.15	798.58	1843.89	923.31	4.36	-0.36	0.033	
135.00	-10.18	-1.33	0.00	-21.80	0.00	21.80	1578.16	789.08	1791.25	896.95	4.51	-0.37	0.031	
136.75	-9.80	-1.31	0.00	-19.47	0.00	19.47	1475.57	737.78	1680.22	841.36	4.64	-0.37	0.030	
137.00	-7.93	-1.19	0.00	-19.15	0.00	19.15	1473.30	736.65	1674.05	838.27	4.66	-0.37	0.028	
140.00	-7.60	-1.17	0.00	-15.57	0.00	15.57	1445.77	722.89	1600.57	801.47	4.90	-0.38	0.025	
145.00	-7.08	-1.12	0.00	-9.71	0.00	9.71	1398.74	699.37	1480.44	741.32	5.30	-0.39	0.018	
146.00	-4.11	-0.78	0.00	-8.59	0.00	8.59	1389.16	694.58	1456.78	729.47	5.39	-0.39	0.015	
150.00	-3.72	-0.73	0.00	-5.47	0.00	5.47	1340.27	670.14	1353.35	677.68	5.72	-0.40	0.011	
151.00	-3.50	-0.70	0.00	-4.74	0.00	4.74	1327.48	663.74	1327.52	664.75	5.80	-0.40	0.010	
155.00	-3.13	-0.64	0.00	-1.93	0.00	1.93	1276.33	638.17	1226.69	614.25	6.13	-0.40	0.006	
158.00	0.00	-0.62	0.00	0.00	0.00	0.00	1237.97	618.99	1153.67	577.69	6.38	-0.40	0.000	

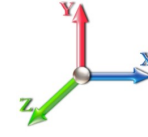
## Seismic Segment Forces (Factored)

<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> EIA/TIA-222-G	12/8/2016
<b>Site Name:</b> Long Hill #1	<b>Exposure:</b> C	
<b>Height:</b> 158.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



Page: 26

<b>Load Case:</b> 0.9D + 1.0E				<b>Iterations</b> 22
<b>Gust Response Factor</b>	1.10	<b>Sds</b>	0.19	<b>Ss</b> 0.18
<b>Dead Load Factor</b>	0.90	<b>Seismic Load Factor</b>	1.00	<b>S1</b> 0.06
<b>Wind Load Factor</b>	0.00	<b>Structure Frequency</b>	0.36	<b>SA</b> 0.04
				<b>Seismic Importance Factor</b> 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		1355.0	0.00	0.03	0.02	23.89	
10.00		1327.2	0.01	0.05	0.03	34.37	
15.00		1299.5	0.02	0.06	0.04	39.13	
20.00		1271.7	0.03	0.07	0.04	41.13	
25.00		1243.9	0.05	0.07	0.04	41.83	
30.00		1216.2	0.07	0.07	0.04	42.00	
35.00		1188.4	0.09	0.07	0.04	42.01	
40.00		1160.7	0.12	0.07	0.03	41.96	
45.00		1132.9	0.15	0.07	0.03	41.74	
45.25	Bot - Section 2	55.92	0.16	0.07	0.03	2.06	
50.00		1964.2	0.19	0.06	0.02	72.98	
51.25	Top - Section 1	509.18	0.20	0.06	0.02	18.91	
55.00		702.74	0.23	0.06	0.02	25.78	
60.00		916.16	0.27	0.05	0.01	31.96	
65.00		892.37	0.32	0.04	0.01	27.75	
70.00		868.58	0.37	0.03	0.01	21.50	
75.00		844.78	0.43	0.01	0.01	13.14	
80.00		820.99	0.48	-0.01	0.01	3.21	
85.00		797.19	0.55	-0.03	0.01	-7.05	
90.00		773.40	0.61	-0.06	0.02	-16.07	
91.75	Bot - Section 3	265.07	0.64	-0.07	0.02	-6.47	
95.00		813.05	0.68	-0.08	0.03	-24.41	
96.50	Top - Section 2	369.60	0.71	-0.09	0.03	-11.85	
100.00		342.95	0.76	-0.10	0.04	-12.11	
105.00		476.45	0.83	-0.12	0.06	-17.17	
107.00	Appurtenance(s)	2761.9	0.87	-0.12	0.08	-96.75	
110.00		274.45	0.92	-0.12	0.09	-8.81	
115.00		444.72	1.00	-0.11	0.13	-10.46	
116.00	Appurtenance(s)	1653.0	1.02	-0.10	0.14	-35.14	
120.00		341.82	1.09	-0.08	0.18	-3.54	
125.00		413.00	1.18	-0.01	0.24	3.03	
130.00		397.14	1.28	0.09	0.32	11.75	
133.00	Bot - Section 4	230.67	1.34	0.18	0.37	10.41	
135.00		303.91	1.38	0.25	0.41	17.15	
136.75	Top - Section 3	261.76	1.42	0.31	0.45	17.52	
137.00	Appurtenance(s)	1555.6	1.42	0.32	0.45	106.53	
140.00		221.39	1.48	0.46	0.52	19.47	
145.00		356.30	1.59	0.75	0.66	44.26	
146.00	Appurtenance(s)	2462.1	1.61	0.82	0.69	325.18	
150.00		271.08	1.70	1.14	0.82	44.83	
151.00	Appurtenance(s)	166.98	1.73	1.22	0.86	29.09	
155.00		258.39	1.82	1.63	1.01	54.64	
158.00	Appurtenance(s)	2577.6	1.89	1.98	1.14	622.68	
<b>Totals:</b>		<b>37,560.6</b>				<b>1,622.0</b>	<b>Total Wind: 40,017.1</b>

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

## Calculated Forces

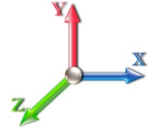
**Structure:** CT01080-S-SBA      **Code:** EIA/TIA-222-G      12/8/2016  
**Site Name:** Long Hill #1      **Exposure:** C  
**Height:** 158.00 (ft)      **Crest Height:** 0.00  
**Base Elev:** 0.000 (ft)      **Site Class:** D - Stiff Soil  
**Gh:** 1.1      **Topography:** 1      **Struct Class:** II      **Page:** 27



**Load Case:** 0.9D + 1.0E

**Iterations** 22

**Gust Response Factor** 1.10      **Sds** 0.19      **Ss** 0.18  
**Dead Load Factor** 0.90      **Seismic Load Factor** 1.00      **Sd1** 0.10      **S1** 0.06  
**Wind Load Factor** 0.00      **Structure Frequency** 0.36      **SA** 0.04      **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	-39.66	-1.87	0.00	-225.71	0.00	225.71	5458.79	2729.40	13000.6	6509.99	0.00	0.00	0.00	0.042
5.00	-38.35	-1.86	0.00	-216.34	0.00	216.34	5387.61	2693.80	12568.9	6293.83	0.00	-0.01	0.041	
10.00	-36.92	-1.83	0.00	-207.06	0.00	207.06	5314.79	2657.39	12140.4	6079.27	0.02	-0.02	0.041	
15.00	-35.52	-1.79	0.00	-197.92	0.00	197.92	5240.33	2620.17	11715.4	5866.42	0.04	-0.03	0.041	
20.00	-34.15	-1.76	0.00	-188.95	0.00	188.95	5164.24	2582.12	11294.0	5655.41	0.08	-0.04	0.040	
25.00	-32.80	-1.72	0.00	-180.16	0.00	180.16	5086.52	2543.26	10876.5	5446.36	0.12	-0.05	0.040	
30.00	-31.48	-1.68	0.00	-171.55	0.00	171.55	5007.16	2503.58	10463.2	5239.39	0.18	-0.06	0.039	
35.00	-30.18	-1.65	0.00	-163.13	0.00	163.13	4926.16	2463.08	10054.2	5034.61	0.25	-0.07	0.039	
40.00	-28.91	-1.61	0.00	-154.91	0.00	154.91	4843.52	2421.76	9649.95	4832.15	0.32	-0.08	0.038	
45.00	-27.66	-1.57	0.00	-146.87	0.00	146.87	4759.26	2379.63	9250.49	4632.12	0.41	-0.09	0.038	
45.25	-27.60	-1.57	0.00	-146.48	0.00	146.48	4755.00	2377.50	9230.65	4622.19	0.42	-0.09	0.037	
50.00	-25.61	-1.49	0.00	-139.04	0.00	139.04	4673.35	2336.67	8856.13	4434.65	0.51	-0.10	0.037	
51.25	-25.10	-1.48	0.00	-137.17	0.00	137.17	3853.76	1926.88	7395.56	3703.28	0.54	-0.10	0.044	
55.00	-24.29	-1.45	0.00	-131.63	0.00	131.63	3804.98	1902.49	7163.10	3586.87	0.62	-0.11	0.043	
60.00	-23.24	-1.42	0.00	-124.37	0.00	124.37	3738.51	1869.25	6856.06	3433.13	0.75	-0.12	0.042	
65.00	-22.21	-1.40	0.00	-117.24	0.00	117.24	3670.40	1835.20	6552.57	3281.16	0.88	-0.14	0.042	
70.00	-21.20	-1.38	0.00	-110.25	0.00	110.25	3600.66	1800.33	6252.87	3131.08	1.03	-0.15	0.041	
75.00	-20.21	-1.37	0.00	-103.35	0.00	103.35	3529.28	1764.64	5957.19	2983.02	1.20	-0.16	0.040	
80.00	-19.24	-1.37	0.00	-96.50	0.00	96.50	3456.27	1728.13	5665.78	2837.10	1.38	-0.18	0.040	
85.00	-18.30	-1.37	0.00	-89.66	0.00	89.66	3381.62	1690.81	5378.88	2693.44	1.57	-0.19	0.039	
90.00	-17.37	-1.37	0.00	-82.82	0.00	82.82	3305.34	1652.67	5096.71	2552.14	1.78	-0.20	0.038	
91.75	-17.05	-1.37	0.00	-80.42	0.00	80.42	3278.25	1639.13	4999.12	2503.28	1.85	-0.21	0.037	
95.00	-16.17	-1.37	0.00	-75.97	0.00	75.97	3221.38	1610.69	4810.51	2408.83	2.00	-0.22	0.037	
96.50	-15.77	-1.37	0.00	-73.92	0.00	73.92	1897.75	948.88	2865.01	1434.63	2.07	-0.22	0.060	
100.00	-15.30	-1.37	0.00	-69.13	0.00	69.13	1872.71	936.35	2763.41	1383.76	2.24	-0.23	0.058	
105.00	-14.65	-1.37	0.00	-62.27	0.00	62.27	1835.54	917.77	2619.24	1311.57	2.49	-0.25	0.055	
107.00	-12.07	-1.36	0.00	-59.53	0.00	59.53	1820.21	910.11	2561.95	1282.88	2.60	-0.26	0.053	
110.00	-11.73	-1.36	0.00	-55.44	0.00	55.44	1796.73	898.37	2476.44	1240.06	2.77	-0.27	0.051	
115.00	-11.17	-1.36	0.00	-48.62	0.00	48.62	1756.29	878.14	2335.25	1169.36	3.07	-0.29	0.048	
116.00	-9.65	-1.36	0.00	-47.25	0.00	47.25	1748.00	874.00	2307.22	1155.32	3.13	-0.30	0.046	
120.00	-9.23	-1.36	0.00	-41.82	0.00	41.82	1714.21	857.11	2195.89	1099.58	3.38	-0.31	0.043	
125.00	-8.73	-1.35	0.00	-35.03	0.00	35.03	1670.50	835.25	2058.61	1030.84	3.72	-0.33	0.039	
130.00	-8.24	-1.34	0.00	-28.26	0.00	28.26	1625.15	812.57	1923.65	963.25	4.08	-0.35	0.034	
133.00	-7.96	-1.33	0.00	-24.23	0.00	24.23	1597.15	798.58	1843.89	923.31	4.30	-0.36	0.031	
135.00	-7.63	-1.31	0.00	-21.57	0.00	21.57	1578.16	789.08	1791.25	896.95	4.45	-0.36	0.029	
136.75	-7.35	-1.29	0.00	-19.27	0.00	19.27	1475.57	737.78	1680.22	841.36	4.59	-0.37	0.028	
137.00	-5.95	-1.18	0.00	-18.95	0.00	18.95	1473.30	736.65	1674.05	838.27	4.60	-0.37	0.027	
140.00	-5.70	-1.16	0.00	-15.41	0.00	15.41	1445.77	722.89	1600.57	801.47	4.84	-0.38	0.023	
145.00	-5.31	-1.11	0.00	-9.62	0.00	9.62	1398.74	699.37	1480.44	741.32	5.24	-0.38	0.017	
146.00	-3.08	-0.77	0.00	-8.51	0.00	8.51	1389.16	694.58	1456.78	729.47	5.32	-0.39	0.014	
150.00	-2.79	-0.73	0.00	-5.42	0.00	5.42	1340.27	670.14	1353.35	677.68	5.64	-0.39	0.010	
151.00	-2.63	-0.70	0.00	-4.70	0.00	4.70	1327.48	663.74	1327.52	664.75	5.73	-0.39	0.009	
155.00	-2.35	-0.64	0.00	-1.92	0.00	1.92	1276.33	638.17	1226.69	614.25	6.05	-0.39	0.005	
158.00	0.00	-0.62	0.00	0.00	0.00	0.00	1237.97	618.99	1153.67	577.69	6.30	-0.39	0.000	

## Wind Loading - Shaft

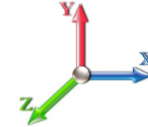
<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> EIA/TIA-222-G	12/8/2016
<b>Site Name:</b> Long Hill #1	<b>Exposure:</b> C	
<b>Height:</b> 158.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 1.0D + 1.0W 60 mph Wind

**Dead Load Factor** 1.00  
**Wind Load Factor** 1.00



**Iterations** 23

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	7.442	8.19	273.27	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	7.442	8.19	267.77	0.650	0.000	5.00	24.452	15.89	130.1	0.0	1355.0
10.00		1.00	0.85	7.442	8.19	262.27	0.650	0.000	5.00	23.955	15.57	127.5	0.0	1327.3
15.00		1.00	0.85	7.442	8.19	256.77	0.650	0.000	5.00	23.457	15.25	124.8	0.0	1299.5
20.00		1.00	0.90	7.896	8.69	258.83	0.650	0.000	5.00	22.960	14.92	129.6	0.0	1271.7
25.00		1.00	0.95	8.276	9.10	259.18	0.650	0.000	5.00	22.463	14.60	132.9	0.0	1244.0
30.00		1.00	0.98	8.600	9.46	258.29	0.650	0.000	5.00	21.966	14.28	135.1	0.0	1216.2
35.00		1.00	1.01	8.883	9.77	256.50	0.650	0.000	5.00	21.469	13.95	136.4	0.0	1188.5
40.00		1.00	1.04	9.137	10.05	254.04	0.650	0.000	5.00	20.972	13.63	137.0	0.0	1160.7
45.00		1.00	1.07	9.366	10.30	251.04	0.650	0.000	5.00	20.475	13.31	137.1	0.0	1132.9
45.25 Bot - Section 2		1.00	1.07	9.377	10.31	250.88	0.650	0.000	0.25	1.011	0.66	6.8	0.0	55.9
50.00		1.00	1.09	9.576	10.53	247.60	0.650	0.000	4.75	19.268	12.52	131.9	0.0	1964.3
51.25 Top - Section 1		1.00	1.10	9.626	10.59	246.68	0.650	0.000	1.25	4.996	3.25	34.4	0.0	509.2
55.00		1.00	1.12	9.770	10.75	247.82	0.650	0.000	3.75	14.802	9.62	103.4	0.0	702.7
60.00		1.00	1.14	9.951	10.95	243.74	0.650	0.000	5.00	19.301	12.55	137.3	0.0	916.2
65.00		1.00	1.16	10.120	11.13	239.38	0.650	0.000	5.00	18.803	12.22	136.1	0.0	892.4
70.00		1.00	1.17	10.279	11.31	234.80	0.650	0.000	5.00	18.306	11.90	134.5	0.0	868.6
75.00		1.00	1.19	10.430	11.47	230.00	0.650	0.000	5.00	17.809	11.58	132.8	0.0	844.8
80.00		1.00	1.21	10.572	11.63	225.01	0.650	0.000	5.00	17.312	11.25	130.9	0.0	821.0
85.00		1.00	1.22	10.708	11.78	219.85	0.650	0.000	5.00	16.815	10.93	128.7	0.0	797.2
90.00		1.00	1.24	10.838	11.92	214.54	0.650	0.000	5.00	16.318	10.61	126.4	0.0	773.4
91.75 Bot - Section 3		1.00	1.24	10.882	11.97	212.65	0.650	0.000	1.75	5.594	3.64	43.5	0.0	265.1
95.00		1.00	1.25	10.962	12.06	209.09	0.650	0.000	3.25	10.364	6.74	81.2	0.0	813.0
96.50 Top - Section 2		1.00	1.26	10.998	12.10	207.43	0.650	0.000	1.50	4.713	3.06	37.1	0.0	369.6
100.00		1.00	1.27	11.081	12.19	206.37	0.650	0.000	3.50	10.822	7.03	85.7	0.0	343.0
105.00		1.00	1.28	11.195	12.31	200.68	0.650	0.000	5.00	15.038	9.77	120.4	0.0	476.4
107.00 Appurtenance(s)		1.00	1.28	11.240	12.36	198.38	0.650	0.000	2.00	5.876	3.82	47.2	0.0	186.1
110.00		1.00	1.29	11.305	12.44	194.89	0.650	0.000	3.00	8.665	5.63	70.0	0.0	274.4
115.00		1.00	1.30	11.412	12.55	188.99	0.650	0.000	5.00	14.044	9.13	114.6	0.0	444.7
116.00 Appurtenance(s)		1.00	1.31	11.432	12.58	187.80	0.650	0.000	1.00	2.749	1.79	22.5	0.0	87.0
120.00		1.00	1.32	11.514	12.67	183.00	0.650	0.000	4.00	10.797	7.02	88.9	0.0	341.8
125.00		1.00	1.33	11.614	12.78	176.92	0.650	0.000	5.00	13.049	8.48	108.4	0.0	413.0
130.00		1.00	1.34	11.710	12.88	170.75	0.650	0.000	5.00	12.552	8.16	105.1	0.0	397.1
133.00 Bot - Section 4		1.00	1.34	11.766	12.94	167.01	0.650	0.000	3.00	7.293	4.74	61.4	0.0	230.7
135.00		1.00	1.35	11.803	12.98	164.50	0.650	0.000	2.00	4.847	3.15	40.9	0.0	303.9
136.75 Top - Section 3		1.00	1.35	11.835	13.02	162.30	0.650	0.000	1.75	4.176	2.71	35.3	0.0	261.8
137.00 Appurtenance(s)		1.00	1.35	11.840	13.02	164.93	0.650	0.000	0.25	0.592	0.38	5.0	0.0	18.7
140.00		1.00	1.36	11.894	13.08	161.14	0.650	0.000	3.00	7.002	4.55	59.5	0.0	221.4
145.00		1.00	1.37	11.982	13.18	154.76	0.650	0.000	5.00	11.272	7.33	96.6	0.0	356.3
146.00 Appurtenance(s)		1.00	1.37	12.000	13.20	153.47	0.650	0.000	1.00	2.195	1.43	18.8	0.0	69.4
150.00		1.00	1.38	12.068	13.27	148.31	0.650	0.000	4.00	8.580	5.58	74.0	0.0	271.1
151.00 Appurtenance(s)		1.00	1.38	12.085	13.29	147.01	0.650	0.000	1.00	2.095	1.36	18.1	0.0	66.2
155.00		1.00	1.39	12.152	13.37	141.79	0.650	0.000	4.00	8.183	5.32	71.1	0.0	258.4
158.00 Appurtenance(s)		1.00	1.39	12.201	13.42	137.85	0.650	0.000	3.00	5.928	3.85	51.7	0.0	187.1
<b>Totals:</b>									<b>158.00</b>			<b>3,850.8</b>		<b>26,997.7</b>

## Discrete Appurtenance Forces

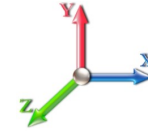
<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> EIA/TIA-222-G	12/8/2016
<b>Site Name:</b> Long Hill #1	<b>Exposure:</b> C	
<b>Height:</b> 158.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 1.0D + 1.0W 60 mph Wind

**Dead Load Factor** 1.00  
**Wind Load Factor** 1.00



**Iterations** 23

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	158.00	Alcatel RRH2X60-700	3	12.201	13.421	0.54	0.80	5.63	180.00	0.000	0.000	75.53	0.00	0.00
2	158.00	Commscope	6	12.201	13.421	0.66	0.80	32.07	304.26	0.000	0.000	430.43	0.00	0.00
3	158.00	Amphenol	2	12.201	13.421	0.75	0.80	14.63	54.00	0.000	0.000	196.40	0.00	0.00
4	158.00	RFS APL866513-42T0 w/	4	12.201	13.421	0.76	0.80	17.18	194.80	0.000	0.000	230.52	0.00	0.00
5	158.00	Alcatel RRH2X60-AWS	3	12.201	13.421	0.54	0.80	5.63	180.00	0.000	0.000	75.53	0.00	0.00
6	158.00	6' Lightning rod	1	12.201	13.421	1.00	1.00	0.38	6.50	0.000	0.000	5.10	0.00	0.00
7	158.00	Alcatel RRH2X60-PCS	3	12.201	13.421	0.54	0.80	3.54	165.00	0.000	0.000	47.48	0.00	0.00
8	158.00	RFS FD9R6004/2CL-3CL	6	12.201	13.421	0.48	0.80	0.89	18.00	0.000	0.000	11.98	0.00	0.00
9	158.00	RFS DB-T1-6C-8AB-0Z	2	12.201	13.421	0.48	0.80	4.61	88.00	0.000	0.000	61.84	0.00	0.00
10	158.00	Low Profile Platform	1	12.201	13.421	1.00	1.00	25.00	1200.00	0.000	0.000	335.52	0.00	0.00
11	151.00	Andrew VHLP2.5	1	12.085	13.294	0.80	0.80	6.74	47.60	2.043	0.000	89.65	183.13	0.00
12	151.00	ODU	1	12.085	13.294	0.60	1.00	0.74	13.20	0.000	0.000	9.89	0.00	0.00
13	151.00	Pipe Mount	1	12.085	13.294	1.00	1.00	2.63	40.00	0.000	0.000	34.96	0.00	0.00
14	146.00	RFS APXVSP18-C-A20	3	12.000	13.200	0.66	0.80	19.16	270.00	0.000	0.000	252.95	0.00	0.00
15	146.00	Low Profile Platform	1	12.000	13.200	1.00	1.00	25.00	1200.00	0.000	0.000	329.99	0.00	0.00
16	146.00	RRUs	3	12.000	13.200	0.54	0.80	4.70	9.39	0.000	0.000	61.98	0.00	0.00
17	146.00	Kathrein Scala 840 10054	3	12.000	13.200	0.49	0.80	6.72	105.00	0.000	0.000	88.70	0.00	0.00
18	146.00	GPS	1	12.000	13.200	1.00	1.00	1.00	10.00	0.000	0.000	13.20	0.00	0.00
19	146.00	RFS ACU-A20-N RET	4	12.000	13.200	0.48	0.80	0.23	4.00	0.000	0.000	3.04	0.00	0.00
20	146.00	Alcatel 800MHz Filters	3	12.000	13.200	0.48	0.80	0.96	26.40	0.000	0.000	12.74	0.00	0.00
21	146.00	Alcatel 800 MHz RRH	3	12.000	13.200	0.54	0.80	3.43	159.00	0.000	0.000	45.21	0.00	0.00
22	146.00	Alcatel 1900MHz RRH	3	12.000	13.200	0.54	0.80	3.83	132.00	0.000	0.000	50.52	0.00	0.00
23	146.00	RFS APXVTM14-C-120 w/	3	12.000	13.200	0.62	0.80	14.86	267.00	0.000	0.000	196.20	0.00	0.00
24	146.00	Alcatel TD-RRH8x20-25	3	12.000	13.200	0.54	0.80	6.51	210.00	0.000	0.000	85.96	0.00	0.00
25	137.00	Low Profile Platform w/	1	11.840	13.024	1.00	1.00	25.00	1200.00	0.000	0.000	325.60	0.00	0.00
26	137.00	Allen Telecom	12	11.840	13.024	0.48	0.80	3.11	98.40	0.000	0.000	40.51	0.00	0.00
27	137.00	Kathrein 782 11056	3	11.840	13.024	0.48	0.80	0.22	33.00	0.000	0.000	2.81	0.00	0.00
28	137.00	Commscope LNX-6515DS	3	11.840	13.024	0.67	0.80	23.08	149.40	0.000	0.000	300.64	0.00	0.00
29	137.00	RFS APXV18-209014-02	3	11.840	13.024	0.62	0.80	6.49	56.10	0.000	0.000	84.48	0.00	0.00
30	116.00	Low Profile Platform	1	11.432	12.576	1.00	1.00	22.00	1500.00	0.000	0.000	276.67	0.00	0.00
31	116.00	Kathrein 742 213	3	11.432	12.576	0.62	0.80	9.62	66.00	0.000	0.000	121.00	0.00	0.00
32	107.00	Powerwave LGP21903	6	11.240	12.364	0.48	0.80	0.66	31.80	0.000	0.000	8.19	0.00	0.00
33	107.00	Powerwave	3	11.240	12.364	0.48	0.80	0.79	48.00	0.000	0.000	9.79	0.00	0.00
34	107.00	KMW	3	11.240	12.364	0.63	0.80	15.21	145.50	0.000	0.000	188.00	0.00	0.00
35	107.00	Powerwave 7770.00	3	11.240	12.364	0.62	0.80	10.18	105.00	0.000	0.000	125.89	0.00	0.00
36	107.00	CCI HPA-65R-BUU-H6	3	11.240	12.364	0.62	0.80	21.88	153.00	0.000	0.000	270.52	0.00	0.00
37	107.00	Raycap DC6-48-60-18-8F	1	11.240	12.364	0.54	0.80	1.18	32.80	0.000	0.000	14.58	0.00	0.00
38	107.00	Powerwave 7020.00	6	11.240	12.364	0.48	0.80	0.98	13.20	0.000	0.000	12.11	0.00	0.00
39	107.00	Ericsson RRUS-32 B2	3	11.240	12.364	0.54	0.80	4.84	159.00	0.000	0.000	59.84	0.00	0.00
40	107.00	CCI DTMAP7819VG12A	3	11.240	12.364	0.48	0.80	1.41	57.54	0.000	0.000	17.45	0.00	0.00
41	107.00	Low Profile Platform	1	11.240	12.364	0.00	1.00	22.00	1500.00	0.000	0.000	272.00	0.00	0.00
42	107.00	Ericsson RRUS 11	6	11.240	12.364	0.54	0.80	8.10	330.00	0.000	0.000	100.20	0.00	0.00

**Totals: 10,562.89 4,975.60**

## Total Applied Force Summary

<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> EIA/TIA-222-G	12/8/2016
<b>Site Name:</b> Long Hill #1	<b>Exposure:</b> C	
<b>Height:</b> 158.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II

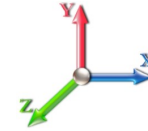


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**Load Case:** 1.0D + 1.0W 60 mph Wind

**Dead Load Factor** 1.00

**Wind Load Factor** 1.00



**Iterations** 23

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		130.11	1456.48	0.00	0.00
10.00		127.46	1580.93	0.00	0.00
15.00		124.82	1553.17	0.00	0.00
20.00		129.63	1525.41	0.00	0.00
25.00		132.92	1497.65	0.00	0.00
30.00		135.07	1469.89	0.00	0.00
35.00		136.36	1442.13	0.00	0.00
40.00		137.00	1414.37	0.00	0.00
45.00		137.11	1386.61	0.00	0.00
45.25		6.78	68.60	0.00	0.00
50.00		131.93	2205.25	0.00	0.00
51.25		34.39	572.60	0.00	0.00
55.00		103.40	892.99	0.00	0.00
60.00		137.32	1169.83	0.00	0.00
65.00		136.06	1146.04	0.00	0.00
70.00		134.54	1122.25	0.00	0.00
75.00		132.80	1098.45	0.00	0.00
80.00		130.86	1074.66	0.00	0.00
85.00		128.74	1050.86	0.00	0.00
90.00		126.44	1027.07	0.00	0.00
91.75		43.52	353.85	0.00	0.00
95.00		81.23	977.93	0.00	0.00
96.50		37.06	445.70	0.00	0.00
100.00		85.74	520.52	0.00	0.00
105.00		120.37	730.12	0.00	0.00
107.00	(38) attachments	1125.79	2863.45	0.00	0.00
110.00		70.04	380.09	0.00	0.00
115.00		114.59	620.79	0.00	0.00
116.00	(4) attachments	420.14	1688.26	0.00	0.00
120.00		88.89	457.72	0.00	0.00
125.00		108.36	557.87	0.00	0.00
130.00		105.09	542.01	0.00	0.00
133.00		61.35	317.59	0.00	0.00
135.00		40.91	361.86	0.00	0.00
136.75		35.34	312.46	0.00	0.00
137.00	(22) attachments	759.05	1562.85	0.00	0.00
140.00		59.55	270.88	0.00	0.00
145.00		96.57	438.77	0.00	0.00
146.00	(30) attachments	1159.30	2478.64	0.00	0.00
150.00		74.04	322.12	0.00	0.00
151.00	(3) attachments	152.61	179.74	183.13	0.00
155.00		71.09	308.79	0.00	0.00
158.00	(31) attachments	1522.06	2615.49	0.00	0.00
	<b>Totals:</b>	<b>8,826.45</b>	<b>44,062.73</b>	<b>183.13</b>	<b>0.00</b>



## Linear Appurtenance Segment Forces (Factored)

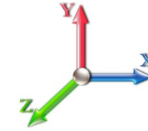
<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> EIA/TIA-222-G	12/8/2016
<b>Site Name:</b> Long Hill #1	<b>Exposure:</b> C	
<b>Height:</b> 158.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 1.0D + 1.0W 60 mph Wind

**Dead Load Factor** 1.00  
**Wind Load Factor** 1.00



**Iterations** 23

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" Hybrid	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	7.442	0.00	4.40
10.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.442	0.00	11.00
15.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.442	0.00	11.00
20.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.896	0.00	11.00
25.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.276	0.00	11.00
30.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.600	0.00	11.00
35.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.883	0.00	11.00
40.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	9.137	0.00	11.00
45.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	9.366	0.00	11.00
45.25	1 5/8" Hybrid	Yes	0.25	0.000	0.00	0.00	0.00	0.000	0.000	9.377	0.00	0.55
50.00	1 5/8" Hybrid	Yes	4.75	0.000	0.00	0.00	0.00	0.000	0.000	9.576	0.00	10.45
51.25	1 5/8" Hybrid	Yes	1.25	0.000	0.00	0.00	0.00	0.000	0.000	9.626	0.00	2.75
55.00	1 5/8" Hybrid	Yes	3.75	0.000	0.00	0.00	0.00	0.000	0.000	9.770	0.00	8.25
60.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	9.951	0.00	11.00
65.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.120	0.00	11.00
70.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.279	0.00	11.00
75.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.430	0.00	11.00
80.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.572	0.00	11.00
85.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.708	0.00	11.00
90.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	10.838	0.00	11.00
91.75	1 5/8" Hybrid	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	10.882	0.00	3.85
95.00	1 5/8" Hybrid	Yes	3.25	0.000	0.00	0.00	0.00	0.000	0.000	10.962	0.00	7.15
96.50	1 5/8" Hybrid	Yes	1.50	0.000	0.00	0.00	0.00	0.000	0.000	10.998	0.00	3.30
100.00	1 5/8" Hybrid	Yes	3.50	0.000	0.00	0.00	0.00	0.000	0.000	11.081	0.00	7.70
105.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.195	0.00	11.00
107.00	1 5/8" Hybrid	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	11.240	0.00	4.40
110.00	1 5/8" Hybrid	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	11.305	0.00	6.60
115.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.412	0.00	11.00
116.00	1 5/8" Hybrid	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	11.432	0.00	2.20
120.00	1 5/8" Hybrid	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	11.514	0.00	8.80
125.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.614	0.00	11.00
130.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.710	0.00	11.00
133.00	1 5/8" Hybrid	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	11.766	0.00	6.60
135.00	1 5/8" Hybrid	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	11.803	0.00	4.40
136.75	1 5/8" Hybrid	Yes	1.75	0.000	0.00	0.00	0.00	0.000	0.000	11.835	0.00	3.85
137.00	1 5/8" Hybrid	Yes	0.25	0.000	0.00	0.00	0.00	0.000	0.000	11.840	0.00	0.55
140.00	1 5/8" Hybrid	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	11.894	0.00	6.60
145.00	1 5/8" Hybrid	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.982	0.00	11.00
146.00	1 5/8" Hybrid	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	12.000	0.00	2.20
150.00	1 5/8" Hybrid	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	12.068	0.00	8.80
151.00	1 5/8" Hybrid	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	12.085	0.00	2.20
155.00	1 5/8" Hybrid	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	12.152	0.00	8.80
158.00	1 5/8" Hybrid	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	12.201	0.00	6.60
<b>Totals:</b>											<b>0.0</b>	<b>341.0</b>



## Final Analysis Summary

<b>Structure:</b> CT01080-S-SBA	<b>Code:</b> EIA/TIA-222-G	12/8/2016
<b>Site Name:</b> Long Hill #1	<b>Exposure:</b> C	
<b>Height:</b> 158.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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### 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 101 mph Wind	40.1	0.00	52.81	0.01	0.50	4597.30
0.9D + 1.6W 101 mph Wind	40.1	0.00	39.59	0.01	0.50	4553.21
1.2D + 1.0Di + 1.0Wi 50 mph Wind	10.4	0.00	81.52	0.00	0.15	1185.88
1.2D + 1.0E	1.9	0.00	52.88	0.00	0.00	228.10
0.9D + 1.0E	1.9	0.00	39.66	0.00	0.00	225.71
1.0D + 1.0W 60 mph Wind	8.8	0.00	44.06	0.00	0.18	1009.05

### 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 101 mph Wind	-18.86	-29.92	-0.51	-1166.5	-0.03	-1166.5	1897.75	948.88	2865.01	1434.63	96.50	0.824
0.9D + 1.6W 101 mph Wind	-13.64	-29.52	-0.51	-1149.4	-0.02	-1149.4	1897.75	948.88	2865.01	1434.63	96.50	0.809
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-39.86	-7.65	-0.15	-298.14	0.00	-298.14	1897.75	948.88	2865.01	1434.63	96.50	0.229
1.2D + 1.0E	-21.03	-1.39	0.00	-74.91	0.00	-74.91	1897.75	948.88	2865.01	1434.63	96.50	0.063
0.9D + 1.0E	-15.77	-1.37	0.00	-73.92	0.00	-73.92	1897.75	948.88	2865.01	1434.63	96.50	0.060
1.0D + 1.0W 60 mph Wind	-17.42	-6.56	-0.18	-255.84	0.00	-255.84	1897.75	948.88	2865.01	1434.63	96.50	0.188

## Base Plate Summary

<b>Structure:</b> CT01080-S-SB	<b>Code:</b> EIA/TIA-222-G	12/8/2016
<b>Site Name:</b> Long Hill #1	<b>Exposure:</b> C	
<b>Height:</b> 158.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> D - Stiff Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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Reactions	Base Plate	Anchor Bolts
Original Design	<b>Yield (ksi):</b> 50.00	<b>Bolt Circle:</b> 66.00
<b>Moment (kip-ft):</b> 4350.00	<b>Width (in):</b> 67.00	<b>Number Bolts:</b> 24.00
<b>Axial (kip):</b> 51.00	<b>Style:</b> Clipped	<b>Bolt Type:</b> 2.25" 18J
<b>Shear (kip):</b> 37.50	<b>Polygon Sides:</b> 0.00	<b>Bolt Diameter (in):</b> 2.25
Analysis	<b>Clip Length (in):</b> 13.00	<b>Yield (ksi):</b> 75.00
<b>Moment (kip-ft):</b> 4597.30	<b>Effective Len (in):</b> 7.75	<b>Ultimate (ksi):</b> 100.00
<b>Axial (kip):</b> 81.52	<b>Moment (kip-in):</b> 543.72	<b>Arrangement:</b> Clustered
<b>Shear (kip):</b> 40.11	<b>Allow Stress (ksi):</b> 67.50	<b>Cluster Dist (in):</b> 6.00
	<b>Applied Stress (ksi):</b> 0.00	<b>Start Angle (deg):</b> 45.00
<b>Moment Design %:</b> 105.69	<b>Stress Ratio:</b> 0.82	<b>Compression</b>
		<b>Force (kip):</b> 142.71
		<b>Allowable (kip):</b> 260.00
		<b>Ratio:</b> 0.56
		<b>Tension</b>
		<b>Force (kip):</b> 135.92
		<b>Allowable (kip):</b> 260.00
		<b>Ratio:</b> 0.54



# Monopole Mat Foundation Design

Date	12/8/2016
Customer Name:	AT&T
Site Name:	Long Hill #1
Site Number:	CT01080-S-SBA
Engr. Number:	28218
EIA/TIA Standard:	EIA-222-G
Structure Height (Ft.):	158
Engineer Name:	W. Velez
Engineer Login ID:	

**Foundation Info Obtained from:**

Drawings/Calculations
Monopole
Analysis

**Structure Type:**

**Analysis or Design?**

**Base Reactions (Factored):**

Axial Load (Kips):	52.8	Shear Force (Kips):	40.1
Uplift Force (Kips):	0.0	Moment (Kips-ft):	4597.3
Allowable overstress %:	5.0%		

**Foundation Geometries:**

Diameter of Pier (ft.):	8.0	Depth of Base BG (ft.):	10.0	Mods required -Yes/No ?:	No
Pier Height A. G. (ft.):	0.50	Thickness of Pad (ft.):	3.50		
Length of Pad (ft.):	23	Width of Pad (ft.):	23		
Final Length of pad (ft)	23.0	Final width of pad (ft):	23.0		
Control Value for Cell D18:	0	Control Value for Cell F18:	0		

**Material Properties and Reabr Info:**

Concrete Strength (psi):	3000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	40	
Vertical Rebar Size #:	11	Tie / Stirrup Size #:	5	
Qty. of Vertical Rebars:	36	Tie Spacing (in):	6.0	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	9	
Concrete Cover (in.):	3	Unit Weight of Concrete:	150.0	pcf
Rebar at the bottom of the concrete pad:				
Qty. of Rebar in Pad (L):	39	Qty. of Rebar in Pad (W):	39	
Rebar at the top of the concrete pad:				
Qty. of Rebar in Pad (L):	39	Qty. of Rebar in Pad (W):	39	

Apply 1.35 factor for e/w Per G: 1.00

**Soil Design Parameters:**

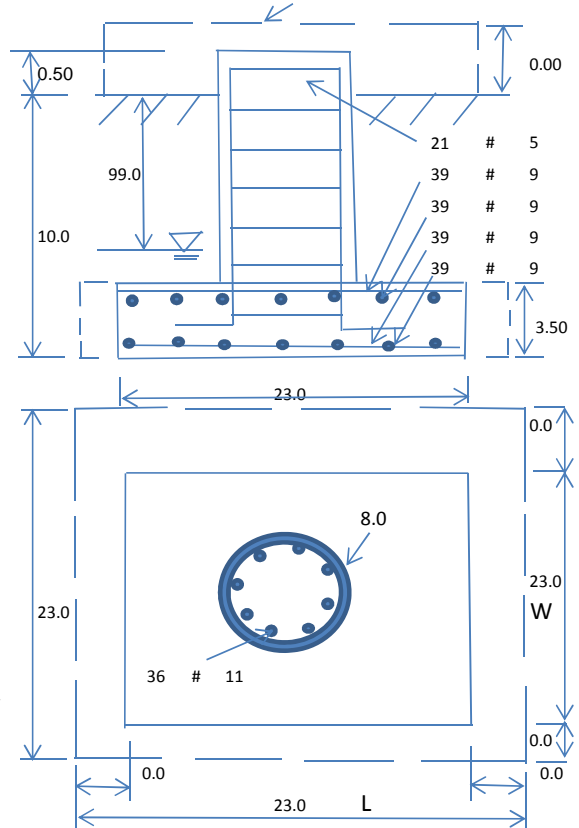
Soil Unit Weight (pcf):	125.0	Soil Buoyant Weight:	62.6	Pcf	
Water Table B.G.S. (ft):	99.0	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad: 30
Ultimate Bearing Pressure (psf):	16000	Ultimate Skin Friction:		Psf	Angle from Bottm of Pad: 25
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	No		Angle from Bottm of Pad: 25
Consider soil hor. resist. for OTM.:	Yes	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.):	3111.77	Total Dry Soil Weight (Kips):	388.97
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	388.97	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	2203.36	Total Dry Concrete Weight (Kips):	330.50
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	330.50	Total Vertical Load on Base (Kips):	772.29

**Check Soil Capacities:**

Calculated Maxium Net Soil Pressure under the base (psf):	3845	<	Allowable Factored Soil Bearing (psf):	12000	0.32	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	8053.9	>	Design Factored Momont (kips-ft):	4454	0.55	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	1.81					OK!



**Check the capacities of Reinforcing Concrete:**

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

**(1) Concrete Pier:**

Vertical Steel Rebar Area (sq. in./each):	1.56	Tie / Stirrup Area (sq. in./each):	0.31			
Calculated Moment Capacity (Mn,Kips-Ft):	10388.7	>	Design Factored Moment (Mu, Kips-Ft)	4878.0	0.47	OK!
Calculated Shear Capacity (Kips):	912.1	>	Design Factored Shear (Kips):	40.1	0.04	OK!
Calculated Tension Capacity (Tn, Kips):	3032.6	>	Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	9523.4	>	Design Factored Axial Load (Pu Kips):	52.8	0.01	OK!
Moment & Axial Strength Combination:	0.47	OK!	Check Tie Spacing (Design/Required):		0.5	OK!
Pier Reinforcement Ratio:	0.008	Reinforcement Ratio is satisfied per ACI				

**(2).Concrete Pad:**

One-Way Design Shear Capacity (L-Direction, Kips):	871.6	>	One-Way Factored Shear (L-D. Kips):	213.3	0.24	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	871.6	>	One-Way Factored Shear (W-D., Kips)	213.3	0.24	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	929.5	>	One-Way Factored Shear (C-C, Kips):	209.7	0.23	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct. ):	0.0037	OK!	Lower Steel Pad Reinf. Ratio (W-Direct	0.0037		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	6454.0	>	Moment at Bottom ( L-Direct. K-Ft):	458.3	0.07	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	6454.0	>	Moment at Bottom ( W-Direct. K-Ft):	458.3	0.07	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	8992.8	>	Moment at Bottom ( C-C Dir. K-Ft):	648.2	0.07	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct. ):	0.0037	OK!	Upper Steel Reinf. Ratio (W-Direct. ):	0.0037		
Upper Steel Pad Moment Capacity (L-Direction. Kips-ft):	6454.0	>	Moment at the top (L-Dir Kips-Ft):	277.2	0.04	OK!
Upper Steel Pad Moment Capacity (W-Direction. Kips-ft):	6454.0	>	Moment at the top (W-Dir Kips-Ft):	277.2	0.04	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	8992.8	>	Moment at the top (C-C Direc. K-Ft):	454.7	0.05	OK!

**PROJECT TEAM**

**SITE ACQUISITION & ZONING:**

SBA COMMUNICATIONS CORP.  
134 FLANDERS ROAD, SUITE 125  
WESTBOROUGH, MA 01581

**ENGINEERING:**

TRYLON TSF  
1825 W. WALNUT HILL LANE SUITE 302  
IRVING, TX 75038  
PHONE: 1-855-669-5421

**RF ENGINEER:**

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

**CONSTRUCTION MANAGEMENT:**

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

**TOWER OWNER:**

SBA PROPERTIES, LLC  
8051 CONGRESS AVENUE  
BOCA RATON, FL 33487

SBA SITE ID: CT01080-S  
SBA SITE NAME: LONG HILL #1

SBA REGIONAL SITE MANAGER: STEPHEN ROTH  
860-539-4920  
sroth@sbsite.com

**GENERAL NOTES**

**DO NOT SCALE DRAWINGS**

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

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

**SITE INFORMATION**

LATITUDE: 41° 30' 40.40316" N  
LONGITUDE: -72° 40' 14.67516" W

LAT./LONG. TYPE: NAD 83

GROUND ELEVATION: N/A

APN/UPC: N/A

AREA OF CONSTRUCTION: EXISTING

ZONING/JURISDICTION: UNKNOWN

CURRENT ZONING: UNKNOWN

EXISTING USE: TELECOMMUNICATIONS FACILITY

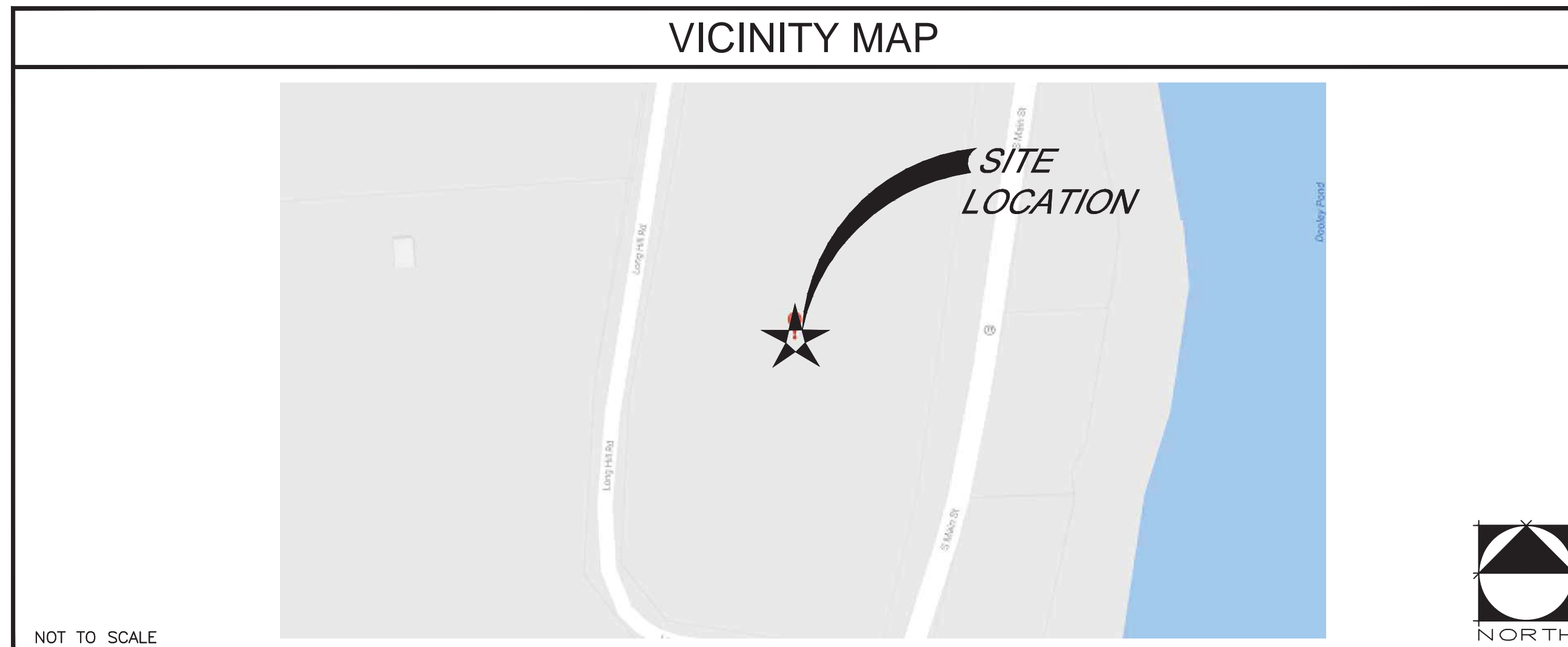
COUNTY: MIDDLESEX

HANDICAP REQUIREMENTS: FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION. HANDICAPPED ACCESS NOT REQUIRED.



**LTE MULTI CARRIER RRU ADD  
CT1208  
MIDDLETOWN SO MAIN  
1825 SOUTH MAIN STRET  
MIDDLETOWN, CT 06457  
FA CODE: 10042329**

**VICINITY MAP**



NOT TO SCALE

**DRIVING DIRECTIONS**

FROM THE HARTFORD AREA, TAKE I-91 SOUTH TO ROUTE 9 SOUTH FOR APPROXIMATELY 6 MILES TO EXIT 13, ROUTE 17 SOUTH (NEW HAVEN). GO 4/10 MILE TO A STOP LIGHT AND GO LEFT ON ROUTE 17 SOUTH. CONTINUE ON ROUTE 17 SOUTH FOR 2.8 MILES TO BRUSH HILL ROAD ON THE RIGHT (AT SOME TELCO SLC CABINETS ON THE CORNER). TAKE BRUSH HILL ROAD 1/10 MILE TO A STOP SIGN. TURN LEFT ONTO LONG HILL ROAD AND GO 2/10 MILE TO THE SITE ENTRANCE ON THE LEFT.

**CODE COMPLIANCE**

2012 INTERNATIONAL BUILDING CODE WITH CONNECTICUT STATE AMENDMENTS  
2014 NATIONAL ELECTRICAL CODE WITH CONNECTICUT STATE AMENDMENTS

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

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



CONNECTICUT LAW REQUIRES TWO WORKING DAYS NOTICE PRIOR TO ANY EARTH MOVING ACTIVITIES BY CALLING 800-922-4455 OR DIAL 811

**APPROVALS**

AT&T (RF): \_\_\_\_\_ DATE: \_\_\_\_\_

AT&T (CONST.): \_\_\_\_\_ DATE: \_\_\_\_\_

AT&T (OPS): \_\_\_\_\_ DATE: \_\_\_\_\_

TOWER OWNER: \_\_\_\_\_ DATE: \_\_\_\_\_

**JURISDICTIONAL APPROVAL**

BASED ON INFORMATION PROVIDED BY AT&T REGULATORY COMPLIANCE PROFESSIONALS AND LEGAL COUNSEL, THIS TELECOMMUNICATIONS EQUIPMENT DEPLOYMENT IS CONSIDERED AN ELIGIBLE FACILITY UNDER THE MIDDLE CLASS TAX RELIEF AND JOB CREATION ACT OF 2012, 47 USC 1455(A), SECTION 6409(A), AND IS SUBJECT TO AN ELIGIBLE FACILITY REQUEST, EXPEDITED REVIEW AND LIMITED/PARTIAL ZONING PRE-EMPTION FOR LOCAL DISCRETIONARY PERMITS (VARIANCE, SPECIAL PERMIT, SITE PLAN REVIEW OR ADMINISTRATIVE REVIEW).

**PROJECT DESCRIPTION**

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

- REMOVE (3) EXISTING RRUS11+RRUS-A2, (1) PER SECTOR FOR (3) SECTORS.
- INSTALL (3) NEW RRUS-32 B2, (1) PER SECTOR FOR (3) SECTORS.
- REUSE (3) EXISTING RRUS11.
- REUSE (1) EXISTING FIBER TRUNK.
- REUSE (3) EXISTING DC TRUNK.
- REUSE (1) EXISTING DC/FIBER SQUID.
- REUSE (12) EXISTING RF CABLES.

Michael Plahovinsak  
Digitally signed by Michael Plahovinsak  
Date: 2016.11.25 20:07:59 -05'00'

**SHEET**

**DESCRIPTION**

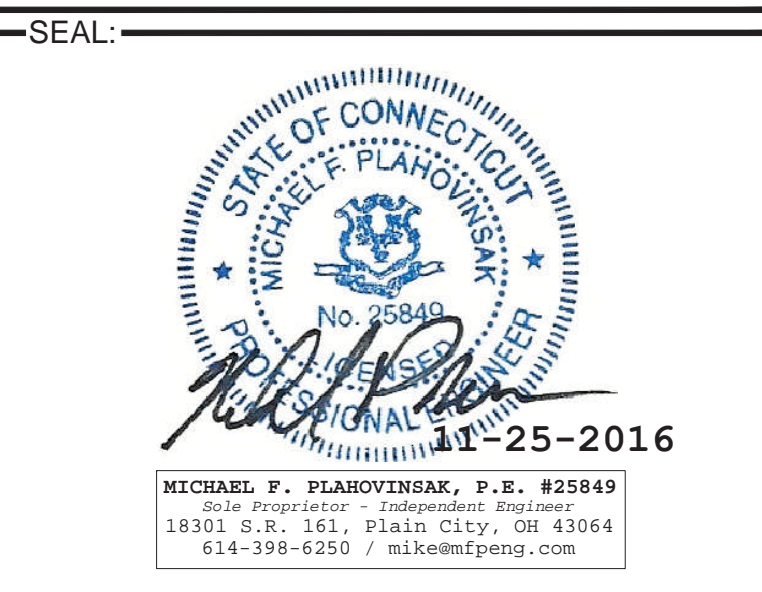
T-1	TITLE SHEET
GN-1	GROUNDING & GENERAL NOTES
A-1	SITE PLAN
A-2	EQUIPMENT LAYOUT
A-3	ANTENNA LAYOUTS & TOWER ELEVATION
A-4	DETAILS
G-1	GROUNDING, ONE-LINE DIAGRAM & DETAILS



NO.	DATE	DESCRIPTION	BY
A	11/18/16	FOR REVIEW	DBG

**SITE INFORMATION:**

**CT1208  
MIDDLETOWN SO MAIN  
FA CODE: 10042329**  
  
1825 SOUTH MAIN STREET  
MIDDLETOWN, CT 06457



SHEET TITLE:  
**TITLE SHEET**

SHEET NUMBER:  
**T-1**

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:  
 CONTRACTOR - EMPIRE TELECOM  
 SUBCONTRACTOR - GENERAL CONTRACTOR (CONSTRUCTION)  
 OWNER - AT&T MOBILITY  
 OEM - ORIGINAL EQUIPMENT MANUFACTURER
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
6. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
7. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.
8. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR. ROUTING OF TRENCHING SHALL BE APPROVED BY CONTRACTOR
9. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
10. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OFF ALL SCR1 'AP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
11. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
12. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.
13. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS UNLESS OTHERWISE SPECIFIED. ALL CONCRETING WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
14. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy=36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCH UP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
15. CONSTRUCTION SHALL COMPLY WITH SPECIFICATION 25741-000-3APS-A00Z-00002, "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF AT&T MOBILITY SITES."
16. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
17. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK MAY NEED TO BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
18. SINCE THE CELL SITE MAY BE ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE REQUIRED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.
19. SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.
  - INTERNATIONAL BUILDING CODE: IBC 2009 WITH LOCAL & COUNTY AMENDMENTS
  - NATIONAL ELECTRICAL CODE: NEC 2011 WITH LOCAL & COUNTY AMENDMENTS
  - FIRE/LIFE SAFETY CODE: NFPA-101 2009 WITH LOCAL & COUNTY AMENDMENTS
20. SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:
  - AMERICAN CONCRETE INSTITUTE (ACI) 318, BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE
  - AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC), MANUAL OF STEEL CONSTRUCTION, THIRTEENTH EDITION
  - AMERICAN SOCIETY OF TESTING OF MATERIALS, ASTM
  - TELECOMMUNICATIONS INDUSTRY ASSOCIATION (ANSI/TIA-222-G-1), STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES:
  - TIA 607, COMMERCIAL BUILDING GROUNDING AND BONDING REQUIREMENTS FOR TELECOMMUNICATIONS
  - OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION, OSHA
  - INSTITUTE FOR ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE) 81, GUIDE FOR MEASURING EARTH RESISTIVELY, GROUND IMPEDANCE, AND EARTH SURFACE POTENTIALS OF A GROUND SYSTEM IEEE 1100 (1999) RECOMMENDED PRACTICE FOR POWERING AND GROUNDING OF ELECTRONIC EQUIPMENT
  - TELCORDIA GR-1503, COAXIAL CABLE CONNECTIONS
21. FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

GROUNDING NOTES:

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.
2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS. TESTS SHALL BE PERFORMED IN ACCORDANCE WITH 25471-000-3PS-EG00-0001, DESIGN & TESTING OF FACILITY GROUNDING FOR CELL SITES.
4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER CIRCUITS TO BTS EQUIPMENT.
5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS; 2 AWG STRANDED COPPER FOR OUTDOOR BTS.
6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED WITH STAINLESS STEEL HARDWARE TO THE BRIDGE AND THE TOWER GROUND BAR.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. MISCELLANEOUS ELECTRICAL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
11. METAL CONDUIT AND TRAY SHALL BE GROUNDING AND MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWG COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
12. GROUND CONDUCTORS USED IN THE FACILITY GROUND AND LIGHTNING PROTECTION SYSTEMS SHALL NOT BE ROUTED THROUGH METALLIC OBJECTS THAT FORM A RING AROUND THE CONDUCTOR, SUCH AS METALLIC CONDUITS, METAL SUPPORT CLIPS OR SLEEVES THROUGH WALLS OR FLOORS. WHEN IT IS REQUIRED TO BE HOUSED IN CONDUIT TO MEET CODE REQUIREMENTS OR LOCAL CONDITIONS, NON-METALLIC MATERIAL SUCH AS PVC PLASTIC CONDUIT SHALL BE USED. WHERE USE OF METAL CONDUIT IS UNAVOIDABLE (E.G., NON-METALLIC CONDUIT PROHIBITED BY LOCAL CODE) THE GROUND CONDUCTOR SHALL BE BONDED TO EACH END OF THE METAL CONDUIT.
13. ALL TOWER GROUNDING SYSTEMS SHALL COMPLY WITH THE REQUIREMENTS OF ANSI/TIA 222. FOR TOWERS BEING BUILT TO REV-G OF THE STANDARD, THE WIRE SIZE OF THE BURIED GROUND RING AND CONNECTIONS BETWEEN THE TOWER AND THE BURIED GROUND RING SHALL BE CHANGED FROM 2 AWG TO 2/0 AWG. IN ADDITION, THE MINIMUM LENGTH OF THE GROUND RODS SHALL BE INCREASED FROM EIGHT FEET (8') TO TEN FEET (10').
14. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE 1/2" OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID TINNED COPPER GROUND WIRE, PER NEC 250.50.

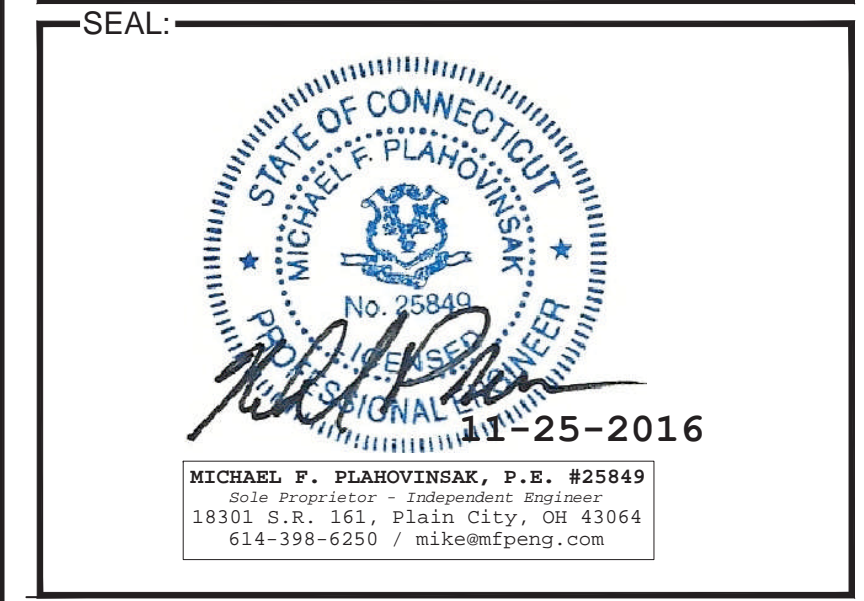


NO.	DATE	DESCRIPTION	BY
A	11/18/16	FOR REVIEW	DBG

SITE INFORMATION:

**CT1208**  
**MIDDLETOWN SO MAIN**  
**FA CODE: 10042329**

1825 SOUTH MAIN STREET  
 MIDDLETOWN, CT 06457



SHEET TITLE:

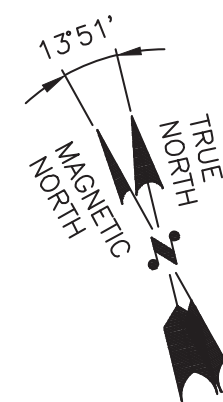
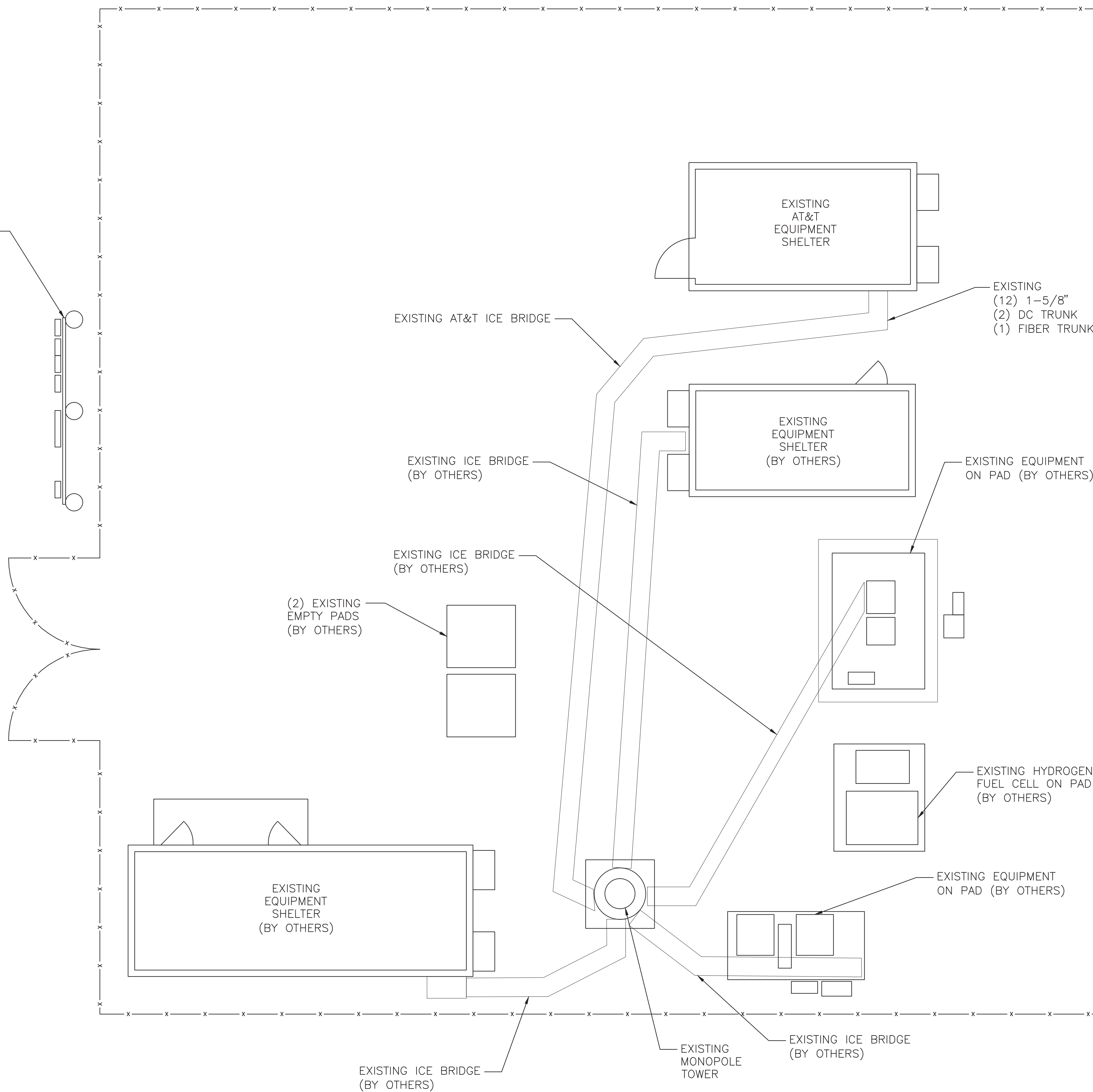
**GENERAL NOTES & GROUNDING NOTES**

SHEET NUMBER:

**GN-1**



EXISTING ELECTRICAL  
EQUIPMENT BOARD



550 COCHITUATE ROAD  
FRAMINGHAM, MA 01701

16 ESQUIRE ROAD  
BILLERICA, MA 01821

SBA COMMUNICATIONS CORP.  
134 FLANDERS ROAD, SUITE  
125 WESTBOROUGH, MA 01581

PLANS PREPARED BY:

1825 W. WALNUT HILL LANE SUITE 302  
IRVING, TX 5038  
1-855-669-5421

NO.	DATE	DESCRIPTION	BY
A	11/18/16	FOR REVIEW	DBG

SITE INFORMATION:

**CT1208**  
MIDDLETOWN SO MAIN  
FA CODE: 10042329

1825 SOUTH MAIN STREET  
MIDDLETOWN, CT 06457

SEAL:

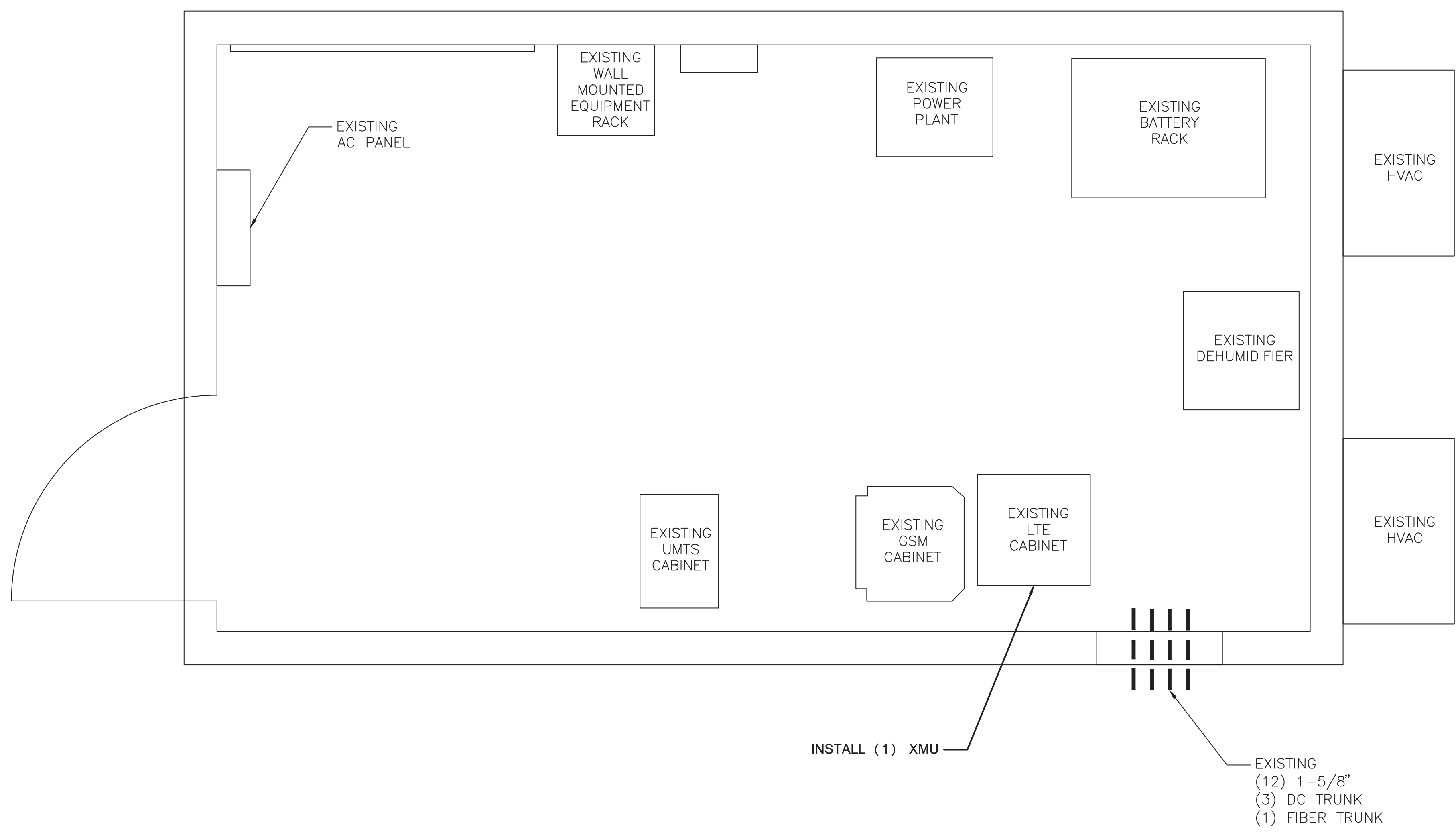
MICHAEL F. PLAHOVINSAK, P.E. #25849  
State Proprietor - Independent Engineer  
18301 Elm St., Plainville, CT 06064  
614-398-6250 / mikeempeng.com

SHEET TITLE:

**SITE PLAN**

SHEET NUMBER:

**A-1**



ENLARGED PARTIAL SITE PLAN

22"x34" SCALE: 3/4" = 1'-0"  
 11"x17" SCALE: 3/8" = 1'-0"  
 1" 6" 0" 1"

1

550 COCHITUATE ROAD  
FRAMINGHAM, MA 01701

16 ESQUIRE ROAD  
BILLERICA, MA 01821

SBA COMMUNICATIONS CORP.  
134 FLANDERS ROAD, SUITE  
125 WESTBOROUGH, MA 01581

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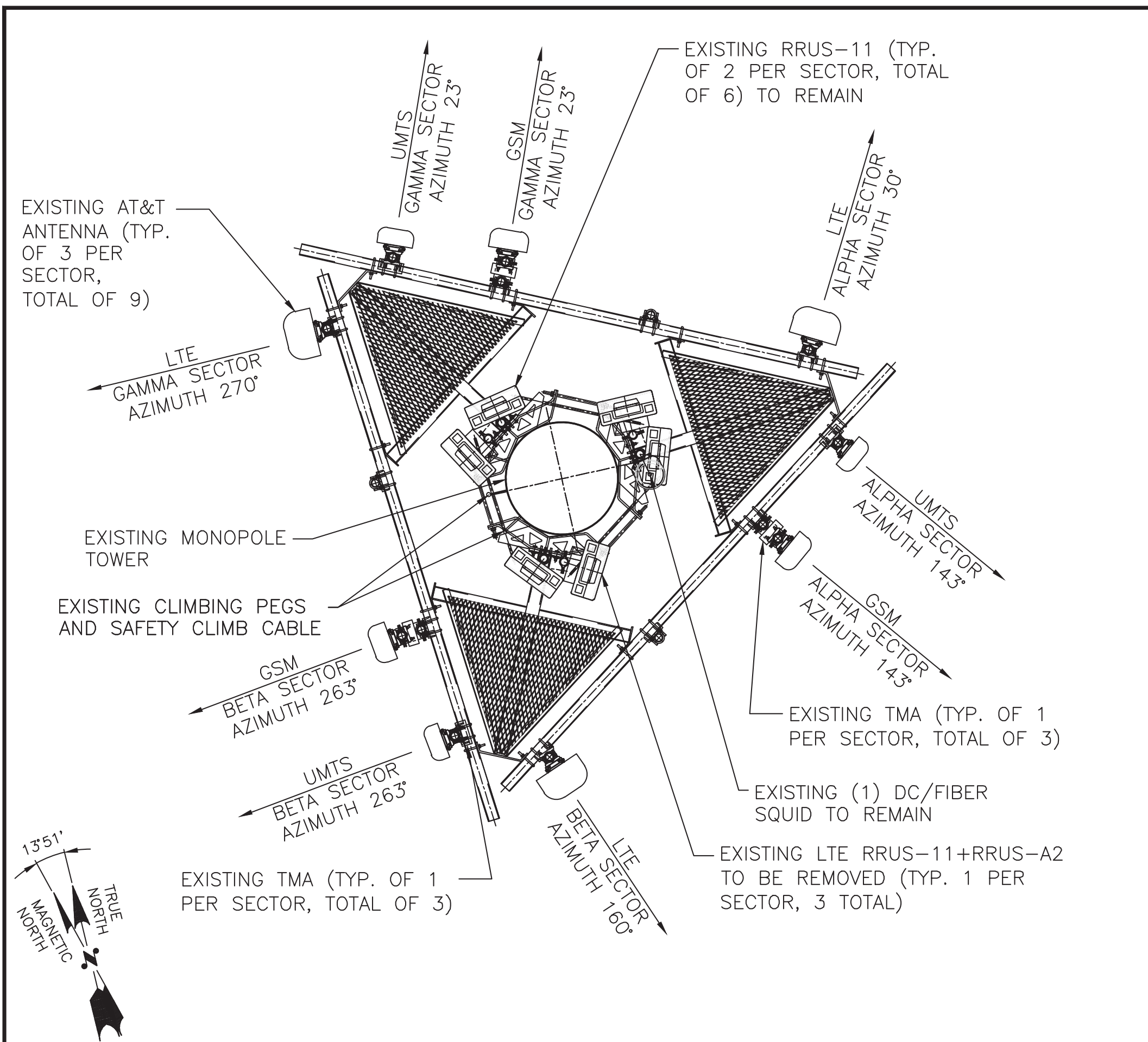
MICHAEL F. PLAHOVINSAK, P.E. #25849  
Solo Proprietor - Independent Engineer  
18301 S.R. 1621, Plain City, OH #3064  
614-398-6250 / mike@mpeng.com

SHEET TITLE:

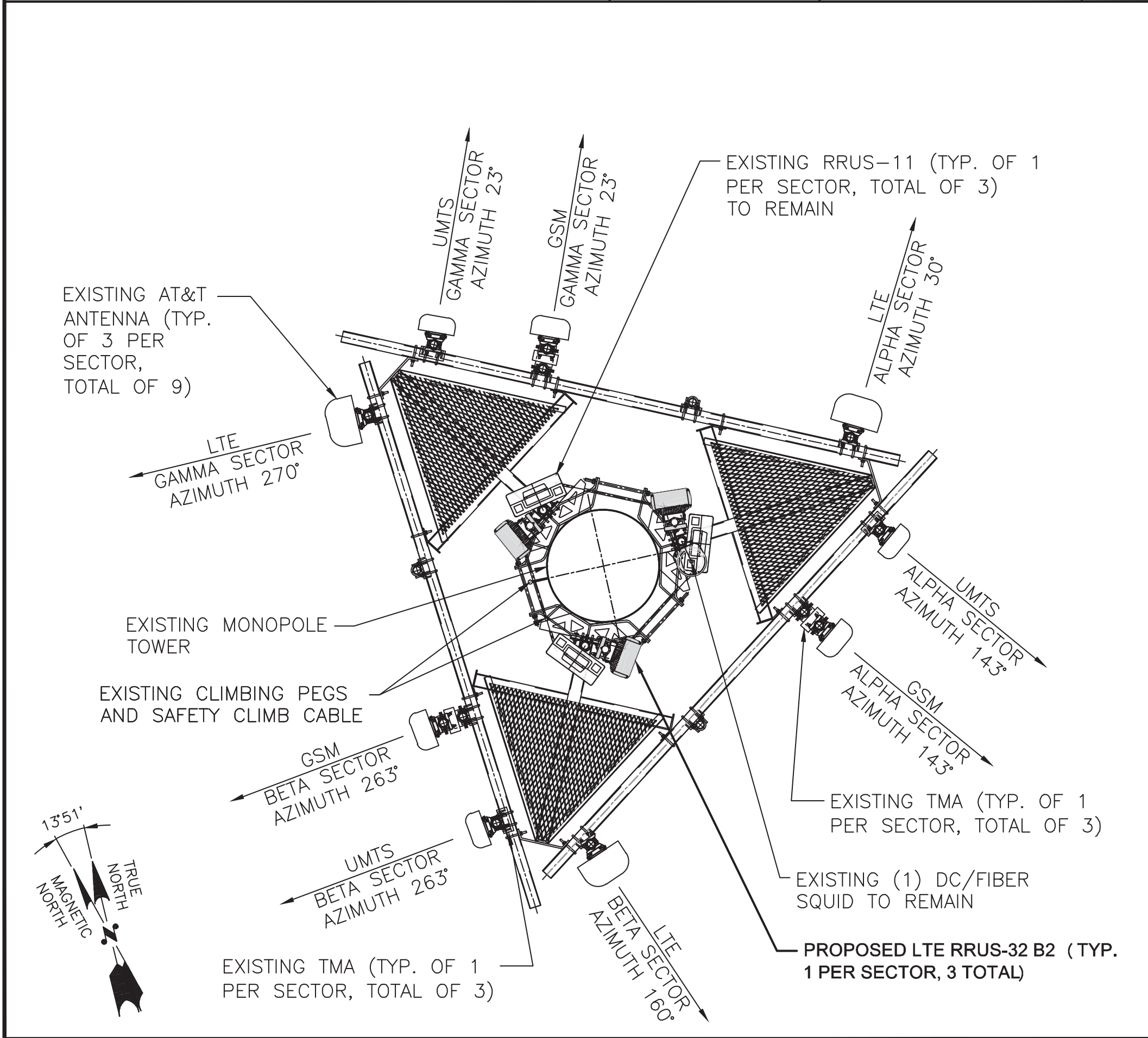
EQUIPMENT LAYOUTS

SHEET NUMBER:

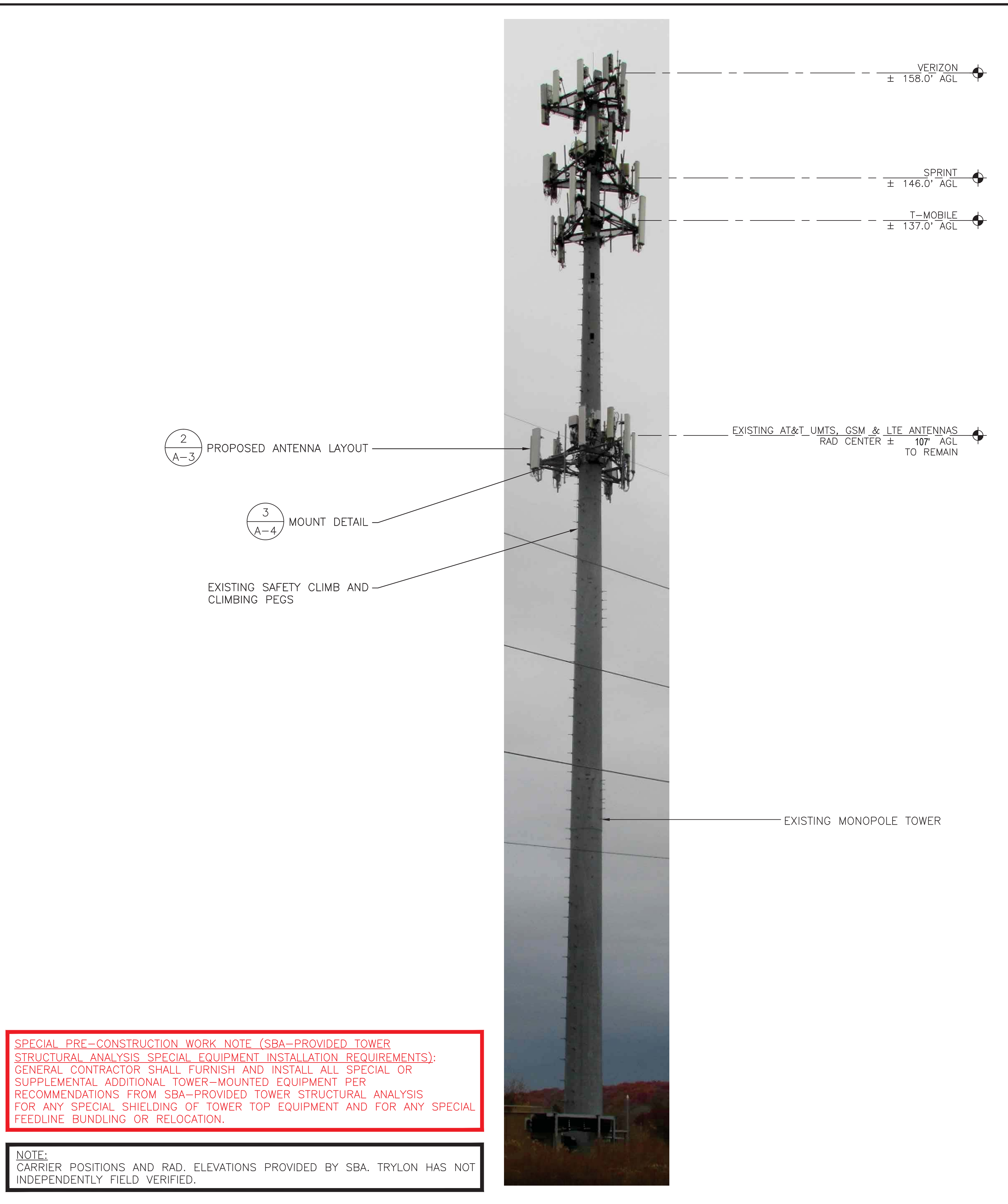
A-2



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



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



**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:**  
 CARRIER POSITIONS AND RAD. ELEVATIONS PROVIDED BY SBA. TRYLON HAS NOT INDEPENDENTLY FIELD VERIFIED.

**EXISTING ELEVATION** N.T.S. 3

**at&t**  
 Mobility  
 550 COCHITUATE ROAD  
 FRAMINGHAM, MA 01701

**EMPIRE**  
 telecom  
 16 ESQUIRE ROAD  
 BILLERICA, MA 01821

**SBA**  
 SBA COMMUNICATIONS CORP.  
 134 FLANDERS ROAD, SUITE  
 125 WESTBOROUGH, MA 01581

PLANS PREPARED BY:  
**Trylon**  
 1825 W. WALNUT HILL LANE SUITE 302  
 IRVING, TX 5038  
 1-855-669-5421

NO.	DATE	DESCRIPTION	BY
A	11/18/16	FOR REVIEW	DBG

SITE INFORMATION:  
**CT1208**  
 MIDDLETOWN SO MAIN  
 FA CODE: 10042329  
 1825 SOUTH MAIN STREET  
 MIDDLETOWN, CT 06457

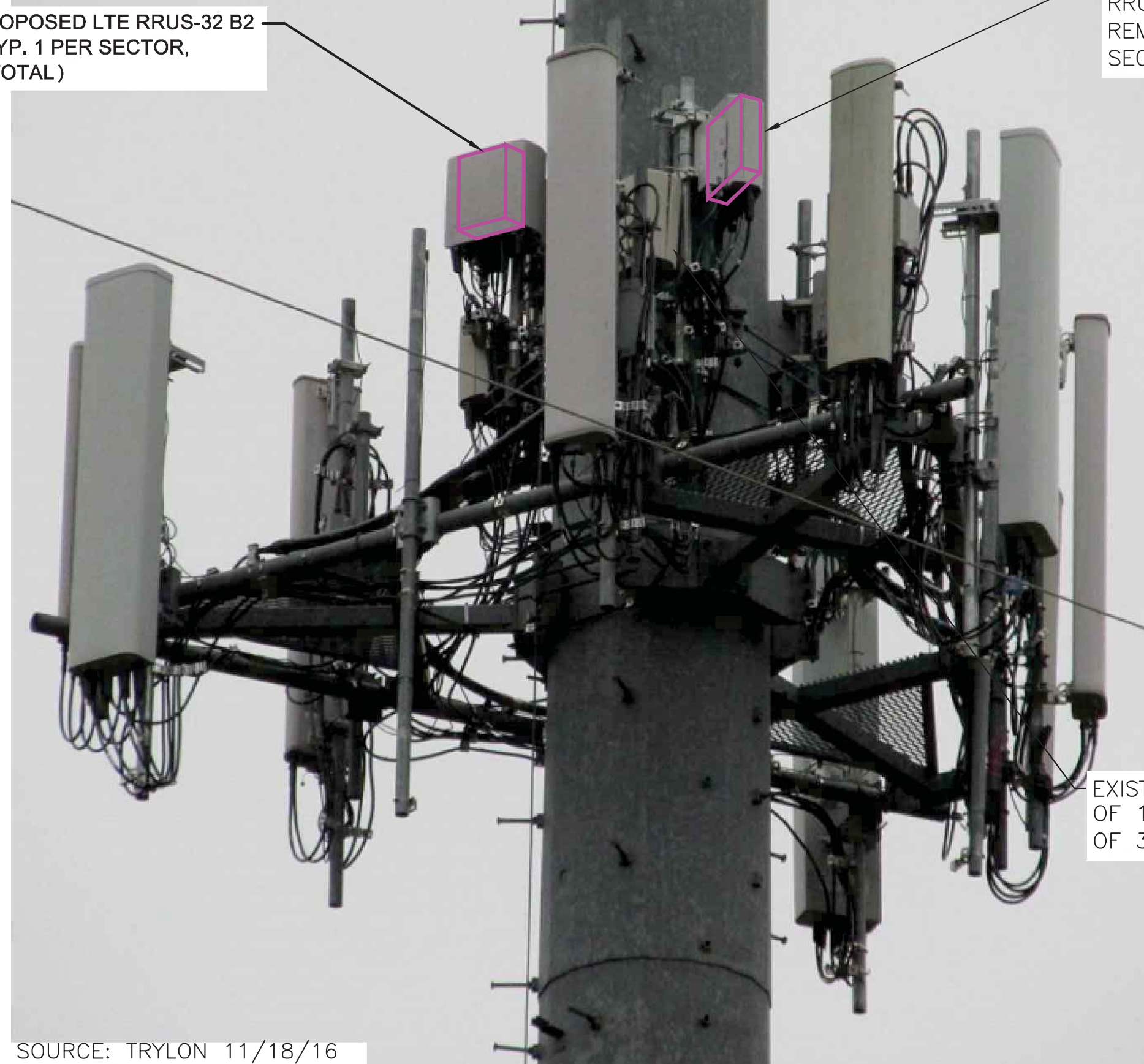
SEAL:  
  
 MICHAEL F. PLAHOVINSAK, P.E. #25849  
 Sole Proprietor - Independent Engineer  
 18901 S.R. 161, Plain City, OH 43064  
 614-398-6250 / mike@mpeng.com

SHEET TITLE:  
**ANTENNA LAYOUTS,  
 TOWER ELEVATION &  
 MOUNTING DETAILS**

SHEET NUMBER:  
**A-3**

3  
A-4

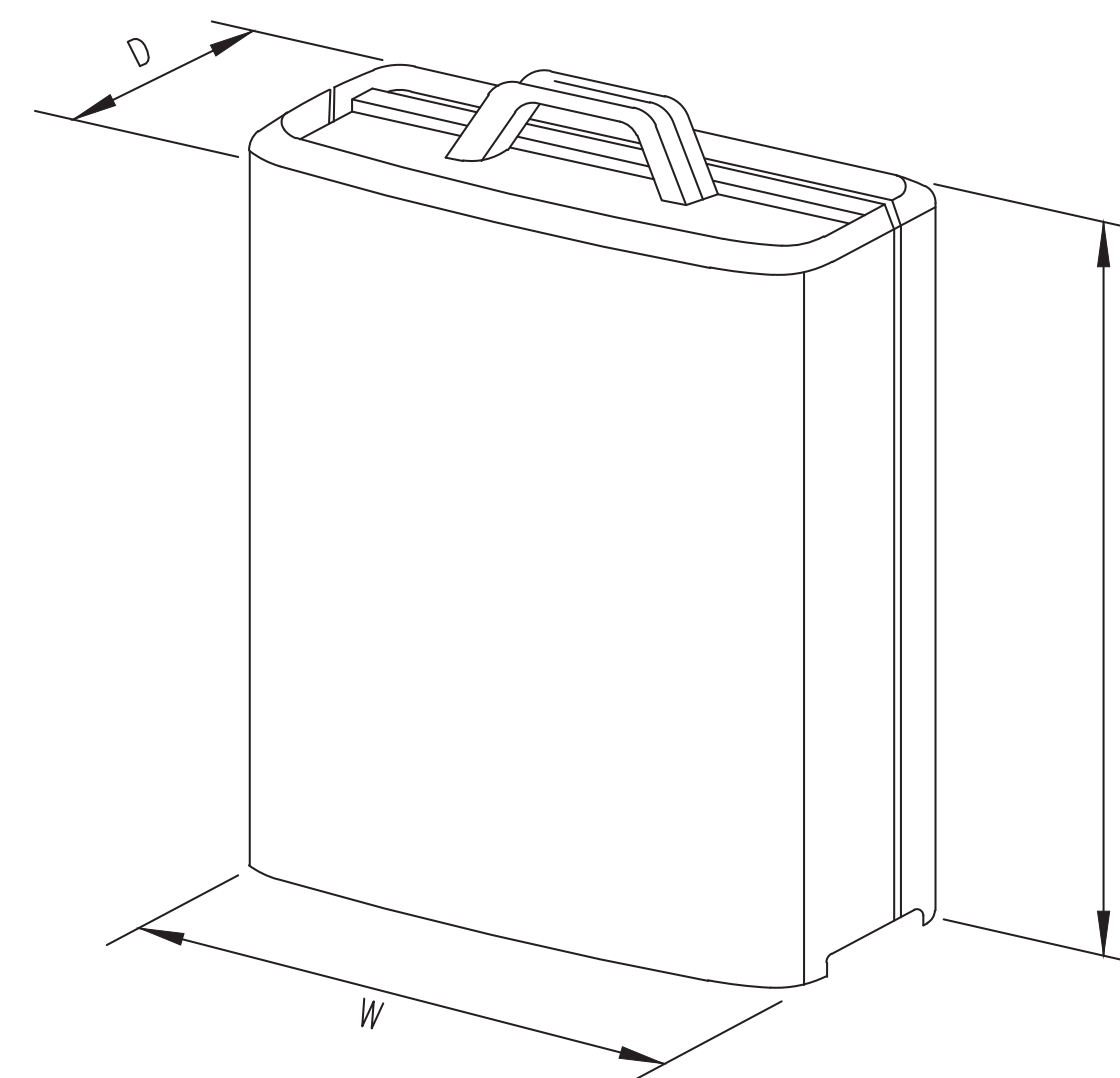
PROPOSED LTE RRUS-32 B2  
(TYP. 1 PER SECTOR,  
3 TOTAL)



EXISTING  
RRUS-11+RRUS-A2 TO BE  
REMOVED (TYP. OF 1 PER  
SECTOR, TOTAL OF 3)

EXISTING RRUS-11 (TYP.  
OF 1 PER SECTOR, TOTAL  
OF 3) TO REMAIN

SOURCE: TRYLON 11/18/16



MODEL	L x W x H	WEIGHT
RRUS-32 B2	20.9' x 9.5' x 3.3'	77 LBS

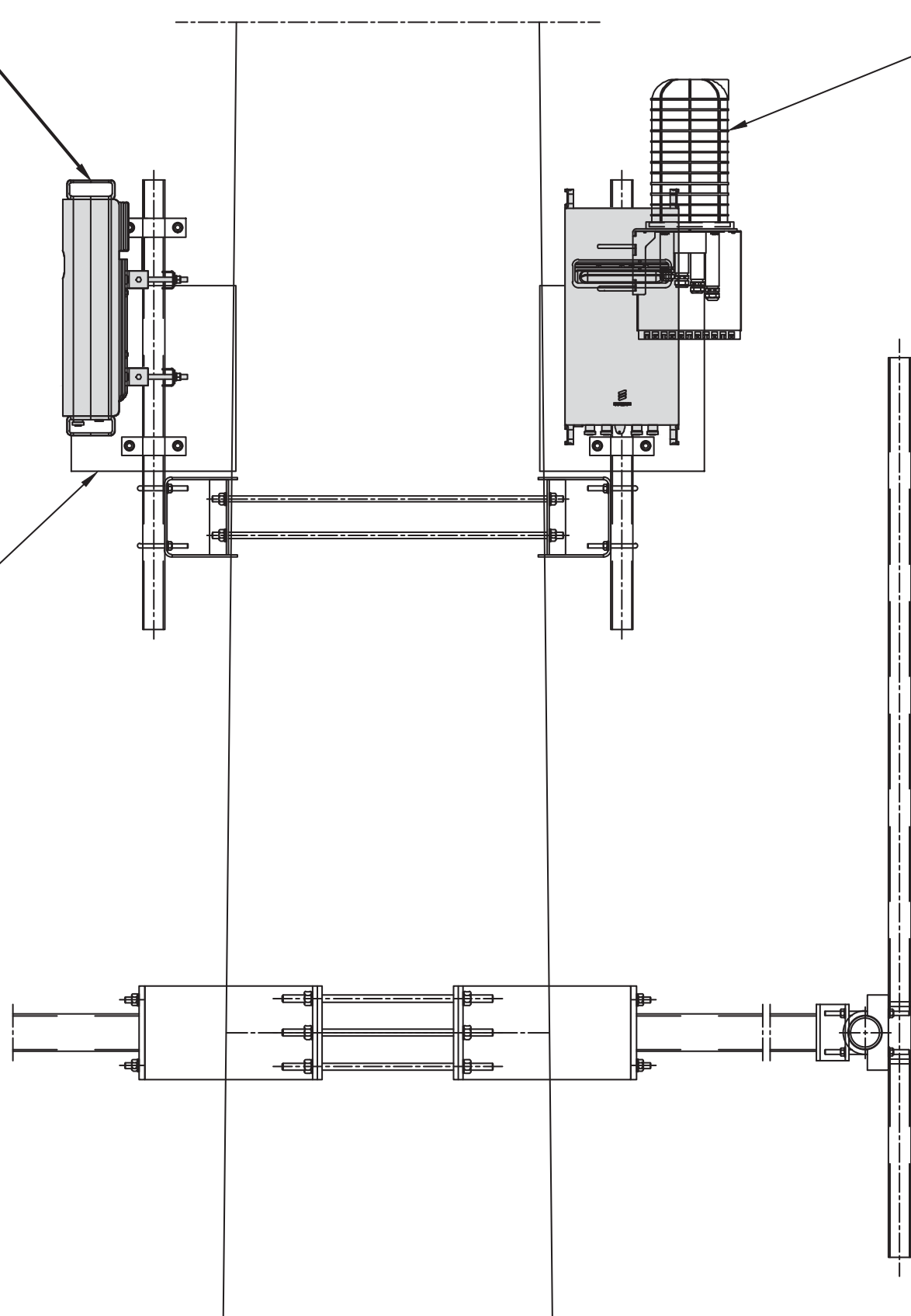
EQUIPMENT MOUNTING DETAILS

N.T.S 1

RRUS DETAILS

N.T.S 2

PROPOSED LTE RRUS-32 B2  
(TYP. 1 PER SECTOR,  
3 TOTAL)



EXISTING (1) DC/FIBER  
SQUID TO REMAIN

EXISTING RRUS-11 (TYP.  
OF 1 PER SECTOR, TOTAL  
OF 3) TO REMAIN

MOUNTING DETAIL

22"x34" SCALE: 3/4" = 1'-0"  
11"x17" SCALE: 3/8" = 1'-0"



N.T.S 3

NOT USED



NO.	DATE	DESCRIPTION	BY
A	11/18/16	FOR REVIEW	DBG



SHEET TITLE:  
**DETAILS**

SHEET NUMBER:  
**A-4**



550 COCHITUATE ROAD  
FRAMINGHAM, MA 01701



16 ESQUIRE ROAD  
BILLERICA, MA 01821



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134 FLANDERS ROAD, SUITE  
125 WESTBOROUGH, MA 01581

PLANS PREPARED BY:



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IRVING, TX 5038  
1-855-669-5421

NO.	DATE	DESCRIPTION	BY
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MIDDLETOWN SO MAIN  
FA CODE: 10042329

1825 SOUTH MAIN STREET  
MIDDLETOWN, CT 06457

SEAL:



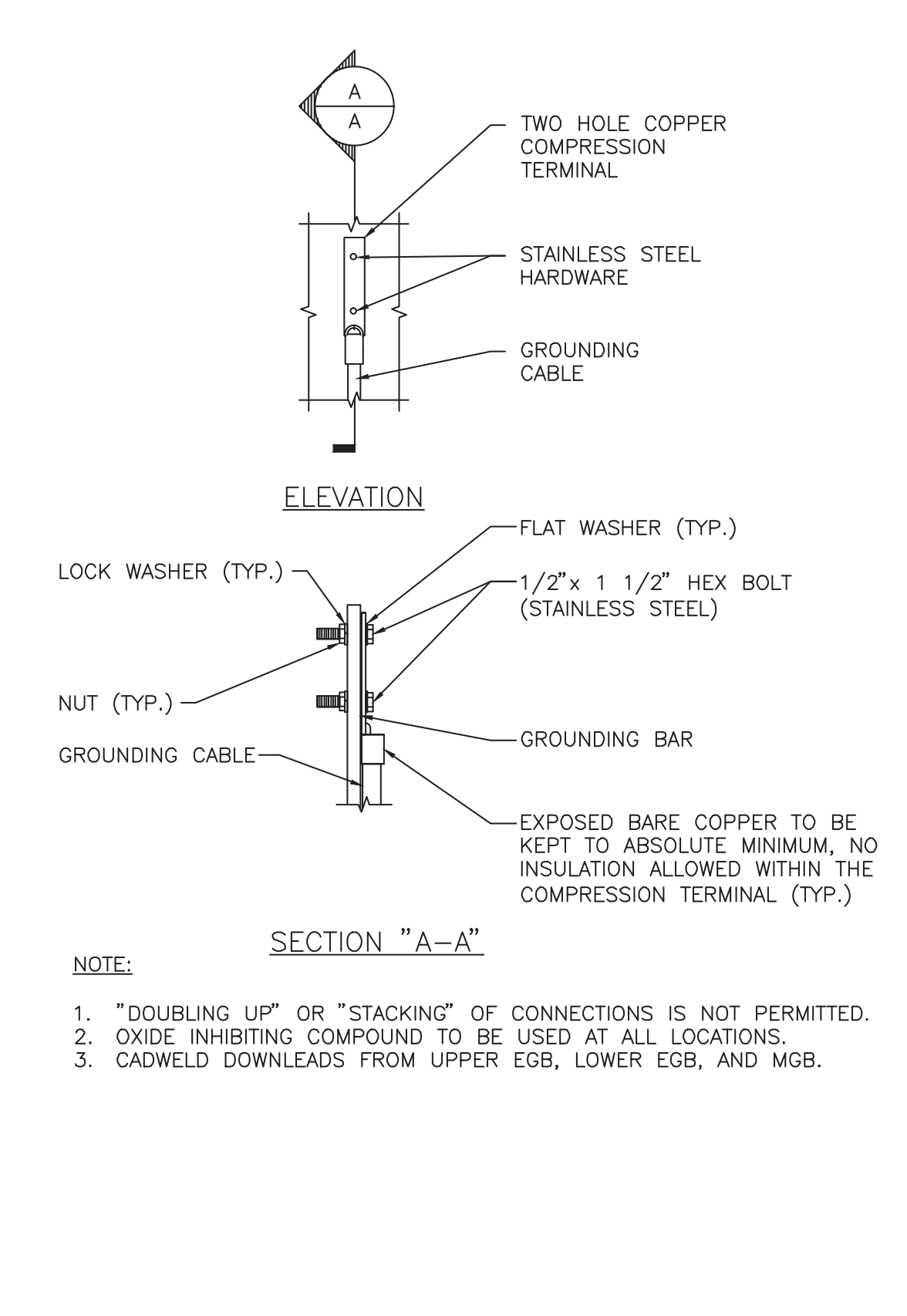
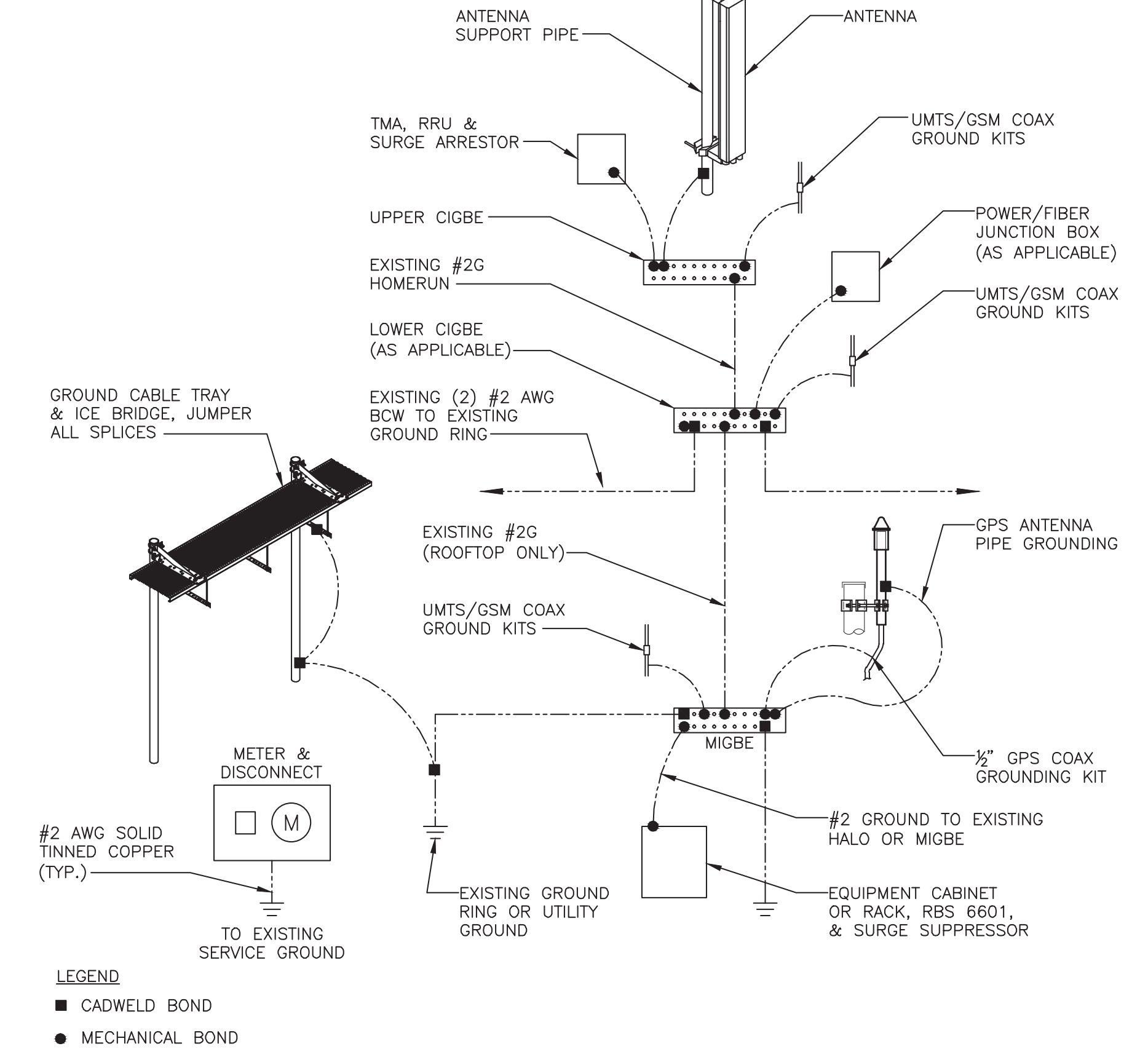
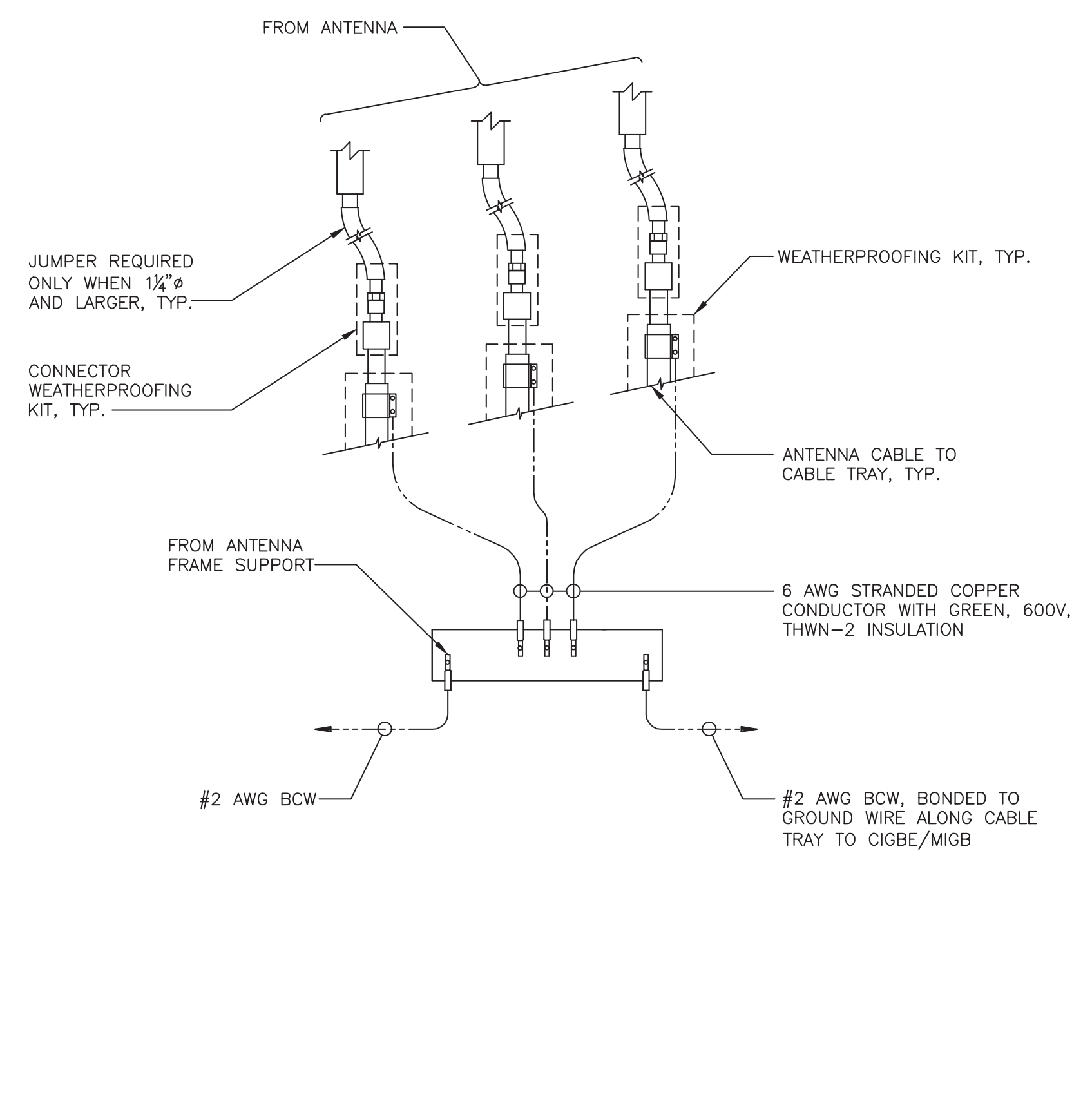
MICHAEL P. FLAROVINSKAS, P.E. #25849  
18301 S.R. 161, Plain City, OH 43064  
614-398-6200 / m.flarovinskas@trylon.com

SHEET TITLE:

GROUNDING, ONE-LINE  
DIAGRAM & DETAILS

SHEET NUMBER:

G-1



GROUND WIRE TO GROUND BAR CONNECTION DETAILS

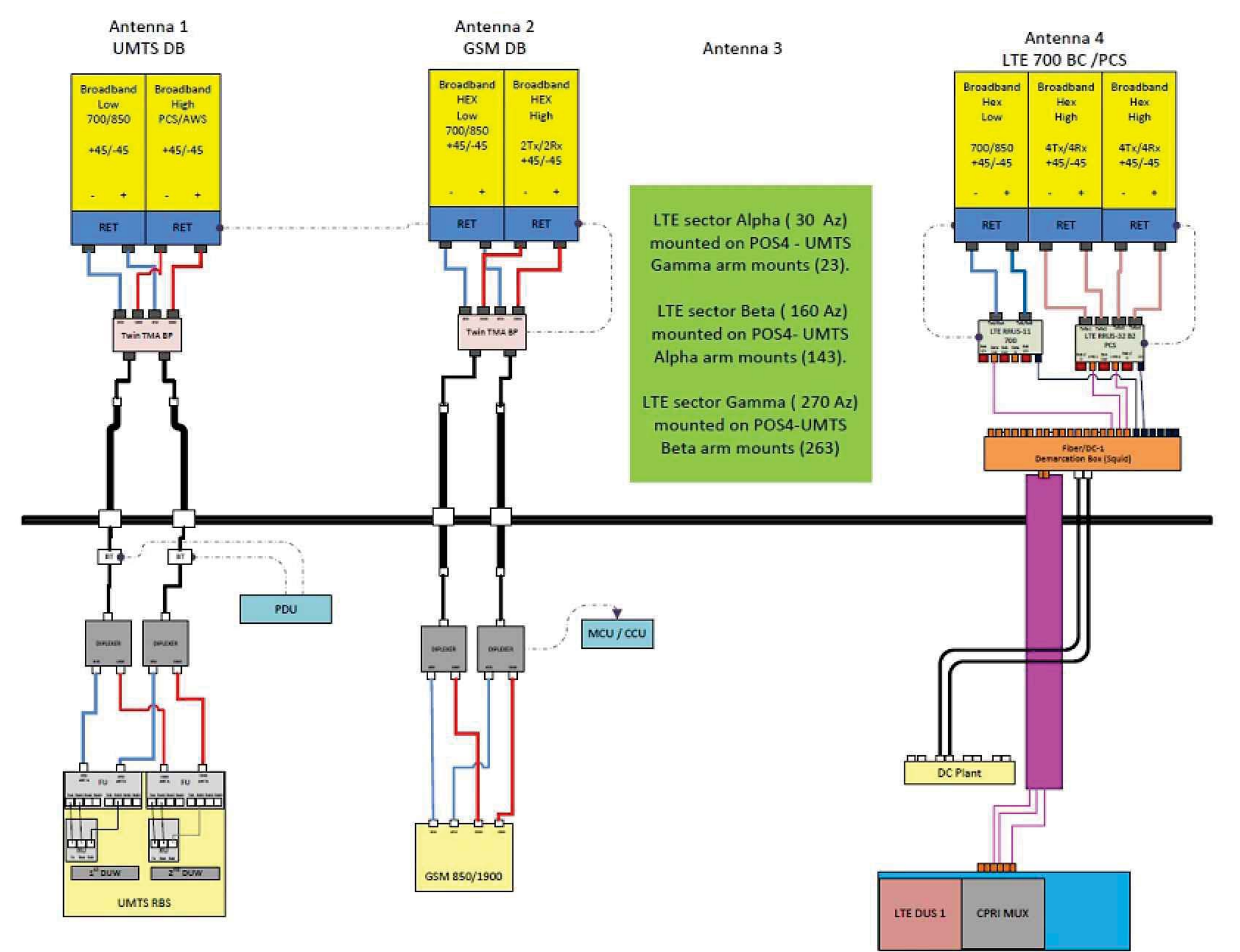
N.T.S 1

GROUND RISER DIAGRAM

N.T.S 2

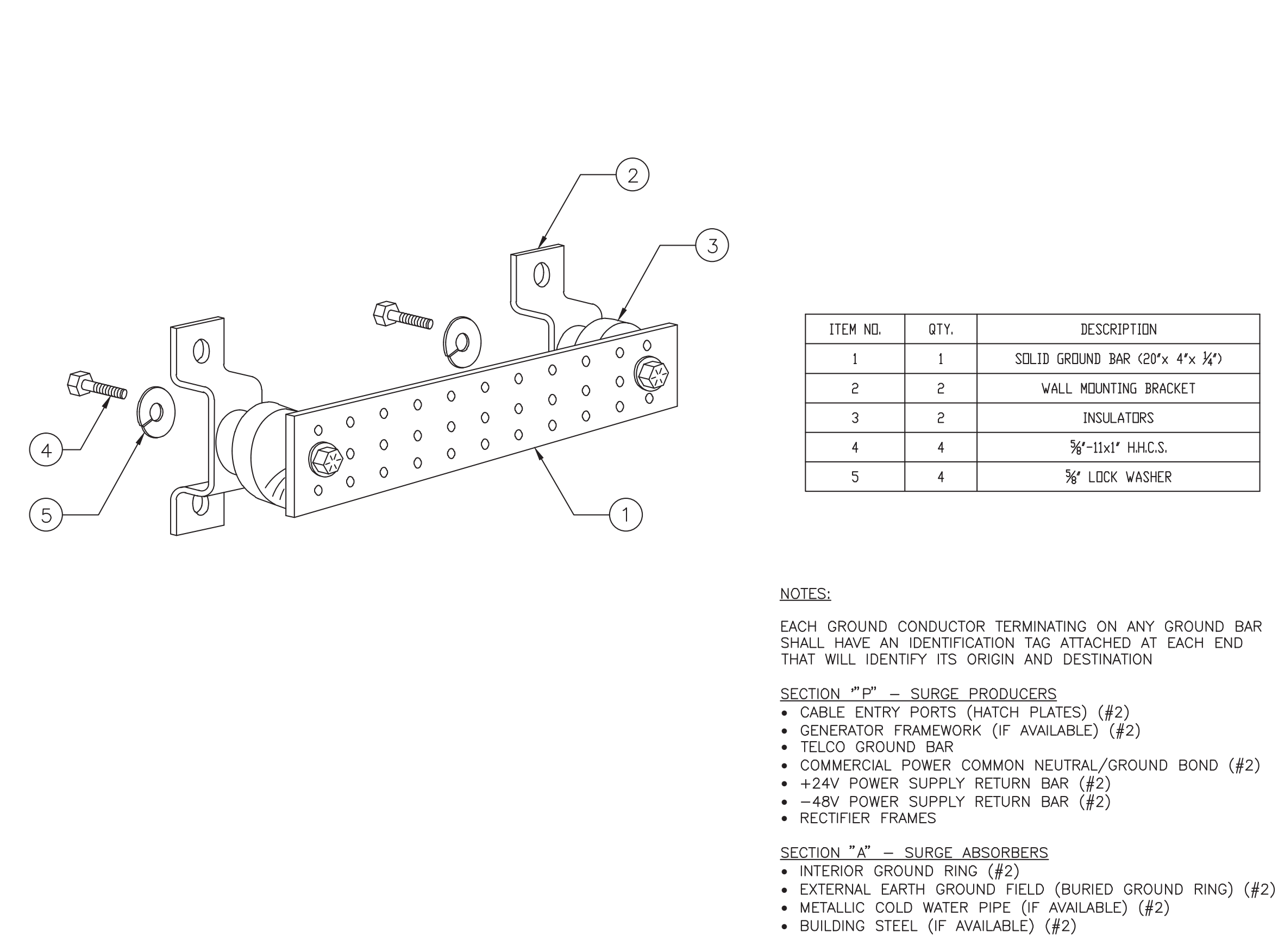
TYPICAL GROUND BAR CONNECTION DETAILS

N.T.S 3



RUN WIRING DIAGRAM

N.T.S 4



GROUND BAR DETAILS

N.T.S 5