



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

November 8, 2017

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

**Notice of Exempt Modification**  
**1293 Bantam Road, Litchfield, CT**  
**41 43 1.86 N**  
**-73 15 39.34 W**  
**Sprint #: CT33XC024\_2.5**

Dear Ms. Bachman:

Sprint currently maintains antennas at the 150-foot level of the existing 149-foot Monopole Tower at 1291 Bantam Road in Litchfield, CT. The property is owned by Robert & Judith Hammer and William and Deborah Downes. The Tower is owned by SBA Towers V, LLC. Sprint now intends to add (3) newer technology cell antennas at the 150-foot level of the tower.

Please note: previous approval was given by the Siting Council on 7/25/14 under EM-SPRINT-074-140711. A Notification of Construction Not Complete was sent 12/3/15. Sprint now intends to resume construction. The proposed full scope of work is as follows:

Remove: None

Remove and Replace: None

Install:

- (3) RFS APXVTM14-C-I20 – Panel Antennas
- (3) ALU TD-RRH8x20-25 RRUs
- (1) 1-1/4" Hybrid

Existing Equipment to Remain (Including entitlements):

- (3) RFS APXVSP18-C-A20 – Panel Antennas
- (3) ALU 1900MHz RRUs
- (3) ALU 800MHz RRUs
- (3) ALU 800MHz Filters
- (4) RFS A20-N ACUs
- (3) 1-1/4" Hybrid

At 73':

- (1) GPS
- (1) 1/2" line

This facility was originally approved by the Council on 12/9/03 under Docket 258. Approval was given for a 150' monopole with low profile antennas. The structure was to be no taller than necessary to provide the proposed telecommunication services and was to allow public/private entities to share space for fair consideration. The Town was to be given space at no cost. A recalculated RF report was to be provided with emission conditions changed, and obsolete equipment was to be removed within 60 days. This modification complies with all aforementioned 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's First Selectman, Leo Paul, and Land Use Administrator, Dennis Tobin, as well as to the Property Owner. (Separate notice is not being sent to the 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  
kpelletier@sbsite.com

Attachments

cc: Leo Paul, First Selectman / with attachments  
*Town of Litchfield, 74 West Street, Litchfield, CT 06759*  
Dennis Tobin, Land Use Administrator / with attachments  
*Town of Litchfield, 80 Doyle Road, Bantam, CT 06750*  
Robert & Judith Hammer and William and Deborah Downes  
*c/o 30 Revere Road Washington CT 06793*  
*and*  
*1293 Bantam Road, Litchfield, CT*



## POWER DENSITY

### SPRINT Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	RFS APXVSPPI8-C-A20	Make / Model:	RFS APXVSPPI8-C-A20	Make / Model:	RFS APXVSPPI8-C-A20
Gain:	13.4 / 15.9 dBd	Gain:	13.4 / 15.9 dBd	Gain:	13.4 / 15.9 dBd
Height (AGL):	149 feet	Height (AGL):	149 feet	Height (AGL):	149 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):	220 Watts	Total TX Power(W):	220 Watts	Total TX Power(W):	220 Watts
ERP (W):	7,537.38	ERP (W):	7,537.38	ERP (W):	7,537.38
Antenna A1 MPE%	1.48 %	Antenna B1 MPE%	1.48 %	Antenna C1 MPE%	1.48 %
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	RFS APXVTM14-C-120	Make / Model:	RFS APXVTM14-C-120	Make / Model:	RFS APXVTM14-C-120
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	149 feet	Height (AGL):	149 feet	Height (AGL):	149 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%	1.12 %	Antenna B2 MPE%	1.12 %	Antenna C2 MPE%	1.12 %

Site Composite MPE%	
Carrier	MPE%
SPRINT - Max per sector	2.60 %
T-Mobile	2.89 %
AT&T	2.14 %
Verizon Wireless	1.65 %
Site Total MPE %:	9.28 %

SPRINT Sector A Total:	2.60 %
SPRINT Sector B Total:	2.60 %
SPRINT Sector C Total:	2.60 %
Site Total:	9.28 %

SPRINT_ Max Values per Frequency Band / Technology Per Sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ( $\mu\text{W}/\text{cm}^2$ )	Frequency (MHz)	Allowable MPE ( $\mu\text{W}/\text{cm}^2$ )	Calculated % MPE
Sprint 850 MHz CDMA	1	437.55	150	0.76	850 MHz	567	0.13%
Sprint 850 MHz LTE	2	437.55	150	1.52	850 MHz	567	0.27%
Sprint 1900 MHz (PCS) CDMA	5	622.47	150	5.40	1900 MHz (PCS)	1000	0.54%
Sprint 1900 MHz (PCS) LTE	2	1,556.18	150	5.40	1900 MHz (PCS)	1000	0.54%
Sprint 2500 MHz (BRS) LTE	8	778.09	147.5	11.18	2500 MHz (BRS)	1000	1.12%
						<b>Total:</b>	<b>2.60%</b>

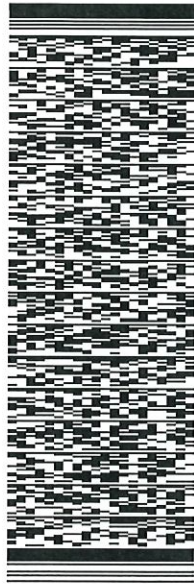
ORIGIN ID: BFFA (508) 614-0389  
RICK WOODS  
SBA NETWORK SERVICES INC  
134 FLANDERS ROAD  
SUITE 125  
WESTBOROUGH, MA 01581  
UNITED STATES US

SHIP DATE: 08NOV17  
ACTWGT: 1.00 LB  
CAD: 105843304/NET3920  
BILL SENDER

TO LEO PAUL, FIRST SELECTMAN  
TOWN OF LITCHFIELD  
74 WEST STREET

LITCHFIELD CT 06759  
(508) 251-0720 X.3804 REF: 1056920096099  
INV: DEPT:

549J3/F877/104C



J172117091301uv

TRK# 7706 9732 2681  
0201

THU - 09 NOV 10:30A  
PRIORITY OVERNIGHT

EB HFDA

06759  
CT-US BDL



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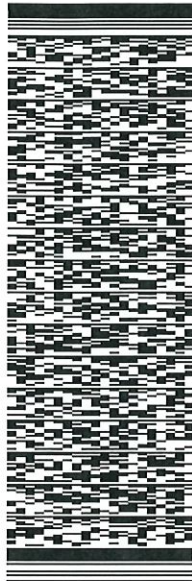
ORIGIN ID: BFEA (508) 614-0389  
RICK WOODS  
SEA NETWORK SERVICES INC  
134 FLANDERS ROAD  
SUITE 125  
WESTBOROUGH, MA 01581  
UNITED STATES US

SHIP DATE: 09NOV17  
ACTWGT: 1.00 LB  
CAD: 105843304/NET3920  
BILL SENDER

TO DENNIS TOBIN, LAND USE ADMIN.  
TOWN OF LITCHFIELD  
80 DOYLE ROAD

BANTAM CT 06750  
(508) 251-0720 X 3804 REF: 105692009-6099  
INV: DEPT:  
PO:

549J3F877/104C



TRK# 7706 9736 4780  
0201

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PRIORITY OVERNIGHT

EB HFDA

06750  
CT-US BDL



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ORIGIN ID:BBFA (508) 614-0389  
RICK WOODS  
SPAN NETWORK SERVICES INC  
134 FLANDERS ROAD  
SUITE 125  
WESTBOROUGH, MA 01581  
UNITED STATES US

SHIP DATE: 08NOV17  
ACTWGT: 1.00 LB  
CAD: 105843304/NET3920  
BILL SENDER

TO **ROBERT/JUDITH HAMMER AND W&D DOWNES**  
**30 REVERE RD.**

**WASHINGTON CT 06793**  
(508) 251-0720 X.3804 REF: 105692009-8089  
INV. PO. DEPT.

549J3F877/104C



TRK# 7706 9739 1409  
0201

THU - 09 NOV 10:30A  
PRIORITY OVERNIGHT

**EB HFDA**

06793  
CT-US BDL



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ORIGIN ID: BFFA (508) 614-0389  
RICK WOODS  
SBA NETWORK SERVICES INC  
134 FLANDERS ROAD  
SUITE 125  
WESTBOROUGH, MA 01581  
UNITED STATES US

SHIP DATE: 09NOV17  
ACTWGT: 1.00 LB  
CAD: 105843304/NET3920  
BILL SENDER

TO ROBERT/JUDITH HAMMER AND W&D DOWNES  
1293 BANTAM RD.

LITCHFIELD CT 06759  
(508) 251-0720 X 3804 REF: 1056-92009-6099  
INV: DEPT:  
PO:

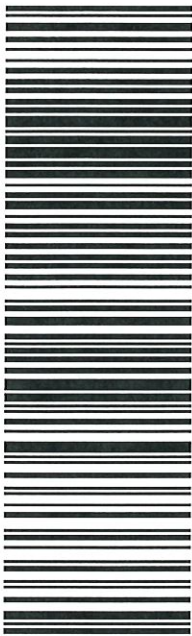
549J3F877/104C



TRK# 7706 9740 7261  
0201  
THU - 09 NOV 10:30A  
PRIORITY OVERNIGHT

EB HFDA

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**1293 BANTAM RD**

**Location** 1293 BANTAM RD

**Mblu** 61/ 87/ 42/ /

**Acct#** 008045

**Owner** HAMMER ROBERT & JUDITH  
ET AL

**Assessment** \$865,080

**PID** 1384

**Building Count** 4

**Current Value**

Assessment			
Valuation Year	Improvements	Land	Total
2016	\$620,010	\$245,070	\$865,080

**Owner of Record**

**Owner** HAMMER ROBERT & JUDITH ET AL  
**Co-Owner**

**Sale Price** \$300,000  
**Certificate**  
**Book & Page** 307/ 353  
**Sale Date** 03/14/2007  
**Instrument** 08

**Ownership History**

Ownership History					
Owner	Sale Price	Certificate	Book & Page	Instrument	Sale Date
HAMMER ROBERT & JUDITH ET AL	\$300,000		307/ 353	08	03/14/2007
HAMMER ROBERT ET AL	\$0		307/ 350		03/14/2007
HAMMER ROBERT & JOHN JR	\$0		135/ 574	25	04/19/1969

**Building Information**

**Building 1 : Section 1**

**Year Built:** 1970  
**Living Area:** 988  
**Replacement Cost:** \$220,278  
**Building Percent** 68  
**Good:**  
**Replacement Cost**  
**Less Depreciation:** \$149,790

**Building Photo**

Building Attributes	
Field	Description
STYLE	Restaurant
MODEL	Comm/Ind

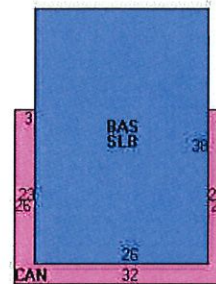


Grade	D
Stories	1
Occupancy	1
Exterior Wall 1	Brick
Exterior Wall 2	Concr/Cinder
Roof Structure	Flat
Roof Cover	Tar & Gravel
Interior Wall 1	Minimum
Interior Wall 2	
Interior Floor 1	Ceramic Tile
Interior Floor 2	
Heating Fuel	Oil
Heating Type	Forced Hot Air
Central Air	None
Sprinkler %	0
Bldg Use	Commercial
Total Rooms	0
Full Baths	0
Half Baths	0
Extra Fixtures	0
Total Fixtures	0
1st Floor Use	
Heat/AC	None
Frame Type	Reinf. Concr
Baths/Plumbing	Average
Common Wall	0
Wall Height	10
Perimeter	128



(<http://images.vgsi.com/photos/LitchfieldCTPhotos//\00\00\92\37.jpg>)

**Building Layout**



Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	988	988
CAN	Canopy	234	0
SLB	Slab	988	0
		2,210	988

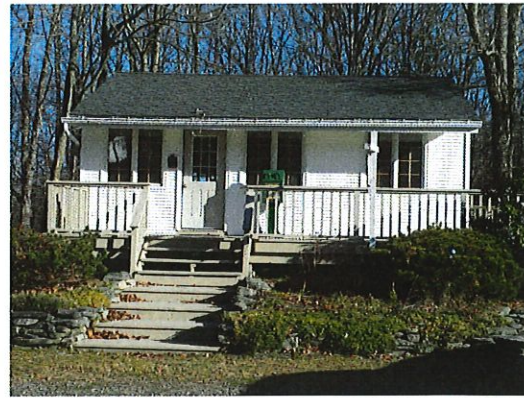
**Building 2 : Section 1**

**Year Built:** 1977  
**Living Area:** 450  
**Replacement Cost:** \$80,567  
**Building Percent** 82  
**Good:**  
**Replacement Cost**  
**Less Depreciation:** \$66,060

**Building Photo**

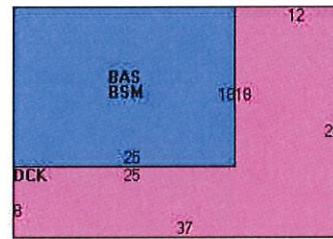
Building Attributes : Bldg 2 of 4	
Field	Description
STYLE	Office
MODEL	Comm/Ind
Grade	D
Stories	1
Occupancy	1

Exterior Wall 1	Vinyl Siding
Exterior Wall 2	
Roof Structure	Gable
Roof Cover	Arch Shingles
Interior Wall 1	Drywall
Interior Wall 2	
Interior Floor 1	Hardwood
Interior Floor 2	
Heating Fuel	Electric
Heating Type	Elec Baseboard
Central Air	None
Sprinkler %	0
Bldg Use	Commercial
Total Rooms	0
Full Baths	0
Half Baths	1
Extra Fixtures	0
Total Fixtures	2
1st Floor Use	
Heat/AC	None
Frame Type	Wood Frame
Baths/Plumbing	Average
Common Wall	0
Wall Height	9
Perimeter	86



(http://images.vgsi.com/photos/LitchfieldCTPhotos//\00\00\92\38.jpg)

**Building Layout**



Building Sub-Areas (sq ft)			Legend	
Code	Description	Gross Area	Living Area	
BAS	First Floor	450	450	
BSM	Basement	450	0	
DCK	Deck	512	0	
		1,412	450	

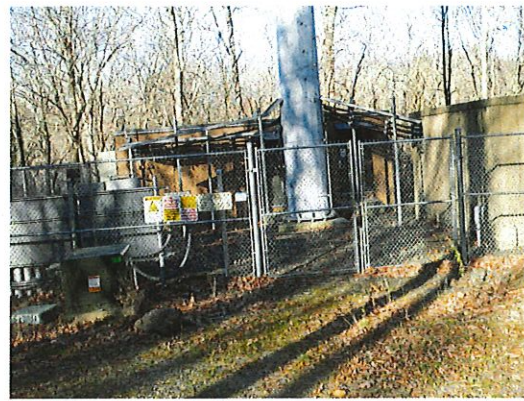
**Building 3 : Section 1**

**Year Built:** 2005  
**Living Area:** 360  
**Replacement Cost:** \$33,787  
**Building Percent:** 93  
**Good:**  
**Replacement Cost Less Depreciation:** \$31,420

Building Attributes : Bldg 3 of 4	
Field	Description
STYLE	Pre-Eng Warehs
MODEL	Comm/Ind
Grade	A
Stories	1
Occupancy	1

**Building Photo**

Exterior Wall 1	Concr/Cinder
Exterior Wall 2	
Roof Structure	Flat
Roof Cover	Rolled
Interior Wall 1	Minimum
Interior Wall 2	
Interior Floor 1	Concrete
Interior Floor 2	
Heating Fuel	None
Heating Type	None
Central Air	None
Sprinkler %	0
Bldg Use	Commercial
Total Rooms	0
Full Baths	0
Half Baths	0
Extra Fixtures	0
Total Fixtures	0
1st Floor Use	
Heat/AC	None
Frame Type	Reinf. Concr
Baths/Plumbing	Average
Common Wall	0
Wall Height	10
Perimeter	84



(<http://images.vgsi.com/photos/LitchfieldCTPhotos//\00\00\92\39.jpg>)

**Building Layout**



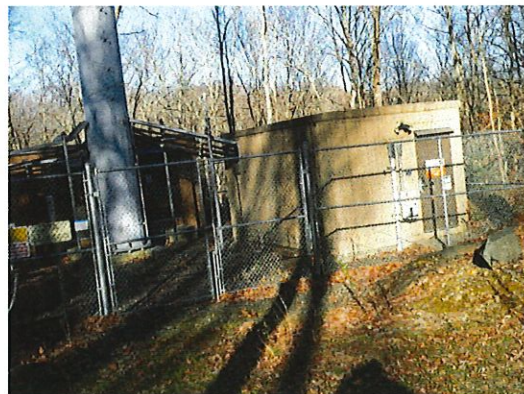
Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	360	360
SLB	Slab	360	0
		720	360

**Building 4 : Section 1**

**Year Built:** 2005  
**Living Area:** 240  
**Replacement Cost:** \$23,950  
**Building Percent Good:** 93  
**Replacement Cost Less Depreciation:** \$22,270

Building Attributes : Bldg 4 of 4	
Field	Description
STYLE	Pre-Eng Warehs
MODEL	Comm/Ind
Grade	A
Stories	1
Occupancy	0
Exterior Wall 1	Concr/Cinder

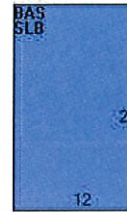
**Building Photo**



(<http://images.vgsi.com/photos/LitchfieldCTPhotos//\00\00\92\40.jpg>)

Exterior Wall 2	
Roof Structure	Flat
Roof Cover	Rolled
Interior Wall 1	Minimum
Interior Wall 2	
Interior Floor 1	Average
Interior Floor 2	
Heating Fuel	None
Heating Type	None
Central Air	None
Sprinkler %	0
Bldg Use	Commercial
Total Rooms	0
Full Baths	0
Half Baths	0
Extra Fixtures	0
Total Fixtures	0
1st Floor Use	
Heat/AC	None
Frame Type	Reinf. Concr
Baths/Plumbing	Average
Common Wall	0
Wall Height	10
Perimeter	64

**Building Layout**



Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	240	240
SLB	Slab	240	0
		480	240

**Extra Features**

Extra Features	Legend
No Data for Extra Features	

**Land**

**Land Use**

Use Code 201  
 Description Commercial  
 Zone 5  
 Neighborhood 200  
 Category

**Land Line Valuation**

Size (Acres) 12.51  
 Frontage  
 Depth  
 Assessed Value \$245,070

**Outbuildings**

Outbuildings						Legend
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
CTWR	Cell Tower			3 UNITS	\$615,600	1
FN1	Fence			200 L.F.	\$600	4

**Valuation History**

<b>Assessment</b>			
<b>Valuation Year</b>	<b>Improvements</b>	<b>Land</b>	<b>Total</b>
2016	\$620,010	\$245,070	\$865,080
2015	\$620,010	\$245,070	\$865,080
2014	\$620,010	\$245,070	\$865,080

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

SPRINT Existing Facility

Site ID: CT33XC024

Litchfield/Hammer  
1291 Bantam Road  
Litchfield, CT 06750

**October 26, 2017**

**EBI Project Number: 6217004751**

Site Compliance Summary	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general population allowable limit:	<b>9.28 %</b>



October 26, 2017

SPRINT

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

## Emissions Analysis for Site: **CT33XC024 – Litchfield/Hammer**

EBI Consulting was directed to analyze the proposed SPRINT facility located at **1291 Bantam Road, Litchfield, 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.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The general population exposure limits for the 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 **1291 Bantam Road, Litchfield, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since SPRINT is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

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





- 6) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 7) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 8) The antennas used in this modeling are the **RFS APXVSP18-C-A20** and the **RFS APXVTM14-C-120** 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 **149.0 feet** above ground level (AGL) for **Sector A**, **149.0 feet** above ground level (AGL) for **Sector B** and **149.0 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:	RFS APXVSPPI8-C-A20	Make / Model:	RFS APXVSPPI8-C-A20	Make / Model:	RFS APXVSPPI8-C-A20
Gain:	13.4 / 15.9 dBd	Gain:	13.4 / 15.9 dBd	Gain:	13.4 / 15.9 dBd
Height (AGL):	<b>149 feet</b>	Height (AGL):	<b>149 feet</b>	Height (AGL):	<b>149 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):	220 Watts	Total TX Power(W):	220 Watts	Total TX Power(W):	220 Watts
ERP (W):	7,537.38	ERP (W):	7,537.38	ERP (W):	7,537.38
Antenna A1 MPE%	<b>1.48 %</b>	Antenna B1 MPE%	<b>1.48 %</b>	Antenna C1 MPE%	<b>1.48 %</b>
Antenna #:	<b>2</b>	Antenna #:	<b>2</b>	Antenna #:	<b>2</b>
Make / Model:	RFS APXVTM14-C-120	Make / Model:	RFS APXVTM14-C-120	Make / Model:	RFS APXVTM14-C-120
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	<b>149 feet</b>	Height (AGL):	<b>149 feet</b>	Height (AGL):	<b>149 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>1.12 %</b>	Antenna B2 MPE%	<b>1.12 %</b>	Antenna C2 MPE%	<b>1.12 %</b>

Site Composite MPE%	
Carrier	MPE%
SPRINT – Max per sector	<b>2.60 %</b>
T-Mobile	2.89 %
AT&T	2.14 %
Verizon Wireless	1.65 %
<b>Site Total MPE %:</b>	<b>9.28 %</b>

SPRINT Sector A Total:	2.60 %
SPRINT Sector B Total:	2.60 %
SPRINT Sector C Total:	2.60 %
<b>Site Total:</b>	<b>9.28 %</b>

SPRINT _ Max Values per Frequency Band / Technology Per Sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ( $\mu\text{W}/\text{cm}^2$ )	Frequency (MHz)	Allowable MPE ( $\mu\text{W}/\text{cm}^2$ )	Calculated % MPE
Sprint 850 MHz CDMA	1	437.55	150	0.76	850 MHz	567	0.13%
Sprint 850 MHz LTE	2	437.55	150	1.52	850 MHz	567	0.27%
Sprint 1900 MHz (PCS) CDMA	5	622.47	150	5.40	1900 MHz (PCS)	1000	0.54%
Sprint 1900 MHz (PCS) LTE	2	1,556.18	150	5.40	1900 MHz (PCS)	1000	0.54%
Sprint 2500 MHz (BRS) LTE	8	778.09	147.5	11.18	2500 MHz (BRS)	1000	1.12%
<b>Total:</b>						<b>2.60%</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:	2.60 %
Sector B:	2.60 %
Sector C:	2.60 %
SPRINT Maximum Total (per sector):	2.60 %
Site Total:	9.28 %
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **9.28 %** 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 149 ft EEI Monopole**

**Customer Name: SBA Communications Corp**

**Customer Site Number: CT12215-A**

**Customer Site Name: Litchfield 3, CT**

**Carrier Name: Sprint Nextel**

**Carrier Site ID / Name: CT33XC024 / Litchfield 3, CT**

**Site Location: 1291 Bantam Road**

**Bantam, Connecticut**

**Litchfield County**

**Latitude: 41.717183**

**Longitude: -73.260928**

### Analysis Result:

**Max Structural Usage: 98.4% [Pass]**

**Max Foundation Usage: 66% [Pass]**

**Report Prepared By : Jie Chen**



10/31/17

## Introduction

The purpose of this report is to summarize the analysis results on the 149 ft EEI 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>	Engineered Endeavors, Inc. (Job No. 12278) Structure and Foundation Design Calculations dated January 26, 2004
<b>Foundation Drawing</b>	Engineered Endeavors, Inc. (Job No. 12278) Design Calculations for a Spread Footer Foundation dated January 27, 2004
<b>Geotechnical Report</b>	Clarence Welti Associates, Inc. (Project Name: Sprint Site CT33XC204) Geotechnical Study dated January 24, 2004
<b>Modification Drawings</b>	FDH Engineering, Inc. (Project No. 12-06691E S3) Modification Drawings for a 149' Monopole dated February 6, 2013

## 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 $V_{ult} = 115.0$ mph (3-Sec. Gust)/ Nominal Design Wind Speed $V_{asd} = 89.0$ mph (3-Sec. Gust)
<b>Wind Speed with Ice:</b>	40 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>	C
<b>Structure Class:</b>	II
<b>Topographic Category:</b>	1
<b>Crest Height:</b>	0 ft
<b>Seismic Parameters:</b>	$S_S = 0.187$ , $S_1 = 0.065$

## 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
-	150.0	3	RFS APXVSP18-C-A20 - Panel	Low Profile Platform	(4) 1-1/4" Fiber	Sprint Nextel
-		3	RFS APXVTM14-C-I20 - Panel			
-		3	ALU 1900MHz			
-		3	ALU 800MHZ			
-		3	ALU TD-RRH8x20-25			
-		3	ALU 800MHz Filter			
-		4	RFS ACU-A20-N			
8	138.0	3	Antel LPA-80080/6CF - Panel	Low Profile Platform	(12) 1 5/8" (1) 1/2"	Verizon
9		3	Antel BXA-70063-6CF_2 - Panel			
10		3	Antel BXA-171085-12B_2 - Panel			
11		1	GPS Receiver			
12	128.0	6	RFS FD9R6004/2C-3L Diplexer	Low Profile Platform	(12) 1 5/8" (2) 3/4" DC (1) 7/16" Fiber	AT&T
13		6	Powerwave 7770.00 - Panel			
14		3	KMW AM-X-CD-16-65-00T-RET - Panel			
15		12	Powerwave LGP 21401			
16		6	Ericsson RRUS-11			
17		1	Raycap DC6-48-60-18-8F			
18	115.0	1	Commscope ABT-DF-DM-ADBH	(3) T-Arm (Site Pro 1 #RMV12-3XX)	(2) 1 5/8" Hybrid	T-Mobile
19		3	Commscope LNX-6515DS-A1M - Panel			
20		3	RFS APX16DWV-16DWVS-E-A20 - Panel			
21		3	Ericsson RRUS 11 (Band 4)			
22		3	Ericsson RRUS 11 (Band 12)			
23	3	Ericsson RRUS 11				
-	73.0	1	GPS Receiver	-	(1) 1/2"	Sprint Nextel
25	50	1	Symmetricom 58532A	-	(1) 1/2"	T-Mobile

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

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

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	152.0	3	RFS APXVSP18-C-A20 - Panel	Low Profile Platform	(4) 1-1/4" Fiber	Sprint Nextel
2		3	RFS APXV14-C-I20 - Panel			
3		4	RFS ACU-A20-N RET			
4		3	Alcatel Lucent 1900 MHz RRH			
5		3	Alcatel Lucent 800 MHz RRH			
6		3	Alcatel Lucent TD-RRH8x20-25			
7		3	Alcatel Lucent 800 MHz Filter			
24	73.0	1	GPS Receiver	-	(1) 1/2"	

All the proposed transmission lines are assumed running outside of the pole shafts. These lines shall be strapped tightly to the face of the pole shafts. Stacking lines is not allowed.

## **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>98.4%</b>	<b>73.2%</b>	<b>97.5%</b>
Pass/Fail	<b>Pass</b>	<b>Pass</b>	<b>Pass</b>

## **Foundations**

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Analysis Reactions	2584.6	23.0	60.3

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 2.5815 degrees under the operational wind speed as specified in the Analysis Criteria.

### **Conclusions**

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

## Standard Conditions

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

# Usage Diagram - Max Ratio 98.44% at 53.0ft

**Structure:** CT12215-A-SBA  
**Site Name:** Litchfield 3, CT  
**Height:** 149.00 (ft)  
**Base Elev:** 0.000 (ft)

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

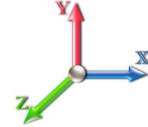
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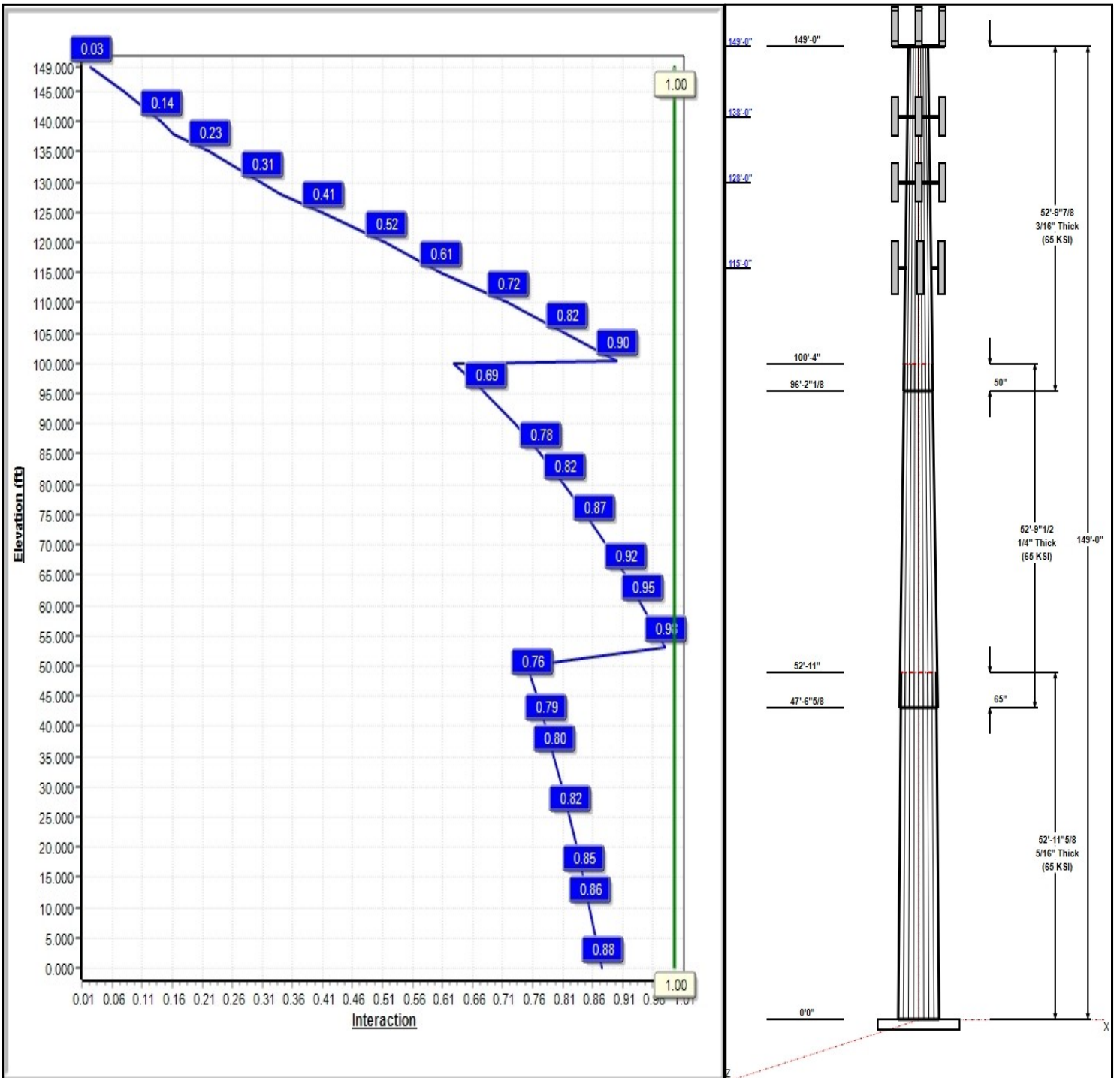
**Dead Load Factor:** 1.20  
**Wind Load Factor:** 1.60

**Load Case : 1.2D + 1.6W 89 mph Wind**



**Iterations:** 27

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## Structure: CT12215-A-SBA

**Type:** Tapered  
**Site Name:** Litchfield 3, CT  
**Height:** 149.00 (ft)  
**Base Elev:** 0.00 (ft)

**Base Shape:** 18 Sided  
**Taper:** 0.20721

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### Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	52.97	37.02	48.00	0.313		0.20721	65
2	52.79	27.71	38.65	0.250	Slip	0.20721	65
3	52.82	18.00	28.95	0.188	Slip	0.20721	65

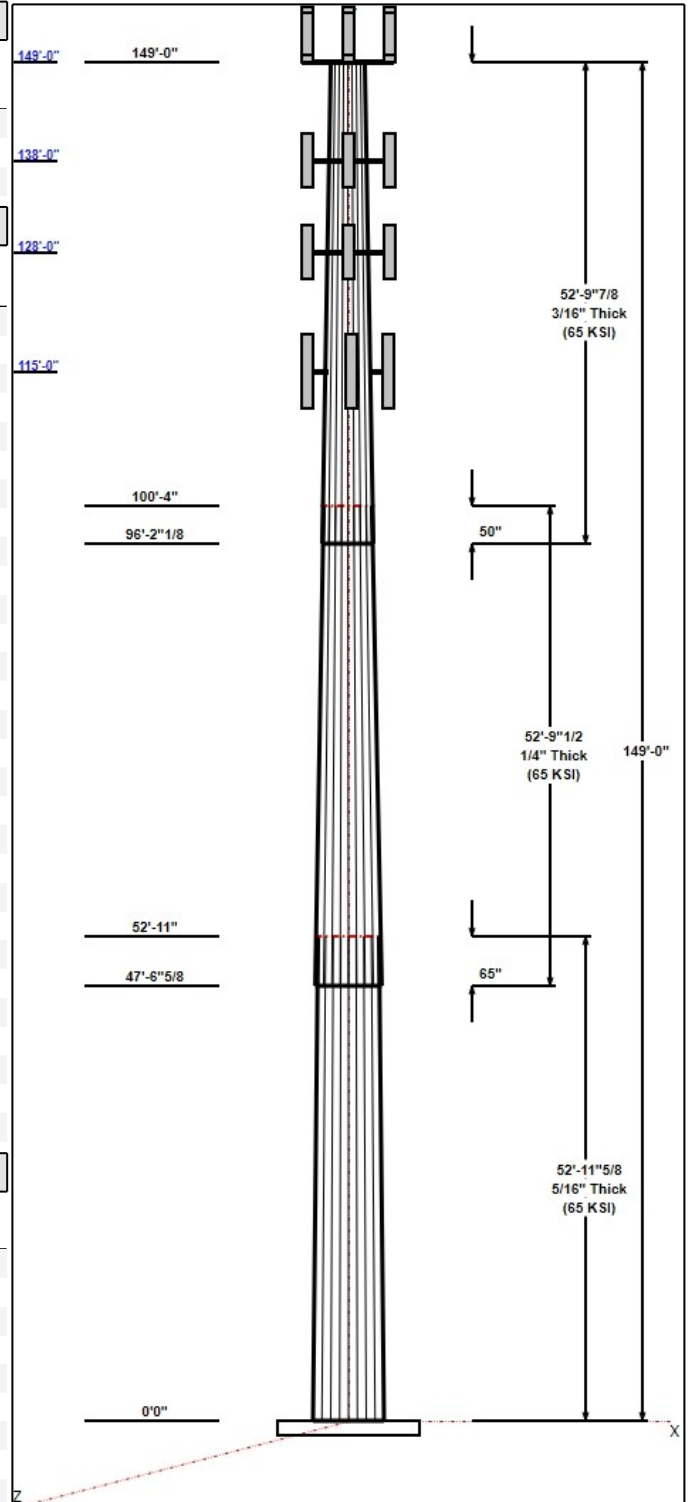
### Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
149.00	152.00	3	APXVSP18-C-A20	Sprint Nextel
149.00	152.00	3	APXVTM14-C-I20	Sprint Nextel
149.00	152.00	3	1900MHZ	Sprint Nextel
149.00	152.00	3	800MHZ	Sprint Nextel
149.00	152.00	3	TD-RRH8x20-25	Sprint Nextel
149.00	152.00	3	800MHZ Filter	Sprint Nextel
149.00	152.00	4	ACU-A20-N	Sprint Nextel
149.00	149.00	1	Low Profile Platform	Sprint Nextel
138.00	138.00	3	LPA-80080/6CF	Verizon
138.00	138.00	3	BXA-70063-6CF_2	Verizon
138.00	138.00	3	BXA-171085-12B_2	Verizon
138.00	138.00	1	GPS Receiver	Verizon
138.00	138.00	6	FD9R6004/2C-3L	Verizon
138.00	138.00	1	Low Profile Platform	Verizon
128.00	128.00	6	7770.00	AT&T
128.00	128.00	3	AM-X-CD-16-65-00T-RET	AT&T
128.00	128.00	12	LGP 21401	AT&T
128.00	128.00	6	RRUS-11	AT&T
128.00	128.00	1	DC6-48-60-18-8F	AT&T
128.00	128.00	1	ABT-DF-DM-ADBH	AT&T
128.00	128.00	1	Low Profile Platform	AT&T
115.00	115.00	3	LNx-6515DS-A1M	T-Mobile
115.00	115.00	3	APX16DWV-16DWVS-E-A	T-Mobile
115.00	115.00	3	RRUS 11 (Band 4)	T-Mobile
115.00	115.00	3	RRUS 11 (Band 12)	T-Mobile
115.00	115.00	3	RRUS 11	T-Mobile
115.00	115.00	3	T-Arm	T-Mobile
73.00	73.00	1	GPS Receiver	Sprint
50.00	50.00	1	58532A	T-Mobile

### Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	149.00	Inside	1-1/4" Fiber	Sprint
0.00	138.00	Inside	1 5/8" Coax	Verizon
0.00	138.00	Inside	1/2" Coax	Verizon
0.00	128.00	Inside	1 5/8" Coax	AT&T
0.00	128.00	Inside	3/4" DC	AT&T
0.00	128.00	Inside	7/16" Fiber	AT&T
0.00	115.00	Outside	1 5/8" Hybrid	T-Mobile
97.00	105.00	Outside	1.25" Reinforcing plate	
50.00	77.00	Outside	1.25" Reinforcing plate	
0.00	73.00	Inside	1/2" Coax	Sprint
0.00	50.00	Outside	1/2" Coax	T-Mobile

### Anchor Bolts



**Structure: CT12215-A-SBA**

**Type:** Tapered  
**Site Name:** Litchfield 3, CT  
**Height:** 149.00 (ft)  
**Base Elev:** 0.00 (ft)

**Base Shape:** 18 Sided  
**Taper:** 0.20721

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Qty	Specifications	Grade (ksi)	Arrangement
12	2.25" 18J	75.0	Radial

**Base Plate**

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
1.7500	63.0	60.0	Round

**Reactions**

Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 89 mph Wind	2584.6	23.0	31.7
0.9D + 1.6W 89 mph Wind	2544.6	23.0	23.8
1.2D + 1.0Di + 1.0Wi 40 mph Wind	638.3	5.4	60.3
1.2D + 1.0E	104.3	0.9	31.8
0.9D + 1.0E	102.6	0.9	23.8
1.0D + 1.0W 60 mph Wind	728.9	6.5	26.5

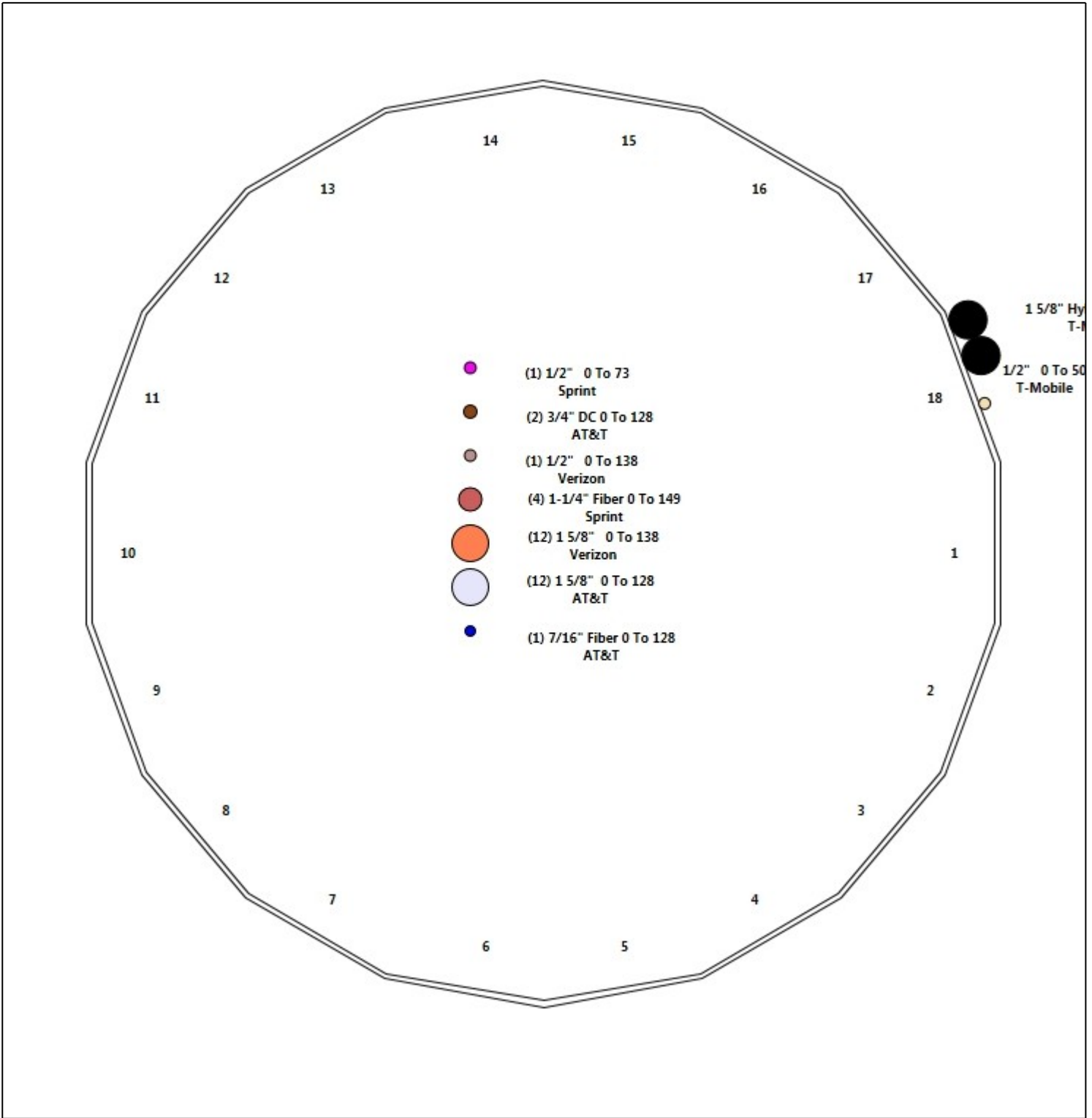
# Structure: CT12215-A-SBA - Coax Line Placement

**Type:** Monopole  
**Site Name:** Litchfield 3, CT  
**Height:** 149.00 (ft)

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## Shaft Properties

<b>Structure:</b> CT12215-A-SBA	<b>Code:</b> EIA/TIA-222-G	10/31/2017
<b>Site Name:</b> Litchfield 3, CT	<b>Exposure:</b> C	
<b>Height:</b> 149.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<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	52.970	0.3125	65		0.00	7,544
2	18	52.790	0.2500	65	Slip	65.00	4,693
3	18	52.823	0.1875	65	Slip	50.00	2,491
<b>Total Shaft Weight:</b>							<b>14,728</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	48.00	0.00	47.30	13589.64	25.67	153.60	37.02	52.97	36.41	6200.05	19.48	118.4	0.207215
2	38.65	47.55	30.47	5674.80	25.85	154.58	27.71	100.34	21.79	2075.21	18.13	110.8	0.207215
3	28.95	96.18	17.11	1788.27	25.81	154.38	18.00	149.00	10.60	424.93	15.52	96.00	0.207215

## Load Summary

<b>Structure:</b> CT12215-A-SBA	<b>Code:</b> EIA/TIA-222-G	10/31/2017
<b>Site Name:</b> Litchfield 3, CT	<b>Exposure:</b> C	
<b>Height:</b> 149.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<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	149.00	APXVSP18-C-A20	3	57.00	8.02	0.83	287.31	11.742	0.83	0.00	3.00
2	149.00	APXVTM14-C-I20	3	56.00	6.34	0.79	284.31	7.855	0.79	0.00	3.00
3	149.00	1900MHZ	3	60.00	2.77	0.50	171.17	4.460	0.50	0.00	3.00
4	149.00	800MHZ	3	59.50	2.64	0.87	163.44	4.182	0.87	0.00	3.00
5	149.00	TD-RRH8x20-25	3	70.00	4.05	0.69	227.60	5.161	0.69	0.00	3.00
6	149.00	800MHz Filter	3	8.80	0.78	0.69	32.31	1.642	0.69	0.00	3.00
7	149.00	ACU-A20-N	4	1.00	0.14	0.79	6.72	0.535	0.79	0.00	3.00
8	149.00	Low Profile Platform	1	1200.00	25.00	1.00	2595.24	52.905	1.00	0.00	0.00
9	138.00	LPA-80080/6CF	3	21.00	4.33	1.70	295.20	5.937	1.70	0.00	0.00
10	138.00	BXA-70063-6CF_2	3	17.00	7.57	0.73	263.39	9.275	0.73	0.00	0.00
11	138.00	BXA-171085-12B_2	3	15.00	4.74	0.84	140.53	7.846	0.84	0.00	0.00
12	138.00	GPS Receiver	1	10.00	1.00	1.00	48.77	1.942	1.00	0.00	0.00
13	138.00	FD9R6004/2C-3L	6	3.10	0.36	0.67	13.71	0.946	0.67	0.00	0.00
14	138.00	Low Profile Platform	1	1200.00	25.00	1.00	2584.58	52.692	1.00	0.00	0.00
15	128.00	7770.00	6	35.00	5.50	0.73	225.19	6.927	0.73	0.00	0.00
16	128.00	AM-X-CD-16-65-00T-RET	3	48.50	8.02	0.75	261.47	11.686	0.75	0.00	0.00
17	128.00	LGP 21401	12	17.50	0.00	0.50	59.70	1.386	0.50	0.00	0.00
18	128.00	RRUS-11	6	51.00	2.52	0.71	145.85	3.351	0.71	0.00	0.00
19	128.00	DC6-48-60-18-8F	1	31.80	0.92	1.00	112.94	1.495	1.00	0.00	0.00
20	128.00	ABT-DF-DM-ADBH	1	1.10	0.05	1.00	4.03	0.303	1.00	0.00	0.00
21	128.00	Low Profile Platform	1	1200.00	25.00	1.00	2574.20	52.484	1.00	0.00	0.00
22	115.00	LNX-6515DS-A1M	3	49.80	11.47	0.80	347.84	15.712	0.80	0.00	0.00
23	115.00	APX16DWV-16DWVS-E-A20	3	40.70	6.61	0.62	192.68	9.438	0.62	0.00	0.00
24	115.00	RRUS 11 (Band 4)	3	51.00	2.52	0.71	144.84	3.342	0.71	0.00	0.00
25	115.00	RRUS 11 (Band 12)	3	54.00	2.52	0.78	138.67	3.342	0.78	0.00	0.00
26	115.00	RRUS 11	3	54.00	2.94	0.67	177.76	3.388	0.67	0.00	0.00
27	115.00	T-Arm	3	350.00	8.00	0.75	667.23	17.064	0.75	0.00	0.00
28	73.00	GPS Receiver	1	10.00	1.00	1.00	46.38	1.883	1.00	0.00	0.00
29	50.00	58532A	1	0.40	0.22	1.00	9.96	0.662	1.00	0.00	0.00
<b>Totals:</b>			<b>90</b>	<b>7,438.80</b>			<b>22,415.11</b>				

### Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
0.00	149.00	(4) 1-1/4" Fiber	0.00	Inside
0.00	138.00	(12) 1 5/8" Coax	0.00	Inside
0.00	138.00	(1) 1/2" Coax	0.00	Inside
0.00	128.00	(12) 1 5/8" Coax	0.00	Inside
0.00	128.00	(2) 3/4" DC	0.00	Inside
0.00	128.00	(1) 7/16" Fiber	0.00	Inside
0.00	115.00	(2) 1 5/8" Hybrid	2.00	Outside
97.00	105.00	(3) 1.25" Reinforcing plate	1.00	Outside
50.00	77.00	(3) 1.25" Reinforcing plate	1.00	Outside
0.00	73.00	(1) 1/2" Coax	0.00	Inside
0.00	50.00	(1) 1/2" Coax	1.00	Outside



## 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		

## Shaft Section Properties

<b>Structure:</b> CT12215-A-SBA	<b>Code:</b> EIA/TIA-222-G	10/31/2017
<b>Site Name:</b> Litchfield 3, CT	<b>Exposure:</b> C	
<b>Height:</b> 149.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<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		0.3125	48.000	47.298	13589.6	25.67	153.60	71.2	557.6	0.0
5.00		0.3125	46.964	46.271	12723.0	25.09	150.28	71.9	533.6	796.0
10.00		0.3125	45.928	45.243	11894.0	24.50	146.97	72.6	510.1	778.5
15.00		0.3125	44.892	44.215	11101.8	23.92	143.65	73.3	487.1	761.0
20.00		0.3125	43.856	43.188	10345.6	23.33	140.34	74.0	464.6	743.5
25.00		0.3125	42.820	42.160	9624.5	22.75	137.02	74.6	442.7	726.1
30.00		0.3125	41.784	41.133	8937.8	22.17	133.71	75.3	421.3	708.6
35.00		0.3125	40.747	40.105	8284.5	21.58	130.39	76.0	400.4	691.1
40.00		0.3125	39.711	39.077	7663.8	21.00	127.08	76.7	380.1	673.6
45.00		0.3125	38.675	38.050	7075.0	20.41	123.76	77.4	360.3	656.1
47.55	Bot - Section 2	0.3125	38.146	37.525	6786.3	20.11	122.07	77.7	350.4	328.3
50.00		0.3125	37.639	37.022	6517.1	19.83	120.45	78.1	341.0	562.3
52.97	Top - Section 1	0.2500	37.524	29.576	5191.5	25.06	150.10	0.0	0.0	672.4
55.00		0.2500	37.103	29.242	5017.8	24.76	148.41	72.3	266.4	203.1
60.00		0.2500	36.067	28.420	4606.3	24.03	144.27	73.1	251.6	490.5
65.00		0.2500	35.031	27.598	4218.1	23.30	140.12	74.0	237.2	476.5
70.00		0.2500	33.995	26.776	3852.2	22.57	135.98	74.9	223.2	462.6
73.00		0.2500	33.373	26.282	3643.2	22.13	133.49	75.4	215.0	270.8
75.00		0.2500	32.959	25.954	3508.2	21.84	131.84	75.7	209.6	177.7
80.00		0.2500	31.923	25.131	3185.3	21.10	127.69	76.6	196.5	434.6
85.00		0.2500	30.887	24.309	2882.8	20.37	123.55	77.4	183.8	420.6
90.00		0.2500	29.851	23.487	2600.1	19.64	119.40	78.3	171.6	406.6
95.00		0.2500	28.815	22.665	2336.5	18.91	115.26	79.2	159.7	392.6
96.18	Bot - Section 3	0.2500	28.571	22.472	2277.2	18.74	114.28	79.4	157.0	90.4
100.00		0.2500	27.779	21.843	2091.4	18.18	111.11	80.0	148.3	507.9
100.34	Top - Section 2	0.1875	28.082	16.600	1632.0	25.00	149.77	0.0	0.0	44.9
105.00		0.1875	27.117	16.026	1468.4	24.09	144.63	73.1	106.7	258.5
110.00		0.1875	26.081	15.410	1305.4	23.12	139.10	74.2	98.6	267.4
115.00		0.1875	25.045	14.793	1154.9	22.14	133.57	75.4	90.8	256.9
120.00		0.1875	24.009	14.176	1016.4	21.17	128.05	76.5	83.4	246.4
125.00		0.1875	22.973	13.560	889.5	20.19	122.52	77.6	76.3	236.0
128.00		0.1875	22.352	13.190	818.6	19.61	119.21	78.3	72.1	136.5
130.00		0.1875	21.937	12.943	773.6	19.22	117.00	78.8	69.5	88.9
135.00		0.1875	20.901	12.327	668.2	18.24	111.47	79.9	63.0	215.0
138.00		0.1875	20.279	11.957	609.8	17.66	108.16	80.6	59.2	123.9
140.00		0.1875	19.865	11.710	572.9	17.27	105.95	81.1	56.8	80.5
145.00		0.1875	18.829	11.094	487.1	16.30	100.42	82.2	50.9	194.0
149.00		0.1875	18.000	10.600	424.9	15.52	96.00	82.5	46.5	147.6

**14728.1**

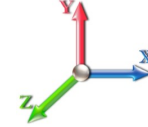
## Wind Loading - Shaft

<b>Structure:</b> CT12215-A-SBA	<b>Code:</b> EIA/TIA-222-G	10/31/2017
<b>Site Name:</b> Litchfield 3, CT	<b>Exposure:</b> C	
<b>Height:</b> 149.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



**Load Case:** 1.2D + 1.6W 89 mph Wind

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



**Iterations** 27

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	16.374	18.01	333.28	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	16.374	18.01	326.09	0.650	0.000	5.00	20.089	13.06	376.3	0.0	955.2
10.00		1.00	0.85	16.374	18.01	318.89	0.650	0.000	5.00	19.651	12.77	368.1	0.0	934.2
15.00		1.00	0.85	16.374	18.01	311.70	0.650	0.000	5.00	19.213	12.49	359.9	0.0	913.2
20.00		1.00	0.90	17.374	19.11	313.66	0.650	0.000	5.00	18.774	12.20	373.2	0.0	892.2
25.00		1.00	0.95	18.209	20.03	313.53	0.650	0.000	5.00	18.336	11.92	382.0	0.0	871.3
30.00		1.00	0.98	18.922	20.81	311.87	0.650	0.000	5.00	17.898	11.63	387.4	0.0	850.3
35.00		1.00	1.01	19.546	21.50	309.11	0.650	0.000	5.00	17.459	11.35	390.4	0.0	829.3
40.00		1.00	1.04	20.103	22.11	305.52	0.650	0.000	5.00	17.021	11.06	391.5	0.0	808.3
45.00		1.00	1.07	20.608	22.67	301.26	0.650	0.000	5.00	16.582	10.78	390.9	0.0	787.3
47.55 Bot - Section 2		1.00	1.08	20.849	22.93	298.87	0.650	0.000	2.55	8.299	5.39	197.9	0.0	394.0
50.00 Appurtenance(s)		1.00	1.09	21.070	23.18	296.46	0.650	0.000	2.45	7.949	5.17	191.6	0.0	674.7
52.97 Top - Section 1		1.00	1.11	21.328	23.46	293.39	0.650	0.000	2.97	9.508	6.18	232.0	0.0	806.9
55.00		1.00	1.12	21.497	23.65	295.18	0.650	0.000	2.03	6.410	4.17	157.6	0.0	243.8
60.00		1.00	1.14	21.895	24.08	289.58	0.650	0.000	5.00	15.479	10.06	387.7	0.0	588.6
65.00		1.00	1.16	22.267	24.49	283.64	0.650	0.000	5.00	15.041	9.78	383.1	0.0	571.8
70.00		1.00	1.17	22.617	24.88	277.41	0.650	0.000	5.00	14.602	9.49	377.8	0.0	555.1
73.00 Appurtenance(s)		1.00	1.18	22.818	25.10	273.54	0.650	0.000	3.00	8.551	5.56	223.2	0.0	325.0
75.00		1.00	1.19	22.948	25.24	270.91	0.650	0.000	2.00	5.613	3.65	147.4	0.0	213.3
80.00		1.00	1.21	23.262	25.59	264.19	0.650	0.000	5.00	13.726	8.92	365.3	0.0	521.5
85.00		1.00	1.22	23.561	25.92	257.25	0.650	0.000	5.00	13.287	8.64	358.1	0.0	504.7
90.00		1.00	1.24	23.846	26.23	250.12	0.650	0.000	5.00	12.849	8.35	350.5	0.0	487.9
95.00		1.00	1.25	24.119	26.53	242.82	0.650	0.000	5.00	12.410	8.07	342.4	0.0	471.1
96.18 Bot - Section 3		1.00	1.26	24.181	26.60	241.07	0.650	0.000	1.18	2.857	1.86	79.0	0.0	108.4
100.00		1.00	1.27	24.381	26.82	235.35	0.658 *	0.000	3.82	9.237	6.08	260.9	0.0	609.4
100.34 Top - Section 2		1.00	1.27	24.398	26.84	234.83	0.680 *	0.000	0.34	0.817	0.56	23.9	0.0	53.9
105.00		1.00	1.28	24.632	27.10	230.93	0.681 *	0.000	4.66	10.876	7.41	321.1	0.0	310.2
110.00		1.00	1.29	24.875	27.36	223.20	0.650	0.000	5.00	11.254	7.32	320.3	0.0	320.9
115.00 Appurtenance(s)		1.00	1.30	25.109	27.62	215.34	0.650	0.000	5.00	10.816	7.03	310.7	0.0	308.3
120.00		1.00	1.32	25.335	27.87	207.36	0.650	0.000	5.00	10.377	6.75	300.8	0.0	295.7
125.00		1.00	1.33	25.553	28.11	199.26	0.650	0.000	5.00	9.939	6.46	290.5	0.0	283.1
128.00 Appurtenance(s)		1.00	1.33	25.681	28.25	194.36	0.650	0.000	3.00	5.753	3.74	169.0	0.0	163.8
130.00		1.00	1.34	25.765	28.34	191.07	0.650	0.000	2.00	3.748	2.44	110.5	0.0	106.7
135.00		1.00	1.35	25.971	28.57	182.77	0.650	0.000	5.00	9.062	5.89	269.2	0.0	258.0
138.00 Appurtenance(s)		1.00	1.35	26.091	28.70	177.74	0.650	0.000	3.00	5.227	3.40	156.0	0.0	148.7
140.00		1.00	1.36	26.170	28.79	174.37	0.650	0.000	2.00	3.397	2.21	101.7	0.0	96.6
145.00		1.00	1.37	26.364	29.00	165.89	0.650	0.000	5.00	8.186	5.32	246.9	0.0	232.8
149.00 Appurtenance(s)		1.00	1.38	26.516	29.17	159.04	0.650	0.000	4.00	6.233	4.05	189.1	0.0	177.2
<b>Totals:</b>									<b>149.00</b>			<b>10,283.9</b>		<b>17,673.7</b>

\* Cf Adjusted by Linear Load Ra Effect

## Discrete Appurtenance Forces

<b>Structure:</b> CT12215-A-SBA	<b>Code:</b> EIA/TIA-222-G	10/31/2017
<b>Site Name:</b> Litchfield 3, CT	<b>Exposure:</b> C	
<b>Height:</b> 149.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 1.2D + 1.6W 89 mph Wind

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



**Iterations** 27

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	149.00	800MHz	3	26.627	29.290	0.87	1.00	6.89	214.20	0.000	3.000	322.91	0.00	968.74
2	149.00	APXVSP18-C-A20	3	26.627	29.290	0.83	1.00	19.97	205.20	0.000	3.000	935.87	0.00	2807.61
3	149.00	APXVTM14-C-I20	3	26.627	29.290	0.79	1.00	15.03	201.60	0.000	3.000	704.17	0.00	2112.52
4	149.00	1900MHz	3	26.627	29.290	0.50	1.00	4.16	216.00	0.000	3.000	194.72	0.00	584.16
5	149.00	Low Profile Platform	1	26.516	29.168	1.00	1.00	25.00	1440.00	0.000	0.000	1166.70	0.00	0.00
6	149.00	TD-RRH8x20-25	3	26.627	29.290	0.69	1.00	8.38	252.00	0.000	3.000	392.89	0.00	1178.66
7	149.00	800MHz Filter	3	26.627	29.290	0.69	1.00	1.61	31.68	0.000	3.000	75.67	0.00	227.00
8	149.00	ACU-A20-N	4	26.627	29.290	0.79	1.00	0.44	4.80	0.000	3.000	20.73	0.00	62.20
9	138.00	Low Profile Platform	1	26.091	28.700	1.00	1.00	25.00	1440.00	0.000	0.000	1148.01	0.00	0.00
10	138.00	FD9R6004/2C-3L	6	26.091	28.700	0.54	0.80	1.16	22.32	0.000	0.000	53.17	0.00	0.00
11	138.00	GPS Receiver	1	26.091	28.700	1.00	1.00	1.00	12.00	0.000	0.000	45.92	0.00	0.00
12	138.00	BXA-171085-12B_2	3	26.091	28.700	0.67	0.80	9.56	54.00	0.000	0.000	438.81	0.00	0.00
13	138.00	BXA-70063-6CF_2	3	26.091	28.700	0.58	0.80	13.26	61.20	0.000	0.000	609.03	0.00	0.00
14	138.00	LPA-80080/6CF	3	26.091	28.700	1.36	0.80	17.67	75.60	0.000	0.000	811.25	0.00	0.00
15	128.00	Low Profile Platform	1	25.681	28.249	1.00	1.00	25.00	1440.00	0.000	0.000	1129.98	0.00	0.00
16	128.00	DC6-48-60-18-8F	1	25.681	28.249	1.00	1.00	0.92	38.16	0.000	0.000	41.58	0.00	0.00
17	128.00	RRUS-11	6	25.681	28.249	0.57	0.80	8.59	367.20	0.000	0.000	388.18	0.00	0.00
18	128.00	LGP 21401	12	25.681	28.249	0.40	0.80	0.00	252.00	0.000	0.000	0.00	0.00	0.00
19	128.00	AM-X-CD-16-65-00T-RET	3	25.681	28.249	0.60	0.80	14.44	174.60	0.000	0.000	652.49	0.00	0.00
20	128.00	7770.00	6	25.681	28.249	0.58	0.80	19.27	252.00	0.000	0.000	871.08	0.00	0.00
21	128.00	ABT-DF-DM-ADBH	1	25.681	28.249	1.00	1.00	0.05	1.32	0.000	0.000	2.26	0.00	0.00
22	115.00	RRUS 11 (Band 4)	3	25.109	27.620	0.57	0.80	4.29	183.60	0.000	0.000	189.76	0.00	0.00
23	115.00	LNx-6515DS-A1M	3	25.109	27.620	0.64	0.80	22.02	179.28	0.000	0.000	973.20	0.00	0.00
24	115.00	APX16DWV-16DWVS-E-	3	25.109	27.620	0.50	0.80	9.84	146.52	0.000	0.000	434.65	0.00	0.00
25	115.00	T-Arm	3	25.109	27.620	0.56	0.75	13.50	1260.00	0.000	0.000	596.58	0.00	0.00
26	115.00	RRUS 11 (Band 12)	3	25.109	27.620	0.62	0.80	4.72	194.40	0.000	0.000	208.47	0.00	0.00
27	115.00	RRUS 11	3	25.109	27.620	0.54	0.80	4.73	194.40	0.000	0.000	208.92	0.00	0.00
28	73.00	GPS Receiver	1	22.818	25.099	1.00	1.00	1.00	12.00	0.000	0.000	40.16	0.00	0.00
29	50.00	58532A	1	21.070	23.177	1.00	1.00	0.22	0.48	0.000	0.000	8.16	0.00	0.00

**Totals:** 8,926.56

**12,665.32**

## Total Applied Force Summary

<b>Structure:</b> CT12215-A-SBA	<b>Code:</b> EIA/TIA-222-G	10/31/2017
<b>Site Name:</b> Litchfield 3, CT	<b>Exposure:</b> C	
<b>Height:</b> 149.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 1.2D + 1.6W 89 mph Wind

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



**Iterations** 27

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		376.32	1150.28	0.00	0.00
10.00		368.11	1129.30	0.00	0.00
15.00		359.89	1108.32	0.00	0.00
20.00		373.15	1087.34	0.00	0.00
25.00		381.97	1066.36	0.00	0.00
30.00		387.42	1045.38	0.00	0.00
35.00		390.40	1024.40	0.00	0.00
40.00		391.45	1003.42	0.00	0.00
45.00		390.94	982.44	0.00	0.00
47.55		197.94	493.60	0.00	0.00
50.00	(1) attachments	199.76	770.70	0.00	0.00
52.97		231.98	922.24	0.00	0.00
55.00		157.63	322.59	0.00	0.00
60.00		387.71	782.77	0.00	0.00
65.00		383.13	765.98	0.00	0.00
70.00		377.82	749.20	0.00	0.00
73.00	(1) attachments	263.37	453.46	0.00	0.00
75.00		147.35	290.57	0.00	0.00
80.00		365.26	714.67	0.00	0.00
85.00		358.13	697.88	0.00	0.00
90.00		350.51	681.10	0.00	0.00
95.00		342.43	664.32	0.00	0.00
96.18		79.03	153.90	0.00	0.00
100.00		260.86	757.14	0.00	0.00
100.34		23.85	67.15	0.00	0.00
105.00		321.15	490.10	0.00	0.00
110.00		320.26	514.08	0.00	0.00
115.00	(18) attachments	2922.26	2659.69	0.00	0.00
120.00		300.77	475.70	0.00	0.00
125.00		290.55	463.12	0.00	0.00
128.00	(30) attachments	3254.59	2797.11	0.00	0.00
130.00		110.46	146.20	0.00	0.00
135.00		269.25	356.70	0.00	0.00
138.00	(17) attachments	3262.21	1873.10	0.00	0.00
140.00		101.70	105.80	0.00	0.00
145.00		246.88	255.68	0.00	0.00
149.00	(23) attachments	4002.73	2760.96	0.00	7940.90
	<b>Totals:</b>	<b>22,949.23</b>	<b>31,782.75</b>	<b>0.00</b>	<b>7,940.90</b>

## Linear Appurtenance Segment Forces (Factored)

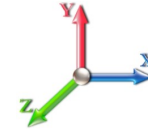
<b>Structure:</b> CT12215-A-SBA	<b>Code:</b> EIA/TIA-222-G	10/31/2017
<b>Site Name:</b> Litchfield 3, CT	<b>Exposure:</b> C	
<b>Height:</b> 149.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 1.2D + 1.6W 89 mph Wind

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



**Iterations** 27

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.055	0.000	16.374	0.00	13.20
5.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.055	0.000	16.374	0.00	0.96
10.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.056	0.000	16.374	0.00	13.20
10.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.056	0.000	16.374	0.00	0.96
15.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.057	0.000	16.374	0.00	13.20
15.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.057	0.000	16.374	0.00	0.96
20.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.059	0.000	17.374	0.00	13.20
20.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.059	0.000	17.374	0.00	0.96
25.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.060	0.000	18.209	0.00	13.20
25.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.060	0.000	18.209	0.00	0.96
30.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.062	0.000	18.922	0.00	13.20
30.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.062	0.000	18.922	0.00	0.96
35.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.063	0.000	19.546	0.00	13.20
35.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.063	0.000	19.546	0.00	0.96
40.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.065	0.000	20.103	0.00	13.20
40.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.065	0.000	20.103	0.00	0.96
45.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.067	0.000	20.608	0.00	13.20
45.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.067	0.000	20.608	0.00	0.96
47.55	1 5/8" Hybrid	Yes	2.55	0.000	2.00	0.43	0.00	0.068	0.000	20.849	0.00	6.74
47.55	1/2" Coax	Yes	2.55	0.000	0.65	0.14	0.00	0.068	0.000	20.849	0.00	0.49
50.00	1 5/8" Hybrid	Yes	2.45	0.000	2.00	0.41	0.00	0.069	0.000	21.070	0.00	6.46
50.00	1/2" Coax	Yes	2.45	0.000	0.65	0.13	0.00	0.069	0.000	21.070	0.00	0.47
52.97	1 5/8" Hybrid	Yes	2.97	0.000	2.00	0.49	0.00	0.086	0.000	21.328	0.00	7.84
52.97	1.25" Reinforcing	Yes	2.97	0.000	1.25	0.31	0.00	0.086	0.000	21.328	0.00	0.00
55.00	1 5/8" Hybrid	Yes	2.03	0.000	2.00	0.34	0.00	0.086	0.000	21.497	0.00	5.36
55.00	1.25" Reinforcing	Yes	2.03	0.000	1.25	0.21	0.00	0.086	0.000	21.497	0.00	0.00
60.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.087	0.000	21.895	0.00	13.20
60.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.087	0.000	21.895	0.00	0.00
65.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.090	0.000	22.267	0.00	13.20
65.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.090	0.000	22.267	0.00	0.00
70.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.093	0.000	22.617	0.00	13.20
70.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.093	0.000	22.617	0.00	0.00
73.00	1 5/8" Hybrid	Yes	3.00	0.000	2.00	0.50	0.00	0.095	0.000	22.818	0.00	7.92
73.00	1.25" Reinforcing	Yes	3.00	0.000	1.25	0.31	0.00	0.095	0.000	22.818	0.00	0.00
75.00	1 5/8" Hybrid	Yes	2.00	0.000	2.00	0.33	0.00	0.097	0.000	22.948	0.00	5.28
75.00	1.25" Reinforcing	Yes	2.00	0.000	1.25	0.21	0.00	0.097	0.000	22.948	0.00	0.00
80.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.076	0.000	23.262	0.00	13.20
80.00	1.25" Reinforcing	Yes	2.00	0.000	1.25	0.21	0.00	0.076	0.000	23.262	0.00	0.00
85.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.063	0.000	23.561	0.00	13.20
90.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.065	0.000	23.846	0.00	13.20
95.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.067	0.000	24.119	0.00	13.20
96.18	1 5/8" Hybrid	Yes	1.18	0.000	2.00	0.20	0.00	0.069	0.000	24.181	0.00	3.11
100.00	1 5/8" Hybrid	Yes	3.82	0.000	2.00	0.64	0.00	0.104	1.013	24.381	0.00	10.09
100.00	1.25" Reinforcing	Yes	3.00	0.000	1.25	0.31	0.00	0.104	1.013	24.381	0.00	0.00
100.34	1 5/8" Hybrid	Yes	0.34	0.000	2.00	0.06	0.00	0.115	1.046	24.398	0.00	0.91
100.34	1.25" Reinforcing	Yes	0.34	0.000	1.25	0.04	0.00	0.115	1.046	24.398	0.00	0.00
105.00	1 5/8" Hybrid	Yes	4.66	0.000	2.00	0.78	0.00	0.116	1.048	24.632	0.00	12.29

## Linear Appurtenance Segment Forces (Factored)

<b>Structure:</b> CT12215-A-SBA	<b>Code:</b> EIA/TIA-222-G	10/31/2017
<b>Site Name:</b> Litchfield 3, CT	<b>Exposure:</b> C	
<b>Height:</b> 149.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II

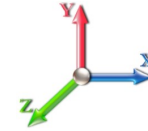


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**Load Case:** 1.2D + 1.6W 89 mph Wind

**Dead Load Factor** 1.20

**Wind Load Factor** 1.60



**Iterations** 27

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
105.00	1.25" Reinforcing	Yes	4.66	0.000	1.25	0.49	0.00	0.116	1.048	24.632	0.00	0.00
110.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.074	0.000	24.875	0.00	13.20
115.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.077	0.000	25.109	0.00	13.20
<b>Totals:</b>											<b>0.0</b>	<b>313.2</b>

## Calculated Forces

<b>Structure:</b> CT12215-A-SBA	<b>Code:</b> EIA/TIA-222-G	<b>10/31/2017</b>
<b>Site Name:</b> Litchfield 3, CT	<b>Exposure:</b> C	
<b>Height:</b> 149.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



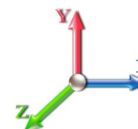
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**Load Case:** 1.2D + 1.6W 89 mph Wind

**Iterations** 27

**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	-31.73	-23.02	0.00	-2584.6	0.00	2584.60	3031.07	1515.53	5947.06	2977.95	0.00	0.000	0.000	0.879
5.00	-30.47	-22.79	0.00	-2469.4	0.00	2469.48	2993.85	1496.92	5745.58	2877.06	0.14	-0.265	0.000	0.869
10.00	-29.24	-22.55	0.00	-2355.5	0.00	2355.55	2955.36	1477.68	5544.90	2776.57	0.56	-0.534	0.000	0.858
15.00	-28.03	-22.31	0.00	-2242.8	0.00	2242.80	2915.59	1457.80	5345.20	2676.57	1.27	-0.809	0.000	0.848
20.00	-26.84	-22.05	0.00	-2131.2	0.00	2131.24	2874.56	1437.28	5146.64	2577.14	2.27	-1.089	0.000	0.837
25.00	-25.67	-21.78	0.00	-2020.9	0.00	2020.97	2832.25	1416.12	4949.37	2478.36	3.56	-1.375	0.000	0.825
30.00	-24.53	-21.49	0.00	-1912.0	0.00	1912.07	2788.67	1394.33	4753.57	2380.32	5.16	-1.666	0.000	0.812
35.00	-23.41	-21.19	0.00	-1804.6	0.00	1804.63	2743.82	1371.91	4559.39	2283.08	7.06	-1.961	0.000	0.799
40.00	-22.31	-20.88	0.00	-1698.6	0.00	1698.68	2697.69	1348.85	4367.01	2186.75	9.27	-2.262	0.000	0.785
45.00	-21.26	-20.53	0.00	-1594.2	0.00	1594.28	2650.30	1325.15	4176.57	2091.39	11.81	-2.568	0.000	0.771
47.55	-20.72	-20.37	0.00	-1541.8	0.00	1541.85	2625.60	1312.80	4080.13	2043.10	13.22	-2.729	0.000	0.763
50.00	-19.90	-20.19	0.00	-1492.0	0.00	1492.01	2601.63	1300.82	3988.26	1997.09	14.66	-2.884	0.000	0.755
52.97	-18.93	-19.97	0.00	-1432.0	0.00	1432.04	1914.68	957.34	2935.86	1470.11	16.51	-3.074	0.000	0.984
55.00	-18.53	-19.88	0.00	-1391.5	0.00	1391.51	1902.26	951.13	2883.67	1443.98	17.85	-3.205	0.000	0.974
60.00	-17.64	-19.56	0.00	-1292.1	0.00	1292.13	1870.76	935.38	2755.66	1379.88	21.41	-3.586	0.000	0.946
65.00	-16.77	-19.24	0.00	-1194.3	0.00	1194.33	1837.99	919.00	2628.54	1316.22	25.37	-3.970	0.000	0.917
70.00	-15.95	-18.90	0.00	-1098.1	0.00	1098.13	1803.95	901.98	2502.46	1253.09	29.73	-4.356	0.000	0.886
73.00	-15.46	-18.65	0.00	-1041.4	0.00	1041.44	1782.92	891.46	2427.38	1215.49	32.54	-4.593	0.000	0.866
75.00	-15.09	-18.55	0.00	-1004.1	0.00	1004.14	1768.64	884.32	2377.59	1190.56	34.50	-4.753	0.000	0.852
80.00	-14.29	-18.23	0.00	-911.37	0.00	911.37	1732.06	866.03	2254.10	1128.72	39.68	-5.141	0.000	0.816
85.00	-13.50	-17.90	0.00	-820.24	0.00	820.24	1694.20	847.10	2132.15	1067.66	45.26	-5.528	0.000	0.777
90.00	-12.75	-17.56	0.00	-730.77	0.00	730.77	1655.08	827.54	2011.90	1007.44	51.25	-5.911	0.000	0.734
95.00	-12.05	-17.20	0.00	-642.95	0.00	642.95	1614.68	807.34	1893.51	948.16	57.63	-6.287	0.000	0.686
96.18	-11.85	-17.14	0.00	-622.71	0.00	622.71	1604.99	802.49	1865.94	934.36	59.19	-6.377	0.000	0.674
100.00	-11.08	-16.83	0.00	-557.16	0.00	557.16	1573.01	786.50	1777.16	889.90	64.40	-6.659	0.000	0.634
100.34	-10.97	-16.83	0.00	-551.39	0.00	551.39	1075.68	537.84	1234.34	618.09	64.88	-6.685	0.000	0.903
105.00	-10.41	-16.52	0.00	-473.01	0.00	473.01	1053.86	526.93	1167.20	584.47	71.55	-7.012	0.000	0.820
110.00	-9.83	-16.21	0.00	-390.39	0.00	390.39	1029.21	514.60	1095.73	548.68	79.10	-7.430	0.000	0.722
115.00	-7.50	-13.01	0.00	-309.35	0.00	309.35	1003.28	501.64	1025.09	513.31	87.07	-7.811	0.000	0.611
120.00	-7.00	-12.68	0.00	-244.31	0.00	244.31	976.09	488.04	955.42	478.42	95.41	-8.152	0.000	0.519
125.00	-6.53	-12.35	0.00	-180.90	0.00	180.90	947.62	473.81	886.90	444.11	104.09	-8.450	0.000	0.415
128.00	-4.23	-8.73	0.00	-143.83	0.00	143.83	929.93	464.96	846.40	423.83	109.43	-8.606	0.000	0.344
130.00	-4.08	-8.61	0.00	-126.38	0.00	126.38	917.88	458.94	819.69	410.45	113.04	-8.700	0.000	0.313
135.00	-3.75	-8.30	0.00	-83.33	0.00	83.33	886.87	443.43	753.94	377.53	122.23	-8.892	0.000	0.225
138.00	-2.40	-4.79	0.00	-58.44	0.00	58.44	867.65	433.83	715.27	358.17	127.82	-8.983	0.000	0.166
140.00	-2.31	-4.67	0.00	-48.87	0.00	48.87	854.59	427.29	689.83	345.43	131.58	-9.033	0.000	0.144
145.00	-2.09	-4.39	0.00	-25.50	0.00	25.50	821.03	410.52	627.52	314.23	141.05	-9.125	0.000	0.084
149.00	0.00	-4.00	0.00	-7.94	0.00	7.94	787.55	393.77	574.90	287.88	148.69	-9.164	0.000	0.028



## Wind Loading - Shaft

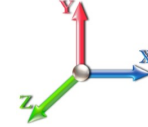
<b>Structure:</b> CT12215-A-SBA	<b>Code:</b> EIA/TIA-222-G	10/31/2017
<b>Site Name:</b> Litchfield 3, CT	<b>Exposure:</b> C	
<b>Height:</b> 149.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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Load Case: 0.9D + 1.6W 89 mph Wind

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



Iterations 27

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	16.374	18.01	333.28	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	16.374	18.01	326.09	0.650	0.000	5.00	20.089	13.06	376.3	0.0	716.4
10.00		1.00	0.85	16.374	18.01	318.89	0.650	0.000	5.00	19.651	12.77	368.1	0.0	700.7
15.00		1.00	0.85	16.374	18.01	311.70	0.650	0.000	5.00	19.213	12.49	359.9	0.0	684.9
20.00		1.00	0.90	17.374	19.11	313.66	0.650	0.000	5.00	18.774	12.20	373.2	0.0	669.2
25.00		1.00	0.95	18.209	20.03	313.53	0.650	0.000	5.00	18.336	11.92	382.0	0.0	653.4
30.00		1.00	0.98	18.922	20.81	311.87	0.650	0.000	5.00	17.898	11.63	387.4	0.0	637.7
35.00		1.00	1.01	19.546	21.50	309.11	0.650	0.000	5.00	17.459	11.35	390.4	0.0	622.0
40.00		1.00	1.04	20.103	22.11	305.52	0.650	0.000	5.00	17.021	11.06	391.5	0.0	606.2
45.00		1.00	1.07	20.608	22.67	301.26	0.650	0.000	5.00	16.582	10.78	390.9	0.0	590.5
47.55 Bot - Section 2		1.00	1.08	20.849	22.93	298.87	0.650	0.000	2.55	8.299	5.39	197.9	0.0	295.5
50.00 Appurtenance(s)		1.00	1.09	21.070	23.18	296.46	0.650	0.000	2.45	7.949	5.17	191.6	0.0	506.1
52.97 Top - Section 1		1.00	1.11	21.328	23.46	293.39	0.650	0.000	2.97	9.508	6.18	232.0	0.0	605.2
55.00		1.00	1.12	21.497	23.65	295.18	0.650	0.000	2.03	6.410	4.17	157.6	0.0	182.8
60.00		1.00	1.14	21.895	24.08	289.58	0.650	0.000	5.00	15.479	10.06	387.7	0.0	441.5
65.00		1.00	1.16	22.267	24.49	283.64	0.650	0.000	5.00	15.041	9.78	383.1	0.0	428.9
70.00		1.00	1.17	22.617	24.88	277.41	0.650	0.000	5.00	14.602	9.49	377.8	0.0	416.3
73.00 Appurtenance(s)		1.00	1.18	22.818	25.10	273.54	0.650	0.000	3.00	8.551	5.56	223.2	0.0	243.7
75.00		1.00	1.19	22.948	25.24	270.91	0.650	0.000	2.00	5.613	3.65	147.4	0.0	160.0
80.00		1.00	1.21	23.262	25.59	264.19	0.650	0.000	5.00	13.726	8.92	365.3	0.0	391.1
85.00		1.00	1.22	23.561	25.92	257.25	0.650	0.000	5.00	13.287	8.64	358.1	0.0	378.5
90.00		1.00	1.24	23.846	26.23	250.12	0.650	0.000	5.00	12.849	8.35	350.5	0.0	365.9
95.00		1.00	1.25	24.119	26.53	242.82	0.650	0.000	5.00	12.410	8.07	342.4	0.0	353.4
96.18 Bot - Section 3		1.00	1.26	24.181	26.60	241.07	0.650	0.000	1.18	2.857	1.86	79.0	0.0	81.3
100.00		1.00	1.27	24.381	26.82	235.35	0.658 *	0.000	3.82	9.237	6.08	260.9	0.0	457.1
100.34 Top - Section 2		1.00	1.27	24.398	26.84	234.83	0.680 *	0.000	0.34	0.817	0.56	23.9	0.0	40.4
105.00		1.00	1.28	24.632	27.10	230.93	0.681 *	0.000	4.66	10.876	7.41	321.1	0.0	232.6
110.00		1.00	1.29	24.875	27.36	223.20	0.650	0.000	5.00	11.254	7.32	320.3	0.0	240.7
115.00 Appurtenance(s)		1.00	1.30	25.109	27.62	215.34	0.650	0.000	5.00	10.816	7.03	310.7	0.0	231.2
120.00		1.00	1.32	25.335	27.87	207.36	0.650	0.000	5.00	10.377	6.75	300.8	0.0	221.8
125.00		1.00	1.33	25.553	28.11	199.26	0.650	0.000	5.00	9.939	6.46	290.5	0.0	212.4
128.00 Appurtenance(s)		1.00	1.33	25.681	28.25	194.36	0.650	0.000	3.00	5.753	3.74	169.0	0.0	122.9
130.00		1.00	1.34	25.765	28.34	191.07	0.650	0.000	2.00	3.748	2.44	110.5	0.0	80.0
135.00		1.00	1.35	25.971	28.57	182.77	0.650	0.000	5.00	9.062	5.89	269.2	0.0	193.5
138.00 Appurtenance(s)		1.00	1.35	26.091	28.70	177.74	0.650	0.000	3.00	5.227	3.40	156.0	0.0	111.6
140.00		1.00	1.36	26.170	28.79	174.37	0.650	0.000	2.00	3.397	2.21	101.7	0.0	72.5
145.00		1.00	1.37	26.364	29.00	165.89	0.650	0.000	5.00	8.186	5.32	246.9	0.0	174.6
149.00 Appurtenance(s)		1.00	1.38	26.516	29.17	159.04	0.650	0.000	4.00	6.233	4.05	189.1	0.0	132.9
								<b>Totals:</b>	<b>149.00</b>			<b>10,283.9</b>		<b>13,255.3</b>

\* Cf Adjusted by Linear Load Ra Effect

## Discrete Appurtenance Forces

<b>Structure:</b> CT12215-A-SBA	<b>Code:</b> EIA/TIA-222-G	10/31/2017
<b>Site Name:</b> Litchfield 3, CT	<b>Exposure:</b> C	
<b>Height:</b> 149.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 0.9D + 1.6W 89 mph Wind

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



**Iterations** 27

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	149.00	800MHZ	3	26.627	29.290	0.87	1.00	6.89	160.65	0.000	3.000	322.91	0.00	968.74
2	149.00	APXVSP18-C-A20	3	26.627	29.290	0.83	1.00	19.97	153.90	0.000	3.000	935.87	0.00	2807.61
3	149.00	APXVTM14-C-I20	3	26.627	29.290	0.79	1.00	15.03	151.20	0.000	3.000	704.17	0.00	2112.52
4	149.00	1900MHz	3	26.627	29.290	0.50	1.00	4.16	162.00	0.000	3.000	194.72	0.00	584.16
5	149.00	Low Profile Platform	1	26.516	29.168	1.00	1.00	25.00	1080.00	0.000	0.000	1166.70	0.00	0.00
6	149.00	TD-RRH8x20-25	3	26.627	29.290	0.69	1.00	8.38	189.00	0.000	3.000	392.89	0.00	1178.66
7	149.00	800MHz Filter	3	26.627	29.290	0.69	1.00	1.61	23.76	0.000	3.000	75.67	0.00	227.00
8	149.00	ACU-A20-N	4	26.627	29.290	0.79	1.00	0.44	3.60	0.000	3.000	20.73	0.00	62.20
9	138.00	Low Profile Platform	1	26.091	28.700	1.00	1.00	25.00	1080.00	0.000	0.000	1148.01	0.00	0.00
10	138.00	FD9R6004/2C-3L	6	26.091	28.700	0.54	0.80	1.16	16.74	0.000	0.000	53.17	0.00	0.00
11	138.00	GPS Receiver	1	26.091	28.700	1.00	1.00	1.00	9.00	0.000	0.000	45.92	0.00	0.00
12	138.00	BXA-171085-12B_2	3	26.091	28.700	0.67	0.80	9.56	40.50	0.000	0.000	438.81	0.00	0.00
13	138.00	BXA-70063-6CF_2	3	26.091	28.700	0.58	0.80	13.26	45.90	0.000	0.000	609.03	0.00	0.00
14	138.00	LPA-80080/6CF	3	26.091	28.700	1.36	0.80	17.67	56.70	0.000	0.000	811.25	0.00	0.00
15	128.00	Low Profile Platform	1	25.681	28.249	1.00	1.00	25.00	1080.00	0.000	0.000	1129.98	0.00	0.00
16	128.00	DC6-48-60-18-8F	1	25.681	28.249	1.00	1.00	0.92	28.62	0.000	0.000	41.58	0.00	0.00
17	128.00	RRUS-11	6	25.681	28.249	0.57	0.80	8.59	275.40	0.000	0.000	388.18	0.00	0.00
18	128.00	LGP 21401	12	25.681	28.249	0.40	0.80	0.00	189.00	0.000	0.000	0.00	0.00	0.00
19	128.00	AM-X-CD-16-65-00T-RET	3	25.681	28.249	0.60	0.80	14.44	130.95	0.000	0.000	652.49	0.00	0.00
20	128.00	7770.00	6	25.681	28.249	0.58	0.80	19.27	189.00	0.000	0.000	871.08	0.00	0.00
21	128.00	ABT-DF-DM-ADBH	1	25.681	28.249	1.00	1.00	0.05	0.99	0.000	0.000	2.26	0.00	0.00
22	115.00	RRUS 11 (Band 4)	3	25.109	27.620	0.57	0.80	4.29	137.70	0.000	0.000	189.76	0.00	0.00
23	115.00	LNx-6515DS-A1M	3	25.109	27.620	0.64	0.80	22.02	134.46	0.000	0.000	973.20	0.00	0.00
24	115.00	APX16DWV-16DWVS-E-	3	25.109	27.620	0.50	0.80	9.84	109.89	0.000	0.000	434.65	0.00	0.00
25	115.00	T-Arm	3	25.109	27.620	0.56	0.75	13.50	945.00	0.000	0.000	596.58	0.00	0.00
26	115.00	RRUS 11 (Band 12)	3	25.109	27.620	0.62	0.80	4.72	145.80	0.000	0.000	208.47	0.00	0.00
27	115.00	RRUS 11	3	25.109	27.620	0.54	0.80	4.73	145.80	0.000	0.000	208.92	0.00	0.00
28	73.00	GPS Receiver	1	22.818	25.099	1.00	1.00	1.00	9.00	0.000	0.000	40.16	0.00	0.00
29	50.00	58532A	1	21.070	23.177	1.00	1.00	0.22	0.36	0.000	0.000	8.16	0.00	0.00
<b>Totals:</b>									<b>6,694.92</b>			<b>12,665.32</b>		

## Total Applied Force Summary

<b>Structure:</b> CT12215-A-SBA	<b>Code:</b> EIA/TIA-222-G	10/31/2017
<b>Site Name:</b> Litchfield 3, CT	<b>Exposure:</b> C	
<b>Height:</b> 149.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II

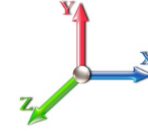


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**Load Case:** 0.9D + 1.6W 89 mph Wind

**Dead Load Factor** 0.90

**Wind Load Factor** 1.60



**Iterations** 27

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		376.32	862.71	0.00	0.00
10.00		368.11	846.97	0.00	0.00
15.00		359.89	831.24	0.00	0.00
20.00		373.15	815.50	0.00	0.00
25.00		381.97	799.77	0.00	0.00
30.00		387.42	784.03	0.00	0.00
35.00		390.40	768.30	0.00	0.00
40.00		391.45	752.56	0.00	0.00
45.00		390.94	736.83	0.00	0.00
47.55		197.94	370.20	0.00	0.00
50.00	(1) attachments	199.76	578.02	0.00	0.00
52.97		231.98	691.68	0.00	0.00
55.00		157.63	241.95	0.00	0.00
60.00		387.71	587.08	0.00	0.00
65.00		383.13	574.49	0.00	0.00
70.00		377.82	561.90	0.00	0.00
73.00	(1) attachments	263.37	340.10	0.00	0.00
75.00		147.35	217.93	0.00	0.00
80.00		365.26	536.00	0.00	0.00
85.00		358.13	523.41	0.00	0.00
90.00		350.51	510.83	0.00	0.00
95.00		342.43	498.24	0.00	0.00
96.18		79.03	115.42	0.00	0.00
100.00		260.86	567.86	0.00	0.00
100.34		23.85	50.36	0.00	0.00
105.00		321.15	367.58	0.00	0.00
110.00		320.26	385.56	0.00	0.00
115.00	(18) attachments	2922.26	1994.77	0.00	0.00
120.00		300.77	356.78	0.00	0.00
125.00		290.55	347.34	0.00	0.00
128.00	(30) attachments	3254.59	2097.83	0.00	0.00
130.00		110.46	109.65	0.00	0.00
135.00		269.25	267.52	0.00	0.00
138.00	(17) attachments	3262.21	1404.82	0.00	0.00
140.00		101.70	79.35	0.00	0.00
145.00		246.88	191.76	0.00	0.00
149.00	(23) attachments	4002.73	2070.72	0.00	7940.90
	<b>Totals:</b>	<b>22,949.23</b>	<b>23,837.06</b>	<b>0.00</b>	<b>7,940.90</b>

## Linear Appurtenance Segment Forces (Factored)

<b>Structure:</b> CT12215-A-SBA	<b>Code:</b> EIA/TIA-222-G	10/31/2017
<b>Site Name:</b> Litchfield 3, CT	<b>Exposure:</b> C	
<b>Height:</b> 149.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II

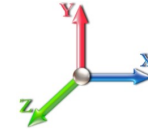


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**Load Case:** 0.9D + 1.6W 89 mph Wind

**Dead Load Factor** 0.90

**Wind Load Factor** 1.60



**Iterations** 27

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.055	0.000	16.374	0.00	9.90
5.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.055	0.000	16.374	0.00	0.72
10.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.056	0.000	16.374	0.00	9.90
10.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.056	0.000	16.374	0.00	0.72
15.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.057	0.000	16.374	0.00	9.90
15.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.057	0.000	16.374	0.00	0.72
20.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.059	0.000	17.374	0.00	9.90
20.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.059	0.000	17.374	0.00	0.72
25.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.060	0.000	18.209	0.00	9.90
25.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.060	0.000	18.209	0.00	0.72
30.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.062	0.000	18.922	0.00	9.90
30.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.062	0.000	18.922	0.00	0.72
35.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.063	0.000	19.546	0.00	9.90
35.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.063	0.000	19.546	0.00	0.72
40.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.065	0.000	20.103	0.00	9.90
40.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.065	0.000	20.103	0.00	0.72
45.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.067	0.000	20.608	0.00	9.90
45.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.067	0.000	20.608	0.00	0.72
47.55	1 5/8" Hybrid	Yes	2.55	0.000	2.00	0.43	0.00	0.068	0.000	20.849	0.00	5.06
47.55	1/2" Coax	Yes	2.55	0.000	0.65	0.14	0.00	0.068	0.000	20.849	0.00	0.37
50.00	1 5/8" Hybrid	Yes	2.45	0.000	2.00	0.41	0.00	0.069	0.000	21.070	0.00	4.84
50.00	1/2" Coax	Yes	2.45	0.000	0.65	0.13	0.00	0.069	0.000	21.070	0.00	0.35
52.97	1 5/8" Hybrid	Yes	2.97	0.000	2.00	0.49	0.00	0.086	0.000	21.328	0.00	5.88
52.97	1.25" Reinforcing	Yes	2.97	0.000	1.25	0.31	0.00	0.086	0.000	21.328	0.00	0.00
55.00	1 5/8" Hybrid	Yes	2.03	0.000	2.00	0.34	0.00	0.086	0.000	21.497	0.00	4.02
55.00	1.25" Reinforcing	Yes	2.03	0.000	1.25	0.21	0.00	0.086	0.000	21.497	0.00	0.00
60.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.087	0.000	21.895	0.00	9.90
60.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.087	0.000	21.895	0.00	0.00
65.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.090	0.000	22.267	0.00	9.90
65.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.090	0.000	22.267	0.00	0.00
70.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.093	0.000	22.617	0.00	9.90
70.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.093	0.000	22.617	0.00	0.00
73.00	1 5/8" Hybrid	Yes	3.00	0.000	2.00	0.50	0.00	0.095	0.000	22.818	0.00	5.94
73.00	1.25" Reinforcing	Yes	3.00	0.000	1.25	0.31	0.00	0.095	0.000	22.818	0.00	0.00
75.00	1 5/8" Hybrid	Yes	2.00	0.000	2.00	0.33	0.00	0.097	0.000	22.948	0.00	3.96
75.00	1.25" Reinforcing	Yes	2.00	0.000	1.25	0.21	0.00	0.097	0.000	22.948	0.00	0.00
80.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.076	0.000	23.262	0.00	9.90
80.00	1.25" Reinforcing	Yes	2.00	0.000	1.25	0.21	0.00	0.076	0.000	23.262	0.00	0.00
85.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.063	0.000	23.561	0.00	9.90
90.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.065	0.000	23.846	0.00	9.90
95.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.067	0.000	24.119	0.00	9.90
96.18	1 5/8" Hybrid	Yes	1.18	0.000	2.00	0.20	0.00	0.069	0.000	24.181	0.00	2.33
100.00	1 5/8" Hybrid	Yes	3.82	0.000	2.00	0.64	0.00	0.104	1.013	24.381	0.00	7.57
100.00	1.25" Reinforcing	Yes	3.00	0.000	1.25	0.31	0.00	0.104	1.013	24.381	0.00	0.00
100.34	1 5/8" Hybrid	Yes	0.34	0.000	2.00	0.06	0.00	0.115	1.046	24.398	0.00	0.68
100.34	1.25" Reinforcing	Yes	0.34	0.000	1.25	0.04	0.00	0.115	1.046	24.398	0.00	0.00
105.00	1 5/8" Hybrid	Yes	4.66	0.000	2.00	0.78	0.00	0.116	1.048	24.632	0.00	9.22

## Linear Appurtenance Segment Forces (Factored)

<b>Structure:</b> CT12215-A-SBA	<b>Code:</b> EIA/TIA-222-G	10/31/2017
<b>Site Name:</b> Litchfield 3, CT	<b>Exposure:</b> C	
<b>Height:</b> 149.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II

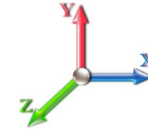


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**Load Case:** 0.9D + 1.6W 89 mph Wind

**Dead Load Factor** 0.90

**Wind Load Factor** 1.60



**Iterations** 27

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
105.00	1.25" Reinforcing	Yes	4.66	0.000	1.25	0.49	0.00	0.116	1.048	24.632	0.00	0.00
110.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.074	0.000	24.875	0.00	9.90
115.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.077	0.000	25.109	0.00	9.90
<b>Totals:</b>											<b>0.0</b>	<b>234.9</b>

## Calculated Forces

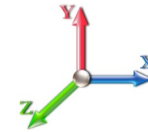
<b>Structure:</b> CT12215-A-SBA	<b>Code:</b> EIA/TIA-222-G	10/31/2017
<b>Site Name:</b> Litchfield 3, CT	<b>Exposure:</b> C	
<b>Height:</b> 149.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 0.9D + 1.6W 89 mph Wind

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



**Iterations** 27

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-23.78	-23.00	0.00	-2544.6	0.00	2544.61	3031.07	1515.53	5947.06	2977.95	0.00	0.000	0.000	0.863
5.00	-22.82	-22.73	0.00	-2429.5	0.00	2429.59	2993.85	1496.92	5745.58	2877.06	0.14	-0.260	0.000	0.852
10.00	-21.87	-22.46	0.00	-2315.9	0.00	2315.94	2955.36	1477.68	5544.90	2776.57	0.55	-0.526	0.000	0.842
15.00	-20.94	-22.19	0.00	-2203.6	0.00	2203.65	2915.59	1457.80	5345.20	2676.57	1.25	-0.796	0.000	0.831
20.00	-20.02	-21.90	0.00	-2092.7	0.00	2092.70	2874.56	1437.28	5146.64	2577.14	2.23	-1.071	0.000	0.819
25.00	-19.12	-21.60	0.00	-1983.2	0.00	1983.20	2832.25	1416.12	4949.37	2478.36	3.50	-1.351	0.000	0.807
30.00	-18.24	-21.28	0.00	-1875.2	0.00	1875.22	2788.67	1394.33	4753.57	2380.32	5.07	-1.637	0.000	0.795
35.00	-17.38	-20.96	0.00	-1768.8	0.00	1768.82	2743.82	1371.91	4559.39	2283.08	6.94	-1.927	0.000	0.781
40.00	-16.54	-20.62	0.00	-1664.0	0.00	1664.05	2697.69	1348.85	4367.01	2186.75	9.11	-2.221	0.000	0.767
45.00	-15.74	-20.26	0.00	-1560.9	0.00	1560.94	2650.30	1325.15	4176.57	2091.39	11.60	-2.521	0.000	0.753
47.55	-15.32	-20.09	0.00	-1509.2	0.00	1509.20	2625.60	1312.80	4080.13	2043.10	12.99	-2.678	0.000	0.745
50.00	-14.69	-19.91	0.00	-1460.0	0.00	1460.04	2601.63	1300.82	3988.26	1997.09	14.40	-2.830	0.000	0.737
52.97	-13.96	-19.68	0.00	-1400.9	0.00	1400.92	1914.68	957.34	2935.86	1470.11	16.22	-3.016	0.000	0.961
55.00	-13.64	-19.57	0.00	-1360.9	0.00	1360.97	1902.26	951.13	2883.67	1443.98	17.53	-3.145	0.000	0.950
60.00	-12.95	-19.23	0.00	-1263.1	0.00	1263.13	1870.76	935.38	2755.66	1379.88	21.02	-3.516	0.000	0.923
65.00	-12.28	-18.89	0.00	-1166.9	0.00	1166.97	1837.99	919.00	2628.54	1316.22	24.90	-3.892	0.000	0.894
70.00	-11.65	-18.54	0.00	-1072.5	0.00	1072.50	1803.95	901.98	2502.46	1253.09	29.18	-4.269	0.000	0.863
73.00	-11.27	-18.29	0.00	-1016.8	0.00	1016.88	1782.92	891.46	2427.38	1215.49	31.93	-4.501	0.000	0.843
75.00	-10.98	-18.18	0.00	-980.31	0.00	980.31	1768.64	884.32	2377.59	1190.56	33.85	-4.657	0.000	0.830
80.00	-10.36	-17.84	0.00	-889.43	0.00	889.43	1732.06	866.03	2254.10	1128.72	38.93	-5.036	0.000	0.794
85.00	-9.75	-17.50	0.00	-800.25	0.00	800.25	1694.20	847.10	2132.15	1067.66	44.40	-5.413	0.000	0.756
90.00	-9.17	-17.16	0.00	-712.78	0.00	712.78	1655.08	827.54	2011.90	1007.44	50.26	-5.786	0.000	0.713
95.00	-8.64	-16.80	0.00	-627.00	0.00	627.00	1614.68	807.34	1893.51	948.16	56.50	-6.153	0.000	0.667
96.18	-8.48	-16.73	0.00	-607.23	0.00	607.23	1604.99	802.49	1865.94	934.36	58.03	-6.241	0.000	0.656
100.00	-7.91	-16.43	0.00	-543.25	0.00	543.25	1573.01	786.50	1777.16	889.90	63.13	-6.516	0.000	0.616
100.34	-7.81	-16.43	0.00	-537.61	0.00	537.61	1075.68	537.84	1234.34	618.09	63.60	-6.541	0.000	0.878
105.00	-7.38	-16.11	0.00	-461.12	0.00	461.12	1053.86	526.93	1167.20	584.47	70.13	-6.860	0.000	0.797
110.00	-6.93	-15.79	0.00	-380.56	0.00	380.56	1029.21	514.60	1095.73	548.68	77.52	-7.268	0.000	0.701
115.00	-5.25	-12.67	0.00	-301.58	0.00	301.58	1003.28	501.64	1025.09	513.31	85.31	-7.640	0.000	0.593
120.00	-4.87	-12.35	0.00	-238.23	0.00	238.23	976.09	488.04	955.42	478.42	93.47	-7.972	0.000	0.504
125.00	-4.52	-12.03	0.00	-176.48	0.00	176.48	947.62	473.81	886.90	444.11	101.95	-8.262	0.000	0.403
128.00	-2.90	-8.51	0.00	-140.38	0.00	140.38	929.93	464.96	846.40	423.83	107.18	-8.414	0.000	0.335
130.00	-2.79	-8.39	0.00	-123.36	0.00	123.36	917.88	458.94	819.69	410.45	110.71	-8.506	0.000	0.304
135.00	-2.55	-8.09	0.00	-81.38	0.00	81.38	886.87	443.43	753.94	377.53	119.69	-8.694	0.000	0.219
138.00	-1.65	-4.66	0.00	-57.10	0.00	57.10	867.65	433.83	715.27	358.17	125.16	-8.783	0.000	0.161
140.00	-1.58	-4.55	0.00	-47.78	0.00	47.78	854.59	427.29	689.83	345.43	128.84	-8.832	0.000	0.140
145.00	-1.42	-4.28	0.00	-25.04	0.00	25.04	821.03	410.52	627.52	314.23	138.10	-8.922	0.000	0.082
149.00	0.00	-4.00	0.00	-7.94	0.00	7.94	787.55	393.77	574.90	287.88	145.57	-8.960	0.000	0.028

## Wind Loading - Shaft

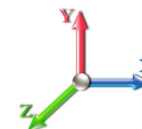
<b>Structure:</b> CT12215-A-SBA	<b>Code:</b> EIA/TIA-222-G	10/31/2017
<b>Site Name:</b> Litchfield 3, CT	<b>Exposure:</b> C	
<b>Height:</b> 149.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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**Load Case:** 1.2D + 1.0Di + 1.0Wi 40 mph Wind

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



**Iterations** 27

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	3.308	3.64	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	3.308	3.64	0.00	1.200	1.656	5.00	21.469	25.76	93.7	504.3	1459.5
10.00		1.00	0.85	3.308	3.64	0.00	1.200	1.775	5.00	21.130	25.36	92.3	530.3	1464.5
15.00		1.00	0.85	3.308	3.64	0.00	1.200	1.848	5.00	20.753	24.90	90.6	541.1	1454.3
20.00		1.00	0.90	3.509	3.86	0.00	1.200	1.902	5.00	20.360	24.43	94.3	545.1	1437.4
25.00		1.00	0.95	3.678	4.05	0.00	1.200	1.945	5.00	19.957	23.95	96.9	545.3	1416.6
30.00		1.00	0.98	3.822	4.20	0.00	1.200	1.981	5.00	19.548	23.46	98.6	542.9	1393.2
35.00		1.00	1.01	3.948	4.34	0.00	1.200	2.012	5.00	19.136	22.96	99.7	538.7	1368.0
40.00		1.00	1.04	4.061	4.47	0.00	1.200	2.039	5.00	18.720	22.46	100.3	533.0	1341.4
45.00		1.00	1.07	4.163	4.58	0.00	1.200	2.063	5.00	18.302	21.96	100.6	526.3	1313.6
47.55 Bot - Section 2		1.00	1.08	4.211	4.63	0.00	1.200	2.074	2.55	9.182	11.02	51.0	266.8	660.8
50.00 Appurtenance(s)		1.00	1.09	4.256	4.68	0.00	1.200	2.085	2.45	8.799	10.56	49.4	257.0	931.7
52.97 Top - Section 1		1.00	1.11	4.308	4.74	0.00	1.200	2.097	2.97	10.546	12.65	60.0	309.0	1115.9
55.00		1.00	1.12	4.342	4.78	0.00	1.200	2.105	2.03	7.122	8.55	40.8	209.8	453.6
60.00		1.00	1.14	4.423	4.86	0.00	1.200	2.123	5.00	17.248	20.70	100.7	507.7	1096.3
65.00		1.00	1.16	4.498	4.95	0.00	1.200	2.140	5.00	16.824	20.19	99.9	498.1	1070.0
70.00		1.00	1.17	4.569	5.03	0.00	1.200	2.156	5.00	16.399	19.68	98.9	488.0	1043.1
73.00 Appurtenance(s)		1.00	1.18	4.609	5.07	0.00	1.200	2.165	3.00	9.634	11.56	58.6	289.1	614.0
75.00		1.00	1.19	4.635	5.10	0.00	1.200	2.171	2.00	6.337	7.60	38.8	191.0	404.3
80.00		1.00	1.21	4.699	5.17	0.00	1.200	2.185	5.00	15.547	18.66	96.4	466.6	988.1
85.00		1.00	1.22	4.759	5.24	0.00	1.200	2.198	5.00	15.119	18.14	95.0	455.4	960.1
90.00		1.00	1.24	4.817	5.30	0.00	1.200	2.211	5.00	14.691	17.63	93.4	443.8	931.7
95.00		1.00	1.25	4.872	5.36	0.00	1.200	2.223	5.00	14.263	17.12	91.7	431.9	903.1
96.18 Bot - Section 3		1.00	1.26	4.885	5.37	0.00	1.200	2.226	1.18	3.293	3.95	21.2	101.0	209.4
100.00		1.00	1.27	4.925	5.42	0.00	1.215 *	2.234	3.82	10.660	12.95	70.2	325.0	934.4
100.34 Top - Section 2		1.00	1.27	4.928	5.42	0.00	1.255 *	2.235	0.34	0.945	1.19	6.4	29.1	83.0
105.00		1.00	1.28	4.976	5.47	0.00	1.257 *	2.245	4.66	12.618	15.87	86.8	384.4	694.5
110.00		1.00	1.29	5.025	5.53	0.00	1.200	2.256	5.00	13.134	15.76	87.1	400.1	721.0
115.00 Appurtenance(s)		1.00	1.30	5.072	5.58	0.00	1.200	2.266	5.00	12.704	15.24	85.1	387.3	695.6
120.00		1.00	1.32	5.117	5.63	0.00	1.200	2.276	5.00	12.274	14.73	82.9	374.3	670.1
125.00		1.00	1.33	5.162	5.68	0.00	1.200	2.285	5.00	11.843	14.21	80.7	361.2	644.3
128.00 Appurtenance(s)		1.00	1.33	5.187	5.71	0.00	1.200	2.290	3.00	6.898	8.28	47.2	211.9	375.7
130.00		1.00	1.34	5.204	5.72	0.00	1.200	2.294	2.00	4.512	5.41	31.0	139.1	245.8
135.00		1.00	1.35	5.246	5.77	0.00	1.200	2.303	5.00	10.981	13.18	76.0	334.3	592.3
138.00 Appurtenance(s)		1.00	1.35	5.270	5.80	0.00	1.200	2.308	3.00	6.381	7.66	44.4	195.7	344.4
140.00		1.00	1.36	5.286	5.81	0.00	1.200	2.311	2.00	4.167	5.00	29.1	128.3	224.9
145.00		1.00	1.37	5.325	5.86	0.00	1.200	2.319	5.00	10.118	12.14	71.1	306.8	539.6
149.00 Appurtenance(s)		1.00	1.38	5.356	5.89	0.00	1.200	2.325	4.00	7.783	9.34	55.0	236.5	413.7
<b>Totals:</b>												<b>149.00</b>	<b>2,716.1</b>	<b>31,210.1</b>

\* Cf Adjusted by Linear Load Ra Effect

## Discrete Appurtenance Forces

<b>Structure:</b> CT12215-A-SBA	<b>Code:</b> EIA/TIA-222-G	10/31/2017
<b>Site Name:</b> Litchfield 3, CT	<b>Exposure:</b> C	
<b>Height:</b> 149.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<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 40 mph Wind

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



**Iterations** 27

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)	
1	149.00	800MHZ	3	5.379	5.916	0.87	1.00	10.92	458.81	0.000	3.000	64.58	0.00	193.74	
2	149.00	APXVSP18-C-A20	3	5.379	5.916	0.83	1.00	29.24	747.64	0.000	3.000	172.99	0.00	518.97	
3	149.00	APXVTM14-C-I20	3	5.379	5.916	0.79	1.00	18.62	886.54	0.000	3.000	110.14	0.00	330.43	
4	149.00	1900MHz	3	5.379	5.916	0.50	1.00	6.69	477.82	0.000	3.000	39.58	0.00	118.75	
5	149.00	Low Profile Platform	1	5.356	5.892	1.00	1.00	52.90	2535.24	0.000	0.000	311.70	0.00	0.00	
6	149.00	TD-RRH8x20-25	3	5.379	5.916	0.69	1.00	10.68	724.79	0.000	3.000	63.21	0.00	189.63	
7	149.00	800MHz Filter	3	5.379	5.916	0.69	1.00	3.40	87.21	0.000	3.000	20.11	0.00	60.33	
8	149.00	ACU-A20-N	4	5.379	5.916	0.79	1.00	1.69	22.50	0.000	3.000	10.01	0.00	30.03	
9	138.00	Low Profile Platform	1	5.270	5.797	1.00	1.00	52.69	2524.58	0.000	0.000	305.47	0.00	0.00	
10	138.00	FD9R6004/2C-3L	6	5.270	5.797	0.54	0.80	3.04	72.20	0.000	0.000	17.64	0.00	0.00	
11	138.00	GPS Receiver	1	5.270	5.797	1.00	1.00	1.94	42.77	0.000	0.000	11.26	0.00	0.00	
12	138.00	BXA-171085-12B_2	3	5.270	5.797	0.67	0.80	15.82	348.98	0.000	0.000	91.70	0.00	0.00	
13	138.00	BXA-70063-6CF_2	3	5.270	5.797	0.58	0.80	16.25	800.36	0.000	0.000	94.21	0.00	0.00	
14	138.00	LPA-80080/6CF	3	5.270	5.797	1.36	0.80	24.22	898.19	0.000	0.000	140.44	0.00	0.00	
15	128.00	Low Profile Platform	1	5.187	5.706	1.00	1.00	52.48	2514.20	0.000	0.000	299.49	0.00	0.00	
16	128.00	DC6-48-60-18-8F	1	5.187	5.706	1.00	1.00	1.49	101.60	0.000	0.000	8.53	0.00	0.00	
17	128.00	RRUS-11	6	5.187	5.706	0.57	0.80	11.42	840.28	0.000	0.000	65.17	0.00	0.00	
18	128.00	LGP 21401	12	5.187	5.706	0.40	0.80	6.65	758.35	0.000	0.000	37.97	0.00	0.00	
19	128.00	AM-X-CD-16-65-00T-RET	3	5.187	5.706	0.60	0.80	21.04	674.00	0.000	0.000	120.03	0.00	0.00	
20	128.00	7770.00	6	5.187	5.706	0.58	0.80	24.27	1393.16	0.000	0.000	138.49	0.00	0.00	
21	128.00	ABT-DF-DM-ADBH	1	5.187	5.706	1.00	1.00	0.30	3.55	0.000	0.000	1.73	0.00	0.00	
22	115.00	RRUS 11 (Band 4)	3	5.072	5.579	0.57	0.80	5.70	417.11	0.000	0.000	31.77	0.00	0.00	
23	115.00	LNx-6515DS-A1M	3	5.072	5.579	0.64	0.80	30.17	876.01	0.000	0.000	168.30	0.00	0.00	
24	115.00	APX16DWV-16DWVS-E-	3	5.072	5.579	0.50	0.80	14.04	501.97	0.000	0.000	78.35	0.00	0.00	
25	115.00	T-Arm	3	5.072	5.579	0.56	0.75	28.80	2001.69	0.000	0.000	160.65	0.00	0.00	
26	115.00	RRUS 11 (Band 12)	3	5.072	5.579	0.62	0.80	6.26	401.62	0.000	0.000	34.91	0.00	0.00	
27	115.00	RRUS 11	3	5.072	5.579	0.54	0.80	5.45	565.69	0.000	0.000	30.40	0.00	0.00	
28	73.00	GPS Receiver	1	4.609	5.070	1.00	1.00	1.88	40.38	0.000	0.000	9.55	0.00	0.00	
29	50.00	58532A	1	4.256	4.682	1.00	1.00	0.66	7.64	0.000	0.000	3.10	0.00	0.00	
<b>Totals:</b>									<b>21,724.87</b>						<b>2,641.47</b>



## Total Applied Force Summary

<b>Structure:</b> CT12215-A-SBA	<b>Code:</b> EIA/TIA-222-G	10/31/2017
<b>Site Name:</b> Litchfield 3, CT	<b>Exposure:</b> C	
<b>Height:</b> 149.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<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 40 mph Wind

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



**Iterations** 27

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		93.73	1721.56	0.00	0.00
10.00		92.25	1733.69	0.00	0.00
15.00		90.61	1728.07	0.00	0.00
20.00		94.31	1714.61	0.00	0.00
25.00		96.90	1696.61	0.00	0.00
30.00		98.63	1675.60	0.00	0.00
35.00		99.73	1652.43	0.00	0.00
40.00		100.34	1627.62	0.00	0.00
45.00		100.56	1601.52	0.00	0.00
47.55		51.04	808.20	0.00	0.00
50.00	(1) attachments	52.53	1080.96	0.00	0.00
52.97		59.97	1303.85	0.00	0.00
55.00		40.82	582.27	0.00	0.00
60.00		100.69	1414.84	0.00	0.00
65.00		99.89	1389.87	0.00	0.00
70.00		98.89	1364.31	0.00	0.00
73.00	(1) attachments	68.16	847.60	0.00	0.00
75.00		38.77	532.90	0.00	0.00
80.00		96.43	1272.98	0.00	0.00
85.00		94.98	1220.30	0.00	0.00
90.00		93.41	1192.48	0.00	0.00
95.00		91.72	1164.34	0.00	0.00
96.18		21.23	270.93	0.00	0.00
100.00		70.17	1173.63	0.00	0.00
100.34		6.43	105.46	0.00	0.00
105.00		86.84	999.78	0.00	0.00
110.00		87.11	983.71	0.00	0.00
115.00	(18) attachments	589.42	5722.87	0.00	0.00
120.00		82.91	850.04	0.00	0.00
125.00		80.69	824.28	0.00	0.00
128.00	(30) attachments	718.64	6768.87	0.00	0.00
130.00		31.00	285.33	0.00	0.00
135.00		76.04	691.01	0.00	0.00
138.00	(17) attachments	705.10	5090.73	0.00	0.00
140.00		29.08	234.05	0.00	0.00
145.00		71.13	562.51	0.00	0.00
149.00	(23) attachments	847.35	6372.57	0.00	1441.88
	<b>Totals:</b>	<b>5,357.53</b>	<b>60,262.41</b>	<b>0.00</b>	<b>1,441.88</b>

## Linear Appurtenance Segment Forces (Factored)

<b>Structure:</b> CT12215-A-SBA	<b>Code:</b> EIA/TIA-222-G	10/31/2017
<b>Site Name:</b> Litchfield 3, CT	<b>Exposure:</b> C	
<b>Height:</b> 149.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<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 40 mph Wind

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



**Iterations** 27

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	2.21	0.00	0.055	0.000	3.308	0.00	59.05
5.00	1/2" Coax	Yes	5.00	0.000	0.65	1.65	0.00	0.055	0.000	3.308	0.00	22.08
10.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	2.31	0.00	0.056	0.000	3.308	0.00	63.39
10.00	1/2" Coax	Yes	5.00	0.000	0.65	1.75	0.00	0.056	0.000	3.308	0.00	24.87
15.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	2.37	0.00	0.057	0.000	3.308	0.00	66.16
15.00	1/2" Coax	Yes	5.00	0.000	0.65	1.81	0.00	0.057	0.000	3.308	0.00	26.68
20.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	2.42	0.00	0.059	0.000	3.509	0.00	68.24
20.00	1/2" Coax	Yes	5.00	0.000	0.65	1.86	0.00	0.059	0.000	3.509	0.00	28.05
25.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	2.45	0.00	0.060	0.000	3.678	0.00	69.91
25.00	1/2" Coax	Yes	5.00	0.000	0.65	1.89	0.00	0.060	0.000	3.678	0.00	29.17
30.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	2.48	0.00	0.062	0.000	3.822	0.00	71.33
30.00	1/2" Coax	Yes	5.00	0.000	0.65	1.92	0.00	0.062	0.000	3.822	0.00	30.12
35.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	2.51	0.00	0.063	0.000	3.948	0.00	72.56
35.00	1/2" Coax	Yes	5.00	0.000	0.65	1.95	0.00	0.063	0.000	3.948	0.00	30.95
40.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	2.53	0.00	0.065	0.000	4.061	0.00	73.65
40.00	1/2" Coax	Yes	5.00	0.000	0.65	1.97	0.00	0.065	0.000	4.061	0.00	31.68
45.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	2.55	0.00	0.067	0.000	4.163	0.00	74.63
45.00	1/2" Coax	Yes	5.00	0.000	0.65	1.99	0.00	0.067	0.000	4.163	0.00	32.35
47.55	1 5/8" Hybrid	Yes	2.55	0.000	2.00	1.31	0.00	0.068	0.000	4.211	0.00	38.35
47.55	1/2" Coax	Yes	2.55	0.000	0.65	1.02	0.00	0.068	0.000	4.211	0.00	16.68
50.00	1 5/8" Hybrid	Yes	2.45	0.000	2.00	1.26	0.00	0.069	0.000	4.256	0.00	36.96
50.00	1/2" Coax	Yes	2.45	0.000	0.65	0.98	0.00	0.069	0.000	4.256	0.00	16.13
52.97	1 5/8" Hybrid	Yes	2.97	0.000	2.00	1.53	0.00	0.086	0.000	4.308	0.00	45.15
52.97	1.25" Reinforcing	Yes	2.97	0.000	1.25	1.35	0.00	0.086	0.000	4.308	0.00	35.28
55.00	1 5/8" Hybrid	Yes	2.03	0.000	2.00	1.05	0.00	0.086	0.000	4.342	0.00	31.00
55.00	1.25" Reinforcing	Yes	2.03	0.000	1.25	0.92	0.00	0.086	0.000	4.342	0.00	24.24
60.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	2.60	0.00	0.087	0.000	4.423	0.00	77.10
60.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	2.29	0.00	0.087	0.000	4.423	0.00	60.46
65.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	2.62	0.00	0.090	0.000	4.498	0.00	77.81
65.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	2.30	0.00	0.090	0.000	4.498	0.00	61.15
70.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	2.63	0.00	0.093	0.000	4.569	0.00	78.48
70.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	2.32	0.00	0.093	0.000	4.569	0.00	61.80
73.00	1 5/8" Hybrid	Yes	3.00	0.000	2.00	1.58	0.00	0.095	0.000	4.609	0.00	47.32
73.00	1.25" Reinforcing	Yes	3.00	0.000	1.25	1.40	0.00	0.095	0.000	4.609	0.00	37.30
75.00	1 5/8" Hybrid	Yes	2.00	0.000	2.00	1.06	0.00	0.097	0.000	4.635	0.00	31.64
75.00	1.25" Reinforcing	Yes	2.00	0.000	1.25	0.93	0.00	0.097	0.000	4.635	0.00	24.97
80.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	2.65	0.00	0.076	0.000	4.699	0.00	79.70
80.00	1.25" Reinforcing	Yes	2.00	0.000	1.25	0.94	0.00	0.076	0.000	4.699	0.00	25.20
85.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	2.67	0.00	0.063	0.000	4.759	0.00	80.26
90.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	2.68	0.00	0.065	0.000	4.817	0.00	80.80
95.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	2.69	0.00	0.067	0.000	4.872	0.00	81.31
96.18	1 5/8" Hybrid	Yes	1.18	0.000	2.00	0.63	0.00	0.069	0.000	4.885	0.00	19.16
100.00	1 5/8" Hybrid	Yes	3.82	0.000	2.00	2.06	0.00	0.104	1.013	4.925	0.00	62.55
100.00	1.25" Reinforcing	Yes	3.00	0.000	1.25	1.43	0.00	0.104	1.013	4.925	0.00	39.03
100.34	1 5/8" Hybrid	Yes	0.34	0.000	2.00	0.19	0.00	0.115	1.046	4.928	0.00	5.62
100.34	1.25" Reinforcing	Yes	0.34	0.000	1.25	0.16	0.00	0.115	1.046	4.928	0.00	4.47
105.00	1 5/8" Hybrid	Yes	4.66	0.000	2.00	2.52	0.00	0.116	1.048	4.976	0.00	76.62

## Linear Appurtenance Segment Forces (Factored)

<b>Structure:</b> CT12215-A-SBA	<b>Code:</b> EIA/TIA-222-G	10/31/2017
<b>Site Name:</b> Litchfield 3, CT	<b>Exposure:</b> C	
<b>Height:</b> 149.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<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 40 mph Wind

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



**Iterations** 27

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
105.00	1.25" Reinforcing	Yes	4.66	0.000	1.25	2.23	0.00	0.116	1.048	4.976	0.00	61.00
110.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	2.71	0.00	0.074	0.000	5.025	0.00	82.72
115.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	2.72	0.00	0.077	0.000	5.072	0.00	83.15
<b>Totals:</b>											<b>0.0</b>	<b>2,458.2</b>

## Calculated Forces

<b>Structure:</b> CT12215-A-SBA	<b>Code:</b> EIA/TIA-222-G	10/31/2017
<b>Site Name:</b> Litchfield 3, CT	<b>Exposure:</b> C	
<b>Height:</b> 149.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<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 40 mph Wind

**Iterations** 27

**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	-60.26	-5.39	0.00	-638.34	0.00	638.34	3031.07	1515.53	5947.06	2977.95	0.00	0.000	0.000	0.234
5.00	-58.53	-5.37	0.00	-611.38	0.00	611.38	2993.85	1496.92	5745.58	2877.06	0.03	-0.065	0.000	0.232
10.00	-56.79	-5.34	0.00	-584.55	0.00	584.55	2955.36	1477.68	5544.90	2776.57	0.14	-0.132	0.000	0.230
15.00	-55.06	-5.31	0.00	-557.87	0.00	557.87	2915.59	1457.80	5345.20	2676.57	0.31	-0.201	0.000	0.227
20.00	-53.34	-5.27	0.00	-531.33	0.00	531.33	2874.56	1437.28	5146.64	2577.14	0.56	-0.270	0.000	0.225
25.00	-51.63	-5.23	0.00	-504.98	0.00	504.98	2832.25	1416.12	4949.37	2478.36	0.88	-0.342	0.000	0.222
30.00	-49.95	-5.19	0.00	-478.82	0.00	478.82	2788.67	1394.33	4753.57	2380.32	1.28	-0.414	0.000	0.219
35.00	-48.29	-5.14	0.00	-452.90	0.00	452.90	2743.82	1371.91	4559.39	2283.08	1.75	-0.488	0.000	0.216
40.00	-46.66	-5.08	0.00	-427.22	0.00	427.22	2697.69	1348.85	4367.01	2186.75	2.30	-0.564	0.000	0.213
45.00	-45.06	-5.01	0.00	-401.81	0.00	401.81	2650.30	1325.15	4176.57	2091.39	2.94	-0.641	0.000	0.209
47.55	-44.24	-4.98	0.00	-389.02	0.00	389.02	2625.60	1312.80	4080.13	2043.10	3.29	-0.682	0.000	0.207
50.00	-43.16	-4.95	0.00	-376.83	0.00	376.83	2601.63	1300.82	3988.26	1997.09	3.65	-0.721	0.000	0.205
52.97	-41.85	-4.90	0.00	-362.13	0.00	362.13	1914.68	957.34	2935.86	1470.11	4.11	-0.769	0.000	0.268
55.00	-41.27	-4.90	0.00	-352.18	0.00	352.18	1902.26	951.13	2883.67	1443.98	4.45	-0.802	0.000	0.266
60.00	-39.85	-4.85	0.00	-327.69	0.00	327.69	1870.76	935.38	2755.66	1379.88	5.34	-0.898	0.000	0.259
65.00	-38.45	-4.79	0.00	-303.46	0.00	303.46	1837.99	919.00	2628.54	1316.22	6.33	-0.996	0.000	0.252
70.00	-37.08	-4.72	0.00	-279.52	0.00	279.52	1803.95	901.98	2502.46	1253.09	7.43	-1.094	0.000	0.244
73.00	-36.23	-4.66	0.00	-265.38	0.00	265.38	1782.92	891.46	2427.38	1215.49	8.14	-1.155	0.000	0.239
75.00	-35.69	-4.66	0.00	-256.05	0.00	256.05	1768.64	884.32	2377.59	1190.56	8.63	-1.195	0.000	0.235
80.00	-34.41	-4.59	0.00	-232.77	0.00	232.77	1732.06	866.03	2254.10	1128.72	9.93	-1.294	0.000	0.226
85.00	-33.19	-4.53	0.00	-209.81	0.00	209.81	1694.20	847.10	2132.15	1067.66	11.34	-1.393	0.000	0.216
90.00	-31.99	-4.46	0.00	-187.18	0.00	187.18	1655.08	827.54	2011.90	1007.44	12.85	-1.491	0.000	0.205
95.00	-30.83	-4.37	0.00	-164.90	0.00	164.90	1614.68	807.34	1893.51	948.16	14.47	-1.587	0.000	0.193
96.18	-30.55	-4.36	0.00	-159.76	0.00	159.76	1604.99	802.49	1865.94	934.36	14.86	-1.611	0.000	0.190
100.00	-29.38	-4.28	0.00	-143.09	0.00	143.09	1573.01	786.50	1777.16	889.90	16.18	-1.683	0.000	0.179
100.34	-29.27	-4.29	0.00	-141.62	0.00	141.62	1075.68	537.84	1234.34	618.09	16.30	-1.690	0.000	0.256
105.00	-28.27	-4.22	0.00	-121.63	0.00	121.63	1053.86	526.93	1167.20	584.47	17.99	-1.774	0.000	0.235
110.00	-27.28	-4.15	0.00	-100.52	0.00	100.52	1029.21	514.60	1095.73	548.68	19.91	-1.881	0.000	0.210
115.00	-21.57	-3.41	0.00	-79.75	0.00	79.75	1003.28	501.64	1025.09	513.31	21.93	-1.980	0.000	0.177
120.00	-20.72	-3.32	0.00	-62.72	0.00	62.72	976.09	488.04	955.42	478.42	24.05	-2.067	0.000	0.152
125.00	-19.90	-3.23	0.00	-46.10	0.00	46.10	947.62	473.81	886.90	444.11	26.26	-2.143	0.000	0.125
128.00	-13.16	-2.27	0.00	-36.40	0.00	36.40	929.93	464.96	846.40	423.83	27.62	-2.183	0.000	0.100
130.00	-12.87	-2.23	0.00	-31.87	0.00	31.87	917.88	458.94	819.69	410.45	28.54	-2.207	0.000	0.092
135.00	-12.18	-2.14	0.00	-20.71	0.00	20.71	886.87	443.43	753.94	377.53	30.88	-2.255	0.000	0.069
138.00	-7.13	-1.23	0.00	-14.31	0.00	14.31	867.65	433.83	715.27	358.17	32.30	-2.277	0.000	0.048
140.00	-6.89	-1.20	0.00	-11.84	0.00	11.84	854.59	427.29	689.83	345.43	33.26	-2.290	0.000	0.042
145.00	-6.33	-1.10	0.00	-5.86	0.00	5.86	821.03	410.52	627.52	314.23	35.67	-2.312	0.000	0.026
149.00	0.00	-0.85	0.00	-1.44	0.00	1.44	787.55	393.77	574.90	287.88	37.61	-2.320	0.000	0.005

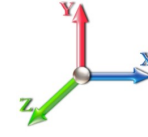
## Seismic Segment Forces (Factored)

<b>Structure:</b> CT12215-A-SBA	<b>Code:</b> EIA/TIA-222-G	10/31/2017
<b>Site Name:</b> Litchfield 3, CT	<b>Exposure:</b> C	
<b>Height:</b> 149.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<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> 24
<b>Gust Response Factor</b>	1.10	<b>Sds</b>	0.12	<b>Ss</b>	0.19
<b>Dead Load Factor</b>	1.20	<b>Seismic Load Factor</b>	1.00	<b>Sd1</b>	0.04
<b>Wind Load Factor</b>	0.00	<b>Structure Frequency</b>	0.31	<b>SA</b>	0.01
					<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		795.99	0.00	0.03	0.02	12.61	
10.00		778.50	0.01	0.05	0.03	16.67	
15.00		761.02	0.02	0.06	0.04	18.22	
20.00		743.54	0.03	0.07	0.04	18.73	
25.00		726.05	0.05	0.07	0.04	18.83	
30.00		708.57	0.08	0.07	0.04	18.83	
35.00		691.08	0.10	0.07	0.04	18.85	
40.00		673.60	0.14	0.07	0.03	18.90	
45.00		656.12	0.17	0.07	0.03	18.88	
47.55	Bot - Section 2	328.31	0.19	0.06	0.02	9.52	
50.00	Appurtenance(s)	562.69	0.21	0.06	0.02	16.35	
52.97	Top - Section 1	672.44	0.24	0.06	0.02	19.38	
55.00		203.15	0.26	0.05	0.02	5.76	
60.00		490.53	0.31	0.04	0.01	12.67	
65.00		476.54	0.36	0.03	0.01	9.68	
70.00		462.55	0.42	0.01	0.01	5.04	
73.00	Appurtenance(s)	280.82	0.45	0.00	0.01	0.98	
75.00		177.75	0.48	-0.01	0.01	-0.33	
80.00		434.58	0.54	-0.03	0.01	-6.57	
85.00		420.59	0.62	-0.06	0.02	-10.75	
90.00		406.60	0.69	-0.08	0.03	-12.90	
95.00		392.62	0.77	-0.11	0.05	-13.22	
96.18	Bot - Section 3	90.36	0.79	-0.11	0.05	-3.03	
100.00		507.85	0.85	-0.12	0.07	-16.21	
100.34	Top - Section 2	44.90	0.86	-0.12	0.07	-1.42	
105.00		258.49	0.94	-0.12	0.10	-6.94	
110.00		267.42	1.03	-0.10	0.15	-4.99	
115.00	Appurtenance(s)	2055.4	1.13	-0.05	0.20	-15.21	
120.00		246.44	1.23	0.03	0.27	1.71	
125.00		235.95	1.33	0.16	0.36	5.76	
128.00	Appurtenance(s)	2240.9	1.39	0.27	0.43	81.65	
130.00		88.93	1.44	0.36	0.47	4.01	
135.00		214.97	1.55	0.64	0.61	14.86	
138.00	Appurtenance(s)	1511.5	1.62	0.85	0.70	128.80	
140.00		80.53	1.67	1.01	0.77	7.78	
145.00		193.99	1.79	1.49	0.96	24.76	
149.00	Appurtenance(s)	2285.5	1.89	1.98	1.14	354.34	
<b>Totals:</b>		<b>22,166.9</b>				<b>772.0</b>	<b>Total Wind: 22,949.2</b>

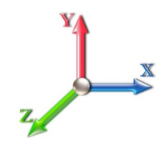
Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

## Calculated Forces

<b>Structure:</b> CT12215-A-SBA	<b>Code:</b> EIA/TIA-222-G	10/31/2017
<b>Site Name:</b> Litchfield 3, CT	<b>Exposure:</b> C	
<b>Height:</b> 149.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



<b>Load Case: 1.2D + 1.0E</b>						<b>Iterations</b> 24
<b>Gust Response Factor</b>	1.10			<b>Sds</b>	0.12	<b>Ss</b> 0.19
<b>Dead Load Factor</b>	1.20	<b>Seismic Load Factor</b>	1.00	<b>Sd1</b>	0.04	<b>S1</b> 0.07
<b>Wind Load Factor</b>	0.00	<b>Structure Frequency</b>	0.31	<b>SA</b>	0.01	<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	-31.78	-0.87	0.00	-104.33	0.00	104.33	3031.07	1515.53	5947.06	2977.95	0.00	0.00	0.00	0.046
5.00	-30.63	-0.86	0.00	-100.00	0.00	100.00	2993.85	1496.92	5745.58	2877.06	0.01	-0.01	0.045	
10.00	-29.50	-0.85	0.00	-95.71	0.00	95.71	2955.36	1477.68	5544.90	2776.57	0.02	-0.02	0.044	
15.00	-28.39	-0.83	0.00	-91.47	0.00	91.47	2915.59	1457.80	5345.20	2676.57	0.05	-0.03	0.044	
20.00	-27.31	-0.82	0.00	-87.30	0.00	87.30	2874.56	1437.28	5146.64	2577.14	0.09	-0.04	0.043	
25.00	-26.24	-0.81	0.00	-83.20	0.00	83.20	2832.25	1416.12	4949.37	2478.36	0.14	-0.06	0.043	
30.00	-25.19	-0.79	0.00	-79.17	0.00	79.17	2788.67	1394.33	4753.57	2380.32	0.21	-0.07	0.042	
35.00	-24.17	-0.78	0.00	-75.21	0.00	75.21	2743.82	1371.91	4559.39	2283.08	0.29	-0.08	0.042	
40.00	-23.17	-0.76	0.00	-71.32	0.00	71.32	2697.69	1348.85	4367.01	2186.75	0.38	-0.09	0.041	
45.00	-22.18	-0.74	0.00	-67.52	0.00	67.52	2650.30	1325.15	4176.57	2091.39	0.48	-0.11	0.041	
47.55	-21.69	-0.74	0.00	-65.62	0.00	65.62	2625.60	1312.80	4080.13	2043.10	0.54	-0.11	0.040	
50.00	-20.92	-0.72	0.00	-63.81	0.00	63.81	2601.63	1300.82	3988.26	1997.09	0.60	-0.12	0.040	
52.97	-20.00	-0.70	0.00	-61.67	0.00	61.67	1914.68	957.34	2935.86	1470.11	0.68	-0.13	0.052	
55.00	-19.67	-0.70	0.00	-60.25	0.00	60.25	1902.26	951.13	2883.67	1443.98	0.73	-0.13	0.052	
60.00	-18.89	-0.69	0.00	-56.75	0.00	56.75	1870.76	935.38	2755.66	1379.88	0.88	-0.15	0.051	
65.00	-18.13	-0.68	0.00	-53.29	0.00	53.29	1837.99	919.00	2628.54	1316.22	1.05	-0.17	0.050	
70.00	-17.38	-0.68	0.00	-49.87	0.00	49.87	1803.95	901.98	2502.46	1253.09	1.23	-0.18	0.049	
73.00	-16.92	-0.68	0.00	-47.83	0.00	47.83	1782.92	891.46	2427.38	1215.49	1.35	-0.19	0.049	
75.00	-16.63	-0.68	0.00	-46.46	0.00	46.46	1768.64	884.32	2377.59	1190.56	1.43	-0.20	0.048	
80.00	-15.92	-0.69	0.00	-43.04	0.00	43.04	1732.06	866.03	2254.10	1128.72	1.65	-0.22	0.047	
85.00	-15.22	-0.69	0.00	-39.61	0.00	39.61	1694.20	847.10	2132.15	1067.66	1.89	-0.24	0.046	
90.00	-14.54	-0.69	0.00	-36.16	0.00	36.16	1655.08	827.54	2011.90	1007.44	2.15	-0.26	0.045	
95.00	-13.87	-0.69	0.00	-32.71	0.00	32.71	1614.68	807.34	1893.51	948.16	2.43	-0.28	0.043	
96.18	-13.72	-0.69	0.00	-31.89	0.00	31.89	1604.99	802.49	1865.94	934.36	2.50	-0.28	0.043	
100.00	-12.96	-0.69	0.00	-29.25	0.00	29.25	1573.01	786.50	1777.16	889.90	2.73	-0.30	0.041	
100.34	-12.89	-0.69	0.00	-29.01	0.00	29.01	1075.68	537.84	1234.34	618.09	2.76	-0.30	0.059	
105.00	-12.40	-0.69	0.00	-25.79	0.00	25.79	1053.86	526.93	1167.20	584.47	3.05	-0.31	0.056	
110.00	-11.89	-0.70	0.00	-22.32	0.00	22.32	1029.21	514.60	1095.73	548.68	3.40	-0.34	0.052	
115.00	-9.23	-0.68	0.00	-18.84	0.00	18.84	1003.28	501.64	1025.09	513.31	3.76	-0.36	0.046	
120.00	-8.75	-0.68	0.00	-15.43	0.00	15.43	976.09	488.04	955.42	478.42	4.15	-0.38	0.041	
125.00	-8.29	-0.67	0.00	-12.02	0.00	12.02	947.62	473.81	886.90	444.11	4.56	-0.40	0.036	
128.00	-5.49	-0.57	0.00	-9.99	0.00	9.99	929.93	464.96	846.40	423.83	4.82	-0.41	0.029	
130.00	-5.35	-0.57	0.00	-8.85	0.00	8.85	917.88	458.94	819.69	410.45	4.99	-0.42	0.027	
135.00	-4.99	-0.55	0.00	-6.00	0.00	6.00	886.87	443.43	753.94	377.53	5.43	-0.43	0.022	
138.00	-3.12	-0.41	0.00	-4.34	0.00	4.34	867.65	433.83	715.27	358.17	5.71	-0.44	0.016	
140.00	-3.01	-0.40	0.00	-3.52	0.00	3.52	854.59	427.29	689.83	345.43	5.89	-0.44	0.014	
145.00	-2.76	-0.38	0.00	-1.50	0.00	1.50	821.03	410.52	627.52	314.23	6.36	-0.45	0.008	
149.00	0.00	-0.35	0.00	0.00	0.00	0.00	787.55	393.77	574.90	287.88	6.73	-0.45	0.000	

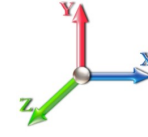
## Seismic Segment Forces (Factored)

<b>Structure:</b> CT12215-A-SBA	<b>Code:</b> EIA/TIA-222-G	10/31/2017
<b>Site Name:</b> Litchfield 3, CT	<b>Exposure:</b> C	
<b>Height:</b> 149.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<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> 24
<b>Gust Response Factor</b>	1.10	<b>Sds</b>	0.12	<b>Ss</b> 0.19
<b>Dead Load Factor</b>	0.90	<b>Seismic Load Factor</b>	1.00	<b>S1</b> 0.07
<b>Wind Load Factor</b>	0.00	<b>Structure Frequency</b>	0.31	<b>SA</b> 0.01
				<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		795.99	0.00	0.03	0.02	12.61	
10.00		778.50	0.01	0.05	0.03	16.67	
15.00		761.02	0.02	0.06	0.04	18.22	
20.00		743.54	0.03	0.07	0.04	18.73	
25.00		726.05	0.05	0.07	0.04	18.83	
30.00		708.57	0.08	0.07	0.04	18.83	
35.00		691.08	0.10	0.07	0.04	18.85	
40.00		673.60	0.14	0.07	0.03	18.90	
45.00		656.12	0.17	0.07	0.03	18.88	
47.55	Bot - Section 2	328.31	0.19	0.06	0.02	9.52	
50.00	Appurtenance(s)	562.69	0.21	0.06	0.02	16.35	
52.97	Top - Section 1	672.44	0.24	0.06	0.02	19.38	
55.00		203.15	0.26	0.05	0.02	5.76	
60.00		490.53	0.31	0.04	0.01	12.67	
65.00		476.54	0.36	0.03	0.01	9.68	
70.00		462.55	0.42	0.01	0.01	5.04	
73.00	Appurtenance(s)	280.82	0.45	0.00	0.01	0.98	
75.00		177.75	0.48	-0.01	0.01	-0.33	
80.00		434.58	0.54	-0.03	0.01	-6.57	
85.00		420.59	0.62	-0.06	0.02	-10.75	
90.00		406.60	0.69	-0.08	0.03	-12.90	
95.00		392.62	0.77	-0.11	0.05	-13.22	
96.18	Bot - Section 3	90.36	0.79	-0.11	0.05	-3.03	
100.00		507.85	0.85	-0.12	0.07	-16.21	
100.34	Top - Section 2	44.90	0.86	-0.12	0.07	-1.42	
105.00		258.49	0.94	-0.12	0.10	-6.94	
110.00		267.42	1.03	-0.10	0.15	-4.99	
115.00	Appurtenance(s)	2055.4	1.13	-0.05	0.20	-15.21	
120.00		246.44	1.23	0.03	0.27	1.71	
125.00		235.95	1.33	0.16	0.36	5.76	
128.00	Appurtenance(s)	2240.9	1.39	0.27	0.43	81.65	
130.00		88.93	1.44	0.36	0.47	4.01	
135.00		214.97	1.55	0.64	0.61	14.86	
138.00	Appurtenance(s)	1511.5	1.62	0.85	0.70	128.80	
140.00		80.53	1.67	1.01	0.77	7.78	
145.00		193.99	1.79	1.49	0.96	24.76	
149.00	Appurtenance(s)	2285.5	1.89	1.98	1.14	354.34	
<b>Totals:</b>		<b>22,166.9</b>				<b>772.0</b>	<b>Total Wind: 22,949.2</b>

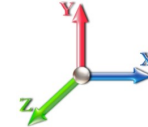
Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

## Calculated Forces

<b>Structure:</b> CT12215-A-SBA	<b>Code:</b> EIA/TIA-222-G	<b>10/31/2017</b>
<b>Site Name:</b> Litchfield 3, CT	<b>Exposure:</b> C	
<b>Height:</b> 149.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<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> 24
<b>Gust Response Factor</b>	1.10		<b>Sds</b>	0.12		<b>Ss</b> 0.19
<b>Dead Load Factor</b>	0.90	<b>Seismic Load Factor</b>	1.00	<b>Sd1</b>	0.04	<b>S1</b> 0.07
<b>Wind Load Factor</b>	0.00	<b>Structure Frequency</b>	0.31	<b>SA</b>	0.01	<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	-23.84	-0.87	0.00	-102.57	0.00	102.57	3031.07	1515.53	5947.06	2977.95	0.00	0.00	0.00	0.042
5.00	-22.97	-0.86	0.00	-98.25	0.00	98.25	2993.85	1496.92	5745.58	2877.06	0.01	-0.01	0.042	
10.00	-22.13	-0.84	0.00	-93.96	0.00	93.96	2955.36	1477.68	5544.90	2776.57	0.02	-0.02	0.041	
15.00	-21.30	-0.83	0.00	-89.74	0.00	89.74	2915.59	1457.80	5345.20	2676.57	0.05	-0.03	0.041	
20.00	-20.48	-0.81	0.00	-85.60	0.00	85.60	2874.56	1437.28	5146.64	2577.14	0.09	-0.04	0.040	
25.00	-19.68	-0.80	0.00	-81.52	0.00	81.52	2832.25	1416.12	4949.37	2478.36	0.14	-0.05	0.040	
30.00	-18.90	-0.78	0.00	-77.53	0.00	77.53	2788.67	1394.33	4753.57	2380.32	0.21	-0.07	0.039	
35.00	-18.13	-0.77	0.00	-73.62	0.00	73.62	2743.82	1371.91	4559.39	2283.08	0.28	-0.08	0.039	
40.00	-17.37	-0.75	0.00	-69.78	0.00	69.78	2697.69	1348.85	4367.01	2186.75	0.37	-0.09	0.038	
45.00	-16.64	-0.73	0.00	-66.03	0.00	66.03	2650.30	1325.15	4176.57	2091.39	0.47	-0.10	0.038	
47.55	-16.27	-0.73	0.00	-64.15	0.00	64.15	2625.60	1312.80	4080.13	2043.10	0.53	-0.11	0.038	
50.00	-15.69	-0.71	0.00	-62.38	0.00	62.38	2601.63	1300.82	3988.26	1997.09	0.59	-0.12	0.037	
52.97	-15.00	-0.69	0.00	-60.27	0.00	60.27	1914.68	957.34	2935.86	1470.11	0.66	-0.12	0.049	
55.00	-14.76	-0.69	0.00	-58.87	0.00	58.87	1902.26	951.13	2883.67	1443.98	0.72	-0.13	0.049	
60.00	-14.17	-0.68	0.00	-55.43	0.00	55.43	1870.76	935.38	2755.66	1379.88	0.86	-0.15	0.048	
65.00	-13.59	-0.67	0.00	-52.05	0.00	52.05	1837.99	919.00	2628.54	1316.22	1.03	-0.16	0.047	
70.00	-13.03	-0.67	0.00	-48.70	0.00	48.70	1803.95	901.98	2502.46	1253.09	1.21	-0.18	0.046	
73.00	-12.69	-0.67	0.00	-46.70	0.00	46.70	1782.92	891.46	2427.38	1215.49	1.32	-0.19	0.046	
75.00	-12.47	-0.67	0.00	-45.37	0.00	45.37	1768.64	884.32	2377.59	1190.56	1.40	-0.20	0.045	
80.00	-11.94	-0.67	0.00	-42.03	0.00	42.03	1732.06	866.03	2254.10	1128.72	1.62	-0.22	0.044	
85.00	-11.41	-0.67	0.00	-38.68	0.00	38.68	1694.20	847.10	2132.15	1067.66	1.86	-0.23	0.043	
90.00	-10.90	-0.67	0.00	-35.32	0.00	35.32	1655.08	827.54	2011.90	1007.44	2.11	-0.25	0.042	
95.00	-10.40	-0.67	0.00	-31.96	0.00	31.96	1614.68	807.34	1893.51	948.16	2.38	-0.27	0.040	
96.18	-10.29	-0.67	0.00	-31.17	0.00	31.17	1604.99	802.49	1865.94	934.36	2.45	-0.27	0.040	
100.00	-9.72	-0.67	0.00	-28.59	0.00	28.59	1573.01	786.50	1777.16	889.90	2.68	-0.29	0.038	
100.34	-9.67	-0.67	0.00	-28.36	0.00	28.36	1075.68	537.84	1234.34	618.09	2.70	-0.29	0.055	
105.00	-9.30	-0.68	0.00	-25.22	0.00	25.22	1053.86	526.93	1167.20	584.47	2.99	-0.31	0.052	
110.00	-8.92	-0.68	0.00	-21.85	0.00	21.85	1029.21	514.60	1095.73	548.68	3.32	-0.33	0.048	
115.00	-6.92	-0.67	0.00	-18.46	0.00	18.46	1003.28	501.64	1025.09	513.31	3.68	-0.35	0.043	
120.00	-6.56	-0.67	0.00	-15.13	0.00	15.13	976.09	488.04	955.42	478.42	4.06	-0.37	0.038	
125.00	-6.22	-0.66	0.00	-11.80	0.00	11.80	947.62	473.81	886.90	444.11	4.46	-0.39	0.033	
128.00	-4.12	-0.56	0.00	-9.82	0.00	9.82	929.93	464.96	846.40	423.83	4.71	-0.40	0.028	
130.00	-4.01	-0.56	0.00	-8.70	0.00	8.70	917.88	458.94	819.69	410.45	4.88	-0.41	0.026	
135.00	-3.74	-0.54	0.00	-5.90	0.00	5.90	886.87	443.43	753.94	377.53	5.32	-0.42	0.020	
138.00	-2.34	-0.40	0.00	-4.27	0.00	4.27	867.65	433.83	715.27	358.17	5.59	-0.43	0.015	
140.00	-2.26	-0.40	0.00	-3.46	0.00	3.46	854.59	427.29	689.83	345.43	5.77	-0.43	0.013	
145.00	-2.07	-0.37	0.00	-1.48	0.00	1.48	821.03	410.52	627.52	314.23	6.22	-0.44	0.007	
149.00	0.00	-0.35	0.00	0.00	0.00	0.00	787.55	393.77	574.90	287.88	6.59	-0.44	0.000	



## Wind Loading - Shaft

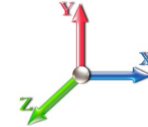
<b>Structure:</b> CT12215-A-SBA	<b>Code:</b> EIA/TIA-222-G	10/31/2017
<b>Site Name:</b> Litchfield 3, CT	<b>Exposure:</b> C	
<b>Height:</b> 149.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> 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** 26

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	7.442	8.19	224.68	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	7.442	8.19	219.83	0.650	0.000	5.00	20.089	13.06	106.9	0.0	796.0
10.00		1.00	0.85	7.442	8.19	214.98	0.650	0.000	5.00	19.651	12.77	104.6	0.0	778.5
15.00		1.00	0.85	7.442	8.19	210.13	0.650	0.000	5.00	19.213	12.49	102.2	0.0	761.0
20.00		1.00	0.90	7.896	8.69	211.46	0.650	0.000	5.00	18.774	12.20	106.0	0.0	743.5
25.00		1.00	0.95	8.276	9.10	211.37	0.650	0.000	5.00	18.336	11.92	108.5	0.0	726.1
30.00		1.00	0.98	8.600	9.46	210.25	0.650	0.000	5.00	17.898	11.63	110.0	0.0	708.6
35.00		1.00	1.01	8.883	9.77	208.39	0.650	0.000	5.00	17.459	11.35	110.9	0.0	691.1
40.00		1.00	1.04	9.137	10.05	205.97	0.650	0.000	5.00	17.021	11.06	111.2	0.0	673.6
45.00		1.00	1.07	9.366	10.30	203.10	0.650	0.000	5.00	16.582	10.78	111.0	0.0	656.1
47.55 Bot - Section 2		1.00	1.08	9.476	10.42	201.48	0.650	0.000	2.55	8.299	5.39	56.2	0.0	328.3
50.00 Appurtenance(s)		1.00	1.09	9.576	10.53	199.86	0.650	0.000	2.45	7.949	5.17	54.4	0.0	562.3
52.97 Top - Section 1		1.00	1.11	9.693	10.66	197.79	0.650	0.000	2.97	9.508	6.18	65.9	0.0	672.4
55.00		1.00	1.12	9.770	10.75	199.00	0.650	0.000	2.03	6.410	4.17	44.8	0.0	203.1
60.00		1.00	1.14	9.951	10.95	195.22	0.650	0.000	5.00	15.479	10.06	110.1	0.0	490.5
65.00		1.00	1.16	10.120	11.13	191.22	0.650	0.000	5.00	15.041	9.78	108.8	0.0	476.5
70.00		1.00	1.17	10.279	11.31	187.02	0.650	0.000	5.00	14.602	9.49	107.3	0.0	462.6
73.00 Appurtenance(s)		1.00	1.18	10.370	11.41	184.41	0.650	0.000	3.00	8.551	5.56	63.4	0.0	270.8
75.00		1.00	1.19	10.430	11.47	182.64	0.650	0.000	2.00	5.613	3.65	41.9	0.0	177.7
80.00		1.00	1.21	10.572	11.63	178.10	0.650	0.000	5.00	13.726	8.92	103.8	0.0	434.6
85.00		1.00	1.22	10.708	11.78	173.43	0.650	0.000	5.00	13.287	8.64	101.7	0.0	420.6
90.00		1.00	1.24	10.838	11.92	168.62	0.650	0.000	5.00	12.849	8.35	99.6	0.0	406.6
95.00		1.00	1.25	10.962	12.06	163.70	0.650	0.000	5.00	12.410	8.07	97.3	0.0	392.6
96.18 Bot - Section 3		1.00	1.26	10.990	12.09	162.52	0.650	0.000	1.18	2.857	1.86	22.4	0.0	90.4
100.00		1.00	1.27	11.081	12.19	158.66	0.658 *	0.000	3.82	9.237	6.08	74.1	0.0	507.9
100.34 Top - Section 2		1.00	1.27	11.089	12.20	158.32	0.680 *	0.000	0.34	0.817	0.56	6.8	0.0	44.9
105.00		1.00	1.28	11.195	12.31	155.69	0.681 *	0.000	4.66	10.876	7.41	91.2	0.0	258.5
110.00		1.00	1.29	11.305	12.44	150.47	0.650	0.000	5.00	11.254	7.32	91.0	0.0	267.4
115.00 Appurtenance(s)		1.00	1.30	11.412	12.55	145.17	0.650	0.000	5.00	10.816	7.03	88.2	0.0	256.9
120.00		1.00	1.32	11.514	12.67	139.79	0.650	0.000	5.00	10.377	6.75	85.4	0.0	246.4
125.00		1.00	1.33	11.614	12.78	134.34	0.650	0.000	5.00	9.939	6.46	82.5	0.0	236.0
128.00 Appurtenance(s)		1.00	1.33	11.672	12.84	131.03	0.650	0.000	3.00	5.753	3.74	48.0	0.0	136.5
130.00		1.00	1.34	11.710	12.88	128.81	0.650	0.000	2.00	3.748	2.44	31.4	0.0	88.9
135.00		1.00	1.35	11.803	12.98	123.21	0.650	0.000	5.00	9.062	5.89	76.5	0.0	215.0
138.00 Appurtenance(s)		1.00	1.35	11.858	13.04	119.83	0.650	0.000	3.00	5.227	3.40	44.3	0.0	123.9
140.00		1.00	1.36	11.894	13.08	117.55	0.650	0.000	2.00	3.397	2.21	28.9	0.0	80.5
145.00		1.00	1.37	11.982	13.18	111.84	0.650	0.000	5.00	8.186	5.32	70.1	0.0	194.0
149.00 Appurtenance(s)		1.00	1.38	12.051	13.26	107.22	0.650	0.000	4.00	6.233	4.05	53.7	0.0	147.6
<b>Totals:</b>									<b>149.00</b>			<b>2,921.2</b>		<b>14,728.1</b>

\* Cf Adjusted by Linear Load Ra Effect

## Discrete Appurtenance Forces

<b>Structure:</b> CT12215-A-SBA	<b>Code:</b> EIA/TIA-222-G	10/31/2017
<b>Site Name:</b> Litchfield 3, CT	<b>Exposure:</b> C	
<b>Height:</b> 149.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<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** 26

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)	
1	149.00	800MHz	3	12.102	13.312	0.87	1.00	6.89	178.50	0.000	3.000	91.73	0.00	275.18	
2	149.00	APXVSP18-C-A20	3	12.102	13.312	0.83	1.00	19.97	171.00	0.000	3.000	265.84	0.00	797.52	
3	149.00	APXVTM14-C-I20	3	12.102	13.312	0.79	1.00	15.03	168.00	0.000	3.000	200.02	0.00	600.07	
4	149.00	1900MHz	3	12.102	13.312	0.50	1.00	4.16	180.00	0.000	3.000	55.31	0.00	165.93	
5	149.00	Low Profile Platform	1	12.051	13.256	1.00	1.00	25.00	1200.00	0.000	0.000	331.41	0.00	0.00	
6	149.00	TD-RRH8x20-25	3	12.102	13.312	0.69	1.00	8.38	210.00	0.000	3.000	111.60	0.00	334.80	
7	149.00	800MHz Filter	3	12.102	13.312	0.69	1.00	1.61	26.40	0.000	3.000	21.49	0.00	64.48	
8	149.00	ACU-A20-N	4	12.102	13.312	0.79	1.00	0.44	4.00	0.000	3.000	5.89	0.00	17.67	
9	138.00	Low Profile Platform	1	11.858	13.044	1.00	1.00	25.00	1200.00	0.000	0.000	326.10	0.00	0.00	
10	138.00	FD9R6004/2C-3L	6	11.858	13.044	0.54	0.80	1.16	18.60	0.000	0.000	15.10	0.00	0.00	
11	138.00	GPS Receiver	1	11.858	13.044	1.00	1.00	1.00	10.00	0.000	0.000	13.04	0.00	0.00	
12	138.00	BXA-171085-12B_2	3	11.858	13.044	0.67	0.80	9.56	45.00	0.000	0.000	124.65	0.00	0.00	
13	138.00	BXA-70063-6CF_2	3	11.858	13.044	0.58	0.80	13.26	51.00	0.000	0.000	173.00	0.00	0.00	
14	138.00	LPA-80080/6CF	3	11.858	13.044	1.36	0.80	17.67	63.00	0.000	0.000	230.44	0.00	0.00	
15	128.00	Low Profile Platform	1	11.672	12.839	1.00	1.00	25.00	1200.00	0.000	0.000	320.98	0.00	0.00	
16	128.00	DC6-48-60-18-8F	1	11.672	12.839	1.00	1.00	0.92	31.80	0.000	0.000	11.81	0.00	0.00	
17	128.00	RRUS-11	6	11.672	12.839	0.57	0.80	8.59	306.00	0.000	0.000	110.26	0.00	0.00	
18	128.00	LGP 21401	12	11.672	12.839	0.40	0.80	0.00	210.00	0.000	0.000	0.00	0.00	0.00	
19	128.00	AM-X-CD-16-65-00T-RET	3	11.672	12.839	0.60	0.80	14.44	145.50	0.000	0.000	185.34	0.00	0.00	
20	128.00	7770.00	6	11.672	12.839	0.58	0.80	19.27	210.00	0.000	0.000	247.43	0.00	0.00	
21	128.00	ABT-DF-DM-ADBH	1	11.672	12.839	1.00	1.00	0.05	1.10	0.000	0.000	0.64	0.00	0.00	
22	115.00	RRUS 11 (Band 4)	3	11.412	12.553	0.57	0.80	4.29	153.00	0.000	0.000	53.90	0.00	0.00	
23	115.00	LNx-6515DS-A1M	3	11.412	12.553	0.64	0.80	22.02	149.40	0.000	0.000	276.44	0.00	0.00	
24	115.00	APX16DWV-16DWVS-E-	3	11.412	12.553	0.50	0.80	9.84	122.10	0.000	0.000	123.47	0.00	0.00	
25	115.00	T-Arm	3	11.412	12.553	0.56	0.75	13.50	1050.00	0.000	0.000	169.46	0.00	0.00	
26	115.00	RRUS 11 (Band 12)	3	11.412	12.553	0.62	0.80	4.72	162.00	0.000	0.000	59.22	0.00	0.00	
27	115.00	RRUS 11	3	11.412	12.553	0.54	0.80	4.73	162.00	0.000	0.000	59.34	0.00	0.00	
28	73.00	GPS Receiver	1	10.370	11.407	1.00	1.00	1.00	10.00	0.000	0.000	11.41	0.00	0.00	
29	50.00	58532A	1	9.576	10.534	1.00	1.00	0.22	0.40	0.000	0.000	2.32	0.00	0.00	
<b>Totals:</b>									<b>7,438.80</b>						<b>3,597.65</b>

## Total Applied Force Summary

<b>Structure:</b> CT12215-A-SBA	<b>Code:</b> EIA/TIA-222-G	10/31/2017
<b>Site Name:</b> Litchfield 3, CT	<b>Exposure:</b> C	
<b>Height:</b> 149.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<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** 26

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		106.89	958.57	0.00	0.00
10.00		104.56	941.08	0.00	0.00
15.00		102.23	923.60	0.00	0.00
20.00		106.00	906.12	0.00	0.00
25.00		108.50	888.63	0.00	0.00
30.00		110.05	871.15	0.00	0.00
35.00		110.90	853.66	0.00	0.00
40.00		111.19	836.18	0.00	0.00
45.00		111.05	818.70	0.00	0.00
47.55		56.23	411.34	0.00	0.00
50.00	(1) attachments	56.74	642.25	0.00	0.00
52.97		65.90	768.54	0.00	0.00
55.00		44.78	268.83	0.00	0.00
60.00		110.13	652.31	0.00	0.00
65.00		108.83	638.32	0.00	0.00
70.00		107.32	624.33	0.00	0.00
73.00	(1) attachments	74.81	377.89	0.00	0.00
75.00		41.86	242.14	0.00	0.00
80.00		103.75	595.56	0.00	0.00
85.00		101.73	581.57	0.00	0.00
90.00		99.56	567.58	0.00	0.00
95.00		97.27	553.60	0.00	0.00
96.18		22.45	128.25	0.00	0.00
100.00		74.10	630.95	0.00	0.00
100.34		6.78	55.96	0.00	0.00
105.00		91.22	408.42	0.00	0.00
110.00		90.97	428.40	0.00	0.00
115.00	(18) attachments	830.08	2216.41	0.00	0.00
120.00		85.43	396.42	0.00	0.00
125.00		82.53	385.93	0.00	0.00
128.00	(30) attachments	924.48	2330.92	0.00	0.00
130.00		31.38	121.84	0.00	0.00
135.00		76.48	297.25	0.00	0.00
138.00	(17) attachments	926.65	1560.91	0.00	0.00
140.00		28.89	88.17	0.00	0.00
145.00		70.13	213.07	0.00	0.00
149.00	(23) attachments	1137.00	2300.80	0.00	2255.65
	<b>Totals:</b>	<b>6,518.84</b>	<b>26,485.62</b>	<b>0.00</b>	<b>2,255.65</b>

## Linear Appurtenance Segment Forces (Factored)

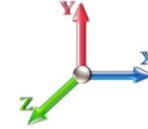
<b>Structure:</b> CT12215-A-SBA	<b>Code:</b> EIA/TIA-222-G	10/31/2017
<b>Site Name:</b> Litchfield 3, CT	<b>Exposure:</b> C	
<b>Height:</b> 149.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> 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** 26

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.055	0.000	7.442	0.00	11.00
5.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.055	0.000	7.442	0.00	0.80
10.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.056	0.000	7.442	0.00	11.00
10.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.056	0.000	7.442	0.00	0.80
15.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.057	0.000	7.442	0.00	11.00
15.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.057	0.000	7.442	0.00	0.80
20.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.059	0.000	7.896	0.00	11.00
20.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.059	0.000	7.896	0.00	0.80
25.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.060	0.000	8.276	0.00	11.00
25.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.060	0.000	8.276	0.00	0.80
30.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.062	0.000	8.600	0.00	11.00
30.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.062	0.000	8.600	0.00	0.80
35.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.063	0.000	8.883	0.00	11.00
35.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.063	0.000	8.883	0.00	0.80
40.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.065	0.000	9.137	0.00	11.00
40.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.065	0.000	9.137	0.00	0.80
45.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.067	0.000	9.366	0.00	11.00
45.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.067	0.000	9.366	0.00	0.80
47.55	1 5/8" Hybrid	Yes	2.55	0.000	2.00	0.43	0.00	0.068	0.000	9.476	0.00	5.62
47.55	1/2" Coax	Yes	2.55	0.000	0.65	0.14	0.00	0.068	0.000	9.476	0.00	0.41
50.00	1 5/8" Hybrid	Yes	2.45	0.000	2.00	0.41	0.00	0.069	0.000	9.576	0.00	5.38
50.00	1/2" Coax	Yes	2.45	0.000	0.65	0.13	0.00	0.069	0.000	9.576	0.00	0.39
52.97	1 5/8" Hybrid	Yes	2.97	0.000	2.00	0.49	0.00	0.086	0.000	9.693	0.00	6.53
52.97	1.25" Reinforcing	Yes	2.97	0.000	1.25	0.31	0.00	0.086	0.000	9.693	0.00	0.00
55.00	1 5/8" Hybrid	Yes	2.03	0.000	2.00	0.34	0.00	0.086	0.000	9.770	0.00	4.47
55.00	1.25" Reinforcing	Yes	2.03	0.000	1.25	0.21	0.00	0.086	0.000	9.770	0.00	0.00
60.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.087	0.000	9.951	0.00	11.00
60.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.087	0.000	9.951	0.00	0.00
65.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.090	0.000	10.120	0.00	11.00
65.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.090	0.000	10.120	0.00	0.00
70.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.093	0.000	10.279	0.00	11.00
70.00	1.25" Reinforcing	Yes	5.00	0.000	1.25	0.52	0.00	0.093	0.000	10.279	0.00	0.00
73.00	1 5/8" Hybrid	Yes	3.00	0.000	2.00	0.50	0.00	0.095	0.000	10.370	0.00	6.60
73.00	1.25" Reinforcing	Yes	3.00	0.000	1.25	0.31	0.00	0.095	0.000	10.370	0.00	0.00
75.00	1 5/8" Hybrid	Yes	2.00	0.000	2.00	0.33	0.00	0.097	0.000	10.430	0.00	4.40
75.00	1.25" Reinforcing	Yes	2.00	0.000	1.25	0.21	0.00	0.097	0.000	10.430	0.00	0.00
80.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.076	0.000	10.572	0.00	11.00
80.00	1.25" Reinforcing	Yes	2.00	0.000	1.25	0.21	0.00	0.076	0.000	10.572	0.00	0.00
85.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.063	0.000	10.708	0.00	11.00
90.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.065	0.000	10.838	0.00	11.00
95.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.067	0.000	10.962	0.00	11.00
96.18	1 5/8" Hybrid	Yes	1.18	0.000	2.00	0.20	0.00	0.069	0.000	10.990	0.00	2.59
100.00	1 5/8" Hybrid	Yes	3.82	0.000	2.00	0.64	0.00	0.104	1.013	11.081	0.00	8.41
100.00	1.25" Reinforcing	Yes	3.00	0.000	1.25	0.31	0.00	0.104	1.013	11.081	0.00	0.00
100.34	1 5/8" Hybrid	Yes	0.34	0.000	2.00	0.06	0.00	0.115	1.046	11.089	0.00	0.76
100.34	1.25" Reinforcing	Yes	0.34	0.000	1.25	0.04	0.00	0.115	1.046	11.089	0.00	0.00
105.00	1 5/8" Hybrid	Yes	4.66	0.000	2.00	0.78	0.00	0.116	1.048	11.195	0.00	10.24

## Linear Appurtenance Segment Forces (Factored)

<b>Structure:</b> CT12215-A-SBA	<b>Code:</b> EIA/TIA-222-G	10/31/2017
<b>Site Name:</b> Litchfield 3, CT	<b>Exposure:</b> C	
<b>Height:</b> 149.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II

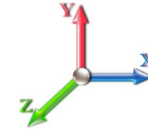


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**Load Case:** 1.0D + 1.0W 60 mph Wind

**Dead Load Factor** 1.00

**Wind Load Factor** 1.00



**Iterations** 26

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
105.00	1.25" Reinforcing	Yes	4.66	0.000	1.25	0.49	0.00	0.116	1.048	11.195	0.00	0.00
110.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.074	0.000	11.305	0.00	11.00
115.00	1 5/8" Hybrid	Yes	5.00	0.000	2.00	0.83	0.00	0.077	0.000	11.412	0.00	11.00
<b>Totals:</b>											<b>0.0</b>	<b>261.0</b>

## Calculated Forces

**Structure:** CT12215-A-SBA  
**Site Name:** Litchfield 3, CT  
**Height:** 149.00 (ft)  
**Base Elev:** 0.000 (ft)  
**Gh:** 1.1

**Topography:** 1

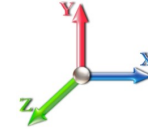
**Code:** EIA/TIA-222-G 10/31/2017  
**Exposure:** C  
**Crest Height:** 0.00  
**Site Class:** B - Competent Rock  
**Struct Class:** II



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

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



**Iterations** 26

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-26.48	-6.54	0.00	-728.85	0.00	728.85	3031.07	1515.53	5947.06	2977.95	0.00	0.000	0.000	0.254
5.00	-25.51	-6.46	0.00	-696.17	0.00	696.17	2993.85	1496.92	5745.58	2877.06	0.04	-0.075	0.000	0.251
10.00	-24.56	-6.39	0.00	-663.87	0.00	663.87	2955.36	1477.68	5544.90	2776.57	0.16	-0.151	0.000	0.247
15.00	-23.63	-6.32	0.00	-631.92	0.00	631.92	2915.59	1457.80	5345.20	2676.57	0.36	-0.228	0.000	0.244
20.00	-22.72	-6.24	0.00	-600.35	0.00	600.35	2874.56	1437.28	5146.64	2577.14	0.64	-0.307	0.000	0.241
25.00	-21.82	-6.15	0.00	-569.16	0.00	569.16	2832.25	1416.12	4949.37	2478.36	1.00	-0.387	0.000	0.237
30.00	-20.94	-6.07	0.00	-538.40	0.00	538.40	2788.67	1394.33	4753.57	2380.32	1.45	-0.469	0.000	0.234
35.00	-20.08	-5.98	0.00	-508.06	0.00	508.06	2743.82	1371.91	4559.39	2283.08	1.99	-0.553	0.000	0.230
40.00	-19.24	-5.89	0.00	-478.17	0.00	478.17	2697.69	1348.85	4367.01	2186.75	2.61	-0.637	0.000	0.226
45.00	-18.41	-5.79	0.00	-448.73	0.00	448.73	2650.30	1325.15	4176.57	2091.39	3.33	-0.723	0.000	0.222
47.55	-18.00	-5.74	0.00	-433.96	0.00	433.96	2625.60	1312.80	4080.13	2043.10	3.73	-0.769	0.000	0.219
50.00	-17.35	-5.69	0.00	-419.91	0.00	419.91	2601.63	1300.82	3988.26	1997.09	4.13	-0.812	0.000	0.217
52.97	-16.58	-5.62	0.00	-403.02	0.00	403.02	1914.68	957.34	2935.86	1470.11	4.65	-0.866	0.000	0.283
55.00	-16.31	-5.60	0.00	-391.60	0.00	391.60	1902.26	951.13	2883.67	1443.98	5.03	-0.903	0.000	0.280
60.00	-15.65	-5.51	0.00	-363.62	0.00	363.62	1870.76	935.38	2755.66	1379.88	6.03	-1.010	0.000	0.272
65.00	-15.00	-5.41	0.00	-336.09	0.00	336.09	1837.99	919.00	2628.54	1316.22	7.15	-1.118	0.000	0.264
70.00	-14.37	-5.31	0.00	-309.03	0.00	309.03	1803.95	901.98	2502.46	1253.09	8.38	-1.227	0.000	0.255
73.00	-13.99	-5.25	0.00	-293.08	0.00	293.08	1782.92	891.46	2427.38	1215.49	9.17	-1.293	0.000	0.249
75.00	-13.74	-5.22	0.00	-282.59	0.00	282.59	1768.64	884.32	2377.59	1190.56	9.72	-1.338	0.000	0.245
80.00	-13.14	-5.12	0.00	-256.51	0.00	256.51	1732.06	866.03	2254.10	1128.72	11.18	-1.448	0.000	0.235
85.00	-12.55	-5.03	0.00	-230.90	0.00	230.90	1694.20	847.10	2132.15	1067.66	12.76	-1.556	0.000	0.224
90.00	-11.97	-4.94	0.00	-205.75	0.00	205.75	1655.08	827.54	2011.90	1007.44	14.44	-1.664	0.000	0.211
95.00	-11.42	-4.84	0.00	-181.07	0.00	181.07	1614.68	807.34	1893.51	948.16	16.24	-1.770	0.000	0.198
96.18	-11.29	-4.82	0.00	-175.38	0.00	175.38	1604.99	802.49	1865.94	934.36	16.68	-1.795	0.000	0.195
100.00	-10.65	-4.73	0.00	-156.95	0.00	156.95	1573.01	786.50	1777.16	889.90	18.15	-1.875	0.000	0.183
100.34	-10.60	-4.73	0.00	-155.32	0.00	155.32	1075.68	537.84	1234.34	618.09	18.29	-1.882	0.000	0.261
105.00	-10.18	-4.65	0.00	-133.28	0.00	133.28	1053.86	526.93	1167.20	584.47	20.17	-1.974	0.000	0.238
110.00	-9.75	-4.56	0.00	-110.03	0.00	110.03	1029.21	514.60	1095.73	548.68	22.30	-2.092	0.000	0.210
115.00	-7.56	-3.66	0.00	-87.23	0.00	87.23	1003.28	501.64	1025.09	513.31	24.55	-2.200	0.000	0.178
120.00	-7.16	-3.57	0.00	-68.92	0.00	68.92	976.09	488.04	955.42	478.42	26.91	-2.296	0.000	0.151
125.00	-6.77	-3.48	0.00	-51.05	0.00	51.05	947.62	473.81	886.90	444.11	29.36	-2.380	0.000	0.122
128.00	-4.48	-2.46	0.00	-40.61	0.00	40.61	929.93	464.96	846.40	423.83	30.87	-2.424	0.000	0.101
130.00	-4.36	-2.43	0.00	-35.68	0.00	35.68	917.88	458.94	819.69	410.45	31.89	-2.450	0.000	0.092
135.00	-4.06	-2.34	0.00	-23.53	0.00	23.53	886.87	443.43	753.94	377.53	34.49	-2.505	0.000	0.067
138.00	-2.54	-1.35	0.00	-16.50	0.00	16.50	867.65	433.83	715.27	358.17	36.07	-2.530	0.000	0.049
140.00	-2.46	-1.32	0.00	-13.80	0.00	13.80	854.59	427.29	689.83	345.43	37.13	-2.544	0.000	0.043
145.00	-2.25	-1.24	0.00	-7.21	0.00	7.21	821.03	410.52	627.52	314.23	39.81	-2.570	0.000	0.026
149.00	0.00	-1.14	0.00	-2.26	0.00	2.26	787.55	393.77	574.90	287.88	41.97	-2.582	0.000	0.008

## Final Analysis Summary

<b>Structure:</b> CT12215-A-SBA	<b>Code:</b> EIA/TIA-222-G	10/31/2017
<b>Site Name:</b> Litchfield 3, CT	<b>Exposure:</b> C	
<b>Height:</b> 149.00 (ft)	<b>Crest Height:</b> 0.00	
<b>Base Elev:</b> 0.000 (ft)	<b>Site Class:</b> B - Competent Rock	
<b>Gh:</b> 1.1	<b>Topography:</b> 1	<b>Struct Class:</b> II



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### Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)
1.2D + 1.6W 89 mph Wind	23.0	0.00	31.73	0.00	0.00	2584.60
0.9D + 1.6W 89 mph Wind	23.0	0.00	23.78	0.00	0.00	2544.61
1.2D + 1.0Di + 1.0Wi 40 mph Wind	5.4	0.00	60.26	0.00	0.00	638.34
1.2D + 1.0E	0.9	0.00	31.78	0.00	0.00	104.33
0.9D + 1.0E	0.9	0.00	23.84	0.00	0.00	102.57
1.0D + 1.0W 60 mph Wind	6.5	0.00	26.48	0.00	0.00	728.85

### 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 89 mph Wind	-18.93	-19.97	0.00	-1432.0	0.00	-1432.0	1914.68	957.34	2935.86	1470.11	52.97	0.984
0.9D + 1.6W 89 mph Wind	-13.96	-19.68	0.00	-1400.9	0.00	-1400.9	1914.68	957.34	2935.86	1470.11	52.97	0.961
1.2D + 1.0Di + 1.0Wi 40 mph Wind	-41.85	-4.90	0.00	-362.13	0.00	-362.13	1914.68	957.34	2935.86	1470.11	52.97	0.268
1.2D + 1.0E	-12.89	-0.69	0.00	-29.01	0.00	-29.01	1075.68	537.84	1234.34	618.09	100.34	0.059
0.9D + 1.0E	-9.67	-0.67	0.00	-28.36	0.00	-28.36	1075.68	537.84	1234.34	618.09	100.34	0.055
1.0D + 1.0W 60 mph Wind	-16.58	-5.62	0.00	-403.02	0.00	-403.02	1914.68	957.34	2935.86	1470.11	52.97	0.283



# Monopole Mat Foundation Design

Date  
10/31/2017

<b>Customer Name:</b>	Sprint Nextel	<b>EIA/TIA Standard:</b>	EIA-222-G
<b>Site Name:</b>		<b>Structure Height (Ft.):</b>	149
<b>Site Number:</b>	CT12215-A-SBA	<b>Engineer Name:</b>	J. Chen
<b>Engr. Number:</b>	42141	<b>Engineer Login ID:</b>	

**Foundation Info Obtained from:**

Drawings/Calculations
Monopole
Analysis

**Structure Type:**

**Analysis or Design?**

**Base Reactions (Factored):**

Axial Load (Kips):	60.3	Shear Force (Kips):	23.0
Uplift Force (Kips):	0.0	Moment (Kips-ft):	2584.6

Allowable overstress %: 5.0%

**Foundation Geometries:**

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	6.5	Depth of Base BG (ft.):	4.5
Pier Height A. G. (ft.):	1.00	Thickness of Pad (ft):	3.00
Length of Pad (ft.):	23	Width of Pad (ft.):	23
Final Length of pad (ft)	23.0	Final width of pad (ft):	23.0
Control Value for Cell D18:	0	Control Value for Cell F18:	0

**Material Properties and Rebar Info:**

Concrete Strength (psi):	4000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:	8	Tie / Stirrup Size #:	4	
Qty. of Vertical Rebars:	38	Tie Spacing (in):	12.0	
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):	34	Qty. of Rebar in Pad (W):	34	
Rebar at the top of the concrete pad:				
Qty. of Rebar in Pad (L):	34	Qty. of Rebar in Pad (W):	34	

Apply 1.35 factor for e/w Per G: 1.35

**Soil Design Parameters:**

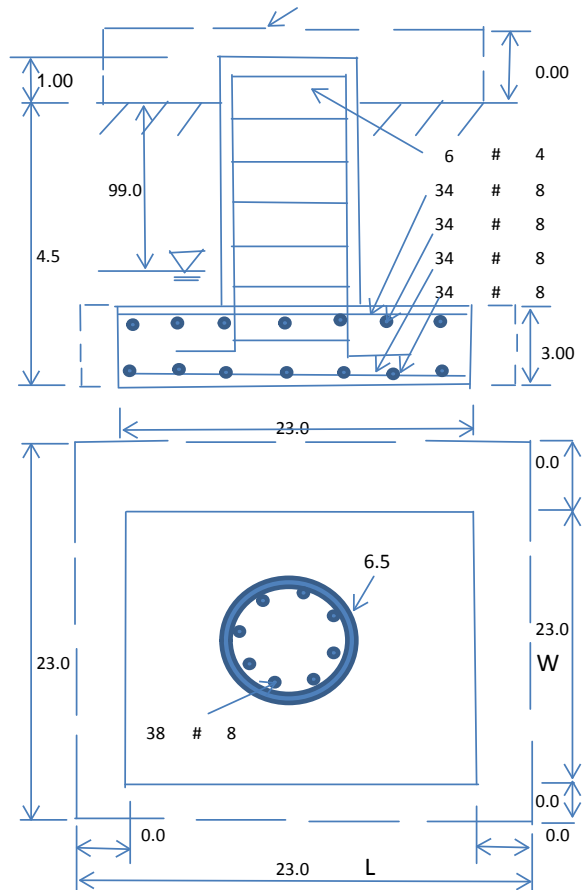
Soil Unit Weight (pcf):	110.0	Soil Buoyant Weight:	50.0	Pcf
Water Table B.G.S. (ft):	99.0	Unit Weight of Water:	62.4	pcf
Ultimate Bearing Pressure (psf):	12000	Ultimate Skin Friction:		Psf
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	No	
Consider soil hor. resist. for OTM.:	No	Reduction factor on the maximum soil bearing pressure:	1.00	
		Angle from Top of Pad:	30	
		Angle from Bottm of Pad:	25	
		Angle from Bottm of Pad:	25	

**Foundation Analysis and Design:**

Uplift Strength Reduction Factor:	0.75	Compression Strength Reduction Factor:	0.75
Total Dry Soil Volume (cu. Ft.):	743.73	Total Dry Soil Weight (Kips):	81.84
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	81.84	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	1669.96	Total Dry Concrete Weight (Kips):	250.49
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	250.49	Total Vertical Load on Base (Kips):	392.63

**Check Soil Capacities:**

Calculated Maxium Net Soil Pressure under the base (psf):	2576	<	Allowable Factored Soil Bearing (psf):	9000	0.29	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	4133.1	>	Design Factored Momont (kips-ft):	2711	0.66	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	1.52					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):	0.79	Tie / Stirrup Area (sq. in./each):	0.20		
Calculated Moment Capacity (Mn,Kips-Ft):	4704.5	> Design Factored Moment (Mu, Kips-Ft)	2642.1	0.56	OK!
Calculated Shear Capacity (Kips):	578.1	> Design Factored Shear (Kips):	23.0	0.04	OK!
Calculated Tension Capacity (Tn, Kips):	1621.1	> Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	8395.1	> Design Factored Axial Load (Pu Kips):	60.3	0.01	OK!
Moment & Axial Strength Combination:	0.56	OK! Check Tie Spacing (Design/Required):		1	OK!
Pier Reinforcement Ratio:	0.006	Reinforcement Ratio is satisfied per ACI			

**(2).Concrete Pad:**

One-Way Design Shear Capacity (L-Direction, Kips):	851.0	> One-Way Factored Shear (L-D. Kips):	182.3	0.21	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	851.0	> One-Way Factored Shear (W-D., Kips)	182.3	0.21	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	963.0	> One-Way Factored Shear (C-C, Kips):	180.4	0.19	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct. ):	0.0030	OK! Lower Steel Pad Reinf. Ratio (W-Direct	0.0030		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	3824.5	> Moment at Bottom ( L-Direct. K-Ft):	505.1	0.13	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	3824.5	> Moment at Bottom ( W-Direct. K-Ft):	505.1	0.13	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	5372.0	> Moment at Bottom ( C-C Dir. K-Ft):	714.3	0.13	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct. ):	0.0030	OK! Upper Steel Reinf. Ratio (W-Direct. ):	0.0030		
Upper Steel Pad Moment Capacity (L-Direction. Kips-ft):	3824.5	> Moment at the top (L-Dir Kips-Ft):	137.8	0.04	OK!
Upper Steel Pad Moment Capacity (W-Direction. Kips-ft):	3824.5	> Moment at the top (W-Dir Kips-Ft):	137.8	0.04	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	5372.0	> Moment at the top (C-C Direc. K-Ft):	296.4	0.06	OK!

**SPECIAL CONSTRUCTION NOTE:**  
 SPRINT TOWER TOP WORK IS CONTINGENT ON THE FOLLOWING:  
 \* COMPLETION OF A GLOBAL STRUCTURAL STABILITY ANALYSIS.  
 \* COMPLETION OF AN ANTENNA/RRH MOUNT STRUCTURAL ASSESSMENT.  
 \* GC SHALL FURNISH, INSTALL AND COMPLETE ALL REQUIRED STRUCTURAL MODIFICATIONS AS INDICATED IN BEFORE-MENTIONED ANALYSIS AND ASSESSMENT.  
 \* SBA COMMUNICATIONS CORPORATION SHALL PROVIDE WRITTEN ACCEPTANCE/APPROVAL FOR THE COMPLETION OF ALL TOWER/FOUNDATION STRUCTURAL MODIFICATIONS INCLUDING (AS NECESSARY) CONTROLLED CONSTRUCTION INSPECTIONS, SHOP-DRAWING APPROVALS, MATERIALS TEST RESULTS, AND FINAL ENGINEER'S AFFIDAVIT.

**PROJECT:** 2.5 EQUIPMENT DEPLOYMENT  
**SITE NAME:** LITCHFIELD/HAMMER  
**SITE CASCADE:** CT33XC024-H  
**MARKET:** SOUTHERN CONNECTICUT  
**SBA SITE ID:** CT12215-A/LITCHFIELD 3, CT  
**SITE ADDRESS:** 1291 BANTAM ROAD  
 LITCHFIELD, CT 06750  
**SITE TYPE:** 149' MONOPOLE



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



SBA COMMUNICATIONS CORP.  
 134 FLANDERS ROAD, SUITE 125  
 WESTBOROUGH, MA 01581  
 TEL: (508) 251-0720  
 FAX: (508) 251-1755



45 BEECHWOOD DRIVE  
 N. ANDOVER, MA 01845  
 TEL: (978) 557-5553  
 FAX: (978) 336-5586

# Sprint



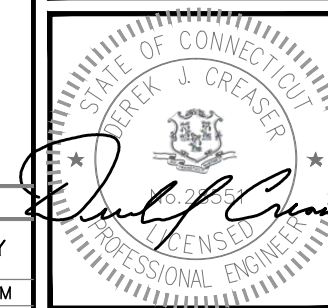
**NOTE:**

OWNER AND TENANT MAY, FROM TIME TO TIME AT TENANT'S OPTION, REPLACE THIS EXHIBIT WITH AN EXHIBIT SETTING FORTH THE LEGAL DESCRIPTION OF THE SITE, OR WITH ENGINEERED OR AS-BUILT DRAWING DEPICTING THE SITE OR ILLUSTRATING STRUCTURAL MODIFICATIONS OR CONSTRUCTION PLANS OF THE SITE. ANY VISUAL OR TEXTUAL REPRESENTATION OF THE EQUIPMENT LOCATED WITHIN THE SITE CONTAINED IN THESE OTHER DOCUMENTS IS ILLUSTRATIVE ONLY, AND DOES NOT LIMIT THE RIGHTS OF SPRINT AS PROVIDED FOR IN THE AGREEMENT. THE LOCATIONS OF ANY ACCESS AND UTILITY EASEMENTS ARE ILLUSTRATIVE ONLY. ACTUAL LOCATIONS MAY BE DETERMINED BY TENANT AND/OR THE SERVICING UTILITY COMPANY IN COMPLIANCE WITH LOCAL LAWS AND REGULATIONS.

**NOTE:**

THESE PLANS ARE BASED ON INFORMATION OBTAINED SITE VISIT ON JUNE 29, 2014. THE SPRINT CONTRACTOR IS RESPONSIBLE TO VERIFYING ALL ITEMS AND NOTIFYING THE ENGINEER OF RECORD AND DISCREPANCIES.

**SPECIAL CONSTRUCTION NOTE:**  
 THE SPRINT NETWORK VISION 2.5 GHz TOWER TOP WORK IS CONTINGENT UPON COMPLETION OF ALL REQUIRED STRUCTURAL MODIFICATIONS, ENGINEERING CONSTRUCTION CONTROL INSPECTIONS, FINAL ENGINEERING AFFIDAVIT, AND ACCEPTANCE/APPROVAL BY SBA COMMUNICATIONS CORP.



**SITE INFORMATION**

**PROPERTY OWNER:**

JOHN JR. AND ROBERT HAMMER  
 1291 BANTAM ROAD  
 LITCHFIELD, CT 06750

**TOWER OWNER:**

SBA TOWERS V, LLC.  
 8051 CONGRESS AVENUE  
 BOCA RATON, FL 33487  
 PHONE: (561)995-7670

**SBA REGIONAL SITE MANAGER:**

STEPHEN ROTH  
 PHONE: 860-539-4920  
 SROth@sbasite.com

**LATITUDE (NAD83):**

**GOOGLE EARTH 2-C CONFIRMATION**

41° 43' 01.86" N  
 41.717189°

**LONGITUDE (NAD83):**

**GOOGLE EARTH 2-C CONFIRMATION**

-73° 15' 39.34" W  
 -73.260928°

**COUNTY:**

LITCHFIELD

**ZONING DISTRICT:**

R-80 RESIDENCE ZONE

**POWER COMPANY:**

CL&P

**AAV PROVIDER:**

VERIZON

**SPRINT CONSTRUCTION MANAGER:**

GARY WOOD  
 PHONE: 860-940-9168  
 gary.wood@sprint.com

**EQUIPMENT SUPPLIER:**

ALCATEL-LUCENT  
 600 MOUNTAIN AVENUE  
 MURRAY HILL, NJ 07974

**AREA MAP**



LOCATION MAP GOOGLE EARTH 2-C CONFIRMATION

**PROJECT DESCRIPTION**

SPRINT EQUIPMENT MODIFICATIONS REQUIRED TO SUPPORT MODERNIZATION OF AN EXISTING WIRELESS COMMUNICATIONS FACILITY AND UTILIZATION OF FCC BROADBAND SPECTRUM LICENSE FOR 2.5GHZ FREQUENCY, INCLUDING INSTALLATION OF:

GROUND-LEVEL RAN EQUIPMENT, CONSISTING OF:  
 \* NEW GROWTH CABINET WITH 2.5 RADIO ACCESS NETWORK (RAN) EQUIPMENT & (2) BATTERY STRINGS

TOWER-TOP EQUIPMENT, INCLUDING INSTALLATION OF:  
 \* (3) PANEL ANTENNAS  
 \* (3) REMOTE RADIO HEADS (RRH)  
 \* (1) HYBRID CABLE (AND ASSOCIATED FIBER, DC POWER, COAXIAL CABLE JUMPERS AND ANTENNA REMOTE ELECTRICAL-TILT (RET) CABLE

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

**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.
- NEW CONSTRUCTION WILL CONFORM TO ALL APPLICABLE CODES AND ORDINANCES.  
 BUILDING CODE: IBC 2012 W/ 2016 CT STATE BUILDING CODE AMENDMENTS  
 ELECTRICAL CODE: 2014 NATIONAL ELECTRICAL CODE  
 STRUCTURAL CODE: (TIA) 222-G STRUCTURAL STANDARDS FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS.



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**DRAWING INDEX**

SHEET NO:	SHEET TITLE	REV	CHK	BY
T-1	TITLE SHEET	2	BB	DJM
SP-1	OUTLINE SPECIFICATIONS	2	BB	DJM
SP-2	OUTLINE SPECIFICATIONS	2	BB	DJM
SP-3	OUTLINE SPECIFICATIONS	2	BB	DJM
A-1	COMPOUND PLAN	2	BB	DJM
A-2	ELEVATION AND ANTENNA PLANS	2	BB	DJM
A-3	RF DATA SHEET	2	BB	DJM
A-4	RAN WIRING DIAGRAM	2	BB	DJM
A-5	EQUIPMENT DETAILS	2	BB	DJM
A-6	EQUIPMENT DETAILS	2	BB	DJM
S-1	STRUCTURAL DETAILS	2	BB	DJM
E-1	ONE LINE DIAGRAM	2	BB	DJM
E-2	GROUNDING DETAILS AND NOTES	2	BB	DJM

**APPROVALS**

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

SPRINT:	_____	DATE:	_____
CONSTRUCTION MANAGER:	_____	DATE:	_____
LEASING/SITE ACQUISITION:	_____	DATE:	_____
RF ENGINEER:	_____	DATE:	_____
LANDLORD/TOWER OWNER:	_____	DATE:	_____

CHECKED BY: BB

APPROVED BY: DJC

**SUBMITTALS**

REV.	DATE	DESCRIPTION	BY
2	11/01/17	REVISED - CODE UPDATE	DJM
1	06/09/14	ISSUED FOR CONSTRUCTION	JA
0	05/20/14	ISSUED FOR CONSTRUCTION	SF

SITE NUMBER:  
 CT33XC024-H

SITE NAME:  
 LITCHFIELD/HAMMER

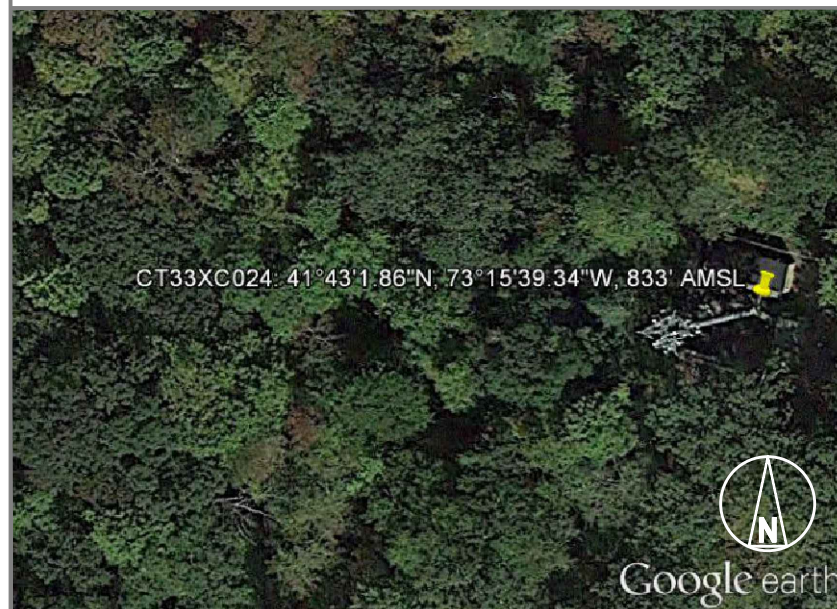
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 1291 BANTAM ROAD  
 LITCHFIELD, CT 06750

SHEET TITLE

TITLE SHEET

SHEET NUMBER

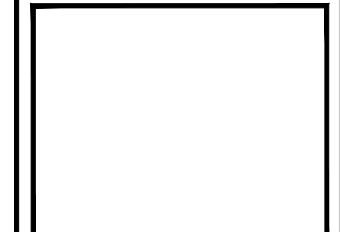
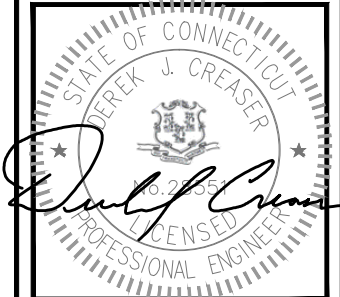
T-1











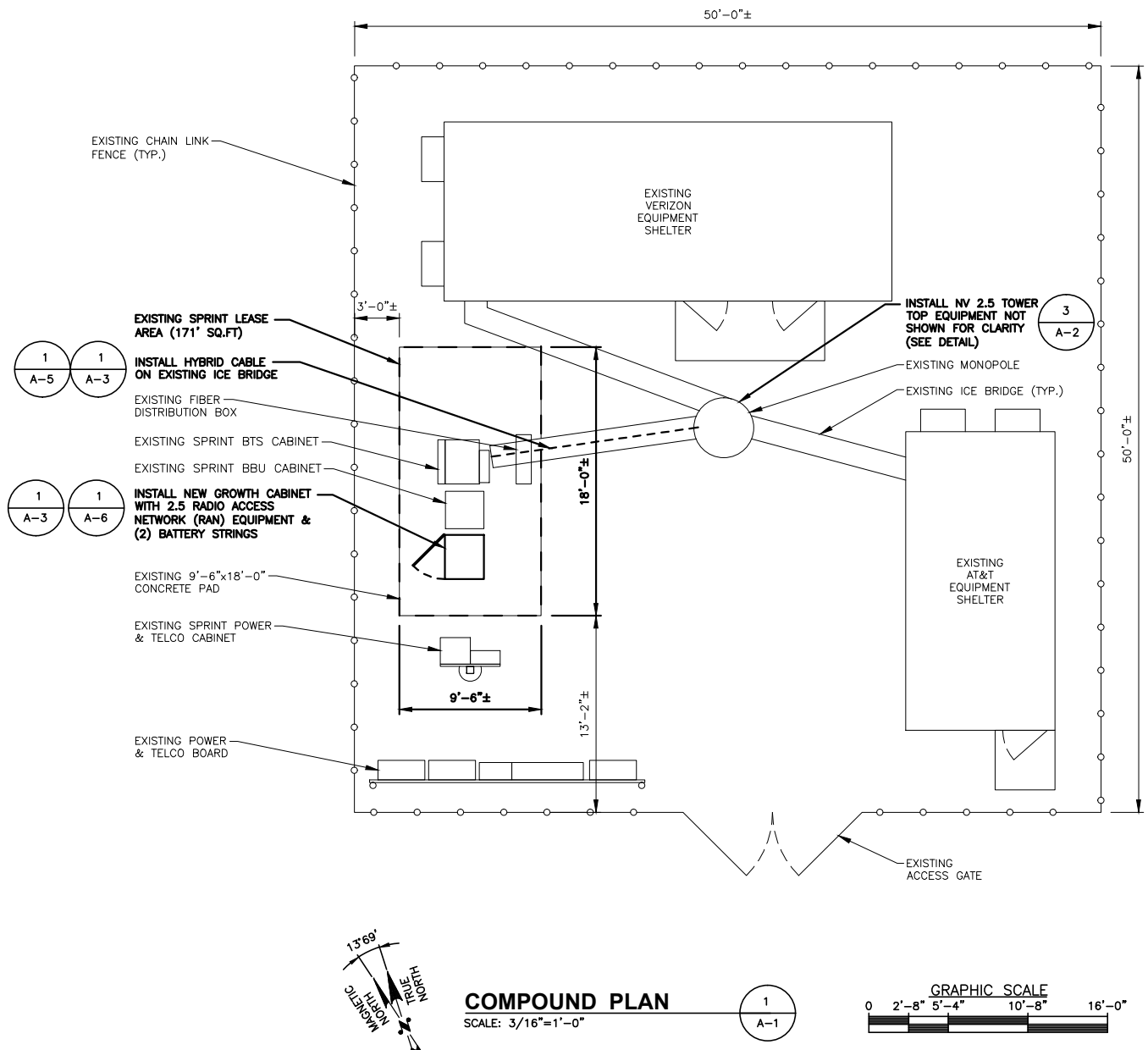
CHECKED BY: BB  
APPROVED BY: DJC

SUBMITTALS			
REV.	DATE	DESCRIPTION	BY
2	11/01/17	REVISED - CODE UPDATE	DJM
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CT33XC024-H  
  
SITE NAME:  
LITCHFIELD/HAMMER  
  
SITE ADDRESS:  
1291 BANTAM ROAD  
LITCHFIELD, CT 06750

SHEET TITLE  
COMPOUND PLAN

SHEET NUMBER  
A-1



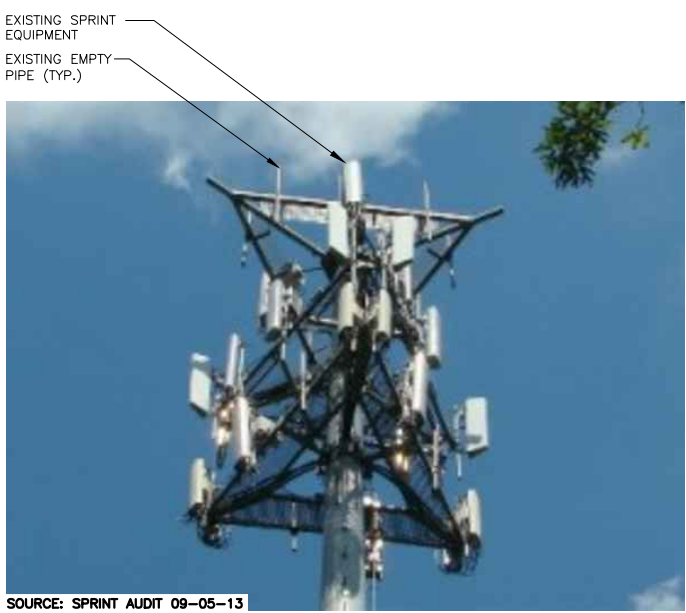
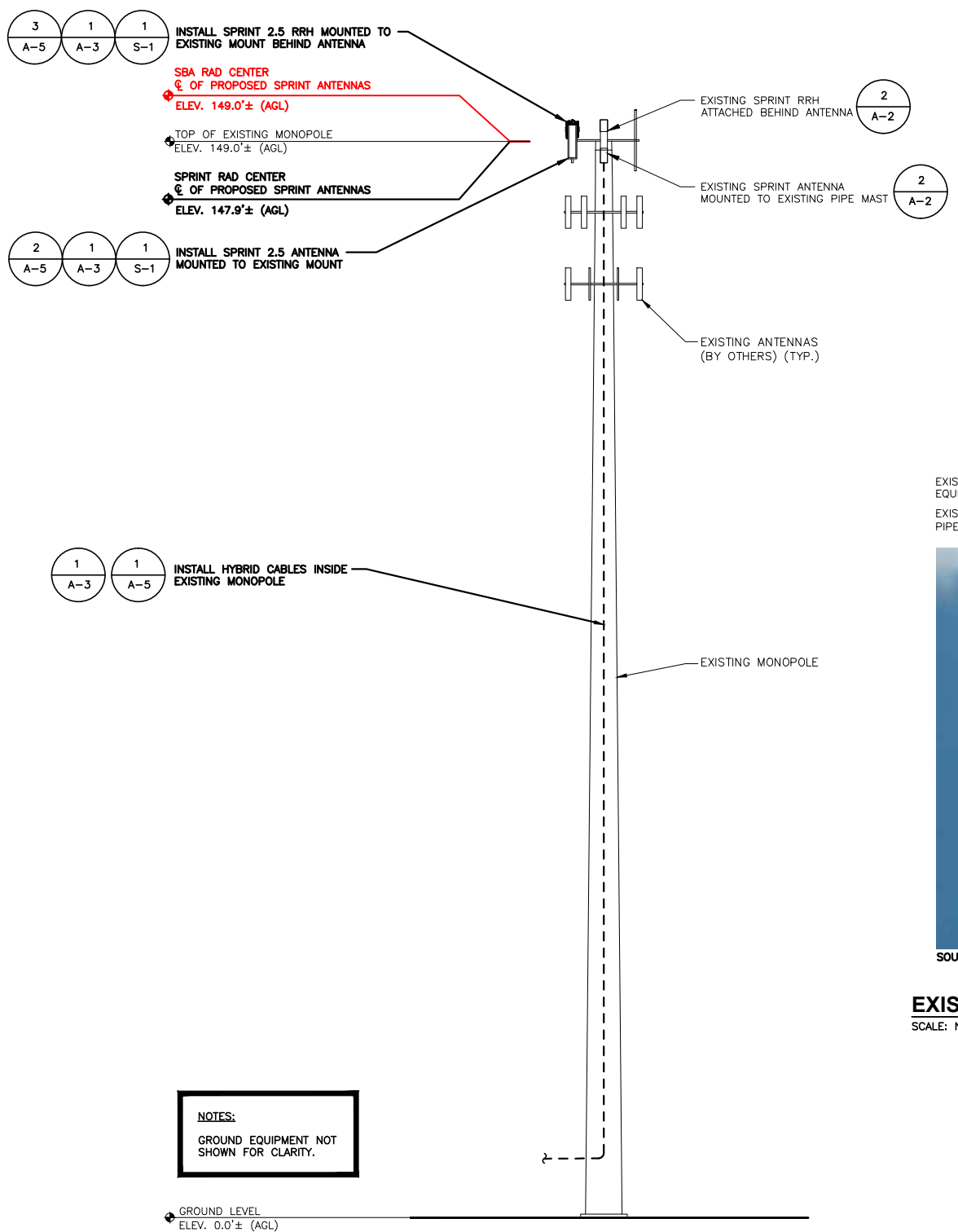
**RAN EQUIPMENT PHOTO DETAIL**  
SCALE: N.T.S.

**SPECIAL CONSTRUCTION NOTE:**  
SPRINT TOWER TOP WORK IS CONTINGENT ON THE FOLLOWING:  
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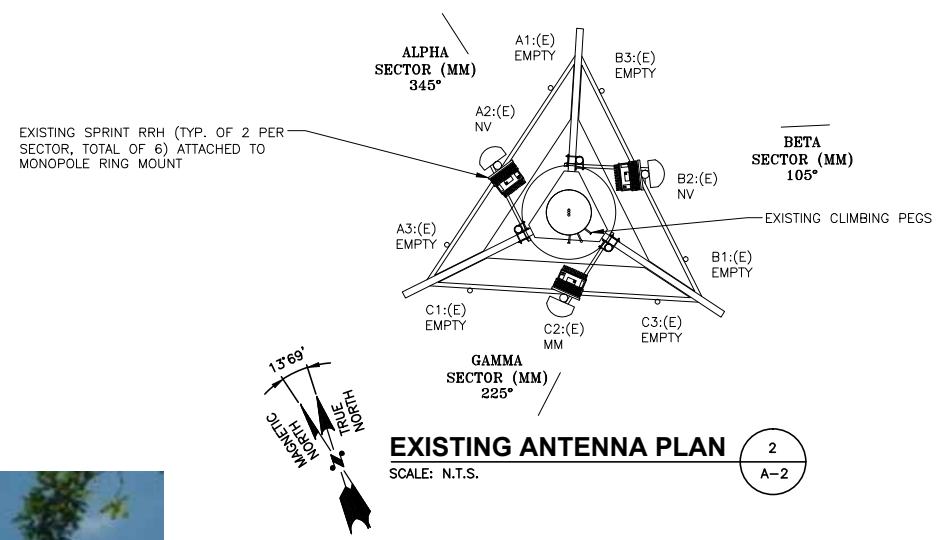
**NOTE:**  
EXISTING AZIMUTHS FROM SPRINT  
SITE AUDIT DATED 09/05/13

**NOTE:**  
SPRINT RAD CENTER SHOWN IN RED TEXT BASED ON SBA-PROVIDED COLLOCATION APPLICATION, EQUIPMENT DATABASE, AND STRUCTURAL ANALYSIS. THE SBA-PROVIDED ANTENNA RAD CENTER SHALL SUPERSEDE ANY CONFLICTING INFORMATION DERIVED FROM THE SPRINT NV 2.5 RFDS.

**SPECIAL CONSTRUCTION NOTE:**  
THE SPRINT NETWORK VISION 2.5 GHz TOWER TOP WORK IS CONTINGENT UPON COMPLETION OF ALL REQUIRED STRUCTURAL MODIFICATIONS, ENGINEERING CONSTRUCTION CONTROL INSPECTIONS, FINAL ENGINEERING AFFIDAVIT, AND ACCEPTANCE/APPROVAL BY SBA COMMUNICATIONS CORP.



**EXISTING PARTIAL ELEVATION PHOTO DETAIL**  
SCALE: N.T.S.



**EXISTING ANTENNA PLAN**  
SCALE: N.T.S.

**SPECIAL WORK NOTE:**  
JUMPERS FROM 2.5 RRH TO 2.5 ANTENNA CAN NOT EXCEED 15'. NOTIFY SPRINT CONSTRUCTION MANAGER OF ANY DISCREPANCY.

**NOTES:**  
1) VERIFY PROPOSED AZIMUTHS WITH RF ENGINEER PRIOR TO INSTALLATION.

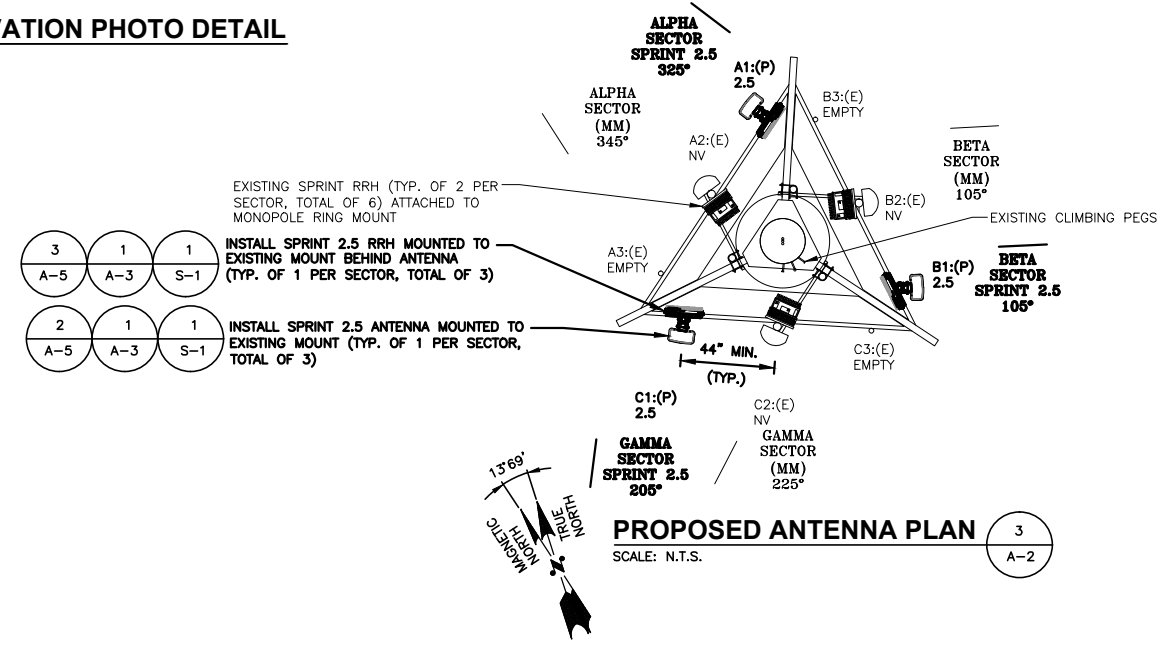
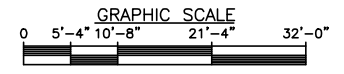
**ANTENNA STATUS LEGEND:**

EMPTY - EMPTY PIPE  
(E) - EXISTING  
(P) - INSTALL  
NV - SPRINT ANTENNA MODEL APXVSPP18-C-A20  
2.5 - SPRINT ANTENNA

**NOTES:**  
GROUND EQUIPMENT NOT SHOWN FOR CLARITY.

GROUND LEVEL  
ELEV. 0.0'± (AGL)

**ELEVATION**  
SCALE: 3/32"=1'-0"



**PROPOSED ANTENNA PLAN**  
SCALE: N.T.S.

CHECKED BY: BB

APPROVED BY: DJC

**SUBMITTALS**

REV.	DATE	DESCRIPTION	BY
2	11/01/17	REVISED - CODE UPDATE	DJM
1	06/09/14	ISSUED FOR CONSTRUCTION	JA
0	05/20/14	ISSUED FOR CONSTRUCTION	SF

SITE NUMBER:  
CT33XC024-H

SITE NAME:  
LITCHFIELD/HAMMER

SITE ADDRESS:  
1291 BANTAM ROAD  
LITCHFIELD, CT 06750

SHEET TITLE  
ELEVATION AND ANTENNA PLANS

SHEET NUMBER  
A-2

**Sprint**

### RFDS Sheet

For 185 Network Services 4/8/14 - 2015 Revised Construction Team Code Book only. Please consult RFDS is used for equipment installation.

---

**General Site Information**

Site ID	CT33XC024	Equipment Vendor	ALL
Market	Southern Connecticut	Latitude	41.717189
Region	East	Longitude	-73.260828
MLA	SBA	SL SITE ID	CT32215-A
Structure Type	MONOPOLE		
BTS Type	Outdoor Macro		
Solution ID	Not Available	Stems SR Equipment Type	Outdoor Macro
		Equipment Vendor	ALL
		Incremental Power Draw Needed for Added Equipment	300

---

**Base Equipment**

BBU Kit	ALL BBU Kit	Top Hat	None
BBU Kit Qty	0	Top Hat Qty	N/A
Growth Cabinet	ALL 9829 Expansion Cabinet	Top Hat Dimensions (Inches)	N/A
Growth Cabinet Qty	1	Top Hat Weight (Lbs.)	N/A
Growth Cabinet Dimensions (Inches)	63.60" X 33.5" X 35.3"		
Growth Cabinet Weight (Lbs.)	3,800		

---

**RF Path Information**

RRH	TD-RRHx3D-25
RRH Qty	3
RRH Dimensions (Inches)	26.1" x 18.6" x 6.7"
RRH Weight (Lbs.)	70.0
RRH Mount Weight (Lbs.)	10
Power and Fiber Cable	ALL Fiber only
Cable Qty	1
Weight per Foot (Lbs.)	0.242
Diameter (Inches)	0.730
Hybrid Cable Length (Feet)	178 (Estimated by Sprint as Antenna C, plus 20% IDO NOT SOM using this length.)
Coax Jumper	Coax Jumper, Mfg TSCA
Coax Jumper Qty	27
Coax Jumper Length (Feet)	8
Coax Jumper Weight (Lbs.)	1.7
Coax Jumper Diameter (Inches)	0.5
AISG Cable	Commscope AIC B-801-006
AISG Cable Qty	3
AISG Diameter (Inches)	0.315
AISG Cable Length (Feet)	8
Weight of Entire AISG Cable (Lbs.)	1.3

---

**Antenna Sector Information**

	Sector 1	Sector 2	Sector 3
Antenna Make/Model	RF/APXVPTM16-AM-120	RF/APXVPTM16-AM-120	RF/APXVPTM16-AM-120
Antenna Qty	1	1	1
Antenna Dimensions (Inches)	56.3 x 12.6 x 6.3	56.3 x 12.6 x 6.3	56.3 x 12.6 x 6.3
Antenna Weight (Lbs.)	55.9	55.9	55.9
Antenna Mounting Kit Weight (Lbs.)	11.5	11.5	11.5
CL Height (Feet)	147.5	147.5	147.5
Antenna Azimuth (Degrees)	325	105	305
Antenna Mechanical Downtilt (Degrees)	0	0	0
Antenna Etilt (Degrees)	-2	-2	-2
RF Filter Make/Model	N/A	N/A	N/A

---

**Comments**

RFDS generated 4/8/14 by SBA Network Services from Sprint; Plan of Record dated 4/2/14.

**Comments in Red Text provided by ASE Vendor:**

**IMPORTANT CONSTRUCTION NOTE:** General Contractor/Tower Crew shall verify that the latest RFDS is used for equipment installation.

\* Note: Antenna Rad Center based on SBA-Provided Collocation Application, Equipment Database, and Structural Analysis. The SBA-Provided Antenna Rad Center shall supersede any conflicting information derived from the Sprint NV 3.5 Database.

\*\* Note: Sprint CM shall confirm Hybrid Cable Length, Coax Jumper Length and AISG Cable Length before preparing RQM. ASE Recommended Hybrid Cable Length based on NV 3.5 Equipment Audit plus 30 Feet for (2) 10-foot coils at each end of the fiber trunk.

**SPRINT CONSTRUCTION STANDARDS:**

GENERAL CONTRACTOR SHALL ADHERE TO THE FOLLOWING SPRINT CONSTRUCTION STANDARDS.

- CONSTRUCTION STANDARDS: INTEGRATED CONSTRUCTION STANDARDS FOR WIRELESS SITES - (CURRENT VERSION), INCLUDING EXHIBITS A-M.
- CONSTRUCTION SPECIFICATIONS: CONSTRUCTION STANDARDS EXHIBIT A - STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES (CURRENT VERSION).
- GROUNDING STANDARDS: EXTERIOR GROUNDING SYSTEM DESIGN. GROUNDING STANDARDS (SUPPLEMENT): ANTI-THEFT UPDATE TO SPRINT GROUNDING 082412 AND SPRINT ENGINEERING LETTER EL-0504 DATED 04.20.12.
- WEATHER PROOFING STANDARDS: EXCERPT FROM CONSTRUCTION STANDARDS EXHIBIT A, SECTION 3.6 WEATHERPROOFING CONNECTORS AND GROUND KITS.
- COLOR CODING: SPRINT NEXTEL ANT AND LINE COLOR CODING PER SPRINT TS-0200 CURRENT VERSION.
- GENERAL CONTRACTOR TO FIELD VERIFY AZIMUTH AND CL HEIGHT AND MECHANICAL DOWNTILT. IF DIFFERENT THAN CALLED OUT IN RFDS, HALT ANTENNA WORK FOR ONE HOUR, CALL SPRINT RF ENGINEER (OR MANAGER IF RF ENGINEER DOES NOT ANSWER, BUT STILL LEAVE A MESSAGE TO RF ENGINEER) USING SPRINT-PROVIDED CONTACT INFORMATION FOR FURTHER INSTRUCTIONS. IF SPRINT DOES NOT RESPOND WITHIN ONE HOUR, PLACE 2.5G ANTENNA AT SAME CL HEIGHT AS 1.9G ANTENNA AND EMAIL CORRECT CL HEIGHT AND AZIMUTH TO SPRINT RF ENGINEER. UPDATE AS-BUILT DRAWING WITH CORRECT CL HEIGHT. ALSO EMAIL CORRECT 1900 MHZ AND 800 MHZ ANTENNA CL HEIGHT, AZIMUTH AND MECHANICAL DOWNTILT TO RF ENGINEER.
- AISG TESTS TO VERIFY OPERATION IS TO BE PERFORMED AFTER FINAL INSTALLATION OF ANTENNAS AND AISG CABLES HAVE BEEN CONNECTED. VERIFY OPERATION OF ALL EXISTING SPRINT AISG EQUIPMENT INCLUDING 800MHZ, 1.9GHZ AND 2.5G. TEST INCLUDE COMPLETE DOWNTILT, AZIMUTH (IF APPLICABLE) AND BEAMWIDTH SWINGS (IF APPLICABLE). DOCUMENT AISG TEST RESULTS IN COAX SWEEP TEST SPREADSHEET.
- GENERAL CONTRACTOR MUST INSURE THAT NO OBJECT IS LOCATED IN FRONT OF ANTENNA. THIS MEANS NO OBJECT IS TO BE LOCATED 45 DEGREES LEFT AND RIGHT OF FRONT OF ANTENNA OR 7 DEGREES UP AND DOWN FROM CENTER OF ANTENNA. IF THIS IS NOT POSSIBLE, CONTACT RF ENGINEER FOR FURTHER INSTRUCTION. IN ADDITION, 2.5G ANTENNA IS NOT TO BE PLACED IN FRONT OF ANY OTHER ANTENNA USING THE SAME 45 DEGREE RULE. THIS INCLUDES SPRINT AND NON-SPRINT ANTENNAS.
- GENERAL CONTRACTOR IS REQUIRED TO USE A DIGITAL ALIGNMENT TOOL TO SET AZIMUTH, ROLL AND DOWNTILT. AZIMUTH ACCURACY IS TO BE WITHIN 1 DEGREE. DOWNTILT AND ROLL (LEFT TO RIGHT TILT) IS TO BE WITHIN 0.1 DEGREES. IF FOR SOME REASON THIS ACCURACY CANNOT BE ACHIEVED, UPDATE AS-BUILT DRAWINGS AND EMAIL SPRINT RF ENGINEER WITH AS-BUILT SETTINGS. USE 3Z RF ALIGNMENT TOOL OR EQUIVALENT TOOL. [HTTP://WWW.3ZTELECOM.COM/ANTENNA-ALIGNMENT-TOOL/](http://www.3ztelecom.com/antenna-alignment-tool/).



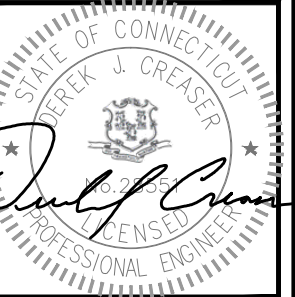
1 INTERNATIONAL BLVD, SUITE 800  
MAHWAH, NJ 07495  
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0	05/20/14	ISSUED FOR CONSTRUCTION	SF

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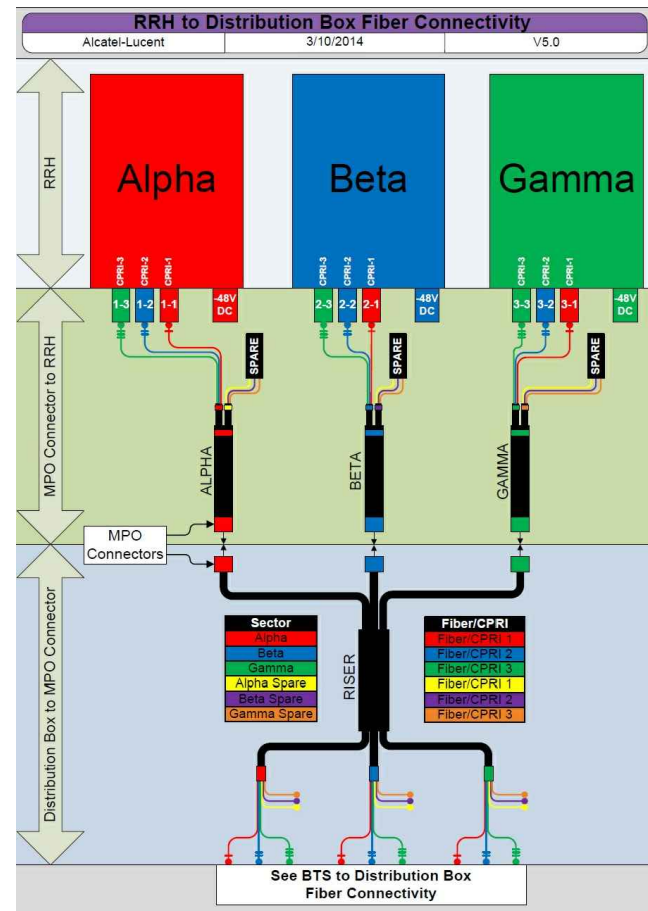
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SITE ADDRESS:  
1291 BANTAM ROAD  
LITCHFIELD, CT 06750

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RF DATA SHEET

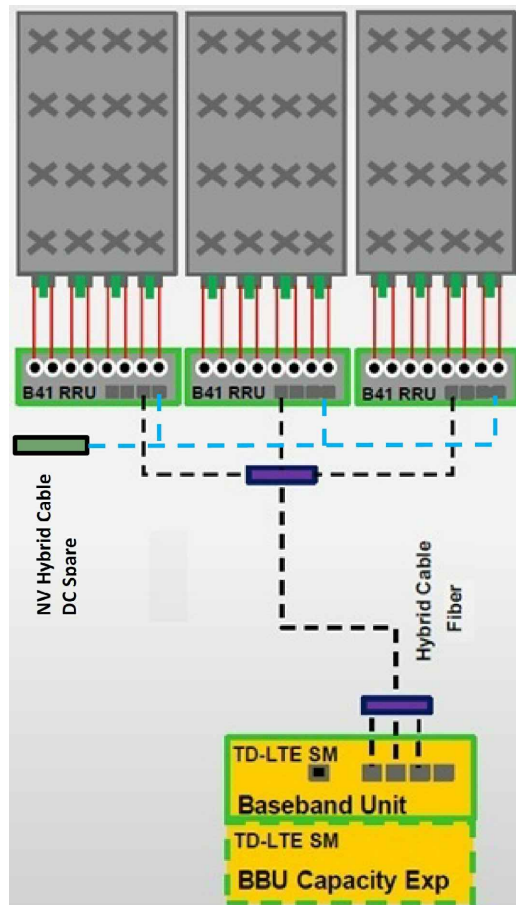
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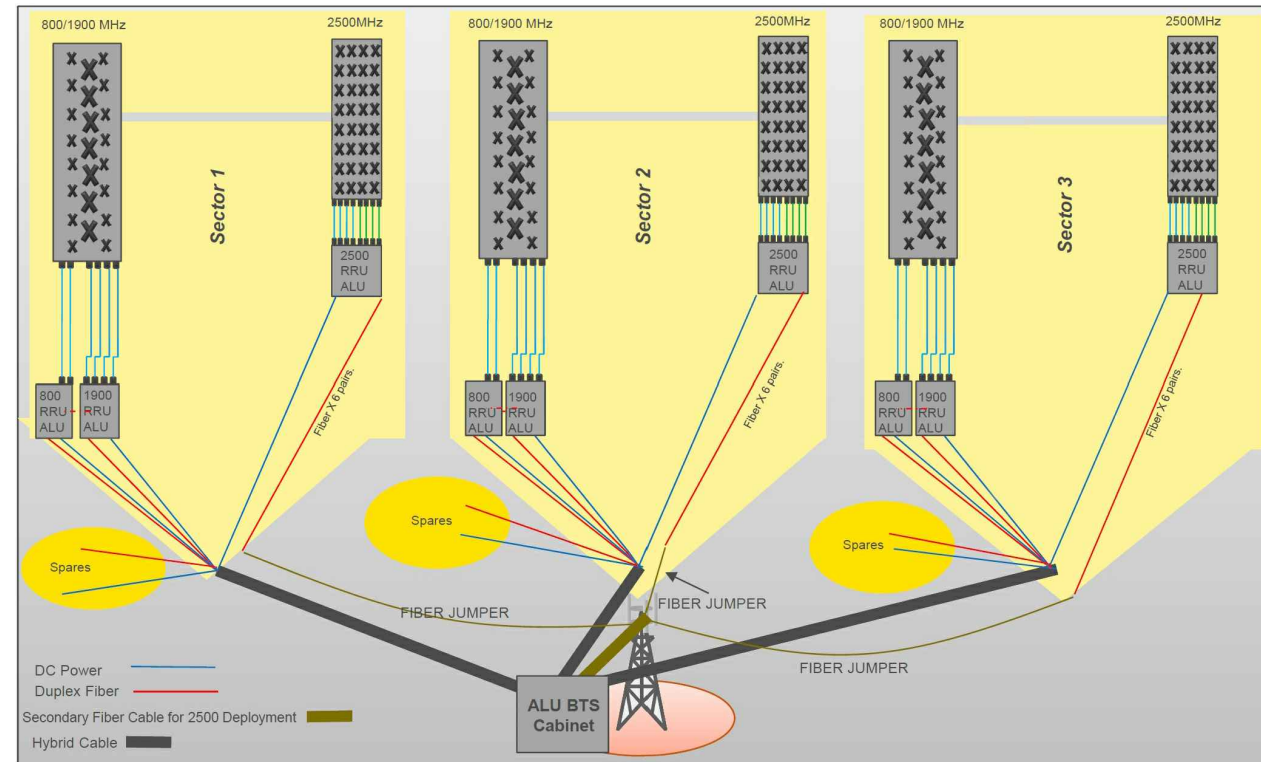
**CABLE COLOR CODING DIAGRAM**

SCALE: N.T.S.



**ALU 2.5 ALU SCENARIO 1**

SCALE: N.T.S.

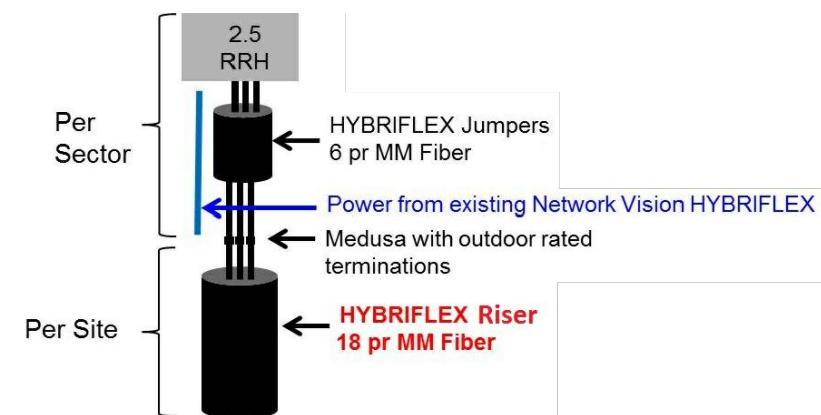


**RAN WIRING DIAGRAM: ALU EQUIPMENT**

SCALE: N.T.S.

**NOTE:**

GENERAL CONTRACTOR/TOWER CREW SHALL VERIFY THAT THE LATEST RF DATA SHEET IS USED FOR EQUIPMENT INSTALLATION.



**RFS 2.5 ALU SCENARIO 1**

SCALE: N.T.S.

**DC POWER INSTALLATION NOTE (FIBER-ONLY SCENARIO):**

USE SPACE 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.

CHECKED BY: BB

APPROVED BY: DJC

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LITCHFIELD, CT 06750

SHEET TITLE

RAN WIRING  
DIAGRAM

SHEET NUMBER

A-4

HYBRID CABLE DC CONDUCTOR SIZE GUIDELINE					
MANUF:	RFS	CABLE	LENGTH	DC CONDUCTOR	CABLE DIAMETER
(*)		FIBER ONLY	VARIES	USE NV HYBRIFLEX	5/8"
		HYBRIFLEX	<200'	8 AWG	1-1/4"
		HYBRIFLEX	225-300'	6 AWG	1-1/4"
		HYBRIFLEX	325-375'	4 AWG	1-1/4"

RFS HYBRIFLEX RISER CABLE SCHEDULE

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

RFS HYBRIFLEX JUMPER CABLE SCHEDULE

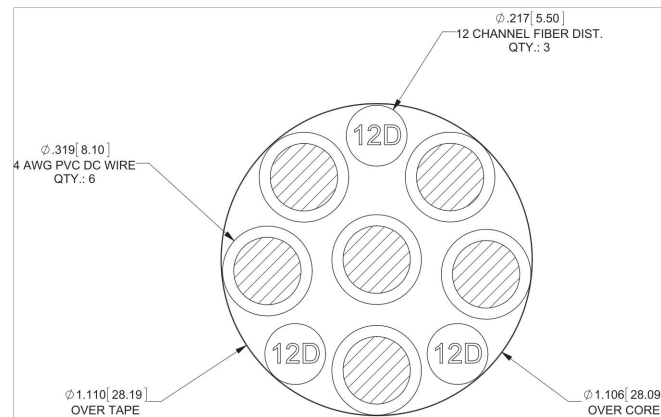
Fiber Only	(*) Hybrid Jumper cable MN: HBF012-M3-5F1 5 ft, 3x multi-mode fiber pairs, Outdoor & LC connectors, 1/2 cable	5 ft
	MN: HBF012-M3-10F1	10 ft
	MN: HBF012-M3-15F1	15 ft
	<b>SPECIAL INSTALLATION NOTE:</b> JUMPERS FROM 2.5 RRH TO 2.5 ANTENNA SHALL NOT EXCEED 15'. NOTIFY SPRINT CM OF ANY DISCREPANCY.	
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
	<b>SPECIAL INSTALLATION NOTE:</b> JUMPERS FROM 2.5 RRH TO 2.5 ANTENNA SHALL NOT EXCEED 15'. NOTIFY SPRINT CM OF ANY DISCREPANCY.	
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
	<b>SPECIAL INSTALLATION NOTE:</b> JUMPERS FROM 2.5 RRH TO 2.5 ANTENNA SHALL NOT EXCEED 15'. NOTIFY SPRINT CM OF ANY DISCREPANCY.	
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
	<b>SPECIAL INSTALLATION NOTE:</b> JUMPERS FROM 2.5 RRH TO 2.5 ANTENNA SHALL NOT EXCEED 15'. NOTIFY SPRINT CM OF ANY DISCREPANCY.	

\* NOTE: SPRINT CM TO CONFIRM HYBRID RISER CABLE AND HYBRID JUMPER CABLE MODEL NUMBERS BEFORE PREPARING BOM.

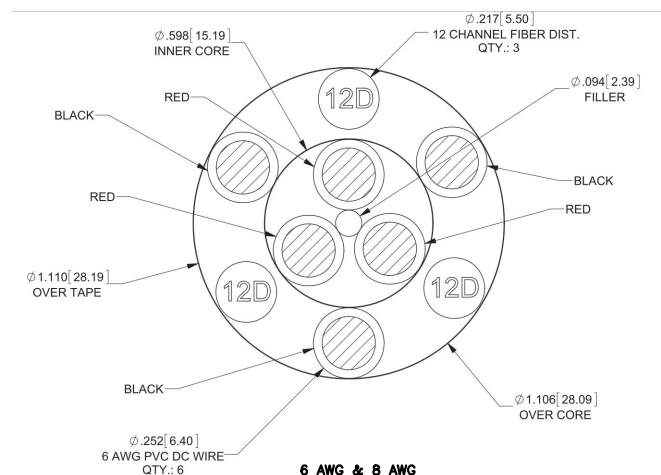
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SCALE: N.T.S.

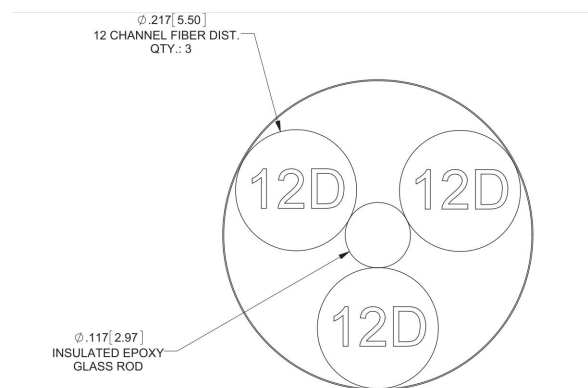
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A-5



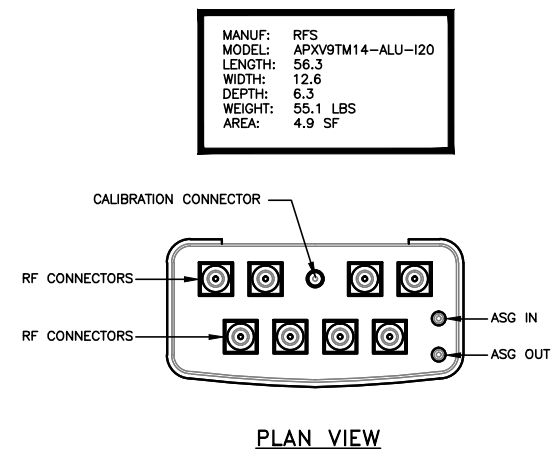
4 AWG



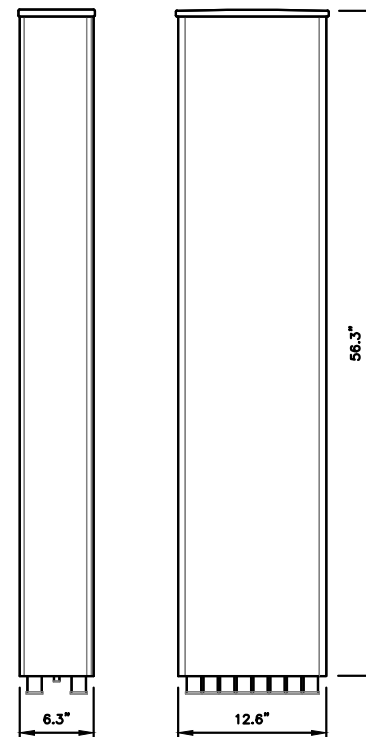
6 AWG & 8 AWG



FIBER ONLY



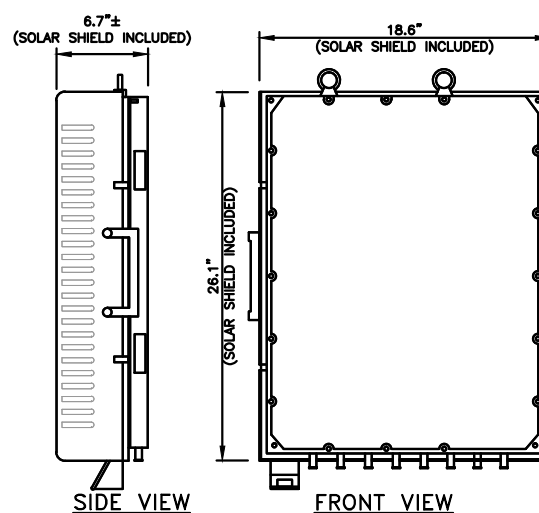
PLAN VIEW



2.5 ANTENNA SPECIFICATIONS

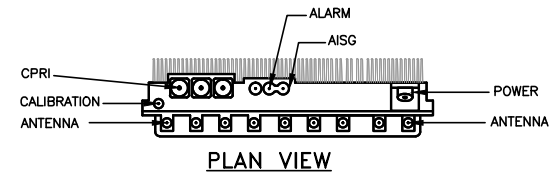
SCALE: N.T.S.

2  
A-5



SIDE VIEW

FRONT VIEW



PLAN VIEW

2.5 RRH'S

SCALE: N.T.S.

3  
A-5



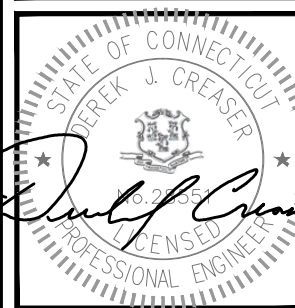
1 INTERNATIONAL BLVD, SUITE 800  
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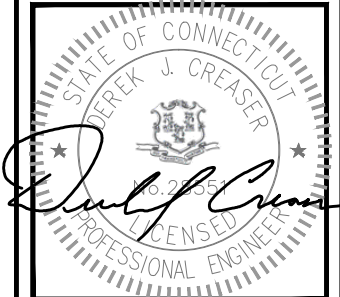
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SITE NAME:  
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SITE ADDRESS:  
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SHEET TITLE  
EQUIPMENT  
DETAILS

SHEET NUMBER  
A-5



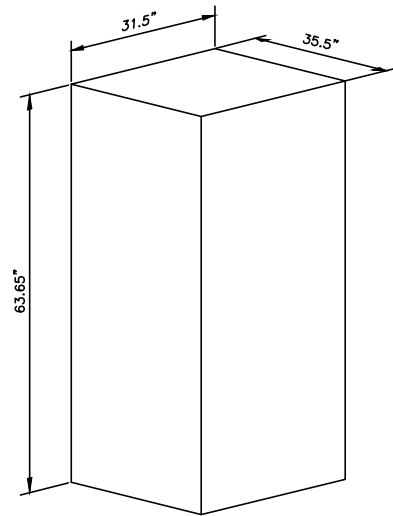
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SHEET TITLE  
EQUIPMENT  
DETAILS

SHEET NUMBER  
A-6



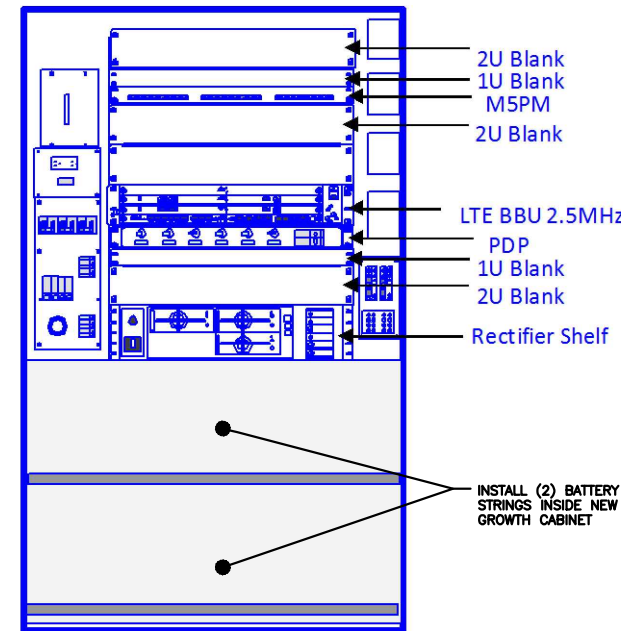
MANUFACTURER	ALU
MODEL	9929
HEIGHT	63.65"
WIDTH	31.5"
DEPTH	35.5"
TOTAL WEIGHT (FULLY LOADED)	1600 lbs

NOTE:  
EQUIPMENT SHALL BE ANCHORED PER  
MANUFACTURERS SPECIFICATIONS.

**9929 MMBTS  
OUTDOOR CABINET**

SCALE: N.T.S.

1  
A-6

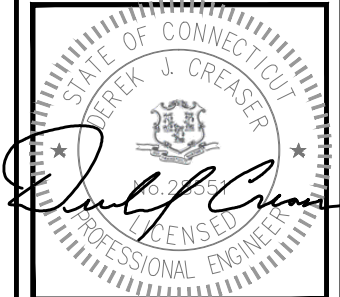


FRONT VIEW

**PROPOSED MMBTS OUTDOOR CABINET  
WITH LTE 2.5 BBU EQUIPMENT**

SCALE: N.T.S.

2  
A-6



**INSTALLATION NOTES:**

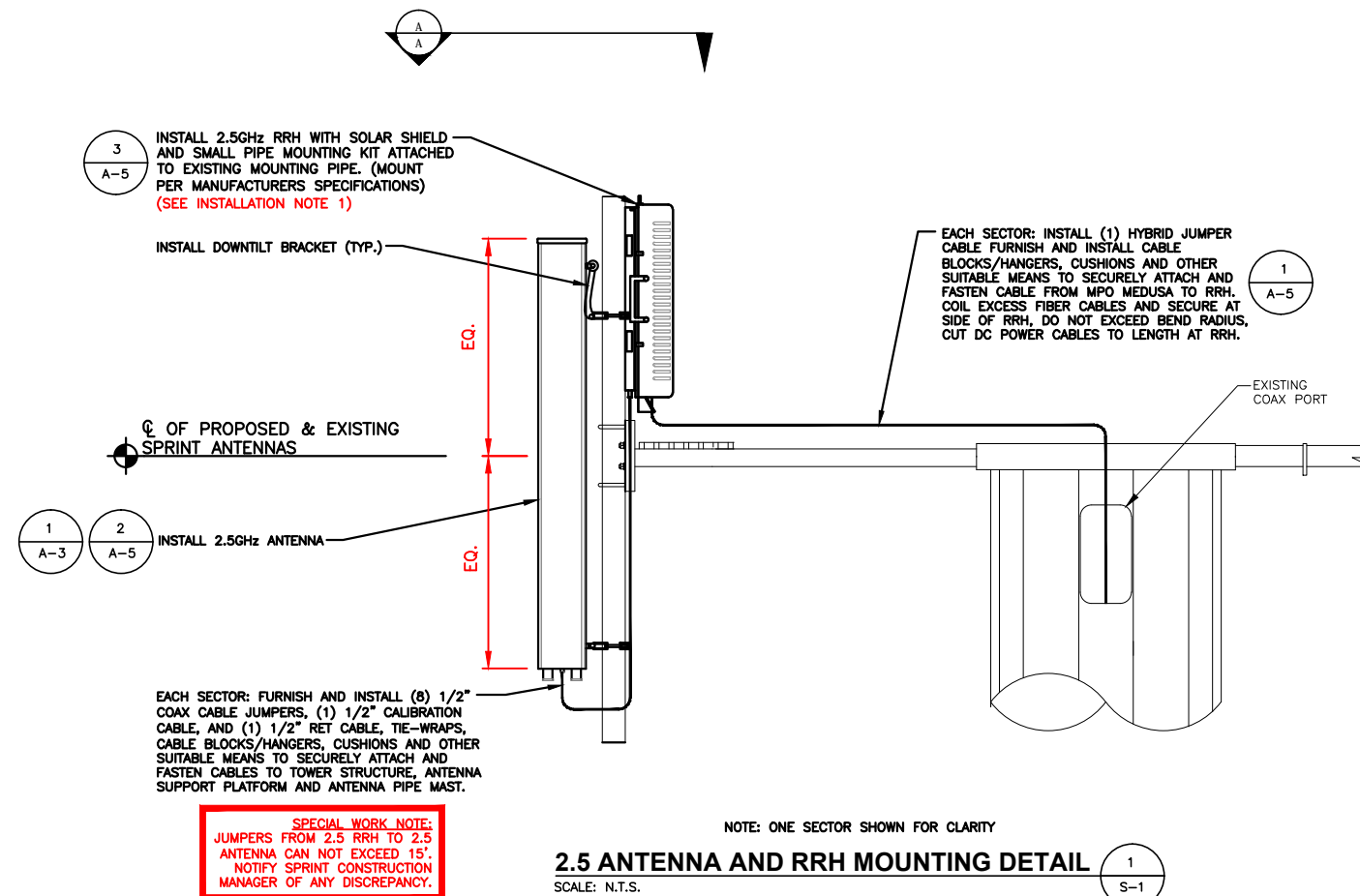
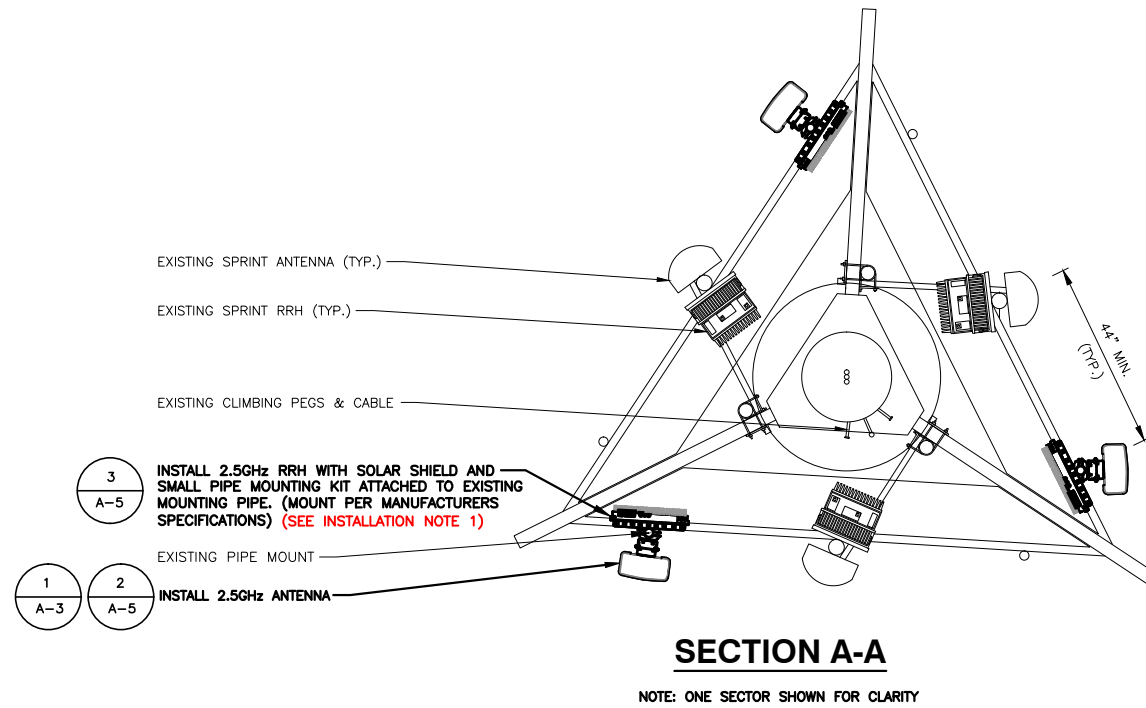
- CONTRACTOR TO ENSURE THAT RRH MOUNTING DOES NOT INTERFERE WITH CLIMBING LADDER/PEGS, CABLE CLIMB, OR COAX PORTS. MONOPOLE: COLLAR-MOUNT RRH CLUSTER SHALL PROVIDE AN OPENING BETWEEN ADJACENT RRH AT LEAST 30" WIDE CENTERED ON THE EXISTING SAFETY-CLIMB AND 30" DEEP FROM THE FACE OF THE POLE. SELF-SUPPORT: RRH LEG-MOUNT OR FACE-MOUNT SHALL PROVIDE AN UNOBSTRUCTED VERTICAL CLIMBING PASSAGE AT LEAST 30" WIDE AND 30" DEEP CENTERED ON THE LEG WITH THE CLIMBING LADDER/PEGS.
- CONTRACTOR TO VERIFY DIAMETER OF EXISTING MONOPOLE BEFORE ORDERING PARTS.
- CONTRACTOR TO VERIFY IN FIELD SIZE OF EXISTING MOUNTING PIPE TO BE 2-1/2" STD (2.88 O.D.) PIPE MAST (6'-0" LONG).
- VERIFY EXACT RRH AND ANTENNA MODEL & AZIMUTHS WITH RF ENGINEER PRIOR TO INSTALLATION.
- ROTATE EXISTING ANTENNA FRAME AS NEEDED TO ACCOMMODATE INSTALL ANTENNAS.
- RRH PLACEMENT FOR REFERENCE ONLY. CONTRACTOR SHALL PLACE RRH IN CORRECT ORDER MATCHING INSTALL ANTENNA PLACEMENT AND ENSURE THAT THERE IS ENOUGH CLEARANCE FOR RRHS TO BE PLACED ON THE INSIDE ON THE ANTENNA FRAME.
- INSTALL EQUIPMENT TO BE MOUNTED PER MANUFACTURERS SPECIFICATIONS.

**SPECIAL CONSTRUCTION NOTE:**

- SPRINT TOWER TOP WORK IS CONTINGENT ON THE FOLLOWING:
- COMPLETION OF A GLOBAL STRUCTURAL STABILITY ANALYSIS (PROVIDED BY TOWER OWNER).
  - COMPLETION OF AN ANTENNA/RRH MOUNT STRUCTURAL ASSESSMENT (PROVIDED BY A&E VENDOR).
  - GC SHALL FURNISH, INSTALL AND COMPLETE ALL REQUIRED STRUCTURAL MODIFICATIONS AS INDICATED IN BEFORE-MENTIONED ANALYSIS AND ASSESSMENT.
  - SBA COMMUNICATIONS CORPORATION SHALL PROVIDE WRITTEN ACCEPTANCE/APPROVAL FOR THE COMPLETION OF ALL TOWER/FOUNDATION STRUCTURAL MODIFICATIONS INCLUDING (AS NECESSARY) CONTROLLED CONSTRUCTION INSPECTIONS, SHOP-DRAWING APPROVALS, MATERIALS TEST RESULTS, AND FINAL ENGINEER'S AFFIDAVIT.

**SPECIAL CONSTRUCTION NOTE:**

THE SPRINT NETWORK VISION 2.5 GHz TOWER TOP WORK IS CONTINGENT UPON COMPLETION OF ALL REQUIRED STRUCTURAL MODIFICATIONS, ENGINEERING CONSTRUCTION CONTROL INSPECTIONS, FINAL ENGINEERING AFFIDAVIT, AND ACCEPTANCE/APPROVAL BY SBA COMMUNICATIONS CORP.



**SPECIAL WORK NOTE:**  
JUMPERS FROM 2.5 RRH TO 2.5 ANTENNA CAN NOT EXCEED 15'. NOTIFY SPRINT CONSTRUCTION MANAGER OF ANY DISCREPANCY.

INSTALL 2.5GHz ANTENNA MOUNTED ON EXISTING PIPE (TYP. OF 1 PER SECTOR, TOTAL OF 3)

INSTALL 2.5GHz RRH WITH SOLAR SHIELD AND SMALL PIPE MOUNTING KIT ATTACHED TO EXISTING MOUNTING PIPE. (MOUNT PER MANUFACTURERS SPECIFICATIONS) (SEE INSTALLATION NOTE 1)



NOTE: ONE SECTOR SHOWN FOR CLARITY

**2.5 ANTENNA AND RRH PHOTO DETAIL AND EQUIPMENT SCHEMATIC**

SCALE: N.T.S.

CHECKED BY: BB

APPROVED BY: DJC

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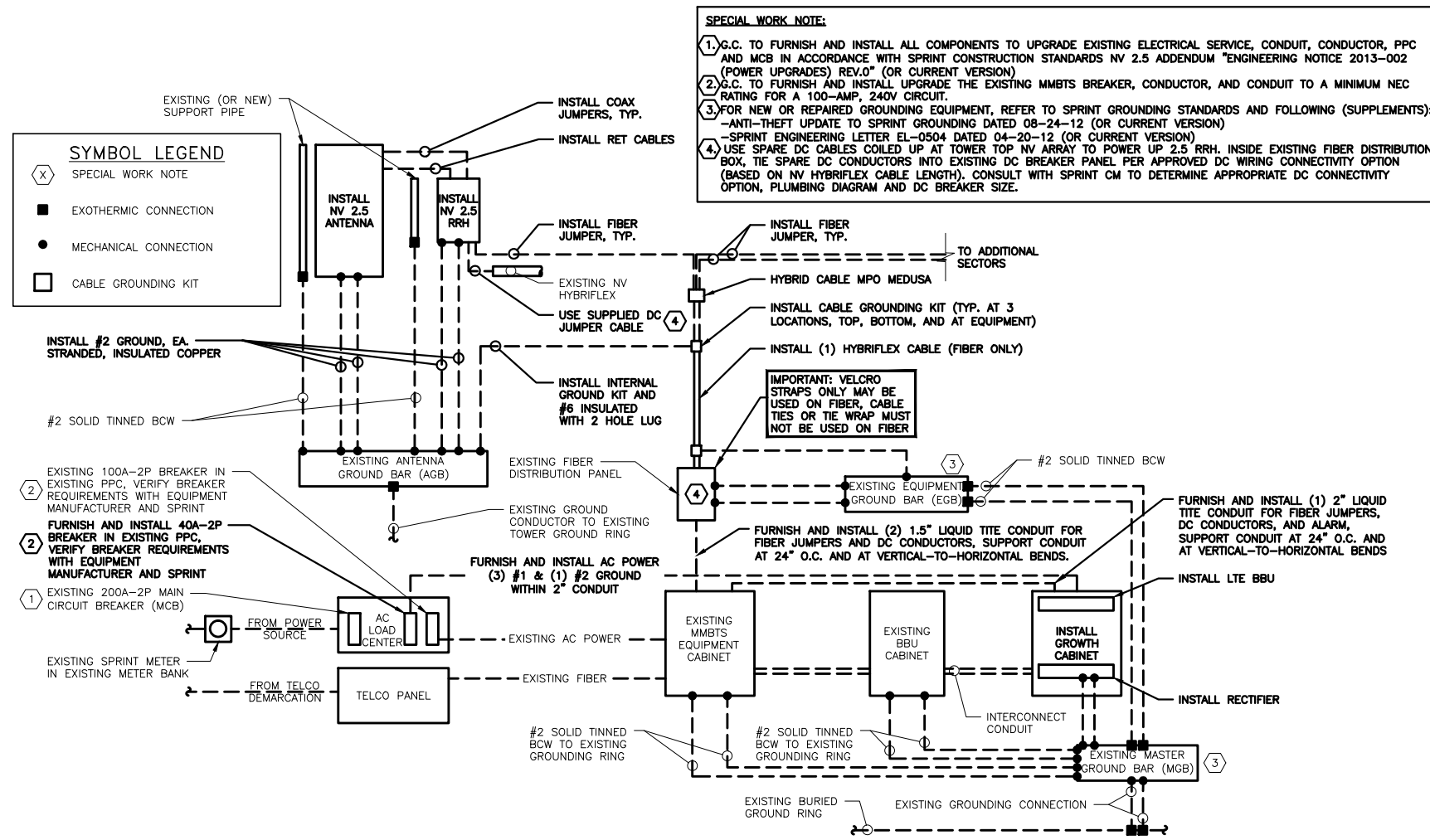
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SHEET TITLE

STRUCTURAL  
DETAILS

SHEET NUMBER

S-1



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

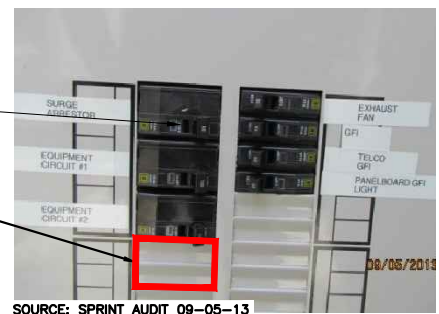
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E-1

1 EXISTING 200A-2P MAIN CIRCUIT BREAKER (MCB)

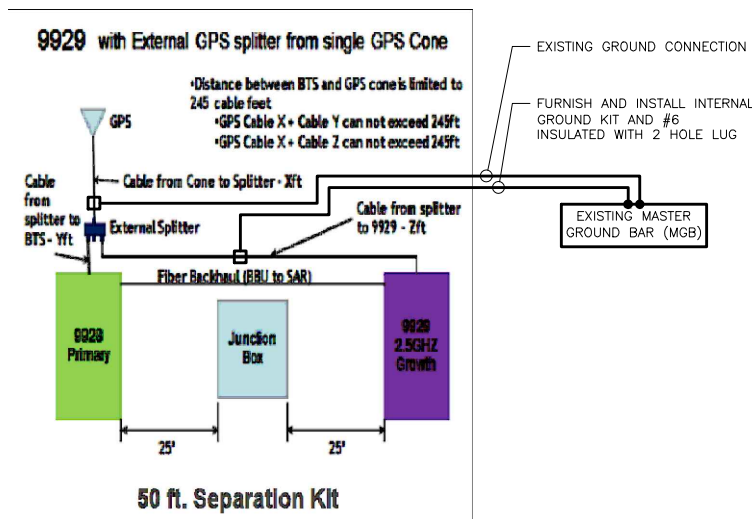


2 EXISTING 100A-2P MMBTS CIRCUIT BREAKER

2 FURNISH AND INSTALL 40A-2P BREAKER IN EXISTING PPC, VERIFY BREAKER REQUIREMENTS WITH EQUIPMENT MANUFACTURER AND SPRINT



**EXISTING PPC BREAKER PANEL**  
SCALE: N.T.S.



**GPS SPLITTER DETAIL**  
SCALE: N.T.S.

2  
E-1

**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.



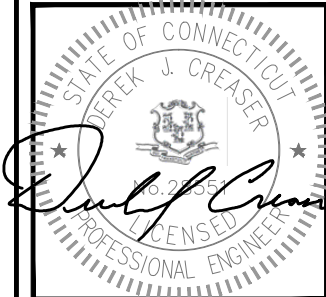
1 INTERNATIONAL BLVD, SUITE 800  
MAHWAH, NJ 07495  
TEL: (800) 357-7641



SBA COMMUNICATIONS CORP.  
134 FLANDERS ROAD, SUITE 125  
WESTBOROUGH, MA 01581  
TEL: (508) 251-0720  
FAX: (508) 251-1755



45 BEECHWOOD DRIVE  
N. ANDOVER, MA 01845  
TEL: (978) 557-5553  
FAX: (978) 336-5586



CHECKED BY: BB

APPROVED BY: DJC

**SUBMITTALS**

REV.	DATE	DESCRIPTION	BY
2	11/01/17	REVISED - CODE UPDATE	DJM
1	06/09/14	ISSUED FOR CONSTRUCTION	JA
0	05/20/14	ISSUED FOR CONSTRUCTION	SF

SITE NUMBER:  
CT33XC024-H

SITE NAME:  
LITCHFIELD/HAMMER

SITE ADDRESS:  
1291 BANTAM ROAD  
LITCHFIELD, CT 06750

SHEET TITLE

ONE LINE DIAGRAM

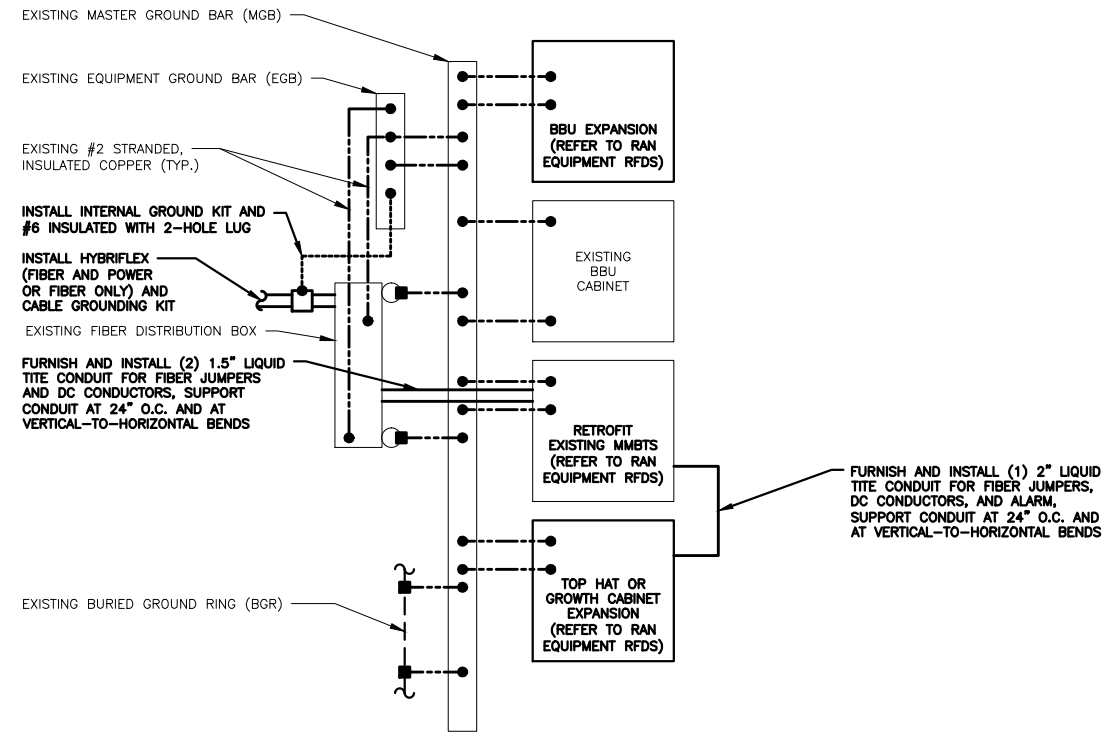
SHEET NUMBER

E-1

**SYMBOL LEGEND**

- EXOTHERMIC CONNECTION
- MECHANICAL CONNECTION
- CABLE GROUNDING KIT

UNLESS NOTED OTHERWISE, ALL BONDING CONDUCTORS ARE 2# SOLID TINNED BCW.



NOTE: HYBRIFLEX (FIBER & POWER) AND HYBRIFLEX (FIBER-ONLY) SHOWN. REFER TO RAN EQUIPMENT RFDS FOR SITE-SPECIFIC SCENARIO.

**2.5 RAN EQUIPMENT GROUNDING SCHEMATIC** 1  
SCALE: N.T.S. E-2

**PROTECTIVE GROUNDING SYSTEMS GENERAL NOTES:**

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



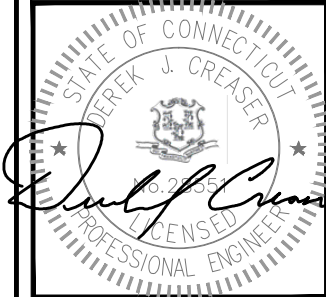
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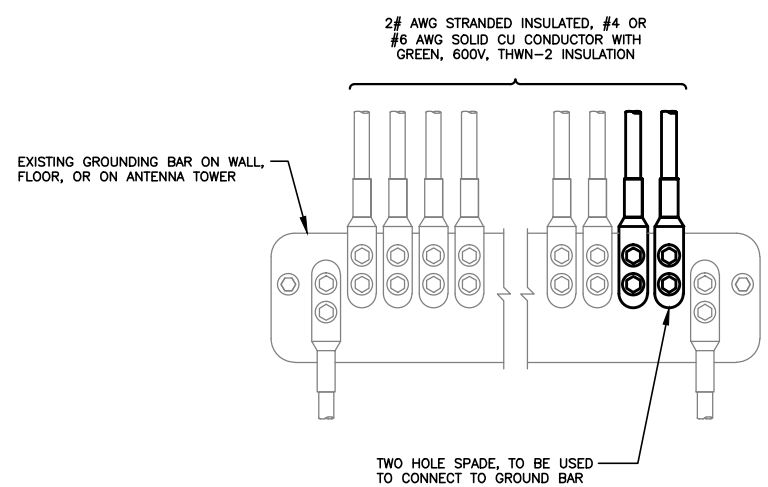
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SHEET TITLE

GROUNDING DETAILS AND NOTES

SHEET NUMBER

E-2



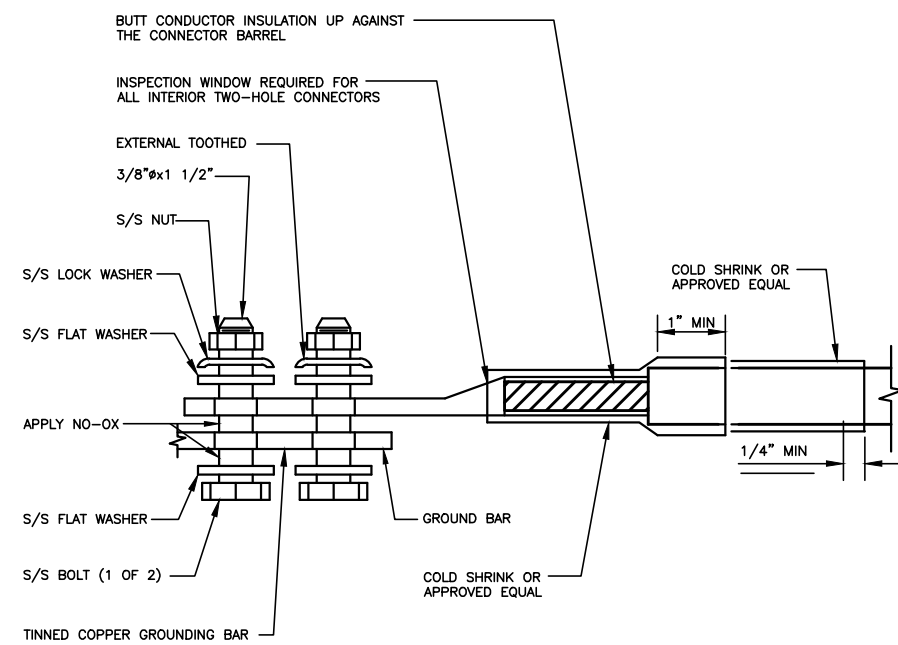
**NOTES**

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

**INSTALLATION OF GROUNDING CONDUCTOR TO GROUNDING BAR**

SCALE: N.T.S.

2  
E-2



**TWO HOLE LUG**

SCALE: N.T.S.

3  
E-2