

7/11/2016

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

Notice of Exempt Modification
170 Mount Trobe Road
Plymouth, CT 06872
N 41.63009457
W -73.05609390

Dear Ms. Bachman:

T-Mobile currently maintains 6 antennas at the 160-foot level of the existing 160-foot monopole at 170 Mount Trobe Road, Plymouth, CT 06872. The tower is owned by SBA Properties, LLC. T-Mobile now intends to add 3 antennas and replace 3 existing antennas with 3 new antennas for a total of 9 antennas. T-Mobile also intends to add 3 RRU's. These antennas would be installed at the 160-foot level of the tower. The Structural Analysis is passing with a structural usage of 90.1% and a foundation usage of 80%

This facility was approved by the Docket No. EM-T-Mobile-111-140327. This approval included the condition(s) that will be followed per the proposed modification. This modification complies with the aforementioned condition(s).

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. g 16-50j-73, a copy of this letter is being sent to David V. Merchant, Mayor, for the Town of Plymouth, Susan and Walter MacDonald the property owner, as well as SBA the tower owner.

The planned modifications to the facility fall squarely within those activities explicitly provided fox its 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 modifications will not require the extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels ox 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 modifications wall not cause a change or alteration in the physical ox environmental characteristics of the site.

6. The existing structure and its foundation can support the proposed loading

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

Sincerely,

Gregg Shappy
10 Industrial Ave.
Suite 3
Mahwah, NJ 07430
(845) 553-2045
gshappy@transcendwireless.com

Attachments

cc: David V. Merchant – Town of Plymouth Mayor
Michael Villa - SBA
Susan and Walter MacDonald (property owners)

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

T-Mobile Existing Facility

Site ID: CT11363D

**SBA South Plymouth
170 Mount Tobe Road
Plymouth, CT 06782**

June 21, 2016

EBI Project Number: 6216002936

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	9.86 %

June 21, 2016

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

Emissions Analysis for Site: **CT11363D – SBA South Plymouth**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **170 Mount Tobe Road, Plymouth, CT**, for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01 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 limit for the 700 MHz Band is approximately 467 $\mu\text{W}/\text{cm}^2$, and the general population exposure limit for the 1900 MHz (PCS) and 2100 MHz (AWS) 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 T-Mobile Wireless antenna facility located at **170 Mount Tobe Road, Plymouth, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

- 1) 2 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 2) 2 UMTS channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 3) 2 UMTS channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 4) 2 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 5) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 6) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.

- 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 **Ericsson AIR32 B66Aa/B2A & Ericsson AIR21 B2A/B4P** for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the **Commscope LNX-6515DS-VTM** for 700 MHz channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **Ericsson AIR32 B66Aa/B2A** has a maximum gain of **15.9 dBd** at its main lobe at 1900 MHz and 2100 MHz. The **Ericsson AIR21 B2A/B4P** has a maximum gain of **15.9 dBd** at its main lobe at 1900 MHz and 2100 MHz. The **Commscope LNX-6515DS-VTM** has a maximum gain of **14.6 dBd** at its main lobe at 700 MHz. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 10) The antenna mounting height centerline of the proposed antennas is **160 feet** above ground level (AGL).
- 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.
- 12) All calculations were done with respect to uncontrolled / general public threshold limits.

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Ericsson AIR32 B66Aa/B2A	Make / Model:	Ericsson AIR32 B66Aa/B2A	Make / Model:	Ericsson AIR32 B66Aa/B2A
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	160	Height (AGL):	160	Height (AGL):	160
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	240	Total TX Power(W):	240	Total TX Power(W):	240
ERP (W):	9,337.08	ERP (W):	9,337.08	ERP (W):	9,337.08
Antenna A1 MPE%	1.42	Antenna B1 MPE%	1.42	Antenna C1 MPE%	1.42
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Ericsson AIR21 B2A/B4P	Make / Model:	Ericsson AIR21 B2A/B4P	Make / Model:	Ericsson AIR21 B2A/B4P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	160	Height (AGL):	160	Height (AGL):	160
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	6	Channel Count	6	Channel Count	6
Total TX Power(W):	180	Total TX Power(W):	180	Total TX Power(W):	180
ERP (W):	7,002.81	ERP (W):	7,002.81	ERP (W):	7,002.81
Antenna A2 MPE%	1.06	Antenna B2 MPE%	1.06	Antenna C2 MPE%	1.06
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM
Gain:	14.6 dBd	Gain:	14.6 dBd	Gain:	14.6 dBd
Height (AGL):	160	Height (AGL):	160	Height (AGL):	160
Frequency Bands	700 MHz	Frequency Bands	700 MHz	Frequency Bands	700 MHz
Channel Count	1	Channel Count	1	Channel Count	1
Total TX Power(W):	30	Total TX Power(W):	30	Total TX Power(W):	30
ERP (W):	865.21	ERP (W):	865.21	ERP (W):	865.21
Antenna A3 MPE%	0.28	Antenna B3 MPE%	0.28	Antenna C3 MPE%	0.28

Site Composite MPE%	
Carrier	MPE%
T-Mobile (Per Sector Max)	2.76 %
Sprint	0.01 %
MetroPCS	0.55 %
Nextel	0.39 %
Verizon Wireless	3.06 %
AT&T	3.09 %
Site Total MPE %:	9.86 %

T-Mobile Sector A Total:	2.76 %
T-Mobile Sector B Total:	2.76 %
T-Mobile Sector C Total:	2.76 %
Site Total:	9.86 %

T-Mobile_per sector	# 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
T-Mobile 2100 MHz (AWS) LTE	2	2,334.27	160	7.08	AWS - 2100 MHz	1000	0.71 %
T-Mobile 1900 MHz (PCS) LTE	2	2,334.27	160	7.08	PCS - 1900 MHz	1000	0.71 %
T-Mobile 2100 MHz (AWS) UMTS	2	1,167.14	160	3.54	AWS - 2100 MHz	1000	0.35 %
T-Mobile 1900 MHz (PCS) UMTS	2	1,167.14	160	3.54	PCS - 1950 MHz	1000	0.35 %
T-Mobile 1900 MHz (PCS) GSM	2	1,167.14	160	3.54	PCS - 1950 MHz	1000	0.35 %
T-Mobile 700 MHz LTE	1	865.21	160	1.31	700 MHz	467	0.28 %
						Total*:	2.76 %

NOTE: Totals may vary by 0.01% due to summing of remainders

Summary

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

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

T-Mobile Sector	Power Density Value (%)
Sector A:	2.76 %
Sector B:	2.76 %
Sector C:	2.76 %
T-Mobile Per Sector Maximum:	2.76 %
Site Total:	9.86 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **9.86%** of the allowable FCC established general public limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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



Tower Engineering Solutions

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

Structural Analysis Report

Existing 160 ft. Summit Monopole
Customer Name: SBA Communications Corp
Customer Site Number: CT03538-S
Customer Site Name: South Plymouth
Carrier Name: T-Mobile
Carrier Site ID / Name: CT11363D
Site Location: 170 Mount Tobe Road
Plymouth, Connecticut
Litchfield County
Latitude: 41.630030
Longitude: -73.056553

Analysis Result:

Max Structural Usage: 90.1% [Pass]
Max Foundation Usage: 80.0% [Pass]
Report Prepared By : Kyle Wyant





Tower Engineering Solutions

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

Structural Analysis Report

Existing 160 ft. Summit Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT03538-S

Customer Site Name: South Plymouth

Carrier Name: T-Mobile

Carrier Site ID / Name: CT11363D

Site Location: 170 Mount Tobe Road

Plymouth, Connecticut

Litchfield County

Latitude: 41.630030

Longitude: -73.056553

Analysis Result:

Max Structural Usage: 90.1% [Pass]

Max Foundation Usage: 80.0% [Pass]

Report Prepared By : Kyle Wyant

Introduction

The purpose of this report is to summarize the analysis results on the 160 ft. Summit Monopole to support the proposed antennas and transmission lines in addition to those currently installed. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

Sources of Information

Tower Drawings	Tower Design by Paul J. Ford and Company for Summit Manufacturing, LLC, PJF Job No. 29201-1019, Summit # 15616, dated August 21, 2001
Foundation Drawing	Foundation Design by Paul J. Ford and Company for Summit Manufacturing, LLC, PJF Job No. 29201-1019, Summit # 15616, dated August 21, 2001
Geotechnical Report	Jaworski Geotech, Inc., Project No. 00244G, dated July 31, 2001
Modification Drawings	N/A

Analysis Criteria

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

Basic Wind Speed Used in the Analysis:	80 mph (Fastest Mile)
Basic Wind Speed with Ice:	69 mph (Fastest Mile) with 1/2" Radial Ice Concurrent
Operational Wind Speed:	50 mph + 0" Radial Ice
Standard/Codes:	ANSI/TIA/EIA 222-F / 2005 Connecticut State Building Code

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	160.0	3	Ericsson AIR21 B2A/B4P - Panel	Low Profile Platform	(12) 1 5/8" (1) 1 5/8" Fiber	T-Mobile
2		3	Ericsson AIR21 B4A/B2P - Panel			
3		3	Ericsson KRY 112 144/1 - TMA			
4	156.5	1	Lone Star Electronics LS-230C - Omni	(1) 4 ft. Sidearm	(1) 7/8"	Thomaston P.D.
5	153.0	1	Andrew VHLP-2.6-11 - Dish	(2) Pipe Mounts	(2) EW90	
6		1	Hutton HPD 3.4-4.7 - Dish			
7		3	Motorola ODU-A-RF			
8	150.0	3	RFS APXVTM14-C-120 - Panel	Low Profile Platform	(4) 1 1/4"	Sprint
9	148.0	3	RFS APXVSP18-C-A20 - Panel			
10		3	ALU 1900MHz - RRU			
11		3	ALU 800 MHz - RRU			
12		3	ALU TD-RRH8x20-25 - RRU			
13		3	ALU 800 MHz Filter			
14		4	RFS ACU-A20-N - RET			
15	137.0	3	Antel BXA-70063-6CF-2 - Panel	Low Profile Platform	(12) 1 5/8" (1) 1 5/8" Hybriflex	Verizon
16		6	Commscope HBXX-6517DS-A2M - Panel			
17		3	Antel BXA-70080-6CF-2 - Panel			
18		1	RFS DB-T1-6Z-8AB-0Z - Distribution Box			
19		3	ALU 2X60-1900 - RRU			
20		3	ALU RRH2X60-AWS - RRU			
21		6	RFS FD9R6004/2C-3 - Diplexer			
22	134.5	1	Bird Technologies CSA 10-67 DIM - Dipole	(1) Pipe Mount	(1) 7/8"	Thomaston P.D.
23	117.0	3	RFS APXV18-206517S-C - Panel	(3) Pipe Mounts	(6) 1 5/8"	Metro PCS
24	108.0	3	CSS DUO1417- 8686-40 - Panel	Low Profile Platform	(12) 1 5/8" (2) 3/4" DC (1) 7/16" Fiber	AT&T
25		6	Powerwave 7770 - Panel			
26		3	KMW AM-X-CD-16-65-00T-RET - Panel			
27		6	Powerwave LGP21401 - TMA			
28		6	Powerwave 21903 - Diplexer			
29		6	Ericsson RRUS 11 - RRU			
30		3	Andrew ABT-DF-DMADBH - Bias T			
31		1	Raycap DC6-48-60-18-8F - Surge Protector			
32	75.0	1	GPS	(1) Standoff	(1) 1/2"	T-Mobile

Proposed Carrier's Final Configuration of Antennas, Mounts and Transmission Lines

Information pertaining to the proposed carrier's final configuration of antennas and transmission lines was provided by SBA Communications Corp. The proposed antennas and lines are listed below.

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	160.0	3	Ericsson AIR 21 B2A/B4P - Panel	Low Profile Platform	(12) 1 5/8" (1) 1 5/8" Hybrid (1) 1 5/8" Fiber	T-Mobile
2		3	Ericsson AIR 32 - Panel			
3		3	Commscope LNX-6515DS-A1M - Panel			
4		3	Ericsson KRY112 144 - TMA			
5		3	Ericsson RRUS 11 - RRU			

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

Analysis Results

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

	Pole shafts	Anchor Bolts	Base Plate
Max. Usage:	90.1%	77.2%	84.1%
Pass/Fail	Pass	Pass	Pass

Foundations

	Moment (Kip-Ft)	Shear (Kips)
Original Design Reactions	4450.0	38.0
Analysis Reactions	3942.8	32.6
% of Design Reactions	88.6%	85.9%

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

Operational Condition (Rigidity):

Operational characteristics of the tower are found to be within the limits prescribed by ANSI/TIA/EIA-222-F for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 2.289 degrees under the operational wind speed as specified in the Analysis Criteria.

Conclusions

Based on the analysis results, the existing structure and its foundation were found to be adequate to safely support the existing and proposed equipment and meet the minimum requirements per the ANSI/TIA/EIA 222-F Standard and the 2005 Connecticut State Building Code under the design basic wind speed as specified in the Analysis Criteria.

Standard Conditions

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

Usage Diagram - Max Stress 90.1% at 45.0ft

Structure: CT03538-S-SBA
Site Name: South Plymouth
Height: 160.00 (ft)
Base Elev: 0.000 (ft)

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

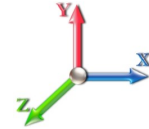
6/22/2016



Page: 1

Dead Load Factor: 1.00
 Wind Load Factor: 1.00

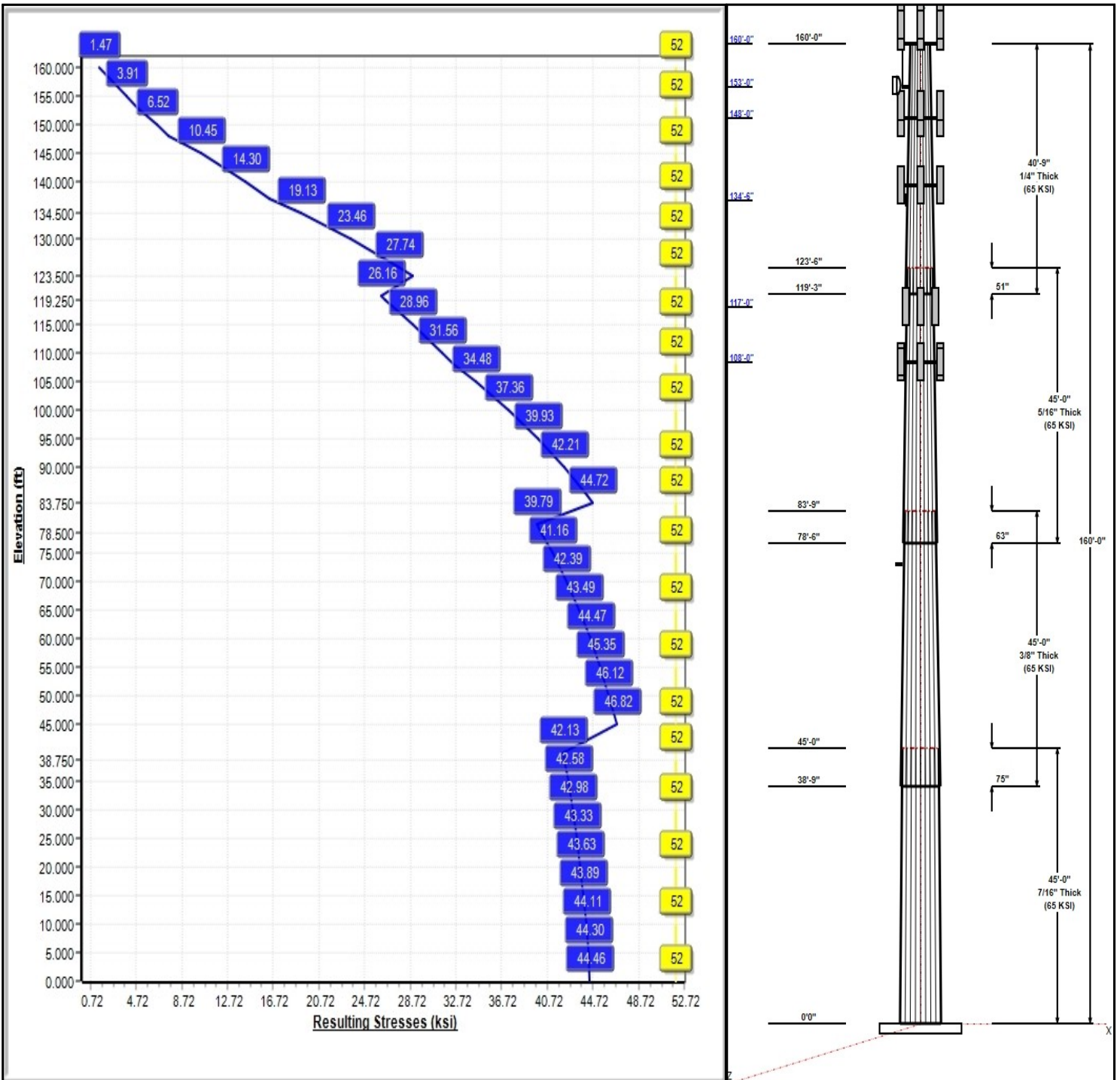
Load Case : 80 mph Wind with 0 in Ice



Iterations: 25

52 Allowable Stress
47 Resulting Stress

Copyright © 2016 by Tower Engineering Solutions, LLC. All rights reserved.



Structure: CT03538-S-SBA

Type: Tapered
Site Name: South Plymouth
Height: 160.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.21503

6/22/2016

Page: 2



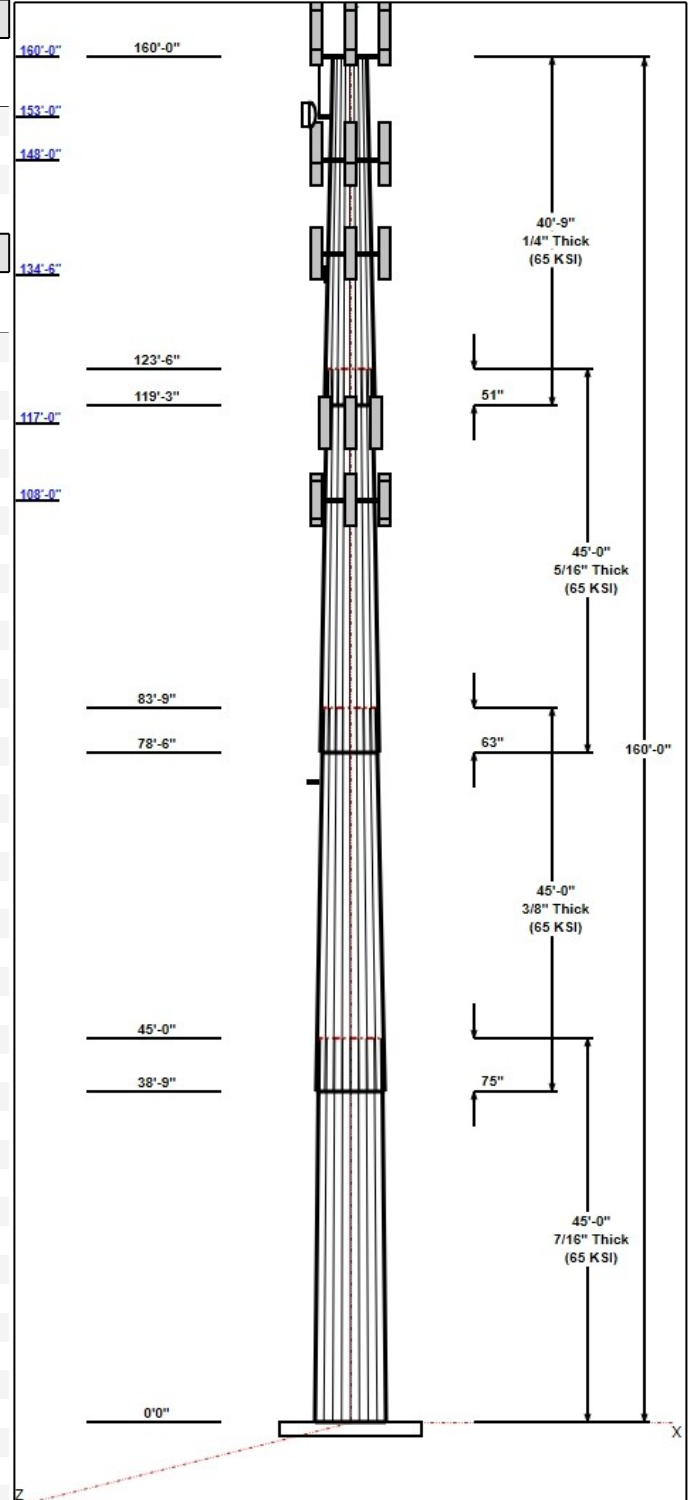
Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	45.00	46.85	56.53	0.438		0.21503	65
2	45.00	39.27	48.95	0.375	Slip	0.21503	65
3	45.00	31.35	41.03	0.313	Slip	0.21503	65
4	40.75	24.00	32.76	0.250	Slip	0.21503	65

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
160.00	163.00	3	AIR 21, 1.3M, B2A B4P	T-Mobile
160.00	163.00	3	Commscope	T-Mobile
160.00	163.00	3	Ericsson AIR 32	T-Mobile
160.00	163.00	3	KRY112 144	T-Mobile
160.00	160.00	1	Low Profile Platform	T-Mobile
160.00	163.00	3	RRUS 11	T-Mobile
153.00	153.00	1	4 ft Sidearm	Thomaston P.D.
153.00	153.00	1	Hutton HPD 3.4-4.7	Thomaston P.D.
153.00	156.50	1	Lone Star Electronics	Thomaston P.D.
153.00	153.00	3	Motorola ODU-A-RF	Thomaston P.D.
153.00	153.00	2	Pipe Mounts	Thomaston P.D.
153.00	153.00	1	VHLP-2.6-11	Thomaston P.D.
148.00	148.00	3	ALU 1900MHz RRH	Sprint
148.00	148.00	3	ALU 800 MHz Filter	Sprint
148.00	148.00	3	ALU 800 MHz RRH	Sprint
148.00	148.00	3	ALU TD-RRH8x20-25	Sprint
148.00	148.00	1	Low Profile Platform	Sprint
148.00	148.00	4	RFS ACU-A20-N	Sprint
148.00	148.00	3	RFS APXVSP18-C-A20	Sprint
148.00	150.00	3	RFS APXVTM14-C-120	Sprint
137.00	137.00	3	ALU 2X60-1900	Verizon
137.00	137.00	3	ALU RRH2X60-AWS	Verizon
137.00	137.00	3	Antel BXA-70063-6CF-2	Verizon
137.00	137.00	3	Antel BXA-70080-6CF-2	Verizon
137.00	137.00	6	Commscope	Verizon
137.00	137.00	1	Low Profile Platform	Verizon
137.00	137.00	1	RFS DB-T1-6Z-8AB-0Z	Verizon
137.00	137.00	6	RFS FD9R6004/2C-3	Verizon
134.50	134.50	1	Bird Technologies CSA	Thomaston P.D.
134.50	134.50	1	Pipe Mount	Thomaston P.D.
117.00	117.00	3	Pipe Mounts	Metro PCS
117.00	117.00	3	RFS APXV18-206517S-C	Metro PCS
108.00	108.00	3	Andrew ABT-DF-DMADBH	AT&T
108.00	108.00	3	CSS DUO1417- 8686-40	AT&T
108.00	108.00	6	Ericsson RRUS 11	AT&T
108.00	108.00	3	KMW	AT&T
108.00	108.00	1	Low Profile Platform	AT&T
108.00	108.00	6	Powerwave 21903	AT&T
108.00	108.00	6	Powerwave 7770	AT&T
108.00	108.00	6	Powerwave LGP21401	AT&T
108.00	108.00	1	Raycap DC6-48-60-18-8F	AT&T
75.00	75.00	1	GPS	T-Mobile
75.00	75.00	1	Standoff	T-Mobile

Linear Appurtenances



Structure: CT03538-S-SBA

Type: Tapered
Site Name: South Plymouth
Height: 160.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.21503

6/22/2016

Page: 3



Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	160.00	Inside	1 5/8" Coax	T-Mobile
0.00	160.00	Inside	1 5/8" Fiber	T-Mobile
0.00	160.00	Inside	1 5/8" Hybrid	T-Mobile
0.00	153.00	Inside	7/8" Coax	Thomaston P.D.
0.00	153.00	Inside	EW90	Thomaston P.D.
0.00	148.00	Inside	1 1/4" Coax	Sprint
0.00	137.00	Inside	1 5/8" Coax	Verizon
0.00	137.00	Inside	1 5/8" Hybriflex	Verizon
0.00	134.50	Inside	7/8" Coax	Thomaston P.D.
0.00	117.00	Inside	1 5/8" Coax	Metro PCS
0.00	108.00	Inside	1 5/8" Coax	AT&T
0.00	108.00	Inside	3/4" DC	AT&T
0.00	108.00	Inside	7/16" Fiber	AT&T
0.00	75.00	Inside	1/2" Coax	T-Mobile

Anchor Bolts

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

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
3.0000	64.0	50.0	Clipped

Reactions

Load Case	Moment	Shear	Axial
80 mph Wind with 0" Ice	3942.8	32.6	44.8
69.28 mph Wind with 0.5" Ice	3408.9	27.5	52.2
50 mph Wind with 0" Ice	1542.1	12.7	44.9

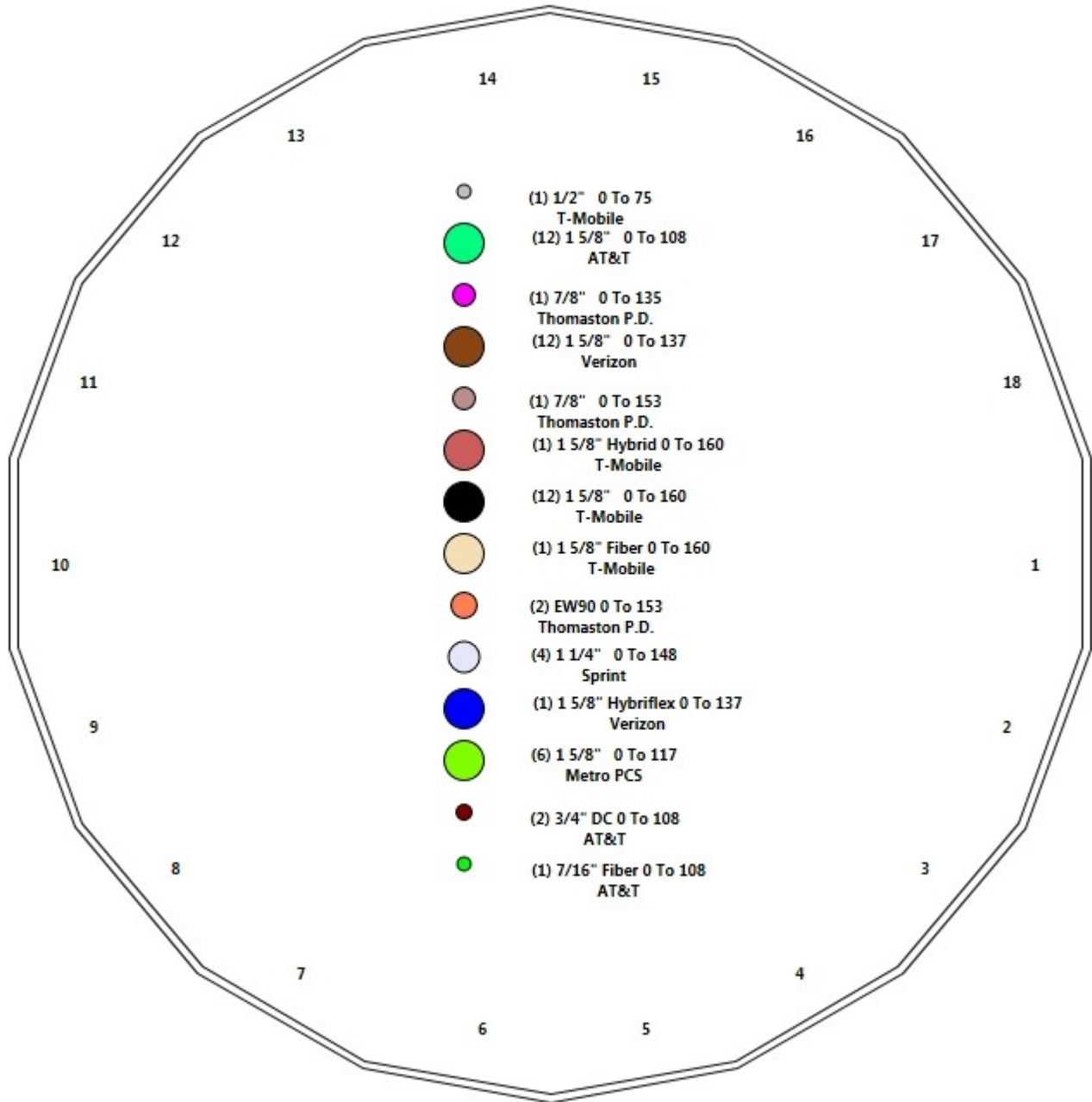
Structure: CT03538-S-SBA - Coax Line Placement

Type: Monopole
Site Name: South Plymouth
Height: 160.00 (ft)

6/22/2016



Page: 4



Shaft Properties

Structure: CT03538-S-SBA
Site Name: South Plymouth
Height: 160.00 (ft)
Base Elev: 0.000 (ft)

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

6/22/2016

Page: 5



Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	45.000	0.4375	65		0.00	10,898
2	18	45.000	0.3750	65	Slip	75.00	7,971
3	18	45.000	0.3125	65	Slip	63.00	5,448
4	18	40.750	0.2500	65	Slip	51.00	3,095
Total Shaft Weight:							27,412

Bottom

Top

Sec. No.	Dia (in)	Elev (ft)	Area (sqin)	Ix (in^4)	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (sqin)	Ix (in^4)	W/t Ratio	D/t Ratio	Taper
1	56.53	0.00	77.89	30962.56	21.37	129.21	46.85	45.00	64.45	17543.9	17.47	107.09	0.215031
2	48.95	38.75	57.81	17232.49	21.60	130.53	39.27	83.75	46.29	8849.01	17.05	104.72	0.215031
3	41.03	78.50	40.38	8456.28	21.74	131.28	31.35	123.5	30.78	3746.26	16.28	100.32	0.215031
4	32.76	119.2	25.80	3445.37	21.70	131.05	24.00	160.0	18.84	1343.00	15.52	96.00	0.215031

Loading Summary

Structure: CT03538-S-SBA
Site Name: South Plymouth
Height: 160.00 (ft)
Base Elev: 0.000 (ft)

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

6/22/2016

Page: 6



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	160.00	AIR 21, 1.3M, B2A B4P	3	117.00	7.19	0.94	169.00	7.850	0.97	0.00	3.00
2	160.00	Commscope LNX-6515DS-A1M	3	91.00	11.83	0.93	171.00	13.370	0.96	0.00	3.00
3	160.00	Ericsson AIR 32	3	166.00	7.19	0.96	219.00	7.850	1.00	0.00	3.00
4	160.00	KRY112 144	3	11.00	0.41	0.70	14.10	0.550	0.75	0.00	3.00
5	160.00	Low Profile Platform	1	1600.00	25.00	1.00	2000.00	27.000	1.00	0.00	0.00
6	160.00	RRUS 11	3	51.00	2.91	0.71	67.00	3.140	0.76	0.00	3.00
7	153.00	4 ft Sidearm	1	50.00	3.00	1.00	84.00	5.790	1.00	0.00	0.00
8	153.00	Hutton HPD 3.4-4.7	1	105.00	8.92	1.00	0.00	9.420	1.00	0.00	0.00
9	153.00	Lone Star Electronics LS-230C	1	20.00	1.61	1.00	32.00	2.630	1.00	0.00	3.50
10	153.00	Motorola ODU-A-RF	3	10.40	1.44	1.00	9.40	1.690	1.00	0.00	0.00
11	153.00	Pipe Mounts	2	50.00	2.00	1.00	100.00	3.000	1.00	0.00	0.00
12	153.00	VHLP-2.6-11	1	47.60	8.43	1.00	97.00	8.920	1.00	0.00	0.00
13	148.00	ALU 1900MHz RRH	3	44.00	3.80	0.88	75.20	4.200	0.00	0.00	0.00
14	148.00	ALU 800 MHz Filter	3	10.00	0.49	0.99	13.50	0.580	0.00	0.00	0.00
15	148.00	ALU 800 MHz RRH	3	53.00	2.49	0.92	74.10	2.820	0.00	0.00	0.00
16	148.00	ALU TD-RRH8x20-25	3	70.00	4.72	0.69	92.00	4.970	0.75	0.00	0.00
17	148.00	Low Profile Platform	1	1200.00	25.00	1.00	1500.00	31.000	1.00	0.00	0.00
18	148.00	RFS ACU-A20-N	4	1.00	0.14	0.79	2.30	0.220	0.00	0.00	0.00
19	148.00	RFS APXVSPP18-C-A20	3	97.00	8.66	0.93	106.50	9.080	0.98	0.00	0.00
20	148.00	RFS APXVTM14-C-120	3	96.00	7.30	0.89	91.90	7.290	0.94	0.00	2.00
21	137.00	ALU 2X60-1900	3	46.00	2.19	0.84	58.80	2.370	0.89	0.00	0.00
22	137.00	ALU RRH2X60-AWS	3	55.00	2.57	0.89	70.90	2.760	0.94	0.00	0.00
23	137.00	Antel BXA-70063-6CF-2	3	17.00	8.13	0.83	59.50	8.540	0.88	0.00	0.00
24	137.00	Antel BXA-70080-6CF-2	3	18.00	6.16	0.97	54.30	6.450	1.02	0.00	0.00
25	137.00	Commscope HBXX-6517DS-A2M	6	40.80	9.13	0.87	91.20	9.590	0.92	0.00	0.00
26	137.00	Low Profile Platform	1	1500.00	22.00	1.00	1800.00	27.000	1.00	0.00	0.00
27	137.00	RFS DB-T1-6Z-8AB-0Z	1	18.90	5.60	0.71	46.00	5.870	0.75	0.00	0.00
28	137.00	RFS FD9R6004/2C-3	6	3.10	0.36	0.50	5.40	0.500	0.50	0.00	0.00
29	134.50	Bird Technologies CSA 10-67 DIM	1	4.60	3.81	1.00	39.80	11.400	1.00	0.00	0.00
30	134.50	Pipe Mount	1	50.00	2.00	1.00	100.00	6.000	1.00	0.00	0.00
31	117.00	Pipe Mounts	3	50.00	2.00	1.00	100.00	3.000	1.00	0.00	0.00
32	117.00	RFS APXV18-206517S-C	3	26.40	5.16	0.74	53.00	5.840	0.75	0.00	0.00
33	108.00	Andrew ABT-DF-DMADBH	3	1.10	0.05	0.98	1.80	0.110	1.00	0.00	0.00
34	108.00	CSS DUO1417- 8686-40	3	20.30	6.93	0.92	0.00	7.150	0.97	0.00	0.00
35	108.00	Ericsson RRUS 11	6	51.00	2.91	0.71	67.00	3.140	0.76	0.00	0.00
36	108.00	KMW AM-X-CD-16-65-00T-RET	3	48.50	8.66	0.85	95.00	9.080	0.90	0.00	0.00
37	108.00	Low Profile Platform	1	1500.00	22.00	1.00	1800.00	27.000	1.00	0.00	0.00
38	108.00	Powerwave 21903	6	5.50	0.27	0.84	7.90	0.380	0.89	0.00	0.00
39	108.00	Powerwave 7770	6	35.00	6.28	0.83	0.00	6.530	0.88	0.00	0.00
40	108.00	Powerwave LGP21401	6	14.10	1.29	0.50	21.20	1.530	0.50	0.00	0.00
41	108.00	Raycap DC6-48-60-18-8F	1	31.80	1.47	1.00	49.50	1.670	1.00	0.00	0.00
42	75.00	GPS	1	1.70	0.14	1.00	3.50	0.230	1.00	0.00	0.00
43	75.00	Standoff	1	20.00	1.00	1.00	50.00	4.340	1.00	0.00	0.00
Totals:			119	10,446.70			13,755.20				

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		
Bottom Elev. (ft)	Top Elev. (ft)	Description		Weight (lb/ft)	CaAa (sf/ft)		Weight (lb/ft)	CaAa (sf/ft)	Exposed		
0.00	160.00	(12) 1 5/8" Coax		12.48	0.00		12.48	0.00	Inside		
0.00	160.00	(1) 1 5/8" Fiber		1.10	0.00		1.10	0.00	Inside		
0.00	160.00	(1) 1 5/8" Hybrid		1.10	0.00		1.10	0.00	Inside		
0.00	153.00	(1) 7/8" Coax		0.52	0.00		0.52	0.00	Inside		
0.00	153.00	(2) EW90		0.64	0.00		0.64	0.00	Inside		
0.00	148.00	(4) 1 1/4" Coax		2.64	0.00		2.64	0.00	Inside		
0.00	137.00	(12) 1 5/8" Coax		12.48	0.00		12.48	0.00	Inside		
0.00	137.00	(1) 1 5/8" Hybriflex		1.10	0.00		1.10	0.00	Inside		
0.00	134.50	(1) 7/8" Coax		0.52	0.00		0.52	0.00	Inside		
0.00	117.00	(6) 1 5/8" Coax		6.24	0.00		6.24	0.00	Inside		
0.00	108.00	(12) 1 5/8" Coax		12.48	0.00		12.48	0.00	Inside		
0.00	108.00	(2) 3/4" DC		0.80	0.00		0.80	0.00	Inside		
0.00	108.00	(1) 7/16" Fiber		0.16	0.00		0.16	0.00	Inside		
0.00	75.00	(1) 1/2" Coax		0.16	0.00		1.10	0.00	Inside		
Totals:				7,041.00			7,111.50				

Shaft Section Properties

Structure: CT03538-S-SBA
Site Name: South Plymouth
Height: 160.00 (ft)
Base Elev: 0.000 (ft)

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

6/22/2016
 Page: 8



Increment Length: 5 (ft)

Elev (ft)	Description	Thick (in)	Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fy (ksi)	Fb (ksi)	Weight (lb)
0.00		0.4375	56.530	77.889	30962.6	21.37	129.21	65	52	0.0
5.00		0.4375	55.455	76.396	29216.0	20.94	126.75	65	52	1312.5
10.00		0.4375	54.380	74.903	27536.5	20.51	124.30	65	52	1287.1
15.00		0.4375	53.305	73.410	25922.5	20.07	121.84	65	52	1261.7
20.00		0.4375	52.229	71.917	24372.9	19.64	119.38	65	52	1236.3
25.00		0.4375	51.154	70.424	22886.3	19.21	116.92	65	52	1210.9
30.00		0.4375	50.079	68.931	21461.4	18.77	114.47	65	52	1185.5
35.00		0.4375	49.004	67.438	20097.0	18.34	112.01	65	52	1160.1
38.75	Bot - Section 2	0.4375	48.198	66.318	19112.5	18.01	110.17	65	52	853.4
40.00		0.4375	47.929	65.945	18791.6	17.91	109.55	65	52	526.5
45.00	Top - Section 1	0.3750	47.604	56.212	15841.3	20.97	126.94	65	52	2076.6
50.00		0.3750	46.528	54.932	14783.9	20.47	124.08	65	52	945.5
55.00		0.3750	45.453	53.652	13774.6	19.96	121.21	65	52	923.7
60.00		0.3750	44.378	52.373	12812.3	19.46	118.34	65	52	902.0
65.00		0.3750	43.303	51.093	11895.9	18.95	115.47	65	52	880.2
70.00		0.3750	42.228	49.814	11024.3	18.45	112.61	65	52	858.4
75.00		0.3750	41.153	48.534	10196.3	17.94	109.74	65	52	836.6
78.50	Bot - Section 3	0.3750	40.400	47.638	9642.1	17.59	107.73	65	52	572.7
80.00		0.3750	40.077	47.254	9410.9	17.43	106.87	65	52	447.5
83.75	Top - Section 2	0.3125	39.896	39.261	7772.2	21.10	127.67	65	52	1102.9
85.00		0.3125	39.627	38.994	7614.9	20.95	126.81	65	52	166.4
90.00		0.3125	38.552	37.928	7007.1	20.34	123.37	65	52	654.4
95.00		0.3125	37.477	36.861	6432.5	19.74	119.93	65	52	636.2
100.00		0.3125	36.402	35.795	5890.2	19.13	116.49	65	52	618.1
105.00		0.3125	35.327	34.728	5379.3	18.52	113.05	65	52	599.9
108.00		0.3125	34.682	34.089	5087.4	18.16	110.98	65	52	351.3
110.00		0.3125	34.252	33.662	4898.8	17.92	109.61	65	52	230.5
115.00		0.3125	33.176	32.596	4447.9	17.31	106.16	65	52	563.7
117.00		0.3125	32.746	32.169	4275.5	17.07	104.79	65	52	220.4
119.25	Bot - Section 4	0.3125	32.263	31.689	4087.0	16.79	103.24	65	52	244.5
120.00		0.3125	32.101	31.529	4025.5	16.70	102.72	65	52	146.3
123.50	Top - Section 3	0.2500	31.849	25.073	3162.9	21.05	127.39	65	52	673.2
125.00		0.2500	31.526	24.817	3067.1	20.82	126.10	65	52	127.3
130.00		0.2500	30.451	23.964	2761.5	20.07	121.80	65	52	415.0
134.50		0.2500	29.483	23.196	2504.5	19.38	117.93	65	52	361.1
135.00		0.2500	29.376	23.110	2476.9	19.31	117.50	65	52	39.4
137.00		0.2500	28.946	22.769	2368.8	19.01	115.78	65	52	156.1
140.00		0.2500	28.301	22.257	2212.6	18.55	113.20	65	52	229.8
145.00		0.2500	27.225	21.404	1967.8	17.79	108.90	65	52	371.4
148.00		0.2500	26.580	20.892	1830.0	17.34	106.32	65	52	215.9
150.00		0.2500	26.150	20.551	1741.8	17.03	104.60	65	52	141.0
153.00		0.2500	25.505	20.039	1614.9	16.58	102.02	65	52	207.2
155.00		0.2500	25.075	19.698	1533.8	16.28	100.30	65	52	135.2
160.00		0.2500	24.000	18.845	1343.0	15.52	96.00	65	52	327.9

27412.2

Wind Loading - Shaft

Structure: CT03538-S-SBA
Site Name: South Plymouth
Height: 160.00 (ft)
Base Elev: 0.000 (ft)

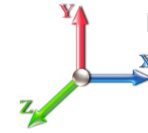
Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

6/22/2016
 Page: 9



Load Case: 80 mph Wind with 0" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 25

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		0.00	1.00	16.384	27.69	376.87	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		0.00	1.00	16.384	27.69	369.70	0.650	0.000	5.00	23.330	15.16	419.9	0.0	1312.5
10.00		0.00	1.00	16.384	27.69	362.53	0.650	0.000	5.00	22.882	14.87	411.8	0.0	1287.1
15.00		0.00	1.00	16.384	27.69	355.36	0.650	0.000	5.00	22.434	14.58	403.8	0.0	1261.7
20.00		0.00	1.00	16.384	27.69	348.20	0.650	0.000	5.00	21.986	14.29	395.7	0.0	1236.3
25.00		0.00	1.00	16.384	27.69	341.03	0.650	0.000	5.00	21.538	14.00	387.6	0.0	1210.9
30.00		0.00	1.00	16.384	27.69	333.86	0.650	0.000	5.00	21.090	13.71	379.6	0.0	1185.5
35.00		0.00	1.02	16.662	28.16	329.45	0.650	0.000	5.00	20.642	13.42	377.8	0.0	1160.1
38.75	Bot - Section 2	0.00	1.05	17.153	28.99	328.78	0.650	0.000	3.75	15.188	9.87	286.2	0.0	853.4
40.00		0.00	1.06	17.310	29.25	328.43	0.650	0.000	1.25	5.085	3.31	96.7	0.0	526.5
45.00	Top - Section 1	0.00	1.09	17.902	30.25	326.51	0.650	0.000	5.00	20.059	13.04	394.5	0.0	2076.6
50.00		0.00	1.13	18.449	31.18	329.16	0.650	0.000	5.00	19.611	12.75	397.4	0.0	945.5
55.00		0.00	1.16	18.959	32.04	325.96	0.650	0.000	5.00	19.163	12.46	399.1	0.0	923.7
60.00		0.00	1.19	19.436	32.85	322.23	0.650	0.000	5.00	18.715	12.16	399.6	0.0	902.0
65.00		0.00	1.21	19.885	33.61	318.04	0.650	0.000	5.00	18.267	11.87	399.0	0.0	880.2
70.00		0.00	1.24	20.311	34.33	313.45	0.650	0.000	5.00	17.819	11.58	397.6	0.0	858.4
75.00	Appurtenance(s)	0.00	1.26	20.715	35.01	308.49	0.650	0.000	5.00	17.371	11.29	395.3	0.0	836.6
78.50	Bot - Section 3	0.00	1.28	20.987	35.47	304.83	0.650	0.000	3.50	11.893	7.73	274.2	0.0	572.7
80.00		0.00	1.29	21.101	35.66	303.21	0.650	0.000	1.50	5.108	3.32	118.4	0.0	447.5
83.75	Top - Section 2	0.00	1.30	21.379	36.13	299.06	0.650	0.000	3.75	12.594	8.19	295.8	0.0	1102.9
85.00		0.00	1.31	21.469	36.28	302.42	0.650	0.000	1.25	4.142	2.69	97.7	0.0	166.4
90.00		0.00	1.33	21.823	36.88	296.62	0.650	0.000	5.00	16.287	10.59	390.5	0.0	654.4
95.00		0.00	1.35	22.163	37.45	290.59	0.650	0.000	5.00	15.839	10.30	385.6	0.0	636.2
100.00		0.00	1.37	22.490	38.01	284.33	0.650	0.000	5.00	15.391	10.00	380.2	0.0	618.1
105.00		0.00	1.39	22.806	38.54	277.86	0.650	0.000	5.00	14.943	9.71	374.4	0.0	599.9
108.00	Appurtenance(s)	0.00	1.40	22.990	38.85	273.88	0.650	0.000	3.00	8.751	5.69	221.0	0.0	351.3
110.00		0.00	1.41	23.111	39.06	271.20	0.650	0.000	2.00	5.744	3.73	145.8	0.0	230.5
115.00		0.00	1.43	23.406	39.56	264.36	0.650	0.000	5.00	14.047	9.13	361.2	0.0	563.7
117.00	Appurtenance(s)	0.00	1.44	23.522	39.75	261.57	0.650	0.000	2.00	5.494	3.57	141.9	0.0	220.4
119.25	Bot - Section 4	0.00	1.44	23.650	39.97	258.41	0.650	0.000	2.25	6.095	3.96	158.3	0.0	244.5
120.00		0.00	1.45	23.692	40.04	257.35	0.650	0.000	0.75	2.043	1.33	53.2	0.0	146.3
123.50	Top - Section 3	0.00	1.46	23.888	40.37	252.35	0.650	0.000	3.50	9.399	6.11	246.6	0.0	673.2
125.00		0.00	1.46	23.970	40.51	254.22	0.650	0.000	1.50	3.961	2.57	104.3	0.0	127.3
130.00		0.00	1.48	24.241	40.97	246.93	0.650	0.000	5.00	12.912	8.39	343.8	0.0	415.0
134.50	Appurtenance(s)	0.00	1.49	24.477	41.37	240.25	0.650	0.000	4.50	11.238	7.30	302.2	0.0	361.1
135.00		0.00	1.50	24.503	41.41	239.50	0.650	0.000	0.50	1.226	0.80	33.0	0.0	39.4
137.00	Appurtenance(s)	0.00	1.50	24.607	41.59	236.49	0.650	0.000	2.00	4.860	3.16	131.4	0.0	156.1
140.00		0.00	1.51	24.759	41.84	231.93	0.650	0.000	3.00	7.156	4.65	194.6	0.0	229.8
145.00		0.00	1.53	25.009	42.26	224.24	0.650	0.000	5.00	11.568	7.52	317.8	0.0	371.4
148.00	Appurtenance(s)	0.00	1.54	25.156	42.51	219.57	0.650	0.000	3.00	6.726	4.37	185.9	0.0	215.9
150.00		0.00	1.54	25.252	42.68	216.43	0.650	0.000	2.00	4.394	2.86	121.9	0.0	141.0
153.00	Appurtenance(s)	0.00	1.55	25.395	42.92	211.69	0.650	0.000	3.00	6.457	4.20	180.1	0.0	207.2
155.00		0.00	1.56	25.490	43.08	208.51	0.650	0.000	2.00	4.215	2.74	118.0	0.0	135.2
160.00	Appurtenance(s)	0.00	1.57	25.722	43.47	200.48	0.650	0.000	5.00	10.224	6.65	288.9	0.0	327.9
Totals:									160.00			11,908.2		27,412.2

Discrete Appurtenance Forces

Structure: CT03538-S-SB
Site Name: South Plymouth
Height: 160.00 (ft)
Base Elev: 0.000 (ft)

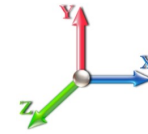
Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

6/22/2016
 Page: 10



Load Case: 80 mph Wind with 0" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 25

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa Factor	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	160.00	Low Profile Platform	1	25.722	43.470	1.00	25.00	1600.00	0.000	0.000	1086.76	0.00	0.00
2	160.00	KRY112 144	3	25.859	43.702	0.70	0.86	33.00	0.000	3.000	37.63	0.00	112.88
3	160.00	Ericsson AIR 32	3	25.859	43.702	0.96	20.73	498.00	0.000	3.000	905.88	0.00	2717.65
4	160.00	Commscope	3	25.859	43.702	0.93	32.86	273.00	0.000	3.000	1436.20	0.00	4308.61
5	160.00	AIR 21, 1.3M, B2A B4P	3	25.859	43.702	0.94	20.17	351.00	0.000	3.000	881.38	0.00	2644.13
6	160.00	RRUS 11	3	25.859	43.702	0.71	6.20	153.00	0.000	3.000	270.88	0.00	812.63
7	153.00	Lone Star Electronics	1	25.560	43.197	1.00	1.61	20.00	0.000	3.500	69.55	0.00	243.41
8	153.00	4 ft Sidearm	1	25.395	42.918	1.00	3.00	50.00	0.000	0.000	128.76	0.00	0.00
9	153.00	Hutton HPD 3.4-4.7	1	25.395	42.918	1.00	8.92	105.00	0.000	0.000	382.83	0.00	0.00
10	153.00	Pipe Mounts	2	25.395	42.918	1.00	4.00	100.00	0.000	0.000	171.67	0.00	0.00
11	153.00	VHLP-2.6-11	1	25.395	42.918	1.00	8.43	47.60	0.000	0.000	361.80	0.00	0.00
12	153.00	Motorola ODU-A-RF	3	25.395	42.918	1.00	4.32	31.20	0.000	0.000	185.41	0.00	0.00
13	148.00	ALU TD-RRH8x20-25	3	25.156	42.513	0.69	9.77	210.00	0.000	0.000	415.37	0.00	0.00
14	148.00	ALU 1900MHz RRH	3	25.156	42.513	0.88	10.03	132.00	0.000	0.000	426.49	0.00	0.00
15	148.00	ALU 800 MHz Filter	3	25.156	42.513	0.99	1.46	30.00	0.000	0.000	61.87	0.00	0.00
16	148.00	ALU 800 MHz RRH	3	25.156	42.513	0.92	6.87	159.00	0.000	0.000	292.17	0.00	0.00
17	148.00	RFS ACU-A20-N	4	25.156	42.513	0.79	0.44	4.00	0.000	0.000	18.81	0.00	0.00
18	148.00	Low Profile Platform	1	25.156	42.513	1.00	25.00	1200.00	0.000	0.000	1062.82	0.00	0.00
19	148.00	RFS APXVSP18-C-A20	3	25.156	42.513	0.93	24.16	291.00	0.000	0.000	1027.17	0.00	0.00
20	148.00	RFS APXVTM14-C-120	3	25.252	42.676	0.89	19.49	288.00	0.000	2.000	831.80	0.00	1663.60
21	137.00	RFS FD9R6004/2C-3	6	24.607	41.585	0.50	1.08	18.60	0.000	0.000	44.91	0.00	0.00
22	137.00	RFS DB-T1-6Z-8AB-0Z	1	24.607	41.585	0.71	3.98	18.90	0.000	0.000	165.34	0.00	0.00
23	137.00	Antel BXA-70063-6CF-2	3	24.607	41.585	0.83	20.24	51.00	0.000	0.000	841.84	0.00	0.00
24	137.00	ALU 2X60-1900	3	24.607	41.585	0.84	5.52	138.00	0.000	0.000	229.50	0.00	0.00
25	137.00	ALU RRH2X60-AWS	3	24.607	41.585	0.89	6.86	165.00	0.000	0.000	285.35	0.00	0.00
26	137.00	Low Profile Platform	1	24.607	41.585	1.00	22.00	1500.00	0.000	0.000	914.87	0.00	0.00
27	137.00	Antel BXA-70080-6CF-2	3	24.607	41.585	0.97	17.93	54.00	0.000	0.000	745.44	0.00	0.00
28	137.00	Commscope	6	24.607	41.585	0.87	47.66	244.80	0.000	0.000	1981.88	0.00	0.00
29	134.50	Pipe Mount	1	24.477	41.367	1.00	2.00	50.00	0.000	0.000	82.73	0.00	0.00
30	134.50	Bird Technologies CSA 10-67	1	24.477	41.367	1.00	3.81	4.60	0.000	0.000	157.61	0.00	0.00
31	117.00	RFS APXV18-206517S-C	3	23.522	39.752	0.74	11.46	79.20	0.000	0.000	455.36	0.00	0.00
32	117.00	Pipe Mounts	3	23.522	39.752	1.00	6.00	150.00	0.000	0.000	238.51	0.00	0.00
33	108.00	Ericsson RRUS 11	6	22.990	38.853	0.71	12.40	306.00	0.000	0.000	481.64	0.00	0.00
34	108.00	CSS DUO1417- 8686-40	3	22.990	38.853	0.92	19.13	60.90	0.000	0.000	743.13	0.00	0.00
35	108.00	KMW	3	22.990	38.853	0.85	22.08	145.50	0.000	0.000	857.99	0.00	0.00
36	108.00	Andrew ABT-DF-DMADBH	3	22.990	38.853	0.98	0.15	3.30	0.000	0.000	5.71	0.00	0.00
37	108.00	Raycap DC6-48-60-18-8F	1	22.990	38.853	1.00	1.47	31.80	0.000	0.000	57.11	0.00	0.00
38	108.00	Low Profile Platform	1	22.990	38.853	1.00	22.00	1500.00	0.000	0.000	854.76	0.00	0.00
39	108.00	Powerwave 21903	6	22.990	38.853	0.84	1.36	33.00	0.000	0.000	52.87	0.00	0.00
40	108.00	Powerwave 7770	6	22.990	38.853	0.83	31.27	210.00	0.000	0.000	1215.10	0.00	0.00
41	108.00	Powerwave LGP21401	6	22.990	38.853	0.50	3.87	84.60	0.000	0.000	150.36	0.00	0.00
42	75.00	Standoff	1	20.715	35.009	1.00	1.00	20.00	0.000	0.000	35.01	0.00	0.00
43	75.00	GPS	1	20.715	35.009	1.00	0.14	1.70	0.000	0.000	4.90	0.00	0.00

Totals: 10,446.70

20,657.18

Total Applied Force Summary

Structure: CT03538-S-SB
Site Name: South Plymouth
Height: 160.00 (ft)
Base Elev: 0.000 (ft)

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

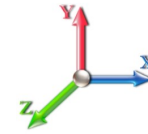
6/22/2016

Page: 11



Load Case: 80 mph Wind with 0" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 25

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		419.89	1574.59	0.00	0.00
10.00		411.83	1549.19	0.00	0.00
15.00		403.77	1523.79	0.00	0.00
20.00		395.70	1498.39	0.00	0.00
25.00		387.64	1472.99	0.00	0.00
30.00		379.58	1447.59	0.00	0.00
35.00		377.81	1422.18	0.00	0.00
38.75		286.18	1049.97	0.00	0.00
40.00		96.68	592.03	0.00	0.00
45.00		394.47	2338.65	0.00	0.00
50.00		397.44	1207.60	0.00	0.00
55.00		399.09	1185.82	0.00	0.00
60.00		399.57	1164.05	0.00	0.00
65.00		399.02	1142.28	0.00	0.00
70.00		397.57	1120.51	0.00	0.00
75.00	(2) appurtenances	435.20	1120.44	0.00	0.00
78.50		274.19	755.60	0.00	0.00
80.00		118.40	525.85	0.00	0.00
83.75		295.75	1298.92	0.00	0.00
85.00		97.68	231.75	0.00	0.00
90.00		390.45	915.67	0.00	0.00
95.00		385.62	897.52	0.00	0.00
100.00		380.25	879.38	0.00	0.00
105.00		374.36	861.24	0.00	0.00
108.00	(35) appurtenances	4639.69	2883.13	0.00	0.00
110.00		145.83	308.18	0.00	0.00
115.00		361.18	757.75	0.00	0.00
117.00	(6) appurtenances	835.82	527.22	0.00	0.00
119.25		158.33	317.76	0.00	0.00
120.00		53.16	170.78	0.00	0.00
123.50		246.64	787.25	0.00	0.00
125.00		104.30	176.19	0.00	0.00
130.00		343.82	577.87	0.00	0.00
134.50	(2) appurtenances	542.50	562.27	0.00	0.00
135.00		33.01	55.42	0.00	0.00
137.00	(26) appurtenances	5340.50	2410.54	0.00	0.00
140.00		194.62	285.26	0.00	0.00
145.00		317.80	463.83	0.00	0.00
148.00	(23) appurtenances	4322.35	2585.33	0.00	1663.60
150.00		121.89	172.70	0.00	0.00
153.00	(9) appurtenances	1480.14	608.50	0.00	243.41
155.00		118.02	164.58	0.00	0.00
160.00	(16) appurtenances	4907.62	3309.28	0.00	10595.90
	Totals:	32,565.39	44,899.86	0.00	12,502.92

Resulting Forces and Deflections

Structure: CT03538-S-SB
Site Name: South Plymouth
Height: 160.00 (ft)
Base Elev: 0.000 (ft)

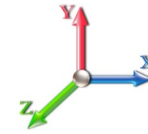
Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

6/22/2016
 Page: 12



Load Case: 80 mph Wind with 0" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 25

Elev (ft)	Lateral FX (-) (kips)	Axial FY (-) (kips)	Lateral FZ (kips)	Moment MX (ft-kips)	Torsion MY (ft-kips)	Moment MZ (ft-kips)	Deflect X (in)	Deflect Z (in)	Deflect Resultant (in)	Rotation Sway (deg)	Rotation Twist (deg)
0.00	-32.636	-44.848	0.000	0.000	0.000	-3942.760	0.000	0.000	0.000	0.000	0.000
5.00	-32.349	-43.173	0.000	0.000	0.000	-3779.583	-0.095	0.000	0.095	-0.177	0.000
10.00	-32.061	-41.525	0.000	0.000	0.000	-3617.843	-0.378	0.000	0.378	-0.357	0.000
15.00	-31.774	-39.902	0.000	0.000	0.000	-3457.541	-0.850	0.000	0.850	-0.540	0.000
20.00	-31.486	-38.306	0.000	0.000	0.000	-3298.675	-1.516	0.000	1.516	-0.726	0.000
25.00	-31.199	-36.736	0.000	0.000	0.000	-3141.245	-2.376	0.000	2.376	-0.914	0.000
30.00	-30.912	-35.192	0.000	0.000	0.000	-2985.252	-3.435	0.000	3.435	-1.104	0.000
35.00	-30.604	-33.688	0.000	0.000	0.000	-2830.694	-4.695	0.000	4.695	-1.297	0.000
38.75	-30.349	-32.593	0.000	0.000	0.000	-2715.930	-5.773	0.000	5.773	-1.444	0.000
40.00	-30.307	-31.938	0.000	0.000	0.000	-2677.994	-6.158	0.000	6.158	-1.494	0.000
45.00	-29.949	-29.508	0.000	0.000	0.000	-2526.463	-7.828	0.000	7.828	-1.691	0.000
50.00	-29.618	-28.204	0.000	0.000	0.000	-2376.719	-9.706	0.000	9.706	-1.890	0.000
55.00	-29.283	-26.920	0.000	0.000	0.000	-2228.630	-11.804	0.000	11.804	-2.111	0.000
60.00	-28.938	-25.660	0.000	0.000	0.000	-2082.220	-14.135	0.000	14.135	-2.334	0.000
65.00	-28.586	-24.424	0.000	0.000	0.000	-1937.532	-16.699	0.000	16.699	-2.557	0.000
70.00	-28.227	-23.214	0.000	0.000	0.000	-1794.604	-19.496	0.000	19.496	-2.780	0.000
75.00	-27.809	-22.025	0.000	0.000	0.000	-1653.470	-22.527	0.000	22.527	-3.003	0.000
78.50	-27.536	-21.232	0.000	0.000	0.000	-1556.141	-24.786	0.000	24.786	-3.160	0.000
80.00	-27.431	-20.657	0.000	0.000	0.000	-1514.838	-25.790	0.000	25.790	-3.227	0.000
83.75	-27.098	-19.326	0.000	0.000	0.000	-1411.974	-28.391	0.000	28.391	-3.393	0.000
85.00	-27.037	-19.028	0.000	0.000	0.000	-1378.103	-29.287	0.000	29.287	-3.449	0.000
90.00	-26.667	-18.026	0.000	0.000	0.000	-1242.919	-33.030	0.000	33.030	-3.694	0.000
95.00	-26.292	-17.049	0.000	0.000	0.000	-1109.588	-37.026	0.000	37.026	-3.933	0.000
100.00	-25.915	-16.096	0.000	0.000	0.000	-978.128	-41.267	0.000	41.267	-4.164	0.000
105.00	-25.523	-15.188	0.000	0.000	0.000	-848.557	-45.744	0.000	45.744	-4.384	0.000
108.00	-20.697	-12.636	0.000	0.000	0.000	-771.989	-48.539	0.000	48.539	-4.513	0.000
110.00	-20.558	-12.289	0.000	0.000	0.000	-730.597	-50.446	0.000	50.446	-4.597	0.000
115.00	-20.163	-11.516	0.000	0.000	0.000	-627.810	-55.363	0.000	55.363	-4.794	0.000
117.00	-19.301	-11.034	0.000	0.000	0.000	-587.485	-57.387	0.000	57.387	-4.872	0.000
119.25	-19.127	-10.712	0.000	0.000	0.000	-544.058	-59.701	0.000	59.701	-4.957	0.000
120.00	-19.073	-10.521	0.000	0.000	0.000	-529.713	-60.481	0.000	60.481	-4.985	0.000
123.50	-18.773	-9.730	0.000	0.000	0.000	-462.958	-64.178	0.000	64.178	-5.108	0.000
125.00	-18.673	-9.525	0.000	0.000	0.000	-434.800	-65.789	0.000	65.789	-5.159	0.000
130.00	-18.303	-8.931	0.000	0.000	0.000	-341.436	-71.285	0.000	71.285	-5.339	0.000
134.50	-17.720	-8.399	0.000	0.000	0.000	-259.076	-76.380	0.000	76.380	-5.478	0.000
135.00	-17.687	-8.337	0.000	0.000	0.000	-250.216	-76.954	0.000	76.954	-5.492	0.000
137.00	-12.146	-6.438	0.000	0.000	0.000	-214.842	-79.264	0.000	79.264	-5.546	0.000
140.00	-11.934	-6.155	0.000	0.000	0.000	-178.403	-82.767	0.000	82.767	-5.617	0.000
145.00	-11.579	-5.711	0.000	0.000	0.000	-118.733	-88.695	0.000	88.695	-5.712	0.000
148.00	-7.022	-3.567	0.000	0.000	0.000	-82.333	-92.293	0.000	92.293	-5.756	0.000
150.00	-6.885	-3.405	0.000	0.000	0.000	-68.290	-94.706	0.000	94.706	-5.779	0.000
153.00	-5.352	-2.947	0.000	0.000	0.000	-47.393	-98.341	0.000	98.341	-5.808	0.000
155.00	-5.219	-2.793	0.000	0.000	0.000	-36.689	-100.774	0.000	100.774	-5.823	0.000
160.00	-4.908	0.000	0.000	0.000	0.000	-10.596	0.000	0.000	106.875	-5.845	0.000

Resulting Stresses

Structure: CT03538-S-SBA
Site Name: South Plymouth
Height: 160.00 (ft)
Base Elev: 0.000 (ft)

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

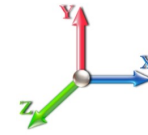
6/22/2016

Page: 13



Load Case: 80 mph Wind with 0" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 25

Applied Stresses

Elev (ft)	fa Axial (Y) (ksi)	fvx Shear (X) (ksi)	fvz Shear (Z) (ksi)	fvT Torsion (ksi)	fbx Bending (X) (ksi)	fbz Bending (Z) (ksi)	fb Combined (ksi)	Fb Allow Stress (ksi)	f/Fb Stress Ratio
0.00	0.58	0.84	0.00	0.00	0.00	43.86	44.46	52.0	0.855
5.00	0.57	0.85	0.00	0.00	0.00	43.71	44.30	52.0	0.852
10.00	0.55	0.86	0.00	0.00	0.00	43.53	44.11	52.0	0.849
15.00	0.54	0.87	0.00	0.00	0.00	43.32	43.89	52.0	0.844
20.00	0.53	0.88	0.00	0.00	0.00	43.07	43.63	52.0	0.839
25.00	0.52	0.89	0.00	0.00	0.00	42.78	43.33	52.0	0.834
30.00	0.51	0.90	0.00	0.00	0.00	42.44	42.98	52.0	0.827
35.00	0.50	0.91	0.00	0.00	0.00	42.05	42.58	52.0	0.819
38.75	0.49	0.92	0.00	0.00	0.00	41.73	42.25	52.0	0.813
40.00	0.48	0.93	0.00	0.00	0.00	41.61	42.13	52.0	0.810
45.00	0.52	1.07	0.00	0.00	0.00	46.26	46.82	52.0	0.901
50.00	0.51	1.09	0.00	0.00	0.00	45.57	46.12	52.0	0.887
55.00	0.50	1.10	0.00	0.00	0.00	44.80	45.35	52.0	0.872
60.00	0.49	1.11	0.00	0.00	0.00	43.94	44.47	52.0	0.856
65.00	0.48	1.13	0.00	0.00	0.00	42.97	43.49	52.0	0.837
70.00	0.47	1.14	0.00	0.00	0.00	41.88	42.39	52.0	0.816
75.00	0.45	1.15	0.00	0.00	0.00	40.66	41.16	52.0	0.792
78.50	0.45	1.16	0.00	0.00	0.00	39.72	40.22	52.0	0.774
80.00	0.44	1.17	0.00	0.00	0.00	39.30	39.79	52.0	0.766
83.75	0.49	1.39	0.00	0.00	0.00	44.16	44.72	52.0	0.860
85.00	0.49	1.40	0.00	0.00	0.00	43.69	44.25	52.0	0.851
90.00	0.48	1.42	0.00	0.00	0.00	41.66	42.21	52.0	0.812
95.00	0.46	1.44	0.00	0.00	0.00	39.39	39.93	52.0	0.768
100.00	0.45	1.46	0.00	0.00	0.00	36.83	37.36	52.0	0.719
105.00	0.44	1.48	0.00	0.00	0.00	33.95	34.48	52.0	0.663
108.00	0.37	1.22	0.00	0.00	0.00	32.06	32.50	52.0	0.625
110.00	0.37	1.23	0.00	0.00	0.00	31.12	31.56	52.0	0.607
115.00	0.35	1.25	0.00	0.00	0.00	28.53	28.96	52.0	0.557
117.00	0.34	1.21	0.00	0.00	0.00	27.41	27.84	52.0	0.536
119.25	0.34	1.22	0.00	0.00	0.00	26.17	26.59	52.0	0.511
120.00	0.33	1.22	0.00	0.00	0.00	25.74	26.16	52.0	0.503
123.50	0.39	1.51	0.00	0.00	0.00	28.40	28.91	52.0	0.556
125.00	0.38	1.52	0.00	0.00	0.00	27.23	27.74	52.0	0.534
130.00	0.37	1.54	0.00	0.00	0.00	22.94	23.46	52.0	0.451
134.50	0.36	1.54	0.00	0.00	0.00	18.58	19.13	52.0	0.368
135.00	0.36	1.54	0.00	0.00	0.00	18.08	18.63	52.0	0.358
137.00	0.28	1.08	0.00	0.00	0.00	15.99	16.38	52.0	0.315
140.00	0.28	1.08	0.00	0.00	0.00	13.90	14.30	52.0	0.275
145.00	0.27	1.09	0.00	0.00	0.00	10.01	10.45	52.0	0.201
148.00	0.17	0.68	0.00	0.00	0.00	7.29	7.55	52.0	0.145
150.00	0.17	0.68	0.00	0.00	0.00	6.25	6.52	52.0	0.125
153.00	0.15	0.54	0.00	0.00	0.00	4.56	4.80	52.0	0.092
155.00	0.14	0.53	0.00	0.00	0.00	3.65	3.91	52.0	0.075
160.00	0.00	0.52	0.00	0.00	0.00	1.15	1.47	52.0	0.028

Wind Loading - Shaft

Structure: CT03538-S-SBA
Site Name: South Plymouth
Height: 160.00 (ft)
Base Elev: 0.000 (ft)

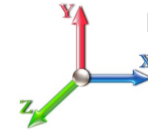
Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

6/22/2016
 Page: 14



Load Case: 69.28 mph Wind with 0.5" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 25

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		0.00	1.00	12.287	20.77	326.37	0.650	0.500	0.00	0.000	0.00	0.0	0.0	0.0
5.00		0.00	1.00	12.287	20.77	320.16	0.650	0.500	5.00	23.747	15.44	320.5	172.7	1485.1
10.00		0.00	1.00	12.287	20.77	313.95	0.650	0.500	5.00	23.299	15.14	314.5	169.3	1456.4
15.00		0.00	1.00	12.287	20.77	307.74	0.650	0.500	5.00	22.851	14.85	308.4	166.0	1427.7
20.00		0.00	1.00	12.287	20.77	301.54	0.650	0.500	5.00	22.403	14.56	302.4	162.7	1399.0
25.00		0.00	1.00	12.287	20.77	295.33	0.650	0.500	5.00	21.955	14.27	296.3	159.4	1370.3
30.00		0.00	1.00	12.287	20.77	289.12	0.650	0.500	5.00	21.507	13.98	290.3	156.1	1341.6
35.00		0.00	1.02	12.496	21.12	285.30	0.650	0.500	5.00	21.059	13.69	289.1	152.8	1312.8
38.75	Bot - Section 2	0.00	1.05	12.864	21.74	284.72	0.650	0.500	3.75	15.500	10.08	219.0	112.7	966.1
40.00		0.00	1.06	12.982	21.94	284.42	0.650	0.500	1.25	5.189	3.37	74.0	37.9	564.4
45.00	Top - Section 1	0.00	1.09	13.426	22.69	282.76	0.650	0.500	5.00	20.475	13.31	302.0	148.4	2225.0
50.00		0.00	1.13	13.836	23.38	285.05	0.650	0.500	5.00	20.028	13.02	304.4	145.1	1090.6
55.00		0.00	1.16	14.218	24.03	282.28	0.650	0.500	5.00	19.580	12.73	305.8	141.8	1065.5
60.00		0.00	1.19	14.576	24.63	279.05	0.650	0.500	5.00	19.132	12.44	306.3	138.5	1040.4
65.00		0.00	1.21	14.913	25.20	275.42	0.650	0.500	5.00	18.684	12.14	306.1	135.2	1015.3
70.00		0.00	1.24	15.232	25.74	271.44	0.650	0.500	5.00	18.236	11.85	305.1	131.8	990.3
75.00	Appurtenance(s)	0.00	1.26	15.536	26.26	267.15	0.650	0.500	5.00	17.788	11.56	303.6	128.5	965.2
78.50	Bot - Section 3	0.00	1.28	15.739	26.60	263.98	0.650	0.500	3.50	12.185	7.92	210.7	88.3	661.0
80.00		0.00	1.29	15.825	26.74	262.58	0.650	0.500	1.50	5.233	3.40	91.0	38.1	485.6
83.75	Top - Section 2	0.00	1.30	16.033	27.10	258.99	0.650	0.500	3.75	12.906	8.39	227.3	93.5	1196.4
85.00		0.00	1.31	16.101	27.21	261.89	0.650	0.500	1.25	4.246	2.76	75.1	31.0	197.4
90.00		0.00	1.33	16.366	27.66	256.88	0.650	0.500	5.00	16.704	10.86	300.3	120.5	774.9
95.00		0.00	1.35	16.621	28.09	251.65	0.650	0.500	5.00	16.256	10.57	296.8	117.2	753.4
100.00		0.00	1.37	16.866	28.50	246.23	0.650	0.500	5.00	15.808	10.28	292.9	113.9	732.0
105.00		0.00	1.39	17.103	28.90	240.62	0.650	0.500	5.00	15.360	9.98	288.6	110.6	710.5
108.00	Appurtenance(s)	0.00	1.40	17.241	29.14	237.18	0.650	0.500	3.00	9.001	5.85	170.5	65.1	416.4
110.00		0.00	1.41	17.332	29.29	234.86	0.650	0.500	2.00	5.911	3.84	112.5	42.9	273.4
115.00		0.00	1.43	17.554	29.67	228.93	0.650	0.500	5.00	14.464	9.40	278.9	103.9	667.6
117.00	Appurtenance(s)	0.00	1.44	17.640	29.81	226.52	0.650	0.500	2.00	5.660	3.68	109.7	41.0	261.4
119.25	Bot - Section 4	0.00	1.44	17.737	29.97	223.79	0.650	0.500	2.25	6.282	4.08	122.4	45.5	290.0
120.00		0.00	1.45	17.768	30.03	222.87	0.650	0.500	0.75	2.105	1.37	41.1	15.3	161.7
123.50	Top - Section 3	0.00	1.46	17.915	30.28	218.54	0.650	0.500	3.50	9.691	6.30	190.7	69.9	743.1
125.00		0.00	1.46	17.977	30.38	220.15	0.650	0.500	1.50	4.086	2.66	80.7	29.6	157.0
130.00		0.00	1.48	18.179	30.72	213.84	0.650	0.500	5.00	13.329	8.66	266.2	95.5	510.5
134.50	Appurtenance(s)	0.00	1.49	18.357	31.02	208.05	0.650	0.500	4.50	11.613	7.55	234.2	83.3	444.3
135.00		0.00	1.50	18.376	31.06	207.40	0.650	0.500	0.50	1.268	0.82	25.6	9.2	48.6
137.00	Appurtenance(s)	0.00	1.50	18.454	31.19	204.80	0.650	0.500	2.00	5.027	3.27	101.9	36.3	192.5
140.00		0.00	1.51	18.568	31.38	200.85	0.650	0.500	3.00	7.406	4.81	151.1	53.3	283.1
145.00		0.00	1.53	18.755	31.70	194.20	0.650	0.500	5.00	11.985	7.79	246.9	85.6	457.0
148.00	Appurtenance(s)	0.00	1.54	18.866	31.88	190.15	0.650	0.500	3.00	6.976	4.53	144.6	50.1	266.0
150.00		0.00	1.54	18.938	32.01	187.43	0.650	0.500	2.00	4.561	2.96	94.9	32.9	173.9
153.00	Appurtenance(s)	0.00	1.55	19.045	32.19	183.33	0.650	0.500	3.00	6.707	4.36	140.3	48.1	255.3
155.00		0.00	1.56	19.116	32.31	180.57	0.650	0.500	2.00	4.382	2.85	92.0	31.6	166.8
160.00	Appurtenance(s)	0.00	1.57	19.290	32.60	173.61	0.650	0.500	5.00	10.641	6.92	225.5	75.6	403.5
Totals:									160.00			9,160.0		31,399.0

Discrete Appurtenance Forces

Structure: CT03538-S-SB
Site Name: South Plymouth
Height: 160.00 (ft)
Base Elev: 0.000 (ft)

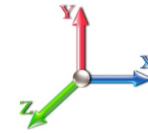
Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

6/22/2016
 Page: 15



Load Case: 69.28 mph Wind with 0.5" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 25

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa Factor	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	160.00	Low Profile Platform	1	19.290	32.601	1.00	27.00	2000.00	0.000	0.000	880.22	0.00	0.00
2	160.00	KRY112 144	3	19.393	32.774	0.75	1.24	42.30	0.000	3.000	40.56	0.00	121.68
3	160.00	Ericsson AIR 32	3	19.393	32.774	1.00	23.50	657.00	0.000	3.000	770.29	0.00	2310.88
4	160.00	Commscope	3	19.393	32.774	0.96	38.59	513.00	0.000	3.000	1264.63	0.00	3793.88
5	160.00	AIR 21, 1.3M, B2A B4P	3	19.393	32.774	0.97	22.94	507.00	0.000	3.000	751.77	0.00	2255.31
6	160.00	RRUS 11	3	19.393	32.774	0.76	7.16	201.00	0.000	3.000	234.64	0.00	703.92
7	153.00	Lone Star Electronics	1	19.169	32.396	1.00	2.63	32.00	0.000	3.500	85.20	0.00	298.20
8	153.00	4 ft Sidearm	1	19.045	32.187	1.00	5.79	84.00	0.000	0.000	186.36	0.00	0.00
9	153.00	Hutton HPD 3.4-4.7	1	19.045	32.187	1.00	9.42	0.00	0.000	0.000	303.20	0.00	0.00
10	153.00	Pipe Mounts	2	19.045	32.187	1.00	6.00	200.00	0.000	0.000	193.12	0.00	0.00
11	153.00	VHLP-2.6-11	1	19.045	32.187	1.00	8.92	97.00	0.000	0.000	287.11	0.00	0.00
12	153.00	Motorola ODU-A-RF	3	19.045	32.187	1.00	5.07	28.20	0.000	0.000	163.19	0.00	0.00
13	148.00	ALU TD-RRH8x20-25	3	18.866	31.883	0.75	11.18	276.00	0.000	0.000	356.53	0.00	0.00
14	148.00	ALU 1900MHz RRH	3	18.866	31.883	0.00	12.60	225.60	0.000	0.000	401.72	0.00	0.00
15	148.00	ALU 800 MHz Filter	3	18.866	31.883	0.00	1.74	40.50	0.000	0.000	55.48	0.00	0.00
16	148.00	ALU 800 MHz RRH	3	18.866	31.883	0.00	8.46	222.30	0.000	0.000	269.73	0.00	0.00
17	148.00	RFS ACU-A20-N	4	18.866	31.883	0.00	0.88	9.20	0.000	0.000	28.06	0.00	0.00
18	148.00	Low Profile Platform	1	18.866	31.883	1.00	31.00	1500.00	0.000	0.000	988.37	0.00	0.00
19	148.00	RFS APXVSP18-C-A20	3	18.866	31.883	0.98	26.70	319.50	0.000	0.000	851.12	0.00	0.00
20	148.00	RFS APXVTM14-C-120	3	18.938	32.005	0.94	20.56	275.70	0.000	2.000	657.96	0.00	1315.92
21	137.00	RFS FD9R6004/2C-3	6	18.454	31.187	0.50	1.50	32.40	0.000	0.000	46.78	0.00	0.00
22	137.00	RFS DB-T1-6Z-8AB-0Z	1	18.454	31.187	0.75	4.40	46.00	0.000	0.000	137.30	0.00	0.00
23	137.00	Antel BXA-70063-6CF-2	3	18.454	31.187	0.88	22.55	178.50	0.000	0.000	703.13	0.00	0.00
24	137.00	ALU 2X60-1900	3	18.454	31.187	0.89	6.33	176.40	0.000	0.000	197.35	0.00	0.00
25	137.00	ALU RRH2X60-AWS	3	18.454	31.187	0.94	7.78	212.70	0.000	0.000	242.73	0.00	0.00
26	137.00	Low Profile Platform	1	18.454	31.187	1.00	27.00	1800.00	0.000	0.000	842.05	0.00	0.00
27	137.00	Antel BXA-70080-6CF-2	3	18.454	31.187	1.02	19.74	162.90	0.000	0.000	615.54	0.00	0.00
28	137.00	Commscope	6	18.454	31.187	0.92	52.94	547.20	0.000	0.000	1650.94	0.00	0.00
29	134.50	Pipe Mount	1	18.357	31.023	1.00	6.00	100.00	0.000	0.000	186.14	0.00	0.00
30	134.50	Bird Technologies CSA 10-67	1	18.357	31.023	1.00	11.40	39.80	0.000	0.000	353.67	0.00	0.00
31	117.00	RFS APXV18-206517S-C	3	17.640	29.812	0.75	13.14	159.00	0.000	0.000	391.73	0.00	0.00
32	117.00	Pipe Mounts	3	17.640	29.812	1.00	9.00	300.00	0.000	0.000	268.31	0.00	0.00
33	108.00	Ericsson RRUS 11	6	17.241	29.138	0.76	14.32	402.00	0.000	0.000	417.21	0.00	0.00
34	108.00	CSS DUO1417- 8686-40	3	17.241	29.138	0.97	20.81	0.00	0.000	0.000	606.26	0.00	0.00
35	108.00	KMW	3	17.241	29.138	0.90	24.52	285.00	0.000	0.000	714.35	0.00	0.00
36	108.00	Andrew ABT-DF-DMADBH	3	17.241	29.138	1.00	0.33	5.40	0.000	0.000	9.62	0.00	0.00
37	108.00	Raycap DC6-48-60-18-8F	1	17.241	29.138	1.00	1.67	49.50	0.000	0.000	48.66	0.00	0.00
38	108.00	Low Profile Platform	1	17.241	29.138	1.00	27.00	1800.00	0.000	0.000	786.73	0.00	0.00
39	108.00	Powerwave 21903	6	17.241	29.138	0.89	2.03	47.40	0.000	0.000	59.13	0.00	0.00
40	108.00	Powerwave 7770	6	17.241	29.138	0.88	34.48	0.00	0.000	0.000	1004.63	0.00	0.00
41	108.00	Powerwave LGP21401	6	17.241	29.138	0.50	4.59	127.20	0.000	0.000	133.74	0.00	0.00
42	75.00	Standoff	1	15.536	26.255	1.00	4.34	50.00	0.000	0.000	113.95	0.00	0.00
43	75.00	GPS	1	15.536	26.255	1.00	0.23	3.50	0.000	0.000	6.04	0.00	0.00

Totals: 13,755.20

18,305.21

Total Applied Force Summary

Structure: CT03538-S-SB
Site Name: South Plymouth
Height: 160.00 (ft)
Base Elev: 0.000 (ft)

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

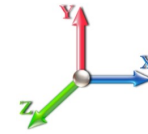
6/22/2016

Page: 16



Load Case: 69.28 mph Wind with 0.5" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 25

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		320.52	1747.25	0.00	0.00
10.00		314.48	1718.53	0.00	0.00
15.00		308.43	1689.81	0.00	0.00
20.00		302.38	1661.09	0.00	0.00
25.00		296.34	1632.38	0.00	0.00
30.00		290.29	1603.66	0.00	0.00
35.00		289.06	1574.94	0.00	0.00
38.75		219.04	1162.67	0.00	0.00
40.00		73.99	629.97	0.00	0.00
45.00		301.98	2487.09	0.00	0.00
50.00		304.40	1352.71	0.00	0.00
55.00		305.80	1327.62	0.00	0.00
60.00		306.33	1302.53	0.00	0.00
65.00		306.08	1277.44	0.00	0.00
70.00		305.13	1252.35	0.00	0.00
75.00	(2) appurtenances	423.55	1280.76	0.00	0.00
78.50		210.67	843.94	0.00	0.00
80.00		90.97	564.00	0.00	0.00
83.75		227.31	1392.41	0.00	0.00
85.00		75.10	262.71	0.00	0.00
90.00		300.31	1036.17	0.00	0.00
95.00		296.81	1014.71	0.00	0.00
100.00		292.89	993.25	0.00	0.00
105.00		288.58	971.79	0.00	0.00
108.00	(35) appurtenances	3950.80	3289.67	0.00	0.00
110.00		112.54	351.07	0.00	0.00
115.00		278.91	861.67	0.00	0.00
117.00	(6) appurtenances	769.72	798.06	0.00	0.00
119.25		122.40	363.26	0.00	0.00
120.00		41.09	186.10	0.00	0.00
123.50		190.71	857.13	0.00	0.00
125.00		80.69	205.84	0.00	0.00
130.00		266.17	673.38	0.00	0.00
134.50	(2) appurtenances	773.98	730.74	0.00	0.00
135.00		25.59	64.64	0.00	0.00
137.00	(26) appurtenances	4537.71	3412.68	0.00	0.00
140.00		151.06	338.59	0.00	0.00
145.00		246.92	549.38	0.00	0.00
148.00	(23) appurtenances	3753.52	3190.27	0.00	1315.92
150.00		94.88	205.60	0.00	0.00
153.00	(9) appurtenances	1358.50	744.05	0.00	298.20
155.00		92.01	196.14	0.00	0.00
160.00	(16) appurtenances	4167.59	4397.18	0.00	9185.66
	Totals:	27,465.22	52,195.24	0.00	10,799.78

Resulting Forces and Deflections

Structure: CT03538-S-SB
Site Name: South Plymouth
Height: 160.00 (ft)
Base Elev: 0.000 (ft)

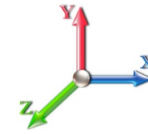
Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

6/22/2016
 Page: 17



Load Case: 69.28 mph Wind with 0.5" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 25

Elev (ft)	Lateral FX (-) (kips)	Axial FY (-) (kips)	Lateral FZ (kips)	Moment MX (ft-kips)	Torsion MY (ft-kips)	Moment MZ (ft-kips)	Deflect X (in)	Deflect Z (in)	Deflect Resultant (in)	Rotation Sway (deg)	Rotation Twist (deg)
0.00	-27.536	-52.157	0.000	0.000	0.000	-3408.890	0.000	0.000	0.000	0.000	0.000
5.00	-27.349	-50.337	0.000	0.000	0.000	-3271.212	-0.082	0.000	0.082	-0.153	0.000
10.00	-27.161	-48.545	0.000	0.000	0.000	-3134.467	-0.327	0.000	0.327	-0.309	0.000
15.00	-26.972	-46.783	0.000	0.000	0.000	-2998.664	-0.736	0.000	0.736	-0.468	0.000
20.00	-26.781	-45.049	0.000	0.000	0.000	-2863.807	-1.312	0.000	1.312	-0.629	0.000
25.00	-26.589	-43.344	0.000	0.000	0.000	-2729.905	-2.058	0.000	2.058	-0.792	0.000
30.00	-26.396	-41.669	0.000	0.000	0.000	-2596.962	-2.976	0.000	2.976	-0.957	0.000
35.00	-26.181	-40.032	0.000	0.000	0.000	-2464.987	-4.069	0.000	4.069	-1.125	0.000
38.75	-25.996	-38.835	0.000	0.000	0.000	-2366.810	-5.005	0.000	5.005	-1.253	0.000
40.00	-25.980	-38.158	0.000	0.000	0.000	-2334.315	-5.339	0.000	5.339	-1.297	0.000
45.00	-25.726	-35.601	0.000	0.000	0.000	-2204.416	-6.790	0.000	6.790	-1.469	0.000
50.00	-25.495	-34.176	0.000	0.000	0.000	-2075.789	-8.421	0.000	8.421	-1.643	0.000
55.00	-25.260	-32.773	0.000	0.000	0.000	-1948.319	-10.245	0.000	10.245	-1.836	0.000
60.00	-25.017	-31.396	0.000	0.000	0.000	-1822.022	-12.272	0.000	12.272	-2.031	0.000
65.00	-24.766	-30.047	0.000	0.000	0.000	-1696.941	-14.504	0.000	14.504	-2.226	0.000
70.00	-24.508	-28.724	0.000	0.000	0.000	-1573.113	-16.940	0.000	16.940	-2.422	0.000
75.00	-24.108	-27.394	0.000	0.000	0.000	-1450.573	-19.581	0.000	19.581	-2.617	0.000
78.50	-23.904	-26.520	0.000	0.000	0.000	-1366.196	-21.551	0.000	21.551	-2.754	0.000
80.00	-23.832	-25.918	0.000	0.000	0.000	-1330.341	-22.426	0.000	22.426	-2.814	0.000
83.75	-23.576	-24.499	0.000	0.000	0.000	-1240.971	-24.694	0.000	24.694	-2.960	0.000
85.00	-23.545	-24.185	0.000	0.000	0.000	-1211.501	-25.476	0.000	25.476	-3.009	0.000
90.00	-23.274	-23.081	0.000	0.000	0.000	-1093.781	-28.742	0.000	28.742	-3.224	0.000
95.00	-22.999	-22.002	0.000	0.000	0.000	-977.412	-32.231	0.000	32.231	-3.435	0.000
100.00	-22.718	-20.950	0.000	0.000	0.000	-862.421	-35.937	0.000	35.937	-3.638	0.000
105.00	-22.420	-19.939	0.000	0.000	0.000	-748.834	-39.851	0.000	39.851	-3.833	0.000
108.00	-18.282	-16.896	0.000	0.000	0.000	-681.576	-42.294	0.000	42.294	-3.946	0.000
110.00	-18.182	-16.514	0.000	0.000	0.000	-645.012	-43.963	0.000	43.963	-4.020	0.000
115.00	-17.875	-15.637	0.000	0.000	0.000	-554.104	-48.264	0.000	48.264	-4.194	0.000
117.00	-17.067	-14.876	0.000	0.000	0.000	-518.356	-50.035	0.000	50.035	-4.263	0.000
119.25	-16.930	-14.509	0.000	0.000	0.000	-479.956	-52.061	0.000	52.061	-4.338	0.000
120.00	-16.892	-14.306	0.000	0.000	0.000	-467.259	-52.744	0.000	52.744	-4.362	0.000
123.50	-16.653	-13.445	0.000	0.000	0.000	-408.139	-55.981	0.000	55.981	-4.471	0.000
125.00	-16.581	-13.215	0.000	0.000	0.000	-383.159	-57.391	0.000	57.391	-4.516	0.000
130.00	-16.292	-12.526	0.000	0.000	0.000	-300.255	-62.204	0.000	62.204	-4.674	0.000
134.50	-15.474	-11.844	0.000	0.000	0.000	-226.940	-66.667	0.000	66.667	-4.796	0.000
135.00	-15.449	-11.773	0.000	0.000	0.000	-219.203	-67.170	0.000	67.170	-4.809	0.000
137.00	-10.649	-8.745	0.000	0.000	0.000	-188.305	-69.193	0.000	69.193	-4.856	0.000
140.00	-10.480	-8.407	0.000	0.000	0.000	-156.360	-72.261	0.000	72.261	-4.918	0.000
145.00	-10.195	-7.871	0.000	0.000	0.000	-103.960	-77.454	0.000	77.454	-5.002	0.000
148.00	-6.179	-5.018	0.000	0.000	0.000	-72.060	-80.606	0.000	80.606	-5.040	0.000
150.00	-6.068	-4.820	0.000	0.000	0.000	-59.702	-82.719	0.000	82.719	-5.061	0.000
153.00	-4.650	-4.197	0.000	0.000	0.000	-41.200	-85.904	0.000	85.904	-5.085	0.000
155.00	-4.543	-4.008	0.000	0.000	0.000	-31.899	-88.034	0.000	88.034	-5.098	0.000
160.00	-4.168	0.000	0.000	0.000	0.000	-9.186	0.000	0.000	93.379	-5.117	0.000

Resulting Stresses

Structure: CT03538-S-SBA
Site Name: South Plymouth
Height: 160.00 (ft)
Base Elev: 0.000 (ft)

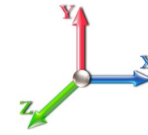
Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

6/22/2016
 Page: 18



Load Case: 69.28 mph Wind with 0.5" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 25

Applied Stresses

Elev (ft)	fa Axial (Y) (ksi)	fvx Shear (X) (ksi)	fvz Shear (Z) (ksi)	fvT Torsion (ksi)	fbx Bending (X) (ksi)	fbz Bending (Z) (ksi)	fb Combined (ksi)	Fb Allow Stress (ksi)	f/Fb Stress Ratio
0.00	0.67	0.71	0.00	0.00	0.00	37.92	38.61	52.0	0.743
5.00	0.66	0.72	0.00	0.00	0.00	37.83	38.51	52.0	0.741
10.00	0.65	0.73	0.00	0.00	0.00	37.71	38.38	52.0	0.738
15.00	0.64	0.74	0.00	0.00	0.00	37.57	38.23	52.0	0.735
20.00	0.63	0.75	0.00	0.00	0.00	37.39	38.04	52.0	0.732
25.00	0.62	0.76	0.00	0.00	0.00	37.18	37.81	52.0	0.727
30.00	0.60	0.77	0.00	0.00	0.00	36.92	37.55	52.0	0.722
35.00	0.59	0.78	0.00	0.00	0.00	36.62	37.24	52.0	0.716
38.75	0.59	0.79	0.00	0.00	0.00	36.36	36.97	52.0	0.711
40.00	0.58	0.79	0.00	0.00	0.00	36.27	36.88	52.0	0.709
45.00	0.63	0.92	0.00	0.00	0.00	40.36	41.02	52.0	0.789
50.00	0.62	0.94	0.00	0.00	0.00	39.80	40.46	52.0	0.778
55.00	0.61	0.95	0.00	0.00	0.00	39.17	39.81	52.0	0.766
60.00	0.60	0.96	0.00	0.00	0.00	38.45	39.09	52.0	0.752
65.00	0.59	0.98	0.00	0.00	0.00	37.63	38.26	52.0	0.736
70.00	0.58	0.99	0.00	0.00	0.00	36.71	37.33	52.0	0.718
75.00	0.56	1.00	0.00	0.00	0.00	35.67	36.28	52.0	0.698
78.50	0.56	1.01	0.00	0.00	0.00	34.88	35.48	52.0	0.682
80.00	0.55	1.02	0.00	0.00	0.00	34.52	35.11	52.0	0.675
83.75	0.62	1.21	0.00	0.00	0.00	38.81	39.49	52.0	0.760
85.00	0.62	1.22	0.00	0.00	0.00	38.41	39.09	52.0	0.752
90.00	0.61	1.24	0.00	0.00	0.00	36.66	37.33	52.0	0.718
95.00	0.60	1.26	0.00	0.00	0.00	34.69	35.36	52.0	0.680
100.00	0.59	1.28	0.00	0.00	0.00	32.47	33.13	52.0	0.637
105.00	0.57	1.30	0.00	0.00	0.00	29.96	30.62	52.0	0.589
108.00	0.50	1.08	0.00	0.00	0.00	28.31	28.86	52.0	0.555
110.00	0.49	1.09	0.00	0.00	0.00	27.48	28.03	52.0	0.539
115.00	0.48	1.11	0.00	0.00	0.00	25.18	25.73	52.0	0.495
117.00	0.46	1.07	0.00	0.00	0.00	24.19	24.72	52.0	0.476
119.25	0.46	1.08	0.00	0.00	0.00	23.08	23.61	52.0	0.454
120.00	0.45	1.08	0.00	0.00	0.00	22.70	23.23	52.0	0.447
123.50	0.54	1.34	0.00	0.00	0.00	25.04	25.68	52.0	0.494
125.00	0.53	1.35	0.00	0.00	0.00	24.00	24.64	52.0	0.474
130.00	0.52	1.37	0.00	0.00	0.00	20.17	20.83	52.0	0.401
134.50	0.51	1.34	0.00	0.00	0.00	16.28	16.95	52.0	0.326
135.00	0.51	1.35	0.00	0.00	0.00	15.84	16.51	52.0	0.318
137.00	0.38	0.94	0.00	0.00	0.00	14.02	14.50	52.0	0.279
140.00	0.38	0.95	0.00	0.00	0.00	12.18	12.67	52.0	0.244
145.00	0.37	0.96	0.00	0.00	0.00	8.76	9.28	52.0	0.179
148.00	0.24	0.60	0.00	0.00	0.00	6.38	6.70	52.0	0.129
150.00	0.23	0.60	0.00	0.00	0.00	5.46	5.79	52.0	0.111
153.00	0.21	0.47	0.00	0.00	0.00	3.96	4.25	52.0	0.082
155.00	0.20	0.46	0.00	0.00	0.00	3.18	3.48	52.0	0.067
160.00	0.00	0.45	0.00	0.00	0.00	1.00	1.26	52.0	0.024

Wind Loading - Shaft

Structure: CT03538-S-SBA
Site Name: South Plymouth
Height: 160.00 (ft)
Base Elev: 0.000 (ft)

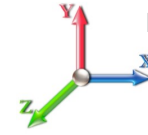
Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

6/22/2016
 Page: 19



Load Case: 50 mph Wind with 0" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 24

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		0.00	1.00	6.400	10.82	235.54	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		0.00	1.00	6.400	10.82	231.06	0.650	0.000	5.00	23.330	15.16	164.0	0.0	1312.5
10.00		0.00	1.00	6.400	10.82	226.58	0.650	0.000	5.00	22.882	14.87	160.9	0.0	1287.1
15.00		0.00	1.00	6.400	10.82	222.10	0.650	0.000	5.00	22.434	14.58	157.7	0.0	1261.7
20.00		0.00	1.00	6.400	10.82	217.62	0.650	0.000	5.00	21.986	14.29	154.6	0.0	1236.3
25.00		0.00	1.00	6.400	10.82	213.14	0.650	0.000	5.00	21.538	14.00	151.4	0.0	1210.9
30.00		0.00	1.00	6.400	10.82	208.66	0.650	0.000	5.00	21.090	13.71	148.3	0.0	1185.5
35.00		0.00	1.02	6.509	11.00	205.91	0.650	0.000	5.00	20.642	13.42	147.6	0.0	1160.1
38.75	Bot - Section 2	0.00	1.05	6.701	11.32	205.48	0.650	0.000	3.75	15.188	9.87	111.8	0.0	853.4
40.00		0.00	1.06	6.762	11.43	205.27	0.650	0.000	1.25	5.085	3.31	37.8	0.0	526.5
45.00	Top - Section 1	0.00	1.09	6.993	11.82	204.07	0.650	0.000	5.00	20.059	13.04	154.1	0.0	2076.6
50.00		0.00	1.13	7.207	12.18	205.72	0.650	0.000	5.00	19.611	12.75	155.3	0.0	945.5
55.00		0.00	1.16	7.406	12.52	203.73	0.650	0.000	5.00	19.163	12.46	155.9	0.0	923.7
60.00		0.00	1.19	7.592	12.83	201.40	0.650	0.000	5.00	18.715	12.16	156.1	0.0	902.0
65.00		0.00	1.21	7.768	13.13	198.78	0.650	0.000	5.00	18.267	11.87	155.9	0.0	880.2
70.00		0.00	1.24	7.934	13.41	195.90	0.650	0.000	5.00	17.819	11.58	155.3	0.0	858.4
75.00	Appurtenance(s)	0.00	1.26	8.092	13.68	192.81	0.650	0.000	5.00	17.371	11.29	154.4	0.0	836.6
78.50	Bot - Section 3	0.00	1.28	8.198	13.85	190.52	0.650	0.000	3.50	11.893	7.73	107.1	0.0	572.7
80.00		0.00	1.29	8.242	13.93	189.51	0.650	0.000	1.50	5.108	3.32	46.2	0.0	447.5
83.75	Top - Section 2	0.00	1.30	8.351	14.11	186.91	0.650	0.000	3.75	12.594	8.19	115.5	0.0	1102.9
85.00		0.00	1.31	8.387	14.17	189.01	0.650	0.000	1.25	4.142	2.69	38.2	0.0	166.4
90.00		0.00	1.33	8.525	14.41	185.39	0.650	0.000	5.00	16.287	10.59	152.5	0.0	654.4
95.00		0.00	1.35	8.657	14.63	181.62	0.650	0.000	5.00	15.839	10.30	150.6	0.0	636.2
100.00		0.00	1.37	8.785	14.85	177.70	0.650	0.000	5.00	15.391	10.00	148.5	0.0	618.1
105.00		0.00	1.39	8.908	15.06	173.66	0.650	0.000	5.00	14.943	9.71	146.2	0.0	599.9
108.00	Appurtenance(s)	0.00	1.40	8.980	15.18	171.18	0.650	0.000	3.00	8.751	5.69	86.3	0.0	351.3
110.00		0.00	1.41	9.028	15.26	169.50	0.650	0.000	2.00	5.744	3.73	57.0	0.0	230.5
115.00		0.00	1.43	9.143	15.45	165.22	0.650	0.000	5.00	14.047	9.13	141.1	0.0	563.7
117.00	Appurtenance(s)	0.00	1.44	9.188	15.53	163.48	0.650	0.000	2.00	5.494	3.57	55.4	0.0	220.4
119.25	Bot - Section 4	0.00	1.44	9.238	15.61	161.51	0.650	0.000	2.25	6.095	3.96	61.8	0.0	244.5
120.00		0.00	1.45	9.255	15.64	160.84	0.650	0.000	0.75	2.043	1.33	20.8	0.0	146.3
123.50	Top - Section 3	0.00	1.46	9.331	15.77	157.72	0.650	0.000	3.50	9.399	6.11	96.3	0.0	673.2
125.00		0.00	1.46	9.363	15.82	158.89	0.650	0.000	1.50	3.961	2.57	40.7	0.0	127.3
130.00		0.00	1.48	9.469	16.00	154.33	0.650	0.000	5.00	12.912	8.39	134.3	0.0	415.0
134.50	Appurtenance(s)	0.00	1.49	9.561	16.16	150.15	0.650	0.000	4.50	11.238	7.30	118.0	0.0	361.1
135.00		0.00	1.50	9.572	16.18	149.69	0.650	0.000	0.50	1.226	0.80	12.9	0.0	39.4
137.00	Appurtenance(s)	0.00	1.50	9.612	16.24	147.80	0.650	0.000	2.00	4.860	3.16	51.3	0.0	156.1
140.00		0.00	1.51	9.672	16.35	144.96	0.650	0.000	3.00	7.156	4.65	76.0	0.0	229.8
145.00		0.00	1.53	9.769	16.51	140.15	0.650	0.000	5.00	11.568	7.52	124.1	0.0	371.4
148.00	Appurtenance(s)	0.00	1.54	9.826	16.61	137.23	0.650	0.000	3.00	6.726	4.37	72.6	0.0	215.9
150.00		0.00	1.54	9.864	16.67	135.27	0.650	0.000	2.00	4.394	2.86	47.6	0.0	141.0
153.00	Appurtenance(s)	0.00	1.55	9.920	16.76	132.31	0.650	0.000	3.00	6.457	4.20	70.4	0.0	207.2
155.00		0.00	1.56	9.957	16.83	130.32	0.650	0.000	2.00	4.215	2.74	46.1	0.0	135.2
160.00	Appurtenance(s)	0.00	1.57	10.048	16.98	125.30	0.650	0.000	5.00	10.224	6.65	112.8	0.0	327.9
Totals:									160.00			4,651.6		27,412.2

Discrete Appurtenance Forces

Structure: CT03538-S-SB
Site Name: South Plymouth
Height: 160.00 (ft)
Base Elev: 0.000 (ft)

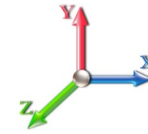
Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

6/22/2016
 Page: 20



Load Case: 50 mph Wind with 0" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 24

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa Factor	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	160.00	Low Profile Platform	1	10.048	16.981	1.00	25.00	1600.00	0.000	0.000	424.52	0.00	0.00
2	160.00	KRY112 144	3	10.101	17.071	0.70	0.86	33.00	0.000	3.000	14.70	0.00	44.09
3	160.00	Ericsson AIR 32	3	10.101	17.071	0.96	20.73	498.00	0.000	3.000	353.86	0.00	1061.58
4	160.00	Commscope	3	10.101	17.071	0.93	32.86	273.00	0.000	3.000	561.02	0.00	1683.05
5	160.00	AIR 21, 1.3M, B2A B4P	3	10.101	17.071	0.94	20.17	351.00	0.000	3.000	344.29	0.00	1032.86
6	160.00	RRUS 11	3	10.101	17.071	0.71	6.20	153.00	0.000	3.000	105.81	0.00	317.43
7	153.00	Lone Star Electronics	1	9.984	16.874	1.00	1.61	20.00	0.000	3.500	27.17	0.00	95.08
8	153.00	4 ft Sidearm	1	9.920	16.765	1.00	3.00	50.00	0.000	0.000	50.29	0.00	0.00
9	153.00	Hutton HPD 3.4-4.7	1	9.920	16.765	1.00	8.92	105.00	0.000	0.000	149.54	0.00	0.00
10	153.00	Pipe Mounts	2	9.920	16.765	1.00	4.00	100.00	0.000	0.000	67.06	0.00	0.00
11	153.00	VHLP-2.6-11	1	9.920	16.765	1.00	8.43	47.60	0.000	0.000	141.33	0.00	0.00
12	153.00	Motorola ODU-A-RF	3	9.920	16.765	1.00	4.32	31.20	0.000	0.000	72.42	0.00	0.00
13	148.00	ALU TD-RRH8x20-25	3	9.826	16.607	0.69	9.77	210.00	0.000	0.000	162.25	0.00	0.00
14	148.00	ALU 1900MHz RRH	3	9.826	16.607	0.88	10.03	132.00	0.000	0.000	166.60	0.00	0.00
15	148.00	ALU 800 MHz Filter	3	9.826	16.607	0.99	1.46	30.00	0.000	0.000	24.17	0.00	0.00
16	148.00	ALU 800 MHz RRH	3	9.826	16.607	0.92	6.87	159.00	0.000	0.000	114.13	0.00	0.00
17	148.00	RFS ACU-A20-N	4	9.826	16.607	0.79	0.44	4.00	0.000	0.000	7.35	0.00	0.00
18	148.00	Low Profile Platform	1	9.826	16.607	1.00	25.00	1200.00	0.000	0.000	415.16	0.00	0.00
19	148.00	RFS APXVSP18-C-A20	3	9.826	16.607	0.93	24.16	291.00	0.000	0.000	401.24	0.00	0.00
20	148.00	RFS APXVTM14-C-120	3	9.864	16.670	0.89	19.49	288.00	0.000	2.000	324.92	0.00	649.85
21	137.00	RFS FD9R6004/2C-3	6	9.612	16.244	0.50	1.08	18.60	0.000	0.000	17.54	0.00	0.00
22	137.00	RFS DB-T1-6Z-8AB-0Z	1	9.612	16.244	0.71	3.98	18.90	0.000	0.000	64.59	0.00	0.00
23	137.00	Antel BXA-70063-6CF-2	3	9.612	16.244	0.83	20.24	51.00	0.000	0.000	328.84	0.00	0.00
24	137.00	ALU 2X60-1900	3	9.612	16.244	0.84	5.52	138.00	0.000	0.000	89.65	0.00	0.00
25	137.00	ALU RRH2X60-AWS	3	9.612	16.244	0.89	6.86	165.00	0.000	0.000	111.47	0.00	0.00
26	137.00	Low Profile Platform	1	9.612	16.244	1.00	22.00	1500.00	0.000	0.000	357.37	0.00	0.00
27	137.00	Antel BXA-70080-6CF-2	3	9.612	16.244	0.97	17.93	54.00	0.000	0.000	291.19	0.00	0.00
28	137.00	Commscope	6	9.612	16.244	0.87	47.66	244.80	0.000	0.000	774.17	0.00	0.00
29	134.50	Pipe Mount	1	9.561	16.159	1.00	2.00	50.00	0.000	0.000	32.32	0.00	0.00
30	134.50	Bird Technologies CSA 10-67	1	9.561	16.159	1.00	3.81	4.60	0.000	0.000	61.57	0.00	0.00
31	117.00	RFS APXV18-206517S-C	3	9.188	15.528	0.74	11.46	79.20	0.000	0.000	177.88	0.00	0.00
32	117.00	Pipe Mounts	3	9.188	15.528	1.00	6.00	150.00	0.000	0.000	93.17	0.00	0.00
33	108.00	Ericsson RRUS 11	6	8.980	15.177	0.71	12.40	306.00	0.000	0.000	188.14	0.00	0.00
34	108.00	CSS DUO1417- 8686-40	3	8.980	15.177	0.92	19.13	60.90	0.000	0.000	290.29	0.00	0.00
35	108.00	KMW	3	8.980	15.177	0.85	22.08	145.50	0.000	0.000	335.15	0.00	0.00
36	108.00	Andrew ABT-DF-DMADBH	3	8.980	15.177	0.98	0.15	3.30	0.000	0.000	2.23	0.00	0.00
37	108.00	Raycap DC6-48-60-18-8F	1	8.980	15.177	1.00	1.47	31.80	0.000	0.000	22.31	0.00	0.00
38	108.00	Low Profile Platform	1	8.980	15.177	1.00	22.00	1500.00	0.000	0.000	333.89	0.00	0.00
39	108.00	Powerwave 21903	6	8.980	15.177	0.84	1.36	33.00	0.000	0.000	20.65	0.00	0.00
40	108.00	Powerwave 7770	6	8.980	15.177	0.83	31.27	210.00	0.000	0.000	474.65	0.00	0.00
41	108.00	Powerwave LGP21401	6	8.980	15.177	0.50	3.87	84.60	0.000	0.000	58.73	0.00	0.00
42	75.00	Standoff	1	8.092	13.675	1.00	1.00	20.00	0.000	0.000	13.68	0.00	0.00
43	75.00	GPS	1	8.092	13.675	1.00	0.14	1.70	0.000	0.000	1.91	0.00	0.00

Totals: 10,446.70

8,069.21

Total Applied Force Summary

Structure: CT03538-S-SB
Site Name: South Plymouth
Height: 160.00 (ft)
Base Elev: 0.000 (ft)

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

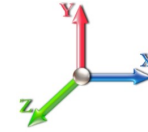
6/22/2016

Page: 21



Load Case: 50 mph Wind with 0" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 24

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		164.02	1574.59	0.00	0.00
10.00		160.87	1549.19	0.00	0.00
15.00		157.72	1523.79	0.00	0.00
20.00		154.57	1498.39	0.00	0.00
25.00		151.42	1472.99	0.00	0.00
30.00		148.27	1447.59	0.00	0.00
35.00		147.58	1422.18	0.00	0.00
38.75		111.79	1049.97	0.00	0.00
40.00		37.77	592.03	0.00	0.00
45.00		154.09	2338.65	0.00	0.00
50.00		155.25	1207.60	0.00	0.00
55.00		155.89	1185.82	0.00	0.00
60.00		156.08	1164.05	0.00	0.00
65.00		155.87	1142.28	0.00	0.00
70.00		155.30	1120.51	0.00	0.00
75.00	(2) appurtenances	170.00	1120.44	0.00	0.00
78.50		107.10	755.60	0.00	0.00
80.00		46.25	525.85	0.00	0.00
83.75		115.53	1298.92	0.00	0.00
85.00		38.16	231.75	0.00	0.00
90.00		152.52	915.67	0.00	0.00
95.00		150.63	897.52	0.00	0.00
100.00		148.53	879.38	0.00	0.00
105.00		146.24	861.24	0.00	0.00
108.00	(35) appurtenances	1812.38	2883.13	0.00	0.00
110.00		56.97	308.18	0.00	0.00
115.00		141.09	757.75	0.00	0.00
117.00	(6) appurtenances	326.49	527.22	0.00	0.00
119.25		61.85	317.76	0.00	0.00
120.00		20.77	170.78	0.00	0.00
123.50		96.34	787.25	0.00	0.00
125.00		40.74	176.19	0.00	0.00
130.00		134.31	577.87	0.00	0.00
134.50	(2) appurtenances	211.92	562.27	0.00	0.00
135.00		12.89	55.42	0.00	0.00
137.00	(26) appurtenances	2086.13	2410.54	0.00	0.00
140.00		76.02	285.26	0.00	0.00
145.00		124.14	463.83	0.00	0.00
148.00	(23) appurtenances	1688.42	2585.33	0.00	649.85
150.00		47.61	172.70	0.00	0.00
153.00	(9) appurtenances	578.18	608.50	0.00	95.08
155.00		46.10	164.58	0.00	0.00
160.00	(16) appurtenances	1917.04	3309.28	0.00	4139.02
	Totals:	12,720.86	44,899.86	0.00	4,883.95

Resulting Forces and Deflections

Structure: CT03538-S-SB
Site Name: South Plymouth
Height: 160.00 (ft)
Base Elev: 0.000 (ft)

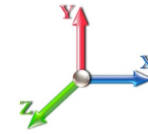
Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

6/22/2016
 Page: 22



Load Case: 50 mph Wind with 0" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 24

Elev (ft)	Lateral FX (-) (kips)	Axial FY (-) (kips)	Lateral FZ (kips)	Moment MX (ft-kips)	Torsion MY (ft-kips)	Moment MZ (ft-kips)	Deflect X (in)	Deflect Z (in)	Deflect Resultant (in)	Rotation Sway (deg)	Rotation Twist (deg)
0.00	-12.748	-44.892	0.000	0.000	0.000	-1542.121	0.000	0.000	0.000	0.000	0.000
5.00	-12.636	-43.302	0.000	0.000	0.000	-1478.382	-0.037	0.000	0.037	-0.069	0.000
10.00	-12.524	-41.738	0.000	0.000	0.000	-1415.204	-0.148	0.000	0.148	-0.140	0.000
15.00	-12.412	-40.199	0.000	0.000	0.000	-1352.586	-0.333	0.000	0.333	-0.211	0.000
20.00	-12.300	-38.685	0.000	0.000	0.000	-1290.527	-0.593	0.000	0.593	-0.284	0.000
25.00	-12.189	-37.198	0.000	0.000	0.000	-1229.027	-0.930	0.000	0.930	-0.357	0.000
30.00	-12.077	-35.735	0.000	0.000	0.000	-1168.085	-1.344	0.000	1.344	-0.432	0.000
35.00	-11.965	-34.301	0.000	0.000	0.000	-1107.700	-1.837	0.000	1.837	-0.507	0.000
38.75	-11.858	-33.244	0.000	0.000	0.000	-1062.860	-2.258	0.000	2.258	-0.565	0.000
40.00	-11.842	-32.642	0.000	0.000	0.000	-1048.037	-2.409	0.000	2.409	-0.585	0.000
45.00	-11.704	-30.289	0.000	0.000	0.000	-988.826	-3.063	0.000	3.063	-0.662	0.000
50.00	-11.576	-29.067	0.000	0.000	0.000	-930.308	-3.797	0.000	3.797	-0.739	0.000
55.00	-11.446	-27.866	0.000	0.000	0.000	-872.431	-4.618	0.000	4.618	-0.826	0.000
60.00	-11.313	-26.688	0.000	0.000	0.000	-815.203	-5.531	0.000	5.531	-0.913	0.000
65.00	-11.177	-25.531	0.000	0.000	0.000	-758.640	-6.534	0.000	6.534	-1.001	0.000
70.00	-11.038	-24.397	0.000	0.000	0.000	-702.757	-7.629	0.000	7.629	-1.088	0.000
75.00	-10.876	-23.266	0.000	0.000	0.000	-647.566	-8.816	0.000	8.816	-1.175	0.000
78.50	-10.770	-22.504	0.000	0.000	0.000	-609.500	-9.700	0.000	9.700	-1.237	0.000
80.00	-10.730	-21.971	0.000	0.000	0.000	-593.345	-10.093	0.000	10.093	-1.263	0.000
83.75	-10.601	-20.667	0.000	0.000	0.000	-553.106	-11.112	0.000	11.112	-1.328	0.000
85.00	-10.579	-20.425	0.000	0.000	0.000	-539.855	-11.463	0.000	11.463	-1.350	0.000
90.00	-10.436	-19.496	0.000	0.000	0.000	-486.962	-12.929	0.000	12.929	-1.446	0.000
95.00	-10.292	-18.587	0.000	0.000	0.000	-434.781	-14.494	0.000	14.494	-1.540	0.000
100.00	-10.147	-17.696	0.000	0.000	0.000	-383.321	-16.155	0.000	16.155	-1.630	0.000
105.00	-9.995	-16.828	0.000	0.000	0.000	-332.588	-17.909	0.000	17.909	-1.717	0.000
108.00	-8.106	-13.995	0.000	0.000	0.000	-302.603	-19.005	0.000	19.005	-1.767	0.000
110.00	-8.053	-13.681	0.000	0.000	0.000	-286.390	-19.752	0.000	19.752	-1.800	0.000
115.00	-7.900	-12.921	0.000	0.000	0.000	-246.126	-21.679	0.000	21.679	-1.877	0.000
117.00	-7.563	-12.400	0.000	0.000	0.000	-230.327	-22.472	0.000	22.472	-1.908	0.000
119.25	-7.495	-12.082	0.000	0.000	0.000	-213.310	-23.379	0.000	23.379	-1.941	0.000
120.00	-7.475	-11.908	0.000	0.000	0.000	-207.689	-23.685	0.000	23.685	-1.952	0.000
123.50	-7.358	-11.120	0.000	0.000	0.000	-181.528	-25.134	0.000	25.134	-2.000	0.000
125.00	-7.320	-10.940	0.000	0.000	0.000	-170.491	-25.766	0.000	25.766	-2.020	0.000
130.00	-7.176	-10.359	0.000	0.000	0.000	-133.892	-27.920	0.000	27.920	-2.091	0.000
134.50	-6.949	-9.802	0.000	0.000	0.000	-101.599	-29.918	0.000	29.918	-2.145	0.000
135.00	-6.936	-9.745	0.000	0.000	0.000	-98.125	-30.143	0.000	30.143	-2.151	0.000
137.00	-4.764	-7.413	0.000	0.000	0.000	-84.253	-31.049	0.000	31.049	-2.172	0.000
140.00	-4.681	-7.128	0.000	0.000	0.000	-69.963	-32.422	0.000	32.422	-2.200	0.000
145.00	-4.542	-6.667	0.000	0.000	0.000	-46.558	-34.747	0.000	34.747	-2.237	0.000
148.00	-2.755	-4.150	0.000	0.000	0.000	-32.282	-36.159	0.000	36.159	-2.254	0.000
150.00	-2.701	-3.979	0.000	0.000	0.000	-26.773	-37.105	0.000	37.105	-2.263	0.000
153.00	-2.100	-3.393	0.000	0.000	0.000	-18.575	-38.531	0.000	38.531	-2.275	0.000
155.00	-2.047	-3.230	0.000	0.000	0.000	-14.376	-39.485	0.000	39.485	-2.280	0.000
160.00	-1.917	0.000	0.000	0.000	0.000	-4.139	0.000	0.000	41.878	-2.289	0.000

Resulting Stresses

Structure: CT03538-S-SBA
Site Name: South Plymouth
Height: 160.00 (ft)
Base Elev: 0.000 (ft)

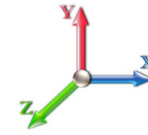
Code: EIA/TIA-222-F
Exposure: C
Gh: 1.69
Struct Class: II

6/22/2016
 Page: 23



Load Case: 50 mph Wind with 0" Ice

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations: 24

Applied Stresses

Elev (ft)	fa Axial (Y) (ksi)	fvx Shear (X) (ksi)	fvz Shear (Z) (ksi)	fvT Torsion (ksi)	fbx Bending (X) (ksi)	fbz Bending (Z) (ksi)	fb Combined (ksi)	Fb Allow Stress (ksi)	f/Fb Stress Ratio
0.00	0.58	0.33	0.00	0.00	0.00	17.15	17.74	52.0	0.341
5.00	0.57	0.33	0.00	0.00	0.00	17.10	17.67	52.0	0.340
10.00	0.56	0.34	0.00	0.00	0.00	17.03	17.59	52.0	0.338
15.00	0.55	0.34	0.00	0.00	0.00	16.95	17.50	52.0	0.337
20.00	0.54	0.34	0.00	0.00	0.00	16.85	17.40	52.0	0.335
25.00	0.53	0.35	0.00	0.00	0.00	16.74	17.28	52.0	0.332
30.00	0.52	0.35	0.00	0.00	0.00	16.61	17.14	52.0	0.330
35.00	0.51	0.36	0.00	0.00	0.00	16.46	16.98	52.0	0.327
38.75	0.50	0.36	0.00	0.00	0.00	16.33	16.84	52.0	0.324
40.00	0.49	0.36	0.00	0.00	0.00	16.29	16.79	52.0	0.323
45.00	0.54	0.42	0.00	0.00	0.00	18.10	18.66	52.0	0.359
50.00	0.53	0.42	0.00	0.00	0.00	17.84	18.38	52.0	0.354
55.00	0.52	0.43	0.00	0.00	0.00	17.54	18.07	52.0	0.348
60.00	0.51	0.44	0.00	0.00	0.00	17.20	17.73	52.0	0.341
65.00	0.50	0.44	0.00	0.00	0.00	16.83	17.34	52.0	0.334
70.00	0.49	0.45	0.00	0.00	0.00	16.40	16.91	52.0	0.325
75.00	0.48	0.45	0.00	0.00	0.00	15.92	16.42	52.0	0.316
78.50	0.47	0.46	0.00	0.00	0.00	15.56	16.05	52.0	0.309
80.00	0.46	0.46	0.00	0.00	0.00	15.39	15.88	52.0	0.305
83.75	0.53	0.54	0.00	0.00	0.00	17.30	17.85	52.0	0.343
85.00	0.52	0.55	0.00	0.00	0.00	17.12	17.67	52.0	0.340
90.00	0.51	0.55	0.00	0.00	0.00	16.32	16.86	52.0	0.324
95.00	0.50	0.56	0.00	0.00	0.00	15.43	15.97	52.0	0.307
100.00	0.49	0.57	0.00	0.00	0.00	14.43	14.96	52.0	0.288
105.00	0.48	0.58	0.00	0.00	0.00	13.31	13.83	52.0	0.266
108.00	0.41	0.48	0.00	0.00	0.00	12.57	13.01	52.0	0.250
110.00	0.41	0.48	0.00	0.00	0.00	12.20	12.63	52.0	0.243
115.00	0.40	0.49	0.00	0.00	0.00	11.18	11.61	52.0	0.223
117.00	0.39	0.47	0.00	0.00	0.00	10.75	11.16	52.0	0.215
119.25	0.38	0.48	0.00	0.00	0.00	10.26	10.67	52.0	0.205
120.00	0.38	0.48	0.00	0.00	0.00	10.09	10.50	52.0	0.202
123.50	0.44	0.59	0.00	0.00	0.00	11.14	11.63	52.0	0.224
125.00	0.44	0.59	0.00	0.00	0.00	10.68	11.17	52.0	0.215
130.00	0.43	0.60	0.00	0.00	0.00	9.00	9.49	52.0	0.182
134.50	0.42	0.60	0.00	0.00	0.00	7.29	7.78	52.0	0.150
135.00	0.42	0.60	0.00	0.00	0.00	7.09	7.58	52.0	0.146
137.00	0.33	0.42	0.00	0.00	0.00	6.27	6.64	52.0	0.128
140.00	0.32	0.42	0.00	0.00	0.00	5.45	5.82	52.0	0.112
145.00	0.31	0.43	0.00	0.00	0.00	3.92	4.30	52.0	0.083
148.00	0.20	0.27	0.00	0.00	0.00	2.86	3.09	52.0	0.059
150.00	0.19	0.26	0.00	0.00	0.00	2.45	2.68	52.0	0.052
153.00	0.17	0.21	0.00	0.00	0.00	1.79	1.99	52.0	0.038
155.00	0.16	0.21	0.00	0.00	0.00	1.43	1.64	52.0	0.031
160.00	0.00	0.21	0.00	0.00	0.00	0.45	0.57	52.0	0.011

Final Analysis Summary

Structure: CT03538-S-SBA
Site Name: South Plymouth
Height: 160.00 (ft)
Base Elev: 0.000 (ft)

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

6/22/2016
 Page: 24



Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)
80 mph Wind with 0" Ice	32.6	0.00	44.85	0.00	0.00	3942.76
69.28 mph Wind with 0.5" Ice	27.5	0.00	52.16	0.00	0.00	3408.89
50 mph Wind with 0" Ice	12.7	0.00	44.89	0.00	0.00	1542.12

Max Stresses

Load Case	fa Axial (Y) (ksi)	fvx Shear (X) (ksi)	fvz Shear (Z) (ksi)	fvT Torsion (ksi)	fbx Bending (X) (ksi)	fbz Bending (Z) (ksi)	Combined Stress (ksi)	Allowable Stress (ksi)	Elev (ft)	Stress Ratio
80 mph Wind with 0" Ice	0.52	1.07	0.00	0.00	0.00	46.26	46.82	52.0	45.00	0.901
69.28 mph Wind with 0.5" Ice	0.63	0.92	0.00	0.00	0.00	40.36	41.02	52.0	45.00	0.789
50 mph Wind with 0" Ice	0.54	0.42	0.00	0.00	0.00	18.10	18.66	52.0	45.00	0.359



Monopole Mat Foundation Design

Date
6/22/2016

Customer Name:	SBA Communications Corp	EIA/TIA Standard:	EIA-222-F
Site Name:	South Plymouth	Structure Height (Ft.):	160
Site Number:	CT03538-S-SBA	Engineer Name:	K. Wyant
Engr. Number:	23615	Engineer Login ID:	

Foundation Info Obtained from:

Drawings/Calculations
Monopole
Analysis

Structure Type:

Analysis or Design?

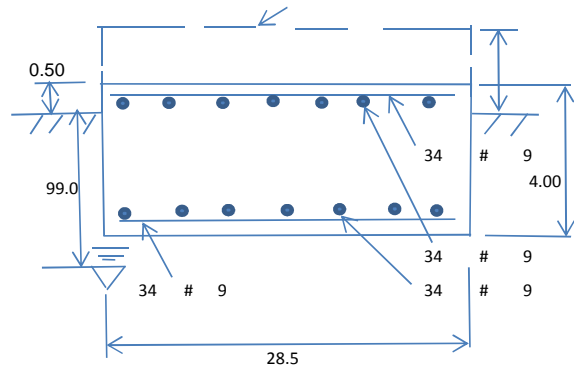
Base Reactions (Unfactored)

Axial Load (Kips):	52.2	Shear Force (Kips):	32.6
Uplift Force (Kips):	0.0	Moment (Kips-ft):	3942.8

Allowable overstress %: 5.0%

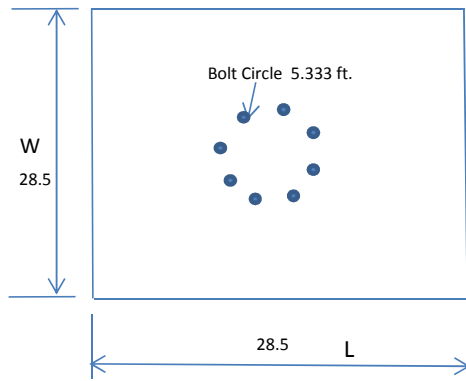
Foundation Geometries:

Anchor Bolt Circle (ft.):	5.33	Mod's required -Yes/No ?:	No
Thickness of Pad (ft):	4.00	Depth of Base BG (ft.):	3.50
Length of Pad (ft.):	28.5	Width of Pad (ft.):	28.5
Final Length of pad (ft)	28.5	Final width of pad (ft):	28.5



Material Properties and Rebar Info:

Concrete Strength (psi):	3000	Steel Elastic Modulus:	29000	ksi
Pad Rebar Yield (Ksi):	60	Tie Spacing (in):	6.0	
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):	34	Qty. of Rebar in Pad (W):	34	
Rebar at the top of the concrete pad:				
Qty. of Rebar in Pad (L):	34	Qty. of Rebar in Pad (W):	34	



Apply 1.35 factor for e/w Per G: 1.35

Soil Design Parameters:

Water Table B.G.S. (ft):	99.0	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad:	30
Allowable Net Soil Bearing (psf):	20000	Allowable Skin Friction:		Psf	Angle from Botm of Pad:	25
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	No		Angle from Botm of Pad:	25
Consider soil hor. resist. for OTM.:	No	Reduction factor on the maximum soil bearing pressure:	1.00			

Foundation Analysis and Design:

Total Dry Soil Volume (cu. Ft.):	0.00	Total Dry Soil Weight (Kips):	0.00
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	0.00	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	3249.00	Total Dry Concrete Weight (Kips):	487.35
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	487.35	Total Vertical Load on Base (Kips):	539.51

Check Soil Capacities:

Calculated Maxium Net Soil Pressure under the base (psf):	2277	<	Allowable Soil Bearing (psf):	20000	0.11	OK!
Allowable Foundation Overturning Resistance (SF=1.5, kips-ft.):	5125.3	>	Applied Momont (kips-ft):	4075	0.80	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	1.89					OK!

Load/
Capacity
Ratio

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:	1.30

Concrete Pad:

One-Way Design Shear Capacity (L-Direction, Kips):	1248.6	>	One-Way Factored Shear (L-D. Kips):	375.8	0.30	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	1248.6	>	One-Way Factored Shear (W-D., Kips):	375.8	0.30	OK!
One-Way Design Shear Capacity (Corner-Corner, Kips):	1510.3	>	One-Way Factored Shear (C-C, Kips):	613.1	0.41	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0022	OK!	Lower Steel Pad Reinf. Ratio (W-Direct	0.0022		
Lower Steel Pad Moment Capacity (L-Direction, Kips-ft):	6620.0	>	Moment at Bottom (L-Direct. K-Ft):	1102.9	0.17	OK!
Lower Steel Pad Moment Capacity (W-Direction, Kips-ft):	6620.0	>	Moment at Bottom (W-Direct. K-Ft):	1102.9	0.17	OK!
Lower Steel Pad Moment Capacity (Corner-Corner, K-ft):	9319.3	>	Moment at Bottom (C-C Dir. K-Ft):	1559.8	0.17	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0022	OK!	Upper Steel Reinf. Ratio (W-Direct.):	0.0022		
Upper Steel Pad Moment Capacity (L-Direction, Kips-ft):	6620.0	>	Moment at the top (L-Dir Kips-Ft):	162.6	0.02	OK!
Upper Steel Pad Moment Capacity (W-Direction, Kips-ft):	6620.0	>	Moment at the top (W-Dir Kips-Ft):	162.6	0.02	OK!
Upper Steel Pad Moment Capacity (Corner-Corner, K-ft):	9319.3	>	Moment at the top (C-C Direc. K-Ft):	1058.8	0.11	OK!

ELECTRICAL NOTES:

WORK INCLUDED

- INCLUDE ALL LABOR, MATERIALS, EQUIPMENT, PLANT SERVICES AND ADMINISTRATIVE TASKS REQUIRED TO COMPLETE AND MAKE OPERABLE THE ELECTRICAL WORK SHOWN ON THE DRAWINGS AND SPECIFIED HEREIN, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
 - PREPARE AND SUBMIT SHOP DRAWINGS, DIAGRAMS AND ILLUSTRATIONS.
 - PROCURE ALL NECESSARY PERMITS AND APPROVALS AND PAY ALL REQUIRED FEES AND CHARGES IN CONNECTION WITH THE WORK OF THIS CONTRACT.
 - SUBMIT AS-BUILT DRAWINGS, OPERATING AND MAINTENANCE INSTRUCTIONS AND MANUALS.
 - EXECUTE ALL CUTTING, DRILLING, ROUGH AND FINISH PATCHING OF EXISTING OR NEWLY INSTALLED CONSTRUCTION REQUIRED FOR THE WORK OF THIS CONTRACT. FOR SLAB PENETRATIONS THROUGH POST TENSION SLABS, X-RAY EXACT AREA OF PENETRATION PRIOR TO PERFORMING WORK. COORDINATE ALL X-RAY WORK WITH BUILDING ENGINEER.
 - PROVIDE HANGERS, SUPPORTS, FOUNDATIONS, STRUCTURAL FRAMING SUPPORTS, AND BASES FOR CONDUIT AND EQUIPMENT PROVIDED OR INSTALLED UNDER THE WORK OF HIS CONTRACT. PROVIDE COUNTER FLASHING, SLEEVES AND SEALS FOR FLOOR AND WALL PENETRATIONS.
 - MAINTAIN ALL EXISTING ELECTRICAL SERVICES IN THE BUILDING AREAS NOT AFFECTED BY THE ALTERATION DURING THE PROGRESS OF THE WORK INCLUDING PROVIDING ALL TEMPORARY JUMPERS, CONDUITS, CAPS, PROTECTIVE DEVICES, CONNECTIONS AND EQUIPMENT REQUIRED. PROVIDE TEMPORARY LIGHT AND POWER FOR CONSTRUCTION PURPOSES.
- IT IS THE INTENT OF THESE DRAWINGS AND SPECIFICATIONS TO CALL FOR AN INSTALLATION THAT IS COMPLETE IN EVERY RESPECT. IT IS NOT THE INTENT TO GIVE EVERY DETAIL ON THE DRAWINGS AND IN THE SPECIFICATIONS. IF AN ITEM OF WORK IS INDICATED IN THE DRAWINGS, IT IS CONSIDERED SUFFICIENT FOR INCLUSION IN THE CONTRACT. FURNISH AND INSTALL ALL MATERIAL AND EQUIPMENT USUALLY FURNISHED OR NEEDED TO MAKE A COMPLETE INSTALLATION WHETHER OR NOT SPECIFICALLY MENTIONED IN THE CONTRACT DOCUMENTS.

GENERAL REQUIREMENTS

- PROVIDE ALL WORK IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE (NEC) AND LOCAL AND STATE ELECTRICAL CODES.
- THE ELECTRICAL PLANS ARE DIAGRAMMATIC ONLY. REFER TO THE ARCHITECTURAL PLANS FOR THE EXACT DIMENSIONS OF THE BUILDING.
- LOAD CALCULATIONS ARE BASED ON EXISTING BUILDING INFORMATION/DRAWINGS PROVIDED TO ENGINEERING. CONTRACTOR IS TO VERIFY ALL EXISTING RATINGS AND LOADS PRIOR TO PURCHASING OF SPECIFIED EQUIPMENT FOR COMPLIANCE TO NEC. CONTRACTOR TO NOTIFY ENGINEER OF ANY DISCREPANCIES AND REQUEST FURTHER DIRECTION BY ENGINEER.
- EXISTING BUILDING EQUIPMENT IS NOTED ON THE DRAWINGS. NEW OR RELOCATED EQUIPMENT IS SHOWN WITH SOLID LINES. FUTURE EQUIPMENT (NOT IN THIS CONTRACT) IS DEPICTED WITH SHADED LINES. REQUEST CLARIFICATION OF DRAWINGS OR SPECIFICATIONS PRIOR TO PRICING OR INSTALLATION.
- GENERAL
 - AFTER CAREFULLY STUDYING THE DRAWINGS AND SPECIFICATIONS, AND BEFORE SUBMITTING THE PROPOSAL, MAKE A MANDATORY SITE VISIT TO ASCERTAIN CONDITIONS OF THE SITE, AND THE NATURE AND EXACT QUANTITY OF WORK TO BE PERFORMED. NO EXTRA COMPENSATION WILL BE ALLOWED FOR FAILURE TO NOTIFY THE OWNER, IN WRITING, OF ANY DISCREPANCIES THAT MAY HAVE BEEN NOTED BETWEEN THE EXISTING CONDITIONS AND THE DRAWINGS AND SPECIFICATIONS.
 - VERIFY ALL MEASUREMENTS AT THE SITE AND BE RESPONSIBLE FOR CORRECTNESS OF SAME.

- QUALITY, WORKMANSHIP, MATERIALS AND SAFETY
 - PROVIDE NEW MATERIALS AND EQUIPMENT OF A DOMESTIC MANUFACTURER BY THOSE REGULARLY ENGAGED IN THE PRODUCTION AND MANUFACTURE OF SPECIFIED MATERIALS AND EQUIPMENT. WHERE UL, OR OTHER AGENCY, HAS ESTABLISHED STANDARDS FOR MATERIALS, PROVIDE MATERIALS WHICH ARE LISTED AND LABELED ACCORDINGLY. THE COMMERCIALY STANDARD ITEMS OF EQUIPMENT AND THE SPECIFIC NAMES MENTIONED HEREIN ARE INTENDED FOR THE PROPER FUNCTIONING OF THE WORK.
 - WORK SHALL BE PERFORMED BY WORKMEN SKILLED IN THE TRADE REQUIRED FOR THE WORK. INSTALL MATERIALS AND EQUIPMENT TO PRESENT A NEAT APPEARANCE WHEN COMPLETED AND IN ACCORDANCE WITH THE APPROVED RECOMMENDATIONS OF THE MANUFACTURER AND IN ACCORDANCE WITH CONTRACT DOCUMENTS.
 - PROVIDE LABOR, MATERIALS, APPARATUS AND APPLIANCES ESSENTIAL TO THE FUNCTIONING OF THE SYSTEMS DESCRIBED OR INDICATED HEREIN, OR WHICH MAY BE REASONABLY IMPLIED AS ESSENTIAL WHENEVER MENTIONED IN THE CONTRACT DOCUMENT OR NOT.
 - MAKE WRITTEN REQUESTS FOR SUPPLEMENTARY INSTRUCTIONS TO ARCHITECT/ENGINEER IN CASE OF DOUBT AS TO WORK INTENDED OR IN EVENT OF NEED FOR EXPLANATION THEREOF.
 - PERFORMANCE AND MATERIAL REQUIREMENTS SCHEDULED OR SPECIFIED ARE MINIMUM STANDARD ACCEPTABLE. THE RIGHT TO JUDGE THE QUALITY OF EQUIPMENT THAT DEVIATES FROM THE CONTRACT DOCUMENT REMAINS SOLELY WITH ARCHITECT/ENGINEER. CONTRACT DOCUMENT OR NOT.

GUARANTEE

- GUARANTEE MATERIALS, PARTS AND LABOR FOR WORK FOR ONE YEAR FROM THE DATE OF ISSUANCE OF OCCUPANCY PERMIT. DURING THAT PERIOD, MAKE GOOD FAILTS OR IMPERFECTIONS THAT MAY ARISE DUE TO DEFECTS OR OMISSIONS IN MATERIALS OR WORKMANSHIP WITH NO ADDITIONAL COMPENSATION AND AS DIRECTED BY ARCHITECT.

CLEANING

- REMOVE ALL CONSTRUCTION DEBRIS RESULTING FROM THE WORK.
- CLEAN EQUIPMENT AND SYSTEMS FOLLOWING THE COMPLETION OF THE PROJECT TO THE SATISFACTION OF THE ENGINEER.

COORDINATION AND SUPERVISION

- CAREFULLY LAY OUT ALL WORK IN ADVANCE TO AVOID UNNECESSARY CUTTING, CHANNELING, CHASING OR DRILLING OF FLOORS, WALLS, PARTITIONS, CEILINGS OR OTHER SURFACES. WHERE SUCH WORK IS NECESSARY, HOWEVER, PATCH AND REPAIR THE WORK IN AN APPROVED MANNER BY SKILLED MECHANICS AT NO ADDITIONAL COST TO THE OWNER. RENDER FULL COOPERATION TO OTHER TRADES WHERE WORK WILL BE INSTALLED IN CLOSE PROXIMITY TO WORK OF OTHER TRADES. ASSIST IN WORKING OUT SPACE CONDITIONS. IF WORK IS INSTALLED BEFORE COORDINATION WITH OTHER TRADES, OR CAUSES INTERFERENCE, MAKE CHANGES NECESSARY TO CORRECT CONDITIONS WITHOUT EXTRA CHARGE.

SUBMITTALS

- AS-BUILT DRAWINGS:
 - UPON COMPLETION OF THE WORK, FURNISH TO THE OWNER "AS-BUILT" DRAWINGS.
 - SERVICE MANUALS.
- UPON COMPLETION OF THE WORK, FULLY INSTRUCT T-MOBILE AS TO THE OPERATION AND MAINTENANCE OF ALL MATERIAL, EQUIPMENT AND SYSTEMS.
- PROVIDE 3 COMPLETE BOUND SETS OF INSTRUCTIONS FOR OPERATING AND MAINTAINING ALL SYSTEMS AND EQUIPMENT.

CUTTING AND PATCHING

- PROVIDE ALL CUTTING, DRILLING, ROUGH AND FINISH PATCHING REQUIRED TO COMPLETE THE WORK
- OBTAIN OWNER APPROVAL PRIOR TO CUTTING THROUGH FLOORS OR WALLS FOR PIPING OR CONDUIT.

TESTS, INSPECTION AND APPROVAL

- BEFORE ENERGIZING ANY ELECTRICAL INSTALLATION, INSPECT EACH UNIT IN DETAIL. TIGHTEN ALL BOLTS AND CONNECTIONS (TORQUE-TIGHTEN WHERE REQUIRED) AND DETERMINE THAT ALL COMPONENTS ARE ALIGNED, AND THE EQUIPMENT IS IN SAFE, OPERATIONAL CONDITION.
- PROVIDE THE COMPLETE ELECTRICAL SYSTEM FREE OF GROUND FAULTS AND SHORT CIRCUITS SUCH THAT THE SYSTEM WILL OPERATE SATISFACTORILY UNDER FULL LOAD CONDITIONS, WITHOUT EXCESSIVE HEATING AT ANY POINT IN THE SYSTEM.

SPECIAL REQUIREMENTS

- DO NOT LEAVE ANY WORK INCOMPLETE NOR ANY HAZARDOUS SITUATIONS CREATED WHICH WILL AFFECT THE LIFE OR SAFETY OF THE PUBLIC AND/OR BUILDING OCCUPANTS. DO NOT INTERFERE WITH OR CUTOFF ANY OF THE EXISTING SERVICES WITHOUT THE OWNER'S WRITTEN PERMISSION.
- WHEN NECESSARY TO TEMPORARILY DISCONNECT ANY EXISTING BUILDING UTILITIES AND SERVICE SYSTEMS, INCLUDING FEEDER OR BRANCH CIRCUITING SUPPLYING EXISTING FACILITIES, CONFER WITH THE OWNER AND ARRANGE THE PERIOD OF INTERRUPTION FOR A TIME MUTUALLY AGREED UPON. SHUTDOWN NOTE: SCHEDULE AND NOTIFY OWNER 48 HOURS PRIOR TO SHUTDOWN. ALL SHUTDOWN WORK TO BE SCHEDULED AT A TIME CONVENIENT TO OWNER.

GROUNDING

- ROUTE ALL GROUNDING CONDUCTORS AS SHOWN ON CONDUIT/GROUNDING RISER.
- ROUTE 500 KCMIL CU. THHN CONDUCTOR FROM THE MGB LOCATION TO BUILDING STEEL. VERIFY BUILDING STEEL IS EFFECTIVELY GROUNDED PER NEC TO THE MAIN SERVICE GROUNDING ELECTRODE CONDUCTOR (GEC).
- MAKE ALL GROUND CONNECTIONS FROM MGB TO ELECTRICAL EQUIPMENT WITH 2 HOLE, CRIMP TYPE, BURNDY COMPRESSION TERMINATIONS, SIZED AS REQUIRED.
- USE 1 HOLE, CRIMP TYPE, BURNDY COMPRESSION TERMINATIONS, SIZED AS REQUIRED, AT EQUIPMENT GROUND CONNECTIONS.
- HIRE AN INDEPENDENT LAB TO PERFORM THE SPECIFIED OHMS TESTING. PROVIDE 4 SETS OF THE CERTIFIED DOCUMENTS TO THE OWNER FOR VERIFICATION PRIOR TO THE PROJECT COMPLETION.

RACEWAYS

- ALL WIRING TO BE INSTALLED IN CONDUIT SYSTEMS IN ACCORDANCE WITH THE FOLLOWING:
 - EXTERIOR FEEDERS AND CONTROL, WHERE UNDERGROUND, TO BE IN SCH 40 PVC.
 - EXTERIOR, ABOVE GROUND POWER CONDUITS TO BE GALVANIZED RIGID STEEL (RGS).
 - ALL TELECOMMUNICATION CONDUITS, INTERIOR/EXTERIOR, TO BE EMT.
 - INSTALL PULL ROPES IN ALL NEW EMPTY CONDUITS INSTALLED ON THIS PROJECT.
 - ALL TELECOM CONDUITS AND PULL BOXES INSTALLED ON THIS PROJECT TO BE LABELED "T-MOBILE". OWNER WILL PROVIDE LABELS FOR CONTRACTOR TO INSTALL.
 - INTERIOR FEEDERS TO BE INSTALLED IN E.M.T. WITH STEEL COMPRESSION FITTINGS.
 - MINIMUM SIZE CONDUIT TO BE 3/4" TRADE SIZE UNLESS OTHERWISE INDICATED ON THE DRAWINGS.
 - FINAL CONNECTIONS TO MOTORS AND VIBRATING EQUIPMENT TO BE INSTALLED IN LIQUID-TIGHT FLEXIBLE METAL CONDUIT.
 - CONDUIT TO BE RUN CONCEALED IN CEILINGS, FINISHED AREAS OR DRYWALL PARTITIONS, UNLESS OTHERWISE NOTED.
 - THE ROUTING OF CONDUITS INDICATED ON THE DRAWINGS IS DIAGRAMMATIC. BEFORE INSTALLING ANY WORK, EXAMINE THE WORKING LAYOUTS AND SHOP DRAWINGS OF THE OTHER TRADES TO DETERMINE THE EXACT LOCATIONS AND CLEARANCES.
 - ALL EXTERIOR MOUNTING HARDWARE TO BE GALVANIZED STEEL. COORDINATE WITH BUILDING ENGINEER PRIOR TO ATTACHING TO BUILDING STRUCTURE.

RACEWAYS CONT'D

- PENETRATIONS OF WALLS, FLOORS AND ROOFS, FOR THE PASSAGE OF ELECTRICAL RACEWAYS, TO BE PROPERLY SEALED AFTER INSTALLATION OF RACEWAYS SO AS TO MAINTAIN THE STRUCTURAL OR WATERPROOF INTEGRITY OF THE WALL, FLOOR OR ROOF SYSTEM TO BE PENETRATED. SEAL ALL CONDUIT PENETRATIONS THROUGH FIRE OR SMOKE RATED WALLS, CEILINGS OR SMOKE TIGHT CORRIDOR PARTITIONS TO MAINTAIN PROPER RATING OF WALL OR CEILING.
- PROVIDE ALL CONDUIT ENDS WITH INSULATED METALLIC GROUNDING BUSHINGS.
- CONDUIT TO BE SUPPORTED AT MAXIMUM DISTANCE OF 8'-0", OR AS REQUIRED BY NEC, IN HORIZONTAL AND VERTICAL DIRECTIONS.
- PROVIDE STAINLESS STEEL BLANK COVER PLATES FOR ALL JUNCTION BOXES AND/OR OUTLET BOXES NOT USED IN EXPOSED AREAS. PROVIDE ALL OTHER UNUSED BOXES WITH STANDARD STEEL COVER PLATES.
- WHERE APPLICABLE, PROVIDE ROOFTOP CONDUIT SUPPORT SYSTEM, CONFORMING TO ROOFTOP WARRANTY REQUIREMENTS, PER BUILDING.

WIRES AND CABLES

- CONTRACTOR TO COORDINATE WITH EQUIPMENT SUPPLIER AND VENDOR FOR EXACT EQUIPMENT OVER-CURRENT PROTECTION VOLTAGE, WIRE SIZE AND PLUG CONFIGURATION, IF APPLICABLE, PRIOR TO BID.
- ALL EQUIPMENT/DEVICES TO BE PROVIDED WITH INSULATED GROUND CONDUCTOR.
- ALL WIRE AND CABLE TO BE 600VOLT, COPPER, WITH THWN/ THHN INSULATION, EXCEPT AS NOTED.
- WIRE FOR POWER AND LIGHTING WILL NOT BE LESS THAN NO. 12AWG. ALL WIRE NO. 8 AND LARGER TO BE STRANDED.
- CONTROL WIRING IS NOT TO BE LESS THAN NO. 14AWG, FLEXIBLE IN SINGLE CONDUCTORS OR MULTI-CONDUCTOR CABLES. CONTROL WIRING WILL CONSIST OF MULTI-CONDUCTOR CABLES WHEREVER POSSIBLE. CABLES TO BE PROVIDED WITH AN OVERALL FLAME-RETARDANT, EXTRUDED JACKET AND RATED FOR PLENUM USE. ALL CONTROL WIRE TO BE 600VOLT RATED.
- WIRE PREVIOUSLY PULLED INTO CONDUIT IS CONSIDERED USED AND IS NOT TO BE RE-PULLED.
- HOME RUNS AND BRANCH CIRCUIT WIRING FOR 20A, 120V CIRCUITS:

LENGTH (FT.)	HOME RUN	WIRE SIZE
0 TO 50	NO. 12	
51 TO 100	NO. 10	
101 TO 150	NO. 8	
- VOLTAGE DROP IS NOT TO EXCEED 3%.
- MAKE ALL CONNECTIONS WITH UL APPROVED, SOLDERLESS, PRESSURE TYPED INSULATED CONNECTORS: SCOTCHKOK OR AND APPROVED EQUAL.

WIRING DEVICES

- ALL RECEPTACLES INSTALLED IN THIS PROJECT TO BE GROUNDING TYPE, WITH GROUNDING PIN SLOT CONNECTED TO DEVICE GROUND SCREW FOR GROUND WIRE CONNECTION. DISCONNECT SWITCHES AND FUSES
 - DISCONNECT SWITCHES TO BE VOLTAGE-RATED TO SUIT THE CHARACTERISTICS OF THE SYSTEM FROM WHICH THEY ARE SUPPLIED.
 - PROVIDE HEAVY-DUTY, METAL-ENCLOSED, EXTERNALLY-OPERATED DISCONNECT SWITCHES, FUSED OR UNFUSED, OF SUCH TYPE AND SIZE AS REQUIRED TO PROPERLY PROTECT OR DISCONNECT THE LOAD FOR WHICH THEY ARE INTENDED.
 - PROVIDE NEMA 1 DISCONNECT SWITCHES FOR INTERIOR INSTALLATION, NEMA 3R FOR EXTERIOR INSTALLATION.
 - DISCONNECT SWITCHES TO BE MANUFACTURED BY:
 - GENERAL ELECTRIC COMPANY
 - SQUARE-D
 - PROVIDE RK-1 TYPE FUSES, UNLESS NOTED OTHERWISE.

INSTALLATION

- INSTALL DISCONNECT SWITCHES WHERE INDICATED ON DRAWINGS.
- INSTALL FUSES IN FUSIBLE DISCONNECT SWITCHES. FUSES MUST MATCH IN TYPE AND RATING.
- FUSES TO BE MOUNTED SO THAT THE LABELS SHOWING THEIR RATINGS CAN BE READ WITHOUT REQUIRING FUSE REMOVAL.
- FURNISH AND DEPOSIT SPARE FUSES AT THE JOB SITE AS FOLLOWS:
 - THREE SPARES FOR EACH TYPE AND SIZE, IN EXCESS OF 60A, USED FOR INITIAL FUSING.
 - TEN PERCENT SPARES FOR EACH TYPE AND SIZE, UP TO AND INCLUDING 60A, USED FOR INITIAL FUSING. IN NO CASE WILL LESS THAN THREE FUSES OF ONE PARTICULAR TYPE AND SIZE BE FURNISHED.

GENERAL NOTES:

INTENT

- THESE SPECIFICATIONS AND CONSTRUCTION DRAWINGS ACCOMPANYING THEM DESCRIBE THE WORK TO BE DONE AND THE MATERIALS TO BE FURNISHED FOR CONSTRUCTION.
- THE DRAWINGS AND SPECIFICATIONS ARE INTENDED TO BE FULLY EXPLANATORY AND SUPPLEMENTARY. HOWEVER, SHOULD ANYTHING BE SHOWN, INDICATED, OR SPECIFIED ON ONE AND NOT THE OTHER, IT SHALL BE DONE THE SAME AS IF SHOWN, INDICATED OR SPECIFIED IN BOTH.
- THE INTENTION OF THE DOCUMENTS IS TO INCLUDE ALL LABOR AND MATERIALS REASONABLY NECESSARY FOR THE PROPER EXECUTION AND COMPLETION OF THE WORK AS STIPULATED IN THE CONTRACT.
- THE PURPOSE OF THE SPECIFICATIONS IS TO INTERPRET THE INTENT OF THE DRAWINGS AND TO DESIGNATE THE METHOD OF THE PROCEDURE, TYPE AND QUALITY OF MATERIALS REQUIRED TO COMPLETE THE WORK.
- MINOR DEVIATIONS FROM THE DESIGN LAYOUT ARE ANTICIPATED AND SHALL BE CONSIDERED AS PART OF THE WORK. NO CHANGES THAT ALTER THE CHARACTER OF THE WORK WILL BE MADE OR PERMITTED BY THE OWNER WITHOUT ISSUING A CHANGE ORDER.

CONFLICTS

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATIONS OF ALL MEASUREMENTS AT THE SITE BEFORE ORDERING ANY MATERIALS OR DOING ANY WORK. NO EXTRA CHARGE OR COMPENSATION SHALL BE ALLOWED DUE TO DIFFERENCE BETWEEN ACTUAL DIMENSIONS AND DIMENSIONS INDICATED ON THE CONSTRUCTION DRAWINGS. ANY SUCH DISCREPANCY IN DIMENSION WHICH MAY BE FOUND SHALL BE SUBMITTED TO THE OWNER FOR CONSIDERATION BEFORE THE CONTRACTOR PROCEEDS WITH THE WORK IN THE AFFECTED AREAS.
- THE BIDDER, IF AWARDED THE CONTRACT, WILL NOT BE ALLOWED ANY EXTRA COMPENSATION BY REASON OF ANY MATTER OR THING CONCERNING SUCH BIDDER MIGHT HAVE FULLY INFORMED THEMSELVES PRIOR TO THE BIDDING.
- NO PLEA OF IGNORANCE OF CONDITIONS THAT EXIST, OR OF DIFFICULTIES OR CONDITIONS THAT MAY BE ENCOUNTERED, OR OF ANY OTHER RELEVANT MATTER CONCERNING THE WORK TO BE PERFORMED IN THE EXECUTION OF THE WORK WILL BE ACCEPTED AS AN EXCUSE FOR ANY FAILURE OR OMISSION ON THE PART OF THE CONTRACTOR TO FULFILL EVERY DETAIL OF ALL THE REQUIREMENTS OF THE CONTRACT DOCUMENTS GOVERNING THE WORK.

CONTRACTS AND WARRANTIES

- CONTRACTOR IS RESPONSIBLE FOR APPLICATION AND PAYMENT OF CONTRACTOR LICENSES AND BONDS.
- SEE MASTER CONTRACTOR SERVICES AGREEMENT FOR ADDITIONAL DETAILS.

STORAGE

- ALL MATERIALS MUST BE STORED IN A LEVEL AND DRY FASHION AND IN A MANNER THAT DOES NOT NECESSARILY OBSTRUCT THE FLOW OF OTHER WORK. ANY STORAGE METHOD MUST MEET ALL RECOMMENDATIONS OF THE ASSOCIATED MANUFACTURER.

CLEANUP

- THE CONTRACTORS SHALL, AT ALL TIMES, KEEP THE SITE FREE FROM ACCUMULATION OF WASTE MATERIALS OR RUBBISH CAUSED BY THEIR EMPLOYEES AT WORK AND AT THE COMPLETION OF THE WORK. THEY SHALL REMOVE ALL RUBBISH FROM AND ABOUT THE BUILDING AREA, INCLUDING ALL THEIR TOOLS, SCAFFOLDING AND SURPLUS MATERIALS AND SHALL LEAVE THEIR WORK CLEAN AND READY TO USE.
- EXTERIOR
 - VISUALLY INSPECT EXTERIOR SURFACES AND REMOVE ALL TRACES OF SOIL, WASTE MATERIALS, SMUDGES AND OTHER FOREIGN MATTER.
 - REMOVE ALL TRACES OF SPLASHED MATERIALS FROM ADJACENT SURFACES.
 - IF NECESSARY, TO ACHIEVE A UNIFORM DEGREE OF CLEANLINESS, HOSE DOWN THE EXTERIOR OF THE STRUCTURE.
- INTERIOR
 - VISUALLY INSPECT INTERIOR SURFACE AND REMOVE ALL TRACES OF SOIL, WASTE MATERIALS, SMUDGES AND OTHER FOREIGN MATTER FROM WALLS, FLOOR, AND CEILING.
 - REMOVE ALL TRACES OF SPLASHED MATERIALS FROM ADJACENT SURFACES.
 - REMOVE PAINT DROPPINGS, SPOTS, STAINS, AND DIRT FROM FINISHED SURFACES.

CHANGE ORDER PROCEDURE:

- REFER TO SECTION 17 OF SIGNED MCSA: SEE PROFESSIONAL SERVICE AGREEMENT FOR MCSA.

RELATED DOCUMENTS AND COORDINATION

- GENERAL CARPENTRY, ELECTRICAL AND ANTENNA DRAWINGS ARE INTERRELATED. IN PERFORMANCE OF THE WORK, THE CONTRACTOR MUST REFER TO ALL DRAWINGS. ALL COORDINATION TO BE THE RESPONSIBILITY OF THE CONTRACTOR.

SHOP DRAWINGS

- CONTRACTOR SHALL SUBMIT SHOP DRAWINGS AS REQUIRED AND LISTED IN THESE SPECIFICATIONS TO THE OWNER FOR APPROVAL.
- ALL SHOP DRAWINGS SHALL BE REVIEWED, CHECKED AND CORRECTED BY CONTRACTOR PRIOR TO SUBMITTAL TO THE OWNER.

PRODUCTS AND SUBSTITUTIONS

- SUBMIT 3 COPIES OF EACH REQUEST FOR SUBSTITUTION. IN EACH REQUEST, IDENTIFY THE PRODUCT OR FABRICATION OR INSTALLATION METHOD TO BE REPLACED BY THE SUBSTITUTION. INCLUDE RELATED SPECIFICATION SECTION AND DRAWING NUMBERS AND COMPLETE DOCUMENTATION SHOWING COMPLIANCE WITH THE REQUIREMENTS FOR SUBSTITUTIONS.
- SUBMIT ALL NECESSARY PRODUCT DATA AND CUT SHEETS WHICH PROPERLY INDICATE AND DESCRIBE THE ITEMS, PRODUCTS AND MATERIALS BEING INSTALLED. THE CONTRACTOR SHALL, IF DEEMED NECESSARY BY THE OWNER, SUBMIT ACTUAL SAMPLES TO THE OWNER FOR APPROVAL IN LIEU OF CUT SHEETS.

QUALITY ASSURANCE

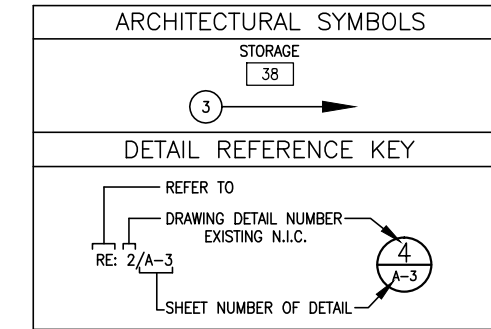
- ALL WORK SHALL BE IN ACCORDANCE WITH APPLICABLE LOCAL, STATE AND FEDERAL REGULATIONS. THESE SHALL INCLUDE, BUT NOT BE LIMITED TO THE APPLICABLE CODES SET FORTH BY THE LOCAL GOVERNING BODY. SEE "CODE COMPLIANCE" T-1.

ADMINISTRATION

- BEFORE THE COMMENCEMENT OF ANY WORK, THE CONTRACTOR WILL ASSIGN A PROJECT MANAGER WHO WILL ACT AS A SINGLE POINT OF CONTACT FOR ALL PERSONNEL INVOLVED IN THIS PROJECT. THIS PROJECT MANAGER WILL DEVELOP A MASTER SCHEDULE FOR THE PROJECT WHICH WILL BE SUBMITTED TO THE OWNER PRIOR TO THE COMMENCEMENT OF ANY WORK.
- SUBMIT A BAR TYPE PROGRESS CHART, NOT MORE THAN 3 DAYS AFTER THE DATE ESTABLISHED FOR COMMENCEMENT OF THE WORK ON THE SCHEDULE, INDICATING A TIME BAR FOR EACH MAJOR CATEGORY OR UNIT OF WORK TO BE PERFORMED AT THE SITE, PROPERLY SEQUENCED AND COORDINATED WITH OTHER ELEMENTS OF WORK AND SHOWING COMPLETION OF THE WORK SUFFICIENTLY IN ADVANCE OF THE DATE ESTABLISHED FOR SUBSTANTIAL COMPLETION OF THE WORK.
- PRIOR TO COMMENCING CONSTRUCTION, THE OWNER SHALL SCHEDULE AN ON-SITE MEETING WITH ALL MAJOR PARTIES. THIS WOULD INCLUDE, BUT NOT LIMITED TO, THE OWNER, PROJECT MANAGER, CONTRACTOR, LAND OWNER REPRESENTATIVE, LOCAL TELEPHONE COMPANY, TOWER ERECTION FOREMAN (IF SUBCONTRACTED).
- CONTRACTOR SHALL BE EQUIPPED WITH SOME MEANS OF CONSTANT COMMUNICATIONS, SUCH AS A MOBILE PHONE OR A BEEPER. THIS EQUIPMENT WILL NOT BE SUPPLIED BY THE OWNER. NOR WILL WIRELESS SERVICE BE ARRANGED.
- DURING CONSTRUCTION, CONTRACTOR MUST ENSURE THAT EMPLOYEES AND SUBCONTRACTORS WEAR HARD HATS AT ALL TIMES. CONTRACTOR WILL COMPLY WITH ALL WPCS SAFETY REQUIREMENTS IN THEIR AGREEMENT.
- PROVIDE WRITTEN DAILY UPDATES ON SITE PROGRESS TO THE OWNER.
- COMPLETE INVENTORY OF CONSTRUCTION MATERIALS AND EQUIPMENT IS REQUIRED PRIOR TO START OF CONSTRUCTION.
- NOTIFY THE OWNER/PROJECT MANAGER IN WRITING NO LESS THAN 48 HOURS IN ADVANCE OF CONCRETE POURS, TOWER ERECTIONS, AND EQUIPMENT CABINET PLACEMENTS.

INSURANCE AND BONDS

- CONTRACTOR, AT THEIR OWN EXPENSE, SHALL CARRY AND MAINTAIN, FOR THE DURATION OF THE PROJECT, ALL INSURANCE, AS REQUIRED AND LISTED, AND SHALL NOT COMMENCE WITH THEIR WORK UNTIL THEY HAVE PRESENTED AN ORIGINAL CERTIFICATE OF INSURANCE STATING ALL COVERAGES TO THE OWNER. REFER TO THE MASTER AGREEMENT FOR REQUIRED INSURANCE LIMITS.
- THE OWNER SHALL BE NAMED AS AN ADDITIONAL INSURED ON ALL POLICIES.
- CONTRACTOR MUST PROVIDE PROOF OF INSURANCE.



T-Mobile
 T-MOBILE NORTHEAST, LLC
 35 GRIFFIN ROAD SOUTH
 BLOOMFIELD, CT 06002
 OFFICE: (860) 692-7100
 FAX: (860) 692-7159

Transcend Wireless
 10 INDUSTRIAL AVE
 MAHWAH NJ 07430
 TRANSCEND@TRANSCENDWIRELESS.COM
 TELEPHONE: (201) 684-0066

FORESITE LLC
 SITE DESIGN SERVICES
 462 WALNUT STREET
 NEWTON, MA 02460
 TEL: 617-527-3031

SUBMITTALS		
DATE	DESCRIPTION	REVISION
05/4/16	ISSUED FOR REVIEW	A

DEPT.	DATE	APP'D	REVISIONS
RFE			
RF MAN.			
ZONING			
OPS			
CONSTR.			
SITE AC.			

PROJECT NO: CT11363D
 DRAWN BY: MS
 CHECKED BY: SM

PROFESSIONAL SEAL

THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF T-MOBILE. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED.

SITE NUMBER
CT11363D
 SITE NAME
 SBA SOUTH PLYMOUTH
 SITE ADDRESS
 170 MOUNT TOBE RD
 PLYMOUTH, CT 06872

SHEET TITLE
CONTRACTOR'S NOTES

SHEET NUMBER
N-1

