



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

July 31, 2018

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

**Notice of Exempt Modification**

**203 Davis Road, Chaplin, CT**  
**41 47 36.55 N**  
**-72 9 36.64 W**  
**Sprint #: CT33XC569**

Dear Ms. Bachman:

Sprint currently maintains antennas at the 165-foot level of the existing 175-foot Monopole Tower at 203 Davis Road in Chaplin, CT. The tower is owned by SBA Towers, LLC. The property is owned by the Truman J. Pearl. Sprint now intends to remove (3) existing cell antennas with replace with (6) newer technology cell antennas at the 165-foot level of the tower. The proposed full scope of work is as follows:

Remove: N/A

Remove and Replace:

- Remove:
  - (3) KMW - ETCR-654L12H6 – Panel Antennas
- Replace with:
  - (3) RFS APXVTM14-C-I20

Install:

- (3) Commscope NNVV-65B-R4 Panel Antennas
- (3) ALU 1900 Mhz RRUs (Note: SA was run as entitlement/existing and proposed-CDs show actual add)
- (6) ALU 800 Mhz RRUs (Note: SA was run as entitlement/existing and proposed-CDs show actual add)
- (3) ALU TD-RRH8x20-25 RRUs (Note: SA was run as entitlement/existing and proposed-CDs show actual add)
- Sitepro:
  - PRK 1245L
  - PRK SFS H-L
  - SPTB

Existing Equipment to Remain (Including entitlements):

- (1) Low Profile Platform
- (4) 1-1/4" Hybrid



This facility was originally approved by the Town of Chaplin on July 13, 2000. Special Permit was issued by the Planning & Zoning Commission. Original Building Permits #1008 and #1011 were issued August 28, 2000, inclusive of town zoning signature/approval, for construction of a 175' telecom tower to include a 70x70' fenced area with a chainlink fence and associated power and telephone utilities. This modification complies with all known tower 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 Chaplin's First Selectman, Matthew Cunningham, Zoning Officer, James Gigliotti, as well as to the property owner. (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: Matthew Cunningham, First Selectman / with attachments  
*Chaplin Town Hall, 495 Phoenixville Road, Chaplin, CT 06235*  
James Gigliotti, Zoning Officer / with attachments  
*Chaplin Town Hall, 495 Phoenixville Road, Chaplin, CT 06235*  
Truman J. Pearl / with attachments  
*203 Davis Road Chaplin CT 06235-2333*



## POWER DENSITY

### SPRINT Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Commscope NNVV-65B-R4	Make / Model:	Commscope NNVV-65B-R4	Make / Model:	Commscope NNVV-65B-R4
Gain:	12.75 / 15.05 dBd	Gain:	12.75 / 15.05 dBd	Gain:	12.75 / 15.05 dBd
Height (AGL):	165 feet	Height (AGL):	165 feet	Height (AGL):	165 feet
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	10	Channel Count	10	Channel Count	10
Total TX Power(W):	280 Watts	Total TX Power(W):	280 Watts	Total TX Power(W):	280 Watts
ERP (W):	7,378.61	ERP (W):	7,378.61	ERP (W):	7,378.61
Antenna A1 MPE%	1.29 %	Antenna B1 MPE%	1.29 %	Antenna C1 MPE%	1.29 %
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	RFS APXVTM14- ALU- I20	Make / Model:	RFS APXVTM14- ALU- I20	Make / Model:	RFS APXVTM14- ALU- I20
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	165 feet	Height (AGL):	165 feet	Height (AGL):	165 feet
Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)
Channel Count	8	Channel Count	8	Channel Count	8
Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts
ERP (W):	6,224.72	ERP (W):	6,224.72	ERP (W):	6,224.72
Antenna A2 MPE%	0.89 %	Antenna B2 MPE%	0.89 %	Antenna C2 MPE%	0.89 %

Site Composite MPE%	
Carrier	MPE%
SPRINT – Max per sector	2.18 %
Verizon Wireless	3.39 %
<b>Site Total MPE %:</b>	<b>5.57 %</b>

SPRINT Sector A Total:	2.18 %
SPRINT Sector B Total:	2.18 %
SPRINT Sector C Total:	2.18 %
<b>Site Total:</b>	<b>5.57 %</b>

SPRINT _ Frequency Band / Technology Max Power Values (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	376.73	165	0.54	850 MHz	567	0.10%
Sprint 850 MHz LTE	2	941.82	165	2.68	850 MHz	567	0.47%
Sprint 1900 MHz (PCS) CDMA	5	511.82	165	3.64	1900 MHz (PCS)	1000	0.36%
Sprint 1900 MHz (PCS) LTE	2	1,279.56	165	3.64	1900 MHz (PCS)	1000	0.36%
Sprint 2500 MHz (BRS) LTE	8	778.09	165	8.85	2500 MHz (BRS)	1000	0.89%
<b>Total:</b>						<b>2.18%</b>	

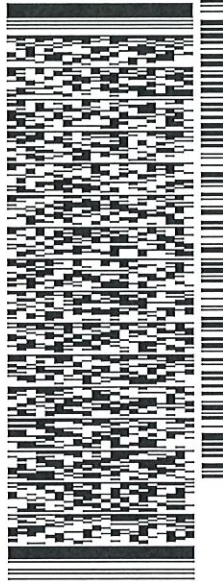
ORIGIN ID:BBFA (508) 251-0720  
KRIPELLETER  
SBA COMMUNICATIONS CORPORATION  
134 FLANDERS RD  
SUITE 725  
WESTBOROUGH MA 01581  
UNITED STATES US

SHIP DATE: 31 JUL 18  
ACTWGT: 1.00 LB  
CAD: 105843304/NET 4040  
BILL SENDER

TO MATTHEW CUNNINGHAM, FIRST SELECTMAN  
CHAPLIN TOWN HALL  
495 PHOENIXVILLE RD

CHAPLIN CT 06235  
(508) 251-0720 X 3804 REF: 10-56-92009-6099  
INVT. DEPT:  
PO:

552.J1/B309/DCA5



TRK# 7728 5716 3577  
0201  
WED - 01 AUG 4:30P  
PRIORITY OVERNIGHT

**EB GONA**

CT-US BDL  
06235



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

SHIP DATE: 31 JUL 18  
ACTWGT: 1.00 LB  
CAD: 105843304INET14040

BILL SENDER

TO JAMES GIGLIOTTI, ZONING OFFICER  
CHAPLIN TOWN HALL  
495 PHEONIXVILLE ROAD

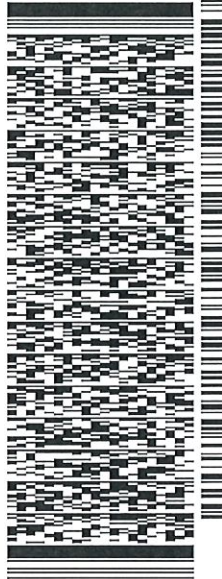
CHAPLIN CT 06235

(508) 251-0720 X 3804

REF: 10-56-92009-6099

PO:

DEPT:



J182018072201uv

TRK# 7728 5718 4108  
0201

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PRIORITY OVERNIGHT

EBGONA

06235  
CT-US BDL



552J1/3309/DC/A5

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

SHIP DATE: 31 JUL 18  
ACTWGT: 1.00 LB  
CAD: 105843304/NET/4040  
BILL SENDER

TO TRUMAN J. PEARL

203 DAVIS ROAD

CHAPLIN CT 06235

(508) 251-0720 X 3804  
NY  
PO:

REF: 10-56-92009-6089

DEPT:

552J1/3309/DCA5



J182018072201uv

TRK# 7728 5719 9269  
0201

WED - 01 AUG 4:30P  
PRIORITY OVERNIGHT

EBGONA

CT-US BDL 06235



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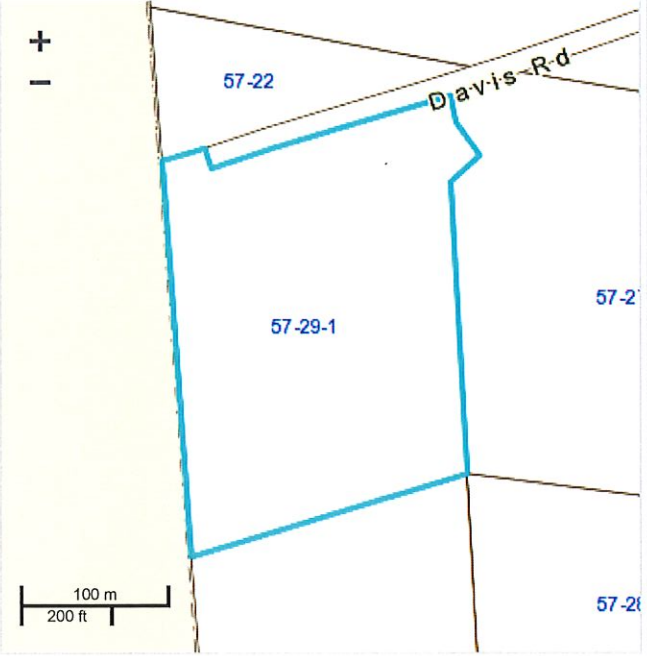
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**Town of Chaplin, Connecticut**  
**Property Record Card** Card 1 of 1

**203 DAVIS RD**

ID: 57-29-1 Account #: P000791



Owner: PEARL TRUMAN J  
 Co-Owner:  
 Address: 203 DAVIS RD  
 CHAPLIN CT 06235

**Important Revaluation Notice**

Assessment: Total: 146300, Assessed Value: 208900  
 Building: 90400 Land: 35900 Yard: 20000

**Sales History**

Grantor	Book / Page	Sale Date	Sale Price
PEARL TRUMAN J	51/ 677		0



MainStreetGIS, LLC  
[www.mainstreetgis.com](http://www.mainstreetgis.com)

**Land Information**

Land Area: 6.26 AC Zoning:  
 Land Use: 101 - Single Family  
 Neighborhood:

**Building Information**

Style: Cape Cod  
 Year Built: 1987  
 Rooms: 6 Bedrooms: 03  
 Baths: 2 Half Baths: 1  
 Living Area: 1517  
 Gross Area: 3076

**Stories:**

Heat Fuel: Oil  
 Heat Type: Hot Water  
 AC Type: None  
 Roof Structure: Gable  
 Roof Covering: Asphalt Shingle

**Extra Features**

Description	Area / Units	Assessment
Canopy	420	3700
Garage	360	5300
Garage	420	6200
Shed	540	4800

**Sub Areas**

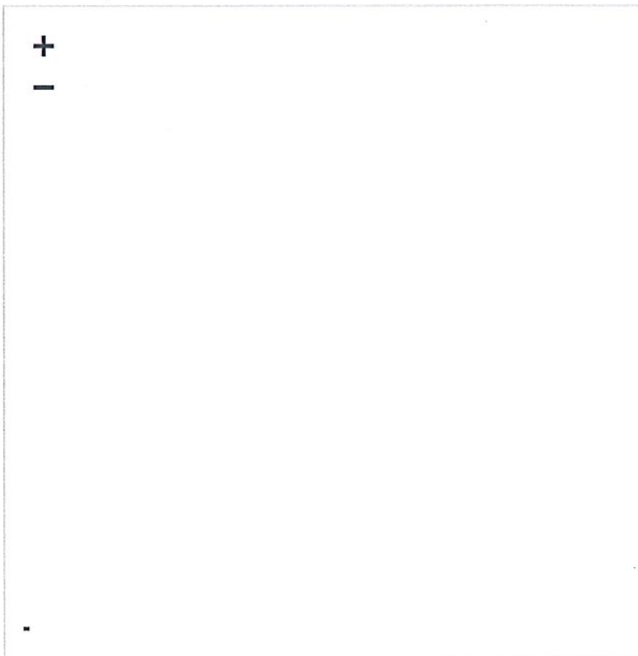
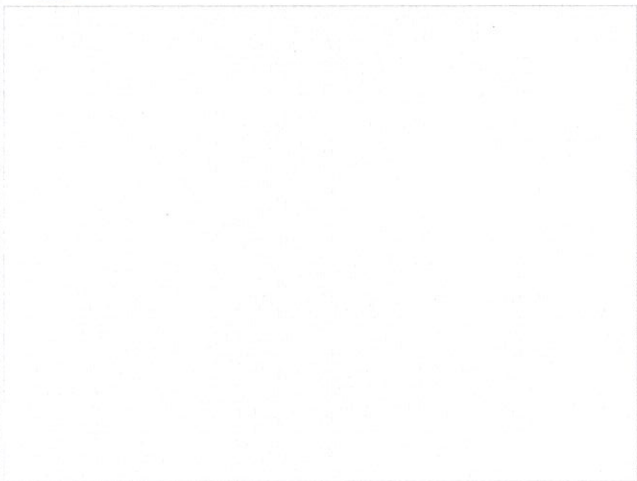
Description	Living Area	Gross Area
First Floor	946	946
Framed Open Porch	0	210
Wood Deck	0	288
Three Quarter Story	571	816
Basement	0	816

Printed from: <http://www.mainstreetmaps.com/ct/chaplin/>



**Town of Chaplin, Connecticut**  
**Property Record Card**    Card 1 of 1

**203 DAVIS RD REAR**  
**ID: 783CELL Account #: 783CELL**



Owner: SBA NETWORKS  
 Co-Owner: ATT TAX DEPT  
 Address: 8051 CONGRESS AVENUE  
 BOCA RATON FL 33487-1307  
**Important Revaluation Notice**  
 Assessment: Total: 656100, Assessed Value: 937200  
 Building: 0 Land: 126000 Yard: 530100

**Sales History**

Grantor	Book / Page	Sale Date	Sale Price
SBA NETWORKS	000/ 000	2008-10-01	0



**Land Information**  
 Land Area: 0 AC    Zoning:  
 Land Use: 202 - Commercial Land & OB  
 Neighborhood:

**Building Information**  
 Style:  
 Year Built:  
 Rooms: Bedrooms:  
 Baths: Half Baths:  
 Living Area:  
 Gross Area:

Stories:  
 Heat Fuel:  
 Heat Type:  
 AC Type:  
 Roof Structure:  
 Roof Covering:

Extra Features Description	Area / Units	Assessment
Fence 6'	280	1300
PreCast Shed	180	33100
PreCast Shed	360	66200
TOWER	3	429500

Sub Areas Description	Living Area	Gross Area

Printed from: <http://www.mainstreetmaps.com/ct/chaplin/>





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

SPRINT Existing Facility

Site ID: CT33XC569

North Chaplin  
203 Davis Road  
Chaplin, CT 06235

**July 19, 2018**

**EBI Project Number: 6218005083**

Site Compliance Summary	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general population allowable limit:	<b>5.57 %</b>



July 19, 2018

SPRINT

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

## Emissions Analysis for Site: **CT33XC569 – North Chaplin**

EBI Consulting was directed to analyze the proposed SPRINT facility located at **203 Davis Road, Chaplin, 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 **203 Davis Road, Chaplin, 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 50 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 **Commscope NNVV-65B-R4 and the RFS APXVTM14-ALU-I20** 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 **165 feet** above ground level (AGL) for **Sector A**, **165 feet** above ground level (AGL) for **Sector B** and **165 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 #:	<b>1</b>	Antenna #:	<b>1</b>	Antenna #:	<b>1</b>
Make / Model:	Commscope NNVV-65B-R4	Make / Model:	Commscope NNVV-65B-R4	Make / Model:	Commscope NNVV-65B-R4
Gain:	12.75 / 15.05 dBd	Gain:	12.75 / 15.05 dBd	Gain:	12.75 / 15.05 dBd
Height (AGL):	<b>165 feet</b>	Height (AGL):	<b>165 feet</b>	Height (AGL):	<b>165 feet</b>
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	10	Channel Count	10	Channel Count	10
Total TX Power(W):	280 Watts	Total TX Power(W):	280 Watts	Total TX Power(W):	280 Watts
ERP (W):	7,378.61	ERP (W):	7,378.61	ERP (W):	7,378.61
Antenna A1 MPE%	<b>1.29 %</b>	Antenna B1 MPE%	<b>1.29 %</b>	Antenna C1 MPE%	<b>1.29 %</b>
Antenna #:	<b>2</b>	Antenna #:	<b>2</b>	Antenna #:	<b>2</b>
Make / Model:	RFS APXVTM14-ALU-I20	Make / Model:	RFS APXVTM14-ALU-I20	Make / Model:	RFS APXVTM14-ALU-I20
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	<b>165 feet</b>	Height (AGL):	<b>165 feet</b>	Height (AGL):	<b>165 feet</b>
Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)
Channel Count	8	Channel Count	8	Channel Count	8
Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts
ERP (W):	6,224.72	ERP (W):	6,224.72	ERP (W):	6,224.72
Antenna A2 MPE%	<b>0.89 %</b>	Antenna B2 MPE%	<b>0.89 %</b>	Antenna C2 MPE%	<b>0.89 %</b>

Site Composite MPE%	
Carrier	MPE%
SPRINT – Max per sector	<b>2.18 %</b>
Verizon Wireless	3.39 %
<b>Site Total MPE %:</b>	<b>5.57 %</b>

SPRINT Sector A Total:	2.18 %
SPRINT Sector B Total:	2.18 %
SPRINT Sector C Total:	2.18 %
<b>Site Total:</b>	<b>5.57 %</b>

SPRINT _ Frequency Band / Technology Max Power Values (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	376.73	165	0.54	850 MHz	567	0.10%
Sprint 850 MHz LTE	2	941.82	165	2.68	850 MHz	567	0.47%
Sprint 1900 MHz (PCS) CDMA	5	511.82	165	3.64	1900 MHz (PCS)	1000	0.36%
Sprint 1900 MHz (PCS) LTE	2	1,279.56	165	3.64	1900 MHz (PCS)	1000	0.36%
Sprint 2500 MHz (BRS) LTE	8	778.09	165	8.85	2500 MHz (BRS)	1000	0.89%
						<b>Total:</b>	<b>2.18%</b>



## 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:	2.18 %
Sector B:	2.18 %
Sector C:	2.18 %
SPRINT Maximum Total (per sector):	2.18 %
Site Total:	5.57 %
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **5.57 %** 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**

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## Structural Analysis Report

**Existing 175 ft Nudd Corporation Monopole**

**Customer Name: SBA Communications Corp**

**Customer Site Number: CT03113-S**

**Customer Site Name: North Chaplin**

**Carrier Name: Sprint Nextel**

**Carrier Site ID / Name: CT33XC569 / Mansfield Center**

**Site Location: 203 Davis Road**

**Chaplin, Connecticut**

**Windham County**

**Latitude: 41.793486**

**Longitude: -72.160178**

**Analysis Result:**

**Max Structural Usage: 61.5% [Pass]**

**Max Foundation Usage: 29% [Pass]**

**Additional Usage Caused by Mount Modification: +2.8%**

**Report Prepared By: Gustavo Zaragoza**



## Introduction

The purpose of this report is to summarize the analysis results on the 175 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

<b>Tower Drawings</b>	Tower Drawings prepared by Fred A. Nudd Corporation Project # 7678; 10125-056 Dated 07/2000
<b>Foundation Drawing</b>	Foundation Drawings prepared by Fred A. Nudd Corporation Project # 7678; 10125-056 Dated 07/2000
<b>Geotechnical Report</b>	Geotechnical Report prepared by FDH, Project # 1206274EG1 Dated 08/20/2012

## 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.

<b>Wind Speed Used in the Analysis:</b>	Ultimate Design Wind Speed $V_{ult} = 130$ mph (3-Sec. Gust)/ Nominal Design Wind Speed $V_{asd} = 101$ mph (3-Sec. Gust)
<b>Wind Speed with Ice:</b>	50 mph (3-Sec. Gust) with 1" radial ice concurrent
<b>Operational Wind Speed:</b>	60 mph + 0" Radial ice
<b>Standard/Codes:</b>	ANSI/TIA/EIA 222-G / 2012 IBC / 2016 Connecticut State Building Code
<b>Exposure Category:</b>	B
<b>Structure Class:</b>	II
<b>Topographic Category:</b>	1
<b>Crest Height:</b>	0 ft
<b>Seismic Parameters:</b>	$S_5 = 0.173$ , $S_1 = 0.062$

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	173.0	-	-	Low Profile Platform (Abandoned)	-	Nextel
-	165.0	3	KMW - ETCR-654L12H6 - Panel	Platform w/ SitePro: (1) HRK-14 (1) PRK-SFS (1) PRK-1245-L	(4) 1-1/4" Hybrid	Sprint Nextel
-		3	ALU 1900 Mhz - RRUs			
-		6	ALU 800 Mhz - RRUs			
-		3	ALU TD-RRH8x20-25 - RRUs			
7	155.0	4	Antel LPA-80063/6CF - Panel	Low Profile Platform	(6) 1 5/8" (2) 1 5/8" Fiber	Verizon
8		2	Antel LPA-80080/6CF - Panel			
9		6	RFS FD9R6004/2C-3L Diplexer			
10		6	Commscope SBNHH-1D65B - Panel			
11		3	Alcatel RRH2X60-1900 - RRH			
12		3	Alcatel RRH2x60-700 - RRH			
13		2	RFS DB-T1-6Z-8AB-OZ - DC SS			
14		3	Alcatel RRH4X45 B66 - RRH			

## **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
2	165.0	3	RFS APXVTM14-C-I20	Low Profile Platform w/ Site Pro PRK-1245L, PRK-SFS-H-L, & SPTB	(4) 1 1/4" Hybrid	Sprint Nextel
3		3	Commscope NNVV-65B-R4			
4		3	ALU 1900 MHz			
5		6	ALU 800 MHz			
6		3	ALU TD-RRH8x20-25			

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

## **Analysis Results**

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

	Pole shafts	Anchor Bolts	Base Plate
Max. Usage:	<b>46.5%</b>	<b>34.9%</b>	<b>61.5%</b>
Pass/Fail	<b>Pass</b>	<b>Pass</b>	<b>Pass</b>

## **Foundations**

	Moment (Kip-Ft)	Shear (Kips)
Original Design Reactions	5680.0	43.6
Analysis Reactions	3493.7	29.0
Factored Reactions*	7668.0	58.9
% of Design Reactions	45.6%	49.2%

\* 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 0.8549 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.

## 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 46.53% at 0.0ft

**Structure:** CT03113-S-SBA  
**Site Name:** North Chaplin  
**Height:** 175.00 (ft)  
**Base Elev:** 0.000 (ft)

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

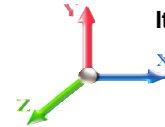
6/25/2018



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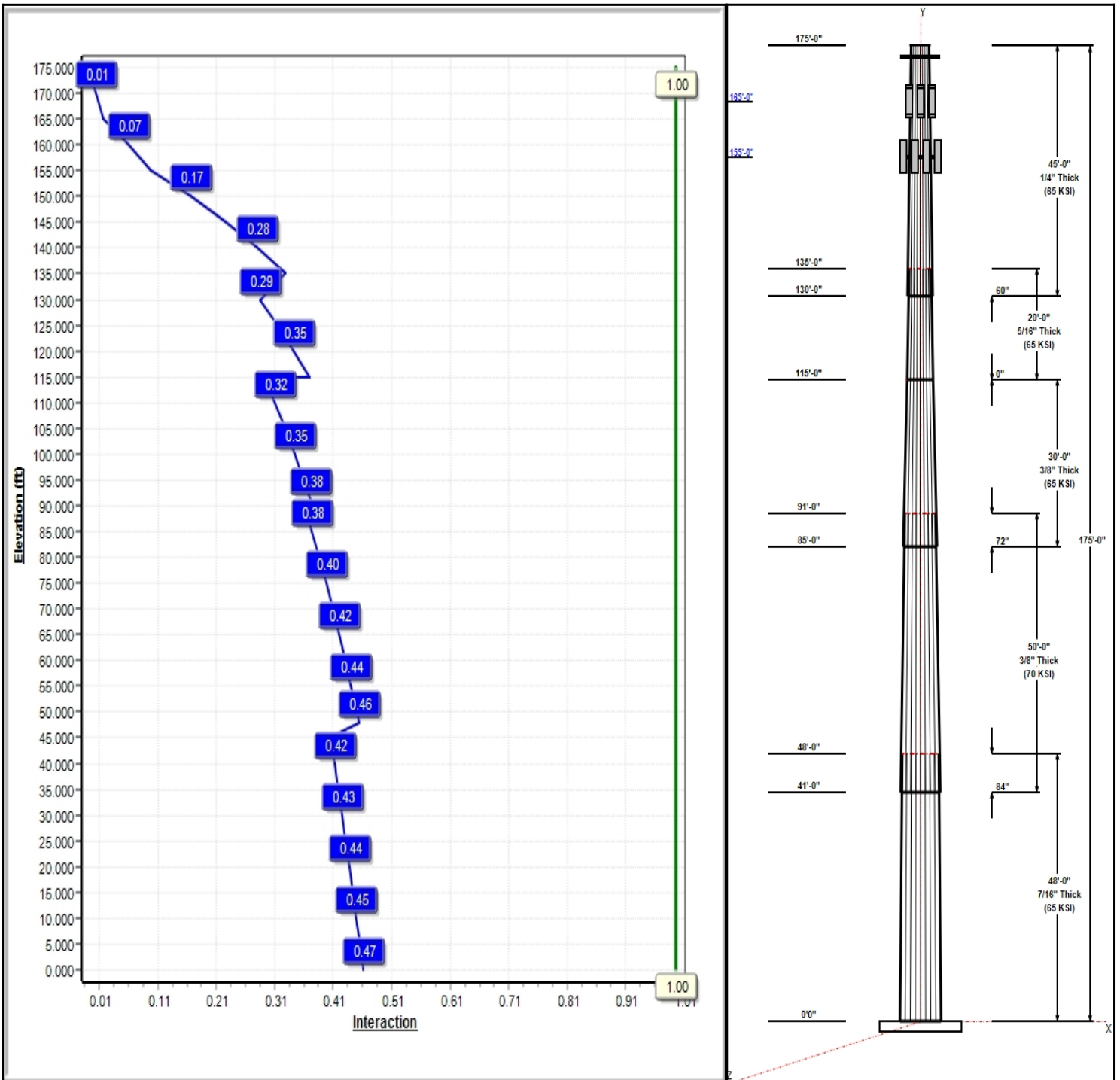
**Dead Load Factor:** 1.20  
**Wind Load Factor:** 1.60

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



**Iterations:** 23

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## Structure: CT03113-S-SBA

**Type:** Tapered  
**Site Name:** North Chaplin  
**Height:** 175.00 (ft)  
**Base Elev:** 0.00 (ft)

**Base Shape:** 18 Sided  
**Taper:** 0.24286

6/25/2018

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### Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	48.00	52.84	64.50	0.438		0.24286	65
2	50.00	43.15	55.29	0.375	Slip	0.24286	70
3	30.00	38.07	45.36	0.375	Slip	0.24286	65
4	20.00	33.21	38.07	0.313	Butt	0.24286	65
5	45.00	24.00	34.93	0.250	Slip	0.24286	65

### Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
173.00	173.00	1	Low Profile Platform	Nextel
165.00	165.00	1	Low Profile Platform	Sprint Nextel
165.00	165.00	3	RFS APXVTM14-C-I20	Sprint Nextel
165.00	165.00	3	Commscope	Sprint Nextel
165.00	165.00	3	ALU 1900 MHz	Sprint Nextel
165.00	165.00	6	ALU 800 MHz	Sprint Nextel
165.00	165.00	3	ALU TD-RRH8x20-25	Sprint Nextel
165.00	165.00	1	Site Pro PRK-1245L	Sprint Nextel
165.00	165.00	1	Site Pro SFS-H-L	Sprint Nextel
165.00	165.00	1	Site Pro SPTB	Sprint Nextel
155.00	155.00	4	Antel LPA-80063/6CF	Verizon
155.00	155.00	2	Antel LPA-80080/6CF	Verizon
155.00	155.00	6	RFS FD9R6004/2C-3L	Verizon
155.00	155.00	1	Low Profile Platform	Verizon
155.00	155.00	6	Commscope	Verizon
155.00	155.00	3	Alcatel RRH2X60-1900 -	Verizon
155.00	155.00	3	Alcatel RRH2x60-700 -	Verizon
155.00	155.00	2	RFS DB-T1-6Z-8AB-0Z -	Verizon
155.00	155.00	3	Alcatel RRH4X45 B66 -	Verizon

### Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	165.00	Inside	1 1/4" Hybrid	Sprint Nextel
0.00	155.00	Inside	1 5/8" Coax	Verizon
0.00	155.00	Inside	1 5/8" Fiber	Verizon

### Anchor Bolts

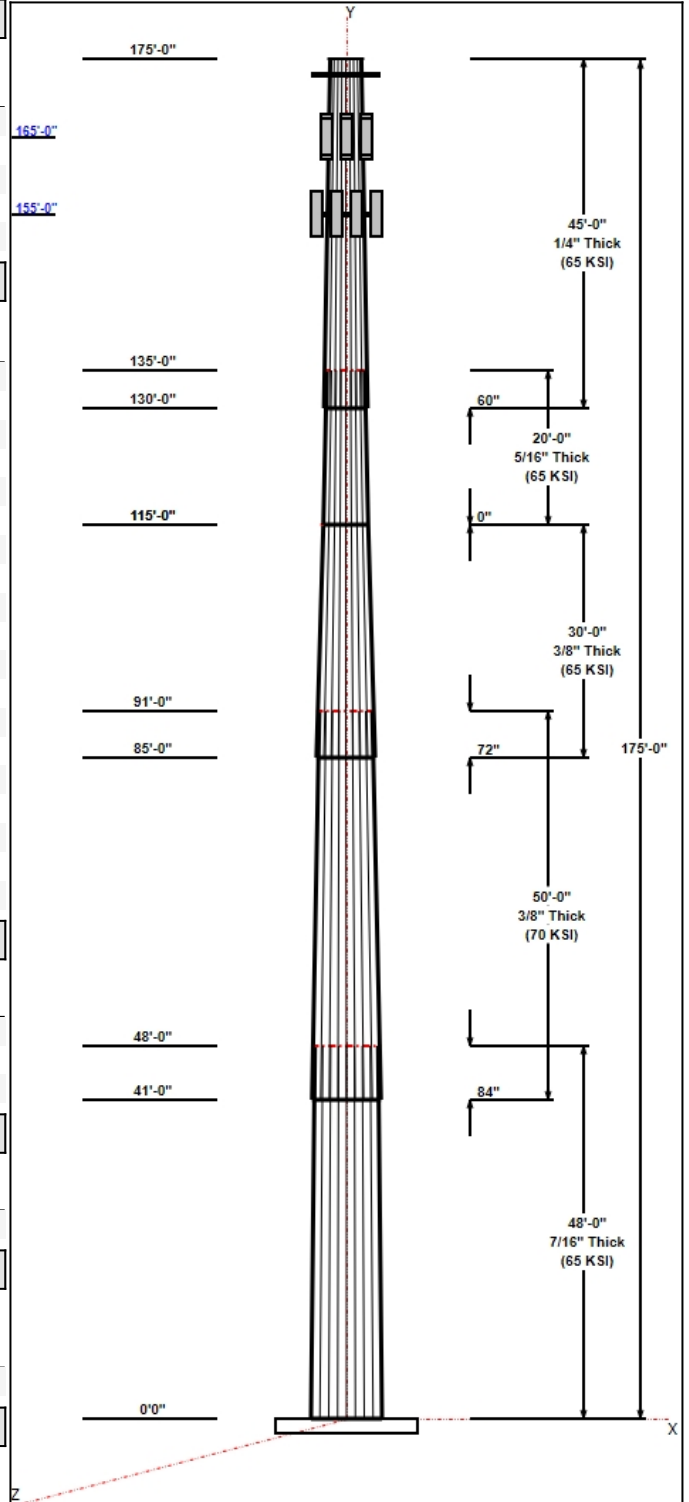
Qty	Specifications	Grade (ksi)	Arrangement
29	2.00" A687	105.0	Radial

### Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
1.5000	64.3	50.0	Polygon

### Reactions

Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 101 mph Wind	3493.7	29.0	51.7
0.9D + 1.6W 101 mph Wind	3465.2	28.9	38.8
1.2D + 1.0Di + 1.0Wi 50 mph Wind	990.1	8.2	86.9
1.2D + 1.0E	186.2	1.5	51.7
0.9D + 1.0E	184.5	1.5	38.8



**Structure: CT03113-S-SBA**

**Type:** Tapered  
**Site Name:** North Chaplin  
**Height:** 175.00 (ft)  
**Base Elev:** 0.00 (ft)

**Base Shape:** 18 Sided  
**Taper:** 0.24286

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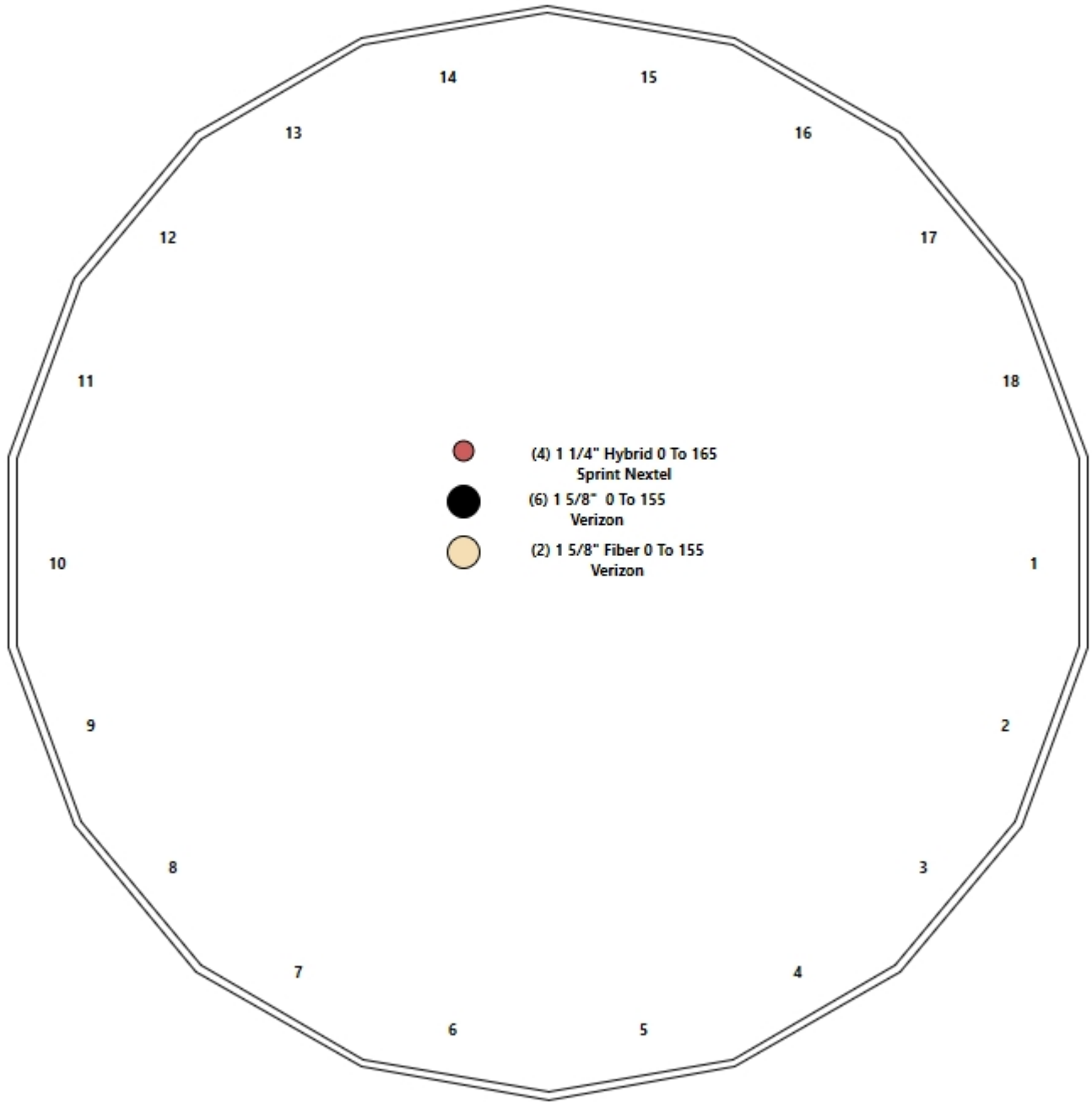
1.0D + 1.0W 60 mph Wind                      766.8              6.4              43.1

# Structure: CT03113-S-SBA - Coax Line Placement

**Type:** Monopole  
**Site Name:** North Chaplin  
**Height:** 175.00 (ft)

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## Shaft Properties

<b>Structure:</b> CT03113-S-SBA	<b>Code:</b> EIA/TIA-222-G	6/25/2018
<b>Site Name:</b> North Chaplin	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> C - Very Dense Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	48.000	0.4375	65		0.00	13,207
2	18	50.000	0.3750	70	Slip	84.00	9,891
3	18	30.000	0.3750	65	Slip	72.00	5,023
4	18	20.000	0.3125	65	Flange	0.00	2,385
5	18	45.000	0.2500	65	Slip	60.00	3,550
<b>Total Shaft Weight:</b>							<b>34,056</b>

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	52.84	48.00	72.77	25249.3	19.89	120.7	0.242857
2	55.29	41.00	65.36	24906.71	24.59	147.45	43.15	91.00	50.91	11769.1	18.88	115.0	0.242857
3	45.36	85.00	53.54	13686.62	19.92	120.95	38.07	115.00	44.87	8055.20	16.49	101.5	0.242857
4	38.07	115.0	37.45	6746.11	20.07	121.83	33.21	135.00	32.63	4463.27	17.33	106.2	0.242857
5	34.93	130.0	27.52	4180.88	23.22	139.71	24.00	175.00	18.84	1343.00	15.52	96.00	0.242857



## Load Summary

<b>Structure:</b> CT03113-S-SBA	<b>Code:</b> EIA/TIA-222-G	6/25/2018
<b>Site Name:</b> North Chaplin	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> C - Very Dense Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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### Discrete Appurtenances

No.	Elev (ft)	Description	Qty	No Ice			Ice			Hor. Ecc. (ft)	Vert Ecc (ft)
				Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor		
1	173.00	Low Profile Platform	1	1200.00	25.00	1.00	2616.23	53.325	1.00	0.00	0.00
2	165.00	Low Profile Platform	1	1311.00	20.00	1.00	2856.80	29.397	1.00	0.00	0.00
3	165.00	RFS APXVTM14-C-I20	3	56.00	6.34	0.79	287.27	7.872	0.79	0.00	0.00
4	165.00	Commscope NNVV-65B-R4	3	77.40	12.27	0.74	461.79	14.230	0.74	0.00	0.00
5	165.00	ALU 1900 MHz	3	60.00	2.77	0.67	172.31	4.478	0.67	0.00	0.00
6	165.00	ALU 800 MHz	6	53.00	2.49	0.67	152.56	4.030	0.67	0.00	0.00
7	165.00	ALU TD-RRH8x20-25	3	70.00	4.05	0.67	229.65	5.174	0.67	0.00	0.00
8	165.00	Site Pro PRK-1245L	1	466.00	9.50	1.00	903.90	22.891	1.00	0.00	0.00
9	165.00	Site Pro SFS-H-L	1	195.00	6.70	1.00	561.48	16.144	1.00	0.00	0.00
10	165.00	Site Pro SPTB	1	264.00	8.40	1.00	710.54	20.240	1.00	0.00	0.00
11	155.00	Antel LPA-80063/6CF	4	27.00	9.59	0.94	431.44	11.446	0.94	0.00	0.00
12	155.00	Antel LPA-80080/6CF	2	21.00	8.62	1.70	299.11	10.413	1.70	0.00	0.00
13	155.00	RFS FD9R6004/2C-3L Diplexer	6	3.00	0.31	0.67	13.39	0.821	0.67	0.00	0.00
14	155.00	Low Profile Platform	1	1500.00	22.00	1.00	4005.20	50.789	1.00	0.00	0.00
15	155.00	Commscope SBNHH-1D65B	6	50.71	8.05	0.83	337.45	9.820	0.83	0.00	0.00
16	155.00	Alcatel RRH2X60-1900 - RRH	3	43.00	1.87	0.67	126.68	2.434	0.67	0.00	0.00
17	155.00	Alcatel RRH2x60-700 - RRH	3	60.00	3.50	0.67	176.77	4.556	0.67	0.00	0.00
18	155.00	RFS DB-T1-6Z-8AB-0Z - DC SS	2	44.00	4.80	0.67	370.25	6.055	0.67	0.00	0.00
19	155.00	Alcatel RRH4X45 B66 - RRH	3	67.00	2.58	0.67	197.39	3.358	0.67	0.00	0.00
<b>Totals:</b>			<b>53</b>	<b>7,114.46</b>			<b>22,694.67</b>				

### Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
0.00	165.00	(4) 1 1/4" Hybrid	0.00	Inside
0.00	155.00	(6) 1 5/8" Coax	0.00	Inside
0.00	155.00	(2) 1 5/8" Fiber	0.00	Inside

## Shaft Section Properties

<b>Structure:</b> CT03113-S-SBA	<b>Code:</b> EIA/TIA-222-G	6/25/2018
<b>Site Name:</b> North Chaplin	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> C - Very Dense Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Increment Length:** 5 (ft)

Elev (ft)	Description	Thick (in)	Dia (in)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	Fpy (ksi)	S (in <sup>3</sup> )	Weight (lb)
0.00		0.4375	64.500	88.956	46124.8	24.59	147.43	72.5	1408.	0.0
5.00		0.4375	63.286	87.269	43551.3	24.10	144.65	73.1	1355.	1499.1
10.00		0.4375	62.071	85.583	41075.4	23.61	141.88	73.6	1303.	1470.4
15.00		0.4375	60.857	83.897	38695.2	23.12	139.10	74.2	1252.	1441.8
20.00		0.4375	59.643	82.211	36408.7	22.63	136.33	74.8	1202.	1413.1
25.00		0.4375	58.429	80.525	34214.2	22.14	133.55	75.4	1153.	1384.4
30.00		0.4375	57.214	78.839	32109.6	21.65	130.78	75.9	1105.	1355.7
35.00		0.4375	56.000	77.153	30093.2	21.16	128.00	76.5	1058.	1327.0
40.00		0.4375	54.786	75.467	28163.0	20.67	125.22	77.1	1012.	1298.3
41.00	Bot - Section 2	0.4375	54.543	75.129	27787.1	20.57	124.67	77.2	1003.	256.2
45.00		0.4375	53.571	73.780	26317.1	20.18	122.45	77.7	967.6	1895.2
48.00	Top - Section 1	0.3750	53.593	63.340	22664.6	23.79	142.91	0.0	0.0	1399.0
50.00		0.3750	53.107	62.762	22049.7	23.56	141.62	78.2	817.8	429.1
55.00		0.3750	51.893	61.317	20561.2	22.99	138.38	79.0	780.4	1055.5
60.00		0.3750	50.679	59.872	19141.3	22.42	135.14	79.7	743.9	1030.9
65.00		0.3750	49.464	58.426	17788.4	21.85	131.90	80.5	708.3	1006.4
70.00		0.3750	48.250	56.981	16500.7	21.28	128.67	81.2	673.6	981.8
75.00		0.3750	47.036	55.536	15276.7	20.71	125.43	82.0	639.7	957.2
80.00		0.3750	45.821	54.091	14114.8	20.13	122.19	82.7	606.7	932.6
85.00	Bot - Section 3	0.3750	44.607	52.645	13013.4	19.56	118.95	83.5	574.6	908.0
90.00		0.3750	43.393	51.200	11970.8	18.99	115.71	84.2	543.4	1782.0
91.00	Top - Section 2	0.3750	43.900	51.804	12399.2	19.23	117.07	0.0	0.0	350.5
95.00		0.3750	42.929	50.648	11587.3	18.77	114.48	79.3	531.6	697.2
100.00		0.3750	41.714	49.202	10623.4	18.20	111.24	80.0	501.6	849.4
105.00		0.3750	40.500	47.757	9714.5	17.63	108.00	80.7	472.4	824.8
110.00		0.3750	39.286	46.312	8859.0	17.06	104.76	81.3	444.2	800.2
115.00	Top - Section 3	0.3750	38.071	44.867	8055.2	16.49	101.52	82.0	416.7	775.6
115.00	Bot - Section 4	0.3125	38.071	37.451	6746.1	19.79	121.83	77.8	349.0	
120.00		0.3125	36.857	36.246	6116.0	19.39	117.94	78.6	326.8	626.9
125.00		0.3125	35.643	35.042	5526.4	18.70	114.06	79.4	305.4	606.4
130.00	Bot - Section 5	0.3125	34.429	33.838	4975.9	18.02	110.17	80.2	284.7	586.0
135.00	Top - Section 4	0.2500	33.714	26.553	3756.9	22.37	134.86	0.0	0.0	1025.4
140.00		0.2500	32.500	25.589	3362.6	21.51	130.00	76.1	203.8	443.6
145.00		0.2500	31.286	24.626	2996.9	20.66	125.14	77.1	188.7	427.2
150.00		0.2500	30.071	23.662	2658.7	19.80	120.29	78.1	174.1	410.8
155.00		0.2500	28.857	22.699	2347.0	18.94	115.43	79.1	160.2	394.4
160.00		0.2500	27.643	21.735	2060.6	18.09	110.57	80.1	146.8	378.0
165.00		0.2500	26.429	20.772	1798.5	17.23	105.71	81.1	134.0	361.6
170.00		0.2500	25.214	19.808	1559.7	16.37	100.86	82.1	121.8	345.2
173.00		0.2500	24.486	19.230	1427.1	15.86	97.94	82.5	114.8	199.3
175.00		0.2500	24.000	18.845	1343.0	15.52	96.00	82.5	110.2	129.6

**34056.0**

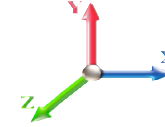
## Wind Loading - Shaft

<b>Structure:</b> CT03113-S-SBA	<b>Code:</b> EIA/TIA-222-G	6/25/2018
<b>Site Name:</b> North Chaplin	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> C - Very Dense Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Page:</b> 8
	<b>Struct Class:</b> II	



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

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



**Iterations** 23

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.70	17.366	19.10	461.21	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	17.366	19.10	452.53	0.650	0.000	5.00	27.033	17.57	537.1	0.0	1799.0
10.00		1.00	0.70	17.366	19.10	443.84	0.650	0.000	5.00	26.519	17.24	526.8	0.0	1764.5
15.00		1.00	0.70	17.366	19.10	435.16	0.650	0.000	5.00	26.005	16.90	516.6	0.0	1730.1
20.00		1.00	0.70	17.366	19.10	426.48	0.650	0.000	5.00	25.491	16.57	506.4	0.0	1695.7
25.00		1.00	0.70	17.366	19.10	417.79	0.650	0.000	5.00	24.978	16.24	496.2	0.0	1661.3
30.00		1.00	0.70	17.381	19.12	409.28	0.650	0.000	5.00	24.464	15.90	486.4	0.0	1626.8
35.00		1.00	0.73	18.163	19.98	409.52	0.650	0.000	5.00	23.950	15.57	497.7	0.0	1592.4
40.00		1.00	0.76	18.870	20.76	408.35	0.650	0.000	5.00	23.436	15.23	505.9	0.0	1558.0
41.00	Bot - Section 2	1.00	0.77	19.003	20.90	407.98	0.650	0.000	1.00	4.626	3.01	100.6	0.0	307.5
45.00		1.00	0.79	19.516	21.47	406.08	0.650	0.000	4.00	18.551	12.06	414.2	0.0	2274.3
48.00	Top - Section 1	1.00	0.80	19.879	21.87	404.27	0.650	0.000	3.00	13.697	8.90	311.5	0.0	1678.8
50.00		1.00	0.81	20.112	22.12	408.66	0.650	0.000	2.00	9.029	5.87	207.7	0.0	514.9
55.00		1.00	0.83	20.667	22.73	404.79	0.650	0.000	5.00	22.212	14.44	525.2	0.0	1266.6
60.00		1.00	0.85	21.187	23.31	400.27	0.650	0.000	5.00	21.699	14.10	525.9	0.0	1237.1
65.00		1.00	0.87	21.678	23.85	395.17	0.650	0.000	5.00	21.185	13.77	525.4	0.0	1207.6
70.00		1.00	0.89	22.142	24.36	389.57	0.650	0.000	5.00	20.671	13.44	523.6	0.0	1178.1
75.00		1.00	0.91	22.582	24.84	383.53	0.650	0.000	5.00	20.157	13.10	520.7	0.0	1148.6
80.00		1.00	0.93	23.003	25.30	377.09	0.650	0.000	5.00	19.644	12.77	516.9	0.0	1119.1
85.00	Bot - Section 3	1.00	0.94	23.404	25.74	370.29	0.650	0.000	5.00	19.130	12.43	512.2	0.0	1089.6
90.00		1.00	0.96	23.790	26.17	363.16	0.650	0.000	5.00	18.933	12.31	515.3	0.0	2138.4
91.00	Top - Section 2	1.00	0.96	23.865	26.25	361.70	0.650	0.000	1.00	3.725	2.42	101.7	0.0	420.6
95.00		1.00	0.97	24.160	26.58	362.06	0.650	0.000	4.00	14.695	9.55	406.1	0.0	836.7
100.00		1.00	0.99	24.517	26.97	354.41	0.650	0.000	5.00	17.906	11.64	502.2	0.0	1019.3
105.00		1.00	1.00	24.861	27.35	346.50	0.650	0.000	5.00	17.392	11.30	494.7	0.0	989.8
110.00		1.00	1.02	25.194	27.71	338.35	0.650	0.000	5.00	16.878	10.97	486.5	0.0	960.3
115.00	Top - Section 3	1.00	1.03	25.516	28.07	329.98	0.650	0.000	5.00	16.365	10.64	477.7	0.0	930.8
120.00		1.00	1.04	25.828	28.41	321.40	0.650	0.000	5.00	15.851	10.30	468.3	0.0	752.3
125.00		1.00	1.05	26.131	28.74	312.63	0.650	0.000	5.00	15.337	9.97	458.5	0.0	727.7
130.00	Bot - Section 5	1.00	1.07	26.425	29.07	303.68	0.650	0.000	5.00	14.823	9.64	448.1	0.0	703.1
135.00	Top - Section 4	1.00	1.08	26.712	29.38	294.55	0.650	0.000	5.00	14.521	9.44	443.7	0.0	1230.5
140.00		1.00	1.09	26.991	29.69	289.72	0.650	0.000	5.00	14.007	9.10	432.5	0.0	532.3
145.00		1.00	1.10	27.263	29.99	280.30	0.650	0.000	5.00	13.494	8.77	420.8	0.0	512.6
150.00		1.00	1.11	27.528	30.28	270.72	0.650	0.000	5.00	12.980	8.44	408.8	0.0	492.9
155.00	Appurtenance(s)	1.00	1.12	27.787	30.57	261.01	0.650	0.000	5.00	12.466	8.10	396.3	0.0	473.3
160.00		1.00	1.13	28.040	30.84	251.17	0.650	0.000	5.00	11.952	7.77	383.4	0.0	453.6
165.00	Appurtenance(s)	1.00	1.14	28.288	31.12	241.19	0.650	0.000	5.00	11.439	7.44	370.2	0.0	433.9
170.00		1.00	1.15	28.530	31.38	231.09	0.650	0.000	5.00	10.925	7.10	356.6	0.0	414.3
173.00	Appurtenance(s)	1.00	1.16	28.673	31.54	224.98	0.650	0.000	3.00	6.308	4.10	206.9	0.0	239.1
175.00		1.00	1.16	28.768	31.64	220.88	0.650	0.000	2.00	4.103	2.67	135.0	0.0	155.5
								<b>Totals:</b>		<b>175.00</b>		<b>16,670.5</b>		<b>40,867.2</b>

## Discrete Appurtenance Forces

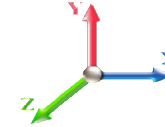
<b>Structure:</b> CT03113-S-SBA	<b>Code:</b> EIA/TIA-222-G	6/25/2018
<b>Site Name:</b> North Chaplin	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> C - Very Dense Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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

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



**Iterations** 23

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	173.00	Low Profile Platform	1	28.673	31.541	1.00	1.00	25.00	1440.00	0.000	0.000	1261.63	0.00	0.00
2	165.00	Site Pro SPTB	1	28.288	31.117	1.00	1.00	8.40	316.80	0.000	0.000	418.21	0.00	0.00
3	165.00	Site Pro SFS-H-L	1	28.288	31.117	1.00	1.00	6.70	234.00	0.000	0.000	333.57	0.00	0.00
4	165.00	Site Pro PRK-1245L	1	28.288	31.117	1.00	1.00	9.50	559.20	0.000	0.000	472.98	0.00	0.00
5	165.00	ALU TD-RRH8x20-25	3	28.288	31.117	0.54	0.80	6.51	252.00	0.000	0.000	324.23	0.00	0.00
6	165.00	ALU 800 MHz	6	28.288	31.117	0.54	0.80	8.01	381.60	0.000	0.000	398.69	0.00	0.00
7	165.00	ALU 1900 MHz	3	28.288	31.117	0.54	0.80	4.45	216.00	0.000	0.000	221.76	0.00	0.00
8	165.00	Commscope	3	28.288	31.117	0.59	0.80	21.79	278.64	0.000	0.000	1084.93	0.00	0.00
9	165.00	RFS APXVTM14-C-I20	3	28.288	31.117	0.63	0.80	12.02	201.60	0.000	0.000	598.47	0.00	0.00
10	165.00	Low Profile Platform	1	28.288	31.117	1.00	1.00	20.00	1573.20	0.000	0.000	995.74	0.00	0.00
11	155.00	Alcatel RRH4X45 B66 -	3	27.787	30.566	0.54	0.80	4.15	241.20	0.000	0.000	202.89	0.00	0.00
12	155.00	RFS DB-T1-6Z-8AB-OZ -	2	27.787	30.566	0.54	0.80	5.15	105.60	0.000	0.000	251.65	0.00	0.00
13	155.00	Alcatel RRH2x60-700 -	3	27.787	30.566	0.54	0.80	5.63	216.00	0.000	0.000	275.24	0.00	0.00
14	155.00	Alcatel RRH2X60-1900 -	3	27.787	30.566	0.54	0.80	3.01	154.80	0.000	0.000	147.06	0.00	0.00
15	155.00	Commscope	6	27.787	30.566	0.66	0.80	32.07	365.11	0.000	0.000	1568.46	0.00	0.00
16	155.00	Low Profile Platform	1	27.787	30.566	1.00	1.00	22.00	1800.00	0.000	0.000	1075.92	0.00	0.00
17	155.00	RFS FD9R6004/2C-3L	6	27.787	30.566	0.54	0.80	1.00	21.60	0.000	0.000	48.76	0.00	0.00
18	155.00	Antel LPA-80080/6CF	2	27.787	30.566	1.36	0.80	23.45	50.40	0.000	0.000	1146.66	0.00	0.00
19	155.00	Antel LPA-80063/6CF	4	27.787	30.566	0.75	0.80	28.85	129.60	0.000	0.000	1410.76	0.00	0.00
<b>Totals:</b>									<b>8,537.35</b>			<b>12,237.61</b>		

## Total Applied Force Summary

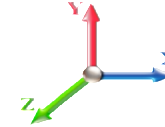
<b>Structure:</b> CT03113-S-SBA	<b>Code:</b> EIA/TIA-222-G	6/25/2018
<b>Site Name:</b> North Chaplin	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> C - Very Dense Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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

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



**Iterations** 23

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		537.06	1872.50	0.00	0.00
10.00		526.85	1838.07	0.00	0.00
15.00		516.64	1803.65	0.00	0.00
20.00		506.44	1769.22	0.00	0.00
25.00		496.23	1734.80	0.00	0.00
30.00		486.43	1700.37	0.00	0.00
35.00		497.66	1665.95	0.00	0.00
40.00		505.92	1631.52	0.00	0.00
41.00		100.56	322.17	0.00	0.00
45.00		414.16	2333.09	0.00	0.00
48.00		311.50	1722.97	0.00	0.00
50.00		207.74	544.33	0.00	0.00
55.00		525.18	1340.18	0.00	0.00
60.00		525.94	1310.67	0.00	0.00
65.00		525.37	1281.16	0.00	0.00
70.00		523.60	1251.66	0.00	0.00
75.00		520.75	1222.15	0.00	0.00
80.00		516.92	1192.64	0.00	0.00
85.00		512.20	1163.13	0.00	0.00
90.00		515.29	2211.94	0.00	0.00
91.00		101.70	435.31	0.00	0.00
95.00		406.15	895.51	0.00	0.00
100.00		502.21	1092.84	0.00	0.00
105.00		494.65	1063.33	0.00	0.00
110.00		486.46	1033.82	0.00	0.00
115.00		477.68	1004.32	0.00	0.00
120.00		468.35	825.86	0.00	0.00
125.00		458.48	801.27	0.00	0.00
130.00		448.12	776.68	0.00	0.00
135.00		443.74	1304.05	0.00	0.00
140.00		432.51	605.82	0.00	0.00
145.00		420.85	586.15	0.00	0.00
150.00		408.77	566.48	0.00	0.00
155.00	(30) attachments	6523.68	3631.12	0.00	0.00
160.00		383.41	476.50	0.00	0.00
165.00	(22) attachments	5218.76	4469.87	0.00	0.00
170.00		356.58	414.26	0.00	0.00
173.00	(1) attachments	1468.55	1679.11	0.00	0.00
175.00		135.02	155.47	0.00	0.00
	<b>Totals:</b>	<b>28,908.13</b>	<b>51,729.96</b>	<b>0.00</b>	<b>0.00</b>

## Calculated Forces

<b>Structure:</b> CT03113-S-SBA	<b>Code:</b> EIA/TIA-222-G	6/25/2018
<b>Site Name:</b> North Chaplin	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> C - Very Dense Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II

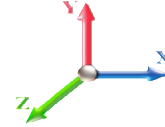


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**Load Case:** 1.2D + 1.6W 101 mph Wind

**Iterations** 23

**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	-51.70	-28.96	0.00	-3493.7	0.00	3493.72	5803.10	2901.55	15291.3	7657.05	0.00	0.000	0.000	0.465
5.00	-49.78	-28.51	0.00	-3348.9	0.00	3348.94	5738.32	2869.16	14832.1	7427.08	0.06	-0.106	0.000	0.460
10.00	-47.89	-28.07	0.00	-3206.3	0.00	3206.39	5671.78	2835.89	14374.9	7198.15	0.23	-0.213	0.000	0.454
15.00	-46.03	-27.63	0.00	-3066.0	0.00	3066.05	5603.50	2801.75	13920.1	6970.40	0.51	-0.321	0.000	0.448
20.00	-44.22	-27.20	0.00	-2927.9	0.00	2927.90	5533.47	2766.74	13467.8	6743.96	0.90	-0.431	0.000	0.442
25.00	-42.43	-26.77	0.00	-2791.9	0.00	2791.91	5461.70	2730.85	13018.5	6518.96	1.41	-0.543	0.000	0.436
30.00	-40.69	-26.35	0.00	-2658.0	0.00	2658.05	5388.18	2694.09	12572.3	6295.53	2.04	-0.656	0.000	0.430
35.00	-38.97	-25.91	0.00	-2526.3	0.00	2526.32	5312.91	2656.45	12129.5	6073.81	2.79	-0.771	0.000	0.423
40.00	-37.32	-25.42	0.00	-2396.7	0.00	2396.78	5235.89	2617.95	11690.4	5853.93	3.66	-0.888	0.000	0.417
41.00	-36.97	-25.36	0.00	-2371.3	0.00	2371.35	5220.28	2610.14	11603.1	5810.18	3.85	-0.912	0.000	0.415
45.00	-34.61	-24.95	0.00	-2269.9	0.00	2269.92	5157.13	2578.57	11255.3	5636.01	4.66	-1.007	0.000	0.410
48.00	-32.87	-24.65	0.00	-2195.0	0.00	2195.06	4442.55	2221.27	9722.51	4868.48	5.31	-1.079	0.000	0.458
50.00	-32.29	-24.48	0.00	-2145.7	0.00	2145.77	4418.96	2209.48	9582.00	4798.12	5.78	-1.128	0.000	0.455
55.00	-30.90	-24.00	0.00	-2023.3	0.00	2023.37	4358.62	2179.31	9231.98	4622.85	7.03	-1.263	0.000	0.445
60.00	-29.55	-23.51	0.00	-1903.3	0.00	1903.37	4296.32	2148.16	8884.00	4448.60	8.43	-1.398	0.000	0.435
65.00	-28.22	-23.02	0.00	-1785.8	0.00	1785.80	4232.08	2116.04	8538.34	4275.52	9.96	-1.535	0.000	0.424
70.00	-26.93	-22.53	0.00	-1670.6	0.00	1670.68	4165.88	2082.94	8195.31	4103.74	11.65	-1.674	0.000	0.414
75.00	-25.67	-22.04	0.00	-1558.0	0.00	1558.03	4097.73	2048.86	7855.19	3933.43	13.47	-1.813	0.000	0.402
80.00	-24.45	-21.54	0.00	-1447.8	0.00	1447.85	4027.63	2013.81	7518.28	3764.73	15.45	-1.953	0.000	0.391
85.00	-23.25	-21.04	0.00	-1340.1	0.00	1340.15	3955.57	1977.79	7184.87	3597.77	17.57	-2.093	0.000	0.378
90.00	-21.03	-20.48	0.00	-1234.9	0.00	1234.93	3881.56	1940.78	6855.26	3432.73	19.84	-2.234	0.000	0.365
91.00	-20.57	-20.38	0.00	-1214.4	0.00	1214.45	3673.04	1836.52	6564.12	3286.94	20.31	-2.263	0.000	0.375
95.00	-19.65	-19.98	0.00	-1132.9	0.00	1132.92	3615.55	1807.77	6315.94	3162.67	22.25	-2.377	0.000	0.364
100.00	-18.54	-19.48	0.00	-1033.0	0.00	1033.00	3542.12	1771.06	6009.55	3009.24	24.81	-2.510	0.000	0.349
105.00	-17.45	-18.98	0.00	-935.61	0.00	935.61	3466.93	1733.47	5707.67	2858.08	27.51	-2.641	0.000	0.333
110.00	-16.40	-18.48	0.00	-840.73	0.00	840.73	3390.01	1695.00	5410.56	2709.30	30.35	-2.771	0.000	0.315
115.00	-15.38	-17.99	0.00	-748.33	0.00	748.33	3311.33	1655.67	5118.49	2563.05	33.32	-2.899	0.000	0.297
115.00	-15.38	-17.99	0.00	-748.33	0.00	748.33	2622.08	1311.04	4066.54	2036.29	33.32	-2.899	0.000	0.374
120.00	-14.54	-17.51	0.00	-658.40	0.00	658.40	2564.05	1282.02	3847.60	1926.66	36.42	-3.023	0.000	0.348
125.00	-13.72	-17.04	0.00	-570.86	0.00	570.86	2504.27	1252.13	3631.97	1818.69	39.66	-3.166	0.000	0.320
130.00	-12.94	-16.58	0.00	-485.65	0.00	485.65	2442.74	1221.37	3419.91	1712.49	43.05	-3.302	0.000	0.289
135.00	-11.63	-16.09	0.00	-402.75	0.00	402.75	1794.51	897.26	2468.50	1236.09	46.58	-3.429	0.000	0.333
140.00	-11.02	-15.64	0.00	-322.32	0.00	322.32	1752.60	876.30	2322.71	1163.08	50.23	-3.545	0.000	0.284
145.00	-10.43	-15.20	0.00	-244.12	0.00	244.12	1708.93	854.47	2178.91	1091.08	54.01	-3.664	0.000	0.230
150.00	-9.87	-14.77	0.00	-168.11	0.00	168.11	1663.52	831.76	2037.37	1020.20	57.90	-3.762	0.000	0.171
155.00	-6.67	-8.03	0.00	-94.25	0.00	94.25	1616.36	808.18	1898.33	950.58	61.88	-3.832	0.000	0.103
160.00	-6.22	-7.62	0.00	-54.10	0.00	54.10	1567.46	783.73	1762.08	882.35	65.92	-3.877	0.000	0.065
165.00	-2.11	-2.11	0.00	-16.01	0.00	16.01	1516.81	758.40	1628.87	815.65	69.99	-3.902	0.000	0.021
170.00	-1.72	-1.72	0.00	-5.47	0.00	5.47	1464.41	732.20	1498.97	750.60	74.08	-3.910	0.000	0.008
173.00	-0.15	-0.15	0.00	-0.29	0.00	0.29	1428.72	714.36	1419.33	710.72	76.54	-3.912	0.000	0.001
175.00	0.00	-0.13	0.00	0.00	0.00	0.00	1400.09	700.04	1362.73	682.38	78.17	-3.912	0.000	0.000

## Wind Loading - Shaft

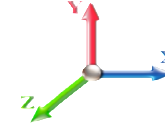
<b>Structure:</b> CT03113-S-SBA	<b>Code:</b> EIA/TIA-222-G	6/25/2018
<b>Site Name:</b> North Chaplin	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> C - Very Dense Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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

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



**Iterations** 23

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.70	17.366	19.10	461.21	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	17.366	19.10	452.53	0.650	0.000	5.00	27.033	17.57	537.1	0.0	1349.2
10.00		1.00	0.70	17.366	19.10	443.84	0.650	0.000	5.00	26.519	17.24	526.8	0.0	1323.4
15.00		1.00	0.70	17.366	19.10	435.16	0.650	0.000	5.00	26.005	16.90	516.6	0.0	1297.6
20.00		1.00	0.70	17.366	19.10	426.48	0.650	0.000	5.00	25.491	16.57	506.4	0.0	1271.8
25.00		1.00	0.70	17.366	19.10	417.79	0.650	0.000	5.00	24.978	16.24	496.2	0.0	1245.9
30.00		1.00	0.70	17.381	19.12	409.28	0.650	0.000	5.00	24.464	15.90	486.4	0.0	1220.1
35.00		1.00	0.73	18.163	19.98	409.52	0.650	0.000	5.00	23.950	15.57	497.7	0.0	1194.3
40.00		1.00	0.76	18.870	20.76	408.35	0.650	0.000	5.00	23.436	15.23	505.9	0.0	1168.5
41.00	Bot - Section 2	1.00	0.77	19.003	20.90	407.98	0.650	0.000	1.00	4.626	3.01	100.6	0.0	230.6
45.00		1.00	0.79	19.516	21.47	406.08	0.650	0.000	4.00	18.551	12.06	414.2	0.0	1705.7
48.00	Top - Section 1	1.00	0.80	19.879	21.87	404.27	0.650	0.000	3.00	13.697	8.90	311.5	0.0	1259.1
50.00		1.00	0.81	20.112	22.12	408.66	0.650	0.000	2.00	9.029	5.87	207.7	0.0	386.2
55.00		1.00	0.83	20.667	22.73	404.79	0.650	0.000	5.00	22.212	14.44	525.2	0.0	950.0
60.00		1.00	0.85	21.187	23.31	400.27	0.650	0.000	5.00	21.699	14.10	525.9	0.0	927.9
65.00		1.00	0.87	21.678	23.85	395.17	0.650	0.000	5.00	21.185	13.77	525.4	0.0	905.7
70.00		1.00	0.89	22.142	24.36	389.57	0.650	0.000	5.00	20.671	13.44	523.6	0.0	883.6
75.00		1.00	0.91	22.582	24.84	383.53	0.650	0.000	5.00	20.157	13.10	520.7	0.0	861.5
80.00		1.00	0.93	23.003	25.30	377.09	0.650	0.000	5.00	19.644	12.77	516.9	0.0	839.3
85.00	Bot - Section 3	1.00	0.94	23.404	25.74	370.29	0.650	0.000	5.00	19.130	12.43	512.2	0.0	817.2
90.00		1.00	0.96	23.790	26.17	363.16	0.650	0.000	5.00	18.933	12.31	515.3	0.0	1603.8
91.00	Top - Section 2	1.00	0.96	23.865	26.25	361.70	0.650	0.000	1.00	3.725	2.42	101.7	0.0	315.4
95.00		1.00	0.97	24.160	26.58	362.06	0.650	0.000	4.00	14.695	9.55	406.1	0.0	627.5
100.00		1.00	0.99	24.517	26.97	354.41	0.650	0.000	5.00	17.906	11.64	502.2	0.0	764.5
105.00		1.00	1.00	24.861	27.35	346.50	0.650	0.000	5.00	17.392	11.30	494.7	0.0	742.3
110.00		1.00	1.02	25.194	27.71	338.35	0.650	0.000	5.00	16.878	10.97	486.5	0.0	720.2
115.00	Top - Section 3	1.00	1.03	25.516	28.07	329.98	0.650	0.000	5.00	16.365	10.64	477.7	0.0	698.1
120.00		1.00	1.04	25.828	28.41	321.40	0.650	0.000	5.00	15.851	10.30	468.3	0.0	564.2
125.00		1.00	1.05	26.131	28.74	312.63	0.650	0.000	5.00	15.337	9.97	458.5	0.0	545.8
130.00	Bot - Section 5	1.00	1.07	26.425	29.07	303.68	0.650	0.000	5.00	14.823	9.64	448.1	0.0	527.4
135.00	Top - Section 4	1.00	1.08	26.712	29.38	294.55	0.650	0.000	5.00	14.521	9.44	443.7	0.0	922.9
140.00		1.00	1.09	26.991	29.69	289.72	0.650	0.000	5.00	14.007	9.10	432.5	0.0	399.2
145.00		1.00	1.10	27.263	29.99	280.30	0.650	0.000	5.00	13.494	8.77	420.8	0.0	384.5
150.00		1.00	1.11	27.528	30.28	270.72	0.650	0.000	5.00	12.980	8.44	408.8	0.0	369.7
155.00	Appurtenance(s)	1.00	1.12	27.787	30.57	261.01	0.650	0.000	5.00	12.466	8.10	396.3	0.0	355.0
160.00		1.00	1.13	28.040	30.84	251.17	0.650	0.000	5.00	11.952	7.77	383.4	0.0	340.2
165.00	Appurtenance(s)	1.00	1.14	28.288	31.12	241.19	0.650	0.000	5.00	11.439	7.44	370.2	0.0	325.4
170.00		1.00	1.15	28.530	31.38	231.09	0.650	0.000	5.00	10.925	7.10	356.6	0.0	310.7
173.00	Appurtenance(s)	1.00	1.16	28.673	31.54	224.98	0.650	0.000	3.00	6.308	4.10	206.9	0.0	179.3
175.00		1.00	1.16	28.768	31.64	220.88	0.650	0.000	2.00	4.103	2.67	135.0	0.0	116.6
<b>Totals:</b>									<b>175.00</b>			<b>16,670.5</b>		<b>30,650.4</b>

## Discrete Appurtenance Forces

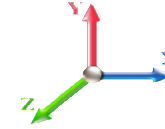
<b>Structure:</b> CT03113-S-SBA	<b>Code:</b> EIA/TIA-222-G	6/25/2018
<b>Site Name:</b> North Chaplin	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> C - Very Dense Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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

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



**Iterations** 23

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	173.00	Low Profile Platform	1	28.673	31.541	1.00	1.00	25.00	1080.00	0.000	0.000	1261.63	0.00	0.00
2	165.00	Site Pro SPTB	1	28.288	31.117	1.00	1.00	8.40	237.60	0.000	0.000	418.21	0.00	0.00
3	165.00	Site Pro SFS-H-L	1	28.288	31.117	1.00	1.00	6.70	175.50	0.000	0.000	333.57	0.00	0.00
4	165.00	Site Pro PRK-1245L	1	28.288	31.117	1.00	1.00	9.50	419.40	0.000	0.000	472.98	0.00	0.00
5	165.00	ALU TD-RRH8x20-25	3	28.288	31.117	0.54	0.80	6.51	189.00	0.000	0.000	324.23	0.00	0.00
6	165.00	ALU 800 MHz	6	28.288	31.117	0.54	0.80	8.01	286.20	0.000	0.000	398.69	0.00	0.00
7	165.00	ALU 1900 MHz	3	28.288	31.117	0.54	0.80	4.45	162.00	0.000	0.000	221.76	0.00	0.00
8	165.00	Commscope	3	28.288	31.117	0.59	0.80	21.79	208.98	0.000	0.000	1084.93	0.00	0.00
9	165.00	RFS APXVTM14-C-I20	3	28.288	31.117	0.63	0.80	12.02	151.20	0.000	0.000	598.47	0.00	0.00
10	165.00	Low Profile Platform	1	28.288	31.117	1.00	1.00	20.00	1179.90	0.000	0.000	995.74	0.00	0.00
11	155.00	Alcatel RRH4X45 B66 -	3	27.787	30.566	0.54	0.80	4.15	180.90	0.000	0.000	202.89	0.00	0.00
12	155.00	RFS DB-T1-6Z-8AB-OZ -	2	27.787	30.566	0.54	0.80	5.15	79.20	0.000	0.000	251.65	0.00	0.00
13	155.00	Alcatel RRH2x60-700 -	3	27.787	30.566	0.54	0.80	5.63	162.00	0.000	0.000	275.24	0.00	0.00
14	155.00	Alcatel RRH2X60-1900 -	3	27.787	30.566	0.54	0.80	3.01	116.10	0.000	0.000	147.06	0.00	0.00
15	155.00	Commscope	6	27.787	30.566	0.66	0.80	32.07	273.83	0.000	0.000	1568.46	0.00	0.00
16	155.00	Low Profile Platform	1	27.787	30.566	1.00	1.00	22.00	1350.00	0.000	0.000	1075.92	0.00	0.00
17	155.00	RFS FD9R6004/2C-3L	6	27.787	30.566	0.54	0.80	1.00	16.20	0.000	0.000	48.76	0.00	0.00
18	155.00	Antel LPA-80080/6CF	2	27.787	30.566	1.36	0.80	23.45	37.80	0.000	0.000	1146.66	0.00	0.00
19	155.00	Antel LPA-80063/6CF	4	27.787	30.566	0.75	0.80	28.85	97.20	0.000	0.000	1410.76	0.00	0.00
<b>Totals:</b>									<b>6,403.01</b>			<b>12,237.61</b>		



## Total Applied Force Summary

<b>Structure:</b> CT03113-S-SBA	<b>Code:</b> EIA/TIA-222-G	6/25/2018
<b>Site Name:</b> North Chaplin	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> C - Very Dense Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II

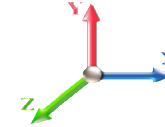


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**Load Case:** 0.9D + 1.6W 101 mph Wind

**Dead Load Factor** 0.90

**Wind Load Factor** 1.60



**Iterations** 23

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		537.06	1404.37	0.00	0.00
10.00		526.85	1378.56	0.00	0.00
15.00		516.64	1352.74	0.00	0.00
20.00		506.44	1326.92	0.00	0.00
25.00		496.23	1301.10	0.00	0.00
30.00		486.43	1275.28	0.00	0.00
35.00		497.66	1249.46	0.00	0.00
40.00		505.92	1223.64	0.00	0.00
41.00		100.56	241.63	0.00	0.00
45.00		414.16	1749.82	0.00	0.00
48.00		311.50	1292.22	0.00	0.00
50.00		207.74	408.25	0.00	0.00
55.00		525.18	1005.13	0.00	0.00
60.00		525.94	983.00	0.00	0.00
65.00		525.37	960.87	0.00	0.00
70.00		523.60	938.74	0.00	0.00
75.00		520.75	916.61	0.00	0.00
80.00		516.92	894.48	0.00	0.00
85.00		512.20	872.35	0.00	0.00
90.00		515.29	1658.96	0.00	0.00
91.00		101.70	326.48	0.00	0.00
95.00		406.15	671.64	0.00	0.00
100.00		502.21	819.63	0.00	0.00
105.00		494.65	797.50	0.00	0.00
110.00		486.46	775.37	0.00	0.00
115.00		477.68	753.24	0.00	0.00
120.00		468.35	619.40	0.00	0.00
125.00		458.48	600.95	0.00	0.00
130.00		448.12	582.51	0.00	0.00
135.00		443.74	978.04	0.00	0.00
140.00		432.51	454.37	0.00	0.00
145.00		420.85	439.61	0.00	0.00
150.00		408.77	424.86	0.00	0.00
155.00	(30) attachments	6523.68	2723.34	0.00	0.00
160.00		383.41	357.37	0.00	0.00
165.00	(22) attachments	5218.76	3352.40	0.00	0.00
170.00		356.58	310.69	0.00	0.00
173.00	(1) attachments	1468.55	1259.33	0.00	0.00
175.00		135.02	116.61	0.00	0.00
	<b>Totals:</b>	<b>28,908.13</b>	<b>38,797.47</b>	<b>0.00</b>	<b>0.00</b>

## Calculated Forces

<b>Structure:</b> CT03113-S-SBA	<b>Code:</b> EIA/TIA-222-G	6/25/2018
<b>Site Name:</b> North Chaplin	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> C - Very Dense Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II

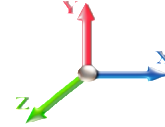


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**Load Case:** 0.9D + 1.6W 101 mph Wind

**Iterations** 23

**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	-38.77	-28.94	0.00	-3465.1	0.00	3465.15	5803.10	2901.55	15291.3	7657.05	0.00	0.000	0.000	0.459
5.00	-37.31	-28.47	0.00	-3320.4	0.00	3320.43	5738.32	2869.16	14832.1	7427.08	0.06	-0.105	0.000	0.454
10.00	-35.88	-28.01	0.00	-3178.0	0.00	3178.06	5671.78	2835.89	14374.9	7198.15	0.22	-0.211	0.000	0.448
15.00	-34.48	-27.55	0.00	-3038.0	0.00	3038.01	5603.50	2801.75	13920.1	6970.40	0.50	-0.318	0.000	0.442
20.00	-33.11	-27.10	0.00	-2900.2	0.00	2900.25	5533.47	2766.74	13467.8	6743.96	0.89	-0.428	0.000	0.436
25.00	-31.76	-26.66	0.00	-2764.7	0.00	2764.74	5461.70	2730.85	13018.5	6518.96	1.40	-0.538	0.000	0.430
30.00	-30.44	-26.22	0.00	-2631.4	0.00	2631.46	5388.18	2694.09	12572.3	6295.53	2.03	-0.650	0.000	0.424
35.00	-29.14	-25.76	0.00	-2500.3	0.00	2500.38	5312.91	2656.45	12129.5	6073.81	2.77	-0.764	0.000	0.417
40.00	-27.90	-25.27	0.00	-2371.5	0.00	2371.57	5235.89	2617.95	11690.4	5853.93	3.63	-0.879	0.000	0.411
41.00	-27.63	-25.20	0.00	-2346.3	0.00	2346.30	5220.28	2610.14	11603.1	5810.18	3.82	-0.903	0.000	0.409
45.00	-25.85	-24.79	0.00	-2245.5	0.00	2245.52	5157.13	2578.57	11255.3	5636.01	4.62	-0.997	0.000	0.404
48.00	-24.54	-24.48	0.00	-2171.1	0.00	2171.15	4442.55	2221.27	9722.51	4868.48	5.27	-1.069	0.000	0.452
50.00	-24.10	-24.30	0.00	-2122.1	0.00	2122.19	4418.96	2209.48	9582.00	4798.12	5.72	-1.117	0.000	0.448
55.00	-23.05	-23.81	0.00	-2000.6	0.00	2000.67	4358.62	2179.31	9231.98	4622.85	6.97	-1.250	0.000	0.438
60.00	-22.02	-23.32	0.00	-1881.6	0.00	1881.61	4296.32	2148.16	8884.00	4448.60	8.35	-1.384	0.000	0.428
65.00	-21.02	-22.82	0.00	-1765.0	0.00	1765.03	4232.08	2116.04	8538.34	4275.52	9.87	-1.520	0.000	0.418
70.00	-20.04	-22.31	0.00	-1650.9	0.00	1650.95	4165.88	2082.94	8195.31	4103.74	11.53	-1.656	0.000	0.407
75.00	-19.09	-21.81	0.00	-1539.3	0.00	1539.38	4097.73	2048.86	7855.19	3933.43	13.34	-1.794	0.000	0.396
80.00	-18.16	-21.31	0.00	-1430.3	0.00	1430.32	4027.63	2013.81	7518.28	3764.73	15.30	-1.932	0.000	0.385
85.00	-17.26	-20.81	0.00	-1323.7	0.00	1323.77	3955.57	1977.79	7184.87	3597.77	17.40	-2.071	0.000	0.372
90.00	-15.59	-20.26	0.00	-1219.7	0.00	1219.72	3881.56	1940.78	6855.26	3432.73	19.64	-2.210	0.000	0.359
91.00	-15.24	-20.16	0.00	-1199.4	0.00	1199.46	3673.04	1836.52	6564.12	3286.94	20.10	-2.239	0.000	0.369
95.00	-14.54	-19.76	0.00	-1118.8	0.00	1118.82	3615.55	1807.77	6315.94	3162.67	22.03	-2.351	0.000	0.358
100.00	-13.70	-19.25	0.00	-1020.0	0.00	1020.03	3542.12	1771.06	6009.55	3009.24	24.56	-2.482	0.000	0.343
105.00	-12.89	-18.75	0.00	-923.76	0.00	923.76	3466.93	1733.47	5707.67	2858.08	27.23	-2.612	0.000	0.327
110.00	-12.09	-18.26	0.00	-829.99	0.00	829.99	3390.01	1695.00	5410.56	2709.30	30.03	-2.741	0.000	0.310
115.00	-11.33	-17.77	0.00	-738.70	0.00	738.70	3311.33	1655.67	5118.49	2563.05	32.97	-2.867	0.000	0.292
115.00	-11.33	-17.77	0.00	-738.70	0.00	738.70	2622.08	1311.04	4066.54	2036.29	32.97	-2.867	0.000	0.367
120.00	-10.69	-17.29	0.00	-649.86	0.00	649.86	2564.05	1282.02	3847.60	1926.66	36.04	-2.989	0.000	0.342
125.00	-10.08	-16.83	0.00	-563.39	0.00	563.39	2504.27	1252.13	3631.97	1818.69	39.25	-3.130	0.000	0.314
130.00	-9.48	-16.37	0.00	-479.25	0.00	479.25	2442.74	1221.37	3419.91	1712.49	42.60	-3.265	0.000	0.284
135.00	-8.50	-15.89	0.00	-397.40	0.00	397.40	1794.51	897.26	2468.50	1236.09	46.08	-3.390	0.000	0.327
140.00	-8.04	-15.45	0.00	-317.96	0.00	317.96	1752.60	876.30	2322.71	1163.08	49.70	-3.504	0.000	0.278
145.00	-7.60	-15.01	0.00	-240.73	0.00	240.73	1708.93	854.47	2178.91	1091.08	53.43	-3.622	0.000	0.225
150.00	-7.18	-14.59	0.00	-165.67	0.00	165.67	1663.52	831.76	2037.37	1020.20	57.28	-3.718	0.000	0.167
155.00	-4.88	-7.90	0.00	-92.73	0.00	92.73	1616.36	808.18	1898.33	950.58	61.21	-3.788	0.000	0.101
160.00	-4.55	-7.50	0.00	-53.21	0.00	53.21	1567.46	783.73	1762.08	882.35	65.20	-3.832	0.000	0.063
165.00	-1.55	-2.07	0.00	-15.71	0.00	15.71	1516.81	758.40	1628.87	815.65	69.22	-3.856	0.000	0.020
170.00	-1.26	-1.69	0.00	-5.36	0.00	5.36	1464.41	732.20	1498.97	750.60	73.26	-3.864	0.000	0.008
173.00	-0.11	-0.14	0.00	-0.29	0.00	0.29	1428.72	714.36	1419.33	710.72	75.69	-3.865	0.000	0.000
175.00	0.00	-0.13	0.00	0.00	0.00	0.00	1400.09	700.04	1362.73	682.38	77.31	-3.866	0.000	0.000

## Wind Loading - Shaft

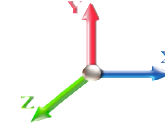
<b>Structure:</b> CT03113-S-SBA	<b>Code:</b> EIA/TIA-222-G	6/25/2018
<b>Site Name:</b> North Chaplin	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> C - Very Dense Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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

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



**Iterations** 22

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.70	4.256	4.68	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	4.256	4.68	0.00	1.200	1.656	5.00	28.413	34.10	159.6	673.7	2472.7
10.00		1.00	0.70	4.256	4.68	0.00	1.200	1.775	5.00	27.998	33.60	157.3	709.8	2474.4
15.00		1.00	0.70	4.256	4.68	0.00	1.200	1.848	5.00	27.546	33.05	154.7	726.0	2456.1
20.00		1.00	0.70	4.256	4.68	0.00	1.200	1.902	5.00	27.077	32.49	152.1	733.3	2429.0
25.00		1.00	0.70	4.256	4.68	0.00	1.200	1.945	5.00	26.599	31.92	149.4	735.6	2396.9
30.00		1.00	0.70	4.260	4.69	0.00	1.200	1.981	5.00	26.115	31.34	146.8	734.5	2361.3
35.00		1.00	0.73	4.451	4.90	0.00	1.200	2.012	5.00	25.627	30.75	150.6	731.0	2323.4
40.00		1.00	0.76	4.625	5.09	0.00	1.200	2.039	5.00	25.135	30.16	153.4	725.6	2283.6
41.00	Bot - Section 2	1.00	0.77	4.657	5.12	0.00	1.200	2.044	1.00	4.966	5.96	30.5	144.9	452.3
45.00		1.00	0.79	4.783	5.26	0.00	1.200	2.063	4.00	19.926	23.91	125.8	582.8	2857.1
48.00	Top - Section 1	1.00	0.80	4.872	5.36	0.00	1.200	2.076	3.00	14.736	17.68	94.8	434.4	2113.2
50.00		1.00	0.81	4.929	5.42	0.00	1.200	2.085	2.00	9.724	11.67	63.3	288.3	803.2
55.00		1.00	0.83	5.065	5.57	0.00	1.200	2.105	5.00	23.966	28.76	160.2	711.8	1978.5
60.00		1.00	0.85	5.193	5.71	0.00	1.200	2.123	5.00	23.468	28.16	160.9	702.1	1939.3
65.00		1.00	0.87	5.313	5.84	0.00	1.200	2.140	5.00	22.969	27.56	161.1	691.7	1899.3
70.00		1.00	0.89	5.426	5.97	0.00	1.200	2.156	5.00	22.468	26.96	160.9	680.7	1858.8
75.00		1.00	0.91	5.534	6.09	0.00	1.200	2.171	5.00	21.967	26.36	160.5	669.0	1817.7
80.00		1.00	0.93	5.637	6.20	0.00	1.200	2.185	5.00	21.465	25.76	159.7	656.9	1776.0
85.00	Bot - Section 3	1.00	0.94	5.736	6.31	0.00	1.200	2.198	5.00	20.962	25.15	158.7	644.4	1734.0
90.00		1.00	0.96	5.830	6.41	0.00	1.200	2.211	5.00	20.776	24.93	159.9	641.8	2780.2
91.00	Top - Section 2	1.00	0.96	5.849	6.43	0.00	1.200	2.214	1.00	4.094	4.91	31.6	127.8	548.4
95.00		1.00	0.97	5.921	6.51	0.00	1.200	2.223	4.00	16.177	19.41	126.4	502.8	1339.5
100.00		1.00	0.99	6.008	6.61	0.00	1.200	2.234	5.00	19.768	23.72	156.8	614.9	1634.2
105.00		1.00	1.00	6.093	6.70	0.00	1.200	2.245	5.00	19.263	23.12	154.9	601.0	1590.8
110.00		1.00	1.02	6.174	6.79	0.00	1.200	2.256	5.00	18.758	22.51	152.9	586.8	1547.1
115.00	Top - Section 3	1.00	1.03	6.253	6.88	0.00	1.200	2.266	5.00	18.253	21.90	150.7	572.3	1503.1
120.00		1.00	1.04	6.330	6.96	0.00	1.200	2.276	5.00	17.747	21.30	148.3	557.6	1309.9
125.00		1.00	1.05	6.404	7.04	0.00	1.200	2.285	5.00	17.241	20.69	145.7	542.6	1270.3
130.00	Bot - Section 5	1.00	1.07	6.476	7.12	0.00	1.200	2.294	5.00	16.735	20.08	143.1	527.4	1230.5
135.00	Top - Section 4	1.00	1.08	6.546	7.20	0.00	1.200	2.303	5.00	16.440	19.73	142.1	519.2	1749.7
140.00		1.00	1.09	6.615	7.28	0.00	1.200	2.311	5.00	15.933	19.12	139.1	503.6	1035.9
145.00		1.00	1.10	6.681	7.35	0.00	1.200	2.319	5.00	15.426	18.51	136.1	487.9	1000.5
150.00		1.00	1.11	6.746	7.42	0.00	1.200	2.327	5.00	14.919	17.90	132.9	471.9	964.9
155.00	Appurtenance(s)	1.00	1.12	6.810	7.49	0.00	1.200	2.335	5.00	14.412	17.29	129.5	455.8	929.1
160.00		1.00	1.13	6.872	7.56	0.00	1.200	2.342	5.00	13.904	16.68	126.1	439.6	893.2
165.00	Appurtenance(s)	1.00	1.14	6.933	7.63	0.00	1.200	2.349	5.00	13.396	16.08	122.6	423.1	857.1
170.00		1.00	1.15	6.992	7.69	0.00	1.200	2.356	5.00	12.888	15.47	119.0	406.6	820.8
173.00	Appurtenance(s)	1.00	1.16	7.027	7.73	0.00	1.200	2.360	3.00	7.489	8.99	69.5	237.9	477.1
175.00		1.00	1.16	7.050	7.76	0.00	1.200	2.363	2.00	4.891	5.87	45.5	155.9	311.4
<b>Totals:</b>								<b>175.00</b>				<b>5,193.0</b>		<b>62,220.4</b>

## Discrete Appurtenance Forces

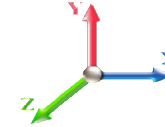
<b>Structure:</b> CT03113-S-SBA	<b>Code:</b> EIA/TIA-222-G	6/25/2018
<b>Site Name:</b> North Chaplin	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> C - Very Dense Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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

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



**Iterations** 22

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	173.00	Low Profile Platform	1	7.027	7.730	1.00	1.00	53.32	2556.23	0.000	0.000	412.19	0.00	0.00
2	165.00	Site Pro SPTB	1	6.933	7.626	1.00	1.00	20.24	777.34	0.000	0.000	154.35	0.00	0.00
3	165.00	Site Pro SFS-H-L	1	6.933	7.626	1.00	1.00	16.14	464.48	0.000	0.000	123.11	0.00	0.00
4	165.00	Site Pro PRK-1245L	1	6.933	7.626	1.00	1.00	22.89	903.10	0.000	0.000	174.56	0.00	0.00
5	165.00	ALU TD-RRH8x20-25	3	6.933	7.626	0.54	0.80	8.32	730.96	0.000	0.000	63.44	0.00	0.00
6	165.00	ALU 800 MHz	6	6.933	7.626	0.54	0.80	12.96	852.35	0.000	0.000	98.83	0.00	0.00
7	165.00	ALU 1900 MHz	3	6.933	7.626	0.54	0.80	7.20	481.24	0.000	0.000	54.91	0.00	0.00
8	165.00	Commscope	3	6.933	7.626	0.59	0.80	25.27	1234.41	0.000	0.000	192.73	0.00	0.00
9	165.00	RFS APXVTM14-C-I20	3	6.933	7.626	0.63	0.80	14.93	895.41	0.000	0.000	113.82	0.00	0.00
10	165.00	Low Profile Platform	1	6.933	7.626	1.00	1.00	29.40	2790.00	0.000	0.000	224.18	0.00	0.00
11	155.00	Alcatel RRH4X45 B66 -	3	6.810	7.491	0.54	0.80	5.40	593.07	0.000	0.000	40.45	0.00	0.00
12	155.00	RFS DB-T1-6Z-8AB-OZ -	2	6.810	7.491	0.54	0.80	6.49	743.89	0.000	0.000	48.62	0.00	0.00
13	155.00	Alcatel RRH2x60-700 -	3	6.810	7.491	0.54	0.80	7.33	506.00	0.000	0.000	54.88	0.00	0.00
14	155.00	Alcatel RRH2X60-1900 -	3	6.810	7.491	0.54	0.80	3.91	294.55	0.000	0.000	29.32	0.00	0.00
15	155.00	Commscope	6	6.810	7.491	0.66	0.80	39.12	2085.58	0.000	0.000	293.05	0.00	0.00
16	155.00	Low Profile Platform	1	6.810	7.491	1.00	1.00	50.79	4040.20	0.000	0.000	380.46	0.00	0.00
17	155.00	RFS FD9R6004/2C-3L	6	6.810	7.491	0.54	0.80	2.64	69.54	0.000	0.000	19.77	0.00	0.00
18	155.00	Antel LPA-80080/6CF	2	6.810	7.491	1.36	0.80	28.32	606.63	0.000	0.000	212.18	0.00	0.00
19	155.00	Antel LPA-80063/6CF	4	6.810	7.491	0.75	0.80	34.43	1747.38	0.000	0.000	257.92	0.00	0.00
<b>Totals:</b>								<b>22,372.37</b>				<b>2,948.76</b>		

## Total Applied Force Summary

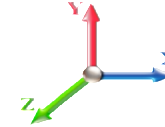
<b>Structure:</b> CT03113-S-SBA	<b>Code:</b> EIA/TIA-222-G	6/25/2018
<b>Site Name:</b> North Chaplin	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> C - Very Dense Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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

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



**Iterations** 22

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		159.62	2546.20	0.00	0.00
10.00		157.29	2547.92	0.00	0.00
15.00		154.75	2529.65	0.00	0.00
20.00		152.11	2502.57	0.00	0.00
25.00		149.43	2470.40	0.00	0.00
30.00		146.83	2434.88	0.00	0.00
35.00		150.58	2396.93	0.00	0.00
40.00		153.44	2357.16	0.00	0.00
41.00		30.53	467.05	0.00	0.00
45.00		125.80	2915.92	0.00	0.00
48.00		94.76	2157.33	0.00	0.00
50.00		63.26	832.60	0.00	0.00
55.00		160.24	2051.99	0.00	0.00
60.00		160.85	2012.79	0.00	0.00
65.00		161.07	1972.87	0.00	0.00
70.00		160.93	1932.31	0.00	0.00
75.00		160.47	1891.19	0.00	0.00
80.00		159.72	1849.58	0.00	0.00
85.00		158.71	1807.52	0.00	0.00
90.00		159.89	2853.76	0.00	0.00
91.00		31.61	563.14	0.00	0.00
95.00		126.43	1398.35	0.00	0.00
100.00		156.78	1707.77	0.00	0.00
105.00		154.93	1664.33	0.00	0.00
110.00		152.88	1620.61	0.00	0.00
115.00		150.66	1576.61	0.00	0.00
120.00		148.28	1383.42	0.00	0.00
125.00		145.75	1343.85	0.00	0.00
130.00		143.06	1304.07	0.00	0.00
135.00		142.06	1823.25	0.00	0.00
140.00		139.12	1109.44	0.00	0.00
145.00		136.05	1074.01	0.00	0.00
150.00		132.86	1038.40	0.00	0.00
155.00	(30) attachments	1466.19	11689.47	0.00	0.00
160.00		126.12	916.05	0.00	0.00
165.00	(22) attachments	1322.52	10009.25	0.00	0.00
170.00		118.95	820.83	0.00	0.00
173.00	(1) attachments	481.65	3033.29	0.00	0.00
175.00		45.51	311.42	0.00	0.00
	<b>Totals:</b>	<b>8,141.72</b>	<b>86,918.19</b>	<b>0.00</b>	<b>0.00</b>

## Calculated Forces

<b>Structure:</b> CT03113-S-SBA	<b>Code:</b> EIA/TIA-222-G	6/25/2018
<b>Site Name:</b> North Chaplin	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> C - Very Dense Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II

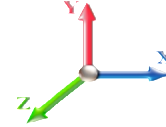


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**Load Case:** 1.2D + 1.0Di + 1.0Wi 50 mph Wind

**Iterations** 22

**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	-86.92	-8.16	0.00	-990.12	0.00	990.12	5803.10	2901.55	15291.3	7657.05	0.00	0.000	0.000	0.144
5.00	-84.37	-8.05	0.00	-949.30	0.00	949.30	5738.32	2869.16	14832.1	7427.08	0.02	-0.030	0.000	0.143
10.00	-81.81	-7.93	0.00	-909.06	0.00	909.06	5671.78	2835.89	14374.9	7198.15	0.06	-0.060	0.000	0.141
15.00	-79.28	-7.82	0.00	-869.39	0.00	869.39	5603.50	2801.75	13920.1	6970.40	0.14	-0.091	0.000	0.139
20.00	-76.77	-7.70	0.00	-830.31	0.00	830.31	5533.47	2766.74	13467.8	6743.96	0.26	-0.122	0.000	0.137
25.00	-74.30	-7.59	0.00	-791.80	0.00	791.80	5461.70	2730.85	13018.5	6518.96	0.40	-0.154	0.000	0.135
30.00	-71.86	-7.48	0.00	-753.85	0.00	753.85	5388.18	2694.09	12572.3	6295.53	0.58	-0.186	0.000	0.133
35.00	-69.46	-7.36	0.00	-716.48	0.00	716.48	5312.91	2656.45	12129.5	6073.81	0.79	-0.219	0.000	0.131
40.00	-67.10	-7.22	0.00	-679.70	0.00	679.70	5235.89	2617.95	11690.4	5853.93	1.04	-0.252	0.000	0.129
41.00	-66.63	-7.20	0.00	-672.48	0.00	672.48	5220.28	2610.14	11603.1	5810.18	1.09	-0.259	0.000	0.129
45.00	-63.71	-7.09	0.00	-643.67	0.00	643.67	5157.13	2578.57	11255.3	5636.01	1.32	-0.285	0.000	0.127
48.00	-61.55	-7.00	0.00	-622.40	0.00	622.40	4442.55	2221.27	9722.51	4868.48	1.51	-0.306	0.000	0.142
50.00	-60.72	-6.96	0.00	-608.40	0.00	608.40	4418.96	2209.48	9582.00	4798.12	1.64	-0.320	0.000	0.141
55.00	-58.66	-6.83	0.00	-573.59	0.00	573.59	4358.62	2179.31	9231.98	4622.85	1.99	-0.358	0.000	0.138
60.00	-56.65	-6.69	0.00	-539.44	0.00	539.44	4296.32	2148.16	8884.00	4448.60	2.39	-0.396	0.000	0.134
65.00	-54.67	-6.56	0.00	-505.97	0.00	505.97	4232.08	2116.04	8538.34	4275.52	2.83	-0.435	0.000	0.131
70.00	-52.74	-6.42	0.00	-473.20	0.00	473.20	4165.88	2082.94	8195.31	4103.74	3.30	-0.474	0.000	0.128
75.00	-50.84	-6.27	0.00	-441.12	0.00	441.12	4097.73	2048.86	7855.19	3933.43	3.82	-0.514	0.000	0.125
80.00	-48.99	-6.13	0.00	-409.76	0.00	409.76	4027.63	2013.81	7518.28	3764.73	4.38	-0.554	0.000	0.121
85.00	-47.18	-5.99	0.00	-379.11	0.00	379.11	3955.57	1977.79	7184.87	3597.77	4.98	-0.593	0.000	0.117
90.00	-44.33	-5.81	0.00	-349.18	0.00	349.18	3881.56	1940.78	6855.26	3432.73	5.62	-0.633	0.000	0.113
91.00	-43.76	-5.79	0.00	-343.36	0.00	343.36	3673.04	1836.52	6564.12	3286.94	5.76	-0.641	0.000	0.116
95.00	-42.36	-5.68	0.00	-320.19	0.00	320.19	3615.55	1807.77	6315.94	3162.67	6.31	-0.673	0.000	0.113
100.00	-40.65	-5.52	0.00	-291.82	0.00	291.82	3542.12	1771.06	6009.55	3009.24	7.03	-0.711	0.000	0.108
105.00	-38.99	-5.37	0.00	-264.20	0.00	264.20	3466.93	1733.47	5707.67	2858.08	7.80	-0.748	0.000	0.104
110.00	-37.36	-5.22	0.00	-237.33	0.00	237.33	3390.01	1695.00	5410.56	2709.30	8.60	-0.785	0.000	0.099
115.00	-35.79	-5.07	0.00	-211.22	0.00	211.22	3311.33	1655.67	5118.49	2563.05	9.44	-0.821	0.000	0.093
115.00	-35.79	-5.07	0.00	-211.22	0.00	211.22	2622.08	1311.04	4066.54	2036.29	9.44	-0.821	0.000	0.117
120.00	-34.40	-4.93	0.00	-185.86	0.00	185.86	2564.05	1282.02	3847.60	1926.66	10.32	-0.856	0.000	0.110
125.00	-33.06	-4.78	0.00	-161.23	0.00	161.23	2504.27	1252.13	3631.97	1818.69	11.24	-0.896	0.000	0.102
130.00	-31.75	-4.64	0.00	-137.31	0.00	137.31	2442.74	1221.37	3419.91	1712.49	12.20	-0.935	0.000	0.093
135.00	-29.93	-4.49	0.00	-114.11	0.00	114.11	1794.51	897.26	2468.50	1236.09	13.20	-0.971	0.000	0.109
140.00	-28.82	-4.34	0.00	-91.69	0.00	91.69	1752.60	876.30	2322.71	1163.08	14.24	-1.003	0.000	0.095
145.00	-27.75	-4.20	0.00	-69.97	0.00	69.97	1708.93	854.47	2178.91	1091.08	15.31	-1.038	0.000	0.080
150.00	-26.71	-4.06	0.00	-48.95	0.00	48.95	1663.52	831.76	2037.37	1020.20	16.41	-1.066	0.000	0.064
155.00	-15.05	-2.38	0.00	-28.63	0.00	28.63	1616.36	808.18	1898.33	950.58	17.54	-1.087	0.000	0.039
160.00	-14.13	-2.24	0.00	-16.72	0.00	16.72	1567.46	783.73	1762.08	882.35	18.68	-1.100	0.000	0.028
165.00	-4.15	-0.73	0.00	-5.51	0.00	5.51	1516.81	758.40	1628.87	815.65	19.84	-1.108	0.000	0.009
170.00	-3.33	-0.59	0.00	-1.88	0.00	1.88	1464.41	732.20	1498.97	750.60	21.00	-1.111	0.000	0.005
173.00	-0.31	-0.05	0.00	-0.10	0.00	0.10	1428.72	714.36	1419.33	710.72	21.70	-1.112	0.000	0.000
175.00	0.00	-0.05	0.00	0.00	0.00	0.00	1400.09	700.04	1362.73	682.38	22.17	-1.112	0.000	0.000

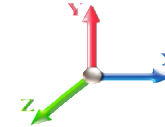
## Seismic Segment Forces (Factored)

<b>Structure:</b> CT03113-S-SBA	<b>Code:</b> EIA/TIA-222-G	6/25/2018
<b>Site Name:</b> North Chaplin	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> C - Very Dense Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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<b>Load Case:</b> 1.2D + 1.0E				<b>Iterations</b> 21
<b>Gust Response Factor</b>	1.10	<b>Sds</b>	0.14	<b>Ss</b> 0.17
<b>Dead Load Factor</b>	1.20	<b>Seismic Load Factor</b>	1.00	<b>S1</b> 0.06
<b>Wind Load Factor</b>	0.00	<b>Structure Frequency</b>	0.38	<b>SA</b> 0.03
				<b>Seismic Importance Factor</b> 1.00



Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		1499.1	0.00	0.03	0.02	17.40	
10.00		1470.4	0.01	0.05	0.03	25.70	
15.00		1441.7	0.01	0.06	0.03	29.81	
20.00		1413.0	0.02	0.07	0.04	31.74	
25.00		1384.3	0.04	0.07	0.04	32.55	
30.00		1355.7	0.06	0.07	0.04	32.81	
35.00		1327.0	0.08	0.07	0.04	32.85	
40.00		1298.3	0.10	0.07	0.04	32.83	
41.00	Bot - Section 2	256.22	0.10	0.07	0.04	6.51	
45.00		1895.2	0.12	0.07	0.03	48.88	
48.00	Top - Section 1	1399.0	0.14	0.07	0.03	36.47	
50.00		429.10	0.15	0.07	0.03	11.25	
55.00		1055.5	0.19	0.06	0.02	27.90	
60.00		1030.9	0.22	0.06	0.02	27.02	
65.00		1006.3	0.26	0.05	0.02	25.44	
70.00		981.77	0.30	0.04	0.01	22.89	
75.00		957.18	0.35	0.03	0.01	19.16	
80.00		932.59	0.39	0.02	0.01	14.11	
85.00	Bot - Section 3	908.00	0.45	0.00	0.01	7.88	
90.00		1782.0	0.50	-0.02	0.01	1.84	
91.00	Top - Section 2	350.50	0.51	-0.02	0.01	-0.20	
95.00		697.24	0.56	-0.04	0.01	-4.90	
100.00		849.42	0.62	-0.06	0.02	-12.32	
105.00		824.83	0.68	-0.08	0.03	-16.86	
110.00		800.24	0.75	-0.10	0.04	-19.32	
115.00	Top - Section 3	775.65	0.82	-0.11	0.06	-19.59	
120.00		626.94	0.89	-0.12	0.08	-14.83	
125.00		606.45	0.96	-0.12	0.11	-11.72	
130.00	Bot - Section 5	585.96	1.04	-0.10	0.15	-7.19	
135.00	Top - Section 4	1025.4	1.12	-0.05	0.20	-2.60	
140.00		443.57	1.21	0.01	0.26	4.39	
145.00		427.18	1.30	0.12	0.33	10.68	
150.00		410.79	1.39	0.26	0.42	17.59	
155.00	Appurtenance(s)	2964.6	1.48	0.46	0.52	188.02	
160.00		378.00	1.58	0.72	0.64	32.81	
165.00	Appurtenance(s)	3705.8	1.68	1.05	0.78	418.96	
170.00		345.22	1.78	1.46	0.95	49.09	
173.00	Appurtenance(s)	1399.2	1.85	1.76	1.06	225.45	
175.00		129.56	1.89	1.98	1.14	22.59	
<b>Totals:</b>		<b>41,170.5</b>				<b>1,345.1</b>	<b>Total Wind: 28,908.1</b>

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

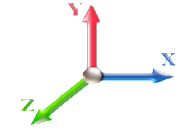
## Calculated Forces

<b>Structure:</b> CT03113-S-SBA	<b>Code:</b> EIA/TIA-222-G	6/25/2018
<b>Site Name:</b> North Chaplin	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> C - Very Dense Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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<b>Load Case:</b> 1.2D + 1.0E						<b>Iterations</b> 21
<b>Gust Response Factor</b>	1.10			<b>Sds</b>	0.14	<b>Ss</b> 0.17
<b>Dead Load Factor</b>	1.20	<b>Seismic Load Factor</b>	1.00	<b>Sd1</b>	0.07	<b>S1</b> 0.06
<b>Wind Load Factor</b>	0.00	<b>Structure Frequency</b>	0.38	<b>SA</b>	0.03	<b>Seismic Importance Factor</b> 1.00



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-51.73	-1.46	0.00	-186.16	0.00	186.16	5803.10	2901.55	15291.3	7657.05	0.00	0.00	0.00	0.033
5.00	-49.86	-1.44	0.00	-178.88	0.00	178.88	5738.32	2869.16	14832.1	7427.08	0.00	-0.01	-0.01	0.033
10.00	-48.02	-1.42	0.00	-171.66	0.00	171.66	5671.78	2835.89	14374.9	7198.15	0.01	-0.01	-0.01	0.032
15.00	-46.22	-1.40	0.00	-164.54	0.00	164.54	5603.50	2801.75	13920.1	6970.40	0.03	-0.02	-0.02	0.032
20.00	-44.45	-1.37	0.00	-157.55	0.00	157.55	5533.47	2766.74	13467.8	6743.96	0.05	-0.02	-0.02	0.031
25.00	-42.71	-1.34	0.00	-150.71	0.00	150.71	5461.70	2730.85	13018.5	6518.96	0.08	-0.03	-0.03	0.031
30.00	-41.01	-1.31	0.00	-144.00	0.00	144.00	5388.18	2694.09	12572.3	6295.53	0.11	-0.04	-0.04	0.030
35.00	-39.34	-1.28	0.00	-137.44	0.00	137.44	5312.91	2656.45	12129.5	6073.81	0.15	-0.04	-0.04	0.030
40.00	-37.71	-1.25	0.00	-131.03	0.00	131.03	5235.89	2617.95	11690.4	5853.93	0.20	-0.05	-0.05	0.030
41.00	-37.39	-1.25	0.00	-129.78	0.00	129.78	5220.28	2610.14	11603.1	5810.18	0.21	-0.05	-0.05	0.029
45.00	-35.06	-1.20	0.00	-124.80	0.00	124.80	5157.13	2578.57	11255.3	5636.01	0.25	-0.05	-0.05	0.029
48.00	-33.33	-1.16	0.00	-121.21	0.00	121.21	4442.55	2221.27	9722.51	4868.48	0.29	-0.06	-0.06	0.032
50.00	-32.79	-1.15	0.00	-118.88	0.00	118.88	4418.96	2209.48	9582.00	4798.12	0.31	-0.06	-0.06	0.032
55.00	-31.45	-1.13	0.00	-113.12	0.00	113.12	4358.62	2179.31	9231.98	4622.85	0.38	-0.07	-0.07	0.032
60.00	-30.14	-1.10	0.00	-107.48	0.00	107.48	4296.32	2148.16	8884.00	4448.60	0.45	-0.08	-0.08	0.031
65.00	-28.86	-1.08	0.00	-101.97	0.00	101.97	4232.08	2116.04	8538.34	4275.52	0.54	-0.08	-0.08	0.031
70.00	-27.61	-1.06	0.00	-96.58	0.00	96.58	4165.88	2082.94	8195.31	4103.74	0.63	-0.09	-0.09	0.030
75.00	-26.38	-1.04	0.00	-91.28	0.00	91.28	4097.73	2048.86	7855.19	3933.43	0.73	-0.10	-0.10	0.030
80.00	-25.19	-1.03	0.00	-86.08	0.00	86.08	4027.63	2013.81	7518.28	3764.73	0.84	-0.11	-0.11	0.029
85.00	-24.03	-1.02	0.00	-80.94	0.00	80.94	3955.57	1977.79	7184.87	3597.77	0.96	-0.12	-0.12	0.029
90.00	-21.82	-1.02	0.00	-75.83	0.00	75.83	3881.56	1940.78	6855.26	3432.73	1.08	-0.13	-0.13	0.028
91.00	-21.38	-1.02	0.00	-74.81	0.00	74.81	3673.04	1836.52	6564.12	3286.94	1.11	-0.13	-0.13	0.029
95.00	-20.48	-1.02	0.00	-70.74	0.00	70.74	3615.55	1807.77	6315.94	3162.67	1.22	-0.13	-0.13	0.028
100.00	-19.39	-1.02	0.00	-65.65	0.00	65.65	3542.12	1771.06	6009.55	3009.24	1.37	-0.14	-0.14	0.027
105.00	-18.33	-1.02	0.00	-60.55	0.00	60.55	3466.93	1733.47	5707.67	2858.08	1.52	-0.15	-0.15	0.026
110.00	-17.29	-1.02	0.00	-55.46	0.00	55.46	3390.01	1695.00	5410.56	2709.30	1.68	-0.16	-0.16	0.026
115.00	-16.29	-1.02	0.00	-50.36	0.00	50.36	3311.33	1655.67	5118.49	2563.05	1.85	-0.17	-0.17	0.025
115.00	-16.29	-1.02	0.00	-50.36	0.00	50.36	2622.08	1311.04	4066.54	2036.29	1.85	-0.17	-0.17	0.031
120.00	-15.46	-1.02	0.00	-45.27	0.00	45.27	2564.05	1282.02	3847.60	1926.66	2.03	-0.18	-0.18	0.030
125.00	-14.66	-1.02	0.00	-40.18	0.00	40.18	2504.27	1252.13	3631.97	1818.69	2.22	-0.19	-0.19	0.028
130.00	-13.89	-1.02	0.00	-35.09	0.00	35.09	2442.74	1221.37	3419.91	1712.49	2.42	-0.20	-0.20	0.026
135.00	-12.58	-1.02	0.00	-30.00	0.00	30.00	1794.51	897.26	2468.50	1236.09	2.63	-0.21	-0.21	0.031
140.00	-11.98	-1.01	0.00	-24.92	0.00	24.92	1752.60	876.30	2322.71	1163.08	2.85	-0.21	-0.21	0.028
145.00	-11.39	-1.00	0.00	-19.87	0.00	19.87	1708.93	854.47	2178.91	1091.08	3.08	-0.22	-0.22	0.025
150.00	-10.82	-0.98	0.00	-14.87	0.00	14.87	1663.52	831.76	2037.37	1020.20	3.32	-0.23	-0.23	0.021
155.00	-7.19	-0.78	0.00	-9.97	0.00	9.97	1616.36	808.18	1898.33	950.58	3.57	-0.24	-0.24	0.015
160.00	-6.72	-0.74	0.00	-6.07	0.00	6.07	1567.46	783.73	1762.08	882.35	3.82	-0.24	-0.24	0.011
165.00	-2.25	-0.31	0.00	-2.35	0.00	2.35	1516.81	758.40	1628.87	815.65	4.08	-0.25	-0.25	0.004
170.00	-1.83	-0.26	0.00	-0.81	0.00	0.81	1464.41	732.20	1498.97	750.60	4.34	-0.25	-0.25	0.002
173.00	-0.16	-0.02	0.00	-0.05	0.00	0.05	1428.72	714.36	1419.33	710.72	4.49	-0.25	-0.25	0.000
175.00	0.00	-0.02	0.00	0.00	0.00	0.00	1400.09	700.04	1362.73	682.38	4.60	-0.25	-0.25	0.000



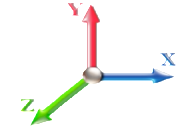
## Seismic Segment Forces (Factored)

<b>Structure:</b> CT03113-S-SBA	<b>Code:</b> EIA/TIA-222-G	6/25/2018
<b>Site Name:</b> North Chaplin	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> C - Very Dense Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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<b>Load Case:</b> 0.9D + 1.0E				<b>Iterations</b> 21
<b>Gust Response Factor</b>	1.10	<b>Sds</b>	0.14	<b>Ss</b> 0.17
<b>Dead Load Factor</b>	0.90	<b>Seismic Load Factor</b>	1.00	<b>S1</b> 0.06
<b>Wind Load Factor</b>	0.00	<b>Structure Frequency</b>	0.38	<b>SA</b> 0.03
				<b>Seismic Importance Factor</b> 1.00



Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		1499.1	0.00	0.03	0.02	17.40	
10.00		1470.4	0.01	0.05	0.03	25.70	
15.00		1441.7	0.01	0.06	0.03	29.81	
20.00		1413.0	0.02	0.07	0.04	31.74	
25.00		1384.3	0.04	0.07	0.04	32.55	
30.00		1355.7	0.06	0.07	0.04	32.81	
35.00		1327.0	0.08	0.07	0.04	32.85	
40.00		1298.3	0.10	0.07	0.04	32.83	
41.00	Bot - Section 2	256.22	0.10	0.07	0.04	6.51	
45.00		1895.2	0.12	0.07	0.03	48.88	
48.00	Top - Section 1	1399.0	0.14	0.07	0.03	36.47	
50.00		429.10	0.15	0.07	0.03	11.25	
55.00		1055.5	0.19	0.06	0.02	27.90	
60.00		1030.9	0.22	0.06	0.02	27.02	
65.00		1006.3	0.26	0.05	0.02	25.44	
70.00		981.77	0.30	0.04	0.01	22.89	
75.00		957.18	0.35	0.03	0.01	19.16	
80.00		932.59	0.39	0.02	0.01	14.11	
85.00	Bot - Section 3	908.00	0.45	0.00	0.01	7.88	
90.00		1782.0	0.50	-0.02	0.01	1.84	
91.00	Top - Section 2	350.50	0.51	-0.02	0.01	-0.20	
95.00		697.24	0.56	-0.04	0.01	-4.90	
100.00		849.42	0.62	-0.06	0.02	-12.32	
105.00		824.83	0.68	-0.08	0.03	-16.86	
110.00		800.24	0.75	-0.10	0.04	-19.32	
115.00	Top - Section 3	775.65	0.82	-0.11	0.06	-19.59	
120.00		626.94	0.89	-0.12	0.08	-14.83	
125.00		606.45	0.96	-0.12	0.11	-11.72	
130.00	Bot - Section 5	585.96	1.04	-0.10	0.15	-7.19	
135.00	Top - Section 4	1025.4	1.12	-0.05	0.20	-2.60	
140.00		443.57	1.21	0.01	0.26	4.39	
145.00		427.18	1.30	0.12	0.33	10.68	
150.00		410.79	1.39	0.26	0.42	17.59	
155.00	Appurtenance(s)	2964.6	1.48	0.46	0.52	188.02	
160.00		378.00	1.58	0.72	0.64	32.81	
165.00	Appurtenance(s)	3705.8	1.68	1.05	0.78	418.96	
170.00		345.22	1.78	1.46	0.95	49.09	
173.00	Appurtenance(s)	1399.2	1.85	1.76	1.06	225.45	
175.00		129.56	1.89	1.98	1.14	22.59	
<b>Totals:</b>		<b>41,170.5</b>				<b>1,345.1</b>	<b>Total Wind: 28,908.1</b>

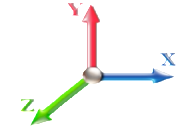
Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

## Calculated Forces

<b>Structure:</b> CT03113-S-SBA	<b>Code:</b> EIA/TIA-222-G	6/25/2018
<b>Site Name:</b> North Chaplin	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> C - Very Dense Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



<b>Load Case:</b> 0.9D + 1.0E						<b>Iterations</b> 21
<b>Gust Response Factor</b>	1.10		<b>Sds</b>	0.14		<b>Ss</b> 0.17
<b>Dead Load Factor</b>	0.90	<b>Seismic Load Factor</b>	1.00	<b>Sd1</b>	0.07	<b>S1</b> 0.06
<b>Wind Load Factor</b>	0.00	<b>Structure Frequency</b>	0.38	<b>SA</b>	0.03	<b>Seismic Importance Factor</b> 1.00



Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-38.80	-1.46	0.00	-184.53	0.00	184.53	5803.10	2901.55	15291.3	7657.05	0.00	0.00	0.00	0.031
5.00	-37.39	-1.44	0.00	-177.25	0.00	177.25	5738.32	2869.16	14832.1	7427.08	0.00	-0.01	-0.01	0.030
10.00	-36.01	-1.42	0.00	-170.04	0.00	170.04	5671.78	2835.89	14374.9	7198.15	0.01	-0.01	-0.01	0.030
15.00	-34.66	-1.39	0.00	-162.94	0.00	162.94	5603.50	2801.75	13920.1	6970.40	0.03	-0.02	-0.02	0.030
20.00	-33.33	-1.36	0.00	-155.98	0.00	155.98	5533.47	2766.74	13467.8	6743.96	0.05	-0.02	-0.02	0.029
25.00	-32.03	-1.33	0.00	-149.15	0.00	149.15	5461.70	2730.85	13018.5	6518.96	0.07	-0.03	-0.03	0.029
30.00	-30.76	-1.30	0.00	-142.48	0.00	142.48	5388.18	2694.09	12572.3	6295.53	0.11	-0.03	-0.03	0.028
35.00	-29.51	-1.27	0.00	-135.95	0.00	135.95	5312.91	2656.45	12129.5	6073.81	0.15	-0.04	-0.04	0.028
40.00	-28.28	-1.24	0.00	-129.58	0.00	129.58	5235.89	2617.95	11690.4	5853.93	0.19	-0.05	-0.05	0.028
41.00	-28.04	-1.24	0.00	-128.34	0.00	128.34	5220.28	2610.14	11603.1	5810.18	0.20	-0.05	-0.05	0.027
45.00	-26.29	-1.19	0.00	-123.39	0.00	123.39	5157.13	2578.57	11255.3	5636.01	0.25	-0.05	-0.05	0.027
48.00	-25.00	-1.15	0.00	-119.83	0.00	119.83	4442.55	2221.27	9722.51	4868.48	0.28	-0.06	-0.06	0.030
50.00	-24.59	-1.14	0.00	-117.52	0.00	117.52	4418.96	2209.48	9582.00	4798.12	0.31	-0.06	-0.06	0.030
55.00	-23.59	-1.12	0.00	-111.81	0.00	111.81	4358.62	2179.31	9231.98	4622.85	0.37	-0.07	-0.07	0.030
60.00	-22.60	-1.09	0.00	-106.22	0.00	106.22	4296.32	2148.16	8884.00	4448.60	0.45	-0.08	-0.08	0.029
65.00	-21.64	-1.07	0.00	-100.76	0.00	100.76	4232.08	2116.04	8538.34	4275.52	0.53	-0.08	-0.08	0.029
70.00	-20.70	-1.05	0.00	-95.42	0.00	95.42	4165.88	2082.94	8195.31	4103.74	0.62	-0.09	-0.09	0.028
75.00	-19.79	-1.03	0.00	-90.19	0.00	90.19	4097.73	2048.86	7855.19	3933.43	0.72	-0.10	-0.10	0.028
80.00	-18.89	-1.02	0.00	-85.05	0.00	85.05	4027.63	2013.81	7518.28	3764.73	0.83	-0.11	-0.11	0.027
85.00	-18.02	-1.01	0.00	-79.97	0.00	79.97	3955.57	1977.79	7184.87	3597.77	0.95	-0.12	-0.12	0.027
90.00	-16.36	-1.00	0.00	-74.93	0.00	74.93	3881.56	1940.78	6855.26	3432.73	1.07	-0.12	-0.12	0.026
91.00	-16.03	-1.01	0.00	-73.92	0.00	73.92	3673.04	1836.52	6564.12	3286.94	1.10	-0.13	-0.13	0.027
95.00	-15.36	-1.01	0.00	-69.90	0.00	69.90	3615.55	1807.77	6315.94	3162.67	1.21	-0.13	-0.13	0.026
100.00	-14.54	-1.01	0.00	-64.87	0.00	64.87	3542.12	1771.06	6009.55	3009.24	1.35	-0.14	-0.14	0.026
105.00	-13.75	-1.01	0.00	-59.84	0.00	59.84	3466.93	1733.47	5707.67	2858.08	1.50	-0.15	-0.15	0.025
110.00	-12.97	-1.01	0.00	-54.81	0.00	54.81	3390.01	1695.00	5410.56	2709.30	1.66	-0.16	-0.16	0.024
115.00	-12.22	-1.01	0.00	-49.78	0.00	49.78	3311.33	1655.67	5118.49	2563.05	1.83	-0.17	-0.17	0.023
115.00	-12.22	-1.01	0.00	-49.78	0.00	49.78	2622.08	1311.04	4066.54	2036.29	1.83	-0.17	-0.17	0.029
120.00	-11.60	-1.01	0.00	-44.75	0.00	44.75	2564.05	1282.02	3847.60	1926.66	2.01	-0.17	-0.17	0.028
125.00	-11.00	-1.01	0.00	-39.73	0.00	39.73	2504.27	1252.13	3631.97	1818.69	2.20	-0.18	-0.18	0.026
130.00	-10.41	-1.01	0.00	-34.70	0.00	34.70	2442.74	1221.37	3419.91	1712.49	2.40	-0.19	-0.19	0.025
135.00	-9.44	-1.00	0.00	-29.67	0.00	29.67	1794.51	897.26	2468.50	1236.09	2.61	-0.20	-0.20	0.029
140.00	-8.98	-1.00	0.00	-24.65	0.00	24.65	1752.60	876.30	2322.71	1163.08	2.82	-0.21	-0.21	0.026
145.00	-8.54	-0.99	0.00	-19.66	0.00	19.66	1708.93	854.47	2178.91	1091.08	3.05	-0.22	-0.22	0.023
150.00	-8.12	-0.97	0.00	-14.72	0.00	14.72	1663.52	831.76	2037.37	1020.20	3.29	-0.23	-0.23	0.019
155.00	-5.39	-0.77	0.00	-9.87	0.00	9.87	1616.36	808.18	1898.33	950.58	3.53	-0.24	-0.24	0.014
160.00	-5.04	-0.74	0.00	-6.02	0.00	6.02	1567.46	783.73	1762.08	882.35	3.78	-0.24	-0.24	0.010
165.00	-1.69	-0.30	0.00	-2.33	0.00	2.33	1516.81	758.40	1628.87	815.65	4.03	-0.24	-0.24	0.004
170.00	-1.37	-0.25	0.00	-0.81	0.00	0.81	1464.41	732.20	1498.97	750.60	4.29	-0.24	-0.24	0.002
173.00	-0.12	-0.02	0.00	-0.05	0.00	0.05	1428.72	714.36	1419.33	710.72	4.44	-0.24	-0.24	0.000
175.00	0.00	-0.02	0.00	0.00	0.00	0.00	1400.09	700.04	1362.73	682.38	4.55	-0.24	-0.24	0.000

## Wind Loading - Shaft

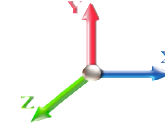
<b>Structure:</b> CT03113-S-SBA	<b>Code:</b> EIA/TIA-222-G	6/25/2018
<b>Site Name:</b> North Chaplin	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> C - Very Dense Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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

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



**Iterations** 22

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.70	6.129	6.74	273.99	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	6.129	6.74	268.83	0.650	0.000	5.00	27.033	17.57	118.5	0.0	1499.1
10.00		1.00	0.70	6.129	6.74	263.67	0.650	0.000	5.00	26.519	17.24	116.2	0.0	1470.4
15.00		1.00	0.70	6.129	6.74	258.51	0.650	0.000	5.00	26.005	16.90	114.0	0.0	1441.8
20.00		1.00	0.70	6.129	6.74	253.35	0.650	0.000	5.00	25.491	16.57	111.7	0.0	1413.1
25.00		1.00	0.70	6.129	6.74	248.19	0.650	0.000	5.00	24.978	16.24	109.5	0.0	1384.4
30.00		1.00	0.70	6.134	6.75	243.14	0.650	0.000	5.00	24.464	15.90	107.3	0.0	1355.7
35.00		1.00	0.73	6.410	7.05	243.28	0.650	0.000	5.00	23.950	15.57	109.8	0.0	1327.0
40.00		1.00	0.76	6.659	7.33	242.59	0.650	0.000	5.00	23.436	15.23	111.6	0.0	1298.3
41.00	Bot - Section 2	1.00	0.77	6.706	7.38	242.36	0.650	0.000	1.00	4.626	3.01	22.2	0.0	256.2
45.00		1.00	0.79	6.887	7.58	241.23	0.650	0.000	4.00	18.551	12.06	91.4	0.0	1895.2
48.00	Top - Section 1	1.00	0.80	7.015	7.72	240.16	0.650	0.000	3.00	13.697	8.90	68.7	0.0	1399.0
50.00		1.00	0.81	7.098	7.81	242.77	0.650	0.000	2.00	9.029	5.87	45.8	0.0	429.1
55.00		1.00	0.83	7.294	8.02	240.47	0.650	0.000	5.00	22.212	14.44	115.8	0.0	1055.5
60.00		1.00	0.85	7.477	8.22	237.78	0.650	0.000	5.00	21.699	14.10	116.0	0.0	1030.9
65.00		1.00	0.87	7.650	8.42	234.75	0.650	0.000	5.00	21.185	13.77	115.9	0.0	1006.4
70.00		1.00	0.89	7.814	8.60	231.43	0.650	0.000	5.00	20.671	13.44	115.5	0.0	981.8
75.00		1.00	0.91	7.969	8.77	227.84	0.650	0.000	5.00	20.157	13.10	114.9	0.0	957.2
80.00		1.00	0.93	8.118	8.93	224.01	0.650	0.000	5.00	19.644	12.77	114.0	0.0	932.6
85.00	Bot - Section 3	1.00	0.94	8.260	9.09	219.97	0.650	0.000	5.00	19.130	12.43	113.0	0.0	908.0
90.00		1.00	0.96	8.396	9.24	215.74	0.650	0.000	5.00	18.933	12.31	113.7	0.0	1782.0
91.00	Top - Section 2	1.00	0.96	8.422	9.26	214.87	0.650	0.000	1.00	3.725	2.42	22.4	0.0	350.5
95.00		1.00	0.97	8.526	9.38	215.09	0.650	0.000	4.00	14.695	9.55	89.6	0.0	697.2
100.00		1.00	0.99	8.652	9.52	210.54	0.650	0.000	5.00	17.906	11.64	110.8	0.0	849.4
105.00		1.00	1.00	8.774	9.65	205.84	0.650	0.000	5.00	17.392	11.30	109.1	0.0	824.8
110.00		1.00	1.02	8.891	9.78	201.00	0.650	0.000	5.00	16.878	10.97	107.3	0.0	800.2
115.00	Top - Section 3	1.00	1.03	9.005	9.91	196.03	0.650	0.000	5.00	16.365	10.64	105.4	0.0	775.6
120.00		1.00	1.04	9.115	10.03	190.93	0.650	0.000	5.00	15.851	10.30	103.3	0.0	626.9
125.00		1.00	1.05	9.222	10.14	185.72	0.650	0.000	5.00	15.337	9.97	101.1	0.0	606.4
130.00	Bot - Section 5	1.00	1.07	9.326	10.26	180.40	0.650	0.000	5.00	14.823	9.64	98.8	0.0	586.0
135.00	Top - Section 4	1.00	1.08	9.427	10.37	174.98	0.650	0.000	5.00	14.521	9.44	97.9	0.0	1025.4
140.00		1.00	1.09	9.525	10.48	172.11	0.650	0.000	5.00	14.007	9.10	95.4	0.0	443.6
145.00		1.00	1.10	9.621	10.58	166.51	0.650	0.000	5.00	13.494	8.77	92.8	0.0	427.2
150.00		1.00	1.11	9.715	10.69	160.83	0.650	0.000	5.00	12.980	8.44	90.2	0.0	410.8
155.00	Appurtenance(s)	1.00	1.12	9.806	10.79	155.06	0.650	0.000	5.00	12.466	8.10	87.4	0.0	394.4
160.00		1.00	1.13	9.896	10.89	149.21	0.650	0.000	5.00	11.952	7.77	84.6	0.0	378.0
165.00	Appurtenance(s)	1.00	1.14	9.983	10.98	143.28	0.650	0.000	5.00	11.439	7.44	81.6	0.0	361.6
170.00		1.00	1.15	10.069	11.08	137.28	0.650	0.000	5.00	10.925	7.10	78.6	0.0	345.2
173.00	Appurtenance(s)	1.00	1.16	10.119	11.13	133.65	0.650	0.000	3.00	6.308	4.10	45.6	0.0	199.3
175.00		1.00	1.16	10.152	11.17	131.21	0.650	0.000	2.00	4.103	2.67	29.8	0.0	129.6
<b>Totals:</b>								<b>175.00</b>			<b>3,677.0</b>	<b>34,056.0</b>		

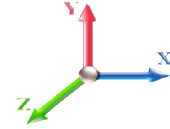
## Discrete Appurtenance Forces

<b>Structure:</b> CT03113-S-SBA	<b>Code:</b> EIA/TIA-222-G	6/25/2018	
<b>Site Name:</b> North Chaplin	<b>Exposure:</b> B		
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00		
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> C - Very Dense Soil		
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II	Page: 25



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

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



**Iterations** 22

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	173.00	Low Profile Platform	1	10.119	11.131	1.00	1.00	25.00	1200.00	0.000	0.000	278.27	0.00	0.00
2	165.00	Site Pro SPTB	1	9.983	10.981	1.00	1.00	8.40	264.00	0.000	0.000	92.24	0.00	0.00
3	165.00	Site Pro SFS-H-L	1	9.983	10.981	1.00	1.00	6.70	195.00	0.000	0.000	73.58	0.00	0.00
4	165.00	Site Pro PRK-1245L	1	9.983	10.981	1.00	1.00	9.50	466.00	0.000	0.000	104.32	0.00	0.00
5	165.00	ALU TD-RRH8x20-25	3	9.983	10.981	0.54	0.80	6.51	210.00	0.000	0.000	71.51	0.00	0.00
6	165.00	ALU 800 MHz	6	9.983	10.981	0.54	0.80	8.01	318.00	0.000	0.000	87.94	0.00	0.00
7	165.00	ALU 1900 MHz	3	9.983	10.981	0.54	0.80	4.45	180.00	0.000	0.000	48.91	0.00	0.00
8	165.00	Commscope	3	9.983	10.981	0.59	0.80	21.79	232.20	0.000	0.000	239.30	0.00	0.00
9	165.00	RFS APXVTM14-C-I20	3	9.983	10.981	0.63	0.80	12.02	168.00	0.000	0.000	132.00	0.00	0.00
10	165.00	Low Profile Platform	1	9.983	10.981	1.00	1.00	20.00	1311.00	0.000	0.000	219.63	0.00	0.00
11	155.00	Alcatel RRH4X45 B66 -	3	9.806	10.787	0.54	0.80	4.15	201.00	0.000	0.000	44.75	0.00	0.00
12	155.00	RFS DB-T1-6Z-8AB-OZ -	2	9.806	10.787	0.54	0.80	5.15	88.00	0.000	0.000	55.51	0.00	0.00
13	155.00	Alcatel RRH2x60-700 -	3	9.806	10.787	0.54	0.80	5.63	180.00	0.000	0.000	60.71	0.00	0.00
14	155.00	Alcatel RRH2x60-1900 -	3	9.806	10.787	0.54	0.80	3.01	129.00	0.000	0.000	32.44	0.00	0.00
15	155.00	Commscope	6	9.806	10.787	0.66	0.80	32.07	304.26	0.000	0.000	345.95	0.00	0.00
16	155.00	Low Profile Platform	1	9.806	10.787	1.00	1.00	22.00	1500.00	0.000	0.000	237.31	0.00	0.00
17	155.00	RFS FD9R6004/2C-3L	6	9.806	10.787	0.54	0.80	1.00	18.00	0.000	0.000	10.75	0.00	0.00
18	155.00	Antel LPA-80080/6CF	2	9.806	10.787	1.36	0.80	23.45	42.00	0.000	0.000	252.91	0.00	0.00
19	155.00	Antel LPA-80063/6CF	4	9.806	10.787	0.75	0.80	28.85	108.00	0.000	0.000	311.17	0.00	0.00
<b>Totals:</b>									<b>7,114.46</b>			<b>2,699.21</b>		

## Total Applied Force Summary

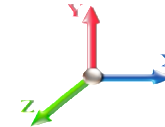
<b>Structure:</b> CT03113-S-SBA	<b>Code:</b> EIA/TIA-222-G	6/25/2018
<b>Site Name:</b> North Chaplin	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> C - Very Dense Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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

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



**Iterations** 22

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		118.46	1560.42	0.00	0.00
10.00		116.21	1531.73	0.00	0.00
15.00		113.95	1503.04	0.00	0.00
20.00		111.70	1474.35	0.00	0.00
25.00		109.45	1445.67	0.00	0.00
30.00		107.29	1416.98	0.00	0.00
35.00		109.77	1388.29	0.00	0.00
40.00		111.59	1359.60	0.00	0.00
41.00		22.18	268.48	0.00	0.00
45.00		91.35	1944.24	0.00	0.00
48.00		68.71	1435.80	0.00	0.00
50.00		45.82	453.61	0.00	0.00
55.00		115.84	1116.81	0.00	0.00
60.00		116.01	1092.22	0.00	0.00
65.00		115.88	1067.64	0.00	0.00
70.00		115.49	1043.05	0.00	0.00
75.00		114.86	1018.46	0.00	0.00
80.00		114.02	993.87	0.00	0.00
85.00		112.97	969.28	0.00	0.00
90.00		113.65	1843.28	0.00	0.00
91.00		22.43	362.76	0.00	0.00
95.00		89.58	746.26	0.00	0.00
100.00		110.77	910.70	0.00	0.00
105.00		109.10	886.11	0.00	0.00
110.00		107.30	861.52	0.00	0.00
115.00		105.36	836.93	0.00	0.00
120.00		103.30	688.22	0.00	0.00
125.00		101.13	667.73	0.00	0.00
130.00		98.84	647.24	0.00	0.00
135.00		97.87	1086.71	0.00	0.00
140.00		95.40	504.85	0.00	0.00
145.00		92.83	488.46	0.00	0.00
150.00		90.16	472.07	0.00	0.00
155.00	(30) attachments	1438.91	3025.93	0.00	0.00
160.00		84.57	397.08	0.00	0.00
165.00	(22) attachments	1151.08	3724.89	0.00	0.00
170.00		78.65	345.22	0.00	0.00
173.00	(1) attachments	323.91	1399.26	0.00	0.00
175.00		29.78	129.56	0.00	0.00
	<b>Totals:</b>	<b>6,376.17</b>	<b>43,108.30</b>	<b>0.00</b>	<b>0.00</b>

## Calculated Forces

<b>Structure:</b> CT03113-S-SBA	<b>Code:</b> EIA/TIA-222-G	6/25/2018
<b>Site Name:</b> North Chaplin	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> C - Very Dense Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II

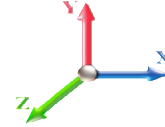


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**Load Case:** 1.0D + 1.0W 60 mph Wind

**Iterations** 22

**Dead Load Factor** 1.00  
**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	-43.11	-6.38	0.00	-766.82	0.00	766.82	5803.10	2901.55	15291.3	7657.05	0.00	0.000	0.000	0.108
5.00	-41.54	-6.28	0.00	-734.90	0.00	734.90	5738.32	2869.16	14832.1	7427.08	0.01	-0.023	0.000	0.106
10.00	-40.01	-6.18	0.00	-703.49	0.00	703.49	5671.78	2835.89	14374.9	7198.15	0.05	-0.047	0.000	0.105
15.00	-38.50	-6.08	0.00	-672.57	0.00	672.57	5603.50	2801.75	13920.1	6970.40	0.11	-0.070	0.000	0.103
20.00	-37.03	-5.98	0.00	-642.16	0.00	642.16	5533.47	2766.74	13467.8	6743.96	0.20	-0.095	0.000	0.102
25.00	-35.58	-5.89	0.00	-612.24	0.00	612.24	5461.70	2730.85	13018.5	6518.96	0.31	-0.119	0.000	0.100
30.00	-34.16	-5.79	0.00	-582.80	0.00	582.80	5388.18	2694.09	12572.3	6295.53	0.45	-0.144	0.000	0.099
35.00	-32.77	-5.69	0.00	-553.84	0.00	553.84	5312.91	2656.45	12129.5	6073.81	0.61	-0.169	0.000	0.097
40.00	-31.41	-5.59	0.00	-525.37	0.00	525.37	5235.89	2617.95	11690.4	5853.93	0.80	-0.195	0.000	0.096
41.00	-31.14	-5.57	0.00	-519.79	0.00	519.79	5220.28	2610.14	11603.1	5810.18	0.85	-0.200	0.000	0.095
45.00	-29.19	-5.48	0.00	-497.51	0.00	497.51	5157.13	2578.57	11255.3	5636.01	1.02	-0.221	0.000	0.094
48.00	-27.76	-5.41	0.00	-481.07	0.00	481.07	4442.55	2221.27	9722.51	4868.48	1.17	-0.237	0.000	0.105
50.00	-27.30	-5.37	0.00	-470.24	0.00	470.24	4418.96	2209.48	9582.00	4798.12	1.27	-0.247	0.000	0.104
55.00	-26.18	-5.27	0.00	-443.37	0.00	443.37	4358.62	2179.31	9231.98	4622.85	1.54	-0.277	0.000	0.102
60.00	-25.09	-5.16	0.00	-417.04	0.00	417.04	4296.32	2148.16	8884.00	4448.60	1.85	-0.307	0.000	0.100
65.00	-24.02	-5.05	0.00	-391.24	0.00	391.24	4232.08	2116.04	8538.34	4275.52	2.19	-0.337	0.000	0.097
70.00	-22.97	-4.94	0.00	-366.00	0.00	366.00	4165.88	2082.94	8195.31	4103.74	2.55	-0.367	0.000	0.095
75.00	-21.95	-4.83	0.00	-341.30	0.00	341.30	4097.73	2048.86	7855.19	3933.43	2.96	-0.397	0.000	0.092
80.00	-20.96	-4.72	0.00	-317.15	0.00	317.15	4027.63	2013.81	7518.28	3764.73	3.39	-0.428	0.000	0.089
85.00	-19.99	-4.61	0.00	-293.56	0.00	293.56	3955.57	1977.79	7184.87	3597.77	3.85	-0.459	0.000	0.087
90.00	-18.14	-4.49	0.00	-270.51	0.00	270.51	3881.56	1940.78	6855.26	3432.73	4.35	-0.490	0.000	0.083
91.00	-17.78	-4.47	0.00	-266.02	0.00	266.02	3673.04	1836.52	6564.12	3286.94	4.45	-0.496	0.000	0.086
95.00	-17.03	-4.38	0.00	-248.15	0.00	248.15	3615.55	1807.77	6315.94	3162.67	4.88	-0.521	0.000	0.083
100.00	-16.12	-4.27	0.00	-226.26	0.00	226.26	3542.12	1771.06	6009.55	3009.24	5.44	-0.550	0.000	0.080
105.00	-15.23	-4.16	0.00	-204.93	0.00	204.93	3466.93	1733.47	5707.67	2858.08	6.03	-0.579	0.000	0.076
110.00	-14.37	-4.05	0.00	-184.15	0.00	184.15	3390.01	1695.00	5410.56	2709.30	6.65	-0.607	0.000	0.072
115.00	-13.53	-3.94	0.00	-163.91	0.00	163.91	3311.33	1655.67	5118.49	2563.05	7.31	-0.635	0.000	0.068
115.00	-13.53	-3.94	0.00	-163.91	0.00	163.91	2622.08	1311.04	4066.54	2036.29	7.31	-0.635	0.000	0.086
120.00	-12.84	-3.84	0.00	-144.21	0.00	144.21	2564.05	1282.02	3847.60	1926.66	7.99	-0.663	0.000	0.080
125.00	-12.18	-3.73	0.00	-125.03	0.00	125.03	2504.27	1252.13	3631.97	1818.69	8.70	-0.694	0.000	0.074
130.00	-11.53	-3.63	0.00	-106.37	0.00	106.37	2442.74	1221.37	3419.91	1712.49	9.44	-0.724	0.000	0.067
135.00	-10.44	-3.52	0.00	-88.21	0.00	88.21	1794.51	897.26	2468.50	1236.09	10.21	-0.751	0.000	0.077
140.00	-9.94	-3.43	0.00	-70.59	0.00	70.59	1752.60	876.30	2322.71	1163.08	11.01	-0.777	0.000	0.066
145.00	-9.45	-3.33	0.00	-53.45	0.00	53.45	1708.93	854.47	2178.91	1091.08	11.84	-0.803	0.000	0.055
150.00	-8.98	-3.24	0.00	-36.79	0.00	36.79	1663.52	831.76	2037.37	1020.20	12.70	-0.824	0.000	0.041
155.00	-5.97	-1.76	0.00	-20.61	0.00	20.61	1616.36	808.18	1898.33	950.58	13.57	-0.840	0.000	0.025
160.00	-5.57	-1.67	0.00	-11.83	0.00	11.83	1567.46	783.73	1762.08	882.35	14.45	-0.850	0.000	0.017
165.00	-1.87	-0.46	0.00	-3.49	0.00	3.49	1516.81	758.40	1628.87	815.65	15.35	-0.855	0.000	0.006
170.00	-1.52	-0.38	0.00	-1.19	0.00	1.19	1464.41	732.20	1498.97	750.60	16.24	-0.857	0.000	0.003
173.00	-0.13	-0.03	0.00	-0.06	0.00	0.06	1428.72	714.36	1419.33	710.72	16.78	-0.857	0.000	0.000
175.00	0.00	-0.03	0.00	0.00	0.00	0.00	1400.09	700.04	1362.73	682.38	17.14	-0.857	0.000	0.000

## Final Analysis Summary

<b>Structure:</b> CT03113-S-SBA	<b>Code:</b> EIA/TIA-222-G	6/25/2018
<b>Site Name:</b> North Chaplin	<b>Exposure:</b> B	
<b>Height:</b> 175.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> C - Very Dense Soil	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II
		<b>Page:</b> 28



### Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)
1.2D + 1.6W 101 mph Wind	29.0	0.00	51.70	0.00	0.00	3493.72
0.9D + 1.6W 101 mph Wind	28.9	0.00	38.77	0.00	0.00	3465.15
1.2D + 1.0Di + 1.0Wi 50 mph Wind	8.2	0.00	86.92	0.00	0.00	990.12
1.2D + 1.0E	1.5	0.00	51.73	0.00	0.00	186.16
0.9D + 1.0E	1.5	0.00	38.80	0.00	0.00	184.53
1.0D + 1.0W 60 mph Wind	6.4	0.00	43.11	0.00	0.00	766.82

### Max Stresses

Load Case	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Elev (ft)	Stress Ratio
1.2D + 1.6W 101 mph Wind	-51.70	-28.96	0.00	-3493.7	0.00	-3493.7	5803.10	2901.5	15291.3	7657.05	0.00	0.465
0.9D + 1.6W 101 mph Wind	-38.77	-28.94	0.00	-3465.1	0.00	-3465.1	5803.10	2901.5	15291.3	7657.05	0.00	0.459
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-86.92	-8.16	0.00	-990.12	0.00	-990.12	5803.10	2901.5	15291.3	7657.05	0.00	0.144
1.2D + 1.0E	-51.73	-1.46	0.00	-186.16	0.00	-186.16	5803.10	2901.5	15291.3	7657.05	0.00	0.033
0.9D + 1.0E	-38.80	-1.46	0.00	-184.53	0.00	-184.53	5803.10	2901.5	15291.3	7657.05	0.00	0.031
1.0D + 1.0W 60 mph Wind	-43.11	-6.38	0.00	-766.82	0.00	-766.82	5803.10	2901.5	15291.3	7657.05	0.00	0.108



# Monopole Mat Foundation Design

Date

6/25/2018

<b>Customer Name:</b>	Sprint Nextel	<b>EIA/TIA Standard:</b>	EIA-222-G
<b>Site Name:</b>		<b>Structure Height (Ft.):</b>	175
<b>Site Number:</b>	CT03113-S-SBA	<b>Engineer Name:</b>	H. You
<b>Engr. Number:</b>	55344	<b>Engineer Login ID:</b>	

**Foundation Info Obtained from:**

Drawings/Calculations

**Structure Type:**

Monopole

**Analysis or Design?**

Analysis

**Base Reactions (Factored):**

Axial Load (Kips):	51.7	Shear Force (Kips):	29.0
Uplift Force (Kips):	0.0	Moment (Kips-ft):	3493.7

Allowable overstress %: 5.0%

**Foundation Geometries:**

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	8.0	Depth of Base BG (ft.):	10.0
Pier Height A. G. (ft.):	0.25	Thickness of Pad (ft):	4.00
Length of Pad (ft.):	31	Width of Pad (ft.):	31

Final Length of pad (ft)	31.0	Final width of pad (ft):	31.0
Control Value for Cell D18:	0	Control Value for Cell F18:	0

**Material Properties and Reabr Info:**

Concrete Strength (psi):	3500	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:	10	Tie / Stirrup Size #:	6	
Qty. of Vertical Rebars:	67	Tie Spacing (in):	8.0	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	8	
Concrete Cover (in.):	3	Unit Weight of Concrete:	150.0	pcf

Rebar at the bottom of the concrete pad:

Qty. of Rebar in Pad (L):	47	Qty. of Rebar in Pad (W):	47
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Rebar at the top of the concrete pad:

Qty. of Rebar in Pad (L):	47	Qty. of Rebar in Pad (W):	47
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Apply 1.35 factor for e/w Per G: 1.35

**Soil Design Parameters:**

Soil Unit Weight (pcf):	135.0	Soil Buoyant Weight:	50.0	Pcf		
Water Table B.G.S. (ft):	10.0	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad:	30
Ultimate Bearing Pressure (psf):	30000	Ultimate Skin Friction:	0	Psf	Angle from Bottm of Pad:	25
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	No		Angle from Bottm of Pad:	25
Consider soil hor. resist. for OTM.:	Yes	Reduction factor on the maximum soil bearing pressure:	1.00			

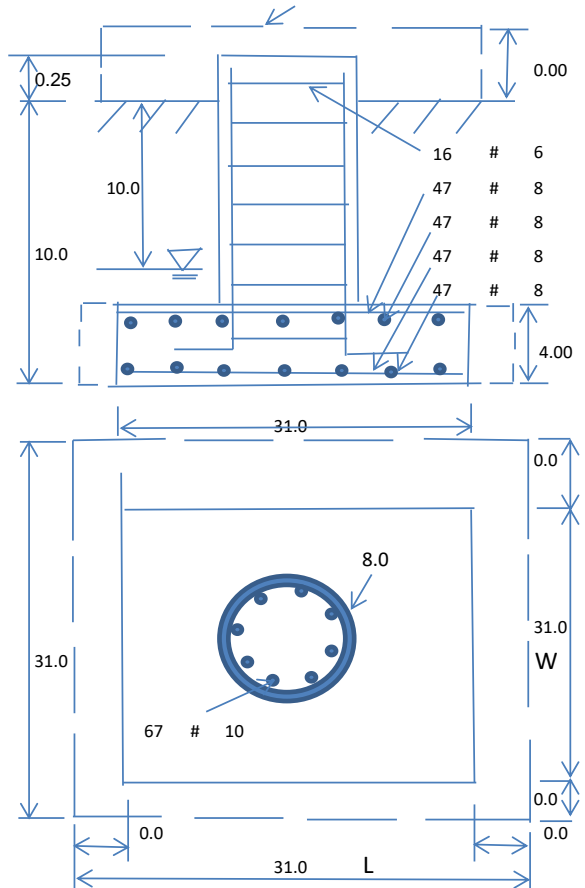
**Foundation Analysis and Design:**

Uplift Strength Reduction Factor: 0.75      Compression Strength Reduction Factor: 0.75

Total Dry Soil Volume (cu. Ft.):	5464.41	Total Dry Soil Weight (Kips):	737.69
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	737.69	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	4158.16	Total Dry Concrete Weight (Kips):	623.72
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	623.72	Total Vertical Load on Base (Kips):	1413.15

**Check Soil Capacities:**

Calculated Maxium Net Soil Pressure under the base (psf):	2319	<	Allowable Factored Soil Bearing (psf):	22500	0.10	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	19793.6	>	Design Factored Momont (kips-ft):	3046	0.15	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	6.50					OK!





**Check the capacities of Reinforcing Concrete:**

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

Load/  
Capacity  
Ratio

**(1) Concrete Pier:**

Vertical Steel Rebar Area (sq. in./each):	1.27	Tie / Stirrup Area (sq. in./each):	0.44		
Calculated Moment Capacity (Mn,Kips-Ft):	15354.1	> Design Factored Moment (Mu, Kips-Ft)	3675.0	0.24	OK!
Calculated Shear Capacity (Kips):	1149.2	> Design Factored Shear (Kips):	29.0	0.03	OK!
Calculated Tension Capacity (Tn, Kips):	4594.9	> Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	11065.9	> Design Factored Axial Load (Pu Kips):	51.7	0.00	OK!
Moment & Axial Strength Combination:	0.24	OK! Check Tie Spacing (Design/Required):		0.6667	OK!
Pier Reinforcement Ratio:	0.012	Reinforcement Ratio is satisfied per ACI			

**(2).Concrete Pad:**

One-Way Design Shear Capacity (L-Direction, Kips):	1469.0	> One-Way Factored Shear (L-D. Kips):	424.2	0.29	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	1469.0	> One-Way Factored Shear (W-D., Kips)	424.2	0.29	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	1698.4	> One-Way Factored Shear (C-C, Kips):	345.1	0.20	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct. ):	0.0022	OK! Lower Steel Pad Reinf. Ratio (W-Direc	0.0022		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	7267.1	> Moment at Bottom ( L-Direct. K-Ft):	1652.8	0.23	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	7267.1	> Moment at Bottom ( W-Direct. K-Ft):	1652.8	0.23	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	10224.2	> Moment at Bottom ( C-C Dir. K-Ft):	2337.4	0.23	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct. ):	0.0022	OK! Upper Steel Reinf. Ratio (W-Direct. ):	0.0022		
Upper Steel Pad Moment Capacity (L-Direction. Kips-ft):	7267.1	> Moment at the top (L-Dir Kips-Ft):	297.9	0.04	OK!
Upper Steel Pad Moment Capacity (W-Direction. Kips-ft):	7267.1	> Moment at the top (W-Dir Kips-Ft):	297.9	0.04	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	10224.2	> Moment at the top (C-C Direc. K-Ft):	416.2	0.04	OK!

# Sprint



PROJECT: DO MACRO UPGRADE  
EQUIPMENT DEPLOYMENT

SITE NUMBER: CT33XC569

SITE ADDRESS: 203 DAVIS ROAD  
CHAPLIN, CT

SITE TYPE: MONOPOLE

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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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.
	ISSUED FOR CONSTRUCTION	04/13/18	SL	0
	ISSUED FOR REVIEW	01/18/18	RCD	A

SITE NUMBER:

CT33XC569

SITE ADDRESS:

203 DAVIS ROAD  
CHAPLIN, CT

SHEET DESCRIPTION:

TITLE SHEET  
& PROJECT DATA

SHEET NUMBER:

T-1

**PROJECT INFORMATION**

**SITE INFORMATION:**

LATITUDE: 41° 47' 36.55" N  
(PER SBA RECORDS) 41.79347°  
LONGITUDE: -72° 02' 36.55" W  
(PER SBA RECORDS) -72.16017°

STRUCTURE HEIGHT: 175'±  
STRUCTURE TYPE: MONOPOLE

**APPLICANT:**

SPRINT  
1 INTERNATIONAL BLVD, SUITE 800  
MAHWAH, NJ 07495

**TOWER OWNER:**

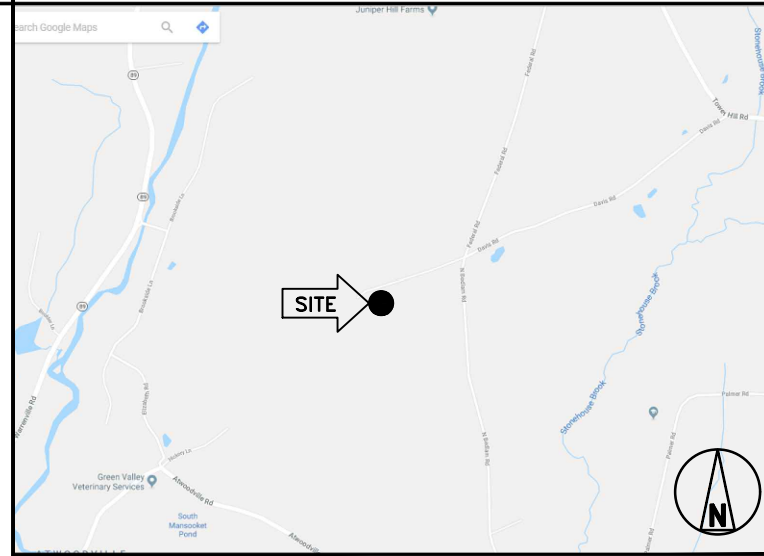
SBA PROPERTIES LLC.  
8051 CONGRESS AVENUE  
BOCA RATON, FL 33487

SBA SITE ID: CT03113-S

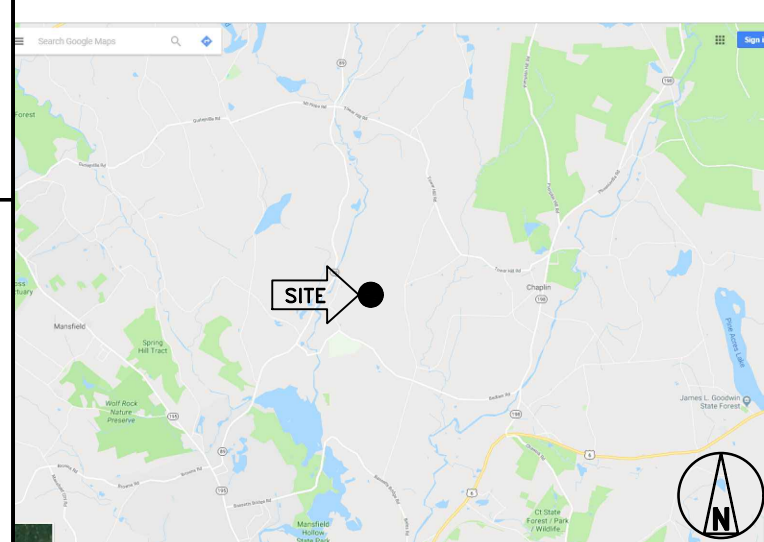
SBA SITE NAME: NORTH CHAPLIN

SBA CONTACT: STEPHEN ROTH  
(860) 539-4920  
sroth@sbasite.com

**AREA MAP**



**LOCATION MAP**



**PROJECT DESCRIPTION**

- SPRINT PROPOSES TO MODIFY AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY.
- REMOVE (6) PANEL ANTENNAS
  - INSTALL (6) PANEL ANTENNAS
  - INSTALL (3) 2.5 GHz RRH'S ON PROPOSED PIPE MOUNT
  - RELOCATE (3) 1900 MHz RRH'S ON PROPOSED PIPE MOUNT
  - INSTALL (6) 800 MHz RRH'S ON PROPOSED PIPE MOUNT
  - REMOVE (6) COAX CABLES
  - INSTALL (4) HYBRID CABLES
  - INSTALL RAN EQUIPMENT INSIDE EXISTING MMBTS CABINET
  - INSTALL STRUCTURAL AUGMENTS

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.

**APPLICABLE CODES**

- 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.
- 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

**GENERAL NOTES**

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

**DRAWING INDEX**

SHEET NO.	SHEET TITLE	REV.
T-1	TITLE SHEET & PROJECT DATA	0
SP-1	OUTLINE SPECIFICATIONS	0
SP-2	OUTLINE SPECIFICATIONS	0
SP-3	OUTLINE SPECIFICATIONS	0
A-1	SITE PLAN	0
A-2	TOWER ELEVATION	0
A-3	ANTENNA LAYOUT & MOUNTING DETAILS	0
A-4	EQUIPMENT & MOUNTING DETAILS	0
A-5	DETAILS	0
E-1	ELECTRICAL & GROUNDING DETAILS	0
RF-1	RF DATA SHEET	0
RF-2	PLUMBING DIAGRAM	0

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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:

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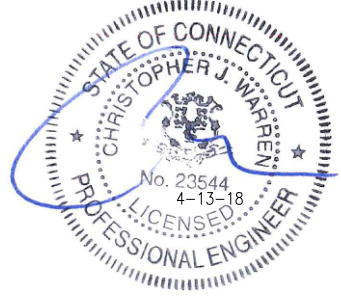
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REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR CONSTRUCTION	04/13/18	SL	0
ISSUED FOR REVIEW	01/18/18	RCD	A

SITE NUMBER:

**CT33XC569**

SITE ADDRESS:

203 DAVIS ROAD  
CHAPLIN, CT

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)

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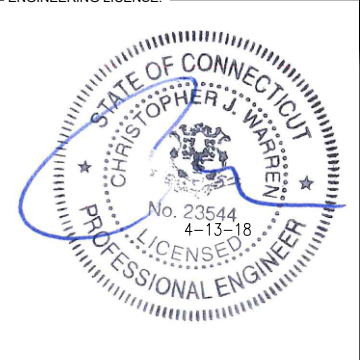
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REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR CONSTRUCTION	04/13/18	SL	0
ISSUED FOR REVIEW	01/18/18	RCD	A

SITE NUMBER:

**CT33XC569**

SITE ADDRESS:

203 DAVIS ROAD  
CHAPLIN, CT

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:



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

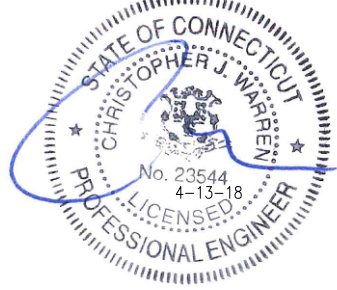
PLANS PREPARED BY:



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

ENGINEERING LICENSE:



CHECKED BY:

APPROVED BY:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR CONSTRUCTION	04/13/18	SL	0
ISSUED FOR REVIEW	01/18/18	RCD	A

SITE NUMBER:

**CT33XC569**

SITE ADDRESS:

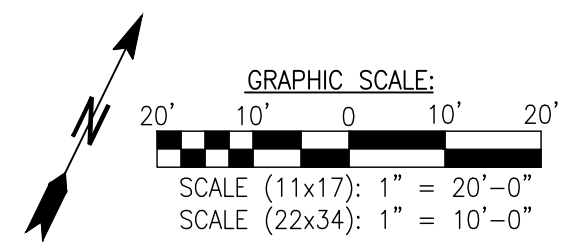
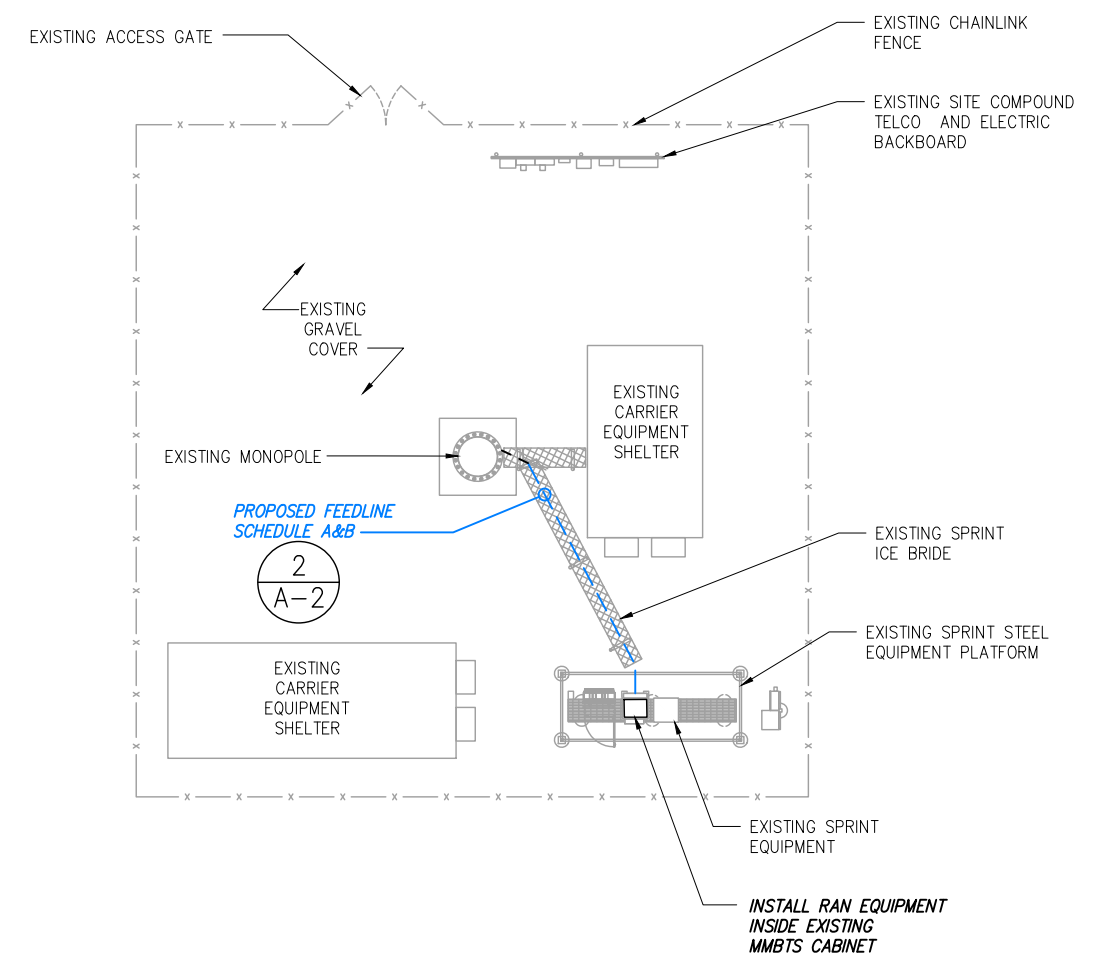
203 DAVIS ROAD  
CHAPLIN, CT

SHEET DESCRIPTION:

**OUTLINE SPECIFICATIONS**

SHEET NUMBER:

**SP-3**



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

EXISTING SPRINT MM-BTS CABINET  
 EXISTING SPRINT BBU CABINET



SOURCE: WESTCHESTER SERVICES 11/16/17

PROPOSED FEEDLINE SCHEDULE A&B  
 2/A-2

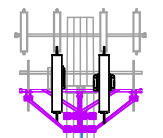
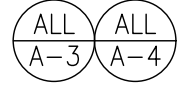
EXISTING FIBER JUNCTION BOX

EXISTING SPRINT 1900 MHz RRH'S TO BE RELOCATED TO TOWER TOP  
 ALL/A-2

EXISTING SPRINT STEEL EQUIPMENT PLATFORM

REVISIONS:	DESCRIPTION	DATE	BY	REV.
	ISSUED FOR CONSTRUCTION	04/13/18	SL	0
	ISSUED FOR REVIEW	01/18/18	RCD	A

TOP OF MONOPOLE  
 ELEV. = ±175' A.G.L.  
 C OF EXISTING/TO BE  
 INSTALLED SPRINT ANTENNAS  
 ELEV. = 162' A.G.L.



EXISTING CARRIER PANEL ANTENNA (TYP.)



EXISTING MONOPOLE

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.

NOTE:  
 VERIFY PROPOSED AZIMUTHS WITH RF ENGINEER PRIOR TO INSTALLATION

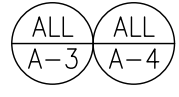
**SPECIAL INSTALLATION NOTE:**  
 JUMPERS FROM RRRHS TO ANTENNA SHALL NOT EXCEED 15'. NOTIFY SPRINT CONSTRUCTION MANAGER OF ANY DISCREPANCY

EXISTING SPRINT EQUIPMENT AREA INSIDE FENCE  
 EXISTING CHAIN LINK FENCE

GROUND LEVEL

FEEDLINE SCHEDULE A  
 FEEDLINE SCHEDULE B

C OF PROPOSED SPRINT ANTENNAS  
 ELEV. = 162' A.G.L.



EXISTING CARRIER PANEL ANTENNA (TYP.)



**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: (6) 1 5/8" COAX	UP INSIDE MONOPOLE TO RAD
B	PROPOSED: (4) HYBRID TO 162' 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 11/16/17

FEEDLINE SCHEDULE A  
 FEEDLINE SCHEDULE B

CHECKED BY:

APPROVED BY:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR CONSTRUCTION	04/13/18	SL	0
ISSUED FOR REVIEW	01/18/18	RCD	A

SITE NUMBER:  
**CT33XC569**

SITE ADDRESS:  
 203 DAVIS ROAD  
 CHAPLIN, CT

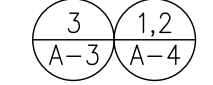
SHEET DESCRIPTION:  
**ANTENNA LAYOUT & MOUNTING DETAILS**

SHEET NUMBER:  
**A-3**

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

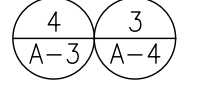
NOTE:  
 VERIFY PROPOSED AZIMUTHS WITH RF ENGINEER PRIOR TO INSTALLATION

INSTALL SPRINT PANEL ANTENNAS MOUNTED TO NEW PIPE MOUNT (TYP OF 2 PER SECTOR)

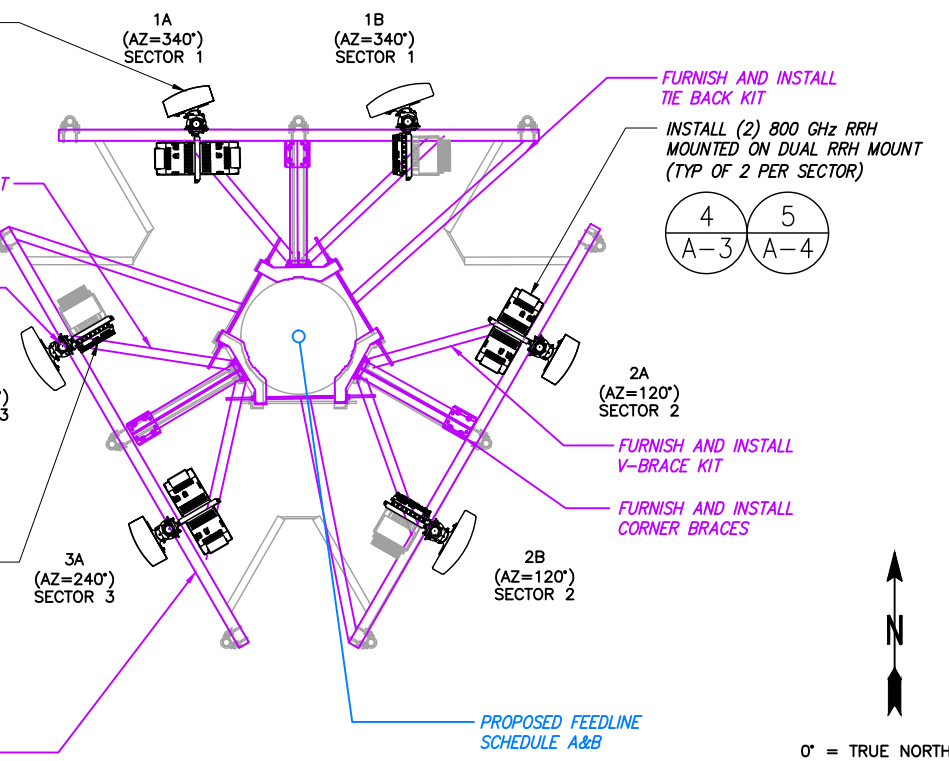


FURNISH AND INSTALL PLATFORM REINFORCEMENT KIT  
 FURNISH AND INSTALL MOUNT PIPES (TYP OF 2 PER SECTOR)

INSTALL RELOCATED 1900 MHz RRH (TYP OF 1 PER SECTOR) & NEW 2.5 GHz RRH (TYP OF 1 PER SECTOR) MOUNTED ON DUAL RRH MOUNT

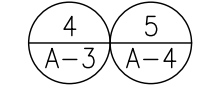


FURNISH AND INSTALL HORIZONTAL RAIL



FURNISH AND INSTALL TIE BACK KIT

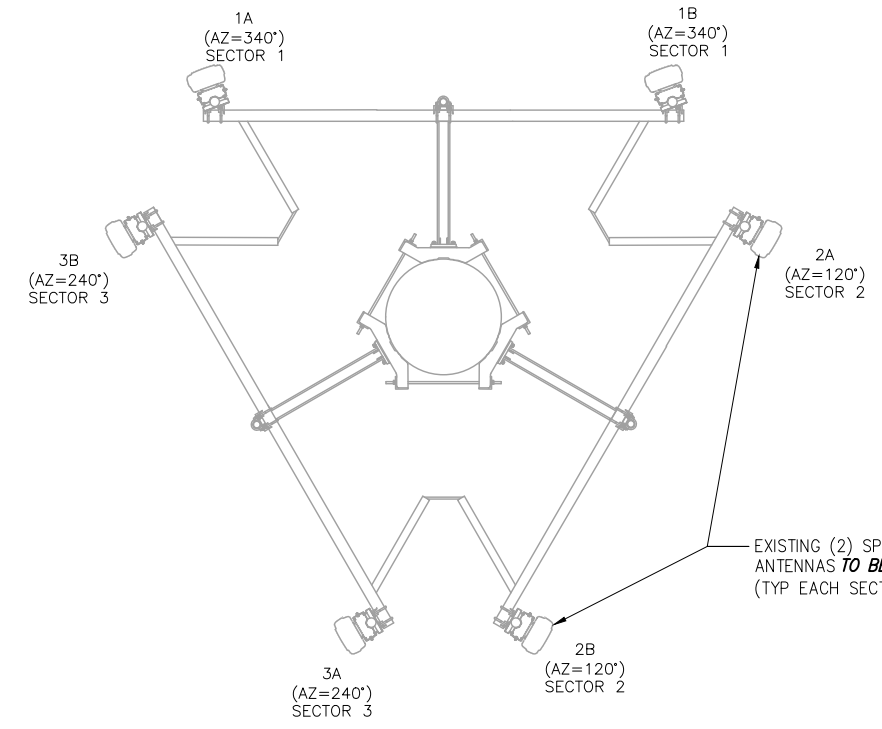
INSTALL (2) 800 GHz RRH MOUNTED ON DUAL RRH MOUNT (TYP OF 2 PER SECTOR)



FURNISH AND INSTALL V-BRACE KIT

FURNISH AND INSTALL CORNER BRACES

PROPOSED FEEDLINE SCHEDULE A&B



EXISTING (2) SPRINT PANEL ANTENNAS TO BE REMOVED (TYP EACH SECTOR)

0° = TRUE NORTH

EXISTING ANTENNA & RRH LAYOUT

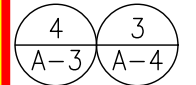
NO SCALE 1

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.

FURNISH AND INSTALL MOUNT PIPES (TYP OF 2 PER SECTOR)  
 INSTALL RELOCATED 1900 MHz RRH (TYP OF 1 PER SECTOR) & NEW 2.5 GHz RRH (TYP OF 1 PER SECTOR) MOUNTED ON DUAL RRH MOUNT

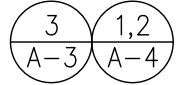


FURNISH AND INSTALL TIE BACK KIT

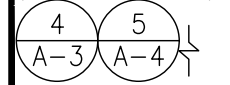
FURNISH AND INSTALL PLATFORM REINFORCEMENT KIT

FURNISH AND INSTALL V-BRACE KIT  
 FURNISH AND INSTALL HORIZONTAL RAIL

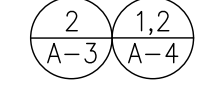
INSTALL SPRINT PANEL ANTENNA MOUNTED TO NEW PIPE MOUNT (TYP OF 2 PER SECTOR)



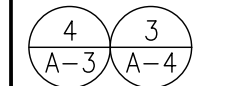
INSTALL (2) 800 GHz RRH MOUNTED ON DUAL RRH MOUNT (TYP OF 2 PER SECTOR)



INSTALL PANEL ANTENNA (TYP OF 2 PER SECTOR)



INSTALL RELOCATED 1900 MHz RRH (TYP OF 1 PER SECTOR) & NEW 2.5 GHz RRH (TYP OF 1 PER SECTOR) MOUNTED ON DUAL RRH MOUNT

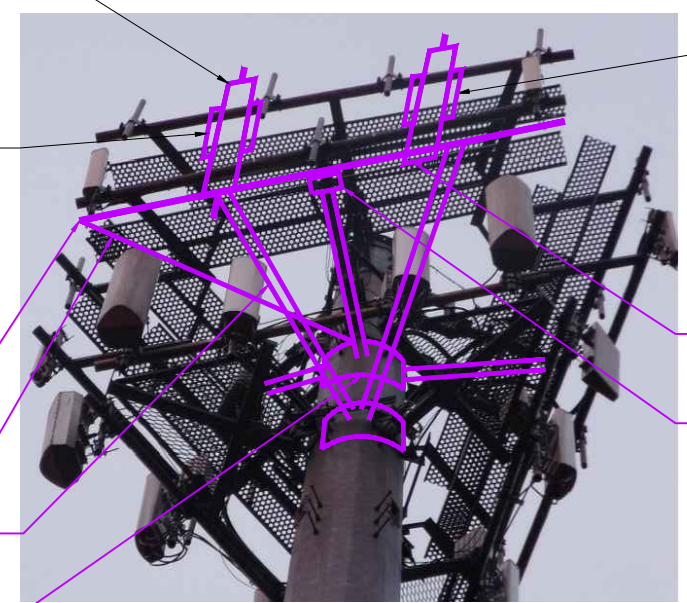


FURNISH AND INSTALL HORIZONTAL RAIL

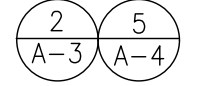
FURNISH AND INSTALL TIE BACK KIT

FURNISH AND INSTALL V-BRACE KIT

FURNISH AND INSTALL PLATFORM REINFORCEMENT KIT



INSTALL 800 MHz RRH MOUNTED ON DUAL RRH MOUNT ON NEW MOUNT PIPE (TYP OF 2 PER SECTOR)



FURNISH AND INSTALL MOUNT PIPES (TYP OF 2 PER SECTOR)

FURNISH AND INSTALL CORNER BRACES

TYPICAL MOUNTING DETAIL

NO SCALE 3

ANTENNA & RRH MOUNT PHOTO DETAIL

NO SCALE 4



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  
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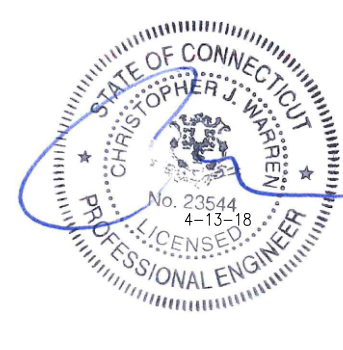
PLANS PREPARED BY:



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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.
ISSUED FOR CONSTRUCTION	04/13/18	SL	0
ISSUED FOR REVIEW	01/18/18	RCD	A

SITE NUMBER:

**CT33XC569**

SITE ADDRESS:

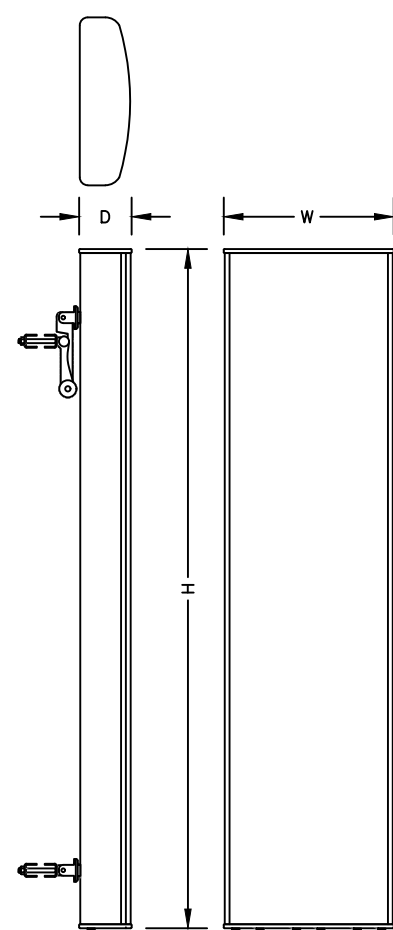
203 DAVIS ROAD  
CHAPLIN, CT

SHEET DESCRIPTION:

**EQUIPMENT & MOUNTING DETAILS**

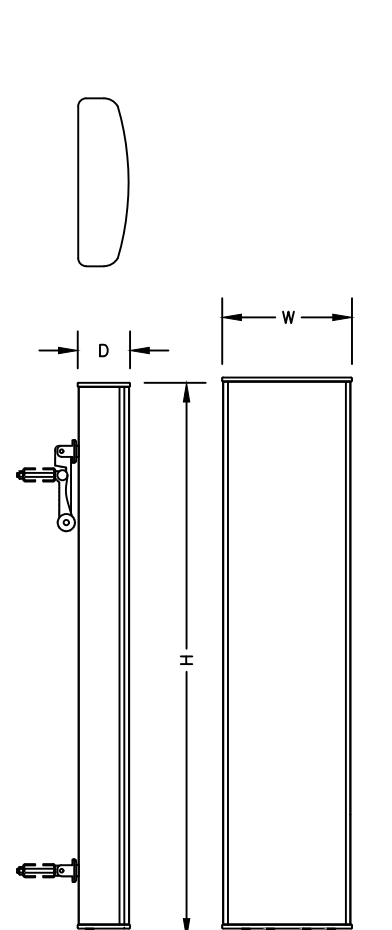
SHEET NUMBER:

**A-4**



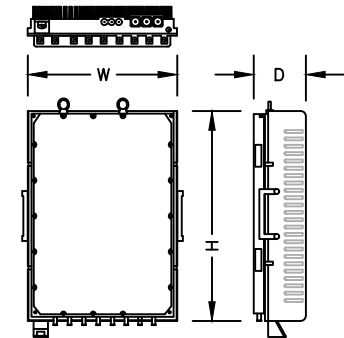
ANTENNA SPECIFICATIONS	
MANUF.	COMMSCOPE
MODEL #	NNVV-65B-R4
HEIGHT	72"
WIDTH	19.6"
DEPTH	7.8"
WEIGHT	84.7± LBS.

ANTENNA DETAIL      NO SCALE      1



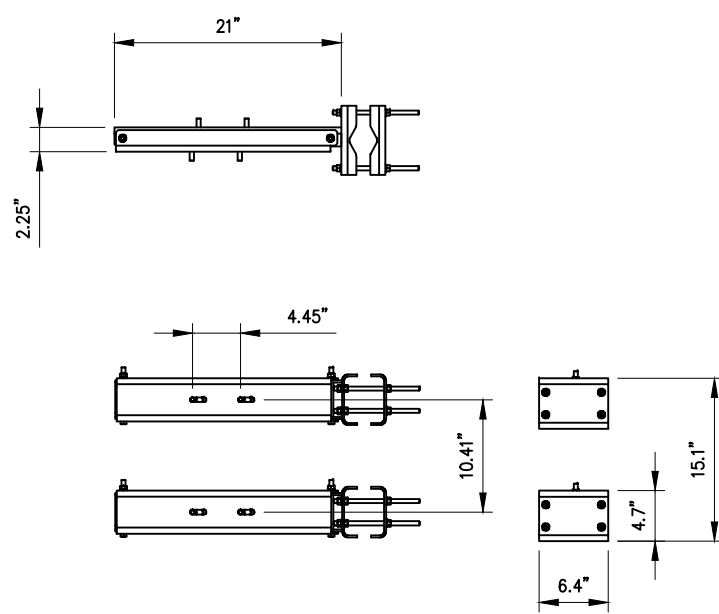
ANTENNA SPECIFICATIONS	
MANUF.	RFS
MODEL #	APXVTM14-ALU-120
HEIGHT	56.3"
WIDTH	12.6"
DEPTH	6.3"
WEIGHT	56.2± LBS.

ANTENNA DETAIL      NO SCALE      2

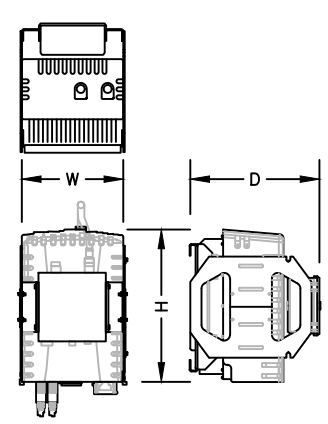


2.5 GHZ RRH SPECIFICATIONS	
MANUF.	NOKIA (ALU)
MODEL #	TD-RRH8X20-25
HEIGHT	26.1"
WIDTH	18.6"
DEPTH	6.7"
WEIGHT	70± LBS

2.5 RRH      NO SCALE      3

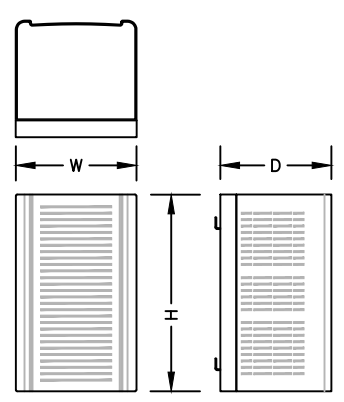


DUAL RRH MOUNT DETAIL      NO SCALE      4



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

800 MHz RRH      NO SCALE      5



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

1900 MHz RRH (EXISTING TO BE RELOCATED)      NO SCALE      6

**RFS HYBRIFLEX RISER CABLE SCHEDULE**

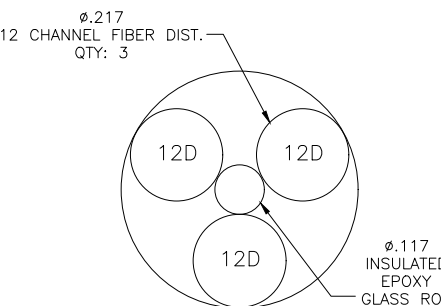
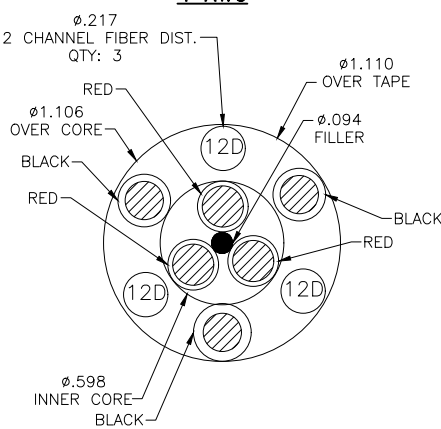
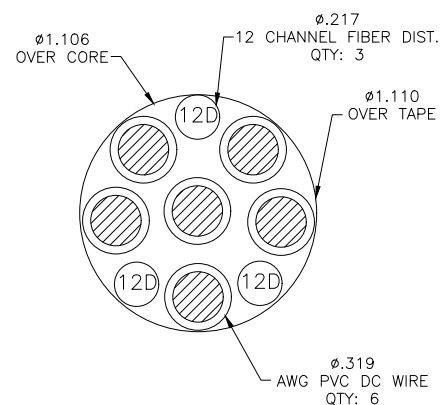
Fiber Only (Existing DC Power)	Hybrid cable MN: HB058-M12-050F 12x multi-mode fiber pairs, Top: Outdoor protected connectors, Bottom: LC Connectors, 5/8 cable, 50 ft	50 ft
	MN: HB058-M12-075F	75 ft
	MN: HB058-M12-100F	100 ft
	MN: HB058-M12-125F	125 ft
	MN: HB058-M12-150F	150 ft
	MN: HB058-M12-175F	175 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.
- \* SPRINT CM TO CONFIRM HYBRID RISER CABLE AND HYBRID JUMPER CABLE MODEL NUMBERS BEFORE PREPARING BOM.



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**  
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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:  
  
 STATE OF CONNECTICUT  
 CHRISTOPHER J. WARREN  
 No. 23544  
 4-13-18  
 LICENSED PROFESSIONAL ENGINEER

CHECKED BY:

APPROVED BY:

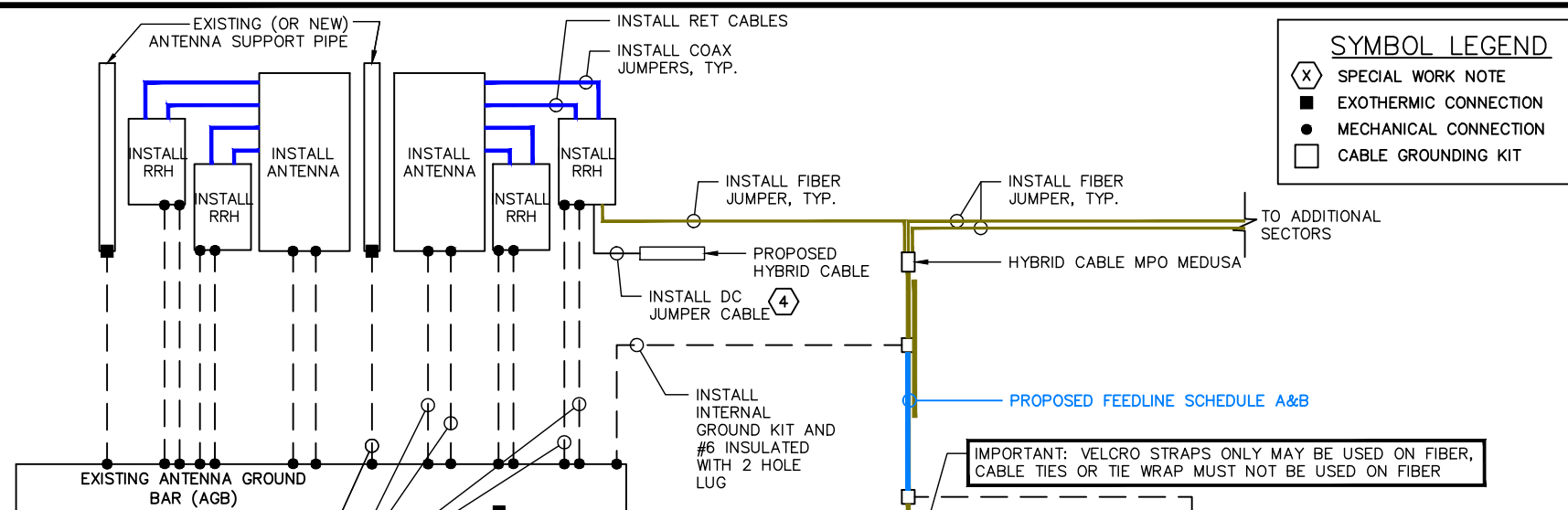
REVISIONS:	DESCRIPTION	DATE	BY	REV.
ISSUED FOR CONSTRUCTION		04/13/18	SL	0
ISSUED FOR REVIEW		01/18/18	RCD	A

SITE NUMBER:  
**CT33XC569**

SITE ADDRESS:  
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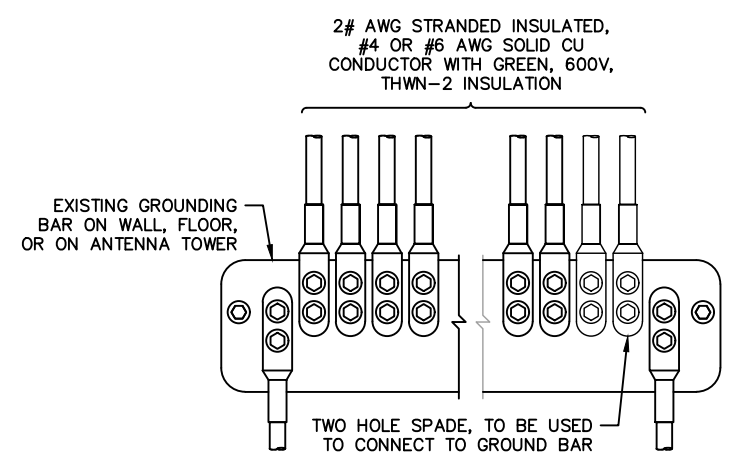
SHEET DESCRIPTION:  
**DETAILS**

SHEET NUMBER:  
**A-5**



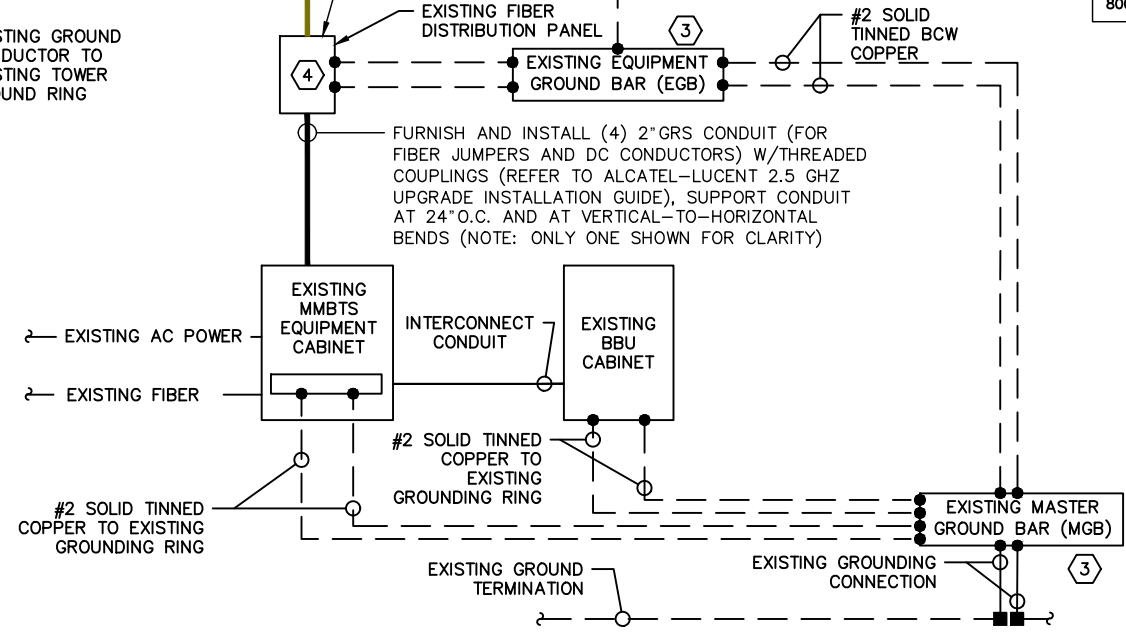
**SPECIAL WORK NOTE:**

- G.C. TO FURNISH AND INSTALL ALL COMPONENTS TO UPGRADE EXISTING ELECTRICAL SERVICE, CONDUIT, CONDUCTOR, PPC AND MCB IN ACCORDANCE WITH SPRINT CONSTRUCTION STANDARDS NV 2.5 ADDENDUM "ENGINEERING NOTICE 2013-002 (POWER UPGRADES) REV.0" (OR CURRENT VERSION)
- G.C. TO FURNISH AND INSTALL UPGRADE THE EXISTING MMBTS BREAKER, CONDUCTOR, AND CONDUIT TO A MINIMUM NEC RATING.
- 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)
- USE SPARE DC CABLES COILED UP AT TOWER TOP NV ARRAY TO POWER UP 2.5 RRH. INSIDE EXISTING FIBER DISTRIBUTION BOX, TIE SPARE DC CONDUCTORS INTO EXISTING DC BREAKER PANEL PER APPROVED DC WIRING CONNECTIVITY OPTION (BASED ON NV HYBRIFLEX CABLE LENGTH). CONSULT WITH SPRINT CM TO DETERMINE APPROPRIATE DC CONNECTIVITY OPTION, PLUMBING DIAGRAM AND DC BREAKER SIZE.

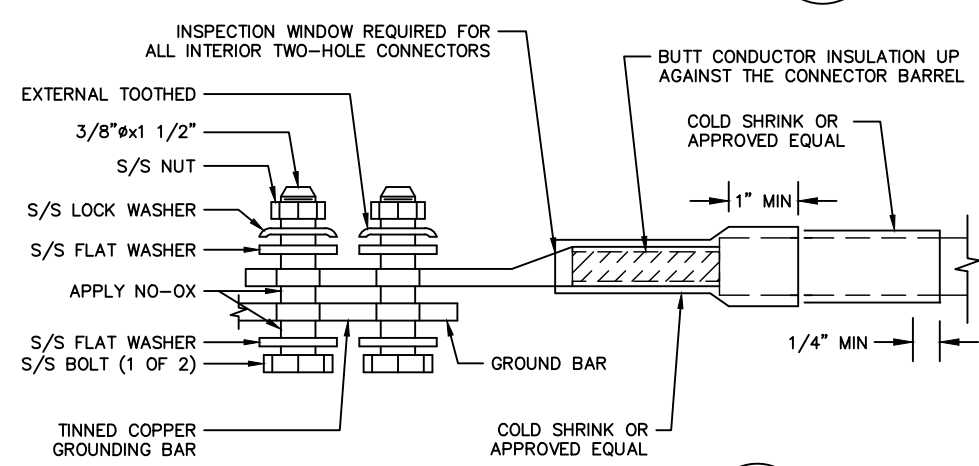


1. APPLY NO-OX TO LUG AND BAR CONTACT SURFACE. DO NOT COAT INLINE LUG.  
 2. IF STOLEN GROUND BARS ARE ENCOUNTERED, CONTACT SPRINT CM FOR REPLACEMENT THREADED ROD KIT.

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



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



**TWO HOLE LUG**  
 SCALE: N.T.S.

**ELECTRICAL NOTES**

- ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
- THE ELECTRICAL CONTRACTOR SHALL COORDINATE ALL CONDUIT ROUTING WITH LOCAL UTILITY COMPANIES AND SPRINT CONSTRUCTION MANAGER.
- ALL CONDUITS ROUTED BELOW GRADE SHALL TRANSITION TO RIGID GALVANIZED ELBOWS WITH RIGID GALVANIZED STEEL CONDUIT ABOVE GRADE.
- ALL METAL CONDUITS SHALL BE PROVIDED WITH GROUNDING BUSHINGS.
- 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.
- ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
- THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIALS DESCRIBED BY DRAWINGS AND SPECIFICATIONS INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
- GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
- 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.
- BURIED CONDUIT SHALL BE SCHEDULE 40 PVC.
- ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THIN INSULATION.
- 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.
- 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.
- FIBER OPTIC CIRCUITS SHALL BE IN ACCORDANCE WITH NEC ARTICLE 770-OPTICAL FIBER CABLES AND RACEWAYS.
- COMMUNICATIONS CIRCUITS SHALL BE IN ACCORDANCE WITH NEC ARTICLE 800-COMMUNICATIONS SYSTEMS.

**PROTECTIVE GROUNDING SYSTEMS GENERAL NOTES:**

- GROUNDING SHALL BE IN ACCORDANCE WITH NEC ARTICLE 250-GROUNDING AND BONDING.
- 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".
- PROVIDE GROUND CONNECTIONS FOR ALL METALLIC STRUCTURES, ENCLOSURES, RACEWAYS AND OTHER CONDUCTIVE ITEMS ASSOCIATED WITH THE INSTALLATION OF CARRIER'S EQUIPMENT.
- GROUND CONNECTIONS: CLEAN SURFACES THOROUGHLY BEFORE APPLYING GROUND LUGS OR CLAMPS. IF SURFACE IS COATED, REMOVE THE COATING, APPLY A NON-CORROSIVE APPROVED COMPOUND TO CLEAN SURFACE AND INSTALL LUGS OR CLAMPS. WHERE GALVANIZING IS REMOVED FROM METAL, IT SHALL BE PAINTED OR TOUCHED UP WITH "GALVAMOX" OR EQUAL.
- 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.
- 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.
- ALL GROUND WIRES SHALL BE #2 SOLID TINNED BCW UNLESS NOTED OTHERWISE.
- PROVIDE DEDICATED #2 AWG COPPER GROUND WIRE FROM EACH ANTENNA MOUNTING PIPE TO ASSOCIATED CIGBE.
- 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.
- EACH EQUIPMENT CABINET SHALL BE CONNECTED TO THE MASTER ISOLATION GROUND BAR (MGB) WITH #2 SOLID TINNED BCW EQUIPMENT CABINETS WALL HAVE (2) CONNECTIONS.
- 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'.
- THE CONTRACTOR SHALL VERIFY THAT THE EXISTING GROUND BARS HAVE ENOUGH SPACE/HOLES FOR ADDITIONAL TWO HOLE LUGS.
- 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.
- 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.
- 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.
- ALL BOLTS, WASHERS, AND NUTS USED ON GROUNDING CONNECTIONS SHALL BE STAINLESS STEEL.
- 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.
- 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)

PLANS PREPARED FOR:

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 JOB NUMBER: 526-104

ENGINEERING LICENSE:

CHECKED BY:

APPROVED BY:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR CONSTRUCTION	04/13/18	SL	0
ISSUED FOR REVIEW	01/18/18	RCD	A

SITE NUMBER:  
**CT33XC569**

SITE ADDRESS:  
 203 DAVIS ROAD  
 CHAPLIN, CT

SHEET DESCRIPTION:  
**ELECTRICAL & GROUNDING DETAILS**

SHEET NUMBER:  
**E-1**



# RF Design Sheet

Site Identification	
Cascade	CT33XC569
SMS Schedule ID	12323282
SMS Schedule Name	DO Macro Upgrade
PID	
RRU OEM	ALU
Switch OEM	Alcatel Lucent
RFDS Issue Date	2017-08-15 00:00:00.0
RFDS Revision Date	2017-10-20 10:09:40.0
RFDS Revision	3

Filter Analysis Complete	YES
RFDS - Issue Date	08/15/2017
Design Status	Complete
Project Description	DO Macro Upgrade - Add 800MHz (3G + 4G) and 2500 MHz

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

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

Location Details	
Latitude	41.79347
Longitude	-72.16017
Market	Northern Connecticut
Region	Northeast
City	Chaplin
State	CT
Zip Code	CT/06235
County	Windham

2500MHz	3
1900MHz	3
800MHz	3

Band: 2500	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
<b>Radio Model</b>						
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
Trunk Cable 1 Qty						

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

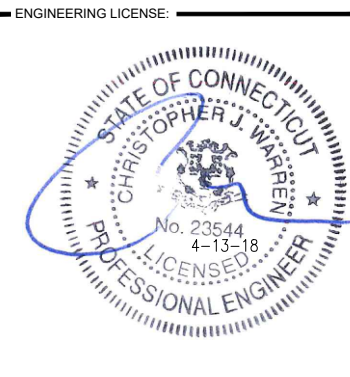
Band: 2500	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
<b>Antenna1</b>						
Model Number	APXVTM14-ALU-I20	APXVTM14-ALU-I20	APXVTM14-ALU-I20			
Weight (lbs)	56.2	56.2	56.2	N/A	N/A	N/A
Dimensions	56.3 x 12.6 x 6.3	56.3 x 12.6 x 6.3	56.3 x 12.6 x 6.3	N/A	N/A	N/A
Manufacturer	RFS	RFS	RFS	N/A	N/A	N/A
Ant 1 Top Jumper Make/Model/Qty	2.5 Jumper 8	2.5 Jumper 8	2.5 Jumper 8	N/A 0	N/A 0	N/A 0
Ant 1 RF requested Diameter	1/2"	1/2"	1/2"	N/A	N/A	N/A
Ant 1 RF requested Top Jumper Length(ft)	8	8	8	N/A	N/A	N/A
Antenna 1 Azimuth	340	120	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)	161.9750708	161.9750708	161.9750708	N/A	N/A	N/A
Antenna 1 Electrical DT	2	2	2	N/A	N/A	N/A
Antenna 1 Electrical DT 2	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Electrical DT 3	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Twist	N/A	N/A	N/A	N/A	N/A	N/A

Band: 1900	Alpha	Beta	Gamma	Delta	Epsilon	Zeta
<b>Antenna1</b>						
Model Number	NNVY-65B-R4	NNVY-65B-R4	NNVY-65B-R4			
Weight (lbs)	84.7	84.7	84.7	N/A	N/A	N/A
Dimensions	72 x 19.6 x 7.8	72 x 19.6 x 7.8	72 x 19.6 x 7.8	N/A	N/A	N/A
Manufacturer	CommScope	CommScope	CommScope	N/A	N/A	N/A
Ant 1 Top Jumper Make/Model/Qty	800/1900 Jumper 4	800/1900 Jumper 4	800/1900 Jumper 4	N/A 0	N/A 0	N/A 0
Ant 1 RF requested Diameter	1/2"	1/2"	1/2"	N/A	N/A	N/A
Ant 1 RF requested Top Jumper Length(ft)	8	8	8	N/A	N/A	N/A
Antenna 1 Azimuth	340	120	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)	161.9750708	161.9750708	161.9750708	N/A	N/A	N/A
Antenna 1 Electrical DT	3	3	3	N/A	N/A	N/A
Antenna 1 Electrical DT 2	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Electrical DT 3	N/A	N/A	N/A	N/A	N/A	N/A
Antenna 1 Twist	N/A	N/A	N/A	N/A	N/A	N/A

PLANS PREPARED FOR:  
**Sprint**  
 1 INTERNATIONAL BLVD, SUITE 800  
 MAHWAH, NJ 07495  
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PROJECT MANAGER:  
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CHECKED BY:

APPROVED BY:

REVISIONS:	DESCRIPTION	DATE	BY	REV.
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	ISSUED FOR REVIEW	01/18/18	RCD	A

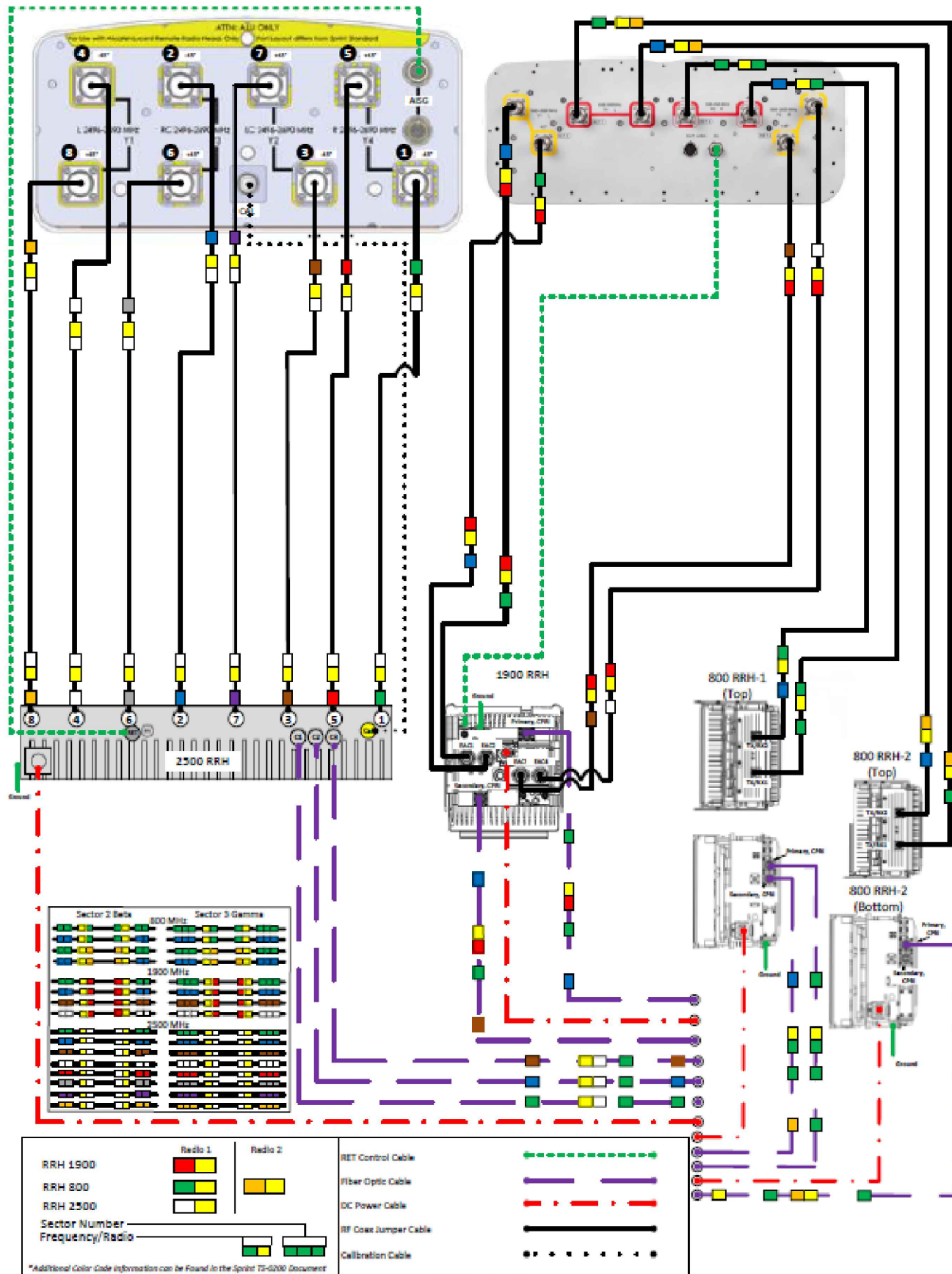
SITE NUMBER:  
**CT33XC569**

SITE ADDRESS:  
 203 DAVIS ROAD  
 CHAPLIN, CT

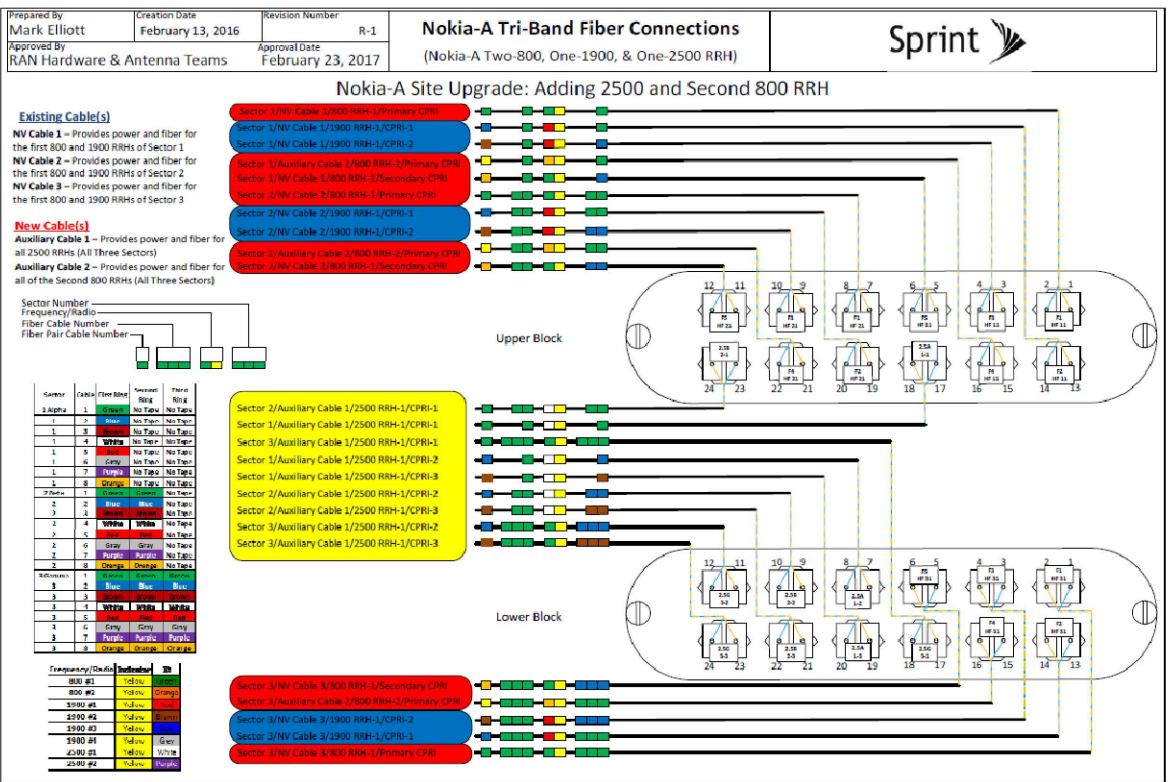
SHEET DESCRIPTION:  
**RF DATA SHEET**

SHEET NUMBER:  
**RF-1**

# ALU 211 APXVTM14-ALU-I20 & NNVV-65B-R4 wo Filters



Not to Scale



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REVISIONS:

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ISSUED FOR REVIEW	01/18/18	RCD	A

SITE NUMBER:  
 CT33XC569

SITE ADDRESS:  
 203 DAVIS ROAD  
 CHAPLIN, CT

SHEET DESCRIPTION:  
 PLUMBING DIAGRAM

SHEET NUMBER:  
 RF-2