



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

March 20, 2018

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

Notice of Exempt Modification
26 Mell Road
Lisbon, CT 06351
Sprint Site #: CT23XC404_DO Macro Upgrade
N 41 35 27.72
W -72 1 1.06

Dear Ms. Bachman:

Sprint currently maintains antennas at the 173-foot level of the existing 195-foot Monopole Tower at 26 Mell Road in Lisbon, CT. The tower is owned by SBA Properties, LLC. The property is owned by the Stanley Wildowsky. Sprint now intends to add (3) newer technology cell antennas at the 173-foot level of the tower. The proposed full scope of work is as follows:

Remove: N/A

Remove and Replace: N/A

Install:

- (3) Commscope - DT465B-2XR – Panel Antennas
- (3) ALU 800 MHz RRHs
- (3) ALU TD-RRH8x20-25 RRUs
- (1) Handrail kit/V-brace kit/tie back kit
- (1) 1-1/4" line

Existing Equipment to Remain (Including entitlements):

- (3) RFS - APXVSP18-C-A20 – Panel Antennas
- (3) Alcatel Lucent 1900 MHz RRUs
- (3) Alcatel Lucent 800 MHz RRUs
- (3) Alcatel Lucent 800 MHz Filters
- (4) RFS ACU-A20-N
- (3) Sector Frames
- (3) 1-1/4" lines



This facility was approved prior to the Council's jurisdiction, on January 5, 1999, by the Lisbon Planning & Zoning Commission. Special Permit was granted to construct a 195' steel monopole. Conditions referred to notes on the initial drawings which show fencing materials to be of galvanized steel with black vinyl coating and other installation parameters. The drawings show five carriers, each with support platforms and 12 panel antennas per rad. No additional constraints were set forth. This modification complies with all conditions.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16.50j-72(b)(2). In accordance with R.C.S.A. § 16.50j-73, a copy of this letter is being sent to the Town of Lisbon's First Selectman, Thomas W. Sparkman, Zoning Enforcement Officer, Carl Brown, and to the property owner, Stanley Wildowsky. (Separate notice is not being sent to tower owner, as it belongs to SBA.)

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

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

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

Sincerely,

Kri Pelletier

Property Specialist

SBA COMMUNICATIONS CORPORATION

134 Flanders Rd., Suite 125

Westborough, MA 01581

508.251.0720 x3804 + T

508.366.2610 + F

203.446.7700 + C

kpelletier@sbsite.com

Attachments

- cc: Thomas Sparkman, First Selectman / with attachments
Town of Lisbon, 1 Newent Road Lisbon, CT 06351
Carl Brown, Zoning Officer / with attachments
Town of Lisbon, 1 Newent Road Lisbon, CT 06351
Stanley Wildowsky / with attachments
20 Nygren Rd., Lisbon, CT 06351 (SBA's Records)



POWER DENSITY

SPRINT Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	RFS APXVSPP18-C-A20	Make / Model:	RFS APXVSPP18-C-A20	Make / Model:	RFS APXVSPP18-C-A20
Gain:	13.4 / 15.9 dBd	Gain:	13.4 / 15.9 dBd	Gain:	13.4 / 15.9 dBd
Height (AGL):	173 feet	Height (AGL):	173 feet	Height (AGL):	173 feet
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	8	Channel Count	8	Channel Count	8
Total TX Power(W):	180 Watts	Total TX Power(W):	180 Watts	Total TX Power(W):	180 Watts
ERP (W):	6,662.27	ERP (W):	6,662.27	ERP (W):	6,662.27
Antenna A1 MPE%	0.94 %	Antenna B1 MPE%	0.94 %	Antenna C1 MPE%	0.94 %
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Commscope DT465B-2XR	Make / Model:	Commscope DT465B-2XR	Make / Model:	Commscope DT465B-2XR
Gain:	15.05 / 13.35 dBd	Gain:	15.05 / 13.35 dBd	Gain:	15.05 / 13.35 dBd
Height (AGL):	173 feet	Height (AGL):	173 feet	Height (AGL):	173 feet
Frequency Bands	2500 MHz (BRS) / 850 MHz	Frequency Bands	2500 MHz (BRS) / 850 MHz	Frequency Bands	2500 MHz (BRS) / 850 MHz
Channel Count	10	Channel Count	10	Channel Count	10
Total TX Power(W):	200 Watts	Total TX Power(W):	200 Watts	Total TX Power(W):	200 Watts
ERP (W):	5,983.32	ERP (W):	5,983.32	ERP (W):	5,983.32
Antenna A2 MPE%	0.89 %	Antenna B2 MPE%	0.89 %	Antenna C2 MPE%	0.89 %

Site Composite MPE%	
Carrier	MPE%
SPRINT – Max per sector	1.82 %
Nextel	0.05 %
MetroPCS	0.25 %
Verizon Wireless	2.83 %
T-Mobile	1.13 %
Site Total MPE %:	6.08 %

SPRINT Sector A Total:	1.82 %
SPRINT Sector B Total:	1.82 %
SPRINT Sector C Total:	1.82 %
Site Total:	6.08 %

SPRINT_ Frequency Band / Technology (All Sectors)	# 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
Sprint 850 MHz CDMA	1	437.55	173	0.58	850 MHz	567	0.10%
Sprint 1900 MHz (PCS) CDMA	5	622.47	173	4.16	1900 MHz (PCS)	1000	0.42%
Sprint 1900 MHz (PCS) LTE	2	1,556.18	173	4.16	1900 MHz (PCS)	1000	0.42%
Sprint 2500 MHz (BRS) LTE	8	639.78	173	6.84	2500 MHz (BRS)	1000	0.68%
Sprint 850 MHz LTE	2	432.54	173	1.16	850 MHz	567	0.20%
						Total:*	1.82%

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

ORIGIN D:BBFA (508) 251-0720
KRI PELLETIER
SBA COMMUNICATIONS CORPORATION
134 FLENDERS RD
SUITE 125
WESTBOROUGH, MA 01581
UNITED STATES US

SHIP DATE: 20MAR18
ACT/MGT: 1.00 LB
CAD: 105843304NET3980

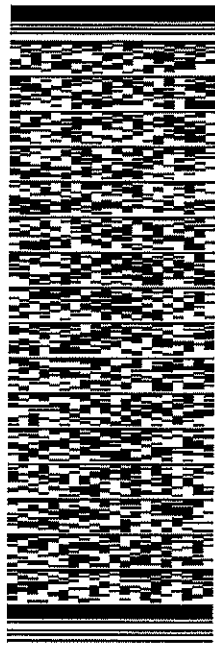
BILL SENDER

TO **CARL BROWN, ZONING OFFICER**
TOWN OF LISBON
1 NEWENT ROAD

LISBON CT 06351

REF: 10-55-92009-6089

PO: DEPT:



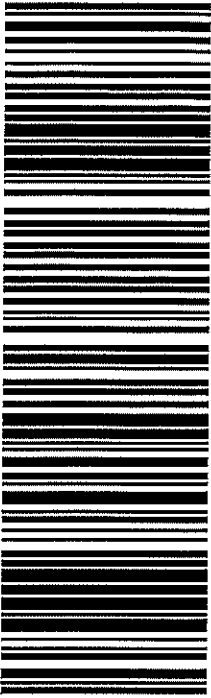
J181118012601uv

552J1107F5/DCA5

TRK# 7717 8509 8960
0201

WED - 21 MAR 12:00P
PRIORITY OVERNIGHT

EB GONA
CT-US **BDL**
06351



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Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com. FedEx will not be responsible for any claim in excess of \$100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim. Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental, consequential, or special is limited to the greater of \$100 or the authorized declared value. Recovery cannot exceed actual documented loss. Maximum for items of extraordinary value is \$1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

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SUITE 123
WESTBOROUGH, MA 01581
UNITED STATES US

SHIP DATE: 20MAR18
ACTWGT: 1.00 LB
CAD: 105843304INET3980

BILL SENDER

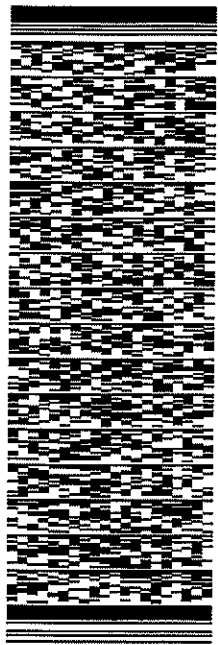
TO **THOMAS SPARKMAN, FIRST SELECTMAN**
TOWN OF LISBON
1 NEWENT ROAD

LISBON CT 06351

REF: 10-56-92009-6089

INV: (508) 251-0720
PO: DEPT:

552J1107F5/DCA5

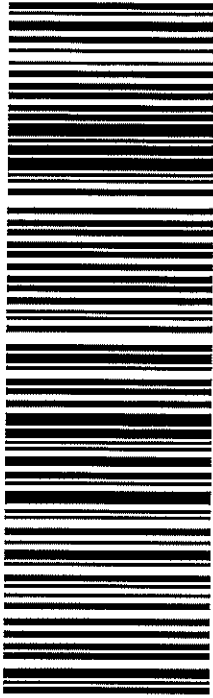


J181118012691UV

TRK# 7717 8508 5503
0901

WED - 21 MAR 12:00P
PRIORITY OVERNIGHT

EB GONA
06351
CT-US BDL



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SBA COMMUNICATIONS CORPORATION
134 FLANDERS RD
SUITE 125
WESTBOROUGH, MA 01581
UNITED STATES US

SHIP DATE: 20MAR18
ACTWGT: 1.00 LB
CAD: 105843304/NET3980
BILL SENDER

TO **STANLEY WILDOWSKY**

20 NYGREN ROAD

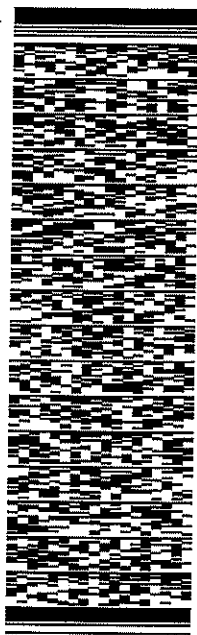
LISBON CT 06351

(508) 251-0720

REF: 10-56-92009-5089

PO:

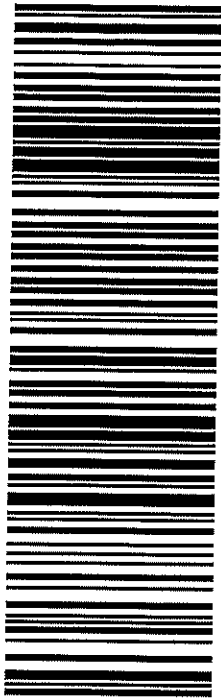
DEPT:



J18111001259102

TRK# 7717 8507 0474
0201

WED - 21 MAR 12:00P
PRIORITY OVERNIGHT



EB GONA

06351
CT-US BDL

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Property Information

Owner	WILDOWSKY STANLEY JR/ C/O SBA TOWERS INC
Address	26 MELL RD
Mailing Address	8051 CONGRESS AVE <small>This is SBA's corporate address</small> SBA records show: 20 Nygren Rd., Lisbon, CT BOCA RATON, FL 33487
Land Use	- Cell Tower
Land Class	I

Census Tract	
Neighborhood	C2
Zoning	R-60
Acreage	0.11
Utilities	
Lot Setting/ Desc	/ Level

Photo



PARCEL VALUATIONS (Assessed value = 70% of Appraised Value)

	Appraised	Assessed
Buildings	0	0
Outbuildings	28680	20080
Improvements	28680	20080
Extras	0	0
Land	121250	84880
Total	149930	104960
Previous		

Construction Details

Year Built	
Stories	
Building Style	Outbuildings
Building Use	Vacant
Building Condition	
Total Rooms	
Bedrooms	
Full Bathrooms	0
Half Bathrooms	
Bath Style	
Kitchen Style	
Roof Style	
Roof Cover	

EXTERIOR WALLS:

Primary	
Secondary	

INTERIOR WALLS:

Primary	
Secondary	

FLOORS:

Primary	
Secondary	

HEATING/AC:

Heating Type	
Heating Fuel	
AC Type	

BUILDING AREA:

Effective Building Area	
Gross Building Area	
Total Living Area	

SALES HISTORY:

Sale Date	9/27/1995
Sale Price	0
Book/ Page	77/11



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

SPRINT Existing Facility

Site ID: CT23XC404

Lisbon
26 Mell Road
Lisbon, CT 06351

March 1, 2018

EBI Project Number: 6218001724

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	6.08 %



March 1, 2018

SPRINT

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

Emissions Analysis for Site: **CT23XC404 – Lisbon**

EBI Consulting was directed to analyze the proposed SPRINT facility located at **26 Mell Road, Lisbon, CT**, for the purpose of determining whether the emissions from the Proposed SPRINT Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01 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 population 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 population 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.

General population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The general population exposure limits for the 850 MHz Band is approximately $567 \mu\text{W}/\text{cm}^2$. The general population exposure limit for the 1900 MHz (PCS) and 2500 MHz (BRS) 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 SPRINT Wireless antenna facility located at **26 Mell Road, Lisbon, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since SPRINT is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

- 1) 1 CDMA channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.
- 2) 2 LTE channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.
- 3) 5 CDMA channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 16 Watts per Channel.
- 4) 2 LTE channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 5) 8 LTE channels (2500 MHz (BRS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.



- 6) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 7) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 8) The antennas used in this modeling are the **RFS APXVSP18-C-A20 and the Commscope DT465B-2XR** for transmission in the 850 MHz, 1900 MHz (PCS) and 2500 MHz (BRS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 9) The antenna mounting height centerlines of the proposed antennas are **173 feet** above ground level (AGL) for **Sector A**, **173 feet** above ground level (AGL) for **Sector B** and **173 feet** above ground level (AGL) for Sector C.
- 10) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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



SPRINT Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	RFS APXVSP18-C-A20	Make / Model:	RFS APXVSP18-C-A20	Make / Model:	RFS APXVSP18-C-A20
Gain:	13.4 / 15.9 dBd	Gain:	13.4 / 15.9 dBd	Gain:	13.4 / 15.9 dBd
Height (AGL):	173 feet	Height (AGL):	173 feet	Height (AGL):	173 feet
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	8	Channel Count	8	Channel Count	8
Total TX Power(W):	180 Watts	Total TX Power(W):	180 Watts	Total TX Power(W):	180 Watts
ERP (W):	6,662.27	ERP (W):	6,662.27	ERP (W):	6,662.27
Antenna A1 MPE%	0.94 %	Antenna B1 MPE%	0.94 %	Antenna C1 MPE%	0.94 %
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Commscope DT465B-2XR	Make / Model:	Commscope DT465B-2XR	Make / Model:	Commscope DT465B-2XR
Gain:	15.05 / 13.35 dBd	Gain:	15.05 / 13.35 dBd	Gain:	15.05 / 13.35 dBd
Height (AGL):	173 feet	Height (AGL):	173 feet	Height (AGL):	173 feet
Frequency Bands	2500 MHz (BRS) / 850 MHz	Frequency Bands	2500 MHz (BRS) / 850 MHz	Frequency Bands	2500 MHz (BRS) / 850 MHz
Channel Count	10	Channel Count	10	Channel Count	10
Total TX Power(W):	200 Watts	Total TX Power(W):	200 Watts	Total TX Power(W):	200 Watts
ERP (W):	5,983.32	ERP (W):	5,983.32	ERP (W):	5,983.32
Antenna A2 MPE%	0.89 %	Antenna B2 MPE%	0.89 %	Antenna C2 MPE%	0.89 %

Site Composite MPE%	
Carrier	MPE%
SPRINT – Max per sector	1.82 %
Nextel	0.05 %
MetroPCS	0.25 %
Verizon Wireless	2.83 %
T-Mobile	1.13 %
Site Total MPE %:	6.08 %

SPRINT Sector A Total:	1.82 %
SPRINT Sector B Total:	1.82 %
SPRINT Sector C Total:	1.82 %
Site Total:	6.08 %

SPRINT _ Frequency Band / Technology (All Sectors)	# 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
Sprint 850 MHz CDMA	1	437.55	173	0.58	850 MHz	567	0.10%
Sprint 1900 MHz (PCS) CDMA	5	622.47	173	4.16	1900 MHz (PCS)	1000	0.42%
Sprint 1900 MHz (PCS) LTE	2	1,556.18	173	4.16	1900 MHz (PCS)	1000	0.42%
Sprint 2500 MHz (BRS) LTE	8	639.78	173	6.84	2500 MHz (BRS)	1000	0.68%
Sprint 850 MHz LTE	2	432.54	173	1.16	850 MHz	567	0.20%
						Total:*	1.82%

*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 population exposure to RF Emissions.

The anticipated maximum composite contributions from the SPRINT facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

SPRINT Sector	Power Density Value (%)
Sector A:	1.82 %
Sector B:	1.82 %
Sector C:	1.82 %
SPRINT Maximum Total (per sector):	1.82 %
Site Total:	6.08 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **6.08 %** of the allowable FCC established general population 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 195 ft Nudd Corporation Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT00167-S

Customer Site Name: Lisbon

Carrier Name: Sprint Nextel

Carrier Site ID / Name: CT23XC404 / Lisbon

Site Location: 26 Mell Road

Lisbon, Connecticut

New London County

Latitude: 41.591033

Longitude: -72.016960

Analysis Result:

Max Structural Usage: 92.0% [Pass]

Max Foundation Usage: 47.0% [Pass]

Report Prepared by: Tawfeeq.alajaj



Introduction

The purpose of this report is to summarize the analysis results on the 195 ft Nudd Corporation 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	Fred A. Nudd Corporation Project #6531, dated February 4, 1999. Semaan Engineering solutions site #CT00167S Modification package, dated May 7, 2002.
Foundation Drawing	Fred A. Nudd Corporation Project #6531, dated February 4, 1999.
Geotechnical Report	Jaworski Geotech Inc., project #C98343G, dated August 5, 1998.

Analysis Criteria

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

Wind Speed Used in the Analysis:	Ultimate Design Wind Speed $V_{ult} = 135.0$ mph (3-Sec. Gust)/ Nominal Design Wind Speed $V_{asd} = 105.0$ mph (3-Sec. Gust)
Wind Speed with Ice:	50 mph (3-Sec. Gust) with 3/4" radial ice concurrent
Operational Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	ANSI/TIA/EIA 222-G / 2012 IBC / 2016 Connecticut State Building Code
Exposure Category:	C
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft
Seismic Parameters:	$S_S = 0.169$, $S_1 = 0.06$

This structural analysis is based upon the tower being classified as a Structure Class II; however, if a different classification is required subsequent to the date hereof, the tower classification will be changed to meet such requirement and a new structural analysis will be run.

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	195.0	3	Ericsson - AIR 21, B2A B4P - Panel	(3) T-Arms w/ Walkways	(12) 1 5/8" (1) 1 5/8" Fiber	T-Mobile
2		3	Ericsson - AIR 21, B4A B2P - Panel			
3		3	Commscope - LNX-6515DS - Panel			
4		3	Ericsson KRY 112 144/1			
5		3	Ericsson S11B12			
6	173.0	3	RFS - APXVSP18-C-A20 - Panel	(3) Sector Frames	(3) 1 1/4"	Sprint Nextel
7		3	Alcatel Lucent 1900MHz RRU			
8		3	Alcatel Lucent 800 MHz RRU			
9		3	Alcatel Lucent 800 MHz Filter			
10		4	RFS ACU-A20-N			
11	159.0	6	Commscope - SBNHH-1D65B - Panel	Low Profile Platform	(10) 1 5/8" (2) 1 5/8" Hybrids	Verizon
12		3	Antel - BXA-70063-6CF-2 - Panel			
13		3	Antel - BXA-70080-4BF - Panel			
14		3	Alcatel Lucent B66 RRH4X45 AWS RRH			
15		3	Alcatel Lucent B25 RRH4X30 RRH			
16		6	RFs FD9R6004/2CL-3CL Diplexer			
17		2	Rfs Celwave DB-T1-6Z-8AB-0Z ODU			
-	153.0	3	-	Standoff Mounts	-	-
18	143.0	6	Kathrein - 742 351 - Panel	(3) T-Arms	(12) 1 5/8" (1) 3/8"	Metro PCS

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
6	173.0	3	Commscope - DT465B-2XR - Panel	(3) Sector Frame add handrail kit, add v-brace kit, and add (1/sector) tie-back kit	(4) 1-1/4" Fiber	Sprint Nextel
7		3	RFS - APXVSP18-C-A20 - Panel			
8		4	RFS ACU-A20-N RET			
9		3	ALU 1900 MHz RRH			
10		6	ALU 800 MHz RRH			
11		3	ALU 800 MHz Filter			
12		3	ALU TD-RRH8x20-25 RRUs			

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

Analysis Results

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

	Pole shafts	Anchor Bolts	Base Plate
Max. Usage:	81.6%	90.0%	92.0%
Pass/Fail	Pass	Pass	Pass

Foundations

	Moment (Kip-Ft)	Shear (Kips)
Original Design Reactions	6014.0	46.0
Analysis Reactions	5979.5	45.4
Factored Reactions*	8118.9	62.1
% of Design Reactions	73.6%	73.2%

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

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

Operational Condition (Rigidity):

Operational characteristics of the tower are found to be within the limits prescribed by ANSI/TIA/EIA 222-G for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 1.4022 degrees under the operational wind speed as specified in the Analysis Criteria.

Conclusions

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

Antenna Mount Note:

The new proposed mount contributes **2%** of additional stress to the tower structure.

Standard Conditions

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

Usage Diagram - Max Ratio 70.72% at 0.0ft

Structure: CT00167-S-SBA
Site Name: Lisbon
Height: 195.00 (ft)
Base Elev: 0.000 (ft)

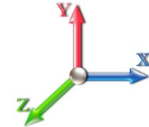
Code: EIA/TIA-222-G
Exposure: C
Gh: 1.1

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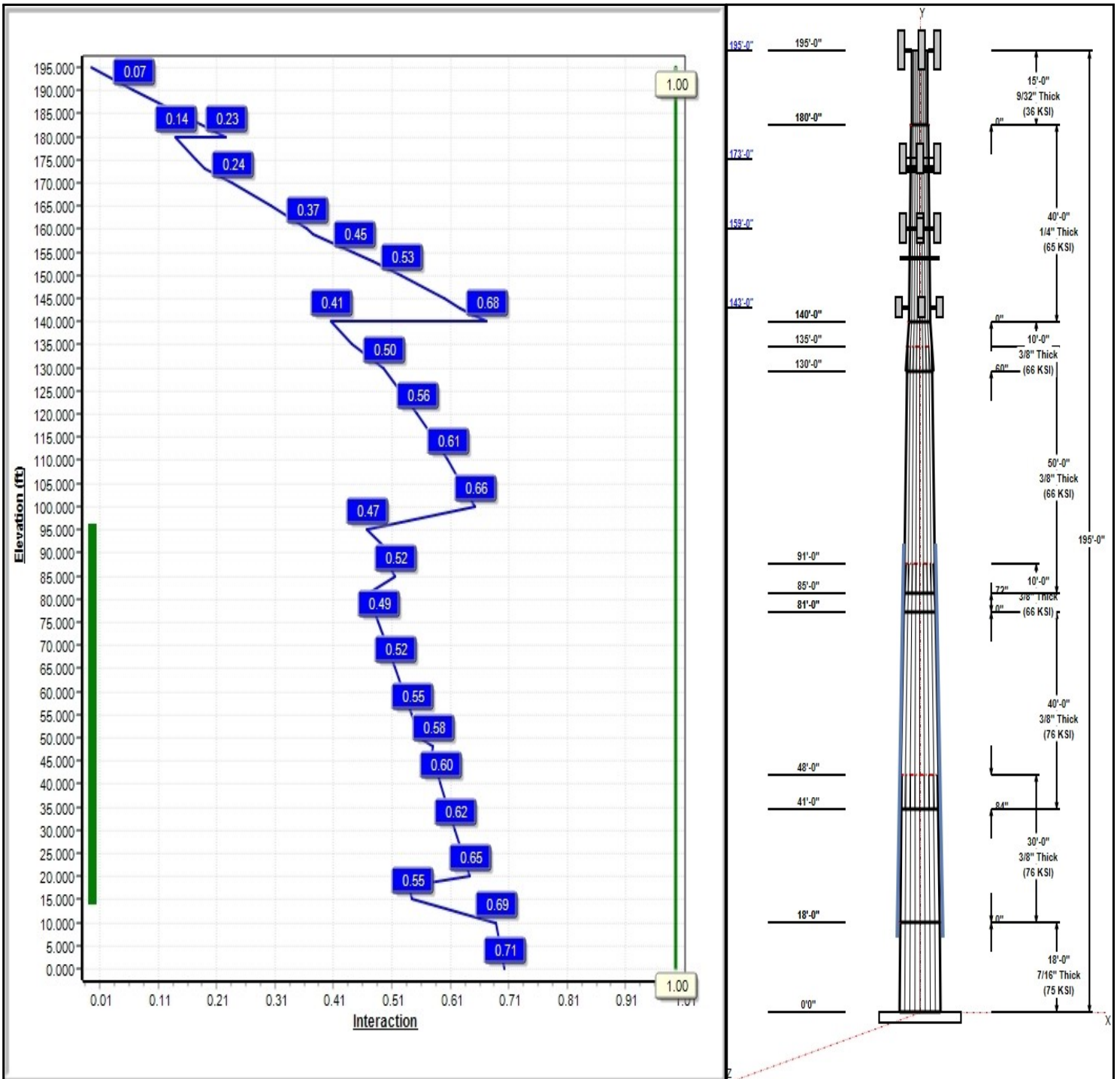
Dead Load Factor: 1.20
Wind Load Factor: 1.60

Load Case : 1.2D + 1.6W 105 mph Wind



Iterations: 25

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Structure: CT00167-S-SBA

Type: Custom
Site Name: Lisbon
Height: 195.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.00000

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Shaft Properties

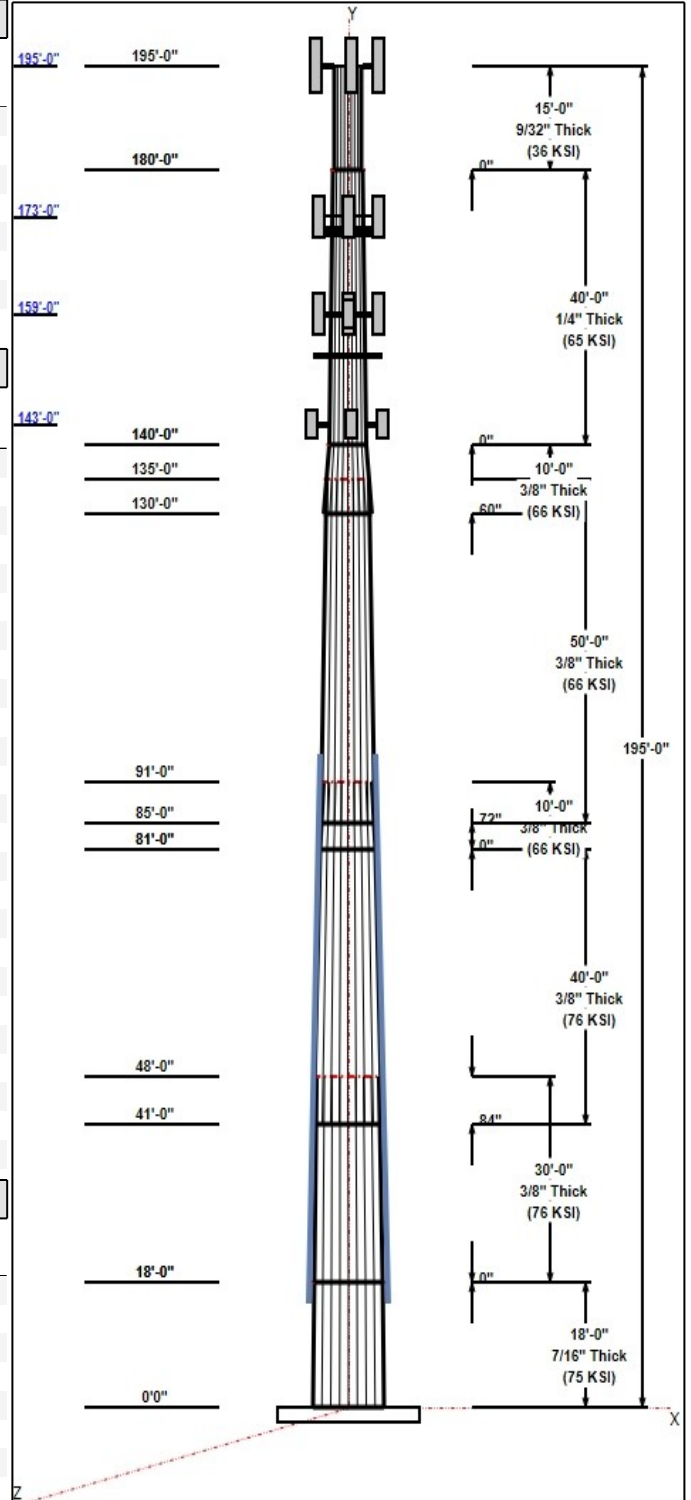
Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	18.00	60.23	64.50	0.438		0.23750	75
2	30.00	53.10	60.23	0.375	Butt	0.23750	76
3	40.00	46.01	55.51	0.375	Slip	0.23750	76
4	10.00	43.64	46.01	0.375	Butt	0.23750	66
5	50.00	33.94	45.81	0.375	Slip	0.23750	66
6	10.00	33.50	35.88	0.375	Slip	0.23750	66
7	40.00	24.00	33.50	0.250	Butt	0.23750	65
8	15.00	24.00	24.00	0.281	Butt	0.00000	36

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
195.00	195.00	3	T-Arm (Flat)	T-Mobile
195.00	195.00	3	AIR 21, 1.3M, B2A B4P	T-Mobile
195.00	195.00	3	AIR 21, 1.3M, B4A B2P	T-Mobile
195.00	195.00	3	KRY 112 144/1	T-Mobile
195.00	195.00	3	LNx-6515DS-A1M	T-Mobile
195.00	195.00	3	S11B12	T-Mobile
173.00	173.00	3	Sector Frame-Pipe/Rod	Sprint Nextel
173.00	173.00	3	APXVSPP18-C-A20	Sprint Nextel
173.00	173.00	3	ALU 1900 MHz RRH	Sprint Nextel
173.00	173.00	6	ALU 800 MHz RRH	Sprint Nextel
173.00	173.00	3	ALU 800 MHz Filter	Sprint Nextel
173.00	173.00	4	RFS ACU-A20-N RET	Sprint Nextel
173.00	173.00	3	DT465B-2XR	Sprint Nextel
173.00	173.00	3	ALU TD-RRH8x20-25	Sprint Nextel
159.00	159.00	1	Low Profile Platform-flat	Verizon
159.00	159.00	6	SBNHH-1D65B	Verizon
159.00	159.00	3	BXA-70080-4BF	Verizon
159.00	159.00	6	RFs FD9R6004/2CL-3CL	Verizon
159.00	159.00	2	Rfs Celwave	Verizon
159.00	159.00	3	BXA-70063-6CF-2	Verizon
159.00	159.00	3	Alcatel Lucent B66	Verizon
159.00	159.00	3	Alcatel Lucent B25	Verizon
153.00	153.00	3	Standoff Mount	Unknown
143.00	143.00	3	T-Arm (Flat)	Metro PCS
143.00	143.00	6	742 351	Metro PCS

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	195.00	Inside	1 5/8" Coax	T-Mobile
0.00	195.00	Inside	1 5/8" Fiber	T-Mobile
0.00	195.00	Outside	Safety Cable	
0.00	195.00	Outside	Step bolts (ladder)	
0.00	173.00	Inside	1-1/4" Fiber	Sprint Nextel
0.00	159.00	Inside	1 5/8" Coax	Verizon
0.00	159.00	Inside	1 5/8" Hybrids	Verizon
0.00	143.00	Inside	1 5/8" Coax	Metro PCS
0.00	143.00	Inside	3/8" Coax	Metro PCS
90.00	105.00	Outside	Reinforcing channels	
60.00	90.00	Outside	Reinforcing channels	
15.00	60.00	Outside	Reinforcing channels	



Structure: CT00167-S-SBA

Type: Custom
Site Name: Lisbon
Height: 195.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.00000

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Anchor Bolts

Qty	Specifications	Grade (ksi)	Arrangement
26	2.00" A687	105.0	Radial

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
1.7500	52.0	50.0	Round

Reactions

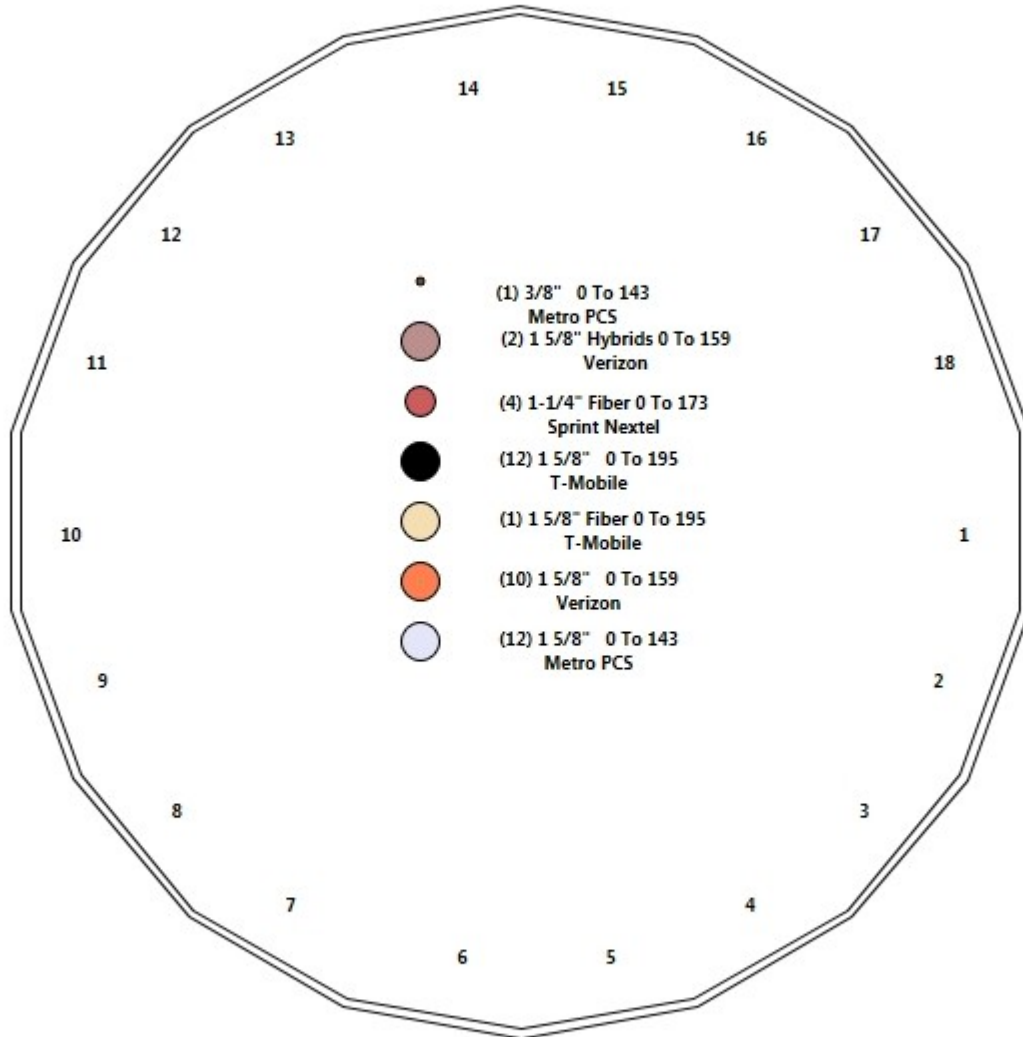
Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 105 mph Wind	5979.5	45.4	62.4
0.9D + 1.6W 105 mph Wind	5914.9	45.4	46.8
1.2D + 1.0Di + 1.0Wi 50 mph Wind	1457.5	11.2	92.6
1.2D + 1.0E	151.1	1.2	62.4
0.9D + 1.0E	149.3	1.2	46.8
1.0D + 1.0W 60 mph Wind	1213.6	9.3	52.0

Structure: CT00167-S-SBA - Coax Line Placement

Type: Monopole
Site Name: Lisbon
Height: 195.00 (ft)

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Shaft Properties

Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	18.000	0.4375	75		0.00	5,267
2	18	30.000	0.3750	76	Flange	0.00	6,839
3	18	40.000	0.3750	76	Slip	84.00	8,163
4	18	10.000	0.3750	66	Flange	0.00	1,800
5	18	50.000	0.3750	66	Slip	72.00	7,999
6	18	10.000	0.3750	66	Slip	60.00	1,390
7	18	40.000	0.2500	65	Flange	0.00	3,078
8	R	15.000	0.2813	36	Flange	0.00	1,081
Total Shaft Weight:							35,616

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	64.50	0.00	88.96	46124.76	24.59	147.43	60.23	18.00	83.02	37493.3	22.86	137.6	0.237500
2	60.23	18.00	71.23	32238.00	26.91	160.60	53.10	48.00	62.75	22040.7	23.56	141.6	0.237500
3	55.51	41.00	65.63	25206.75	24.69	148.03	46.01	81.00	54.32	14293.5	20.22	122.7	0.237500
4	46.01	81.00	54.32	14293.59	20.22	122.70	43.64	91.00	51.49	12176.1	19.11	116.3	0.237500
5	45.81	85.00	54.08	14106.49	20.13	122.17	33.94	135.00	39.95	5685.11	14.55	90.50	0.237500
6	35.88	130.0	42.25	6727.61	15.46	95.67	33.50	140.00	39.43	5465.67	14.34	89.33	0.237500
7	33.50	140.0	26.38	3685.19	22.22	134.00	24.00	180.00	18.84	1343.00	15.52	96.00	0.237500
8	24.00	180.0	21.18	1505.17	13.63	85.32	24.00	195.00	21.18	1505.17	13.63	85.32	0.000000

Additional Steel

Elev From (ft)	Elev To (ft)	Qty	Description	Fy (ksi)	Fu (ksi)	Offset (in)	Intermediate Connectors Description	Spacing (in)	Termination Connectors Description	Spacing (in)	Lower Qty	Upper Qty
15.00	95.00	6	PLT C6x10.5 (no hole)	65	80	1.00	5/8" Hollo Bolt	0.00	AJM20&sleeve	24.00	3	3

Load Summary

Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Discrete Appurtenances

No.	Elev (ft)	Description	Qty	No Ice			Ice			Hor. Ecc. (ft)	Vert Ecc (ft)
				Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor		
1	195.00	T-Arm (Flat)	3	400.00	10.00	0.75	686.66	18.958	0.75	0.00	0.00
2	195.00	AIR 21, 1.3M, B2A B4P	3	91.50	6.09	0.86	265.77	7.218	0.86	0.00	0.00
3	195.00	AIR 21, 1.3M, B4A B2P	3	90.40	6.09	0.86	264.67	7.218	0.87	0.00	0.00
4	195.00	KRY 112 144/1	3	11.00	0.41	0.50	22.07	0.898	0.50	0.00	0.00
5	195.00	LNX-6515DS-A1M	3	49.80	11.47	0.80	285.45	14.824	0.80	0.00	0.00
6	195.00	S11B12	3	51.00	2.83	0.50	122.45	3.520	0.50	0.00	0.00
7	173.00	Sector Frame-Pipe/Rod	3	600.00	21.00	0.75	1075.85	31.707	0.75	0.00	0.00
8	173.00	APXVSP18-C-A20	3	57.00	8.02	0.83	232.34	10.854	0.83	0.00	0.00
9	173.00	ALU 1900 MHz RRH	3	44.00	3.80	0.50	154.73	5.210	0.50	0.00	0.00
10	173.00	ALU 800 MHz RRH	6	53.00	2.49	0.50	128.02	3.650	0.50	0.00	0.00
11	173.00	ALU 800 MHz Filter	3	10.00	0.42	0.50	33.46	0.751	0.50	0.00	0.00
12	173.00	RFS ACU-A20-N RET	4	1.00	0.14	0.50	5.36	0.441	0.50	0.00	0.00
13	173.00	DT465B-2XR	3	58.00	9.10	0.83	292.07	10.461	0.83	0.00	0.00
14	173.00	ALU TD-RRH8x20-25 RRUs	3	70.00	4.05	0.69	182.39	4.876	0.69	0.00	0.00
15	159.00	Low Profile Platform-flat	1	1200.00	25.00	1.00	2253.25	46.065	1.00	0.00	0.00
16	159.00	SBNHH-1D65B	6	40.00	8.16	0.83	244.55	9.468	0.83	0.00	0.00
17	159.00	BXA-70080-4BF	3	12.00	3.56	0.88	100.88	5.417	0.89	0.00	0.00
18	159.00	RFs FD9R6004/2CL-3CL Diplexer	6	3.10	0.36	1.00	11.17	0.806	1.00	0.00	0.00
19	159.00	Rfs Celwave DB-T1-6Z-8AB-0Z ODU	2	18.90	4.80	0.71	163.62	5.679	0.71	0.00	0.00
20	159.00	BXA-70063-6CF-2	3	17.00	7.57	0.73	192.42	8.838	0.73	0.00	0.00
21	159.00	Alcatel Lucent B66 RRH4X45 AWS	3	56.80	2.54	0.82	141.54	3.239	0.82	0.00	0.00
22	159.00	Alcatel Lucent B25 RRH4X30 RRH	3	51.00	2.14	0.81	109.08	2.752	0.81	0.00	0.00
23	153.00	Standoff Mount	3	350.00	5.00	0.75	643.78	8.497	0.75	0.00	0.00
24	143.00	T-Arm (Flat)	3	400.00	10.00	0.75	677.90	18.684	0.75	0.00	0.00
25	143.00	742 351	6	29.80	5.38	0.61	124.64	7.357	0.61	0.00	0.00
Totals:			85	9,255.70			22,102.80				

Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
0.00	195.00	(12) 1 5/8" Coax	0.00	Inside
0.00	195.00	(1) 1 5/8" Fiber	0.00	Inside
0.00	195.00	(1) Safety Cable	0.00	Outside
0.00	195.00	(1) Step bolts (ladder)	0.00	Outside
0.00	173.00	(4) 1-1/4" Fiber	0.00	Inside
0.00	159.00	(10) 1 5/8" Coax	0.00	Inside
0.00	159.00	(2) 1 5/8" Hybrids	0.00	Inside
0.00	143.00	(12) 1 5/8" Coax	0.00	Inside
0.00	143.00	(1) 3/8" Coax	0.00	Inside
90.00	105.00	(2) Reinforcing channels	0.00	Outside
60.00	90.00	(2) Reinforcing channels	2.00	Outside
15.00	60.00	(2) Reinforcing channels	2.00	Outside

Shaft Section Properties

Structure: CT00167-S-SBA

Code: EIA/TIA-222-G

12/6/2017

Site Name: Lisbon

Exposure: C

Height: 195.00 (ft)

Crest Height: 0.00

Base Elev: 0.000 (ft)

Site Class: B - Competent Rock

Gh: 1.1

Topography: 1

Struct Class: II

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Increment Length: 5 (ft)

Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fy (ksi)	Fb (ksi)	Weight (lb)	Additional Reinforcing			
											Area (in^2)	Ixp (in^4)	Iyp (in^4)	Weight (lb)
0.00		0.4375	64.500	88.956	46124.8	24.59	147.43	75	81	0.0				
5.00		0.4375	63.313	87.307	43607.0	24.11	144.71	75	82	1499.5				
10.00		0.4375	62.125	85.658	41182.6	23.63	142.00	75	83	1471.4				
15.00	RB1	0.4375	60.938	84.009	38849.8	23.15	139.29	75	83	1443.3	18.54	9762.2	9762.2	246.0
18.00	Top - Section 1	0.4375	60.225	83.019	37493.3	22.86	137.66	75	84	852.5	18.54	9549.1	9549.1	147.6
18.00	Bot - Section 2	0.3750	60.225	71.234	32238.0	26.67	160.60	76	79					
20.00		0.3750	59.750	70.669	31476.5	26.68	159.33	76	79	482.9	18.54	9408.4	9408.4	98.4
25.00		0.3750	58.563	69.255	29625.4	26.13	156.17	76	80	1190.3	18.54	9061.0	9061.0	246.0
30.00		0.3750	57.375	67.842	27848.4	25.57	153.00	76	81	1166.3	18.54	8720.2	8720.2	246.0
35.00		0.3750	56.188	66.428	26143.9	25.01	149.83	76	81	1142.2	18.54	8385.9	8385.9	246.0
40.00		0.3750	55.000	65.015	24510.4	24.45	146.67	76	82	1118.2	18.54	8058.2	8058.2	246.0
41.00	Bot - Section 3	0.3750	54.763	64.732	24192.1	24.34	146.03	76	82	220.8	18.54	7993.5	7993.5	49.2
45.00		0.3750	53.813	63.602	22946.4	23.89	143.50	76	83	1758.9	18.54	7939.1	7939.1	196.8
48.00	Top - Section 2	0.3750	53.850	63.646	22994.7	23.91	143.60	76	83	1299.0	18.54	7747.1	7747.1	147.6
50.00		0.3750	53.375	63.081	22387.4	23.69	142.33	76	83	431.2	18.54	7620.3	7620.3	98.4
55.00		0.3750	52.188	61.668	20916.0	23.13	139.17	76	84	1061.2	18.54	7308.1	7308.1	246.0
60.00		0.3750	51.000	60.254	19510.6	22.57	136.00	76	85	1037.2	18.54	7002.4	7002.4	246.0
65.00		0.3750	49.813	58.841	18169.6	22.01	132.83	76	86	1013.1	18.54	6703.2	6703.2	246.0
70.00		0.3750	48.625	57.427	16891.5	21.45	129.67	76	87	989.1	18.54	6410.6	6410.6	246.0
75.00		0.3750	47.438	56.014	15674.7	20.89	126.50	76	87	965.0	18.54	6124.4	6124.4	246.0
80.00		0.3750	46.250	54.601	14517.9	20.34	123.33	76	88	941.0	18.54	5844.9	5844.9	246.0
81.00	Top - Section 3	0.3750	46.013	54.318	14293.6	20.22	122.70	76	88	185.3	18.54	5789.7	5789.7	49.2
81.00	Bot - Section 4	0.3750	46.013	54.318	14293.6	20.22	122.70	66	79					
85.00	Bot - Section 5	0.3750	45.063	53.187	13419.4	19.78	120.17	66	79	731.6	18.54	5571.8	5571.8	196.8
90.00		0.3750	43.875	51.774	12377.8	19.22	117.00	66	80	1801.0	18.54	5472.9	5472.9	246.0
91.00	Top - Section 4	0.3750	44.388	52.384	12820.5	19.46	118.37	66	80	354.4	18.54	5419.6	5419.6	49.2
95.00	RT1	0.3750	43.438	51.253	12008.1	19.01	115.83	66	80	705.3	18.54	5208.8	5208.8	196.8
100.00		0.3750	42.250	49.840	11041.8	18.46	112.67	66	81	860.0				
105.00		0.3750	41.063	48.427	10128.8	17.90	109.50	66	81	835.9				
110.00		0.3750	39.875	47.013	9267.6	17.34	106.33	66	82	811.9				
115.00		0.3750	38.688	45.600	8456.6	16.78	103.17	66	83	787.9				
120.00		0.3750	37.500	44.186	7694.4	16.22	100.00	66	83	763.8				
125.00		0.3750	36.313	42.773	6979.4	15.66	96.83	66	84	739.8				
130.00	Bot - Section 6	0.3750	35.125	41.360	6310.2	15.11	93.67	66	84	715.7				
135.00	Top - Section 5	0.3750	34.688	40.839	6074.8	14.90	92.50	66	84	1398.5				
140.00	Top - Section 6	0.3750	33.500	39.426	5465.7	14.34	89.33	66	84	682.8				
140.00	Bot - Section 7	0.2500	33.500	26.383	3685.2	21.51	134.00	65	75					
143.00		0.2500	32.788	25.818	3453.3	21.71	131.15	65	76	266.4				
145.00		0.2500	32.313	25.441	3304.3	21.38	129.25	65	76	174.4				
150.00		0.2500	31.125	24.498	2950.6	20.54	124.50	65	77	424.8				
153.00		0.2500	30.413	23.933	2751.0	20.04	121.65	65	78	247.2				
155.00		0.2500	29.938	23.556	2623.0	19.70	119.75	65	78	161.6				
159.00		0.2500	28.988	22.802	2379.2	19.03	115.95	65	79	315.5				
160.00		0.2500	28.750	22.614	2320.7	18.87	115.00	65	79	77.3				
165.00		0.2500	27.563	21.672	2042.5	18.03	110.25	65	80	376.7				
170.00		0.2500	26.375	20.729	1787.5	17.19	105.50	65	81	360.7				
173.00		0.2500	25.663	20.164	1645.2	16.69	102.65	65	82	208.7				
175.00		0.2500	25.188	19.787	1554.7	16.35	100.75	65	82	135.9				
180.00	Top - Section 7	0.2500	24.000	18.845	1343.0	15.52	96.00	65	83	328.6				
180.00	Bot - Section 8	0.2813	24.000	21.176	1505.2	13.79	85.32	36	46					

Increment Length: 5 (ft)

Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fy (ksi)	Fb (ksi)	Weight (lb)	Additional Reinforcing			
											Area (in^2)	Ixp (in^4)	Iyp (in^4)	Weight (lb)
185.00		0.2813	24.000	21.176	1505.2	13.63	85.32	36	46	360.3				
190.00		0.2813	24.000	21.176	1505.2	13.63	85.32	36	46	360.3				
195.00		0.2813	24.000	21.176	1505.2	13.63	85.32	36	46	360.3				
Total Weight										35616.0				4182.0

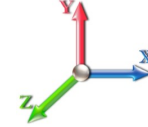
Wind Loading - Shaft

Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



Load Case: 1.2D + 1.6W 105 mph Wind

Dead Load Factor 1.20
Wind Load Factor 1.60



Iterations 25

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	22.791	25.07	528.35	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	22.791	25.07	518.63	0.650	0.000	5.00	27.038	17.57	705.0	0.0	1799.3
10.00		1.00	0.85	22.791	25.07	508.90	0.650	0.000	5.00	26.536	17.25	691.9	0.0	1765.7
15.00	RB1	1.00	0.85	22.791	25.07	499.17	0.650	0.000	5.00	26.034	16.92	678.8	0.0	1732.0
18.00	Top - Section 1	1.00	0.88	23.652	26.02	502.57	0.650	0.000	3.00	15.379	10.00	416.1	0.0	1023.0
20.00		1.00	0.90	24.182	26.60	504.16	0.650	0.000	2.00	10.152	6.60	280.9	0.0	579.4
25.00		1.00	0.95	25.345	27.88	505.89	0.650	0.000	5.00	25.029	16.27	725.7	0.0	1428.4
30.00		1.00	0.98	26.337	28.97	505.23	0.650	0.000	5.00	24.526	15.94	739.0	0.0	1399.5
35.00		1.00	1.01	27.206	29.93	502.87	0.650	0.000	5.00	24.024	15.62	747.7	0.0	1370.7
40.00		1.00	1.04	27.981	30.78	499.21	0.650	0.000	5.00	23.521	15.29	752.9	0.0	1341.8
41.00	Bot - Section 3	1.00	1.05	28.127	30.94	498.35	0.650	0.000	1.00	4.644	3.02	149.4	0.0	264.9
45.00		1.00	1.07	28.684	31.55	494.52	0.650	0.000	4.00	18.629	12.11	611.3	0.0	2110.7
48.00	Top - Section 2	1.00	1.08	29.076	31.98	491.30	0.650	0.000	3.00	13.761	8.94	457.7	0.0	1558.8
50.00		1.00	1.09	29.327	32.26	495.97	0.650	0.000	2.00	9.073	5.90	304.4	0.0	517.5
55.00		1.00	1.12	29.922	32.91	489.83	0.650	0.000	5.00	22.331	14.52	764.4	0.0	1273.5
60.00		1.00	1.14	30.475	33.52	483.09	0.650	0.000	5.00	21.829	14.19	761.0	0.0	1244.6
65.00		1.00	1.16	30.993	34.09	475.83	0.650	0.000	5.00	21.327	13.86	756.1	0.0	1215.8
70.00		1.00	1.17	31.480	34.63	468.13	0.650	0.000	5.00	20.824	13.54	749.9	0.0	1186.9
75.00		1.00	1.19	31.941	35.13	460.02	0.650	0.000	5.00	20.322	13.21	742.6	0.0	1158.0
80.00		1.00	1.21	32.377	35.62	451.56	0.650	0.000	5.00	19.819	12.88	734.1	0.0	1129.2
81.00	Top - Section 3	1.00	1.21	32.462	35.71	449.83	0.650	0.000	1.00	3.904	2.54	145.0	0.0	222.4
85.00	Bot - Section 5	1.00	1.22	32.793	36.07	442.79	0.650	0.000	4.00	15.413	10.02	578.2	0.0	878.0
90.00		1.00	1.24	33.190	36.51	433.72	0.650	0.000	5.00	19.132	12.44	726.4	0.0	2161.2
91.00	Top - Section 4	1.00	1.24	33.268	36.59	431.87	0.650	0.000	1.00	3.766	2.45	143.3	0.0	425.3
95.00	RT1	1.00	1.25	33.570	36.93	431.85	0.650	0.000	4.00	14.863	9.66	570.8	0.0	846.4
100.00		1.00	1.27	33.935	37.33	422.31	0.650	0.000	5.00	18.127	11.78	703.7	0.0	1032.0
105.00		1.00	1.28	34.285	37.71	412.56	0.650	0.000	5.00	17.625	11.46	691.3	0.0	1003.1
110.00		1.00	1.29	34.623	38.08	402.59	0.650	0.000	5.00	17.122	11.13	678.2	0.0	974.3
115.00		1.00	1.30	34.948	38.44	392.44	0.650	0.000	5.00	16.620	10.80	664.5	0.0	945.4
120.00		1.00	1.32	35.263	38.79	382.10	0.650	0.000	5.00	16.117	10.48	650.2	0.0	916.6
125.00		1.00	1.33	35.567	39.12	371.59	0.650	0.000	5.00	15.615	10.15	635.3	0.0	887.7
130.00	Bot - Section 6	1.00	1.34	35.862	39.45	360.93	0.650	0.000	5.00	15.112	9.82	620.0	0.0	858.9
135.00	Top - Section 5	1.00	1.35	36.148	39.76	350.11	0.650	0.000	5.00	14.927	9.70	617.3	0.0	1678.2
140.00	Top - Section 6	1.00	1.36	36.426	40.07	346.92	0.650	0.000	5.00	14.425	9.38	601.1	0.0	819.4
143.00	Appurtenance(s)	1.00	1.36	36.589	40.25	340.30	0.650	0.000	3.00	8.414	5.47	352.2	0.0	319.7
145.00		1.00	1.37	36.696	40.37	335.86	0.650	0.000	2.00	5.509	3.58	231.3	0.0	209.3
150.00		1.00	1.38	36.959	40.65	324.68	0.650	0.000	5.00	13.420	8.72	567.4	0.0	509.8
153.00	Appurtenance(s)	1.00	1.38	37.113	40.82	317.91	0.650	0.000	3.00	7.811	5.08	331.6	0.0	296.6
155.00		1.00	1.39	37.215	40.94	313.37	0.650	0.000	2.00	5.107	3.32	217.4	0.0	193.9
159.00	Appurtenance(s)	1.00	1.40	37.415	41.16	304.24	0.650	0.000	4.00	9.972	6.48	426.8	0.0	378.6
160.00		1.00	1.40	37.464	41.21	301.95	0.650	0.000	1.00	2.443	1.59	104.7	0.0	92.7
165.00		1.00	1.41	37.708	41.48	290.42	0.650	0.000	5.00	11.913	7.74	513.9	0.0	452.1
170.00		1.00	1.42	37.946	41.74	278.78	0.650	0.000	5.00	11.410	7.42	495.3	0.0	432.8
173.00	Appurtenance(s)	1.00	1.42	38.086	41.89	271.75	0.650	0.000	3.00	6.605	4.29	287.8	0.0	250.5
175.00		1.00	1.42	38.178	42.00	267.04	0.650	0.000	2.00	4.303	2.80	187.9	0.0	163.1
180.00	Top - Section 7	1.00	1.43	38.405	42.25	255.21	0.650	0.000	5.00	10.405	6.76	457.2	0.0	394.4
185.00		1.00	1.44	38.627	42.49	255.94	0.650	0.000	5.00	10.154	6.60	448.7	0.0	432.4

Wind Loading - Shaft

Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II
		Page: 10



190.00	1.00	1.45	38.845	42.73	256.66	0.650	0.000	5.00	10.154	6.60	451.2	0.0	432.4
195.00 Appurtenance(s)	1.00	1.46	39.058	42.96	257.36	0.650	0.000	5.00	10.154	6.60	453.7	0.0	432.4
Totals:											195.00	25,321.4	42,739.2

Discrete Appurtenance Forces

Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.2D + 1.6W 105 mph Wind

Dead Load Factor 1.20
Wind Load Factor 1.60



Iterations 25

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	195.00	AIR 21, 1.3M, B4A B2P	3	39.058	42.963	0.77	0.90	14.14	325.44	0.000	0.000	972.07	0.00	0.00
2	195.00	T-Arm (Flat)	3	39.058	42.963	0.56	0.75	16.88	1440.00	0.000	0.000	1160.01	0.00	0.00
3	195.00	AIR 21, 1.3M, B2A B4P	3	39.058	42.963	0.77	0.90	14.14	329.40	0.000	0.000	972.07	0.00	0.00
4	195.00	S11B12	3	39.058	42.963	0.45	0.90	3.82	183.60	0.000	0.000	262.63	0.00	0.00
5	195.00	KRY 112 144/1	3	39.058	42.963	0.45	0.90	0.55	39.60	0.000	0.000	38.05	0.00	0.00
6	195.00	LNx-6515DS-A1M	3	39.058	42.963	0.72	0.90	24.78	179.28	0.000	0.000	1703.08	0.00	0.00
7	173.00	ALU TD-RRH8x20-25	3	38.086	41.894	0.55	0.80	6.71	252.00	0.000	0.000	449.56	0.00	0.00
8	173.00	DT465B-2XR	3	38.086	41.894	0.66	0.80	18.13	208.80	0.000	0.000	1215.08	0.00	0.00
9	173.00	RFS ACU-A20-N RET	4	38.086	41.894	0.40	0.80	0.22	4.80	0.000	0.000	15.01	0.00	0.00
10	173.00	ALU 800 MHz Filter	3	38.086	41.894	0.40	0.80	0.50	36.00	0.000	0.000	33.78	0.00	0.00
11	173.00	ALU 800 MHz RRH	6	38.086	41.894	0.40	0.80	5.98	381.60	0.000	0.000	400.57	0.00	0.00
12	173.00	ALU 1900 MHz RRH	3	38.086	41.894	0.40	0.80	4.56	158.40	0.000	0.000	305.66	0.00	0.00
13	173.00	APXVSP18-C-A20	3	38.086	41.894	0.66	0.80	15.98	205.20	0.000	0.000	1070.87	0.00	0.00
14	173.00	Sector Frame-Pipe/Rod	3	38.086	41.894	0.60	0.80	37.80	2160.00	0.000	0.000	2533.75	0.00	0.00
15	159.00	Low Profile Platform-flat	1	37.415	41.156	1.00	1.00	25.00	1440.00	0.000	0.000	1646.26	0.00	0.00
16	159.00	SBNHH-1D65B	6	37.415	41.156	0.66	0.80	32.51	288.00	0.000	0.000	2140.75	0.00	0.00
17	159.00	BXA-70080-4BF	3	37.415	41.156	0.70	0.80	7.52	43.20	0.000	0.000	495.11	0.00	0.00
18	159.00	RFs FD9R6004/2CL-3CL	6	37.415	41.156	0.80	0.80	1.73	22.32	0.000	0.000	113.79	0.00	0.00
19	159.00	Rfs Celwave	2	37.415	41.156	0.57	0.80	5.45	45.36	0.000	0.000	359.07	0.00	0.00
20	159.00	BXA-70063-6CF-2	3	37.415	41.156	0.58	0.80	13.26	61.20	0.000	0.000	873.35	0.00	0.00
21	159.00	Alcatel Lucent B66	3	37.415	41.156	0.66	0.80	5.00	204.48	0.000	0.000	329.17	0.00	0.00
22	159.00	Alcatel Lucent B25	3	37.415	41.156	0.65	0.80	4.16	183.60	0.000	0.000	273.95	0.00	0.00
23	153.00	Standoff Mount	3	37.113	40.824	0.56	0.75	8.44	1260.00	0.000	0.000	551.13	0.00	0.00
24	143.00	742 351	6	36.589	40.248	0.49	0.80	15.75	214.56	0.000	0.000	1014.41	0.00	0.00
25	143.00	T-Arm (Flat)	3	36.589	40.248	0.56	0.75	16.88	1440.00	0.000	0.000	1086.69	0.00	0.00
Totals:								11,106.84				20,015.85		

Total Applied Force Summary

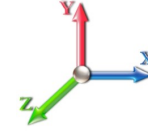
Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.2D + 1.6W 105 mph Wind

Dead Load Factor 1.20
Wind Load Factor 1.60



Iterations 25

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		704.97	2055.50	0.00	0.00
10.00		691.87	2021.84	0.00	0.00
15.00		678.77	1988.17	0.00	0.00
18.00		416.11	1176.74	0.00	0.00
20.00		280.85	681.90	0.00	0.00
25.00		725.70	1684.55	0.00	0.00
30.00		738.96	1655.69	0.00	0.00
35.00		747.70	1626.83	0.00	0.00
40.00		752.94	1597.98	0.00	0.00
41.00		149.43	316.13	0.00	0.00
45.00		611.29	2315.63	0.00	0.00
48.00		457.72	1712.48	0.00	0.00
50.00		304.41	619.93	0.00	0.00
55.00		764.41	1529.63	0.00	0.00
60.00		761.03	1500.78	0.00	0.00
65.00		756.15	1471.92	0.00	0.00
70.00		749.94	1443.06	0.00	0.00
75.00		742.56	1414.21	0.00	0.00
80.00		734.10	1385.35	0.00	0.00
81.00		144.97	273.61	0.00	0.00
85.00		578.24	1082.89	0.00	0.00
90.00		726.43	2417.34	0.00	0.00
91.00		143.33	476.54	0.00	0.00
95.00		570.82	1051.30	0.00	0.00
100.00		703.71	1288.15	0.00	0.00
105.00		691.27	1259.29	0.00	0.00
110.00		678.18	1230.44	0.00	0.00
115.00		664.47	1201.58	0.00	0.00
120.00		650.18	1172.73	0.00	0.00
125.00		635.35	1143.87	0.00	0.00
130.00		620.00	1115.01	0.00	0.00
135.00		617.29	1934.38	0.00	0.00
140.00		601.10	1075.53	0.00	0.00
143.00	(9) attachments	2453.27	2127.98	0.00	0.00
145.00		231.26	281.62	0.00	0.00
150.00		567.41	690.59	0.00	0.00
153.00	(3) attachments	882.76	1665.12	0.00	0.00
155.00		217.41	266.23	0.00	0.00
159.00	(27) attachments	6658.28	2811.39	0.00	0.00
160.00		104.70	113.76	0.00	0.00
165.00		513.89	557.28	0.00	0.00
170.00		495.32	538.04	0.00	0.00
173.00	(28) attachments	6312.07	3720.39	0.00	0.00
175.00		187.93	198.88	0.00	0.00
180.00		457.17	483.73	0.00	0.00
185.00		448.71	521.71	0.00	0.00

Total Applied Force Summary

Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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190.00		451.24	521.71	0.00	0.00
195.00	(18) attachments	5561.61	3019.03	0.00	0.00
Totals:		45,337.27	62,438.47	0.00	0.00

Linear Appurtenance Segment Forces (Factored)

Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.2D + 1.6W 105 mph Wind

Dead Load Factor 1.20
Wind Load Factor 1.60



Iterations 25

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	22.791	0.00	1.64
5.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	22.791	0.00	6.24
10.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	22.791	0.00	1.64
10.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	22.791	0.00	6.24
15.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	22.791	0.00	1.64
15.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	22.791	0.00	6.24
18.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.033	0.000	23.652	0.00	0.98
18.00	Step bolts (ladder)	Yes	3.00	0.000	0.00	0.00	0.00	0.033	0.000	23.652	0.00	3.74
18.00	Reinforcing channels	Yes	3.00	0.000	2.00	0.50	0.00	0.033	0.000	23.652	0.00	0.00
20.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.033	0.000	24.182	0.00	0.66
20.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.033	0.000	24.182	0.00	2.50
20.00	Reinforcing channels	Yes	2.00	0.000	2.00	0.33	0.00	0.033	0.000	24.182	0.00	0.00
25.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.033	0.000	25.345	0.00	1.64
25.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.033	0.000	25.345	0.00	6.24
25.00	Reinforcing channels	Yes	5.00	0.000	2.00	0.83	0.00	0.033	0.000	25.345	0.00	0.00
30.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.034	0.000	26.337	0.00	1.64
30.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.034	0.000	26.337	0.00	6.24
30.00	Reinforcing channels	Yes	5.00	0.000	2.00	0.83	0.00	0.034	0.000	26.337	0.00	0.00
35.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.035	0.000	27.206	0.00	1.64
35.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.035	0.000	27.206	0.00	6.24
35.00	Reinforcing channels	Yes	5.00	0.000	2.00	0.83	0.00	0.035	0.000	27.206	0.00	0.00
40.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.035	0.000	27.981	0.00	1.64
40.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.035	0.000	27.981	0.00	6.24
40.00	Reinforcing channels	Yes	5.00	0.000	2.00	0.83	0.00	0.035	0.000	27.981	0.00	0.00
41.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.036	0.000	28.127	0.00	0.33
41.00	Step bolts (ladder)	Yes	1.00	0.000	0.00	0.00	0.00	0.036	0.000	28.127	0.00	1.25
41.00	Reinforcing channels	Yes	1.00	0.000	2.00	0.17	0.00	0.036	0.000	28.127	0.00	0.00
45.00	Safety Cable	Yes	4.00	0.000	0.00	0.00	0.00	0.036	0.000	28.684	0.00	1.31
45.00	Step bolts (ladder)	Yes	4.00	0.000	0.00	0.00	0.00	0.036	0.000	28.684	0.00	4.99
45.00	Reinforcing channels	Yes	4.00	0.000	2.00	0.67	0.00	0.036	0.000	28.684	0.00	0.00
48.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.037	0.000	29.076	0.00	0.98
48.00	Step bolts (ladder)	Yes	3.00	0.000	0.00	0.00	0.00	0.037	0.000	29.076	0.00	3.74
48.00	Reinforcing channels	Yes	3.00	0.000	2.00	0.50	0.00	0.037	0.000	29.076	0.00	0.00
50.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.037	0.000	29.327	0.00	0.66
50.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.037	0.000	29.327	0.00	2.50
50.00	Reinforcing channels	Yes	2.00	0.000	2.00	0.33	0.00	0.037	0.000	29.327	0.00	0.00
55.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.037	0.000	29.922	0.00	1.64
55.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.037	0.000	29.922	0.00	6.24
55.00	Reinforcing channels	Yes	5.00	0.000	2.00	0.83	0.00	0.037	0.000	29.922	0.00	0.00
60.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.038	0.000	30.475	0.00	1.64
60.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.038	0.000	30.475	0.00	6.24
60.00	Reinforcing channels	Yes	5.00	0.000	2.00	0.83	0.00	0.038	0.000	30.475	0.00	0.00
65.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.039	0.000	30.993	0.00	1.64
65.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.039	0.000	30.993	0.00	6.24
65.00	Reinforcing channels	Yes	5.00	0.000	2.00	0.83	0.00	0.039	0.000	30.993	0.00	0.00
70.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.040	0.000	31.480	0.00	1.64
70.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.040	0.000	31.480	0.00	6.24

Linear Appurtenance Segment Forces (Factored)

Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II

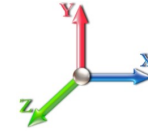


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Load Case: 1.2D + 1.6W 105 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 25

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
70.00	Reinforcing channels	Yes	5.00	0.000	2.00	0.83	0.00	0.040	0.000	31.480	0.00	0.00
75.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.041	0.000	31.941	0.00	1.64
75.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.041	0.000	31.941	0.00	6.24
75.00	Reinforcing channels	Yes	5.00	0.000	2.00	0.83	0.00	0.041	0.000	31.941	0.00	0.00
80.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.042	0.000	32.377	0.00	1.64
80.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.042	0.000	32.377	0.00	6.24
80.00	Reinforcing channels	Yes	5.00	0.000	2.00	0.83	0.00	0.042	0.000	32.377	0.00	0.00
81.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.043	0.000	32.462	0.00	0.33
81.00	Step bolts (ladder)	Yes	1.00	0.000	0.00	0.00	0.00	0.043	0.000	32.462	0.00	1.25
81.00	Reinforcing channels	Yes	1.00	0.000	2.00	0.17	0.00	0.043	0.000	32.462	0.00	0.00
85.00	Safety Cable	Yes	4.00	0.000	0.00	0.00	0.00	0.043	0.000	32.793	0.00	1.31
85.00	Step bolts (ladder)	Yes	4.00	0.000	0.00	0.00	0.00	0.043	0.000	32.793	0.00	4.99
85.00	Reinforcing channels	Yes	4.00	0.000	2.00	0.67	0.00	0.043	0.000	32.793	0.00	0.00
90.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.044	0.000	33.190	0.00	1.64
90.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.044	0.000	33.190	0.00	6.24
90.00	Reinforcing channels	Yes	5.00	0.000	2.00	0.83	0.00	0.044	0.000	33.190	0.00	0.00
91.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	33.268	0.00	0.33
91.00	Step bolts (ladder)	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	33.268	0.00	1.25
91.00	Reinforcing channels	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	33.268	0.00	0.00
95.00	Safety Cable	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	33.570	0.00	1.31
95.00	Step bolts (ladder)	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	33.570	0.00	4.99
95.00	Reinforcing channels	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	33.570	0.00	0.00
100.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	33.935	0.00	1.64
100.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	33.935	0.00	6.24
100.00	Reinforcing channels	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	33.935	0.00	0.00
105.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	34.285	0.00	1.64
105.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	34.285	0.00	6.24
105.00	Reinforcing channels	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	34.285	0.00	0.00
110.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	34.623	0.00	1.64
110.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	34.623	0.00	6.24
115.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	34.948	0.00	1.64
115.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	34.948	0.00	6.24
120.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	35.263	0.00	1.64
120.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	35.263	0.00	6.24
125.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	35.567	0.00	1.64
125.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	35.567	0.00	6.24
130.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	35.862	0.00	1.64
130.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	35.862	0.00	6.24
135.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	36.148	0.00	1.64
135.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	36.148	0.00	6.24
140.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	36.426	0.00	1.64
140.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	36.426	0.00	6.24
143.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	36.589	0.00	0.98
143.00	Step bolts (ladder)	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	36.589	0.00	3.74
145.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	36.696	0.00	0.66
145.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	36.696	0.00	2.50
150.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	36.959	0.00	1.64

Linear Appurtenance Segment Forces (Factored)

Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II

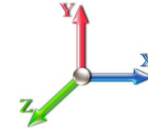


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Load Case: 1.2D + 1.6W 105 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 25

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
150.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	36.959	0.00	6.24
153.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	37.113	0.00	0.98
153.00	Step bolts (ladder)	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	37.113	0.00	3.74
155.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	37.215	0.00	0.66
155.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	37.215	0.00	2.50
159.00	Safety Cable	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	37.415	0.00	1.31
159.00	Step bolts (ladder)	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	37.415	0.00	4.99
160.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	37.464	0.00	0.33
160.00	Step bolts (ladder)	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	37.464	0.00	1.25
165.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	37.708	0.00	1.64
165.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	37.708	0.00	6.24
170.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	37.946	0.00	1.64
170.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	37.946	0.00	6.24
173.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	38.086	0.00	0.98
173.00	Step bolts (ladder)	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	38.086	0.00	3.74
175.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	38.178	0.00	0.66
175.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	38.178	0.00	2.50
180.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	38.405	0.00	1.64
180.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	38.405	0.00	6.24
185.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	38.627	0.00	1.64
185.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	38.627	0.00	6.24
190.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	38.845	0.00	1.64
190.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	38.845	0.00	6.24
195.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	39.058	0.00	1.64
195.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	39.058	0.00	6.24
Totals:											0.0	307.2

Calculated Forces

Structure: CT00167-S-SBA
Site Name: Lisbon
Height: 195.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1

Topography: 1

Code: EIA/TIA-222-G
Exposure: C
Crest Height: 0.00
Site Class: B - Competent Rock
Struct Class: II

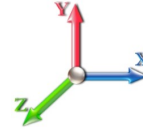
12/6/2017
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Load Case: 1.2D + 1.6W 105 mph Wind

Iterations 25

Dead Load Factor 1.20
Wind Load Factor 1.60



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-62.36	-45.44	0.00	-5979.4	0.00	5979.47	6497.76	3248.88	17121.8	8573.64	0.00	0.000	0.000	0.707
5.00	-60.17	-44.92	0.00	-5752.2	0.00	5752.28	6432.14	3216.07	16632.6	8328.66	0.10	-0.181	0.000	0.700
10.00	-58.01	-44.41	0.00	-5527.6	0.00	5527.69	6364.44	3182.22	16144.5	8084.28	0.39	-0.365	0.000	0.693
15.00	-55.92	-43.85	0.00	-5305.6	0.00	5305.66	6294.68	3147.34	15658.0	7840.66	0.87	-0.552	0.000	0.548
18.00	-54.69	-43.49	0.00	-5174.1	0.00	5174.11	6251.82	3125.91	15366.9	7694.92	1.25	-0.644	0.000	0.543
18.00	-54.69	-43.49	0.00	-5174.1	0.00	5174.11	5035.78	2517.89	12403.8	6211.14	1.25	-0.644	0.000	0.579
20.00	-53.92	-43.32	0.00	-5087.1	0.00	5087.13	5016.94	2508.47	12258.7	6138.49	1.53	-0.706	0.000	0.647
25.00	-52.11	-42.73	0.00	-4870.5	0.00	4870.55	4968.35	2484.18	11895.7	5956.70	2.36	-0.879	0.000	0.635
30.00	-50.34	-42.11	0.00	-4656.9	0.00	4656.93	4917.65	2458.83	11532.4	5774.82	3.38	-1.054	0.000	0.622
35.00	-48.60	-41.48	0.00	-4446.3	0.00	4446.37	4864.84	2432.42	11169.4	5593.00	4.58	-1.232	0.000	0.610
40.00	-46.95	-40.78	0.00	-4238.9	0.00	4238.95	4809.92	2404.96	10806.7	5411.42	5.96	-1.410	0.000	0.597
41.00	-46.57	-40.70	0.00	-4198.1	0.00	4198.17	4798.68	2399.34	10734.3	5375.14	6.26	-1.447	0.000	0.595
45.00	-44.18	-40.13	0.00	-4035.3	0.00	4035.37	4752.88	2376.44	10444.9	5230.21	7.54	-1.593	0.000	0.581
48.00	-42.42	-39.69	0.00	-3914.9	0.00	3914.99	4754.71	2377.36	10456.3	5235.93	8.57	-1.703	0.000	0.584
50.00	-41.72	-39.46	0.00	-3835.6	0.00	3835.62	4731.34	2365.67	10311.8	5163.58	9.30	-1.777	0.000	0.561
55.00	-40.10	-38.77	0.00	-3638.3	0.00	3638.35	4671.41	2335.70	9951.50	4983.15	11.26	-1.954	0.000	0.548
60.00	-38.51	-38.07	0.00	-3444.5	0.00	3444.51	4609.37	2304.68	9592.67	4803.47	13.40	-2.132	0.000	0.534
65.00	-36.95	-37.38	0.00	-3254.1	0.00	3254.15	4545.22	2272.61	9235.65	4624.69	15.73	-2.312	0.000	0.520
70.00	-35.42	-36.68	0.00	-3067.2	0.00	3067.27	4478.96	2239.48	8880.76	4446.98	18.25	-2.493	0.000	0.506
75.00	-33.93	-35.98	0.00	-2883.8	0.00	2883.87	4410.58	2205.29	8528.29	4270.48	20.96	-2.674	0.000	0.492
80.00	-32.51	-35.24	0.00	-2703.9	0.00	2703.97	4340.09	2170.05	8178.57	4095.36	23.85	-2.857	0.000	0.477
81.00	-32.19	-35.14	0.00	-2668.7	0.00	2668.73	4325.74	2162.87	8108.99	4060.52	24.46	-2.894	0.000	0.474
81.00	-32.19	-35.14	0.00	-2668.7	0.00	2668.73	3843.52	1921.76	7205.03	3607.87	24.46	-2.894	0.000	0.533
85.00	-31.04	-34.59	0.00	-2528.1	0.00	2528.18	3789.25	1894.62	6954.21	3482.28	26.94	-3.042	0.000	0.519
90.00	-28.60	-33.79	0.00	-2355.2	0.00	2355.21	3719.86	1859.93	6643.95	3326.92	30.23	-3.224	0.000	0.497
91.00	-28.08	-33.67	0.00	-2321.4	0.00	2321.42	3750.02	1875.01	6777.40	3393.74	30.91	-3.262	0.000	0.504
95.00	-26.97	-33.11	0.00	-2186.7	0.00	2186.76	3693.87	1846.94	6530.61	3270.16	33.70	-3.407	0.000	0.472
100.00	-25.61	-32.42	0.00	-2021.2	0.00	2021.21	3622.15	1811.07	6225.69	3117.47	37.36	-3.581	0.000	0.656
105.00	-24.26	-31.76	0.00	-1859.0	0.00	1859.09	3548.72	1774.36	5924.97	2966.89	41.24	-3.831	0.000	0.634
110.00	-22.94	-31.10	0.00	-1700.3	0.00	1700.30	3473.57	1736.79	5628.70	2818.54	45.39	-4.081	0.000	0.610
115.00	-21.66	-30.44	0.00	-1544.8	0.00	1544.81	3396.72	1698.36	5337.14	2672.54	49.79	-4.330	0.000	0.585
120.00	-20.41	-29.79	0.00	-1392.6	0.00	1392.60	3318.16	1659.08	5050.54	2529.02	54.46	-4.577	0.000	0.557
125.00	-19.20	-29.14	0.00	-1243.6	0.00	1243.66	3226.71	1613.36	4752.68	2379.87	59.38	-4.821	0.000	0.529
130.00	-18.03	-28.50	0.00	-1097.9	0.00	1097.94	3120.09	1560.05	4442.21	2224.41	64.55	-5.060	0.000	0.500
135.00	-16.05	-27.78	0.00	-955.42	0.00	955.42	3080.81	1540.41	4330.47	2168.45	69.97	-5.291	0.000	0.446
140.00	-14.95	-27.12	0.00	-816.52	0.00	816.52	2974.19	1487.09	4034.35	2020.17	75.62	-5.513	0.000	0.410
140.00	-14.95	-27.12	0.00	-816.52	0.00	816.52	1787.24	893.62	2442.64	1223.14	75.62	-5.513	0.000	0.677
143.00	-13.02	-24.50	0.00	-735.15	0.00	735.15	1762.68	881.34	2357.06	1180.28	79.12	-5.634	0.000	0.631
145.00	-12.68	-24.29	0.00	-686.15	0.00	686.15	1745.97	872.98	2300.37	1151.90	81.50	-5.751	0.000	0.604
150.00	-11.97	-23.70	0.00	-564.71	0.00	564.71	1703.02	851.51	2160.05	1081.63	87.66	-6.020	0.000	0.530
153.00	-10.36	-22.66	0.00	-493.62	0.00	493.62	1676.45	838.23	2076.88	1039.98	91.49	-6.173	0.000	0.482
155.00	-10.06	-22.44	0.00	-448.30	0.00	448.30	1658.40	829.20	2021.90	1012.45	94.09	-6.271	0.000	0.450
159.00	-7.98	-15.53	0.00	-358.52	0.00	358.52	1621.51	810.75	1913.13	957.99	99.41	-6.446	0.000	0.380
160.00	-7.84	-15.43	0.00	-342.99	0.00	342.99	1612.12	806.06	1886.20	944.50	100.77	-6.488	0.000	0.368
165.00	-7.30	-14.88	0.00	-265.85	0.00	265.85	1564.16	782.08	1753.17	877.89	107.65	-6.674	0.000	0.308
170.00	-6.80	-14.34	0.00	-191.47	0.00	191.47	1514.53	757.27	1623.07	812.74	114.71	-6.834	0.000	0.240
173.00	-3.85	-7.63	0.00	-148.46	0.00	148.46	1483.95	741.98	1546.51	774.41	119.03	-6.915	0.000	0.194
175.00	-3.67	-7.42	0.00	-133.20	0.00	133.20	1463.23	731.62	1496.14	749.18	121.93	-6.963	0.000	0.180

Calculated Forces

Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Page: 18
	Struct Class: II	



180.00	-3.23	-6.91	0.00	-96.09	0.00	96.09	1400.09	700.04	1362.73	682.38	129.26	-7.068	0.000	0.143
180.00	-3.23	-6.91	0.00	-96.09	0.00	96.09	871.37	435.68	845.88	423.57	129.26	-7.068	0.000	0.231
185.00	-2.76	-6.41	0.00	-61.52	0.00	61.52	871.37	435.68	845.88	423.57	136.69	-7.152	0.000	0.149
190.00	-2.30	-5.90	0.00	-29.48	0.00	29.48	871.37	435.68	845.88	423.57	144.19	-7.195	0.000	0.072
195.00	0.00	-5.56	0.00	0.00	0.00	0.00	871.37	435.68	845.88	423.57	151.71	-7.209	0.000	0.000

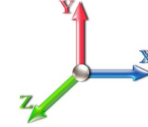
Wind Loading - Shaft

Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



Load Case: 0.9D + 1.6W 105 mph Wind

Dead Load Factor 0.90
Wind Load Factor 1.60



Iterations 25

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	22.791	25.07	528.35	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	22.791	25.07	518.63	0.650	0.000	5.00	27.038	17.57	705.0	0.0	1349.5
10.00		1.00	0.85	22.791	25.07	508.90	0.650	0.000	5.00	26.536	17.25	691.9	0.0	1324.3
15.00	RB1	1.00	0.85	22.791	25.07	499.17	0.650	0.000	5.00	26.034	16.92	678.8	0.0	1299.0
18.00	Top - Section 1	1.00	0.88	23.652	26.02	502.57	0.650	0.000	3.00	15.379	10.00	416.1	0.0	767.3
20.00		1.00	0.90	24.182	26.60	504.16	0.650	0.000	2.00	10.152	6.60	280.9	0.0	434.6
25.00		1.00	0.95	25.345	27.88	505.89	0.650	0.000	5.00	25.029	16.27	725.7	0.0	1071.3
30.00		1.00	0.98	26.337	28.97	505.23	0.650	0.000	5.00	24.526	15.94	739.0	0.0	1049.6
35.00		1.00	1.01	27.206	29.93	502.87	0.650	0.000	5.00	24.024	15.62	747.7	0.0	1028.0
40.00		1.00	1.04	27.981	30.78	499.21	0.650	0.000	5.00	23.521	15.29	752.9	0.0	1006.4
41.00	Bot - Section 3	1.00	1.05	28.127	30.94	498.35	0.650	0.000	1.00	4.644	3.02	149.4	0.0	198.7
45.00		1.00	1.07	28.684	31.55	494.52	0.650	0.000	4.00	18.629	12.11	611.3	0.0	1583.0
48.00	Top - Section 2	1.00	1.08	29.076	31.98	491.30	0.650	0.000	3.00	13.761	8.94	457.7	0.0	1169.1
50.00		1.00	1.09	29.327	32.26	495.97	0.650	0.000	2.00	9.073	5.90	304.4	0.0	388.1
55.00		1.00	1.12	29.922	32.91	489.83	0.650	0.000	5.00	22.331	14.52	764.4	0.0	955.1
60.00		1.00	1.14	30.475	33.52	483.09	0.650	0.000	5.00	21.829	14.19	761.0	0.0	933.5
65.00		1.00	1.16	30.993	34.09	475.83	0.650	0.000	5.00	21.327	13.86	756.1	0.0	911.8
70.00		1.00	1.17	31.480	34.63	468.13	0.650	0.000	5.00	20.824	13.54	749.9	0.0	890.2
75.00		1.00	1.19	31.941	35.13	460.02	0.650	0.000	5.00	20.322	13.21	742.6	0.0	868.5
80.00		1.00	1.21	32.377	35.62	451.56	0.650	0.000	5.00	19.819	12.88	734.1	0.0	846.9
81.00	Top - Section 3	1.00	1.21	32.462	35.71	449.83	0.650	0.000	1.00	3.904	2.54	145.0	0.0	166.8
85.00	Bot - Section 5	1.00	1.22	32.793	36.07	442.79	0.650	0.000	4.00	15.413	10.02	578.2	0.0	658.5
90.00		1.00	1.24	33.190	36.51	433.72	0.650	0.000	5.00	19.132	12.44	726.4	0.0	1620.9
91.00	Top - Section 4	1.00	1.24	33.268	36.59	431.87	0.650	0.000	1.00	3.766	2.45	143.3	0.0	319.0
95.00	RT1	1.00	1.25	33.570	36.93	431.85	0.650	0.000	4.00	14.863	9.66	570.8	0.0	634.8
100.00		1.00	1.27	33.935	37.33	422.31	0.650	0.000	5.00	18.127	11.78	703.7	0.0	774.0
105.00		1.00	1.28	34.285	37.71	412.56	0.650	0.000	5.00	17.625	11.46	691.3	0.0	752.4
110.00		1.00	1.29	34.623	38.08	402.59	0.650	0.000	5.00	17.122	11.13	678.2	0.0	730.7
115.00		1.00	1.30	34.948	38.44	392.44	0.650	0.000	5.00	16.620	10.80	664.5	0.0	709.1
120.00		1.00	1.32	35.263	38.79	382.10	0.650	0.000	5.00	16.117	10.48	650.2	0.0	687.4
125.00		1.00	1.33	35.567	39.12	371.59	0.650	0.000	5.00	15.615	10.15	635.3	0.0	665.8
130.00	Bot - Section 6	1.00	1.34	35.862	39.45	360.93	0.650	0.000	5.00	15.112	9.82	620.0	0.0	644.1
135.00	Top - Section 5	1.00	1.35	36.148	39.76	350.11	0.650	0.000	5.00	14.927	9.70	617.3	0.0	1258.7
140.00	Top - Section 6	1.00	1.36	36.426	40.07	346.92	0.650	0.000	5.00	14.425	9.38	601.1	0.0	614.5
143.00	Appurtenance(s)	1.00	1.36	36.589	40.25	340.30	0.650	0.000	3.00	8.414	5.47	352.2	0.0	239.8
145.00		1.00	1.37	36.696	40.37	335.86	0.650	0.000	2.00	5.509	3.58	231.3	0.0	157.0
150.00		1.00	1.38	36.959	40.65	324.68	0.650	0.000	5.00	13.420	8.72	567.4	0.0	382.3
153.00	Appurtenance(s)	1.00	1.38	37.113	40.82	317.91	0.650	0.000	3.00	7.811	5.08	331.6	0.0	222.5
155.00		1.00	1.39	37.215	40.94	313.37	0.650	0.000	2.00	5.107	3.32	217.4	0.0	145.4
159.00	Appurtenance(s)	1.00	1.40	37.415	41.16	304.24	0.650	0.000	4.00	9.972	6.48	426.8	0.0	283.9
160.00		1.00	1.40	37.464	41.21	301.95	0.650	0.000	1.00	2.443	1.59	104.7	0.0	69.5
165.00		1.00	1.41	37.708	41.48	290.42	0.650	0.000	5.00	11.913	7.74	513.9	0.0	339.1
170.00		1.00	1.42	37.946	41.74	278.78	0.650	0.000	5.00	11.410	7.42	495.3	0.0	324.6
173.00	Appurtenance(s)	1.00	1.42	38.086	41.89	271.75	0.650	0.000	3.00	6.605	4.29	287.8	0.0	187.9
175.00		1.00	1.42	38.178	42.00	267.04	0.650	0.000	2.00	4.303	2.80	187.9	0.0	122.4
180.00	Top - Section 7	1.00	1.43	38.405	42.25	255.21	0.650	0.000	5.00	10.405	6.76	457.2	0.0	295.8
185.00		1.00	1.44	38.627	42.49	255.94	0.650	0.000	5.00	10.154	6.60	448.7	0.0	324.3

Wind Loading - Shaft

Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II
		Page: 20



190.00	1.00	1.45	38.845	42.73	256.66	0.650	0.000	5.00	10.154	6.60	451.2	0.0	324.3	
195.00 Appurtenance(s)	1.00	1.46	39.058	42.96	257.36	0.650	0.000	5.00	10.154	6.60	453.7	0.0	324.3	
Totals:								195.00				25,321.4		32,054.4

Discrete Appurtenance Forces

Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 0.9D + 1.6W 105 mph Wind

Dead Load Factor 0.90
Wind Load Factor 1.60



Iterations 25

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	195.00	AIR 21, 1.3M, B4A B2P	3	39.058	42.963	0.77	0.90	14.14	244.08	0.000	0.000	972.07	0.00	0.00
2	195.00	T-Arm (Flat)	3	39.058	42.963	0.56	0.75	16.88	1080.00	0.000	0.000	1160.01	0.00	0.00
3	195.00	AIR 21, 1.3M, B2A B4P	3	39.058	42.963	0.77	0.90	14.14	247.05	0.000	0.000	972.07	0.00	0.00
4	195.00	S11B12	3	39.058	42.963	0.45	0.90	3.82	137.70	0.000	0.000	262.63	0.00	0.00
5	195.00	KRY 112 144/1	3	39.058	42.963	0.45	0.90	0.55	29.70	0.000	0.000	38.05	0.00	0.00
6	195.00	LNx-6515DS-A1M	3	39.058	42.963	0.72	0.90	24.78	134.46	0.000	0.000	1703.08	0.00	0.00
7	173.00	ALU TD-RRH8x20-25	3	38.086	41.894	0.55	0.80	6.71	189.00	0.000	0.000	449.56	0.00	0.00
8	173.00	DT465B-2XR	3	38.086	41.894	0.66	0.80	18.13	156.60	0.000	0.000	1215.08	0.00	0.00
9	173.00	RFS ACU-A20-N RET	4	38.086	41.894	0.40	0.80	0.22	3.60	0.000	0.000	15.01	0.00	0.00
10	173.00	ALU 800 MHz Filter	3	38.086	41.894	0.40	0.80	0.50	27.00	0.000	0.000	33.78	0.00	0.00
11	173.00	ALU 800 MHz RRH	6	38.086	41.894	0.40	0.80	5.98	286.20	0.000	0.000	400.57	0.00	0.00
12	173.00	ALU 1900 MHz RRH	3	38.086	41.894	0.40	0.80	4.56	118.80	0.000	0.000	305.66	0.00	0.00
13	173.00	APXVSP18-C-A20	3	38.086	41.894	0.66	0.80	15.98	153.90	0.000	0.000	1070.87	0.00	0.00
14	173.00	Sector Frame-Pipe/Rod	3	38.086	41.894	0.60	0.80	37.80	1620.00	0.000	0.000	2533.75	0.00	0.00
15	159.00	Low Profile Platform-flat	1	37.415	41.156	1.00	1.00	25.00	1080.00	0.000	0.000	1646.26	0.00	0.00
16	159.00	SBNHH-1D65B	6	37.415	41.156	0.66	0.80	32.51	216.00	0.000	0.000	2140.75	0.00	0.00
17	159.00	BXA-70080-4BF	3	37.415	41.156	0.70	0.80	7.52	32.40	0.000	0.000	495.11	0.00	0.00
18	159.00	RFs FD9R6004/2CL-3CL	6	37.415	41.156	0.80	0.80	1.73	16.74	0.000	0.000	113.79	0.00	0.00
19	159.00	Rfs Celwave	2	37.415	41.156	0.57	0.80	5.45	34.02	0.000	0.000	359.07	0.00	0.00
20	159.00	BXA-70063-6CF-2	3	37.415	41.156	0.58	0.80	13.26	45.90	0.000	0.000	873.35	0.00	0.00
21	159.00	Alcatel Lucent B66	3	37.415	41.156	0.66	0.80	5.00	153.36	0.000	0.000	329.17	0.00	0.00
22	159.00	Alcatel Lucent B25	3	37.415	41.156	0.65	0.80	4.16	137.70	0.000	0.000	273.95	0.00	0.00
23	153.00	Standoff Mount	3	37.113	40.824	0.56	0.75	8.44	945.00	0.000	0.000	551.13	0.00	0.00
24	143.00	742 351	6	36.589	40.248	0.49	0.80	15.75	160.92	0.000	0.000	1014.41	0.00	0.00
25	143.00	T-Arm (Flat)	3	36.589	40.248	0.56	0.75	16.88	1080.00	0.000	0.000	1086.69	0.00	0.00

Totals: **8,330.13**

20,015.85

Total Applied Force Summary

Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 0.9D + 1.6W 105 mph Wind

Dead Load Factor 0.90
Wind Load Factor 1.60



Iterations 25

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		704.97	1541.63	0.00	0.00
10.00		691.87	1516.38	0.00	0.00
15.00		678.77	1491.13	0.00	0.00
18.00		416.11	882.56	0.00	0.00
20.00		280.85	511.42	0.00	0.00
25.00		725.70	1263.41	0.00	0.00
30.00		738.96	1241.77	0.00	0.00
35.00		747.70	1220.13	0.00	0.00
40.00		752.94	1198.48	0.00	0.00
41.00		149.43	237.10	0.00	0.00
45.00		611.29	1736.72	0.00	0.00
48.00		457.72	1284.36	0.00	0.00
50.00		304.41	464.95	0.00	0.00
55.00		764.41	1147.22	0.00	0.00
60.00		761.03	1125.58	0.00	0.00
65.00		756.15	1103.94	0.00	0.00
70.00		749.94	1082.30	0.00	0.00
75.00		742.56	1060.66	0.00	0.00
80.00		734.10	1039.01	0.00	0.00
81.00		144.97	205.21	0.00	0.00
85.00		578.24	812.17	0.00	0.00
90.00		726.43	1813.01	0.00	0.00
91.00		143.33	357.41	0.00	0.00
95.00		570.82	788.47	0.00	0.00
100.00		703.71	966.11	0.00	0.00
105.00		691.27	944.47	0.00	0.00
110.00		678.18	922.83	0.00	0.00
115.00		664.47	901.19	0.00	0.00
120.00		650.18	879.54	0.00	0.00
125.00		635.35	857.90	0.00	0.00
130.00		620.00	836.26	0.00	0.00
135.00		617.29	1450.79	0.00	0.00
140.00		601.10	806.64	0.00	0.00
143.00	(9) attachments	2453.27	1595.99	0.00	0.00
145.00		231.26	211.22	0.00	0.00
150.00		567.41	517.94	0.00	0.00
153.00	(3) attachments	882.76	1248.84	0.00	0.00
155.00		217.41	199.68	0.00	0.00
159.00	(27) attachments	6658.28	2108.55	0.00	0.00
160.00		104.70	85.32	0.00	0.00
165.00		513.89	417.96	0.00	0.00
170.00		495.32	403.53	0.00	0.00
173.00	(28) attachments	6312.07	2790.29	0.00	0.00
175.00		187.93	149.16	0.00	0.00
180.00		457.17	362.80	0.00	0.00
185.00		448.71	391.28	0.00	0.00

Total Applied Force Summary

Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II
		Page: 23



190.00		451.24	391.28	0.00	0.00
195.00	(18) attachments	5561.61	2264.27	0.00	0.00
	Totals:	45,337.27	46,828.85	0.00	0.00

Linear Appurtenance Segment Forces (Factored)

Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II

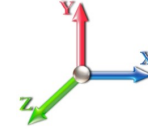


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Load Case: 0.9D + 1.6W 105 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 25

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	22.791	0.00	1.23
5.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	22.791	0.00	4.68
10.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	22.791	0.00	1.23
10.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	22.791	0.00	4.68
15.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	22.791	0.00	1.23
15.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	22.791	0.00	4.68
18.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.033	0.000	23.652	0.00	0.74
18.00	Step bolts (ladder)	Yes	3.00	0.000	0.00	0.00	0.00	0.033	0.000	23.652	0.00	2.81
18.00	Reinforcing channels	Yes	3.00	0.000	2.00	0.50	0.00	0.033	0.000	23.652	0.00	0.00
20.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.033	0.000	24.182	0.00	0.49
20.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.033	0.000	24.182	0.00	1.87
20.00	Reinforcing channels	Yes	2.00	0.000	2.00	0.33	0.00	0.033	0.000	24.182	0.00	0.00
25.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.033	0.000	25.345	0.00	1.23
25.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.033	0.000	25.345	0.00	4.68
25.00	Reinforcing channels	Yes	5.00	0.000	2.00	0.83	0.00	0.033	0.000	25.345	0.00	0.00
30.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.034	0.000	26.337	0.00	1.23
30.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.034	0.000	26.337	0.00	4.68
30.00	Reinforcing channels	Yes	5.00	0.000	2.00	0.83	0.00	0.034	0.000	26.337	0.00	0.00
35.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.035	0.000	27.206	0.00	1.23
35.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.035	0.000	27.206	0.00	4.68
35.00	Reinforcing channels	Yes	5.00	0.000	2.00	0.83	0.00	0.035	0.000	27.206	0.00	0.00
40.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.035	0.000	27.981	0.00	1.23
40.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.035	0.000	27.981	0.00	4.68
40.00	Reinforcing channels	Yes	5.00	0.000	2.00	0.83	0.00	0.035	0.000	27.981	0.00	0.00
41.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.036	0.000	28.127	0.00	0.25
41.00	Step bolts (ladder)	Yes	1.00	0.000	0.00	0.00	0.00	0.036	0.000	28.127	0.00	0.94
41.00	Reinforcing channels	Yes	1.00	0.000	2.00	0.17	0.00	0.036	0.000	28.127	0.00	0.00
45.00	Safety Cable	Yes	4.00	0.000	0.00	0.00	0.00	0.036	0.000	28.684	0.00	0.98
45.00	Step bolts (ladder)	Yes	4.00	0.000	0.00	0.00	0.00	0.036	0.000	28.684	0.00	3.74
45.00	Reinforcing channels	Yes	4.00	0.000	2.00	0.67	0.00	0.036	0.000	28.684	0.00	0.00
48.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.037	0.000	29.076	0.00	0.74
48.00	Step bolts (ladder)	Yes	3.00	0.000	0.00	0.00	0.00	0.037	0.000	29.076	0.00	2.81
48.00	Reinforcing channels	Yes	3.00	0.000	2.00	0.50	0.00	0.037	0.000	29.076	0.00	0.00
50.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.037	0.000	29.327	0.00	0.49
50.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.037	0.000	29.327	0.00	1.87
50.00	Reinforcing channels	Yes	2.00	0.000	2.00	0.33	0.00	0.037	0.000	29.327	0.00	0.00
55.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.037	0.000	29.922	0.00	1.23
55.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.037	0.000	29.922	0.00	4.68
55.00	Reinforcing channels	Yes	5.00	0.000	2.00	0.83	0.00	0.037	0.000	29.922	0.00	0.00
60.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.038	0.000	30.475	0.00	1.23
60.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.038	0.000	30.475	0.00	4.68
60.00	Reinforcing channels	Yes	5.00	0.000	2.00	0.83	0.00	0.038	0.000	30.475	0.00	0.00
65.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.039	0.000	30.993	0.00	1.23
65.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.039	0.000	30.993	0.00	4.68
65.00	Reinforcing channels	Yes	5.00	0.000	2.00	0.83	0.00	0.039	0.000	30.993	0.00	0.00
70.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.040	0.000	31.480	0.00	1.23
70.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.040	0.000	31.480	0.00	4.68

Linear Appurtenance Segment Forces (Factored)

Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II

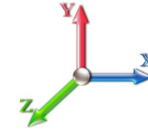


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Load Case: 0.9D + 1.6W 105 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 25

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
70.00	Reinforcing channels	Yes	5.00	0.000	2.00	0.83	0.00	0.040	0.000	31.480	0.00	0.00
75.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.041	0.000	31.941	0.00	1.23
75.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.041	0.000	31.941	0.00	4.68
75.00	Reinforcing channels	Yes	5.00	0.000	2.00	0.83	0.00	0.041	0.000	31.941	0.00	0.00
80.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.042	0.000	32.377	0.00	1.23
80.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.042	0.000	32.377	0.00	4.68
80.00	Reinforcing channels	Yes	5.00	0.000	2.00	0.83	0.00	0.042	0.000	32.377	0.00	0.00
81.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.043	0.000	32.462	0.00	0.25
81.00	Step bolts (ladder)	Yes	1.00	0.000	0.00	0.00	0.00	0.043	0.000	32.462	0.00	0.94
81.00	Reinforcing channels	Yes	1.00	0.000	2.00	0.17	0.00	0.043	0.000	32.462	0.00	0.00
85.00	Safety Cable	Yes	4.00	0.000	0.00	0.00	0.00	0.043	0.000	32.793	0.00	0.98
85.00	Step bolts (ladder)	Yes	4.00	0.000	0.00	0.00	0.00	0.043	0.000	32.793	0.00	3.74
85.00	Reinforcing channels	Yes	4.00	0.000	2.00	0.67	0.00	0.043	0.000	32.793	0.00	0.00
90.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.044	0.000	33.190	0.00	1.23
90.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.044	0.000	33.190	0.00	4.68
90.00	Reinforcing channels	Yes	5.00	0.000	2.00	0.83	0.00	0.044	0.000	33.190	0.00	0.00
91.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	33.268	0.00	0.25
91.00	Step bolts (ladder)	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	33.268	0.00	0.94
91.00	Reinforcing channels	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	33.268	0.00	0.00
95.00	Safety Cable	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	33.570	0.00	0.98
95.00	Step bolts (ladder)	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	33.570	0.00	3.74
95.00	Reinforcing channels	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	33.570	0.00	0.00
100.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	33.935	0.00	1.23
100.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	33.935	0.00	4.68
100.00	Reinforcing channels	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	33.935	0.00	0.00
105.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	34.285	0.00	1.23
105.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	34.285	0.00	4.68
105.00	Reinforcing channels	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	34.285	0.00	0.00
110.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	34.623	0.00	1.23
110.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	34.623	0.00	4.68
115.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	34.948	0.00	1.23
115.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	34.948	0.00	4.68
120.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	35.263	0.00	1.23
120.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	35.263	0.00	4.68
125.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	35.567	0.00	1.23
125.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	35.567	0.00	4.68
130.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	35.862	0.00	1.23
130.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	35.862	0.00	4.68
135.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	36.148	0.00	1.23
135.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	36.148	0.00	4.68
140.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	36.426	0.00	1.23
140.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	36.426	0.00	4.68
143.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	36.589	0.00	0.74
143.00	Step bolts (ladder)	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	36.589	0.00	2.81
145.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	36.696	0.00	0.49
145.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	36.696	0.00	1.87
150.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	36.959	0.00	1.23

Linear Appurtenance Segment Forces (Factored)

Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II

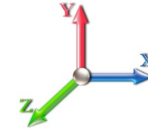


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Load Case: 0.9D + 1.6W 105 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 25

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
150.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	36.959	0.00	4.68
153.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	37.113	0.00	0.74
153.00	Step bolts (ladder)	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	37.113	0.00	2.81
155.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	37.215	0.00	0.49
155.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	37.215	0.00	1.87
159.00	Safety Cable	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	37.415	0.00	0.98
159.00	Step bolts (ladder)	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	37.415	0.00	3.74
160.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	37.464	0.00	0.25
160.00	Step bolts (ladder)	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	37.464	0.00	0.94
165.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	37.708	0.00	1.23
165.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	37.708	0.00	4.68
170.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	37.946	0.00	1.23
170.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	37.946	0.00	4.68
173.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	38.086	0.00	0.74
173.00	Step bolts (ladder)	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	38.086	0.00	2.81
175.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	38.178	0.00	0.49
175.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	38.178	0.00	1.87
180.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	38.405	0.00	1.23
180.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	38.405	0.00	4.68
185.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	38.627	0.00	1.23
185.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	38.627	0.00	4.68
190.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	38.845	0.00	1.23
190.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	38.845	0.00	4.68
195.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	39.058	0.00	1.23
195.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	39.058	0.00	4.68
Totals:											0.0	230.4

Calculated Forces

Structure: CT00167-S-SBA
Site Name: Lisbon
Height: 195.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1

Topography: 1

Code: EIA/TIA-222-G
Exposure: C
Crest Height: 0.00
Site Class: B - Competent Rock
Struct Class: II

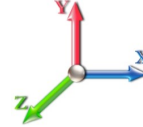
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Load Case: 0.9D + 1.6W 105 mph Wind

Iterations 25

Dead Load Factor 0.90
Wind Load Factor 1.60



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-46.76	-45.41	0.00	-5914.8	0.00	5914.88	6497.76	3248.88	17121.8	8573.64	0.00	0.000	0.000	0.697
5.00	-45.07	-44.85	0.00	-5687.8	0.00	5687.83	6432.14	3216.07	16632.6	8328.66	0.10	-0.179	0.000	0.690
10.00	-43.42	-44.29	0.00	-5463.6	0.00	5463.60	6364.44	3182.22	16144.5	8084.28	0.38	-0.361	0.000	0.683
15.00	-41.83	-43.70	0.00	-5242.1	0.00	5242.18	6294.68	3147.34	15658.0	7840.66	0.86	-0.546	0.000	0.540
18.00	-40.89	-43.32	0.00	-5111.0	0.00	5111.09	6251.82	3125.91	15366.9	7694.92	1.23	-0.637	0.000	0.535
18.00	-40.89	-43.32	0.00	-5111.0	0.00	5111.09	5035.78	2517.89	12403.8	6211.14	1.23	-0.637	0.000	0.570
20.00	-40.30	-43.12	0.00	-5024.4	0.00	5024.44	5016.94	2508.47	12258.7	6138.49	1.51	-0.698	0.000	0.637
25.00	-38.92	-42.49	0.00	-4808.8	0.00	4808.85	4968.35	2484.18	11895.7	5956.70	2.34	-0.869	0.000	0.625
30.00	-37.56	-41.85	0.00	-4596.3	0.00	4596.38	4917.65	2458.83	11532.4	5774.82	3.34	-1.042	0.000	0.612
35.00	-36.23	-41.19	0.00	-4387.1	0.00	4387.14	4864.84	2432.42	11169.4	5593.00	4.52	-1.217	0.000	0.600
40.00	-34.97	-40.47	0.00	-4181.2	0.00	4181.20	4809.92	2404.96	10806.7	5411.42	5.89	-1.393	0.000	0.587
41.00	-34.68	-40.37	0.00	-4140.7	0.00	4140.72	4798.68	2399.34	10734.3	5375.14	6.19	-1.429	0.000	0.585
45.00	-32.87	-39.79	0.00	-3979.2	0.00	3979.24	4752.88	2376.44	10444.9	5230.21	7.45	-1.573	0.000	0.571
48.00	-31.54	-39.34	0.00	-3859.8	0.00	3859.87	4754.71	2377.36	10456.3	5235.93	8.47	-1.681	0.000	0.575
50.00	-31.00	-39.09	0.00	-3781.1	0.00	3781.19	4731.34	2365.67	10311.8	5163.58	9.19	-1.754	0.000	0.552
55.00	-29.76	-38.38	0.00	-3585.7	0.00	3585.72	4671.41	2335.70	9951.50	4983.15	11.12	-1.929	0.000	0.538
60.00	-28.54	-37.67	0.00	-3393.8	0.00	3393.81	4609.37	2304.68	9592.67	4803.47	13.24	-2.105	0.000	0.525
65.00	-27.35	-36.96	0.00	-3205.4	0.00	3205.46	4545.22	2272.61	9235.65	4624.69	15.54	-2.282	0.000	0.511
70.00	-26.19	-36.25	0.00	-3020.6	0.00	3020.67	4478.96	2239.48	8880.76	4446.98	18.02	-2.460	0.000	0.497
75.00	-25.05	-35.54	0.00	-2839.4	0.00	2839.44	4410.58	2205.29	8528.29	4270.48	20.69	-2.639	0.000	0.483
80.00	-23.99	-34.80	0.00	-2661.7	0.00	2661.76	4340.09	2170.05	8178.57	4095.36	23.55	-2.818	0.000	0.468
81.00	-23.73	-34.68	0.00	-2626.9	0.00	2626.97	4325.74	2162.87	8108.99	4060.52	24.15	-2.855	0.000	0.465
81.00	-23.73	-34.68	0.00	-2626.9	0.00	2626.97	3843.52	1921.76	7205.03	3607.87	24.15	-2.855	0.000	0.523
85.00	-22.85	-34.13	0.00	-2488.2	0.00	2488.24	3789.25	1894.62	6954.21	3482.28	26.60	-3.000	0.000	0.510
90.00	-21.02	-33.34	0.00	-2317.6	0.00	2317.61	3719.86	1859.93	6643.95	3326.92	29.84	-3.180	0.000	0.488
91.00	-20.62	-33.21	0.00	-2284.2	0.00	2284.27	3750.02	1875.01	6777.40	3393.74	30.51	-3.217	0.000	0.495
95.00	-19.78	-32.65	0.00	-2151.4	0.00	2151.42	3693.87	1846.94	6530.61	3270.16	33.26	-3.360	0.000	0.463
100.00	-18.74	-31.96	0.00	-1988.1	0.00	1988.16	3622.15	1811.07	6225.69	3117.47	36.87	-3.531	0.000	0.643
105.00	-17.70	-31.29	0.00	-1828.3	0.00	1828.36	3548.72	1774.36	5924.97	2966.89	40.70	-3.777	0.000	0.622
110.00	-16.70	-30.62	0.00	-1671.9	0.00	1671.93	3473.57	1736.79	5628.70	2818.54	44.79	-4.023	0.000	0.598
115.00	-15.72	-29.96	0.00	-1518.8	0.00	1518.84	3396.72	1698.36	5337.14	2672.54	49.13	-4.268	0.000	0.573
120.00	-14.77	-29.31	0.00	-1369.0	0.00	1369.05	3318.16	1659.08	5050.54	2529.02	53.72	-4.511	0.000	0.546
125.00	-13.85	-28.66	0.00	-1222.5	0.00	1222.52	3226.71	1613.36	4752.68	2379.87	58.57	-4.750	0.000	0.518
130.00	-12.95	-28.02	0.00	-1079.2	0.00	1079.22	3120.09	1560.05	4442.21	2224.41	63.67	-4.985	0.000	0.490
135.00	-11.46	-27.32	0.00	-939.11	0.00	939.11	3080.81	1540.41	4330.47	2168.45	69.01	-5.212	0.000	0.437
140.00	-10.63	-26.68	0.00	-802.48	0.00	802.48	2974.19	1487.09	4034.35	2020.17	74.58	-5.430	0.000	0.401
140.00	-10.63	-26.68	0.00	-802.48	0.00	802.48	1787.24	893.62	2442.64	1223.14	74.58	-5.430	0.000	0.663
143.00	-9.23	-24.11	0.00	-722.44	0.00	722.44	1762.68	881.34	2357.06	1180.28	78.02	-5.549	0.000	0.618
145.00	-8.96	-23.89	0.00	-674.22	0.00	674.22	1745.97	872.98	2300.37	1151.90	80.37	-5.664	0.000	0.591
150.00	-8.42	-23.30	0.00	-554.79	0.00	554.79	1703.02	851.51	2160.05	1081.63	86.44	-5.929	0.000	0.519
153.00	-7.22	-22.31	0.00	-484.89	0.00	484.89	1676.45	838.23	2076.88	1039.98	90.21	-6.079	0.000	0.471
155.00	-7.00	-22.09	0.00	-440.28	0.00	440.28	1658.40	829.20	2021.90	1012.45	92.77	-6.175	0.000	0.440
159.00	-5.60	-15.25	0.00	-351.94	0.00	351.94	1621.51	810.75	1913.13	957.99	98.01	-6.347	0.000	0.371
160.00	-5.50	-15.15	0.00	-336.69	0.00	336.69	1612.12	806.06	1886.20	944.50	99.34	-6.388	0.000	0.360
165.00	-5.09	-14.60	0.00	-260.97	0.00	260.97	1564.16	782.08	1753.17	877.89	106.12	-6.571	0.000	0.301
170.00	-4.72	-14.07	0.00	-187.95	0.00	187.95	1514.53	757.27	1623.07	812.74	113.07	-6.727	0.000	0.235
173.00	-2.69	-7.48	0.00	-145.73	0.00	145.73	1483.95	741.98	1546.51	774.41	117.32	-6.807	0.000	0.190
175.00	-2.55	-7.28	0.00	-130.78	0.00	130.78	1463.23	731.62	1496.14	749.18	120.17	-6.855	0.000	0.176

Calculated Forces

Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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180.00	-2.24	-6.78	0.00	-94.38	0.00	94.38	1400.09	700.04	1362.73	682.38	127.39	-6.958	0.000	0.140
180.00	-2.24	-6.78	0.00	-94.38	0.00	94.38	871.37	435.68	845.88	423.57	127.39	-6.958	0.000	0.226
185.00	-1.90	-6.29	0.00	-60.46	0.00	60.46	871.37	435.68	845.88	423.57	134.71	-7.040	0.000	0.145
190.00	-1.56	-5.80	0.00	-28.99	0.00	28.99	871.37	435.68	845.88	423.57	142.09	-7.082	0.000	0.070
195.00	0.00	-5.56	0.00	0.00	0.00	0.00	871.37	435.68	845.88	423.57	149.50	-7.096	0.000	0.000

Wind Loading - Shaft

Structure: CT00167-S-SBA

Code: EIA/TIA-222-G

12/6/2017

Site Name: Lisbon

Exposure: C

Height: 195.00 (ft)

Crest Height: 0.00

Base Elev: 0.000 (ft)

Site Class: B - Competent Rock

Gh: 1.1

Topography: 1

Struct Class: II

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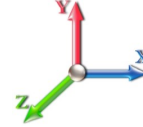


Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Iterations 25

Dead Load Factor 1.20

Wind Load Factor 1.00



Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	5.168	5.68	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	5.168	5.68	0.00	1.200	1.242	5.00	28.073	33.69	191.5	502.3	2301.7
10.00		1.00	0.85	5.168	5.68	0.00	1.200	1.331	5.00	27.645	33.17	188.6	529.2	2294.9
15.00	RB1	1.00	0.85	5.168	5.68	0.00	1.200	1.386	5.00	27.189	32.63	185.5	541.2	2273.3
18.00	Top - Section 1	1.00	0.88	5.363	5.90	0.00	1.200	1.412	3.00	16.085	19.30	113.9	327.1	1350.1
20.00		1.00	0.90	5.483	6.03	0.00	1.200	1.427	2.00	10.628	12.75	76.9	218.7	798.1
25.00		1.00	0.95	5.747	6.32	0.00	1.200	1.459	5.00	26.244	31.49	199.1	548.5	1976.9
30.00		1.00	0.98	5.972	6.57	0.00	1.200	1.486	5.00	25.764	30.92	203.1	547.8	1947.4
35.00		1.00	1.01	6.169	6.79	0.00	1.200	1.509	5.00	25.281	30.34	205.9	545.3	1916.0
40.00		1.00	1.04	6.345	6.98	0.00	1.200	1.529	5.00	24.796	29.75	207.7	541.5	1883.3
41.00	Bot - Section 3	1.00	1.05	6.378	7.02	0.00	1.200	1.533	1.00	4.899	5.88	41.2	108.1	373.0
45.00		1.00	1.07	6.504	7.15	0.00	1.200	1.547	4.00	19.660	23.59	168.8	435.1	2545.8
48.00	Top - Section 2	1.00	1.08	6.593	7.25	0.00	1.200	1.557	3.00	14.539	17.45	126.5	324.3	1883.1
50.00		1.00	1.09	6.650	7.32	0.00	1.200	1.564	2.00	9.594	11.51	84.2	215.2	732.7
55.00		1.00	1.12	6.785	7.46	0.00	1.200	1.579	5.00	23.647	28.38	211.8	531.7	1805.1
60.00		1.00	1.14	6.910	7.60	0.00	1.200	1.592	5.00	23.156	27.79	211.2	524.6	1769.2
65.00		1.00	1.16	7.028	7.73	0.00	1.200	1.605	5.00	22.664	27.20	210.2	517.0	1732.7
70.00		1.00	1.17	7.138	7.85	0.00	1.200	1.617	5.00	22.172	26.61	208.9	508.9	1695.8
75.00		1.00	1.19	7.243	7.97	0.00	1.200	1.628	5.00	21.679	26.01	207.3	500.4	1658.5
80.00		1.00	1.21	7.342	8.08	0.00	1.200	1.639	5.00	21.185	25.42	205.3	491.6	1620.8
81.00	Top - Section 3	1.00	1.21	7.361	8.10	0.00	1.200	1.641	1.00	4.177	5.01	40.6	98.0	320.3
85.00	Bot - Section 5	1.00	1.22	7.436	8.18	0.00	1.200	1.649	4.00	16.513	19.82	162.1	385.9	1263.9
90.00		1.00	1.24	7.526	8.28	0.00	1.200	1.658	5.00	20.514	24.62	203.8	480.7	2641.9
91.00	Top - Section 4	1.00	1.24	7.544	8.30	0.00	1.200	1.660	1.00	4.043	4.85	40.3	95.8	521.1
95.00	RT1	1.00	1.25	7.612	8.37	0.00	1.200	1.667	4.00	15.975	19.17	160.5	376.8	1223.2
100.00		1.00	1.27	7.695	8.46	0.00	1.200	1.676	5.00	19.524	23.43	198.3	461.0	1493.0
105.00		1.00	1.28	7.774	8.55	0.00	1.200	1.684	5.00	19.028	22.83	195.3	450.9	1454.0
110.00		1.00	1.29	7.851	8.64	0.00	1.200	1.692	5.00	18.532	22.24	192.1	440.4	1414.7
115.00		1.00	1.30	7.925	8.72	0.00	1.200	1.699	5.00	18.036	21.64	188.7	429.8	1375.3
120.00		1.00	1.32	7.996	8.80	0.00	1.200	1.707	5.00	17.540	21.05	185.1	419.1	1335.6
125.00		1.00	1.33	8.065	8.87	0.00	1.200	1.714	5.00	17.043	20.45	181.4	408.1	1295.8
130.00	Bot - Section 6	1.00	1.34	8.132	8.95	0.00	1.200	1.720	5.00	16.546	19.86	177.6	397.0	1255.8
135.00	Top - Section 5	1.00	1.35	8.197	9.02	0.00	1.200	1.727	5.00	16.366	19.64	177.1	393.8	2072.0
140.00	Top - Section 6	1.00	1.36	8.260	9.09	0.00	1.200	1.733	5.00	15.869	19.04	173.0	382.4	1201.8
143.00	Appurtenance(s)	1.00	1.36	8.297	9.13	0.00	1.200	1.737	3.00	9.282	11.14	101.7	225.3	545.0
145.00		1.00	1.37	8.321	9.15	0.00	1.200	1.739	2.00	6.088	7.31	66.9	148.3	357.7
150.00		1.00	1.38	8.381	9.22	0.00	1.200	1.745	5.00	14.874	17.85	164.5	359.2	869.0
153.00	Appurtenance(s)	1.00	1.38	8.416	9.26	0.00	1.200	1.749	3.00	8.685	10.42	96.5	211.3	507.9
155.00		1.00	1.39	8.439	9.28	0.00	1.200	1.751	2.00	5.690	6.83	63.4	139.0	332.9
159.00	Appurtenance(s)	1.00	1.40	8.484	9.33	0.00	1.200	1.755	4.00	11.143	13.37	124.8	270.3	648.9
160.00		1.00	1.40	8.495	9.34	0.00	1.200	1.757	1.00	2.736	3.28	30.7	67.1	159.8
165.00		1.00	1.41	8.551	9.41	0.00	1.200	1.762	5.00	13.381	16.06	151.0	323.5	775.6
170.00		1.00	1.42	8.604	9.46	0.00	1.200	1.767	5.00	12.883	15.46	146.3	311.4	744.2
173.00	Appurtenance(s)	1.00	1.42	8.636	9.50	0.00	1.200	1.770	3.00	7.490	8.99	85.4	182.4	432.9
175.00		1.00	1.42	8.657	9.52	0.00	1.200	1.772	2.00	4.894	5.87	55.9	119.7	282.8
180.00	Top - Section 7	1.00	1.43	8.709	9.58	0.00	1.200	1.777	5.00	11.887	14.26	136.6	286.8	681.2
185.00		1.00	1.44	8.759	9.63	0.00	1.200	1.782	5.00	11.639	13.97	134.6	287.6	720.0

Wind Loading - Shaft

Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Page: 30
	Struct Class: II	



190.00	1.00	1.45	8.808	9.69	0.00	1.200	1.787	5.00	11.643	13.97	135.4	288.5	720.8
195.00 Appurtenance(s)	1.00	1.46	8.857	9.74	0.00	1.200	1.792	5.00	11.647	13.98	136.2	289.3	721.6
Totals:								195.00			7,153.3		59,927.0

Discrete Appurtenance Forces

Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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

Dead Load Factor 1.20
Wind Load Factor 1.00



Iterations 25

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	195.00	AIR 21, 1.3M, B4A B2P	3	8.857	9.742	0.78	0.90	16.91	848.26	0.000	0.000	164.72	0.00	0.00
2	195.00	T-Arm (Flat)	3	8.857	9.742	0.56	0.75	31.99	2059.97	0.000	0.000	311.67	0.00	0.00
3	195.00	AIR 21, 1.3M, B2A B4P	3	8.857	9.742	0.78	0.90	16.86	852.22	0.000	0.000	164.24	0.00	0.00
4	195.00	S11B12	3	8.857	9.742	0.45	0.90	4.75	349.66	0.000	0.000	46.29	0.00	0.00
5	195.00	KRY 112 144/1	3	8.857	9.742	0.45	0.90	1.21	63.50	0.000	0.000	11.81	0.00	0.00
6	195.00	LNx-6515DS-A1M	3	8.857	9.742	0.72	0.90	32.02	688.84	0.000	0.000	311.94	0.00	0.00
7	173.00	ALU TD-RRH8x20-25	3	8.636	9.500	0.55	0.80	8.07	589.16	0.000	0.000	76.70	0.00	0.00
8	173.00	DT465B-2XR	3	8.636	9.500	0.66	0.80	20.84	911.00	0.000	0.000	197.97	0.00	0.00
9	173.00	RFS ACU-A20-N RET	4	8.636	9.500	0.40	0.80	0.71	17.03	0.000	0.000	6.70	0.00	0.00
10	173.00	ALU 800 MHz Filter	3	8.636	9.500	0.40	0.80	0.90	106.39	0.000	0.000	8.56	0.00	0.00
11	173.00	ALU 800 MHz RRH	6	8.636	9.500	0.40	0.80	8.76	705.14	0.000	0.000	83.22	0.00	0.00
12	173.00	ALU 1900 MHz RRH	3	8.636	9.500	0.40	0.80	6.25	397.00	0.000	0.000	59.39	0.00	0.00
13	173.00	APXVSP18-C-A20	3	8.636	9.500	0.66	0.80	21.62	582.71	0.000	0.000	205.39	0.00	0.00
14	173.00	Sector Frame-Pipe/Rod	3	8.636	9.500	0.60	0.80	57.07	3737.56	0.000	0.000	542.17	0.00	0.00
15	159.00	Low Profile Platform-flat	1	8.484	9.333	1.00	1.00	46.06	2193.25	0.000	0.000	429.90	0.00	0.00
16	159.00	SBNHH-1D65B	6	8.484	9.333	0.66	0.80	37.72	1515.29	0.000	0.000	352.03	0.00	0.00
17	159.00	BXA-70080-4BF	3	8.484	9.333	0.71	0.80	11.51	233.93	0.000	0.000	107.38	0.00	0.00
18	159.00	RFs FD9R6004/2CL-3CL	6	8.484	9.333	0.80	0.80	3.87	56.96	0.000	0.000	36.10	0.00	0.00
19	159.00	Rfs Celwave	2	8.484	9.333	0.57	0.80	6.45	334.80	0.000	0.000	60.21	0.00	0.00
20	159.00	BXA-70063-6CF-2	3	8.484	9.333	0.58	0.80	15.48	587.47	0.000	0.000	144.51	0.00	0.00
21	159.00	Alcatel Lucent B66	3	8.484	9.333	0.66	0.80	6.37	458.69	0.000	0.000	59.48	0.00	0.00
22	159.00	Alcatel Lucent B25	3	8.484	9.333	0.65	0.80	5.35	316.15	0.000	0.000	49.92	0.00	0.00
23	153.00	Standoff Mount	3	8.416	9.257	0.56	0.75	14.34	1841.33	0.000	0.000	132.74	0.00	0.00
24	143.00	742 351	6	8.297	9.126	0.49	0.80	21.54	619.82	0.000	0.000	196.60	0.00	0.00
25	143.00	T-Arm (Flat)	3	8.297	9.126	0.56	0.75	31.53	2033.71	0.000	0.000	287.76	0.00	0.00
Totals:								22,099.84				4,047.42		

Total Applied Force Summary

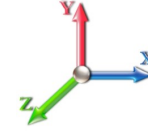
Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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

Dead Load Factor 1.20
Wind Load Factor 1.00



Iterations 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		191.51	2581.71	0.00	0.00
10.00		188.59	2578.07	0.00	0.00
15.00		185.48	2558.50	0.00	0.00
18.00		113.87	1536.25	0.00	0.00
20.00		76.93	922.61	0.00	0.00
25.00		199.10	2290.18	0.00	0.00
30.00		203.11	2262.37	0.00	0.00
35.00		205.87	2232.54	0.00	0.00
40.00		207.67	2201.19	0.00	0.00
41.00		41.25	436.65	0.00	0.00
45.00		168.80	2801.07	0.00	0.00
48.00		126.54	2074.97	0.00	0.00
50.00		84.22	860.81	0.00	0.00
55.00		211.79	2126.43	0.00	0.00
60.00		211.22	2091.46	0.00	0.00
65.00		210.25	2055.90	0.00	0.00
70.00		208.92	2019.82	0.00	0.00
75.00		207.26	1983.28	0.00	0.00
80.00		205.31	1946.33	0.00	0.00
81.00		40.59	385.47	0.00	0.00
85.00		162.08	1524.90	0.00	0.00
90.00		203.79	2968.86	0.00	0.00
91.00		40.26	583.74	0.00	0.00
95.00		160.52	1474.22	0.00	0.00
100.00		198.31	1807.40	0.00	0.00
105.00		195.27	1768.89	0.00	0.00
110.00		192.05	1712.66	0.00	0.00
115.00		188.67	1673.54	0.00	0.00
120.00		185.13	1634.22	0.00	0.00
125.00		181.44	1594.72	0.00	0.00
130.00		177.61	1555.05	0.00	0.00
135.00		177.08	2371.55	0.00	0.00
140.00		173.02	1501.59	0.00	0.00
143.00	(9) attachments	586.02	3378.55	0.00	0.00
145.00		66.87	447.55	0.00	0.00
150.00		164.55	1094.01	0.00	0.00
153.00	(3) attachments	229.22	2484.37	0.00	0.00
155.00		63.39	422.99	0.00	0.00
159.00	(27) attachments	1364.32	6525.85	0.00	0.00
160.00		30.68	189.82	0.00	0.00
165.00		151.03	925.77	0.00	0.00
170.00		146.32	894.65	0.00	0.00
173.00	(28) attachments	1265.50	7569.23	0.00	0.00
175.00		55.92	336.73	0.00	0.00
180.00		136.64	816.26	0.00	0.00
185.00		134.57	855.31	0.00	0.00

Total Applied Force Summary

Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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190.00		135.38	856.36	0.00	0.00
195.00	(18) attachments	1146.83	5719.83	0.00	0.00
Totals:		11,200.71	92,634.24	0.00	0.00

Linear Appurtenance Segment Forces (Factored)

Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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

Dead Load Factor 1.20
Wind Load Factor 1.00



Iterations 25

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.168	0.00	12.93
5.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.168	0.00	18.85
10.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.168	0.00	14.46
10.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.168	0.00	20.46
15.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.168	0.00	15.46
15.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	5.168	0.00	21.51
18.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.033	0.000	5.363	0.00	9.56
18.00	Step bolts (ladder)	Yes	3.00	0.000	0.00	0.00	0.00	0.033	0.000	5.363	0.00	13.21
18.00	Reinforcing channels	Yes	3.00	0.000	2.00	1.21	0.00	0.033	0.000	5.363	0.00	14.39
20.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.033	0.000	5.483	0.00	6.48
20.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.033	0.000	5.483	0.00	8.92
20.00	Reinforcing channels	Yes	2.00	0.000	2.00	0.81	0.00	0.033	0.000	5.483	0.00	9.75
25.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.033	0.000	5.747	0.00	16.83
25.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.033	0.000	5.747	0.00	22.95
25.00	Reinforcing channels	Yes	5.00	0.000	2.00	2.05	0.00	0.033	0.000	5.747	0.00	25.18
30.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.034	0.000	5.972	0.00	17.35
30.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.034	0.000	5.972	0.00	23.50
30.00	Reinforcing channels	Yes	5.00	0.000	2.00	2.07	0.00	0.034	0.000	5.972	0.00	25.88
35.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.035	0.000	6.169	0.00	17.80
35.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.035	0.000	6.169	0.00	23.98
35.00	Reinforcing channels	Yes	5.00	0.000	2.00	2.09	0.00	0.035	0.000	6.169	0.00	26.48
40.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.035	0.000	6.345	0.00	18.21
40.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.035	0.000	6.345	0.00	24.40
40.00	Reinforcing channels	Yes	5.00	0.000	2.00	2.11	0.00	0.035	0.000	6.345	0.00	27.01
41.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.036	0.000	6.378	0.00	3.66
41.00	Step bolts (ladder)	Yes	1.00	0.000	0.00	0.00	0.00	0.036	0.000	6.378	0.00	4.90
41.00	Reinforcing channels	Yes	1.00	0.000	2.00	0.42	0.00	0.036	0.000	6.378	0.00	5.42
45.00	Safety Cable	Yes	4.00	0.000	0.00	0.00	0.00	0.036	0.000	6.504	0.00	14.86
45.00	Step bolts (ladder)	Yes	4.00	0.000	0.00	0.00	0.00	0.036	0.000	6.504	0.00	19.83
45.00	Reinforcing channels	Yes	4.00	0.000	2.00	1.70	0.00	0.036	0.000	6.504	0.00	21.99
48.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.037	0.000	6.593	0.00	11.27
48.00	Step bolts (ladder)	Yes	3.00	0.000	0.00	0.00	0.00	0.037	0.000	6.593	0.00	15.00
48.00	Reinforcing channels	Yes	3.00	0.000	2.00	1.28	0.00	0.037	0.000	6.593	0.00	16.66
50.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.037	0.000	6.650	0.00	7.56
50.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.037	0.000	6.650	0.00	10.06
50.00	Reinforcing channels	Yes	2.00	0.000	2.00	0.85	0.00	0.037	0.000	6.650	0.00	11.17
55.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.037	0.000	6.785	0.00	19.22
55.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.037	0.000	6.785	0.00	25.46
55.00	Reinforcing channels	Yes	5.00	0.000	2.00	2.15	0.00	0.037	0.000	6.785	0.00	28.34
60.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.038	0.000	6.910	0.00	19.51
60.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.038	0.000	6.910	0.00	25.76
60.00	Reinforcing channels	Yes	5.00	0.000	2.00	2.16	0.00	0.038	0.000	6.910	0.00	28.71
65.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.039	0.000	7.028	0.00	19.78
65.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.039	0.000	7.028	0.00	26.04
65.00	Reinforcing channels	Yes	5.00	0.000	2.00	2.17	0.00	0.039	0.000	7.028	0.00	29.06
70.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.040	0.000	7.138	0.00	20.03
70.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.040	0.000	7.138	0.00	26.31

Linear Appurtenance Segment Forces (Factored)

Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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

Dead Load Factor 1.20
Wind Load Factor 1.00



Iterations 25

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
70.00	Reinforcing channels	Yes	5.00	0.000	2.00	2.18	0.00	0.040	0.000	7.138	0.00	29.39
75.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.041	0.000	7.243	0.00	20.27
75.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.041	0.000	7.243	0.00	26.56
75.00	Reinforcing channels	Yes	5.00	0.000	2.00	2.19	0.00	0.041	0.000	7.243	0.00	29.70
80.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.042	0.000	7.342	0.00	20.49
80.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.042	0.000	7.342	0.00	26.79
80.00	Reinforcing channels	Yes	5.00	0.000	2.00	2.20	0.00	0.042	0.000	7.342	0.00	29.99
81.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.043	0.000	7.361	0.00	4.11
81.00	Step bolts (ladder)	Yes	1.00	0.000	0.00	0.00	0.00	0.043	0.000	7.361	0.00	5.37
81.00	Reinforcing channels	Yes	1.00	0.000	2.00	0.44	0.00	0.043	0.000	7.361	0.00	6.01
85.00	Safety Cable	Yes	4.00	0.000	0.00	0.00	0.00	0.043	0.000	7.436	0.00	16.57
85.00	Step bolts (ladder)	Yes	4.00	0.000	0.00	0.00	0.00	0.043	0.000	7.436	0.00	21.61
85.00	Reinforcing channels	Yes	4.00	0.000	2.00	1.77	0.00	0.043	0.000	7.436	0.00	24.21
90.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.044	0.000	7.526	0.00	20.91
90.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.044	0.000	7.526	0.00	27.23
90.00	Reinforcing channels	Yes	5.00	0.000	2.00	2.22	0.00	0.044	0.000	7.526	0.00	30.53
91.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	7.544	0.00	4.19
91.00	Step bolts (ladder)	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	7.544	0.00	5.45
91.00	Reinforcing channels	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	7.544	0.00	3.37
95.00	Safety Cable	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	7.612	0.00	16.89
95.00	Step bolts (ladder)	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	7.612	0.00	21.95
95.00	Reinforcing channels	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	7.612	0.00	13.59
100.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.695	0.00	21.30
100.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.695	0.00	27.63
100.00	Reinforcing channels	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.695	0.00	17.16
105.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.774	0.00	21.48
105.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.774	0.00	27.82
105.00	Reinforcing channels	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.774	0.00	17.32
110.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.851	0.00	21.65
110.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.851	0.00	28.00
115.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.925	0.00	21.82
115.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.925	0.00	28.18
120.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.996	0.00	21.98
120.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.996	0.00	28.34
125.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.065	0.00	22.14
125.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.065	0.00	28.51
130.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.132	0.00	22.29
130.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.132	0.00	28.67
135.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.197	0.00	22.43
135.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.197	0.00	28.82
140.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.260	0.00	22.57
140.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.260	0.00	28.97
143.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	8.297	0.00	13.59
143.00	Step bolts (ladder)	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	8.297	0.00	17.43
145.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	8.321	0.00	9.09
145.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	8.321	0.00	11.64
150.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.381	0.00	22.85

Linear Appurtenance Segment Forces (Factored)

Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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

Dead Load Factor 1.20
Wind Load Factor 1.00



Iterations 25

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
150.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.381	0.00	29.25
153.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	8.416	0.00	13.76
153.00	Step bolts (ladder)	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	8.416	0.00	17.60
155.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	8.439	0.00	9.19
155.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	8.439	0.00	11.75
159.00	Safety Cable	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	8.484	0.00	18.46
159.00	Step bolts (ladder)	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	8.484	0.00	23.59
160.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	8.495	0.00	4.62
160.00	Step bolts (ladder)	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	8.495	0.00	5.90
165.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.551	0.00	23.23
165.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.551	0.00	29.65
170.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.604	0.00	23.35
170.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.604	0.00	29.78
173.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	8.636	0.00	14.05
173.00	Step bolts (ladder)	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	8.636	0.00	17.91
175.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	8.657	0.00	9.39
175.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	8.657	0.00	11.96
180.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.709	0.00	23.59
180.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.709	0.00	30.02
185.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.759	0.00	23.70
185.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.759	0.00	30.14
190.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.808	0.00	23.81
190.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.808	0.00	30.25
195.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.857	0.00	23.92
195.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	8.857	0.00	30.37
Totals:											0.0	2,322.2

Calculated Forces

Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II

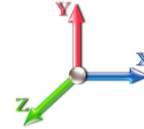


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Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Iterations 25

Dead Load Factor 1.20
Wind Load Factor 1.00



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-92.63	-11.24	0.00	-1457.5	0.00	1457.50	6497.76	3248.88	17121.8	8573.64	0.00	0.000	0.000	0.184
5.00	-90.04	-11.11	0.00	-1401.3	0.00	1401.32	6432.14	3216.07	16632.6	8328.66	0.02	-0.044	0.000	0.182
10.00	-87.45	-10.99	0.00	-1345.7	0.00	1345.75	6364.44	3182.22	16144.5	8084.28	0.09	-0.089	0.000	0.180
15.00	-84.89	-10.85	0.00	-1290.7	0.00	1290.79	6294.68	3147.34	15658.0	7840.66	0.21	-0.134	0.000	0.143
18.00	-83.35	-10.76	0.00	-1258.2	0.00	1258.24	6251.82	3125.91	15366.9	7694.92	0.30	-0.157	0.000	0.141
18.00	-83.35	-10.76	0.00	-1258.2	0.00	1258.24	5035.78	2517.89	12403.8	6211.14	0.30	-0.157	0.000	0.150
20.00	-82.42	-10.72	0.00	-1236.7	0.00	1236.72	5016.94	2508.47	12258.7	6138.49	0.37	-0.172	0.000	0.168
25.00	-80.12	-10.57	0.00	-1183.1	0.00	1183.11	4968.35	2484.18	11895.7	5956.70	0.58	-0.214	0.000	0.165
30.00	-77.85	-10.42	0.00	-1130.2	0.00	1130.24	4917.65	2458.83	11532.4	5774.82	0.82	-0.257	0.000	0.161
35.00	-75.62	-10.26	0.00	-1078.1	0.00	1078.14	4864.84	2432.42	11169.4	5593.00	1.11	-0.299	0.000	0.158
40.00	-73.41	-10.07	0.00	-1026.8	0.00	1026.83	4809.92	2404.96	10806.7	5411.42	1.45	-0.343	0.000	0.155
41.00	-72.97	-10.06	0.00	-1016.7	0.00	1016.76	4798.68	2399.34	10734.3	5375.14	1.52	-0.352	0.000	0.154
45.00	-70.17	-9.91	0.00	-976.53	0.00	976.53	4752.88	2376.44	10444.9	5230.21	1.83	-0.387	0.000	0.150
48.00	-68.09	-9.79	0.00	-946.80	0.00	946.80	4754.71	2377.36	10456.3	5235.93	2.09	-0.414	0.000	0.151
50.00	-67.22	-9.74	0.00	-927.21	0.00	927.21	4731.34	2365.67	10311.8	5163.58	2.26	-0.431	0.000	0.145
55.00	-65.09	-9.56	0.00	-878.51	0.00	878.51	4671.41	2335.70	9951.50	4983.15	2.74	-0.474	0.000	0.141
60.00	-62.99	-9.38	0.00	-830.72	0.00	830.72	4609.37	2304.68	9592.67	4803.47	3.26	-0.517	0.000	0.138
65.00	-60.93	-9.19	0.00	-783.83	0.00	783.83	4545.22	2272.61	9235.65	4624.69	3.82	-0.561	0.000	0.134
70.00	-58.91	-9.01	0.00	-737.85	0.00	737.85	4478.96	2239.48	8880.76	4446.98	4.43	-0.604	0.000	0.130
75.00	-56.92	-8.82	0.00	-692.80	0.00	692.80	4410.58	2205.29	8528.29	4270.48	5.09	-0.648	0.000	0.126
80.00	-54.97	-8.62	0.00	-648.68	0.00	648.68	4340.09	2170.05	8178.57	4095.36	5.79	-0.692	0.000	0.122
81.00	-54.59	-8.60	0.00	-640.06	0.00	640.06	4325.74	2162.87	8108.99	4060.52	5.94	-0.701	0.000	0.122
81.00	-54.59	-8.60	0.00	-640.06	0.00	640.06	3843.52	1921.76	7205.03	3607.87	5.94	-0.701	0.000	0.137
85.00	-53.06	-8.45	0.00	-605.67	0.00	605.67	3789.25	1894.62	6954.21	3482.28	6.54	-0.736	0.000	0.133
90.00	-50.09	-8.23	0.00	-563.41	0.00	563.41	3719.86	1859.93	6643.95	3326.92	7.33	-0.780	0.000	0.127
91.00	-49.50	-8.20	0.00	-555.17	0.00	555.17	3750.02	1875.01	6777.40	3393.74	7.50	-0.789	0.000	0.129
95.00	-48.02	-8.05	0.00	-522.36	0.00	522.36	3693.87	1846.94	6530.61	3270.16	8.17	-0.823	0.000	0.121
100.00	-46.21	-7.87	0.00	-482.09	0.00	482.09	3622.15	1811.07	6225.69	3117.47	9.06	-0.865	0.000	0.167
105.00	-44.44	-7.69	0.00	-442.74	0.00	442.74	3548.72	1774.36	5924.97	2966.89	10.00	-0.925	0.000	0.162
110.00	-42.72	-7.52	0.00	-404.27	0.00	404.27	3473.57	1736.79	5628.70	2818.54	11.00	-0.984	0.000	0.156
115.00	-41.04	-7.34	0.00	-366.68	0.00	366.68	3396.72	1698.36	5337.14	2672.54	12.06	-1.043	0.000	0.149
120.00	-39.41	-7.17	0.00	-329.98	0.00	329.98	3318.16	1659.08	5050.54	2529.02	13.18	-1.102	0.000	0.142
125.00	-37.81	-6.99	0.00	-294.15	0.00	294.15	3226.71	1613.36	4752.68	2379.87	14.37	-1.159	0.000	0.135
130.00	-36.25	-6.82	0.00	-259.20	0.00	259.20	3120.09	1560.05	4442.21	2224.41	15.61	-1.216	0.000	0.128
135.00	-33.88	-6.62	0.00	-225.12	0.00	225.12	3080.81	1540.41	4330.47	2168.45	16.92	-1.270	0.000	0.115
140.00	-32.38	-6.43	0.00	-192.02	0.00	192.02	2974.19	1487.09	4034.35	2020.17	18.28	-1.323	0.000	0.106
140.00	-32.38	-6.43	0.00	-192.02	0.00	192.02	1787.24	893.62	2442.64	1223.14	18.28	-1.323	0.000	0.175
143.00	-29.01	-5.78	0.00	-172.72	0.00	172.72	1762.68	881.34	2357.06	1180.28	19.12	-1.351	0.000	0.163
145.00	-28.56	-5.73	0.00	-161.15	0.00	161.15	1745.97	872.98	2300.37	1151.90	19.69	-1.379	0.000	0.156
150.00	-27.46	-5.56	0.00	-132.51	0.00	132.51	1703.02	851.51	2160.05	1081.63	21.17	-1.442	0.000	0.139
153.00	-24.98	-5.28	0.00	-115.82	0.00	115.82	1676.45	838.23	2076.88	1039.98	22.08	-1.478	0.000	0.126
155.00	-24.56	-5.22	0.00	-105.26	0.00	105.26	1658.40	829.20	2021.90	1012.45	22.71	-1.501	0.000	0.119
159.00	-18.07	-3.69	0.00	-84.37	0.00	84.37	1621.51	810.75	1913.13	957.99	23.98	-1.542	0.000	0.099
160.00	-17.88	-3.66	0.00	-80.68	0.00	80.68	1612.12	806.06	1886.20	944.50	24.31	-1.552	0.000	0.097
165.00	-16.96	-3.50	0.00	-62.36	0.00	62.36	1564.16	782.08	1753.17	877.89	25.96	-1.595	0.000	0.082
170.00	-16.06	-3.34	0.00	-44.85	0.00	44.85	1514.53	757.27	1623.07	812.74	27.65	-1.633	0.000	0.066
173.00	-8.53	-1.86	0.00	-34.84	0.00	34.84	1483.95	741.98	1546.51	774.41	28.68	-1.652	0.000	0.051
175.00	-8.20	-1.79	0.00	-31.13	0.00	31.13	1463.23	731.62	1496.14	749.18	29.38	-1.663	0.000	0.047

Calculated Forces

Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Page: 38
	Struct Class: II	



180.00	-7.39	-1.64	0.00	-22.16	0.00	22.16	1400.09	700.04	1362.73	682.38	31.13	-1.688	0.000	0.038
180.00	-7.39	-1.64	0.00	-22.16	0.00	22.16	871.37	435.68	845.88	423.57	31.13	-1.688	0.000	0.061
185.00	-6.53	-1.48	0.00	-13.98	0.00	13.98	871.37	435.68	845.88	423.57	32.91	-1.707	0.000	0.041
190.00	-5.68	-1.32	0.00	-6.59	0.00	6.59	871.37	435.68	845.88	423.57	34.70	-1.716	0.000	0.022
195.00	0.00	-1.15	0.00	0.00	0.00	0.00	871.37	435.68	845.88	423.57	36.50	-1.720	0.000	0.000

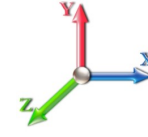
Seismic Segment Forces (Factored)

Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.2D + 1.0E					Iterations 22
Gust Response Factor	1.10	Sds	0.11	Ss	0.17
Dead Load Factor	1.20	Seismic Load Factor	1.00	Sd1	0.04
Wind Load Factor	0.00	Structure Frequency	0.30	SA	0.01
					Seismic Importance Factor 1.00



Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		1499.4	0.00	0.03	0.01	18.56	
10.00		1471.4	0.00	0.04	0.03	25.82	
15.00	RB1	1443.3	0.01	0.06	0.03	29.25	
18.00	Top - Section 1	852.54	0.02	0.06	0.04	18.14	
20.00		482.86	0.02	0.06	0.04	10.52	
25.00		1190.3	0.03	0.07	0.04	26.98	
30.00		1166.2	0.04	0.07	0.04	27.10	
35.00		1142.2	0.06	0.07	0.04	27.06	
40.00		1118.1	0.08	0.07	0.04	26.99	
41.00	Bot - Section 3	220.75	0.08	0.07	0.04	5.35	
45.00		1758.9	0.10	0.07	0.04	43.32	
48.00	Top - Section 2	1298.9	0.11	0.07	0.04	32.41	
50.00		431.22	0.12	0.07	0.03	10.85	
55.00		1061.2	0.15	0.07	0.03	27.28	
60.00		1037.1	0.18	0.07	0.03	27.13	
65.00		1013.1	0.21	0.06	0.02	26.69	
70.00		989.09	0.24	0.06	0.02	25.77	
75.00		965.04	0.28	0.05	0.01	24.07	
80.00		940.99	0.32	0.04	0.01	21.26	
81.00	Top - Section 3	185.31	0.33	0.04	0.01	4.06	
85.00	Bot - Section 5	731.63	0.36	0.03	0.01	13.54	
90.00		1800.9	0.40	0.02	0.01	22.17	
91.00	Top - Section 4	354.43	0.41	0.01	0.01	3.83	
95.00	RT1	705.31	0.45	0.00	0.01	2.88	
100.00		859.99	0.50	-0.02	0.01	-4.54	
105.00		835.95	0.55	-0.03	0.01	-11.99	
110.00		811.90	0.60	-0.05	0.01	-17.69	
115.00		787.85	0.66	-0.07	0.02	-21.25	
120.00		763.81	0.72	-0.09	0.03	-22.78	
125.00		739.76	0.78	-0.11	0.05	-22.60	
130.00	Bot - Section 6	715.71	0.84	-0.12	0.07	-21.01	
135.00	Top - Section 5	1398.5	0.91	-0.12	0.09	-36.90	
140.00	Top - Section 6	682.81	0.97	-0.12	0.12	-14.85	
143.00	Appurtenance(s)	1645.2	1.02	-0.11	0.14	-29.92	
145.00		174.42	1.05	-0.10	0.15	-2.70	
150.00		424.83	1.12	-0.06	0.20	-3.24	
153.00	Appurtenance(s)	1297.2	1.16	-0.03	0.23	-2.76	
155.00		161.60	1.19	0.00	0.25	0.30	
159.00	Appurtenance(s)	2222.3	1.26	0.06	0.30	23.63	
160.00		77.27	1.27	0.08	0.31	1.00	
165.00		376.74	1.35	0.20	0.39	9.72	
170.00		360.70	1.44	0.36	0.47	14.55	
173.00	Appurtenance(s)	3047.7	1.49	0.47	0.53	152.02	
175.00		135.95	1.52	0.56	0.57	7.69	
180.00	Top - Section 7	328.64	1.61	0.81	0.68	24.54	

Seismic Segment Forces (Factored)

Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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185.00		360.29	1.70	1.13	0.82	34.08
190.00		360.29	1.79	1.51	0.97	41.93
195.00	Appurtenance(s)	2441.3	1.89	1.98	1.14	342.02
Totals:		44,871.7				940.3
						Total Wind: 45,337.3

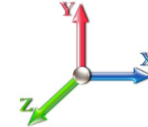
Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

Calculated Forces

Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



Load Case: 1.2D + 1.0E										Iterations 22	
Gust Response Factor	1.10						Sds	0.11		Ss	0.17
Dead Load Factor	1.20	Seismic Load Factor	1.00	Sd1	0.04					S1	0.06
Wind Load Factor	0.00	Structure Frequency	0.30	SA	0.01	Seismic Importance Factor	1.00				



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-62.44	-1.15	0.00	-151.07	0.00	151.07	6497.76	3248.88	17121.8	8573.64	0.00	0.00	0.00	0.027
5.00	-60.38	-1.14	0.00	-145.30	0.00	145.30	6432.14	3216.07	16632.6	8328.66	0.00	0.00	0.00	0.027
10.00	-58.36	-1.12	0.00	-139.60	0.00	139.60	6364.44	3182.22	16144.5	8084.28	0.01	-0.01	0.00	0.026
15.00	-56.37	-1.09	0.00	-134.01	0.00	134.01	6294.68	3147.34	15658.0	7840.66	0.02	-0.01	0.00	0.021
18.00	-55.20	-1.08	0.00	-130.73	0.00	130.73	6251.82	3125.91	15366.9	7694.92	0.03	-0.02	0.00	0.021
18.00	-55.20	-1.08	0.00	-130.73	0.00	130.73	5035.78	2517.89	12403.8	6211.14	0.03	-0.02	0.00	0.022
20.00	-54.51	-1.07	0.00	-128.58	0.00	128.58	5016.94	2508.47	12258.7	6138.49	0.04	-0.02	0.00	0.025
25.00	-52.83	-1.04	0.00	-123.24	0.00	123.24	4968.35	2484.18	11895.7	5956.70	0.06	-0.02	0.00	0.024
30.00	-51.17	-1.02	0.00	-118.01	0.00	118.01	4917.65	2458.83	11532.4	5774.82	0.09	-0.03	0.00	0.024
35.00	-49.55	-1.00	0.00	-112.91	0.00	112.91	4864.84	2432.42	11169.4	5593.00	0.12	-0.03	0.00	0.023
40.00	-47.95	-0.97	0.00	-107.93	0.00	107.93	4809.92	2404.96	10806.7	5411.42	0.15	-0.04	0.00	0.023
41.00	-47.63	-0.97	0.00	-106.96	0.00	106.96	4798.68	2399.34	10734.3	5375.14	0.16	-0.04	0.00	0.023
45.00	-45.32	-0.93	0.00	-103.08	0.00	103.08	4752.88	2376.44	10444.9	5230.21	0.19	-0.04	0.00	0.022
48.00	-43.60	-0.89	0.00	-100.31	0.00	100.31	4754.71	2377.36	10456.3	5235.93	0.22	-0.04	0.00	0.022
50.00	-42.98	-0.88	0.00	-98.52	0.00	98.52	4731.34	2365.67	10311.8	5163.58	0.24	-0.05	0.00	0.021
55.00	-41.45	-0.86	0.00	-94.10	0.00	94.10	4671.41	2335.70	9951.50	4983.15	0.28	-0.05	0.00	0.021
60.00	-39.95	-0.83	0.00	-89.80	0.00	89.80	4609.37	2304.68	9592.67	4803.47	0.34	-0.05	0.00	0.020
65.00	-38.48	-0.81	0.00	-85.63	0.00	85.63	4545.22	2272.61	9235.65	4624.69	0.40	-0.06	0.00	0.020
70.00	-37.04	-0.79	0.00	-81.59	0.00	81.59	4478.96	2239.48	8880.76	4446.98	0.46	-0.06	0.00	0.020
75.00	-35.62	-0.76	0.00	-77.66	0.00	77.66	4410.58	2205.29	8528.29	4270.48	0.53	-0.07	0.00	0.019
80.00	-34.24	-0.74	0.00	-73.85	0.00	73.85	4340.09	2170.05	8178.57	4095.36	0.61	-0.07	0.00	0.019
81.00	-33.97	-0.74	0.00	-73.11	0.00	73.11	4325.74	2162.87	8108.99	4060.52	0.62	-0.07	0.00	0.019
81.00	-33.97	-0.74	0.00	-73.11	0.00	73.11	3843.52	1921.76	7205.03	3607.87	0.62	-0.07	0.00	0.021
85.00	-32.88	-0.73	0.00	-70.15	0.00	70.15	3789.25	1894.62	6954.21	3482.28	0.69	-0.08	0.00	0.021
90.00	-30.47	-0.70	0.00	-66.52	0.00	66.52	3719.86	1859.93	6643.95	3326.92	0.77	-0.08	0.00	0.020
91.00	-29.99	-0.70	0.00	-65.82	0.00	65.82	3750.02	1875.01	6777.40	3393.74	0.79	-0.08	0.00	0.020
95.00	-28.94	-0.70	0.00	-63.03	0.00	63.03	3693.87	1846.94	6530.61	3270.16	0.86	-0.09	0.00	0.019
100.00	-27.65	-0.70	0.00	-59.54	0.00	59.54	3622.15	1811.07	6225.69	3117.47	0.96	-0.09	0.00	0.027
105.00	-26.39	-0.70	0.00	-56.06	0.00	56.06	3548.72	1774.36	5924.97	2966.89	1.06	-0.10	0.00	0.026
110.00	-25.16	-0.70	0.00	-52.56	0.00	52.56	3473.57	1736.79	5628.70	2818.54	1.17	-0.11	0.00	0.026
115.00	-23.96	-0.70	0.00	-49.06	0.00	49.06	3396.72	1698.36	5337.14	2672.54	1.29	-0.12	0.00	0.025
120.00	-22.78	-0.70	0.00	-45.55	0.00	45.55	3318.16	1659.08	5050.54	2529.02	1.42	-0.12	0.00	0.025
125.00	-21.64	-0.70	0.00	-42.04	0.00	42.04	3226.71	1613.36	4752.68	2379.87	1.55	-0.13	0.00	0.024
130.00	-20.53	-0.70	0.00	-38.53	0.00	38.53	3120.09	1560.05	4442.21	2224.41	1.69	-0.14	0.00	0.024
135.00	-18.59	-0.70	0.00	-35.02	0.00	35.02	3080.81	1540.41	4330.47	2168.45	1.85	-0.15	0.00	0.022
140.00	-17.52	-0.70	0.00	-31.52	0.00	31.52	2974.19	1487.09	4034.35	2020.17	2.01	-0.16	0.00	0.021
140.00	-17.52	-0.70	0.00	-31.52	0.00	31.52	1787.24	893.62	2442.64	1223.14	2.01	-0.16	0.00	0.036
143.00	-15.39	-0.70	0.00	-29.42	0.00	29.42	1762.68	881.34	2357.06	1180.28	2.11	-0.16	0.00	0.034
145.00	-15.11	-0.70	0.00	-28.03	0.00	28.03	1745.97	872.98	2300.37	1151.90	2.18	-0.17	0.00	0.033
150.00	-14.42	-0.70	0.00	-24.54	0.00	24.54	1703.02	851.51	2160.05	1081.63	2.36	-0.18	0.00	0.031
153.00	-12.75	-0.69	0.00	-22.45	0.00	22.45	1676.45	838.23	2076.88	1039.98	2.47	-0.19	0.00	0.029
155.00	-12.48	-0.69	0.00	-21.07	0.00	21.07	1658.40	829.20	2021.90	1012.45	2.55	-0.19	0.00	0.028
159.00	-9.67	-0.66	0.00	-18.30	0.00	18.30	1621.51	810.75	1913.13	957.99	2.72	-0.20	0.00	0.025
160.00	-9.56	-0.66	0.00	-17.64	0.00	17.64	1612.12	806.06	1886.20	944.50	2.76	-0.20	0.00	0.025
165.00	-9.00	-0.65	0.00	-14.33	0.00	14.33	1564.16	782.08	1753.17	877.89	2.97	-0.21	0.00	0.022
170.00	-8.46	-0.63	0.00	-11.08	0.00	11.08	1514.53	757.27	1623.07	812.74	3.20	-0.22	0.00	0.019
173.00	-4.74	-0.47	0.00	-9.18	0.00	9.18	1483.95	741.98	1546.51	774.41	3.34	-0.22	0.00	0.015

Calculated Forces

Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II
		Page: 42



175.00	-4.54	-0.46	0.00	-8.24	0.00	8.24	1463.23	731.62	1496.14	749.18	3.43	-0.23	0.014
180.00	-4.06	-0.43	0.00	-5.94	0.00	5.94	1400.09	700.04	1362.73	682.38	3.67	-0.23	0.012
180.00	-4.06	-0.43	0.00	-5.94	0.00	5.94	871.37	435.68	845.88	423.57	3.67	-0.23	0.019
185.00	-3.54	-0.40	0.00	-3.77	0.00	3.77	871.37	435.68	845.88	423.57	3.92	-0.24	0.013
190.00	-3.02	-0.35	0.00	-1.77	0.00	1.77	871.37	435.68	845.88	423.57	4.17	-0.24	0.008
195.00	0.00	-0.34	0.00	0.00	0.00	0.00	871.37	435.68	845.88	423.57	4.43	-0.24	0.000

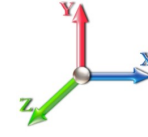
Seismic Segment Forces (Factored)

Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 0.9D + 1.0E					Iterations 22
Gust Response Factor	1.10	Sds	0.11	Ss	0.17
Dead Load Factor	0.90	Seismic Load Factor	1.00	Sd1	0.04
Wind Load Factor	0.00	Structure Frequency	0.30	SA	0.01
					Seismic Importance Factor 1.00



Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		1499.4	0.00	0.03	0.01	18.56	
10.00		1471.4	0.00	0.04	0.03	25.82	
15.00	RB1	1443.3	0.01	0.06	0.03	29.25	
18.00	Top - Section 1	852.54	0.02	0.06	0.04	18.14	
20.00		482.86	0.02	0.06	0.04	10.52	
25.00		1190.3	0.03	0.07	0.04	26.98	
30.00		1166.2	0.04	0.07	0.04	27.10	
35.00		1142.2	0.06	0.07	0.04	27.06	
40.00		1118.1	0.08	0.07	0.04	26.99	
41.00	Bot - Section 3	220.75	0.08	0.07	0.04	5.35	
45.00		1758.9	0.10	0.07	0.04	43.32	
48.00	Top - Section 2	1298.9	0.11	0.07	0.04	32.41	
50.00		431.22	0.12	0.07	0.03	10.85	
55.00		1061.2	0.15	0.07	0.03	27.28	
60.00		1037.1	0.18	0.07	0.03	27.13	
65.00		1013.1	0.21	0.06	0.02	26.69	
70.00		989.09	0.24	0.06	0.02	25.77	
75.00		965.04	0.28	0.05	0.01	24.07	
80.00		940.99	0.32	0.04	0.01	21.26	
81.00	Top - Section 3	185.31	0.33	0.04	0.01	4.06	
85.00	Bot - Section 5	731.63	0.36	0.03	0.01	13.54	
90.00		1800.9	0.40	0.02	0.01	22.17	
91.00	Top - Section 4	354.43	0.41	0.01	0.01	3.83	
95.00	RT1	705.31	0.45	0.00	0.01	2.88	
100.00		859.99	0.50	-0.02	0.01	-4.54	
105.00		835.95	0.55	-0.03	0.01	-11.99	
110.00		811.90	0.60	-0.05	0.01	-17.69	
115.00		787.85	0.66	-0.07	0.02	-21.25	
120.00		763.81	0.72	-0.09	0.03	-22.78	
125.00		739.76	0.78	-0.11	0.05	-22.60	
130.00	Bot - Section 6	715.71	0.84	-0.12	0.07	-21.01	
135.00	Top - Section 5	1398.5	0.91	-0.12	0.09	-36.90	
140.00	Top - Section 6	682.81	0.97	-0.12	0.12	-14.85	
143.00	Appurtenance(s)	1645.2	1.02	-0.11	0.14	-29.92	
145.00		174.42	1.05	-0.10	0.15	-2.70	
150.00		424.83	1.12	-0.06	0.20	-3.24	
153.00	Appurtenance(s)	1297.2	1.16	-0.03	0.23	-2.76	
155.00		161.60	1.19	0.00	0.25	0.30	
159.00	Appurtenance(s)	2222.3	1.26	0.06	0.30	23.63	
160.00		77.27	1.27	0.08	0.31	1.00	
165.00		376.74	1.35	0.20	0.39	9.72	
170.00		360.70	1.44	0.36	0.47	14.55	
173.00	Appurtenance(s)	3047.7	1.49	0.47	0.53	152.02	
175.00		135.95	1.52	0.56	0.57	7.69	
180.00	Top - Section 7	328.64	1.61	0.81	0.68	24.54	

Seismic Segment Forces (Factored)

Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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185.00	360.29	1.70	1.13	0.82	34.08	
190.00	360.29	1.79	1.51	0.97	41.93	
195.00	Appurtenance(s)	2441.3	1.89	1.98	1.14	342.02
Totals:		44,871.7			940.3	Total Wind: 45,337.3

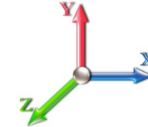
Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

Calculated Forces

Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



Load Case: 0.9D + 1.0E										Iterations 22
Gust Response Factor 1.10					Sds 0.11					Ss 0.17
Dead Load Factor 0.90			Seismic Load Factor 1.00			Sd1 0.04		S1 0.06		
Wind Load Factor 0.00			Structure Frequency 0.30			SA 0.01		Seismic Importance Factor 1.00		



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-46.83	-1.15	0.00	-149.31	0.00	149.31	6497.76	3248.88	17121.8	8573.64	0.00	0.00	0.00	0.025
5.00	-45.29	-1.14	0.00	-143.55	0.00	143.55	6432.14	3216.07	16632.6	8328.66	0.00	0.00	0.00	0.024
10.00	-43.77	-1.12	0.00	-137.85	0.00	137.85	6364.44	3182.22	16144.5	8084.28	0.01	-0.01	0.00	0.024
15.00	-42.28	-1.09	0.00	-132.28	0.00	132.28	6294.68	3147.34	15658.0	7840.66	0.02	-0.01	0.00	0.019
18.00	-41.40	-1.07	0.00	-129.01	0.00	129.01	6251.82	3125.91	15366.9	7694.92	0.03	-0.02	0.00	0.019
18.00	-41.40	-1.07	0.00	-129.01	0.00	129.01	5035.78	2517.89	12403.8	6211.14	0.03	-0.02	0.00	0.020
20.00	-40.89	-1.06	0.00	-126.87	0.00	126.87	5016.94	2508.47	12258.7	6138.49	0.04	-0.02	0.00	0.022
25.00	-39.62	-1.04	0.00	-121.55	0.00	121.55	4968.35	2484.18	11895.7	5956.70	0.06	-0.02	0.00	0.022
30.00	-38.38	-1.01	0.00	-116.35	0.00	116.35	4917.65	2458.83	11532.4	5774.82	0.08	-0.03	0.00	0.021
35.00	-37.16	-0.99	0.00	-111.28	0.00	111.28	4864.84	2432.42	11169.4	5593.00	0.11	-0.03	0.00	0.021
40.00	-35.96	-0.96	0.00	-106.34	0.00	106.34	4809.92	2404.96	10806.7	5411.42	0.15	-0.04	0.00	0.021
41.00	-35.72	-0.96	0.00	-105.37	0.00	105.37	4798.68	2399.34	10734.3	5375.14	0.16	-0.04	0.00	0.021
45.00	-33.99	-0.92	0.00	-101.54	0.00	101.54	4752.88	2376.44	10444.9	5230.21	0.19	-0.04	0.00	0.020
48.00	-32.70	-0.88	0.00	-98.78	0.00	98.78	4754.71	2377.36	10456.3	5235.93	0.21	-0.04	0.00	0.020
50.00	-32.24	-0.88	0.00	-97.01	0.00	97.01	4731.34	2365.67	10311.8	5163.58	0.23	-0.04	0.00	0.019
55.00	-31.09	-0.85	0.00	-92.64	0.00	92.64	4671.41	2335.70	9951.50	4983.15	0.28	-0.05	0.00	0.019
60.00	-29.97	-0.82	0.00	-88.39	0.00	88.39	4609.37	2304.68	9592.67	4803.47	0.33	-0.05	0.00	0.019
65.00	-28.86	-0.80	0.00	-84.27	0.00	84.27	4545.22	2272.61	9235.65	4624.69	0.39	-0.06	0.00	0.018
70.00	-27.78	-0.77	0.00	-80.28	0.00	80.28	4478.96	2239.48	8880.76	4446.98	0.46	-0.06	0.00	0.018
75.00	-26.72	-0.75	0.00	-76.41	0.00	76.41	4410.58	2205.29	8528.29	4270.48	0.53	-0.07	0.00	0.017
80.00	-25.68	-0.73	0.00	-72.65	0.00	72.65	4340.09	2170.05	8178.57	4095.36	0.60	-0.07	0.00	0.017
81.00	-25.47	-0.73	0.00	-71.92	0.00	71.92	4325.74	2162.87	8108.99	4060.52	0.61	-0.07	0.00	0.017
81.00	-25.47	-0.73	0.00	-71.92	0.00	71.92	3843.52	1921.76	7205.03	3607.87	0.61	-0.07	0.00	0.019
85.00	-24.66	-0.71	0.00	-69.02	0.00	69.02	3789.25	1894.62	6954.21	3482.28	0.68	-0.08	0.00	0.019
90.00	-22.85	-0.69	0.00	-65.45	0.00	65.45	3719.86	1859.93	6643.95	3326.92	0.76	-0.08	0.00	0.018
91.00	-22.49	-0.69	0.00	-64.76	0.00	64.76	3750.02	1875.01	6777.40	3393.74	0.78	-0.08	0.00	0.018
95.00	-21.70	-0.68	0.00	-62.01	0.00	62.01	3693.87	1846.94	6530.61	3270.16	0.85	-0.09	0.00	0.018
100.00	-20.74	-0.69	0.00	-58.59	0.00	58.59	3622.15	1811.07	6225.69	3117.47	0.94	-0.09	0.00	0.025
105.00	-19.79	-0.69	0.00	-55.16	0.00	55.16	3548.72	1774.36	5924.97	2966.89	1.05	-0.10	0.00	0.024
110.00	-18.87	-0.69	0.00	-51.73	0.00	51.73	3473.57	1736.79	5628.70	2818.54	1.15	-0.11	0.00	0.024
115.00	-17.97	-0.69	0.00	-48.29	0.00	48.29	3396.72	1698.36	5337.14	2672.54	1.27	-0.12	0.00	0.023
120.00	-17.09	-0.69	0.00	-44.85	0.00	44.85	3318.16	1659.08	5050.54	2529.02	1.40	-0.12	0.00	0.023
125.00	-16.23	-0.69	0.00	-41.41	0.00	41.41	3226.71	1613.36	4752.68	2379.87	1.53	-0.13	0.00	0.022
130.00	-15.39	-0.69	0.00	-37.96	0.00	37.96	3120.09	1560.05	4442.21	2224.41	1.67	-0.14	0.00	0.022
135.00	-13.94	-0.69	0.00	-34.52	0.00	34.52	3080.81	1540.41	4330.47	2168.45	1.82	-0.15	0.00	0.020
140.00	-13.14	-0.69	0.00	-31.08	0.00	31.08	2974.19	1487.09	4034.35	2020.17	1.98	-0.16	0.00	0.020
140.00	-13.14	-0.69	0.00	-31.08	0.00	31.08	1787.24	893.62	2442.64	1223.14	1.98	-0.16	0.00	0.033
143.00	-11.54	-0.68	0.00	-29.02	0.00	29.02	1762.68	881.34	2357.06	1180.28	2.08	-0.16	0.00	0.031
145.00	-11.33	-0.68	0.00	-27.65	0.00	27.65	1745.97	872.98	2300.37	1151.90	2.15	-0.16	0.00	0.030
150.00	-10.81	-0.68	0.00	-24.23	0.00	24.23	1703.02	851.51	2160.05	1081.63	2.32	-0.18	0.00	0.029
153.00	-9.56	-0.68	0.00	-22.17	0.00	22.17	1676.45	838.23	2076.88	1039.98	2.44	-0.18	0.00	0.027
155.00	-9.36	-0.68	0.00	-20.81	0.00	20.81	1658.40	829.20	2021.90	1012.45	2.52	-0.19	0.00	0.026
159.00	-7.25	-0.65	0.00	-18.08	0.00	18.08	1621.51	810.75	1913.13	957.99	2.68	-0.20	0.00	0.023
160.00	-7.17	-0.65	0.00	-17.43	0.00	17.43	1612.12	806.06	1886.20	944.50	2.72	-0.20	0.00	0.023
165.00	-6.75	-0.64	0.00	-14.17	0.00	14.17	1564.16	782.08	1753.17	877.89	2.93	-0.21	0.00	0.020
170.00	-6.35	-0.63	0.00	-10.97	0.00	10.97	1514.53	757.27	1623.07	812.74	3.15	-0.22	0.00	0.018
173.00	-3.56	-0.46	0.00	-9.09	0.00	9.09	1483.95	741.98	1546.51	774.41	3.29	-0.22	0.00	0.014

Calculated Forces

Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Page: 46
	Struct Class: II	



175.00	-3.41	-0.46	0.00	-8.16	0.00	8.16	1463.23	731.62	1496.14	749.18	3.38	-0.22	0.013
180.00	-3.05	-0.43	0.00	-5.88	0.00	5.88	1400.09	700.04	1362.73	682.38	3.62	-0.23	0.011
180.00	-3.05	-0.43	0.00	-5.88	0.00	5.88	871.37	435.68	845.88	423.57	3.62	-0.23	0.017
185.00	-2.65	-0.39	0.00	-3.73	0.00	3.73	871.37	435.68	845.88	423.57	3.86	-0.24	0.012
190.00	-2.26	-0.35	0.00	-1.76	0.00	1.76	871.37	435.68	845.88	423.57	4.11	-0.24	0.007
195.00	0.00	-0.34	0.00	0.00	0.00	0.00	871.37	435.68	845.88	423.57	4.36	-0.24	0.000

Wind Loading - Shaft

Structure: CT00167-S-SBA

Code: EIA/TIA-222-G

12/6/2017

Site Name: Lisbon

Exposure: C

Height: 195.00 (ft)

Crest Height: 0.00

Base Elev: 0.000 (ft)

Site Class: B - Competent Rock

Gh: 1.1

Topography: 1

Struct Class: II

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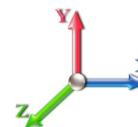


Load Case: 1.0D + 1.0W 60 mph Wind

Iterations 24

Dead Load Factor 1.00

Wind Load Factor 1.00



Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	7.442	8.19	301.92	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	7.442	8.19	296.36	0.650	0.000	5.00	27.038	17.57	143.9	0.0	1499.5
10.00		1.00	0.85	7.442	8.19	290.80	0.650	0.000	5.00	26.536	17.25	141.2	0.0	1471.4
15.00	RB1	1.00	0.85	7.442	8.19	285.24	0.650	0.000	5.00	26.034	16.92	138.5	0.0	1443.3
18.00	Top - Section 1	1.00	0.88	7.723	8.50	287.18	0.650	0.000	3.00	15.379	10.00	84.9	0.0	852.5
20.00		1.00	0.90	7.896	8.69	288.09	0.650	0.000	2.00	10.152	6.60	57.3	0.0	482.9
25.00		1.00	0.95	8.276	9.10	289.08	0.650	0.000	5.00	25.029	16.27	148.1	0.0	1190.3
30.00		1.00	0.98	8.600	9.46	288.70	0.650	0.000	5.00	24.526	15.94	150.8	0.0	1166.3
35.00		1.00	1.01	8.883	9.77	287.35	0.650	0.000	5.00	24.024	15.62	152.6	0.0	1142.2
40.00		1.00	1.04	9.137	10.05	285.26	0.650	0.000	5.00	23.521	15.29	153.7	0.0	1118.2
41.00	Bot - Section 3	1.00	1.05	9.184	10.10	284.77	0.650	0.000	1.00	4.644	3.02	30.5	0.0	220.8
45.00		1.00	1.07	9.366	10.30	282.59	0.650	0.000	4.00	18.629	12.11	124.8	0.0	1758.9
48.00	Top - Section 2	1.00	1.08	9.494	10.44	280.74	0.650	0.000	3.00	13.761	8.94	93.4	0.0	1299.0
50.00		1.00	1.09	9.576	10.53	283.41	0.650	0.000	2.00	9.073	5.90	62.1	0.0	431.2
55.00		1.00	1.12	9.770	10.75	279.90	0.650	0.000	5.00	22.331	14.52	156.0	0.0	1061.2
60.00		1.00	1.14	9.951	10.95	276.05	0.650	0.000	5.00	21.829	14.19	155.3	0.0	1037.2
65.00		1.00	1.16	10.120	11.13	271.90	0.650	0.000	5.00	21.327	13.86	154.3	0.0	1013.1
70.00		1.00	1.17	10.279	11.31	267.50	0.650	0.000	5.00	20.824	13.54	153.0	0.0	989.1
75.00		1.00	1.19	10.430	11.47	262.87	0.650	0.000	5.00	20.322	13.21	151.5	0.0	965.0
80.00		1.00	1.21	10.572	11.63	258.04	0.650	0.000	5.00	19.819	12.88	149.8	0.0	941.0
81.00	Top - Section 3	1.00	1.21	10.600	11.66	257.05	0.650	0.000	1.00	3.904	2.54	29.6	0.0	185.3
85.00	Bot - Section 5	1.00	1.22	10.708	11.78	253.02	0.650	0.000	4.00	15.413	10.02	118.0	0.0	731.6
90.00		1.00	1.24	10.838	11.92	247.84	0.650	0.000	5.00	19.132	12.44	148.3	0.0	1801.0
91.00	Top - Section 4	1.00	1.24	10.863	11.95	246.78	0.650	0.000	1.00	3.766	2.45	29.3	0.0	354.4
95.00	RT1	1.00	1.25	10.962	12.06	246.77	0.650	0.000	4.00	14.863	9.66	116.5	0.0	705.3
100.00		1.00	1.27	11.081	12.19	241.32	0.650	0.000	5.00	18.127	11.78	143.6	0.0	860.0
105.00		1.00	1.28	11.195	12.31	235.75	0.650	0.000	5.00	17.625	11.46	141.1	0.0	835.9
110.00		1.00	1.29	11.305	12.44	230.05	0.650	0.000	5.00	17.122	11.13	138.4	0.0	811.9
115.00		1.00	1.30	11.412	12.55	224.25	0.650	0.000	5.00	16.620	10.80	135.6	0.0	787.9
120.00		1.00	1.32	11.514	12.67	218.34	0.650	0.000	5.00	16.117	10.48	132.7	0.0	763.8
125.00		1.00	1.33	11.614	12.78	212.34	0.650	0.000	5.00	15.615	10.15	129.7	0.0	739.8
130.00	Bot - Section 6	1.00	1.34	11.710	12.88	206.24	0.650	0.000	5.00	15.112	9.82	126.5	0.0	715.7
135.00	Top - Section 5	1.00	1.35	11.803	12.98	200.06	0.650	0.000	5.00	14.927	9.70	126.0	0.0	1398.5
140.00	Top - Section 6	1.00	1.36	11.894	13.08	198.24	0.650	0.000	5.00	14.425	9.38	122.7	0.0	682.8
143.00	Appurtenance(s)	1.00	1.36	11.947	13.14	194.46	0.650	0.000	3.00	8.414	5.47	71.9	0.0	266.4
145.00		1.00	1.37	11.982	13.18	191.92	0.650	0.000	2.00	5.509	3.58	47.2	0.0	174.4
150.00		1.00	1.38	12.068	13.27	185.53	0.650	0.000	5.00	13.420	8.72	115.8	0.0	424.8
153.00	Appurtenance(s)	1.00	1.38	12.119	13.33	181.66	0.650	0.000	3.00	7.811	5.08	67.7	0.0	247.2
155.00		1.00	1.39	12.152	13.37	179.07	0.650	0.000	2.00	5.107	3.32	44.4	0.0	161.6
159.00	Appurtenance(s)	1.00	1.40	12.217	13.44	173.85	0.650	0.000	4.00	9.972	6.48	87.1	0.0	315.5
160.00		1.00	1.40	12.233	13.46	172.54	0.650	0.000	1.00	2.443	1.59	21.4	0.0	77.3
165.00		1.00	1.41	12.313	13.54	165.95	0.650	0.000	5.00	11.913	7.74	104.9	0.0	376.7
170.00		1.00	1.42	12.390	13.63	159.30	0.650	0.000	5.00	11.410	7.42	101.1	0.0	360.7
173.00	Appurtenance(s)	1.00	1.42	12.436	13.68	155.28	0.650	0.000	3.00	6.605	4.29	58.7	0.0	208.7
175.00		1.00	1.42	12.466	13.71	152.59	0.650	0.000	2.00	4.303	2.80	38.4	0.0	135.9
180.00	Top - Section 7	1.00	1.43	12.540	13.79	145.83	0.650	0.000	5.00	10.405	6.76	93.3	0.0	328.6
185.00		1.00	1.44	12.613	13.87	146.25	0.650	0.000	5.00	10.154	6.60	91.6	0.0	360.3

Wind Loading - Shaft

Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Page: 48
	Struct Class: II	



190.00	1.00	1.45	12.684	13.95	146.66	0.650	0.000	5.00	10.154	6.60	92.1	0.0	360.3
195.00 Appurtenance(s)	1.00	1.46	12.753	14.03	147.07	0.650	0.000	5.00	10.154	6.60	92.6	0.0	360.3
Totals:								195.00			5,167.6		35,616.0

Discrete Appurtenance Forces

Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations 24

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)	
1	195.00	AIR 21, 1.3M, B4A B2P	3	12.753	14.029	0.77	0.90	14.14	271.20	0.000	0.000	198.38	0.00	0.00	
2	195.00	T-Arm (Flat)	3	12.753	14.029	0.56	0.75	16.88	1200.00	0.000	0.000	236.74	0.00	0.00	
3	195.00	AIR 21, 1.3M, B2A B4P	3	12.753	14.029	0.77	0.90	14.14	274.50	0.000	0.000	198.38	0.00	0.00	
4	195.00	S11B12	3	12.753	14.029	0.45	0.90	3.82	153.00	0.000	0.000	53.60	0.00	0.00	
5	195.00	KRY 112 144/1	3	12.753	14.029	0.45	0.90	0.55	33.00	0.000	0.000	7.76	0.00	0.00	
6	195.00	LNx-6515DS-A1M	3	12.753	14.029	0.72	0.90	24.78	149.40	0.000	0.000	347.57	0.00	0.00	
7	173.00	ALU TD-RRH8x20-25	3	12.436	13.680	0.55	0.80	6.71	210.00	0.000	0.000	91.75	0.00	0.00	
8	173.00	DT465B-2XR	3	12.436	13.680	0.66	0.80	18.13	174.00	0.000	0.000	247.97	0.00	0.00	
9	173.00	RFS ACU-A20-N RET	4	12.436	13.680	0.40	0.80	0.22	4.00	0.000	0.000	3.06	0.00	0.00	
10	173.00	ALU 800 MHz Filter	3	12.436	13.680	0.40	0.80	0.50	30.00	0.000	0.000	6.89	0.00	0.00	
11	173.00	ALU 800 MHz RRH	6	12.436	13.680	0.40	0.80	5.98	318.00	0.000	0.000	81.75	0.00	0.00	
12	173.00	ALU 1900 MHz RRH	3	12.436	13.680	0.40	0.80	4.56	132.00	0.000	0.000	62.38	0.00	0.00	
13	173.00	APXVSP18-C-A20	3	12.436	13.680	0.66	0.80	15.98	171.00	0.000	0.000	218.54	0.00	0.00	
14	173.00	Sector Frame-Pipe/Rod	3	12.436	13.680	0.60	0.80	37.80	1800.00	0.000	0.000	517.09	0.00	0.00	
15	159.00	Low Profile Platform-flat	1	12.217	13.439	1.00	1.00	25.00	1200.00	0.000	0.000	335.97	0.00	0.00	
16	159.00	SBNHH-1D65B	6	12.217	13.439	0.66	0.80	32.51	240.00	0.000	0.000	436.89	0.00	0.00	
17	159.00	BXA-70080-4BF	3	12.217	13.439	0.70	0.80	7.52	36.00	0.000	0.000	101.04	0.00	0.00	
18	159.00	RFs FD9R6004/2CL-3CL	6	12.217	13.439	0.80	0.80	1.73	18.60	0.000	0.000	23.22	0.00	0.00	
19	159.00	Rfs Celwave	2	12.217	13.439	0.57	0.80	5.45	37.80	0.000	0.000	73.28	0.00	0.00	
20	159.00	BXA-70063-6CF-2	3	12.217	13.439	0.58	0.80	13.26	51.00	0.000	0.000	178.23	0.00	0.00	
21	159.00	Alcatel Lucent B66	3	12.217	13.439	0.66	0.80	5.00	170.40	0.000	0.000	67.18	0.00	0.00	
22	159.00	Alcatel Lucent B25	3	12.217	13.439	0.65	0.80	4.16	153.00	0.000	0.000	55.91	0.00	0.00	
23	153.00	Standoff Mount	3	12.119	13.330	0.56	0.75	8.44	1050.00	0.000	0.000	112.48	0.00	0.00	
24	143.00	742 351	6	11.947	13.142	0.49	0.80	15.75	178.80	0.000	0.000	207.02	0.00	0.00	
25	143.00	T-Arm (Flat)	3	11.947	13.142	0.56	0.75	16.88	1200.00	0.000	0.000	221.77	0.00	0.00	
Totals:									9,255.70						4,084.87

Total Applied Force Summary

Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations 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		143.87	1712.92	0.00	0.00
10.00		141.20	1684.86	0.00	0.00
15.00		138.52	1656.81	0.00	0.00
18.00		84.92	980.62	0.00	0.00
20.00		57.32	568.25	0.00	0.00
25.00		148.10	1403.79	0.00	0.00
30.00		150.81	1379.74	0.00	0.00
35.00		152.59	1355.69	0.00	0.00
40.00		153.66	1331.65	0.00	0.00
41.00		30.50	263.44	0.00	0.00
45.00		124.75	1929.69	0.00	0.00
48.00		93.41	1427.07	0.00	0.00
50.00		62.12	516.61	0.00	0.00
55.00		156.00	1274.69	0.00	0.00
60.00		155.31	1250.65	0.00	0.00
65.00		154.32	1226.60	0.00	0.00
70.00		153.05	1202.55	0.00	0.00
75.00		151.54	1178.51	0.00	0.00
80.00		149.82	1154.46	0.00	0.00
81.00		29.58	228.01	0.00	0.00
85.00		118.01	902.41	0.00	0.00
90.00		148.25	2014.45	0.00	0.00
91.00		29.25	397.12	0.00	0.00
95.00		116.49	876.08	0.00	0.00
100.00		143.61	1073.46	0.00	0.00
105.00		141.08	1049.41	0.00	0.00
110.00		138.40	1025.37	0.00	0.00
115.00		135.61	1001.32	0.00	0.00
120.00		132.69	977.27	0.00	0.00
125.00		129.66	953.22	0.00	0.00
130.00		126.53	929.18	0.00	0.00
135.00		125.98	1611.98	0.00	0.00
140.00		122.67	896.27	0.00	0.00
143.00	(9) attachments	500.67	1773.32	0.00	0.00
145.00		47.19	234.69	0.00	0.00
150.00		115.80	575.49	0.00	0.00
153.00	(3) attachments	180.15	1387.60	0.00	0.00
155.00		44.37	221.86	0.00	0.00
159.00	(27) attachments	1358.83	2342.83	0.00	0.00
160.00		21.37	94.80	0.00	0.00
165.00		104.88	464.40	0.00	0.00
170.00		101.09	448.37	0.00	0.00
173.00	(28) attachments	1288.18	3100.33	0.00	0.00
175.00		38.35	165.73	0.00	0.00
180.00		93.30	403.11	0.00	0.00
185.00		91.57	434.76	0.00	0.00

Total Applied Force Summary

Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II
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190.00		92.09	434.76	0.00	0.00
195.00	(18) attachments	1135.02	2515.86	0.00	0.00
Totals:		9,252.50	52,032.06	0.00	0.00

Linear Appurtenance Segment Forces (Factored)

Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations 24

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.442	0.00	1.37
5.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.442	0.00	5.20
10.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.442	0.00	1.37
10.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.442	0.00	5.20
15.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.442	0.00	1.37
15.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	7.442	0.00	5.20
18.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.033	0.000	7.723	0.00	0.82
18.00	Step bolts (ladder)	Yes	3.00	0.000	0.00	0.00	0.00	0.033	0.000	7.723	0.00	3.12
18.00	Reinforcing channels	Yes	3.00	0.000	2.00	0.50	0.00	0.033	0.000	7.723	0.00	0.00
20.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.033	0.000	7.896	0.00	0.55
20.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.033	0.000	7.896	0.00	2.08
20.00	Reinforcing channels	Yes	2.00	0.000	2.00	0.33	0.00	0.033	0.000	7.896	0.00	0.00
25.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.033	0.000	8.276	0.00	1.37
25.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.033	0.000	8.276	0.00	5.20
25.00	Reinforcing channels	Yes	5.00	0.000	2.00	0.83	0.00	0.033	0.000	8.276	0.00	0.00
30.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.034	0.000	8.600	0.00	1.37
30.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.034	0.000	8.600	0.00	5.20
30.00	Reinforcing channels	Yes	5.00	0.000	2.00	0.83	0.00	0.034	0.000	8.600	0.00	0.00
35.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.035	0.000	8.883	0.00	1.37
35.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.035	0.000	8.883	0.00	5.20
35.00	Reinforcing channels	Yes	5.00	0.000	2.00	0.83	0.00	0.035	0.000	8.883	0.00	0.00
40.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.035	0.000	9.137	0.00	1.37
40.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.035	0.000	9.137	0.00	5.20
40.00	Reinforcing channels	Yes	5.00	0.000	2.00	0.83	0.00	0.035	0.000	9.137	0.00	0.00
41.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.036	0.000	9.184	0.00	0.27
41.00	Step bolts (ladder)	Yes	1.00	0.000	0.00	0.00	0.00	0.036	0.000	9.184	0.00	1.04
41.00	Reinforcing channels	Yes	1.00	0.000	2.00	0.17	0.00	0.036	0.000	9.184	0.00	0.00
45.00	Safety Cable	Yes	4.00	0.000	0.00	0.00	0.00	0.036	0.000	9.366	0.00	1.09
45.00	Step bolts (ladder)	Yes	4.00	0.000	0.00	0.00	0.00	0.036	0.000	9.366	0.00	4.16
45.00	Reinforcing channels	Yes	4.00	0.000	2.00	0.67	0.00	0.036	0.000	9.366	0.00	0.00
48.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.037	0.000	9.494	0.00	0.82
48.00	Step bolts (ladder)	Yes	3.00	0.000	0.00	0.00	0.00	0.037	0.000	9.494	0.00	3.12
48.00	Reinforcing channels	Yes	3.00	0.000	2.00	0.50	0.00	0.037	0.000	9.494	0.00	0.00
50.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.037	0.000	9.576	0.00	0.55
50.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.037	0.000	9.576	0.00	2.08
50.00	Reinforcing channels	Yes	2.00	0.000	2.00	0.33	0.00	0.037	0.000	9.576	0.00	0.00
55.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.037	0.000	9.770	0.00	1.37
55.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.037	0.000	9.770	0.00	5.20
55.00	Reinforcing channels	Yes	5.00	0.000	2.00	0.83	0.00	0.037	0.000	9.770	0.00	0.00
60.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.038	0.000	9.951	0.00	1.37
60.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.038	0.000	9.951	0.00	5.20
60.00	Reinforcing channels	Yes	5.00	0.000	2.00	0.83	0.00	0.038	0.000	9.951	0.00	0.00
65.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.039	0.000	10.120	0.00	1.37
65.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.039	0.000	10.120	0.00	5.20
65.00	Reinforcing channels	Yes	5.00	0.000	2.00	0.83	0.00	0.039	0.000	10.120	0.00	0.00
70.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.040	0.000	10.279	0.00	1.37
70.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.040	0.000	10.279	0.00	5.20

Linear Appurtenance Segment Forces (Factored)

Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations 24

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
70.00	Reinforcing channels	Yes	5.00	0.000	2.00	0.83	0.00	0.040	0.000	10.279	0.00	0.00
75.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.041	0.000	10.430	0.00	1.37
75.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.041	0.000	10.430	0.00	5.20
75.00	Reinforcing channels	Yes	5.00	0.000	2.00	0.83	0.00	0.041	0.000	10.430	0.00	0.00
80.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.042	0.000	10.572	0.00	1.37
80.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.042	0.000	10.572	0.00	5.20
80.00	Reinforcing channels	Yes	5.00	0.000	2.00	0.83	0.00	0.042	0.000	10.572	0.00	0.00
81.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.043	0.000	10.600	0.00	0.27
81.00	Step bolts (ladder)	Yes	1.00	0.000	0.00	0.00	0.00	0.043	0.000	10.600	0.00	1.04
81.00	Reinforcing channels	Yes	1.00	0.000	2.00	0.17	0.00	0.043	0.000	10.600	0.00	0.00
85.00	Safety Cable	Yes	4.00	0.000	0.00	0.00	0.00	0.043	0.000	10.708	0.00	1.09
85.00	Step bolts (ladder)	Yes	4.00	0.000	0.00	0.00	0.00	0.043	0.000	10.708	0.00	4.16
85.00	Reinforcing channels	Yes	4.00	0.000	2.00	0.67	0.00	0.043	0.000	10.708	0.00	0.00
90.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.044	0.000	10.838	0.00	1.37
90.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.044	0.000	10.838	0.00	5.20
90.00	Reinforcing channels	Yes	5.00	0.000	2.00	0.83	0.00	0.044	0.000	10.838	0.00	0.00
91.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	10.863	0.00	0.27
91.00	Step bolts (ladder)	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	10.863	0.00	1.04
91.00	Reinforcing channels	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	10.863	0.00	0.00
95.00	Safety Cable	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	10.962	0.00	1.09
95.00	Step bolts (ladder)	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	10.962	0.00	4.16
95.00	Reinforcing channels	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	10.962	0.00	0.00
100.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.081	0.00	1.37
100.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.081	0.00	5.20
100.00	Reinforcing channels	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.081	0.00	0.00
105.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.195	0.00	1.37
105.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.195	0.00	5.20
105.00	Reinforcing channels	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.195	0.00	0.00
110.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.305	0.00	1.37
110.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.305	0.00	5.20
115.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.412	0.00	1.37
115.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.412	0.00	5.20
120.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.514	0.00	1.37
120.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.514	0.00	5.20
125.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.614	0.00	1.37
125.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.614	0.00	5.20
130.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.710	0.00	1.37
130.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.710	0.00	5.20
135.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.803	0.00	1.37
135.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.803	0.00	5.20
140.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.894	0.00	1.37
140.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	11.894	0.00	5.20
143.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	11.947	0.00	0.82
143.00	Step bolts (ladder)	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	11.947	0.00	3.12
145.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	11.982	0.00	0.55
145.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	11.982	0.00	2.08
150.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	12.068	0.00	1.37

Linear Appurtenance Segment Forces (Factored)

Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II

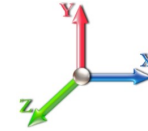


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Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 24

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
150.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	12.068	0.00	5.20
153.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	12.119	0.00	0.82
153.00	Step bolts (ladder)	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	12.119	0.00	3.12
155.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	12.152	0.00	0.55
155.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	12.152	0.00	2.08
159.00	Safety Cable	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	12.217	0.00	1.09
159.00	Step bolts (ladder)	Yes	4.00	0.000	0.00	0.00	0.00	0.000	0.000	12.217	0.00	4.16
160.00	Safety Cable	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	12.233	0.00	0.27
160.00	Step bolts (ladder)	Yes	1.00	0.000	0.00	0.00	0.00	0.000	0.000	12.233	0.00	1.04
165.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	12.313	0.00	1.37
165.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	12.313	0.00	5.20
170.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	12.390	0.00	1.37
170.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	12.390	0.00	5.20
173.00	Safety Cable	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	12.436	0.00	0.82
173.00	Step bolts (ladder)	Yes	3.00	0.000	0.00	0.00	0.00	0.000	0.000	12.436	0.00	3.12
175.00	Safety Cable	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	12.466	0.00	0.55
175.00	Step bolts (ladder)	Yes	2.00	0.000	0.00	0.00	0.00	0.000	0.000	12.466	0.00	2.08
180.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	12.540	0.00	1.37
180.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	12.540	0.00	5.20
185.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	12.613	0.00	1.37
185.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	12.613	0.00	5.20
190.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	12.684	0.00	1.37
190.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	12.684	0.00	5.20
195.00	Safety Cable	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	12.753	0.00	1.37
195.00	Step bolts (ladder)	Yes	5.00	0.000	0.00	0.00	0.00	0.000	0.000	12.753	0.00	5.20
Totals:											0.0	256.0

Calculated Forces

Structure: CT00167-S-SBA
Site Name: Lisbon
Height: 195.00 (ft)
Base Elev: 0.000 (ft)
Gh: 1.1

Topography: 1

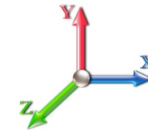
Code: EIA/TIA-222-G
Exposure: C
Crest Height: 0.00
Site Class: B - Competent Rock
Struct Class: II

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Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00
Wind Load Factor 1.00



Iterations 24

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-52.03	-9.27	0.00	-1213.5	0.00	1213.57	6497.76	3248.88	17121.8	8573.64	0.00	0.000	0.000	0.150
5.00	-50.31	-9.16	0.00	-1167.2	0.00	1167.23	6432.14	3216.07	16632.6	8328.66	0.02	-0.037	0.000	0.148
10.00	-48.62	-9.05	0.00	-1121.4	0.00	1121.45	6364.44	3182.22	16144.5	8084.28	0.08	-0.074	0.000	0.146
15.00	-46.96	-8.93	0.00	-1076.2	0.00	1076.22	6294.68	3147.34	15658.0	7840.66	0.18	-0.112	0.000	0.116
18.00	-45.98	-8.85	0.00	-1049.4	0.00	1049.44	6251.82	3125.91	15366.9	7694.92	0.25	-0.131	0.000	0.115
18.00	-45.98	-8.85	0.00	-1049.4	0.00	1049.44	5035.78	2517.89	12403.8	6211.14	0.25	-0.131	0.000	0.122
20.00	-45.40	-8.81	0.00	-1031.7	0.00	1031.73	5016.94	2508.47	12258.7	6138.49	0.31	-0.143	0.000	0.137
25.00	-44.00	-8.69	0.00	-987.66	0.00	987.66	4968.35	2484.18	11895.7	5956.70	0.48	-0.178	0.000	0.134
30.00	-42.61	-8.56	0.00	-944.22	0.00	944.22	4917.65	2458.83	11532.4	5774.82	0.69	-0.214	0.000	0.131
35.00	-41.25	-8.43	0.00	-901.42	0.00	901.42	4864.84	2432.42	11169.4	5593.00	0.93	-0.250	0.000	0.129
40.00	-39.92	-8.28	0.00	-859.28	0.00	859.28	4809.92	2404.96	10806.7	5411.42	1.21	-0.286	0.000	0.126
41.00	-39.65	-8.26	0.00	-851.00	0.00	851.00	4798.68	2399.34	10734.3	5375.14	1.27	-0.294	0.000	0.125
45.00	-37.72	-8.15	0.00	-817.94	0.00	817.94	4752.88	2376.44	10444.9	5230.21	1.53	-0.323	0.000	0.122
48.00	-36.29	-8.06	0.00	-793.51	0.00	793.51	4754.71	2377.36	10456.3	5235.93	1.74	-0.345	0.000	0.123
50.00	-35.77	-8.01	0.00	-777.40	0.00	777.40	4731.34	2365.67	10311.8	5163.58	1.89	-0.360	0.000	0.118
55.00	-34.49	-7.86	0.00	-737.36	0.00	737.36	4671.41	2335.70	9951.50	4983.15	2.28	-0.396	0.000	0.115
60.00	-33.24	-7.72	0.00	-698.05	0.00	698.05	4609.37	2304.68	9592.67	4803.47	2.72	-0.432	0.000	0.112
65.00	-32.01	-7.58	0.00	-659.44	0.00	659.44	4545.22	2272.61	9235.65	4624.69	3.19	-0.469	0.000	0.110
70.00	-30.80	-7.43	0.00	-621.56	0.00	621.56	4478.96	2239.48	8880.76	4446.98	3.70	-0.505	0.000	0.107
75.00	-29.62	-7.29	0.00	-584.39	0.00	584.39	4410.58	2205.29	8528.29	4270.48	4.25	-0.542	0.000	0.103
80.00	-28.46	-7.14	0.00	-547.94	0.00	547.94	4340.09	2170.05	8178.57	4095.36	4.84	-0.579	0.000	0.100
81.00	-28.23	-7.12	0.00	-540.80	0.00	540.80	4325.74	2162.87	8108.99	4060.52	4.96	-0.587	0.000	0.100
81.00	-28.23	-7.12	0.00	-540.80	0.00	540.80	3843.52	1921.76	7205.03	3607.87	4.96	-0.587	0.000	0.112
85.00	-27.33	-7.01	0.00	-512.33	0.00	512.33	3789.25	1894.62	6954.21	3482.28	5.47	-0.617	0.000	0.109
90.00	-25.31	-6.85	0.00	-477.30	0.00	477.30	3719.86	1859.93	6643.95	3326.92	6.13	-0.654	0.000	0.105
91.00	-24.91	-6.82	0.00	-470.46	0.00	470.46	3750.02	1875.01	6777.40	3393.74	6.27	-0.661	0.000	0.106
95.00	-24.03	-6.71	0.00	-443.18	0.00	443.18	3693.87	1846.94	6530.61	3270.16	6.84	-0.691	0.000	0.099
100.00	-22.96	-6.57	0.00	-409.65	0.00	409.65	3622.15	1811.07	6225.69	3117.47	7.58	-0.726	0.000	0.138
105.00	-21.90	-6.43	0.00	-376.82	0.00	376.82	3548.72	1774.36	5924.97	2966.89	8.37	-0.777	0.000	0.133
110.00	-20.88	-6.30	0.00	-344.66	0.00	344.66	3473.57	1736.79	5628.70	2818.54	9.21	-0.827	0.000	0.128
115.00	-19.87	-6.16	0.00	-313.18	0.00	313.18	3396.72	1698.36	5337.14	2672.54	10.10	-0.878	0.000	0.123
120.00	-18.89	-6.03	0.00	-282.36	0.00	282.36	3318.16	1659.08	5050.54	2529.02	11.05	-0.928	0.000	0.117
125.00	-17.93	-5.90	0.00	-252.20	0.00	252.20	3226.71	1613.36	4752.68	2379.87	12.05	-0.977	0.000	0.112
130.00	-17.00	-5.77	0.00	-222.69	0.00	222.69	3120.09	1560.05	4442.21	2224.41	13.09	-1.026	0.000	0.106
135.00	-15.39	-5.63	0.00	-193.82	0.00	193.82	3080.81	1540.41	4330.47	2168.45	14.19	-1.073	0.000	0.094
140.00	-14.49	-5.50	0.00	-165.67	0.00	165.67	2974.19	1487.09	4034.35	2020.17	15.34	-1.118	0.000	0.087
140.00	-14.49	-5.50	0.00	-165.67	0.00	165.67	1787.24	893.62	2442.64	1223.14	15.34	-1.118	0.000	0.144
143.00	-12.73	-4.97	0.00	-149.17	0.00	149.17	1762.68	881.34	2357.06	1180.28	16.05	-1.142	0.000	0.134
145.00	-12.49	-4.93	0.00	-139.23	0.00	139.23	1745.97	872.98	2300.37	1151.90	16.54	-1.166	0.000	0.128
150.00	-11.91	-4.81	0.00	-114.60	0.00	114.60	1703.02	851.51	2160.05	1081.63	17.79	-1.221	0.000	0.113
153.00	-10.53	-4.60	0.00	-100.18	0.00	100.18	1676.45	838.23	2076.88	1039.98	18.57	-1.252	0.000	0.103
155.00	-10.30	-4.56	0.00	-90.98	0.00	90.98	1658.40	829.20	2021.90	1012.45	19.09	-1.271	0.000	0.096
159.00	-7.99	-3.15	0.00	-72.75	0.00	72.75	1621.51	810.75	1913.13	957.99	20.18	-1.307	0.000	0.081
160.00	-7.90	-3.13	0.00	-69.60	0.00	69.60	1612.12	806.06	1886.20	944.50	20.45	-1.315	0.000	0.079
165.00	-7.43	-3.02	0.00	-53.96	0.00	53.96	1564.16	782.08	1753.17	877.89	21.85	-1.353	0.000	0.066
170.00	-6.99	-2.91	0.00	-38.87	0.00	38.87	1514.53	757.27	1623.07	812.74	23.28	-1.386	0.000	0.052
173.00	-3.92	-1.55	0.00	-30.14	0.00	30.14	1483.95	741.98	1546.51	774.41	24.16	-1.402	0.000	0.042
175.00	-3.75	-1.51	0.00	-27.05	0.00	27.05	1463.23	731.62	1496.14	749.18	24.75	-1.412	0.000	0.039

Calculated Forces

Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Page: 56
	Struct Class: II	



180.00	-3.35	-1.40	0.00	-19.52	0.00	19.52	1400.09	700.04	1362.73	682.38	26.24	-1.433	0.000	0.031
180.00	-3.35	-1.40	0.00	-19.52	0.00	19.52	871.37	435.68	845.88	423.57	26.24	-1.433	0.000	0.050
185.00	-2.92	-1.30	0.00	-12.50	0.00	12.50	871.37	435.68	845.88	423.57	27.75	-1.450	0.000	0.033
190.00	-2.49	-1.20	0.00	-5.99	0.00	5.99	871.37	435.68	845.88	423.57	29.28	-1.459	0.000	0.017
195.00	0.00	-1.13	0.00	0.00	0.00	0.00	871.37	435.68	845.88	423.57	30.81	-1.462	0.000	0.000

Final Analysis Summary

Structure: CT00167-S-SBA	Code: EIA/TIA-222-G	12/6/2017
Site Name: Lisbon	Exposure: C	
Height: 195.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: B - Competent Rock	
Gh: 1.1	Topography: 1	Struct Class: II



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Reactions


Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)
1.2D + 1.6W 105 mph Wind	45.4	0.00	62.36	0.00	0.00	5979.47
0.9D + 1.6W 105 mph Wind	45.4	0.00	46.76	0.00	0.00	5914.88
1.2D + 1.0Di + 1.0Wi 50 mph Wind	11.2	0.00	92.63	0.00	0.00	1457.50
1.2D + 1.0E	1.2	0.00	62.44	0.00	0.00	151.07
0.9D + 1.0E	1.2	0.00	46.83	0.00	0.00	149.31
1.0D + 1.0W 60 mph Wind	9.3	0.00	52.03	0.00	0.00	1213.57

Max Stresses

Load Case	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Elev (ft)	Stress Ratio
1.2D + 1.6W 105 mph Wind	-62.36	-45.44	0.00	-5979.4	0.00	-5979.4	6497.76	3248.8	17121.8	8573.64	0.00	0.707
0.9D + 1.6W 105 mph Wind	-46.76	-45.41	0.00	-5914.8	0.00	-5914.8	6497.76	3248.8	17121.8	8573.64	0.00	0.697
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-92.63	-11.24	0.00	-1457.5	0.00	-1457.5	6497.76	3248.8	17121.8	8573.64	0.00	0.184
1.2D + 1.0E	-17.52	-0.70	0.00	-31.52	0.00	-31.52	2974.19	1487.0	4034.35	2020.17	140.00	0.036
0.9D + 1.0E	-13.14	-0.69	0.00	-31.08	0.00	-31.08	2974.19	1487.0	4034.35	2020.17	140.00	0.033
1.0D + 1.0W 60 mph Wind	-52.03	-9.27	0.00	-1213.5	0.00	-1213.5	6497.76	3248.8	17121.8	8573.64	0.00	0.150

Additional Steel Summary

Elev From (ft)	Elev To (ft)	Member	Intermediate Connectors			Lower Termination				Upper Termination				Max Member			
			VQ/I (lb/in)	Vu (kips)	phi Vn (kips)	MQ/I (kips)	phi Vn (kips)	Num Reqd	Num Actual	MQ/I (kips)	phi Vn (kips)	Num Reqd	Num Actual	Pu (kips)	phi Pn (kips)	phi Tn (kips)	Ratio
15.0	95.0	(6) PLT-C6x10.5 (no hole)	142.9	0.00	37.1	131.3	37.1	4	3	111.6	37.1	4	3	146.95	180.8	180.17	0.816

	Monopole Mat Foundation Design			Date
				12/6/2017
	Customer Name:	Sprint Nextel	EIA/TIA Standard:	EIA-222-G
	Site Name:		Structure Height (Ft.):	195
	Site Number:	CT00167-S-SBA	Engineer Name:	T. Alajaj
Engr. Number:	44283	Engineer Login ID:		

Foundation Info Obtained from:

Drawings/Calculations
Monopole
Analysis

Structure Type:

Analysis or Design?

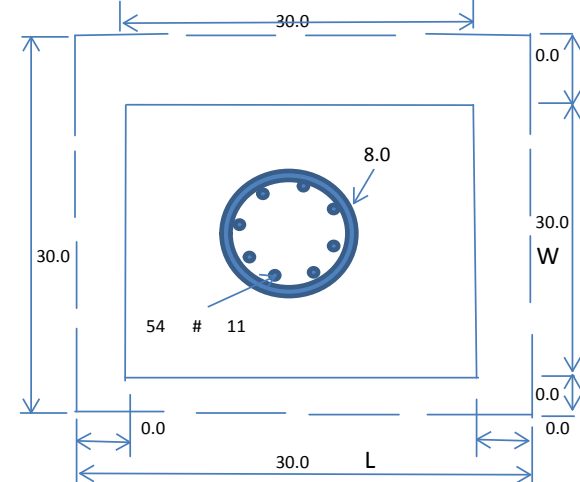
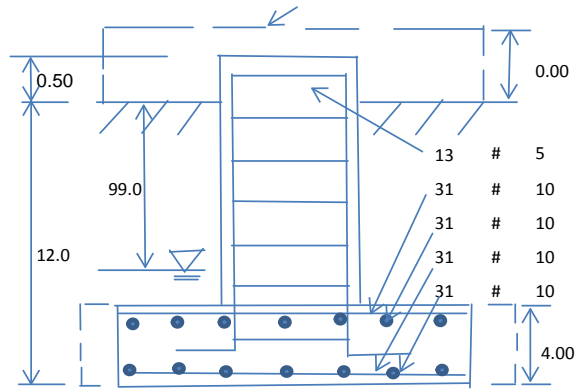
Base Reactions (Factored):

Axial Load (Kips):	62.4	Shear Force (Kips):	45.4
Uplift Force (Kips):	0.0	Moment (Kips-ft):	5979.5

Allowable overstress %: 5.0%

Foundation Geometries:

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	8.0	Depth of Base BG (ft.):	12.0
Pier Height A. G. (ft.):	0.50	Thickness of Pad (ft):	4.00
Length of Pad (ft.):	30	Width of Pad (ft.):	30
Final Length of pad (ft)	30.0	Final width of pad (ft):	30.0
Control Value for Cell D18:	0	Control Value for Cell F18:	0



Material Properties and Rebar Info:

Concrete Strength (psi):	3000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:	11	Tie / Stirrup Size #:	5	
Qty. of Vertical Rebars:	54	Tie Spacing (in):	12.0	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	10	
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):	31	Qty. of Rebar in Pad (W):	31	
Rebar at the top of the concrete pad:				
Qty. of Rebar in Pad (L):	31	Qty. of Rebar in Pad (W):	31	

Apply 1.35 factor for e/w Per G: 1.35

Soil Design Parameters:

Soil Unit Weight (pcf):	125.0	Soil Buoyant Weight:	50.0	Pcf
Water Table B.G.S. (ft):	99.0	Unit Weight of Water:	62.4	pcf
Ultimate Bearing Pressure (psf):	8000	Ultimate Skin Friction:	0	Psf
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	No	
Consider soil hor. resist. for OTM.:	No	Reduction factor on the maximum soil bearing pressure:	1.00	
		Angle from Top of Pad:	30	
		Angle from Bottm of Pad:	25	
		Angle from Bottm of Pad:	25	

Foundation Analysis and Design:

Uplift Strength Reduction Factor:	0.75	Compression Strength Reduction Factor:	0.75
Total Dry Soil Volume (cu. Ft.):	6797.88	Total Dry Soil Weight (Kips):	849.73
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	849.73	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	4027.26	Total Dry Concrete Weight (Kips):	604.09
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	604.09	Total Vertical Load on Base (Kips):	1516.18

Check Soil Capacities:

Calculated Maxium Net Soil Pressure under the base (psf):	2821	<	Allowable Factored Soil Bearing (psf):	6000	0.47	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	20562.0	>	Design Factored Momont (kips-ft):	6547	0.32	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	3.14					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:	1.00

Load/
Capacity
Ratio

(1) Concrete Pier:

Vertical Steel Rebar Area (sq. in./each):	1.56	Tie / Stirrup Area (sq. in./each):	0.31		
Calculated Moment Capacity (Mn,Kips-Ft):	15197.3	>	Design Factored Moment (Mu, Kips-Ft)	6365.4	0.42 OK!
Calculated Shear Capacity (Kips):	832.8	>	Design Factored Shear (Kips):	45.4	0.05 OK!
Calculated Tension Capacity (Tn, Kips):	4549.0	>	Design Factored Tension (Tu Kips):	0.0	0.00 OK!
Calculated Compression Capacity (Pn, Kips):	9486.2	>	Design Factored Axial Load (Pu Kips):	62.4	0.01 OK!
Moment & Axial Strength Combination:	0.42	OK!	Check Tie Spacing (Design/Required):	1	OK!
Pier Reinforcement Ratio:	0.012		Reinforcement Ratio is satisfied per ACI		

(2).Concrete Pad:

One-Way Design Shear Capacity (L-Direction, Kips):	1312.5	>	One-Way Factored Shear (L-D. Kips):	374.7	0.29 OK!
One-Way Design Shear Capacity (W-Direction, Kips):	1312.5	>	One-Way Factored Shear (W-D., Kips)	374.7	0.29 OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	1182.6	>	One-Way Factored Shear (C-C, Kips):	347.7	0.29 OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0025	OK!	Lower Steel Pad Reinf. Ratio (W-Direc	0.0025	
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	7633.8	>	Moment at Bottom (L-Dir. K-Ft):	2648.6	0.35 OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	7633.8	>	Moment at Bottom (W-Dir. K-Ft):	2648.6	0.35 OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	10720.9	>	Moment at Bottom (C-C Dir. K-Ft):	3745.7	0.35 OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0025	OK!	Upper Steel Reinf. Ratio (W-Dir.):	0.0025	
Upper Steel Pad Moment Capacity (L-Direc. Kips-ft):	7633.8	>	Moment at the top (L-Dir K-Ft):	1638.5	0.21 OK!
Upper Steel Pad Moment Capacity (W-Direc. Kips-ft):	7633.8	>	Moment at the top (W-Dir K-Ft):	1638.5	0.21 OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	10720.9	>	Moment at the top (C-C Dir. K-Ft):	1534.7	0.14 OK!

(3).Check Punching Shear Capacity due to Moment in the Pier:

Moment transferred by punching shear:	2391.8	k-ft.	Max. factored shear stress v_{u_cd} :	4.1	Psi
Max. factored shear stress v_{u_AB} :	9.0	Psi	Factored shear Strength ϕv_n :	164.3	Psi
Max. factored shear stress v_u :	9.0	Psi	Check Usage of Punching Shear Capacity:	0.05	OK!



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

SPECIAL CONSTRUCTION NOTE:
 GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL ANTENNA MOUNT STRUCTURAL AUGMENTS AND STRUCTURAL MODIFICATIONS AT THE SPRINT'S RAD/VERTICAL EQUIPMENT SPACE PER RECOMMENDATIONS FROM SBA-PROVIDED ANTENNA MOUNT STRUCTURAL ANALYSIS AND ANY SUPPLEMENTAL CONSTRUCTION DRAWINGS (PROVIDED BY OTHERS). SCHEMATIC DESIGNS DEPICTED IN MAGENTA ARE PRELIMINARY ONLY AND ARE NOT FOR FINAL CONSTRUCTION.

PROJECT: DO MACRO UPGRADE
 EQUIPMENT DEPLOYMENT

SITE CASCADE: CT23XC404

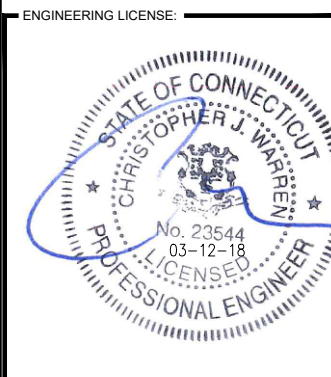
SITE ADDRESS: 26 MELL ROAD
 LISBON, CT 06351

SITE TYPE: MONOPOLE

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

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

PLANS PREPARED BY:
INFINIGY
 FROM ZERO TO INFINIGY
 the solutions are endless
 1033 Watervliet Shaker Rd | Albany, NY 12205
 Phone: 518-690-0790 | Fax: 518-690-0793
 www.infinigy.com
 JOB NUMBER 526-104



CHECKED BY:

APPROVED BY:

REVISIONS:	DESCRIPTION	DATE	BY	REV.
CLIENT REVISIONS		03/09/18	RWF	C
CLIENT REVISIONS		03/08/18	RWF	B
ISSUED FOR REVIEW		02/20/18	RCD	A

SITE NUMBER:

CT23XC404

SITE ADDRESS:

26 MELL ROAD
 LISBON, CT 06351

SHEET DESCRIPTION:

TITLE SHEET
 & PROJECT DATA

SHEET NUMBER:

T-1



PROJECT INFORMATION	AREA MAP	PROJECT DESCRIPTION	DRAWING INDEX																																							
<p>SITE INFORMATION: LATITUDE: 41° 35' 27.72" N (PER SBA RECORDS) 41.59125277 LONGITUDE: -72° 01' 1.06" W (PER SBA RECORDS) -72.01696111</p> <p>STRUCTURE HEIGHT: 195'± STRUCTURE TYPE: MONOPOLE</p> <p>APPLICANT: SPRINT 1 INTERNATIONAL BLVD, SUITE 800 MAHWAH, NJ 07495</p> <p>TOWER OWNER: SBA PROPERTIES LLC. 8051 CONGRESS AVENUE BOCA RATON, FL 33487</p> <p>SBA SITE ID: CT00167-S SBA SITE NAME: LISBON SBA CONTACT: STEPHEN ROTH (860) 539-4920 sroth@sbasite.com</p>		<p>SPRINT PROPOSES TO MODIFY AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY.</p> <ul style="list-style-type: none"> INSTALL (3) PANEL ANTENNAS INSTALL (3) 2.5 GHz RRH'S ON DUAL RRH MOUNT INSTALL (3) 800 MHz RRH'S ON DUAL RRH MOUNT INSTALL (3) FILTERS FOR 800 MHz RRH'S INSTALL (4) HYBRID CABLES INSTALL RAN EQUIPMENT INSIDE EXISTING MMBTS CABINET FURNISH AND INSTALL SECTOR FRAME STRUCTURAL AUGMENTS <p>THESE PLANS HAVE BEEN DEVELOPED FOR THE MODIFICATION OF AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY OWNED OR LEASED BY SPRINT IN ACCORDANCE WITH THE SCOPE OF WORK PROVIDED BY SPRINT. INFINIGY HAS INCORPORATED THIS SCOPE OF WORK IN THE PLANS. THESE PLANS ARE NOT FOR CONSTRUCTION UNLESS ACCOMPANIED BY A PASSING STRUCTURAL STABILITY ANALYSIS PREPARED BY A LICENSED STRUCTURAL ENGINEER. STRUCTURAL ANALYSIS MUST INCLUDE BOTH TOWER AND MOUNT.</p> <p>APPLICABLE CODES</p> <p>ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALL IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES.</p> <ol style="list-style-type: none"> INTERNATIONAL BUILDING CODE (2012 IBC) TIA-222-G OR LATEST EDITION NFPA 780 - LIGHTNING PROTECTION CODE 2014 NATIONAL ELECTRIC CODE OR LATEST EDITION ANY OTHER NATIONAL OR LOCAL APPLICABLE CODES, MOST RECENT EDITIONS CT BUILDING CODE LOCAL BUILDING CODE CITY/COUNTY ORDINANCES <p>GENERAL NOTES</p> <ol style="list-style-type: none"> THIS IS AN UNMANNED TELECOMMUNICATION FACILITY AND NOT FOR HUMAN HABITATION: <ul style="list-style-type: none"> ADA COMPLIANCE NOT REQUIRED. POTABLE WATER OR SANITARY SERVICE IS NOT REQUIRED. NO OUTDOOR STORAGE OR ANY SOLID WASTE RECEPTACLES REQUIRED. CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, AND CONDITIONS ON JOB SITE. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT/ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK. FAILURE TO NOTIFY THE ARCHITECT/ENGINEER PLACE THE RESPONSIBILITY ON THE CONTRACTOR TO CORRECT THE DISCREPANCIES AT THE CONTRACTOR'S EXPENSE. 	<table border="1"> <thead> <tr> <th>SHEET NO.</th> <th>SHEET TITLE</th> <th>REV.</th> </tr> </thead> <tbody> <tr> <td>T-1</td> <td>TITLE SHEET & PROJECT DATA</td> <td>C</td> </tr> <tr> <td>SP-1</td> <td>OUTLINE SPECIFICATIONS</td> <td>C</td> </tr> <tr> <td>SP-2</td> <td>OUTLINE SPECIFICATIONS</td> <td>C</td> </tr> <tr> <td>SP-3</td> <td>OUTLINE SPECIFICATIONS</td> <td>C</td> </tr> <tr> <td>A-1</td> <td>SITE PLAN</td> <td>C</td> </tr> <tr> <td>A-2</td> <td>MONOPOLE ELEVATION</td> <td>C</td> </tr> <tr> <td>A-3</td> <td>ANTENNA LAYOUT & MOUNTING DETAILS</td> <td>C</td> </tr> <tr> <td>A-4</td> <td>EQUIPMENT & MOUNTING DETAILS</td> <td>C</td> </tr> <tr> <td>A-5</td> <td>DETAILS</td> <td>C</td> </tr> <tr> <td>E-1</td> <td>ELECTRICAL & GROUNDING DETAILS & NOTES</td> <td>C</td> </tr> <tr> <td>RF-1</td> <td>RF DATA SHEET</td> <td>C</td> </tr> <tr> <td>RF-2</td> <td>PLUMBING DIAGRAM</td> <td>C</td> </tr> </tbody> </table>	SHEET NO.	SHEET TITLE	REV.	T-1	TITLE SHEET & PROJECT DATA	C	SP-1	OUTLINE SPECIFICATIONS	C	SP-2	OUTLINE SPECIFICATIONS	C	SP-3	OUTLINE SPECIFICATIONS	C	A-1	SITE PLAN	C	A-2	MONOPOLE ELEVATION	C	A-3	ANTENNA LAYOUT & MOUNTING DETAILS	C	A-4	EQUIPMENT & MOUNTING DETAILS	C	A-5	DETAILS	C	E-1	ELECTRICAL & GROUNDING DETAILS & NOTES	C	RF-1	RF DATA SHEET	C	RF-2	PLUMBING DIAGRAM	C
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<p>CALL CONNECTICUT ONE CALL (800) 922-4455 CALL 3 WORKING DAYS BEFORE YOU DIG!</p> <p>Know what's below. Call before you dig. www.call811.com</p>																																										

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

SECTION 01 100 – SCOPE OF WORK

PART 1 – GENERAL

- 1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE SPRINT CONSTRUCTION STANDARDS FOR WIRELESS SITES, CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.
- 1.2 RELATED DOCUMENTS:
 - A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.
 - B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HERewith.
- 1.3 PRECEDENCE: SHOULD CONFLICTS OCCUR BETWEEN THE STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES INCLUDING THE STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES AND THE CONSTRUCTION DRAWINGS, INFORMATION ON THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE. NOTIFY SPRINT CONSTRUCTION MANAGER IF THIS OCCURS.
- 1.4 NATIONALLY RECOGNIZED CODES AND STANDARDS:
 - A. THE WORK SHALL COMPLY WITH APPLICABLE NATIONAL AND LOCAL CODES AND STANDARDS, LATEST EDITION, AND PORTIONS THEREOF, INCLUDED BUT NOT LIMITED TO THE FOLLOWING:
 - 1. GR-63-CORE NEBS REQUIREMENTS: PHYSICAL PROTECTION
 - 5. GR-78-CORE GENERIC REQUIREMENTS FOR THE PHYSICAL DESIGN AND MANUFACTURE OF TELECOMMUNICATIONS EQUIPMENT.
 - 3. GR-1089 CORE, ELECTROMAGNETIC COMPATIBILITY AND ELECTRICAL SAFETY –GENERIC CRITERIA FOR NETWORK TELECOMMUNICATIONS EQUIPMENT.
 - 4. NATIONAL FIRE PROTECTION ASSOCIATION CODES AND STANDARDS (NFPA) INCLUDING NFPA 70 (NATIONAL ELECTRICAL CODE – "NEC") AND NFPA 101 (LIFE SAFETY CODE).
 - 5. AMERICAN SOCIETY FOR TESTING OF MATERIALS (ASTM)
 - 6. INSTITUTE OF ELECTRONIC AND ELECTRICAL ENGINEERS (IEEE)
 - 7. AMERICAN CONCRETE INSTITUTE (ACI)
 - 8. AMERICAN WIRE PRODUCERS ASSOCIATION (AWPA)
 - 9. CONCRETE REINFORCING STEEL INSTITUTE (CRSI)
 - 10. AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)
 - 11. PORTLAND CEMENT ASSOCIATION (PCA)
 - 12. NATIONAL CONCRETE MASONRY ASSOCIATION (NCMA)
 - 13. BRICK INDUSTRY ASSOCIATION (BIA)
 - 14. AMERICAN WELDING SOCIETY (AWS)
 - 15. NATIONAL ROOFING CONTRACTORS ASSOCIATION (NRCA)
 - 16. SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA)
 - 17. DOOR AND HARDWARE INSTITUTE (DHI)
 - 18. OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA)
 - 19. APPLICABLE BUILDING CODES INCLUDING UNIFORM BUILDING CODE, SOUTHERN BUILDING CODE, BOCA, AND THE INTERNATIONAL BUILDING CODE.
- 1.5 DEFINITIONS:
 - A. WORK: THE SUM OF TASKS AND RESPONSIBILITIES IDENTIFIED IN THE CONTRACT DOCUMENTS.
 - B. COMPANY: SPRINT CORPORATION
 - C. ENGINEER: SYNONYMOUS WITH ARCHITECT & ENGINEER AND "A&E". THE DESIGN PROFESSIONAL HAVING PROFESSIONAL RESPONSIBILITY FOR DESIGN OF THE PROJECT.
 - D. CONTRACTOR: CONSTRUCTION CONTRACTOR; CONSTRUCTION VENDOR; INDIVIDUAL OR ENTITY WHO AFTER EXECUTION OF A CONTRACT IS BOUND TO ACCOMPLISH THE WORK.
 - E. THIRD PARTY VENDOR OR AGENCY: A VENDOR OR AGENCY ENGAGED SEPARATELY BY THE COMPANY, A&E, OR CONTRACTOR TO PROVIDE MATERIALS OR TO ACCOMPLISH SPECIFIC TASKS RELATED TO BUT NOT INCLUDED IN THE WORK.
 - F. OFCI: OWNER FURNISHED, CONTRACTOR INSTALLED EQUIPMENT.
 - G. CONSTRUCTION MANAGER – ALL PROJECTS RELATED COMMUNICATION TO FLOW THROUGH SPRINT REPRESENTATIVE IN CHARGE OF PROJECT...

- 1.6 SITE FAMILIARITY: CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE SPRINT CONSTRUCTION MANAGER PRIOR TO THE COMMENCEMENT OF WORK. NO COMPENSATION WILL BE AWARDED BASED ON CLAIM OF LACK OF KNOWLEDGE OR FIELD CONDITIONS.
- 1.7 POINT OF CONTACT: COMMUNICATION BETWEEN SPRINT AND THE CONTRACTOR SHALL FLOW THROUGH THE SINGLE SPRINT CONSTRUCTION MANAGER APPOINTED TO MANAGE THE PROJECT FOR SPRINT.
- 1.8 ON-SITE SUPERVISION: THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL EMPLOY A COMPETENT SUPERINTENDENT WHO SHALL BE IN ATTENDANCE AT THE SITE AT ALL TIMES DURING PERFORMANCE OF THE WORK.
- 1.9 DRAWINGS, SPECIFICATIONS AND DETAILS REQUIRED AT JOBSITE: THE CONSTRUCTION CONTRACTOR SHALL MAINTAIN A FULL SET OF THE CONSTRUCTION DRAWINGS, STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES AND THE STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES AT THE JOBSITE FROM MOBILIZATION THROUGH CONSTRUCTION COMPLETION.
 - A. THE JOBSITE DRAWINGS, SPECIFICATIONS AND DETAILS SHALL BE CLEARLY MARKED DAILY IN RED PENCIL WITH ANY CHANGES IN CONSTRUCTION OVER WHAT IS DEPICTED IN THE DOCUMENTS. AT CONSTRUCTION COMPLETION, THIS JOBSITE MARKUP SET SHALL BE DELIVERED TO THE COMPANY OR COMPANY'S DESIGNATED REPRESENTATIVE TO BE FORWARDED TO THE COMPANY'S A&E VENDOR FOR PRODUCTION OF "AS-BUILT" DRAWINGS.
 - B. DETAILS ARE INTENDED TO SHOW DESIGN INTENT. MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE WORK. CONTRACTOR SHALL NOTIFY SPRINT CONSTRUCTION MANAGER OF ANY VARIATIONS PRIOR TO PROCEEDING WITH THE WORK.
 - C. DIMENSIONS SHOWN ARE TO FINISH SURFACES UNLESS NOTED OTHERWISE. SPACING BETWEEN EQUIPMENT IS THE REQUIRED CLEARANCE. SHOULD THERE BE ANY QUESTIONS REGARDING THE CONTRACT DOCUMENTS, EXISTING CONDITIONS AND/OR DESIGN INTENT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A CLARIFICATION FROM THE SPRINT CONSTRUCTION MANAGER PRIOR TO PROCEEDING WITH THE WORK.
- 1.10 USE OF JOB SITE: THE CONTRACTOR SHALL CONFINE ALL CONSTRUCTION AND RELATED OPERATIONS INCLUDING STAGING AND STORAGE OF MATERIALS AND EQUIPMENT, PARKING, TEMPORARY FACILITIES, AND WASTE STORAGE TO THE LEASE PARCEL UNLESS OTHERWISE PERMITTED BY THE CONTRACT DOCUMENTS.
- 1.11 UTILITIES SERVICES: WHERE NECESSARY TO CUT EXISTING PIPES, ELECTRICAL WIRES, CONDUITS, CABLES, ETC., OF UTILITY SERVICES, OR OF FIRE PROTECTION OR COMMUNICATIONS SYSTEMS, THEY SHALL BE CUT AND CAPPED AT SUITABLE PLACES OR WHERE SHOWN. ALL SUCH ACTIONS SHALL BE COORDINATED WITH THE UTILITY COMPANY INVOLVED:
- 1.12 PERMITS / FEES: WHEN REQUIRED THAT A PERMIT OR CONNECTION FEE BE PAID TO A PUBLIC UTILITY PROVIDER FOR NEW SERVICE TO THE CONSTRUCTION PROJECT, PAYMENT OF SUCH FEE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
- 1.13 CONTRACTOR SHALL TAKE ALL MEASURES AND PROVIDE ALL MATERIAL NECESSARY FOR PROTECTING EXISTING EQUIPMENT AND PROPERTY.
- 1.14 METHODS OF PROCEDURE (MOPS) FOR CONSTRUCTION: CONTRACTOR SHALL PERFORM WORK AS DESCRIBED IN THE FOLLOWING INSTALLATION AND COMMISSIONING MOPS.

NOTE: IN SHORT-FORM SPECIFICATIONS ON THE DRAWINGS, A/E TO INSERT LIST OF APPLICABLE MOPS INCLUDING EN-2012-001, EN-2013-002, EL-0568, AND TS-0193
- 1.15 USE OF ELECTRONIC PROJECT MANAGEMENT SYSTEMS:

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

- 3.1 TEMPORARY UTILITIES AND FACILITIES: THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY UTILITIES AND FACILITIES NECESSARY EXCEPT AS OTHERWISE INDICATED IN THE CONSTRUCTION DOCUMENTS. TEMPORARY UTILITIES AND FACILITIES INCLUDE POTABLE WATER, HEAT, HVAC, ELECTRICITY, SANITARY FACILITIES, WASTE DISPOSAL FACILITIES, AND TELEPHONE/COMMUNICATION SERVICES. PROVIDE TEMPORARY UTILITIES AND FACILITIES IN ACCORDANCE WITH OSHA AND THE AUTHORITY HAVING JURISDICTION. CONTRACTOR MAY UTILIZE THE COMPANY ELECTRICAL SERVICE IN THE COMPLETION OF THE WORK WHEN IT BECOMES AVAILABLE. USE OF THE LESSORS OR SITE OWNER'S UTILITIES OR FACILITIES IS EXPRESSLY FORBIDDEN EXCEPT AS OTHERWISE ALLOWED IN THE CONTRACT DOCUMENTS.
- 3.2 ACCESS TO WORK: THE CONTRACTOR SHALL PROVIDE ACCESS TO THE JOB SITE FOR AUTHORIZED COMPANY PERSONNEL AND AUTHORIZED REPRESENTATIVES OF THE ARCHITECT/ENGINEER DURING ALL PHASES OF THE WORK.
- 3.3 TESTING: REQUIREMENTS FOR TESTING BY THIS CONTRACTOR SHALL BE AS INDICATED HERewith, ON THE CONSTRUCTION DRAWINGS, AND IN THE INDIVIDUAL SECTIONS OF THESE SPECIFICATIONS. SHOULD COMPANY CHOOSE TO ENGAGE ANY THIRD-PARTY TO CONDUCT ADDITIONAL TESTING, THE CONTRACTOR SHALL COOPERATE WITH AND PROVIDE A WORK AREA FOR COMPANY'S TEST AGENCY.
- 3.4 DIMENSIONS: VERIFY DIMENSIONS INDICATED ON DRAWINGS WITH FIELD DIMENSIONS BEFORE FABRICATION OR ORDERING OF MATERIALS. DO NOT SCALE DRAWINGS.

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

SECTION 01 200 – COMPANY FURNISHED MATERIAL AND EQUIPMENT

PART 1 – GENERAL

- 1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.
- 1.2 RELATED DOCUMENTS:
 - A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.
 - B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HERewith.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

- 3.1 RECEIPT OF MATERIAL AND EQUIPMENT:
 - A. A COMPANY FURNISHED MATERIAL AND EQUIPMENT IS IDENTIFIED ON THE RF DATA SHEET IN THE CONSTRUCTION DOCUMENTS.
 - B. THE CONTRACTOR IS RESPONSIBLE FOR SPRINT PROVIDED MATERIAL AND EQUIPMENT AND UPON RECEIPT SHALL:
 - 1. ACCEPT DELIVERIES AS SHIPPED AND TAKE RECEIPT.
 - 2. VERIFY COMPLETENESS AND CONDITION OF ALL DELIVERIES.
 - 3. TAKE RESPONSIBILITY FOR EQUIPMENT AND PROVIDE INSURANCE PROTECTION AS REQUIRED IN AGREEMENT.
 - 4. RECORD ANY DEFECTS OR DAMAGES AND WITHIN TWENTY-FOUR HOURS AFTER RECEIPT, REPORT TO SPRINT OR ITS DESIGNATED PROJECT REPRESENTATIVE OF SUCH.
 - 5. PROVIDE SECURE AND NECESSARY WEATHER PROTECTED WAREHOUSING.
 - 6. COORDINATE SAFE AND SECURE TRANSPORTATION OF MATERIAL AND EQUIPMENT, DELIVERING AND OFF-LOADING FROM CONTRACTOR'S WAREHOUSE TO SITE.
- 3.2 DELIVERABLES:
 - A. COMPLETE SHIPPING AND RECEIPT DOCUMENTATION IN ACCORDANCE WITH COMPANY PRACTICE.
 - B. IF APPLICABLE, COMPLETE LOST/STOLEN/DAMAGED DOCUMENTATION REPORT AS NECESSARY IN ACCORDANCE WITH COMPANY PRACTICE, AND AS DIRECTED BY COMPANY.
 - C. UPLOAD DOCUMENTATION INTO SPRINT SITE MANAGEMENT SYSTEM (SMS) AND/OR PROVIDE HARD COPY DOCUMENTATION AS REQUESTED.

SECTION 01 300 – CELL SITE CONSTRUCTION CO.

PART 1 – GENERAL

- 1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.
- 1.2 RELATED DOCUMENTS:
 - A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.
 - B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HERewith.
- 1.3 NOTICE TO PROCEED
 - A. NO WORK SHALL COMMENCE PRIOR TO COMPANY'S WRITTEN NOTICE TO PROCEED AND THE ISSUANCE OF THE WORK ORDER.
 - B. UPON RECEIVING NOTICE TO PROCEED, CONTRACTOR SHALL FULLY PERFORM ALL WORK NECESSARY TO PROVIDE SPRINT WITH AN OPERATIONAL WIRELESS FACILITY.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

- 3.1 FUNCTIONAL REQUIREMENTS:
 - A. THE ACTIVITIES DESCRIBED IN THIS PARAGRAPH REPRESENT MINIMUM ACTIONS AND PROCESSES REQUIRED TO SUCCESSFULLY COMPLETE THE WORK. THE ACTIVITIES DESCRIBED ARE NOT EXHAUSTIVE, AND CONTRACTOR SHALL TAKE ANY AND ALL ACTIONS AS NECESSARY TO SUCCESSFULLY COMPLETE THE CONSTRUCTION OF A FULLY FUNCTIONING WIRELESS FACILITY AT THE SITE IN ACCORDANCE WITH COMPANY PROCESSES.
 - B. SUBMIT SPECIFIC DOCUMENTATION AS INDICATED HEREIN, AND OBTAIN REQUIRED APPROVALS WHILE THE WORK IS BEING PERFORMED.
 - C. MANAGE AND CONDUCT ALL FIELD CONSTRUCTION SERVICE RELATED ACTIVITIES
 - D. PROVIDE CONSTRUCTION ACTIVITIES TO THE EXTENT REQUIRED BY THE CONTRACT DOCUMENTS, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

PLANS PREPARED FOR:



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

PROJECT MANAGER:



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

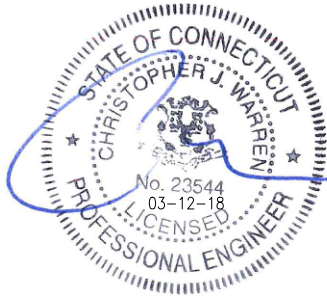
PLANS PREPARED BY:



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the solutions are endless

1033 Watervliet Shaker Rd | Albany, NY 12205
Phone: 518-690-0790 | Fax: 518-690-0793
www.infinigy.com
JOB NUMBER 526-104

ENGINEERING LICENSE:



CHECKED BY:

APPROVED BY:

REVISIONS:	DESCRIPTION	DATE	BY	REV.
CLIENT REVISIONS		03/09/18	RWF	C
CLIENT REVISIONS		03/08/18	RWF	B
ISSUED FOR REVIEW		02/20/18	RCD	A

SITE NUMBER:

CT23XC404

SITE ADDRESS:

26 MELL ROAD
LISBON, CT 06351

SHEET DESCRIPTION:

OUTLINE SPECIFICATIONS

SHEET NUMBER:

SP-1

CONTINUE FROM SP-1

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

3.2 GENERAL REQUIREMENTS FOR CIVIL CONSTRUCTION:

- A. CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH. AT THE COMPLETION OF THE WORK, CONTRACTOR SHALL REMOVE FROM THE SITE ALL REMAINING RUBBISH, IMPLEMENTS, TEMPORARY FACILITIES, AND SURPLUS MATERIALS.
- B. EQUIPMENT ROOMS SHALL AT ALL TIMES BE MAINTAINED "BROOM CLEAN" AND CLEAR OF DEBRIS.
- C. CONTRACTOR SHALL TAKE ALL REASONABLE PRECAUTIONS TO DISCOVER AND LOCATE ANY HAZARDOUS CONDITION.
 1. IN THE EVENT CONTRACTOR ENCOUNTERS ANY HAZARDOUS CONDITION WHICH HAS NOT BEEN ABATED OR OTHERWISE MITIGATED, CONTRACTOR AND ALL OTHER PERSONS SHALL IMMEDIATELY STOP WORK IN THE AFFECTED AREA AND NOTIFY COMPANY IN WRITING. THE WORK IN THE AFFECTED AREA SHALL NOT BE RESUMED EXCEPT BY WRITTEN NOTIFICATION BY COMPANY.
 2. CONTRACTOR AGREES TO USE CARE WHILE ON THE SITE AND SHALL NOT TAKE ANY ACTION THAT WILL OR MAY RESULT IN OR CAUSE THE HAZARDOUS CONDITION TO BE FURTHER RELEASED IN THE ENVIRONMENT, OR TO FURTHER EXPOSE INDIVIDUALS TO THE HAZARD.
- D. CONTRACTOR'S ACTIVITIES SHALL BE RESTRICTED TO THE PROJECT LIMITS. SHOULD AREAS OUTSIDE THE PROJECT LIMITS BE AFFECTED BY CONTRACTOR'S ACTIVITIES, CONTRACTOR SHALL IMMEDIATELY RETURN THEM TO ORIGINAL CONDITION
- E. CONDUCT TESTING AS REQUIRED HEREIN.

3.3 DELIVERABLES:

- A. CONTRACTOR SHALL REVIEW, APPROVE, AND SUBMIT TO SPRINT SHOP DRAWINGS, PRODUCT DATA, SAMPLES, AND SIMILAR SUBMITTALS AS REQUIRED HEREINAFTER
- B. PROVIDE DOCUMENTATION INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING. DOCUMENTATION SHALL BE FORWARDED IN ORIGINAL FORMAT AND/OR UPLOADED INTO SMS.
 1. ALL CORRESPONDENCE AND PRELIMINARY CONSTRUCTION REPORTS.
 2. PROJECT PROGRESS REPORTS.
 3. CIVIL CONSTRUCTION START DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
 4. ELECTRICAL SERVICE COMPLETION DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).

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

SECTION 01 400 - SUBMITTALS & TESTS

PART 1 - GENERAL

- 1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.
- 1.2 RELATED DOCUMENTS:
 - A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.
 - B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HERewith.
- 1.3 SUBMITTALS:
 - A. THE WORK IN ALL ASPECTS SHALL COMPLY WITH THE CONSTRUCTION DRAWINGS AND THESE SPECIFICATIONS.
 - B. SUBMIT THE FOLLOWING TO COMPANY REPRESENTATIVE FOR APPROVAL.
 1. CONCRETE MIX-DESIGNS FOR TOWER FOUNDATIONS, ANCHORS PIERS, AND CONCRETE PAVING.
 2. CONCRETE BREAK TESTS AS SPECIFIED HEREIN.
 3. SPECIAL FINISHES FOR INTERIOR SPACES, IF ANY.
 4. ALL EQUIPMENT AND MATERIALS SO IDENTIFIED ON THE CONSTRUCTION DRAWINGS.
 5. CHEMICAL GROUNDING DESIGN
 - D. ALTERNATES: AT THE COMPANY'S REQUEST, ANY ALTERNATIVES TO THE MATERIALS OR METHODS SPECIFIED SHALL BE SUBMITTED TO SPRINT'S CONSTRUCTION MANAGER FOR APPROVAL PRIOR TO BEING SHIPPED TO SITE. SPRINT WILL REVIEW AND APPROVE ONLY THOSE REQUESTS MADE IN WRITING. NO VERBAL APPROVALS WILL BE CONSIDERED. SUBMITTAL FOR APPROVAL SHALL INCLUDE A STATEMENT OF COST REDUCTION PROPOSED FOR USE OF ALTERNATE PRODUCT.

1.4 TESTS AND INSPECTIONS:

- A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION TESTS, INSPECTIONS AND PROJECT DOCUMENTATION.
- B. CONTRACTOR SHALL ACCOMPLISH TESTING INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
 1. COAX SWEEPS AND FIBER TESTS PER TS-0200 REV 4 ANTENNA LINE ACCEPTANCE STANDARDS.
 2. AGL, AZIMUTH AND DOWNTILT USING ELECTRONIC COMMERCIAL MADE-FOR-THE-PURPOSE ANTENNA ALIGNMENT TOOL.
 3. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CORRECTIONS TO ANY WORK IDENTIFIED AS UNACCEPTABLE IN SITE INSPECTION ACTIVITIES AND/OR AS A RESULT OF TESTING.
- C. REQUIRED CLOSEOUT DOCUMENTATION INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING:
 1. AZIMUTH, DOWNTILT, AGL - UPLOAD REPORT FROM ANTENNA ALIGNMENT TOOL TO SITERRA TASK 465. INSTALLED AZIMUTH, DOWNTILT, AND AGL MUST CONFORM TO THE RF DATA SHEETS. SWEEP AND FIBER TESTS
 2. SCANABLE BARCODE PHOTOGRAPHS OF TOWER TOP AND INACCESSIBLE SERIALIZED EQUIPMENT
 3. ALL AVAILABLE JURISDICTIONAL INFORMATION
 4. PDF SCAN OF REDLINES PRODUCED IN FIELD

5. ELECTRONIC AS-BUILT DRAWINGS IN AUTOCAD AND PDF FORMATS. ANY FIELD CHANGE MUST BE REFLECTED BY MODIFYING THE PLANS, ELEVATIONS, AND DETAILS IN THE DRAWING SETS. GENERAL NOTES INDICATING MODIFICATIONS WILL NOT BE ACCEPTED. CHANGES SHALL BE HIGHLIGHTED AS "CLOUDS" IDENTIFIED AS THE "AS-BUILT" CONDITION.
 6. LIEN WAIVERS
 7. FINAL PAYMENT APPLICATION
 8. REQUIRED FINAL CONSTRUCTION PHOTOS
 9. CONSTRUCTION AND COMMISSIONING CHECKLIST COMPLETE WITH NO DEFICIENT ITEMS
 10. ALL POST NTP TASKS INCLUDING DOCUMENT UPLOADS COMPLETED IN SITERRA (SPRINTS DOCUMENT REPOSITORY OF RECORD).
- 1.5 COMMISSIONING: PERFORM ALL COMMISSIONING AS REQUIRED BY APPLICABLE MOPs
- 1.6 INTEGRATION: PERFORM ALL INTEGRATION ACTIVITIES AS REQUIRED BY APPLICABLE MOPs

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 REQUIREMENTS FOR TESTING:

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

3.2 REQUIRED TESTS:

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

3.3 REQUIRED INSPECTIONS

- A. SCHEDULE INSPECTIONS WITH COMPANY REPRESENTATIVE.
- B. CONDUCT INSPECTIONS INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
 1. GROUNDING SYSTEM INSTALLATION PRIOR TO EARTH CONCEALMENT DOCUMENTED WITH DIGITAL PHOTOGRAPHS BY CONTRACTOR, APPROVED BY A&E OR SPRINT REPRESENTATIVE.
 2. FORMING FOR CONCRETE AND REBAR PLACEMENT PRIOR TO POUR DOCUMENTED WITH DIGITAL PHOTOGRAPHS BY CONTRACTOR, APPROVED BY A&E OR SPRINT REPRESENTATIVE.
 3. COMPACTION OF BACKFILL MATERIALS; AGGREGATE BASE FOR ROADS, PADS, AND ANCHORS; ASPHALT PAVING; AND SHAFT BACKFILL FOR CONCRETE AND WOOD POLES, BY INDEPENDENT THIRD PARTY AGENCY.
 4. PRE- AND POST-CONSTRUCTION ROOFTOP AND STRUCTURAL INSPECTIONS ON EXISTING FACILITIES.
 5. TOWER ERECTION SECTION STACKING AND PLATFORM ATTACHMENT DOCUMENTED BY DIGITAL PHOTOGRAPHS BY THIRD PARTY AGENCY.
 6. ANTENNA AZIMUTH , DOWN TILT AND PER SUNLIGHT TOOL SUNSIGHT INSTRUMENTS - ANTENNALIGN ALIGNMENT TOOL (AAT)

PLANS PREPARED FOR:




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PROJECT MANAGER:



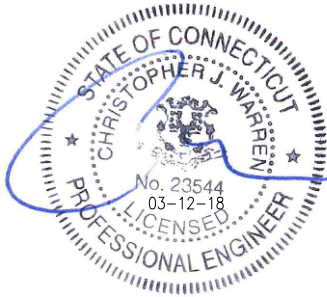
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ENGINEERING LICENSE:



CHECKED BY:

APPROVED BY:

REVISIONS:	DESCRIPTION	DATE	BY	REV.
CLIENT REVISIONS		03/09/18	RWF	C
CLIENT REVISIONS		03/08/18	RWF	B
ISSUED FOR REVIEW		02/20/18	RCD	A

SITE NUMBER:
CT23XC404

SITE ADDRESS:
**26 MELL ROAD
LISBON, CT 06351**

SHEET DESCRIPTION:
OUTLINE SPECIFICATIONS

SHEET NUMBER:
SP-2

CONTINUE FROM SP-2

- 7. VERIFICATION DOCUMENTED WITH THE ANTENNA CHECKLIST REPORT, BY A&E, SITE DEVELOPMENT REP, OR RF REP.
- 8. FINAL INSPECTION CHECKLIST AND HANDOFF WALK (HOC.). SIGNED FORM SHOWING ACCEPTANCE BY FIELD OPS IS TO BE UPLOADED INTO SMS.
- 9. COAX SWEEP AND FIBER TESTING DOCUMENTS SUBMITTED VIA SMS FOR RF APPROVAL.
- 10. SCAN-ABLE BARCODE PHOTOGRAPHS OF TOWER TOP AND INACCESSIBLE SERIALIZED EQUIPMENT
- 11. ALL AVAILABLE JURISDICTIONAL INFORMATION
- 12. PDF SCAN OF REDLINES PRODUCED IN FIELD
- C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CORRECTIONS TO ANY WORK IDENTIFIED AS UNACCEPTABLE IN SITE INSPECTION ACTIVITIES AND/OR AS A RESULT OF TESTING.
- D. CONSTRUCTION INSPECTIONS AND CORRECTIVE MEASURES SHALL BE DOCUMENTED BY THE CONTRACTOR WITH WRITTEN REPORTS AND PHOTOGRAPHS. PHOTOGRAPHS MUST BE DIGITAL AND OF SUFFICIENT QUALITY TO CLEARLY SHOW THE SITE CONSTRUCTION. PHOTOGRAPHS MUST CLEARLY IDENTIFY THE PHOTOGRAPHED ITEM AND BE LABELED WITH THE SITE CASCADE NUMBER, SITE NAME, DESCRIPTION, AND DATE.
- 3.4 DELIVERABLES: TEST AND INSPECTION REPORTS AND CLOSEOUT DOCUMENTATION SHALL BE UPLOADED TO THE SMS AND/OR FORWARDED TO SPRINT FOR INCLUSION INTO THE PERMANENT SITE FILES.
 - A. THE FOLLOWING TEST AND INSPECTION REPORTS SHALL BE PROVIDED AS APPLICABLE.
 - 1. CONCRETE MIX AND CYLINDER BREAK REPORTS.
 - 2. STRUCTURAL BACKFILL COMPACTION REPORTS.
 - 3. SITE RESISTANCE TO EARTH TEST.
 - 4. ANTENNA AZIMUTH AND DOWN TILT VERIFICATION
 - 5. TOWER ERECTION INSPECTIONS AND MEASUREMENTS DOCUMENTING TOWER INSTALLED PER SUPPLIER'S REQUIREMENTS AND THE APPLICABLE SECTIONS HEREIN.
 - 6. COAX CABLE SWEEP TESTS PER COMPANY'S "ANTENNA LINE ACCEPTANCE STANDARDS".
 - B. REQUIRED CLOSEOUT DOCUMENTATION INCLUDES THE FOLLOWING;
 - 1. TEST WELLS AND TRENCHES: PHOTOGRAPHS OF ALL TEST WELLS; PHOTOGRAPHS SHOWING ALL OPEN EXCAVATIONS AND TRENCHING PRIOR TO BACKFILLING SHOWING A TAPE MEASURE VISIBLE IN THE EXCAVATIONS INDICATING DEPTH.
 - 2. CONDUITS, CONDUCTORS AND GROUNDING: PHOTOGRAPHS SHOWING TYPICAL INSTALLATION OF CONDUCTORS AND CONNECTORS; PHOTOGRAPHS SHOWING TYPICAL BEND RADIUS OF INSTALLED GROUND WIRES AND GROUND ROD SPACING;
 - 3. CONCRETE FORMS AND REINFORCING: CONCRETE FORMING AT TOWER AND EQUIPMENT/SHELTER PAD/FOUNDATIONS - PHOTOGRAPHS SHOWING ALL REINFORCING STEEL, UTILITY AND CONDUIT STUB OUTS; PHOTOGRAPHS SHOWING CONCRETE POUR OF SHELTER SLAB/FOUNDATION, TOWER FOUNDATION AND GUY ANCHORS WITH VIBRATOR IN USE; PHOTOGRAPHS SHOWING EACH ANCHOR ON GUYED TOWERS, BEFORE CONCRETE POUR.
 - 4. TOWER, ANTENNAS AND MAINLINE: INSPECTION AND PHOTOGRAPHS OF SECTION STACKING; INSPECTION AND PHOTOGRAPHS OF PLATFORM COMPONENT ATTACHMENT POINTS; PHOTOGRAPHS OF TOWER TOP GROUNDING; PHOTOS OF TOWER COAX LINE COLOR CODING AT THE TOP AND AT GROUND LEVEL; INSPECTION AND PHOTOGRAPHS OF OPERATIONAL OF TOWER LIGHTING, AND PLACEMENT OF FAA REGISTRATION SIGN; PHOTOGRAPHS SHOWING ADDITIONAL GROUNDING POINTS FOR TOWERS GREATER THAN 200 FEET.; PHOTOS OF ANTENNA GROUND BAR, EQUIPMENT GROUND BAR, AND MASTER GROUND BAR; PHOTOS OF GPS ANTENNA(S); PHOTOS OF EACH SECTOR OF ANTENNAS; ONE PHOTOGRAPH LOOKING AT THE SECTOR AND ONE FROM BEHIND SHOWING THE PROJECTED COVERAGE AREA; PHOTOS OF COAX WEATHERPROOFING - TOP AND BOTTOM; PHOTOS OF COAX GROUNDING--TOP AND BOTTOM; PHOTOS OF ANTENNA AND MAST GROUNDING; PHOTOS OF COAX CABLE ENTRY INTO SHELTER; PHOTOS OF PLATFORM MECHANICAL CONNECTIONS TO TOWER/MONOPOLE.
 - 5. ROOF TOPS: PRE-CONSTRUCTION AND POST-CONSTRUCTION VISUAL INSPECTION AND PHOTOGRAPHS OF THE ROOF AND INTERIOR TO DETERMINE AND DOCUMENT CONDITIONS; ROOF TOP CONSTRUCTION INSPECTIONS AS REQUIRED BY THE JURISDICTION; PHOTOGRAPHS OF CABLE TRAY AND/OR ICE BRIDGE; PHOTOGRAPHS OF DOGHOUSE/CABLE EXIT FROM ROOF;
 - 6. SITE LAYOUT - PHOTOGRAPHS OF THE OVERALL COMPOUND, INCLUDING EQUIPMENT PLATFORM FROM ALL FOUR CORNERS.
 - 7. FINISHED UTILITIES: CLOSE-UP PHOTOGRAPHS OF THE PPC BREAKER PANEL; CLOSE-UP PHOTOGRAPH OF THE INSIDE OF THE TELCO PANEL AND NIU; CLOSE-UP PHOTOGRAPH OF THE POWER METER AND DISCONNECT; PHOTOS OF POWER AND TELCO ENTRANCE TO COMPANY ENCLOSURE; PHOTOGRAPHS AT METER BOX AND/OR FACILITY DISTRIBUTION PANEL.
 - 8. REQUIRED MATERIALS CERTIFICATIONS: CONCRETE MIX DESIGNS; MILL CERTIFICATION FOR ALL REINFORCING AND STRUCTURAL STEEL; AND ASPHALT PAVING MIX DESIGN.
 - 9. ANY AND ALL SUBMITTALS BY THE JURISDICTION OR COMPANY.

SECTION 01 400 - SUBMITTALS & TESTS

PART 1 - GENERAL

- 1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.
- 1.2 RELATED DOCUMENTS:
 - A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.
 - B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

- 3.1 WEEKLY REPORTS:
 - A. CONTRACTOR SHALL PROVIDE SPRINT WITH WEEKLY REPORTS SHOWING PROJECT STATUS. THIS STATUS REPORT FORMAT WILL BE PROVIDED TO THE CONTRACTOR BY SPRINT. THE REPORT WILL CONTAIN SITE ID NUMBER, THE MILESTONES FOR EACH SITE, INCLUDING THE BASELINE DATE, ESTIMATED COMPLETION DATE AND ACTUAL COMPLETION DATE.
 - B. REPORT INFORMATION WILL BE TRANSMITTED TO SPRINT VIA ELECTRONIC MEANS AS REQUIRED. THIS INFORMATION WILL PROVIDE A BASIS FOR PROGRESS MONITORING AND PAYMENT.
- 3.2 PROJECT CONFERENCE CALLS:
 - A. SPRINT MAY HOLD WEEKLY PROJECT CONFERENCE CALLS. CONTRACTOR WILL BE REQUIRED TO COMMUNICATE SITE STATUS, MILESTONE COMPLETIONS AND UPCOMING MILESTONE PROJECTIONS, AND ANSWER ANY OTHER SITE STATUS QUESTIONS AS NECESSARY.
- 3.3 PROJECT TRACKING IN SMS:
 - A. CONTRACTOR SHALL PROVIDE SCHEDULE UPDATES AND PROJECTIONS IN THE SMS SYSTEM ON A WEEKLY BASIS.
- 3.4 ADDITIONAL REPORTING:
 - A. ADDITIONAL OR ALTERNATE REPORTING REQUIREMENTS MAY BE ADDED TO THE REPORT AS DETERMINED TO BE REASONABLY NECESSARY BY COMPANY.
- 3.5 PROJECT PHOTOGRAPHS:
 - A. FILE DIGITAL PHOTOGRAPHS OF COMPLETED SITE IN JPEG FORMAT IN THE SMS PHOTO LIBRARY FOR THE RESPECTIVE SITE. PHOTOGRAPHS SHALL BE CLEARLY LABELED WITH SITE NUMBER, NAME AND DESCRIPTION, AND SHALL INCLUDE AT A MINIMUM THE FOLLOWING AS APPLICABLE:
 - 1. SHELTER AND TOWER OVERVIEW.
 - 2. TOWER FOUNDATION(S) - FORMS AND STEEL BEFORE POUR (EACH ANCHOR ON GUYED TOWERS).
 - 3. TOWER FOUNDATION(S) POUR WITH VIBRATOR IN USE (EACH ANCHOR ON GUYED TOWERS).
 - 4. TOWER STEEL AS BEING INSTALLED INTO HOLE (SHOW ANCHOR STEEL ON GUYED TOWERS).
 - 5. PHOTOS OF TOWER SECTION STACKING.
 - 6. CONCRETE TESTING / SAMPLES.
 - 7. PLACING OF ANCHOR BOLTS IN TOWER FOUNDATION.
 - 8. BUILDING/WATER TANK FROM ROAD FOR TENANT IMPROVEMENTS OR COMMENTS.
 - 9. SHELTER FOUNDATION--FORMS AND STEEL BEFORE POURING.
 - 10. SHELTER FOUNDATION POUR WITH VIBRATOR IN USE.
 - 11. COAX CABLE ENTRY INTO SHELTER.
 - 12. PLATFORM MECHANICAL CONNECTIONS TO TOWER/MONOPOLE.
 - 13. ROOFTOP PRE AND POST CONSTRUCTION PHOTOS TO INCLUDE PENETRATIONS AND INTERIOR CEILING.
 - 14. PHOTOS OF TOWER TOP COAX LINE COLOR CODING AND COLOR CODING AT GROUND LEVEL.
 - 15. PHOTOS OF ALL APPROPRIATE COMPANY OR REGULATORY SIGNAGE.
 - 16. PHOTOS OF EQUIPMENT BOLT DOWN INSIDE SHELTER.
 - 17. POWER AND TELCO ENTRANCE TO COMPANY ENCLOSURE AND POWER AND TELCO SUPPLY LOCATIONS INCLUDING METER/DISCONNECT.
 - 18. ELECTRICAL TRENCH(S) WITH ELECTRICAL / CONDUIT BEFORE BACKFILL.
 - 19. ELECTRICAL TRENCH(S) WITH FOIL-BACKED TAPE BEFORE FURTHER BACKFILL.
 - 20. TELCO TRENCH WITH TELEPHONE / CONDUIT BEFORE BACKFILL.
 - 21. TELCO TRENCH WITH FOIL-BACKED TAPE BEFORE FURTHER BACKFILL.
 - 22. SHELTER GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADI).
 - 23. TOWER GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADI).

- 24. FENCE GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADI).
- 25. ALL BTS GROUND CONNECTIONS.
- 26. ALL GROUND TEST WELLS.
- 27. ANTENNA GROUND BAR AND EQUIPMENT GROUND BAR.
- 28. ADDITIONAL GROUNDING POINTS ON TOWERS ABOVE 200'.
- 29. HVAC UNITS INCLUDING CONDENSERS ON SPLIT SYSTEMS.
- 30. GPS ANTENNAS.
- 31. CABLE TRAY AND/OR WAVEGUIDE BRIDGE.
- 32. DOGHOUSE/CABLE EXIT FROM ROOF.
- 33. EACH SECTOR OF ANTENNAS: ONE PHOTOGRAPH LOOKING AT THE SECTOR AND ONE FROM BEHIND SHOWING THE PROJECTED COVERAGE AREA.
- 34. MASTER BUS BAR.
- 35. TELCO BOARD AND NIU.
- 36. ELECTRICAL DISTRIBUTION WALL.
- 37. CABLE ENTRY WITH SURGE SUPPRESSION.
- 38. ENTRANCE TO EQUIPMENT ROOM.
- 39. COAX WEATHERPROOFING--TOP AND BOTTOM OF TOWER.
- 40. COAX GROUNDING -TOP AND BOTTOM OF TOWER.
- 41. ANTENNA AND MAST GROUNDING.
- 42. LANDSCAPING - WHERE APPLICABLE.

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

PLANS PREPARED FOR:




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MAHWAH, NJ 07495
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PROJECT MANAGER:



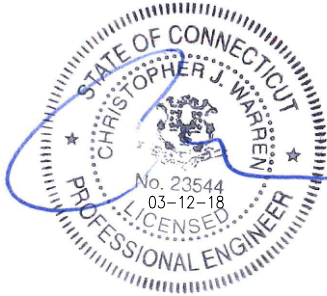
SBA COMMUNICATIONS CORP.
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PLANS PREPARED BY:



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JOB NUMBER 526-104

ENGINEERING LICENSE:



CHECKED BY:

APPROVED BY:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
CLIENT REVISIONS	03/09/18	RWF	C
CLIENT REVISIONS	03/08/18	RWF	B
ISSUED FOR REVIEW	02/20/18	RCD	A

SITE NUMBER:
CT23XC404

SITE ADDRESS:
26 MELL ROAD
LISBON, CT 06351

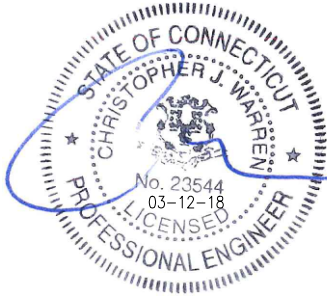
SHEET DESCRIPTION:
OUTLINE SPECIFICATIONS

SHEET NUMBER:
SP-3

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

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

PLANS PREPARED BY:
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 1033 Watervliet Shaker Rd | Albany, NY 12205
 Phone: 518-690-0790 | Fax: 518-690-0793
 www.infinigy.com
 JOB NUMBER 526-104

ENGINEERING LICENSE:

 STATE OF CONNECTICUT
 CHRISTOPHER J. WARREN
 No. 23544
 03-12-18
 LICENSED
 PROFESSIONAL ENGINEER

CHECKED BY:

APPROVED BY:

REVISIONS:

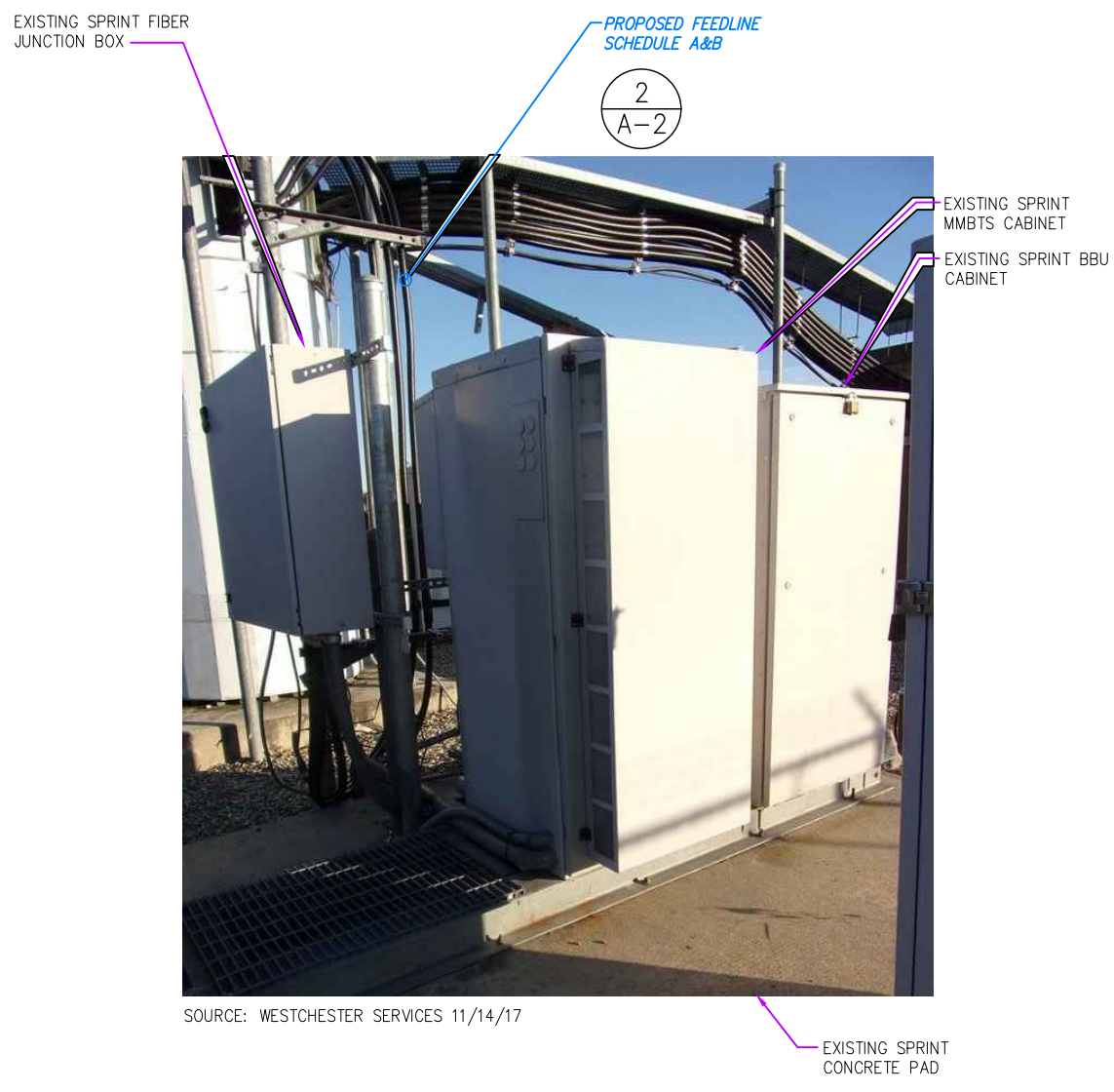
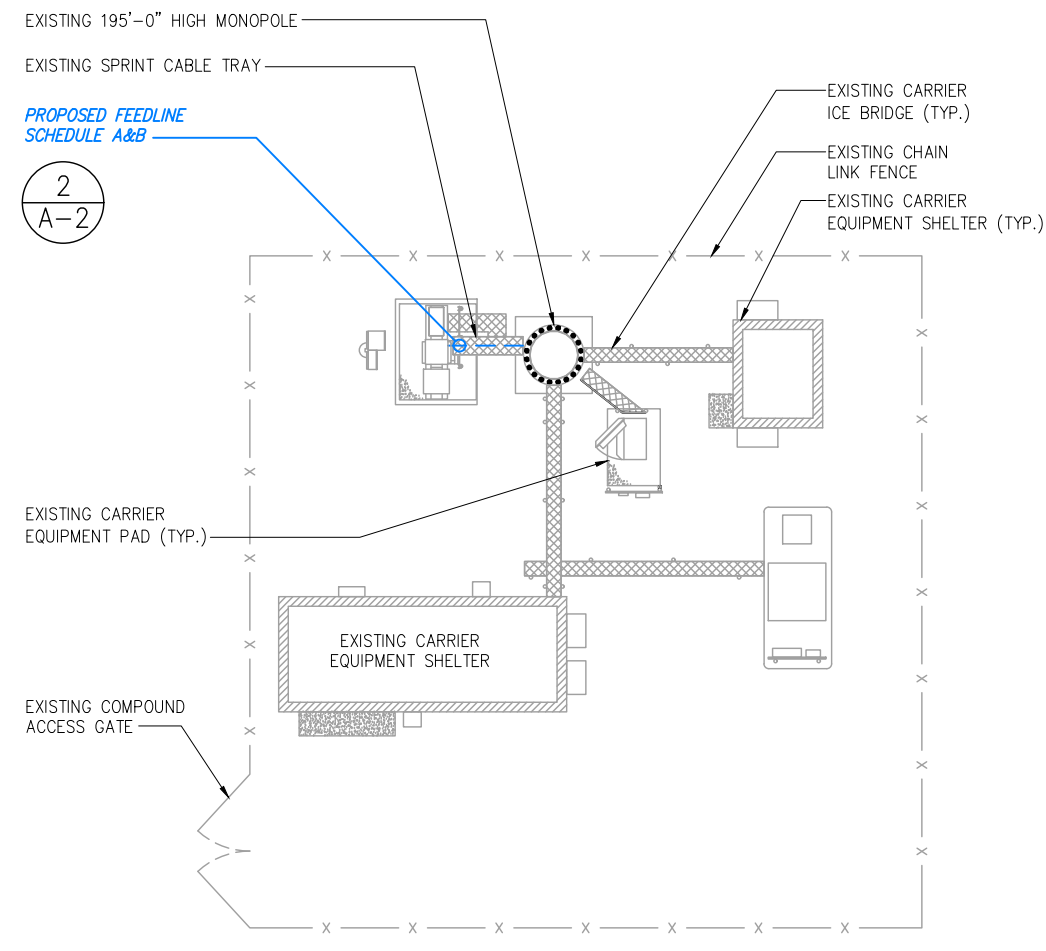
DESCRIPTION	DATE	BY	REV.
CLIENT REVISIONS	03/09/18	RWF	C
CLIENT REVISIONS	03/08/18	RWF	B
ISSUED FOR REVIEW	02/20/18	RCD	A

SITE NUMBER:
CT23XC404

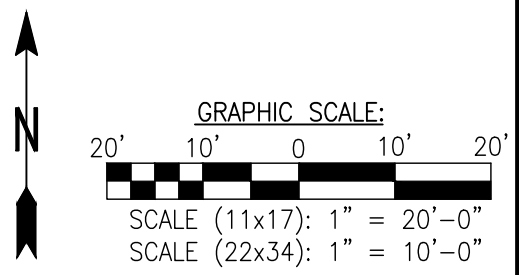
SITE ADDRESS:
 26 MELL ROAD
 LISBON, CT 06351

SHEET DESCRIPTION:
SITE PLAN

SHEET NUMBER:
A-1



SOURCE: WESTCHESTER SERVICES 11/14/17



INFORMATION CONTAINED WITHIN DRAWINGS ARE BASED ON PROVIDED INFORMATION AND ARE NOT THE RESULT OF A FIELD SURVEY.

NOTE:
SEE DETAIL 2 ON A-3
FOR ANTENNA LAYOUT

TOP OF MONOPOLE
ELEV. = ±195' A.G.L.

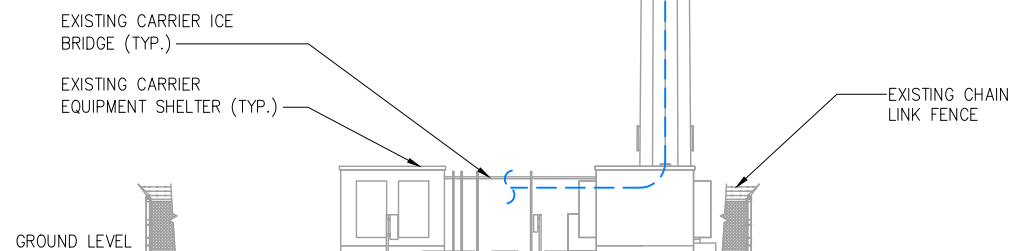
☉ OF EXISTING/TO BE
INSTALLED SPRINT ANTENNAS
ELEV. = 173' A.G.L.

ALL A-3 ALL A-4

2 A-2 PROPOSED FEEDLINE
SCHEDULE A&B

NOTE:
VERIFY PROPOSED AZIMUTHS WITH RF
ENGINEER PRIOR TO INSTALLATION

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



TOWER ELEVATION

NO SCALE

1

SPECIAL CONSTRUCTION NOTE:
GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL ANTENNA MOUNT STRUCTURAL AUGMENTS AND
STRUCTURAL MODIFICATIONS AT THE SPRINT'S RAD/VERTICAL EQUIPMENT SPACE PER RECOMMENDATIONS
FROM SBA-PROVIDED ANTENNA MOUNT STRUCTURAL ANALYSIS AND ANY SUPPLEMENTAL CONSTRUCTION
DRAWINGS (PROVIDED BY OTHERS). SCHEMATIC DESIGNS DEPICTED IN MAGENTA ARE PRELIMINARY ONLY
AND ARE NOT FOR FINAL CONSTRUCTION.

☉ OF PROPOSED SPRINT ANTENNAS
ELEV. = 173' A.G.L.

ALL A-3 ALL A-4

EXISTING CARRIER PANEL ANTENNA (TYP.)

2 A-2 PROPOSED FEEDLINE
SCHEDULE A&B

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

FEEDLINE SCHEDULE	FEEDLINE DESCRIPTION	LOCATION
A	EXISTING TO BE REMOVED: (3) 1 1/4" COAX	UP INSIDE MONOPOLE TO RAD
B	PROPOSED: (4) HYBRID TO 173' RAD	UP INSIDE MONOPOLE TO RAD

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



SOURCE: WESTCHESTER SERVICES 11/14/17

TOWER ELEVATION PHOTO DETAIL

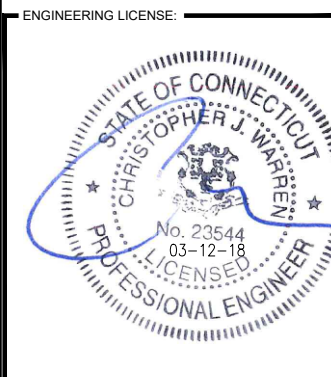
NO SCALE

2

PLANS PREPARED FOR:
Sprint
1 INTERNATIONAL BLVD, SUITE 800
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TEL: (800) 357-7641

PROJECT MANAGER:
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SBA COMMUNICATIONS CORP.
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CHECKED BY:

APPROVED BY:

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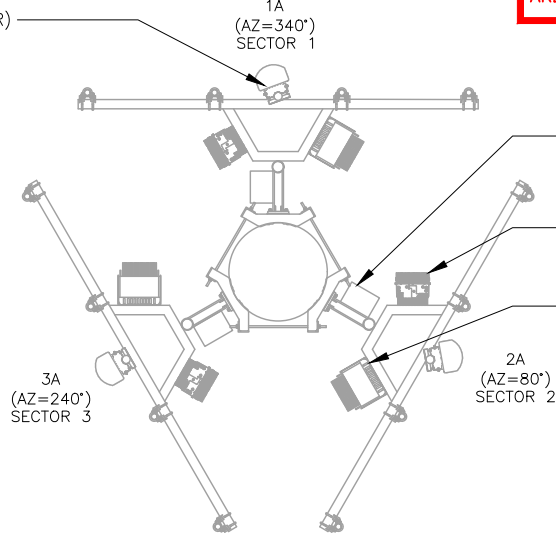
SITE NUMBER:
CT23XC404

SITE ADDRESS:
**26 MELL ROAD
LISBON, CT 06351**

SHEET DESCRIPTION:
TOWER ELEVATION

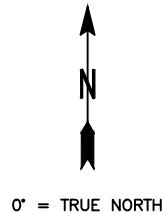
SHEET NUMBER:
A-2

EXISTING (1) SPRINT PANEL ANTENNAS TO REMAIN (TYP OF 1 PER SECTOR)



SPECIAL CONSTRUCTION NOTE:
GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL ANTENNA MOUNT STRUCTURAL AUGMENTS AND STRUCTURAL MODIFICATIONS AT THE SPRINT'S RAD/VERTICAL EQUIPMENT SPACE PER RECOMMENDATIONS FROM SBA-PROVIDED ANTENNA MOUNT STRUCTURAL ANALYSIS AND ANY SUPPLEMENTAL CONSTRUCTION DRAWINGS (PROVIDED BY OTHERS). SCHEMATIC DESIGNS DEPICTED IN MAGENTA ARE PRELIMINARY ONLY AND ARE NOT FOR FINAL CONSTRUCTION.

EXISTING (1) SPRINT 800 MHz FILTER ON EXISTING SECTOR MOUNT TO REMAIN (TYP OF 1 PER SECTOR)
EXISTING (1) SPRINT 800 MHz RRH ON EXISTING SECTOR MOUNT TO REMAIN (TYP OF 1 PER SECTOR)
EXISTING (1) SPRINT 1900 MHz RRH ON EXISTING SECTOR MOUNT TO REMAIN (TYP OF 1 PER SECTOR)



EXISTING ANTENNA & RRH LAYOUT

NO SCALE 1

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

FURNISH AND INSTALL HANDRAIL KIT
FURNISH AND INSTALL TIE BACK KIT
FURNISH & INSTALL 8' LONG x 2-7/8" SCH40 ANTENNA PIPE MOUNT (TYP OF 2 PER SECTOR)

FURNISH AND INSTALL HANDRAIL KIT
FURNISH AND INSTALL PLATFORM REINFORCEMENT KIT
PROPOSED FEEDLINE SCHEDULE A&B

INSTALL (1) 2.5 GHz RRH MOUNTED ON DUAL RRH MOUNT (TYP OF 1 PER SECTOR)

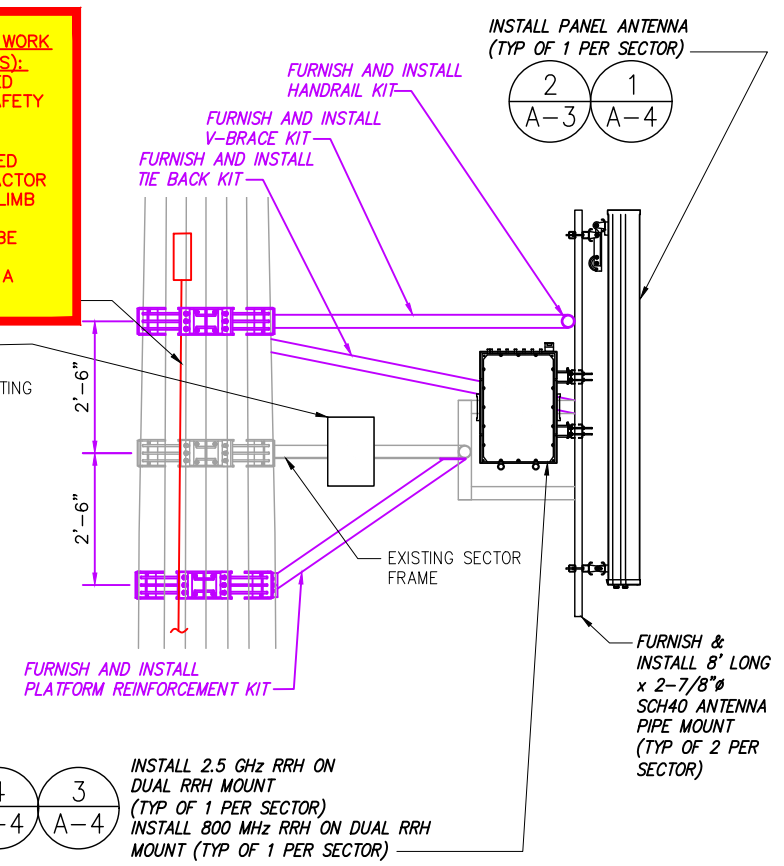
NOTE:
VERIFY PROPOSED AZIMUTHS WITH RF ENGINEER PRIOR TO INSTALLATION

FINAL ANTENNA LAYOUT

NO SCALE 2

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

INSTALL 800 MHz FILTER ON SECTOR MOUNT (TYP OF 1 PER SECTOR)
EXISTING (1) 800 MHz FILTER ON EXISTING SECTOR MOUNT TO REMAIN (TYP OF 1 PER SECTOR)



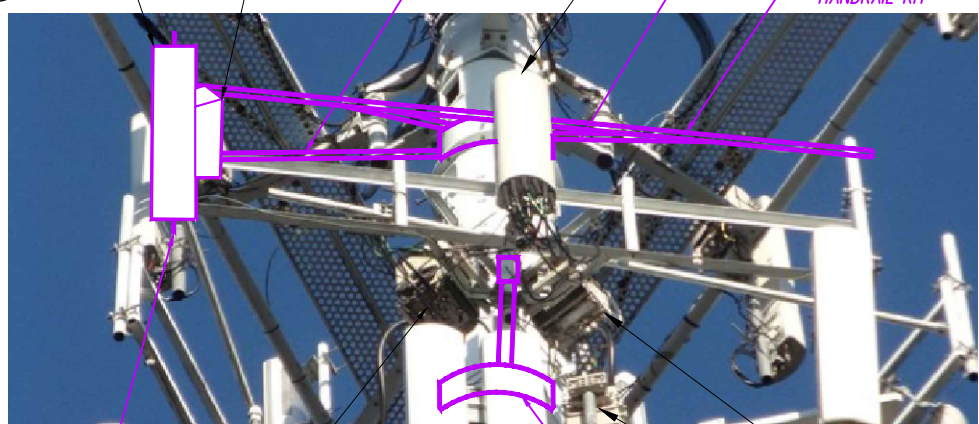
INSTALL 2.5 GHz RRH ON DUAL RRH MOUNT (TYP OF 1 PER SECTOR)
INSTALL 800 MHz RRH ON DUAL RRH MOUNT (TYP OF 1 PER SECTOR)

TYPICAL MOUNTING DETAIL

NO SCALE 3

INSTALL 2.5 GHz RRH ON DUAL RRH MOUNT (TYP OF 1 PER SECTOR)
INSTALL 800 MHz RRH MOUNTED ON DUAL RRH MOUNT (TYP OF 1 PER SECTOR)

INSTALL PANEL ANTENNA (TYP OF 1 PER SECTOR)



FURNISH & INSTALL 8' LONG x 2-7/8" SCH40 ANTENNA PIPE MOUNT (TYP OF 2 PER SECTOR)

EXISTING (1) SPRINT 1900 MHz RRH TO REMAIN (TYP OF 1 PER SECTOR)

SOURCE: WESTCHESTER SERVICES 11/14/17

ANTENNA & RRH MOUNT PHOTO DETAIL

NO SCALE 4

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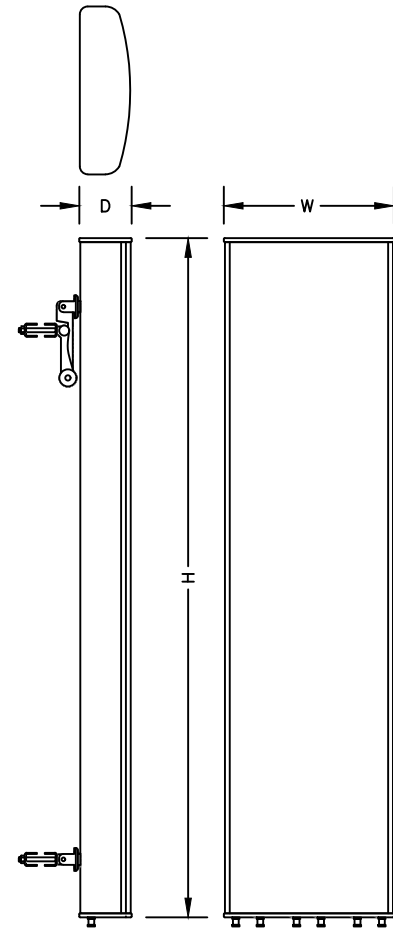
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**26 MELL ROAD
LISBON, CT 06351**

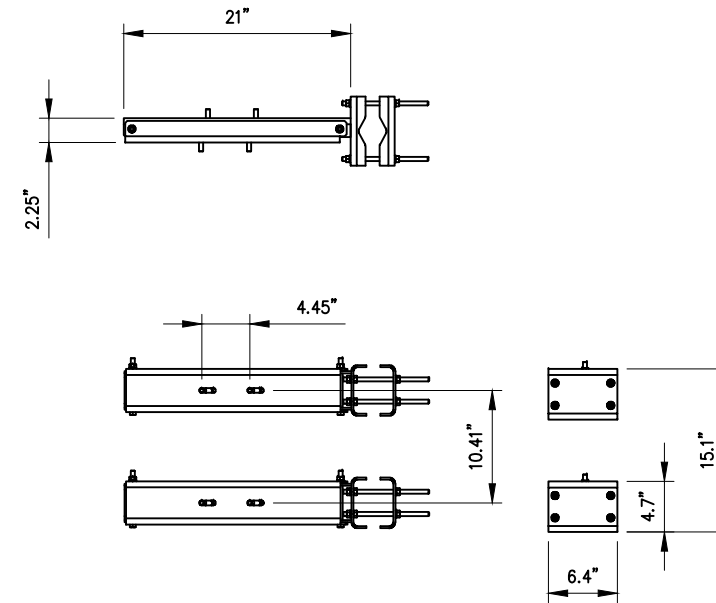
SHEET DESCRIPTION:
**ANTENNA LAYOUT
& MOUNTING DETAILS**

SHEET NUMBER:
A-3



ANTENNA SPECIFICATIONS

MANUF.	COMMSCOPE
MODEL #	DT465B-2XR
HEIGHT	72"
WIDTH	14"
DEPTH	8"
WEIGHT	58± LBS.



PANEL ANTENNA

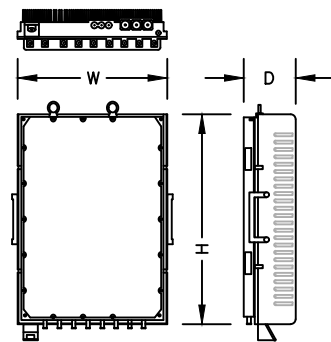
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1

DUAL RRH MOUNT DETAIL

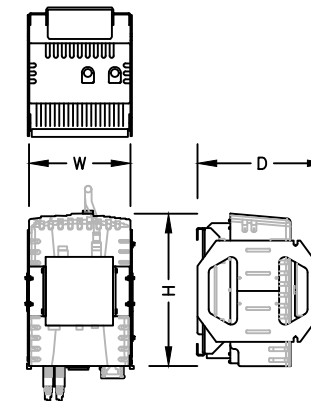
NO SCALE

2



2.5 GHZ RRH SPECIFICATIONS

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



800 MHZ RRH SPECIFICATIONS

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

2.5 RRH

NO SCALE

3

800 MHz RRH

NO SCALE

4

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SITE NUMBER:

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SITE ADDRESS:

26 MELL ROAD
LISBON, CT 06351

SHEET DESCRIPTION:

EQUIPMENT &
MOUNTING DETAILS

SHEET NUMBER:

A-4

RFS HYBRIFLEX RISER CABLE SCHEDULE

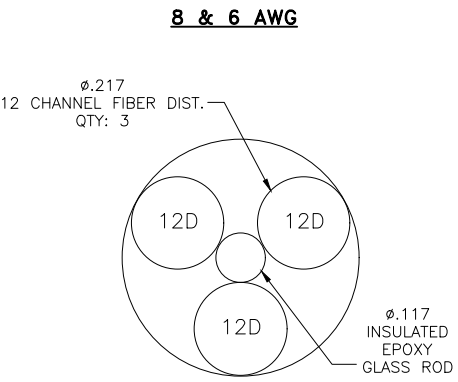
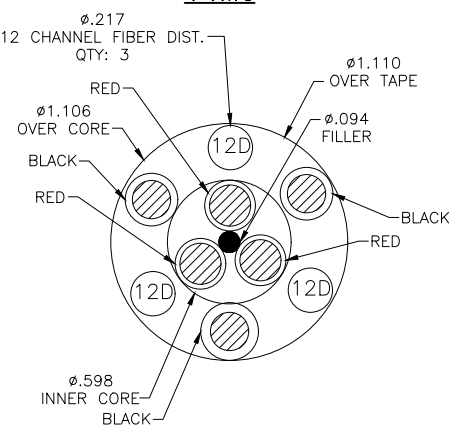
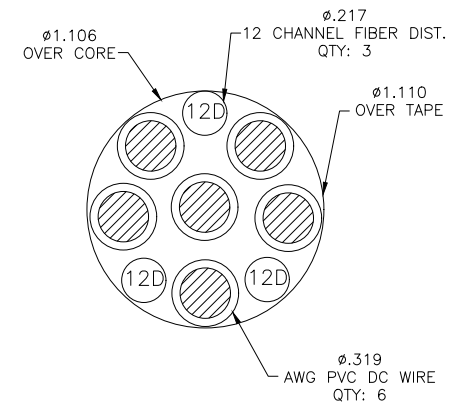
Fiber Only (Existing DC Power)	Hybrid cable MN: HB058-M12-050F 12x multi-mode fiber pairs, Top: Outdoor protected connectors, Bottom: LC Connectors, 5/8 cable, 50 ft	50 ft
	MN: HB058-M12-075F	75 ft
	MN: HB058-M12-100F	100 ft
	MN: HB058-M12-125F	125 ft
	MN: HB058-M12-150F	150 ft
	MN: HB058-M12-175F	175 ft
	MN: HB058-M12-200F	200 ft
8 AWG Power	Hybrid cable MN: HB114-08U3M12-050F 3x 8 AWG power pairs, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/4 cable, 50 ft	50 ft
	MN: HB114-08U3M12-075F	75 ft
	MN: HB114-08U3M12-100F	100 ft
	MN: HB114-08U3M12-125F	125 ft
	MN: HB114-08U3M12-150F	150 ft
	MN: HB114-08U3M12-175F	175 ft
	MN: HB114-08U3M12-200F	200 ft
6 AWG Power	Hybrid cable MN: HB114-13U3M12-225F 3x 6 AWG power pair, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/4 cable, 225 ft	225 ft
	MN: HB114-13U3M12-250F	250 ft
	MN: HB114-13U3M12-275F	275 ft
	MN: HB114-13U3M12-300F	300 ft
4 AWG Power	Hybrid cable MN: HB114-21U3M12-325F 3x 4 AWG power pair, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/4 cable, 325 ft	325 ft
	MN: HB114-21U3M12-350F	350 ft
	MN: HB114-21U3M12-375F	375 ft

RFS HYBRIFLEX JUMPER CABLE SCHEDULE

Fiber Only	Hybrid Jumper cable MN: HBF012-M3-5F1 5 ft, 3x multi-mode fiber pairs, Outdoor & LC connectors, 1/2 cable	5 ft
	MN: HBF012-M3-10F1	10 ft
	MN: HBF012-M3-15F1	15 ft
	MN: HBF012-M3-20F1	20 ft
	MN: HBF012-M3-25F1	25 ft
	MN: HBF012-M3-30F1	30 ft
8 AWG Power	Hybrid Jumper cable MN: HBF058-08U1M3-5F1 5 ft, 1x 8 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC Connectors, 5/8 cable	5 ft
	MN: HBF058-08U1M3-10F1	10 ft
	MN: HBF058-08U1M3-15F1	15 ft
	MN: HBF058-08U1M3-20F1	20 ft
	MN: HBF058-08U1M3-25F1	25 ft
	MN: HBF058-08U1M3-30F1	30 ft
6 AWG Power	Hybrid Jumper cable MN: HBF058-13U1M3-5F1 5 ft, 1x 6 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC Connectors, 5/8 cable	5 ft
	MN: HBF058-13U1M3-10F1	10 ft
	MN: HBF058-13U1M3-15F1	15 ft
	MN: HBF058-13U1M3-20F1	20 ft
	MN: HBF058-13U1M3-25F1	25 ft
	MN: HBF058-13U1M3-30F1	30 ft
4 AWG Power	Hybrid Jumper cable MN: HBF078-21U1M3-5F1 5 ft, 1x 4 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC Connectors, 7/8 cable	5 ft
	MN: HBF078-21U1M3-10F1	10 ft
	MN: HBF078-21U1M3-15F1	15 ft
	MN: HBF078-21U1M3-20F1	20 ft
	MN: HBF078-21U1M3-25F1	25 ft
	MN: HBF078-21U1M3-30F1	30 ft

NOTE:
SPRINT CM TO CONFIRM HYBRID OR FIBER RISER CABLE AND HYBRID OR FIBER JUMPER CABLE MODEL NUMBERS IF HYBRID CABLES ARE REQUIRED BEFORE PREPARING BOM.

* PROPOSED CABLE LENGTH WAS DETERMINED USING THE SUM OF THE RAD CENTER OF ANTENNAS, AND DISTANCE FROM EXISTING EQUIPMENT AREA TO TOWER BASE WITH AN ADDITIONAL 20' BUFFER. LENGTH TO BE VERIFIED IN FIELD PRIOR TO ORDERING MATERIALS.



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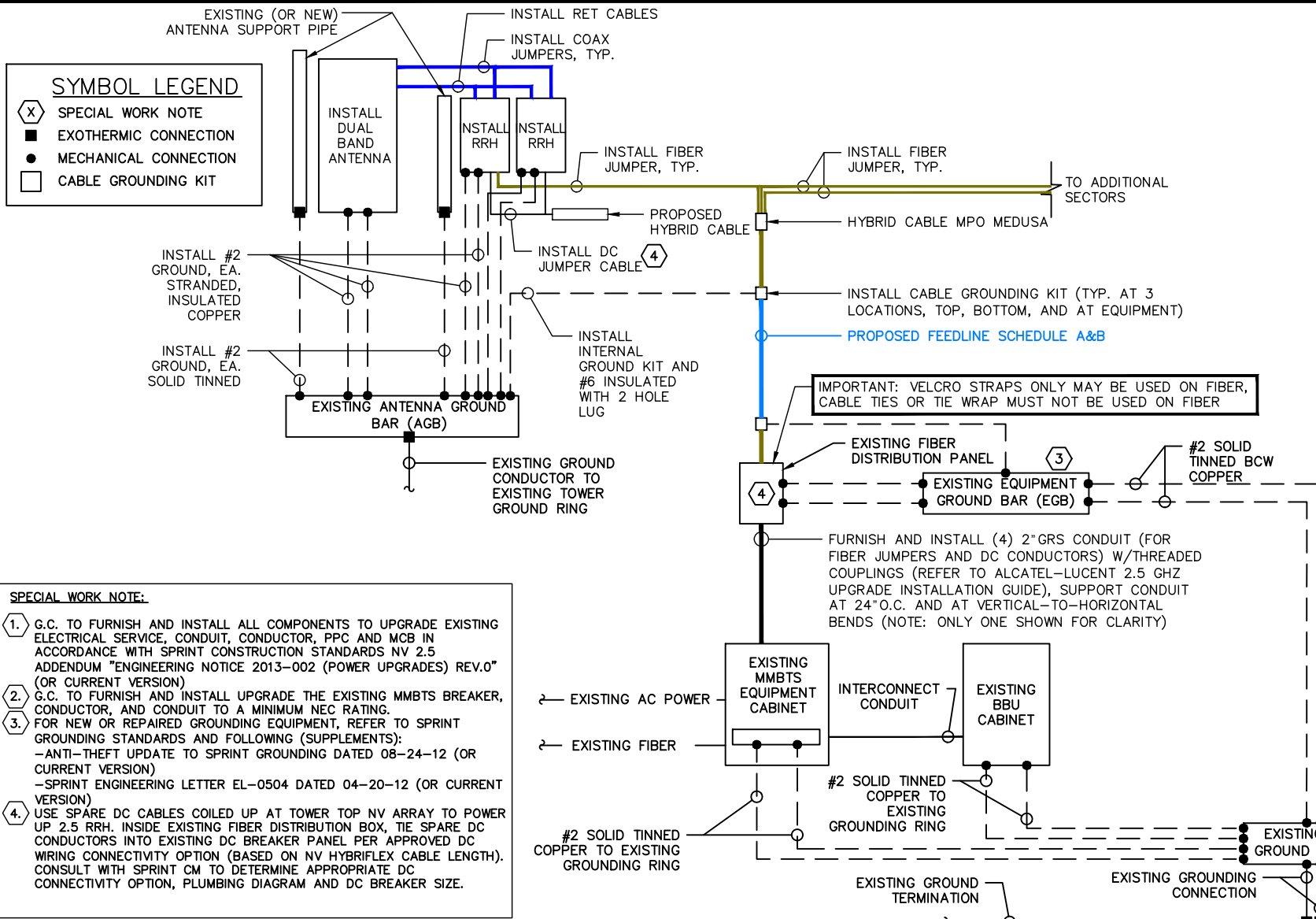
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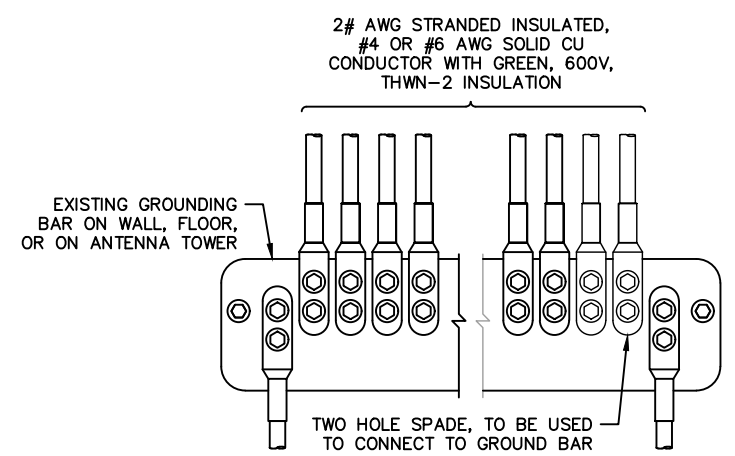
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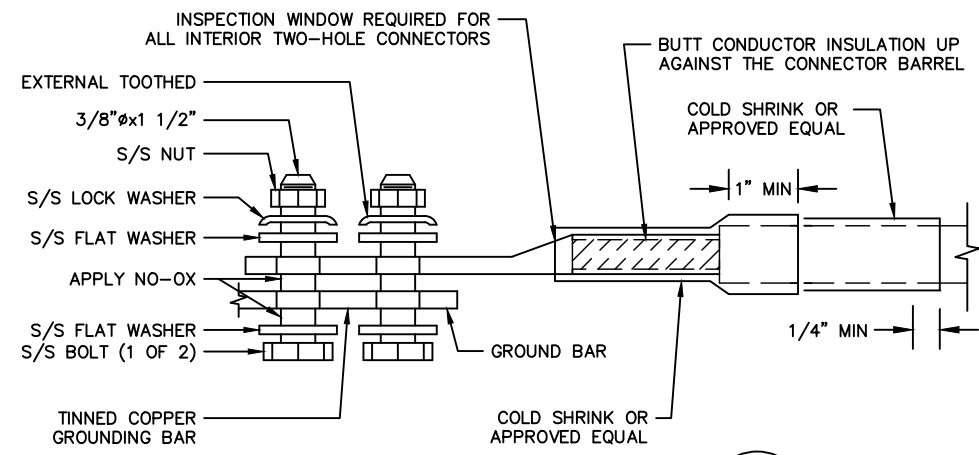
- ELECTRICAL NOTES**
- 1) ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
 - 2) THE ELECTRICAL CONTRACTOR SHALL COORDINATE ALL CONDUIT ROUTING WITH LOCAL UTILITY COMPANIES AND SPRINT CONSTRUCTION MANAGER.
 - 3) ALL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

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

TYPICAL POWER AND GROUNDING ONE LINE DIAGRAMS
SCALE: N.T.S.



INSTALLATION OF GROUNDING CONDUCTOR TO GROUNDING BAR
SCALE: N.T.S.



TWO HOLE LUG
SCALE: N.T.S.

PLANS PREPARED FOR:

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

PROJECT MANAGER:

SBA COMMUNICATIONS CORP.
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JOB NUMBER 526-104

ENGINEERING LICENSE:

STATE OF CONNECTICUT
CHRISTOPHER J. WARREN
No. 23544
03-12-18
LICENSED
PROFESSIONAL ENGINEER

CHECKED BY:

APPROVED BY:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
CLIENT REVISIONS	03/09/18	RWF	C
CLIENT REVISIONS	03/08/18	RWF	B
ISSUED FOR REVIEW	02/20/18	RCD	A

SITE NUMBER:

CT23XC404

SITE ADDRESS:

26 MELL ROAD
LISBON, CT 06351

SHEET DESCRIPTION:

ELECTRICAL & GROUNDING DETAILS & NOTES

SHEET NUMBER:

E-1



RF Design Sheet

Site Identification	
Cascade	CT23XC404
SMS Schedule ID	12323154
SMS Schedule Name	DO Macro Upgrade
PID	
RRU OEM	Alcatel Lucent
Switch OEM	ALU
RFDS Issue Date	2017-08-15 00:00:00.0
RFDS Revision Date	
RFDS Revision	

Filter Analysis Complete	YES
RFDS - Issue Date	08/15/2017
Design Status	Complete
Border Analysis Complete	YES
Project Description	DO Macro Upgrade - Add 2500 MHz and enhance 800 2T4R

Contact Information	
Engineer Email	Bill.M.Hastings@sprint.com
Sprint Badged RF Engineer	Bill Hastings
RF Engineer Email	Bill.M.Hastings@sprint.com
RF Engineer Phone	978-690-9700
RF Manager	Jonathan Hull
RF Manager Email	Jonathan.B.Hull@sprint.com
RF Manager Phone	617-233-2820

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

Location Details	
Latitude	41.59125277
Longitude	-72.01888111
Market	Northern Connecticut
Region	Northeast
City	Lisbon
State	CT
Zip Code	CT/06351
County	New London

2500MHz	3
1900MHz	3
800MHz	3

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

Trunk Cable 1						
Model Number	Hybriflex	N/A	N/A	N/A	N/A	N/A
Weight (lbs.)	1	N/A	N/A	N/A	N/A	N/A
Dimensions (In.)	1.54	N/A	N/A	N/A	N/A	N/A
Manufacturer	ALU	N/A	N/A	N/A	N/A	N/A

Band: 800	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
Radio Model						
Model Number	RRH-2x50-800	RRH-2x50-800	RRH-2x50-800	N/A	N/A	N/A
Weight (lbs)	69.1	69.1	69.1	N/A	N/A	N/A
Dimensions	16 x 13 x 10	16 x 13 x 10	16 x 13 x 10	N/A	N/A	N/A
Manufacturer	ALU	ALU	ALU	N/A	N/A	N/A
Number of RRUs needed	1	1	1	0	0	0

Band: 2500	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
Antenna1						
Model Number	DT465B-2XR	DT465B-2XR	DT465B-2XR			
Weight (lbs)	58	58	58	N/A	N/A	N/A
Dimensions	72 x 14 x 8	72 x 14 x 8	72 x 14 x 8	N/A	N/A	N/A
Manufacturer	CommScope	CommScope	CommScope	N/A	N/A	N/A
Ant 1 Top Jumper Make/Mode/Qty	2.5 Jumper 8	2.5 Jumper 8	2.5 Jumper 8	N/A	N/A	N/A
Ant 1 RF requested Diameter	1/2"	1/2"	1/2"	N/A	N/A	N/A
Ant 1 RF requested Top Jumper Length(ft)	8	8	8	N/A	N/A	N/A
Antenna 1 Azimuth	340	80	240	N/A	N/A	N/A
Antenna 1 Mechanical DT	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Center Line (ft)	172.9658848	172.9658848	172.9658848	N/A	N/A	N/A
Antenna 1 Electrical DT	2	2	2	N/A	N/A	N/A
Antenna 1 Electrical DT 2	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Electrical DT 3	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Twist	N/A	N/A	N/A	N/A	N/A	N/A

Additional RF Notes

Keep Existing NV Antenna for 800/1900 and add 1 800/2500 antenna for LTE2.5 8T8R and enhance 2R for 800 MHz

PLANS PREPARED FOR:

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

PROJECT MANAGER:

SBA COMMUNICATIONS CORP.
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WESTBOROUGH, MA 01581
TEL: (508) 251-0720

PLANS PREPARED BY:

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JOB NUMBER 526-104

ENGINEERING LICENSE:

CHECKED BY:

APPROVED BY:

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ISSUED FOR REVIEW		02/20/18	RCD	A

SITE NUMBER:

CT23XC404

SITE ADDRESS:

26 MELL ROAD
LISBON, CT 06351

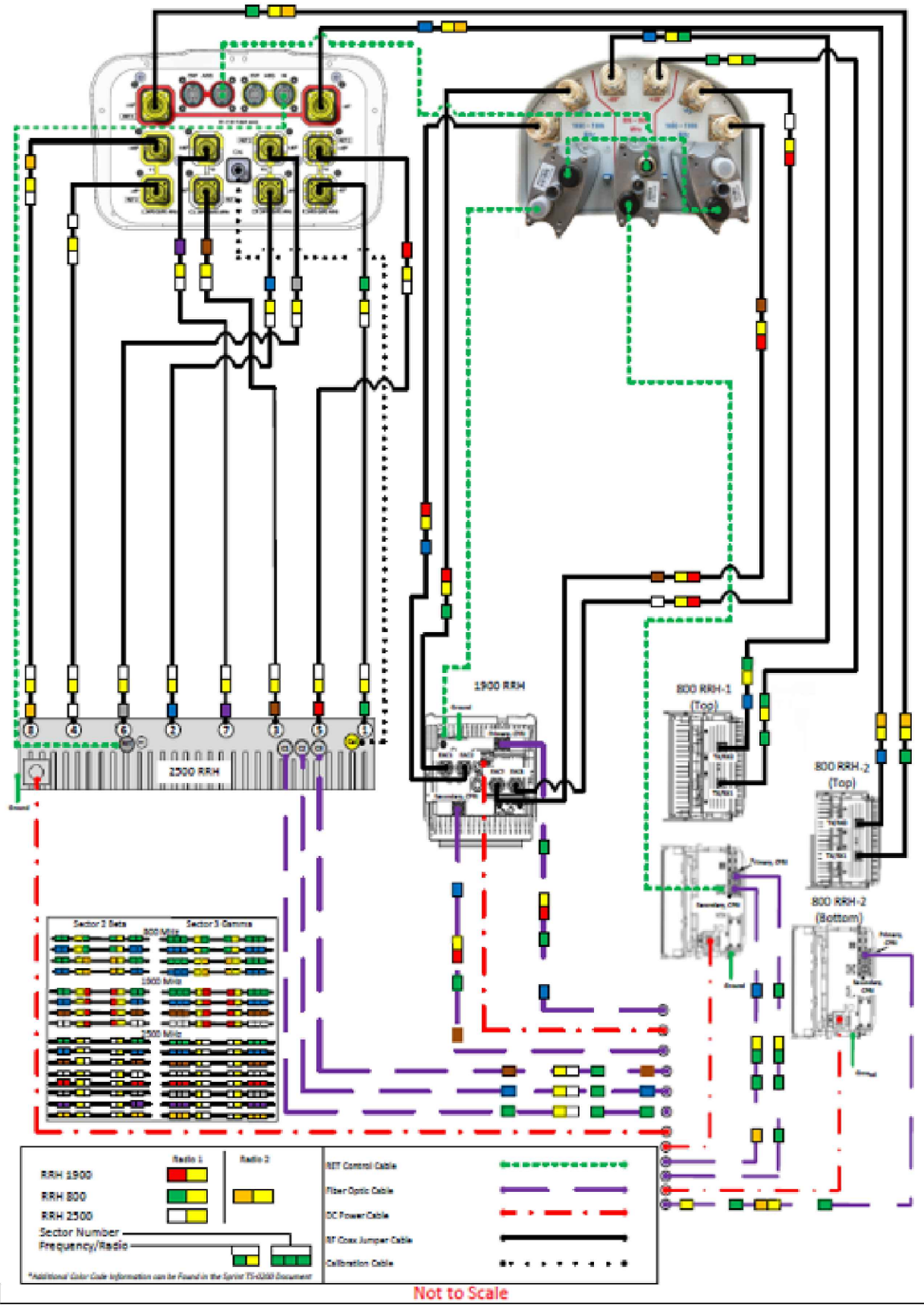
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RF DATA SHEET

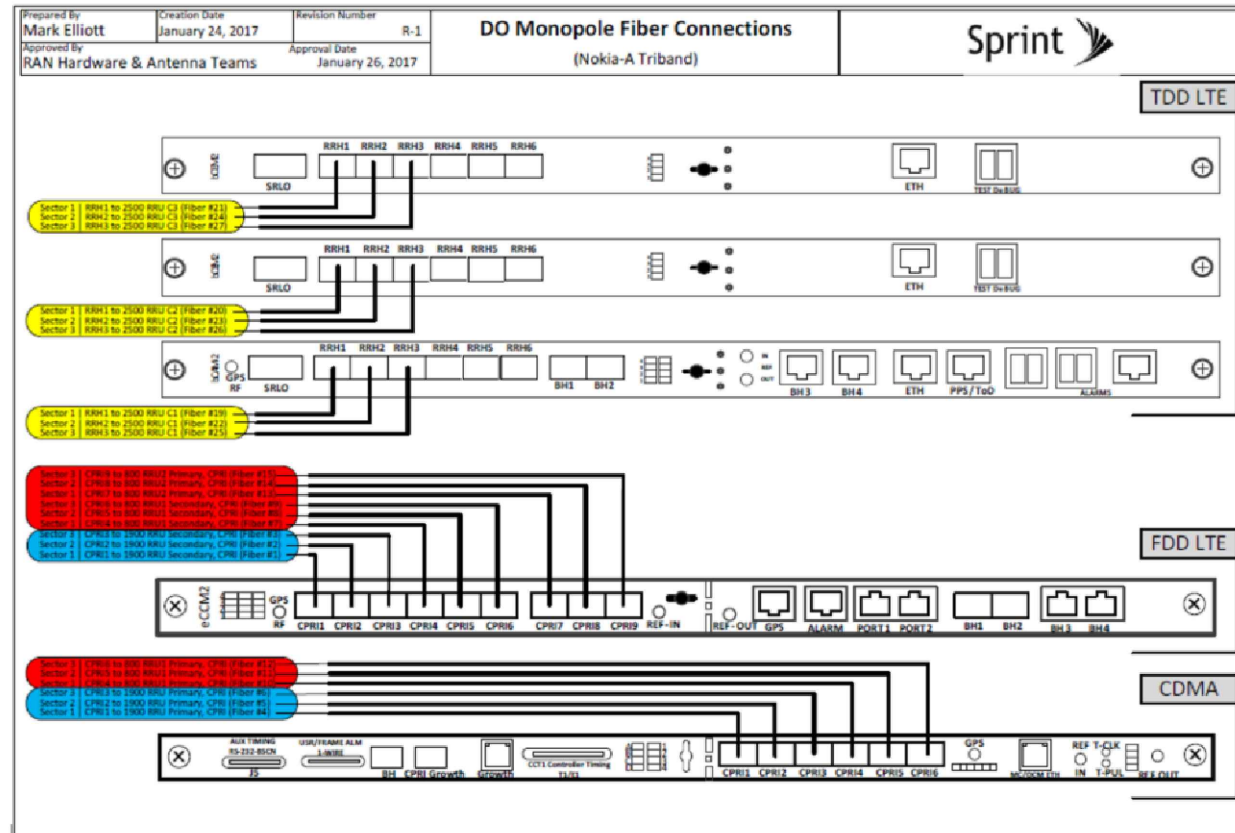
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RF-1

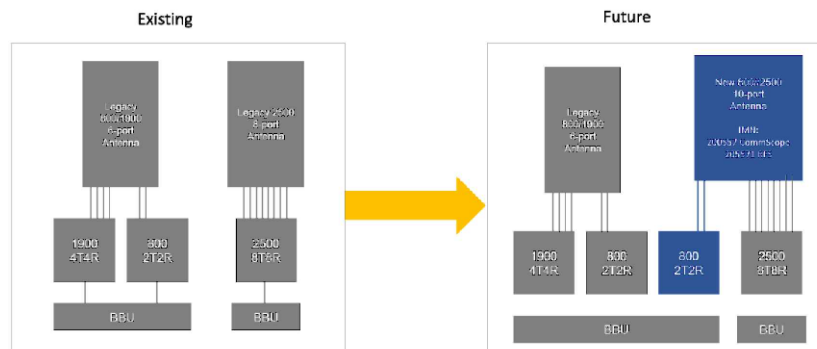
ALU 211 DT465B-2XR-V2 & APXVSP18-C-A20 wo Filters



Not to Scale

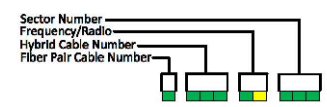


Sector	Cable	First Ring	Second Ring	Third Ring
1 Alpha	1	Green	No Tape	No Tape
1	2	Blue	No Tape	No Tape
1	3	Brown	No Tape	No Tape
1	4	White	No Tape	No Tape
1	5	Red	No Tape	No Tape
1	6	Gray	No Tape	No Tape
1	7	Purple	No Tape	No Tape
1	8	Orange	No Tape	No Tape
2 Beta	1	Green	Green	No Tape
2	2	Blue	Blue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



RRH	Radio Port #	Antenna Ports	
		Left	Right
800MHz	RRU 1-TX/RX1	L-45 (Port 1)	N/A
	RRU 1-TX/RX2	L-45 (Port 2)	N/A
	RRU 2-TX/RX1	N/A	R-45 (Port 3)
1300MHz	EAC1	L-45 (Port 5)	N/A
	EAC2	L-45 (Port 6)	N/A
	EAC3	N/A	R-45 (Port 7)
	EAC4	N/A	R-45 (Port 8)
2500MHz	1	N/A	R8-45
	2	N/A	CR6-45
	3	CL4-45	N/A
	4	L2-45	N/A
	5	N/A	R7-45
	6	N/A	CR5-45
	7	CL3-45	N/A
	8	L1-45	N/A

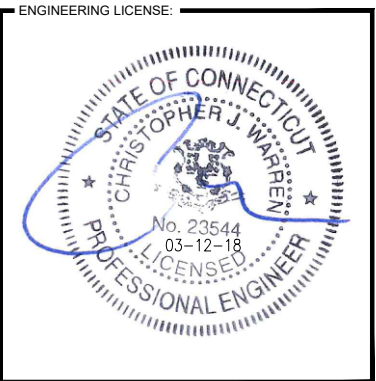
Frequency/ Radio	Indicator	ID
800 #1	Yellow	Green
800 #2	Yellow	Orange
1900 #1	Yellow	Red
1900 #2	Yellow	Brown
1900 #3	Yellow	Blue
1900 #4	Yellow	Grey
2500 #1	Yellow	White
2500 #2	Yellow	Purple



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

PROJECT MANAGER:
SBA
 SBA COMMUNICATIONS CORP.
 134 FLANDERS ROAD, SUITE 125
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 JOB NUMBER 526-104



CHECKED BY:

APPROVED BY:

REVISIONS:	DESCRIPTION	DATE	BY	REV.
CLIENT REVISIONS		03/09/18	RWF	C
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ISSUED FOR REVIEW		02/20/18	RCD	A

SITE NUMBER:
CT23XC404

SITE ADDRESS:
 26 MELL ROAD
 LISBON, CT 06351

SHEET DESCRIPTION:
PLUMBING DIAGRAM

SHEET NUMBER:
RF-2

CT23XC404

DO MACRO EQUIPMENT DEPLOYMENT

MOUNT AUGMENTATION @ 173'

MONOPOLE TOWER

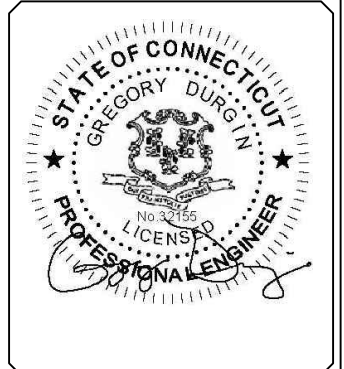
LISBON, CT
NEW LONDON COUNTY



REVISIONS:			
0	3/12/18	ISSUE FOR CONSTRUCTION	JAD

CHECKED BY: _____ DWG

THE INFORMATION CONTAINED IN THIS SET OF DOCUMENTS IS PROPRIETARY BY NATURE. ANY USE OR DISCLOSURE OTHER THAN THAT WHICH RELATES TO THE CLIENT NAMES IS STRICTLY PROHIBITED.



SITE INFORMATION:
MOUNT AUGMENTATION

CT23XC404

LISBON, CT
LATITUDE: 41.591033
LONGITUDE: -72.01696

SHEET TITLE:
TITLE SHEET

SHEET NUMBER:
S1

SITE INFORMATION

STRUCTURE TYPE: MONOPOLE
MOUNT TYPE: SECTOR FRAMES
LATITUDE: 41.591033 (NAD 83)
LONGITUDE: -72.01696 (NAD 83)
CITY, STATE: LISBON, CT
COUNTY: NEW LONDON
SBA SITE: CT00167-S Lisbon
COORDINATES ARE FOR NAVIGATIONAL PURPOSES ONLY, NOT TO 1A ACCURACY.

DO NOT SCALE DRAWINGS

CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, CONDITIONS ON THE JOB SITE & SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR THE LABOR & MATERIALS FOR THE DISCREPANCIES.

CODE COMPLIANCE

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES.

BUILDING CODE AND DESIGN STANDARD: 2012 IBC / TIA-222-G

RIGGING PLAN REQUIRED

THIS SET OF PLANS DOES "NOT" CONSTITUTE A RIGGING PLAN.

A PROPER RIGGING PLAN SHALL BE PERFORMED BY A LICENSED PROFESSIONAL ENGINEER PRIOR TO PROCEEDING ON ANY AUGMENTATIONS SHOWN HEREIN.

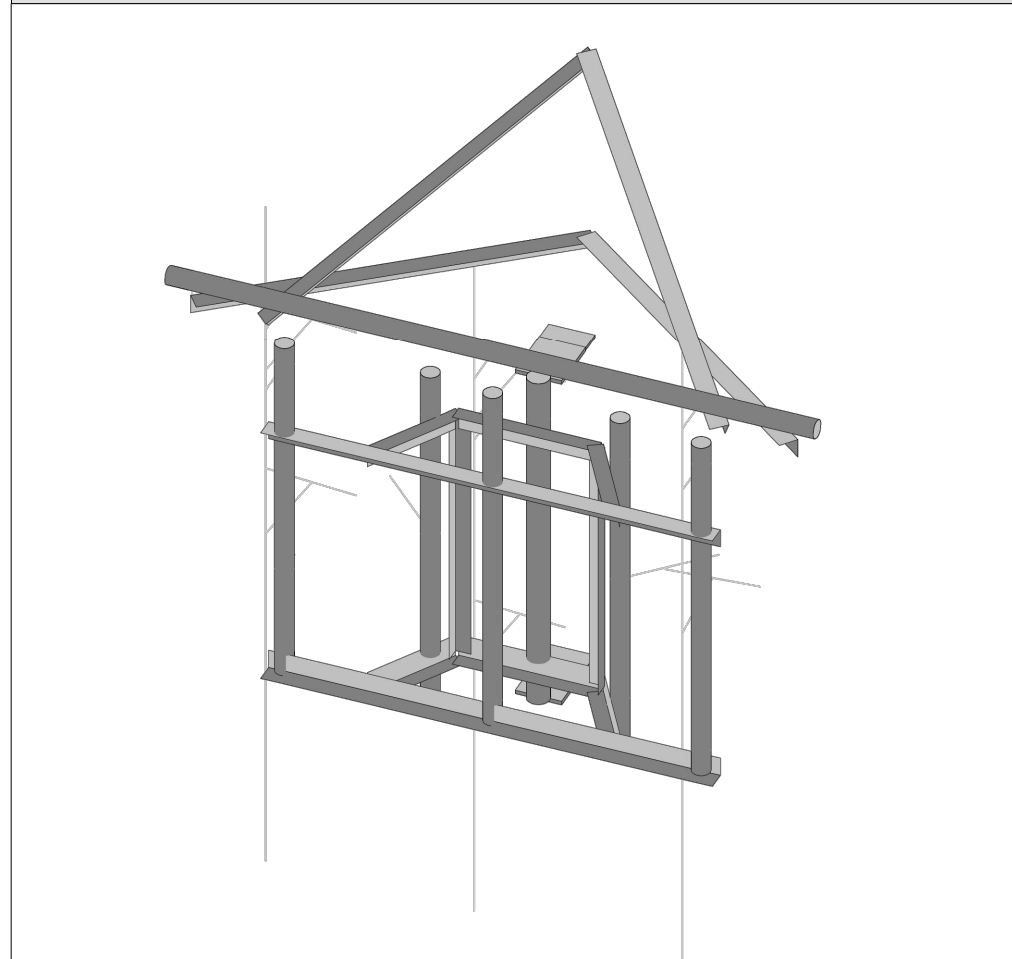
GENERAL DESIGN NOTES

- THIS PLAN HAS BEEN DESIGNED UTILIZING THE CORRESPONDING MOUNT STRUCTURAL ANALYSIS.
- THESE PLANS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE GOVERNING PROVISIONS OF TIA/EIA-222, ASCE 7, AWS, ACI, AND AISC. MATERIALS AND SERVICES PROVIDED BY THE CONTRACTOR SHALL CONFORM TO THE ABOVE-MENTIONED CODES AND THE CONTRACT SPECIFICATIONS.
- ALL STRUCTURE INFORMATION OBTAINED IN THE FORM OF FROM INFORMATION PROVIDED BY THE CLIENT. CONTRACTOR SHALL OBTAIN AND BECOME FAMILIAR WITH THE REFERENCED DOCUMENTS. CONTRACTOR SHALL ISSUE A REQUEST FOR INFORMATION (RFI) IN THE EVENT ANY DISCREPANCIES ARE DISCOVERED BETWEEN THESE DOCUMENTS AND THE AS-BUILT CONDITIONS IN THE FIELD IN A SITE VISIT THAT SHALL BE PERFORMED PRIOR TO STARTING FABRICATION OR CONSTRUCTION.
- ALL MATERIALS UTILIZED FOR THIS PROJECT MUST BE NEW AND FREE OF ANY DEFECTS.
- ALL PRODUCT OR MATERIAL SUBSTITUTIONS PROPOSED BY THE CONTRACTOR SHALL BE APPROVED IN WRITING BY THE ENGINEER. CONTRACTOR SHALL PROVIDE DOCUMENTATION TO ENGINEER SUITABLE TO DETERMINE IF SUBSTITUTE IS ACCEPTABLE FOR USE AND MEETS THE ORIGINAL DESIGN CRITERIA. DIFFERENCES FROM THE ORIGINAL DESIGN, INCLUDING MAINTENANCE, REPAIR AND REPLACEMENT, SHALL BE NOTED. ESTIMATES OF COSTS/CREDITS ASSOCIATED WITH THE SUBSTITUTION (INCLUDING RE-DESIGN COSTS AND COSTS TO SUB-CONTRACTORS) SHALL BE PROVIDED TO THE ENGINEER. CONTRACTOR SHALL PROVIDE ADDITIONAL DOCUMENTATION AND/OR SPECIFICATIONS TO THE ENGINEER AS REQUESTED.
- PROVIDE STRUCTURAL STEEL SHOP DRAWING(S) TO THE ENGINEER OF RECORD FOR APPROVAL PRIOR TO FABRICATION (ONLY IF SPECIFICALLY REQUESTED BY ENGINEER).
- UNLESS NOTED OTHERWISE, ALL NEW MEMBERS AND REINFORCING SHALL MAINTAIN THE EXISTING MEMBER WORK LINES AND NOT INTRODUCE ECCENTRICITIES INTO THE STRUCTURE.
- ANY CONTRACTOR-CAUSED DAMAGE TO PROPERTY OF THE LAND OWNER, PROPERTY OF THE STRUCTURE OWNER, PROPERTY OF THE CUSTOMER, SITE FENCING OR GATES, ANY AND ALL UTILITY AND/OR SERVICE LINES, SHOWN OR NOT SHOWN ON THE PLANS, SHALL BE REPAIRED OR REPLACED AT THE SOLE COST OF THE CONTRACTOR AND SHALL BE ACCOMPLISHED BY THE CONTRACTOR OR SUBCONTRACTOR AS APPROVED BY THE ENGINEER OF RECORD AND LAND OWNER. DAMAGE TO EQUIPMENT OR PROPERTY OF ANY KIND BELONGING TO OTHER COMPANIES (BESIDES THE INDICATED CUSTOMER) SHALL BE ADDRESSED BY THE CONTRACTOR WITH THE COMPANIES THAT OWN THE DAMAGED ITEMS.

SHEET INDEX

SHEET	DESCRIPTION
S-1	TITLE SHEET
S-2	NOTES AND SPECIFICATIONS
S-3	AUGMENTATIONS, SECTIONS & DETAILS

MOUNT AUGMENTATION CONFIGURATION



AUGMENTATION SCOPE

AUGMENT ALL SECTORS OF CARRIER'S EXISTING MOUNT INSTALLATION AS REQUIRED (UNLESS NOTED OTHERWISE)

CONTRACTOR NOTES

- PRIOR TO BEGINNING CONSTRUCTION, ALL CONTRACTORS AND SUBCONTRACTORS MUST ACKNOWLEDGE IN WRITING TO TOWER OWNER THAT THEY HAVE OBTAINED, UNDERSTAND, AND WILL FOLLOW STRUCTURE OWNER STANDARDS OF PRACTICE, CONSTRUCTION GUIDELINES, ALL SITE AND STRUCTURE/TOWER SAFETY PROCEDURES, ALL PRODUCT LIMITATIONS AND INSTALLATION PROCEDURES USED ON SITE, AND PROPOSED AUGMENTATIONS DESCRIBED. RECEIPT OF ACKNOWLEDGEMENT MUST OCCUR PRIOR TO BEGINNING CONSTRUCTION OR CLIMBING. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO PROVIDE THIS DOCUMENTATION FOR STRUCTURE OWNER ON COMPANY LETTERHEAD AND THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO OBTAIN THIS DOCUMENTATION FROM ANY SUBCONTRACTORS (ON SUBCONTRACTOR LETTERHEAD) AND DELIVER IT TO THE STRUCTURE OWNER.
- IF THE CONTRACTOR DISCOVERS ANY EXISTING CONDITIONS THAT ARE NOT REPRESENTED ON THESE DRAWINGS, OR ANY CONDITIONS THAT WOULD INTERFERE WITH THE INSTALLATION OF THE AUGMENTATIONS, THE ENGINEER OF RECORD SHALL BE CONTACTED IMMEDIATELY TO EVALUATE THE SIGNIFICANCE OF THE DEVIATION.
- THE CONTRACTOR SHALL SOLICIT AND HIRE THE SERVICES OF A QUALIFIED AUGMENTATION INSPECTOR PRIOR TO BEGINNING CONSTRUCTION. THE AUGMENTATION INSPECTOR MAY BE AN EMPLOYEE OF THE CONTRACTOR'S FIRM, HOWEVER THE INSPECTOR'S ONLY DUTIES SHALL BE INSPECTION, TESTING, AND REPORT CREATION AS REQUIRED ON THE "AUGMENTATION INSPECTION NOTES" SHEET.
- THE CONTRACTOR SHALL NOTIFY THE TOWER OWNER OF THE PLANNED CONSTRUCTION & INSPECTION SCHEDULE, AS WELL AS ANY CHANGES TO THE SCHEDULE, WITHIN TWO BUSINESS DAYS OF THE COMPLETION OF THE SCHEDULE OR SCHEDULE REVISION BOTH PRIOR TO BEGINNING CONSTRUCTION AND DURING CONSTRUCTION AS THE SCHEDULE CHANGES. THE STRUCTURE OWNER WHEN THE WORK HAS BEEN COMPLETED WITHIN 2 BUSINESS DAYS OF THE COMPLETION OF THE WORK AND ASSOCIATED AUGMENTATION INSPECTIONS & TESTING (WHEN APPLICABLE).
- IT IS ASSUMED THAT ANY STRUCTURAL AUGMENTATION WORK SPECIFIED ON THESE PLANS WILL BE ACCOMPLISHED BY KNOWLEDGEABLE WORKMEN WITH TOWER CONSTRUCTION EXPERIENCE. THIS INCLUDES PROVIDING THE NECESSARY CERTIFICATIONS TO THE STRUCTURE OWNER AND ENGINEER INCLUDING BUT NOT LIMITED TO TOWER CLIMBER AND RESCUE CLIMBER CERTIFICATIONS, ET CETERA.
- THESE DRAWINGS DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION METHODS, MEANS, TECHNIQUES, SEQUENCES AND PROCEDURES.
- CONTRACTOR SHALL WORK WITHIN THE LIMITS OF THE STRUCTURE OWNER'S PROPERTY OR LEASE AREA AND APPROVED EASEMENTS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY WORK IS WITHIN THESE BOUNDARIES. CONTRACTOR SHALL EMPLOY A SURVEYOR AS REQUIRED. ANY WORK OUTSIDE THESE BOUNDARIES SHALL BE APPROVED IN WRITING BY THE LAND OWNER PRIOR TO MOBILIZATION. CONSTRUCTION STAKING AND BOUNDARY MARKING IS THE RESPONSIBILITY OF THE CONTRACTOR.

STRUCTURAL ERECTION AND BRACING REQUIREMENTS

- THE STRUCTURAL DRAWINGS ILLUSTRATE THE COMPLETED STRUCTURE WITH ALL ELEMENTS IN THEIR FINAL POSITIONS, PROPERLY SUPPORTED AND BRACED.
- THE CONTRACTOR SHALL PROVIDE SHORING AND BRACING AS REQUIRED DURING CONSTRUCTION TO ENSURE STABILITY. DESIGN AND SEQUENCING OF CONSTRUCTION SHORING AND BRACING IS OUTSIDE THE SCOPE OF THIS WORK.
- THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND EXECUTION OF ALL MISCELLANEOUS SHORING, BRACING, TEMPORARY SUPPORTS, GUYING, ETC. NECESSARY TO PROVIDE A COMPLETE AND STABLE STRUCTURE AS SHOWN ON THESE DRAWINGS.

BOLTS

- ALL CONNECTIONS OF STRUCTURAL STEEL MEMBERS SHALL BE MADE USING SPECIFIED GALVANIZED HIGH STRENGTH ASTM A325 OR A490 BOLTS WITH THREADS EXCLUDED FROM SHEAR PLANE.
- FASTENERS SHALL BE INSTALLED IN PROPERLY ALIGNED HOLES, WITH BOLT HEADS FACING DOWN WHERE APPLICABLE.
- ALL BOLTS AT EVERY CONNECTION SHALL BE INSTALLED SNUG-TIGHT UNTIL THE SECTION IS FULLY COMPACTED AND ALL PLIES ARE JOINED, AND THEN TIGHTENED FURTHER BY AISC - "TURN OF THE NUT" METHOD. TIGHTENING SHALL PROGRESS SYSTEMATICALLY.
- BOLT LENGTHS UP TO AND INCLUDING 4 DIAMETERS SHALL BE TENSIONED 1/3 TURN BEYOND SNUG-TIGHT. BOLT LENGTHS OVER 4 DIAMETERS SHALL BE 1 1/2 TURNS BEYOND SNUG-TIGHT.
- ALL BOLTED CONNECTIONS SHALL USE LOCK WASHERS.

STRUCTURAL STEEL

- STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED, AND ERECTED IN ACCORDANCE WITH THE CURRENT EDITION OF THE AISC STEEL CONSTRUCTION MANUAL AND SECTION 4 OF THE TIA CODE.
- PRE-QUALIFIED STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING MINIMUM GRADES UNLESS OTHERWISE NOTED:
 - CHANNELS & ANGLES ASTM A36, (Fy = 36 KSI)
 - PLATES ASTM A36, (Fy = 36 KSI)
 - PIPES ASTM A53 GR.B, (Fy = 35 KSI)
 - HSS ROUND ASTM A500 GR.B, (Fy = 42 KSI)
 - HSS RECTANGULAR ASTM A500 GR.B, (Fy = 46 KSI)
 - STRUCTURAL BOLTS ASTM A325
 - U-BOLTS ASTM A307 GR.A
 - NUTS FOR BOLTS ASTM A563 (THREADING TO MATCH BOLT)
 - WASHERS FOR BOLTS ASTM F436
 - SEE TABLE 5-1 OF THE TIA CODE FOR ADDITIONAL SHAPES AND STANDARDS THAT ARE NOT LISTED ABOVE.
- NON PRE-QUALIFIED STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING STANDARDS PER THE TIA CODE:
 - THE CARBON EQUIVALENT OF STEEL SHALL NOT EXCEED 0.65 PER SECTION 5.4.2 OF THE TIA CODE
 - ELONGATION OF STEEL SHALL NOT BE LESS THAN 18%
 - TEST REPORTS SHALL BE IN ACCORDANCE WITH ASTM A6 OR A568
 - TOLERANCES SHALL BE IN ACCORDANCE WITH ASTM A6
- FIELD CUT EDGES, EXCEPT DRILLED HOLES, SHALL BE GROUND SMOOTH AND COLD GALVANIZED.
- ALL WELDING WORK SHALL CONFORM TO THE AWS D1.1 STRUCTURAL WELDING CODE. ALL WELDING SHALL BE PERFORMED BY CERTIFIED WELDERS ONLY. WELDING ELECTRODES SHALL BE E70XX.
- ALL DETAILING, FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO AISC SPECS AND CODES, LATEST EDITION.
- UPON REQUEST, THE CONTRACTOR SHALL SUBMIT DETAILED, ENGINEERED, COORDINATED AND CHECKED SHOP DRAWINGS FOR ALL STRUCTURAL STEEL TO THE ENGINEER OF RECORD TO REVIEW FOR COMPLIANCE WITH DESIGN INTENT PRIOR TO THE START OF FABRICATION AND/OR ERECTION.
- TORCH-CUTTING OF ANY KIND SHALL NOT BE PERMITTED.
- ALL BOLT HOLES SHALL BE STANDARD SIZE BOLT HOLES PER AISC 360, UNLESS OTHERWISE NOTED. ALL HOLES SHALL BE SHOP DRILLED OR SUB-PUNCHED AND REAMED. BURNING OF HOLES IS NOT PERMITTED. WHERE SLOTTED OR OVERSIZE HOLES ARE SPECIFIED ON THE DRAWINGS, EXTRA-THICK ASTM F436 PLATE WASHERS SHALL BE USED (3/16" MINIMUM THICKNESS) WITH A DIAMETER SUITABLE TO COVER THE EXTENTS OF THE SLOT OR HOLE. BOLTS SHALL BE HEAVY-HEX WHERE AVAILABLE IN THE SIZE AND GRADE SPECIFIED, OTHERWISE BOLTS SHALL BE HEX HEAD CAP SCREWS.
- ALL STEEL HARDWARE, INCLUDING ADHESIVE OR EMBEDDED ANCHOR BOLTS AND THEIR ACCESSORIES, SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A153 (EXCEPT BOLTS SMALLER THAN 1/2" SHALL CONFORM TO FE/ZN 3 AT PER ASTM F1941 WHERE HOT-DIP GALVANIZED BOLTS ARE NOT AVAILABLE). ALL STEEL MEMBERS, INCLUDING WELDMENTS, SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A123. REPAIR DAMAGE TO GALVANIZED COATINGS USING ASTM A780 PROCEDURES WITH A ZINC RICH PAINT (SUCH AS ZINC GALVILITE) FOR GALVANIZING DAMAGED BY HANDLING, TRANSPORTING, CUTTING, WELDING, OR BOLTING. DO NOT HEAT SURFACES TO WHICH REPAIR PAINT HAS BEEN APPLIED. CALL OUT HOLES REQUIRED FOR HOT-DIP GALVANIZING ON SHOP DRAWINGS.
- MEMBERS SHALL BE SHOP-FABRICATED AND WELDED TO THE EXTENT PRACTICABLE IN ORDER TO REDUCE FIELD INSTALLATION COSTS.

CONSTRUCTION INSPECTION CHECKLIST

CONSTRUCTION AND/OR INSTALLATION INSPECTIONS REQUIRED FOR REPORT? (CHECK=YES, BLANK=NO)	INSPECTION REPORT ITEM
√	CONSTRUCTION INSPECTIONS
	THIRD-PARTY CERTIFIED WELD INSPECTION (INCLUDING IBC SPECIAL INSPECTIONS)
√	GALVANIZING REPAIR MATERIAL PREPARATION, INSPECTION, & PAINT APPLICATION
√	PRIME CONTRACTOR'S AS-BUILT DOCUMENTS (SIGNED & DATED)
√	FABRICATION INSPECTION
√	MATERIAL TEST REPORT(S) / MILL CERTIFICATE(S)
√	PACKING SLIPS FOR STRUCTURAL MATERIALS

NOMINAL HOLE DIMENSIONS

BOLT Ø	STANDARD HOLE Ø
1/2"Ø	9/16"Ø
5/8"Ø	11/16"Ø
3/4"Ø	13/16"Ø
7/8"Ø	15/16"Ø
1"Ø	1 1/8"Ø

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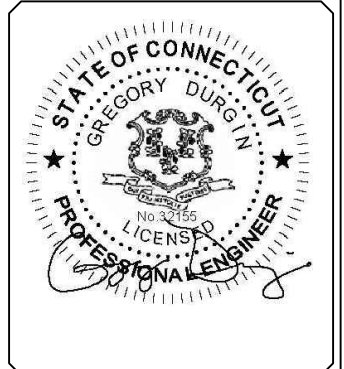
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SITE INFORMATION:
MOUNT AUGMENTATION

CT23XC404

LISBON, CT

LATITUDE: 41.591033
LONGITUDE: -72.01696

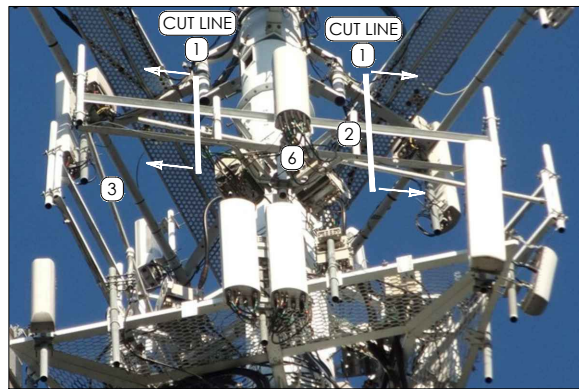
SHEET TITLE:
NOTES AND SPECIFICATIONS

SHEET NUMBER:
S2

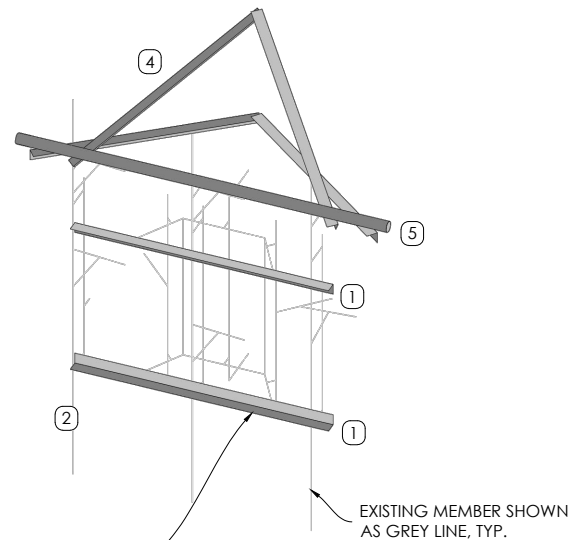
NEW MOUNT AUGMENTATIONS

1. CONTRACTOR TO MODIFY FACE WIDTH OF EXISTING MOUNT FRAME TO 4.5' WIDE. TOP AND BOTTOM ANGLE RAIL MEMBERS TO BE CUT JUST BEYOND THE WELDED INTERIOR MOUNT PIPE LOCATIONS AS DEPICTED IN PHOTO BELOW. APPLY (2) COATS OF COLD-GALV. COMPOUND TO CUT MEMBER ENDS. [TYP. (3) SECTORS]
2. NEW PIPE 2.0 STD. (2.375"O.D.) MOUNT PIPE INSTALLED IN POSITIONS 1 AND 2 OF MODIFIED MOUNT FACE. ATTACH EACH NEW MOUNT PIPE TO EXISTING WELDED MOUNT PIPES WITH (2) SITEPRO1 DCP12K PIPE TO PIPE CLAMP SETS. [(6) TOTAL PIPES]
3. CONTRACTOR TO RELOCATE EXISTING PIPE STIFF-ARM (TIE-BACK) MEMBER FROM EXISTING LOCATION TO NEW POSITION ON CUT FACE. [TYP. (3) LOCATIONS]
4. SECTOR FRAME REINFORCEMENT KIT SITEPRO1 PART# PRK-SFR-K-L, 1 KIT PER SECTOR. ATTACH LOWER KIT COLLAR MOUNT TO MONOPOLE SHAFT ~1.0' ABOVE EXISTING STANDOFF CENTERLINE & UPPER KIT COLLAR MOUNT TO MONOPOLE SHAFT ~3.0' ABOVE STANDOFF CENTERLINE. NOTE: IF THE PRK-SFR-K-L KIT IS NOT AVAILABLE, PROVIDE (12) TOTAL L2 1/2 X21/2X3/16 X ~8' LONG REPLACEMENT ANGLES, FIELD-CUT AND DRILL TO SUIT. [(3) KITS TOTAL]
5. PIPE 2.0 STD. (2.375"O.D.) x 7± HORIZONTAL RAIL. ATTACH TO ALL MOUNT PIPES WITH SITEPRO1 SCX x-K CROSS-OVER PLATES. [(3) TOTAL RAILS; (6) SCX]
6. PANEL ANTENNAS TO BE INSTALLED IN POSITIONS 1 AND 2 WITH A HORIZONTAL SEPARATION NOT TO EXCEED 4.5'. EXISTING 800 AND 1900 RRH UNITS TO REMAIN IN THEIR CURRENTLY INSTALLED LOCATIONS ON THE SECTOR FRAME STANDOFFS. NEW 800 AND 2500 RRH UNITS TO BE INSTALLED BEHIND EACH PANEL ANTENNA ON DUAL RRH SWIVEL BRACKETS (ONE RRH PER PANEL MOUNT PIPE).

AUGMENTATIONS SHALL BE COMPLETED PRIOR TO THE INSTALLATION OF ANY NEW EQUIPMENT.



SECTOR FRAMES @ 173' AUGMENTATION

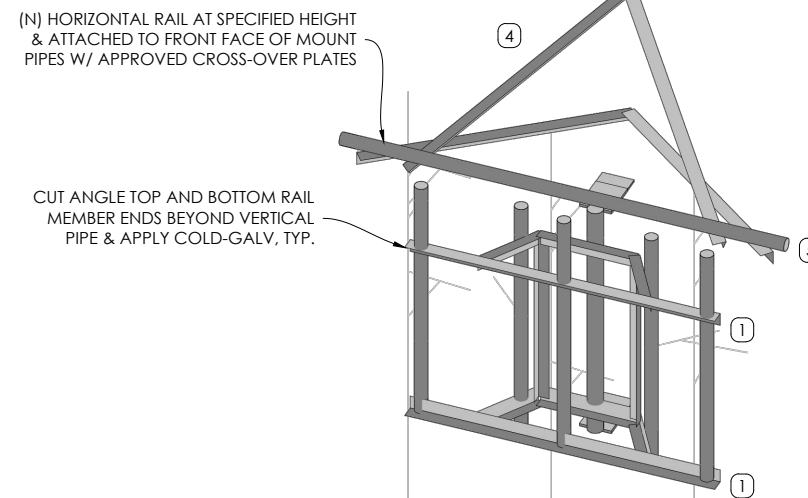


PROPOSED AUGMENT MEMBER INSTALLED AS SHOWN, TYP. EXISTING MEMBER SHOWN AS GREY LINE, TYP.

MOUNT AUGMENTATION ISOLATION
SCALE: N.T.S.

CONSTRUCTION NOTES

1. SCOPE OF WORK MUST BE COMPLETED AT WIND SPEEDS < 20 MPH.
2. ALL DIMENSIONS ARE APPROXIMATE. CONTRACTOR SHOULD FIELD-VERIFY ALL DIMENSIONS BEFORE FABRICATION OF STEEL AND COMMENCEMENT OF WORK. FIELD CUT MEMBERS AS REQUIRED.
3. CONTRACTOR TO COORDINATE THE TEMPORARY REMOVAL/RELOCATION/REPLACEMENT OF ELEMENTS (E.G. COAX, CLIPS, TMAs, ETC.) CONNECTED TO, OR IN THE DIRECT PATH, OF NEW AUGMENTATION MEMBERS.



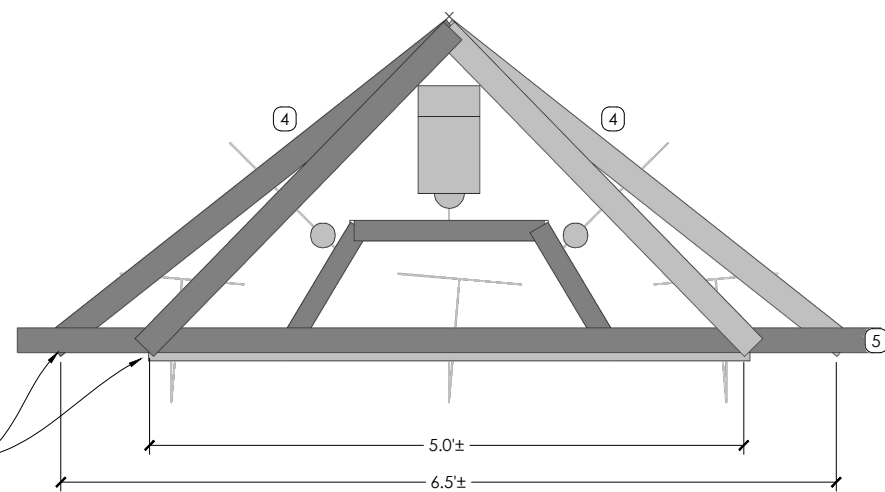
(N) HORIZONTAL RAIL AT SPECIFIED HEIGHT & ATTACHED TO FRONT FACE OF MOUNT PIPES W/ APPROVED CROSS-OVER PLATES

CUT ANGLE TOP AND BOTTOM RAIL MEMBER ENDS BEYOND VERTICAL PIPE & APPLY COLD-GALV, TYP.

AUGMENTED MOUNT ISOMETRIC
SCALE: N.T.S.

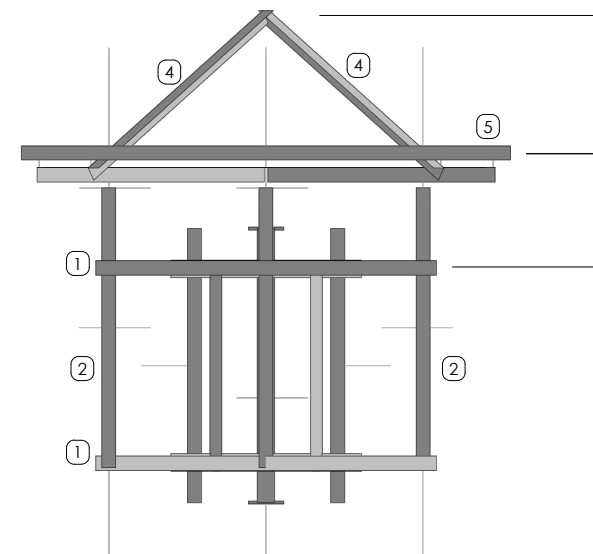
INSTALLATION NOTES

1. AUGMENT MEMBER(S) MAY NEED TO BE FIELD-CUT TO LENGTH TO ACCOMMODATE THIS INSTALLATION. CONTRACTOR TO CUT AND DRILL TO SUIT AS REQUIRED AND APPLY (2) COATS OF COLD-GALV. COMPOUND TO CUT MEMBER ENDS.
2. CONTRACTOR TO CHECK ALL EXISTING MEMBER CONNECTION BOLTS, PARTICULARLY STANDOFF TO TOWER BOLTS, FOR PROPER INSTALLATION AND TIGHTNESS.
3. COORDINATE PLACEMENT OF NEW AUGMENT MEMBERS WITH EXISTING TOWER AND CLIMBING FACILITY ELEMENTS (E.G. STEP PEGS, COAX PORTS, ETC.)
4. REFER TO CONSTRUCTION DRAWINGS (BY OTHERS) AND MOUNT STRUCTURAL ANALYSIS FOR APPROVED INSTALLATION LOCATIONS AND QUANTITIES OF APPURTENANCES.



ATTACH SFR-K-L KIT ANGLE TO NEW PIPE RAIL W/ MANUF. SUPPLIED CHANNEL BRACKET

AUGMENTED MOUNT PLAN
SCALE: N.T.S.



AUGMENTED MOUNT FRONT ELEVATION
SCALE: N.T.S.



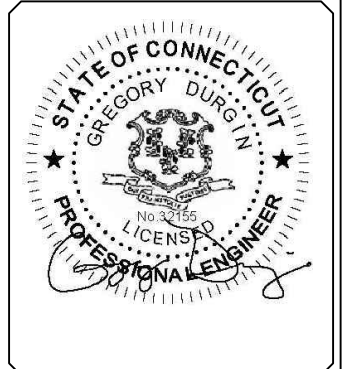
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WESTBOROUGH, MA 01581
P: 508.251.0720



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NO.	DATE	DESCRIPTION	BY
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SHEET TITLE:
AUGMENTATIONS, SECTIONS & DETAILS

SHEET NUMBER:
S3