



June 18<sup>th</sup>, 2018

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

**RE: Notice of Exempt Modification – Antenna Swap for wireless facility located at 330 ROUTE 66, COLUMBIA CONNECTICUT – CT33XC014 (lat. 41° 41' 23.58" N, long. -72° 19' 30.70" W)**

Dear Ms. Bachman:

Sprint Spectrum, LP ("Sprint") currently maintains wireless telecommunications antennas at the (108-foot level) on an existing (149-foot monopole tower) at the above-referenced address. The property is owned by JOHN AND MYRA PEKARSKI and the tower is owned by American Tower Corporation.

Sprint's proposed work involves antenna replacement and tower work. Sprint intends to replace six (6) antennas, relocate three (3) RRHs from ground level to the tower and add nine (9) new RRHs onto the tower. All the proposed work is contained within the existing fenced area. Please refer to the attached drawings for site plans prepared by Infinigy Engineering.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to STEVEN EVERETT, FIRST SELECTMAN and PAULA STAHL, TOWN PLANNER of the Town of COLUMBIA. A copy of this letter is also being sent to JUSTINE PAUL the manager for AMERICAN TOWER CORPORATION who manages the site, and JOHN AND MYRA PEKARSKI who own the property where the tower is located.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b).

1. The proposed modifications will not result in an increase in the height of the existing tower.
2. The antennas work is a one-for-one replacement of facility components.
3. The proposed modifications will include the addition of ground base equipment as

depicted on the attached drawings; however, the proposed equipment will not require an extension of the site boundaries.

4. The proposed modifications will not increase noise levels at the facility by six decibels or more.
5. The additional ground based equipment will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) adopted safety standard.

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

If you have any questions or require any additional information regarding this request, please do not hesitate to give me a call at (518) 350-4222 or email me to [aperkowski@airosmithdevelopment.com](mailto:aperkowski@airosmithdevelopment.com)

Kind Regards,



Arthur Perkowski  
Airosmith Development Inc.  
32 Clinton Street  
Saratoga Springs, NY 12866  
518-306-1711 desk & fax  
518-871-3707 cell  
[aperkowski@airosmithdevelopment.com](mailto:aperkowski@airosmithdevelopment.com)

Attachment

CC: STEVEN EVERETT (FIRST SELECTMAN / COLUMBIA, CT)  
JUSTINE PAUL (Manager, AMERICAN TOWER CORPORATION)  
PAULA STAHL (TOWN PLANNER / COLUMBIA, CT)  
JOHN AND MYRA PEKARSKI (Land Owner)

7017 3040 0000 7669 8918

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JUN 18 2018

06/18/2018

Sent To: John and Myra Pekarochi, CT 83XC014  
Street and Apt. No., or PO Box No.: 330 Rt 66 South  
City, State, ZIP+4®: Columbia CT 06237

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

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06/18/2018

Sent To: Justin Paul, CT 83XC014  
Street and Apt. No., or PO Box No.: 10 Presidential Way  
City, State, ZIP+4®: Webburn MA 01801

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

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Postage	\$0.50
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06/18/2018

Sent To: Paul Stahl, CT 83XC014  
Street and Apt. No., or PO Box No.: 223 Route 87  
City, State, ZIP+4®: Columbia CT 06237

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

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<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00
Postage	\$0.50
<b>Total Postage and Fees</b>	<b>\$6.70</b>

Postmark Here  
0867 77  
JUN 18 2018

06/18/2018

Sent To: Steven Everett, CT 83XC014  
Street and Apt. No., or PO Box No.: 323 Route 87  
City, State, ZIP+4®: Columbia CT 06237

PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions

# 330 RT 66 SOUTH

**Location** 330 RT 66 SOUTH

**Mblu** 028/ / 019/ /

**Acct#** 00165000

**Owner** PEKARSKI JOHN & MYRA J

**Assessment** \$176,420

**Appraisal** \$367,600

**PID** 1657

**Building Count** 1

## Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2016	\$194,900	\$172,700	\$367,600

Assessment			
Valuation Year	Improvements	Land	Total
2016	\$136,600	\$39,820	\$176,420

## Owner of Record

**Owner** PEKARSKI JOHN & MYRA J  
**Co-Owner** SHUTT MARY J  
**Address** 330 RT 66 SOUTH  
COLUMBIA, CT 06237

**Sale Price** \$0  
**Certificate**  
**Book & Page** 0227/0002  
**Sale Date** 05/08/2018

## Ownership History

Ownership History				
Owner	Sale Price	Certificate	Book & Page	Sale Date
PEKARSKI JOHN & MYRA J	\$0		0227/0002	05/08/2018
PEKARSKI JOHN & M JEANETTE	\$0		0143/0397	03/11/2003
PEKARSKI JOHN	\$65,000		0143/0388	03/11/2003
PEKARSKI JOHN & ALEXANDER	\$0		0058/0422	10/08/1981

## Building Information

### Building 1 : Section 1

**Year Built:** 1760  
**Living Area:** 3,626  
**Replacement Cost:** \$296,899  
**Building Percent** 60  
**Good:**  
**Replacement Cost**  
**Less Depreciation:** \$178,100

Building Attributes	
Field	Description
Style	Colonial
Model	Residential
Grade:	Average +10
Stories:	2 Stories
Occupancy	2
Exterior Wall 1	Asbest Shingle
Exterior Wall 2	Pre-Fab Wood
Roof Structure:	Gable/Hip
Roof Cover	Asphalt
Interior Wall 1	Plastered
Interior Wall 2	Drywall/Sheet
Interior Flr 1	Inlaid Sht Gds
Interior Flr 2	Carpet
Heat Fuel	Oil
Heat Type:	Hot Water
AC Type:	None
Total Bedrooms:	6 Bedrooms
Total Bthrms:	3
Total Half Baths:	1
Total Xtra Fixtrs:	
Total Rooms:	12 Rooms
Bath Style:	Average
Kitchen Style:	Average
Whirlpool	
Fireplace(s)	
Fndtn. Level	

## Building Photo



(<http://images.vgsi.com/photos2/ColumbiaCTPhotos//\00\00\81/>)

## Building Layout



Building Sub-Areas (sq ft)			Legend	
Code	Description	Gross Area	Living Area	
FFL	First Floor Living	1,813	1,813	
FUS	Upper Story, Finished	1,813	1,813	
FOP	Porch, Open, Finished	48	0	
UAT	Attic, Unfinished	999	0	
UBM	Basement, Unfinished	804	0	
		5,477	3,626	

## Extra Features

Extra Features				Legend
Code	Description	Size	Value	Bldg #
XKIT	Extra Kitchen	1 UNITS	\$700	1

## Land

### Land Use

### Land Line Valuation

**Use Code** 1015  
**Description** Single Fam W/ In-Law  
**Zone** LCR  
**Neighborhood** 11  
**Alt Land Appr Category** No

**Size (Acres)** 26.27  
**Frontage** 1054  
**Depth** 0  
**Assessed Value** \$39,820  
**Appraised Value** \$172,700

### Outbuildings

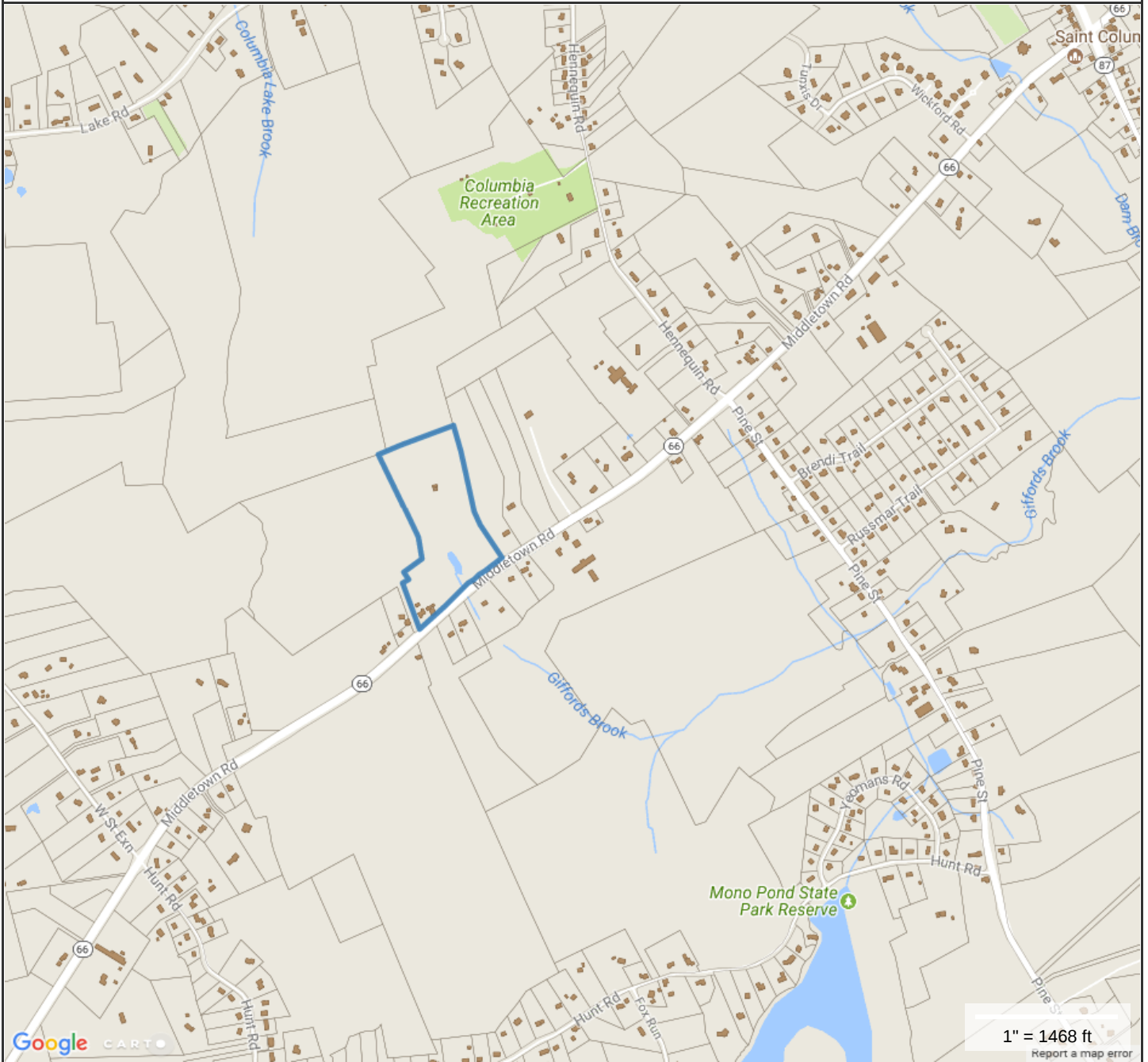
Outbuildings						<u>Legend</u>
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
SHD1	Shed Frame			180 S.F.	\$1,300	1
SHD1	Shed Frame			348 S.F.	\$2,400	1
MLK	Milk House			192 S.F.	\$1,600	1
IMP	Implement Shed			544 S.F.	\$3,500	1
FGR1	Garage-Ave			256 S.F.	\$2,400	1
SHD1	Shed Frame			280 S.F.	\$2,000	1
SHD1	Shed Frame			64 S.F.	\$400	1
IMP	Implement Shed			384 S.F.	\$2,500	1

### Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2017	\$194,900	\$172,700	\$367,600
2016	\$194,900	\$172,700	\$367,600
2015	\$188,100	\$172,700	\$360,800

Assessment			
Valuation Year	Improvements	Land	Total
2017	\$136,600	\$39,820	\$176,420
2016	\$136,600	\$39,820	\$176,420
2015	\$131,800	\$38,200	\$170,000

# CT33XC014



**Property Information**

**Property ID** 09013030-028-019  
**Location** 330 RT 66 SOUTH  
**Owner** PEKARSKI JOHN & M  
 JEANETTE



**MAP FOR REFERENCE ONLY  
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CRCOG makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.



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

SPRINT Existing Facility

Site ID: CT33XC014

Columbia/Nextel  
330 Route 66  
Columbia, CT 06237

**June 12, 2018**

**EBI Project Number: 6218004307**

Site Compliance Summary	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general population allowable limit:	<b>9.63 %</b>





June 12, 2018

SPRINT

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

## Emissions Analysis for Site: **CT33XC014 – Columbia/Nextel**

EBI Consulting was directed to analyze the proposed SPRINT facility located at **330 Route 66, Columbia, CT**, for the purpose of determining whether the emissions from the Proposed SPRINT Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The number of  $\mu\text{W}/\text{cm}^2$  calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general population may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general population would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

General population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ( $\mu\text{W}/\text{cm}^2$ ). The general population exposure limits for the 850 MHz Band is approximately  $567 \mu\text{W}/\text{cm}^2$ . The general population exposure limit for the 1900 MHz (PCS) and 2500 MHz (BRS) bands is  $1000 \mu\text{W}/\text{cm}^2$ . Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.



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

Additional details can be found in FCC OET 65.

## CALCULATIONS

Calculations were done for the proposed SPRINT Wireless antenna facility located at **330 Route 66, Columbia, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since SPRINT is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

- 1) 1 CDMA channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.
- 2) 2 LTE channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 50 Watts per Channel.
- 3) 5 CDMA channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 16 Watts per Channel.
- 4) 2 LTE channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.
- 5) 8 LTE channels (2500 MHz (BRS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.



- 6) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 7) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 8) The antennas used in this modeling are the **Commscope NNVV-65B-R4 and the RFS APXVTM14-ALU-I20** for transmission in the 850 MHz, 1900 MHz (PCS) and 2500 MHz (BRS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 9) The antenna mounting height centerlines of the proposed antennas are **108 feet** above ground level (AGL) for **Sector A**, **108 feet** above ground level (AGL) for **Sector B** and **108 feet** above ground level (AGL) for Sector C.
- 10) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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



## SPRINT Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	<b>1</b>	Antenna #:	<b>1</b>	Antenna #:	<b>1</b>
Make / Model:	Commscope NNVV-65B-R4	Make / Model:	Commscope NNVV-65B-R4	Make / Model:	Commscope NNVV-65B-R4
Gain:	12.75 / 15.05 dBd	Gain:	12.75 / 15.05 dBd	Gain:	12.75 / 15.05 dBd
Height (AGL):	<b>108 feet</b>	Height (AGL):	<b>108 feet</b>	Height (AGL):	<b>108 feet</b>
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	10	Channel Count	10	Channel Count	10
Total TX Power(W):	280 Watts	Total TX Power(W):	280 Watts	Total TX Power(W):	280 Watts
ERP (W):	7,378.61	ERP (W):	7,378.61	ERP (W):	7,378.61
Antenna A1 MPE%	<b>3.15 %</b>	Antenna B1 MPE%	<b>3.15 %</b>	Antenna C1 MPE%	<b>3.15 %</b>
Antenna #:	<b>2</b>	Antenna #:	<b>2</b>	Antenna #:	<b>2</b>
Make / Model:	RFS APXVTM14-ALU-I20	Make / Model:	RFS APXVTM14-ALU-I20	Make / Model:	RFS APXVTM14-ALU-I20
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	<b>108 feet</b>	Height (AGL):	<b>108 feet</b>	Height (AGL):	<b>108 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>2.15 %</b>	Antenna B2 MPE%	<b>2.15 %</b>	Antenna C2 MPE%	<b>2.15 %</b>

Site Composite MPE%	
Carrier	MPE%
SPRINT – Max per sector	<b>5.30 %</b>
Verizon Wireless	2.33 %
Nextel	0.45 %
AT&T	1.55 %
<b>Site Total MPE %:</b>	<b>9.63 %</b>

SPRINT Sector A Total:	5.30 %
SPRINT Sector B Total:	5.30 %
SPRINT Sector C Total:	5.30 %
<b>Site Total:</b>	<b>9.63 %</b>

SPRINT _ Frequency Band / Technology Max Power Values (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	376.73	108	1.30	850 MHz	567	0.24%
Sprint 850 MHz LTE	2	941.82	108	6.51	850 MHz	567	1.15%
Sprint 1900 MHz (PCS) CDMA	5	511.82	108	8.84	1900 MHz (PCS)	1000	0.88%
Sprint 1900 MHz (PCS) LTE	2	1,279.56	108	8.84	1900 MHz (PCS)	1000	0.88%
Sprint 2500 MHz (BRS) LTE	8	778.09	108	21.51	2500 MHz (BRS)	1000	2.15%
						<b>Total:</b>	<b>5.30%</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:	5.30 %
Sector B:	5.30 %
Sector C:	5.30 %
SPRINT Maximum Total (per sector):	5.30 %
Site Total:	9.63 %
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **9.63 %** 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.

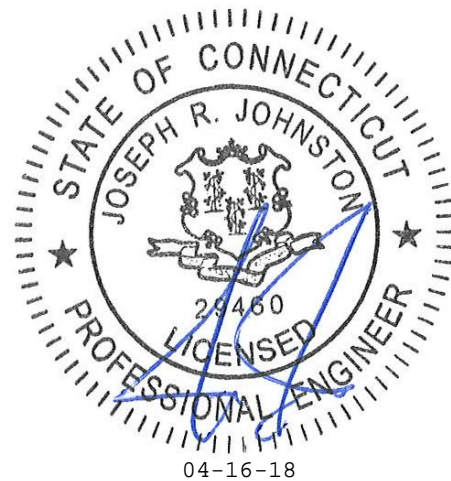
FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100%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

## Mount Analysis Report

April 15, 2018

Sprint Site #	CT33XC014
Infinigy Job Number	526-104
Client	Airosmith
Proposed Carrier	Sprint
Site Location	330 Middletown Rd, Columbia, CT 06237 41° 41' 23.64" N NAD83 72° 19' 30.71" W NAD83
Mount Centerline EL.	108'
Mount Classification	Platform Mount
Structural Usage Ratio	<b>91.5%</b>
Overall Result	<b>Pass</b>

Upon reviewing the results of this analysis, it is our opinion that the structure and anchorage meets the specified TIA code requirements. The mount is therefore deemed adequate to support the existing and proposed loading as listed in this report.



Nathaniel R. Ober, E.I.T.  
Northeast Structural Region Lead

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**Introduction**

Infinigy Engineering has been requested to perform a mount analysis on the existing Sprint mounts. All supporting documents have been obtained from the client and are assumed to be accurate and applicable to this site. The mount was analyzed using RISA-3D Version 16.0.2 structural analysis software.

**Supporting Documentation**

<b>Structural Analysis</b>	ATC Eng #OAA713126_C3_02, dated March 22, 2018
----------------------------	--

**Analysis Code Requirements**

Wind Speed	101 mph (3-Second Gust, $V_{asd}$ ) / 130 mph (3-Second Gust $V_{ult}$ )
Wind Speed w/ ice	50 mph (3-Second Gust) w/ 1" ice
TIA Revision	ANSI/TIA222-G
Adopted IBC	2012 IBC / 2016 Connecticut State Building Code
Structure Class	II
Exposure Category	B
Topographic Category	1
Calculated Crest Height	0 ft

**Conclusion**

Upon reviewing the results of this analysis, it is our opinion that the structure meets the specified TIA code requirements. The mount for the proposed carrier is therefore deemed adequate to support the final loading configuration as listed in this report.

If you have any questions, require additional information, or actual conditions differ from those as detailed in this report please contact me via the information below:

Nathaniel R Ober E.I.T.  
 Northeast Structural Region Lead | Infinigy  
 1033 Watervliet Shaker Road, Albany, NY 12205  
 (O) (518) 690-0790 | (M) (303) 704-0322  
[nober@infinigy.com](mailto:nober@infinigy.com) | [www.infinigy.com](http://www.infinigy.com)



**Final Configuration Loading**

Mount Centerline (ft)	RAD Height (ft)	Horizontal Offset (ft)*	Qty.	Appurtenance	Carrier
108.0	108.0	11.75	3	Commscope NNVV-65B-R4	Sprint
		0.33	3	RFS APXVTM14-ALU-I20	
		0.33	3	Alcatel-Lucent TD-RRH8x20-25	
		0.33/11.75	6	Alcatel-Lucent RRH2x50-08	
		11.75	3	Alcatel-Lucent 1900 MHz 4X45 RRH	

\* Horizontal Offset is defined as the distance from the left most edge of the mount face horizontal when viewed facing the tower

**Structure Usages**

Stand off	91.5	Pass
Face Horizontal	37.9	Pass
Mount Pipe	55.0	Pass
<b>RATING =</b>	<b>91.5</b>	<b>Pass</b>

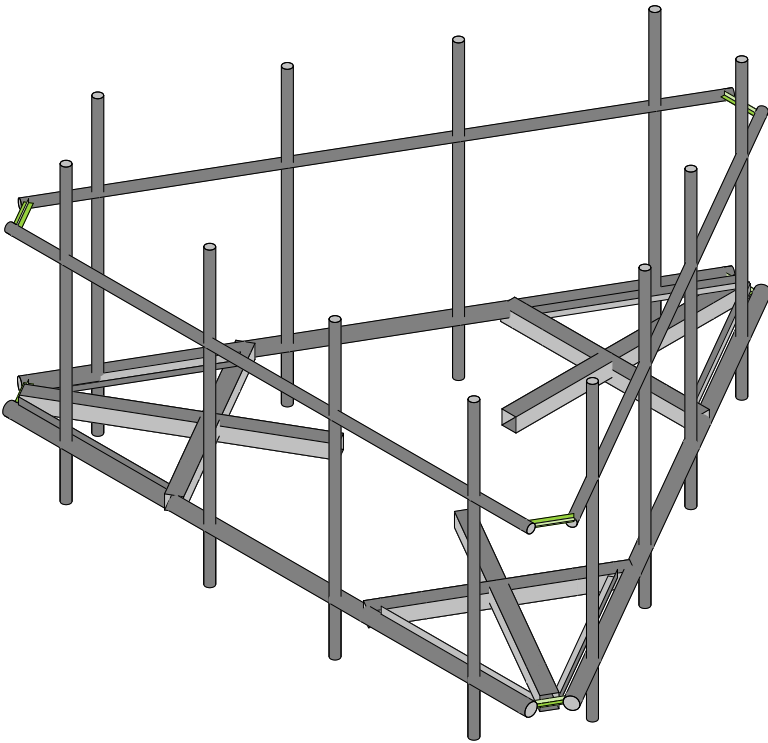
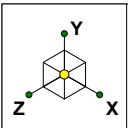
**Assumptions and Limitations**

Our structural calculations are completed assuming all information provided to Infinigy Engineering is accurate and applicable to this site. For the purposes of calculations, we assume an overall structure condition of “like new” and all members and connections to be free of corrosion and/or structural defects. The structure owner and/or contractor shall verify the structure’s condition prior to installation of any proposed equipment. If actual conditions differ from those described in this report Infinigy Engineering should be notified immediately to complete a revised evaluation.

Our evaluation is completed using standard TIA, AISC, ACI, and ASCE methods and procedures. Our structural results are proprietary and should not be used by others as their own. Infinigy Engineering is not responsible for decisions made by others that are or are not based on our supplied assumptions and conclusions.

This report is an evaluation of the proposed carriers mount structure only and does not reflect adequacy of the existing tower, other mounts, or coax mounting attachments. These elements are assumed to be adequate for the purposes of this analysis and are assumed to have been installed per their manufacturer requirements.





Envelope Only Solution

Infinigy	CT33XC014	Apr 15, 2018 at 10:47 AM
NRO		CT33XC014___.r3d
526-104		

## Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N1	N2			HSS 4"x4"x4	Beam	Tube	A53 Gr.B	Typical
2	M2	N4	N3			RIGID	None	None	RIGID	Typical
3	M3	N6	N9			HSS 4"x4"x4	Beam	Tube	A53 Gr.B	Typical
4	M4	N11	N10A			RIGID	None	None	RIGID	Typical
5	M5	N7	N16			HSS 4"x4"x4	Beam	Tube	A53 Gr.B	Typical
6	M6	N18	N17			RIGID	None	None	RIGID	Typical
7	M7	N16A	N15			3" STD Pipe	Beam	Pipe	A53 Gr.B	Typical
8	M11	N28	N27			3" STD Pipe	Beam	Pipe	A53 Gr.B	Typical
9	M15	N40	N39			3" STD Pipe	Beam	Pipe	A53 Gr.B	Typical
10	M19	N51	N50			HSS 4"x4"x4	Beam	Tube	A53 Gr.B	Typical
11	M20	N54	N53			HSS 4"x4"x4	Beam	Tube	A53 Gr.B	Typical
12	M21	N57	N56			HSS 4"x4"x4	Beam	Tube	A53 Gr.B	Typical
13	M22	N56A	N57A			L2"x2"x1/8"	Beam	Single Angle	A36 Gr.36	Typical
14	M23	N58	N59		270	L2"x2"x1/8"	Beam	Single Angle	A36 Gr.36	Typical
15	M24	N61	N62			L2"x2"x1/8"	Beam	Single Angle	A36 Gr.36	Typical
16	M25	N63	N64		270	L2"x2"x1/8"	Beam	Single Angle	A36 Gr.36	Typical
17	M26	N66	N67			L2"x2"x1/8"	Beam	Single Angle	A36 Gr.36	Typical
18	M27	N68	N69		270	L2"x2"x1/8"	Beam	Single Angle	A36 Gr.36	Typical
19	M46	N101	N100			2" STD Pipe	Beam	Pipe	A53 Gr.B	Typical
20	M45	N104	N105			2" STD Pipe	Beam	Pipe	A53 Gr.B	Typical
21	M44	N107	N106			2" STD Pipe	Beam	Pipe	A53 Gr.B	Typical
22	M31	N84	N83			2" STD Pipe	Beam	Pipe	A53 Gr.B	Typical
23	M32	N86	N85			2" STD Pipe	Beam	Pipe	A53 Gr.B	Typical
24	M33	N88	N87			2" STD Pipe	Beam	Pipe	A53 Gr.B	Typical
25	M37	N115A	N116A		180	RIGID	None	None	RIGID	Typical
26	M38	N113A	N114A		180	RIGID	None	None	RIGID	Typical
27	M39	N112A	N111A		90	RIGID	None	None	RIGID	Typical
28	M28	N86A	N85A			2" STD Pipe	Beam	Pipe	A53 Gr.B	Typical
29	M29	N94	N97			2" STD Pipe	Beam	Pipe	A53 Gr.B	Typical
30	M30	N95	N92A			2" STD Pipe	Beam	Pipe	A53 Gr.B	Typical
31	M55	N93	N96			2" STD Pipe	Beam	Pipe	A53 Gr.B	Typical
32	M88	N103	N102			2" STD Pipe	Beam	Pipe	A53 Gr.B	Typical
33	M99	N111	N114			2" STD Pipe	Beam	Pipe	A53 Gr.B	Typical
34	M34	N112	N109			2" STD Pipe	Beam	Pipe	A53 Gr.B	Typical
35	M35	N110	N113			2" STD Pipe	Beam	Pipe	A53 Gr.B	Typical
36	M36	N120	N119			2" STD Pipe	Beam	Pipe	A53 Gr.B	Typical

## Material Takeoff

	Material	Size	Pieces	Length[in]	Weight[K]
1	General				
2	RIGID		6	62.1	0
3	Total General		6	62.1	0
4					
5	Hot Rolled Steel				
6	A36 Gr.36	L2x2x2	6	273.6	0
7	A53 Gr.B	HSS4x4x4	6	369.1	.4
8	A53 Gr.B	PIPE 2.0	15	1458	.4
9	A53 Gr.B	PIPE 3.0	3	450	.3
10	Total HR Steel		30	2550.6	1.1

## Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut..	Area(M...	Surface...
1	Self Weight	DL			-1		24		3	
2	Wind Load AZI 000	WLZ					24		2	
3	Wind Load AZI 090	WLX					24		2	
4	Ice Weight	OL1					24	36	3	
5	Wind + Ice Load AZI 000	OL2					24		1	
6	Wind + Ice Load AZI 090	OL3					24		1	
7	Service Live 1	LL				6				
8	BLC 1 Transient Area Loads	None						48		
9	BLC 2 Transient Area Loads	None						47		
10	BLC 3 Transient Area Loads	None						41		
11	BLC 4 Transient Area Loads	None						48		
12	BLC 5 Transient Area Loads	None						35		
13	BLC 6 Transient Area Loads	None						29		

## Load Combinations

	Description	So...	P...	S...	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..
1	1.4D	Yes	Y		DL	1.4										
2	1.2D + 1.6W AZI 000	Yes	Y		DL	1.2	W...	1.6								
3	1.2D + 1.6W AZI 030	Yes	Y		DL	1.2	W...	1.3...	W...	.8						
4	1.2D + 1.6W AZI 060	Yes	Y		DL	1.2	W...	.8	W...	1.3...						
5	1.2D + 1.6W AZI 090	Yes	Y		DL	1.2			W...	1.6						
6	1.2D + 1.6W AZI 120	Yes	Y		DL	1.2	W...	-.8	W...	1.3...						
7	1.2D + 1.6W AZI 150	Yes	Y		DL	1.2	W...	-1.3...	W...	.8						
8	1.2D + 1.6W AZI 180	Yes	Y		DL	1.2	W...	-1.6								
9	1.2D + 1.6W AZI 210	Yes	Y		DL	1.2	W...	-1.3...	W...	-.8						
10	1.2D + 1.6W AZI 240	Yes	Y		DL	1.2	W...	-.8	W...	-1.3...						
11	1.2D + 1.6W AZI 270	Yes	Y		DL	1.2			W...	-1.6						
12	1.2D + 1.6W AZI 300	Yes	Y		DL	1.2	W...	.8	W...	-1.3...						
13	1.2D + 1.6W AZI 330	Yes	Y		DL	1.2	W...	1.3...	W...	-.8						
14	0.9D + 1.6W AZI 000	Yes	Y		DL	.9	W...	1.6								
15	0.9D + 1.6W AZI 030	Yes	Y		DL	.9	W...	1.3...	W...	.8						
16	0.9D + 1.6W AZI 060	Yes	Y		DL	.9	W...	.8	W...	1.3...						
17	0.9D + 1.6W AZI 090	Yes	Y		DL	.9			W...	1.6						
18	0.9D + 1.6W AZI 120	Yes	Y		DL	.9	W...	-.8	W...	1.3...						
19	0.9D + 1.6W AZI 150	Yes	Y		DL	.9	W...	-1.3...	W...	.8						
20	0.9D + 1.6W AZI 180	Yes	Y		DL	.9	W...	-1.6								
21	0.9D + 1.6W AZI 210	Yes	Y		DL	.9	W...	-1.3...	W...	-.8						
22	0.9D + 1.6W AZI 240	Yes	Y		DL	.9	W...	-.8	W...	-1.3...						
23	0.9D + 1.6W AZI 270	Yes	Y		DL	.9			W...	-1.6						
24	0.9D + 1.6W AZI 300	Yes	Y		DL	.9	W...	.8	W...	-1.3...						
25	0.9D + 1.6W AZI 330	Yes	Y		DL	.9	W...	1.3...	W...	-.8						
26	1.2D + 1.0Di	Yes	Y		DL	1.2	OL1	1								
27	1.2D + 1.0Di + 1.0Wi A...	Yes	Y		DL	1.2	OL1	1	OL2	1						
28	1.2D + 1.0Di + 1.0Wi A...	Yes	Y		DL	1.2	OL1	1	OL2	.866	OL3	.5				
29	1.2D + 1.0Di + 1.0Wi A...	Yes	Y		DL	1.2	OL1	1	OL2	.5	OL3	.866				
30	1.2D + 1.0Di + 1.0Wi A...	Yes	Y		DL	1.2	OL1	1			OL3	1				
31	1.2D + 1.0Di + 1.0Wi A...	Yes	Y		DL	1.2	OL1	1	OL2	-.5	OL3	.866				
32	1.2D + 1.0Di + 1.0Wi A...	Yes	Y		DL	1.2	OL1	1	OL2	-.866	OL3	.5				
33	1.2D + 1.0Di + 1.0Wi A...	Yes	Y		DL	1.2	OL1	1	OL2	-1						
34	1.2D + 1.0Di + 1.0Wi A...	Yes	Y		DL	1.2	OL1	1	OL2	-.866	OL3	-.5				
35	1.2D + 1.0Di + 1.0Wi A...	Yes	Y		DL	1.2	OL1	1	OL2	-.5	OL3	-.866				
36	1.2D + 1.0Di + 1.0Wi A...	Yes	Y		DL	1.2	OL1	1			OL3	-1				
37	1.2D + 1.0Di + 1.0Wi A...	Yes	Y		DL	1.2	OL1	1	OL2	.5	OL3	-.866				
38	1.2D + 1.0Di + 1.0Wi A...	Yes	Y		DL	1.2	OL1	1	OL2	.866	OL3	-.5				

## Load Combinations (Continued)

Description	So...	P...	S...	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..
39	1.2D + 1.5L + 1.0WL (...)	Yes	Y	DL	1.2	LL	1.5	W...	.111					
40	1.2D + 1.5L + 1.0WL (...)	Yes	Y	DL	1.2	LL	1.5	W...	.096	W...	.056			
41	1.2D + 1.5L + 1.0WL (...)	Yes	Y	DL	1.2	LL	1.5	W...	.056	W...	.096			
42	1.2D + 1.5L + 1.0WL (...)	Yes	Y	DL	1.2	LL	1.5			W...	.111			
43	1.2D + 1.5L + 1.0WL (...)	Yes	Y	DL	1.2	LL	1.5	W...	-.056	W...	.096			
44	1.2D + 1.5L + 1.0WL (...)	Yes	Y	DL	1.2	LL	1.5	W...	-.096	W...	.056			
45	1.2D + 1.5L + 1.0WL (...)	Yes	Y	DL	1.2	LL	1.5	W...	-.111					
46	1.2D + 1.5L + 1.0WL (...)	Yes	Y	DL	1.2	LL	1.5	W...	-.096	W...	-.056			
47	1.2D + 1.5L + 1.0WL (...)	Yes	Y	DL	1.2	LL	1.5	W...	-.056	W...	-.096			
48	1.2D + 1.5L + 1.0WL (...)	Yes	Y	DL	1.2	LL	1.5				W...	-.111		
49	1.2D + 1.5L + 1.0WL (...)	Yes	Y	DL	1.2	LL	1.5	W...	.056	W...	-.096			
50	1.2D + 1.5L + 1.0WL (...)	Yes	Y	DL	1.2	LL	1.5	W...	.096	W...	-.056			

## Envelope Joint Reactions

Joint	X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC		
1	N1	max	2204.551	4	4556.571	35	1936.058	3	772.6	15	1677.477	20	9594.915	35
2		min	-2054.63	22	-325.517	16	-1845.618	21	-5513.657	34	-1685.991	2	-1079.148	16
3	N6	max	1141.93	17	3716.508	27	2466.713	14	8657.031	27	1778.278	10	812.347	11
4		min	-1148.907	11	-484.002	20	-2635.559	8	-1688.755	20	-1766.314	16	-811.601	5
5	N7	max	2023.731	18	2865.309	31	1408.514	13	1149.396	25	287.89	25	1768.316	24
6		min	-2166.016	12	-619.614	24	-1330.564	19	-3216.563	32	-292.161	7	-5370.128	31
7	Totals:	max	5135.705	17	10116.818	29	5266.603	2						
8		min	-5135.706	11	2160.687	22	-5266.603	20						

## Envelope AISC 14th(360-10): LRFD Steel Code Checks

Member	Shape	Code Check	Lo.....	Shear C...	Loc[in]...	LC	phi*Pnc...	phi*Pnt...	phi*...	phi*...	Eqn		
1	M1	HSS4x...	.915	0	.177	0	y	37	96102....	106155	1231...	1231....	H1-...
2	M3	HSS4x...	.719	0	.142	0	y	37	96101....	106155	1231...	1231....	H1-...
3	M55	PIPE 2.0	.550	68.....	.094	68.25		13	17855....	32130	1871...	1871....	H1-...
4	M5	HSS4x...	.514	0	.118	0	y	33	96101....	106155	1231...	1231....	H1-...
5	M29	PIPE 2.0	.500	68.....	.073	68.25		11	17855....	32130	1871...	1871....	H1-...
6	M46	PIPE 2.0	.484	68.....	.100	68.25		7	17855....	32130	1871...	1871....	H1-...
7	M30	PIPE 2.0	.463	15...3	.070	15.75		3	17855....	32130	1871...	1871....	H1-...
8	M88	PIPE 2.0	.454	15...9	.064	15.75		9	17855....	32130	1871...	1871....	H1-...
9	M35	PIPE 2.0	.406	68.....	.085	68.25		5	17855....	32130	1871...	1871....	H1-...
10	M44	PIPE 2.0	.402	68.....	.065	68.25		9	17855....	32130	1871...	1871....	H1-...
11	M45	PIPE 2.0	.397	15.....	.051	15.75		12	17855....	32130	1871...	1871....	H1-...
12	M34	PIPE 2.0	.395	15...7	.051	15.75		6	17855....	32130	1871...	1871....	H1-...
13	M28	PIPE 2.0	.389	15...5	.051	15.75		6	17855....	32130	1871...	1871....	H1-...
14	M36	PIPE 2.0	.388	15.....	.050	15.75		6	17855....	32130	1871...	1871....	H1-...
15	M32	PIPE 2.0	.379	17.....	.314	3.125		7	6296.43	32130	1871...	1871....	H1-...
16	M99	PIPE 2.0	.348	68.....	.068	68.25		28	17855....	32130	1871...	1871....	H1-...
17	M31	PIPE 2.0	.346	13.....	.352	146....		2	6296.43	32130	1871...	1871....	H1-...
18	M11	PIPE 3.0	.322	48.....	.109	48.4...		7	28254....	65205	5748...	5748....	H1-...
19	M7	PIPE 3.0	.308	10.....	.123	101....		38	28254....	65205	5748...	5748....	H1-...
20	M20	HSS4x...	.306	27.....	.141	2.914	y	37	99056....	106155	1231...	1231....	H1-...
21	M33	PIPE 2.0	.299	17.....	.334	3.125		11	6296.43	32130	1871...	1871....	H1-...
22	M21	HSS4x...	.261	27.....	.120	2.914	y	29	99056....	106155	1231...	1231....	H1-...
23	M24	L2x2x2	.245	45.....	.017	45.6...	y	37	7549.8	15908.4	402...	836....	H2-1
24	M25	L2x2x2	.241	45.....	.017	45.6...	z	33	7549.8	15908.4	402...	835....	H2-1
25	M15	PIPE 3.0	.240	48.....	.109	3.125		35	28254....	65205	5748...	5748....	H1-...
26	M19	HSS4x...	.209	27.....	.098	2.914	y	33	99056....	106155	1231...	1231....	H1-...
27	M27	L2x2x2	.206	45.....	.016	45.6...	z	37	7549.8	15908.4	402...	844....	H2-1
28	M26	L2x2x2	.205	45.....	.016	45.6...	y	29	7549.8	15908.4	402...	832....	H2-1

**Envelope AISC 14th(360-10): LRFD Steel Code Checks (Continued)**

Member	Shape	Code Check	Lo...	Shear C...	Loc[in]...	LC	phi*Pnc...	phi*Pnt ...	phi*...	phi*...	Eqn	
29	M22	L2x2x2	.167	45....	.014	45.6...y	33	7549.8	15908.4	402....	852....	H2-1
30	M23	L2x2x2	.164	45....	.014	45.6...z	29	7549.8	15908.4	402....	844....	H2-1



**AMERICAN TOWER®**  
CORPORATION

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## Structural Analysis Report

**Structure** : 148 ft Monopole  
**ATC Site Name** : Columbia Central, CT  
**ATC Site Number** : 302528  
**Engineering Number** : OAA713126\_C3\_02  
**Proposed Carrier** : Sprint Nextel  
**Carrier Site Name** : Columbia / Nextel  
**Carrier Site Number** : CT33XC014  
**Site Location** : 330 Middletown Road  
Columbia, CT 06237-1528  
41.689900,-72.325200  
**County** : Tolland  
**Date** : March 22, 2018  
**Max Usage** : 65%  
**Result** : Pass

Prepared By:  
Christophe S. Quenum  
Structural Engineer I

Reviewed By:

**COA: PEC.0001553**





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## Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 148 ft monopole to reflect the change in loading by Sprint Nextel.

## Supporting Documents

<b>Tower Drawings</b>	Summit Manufacturing Design #13998, dated May 2, 2001
<b>Foundation Drawing</b>	Summit Manufacturing Design #13998, dated April 30, 2001
<b>Geotechnical Report</b>	Tectonic Engineering Consultants Report #1170-C878B, dated January 26, 2001

## Analysis

The tower was analyzed using American Tower Corporation's tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

<b>Basic Wind Speed:</b>	101 mph (3-Second Gust $V_{asd}$ ) / 130 mph (3-second Gust $V_{ult}$ )
<b>Basic Wind Speed w/ Ice:</b>	50 mph (3-Second Gust) w/ 1" radial ice concurrent
<b>Code:</b>	ANSI/TIA-222-G / 2012 IBC / 2016 Connecticut State Building Code
<b>Structure Class:</b>	II
<b>Exposure Category:</b>	B
<b>Topographic Category:</b>	1
<b>Crest Height:</b>	0 ft
<b>Spectral Response:</b>	$S_s = 0.17, S_1 = 0.06$
<b>Site Class:</b>	D - Stiff Soil

## Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact American Tower via email at [Engineering@americantower.com](mailto:Engineering@americantower.com). Please include the American Tower site name, site number, and engineering number in the subject line for any questions.



**Existing and Reserved Equipment**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
146.0	146.0	6	LGP LGP21903	Low Profile Platform	(12) 1 5/8" Coax (2) 0.78" 8 AWG 6 (1) 0.39" Cable	AT&T Mobility
		6	Powerwave LGP21401			
		1	Raycap DC6-48-60-18-8F			
		3	Ericsson RRUS-11			
		6	Powerwave 7770.00			
		3	KMW AM-X-CD-16-65-00T-RET			
137.0	137.0	6	RFS FD9R6004/2C-3L	Low Profile Platform	(12) 1 5/8" Coax	Verizon
		3	Antel BXA-171063-8CF-EDIN-X			
		6	Antel LPA-80063/4CF			
		3	Antel BXA-70063/6CF			
124.0	124.0	12	Decibel DB844H90E-XY	Low Profile Platform	(12) 1 1/4" Coax	Sprint Nextel
108.0	-	-	-	Low Profile Platform	(6) 1 1/4" Coax	
30.0	30.0	1	GPS	Stand-Off	(1) 1/2" Coax	Verizon
		1	GPS			

**Equipment to be Removed**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
108.0	108.0	12	Andrew DB980H90E-M	-	(6) 1 1/4" Coax	Sprint Nextel

**Proposed Equipment**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
108.0	108.0	6	Alcatel-Lucent RRH2x50-08	Low Profile Platform	(4) 1 1/4" Hybriflex	Sprint Nextel
		3	Alcatel-Lucent 1900MHz 4x45 RRH			
		3	Alcatel-Lucent TD-RRH8x20-25 w/ Solar Shield			
		3	RFS APXVTM14-ALU-I20			
		3	Commscope NNVV-65B-R4			

<sup>1</sup>Mount elevation is defined as height above bottom of steel structure to the bottom of mount, RAD elevation is defined as center of antenna above ground level (AGL).

Install proposed coax inside the pole shaft.



**Structure Usages**

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	47%	Pass
Shaft	56%	Pass
Base Plate	41%	Pass
Flanges	65%	Pass

**Foundations**

Reaction Component	Original Design Reactions	Factored Design Reactions*	Analysis Reactions	% of Design
Moment (Kips-Ft)	3,316.0	4,476.6	2,378.0	53%
Shear (Kips)	35.0	47.3	22.9	49%

\* The design reactions are factored by 1.35 per ANSI/TIA-222-G, Sec. 15.5.1

The structure base reactions resulting from this analysis are acceptable when compared to those shown on the original structure drawings, therefore no modification or reinforcement of the foundation will be required.

**Deflection and Sway\***

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
108.0	Alcatel-Lucent RRH2x50-08	Sprint Nextel	0.734	0.767
	Alcatel-Lucent 1900 MHz 4x45 RRH			
	Alcatel-Lucent TD-RRH8x20-25 w/ Solar Shield			
	RFS APXVTM14-ALU-I20			
	Commscope NNVV-65B-R4			

\*Deflection and Sway was evaluated considering a design wind speed of 60 mph (3-Second Gust) per ANSI/TIA-222-G



## **Standard Conditions**

All engineering services performed by A.T. Engineering Service, PLLC are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

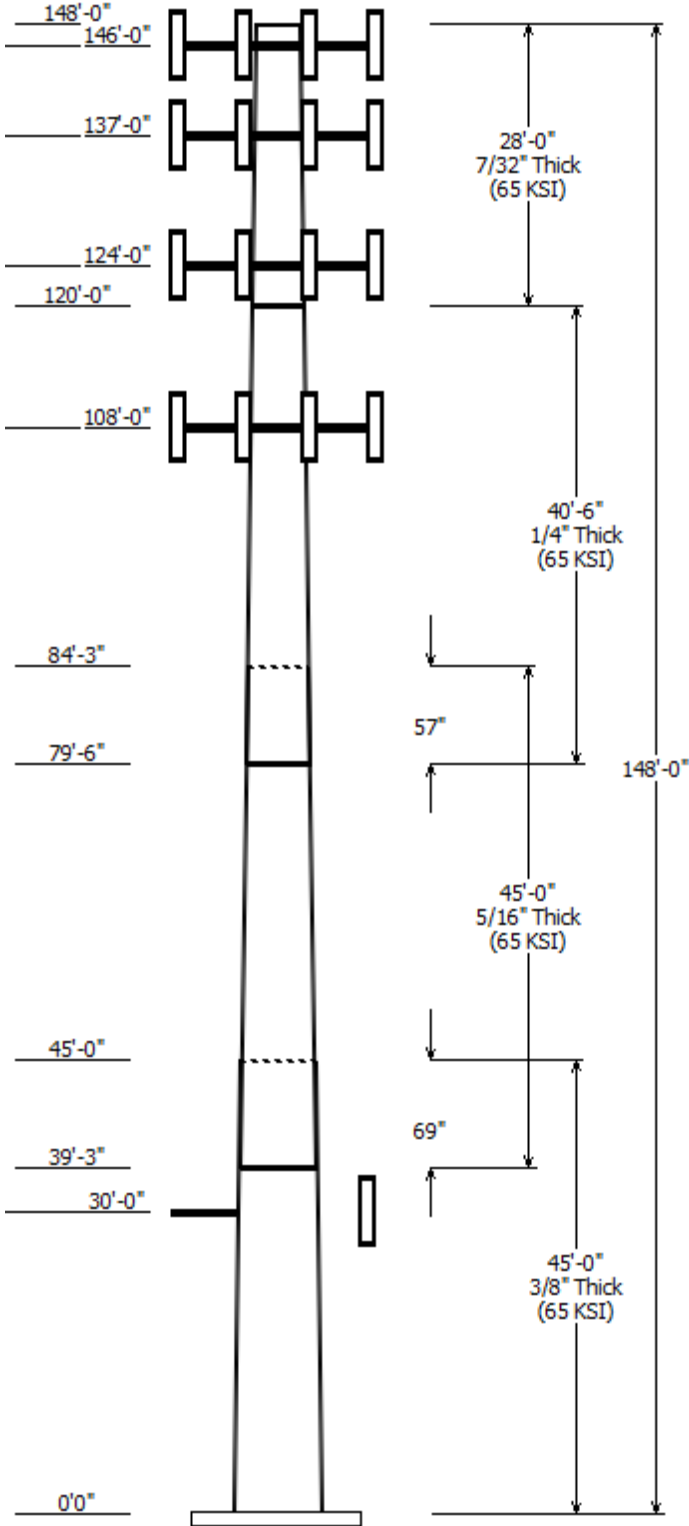
- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete.

All assets of American Tower Corporation, its affiliates and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

Unless explicitly agreed by both the client and A.T. Engineering Service, PLLC, all services will be performed in accordance with the current revision of ANSI/TIA-222.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.



Job Information	
Pole : 302528	Code: ANSI/TIA-222-G
Location : Columbia Central, CT	
Description : 148' Summit Monopole	
Client : SPRINT NEXTEL	Struct Class : II
Shape : 18 Sides	Exposure : B
Height : 148.00 (ft)	Topo : 1
Base Elev (ft): 0.00	
Taper: 0.181424(in/ft)	

Sections Properties							
Shaft Section	Length (ft)	Diameter (in)		Thick (in)	Joint Type	Overlap Length (in)	Steel Grade
		Top	Bottom				
1	45.000	43.56	51.72	0.375		0.000	18 Sides 65
2	45.000	37.06	45.23	0.313	Slip Joint	69.000	18 Sides 65
3	40.500	31.08	38.42	0.250	Slip Joint	57.000	18 Sides 65
4	28.000	26.00	31.08	0.219	Butt Joint	0.000	18 Sides 65

Discrete Appurtenance			
Attach Elev (ft)	Force Elev (ft)	Qty	Description
146.000	146.000	1	Round Low Profile Platform
146.000	146.000	3	KMW AM-X-CD-16-65-00T-RET
146.000	146.000	3	Ericsson RRUS-11
146.000	146.000	6	Powerwave Allgon 7770.00
146.000	146.000	1	Raycap DC6-48-60-18-8F
146.000	146.000	6	Powerwave Allgon LGP21401
146.000	146.000	6	LGP Allgon LGP21903
137.000	137.000	1	Round Low Profile Platform
137.000	137.000	3	Antel BXA-70063/6CF_
137.000	137.000	6	Antel LPA-80063/4CF
137.000	137.000	3	Antel BXA-171063-8CF-EDIN-X
137.000	137.000	6	RFS FD9R6004/2C-3L
124.000	124.000	1	Round Low Profile Platform
124.000	124.000	12	Decibel DB844H90E-XY
108.000	108.000	3	Commscope NNVV-65B-R4
108.000	108.000	3	Alcatel-Lucent TD-RRH8x20-25
108.000	108.000	3	Alcatel-Lucent 1900 MHz 4x45
108.000	108.000	6	Alcatel-Lucent RRH2x50-08
108.000	108.000	3	RFS APXVTM14-ALU-I20
108.000	108.000	1	Round Low Profile Platform
30.000	30.000	1	Stand-Off
30.000	30.000	1	GPS
30.000	30.000	1	GPS

Linear Appurtenance			
Elev (ft)		Description	Exposed To Wind
From	To		
0.000	30.000	1/2" Coax	No
0.000	108.0	1 1/4" Coax	No
0.000	108.0	1 1/4" Hybriflex	No
0.000	124.0	1 1/4" Coax	No
0.000	137.0	1 5/8" Coax	No
0.000	146.0	0.39" (10 mm)	No
0.000	146.0	0.78" (19.7mm) 8	No
0.000	146.0	1 5/8" Coax	No

Load Cases	
1.2D + 1.6W	101 mph with No Ice
0.9D + 1.6W	101 mph with No Ice (Reduced DL)

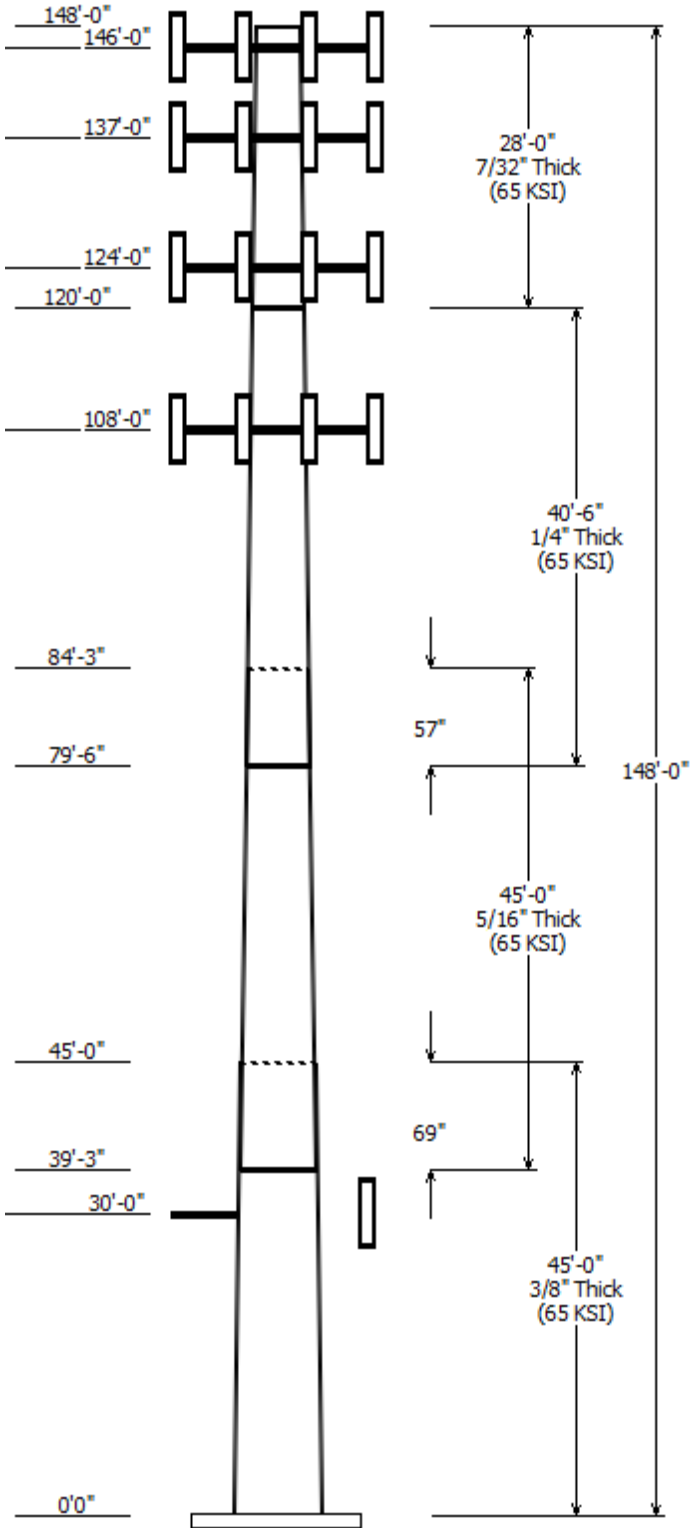
1.2D + 1.0Di + 1.0Wi	50 mph with 1.00 in Radial Ice
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Lateral
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Modal
1.0D + 1.0W	Serviceability 60 mph

### Reactions

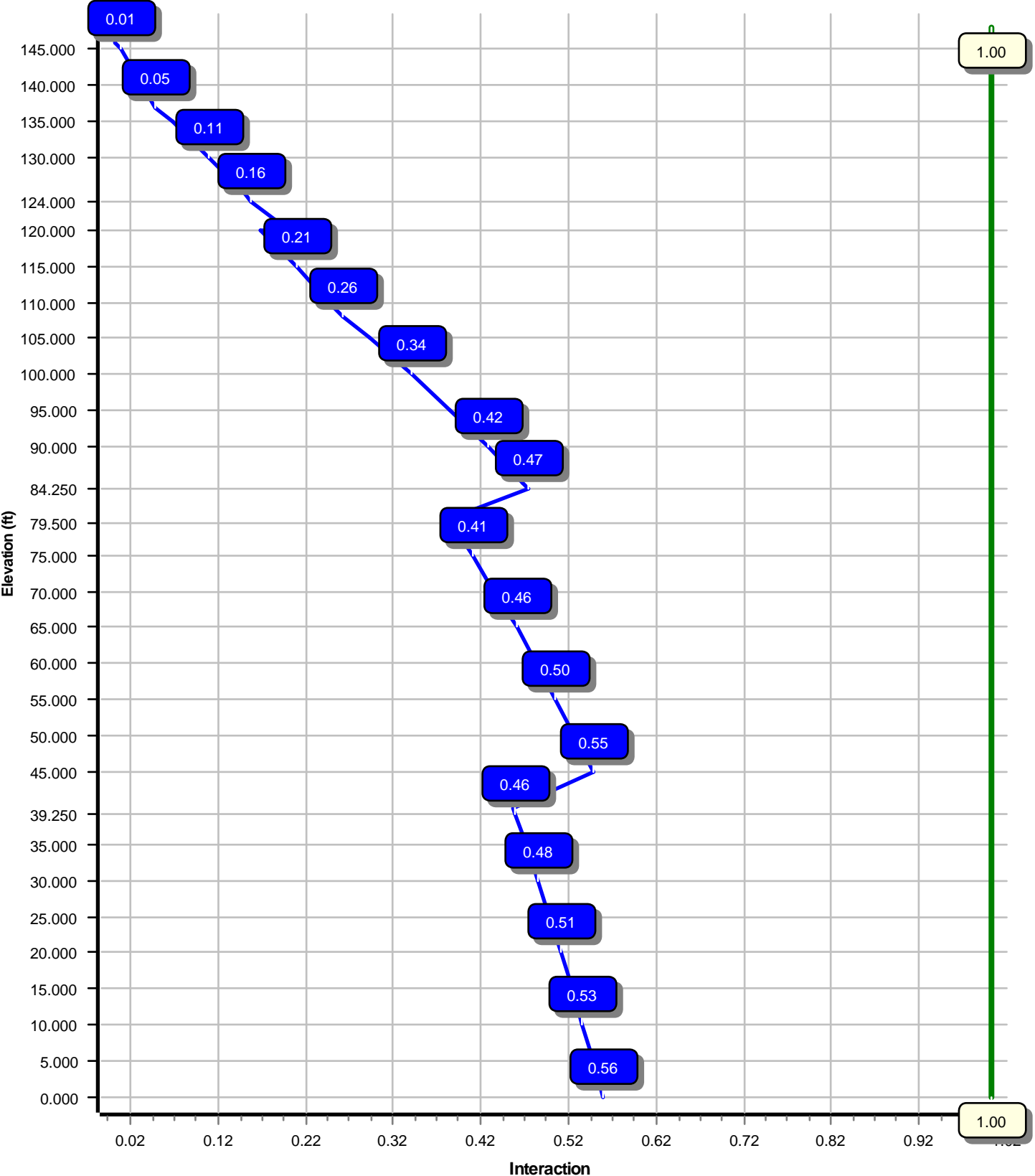
Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.6W	2377.95	22.92	40.16
0.9D + 1.6W	2354.20	22.91	30.11
1.2D + 1.0Di + 1.0Wi	676.48	6.43	69.41
(1.2 + 0.2Sds) * DL + E ELFM	157.33	1.34	39.94
(1.2 + 0.2Sds) * DL + E EMAM	204.14	1.77	39.94
(0.9 - 0.2Sds) * DL + E ELFM	155.42	1.34	27.85
(0.9 - 0.2Sds) * DL + E EMAM	201.49	1.77	27.85
1.0D + 1.0W	521.32	5.05	33.49

### Dish Deflections

Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
	0.00	0.000	0.000



Load Case : 1.2D + 1.6W  
Max Ratio 55.61% at 0.0 ft





Site Number: 302528

Code: ANSI/TIA-222-G

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Site Name: Columbia Central, CT

Engineering Number: OAA713126\_C3\_02

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Customer: SPRINT NEXTEL

Analysis Parameters

Location :	TOLLAND County, CT	Height (ft) :	148
Code :	ANSI/TIA-222-G	Base Diameter (in) :	51.73
Shape :	18 Sides	Top Diameter (in) :	26.00
Pole Type :	Taper	Taper (in/ft) :	0.181
Pole Manufacturer :	Summit Manufacturing	Rotation (deg) :	0.00

Ice & Wind Parameters

Structure Class:	II	Design Wind Speed Without Ice:	101 mph
Exposure Category:	B	Design Wind Speed With Ice:	50 mph
Topographic Category:	1	Operational Wind Speed:	60 mph
Crest Height:	0 ft	Design Ice Thickness:	1.00 in

Seismic Parameters

Analysis Method:	Equivalent Modal Analysis & Equivalent Lateral Force Methods		
Site Class:	D - Stiff Soil		
Period Based on Rayleigh Method (sec):	2.16		
T <sub>L</sub> (sec):	6	p:	1.3
S <sub>s</sub> :	0.175	S <sub>1</sub> :	0.062
F <sub>a</sub> :	1.600	F <sub>v</sub> :	2.400
S <sub>ds</sub> :	0.187	S <sub>d1</sub> :	0.099
		C <sub>s</sub> :	0.031
		C <sub>s</sub> Max:	0.031
		C <sub>s</sub> Min:	0.030

Load Cases

1.2D + 1.6W	101 mph with No Ice
0.9D + 1.6W	101 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 1.00 in Radial Ice
(1.2 + 0.2S <sub>ds</sub> ) * DL + E ELFM	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2S <sub>ds</sub> ) * DL + E EMAM	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2S <sub>ds</sub> ) * DL + E ELFM	Seismic (Reduced DL) Equivalent Lateral Forces Method
(0.9 - 0.2S <sub>ds</sub> ) * DL + E EMAM	Seismic (Reduced DL) Equivalent Modal Analysis Method
1.0D + 1.0W	Serviceability 60 mph

Site Number: 302528

Code: ANSI/TIA-222-G

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Site Name: Columbia Central, CT

Engineering Number: OAA713126\_C3\_02

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Customer: SPRINT NEXTEL

**Shaft Section Properties**

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Joint Len (in)	Weight (lb)	Bottom						Top						
							Dia (in)	Elev (ft)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	Taper (in/ft)
1-18	45.000	0.3750	65		0.00	8,615	51.72	0.00	61.12	20361.7	22.56	137.94	43.56	45.00	51.40	12112.2	18.72	116.16	0.181424
2-18	45.000	0.3125	65	Slip	69.00	6,202	45.23	39.25	44.55	11356.3	23.76	144.74	37.06	84.25	36.45	6221.3	19.15	118.61	0.181424
3-18	40.500	0.2500	65	Slip	57.00	3,773	38.42	79.50	30.29	5578.4	25.34	153.71	31.08	120.00	24.46	2937.6	20.16	124.32	0.181424
4-18	28.000	0.2187	65	Butt	0.00	1,873	31.08	120.00	21.42	2577.7	23.29	142.11	26.00	148.00	17.90	1502.8	19.20	118.88	0.181424
Shaft Weight						20,463													

**Discrete Appurtenance Properties**

Attach Elev (ft)	Description	Qty	Distance From Face (ft)	Vert Ecc (ft)	Weight (lb)	No Ice EPAa (sf)	Orientation Factor
146.00	Ericsson RRUS-11	3	0.000	0.000	55.00	3.790	0.67
146.00	KMW AM-X-CD-16-65-00T-RET	3	0.000	0.000	48.50	8.020	0.67
146.00	LGP Allgon LGP21903	6	0.000	0.000	5.50	0.270	0.50
146.00	Powerwave Allgon 7770.00	6	0.000	0.000	35.00	5.510	0.65
146.00	Powerwave Allgon LGP21401	6	0.000	0.000	14.10	1.100	0.50
146.00	Raycap DC6-48-60-18-8F	1	0.000	0.000	31.80	1.470	0.67
146.00	Round Low Profile Platform	1	0.000	0.000	1500.00	21.700	1.00
137.00	Antel BXA-171063-8CF-EDIN-X	3	0.000	0.000	10.50	2.944	0.71
137.00	Antel BXA-70063/6CF_	3	0.000	0.000	17.00	7.570	0.65
137.00	Antel LPA-80063/4CF_	6	0.000	0.000	20.00	6.140	0.76
137.00	RFS FD9R6004/2C-3L	6	0.000	0.000	2.60	0.370	0.50
137.00	Round Low Profile Platform	1	0.000	0.000	1500.00	21.700	1.00
124.00	Decibel DB844H90E-XY	12	0.000	0.000	14.00	3.610	0.74
124.00	Round Low Profile Platform	1	0.000	0.000	1500.00	21.700	1.00
108.00	Alcatel-Lucent 1900 MHz 4x45 R	3	0.000	0.000	60.00	2.320	0.67
108.00	Alcatel-Lucent RRH2x50-08	6	0.000	0.000	52.90	1.700	0.50
108.00	Alcatel-Lucent TD-RRH8x20-25 w	3	0.000	0.000	70.00	4.050	0.67
108.00	Commscope NNVV-65B-R4	3	0.000	0.000	77.40	12.270	0.64
108.00	RFS APXVTM14-ALU-I20	3	0.000	0.000	56.20	6.340	0.66
108.00	Round Low Profile Platform	1	0.000	0.000	1500.00	21.700	1.00
30.00	GPS	1	0.000	0.000	10.00	1.000	1.00
30.00	GPS	1	0.000	0.000	10.00	1.000	1.00
30.00	Stand-Off	1	0.000	0.000	100.00	3.000	1.00
Totals	Num Loadings:23	80			8284.20		

**Linear Appurtenance Properties**

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Diameter (in)	Coax Weight (lb/ft)	Projected Width Flat (in)	Exposed To Wind	Carrier
0.00	146.00	1	0.39" (10 mm) Cable	0.39	0.07	N	0.00	AT&T Mobility
0.00	146.00	2	0.78" (19.7mm) 8	0.78	0.59	N	0.00	AT&T Mobility
0.00	146.00	12	1 5/8" Coax	1.98	0.82	N	0.00	AT&T Mobility
0.00	137.00	12	1 5/8" Coax	1.98	0.82	N	0.00	Verizon
0.00	124.00	12	1 1/4" Coax	1.55	0.63	N	0.00	Sprint Nextel
0.00	108.00	6	1 1/4" Coax	1.55	0.63	N	0.00	Sprint Nextel
0.00	108.00	4	1 1/4" Hybriflex Cable	1.54	1.00	N	0.00	Sprint Nextel
0.00	30.00	1	1/2" Coax	0.63	0.15	N	0.00	Verizon

Segment Properties (Max Len : 5. ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	F'y (ksi)	S (in <sup>3</sup> )	Z (in <sup>3</sup> )	Weight (lb)
0.00		0.3750	51.726	61.118	20,361.7	22.56	137.94	74.9	775.3	0.0	0.0
5.00		0.3750	50.819	60.038	19,301.6	22.13	135.52	75.4	748.1	0.0	1,030.7
10.00		0.3750	49.911	58.959	18,278.9	21.71	133.10	75.9	721.3	0.0	1,012.3
15.00		0.3750	49.004	57.879	17,293.0	21.28	130.68	76.4	695.1	0.0	993.9
20.00		0.3750	48.097	56.799	16,343.2	20.85	128.26	76.9	669.3	0.0	975.6
25.00		0.3750	47.190	55.720	15,428.9	20.43	125.84	77.4	644.0	0.0	957.2
30.00		0.3750	46.283	54.640	14,549.2	20.00	123.42	77.9	619.2	0.0	938.8
35.00		0.3750	45.376	53.560	13,703.7	19.57	121.00	78.4	594.8	0.0	920.5
39.25	Bot - Section 2	0.3750	44.605	52.643	13,011.3	19.21	118.95	78.8	574.5	0.0	767.9
40.00		0.3750	44.469	52.481	12,891.6	19.15	118.58	78.9	571.0	0.0	247.7
45.00	Top - Section 1	0.3125	44.187	43.516	10,583.3	23.17	141.40	74.1	471.7	0.0	1,631.7
50.00		0.3125	43.280	42.616	9,940.3	22.66	138.49	74.8	452.4	0.0	732.7
55.00		0.3125	42.372	41.717	9,323.9	22.15	135.59	75.4	433.4	0.0	717.4
60.00		0.3125	41.465	40.817	8,733.6	21.63	132.69	76.0	414.8	0.0	702.1
65.00		0.3125	40.558	39.917	8,168.7	21.12	129.79	76.6	396.7	0.0	686.8
70.00		0.3125	39.651	39.018	7,628.7	20.61	126.88	77.2	378.9	0.0	671.5
75.00		0.3125	38.744	38.118	7,113.0	20.10	123.98	77.8	361.6	0.0	656.2
79.50	Bot - Section 3	0.3125	37.928	37.308	6,669.3	19.64	121.37	78.3	346.3	0.0	577.5
80.00		0.3125	37.837	37.218	6,621.1	19.59	121.08	78.4	344.7	0.0	114.9
84.25	Top - Section 2	0.2500	37.566	29.609	5,209.1	24.73	150.26	72.3	273.1	0.0	965.3
85.00		0.2500	37.430	29.501	5,152.3	24.64	149.72	72.4	271.1	0.0	75.4
90.00		0.2500	36.523	28.781	4,784.3	24.00	146.09	73.2	258.0	0.0	495.8
95.00		0.2500	35.615	28.061	4,434.3	23.36	142.46	73.9	245.2	0.0	483.6
100.0		0.2500	34.708	27.342	4,101.7	22.72	138.83	74.7	232.8	0.0	471.3
105.0		0.2500	33.801	26.622	3,786.3	22.08	135.20	75.4	220.6	0.0	459.1
108.0		0.2500	33.257	26.190	3,605.0	21.69	133.03	75.9	213.5	0.0	269.6
110.0		0.2500	32.894	25.902	3,487.4	21.44	131.58	76.2	208.8	0.0	177.3
115.0		0.2500	31.987	25.182	3,204.7	20.80	127.95	76.9	197.3	0.0	434.6
120.0	Top - Section 3	0.2500	31.080	24.463	2,937.6	20.16	124.32	77.7	186.2	0.0	422.3
120.0	Bot - Section 4	0.2187	31.080	21.422	2,577.7	23.29	142.11	74.0	163.4	0.0	
124.0		0.2187	30.354	20.918	2,400.1	22.71	138.79	74.7	155.7	0.0	288.1
125.0		0.2187	30.173	20.792	2,357.0	22.56	137.96	74.9	153.9	0.0	71.0
130.0		0.2187	29.266	20.162	2,149.3	21.83	133.82	75.7	144.6	0.0	348.4
135.0		0.2187	28.359	19.533	1,954.1	21.10	129.67	76.6	135.7	0.0	337.7
137.0		0.2187	27.996	19.281	1,879.5	20.81	128.01	76.9	132.2	0.0	132.1
140.0		0.2187	27.451	18.903	1,771.2	20.37	125.52	77.4	127.1	0.0	194.9
145.0		0.2187	26.544	18.273	1,600.0	19.64	121.37	78.3	118.7	0.0	316.3
146.0		0.2187	26.363	18.147	1,567.2	19.49	120.54	78.5	117.1	0.0	62.0
148.0		0.2187	26.000	17.896	1,502.8	19.20	118.88	78.8	113.8	0.0	122.6
											20,462.6

<b>Load Case:</b> 1.2D + 1.6W	101 mph with No Ice	24 Iterations
Gust Response Factor :1.10		Wind Importance Factor :1.00
Dead Load Factor :1.20		
Wind Load Factor :1.60		

**Applied Segment Forces Summary**

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		215.5	0.0					0.0	0.0	215.5	0.0	0.0	0.0
5.00		427.2	1,236.8					0.0	218.5	427.2	1,455.3	0.0	0.0
10.00		419.5	1,214.8					0.0	218.5	419.5	1,433.3	0.0	0.0
15.00		411.9	1,192.7					0.0	218.5	411.9	1,411.2	0.0	0.0
20.00		404.3	1,170.7					0.0	218.5	404.3	1,389.2	0.0	0.0
25.00		396.7	1,148.6					0.0	218.5	396.7	1,367.1	0.0	0.0
30.00	Appurtenance(s)	393.7	1,126.6	153.0	0.0	0.0	144.0	0.0	218.5	546.6	1,489.1	0.0	0.0
35.00		368.2	1,104.5					0.0	217.6	368.2	1,322.1	0.0	0.0
39.25	Bot - Section 2	201.8	921.5					0.0	185.0	201.8	1,106.5	0.0	0.0
40.00		238.3	297.2					0.0	32.6	238.3	329.8	0.0	0.0
45.00	Top - Section 1	417.2	1,958.1					0.0	217.6	417.2	2,175.7	0.0	0.0
50.00		421.1	879.3					0.0	217.6	421.1	1,096.9	0.0	0.0
55.00		423.7	860.9					0.0	217.6	423.7	1,078.5	0.0	0.0
60.00		425.1	842.5					0.0	217.6	425.1	1,060.1	0.0	0.0
65.00		425.4	824.2					0.0	217.6	425.4	1,041.8	0.0	0.0
70.00		424.8	805.8					0.0	217.6	424.8	1,023.4	0.0	0.0
75.00		402.3	787.4					0.0	217.6	402.3	1,005.0	0.0	0.0
79.50	Bot - Section 3	211.5	693.0					0.0	195.8	211.5	888.8	0.0	0.0
80.00		202.3	137.9					0.0	21.8	202.3	159.6	0.0	0.0
84.25	Top - Section 2	212.7	1,158.4					0.0	185.0	212.7	1,343.4	0.0	0.0
85.00		243.0	90.5					0.0	32.6	243.0	123.2	0.0	0.0
90.00		420.5	595.0					0.0	217.6	420.5	812.6	0.0	0.0
95.00		416.4	580.3					0.0	217.6	416.4	797.9	0.0	0.0
100.00		411.8	565.6					0.0	217.6	411.8	783.2	0.0	0.0
105.00		326.2	550.9					0.0	217.6	326.2	768.5	0.0	0.0
108.00	Appurtenance(s)	202.0	323.5	2,863.2	0.0	0.0	3,129.8	0.0	130.6	3,065.2	3,583.9	0.0	0.0
110.00		279.5	212.7					0.0	68.4	279.5	281.1	0.0	0.0
115.00		395.0	521.5					0.0	170.9	395.0	692.4	0.0	0.0
120.00	Top - Section 3	350.2	506.8					0.0	170.9	350.2	677.7	0.0	0.0
124.00	Appurtenance(s)	192.6	345.8	2,172.4	0.0	0.0	2,001.6	0.0	136.7	2,365.0	2,484.1	0.0	0.0
125.00		227.2	85.2					0.0	25.1	227.2	110.3	0.0	0.0
130.00		374.3	418.1					0.0	125.6	374.3	543.6	0.0	0.0
135.00		258.3	405.2					0.0	125.6	258.3	530.8	0.0	0.0
137.00	Appurtenance(s)	181.3	158.5	2,918.2	0.0	0.0	2,061.7	0.0	50.2	3,099.5	2,270.4	0.0	0.0
140.00		285.6	233.9					0.0	39.9	285.6	273.8	0.0	0.0
145.00		212.2	379.5					0.0	66.5	212.2	446.0	0.0	0.0
146.00	Appurtenance(s)	104.3	74.4	2,978.7	0.0	0.0	2,603.9	0.0	13.3	3,083.0	2,691.5	0.0	0.0
148.00		69.4	147.2					0.0	0.0	69.4	147.2	0.0	0.0
<b>Totals:</b>										23,078.5	40,194.9	0.00	0.00

Site Number: 302528

Code: ANSI/TIA-222-G

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Site Name: Columbia Central, CT

Engineering Number: OAA713126\_C3\_02

3/22/2018 2:02:27 PM

Customer: SPRINT NEXTEL

Load Case: 1.2D + 1.6W

101 mph with No Ice

24 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

Dead Load Factor :1.20

Wind Load Factor :1.60

Calculated Forces

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 (deg)	Ratio
0.00	-40.16	-22.92	0.00	-2,377.95	0.00	2,377.95	4,118.20	2,059.10	8,694.25	4,353.59	0.00	0.00	0.556
5.00	-38.64	-22.60	0.00	-2,263.35	0.00	2,263.35	4,072.56	2,036.28	8,444.91	4,228.73	0.09	-0.16	0.545
10.00	-37.15	-22.28	0.00	-2,150.35	0.00	2,150.35	4,025.94	2,012.97	8,197.01	4,104.60	0.34	-0.32	0.533
15.00	-35.68	-21.96	0.00	-2,038.95	0.00	2,038.95	3,978.35	1,989.18	7,950.67	3,981.24	0.77	-0.49	0.521
20.00	-34.23	-21.64	0.00	-1,929.15	0.00	1,929.15	3,929.78	1,964.89	7,705.99	3,858.72	1.37	-0.65	0.509
25.00	-32.81	-21.32	0.00	-1,820.95	0.00	1,820.95	3,880.24	1,940.12	7,463.08	3,737.09	2.14	-0.81	0.496
30.00	-31.27	-20.84	0.00	-1,714.35	0.00	1,714.35	3,829.73	1,914.86	7,222.06	3,616.40	3.08	-0.98	0.482
35.00	-29.90	-20.52	0.00	-1,610.16	0.00	1,610.16	3,778.24	1,889.12	6,983.04	3,496.71	4.19	-1.14	0.469
39.25	-28.77	-20.34	0.00	-1,522.94	0.00	1,522.94	3,733.70	1,866.85	6,781.51	3,395.80	5.27	-1.28	0.456
40.00	-28.41	-20.14	0.00	-1,507.68	0.00	1,507.68	3,725.77	1,862.89	6,746.11	3,378.07	5.47	-1.30	0.454
45.00	-26.19	-19.74	0.00	-1,406.98	0.00	1,406.98	2,904.05	1,452.02	5,239.24	2,623.51	6.92	-1.46	0.546
50.00	-25.05	-19.37	0.00	-1,308.26	0.00	1,308.26	2,867.09	1,433.55	5,064.87	2,536.20	8.54	-1.62	0.525
55.00	-23.93	-18.99	0.00	-1,211.42	0.00	1,211.42	2,829.16	1,414.58	4,891.59	2,449.43	10.34	-1.80	0.503
60.00	-22.82	-18.60	0.00	-1,116.49	0.00	1,116.49	2,790.26	1,395.13	4,719.51	2,363.26	12.32	-1.98	0.481
65.00	-21.74	-18.20	0.00	-1,023.50	0.00	1,023.50	2,750.38	1,375.19	4,548.74	2,277.75	14.49	-2.16	0.457
70.00	-20.68	-17.80	0.00	-932.50	0.00	932.50	2,709.53	1,354.77	4,379.40	2,192.95	16.84	-2.33	0.433
75.00	-19.65	-17.41	0.00	-843.52	0.00	843.52	2,667.70	1,333.85	4,211.58	2,108.92	19.36	-2.49	0.408
79.50	-18.75	-17.18	0.00	-765.20	0.00	765.20	2,629.23	1,314.61	4,061.95	2,033.99	21.78	-2.64	0.384
80.00	-18.58	-17.00	0.00	-756.61	0.00	756.61	2,624.90	1,312.45	4,045.41	2,025.71	22.06	-2.65	0.381
84.25	-17.22	-16.74	0.00	-684.38	0.00	684.38	1,926.96	963.48	2,958.03	1,481.22	24.48	-2.78	0.471
85.00	-17.08	-16.52	0.00	-671.82	0.00	671.82	1,922.93	961.46	2,941.01	1,472.69	24.92	-2.81	0.465
90.00	-16.24	-16.11	0.00	-589.21	0.00	589.21	1,895.51	947.75	2,827.86	1,416.03	27.95	-2.98	0.425
95.00	-15.43	-15.69	0.00	-508.66	0.00	508.66	1,867.11	933.55	2,715.36	1,359.70	31.16	-3.14	0.383
100.00	-14.63	-15.28	0.00	-430.19	0.00	430.19	1,837.73	918.87	2,603.61	1,303.74	34.54	-3.29	0.338
105.00	-13.85	-14.93	0.00	-353.81	0.00	353.81	1,807.38	903.69	2,492.72	1,248.21	38.06	-3.43	0.291
108.00	-10.45	-11.66	0.00	-309.02	0.00	309.02	1,788.71	894.35	2,426.64	1,215.12	40.24	-3.51	0.260
110.00	-10.17	-11.38	0.00	-285.69	0.00	285.69	1,776.06	888.03	2,382.80	1,193.17	41.72	-3.55	0.245
115.00	-9.49	-10.96	0.00	-228.78	0.00	228.78	1,743.76	871.88	2,273.96	1,138.67	45.49	-3.66	0.207
120.00	-8.82	-10.58	0.00	-173.98	0.00	173.98	1,710.49	855.24	2,166.32	1,084.77	49.37	-3.75	0.166
120.00	-8.82	-10.58	0.00	-173.98	0.00	173.98	1,426.71	713.36	1,810.59	906.64	49.37	-3.75	0.198
124.00	-6.49	-8.06	0.00	-131.67	0.00	131.67	1,406.12	703.06	1,742.20	872.40	52.54	-3.81	0.156
125.00	-6.39	-7.83	0.00	-123.61	0.00	123.61	1,400.87	700.44	1,725.18	863.87	53.33	-3.82	0.148
130.00	-5.87	-7.42	0.00	-84.46	0.00	84.46	1,374.06	687.03	1,640.54	821.49	57.37	-3.88	0.107
135.00	-5.35	-7.13	0.00	-47.34	0.00	47.34	1,346.27	673.14	1,556.79	779.55	61.46	-3.93	0.065
137.00	-3.30	-3.89	0.00	-33.07	0.00	33.07	1,334.88	667.44	1,523.56	762.91	63.11	-3.94	0.046
140.00	-3.04	-3.58	0.00	-21.42	0.00	21.42	1,317.51	658.75	1,474.04	738.11	65.58	-3.95	0.031
145.00	-2.61	-3.34	0.00	-3.50	0.00	3.50	1,287.77	643.88	1,392.39	697.23	69.73	-3.96	0.007
146.00	-0.14	-0.08	0.00	-0.16	0.00	0.16	1,281.70	640.85	1,376.20	689.12	70.56	-3.96	0.000
148.00	0.00	-0.07	0.00	0.00	0.00	0.00	1,269.46	634.73	1,343.98	672.99	72.21	-3.96	0.000

<b>Load Case:</b> 0.9D + 1.6W	101 mph with No Ice (Reduced DL)	24 Iterations
Gust Response Factor :1.10		Wind Importance Factor :1.00
Dead Load Factor :0.90		
Wind Load Factor :1.60		

**Applied Segment Forces Summary**

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		215.5	0.0					0.0	0.0	215.5	0.0	0.0	0.0
5.00		427.2	927.6					0.0	163.9	427.2	1,091.5	0.0	0.0
10.00		419.5	911.1					0.0	163.9	419.5	1,074.9	0.0	0.0
15.00		411.9	894.5					0.0	163.9	411.9	1,058.4	0.0	0.0
20.00		404.3	878.0					0.0	163.9	404.3	1,041.9	0.0	0.0
25.00		396.7	861.5					0.0	163.9	396.7	1,025.4	0.0	0.0
30.00	Appurtenance(s)	393.7	844.9	153.0	0.0	0.0	108.0	0.0	163.9	546.6	1,116.8	0.0	0.0
35.00		368.2	828.4					0.0	163.2	368.2	991.6	0.0	0.0
39.25	Bot - Section 2	201.8	691.1					0.0	138.7	201.8	829.9	0.0	0.0
40.00		238.3	222.9					0.0	24.5	238.3	247.4	0.0	0.0
45.00	Top - Section 1	417.2	1,468.6					0.0	163.2	417.2	1,631.8	0.0	0.0
50.00		421.1	659.5					0.0	163.2	421.1	822.7	0.0	0.0
55.00		423.7	645.7					0.0	163.2	423.7	808.9	0.0	0.0
60.00		425.1	631.9					0.0	163.2	425.1	795.1	0.0	0.0
65.00		425.4	618.1					0.0	163.2	425.4	781.3	0.0	0.0
70.00		424.8	604.3					0.0	163.2	424.8	767.5	0.0	0.0
75.00		402.3	590.6					0.0	163.2	402.3	753.8	0.0	0.0
79.50	Bot - Section 3	211.5	519.7					0.0	146.9	211.5	666.6	0.0	0.0
80.00		202.3	103.4					0.0	16.3	202.3	119.7	0.0	0.0
84.25	Top - Section 2	212.7	868.8					0.0	138.7	212.7	1,007.5	0.0	0.0
85.00		243.0	67.9					0.0	24.5	243.0	92.4	0.0	0.0
90.00		420.5	446.2					0.0	163.2	420.5	609.4	0.0	0.0
95.00		416.4	435.2					0.0	163.2	416.4	598.4	0.0	0.0
100.00		411.8	424.2					0.0	163.2	411.8	587.4	0.0	0.0
105.00		326.2	413.2					0.0	163.2	326.2	576.4	0.0	0.0
108.00	Appurtenance(s)	202.0	242.6	2,863.2	0.0	0.0	2,347.4	0.0	97.9	3,065.2	2,687.9	0.0	0.0
110.00		279.5	159.5					0.0	51.3	279.5	210.8	0.0	0.0
115.00		395.0	391.1					0.0	128.2	395.0	519.3	0.0	0.0
120.00	Top - Section 3	350.2	380.1					0.0	128.2	350.2	508.3	0.0	0.0
124.00	Appurtenance(s)	192.6	259.3	2,172.4	0.0	0.0	1,501.2	0.0	102.6	2,365.0	1,863.1	0.0	0.0
125.00		227.2	63.9					0.0	18.8	227.2	82.7	0.0	0.0
130.00		374.3	313.6					0.0	94.2	374.3	407.7	0.0	0.0
135.00		258.3	303.9					0.0	94.2	258.3	398.1	0.0	0.0
137.00	Appurtenance(s)	181.3	118.9	2,918.2	0.0	0.0	1,546.3	0.0	37.7	3,099.5	1,702.8	0.0	0.0
140.00		285.6	175.4					0.0	29.9	285.6	205.3	0.0	0.0
145.00		212.2	284.6					0.0	49.9	212.2	334.5	0.0	0.0
146.00	Appurtenance(s)	104.3	55.8	2,978.7	0.0	0.0	1,952.9	0.0	10.0	3,083.0	2,018.7	0.0	0.0
148.00		69.4	110.4					0.0	0.0	69.4	110.4	0.0	0.0
<b>Totals:</b>										23,078.5	30,146.2	0.00	0.00

Site Number: 302528

Code: ANSI/TIA-222-G

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Site Name: Columbia Central, CT

Engineering Number: OAA713126\_C3\_02

3/22/2018 2:02:29 PM

Customer: SPRINT NEXTEL

Load Case: 0.9D + 1.6W

101 mph with No Ice (Reduced DL)

24 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

Dead Load Factor :0.90

Wind Load Factor :1.60

Calculated Forces

Seg	Pu	Vu	Tu	Mu	Mu	Resultant	phi	phi	phi	phi	Total		
Elev	FY (-)	FX (-)	MY	MZ	MX	Moment	Pn	Vn	Tn	Mn	Deflect	Rotation	Ratio
(ft)	(kips)	(kips)	(ft-kips)	(ft-kips)	(ft-kips)	(ft-kips)	(kips)	(kips)	(ft-kips)	(ft-kips)	(in)	(deg)	
0.00	-30.11	-22.91	0.00	-2,354.20	0.00	2,354.20	4,118.20	2,059.10	8,694.25	4,353.59	0.00	0.00	0.548
5.00	-28.96	-22.56	0.00	-2,239.67	0.00	2,239.67	4,072.56	2,036.28	8,444.91	4,228.73	0.09	-0.16	0.537
10.00	-27.82	-22.21	0.00	-2,126.88	0.00	2,126.88	4,025.94	2,012.97	8,197.01	4,104.60	0.34	-0.32	0.525
15.00	-26.71	-21.87	0.00	-2,015.82	0.00	2,015.82	3,978.35	1,989.18	7,950.67	3,981.24	0.76	-0.48	0.513
20.00	-25.61	-21.53	0.00	-1,906.48	0.00	1,906.48	3,929.78	1,964.89	7,705.99	3,858.72	1.36	-0.64	0.501
25.00	-24.53	-21.19	0.00	-1,798.86	0.00	1,798.86	3,880.24	1,940.12	7,463.08	3,737.09	2.12	-0.81	0.488
30.00	-23.36	-20.69	0.00	-1,692.93	0.00	1,692.93	3,829.73	1,914.86	7,222.06	3,616.40	3.05	-0.97	0.474
35.00	-22.33	-20.36	0.00	-1,589.50	0.00	1,589.50	3,778.24	1,889.12	6,983.04	3,496.71	4.15	-1.13	0.461
39.25	-21.47	-20.17	0.00	-1,502.97	0.00	1,502.97	3,733.70	1,866.85	6,781.51	3,395.80	5.21	-1.26	0.448
40.00	-21.20	-19.96	0.00	-1,487.85	0.00	1,487.85	3,725.77	1,862.89	6,746.11	3,378.07	5.41	-1.29	0.446
45.00	-19.52	-19.56	0.00	-1,388.05	0.00	1,388.05	2,904.05	1,452.02	5,239.24	2,623.51	6.84	-1.45	0.536
50.00	-18.66	-19.17	0.00	-1,290.26	0.00	1,290.26	2,867.09	1,433.55	5,064.87	2,536.20	8.44	-1.60	0.515
55.00	-17.80	-18.78	0.00	-1,194.41	0.00	1,194.41	2,829.16	1,414.58	4,891.59	2,449.43	10.22	-1.78	0.494
60.00	-16.97	-18.38	0.00	-1,100.53	0.00	1,100.53	2,790.26	1,395.13	4,719.51	2,363.26	12.18	-1.96	0.472
65.00	-16.15	-17.97	0.00	-1,008.64	0.00	1,008.64	2,750.38	1,375.19	4,548.74	2,277.75	14.32	-2.13	0.449
70.00	-15.34	-17.56	0.00	-918.78	0.00	918.78	2,709.53	1,354.77	4,379.40	2,192.95	16.64	-2.30	0.425
75.00	-14.56	-17.17	0.00	-830.96	0.00	830.96	2,667.70	1,333.85	4,211.58	2,108.92	19.13	-2.46	0.400
79.50	-13.88	-16.95	0.00	-753.70	0.00	753.70	2,629.23	1,314.61	4,061.95	2,033.99	21.52	-2.60	0.376
80.00	-13.75	-16.76	0.00	-745.23	0.00	745.23	2,624.90	1,312.45	4,045.41	2,025.71	21.79	-2.62	0.373
84.25	-12.73	-16.51	0.00	-674.01	0.00	674.01	1,926.96	963.48	2,958.03	1,481.22	24.18	-2.75	0.462
85.00	-12.62	-16.29	0.00	-661.63	0.00	661.63	1,922.93	961.46	2,941.01	1,472.69	24.61	-2.77	0.456
90.00	-11.99	-15.87	0.00	-580.19	0.00	580.19	1,895.51	947.75	2,827.86	1,416.03	27.61	-2.94	0.416
95.00	-11.37	-15.46	0.00	-500.82	0.00	500.82	1,867.11	933.55	2,715.36	1,359.70	30.78	-3.10	0.375
100.00	-10.77	-15.04	0.00	-423.54	0.00	423.54	1,837.73	918.87	2,603.61	1,303.74	34.10	-3.25	0.331
105.00	-10.19	-14.70	0.00	-348.34	0.00	348.34	1,807.38	903.69	2,492.72	1,248.21	37.58	-3.38	0.285
108.00	-7.68	-11.49	0.00	-304.25	0.00	304.25	1,788.71	894.35	2,426.64	1,215.12	39.73	-3.46	0.255
110.00	-7.47	-11.20	0.00	-281.27	0.00	281.27	1,776.06	888.03	2,382.80	1,193.17	41.19	-3.50	0.240
115.00	-6.96	-10.79	0.00	-225.25	0.00	225.25	1,743.76	871.88	2,273.96	1,138.67	44.91	-3.61	0.202
120.00	-6.46	-10.42	0.00	-171.30	0.00	171.30	1,710.49	855.24	2,166.32	1,084.77	48.74	-3.70	0.162
120.00	-6.46	-10.42	0.00	-171.30	0.00	171.30	1,426.71	713.36	1,810.59	906.64	48.74	-3.70	0.194
124.00	-4.75	-7.94	0.00	-129.64	0.00	129.64	1,406.12	703.06	1,742.20	872.40	51.86	-3.75	0.152
125.00	-4.68	-7.71	0.00	-121.70	0.00	121.70	1,400.87	700.44	1,725.18	863.87	52.65	-3.77	0.144
130.00	-4.29	-7.31	0.00	-83.16	0.00	83.16	1,374.06	687.03	1,640.54	821.49	56.63	-3.83	0.104
135.00	-3.90	-7.03	0.00	-46.59	0.00	46.59	1,346.27	673.14	1,556.79	779.55	60.66	-3.87	0.063
137.00	-2.42	-3.82	0.00	-32.53	0.00	32.53	1,334.88	667.44	1,523.56	762.91	62.29	-3.88	0.044
140.00	-2.23	-3.52	0.00	-21.07	0.00	21.07	1,317.51	658.75	1,474.04	738.11	64.73	-3.90	0.030
145.00	-1.91	-3.29	0.00	-3.44	0.00	3.44	1,287.77	643.88	1,392.39	697.23	68.81	-3.91	0.006
146.00	-0.11	-0.08	0.00	-0.15	0.00	0.15	1,281.70	640.85	1,376.20	689.12	69.63	-3.91	0.000
148.00	0.00	-0.07	0.00	0.00	0.00	0.00	1,269.46	634.73	1,343.98	672.99	71.27	-3.91	0.000

<b>Load Case:</b> 1.2D + 1.0Di + 1.0Wi	50 mph with 1.00 in Radial Ice	24 Iterations
Gust Response Factor :1.10	Ice Dead Load Factor :1.00	Wind Importance Factor :1.00
Dead Load Factor :1.20		Ice Importance Factor :1.00
Wind Load Factor :1.00		

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		64.6	0.0					0.0	0.0	64.6	0.0	0.0	0.0
5.00		128.4	1,743.6					0.0	218.5	128.4	1,962.1	0.0	0.0
10.00		126.9	1,772.5					0.0	218.5	126.9	1,991.0	0.0	0.0
15.00		125.1	1,770.4					0.0	218.5	125.1	1,988.9	0.0	0.0
20.00		123.2	1,758.2					0.0	218.5	123.2	1,976.7	0.0	0.0
25.00		121.3	1,740.7					0.0	218.5	121.3	1,959.2	0.0	0.0
30.00	Appurtenance(s)	120.7	1,720.0	35.2	0.0	0.0	239.5	0.0	218.5	155.9	2,178.0	0.0	0.0
35.00		113.2	1,697.0					0.0	217.6	113.2	1,914.6	0.0	0.0
39.25	Bot - Section 2	62.1	1,423.8					0.0	185.0	62.1	1,608.8	0.0	0.0
40.00		73.5	387.4					0.0	32.6	73.5	420.0	0.0	0.0
45.00	Top - Section 1	128.8	2,552.1					0.0	217.6	128.8	2,769.7	0.0	0.0
50.00		130.4	1,468.4					0.0	217.6	130.4	1,686.0	0.0	0.0
55.00		131.5	1,444.3					0.0	217.6	131.5	1,661.9	0.0	0.0
60.00		132.3	1,419.5					0.0	217.6	132.3	1,637.1	0.0	0.0
65.00		132.8	1,394.1					0.0	217.6	132.8	1,611.7	0.0	0.0
70.00		133.0	1,368.1					0.0	217.6	133.0	1,585.7	0.0	0.0
75.00		126.3	1,341.7					0.0	217.6	126.3	1,559.3	0.0	0.0
79.50	Bot - Section 3	66.5	1,185.1					0.0	195.8	66.5	1,381.0	0.0	0.0
80.00		63.7	193.3					0.0	21.8	63.7	215.0	0.0	0.0
84.25	Top - Section 2	67.0	1,622.0					0.0	185.0	67.0	1,806.9	0.0	0.0
85.00		76.8	172.3					0.0	32.6	76.8	204.9	0.0	0.0
90.00		133.1	1,129.6					0.0	217.6	133.1	1,347.2	0.0	0.0
95.00		132.2	1,105.4					0.0	217.6	132.2	1,323.1	0.0	0.0
100.00		131.2	1,081.0					0.0	217.6	131.2	1,298.6	0.0	0.0
105.00		104.2	1,056.3					0.0	217.6	104.2	1,273.9	0.0	0.0
108.00	Appurtenance(s)	64.7	623.4	681.8	0.0	0.0	6,827.2	0.0	130.6	746.5	7,581.2	0.0	0.0
110.00		89.8	411.1					0.0	68.4	89.8	479.5	0.0	0.0
115.00		127.3	1,006.2					0.0	170.9	127.3	1,177.2	0.0	0.0
120.00	Top - Section 3	113.3	980.9					0.0	170.9	113.3	1,151.8	0.0	0.0
124.00	Appurtenance(s)	62.4	718.3	539.8	0.0	0.0	4,517.6	0.0	136.7	602.2	5,372.6	0.0	0.0
125.00		74.0	178.0					0.0	25.1	74.0	203.1	0.0	0.0
130.00		122.2	870.3					0.0	125.6	122.2	995.9	0.0	0.0
135.00		84.6	846.2					0.0	125.6	84.6	971.8	0.0	0.0
137.00	Appurtenance(s)	59.6	333.3	707.1	0.0	0.0	5,612.7	0.0	50.2	766.7	5,996.2	0.0	0.0
140.00		94.2	491.9					0.0	39.9	94.2	531.8	0.0	0.0
145.00		70.2	797.7					0.0	66.5	70.2	864.2	0.0	0.0
146.00	Appurtenance(s)	34.6	157.7	734.2	0.0	0.0	6,247.5	0.0	13.3	768.9	6,418.5	0.0	0.0
148.00		23.0	311.8					0.0	0.0	23.0	311.8	0.0	0.0
<b>Totals:</b>									<b>6,467.07</b>	<b>69,416.8</b>	<b>0.00</b>	<b>0.00</b>	



Site Number: 302528

Code: ANSI/TIA-222-G

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Site Name: Columbia Central, CT

Engineering Number: OAA713126\_C3\_02

3/22/2018 2:02:32 PM

Customer: SPRINT NEXTEL

Load Case: 1.2D + 1.0Di + 1.0Wi

50 mph with 1.00 in Radial Ice

24 Iterations

Gust Response Factor :1.10

Ice Dead Load Factor :1.00

Wind Importance Factor :1.00

Dead Load Factor :1.20

Ice Importance Factor :1.00

Wind Load Factor :1.00

Calculated Forces

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 (deg)	Ratio
0.00	-69.41	-6.43	0.00	-676.48	0.00	676.48	4,118.20	2,059.10	8,694.25	4,353.59	0.00	0.00	0.172
5.00	-67.45	-6.36	0.00	-644.33	0.00	644.33	4,072.56	2,036.28	8,444.91	4,228.73	0.02	-0.05	0.169
10.00	-65.45	-6.28	0.00	-612.55	0.00	612.55	4,025.94	2,012.97	8,197.01	4,104.60	0.10	-0.09	0.166
15.00	-63.46	-6.20	0.00	-581.15	0.00	581.15	3,978.35	1,989.18	7,950.67	3,981.24	0.22	-0.14	0.162
20.00	-61.48	-6.12	0.00	-550.14	0.00	550.14	3,929.78	1,964.89	7,705.99	3,858.72	0.39	-0.19	0.158
25.00	-59.51	-6.04	0.00	-519.53	0.00	519.53	3,880.24	1,940.12	7,463.08	3,737.09	0.61	-0.23	0.154
30.00	-57.33	-5.92	0.00	-489.32	0.00	489.32	3,829.73	1,914.86	7,222.06	3,616.40	0.88	-0.28	0.150
35.00	-55.41	-5.84	0.00	-459.70	0.00	459.70	3,778.24	1,889.12	6,983.04	3,496.71	1.19	-0.32	0.146
39.25	-53.80	-5.79	0.00	-434.87	0.00	434.87	3,733.70	1,866.85	6,781.51	3,395.80	1.50	-0.36	0.142
40.00	-53.38	-5.74	0.00	-430.53	0.00	430.53	3,725.77	1,862.89	6,746.11	3,378.07	1.56	-0.37	0.142
45.00	-50.61	-5.63	0.00	-401.82	0.00	401.82	2,904.05	1,452.02	5,239.24	2,623.51	1.97	-0.42	0.171
50.00	-48.92	-5.53	0.00	-373.66	0.00	373.66	2,867.09	1,433.55	5,064.87	2,536.20	2.43	-0.46	0.164
55.00	-47.25	-5.43	0.00	-346.00	0.00	346.00	2,829.16	1,414.58	4,891.59	2,449.43	2.95	-0.51	0.158
60.00	-45.61	-5.32	0.00	-318.86	0.00	318.86	2,790.26	1,395.13	4,719.51	2,363.26	3.51	-0.57	0.151
65.00	-44.00	-5.21	0.00	-292.26	0.00	292.26	2,750.38	1,375.19	4,548.74	2,277.75	4.13	-0.61	0.144
70.00	-42.41	-5.09	0.00	-266.22	0.00	266.22	2,709.53	1,354.77	4,379.40	2,192.95	4.80	-0.66	0.137
75.00	-40.85	-4.98	0.00	-240.76	0.00	240.76	2,667.70	1,333.85	4,211.58	2,108.92	5.52	-0.71	0.129
79.50	-39.46	-4.91	0.00	-218.35	0.00	218.35	2,629.23	1,314.61	4,061.95	2,033.99	6.21	-0.75	0.122
80.00	-39.25	-4.86	0.00	-215.89	0.00	215.89	2,624.90	1,312.45	4,045.41	2,025.71	6.29	-0.76	0.122
84.25	-37.44	-4.78	0.00	-195.24	0.00	195.24	1,926.96	963.48	2,958.03	1,481.22	6.98	-0.79	0.151
85.00	-37.23	-4.72	0.00	-191.66	0.00	191.66	1,922.93	961.46	2,941.01	1,472.69	7.11	-0.80	0.150
90.00	-35.89	-4.60	0.00	-168.05	0.00	168.05	1,895.51	947.75	2,827.86	1,416.03	7.97	-0.85	0.138
95.00	-34.56	-4.47	0.00	-145.06	0.00	145.06	1,867.11	933.55	2,715.36	1,359.70	8.89	-0.90	0.125
100.00	-33.26	-4.35	0.00	-122.69	0.00	122.69	1,837.73	918.87	2,603.61	1,303.74	9.85	-0.94	0.112
105.00	-31.99	-4.24	0.00	-100.97	0.00	100.97	1,807.38	903.69	2,492.72	1,248.21	10.86	-0.98	0.099
108.00	-24.42	-3.37	0.00	-88.26	0.00	88.26	1,788.71	894.35	2,426.64	1,215.12	11.48	-1.00	0.086
110.00	-23.94	-3.28	0.00	-81.53	0.00	81.53	1,776.06	888.03	2,382.80	1,193.17	11.90	-1.01	0.082
115.00	-22.76	-3.14	0.00	-65.14	0.00	65.14	1,743.76	871.88	2,273.96	1,138.67	12.98	-1.04	0.070
120.00	-21.61	-3.01	0.00	-49.44	0.00	49.44	1,710.49	855.24	2,166.32	1,084.77	14.09	-1.07	0.058
120.00	-21.61	-3.01	0.00	-49.44	0.00	49.44	1,426.71	713.36	1,810.59	906.64	14.09	-1.07	0.070
124.00	-16.25	-2.31	0.00	-37.39	0.00	37.39	1,406.12	703.06	1,742.20	872.40	14.99	-1.09	0.054
125.00	-16.05	-2.24	0.00	-35.08	0.00	35.08	1,400.87	700.44	1,725.18	863.87	15.22	-1.09	0.052
130.00	-15.06	-2.10	0.00	-23.89	0.00	23.89	1,374.06	687.03	1,640.54	821.49	16.37	-1.11	0.040
135.00	-14.09	-2.00	0.00	-13.39	0.00	13.39	1,346.27	673.14	1,556.79	779.55	17.54	-1.12	0.028
137.00	-8.11	-1.12	0.00	-9.39	0.00	9.39	1,334.88	667.44	1,523.56	762.91	18.01	-1.12	0.018
140.00	-7.58	-1.01	0.00	-6.04	0.00	6.04	1,317.51	658.75	1,474.04	738.11	18.72	-1.13	0.014
145.00	-6.71	-0.92	0.00	-0.98	0.00	0.98	1,287.77	643.88	1,392.39	697.23	19.90	-1.13	0.007
146.00	-0.31	-0.03	0.00	-0.06	0.00	0.06	1,281.70	640.85	1,376.20	689.12	20.14	-1.13	0.000
148.00	0.00	-0.02	0.00	0.00	0.00	0.00	1,269.46	634.73	1,343.98	672.99	20.61	-1.13	0.000

<b>Load Case:</b> 1.0D + 1.0W	Serviceability 60 mph	23 Iterations
Gust Response Factor :1.10		Wind Importance Factor :1.00
Dead Load Factor :1.00		
Wind Load Factor :1.00		

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		47.5	0.0					0.0	0.0	47.5	0.0	0.0	0.0
5.00		94.2	1,030.7					0.0	182.1	94.2	1,212.8	0.0	0.0
10.00		92.5	1,012.3					0.0	182.1	92.5	1,194.4	0.0	0.0
15.00		90.9	993.9					0.0	182.1	90.9	1,176.0	0.0	0.0
20.00		89.2	975.6					0.0	182.1	89.2	1,157.6	0.0	0.0
25.00		87.5	957.2					0.0	182.1	87.5	1,139.3	0.0	0.0
30.00	Appurtenance(s)	86.8	938.8	33.7	0.0	0.0	120.0	0.0	182.1	120.6	1,240.9	0.0	0.0
35.00		81.2	920.5					0.0	181.3	81.2	1,101.8	0.0	0.0
39.25	Bot - Section 2	44.5	767.9					0.0	154.1	44.5	922.1	0.0	0.0
40.00		52.6	247.7					0.0	27.2	52.6	274.9	0.0	0.0
45.00	Top - Section 1	92.0	1,631.7					0.0	181.3	92.0	1,813.1	0.0	0.0
50.00		92.9	732.7					0.0	181.3	92.9	914.1	0.0	0.0
55.00		93.5	717.4					0.0	181.3	93.5	898.8	0.0	0.0
60.00		93.8	702.1					0.0	181.3	93.8	883.4	0.0	0.0
65.00		93.8	686.8					0.0	181.3	93.8	868.1	0.0	0.0
70.00		93.7	671.5					0.0	181.3	93.7	852.8	0.0	0.0
75.00		88.7	656.2					0.0	181.3	88.7	837.5	0.0	0.0
79.50	Bot - Section 3	46.7	577.5					0.0	163.2	46.7	740.7	0.0	0.0
80.00		44.6	114.9					0.0	18.1	44.6	133.0	0.0	0.0
84.25	Top - Section 2	46.9	965.3					0.0	154.1	46.9	1,119.5	0.0	0.0
85.00		53.6	75.4					0.0	27.2	53.6	102.6	0.0	0.0
90.00		92.7	495.8					0.0	181.3	92.7	677.1	0.0	0.0
95.00		91.8	483.6					0.0	181.3	91.8	664.9	0.0	0.0
100.00		90.8	471.3					0.0	181.3	90.8	652.6	0.0	0.0
105.00		72.0	459.1					0.0	181.3	72.0	640.4	0.0	0.0
108.00	Appurtenance(s)	44.6	269.6	631.5	0.0	0.0	2,608.2	0.0	108.8	676.1	2,986.6	0.0	0.0
110.00		61.7	177.3					0.0	57.0	61.7	234.2	0.0	0.0
115.00		87.1	434.6					0.0	142.4	87.1	577.0	0.0	0.0
120.00	Top - Section 3	77.3	422.3					0.0	142.4	77.3	564.8	0.0	0.0
124.00	Appurtenance(s)	42.5	288.1	479.2	0.0	0.0	1,668.0	0.0	114.0	521.6	2,070.1	0.0	0.0
125.00		50.1	71.0					0.0	20.9	50.1	91.9	0.0	0.0
130.00		82.6	348.4					0.0	104.6	82.6	453.0	0.0	0.0
135.00		57.0	337.7					0.0	104.6	57.0	442.3	0.0	0.0
137.00	Appurtenance(s)	40.0	132.1	643.7	0.0	0.0	1,718.1	0.0	41.9	683.7	1,892.0	0.0	0.0
140.00		63.0	194.9					0.0	33.3	63.0	228.2	0.0	0.0
145.00		46.8	316.3					0.0	55.4	46.8	371.7	0.0	0.0
146.00	Appurtenance(s)	23.0	62.0	657.0	0.0	0.0	2,169.9	0.0	11.1	680.0	2,243.0	0.0	0.0
148.00		15.3	122.6					0.0	0.0	15.3	122.6	0.0	0.0
<b>Totals:</b>										5,090.35	33,495.8	0.00	0.00

Site Number: 302528

Code: ANSI/TIA-222-G

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Site Name: Columbia Central, CT

Engineering Number: OAA713126\_C3\_02

3/22/2018 2:02:35 PM

Customer: SPRINT NEXTEL

Load Case: 1.0D + 1.0W

Serviceability 60 mph

23 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

Dead Load Factor :1.00

Wind Load Factor :1.00

Calculated Forces

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 (deg)	Ratio
0.00	-33.49	-5.05	0.00	-521.32	0.00	521.32	4,118.20	2,059.10	8,694.25	4,353.59	0.00	0.00	0.128
5.00	-32.28	-4.98	0.00	-496.06	0.00	496.06	4,072.56	2,036.28	8,444.91	4,228.73	0.02	-0.04	0.125
10.00	-31.08	-4.90	0.00	-471.17	0.00	471.17	4,025.94	2,012.97	8,197.01	4,104.60	0.08	-0.07	0.123
15.00	-29.90	-4.83	0.00	-446.65	0.00	446.65	3,978.35	1,989.18	7,950.67	3,981.24	0.17	-0.11	0.120
20.00	-28.74	-4.76	0.00	-422.50	0.00	422.50	3,929.78	1,964.89	7,705.99	3,858.72	0.30	-0.14	0.117
25.00	-27.60	-4.68	0.00	-398.72	0.00	398.72	3,880.24	1,940.12	7,463.08	3,737.09	0.47	-0.18	0.114
30.00	-26.36	-4.57	0.00	-375.30	0.00	375.30	3,829.73	1,914.86	7,222.06	3,616.40	0.68	-0.21	0.111
35.00	-25.25	-4.50	0.00	-352.43	0.00	352.43	3,778.24	1,889.12	6,983.04	3,496.71	0.92	-0.25	0.107
39.25	-24.33	-4.46	0.00	-333.30	0.00	333.30	3,733.70	1,866.85	6,781.51	3,395.80	1.15	-0.28	0.105
40.00	-24.05	-4.42	0.00	-329.95	0.00	329.95	3,725.77	1,862.89	6,746.11	3,378.07	1.20	-0.29	0.104
45.00	-22.24	-4.33	0.00	-307.87	0.00	307.87	2,904.05	1,452.02	5,239.24	2,623.51	1.52	-0.32	0.125
50.00	-21.32	-4.24	0.00	-286.22	0.00	286.22	2,867.09	1,433.55	5,064.87	2,536.20	1.87	-0.36	0.120
55.00	-20.42	-4.16	0.00	-265.00	0.00	265.00	2,829.16	1,414.58	4,891.59	2,449.43	2.26	-0.39	0.115
60.00	-19.54	-4.07	0.00	-244.21	0.00	244.21	2,790.26	1,395.13	4,719.51	2,363.26	2.70	-0.43	0.110
65.00	-18.67	-3.98	0.00	-223.85	0.00	223.85	2,750.38	1,375.19	4,548.74	2,277.75	3.17	-0.47	0.105
70.00	-17.81	-3.89	0.00	-203.94	0.00	203.94	2,709.53	1,354.77	4,379.40	2,192.95	3.69	-0.51	0.100
75.00	-16.97	-3.81	0.00	-184.47	0.00	184.47	2,667.70	1,333.85	4,211.58	2,108.92	4.24	-0.55	0.094
79.50	-16.23	-3.76	0.00	-167.34	0.00	167.34	2,629.23	1,314.61	4,061.95	2,033.99	4.77	-0.58	0.088
80.00	-16.10	-3.72	0.00	-165.46	0.00	165.46	2,624.90	1,312.45	4,045.41	2,025.71	4.83	-0.58	0.088
84.25	-14.98	-3.66	0.00	-149.66	0.00	149.66	1,926.96	963.48	2,958.03	1,481.22	5.36	-0.61	0.109
85.00	-14.87	-3.61	0.00	-146.91	0.00	146.91	1,922.93	961.46	2,941.01	1,472.69	5.46	-0.61	0.108
90.00	-14.20	-3.52	0.00	-128.84	0.00	128.84	1,895.51	947.75	2,827.86	1,416.03	6.12	-0.65	0.098
95.00	-13.53	-3.43	0.00	-111.23	0.00	111.23	1,867.11	933.55	2,715.36	1,359.70	6.82	-0.69	0.089
100.00	-12.88	-3.34	0.00	-94.07	0.00	94.07	1,837.73	918.87	2,603.61	1,303.74	7.56	-0.72	0.079
105.00	-12.24	-3.26	0.00	-77.38	0.00	77.38	1,807.38	903.69	2,492.72	1,248.21	8.33	-0.75	0.069
108.00	-9.26	-2.55	0.00	-67.58	0.00	67.58	1,788.71	894.35	2,426.64	1,215.12	8.81	-0.77	0.061
110.00	-9.02	-2.49	0.00	-62.48	0.00	62.48	1,776.06	888.03	2,382.80	1,193.17	9.14	-0.78	0.057
115.00	-8.45	-2.40	0.00	-50.04	0.00	50.04	1,743.76	871.88	2,273.96	1,138.67	9.96	-0.80	0.049
120.00	-7.88	-2.31	0.00	-38.06	0.00	38.06	1,710.49	855.24	2,166.32	1,084.77	10.81	-0.82	0.040
120.00	-7.88	-2.31	0.00	-38.06	0.00	38.06	1,426.71	713.36	1,810.59	906.64	10.81	-0.82	0.048
124.00	-5.82	-1.76	0.00	-28.80	0.00	28.80	1,406.12	703.06	1,742.20	872.40	11.50	-0.83	0.037
125.00	-5.73	-1.71	0.00	-27.04	0.00	27.04	1,400.87	700.44	1,725.18	863.87	11.68	-0.84	0.035
130.00	-5.28	-1.62	0.00	-18.48	0.00	18.48	1,374.06	687.03	1,640.54	821.49	12.56	-0.85	0.026
135.00	-4.83	-1.56	0.00	-10.35	0.00	10.35	1,346.27	673.14	1,556.79	779.55	13.46	-0.86	0.017
137.00	-2.95	-0.85	0.00	-7.23	0.00	7.23	1,334.88	667.44	1,523.56	762.91	13.82	-0.86	0.012
140.00	-2.73	-0.78	0.00	-4.68	0.00	4.68	1,317.51	658.75	1,474.04	738.11	14.36	-0.86	0.008
145.00	-2.35	-0.73	0.00	-0.77	0.00	0.77	1,287.77	643.88	1,392.39	697.23	15.27	-0.87	0.003
146.00	-0.12	-0.02	0.00	-0.03	0.00	0.03	1,281.70	640.85	1,376.20	689.12	15.45	-0.87	0.000
148.00	0.00	-0.02	0.00	0.00	0.00	0.00	1,269.46	634.73	1,343.98	672.99	15.81	-0.87	0.000

### Equivalent Lateral Forces Method Analysis

(Based on ASCE7-10 Chapters 11, 12, 15)

Spectral Response Acceleration for Short Period ( $S_s$ ):	0.17
Spectral Response Acceleration at 1.0 Second Period ( $S_1$ ):	0.06
Long-Period Transition Period ( $T_L$ ):	6
Importance Factor ( $I_E$ ):	1.00
Site Coefficient $F_a$ :	1.60
Site Coefficient $F_v$ :	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period ( $S_{ds}$ ):	0.19
Design Spectral Response Acceleration at 1.0 Second Period ( $S_{d1}$ ):	0.10
Seismic Response Coefficient ( $C_s$ ):	0.03
Upper Limit $C_s$	0.03
Lower Limit $C_s$	0.03
Period based on Rayleigh Method (sec):	2.16
Redundancy Factor ( $\rho$ ):	1.30
Seismic Force Distribution Exponent (k):	1.83
Total Unfactored Dead Load:	33.50 k
Seismic Base Shear (E):	1.33 k

#### Load Case (1.2 + 0.2Sds) \* DL + E ELFM      Seismic Equivalent Lateral Forces Method

Segment	Height Above Base (ft)	Weight (lb)	$W_z$ (lb-ft)	$C_{vx}$	Horizontal Force (lb)	Vertical Force (lb)
37	147.00	123	1,129	0.010	13	152
36	145.50	73	660	0.006	7	90
35	142.50	372	3,233	0.027	37	460
34	138.50	228	1,884	0.016	21	282
33	136.00	174	1,389	0.012	16	215
32	132.50	442	3,368	0.029	38	547
31	127.50	453	3,215	0.027	36	561
30	124.50	92	624	0.005	7	114
29	122.00	402	2,632	0.022	30	498
28	117.50	565	3,452	0.029	39	699
27	112.50	577	3,257	0.028	37	714
26	109.00	234	1,248	0.011	14	290
25	106.50	378	1,932	0.016	22	468
24	102.50	640	3,049	0.026	35	792
23	97.50	653	2,836	0.024	32	808
22	92.50	665	2,624	0.022	30	823
21	87.50	677	2,414	0.020	27	838
20	84.63	103	344	0.003	4	127
19	82.13	1,119	3,553	0.030	40	1,385
18	79.75	133	400	0.003	5	165
17	77.25	741	2,102	0.018	24	916
16	72.50	838	2,116	0.018	24	1,036
15	67.50	853	1,891	0.016	21	1,055

Site Number: 302528

Code: ANSI/TIA-222-G

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Site Name: Columbia Central, CT

Engineering Number: OAA713126\_C3\_02

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Customer: SPRINT NEXTEL

14	62.50	868	1,672	0.014	19	1,074
13	57.50	883	1,461	0.012	17	1,093
12	52.50	899	1,259	0.011	14	1,112
11	47.50	914	1,066	0.009	12	1,131
10	42.50	1,813	1,725	0.015	20	2,243
9	39.63	275	230	0.002	3	340
8	37.13	922	685	0.006	8	1,141
7	32.50	1,102	642	0.005	7	1,363
6	27.50	1,121	481	0.004	5	1,387
5	22.50	1,139	339	0.003	4	1,410
4	17.50	1,158	217	0.002	2	1,432
3	12.50	1,176	119	0.001	1	1,455
2	7.50	1,194	48	0.000	1	1,478
1	2.50	1,213	6	0.000	0	1,501
LGP Allgon LGP21903	146.00	33	300	0.003	3	41
Powerwave Allgon LGP	146.00	85	769	0.007	9	105
Raycap DC6-48-60-18-	146.00	32	289	0.002	3	39
Ericsson RRUS-11	146.00	165	1,500	0.013	17	204
Powerwave Allgon 777	146.00	210	1,909	0.016	22	260
KMW AM-X-CD-16-65-00	146.00	146	1,323	0.011	15	180
Round Low Profile PI	146.00	1,500	13,638	0.116	154	1,856
RFS FD9R6004/2C-3L	137.00	16	126	0.001	1	19
Antel BXA-171063-8CF	137.00	32	255	0.002	3	39
Antel LPA-80063/4CF	137.00	120	971	0.008	11	148
Antel BXA-70063/6CF_	137.00	51	413	0.004	5	63
Round Low Profile PI	137.00	1,500	12,140	0.103	137	1,856
Decibel DB844H90E-XY	124.00	168	1,133	0.010	13	208
Round Low Profile PI	124.00	1,500	10,116	0.086	114	1,856
Alcatel-Lucent RRH2x	108.00	317	1,663	0.014	19	393
Alcatel-Lucent 1900	108.00	180	943	0.008	11	223
Alcatel-Lucent TD-RR	108.00	210	1,100	0.009	12	260
RFS APXVTM14-ALU-I20	108.00	169	883	0.007	10	209
Commscope NNVV-65B-R	108.00	232	1,216	0.010	14	287
Round Low Profile PI	108.00	1,500	7,858	0.067	89	1,856
GPS	30.00	10	5	0.000	0	12
GPS	30.00	10	5	0.000	0	12
Stand-Off	30.00	100	50	0.000	1	124
		33,496	117,909	1.000	1,334	41,445

Load Case (0.9 - 0.2Sds) \* DL + E EFLM

Seismic (Reduced DL) Equivalent Lateral Forces Method

Segment	Height Above Base (ft)	Weight (lb)	W <sub>z</sub> (lb-ft)	C <sub>vx</sub>	Horizontal Force (lb)	Vertical Force (lb)
37	147.00	123	1,129	0.010	13	106
36	145.50	73	660	0.006	7	63
35	142.50	372	3,233	0.027	37	321
34	138.50	228	1,884	0.016	21	197
33	136.00	174	1,389	0.012	16	150
32	132.50	442	3,368	0.029	38	382
31	127.50	453	3,215	0.027	36	391
30	124.50	92	624	0.005	7	79
29	122.00	402	2,632	0.022	30	347
28	117.50	565	3,452	0.029	39	487
27	112.50	577	3,257	0.028	37	498
26	109.00	234	1,248	0.011	14	202
25	106.50	378	1,932	0.016	22	326
24	102.50	640	3,049	0.026	35	552
23	97.50	653	2,836	0.024	32	563
22	92.50	665	2,624	0.022	30	574
21	87.50	677	2,414	0.020	27	584

Site Number: 302528

Code: ANSI/TIA-222-G

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Site Name: Columbia Central, CT

Engineering Number: OAA713126\_C3\_02

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Customer: SPRINT NEXTEL

20	84.63	103	344	0.003	4	89
19	82.13	1,119	3,553	0.030	40	966
18	79.75	133	400	0.003	5	115
17	77.25	741	2,102	0.018	24	639
16	72.50	838	2,116	0.018	24	723
15	67.50	853	1,891	0.016	21	736
14	62.50	868	1,672	0.014	19	749
13	57.50	883	1,461	0.012	17	762
12	52.50	899	1,259	0.011	14	775
11	47.50	914	1,066	0.009	12	789
10	42.50	1,813	1,725	0.015	20	1,564
9	39.63	275	230	0.002	3	237
8	37.13	922	685	0.006	8	795
7	32.50	1,102	642	0.005	7	950
6	27.50	1,121	481	0.004	5	967
5	22.50	1,139	339	0.003	4	983
4	17.50	1,158	217	0.002	2	999
3	12.50	1,176	119	0.001	1	1,015
2	7.50	1,194	48	0.000	1	1,030
1	2.50	1,213	6	0.000	0	1,046
LGP Allgon LGP21903	146.00	33	300	0.003	3	28
Powerwave Allgon LGP	146.00	85	769	0.007	9	73
Raycap DC6-48-60-18-	146.00	32	289	0.002	3	27
Ericsson RRUS-11	146.00	165	1,500	0.013	17	142
Powerwave Allgon 777	146.00	210	1,909	0.016	22	181
KMW AM-X-CD-16-65-00	146.00	146	1,323	0.011	15	126
Round Low Profile PI	146.00	1,500	13,638	0.116	154	1,294
RFS FD9R6004/2C-3L	137.00	16	126	0.001	1	13
Antel BXA-171063-8CF	137.00	32	255	0.002	3	27
Antel LPA-80063/4CF	137.00	120	971	0.008	11	104
Antel BXA-70063/6CF_	137.00	51	413	0.004	5	44
Round Low Profile PI	137.00	1,500	12,140	0.103	137	1,294
Decibel DB844H90E-XY	124.00	168	1,133	0.010	13	145
Round Low Profile PI	124.00	1,500	10,116	0.086	114	1,294
Alcatel-Lucent RRH2x	108.00	317	1,663	0.014	19	274
Alcatel-Lucent 1900	108.00	180	943	0.008	11	155
Alcatel-Lucent TD-RR	108.00	210	1,100	0.009	12	181
RFS APXVTM14-ALU-I20	108.00	169	883	0.007	10	145
Commscope NNVV-65B-R	108.00	232	1,216	0.010	14	200
Round Low Profile PI	108.00	1,500	7,858	0.067	89	1,294
GPS	30.00	10	5	0.000	0	9
GPS	30.00	10	5	0.000	0	9
Stand-Off	30.00	100	50	0.000	1	86
		33,496	117,909	1.000	1,334	28,896

Load Case (1.2 + 0.2Sds) \* DL + E ELFM Seismic Equivalent Lateral Forces Method

Calculated Forces

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 (deg)	Ratio
0.00	-39.94	-1.34	0.00	-157.33	0.00	157.33	4,118.20	2,059.10	8,694.25	4,353.59	0.00	0.00	0.046
5.00	-38.47	-1.34	0.00	-150.64	0.00	150.64	4,072.56	2,036.28	8,444.91	4,228.73	0.01	-0.01	0.045
10.00	-37.01	-1.35	0.00	-143.92	0.00	143.92	4,025.94	2,012.97	8,197.01	4,104.60	0.02	-0.02	0.044
15.00	-35.58	-1.35	0.00	-137.18	0.00	137.18	3,978.35	1,989.18	7,950.67	3,981.24	0.05	-0.03	0.043
20.00	-34.17	-1.35	0.00	-130.41	0.00	130.41	3,929.78	1,964.89	7,705.99	3,858.72	0.09	-0.04	0.042
25.00	-32.78	-1.35	0.00	-123.64	0.00	123.64	3,880.24	1,940.12	7,463.08	3,737.09	0.14	-0.05	0.042
30.00	-31.27	-1.35	0.00	-116.87	0.00	116.87	3,829.73	1,914.86	7,222.06	3,616.40	0.21	-0.07	0.040
35.00	-30.13	-1.35	0.00	-110.11	0.00	110.11	3,778.24	1,889.12	6,983.04	3,496.71	0.28	-0.08	0.039
39.25	-29.79	-1.35	0.00	-104.39	0.00	104.39	3,733.70	1,866.85	6,781.51	3,395.80	0.35	-0.09	0.039
40.00	-27.54	-1.33	0.00	-103.37	0.00	103.37	3,725.77	1,862.89	6,746.11	3,378.07	0.37	-0.09	0.038
45.00	-26.41	-1.32	0.00	-96.74	0.00	96.74	2,904.05	1,452.02	5,239.24	2,623.51	0.47	-0.10	0.046
50.00	-25.30	-1.31	0.00	-90.15	0.00	90.15	2,867.09	1,433.55	5,064.87	2,536.20	0.57	-0.11	0.044
55.00	-24.21	-1.29	0.00	-83.61	0.00	83.61	2,829.16	1,414.58	4,891.59	2,449.43	0.70	-0.12	0.043
60.00	-23.13	-1.28	0.00	-77.14	0.00	77.14	2,790.26	1,395.13	4,719.51	2,363.26	0.83	-0.13	0.041
65.00	-22.08	-1.26	0.00	-70.75	0.00	70.75	2,750.38	1,375.19	4,548.74	2,277.75	0.98	-0.15	0.039
70.00	-21.04	-1.24	0.00	-64.46	0.00	64.46	2,709.53	1,354.77	4,379.40	2,192.95	1.14	-0.16	0.037
75.00	-20.12	-1.21	0.00	-58.29	0.00	58.29	2,667.70	1,333.85	4,211.58	2,108.92	1.31	-0.17	0.035
79.50	-19.96	-1.21	0.00	-52.83	0.00	52.83	2,629.23	1,314.61	4,061.95	2,033.99	1.48	-0.18	0.034
80.00	-18.57	-1.17	0.00	-52.22	0.00	52.22	2,624.90	1,312.45	4,045.41	2,025.71	1.50	-0.18	0.033
84.25	-18.45	-1.16	0.00	-47.26	0.00	47.26	1,926.96	963.48	2,958.03	1,481.22	1.66	-0.19	0.041
85.00	-17.61	-1.14	0.00	-46.39	0.00	46.39	1,922.93	961.46	2,941.01	1,472.69	1.69	-0.19	0.041
90.00	-16.79	-1.11	0.00	-40.71	0.00	40.71	1,895.51	947.75	2,827.86	1,416.03	1.90	-0.20	0.038
95.00	-15.98	-1.08	0.00	-35.17	0.00	35.17	1,867.11	933.55	2,715.36	1,359.70	2.12	-0.22	0.034
100.00	-15.19	-1.04	0.00	-29.80	0.00	29.80	1,837.73	918.87	2,603.61	1,303.74	2.35	-0.23	0.031
105.00	-14.72	-1.02	0.00	-24.60	0.00	24.60	1,807.38	903.69	2,492.72	1,248.21	2.59	-0.23	0.028
108.00	-11.20	-0.84	0.00	-21.54	0.00	21.54	1,788.71	894.35	2,426.64	1,215.12	2.74	-0.24	0.024
110.00	-10.49	-0.80	0.00	-19.87	0.00	19.87	1,776.06	888.03	2,382.80	1,193.17	2.84	-0.24	0.023
115.00	-9.79	-0.76	0.00	-15.88	0.00	15.88	1,743.76	871.88	2,273.96	1,138.67	3.10	-0.25	0.020
120.00	-9.29	-0.73	0.00	-12.10	0.00	12.10	1,710.49	855.24	2,166.32	1,084.77	3.37	-0.26	0.017
120.00	-9.29	-0.73	0.00	-12.10	0.00	12.10	1,426.71	713.36	1,810.59	906.64	3.37	-0.26	0.020
124.00	-7.12	-0.58	0.00	-9.20	0.00	9.20	1,406.12	703.06	1,742.20	872.40	3.58	-0.26	0.016
125.00	-6.56	-0.54	0.00	-8.62	0.00	8.62	1,400.87	700.44	1,725.18	863.87	3.64	-0.26	0.015
130.00	-6.01	-0.50	0.00	-5.91	0.00	5.91	1,374.06	687.03	1,640.54	821.49	3.91	-0.27	0.012
135.00	-5.79	-0.49	0.00	-3.40	0.00	3.40	1,346.27	673.14	1,556.79	779.55	4.20	-0.27	0.009
137.00	-3.39	-0.30	0.00	-2.42	0.00	2.42	1,334.88	667.44	1,523.56	762.91	4.31	-0.27	0.006
140.00	-2.93	-0.26	0.00	-1.54	0.00	1.54	1,317.51	658.75	1,474.04	738.11	4.48	-0.27	0.004
145.00	-2.84	-0.25	0.00	-0.25	0.00	0.25	1,287.77	643.88	1,392.39	697.23	4.76	-0.27	0.003
146.00	0.00	0.00	0.00	0.00	0.00	0.00	1,281.70	640.85	1,376.20	689.12	4.82	-0.27	0.000
148.00	0.00	0.00	0.00	0.00	0.00	0.00	1,269.46	634.73	1,343.98	672.99	4.93	-0.27	0.000

Load Case (0.9 - 0.2Sds) \* DL + E ELMF

Seismic (Reduced DL) Equivalent Lateral Forces Method

Calculated Forces

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 (deg)	Ratio
0.00	-27.85	-1.34	0.00	-155.42	0.00	155.42	4,118.20	2,059.10	8,694.25	4,353.59	0.00	0.00	0.042
5.00	-26.82	-1.34	0.00	-148.74	0.00	148.74	4,072.56	2,036.28	8,444.91	4,228.73	0.01	-0.01	0.042
10.00	-25.80	-1.34	0.00	-142.04	0.00	142.04	4,025.94	2,012.97	8,197.01	4,104.60	0.02	-0.02	0.041
15.00	-24.81	-1.35	0.00	-135.32	0.00	135.32	3,978.35	1,989.18	7,950.67	3,981.24	0.05	-0.03	0.040
20.00	-23.82	-1.35	0.00	-128.59	0.00	128.59	3,929.78	1,964.89	7,705.99	3,858.72	0.09	-0.04	0.039
25.00	-22.85	-1.34	0.00	-121.86	0.00	121.86	3,880.24	1,940.12	7,463.08	3,737.09	0.14	-0.05	0.038
30.00	-21.80	-1.34	0.00	-115.14	0.00	115.14	3,829.73	1,914.86	7,222.06	3,616.40	0.20	-0.06	0.038
35.00	-21.00	-1.33	0.00	-108.45	0.00	108.45	3,778.24	1,889.12	6,983.04	3,496.71	0.28	-0.08	0.037
39.25	-20.77	-1.33	0.00	-102.78	0.00	102.78	3,733.70	1,866.85	6,781.51	3,395.80	0.35	-0.09	0.036
40.00	-19.20	-1.31	0.00	-101.78	0.00	101.78	3,725.77	1,862.89	6,746.11	3,378.07	0.36	-0.09	0.035
45.00	-18.41	-1.30	0.00	-95.21	0.00	95.21	2,904.05	1,452.02	5,239.24	2,623.51	0.46	-0.10	0.043
50.00	-17.64	-1.29	0.00	-88.69	0.00	88.69	2,867.09	1,433.55	5,064.87	2,536.20	0.57	-0.11	0.041
55.00	-16.88	-1.28	0.00	-82.24	0.00	82.24	2,829.16	1,414.58	4,891.59	2,449.43	0.69	-0.12	0.040
60.00	-16.13	-1.26	0.00	-75.85	0.00	75.85	2,790.26	1,395.13	4,719.51	2,363.26	0.82	-0.13	0.038
65.00	-15.39	-1.24	0.00	-69.56	0.00	69.56	2,750.38	1,375.19	4,548.74	2,277.75	0.97	-0.14	0.036
70.00	-14.67	-1.22	0.00	-63.36	0.00	63.36	2,709.53	1,354.77	4,379.40	2,192.95	1.12	-0.16	0.034
75.00	-14.03	-1.19	0.00	-57.27	0.00	57.27	2,667.70	1,333.85	4,211.58	2,108.92	1.29	-0.17	0.032
79.50	-13.92	-1.19	0.00	-51.90	0.00	51.90	2,629.23	1,314.61	4,061.95	2,033.99	1.46	-0.18	0.031
80.00	-12.95	-1.15	0.00	-51.31	0.00	51.31	2,624.90	1,312.45	4,045.41	2,025.71	1.47	-0.18	0.030
84.25	-12.86	-1.15	0.00	-46.43	0.00	46.43	1,926.96	963.48	2,958.03	1,481.22	1.64	-0.19	0.038
85.00	-12.28	-1.12	0.00	-45.57	0.00	45.57	1,922.93	961.46	2,941.01	1,472.69	1.67	-0.19	0.037
90.00	-11.70	-1.09	0.00	-39.98	0.00	39.98	1,895.51	947.75	2,827.86	1,416.03	1.87	-0.20	0.034
95.00	-11.14	-1.06	0.00	-34.54	0.00	34.54	1,867.11	933.55	2,715.36	1,359.70	2.09	-0.21	0.031
100.00	-10.59	-1.02	0.00	-29.26	0.00	29.26	1,837.73	918.87	2,603.61	1,303.74	2.31	-0.22	0.028
105.00	-10.26	-1.00	0.00	-24.16	0.00	24.16	1,807.38	903.69	2,492.72	1,248.21	2.55	-0.23	0.025
108.00	-7.81	-0.82	0.00	-21.16	0.00	21.16	1,788.71	894.35	2,426.64	1,215.12	2.70	-0.24	0.022
110.00	-7.31	-0.78	0.00	-19.52	0.00	19.52	1,776.06	888.03	2,382.80	1,193.17	2.80	-0.24	0.020
115.00	-6.82	-0.74	0.00	-15.60	0.00	15.60	1,743.76	871.88	2,273.96	1,138.67	3.05	-0.25	0.018
120.00	-6.48	-0.71	0.00	-11.89	0.00	11.89	1,710.49	855.24	2,166.32	1,084.77	3.31	-0.25	0.015
120.00	-6.48	-0.71	0.00	-11.89	0.00	11.89	1,426.71	713.36	1,810.59	906.64	3.31	-0.25	0.018
124.00	-4.96	-0.57	0.00	-9.04	0.00	9.04	1,406.12	703.06	1,742.20	872.40	3.53	-0.26	0.014
125.00	-4.57	-0.53	0.00	-8.47	0.00	8.47	1,400.87	700.44	1,725.18	863.87	3.58	-0.26	0.013
130.00	-4.19	-0.49	0.00	-5.81	0.00	5.81	1,374.06	687.03	1,640.54	821.49	3.85	-0.26	0.010
135.00	-4.04	-0.48	0.00	-3.34	0.00	3.34	1,346.27	673.14	1,556.79	779.55	4.13	-0.27	0.007
137.00	-2.36	-0.29	0.00	-2.38	0.00	2.38	1,334.88	667.44	1,523.56	762.91	4.24	-0.27	0.005
140.00	-2.04	-0.25	0.00	-1.51	0.00	1.51	1,317.51	658.75	1,474.04	738.11	4.41	-0.27	0.004
145.00	-1.98	-0.25	0.00	-0.25	0.00	0.25	1,287.77	643.88	1,392.39	697.23	4.69	-0.27	0.002
146.00	0.00	0.00	0.00	0.00	0.00	0.00	1,281.70	640.85	1,376.20	689.12	4.75	-0.27	0.000
148.00	0.00	0.00	0.00	0.00	0.00	0.00	1,269.46	634.73	1,343.98	672.99	4.86	-0.27	0.000



### Equivalent Modal Forces Analysis

(Based on ASCE7-10 Chapters 11, 12 & 15 and ANSI/TIA-G, section 2.7)

Spectral Response Acceleration for Short Period ( $S_s$ ):	0.17
Spectral Response Acceleration at 1.0 Second Period ( $S_1$ ):	0.06
Importance Factor ( $I_E$ ):	1.00
Site Coefficient $F_a$ :	1.60
Site Coefficient $F_v$ :	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period ( $S_{ds}$ ):	0.19
Design Spectral Response Acceleration at 1.0 Second Period ( $S_{d1}$ ):	0.10
Period Based on Rayleigh Method (sec):	2.16
Redundancy Factor ( $p$ ):	1.30

Load Case (1.2 + 0.2Sds) \* DL + E EMAM      Seismic Equivalent Modal Analysis Method

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
37	147.00	123	1.865	1.848	1.092	0.341	36	152
36	145.50	73	1.827	1.663	1.024	0.318	20	90
35	142.50	372	1.752	1.330	0.897	0.274	88	460
34	138.50	228	1.655	0.959	0.748	0.220	44	282
33	136.00	174	1.596	0.766	0.665	0.189	29	215
32	132.50	442	1.515	0.538	0.561	0.149	57	547
31	127.50	453	1.403	0.289	0.435	0.099	39	561
30	124.50	92	1.337	0.176	0.370	0.073	6	114
29	122.00	402	1.284	0.099	0.322	0.053	19	498
28	117.50	565	1.191	-0.003	0.248	0.023	11	699
27	112.50	577	1.092	-0.074	0.182	-0.003	-2	714
26	109.00	234	1.025	-0.103	0.144	-0.017	-3	290
25	106.50	378	0.979	-0.115	0.121	-0.024	-8	468
24	102.50	640	0.907	-0.122	0.090	-0.032	-18	792
23	97.50	653	0.820	-0.115	0.060	-0.035	-20	808
22	92.50	665	0.738	-0.098	0.038	-0.032	-18	823
21	87.50	677	0.661	-0.074	0.023	-0.022	-13	838
20	84.63	103	0.618	-0.059	0.017	-0.015	-1	127
19	82.13	1,119	0.582	-0.046	0.013	-0.008	-7	1,385
18	79.75	133	0.549	-0.034	0.010	-0.001	0	165
17	77.25	741	0.515	-0.022	0.008	0.007	4	916
16	72.50	838	0.454	0.000	0.006	0.020	15	1,036
15	67.50	853	0.393	0.020	0.007	0.032	23	1,055
14	62.50	868	0.337	0.036	0.009	0.040	30	1,074
13	57.50	883	0.285	0.048	0.014	0.045	35	1,093
12	52.50	899	0.238	0.057	0.018	0.048	37	1,112
11	47.50	914	0.195	0.063	0.024	0.048	38	1,131
10	42.50	1,813	0.156	0.067	0.029	0.048	75	2,243
9	39.63	275	0.135	0.069	0.032	0.047	11	340
8	37.13	922	0.119	0.070	0.035	0.047	37	1,141
7	32.50	1,102	0.091	0.071	0.038	0.046	44	1,363
6	27.50	1,121	0.065	0.072	0.041	0.044	43	1,387
5	22.50	1,139	0.044	0.071	0.042	0.043	42	1,410
4	17.50	1,158	0.026	0.067	0.040	0.040	41	1,432

Site Number: 302528

Code: ANSI/TIA-222-G

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Site Name: Columbia Central, CT

Engineering Number: OAA713126\_C3\_02

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Customer: SPRINT NEXTEL

3	12.50	1,176	0.013	0.059	0.035	0.036	37	1,455
2	7.50	1,194	0.005	0.044	0.025	0.028	29	1,478
1	2.50	1,213	0.001	0.018	0.010	0.013	14	1,501
LGP Allgon LGP21903	146.00	33	1.839	1.723	1.046	0.325	9	41
Powerwave Allgon LGP	146.00	85	1.839	1.723	1.046	0.325	24	105
Raycap DC6-48-60-18-	146.00	32	1.839	1.723	1.046	0.325	9	39
Ericsson RRUS-11	146.00	165	1.839	1.723	1.046	0.325	47	204
Powerwave Allgon 777	146.00	210	1.839	1.723	1.046	0.325	59	260
KMW AM-X-CD-16-65-00	146.00	146	1.839	1.723	1.046	0.325	41	180
Round Low Profile PI	146.00	1,500	1.839	1.723	1.046	0.325	423	1,856
RFS FD9R6004/2C-3L	137.00	16	1.619	0.840	0.697	0.201	3	19
Antel BXA-171063-8CF	137.00	32	1.619	0.840	0.697	0.201	5	39
Antel LPA-80063/4CF	137.00	120	1.619	0.840	0.697	0.201	21	148
Antel BXA-70063/6CF_	137.00	51	1.619	0.840	0.697	0.201	9	63
Round Low Profile PI	137.00	1,500	1.619	0.840	0.697	0.201	262	1,856
Decibel DB844H90E-XY	124.00	168	1.327	0.159	0.360	0.069	10	208
Round Low Profile PI	124.00	1,500	1.327	0.159	0.360	0.069	90	1,856
Alcatel-Lucent RRH2x	108.00	317	1.006	-0.108	0.135	-0.020	-5	393
Alcatel-Lucent 1900	108.00	180	1.006	-0.108	0.135	-0.020	-3	223
Alcatel-Lucent TD-RR	108.00	210	1.006	-0.108	0.135	-0.020	-4	260
RFS APXVTM14-ALU-I20	108.00	169	1.006	-0.108	0.135	-0.020	-3	209
Commscope NNVV-	108.00	232	1.006	-0.108	0.135	-0.020	-4	287
Round Low Profile PI	108.00	1,500	1.006	-0.108	0.135	-0.020	-26	1,856
GPS	30.00	10	0.078	0.072	0.040	0.045	0	12
GPS	30.00	10	0.078	0.072	0.040	0.045	0	12
Stand-Off	30.00	100	0.078	0.072	0.040	0.045	4	124
		33,496	56.365	23.783	19.926	5.622	1,784	41,445

Load Case (0.9 - 0.2Sds) \* DL + E EMAM

Seismic (Reduced DL) Equivalent Modal Analysis Method

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
37	147.00	123	1.865	1.848	1.092	0.341	36	106
36	145.50	73	1.827	1.663	1.024	0.318	20	63
35	142.50	372	1.752	1.330	0.897	0.274	88	321
34	138.50	228	1.655	0.959	0.748	0.220	44	197
33	136.00	174	1.596	0.766	0.665	0.189	29	150
32	132.50	442	1.515	0.538	0.561	0.149	57	382
31	127.50	453	1.403	0.289	0.435	0.099	39	391
30	124.50	92	1.337	0.176	0.370	0.073	6	79
29	122.00	402	1.284	0.099	0.322	0.053	19	347
28	117.50	565	1.191	-0.003	0.248	0.023	11	487
27	112.50	577	1.092	-0.074	0.182	-0.003	-2	498
26	109.00	234	1.025	-0.103	0.144	-0.017	-3	202
25	106.50	378	0.979	-0.115	0.121	-0.024	-8	326
24	102.50	640	0.907	-0.122	0.090	-0.032	-18	552
23	97.50	653	0.820	-0.115	0.060	-0.035	-20	563
22	92.50	665	0.738	-0.098	0.038	-0.032	-18	574
21	87.50	677	0.661	-0.074	0.023	-0.022	-13	584
20	84.63	103	0.618	-0.059	0.017	-0.015	-1	89
19	82.13	1,119	0.582	-0.046	0.013	-0.008	-7	966
18	79.75	133	0.549	-0.034	0.010	-0.001	0	115
17	77.25	741	0.515	-0.022	0.008	0.007	4	639
16	72.50	838	0.454	0.000	0.006	0.020	15	723
15	67.50	853	0.393	0.020	0.007	0.032	23	736
14	62.50	868	0.337	0.036	0.009	0.040	30	749
13	57.50	883	0.285	0.048	0.014	0.045	35	762
12	52.50	899	0.238	0.057	0.018	0.048	37	775
11	47.50	914	0.195	0.063	0.024	0.048	38	789

Site Number: 302528

Code: ANSI/TIA-222-G

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Site Name: Columbia Central, CT

Engineering Number: OAA713126\_C3\_02

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Customer: SPRINT NEXTEL

10	42.50	1,813	0.156	0.067	0.029	0.048	75	1,564
9	39.63	275	0.135	0.069	0.032	0.047	11	237
8	37.13	922	0.119	0.070	0.035	0.047	37	795
7	32.50	1,102	0.091	0.071	0.038	0.046	44	950
6	27.50	1,121	0.065	0.072	0.041	0.044	43	967
5	22.50	1,139	0.044	0.071	0.042	0.043	42	983
4	17.50	1,158	0.026	0.067	0.040	0.040	41	999
3	12.50	1,176	0.013	0.059	0.035	0.036	37	1,015
2	7.50	1,194	0.005	0.044	0.025	0.028	29	1,030
1	2.50	1,213	0.001	0.018	0.010	0.013	14	1,046
LGP Allgon LGP21903	146.00	33	1.839	1.723	1.046	0.325	9	28
Powerwave Allgon LGP	146.00	85	1.839	1.723	1.046	0.325	24	73
Raycap DC6-48-60-18-	146.00	32	1.839	1.723	1.046	0.325	9	27
Ericsson RRUS-11	146.00	165	1.839	1.723	1.046	0.325	47	142
Powerwave Allgon 777	146.00	210	1.839	1.723	1.046	0.325	59	181
KMW AM-X-CD-16-65-00	146.00	146	1.839	1.723	1.046	0.325	41	126
Round Low Profile PI	146.00	1,500	1.839	1.723	1.046	0.325	423	1,294
RFS FD9R6004/2C-3L	137.00	16	1.619	0.840	0.697	0.201	3	13
Antel BXA-171063-8CF	137.00	32	1.619	0.840	0.697	0.201	5	27
Antel LPA-80063/4CF	137.00	120	1.619	0.840	0.697	0.201	21	104
Antel BXA-70063/6CF_	137.00	51	1.619	0.840	0.697	0.201	9	44
Round Low Profile PI	137.00	1,500	1.619	0.840	0.697	0.201	262	1,294
Decibel DB844H90E-XY	124.00	168	1.327	0.159	0.360	0.069	10	145
Round Low Profile PI	124.00	1,500	1.327	0.159	0.360	0.069	90	1,294
Alcatel-Lucent RRH2x	108.00	317	1.006	-0.108	0.135	-0.020	-5	274
Alcatel-Lucent 1900	108.00	180	1.006	-0.108	0.135	-0.020	-3	155
Alcatel-Lucent TD-RR	108.00	210	1.006	-0.108	0.135	-0.020	-4	181
RFS APXVTM14-ALU-I20	108.00	169	1.006	-0.108	0.135	-0.020	-3	145
Commscope NNVV-	108.00	232	1.006	-0.108	0.135	-0.020	-4	200
Round Low Profile PI	108.00	1,500	1.006	-0.108	0.135	-0.020	-26	1,294
GPS	30.00	10	0.078	0.072	0.040	0.045	0	9
GPS	30.00	10	0.078	0.072	0.040	0.045	0	9
Stand-Off	30.00	100	0.078	0.072	0.040	0.045	4	86
		33,496	56.365	23.783	19.926	5.622	1,784	28,896

Load Case (1.2 + 0.2Sds) \* DL + E EMAM Seismic Equivalent Modal Analysis Method

Calculated Forces

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 (deg)	Ratio
0.00	-39.94	-1.77	0.00	-204.14	0.00	204.14	4,118.20	2,059.10	8,694.25	4,353.59	0.00	0.00	0.057
5.00	-38.47	-1.75	0.00	-195.26	0.00	195.26	4,072.56	2,036.28	8,444.91	4,228.73	0.01	-0.01	0.056
10.00	-37.01	-1.73	0.00	-186.49	0.00	186.49	4,025.94	2,012.97	8,197.01	4,104.60	0.03	-0.03	0.055
15.00	-35.58	-1.69	0.00	-177.86	0.00	177.86	3,978.35	1,989.18	7,950.67	3,981.24	0.07	-0.04	0.054
20.00	-34.17	-1.66	0.00	-169.39	0.00	169.39	3,929.78	1,964.89	7,705.99	3,858.72	0.12	-0.06	0.053
25.00	-32.78	-1.62	0.00	-161.09	0.00	161.09	3,880.24	1,940.12	7,463.08	3,737.09	0.19	-0.07	0.052
30.00	-31.27	-1.58	0.00	-152.98	0.00	152.98	3,829.73	1,914.86	7,222.06	3,616.40	0.27	-0.09	0.050
35.00	-30.13	-1.55	0.00	-145.08	0.00	145.08	3,778.24	1,889.12	6,983.04	3,496.71	0.36	-0.10	0.049
39.25	-29.79	-1.54	0.00	-138.50	0.00	138.50	3,733.70	1,866.85	6,781.51	3,395.80	0.46	-0.11	0.049
40.00	-27.54	-1.46	0.00	-137.34	0.00	137.34	3,725.77	1,862.89	6,746.11	3,378.07	0.48	-0.11	0.048
45.00	-26.41	-1.43	0.00	-130.02	0.00	130.02	2,904.05	1,452.02	5,239.24	2,623.51	0.60	-0.13	0.059
50.00	-25.30	-1.40	0.00	-122.87	0.00	122.87	2,867.09	1,433.55	5,064.87	2,536.20	0.75	-0.14	0.057
55.00	-24.21	-1.37	0.00	-115.88	0.00	115.88	2,829.16	1,414.58	4,891.59	2,449.43	0.91	-0.16	0.056
60.00	-23.13	-1.34	0.00	-109.04	0.00	109.04	2,790.26	1,395.13	4,719.51	2,363.26	1.09	-0.18	0.054
65.00	-22.08	-1.32	0.00	-102.33	0.00	102.33	2,750.38	1,375.19	4,548.74	2,277.75	1.28	-0.20	0.053
70.00	-21.04	-1.31	0.00	-95.72	0.00	95.72	2,709.53	1,354.77	4,379.40	2,192.95	1.50	-0.21	0.051
75.00	-20.12	-1.31	0.00	-89.17	0.00	89.17	2,667.70	1,333.85	4,211.58	2,108.92	1.73	-0.23	0.050
79.50	-19.96	-1.31	0.00	-83.29	0.00	83.29	2,629.23	1,314.61	4,061.95	2,033.99	1.95	-0.25	0.049
80.00	-18.57	-1.31	0.00	-82.64	0.00	82.64	2,624.90	1,312.45	4,045.41	2,025.71	1.98	-0.25	0.048
84.25	-18.45	-1.32	0.00	-77.05	0.00	77.05	1,926.96	963.48	2,958.03	1,481.22	2.21	-0.26	0.062
85.00	-17.61	-1.33	0.00	-76.07	0.00	76.07	1,922.93	961.46	2,941.01	1,472.69	2.25	-0.26	0.061
90.00	-16.78	-1.35	0.00	-69.42	0.00	69.42	1,895.51	947.75	2,827.86	1,416.03	2.54	-0.28	0.058
95.00	-15.98	-1.37	0.00	-62.67	0.00	62.67	1,867.11	933.55	2,715.36	1,359.70	2.85	-0.30	0.055
100.00	-15.18	-1.39	0.00	-55.81	0.00	55.81	1,837.73	918.87	2,603.61	1,303.74	3.17	-0.32	0.051
105.00	-14.71	-1.40	0.00	-48.86	0.00	48.86	1,807.38	903.69	2,492.72	1,248.21	3.52	-0.34	0.047
108.00	-11.20	-1.43	0.00	-44.67	0.00	44.67	1,788.71	894.35	2,426.64	1,215.12	3.74	-0.35	0.043
110.00	-10.48	-1.43	0.00	-41.81	0.00	41.81	1,776.06	888.03	2,382.80	1,193.17	3.89	-0.36	0.041
115.00	-9.78	-1.41	0.00	-34.68	0.00	34.68	1,743.76	871.88	2,273.96	1,138.67	4.27	-0.37	0.036
120.00	-9.29	-1.39	0.00	-27.61	0.00	27.61	1,710.49	855.24	2,166.32	1,084.77	4.67	-0.39	0.031
120.00	-9.29	-1.39	0.00	-27.61	0.00	27.61	1,426.71	713.36	1,810.59	906.64	4.67	-0.39	0.037
124.00	-7.11	-1.27	0.00	-22.04	0.00	22.04	1,406.12	703.06	1,742.20	872.40	5.00	-0.40	0.030
125.00	-6.55	-1.23	0.00	-20.76	0.00	20.76	1,400.87	700.44	1,725.18	863.87	5.09	-0.40	0.029
130.00	-6.00	-1.17	0.00	-14.61	0.00	14.61	1,374.06	687.03	1,640.54	821.49	5.51	-0.41	0.022
135.00	-5.79	-1.14	0.00	-8.75	0.00	8.75	1,346.27	673.14	1,556.79	779.55	5.95	-0.42	0.016
137.00	-3.38	-0.78	0.00	-6.46	0.00	6.46	1,334.88	667.44	1,523.56	762.91	6.13	-0.42	0.011
140.00	-2.92	-0.69	0.00	-4.12	0.00	4.12	1,317.51	658.75	1,474.04	738.11	6.39	-0.42	0.008
145.00	-2.83	-0.67	0.00	-0.67	0.00	0.67	1,287.77	643.88	1,392.39	697.23	6.84	-0.43	0.003
146.00	0.00	0.00	0.00	0.00	0.00	0.00	1,281.70	640.85	1,376.20	689.12	6.92	-0.43	0.000
148.00	0.00	0.00	0.00	0.00	0.00	0.00	1,269.46	634.73	1,343.98	672.99	7.10	-0.43	0.000

Load Case (0.9 - 0.2Sds) \* DL + E EMAM Seismic (Reduced DL) Equivalent Modal Analysis Method

Calculated Forces

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 (deg)	Ratio
0.00	-27.85	-1.77	0.00	-201.49	0.00	201.49	4,118.20	2,059.10	8,694.25	4,353.59	0.00	0.00	0.053
5.00	-26.82	-1.75	0.00	-192.62	0.00	192.62	4,072.56	2,036.28	8,444.91	4,228.73	0.01	-0.01	0.052
10.00	-25.80	-1.72	0.00	-183.87	0.00	183.87	4,025.94	2,012.97	8,197.01	4,104.60	0.03	-0.03	0.051
15.00	-24.80	-1.68	0.00	-175.27	0.00	175.27	3,978.35	1,989.18	7,950.67	3,981.24	0.07	-0.04	0.050
20.00	-23.82	-1.65	0.00	-166.85	0.00	166.85	3,929.78	1,964.89	7,705.99	3,858.72	0.12	-0.06	0.049
25.00	-22.85	-1.61	0.00	-158.62	0.00	158.62	3,880.24	1,940.12	7,463.08	3,737.09	0.18	-0.07	0.048
30.00	-21.80	-1.56	0.00	-150.57	0.00	150.57	3,829.73	1,914.86	7,222.06	3,616.40	0.26	-0.08	0.047
35.00	-21.00	-1.53	0.00	-142.75	0.00	142.75	3,778.24	1,889.12	6,983.04	3,496.71	0.36	-0.10	0.046
39.25	-20.77	-1.52	0.00	-136.24	0.00	136.24	3,733.70	1,866.85	6,781.51	3,395.80	0.45	-0.11	0.046
40.00	-19.20	-1.45	0.00	-135.10	0.00	135.10	3,725.77	1,862.89	6,746.11	3,378.07	0.47	-0.11	0.045
45.00	-18.41	-1.41	0.00	-127.87	0.00	127.87	2,904.05	1,452.02	5,239.24	2,623.51	0.60	-0.13	0.055
50.00	-17.64	-1.38	0.00	-120.81	0.00	120.81	2,867.09	1,433.55	5,064.87	2,536.20	0.74	-0.14	0.054
55.00	-16.88	-1.35	0.00	-113.93	0.00	113.93	2,829.16	1,414.58	4,891.59	2,449.43	0.90	-0.16	0.052
60.00	-16.13	-1.32	0.00	-107.20	0.00	107.20	2,790.26	1,395.13	4,719.51	2,363.26	1.07	-0.18	0.051
65.00	-15.39	-1.30	0.00	-100.61	0.00	100.61	2,750.38	1,375.19	4,548.74	2,277.75	1.26	-0.19	0.050
70.00	-14.67	-1.28	0.00	-94.13	0.00	94.13	2,709.53	1,354.77	4,379.40	2,192.95	1.47	-0.21	0.048
75.00	-14.03	-1.28	0.00	-87.71	0.00	87.71	2,667.70	1,333.85	4,211.58	2,108.92	1.70	-0.23	0.047
79.50	-13.91	-1.28	0.00	-81.94	0.00	81.94	2,629.23	1,314.61	4,061.95	2,033.99	1.92	-0.24	0.046
80.00	-12.95	-1.29	0.00	-81.30	0.00	81.30	2,624.90	1,312.45	4,045.41	2,025.71	1.95	-0.24	0.045
84.25	-12.86	-1.29	0.00	-75.83	0.00	75.83	1,926.96	963.48	2,958.03	1,481.22	2.17	-0.26	0.058
85.00	-12.27	-1.30	0.00	-74.86	0.00	74.86	1,922.93	961.46	2,941.01	1,472.69	2.21	-0.26	0.057
90.00	-11.70	-1.32	0.00	-68.34	0.00	68.34	1,895.51	947.75	2,827.86	1,416.03	2.50	-0.28	0.054
95.00	-11.14	-1.34	0.00	-61.73	0.00	61.73	1,867.11	933.55	2,715.36	1,359.70	2.80	-0.30	0.051
100.00	-10.58	-1.36	0.00	-55.01	0.00	55.01	1,837.73	918.87	2,603.61	1,303.74	3.13	-0.32	0.048
105.00	-10.26	-1.37	0.00	-48.20	0.00	48.20	1,807.38	903.69	2,492.72	1,248.21	3.47	-0.34	0.044
108.00	-7.80	-1.41	0.00	-44.09	0.00	44.09	1,788.71	894.35	2,426.64	1,215.12	3.68	-0.35	0.041
110.00	-7.31	-1.41	0.00	-41.28	0.00	41.28	1,776.06	888.03	2,382.80	1,193.17	3.83	-0.35	0.039
115.00	-6.82	-1.39	0.00	-34.25	0.00	34.25	1,743.76	871.88	2,273.96	1,138.67	4.21	-0.37	0.034
120.00	-6.47	-1.37	0.00	-27.28	0.00	27.28	1,710.49	855.24	2,166.32	1,084.77	4.60	-0.38	0.029
120.00	-6.47	-1.37	0.00	-27.28	0.00	27.28	1,426.71	713.36	1,810.59	906.64	4.60	-0.38	0.035
124.00	-4.95	-1.26	0.00	-21.79	0.00	21.79	1,406.12	703.06	1,742.20	872.40	4.93	-0.39	0.029
125.00	-4.56	-1.22	0.00	-20.53	0.00	20.53	1,400.87	700.44	1,725.18	863.87	5.01	-0.39	0.027
130.00	-4.18	-1.16	0.00	-14.45	0.00	14.45	1,374.06	687.03	1,640.54	821.49	5.43	-0.41	0.021
135.00	-4.03	-1.13	0.00	-8.66	0.00	8.66	1,346.27	673.14	1,556.79	779.55	5.86	-0.41	0.014
137.00	-2.36	-0.77	0.00	-6.40	0.00	6.40	1,334.88	667.44	1,523.56	762.91	6.03	-0.41	0.010
140.00	-2.04	-0.68	0.00	-4.08	0.00	4.08	1,317.51	658.75	1,474.04	738.11	6.29	-0.42	0.007
145.00	-1.97	-0.66	0.00	-0.66	0.00	0.66	1,287.77	643.88	1,392.39	697.23	6.73	-0.42	0.002
146.00	0.00	0.00	0.00	0.00	0.00	0.00	1,281.70	640.85	1,376.20	689.12	6.82	-0.42	0.000
148.00	0.00	0.00	0.00	0.00	0.00	0.00	1,269.46	634.73	1,343.98	672.99	6.99	-0.42	0.000

Site Number: 302528

Code: ANSI/TIA-222-G

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Site Name: Columbia Central, CT

Engineering Number: OAA713126\_C3\_02

3/22/2018 2:02:36 PM

Customer: SPRINT NEXTEL

### Analysis Summary

Load Case	Reactions						Max Usage	
	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.6W	22.92	0.00	40.16	0.00	0.00	2377.95	0.00	0.56
0.9D + 1.6W	22.91	0.00	30.11	0.00	0.00	2354.20	0.00	0.55
1.2D + 1.0Di + 1.0Wi	6.43	0.00	69.41	0.00	0.00	676.48	0.00	0.17
(1.2 + 0.2Sds) * DL + E ELFM	1.34	0.00	39.94	0.00	0.00	157.33	45.00	0.05
(1.2 + 0.2Sds) * DL + E EMAM	1.77	0.00	39.94	0.00	0.00	204.14	84.25	0.06
(0.9 - 0.2Sds) * DL + E ELFM	1.34	0.00	27.85	0.00	0.00	155.42	45.00	0.04
(0.9 - 0.2Sds) * DL + E EMAM	1.77	0.00	27.85	0.00	0.00	201.49	84.25	0.06
1.0D + 1.0W	5.05	0.00	33.49	0.00	0.00	521.32	0.00	0.13



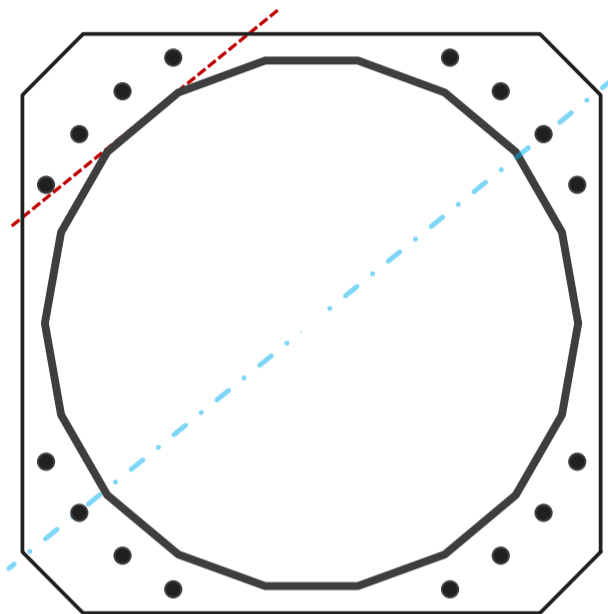
## Base Plate & Anchor Rod Analysis

Pole Dimensions		
Number of Sides	18	-
Diameter	51.73	in
Thickness	0.375	in
Orientation Offset	0	°

Base Reactions		
Moment, Mu	2378.0	k-ft
Axial, Pu	40.2	k
Shear, Vu	22.9	k
Neutral Axis	39	°

Report Capacities		
Component	Capacity	Result
Base Plate	41%	Pass
Anchor Rods	47%	Pass
Dwyidag	-	-

Base Plate		
Shape	Square	-
Width	57	in
Thickness	3	in
Grade	Other	-
Yield Strength, Fy	55	ksi
Tensile Strength, Fu	70	ksi
Clip	6	in
Orientation Offset	0	°
Anchor Rod Detail	d	$\eta=0.5$
Clear Distance	3	in
Applied Moment, Mu	1316.2	k
Bending Stress, $\phi Mn$	3222.9	k



Original Anchor Rods		
Arrangement	Cluster	-
Quantity	16	-
Diameter, $\phi$	2 1/4	in
Bolt Circle	59	in
Grade	A615-75	
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Spacing	6.0	in
Orientation Offset	0	°
Applied Force, Pu	123.4	k
Anchor Rods, $\phi Pn$	259.8	k

<b>Base/Flange Plate</b>	Plate Type	<b>Flange @ 120.0 ft</b>
	Pole Diameter	28 in
	Pole Thickness	0.2187 in
	Plate Diameter	39 in
	Plate Thickness	1 in
	Plate Fy	50 ksi
	Weld Length	0.25 in
	$\phi_s$ Resistance	61.85 k-in
	Applied	40.38 k-in
	<b>Stiffeners</b>	#

Code Rev. **G**

Date 3/22/2018  
 Engineer Christophe.Quenum  
 Site # 302528  
 Carrier SPRINT NEXTEL

Moment 174.0 k-ft  
 Axial 8.8 k

Required Flange Thickness:

**0.81 in** OK

<b>Bolts</b>	#	<b>16</b>
	Bolt Circle	35 in
	(R)adial / (S)quare	R
	Diameter	0.75 in
	Hole Diameter	0.875 in
	Type	A325
	Fy	92 ksi
	Fu	120 ksi
	$\phi_s$ Resistance	30.10 k
	Applied	14.36 k
<b>Reinforcement</b>	#	0
	#	0
<b>Extra Bolts</b>	#	0

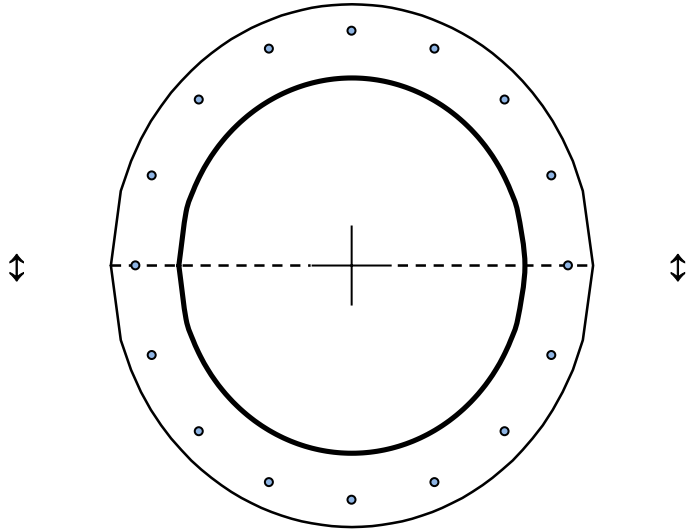


Plate Stress Ratio:  
**0.65** (Pass)

Bolt Stress Ratio:  
**0.48** (Pass)



# Sprint



PROJECT: DO MACRO UPGRADE  
 SITE NAME: COLUMBIA/NEXTEL  
 SITE CASCADE: CT33XC014  
 SITE ADDRESS: 330 ROUTE 66  
 COLUMBIA, CT 06237  
 SITE TYPE: MONOPOLE TOWER  
 MARKET: NORTHERN CONECTICUT

PLANS PREPARED FOR:

PLANS PREPARED BY:

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

PROJECT MANAGER:

32 CLINTON ST.  
 SARATOGA SPRINGS, NY 12886  
 OFFICE# (518) 308-3740

ENGINEERING LICENSE:

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REVISIONS:	DESCRIPTION	DATE	BY	REV

ISSUED FOR REVIEW: 04/23/18 ETC A

SITE NAME:  
**COLUMBIA/NEXTEL**

SITE NUMBER:  
**CT33XC014**

SITE ADDRESS:  
**330 ROUTE 66  
 COLUMBIA, CT 06237**

SHEET DESCRIPTION:  
**TITLE SHEET  
 & PROJECT DATA**

SHEET NUMBER:  
**T-1**

SITE INFORMATION	AREA MAP	PROJECT DESCRIPTION	DRAWING INDEX																																							
<p><b>TOWER OWNER:</b>            AMERICAN TOWER CORPORATION            10 PRESIDENTIAL WAY            WOBURN, MA 01801</p> <p><b>LATITUDE (NAD83):</b>            41° 41' 23.58" N            41.689883°</p> <p><b>LONGITUDE (NAD83):</b>            72° 19' 30.70" W            -72.325194°</p> <p><b>COUNTY:</b>            TOLLAND COUNTY</p> <p><b>ZONING JURISDICTION:</b>            CONNECTICUT SITING COUNCIL</p> <p><b>ZONING DISTRICT:</b>            TBD</p> <p><b>POWER COMPANY:</b>            CL&amp;P            PHONE: (800) 286-2000</p> <p><b>AAV PROVIDER:</b>            AT&amp;T            PHONE: (800) 331-0500</p> <p><b>PROJECT MANAGER:</b>            AIROSMITH DEVELOPMENT            TERRI BURKHOLDER            (315) 719-2928            TBURKHOLDER@AIROSMITHDEVELOPMENT.COM</p>	<p style="text-align: center;"><b>LOCATION MAP</b></p>	<p>SPRINT PROPOSES TO MODIFY AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY.</p> <ul style="list-style-type: none"> <li>REMOVE (6) EXISTING PANEL ANTENNAS</li> <li>INSTALL (6) PANEL ANTENNAS</li> <li>RELOCATE (3) 1900 MHz RRH'S BEHIND ANTENNAS</li> <li>INSTALL (3) 800 MHz RRH'S BEHIND ANTENNAS</li> <li>INSTALL (3) 800 MHz RRH'S BEHIND EXISTING PIPE MOUNT</li> <li>INSTALL (3) 2.5 GHz RRH'S BEHIND ANTENNAS</li> <li>INSTALL (48) JUMPER CABLES</li> <li>INSTALL (4) HYBRID CABLE</li> <li>INSTALL 2.5 EQUIPMENT INSIDE EXISTING N.V. MMBS CABINET</li> </ul> <p>THESE PLANS HAVE BEEN DEVELOPED FOR THE MODIFICATION OF AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY OWNED OR LEASED BY SPRINT IN ACCORDANCE WITH THE SCOPE OF WORK PROVIDED BY SPRINT. INFINIGY HAS INCORPORATED THIS SCOPE OF WORK IN THE PLANS. THESE PLANS ARE NOT FOR CONSTRUCTION UNLESS ACCOMPANIED BY A PASSING STRUCTURAL STABILITY ANALYSIS PREPARED BY A LICENSED STRUCTURAL ENGINEER. STRUCTURAL ANALYSIS MUST INCLUDE BOTH TOWER AND MOUNT.</p> <p style="text-align: center;"><b>APPLICABLE CODES</b></p> <ol style="list-style-type: none"> <li>INTERNATIONAL BUILDING CODE (2015 IBC)</li> <li>TIA-222-G OR LATEST EDITION</li> <li>NFPA 780 - LIGHTNING PROTECTION CODE</li> <li>2011 NATIONAL ELECTRIC CODE OR LATEST EDITION</li> <li>ANY OTHER NATIONAL OR LOCAL APPLICABLE CODES, MOST RECENT EDITIONS</li> <li>CT BUILDING CODE</li> <li>LOCAL BUILDING CODE</li> <li>CITY/COUNTY ORDINANCES</li> </ol> <div style="text-align: right;"> <p>Know what's below.            Call before you dig.            www.call811.com</p> </div>	<table border="1"> <thead> <tr> <th>SHEET NO.</th> <th>SHEET TITLE</th> <th>REV</th> </tr> </thead> <tbody> <tr> <td>T-1</td> <td>TITLE SHEET &amp; PROJECT DATA</td> <td>0</td> </tr> <tr> <td>SP-1</td> <td>SPRINT SPECIFICATIONS</td> <td>0</td> </tr> <tr> <td>SP-2</td> <td>SPRINT SPECIFICATIONS</td> <td>0</td> </tr> <tr> <td>SP-3</td> <td>SPRINT SPECIFICATIONS</td> <td>0</td> </tr> <tr> <td>A-1</td> <td>SITE PLAN</td> <td>0</td> </tr> <tr> <td>A-2</td> <td>TOWER ELEVATION</td> <td>0</td> </tr> <tr> <td>A-3</td> <td>ANTENNA LAYOUT &amp; MOUNTING DETAILS</td> <td>0</td> </tr> <tr> <td>A-4</td> <td>EQUIPMENT &amp; MOUNTING DETAILS</td> <td>0</td> </tr> <tr> <td>A-5</td> <td>CIVIL DETAILS</td> <td>0</td> </tr> <tr> <td>A-6</td> <td>PLUMBING DIAGRAM</td> <td>0</td> </tr> <tr> <td>E-1</td> <td>ELECTRICAL &amp; GROUNDING PLAN</td> <td>0</td> </tr> <tr> <td>E-2</td> <td>ELECTRICAL &amp; GROUNDING DETAILS</td> <td>0</td> </tr> </tbody> </table>	SHEET NO.	SHEET TITLE	REV	T-1	TITLE SHEET & PROJECT DATA	0	SP-1	SPRINT SPECIFICATIONS	0	SP-2	SPRINT SPECIFICATIONS	0	SP-3	SPRINT SPECIFICATIONS	0	A-1	SITE PLAN	0	A-2	TOWER ELEVATION	0	A-3	ANTENNA LAYOUT & MOUNTING DETAILS	0	A-4	EQUIPMENT & MOUNTING DETAILS	0	A-5	CIVIL DETAILS	0	A-6	PLUMBING DIAGRAM	0	E-1	ELECTRICAL & GROUNDING PLAN	0	E-2	ELECTRICAL & GROUNDING DETAILS	0
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THESE OUTLINE SPECIFICATIONS IN CONJUNCTION WITH THE SPRINT STANDARD CONSTRUCTION SPECIFICATIONS, INCLUDING CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

**SECTION 01 100 – SCOPE OF WORK**

**PART 1 – GENERAL**

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

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

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

**PART 2 – PRODUCTS (NOT USED)**

**PART 3 – EXECUTION**

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

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

**SECTION 01 200 – COMPANY FURNISHED MATERIAL AND EQUIPMENT**

**PART 1 – GENERAL**

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

**PART 2 – PRODUCTS (NOT USED)**

**PART 3 – EXECUTION**

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

**SECTION 01 300 – CELL SITE CONSTRUCTION CO.**

**PART 1 – GENERAL**

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

**PART 2 – PRODUCTS (NOT USED)**

**PART 3 – EXECUTION**

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

PLANS PREPARED FOR:



PLANS PREPARED BY:

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

PROJECT MANAGER:

**AIROSMITH**  
DEVELOPMENT  
32 CLINTON ST.  
SARATOGA SPRINGS, NY 12886  
OFFICE# (518) 308-3740

ENGINEERING LICENSE:



DRAWING NOTICE:

THESE DOCUMENTS ARE CONFIDENTIAL AND ARE THE SOLE PROPERTY OF SPRINT AND MAY NOT BE REPRODUCED, DISSEMINATED OR REDISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF SPRINT.

REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR REVIEW	04/23/18	ETC	A

SITE NAME:

COLUMBIA/NEXTEL

SITE NUMBER:

CT33XC014

SITE ADDRESS:

330 ROUTE 66  
COLUMBIA, CT 06237

SHEET DESCRIPTION:

SPRINT SPECIFICATIONS

SHEET NUMBER:

**SP-1**

CONTINUE FROM SP-1

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

3.2 GENERAL REQUIREMENTS FOR CIVIL CONSTRUCTION:

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

3.3 DELIVERABLES:

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

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

SECTION 01 400 - SUBMITTALS & TESTS

PART 1 - GENERAL

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

1.4 TESTS AND INSPECTIONS:

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

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

1.5 COMMISSIONING: PERFORM ALL COMMISSIONING AS REQUIRED BY APPLICABLE MOPs

1.6 INTEGRATION: PERFORM ALL INTEGRATION ACTIVITIES AS REQUIRED BY APPLICABLE MOPs

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 REQUIREMENTS FOR TESTING:

A. THIRD PARTY TESTING AGENCY:

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

3.2 REQUIRED TESTS:

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

3.3 REQUIRED INSPECTIONS

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

PLANS PREPARED FOR:



PLANS PREPARED BY:



PROJECT MANAGER:



ENGINEERING LICENSE:



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REVISIONS:	DESCRIPTION	DATE	BY	REV
ISSUED FOR REVIEW		04/23/18	ETC	A

SITE NAME:

COLUMBIA/NEXTEL

SITE NUMBER:

CT33XC014

SITE ADDRESS:

330 ROUTE 66  
COLUMBIA, CT 06237

SHEET DESCRIPTION:

SPRINT SPECIFICATIONS

SHEET NUMBER:

SP-2

CONTINUE FROM SP-2

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

SECTION 01 400 - SUBMITTALS & TESTS

PART 1 - GENERAL

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

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

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

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

PLANS PREPARED FOR:



PLANS PREPARED BY:

**INFINIGY**  
FROM ZERO TO INFINIGY  
the solutions are endless

1033 Watervliet Shaker Rd | Albany, NY 12203  
Phone: 518-690-0790 | Fax: 518-690-0793  
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JOB NUMBER 526-104

PROJECT MANAGER:

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DEVELOPMENT

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REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR REVIEW	04/23/18	ETC	A

SITE NAME:

**COLUMBIA/NEXTEL**

SITE NUMBER:

**CT33XC014**

SITE ADDRESS:

**330 ROUTE 66  
COLUMBIA, CT 06237**

SHEET DESCRIPTION:

**SPRINT SPECIFICATIONS**

SHEET NUMBER:

**SP-3**

PLANS PREPARED FOR:



PLANS PREPARED BY:

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ISSUED FOR REVIEW		04/23/18	ETC	A

SITE NAME:

COLUMBIA/NEXTEL

SITE NUMBER:

CT33XC014

SITE ADDRESS:

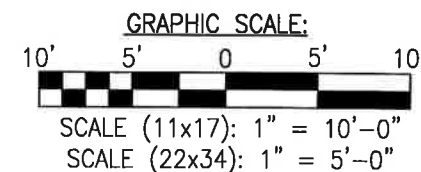
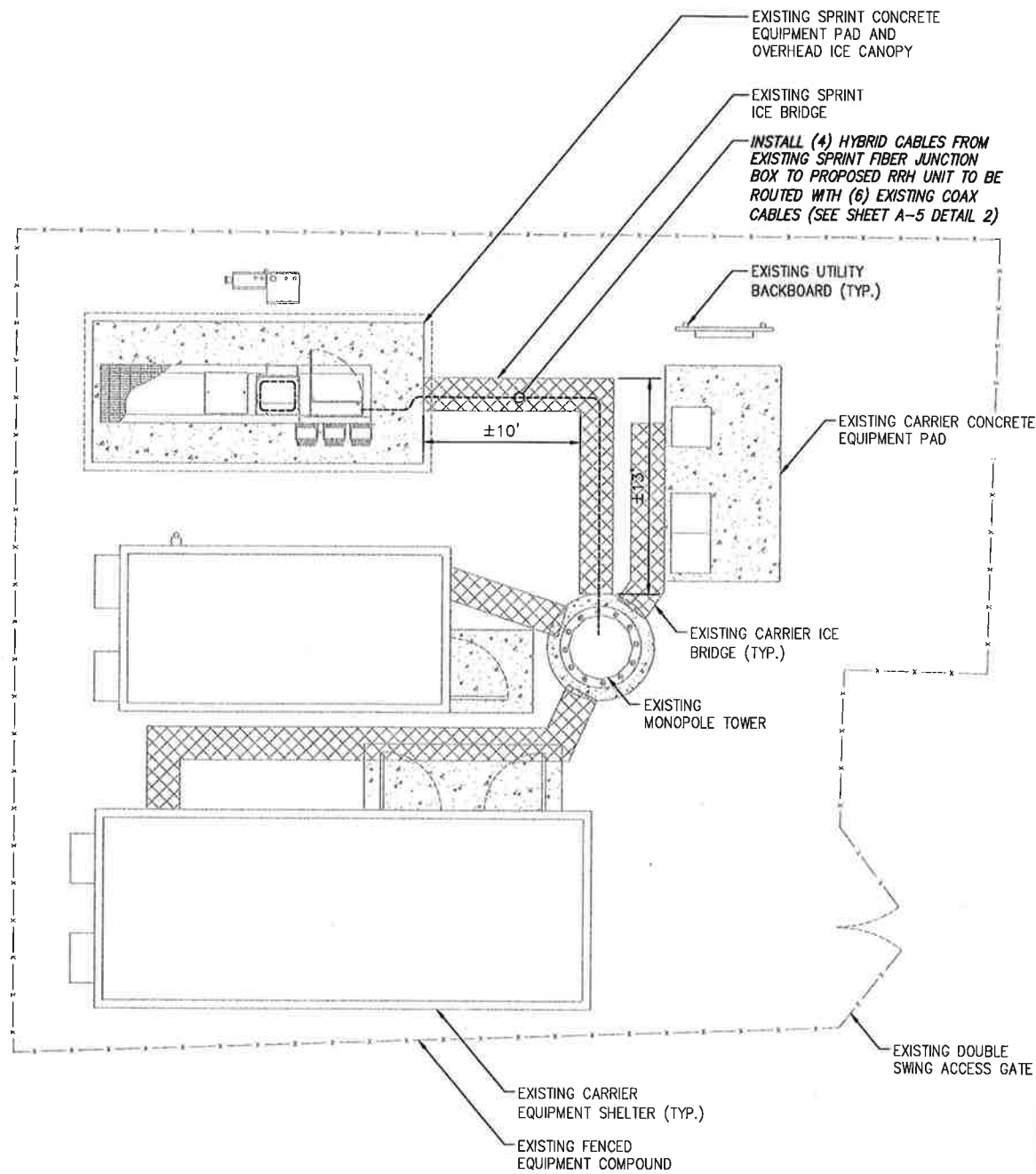
330 ROUTE 66  
 COLUMBIA, CT 06237

SHEET DESCRIPTION:

SITE PLAN

SHEET NUMBER:

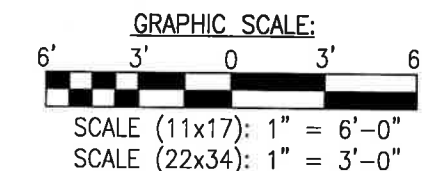
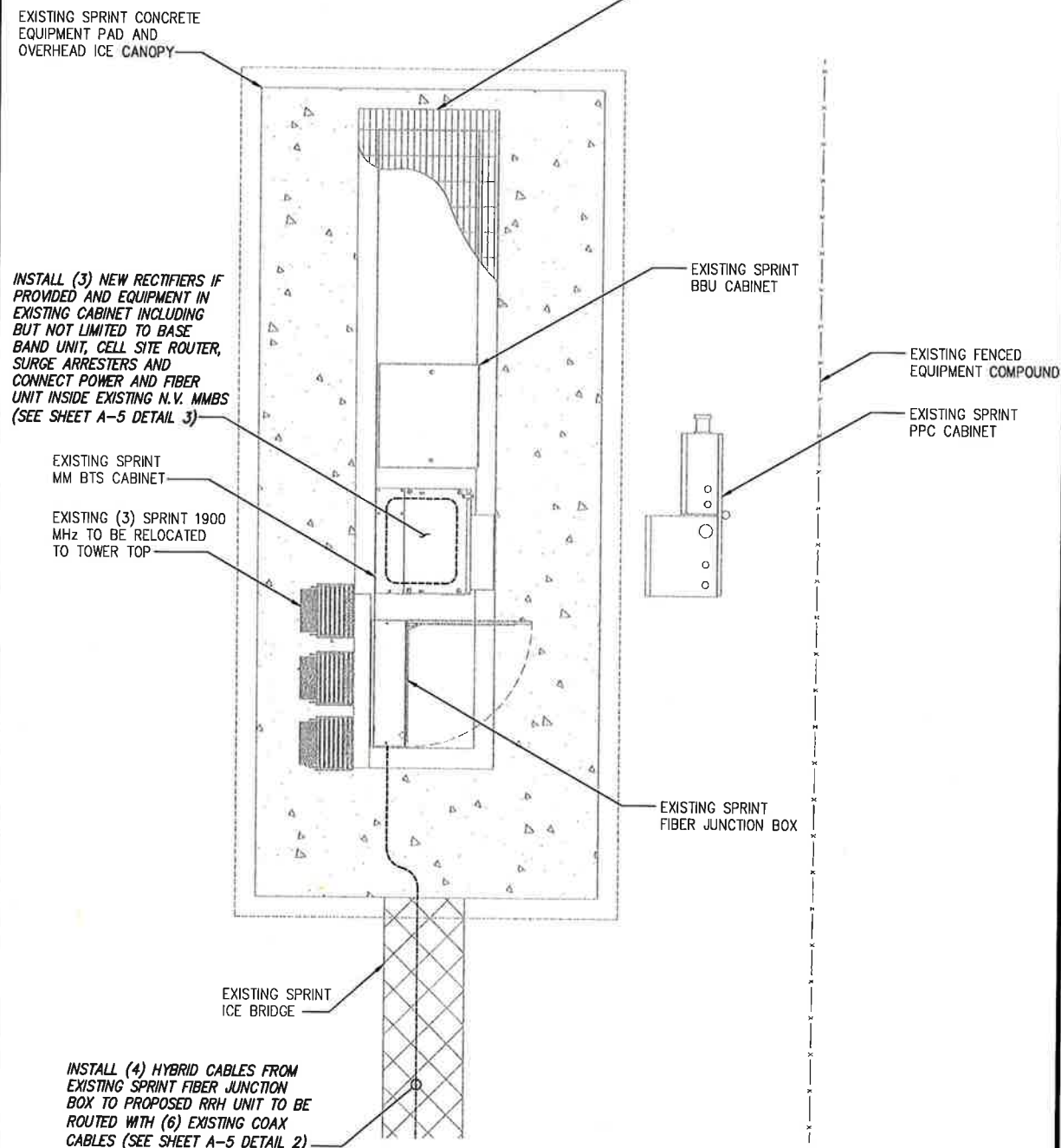
A-1



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

OVERALL SITE PLAN

SCALE: AS NOTED 1



SPRINT EQUIPMENT PLAN

SCALE: AS NOTED 2

**NOTE:**  
 INFINIGY ENGINEERING HAS NOT EVALUATED THE EXISTING STRUCTURE FOR THIS SITE, AND ASSUMES NO RESPONSIBILITY FOR ITS STRUCTURAL INTEGRITY. REFER TO STRUCTURAL ANALYSIS BY OTHERS PRIOR TO ANY CONSTRUCTION.

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

TOP OF TOWER  
 ELEV. = 149'-0" A.G.L.

Q OF EXISTING/TO BE INSTALLED SPRINT ANTENNAS  
 ELEV. = 108'-0" A.G.L.

INSTALL (1) SPRINT DUAL BAND ANTENNA TO REPLACE EXISTING ANTENNA EACH SECTOR (SEE DETAIL 3)

INSTALL (1) SPRINT 800 MHz RRH MOUNTED BEHIND PROPOSED ANTENNA EACH SECTOR (SEE SHEET A-4 DETAIL 4)

EXISTING (1) SPRINT GROUND MOUNTED 1900 MHz RRH RELOCATED BEHIND PROPOSED ANTENNA EACH SECTOR

EXISTING CARRIER PANEL ANTENNA (TYP.)

INSTALL (1) SPRINT 2.5 ANTENNA TO REPLACE EXISTING ANTENNA EACH SECTOR (SEE SHEET A-4 DETAIL 3)

INSTALL (1) SPRINT 2.5 GHz RRH MOUNTED BEHIND PROPOSED ANTENNA EACH SECTOR (SEE SHEET A-4 DETAIL 1)

INSTALL (1) SPRINT 800 MHz RRH MOUNTED ON EXISTING PIPE MOUNT EACH SECTOR (SEE SHEET A-4 DETAIL 4)

EXISTING MONOPOLE TOWER

INSTALL (4) HYBRID CABLES FROM EXISTING SPRINT FIBER JUNCTION BOX TO PROPOSED RRH UNIT TO BE ROUTED WITH (6) EXISTING COAX CABLES (SEE SHEET A-5 DETAIL 2)

GROUND LEVEL

**TOWER ELEVATION**

NO SCALE

1

**SITE LOADING CHART**

SECTOR	EXISTING/PROPOSED	ANTENNA MODEL #	VENDOR	AZIMUTH	QTY.	REMAIN/REMOVED	RRH (QTY/MODEL)	CABLE	CABLE LENGTH	RAD CENTER
ALPHA	PROPOSED	APXVTM14-ALU-120	RFS	340°	1	-	(2) 800 MHz 2X50W RRH W/ FILTER	SEE SHEET A-5 DETAIL 1	±156*	±108' AGL
	PROPOSED	NNVV-65B-R4	COMMSCOPE	340°	1	-	(1) TD-RRH8X20-25 W/ SOLAR SHIELD	SEE SHEET A-5 DETAIL 1		
	EXISTING	DP980H90E-M	ANDREW	340°	2	REMOVE	(1) 1900 MHz 4X45 RRH	EXISTING COAX		
BETA	PROPOSED	APXVTM14-ALU-120	RFS	90°	1	-	(2) 800 MHz 2X50W RRH W/ FILTER	SEE SHEET A-5 DETAIL 1	±156*	±108' AGL
	PROPOSED	NNVV-65B-R4	COMMSCOPE	90°	1	-	(1) TD-RRH8X20-25 W/ SOLAR SHIELD	SEE SHEET A-5 DETAIL 1		
	EXISTING	DP980H90E-M	ANDREW	90°	2	REMOVE	(1) 1900 MHz 4X45 RRH	EXISTING COAX		
GAMMA	PROPOSED	APXVTM14-ALU-120	RFS	220°	1	-	(2) 800 MHz 2X50W RRH W/ FILTER	SEE SHEET A-5 DETAIL 1	±156*	±108' AGL
	PROPOSED	NNVV-65B-R4	COMMSCOPE	220°	1	-	(1) TD-RRH8X20-25 W/ SOLAR SHIELD	SEE SHEET A-5 DETAIL 1		
	EXISTING	DP980H90E-M	ANDREW	220°	2	REMOVE	(1) 1900 MHz 4X45 RRH	EXISTING COAX		

**PROJECT SCOPE:**

REMOVE: (6) PANEL ANTENNAS INSTALL: (6) PANEL ANTENNAS AND (9) RRH'S RELOCATE: (3) EXISTING RRH'S

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

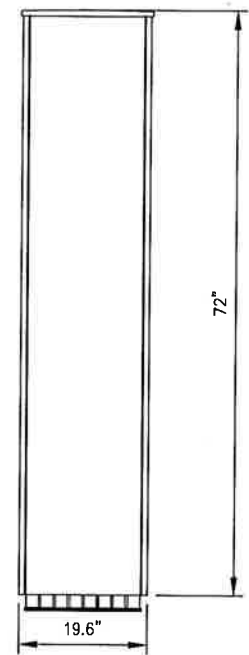
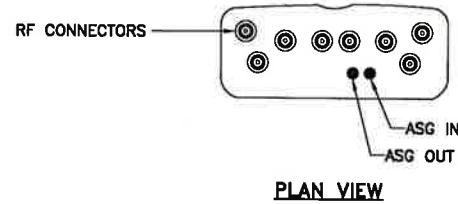
**SITE LOADING CHART**

NO SCALE

2

**ANTENNA COMMSCOPE NNVV-65B-R4**

RADOME MATERIAL: FIBERGLASS  
 RADOME COLOR: LIGHT GREY  
 DIMENSIONS, HxWxD.in(mim): 72"x19.6"x7.8" (1829x498x198mm)  
 WEIGHT: 77.4 lbs  
 CONNECTORS: (8) PIN DIN FEMALE  
 (8) 8 PIN DIN MALE



**DUAL BAND ANTENNA**

NO SCALE

3

PLANS PREPARED FOR:



PLANS PREPARED BY:

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 www.infinigy.com  
 JOB NUMBER 526-104

PROJECT MANAGER:

**AIRSMITH DEVELOPMENT**  
 32 CLINTON ST.  
 SARATOGA SPRINGS, NY 12868  
 OFFICE# (518) 308-3740

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SITE NUMBER:

CT33XC014

SITE ADDRESS:

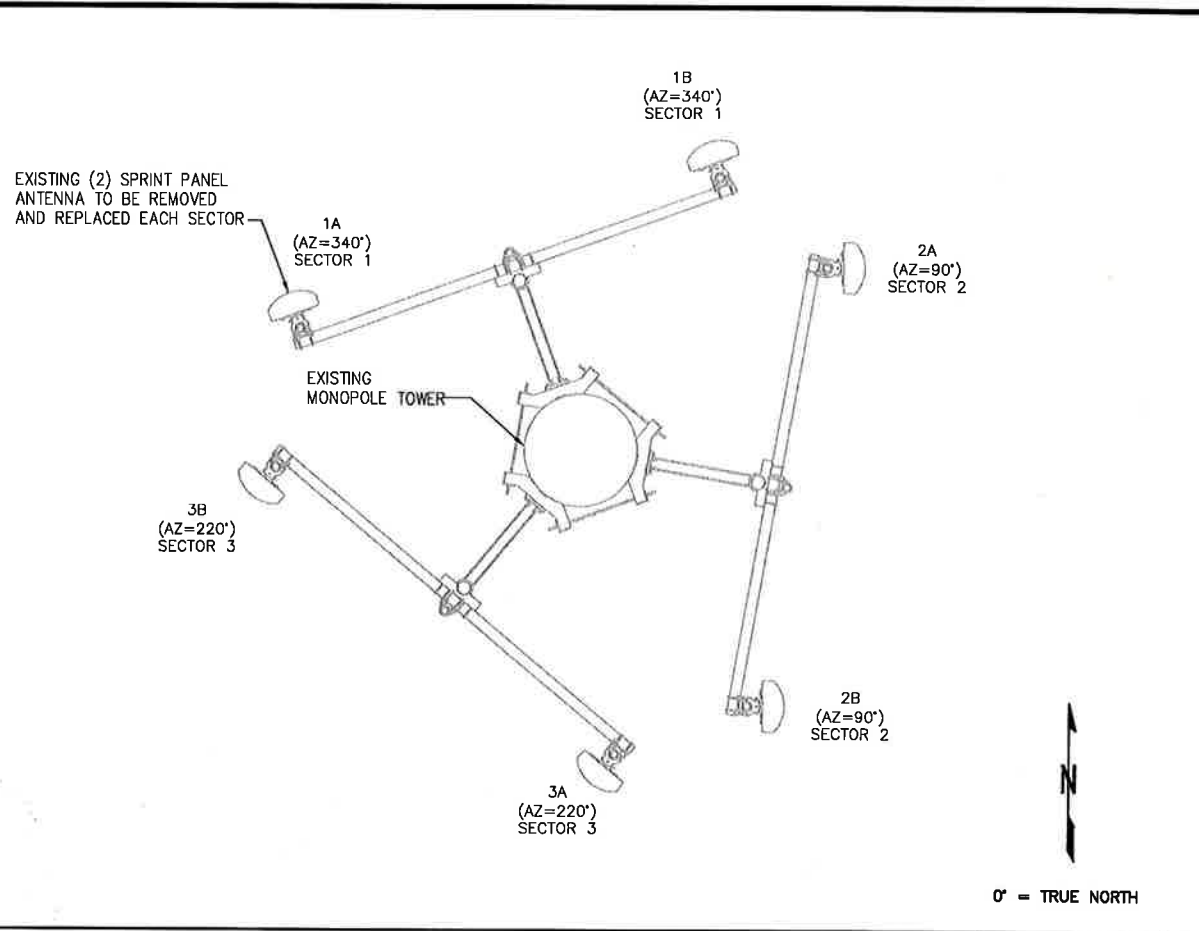
330 ROUTE 66  
 COLUMBIA, CT 06237

SHEET DESCRIPTION:

TOWER ELEVATION

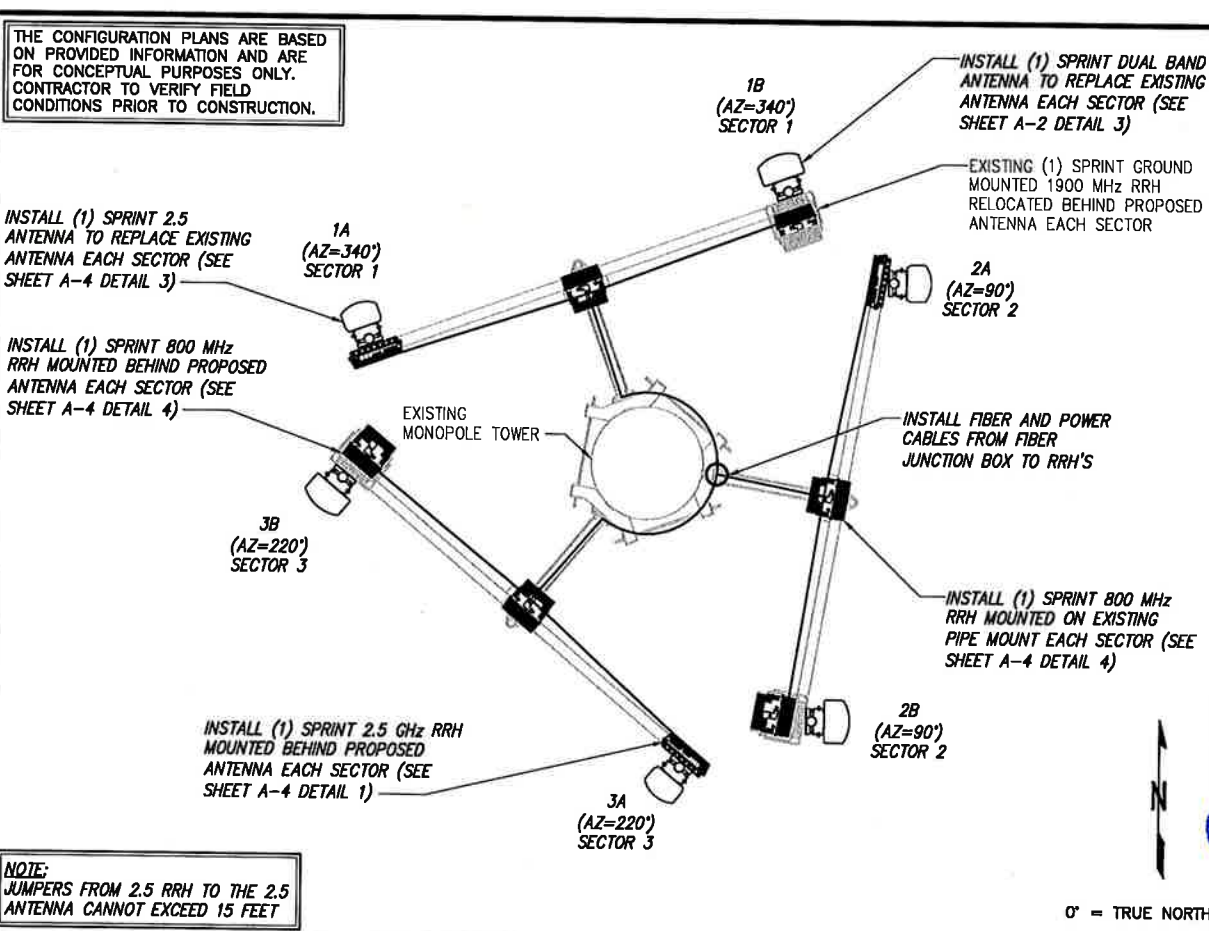
SHEET NUMBER:

A-2



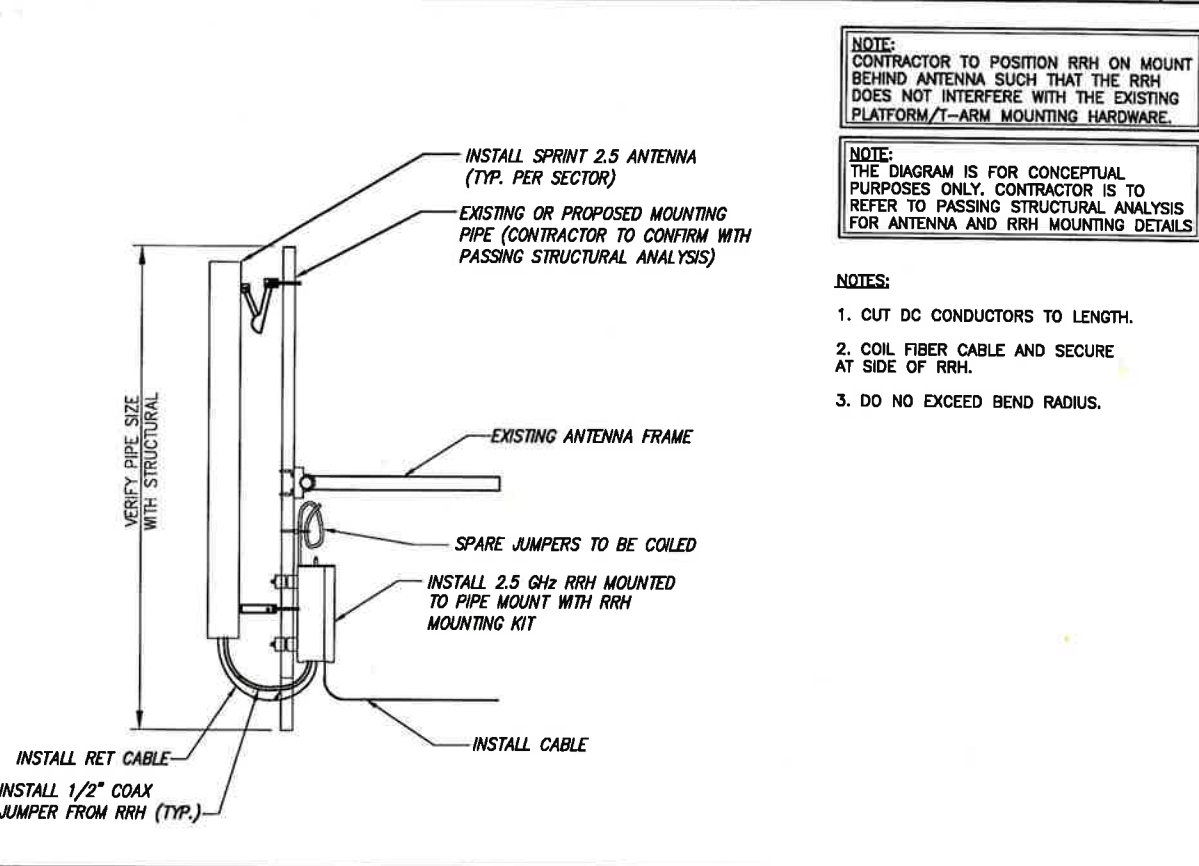
EXISTING ANTENNA LAYOUT

NO SCALE 1



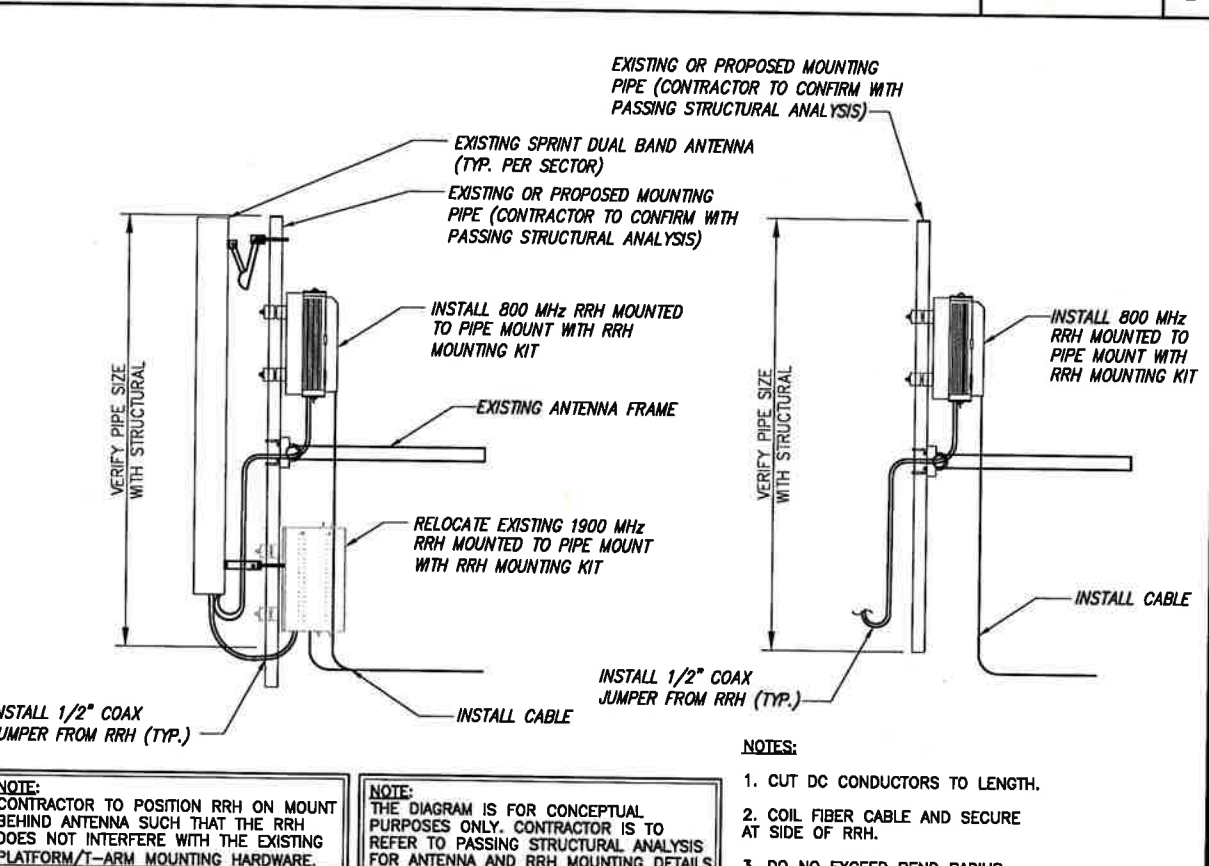
FINAL ANTENNA & RRH LAYOUT

NO SCALE 2



TYPICAL 2.5 ANTENNA & RRH MOUNTING DETAILS

NO SCALE 3



TYPICAL DUAL BAND & RRH MOUNTING DETAILS

NO SCALE 4

THE CONFIGURATION PLANS ARE BASED ON PROVIDED INFORMATION AND ARE FOR CONCEPTUAL PURPOSES ONLY. CONTRACTOR TO VERIFY FIELD CONDITIONS PRIOR TO CONSTRUCTION.

INSTALL (1) SPRINT 2.5 ANTENNA TO REPLACE EXISTING ANTENNA EACH SECTOR (SEE SHEET A-4 DETAIL 3)

INSTALL (1) SPRINT 800 MHz RRH MOUNTED BEHIND PROPOSED ANTENNA EACH SECTOR (SEE SHEET A-4 DETAIL 4)

NOTE: JUMPERS FROM 2.5 RRH TO THE 2.5 ANTENNA CANNOT EXCEED 15 FEET

INSTALL (1) SPRINT DUAL BAND ANTENNA TO REPLACE EXISTING ANTENNA EACH SECTOR (SEE SHEET A-2 DETAIL 3)

EXISTING (1) SPRINT GROUND MOUNTED 1900 MHz RRH RELOCATED BEHIND PROPOSED ANTENNA EACH SECTOR

INSTALL FIBER AND POWER CABLES FROM FIBER JUNCTION BOX TO RRH'S

INSTALL (1) SPRINT 800 MHz RRH MOUNTED ON EXISTING PIPE MOUNT EACH SECTOR (SEE SHEET A-4 DETAIL 4)

INSTALL (1) SPRINT 2.5 GHz RRH MOUNTED BEHIND PROPOSED ANTENNA EACH SECTOR (SEE SHEET A-4 DETAIL 1)

NOTE: CONTRACTOR TO POSITION RRH ON MOUNT BEHIND ANTENNA SUCH THAT THE RRH DOES NOT INTERFERE WITH THE EXISTING PLATFORM/T-ARM MOUNTING HARDWARE.

NOTE: THE DIAGRAM IS FOR CONCEPTUAL PURPOSES ONLY. CONTRACTOR IS TO REFER TO PASSING STRUCTURAL ANALYSIS FOR ANTENNA AND RRH MOUNTING DETAILS

- NOTES:
- CUT DC CONDUCTORS TO LENGTH.
  - COIL FIBER CABLE AND SECURE AT SIDE OF RRH.
  - DO NOT EXCEED BEND RADIUS.

EXISTING OR PROPOSED MOUNTING PIPE (CONTRACTOR TO CONFIRM WITH PASSING STRUCTURAL ANALYSIS)

NOTE: CONTRACTOR TO POSITION RRH ON MOUNT BEHIND ANTENNA SUCH THAT THE RRH DOES NOT INTERFERE WITH THE EXISTING PLATFORM/T-ARM MOUNTING HARDWARE.

NOTE: THE DIAGRAM IS FOR CONCEPTUAL PURPOSES ONLY. CONTRACTOR IS TO REFER TO PASSING STRUCTURAL ANALYSIS FOR ANTENNA AND RRH MOUNTING DETAILS

- NOTES:
- CUT DC CONDUCTORS TO LENGTH.
  - COIL FIBER CABLE AND SECURE AT SIDE OF RRH.
  - DO NOT EXCEED BEND RADIUS.

PLANS PREPARED FOR:

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SITE NUMBER:

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SITE ADDRESS:

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COLUMBIA, CT 06237

SHEET DESCRIPTION:

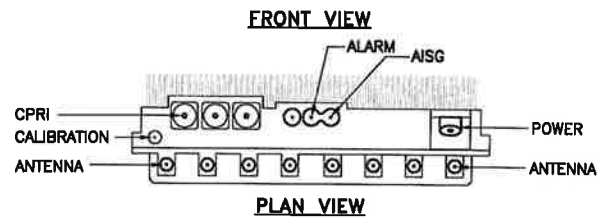
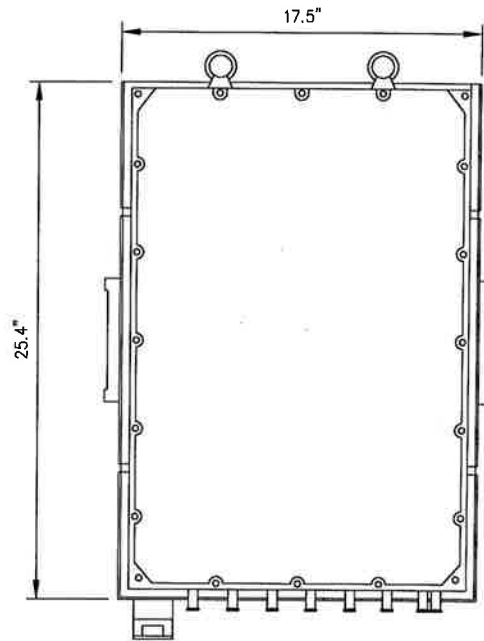
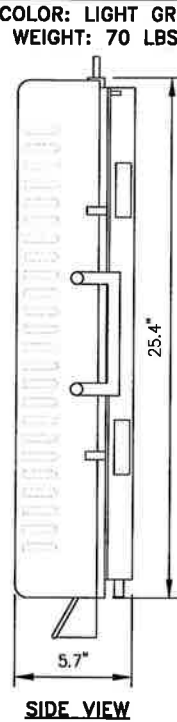
ANTENNA LAYOUT & MOUNTING DETAILS

SHEET NUMBER:

A-3

RRH: ALCATEL LUCENT TD-RRH8X20

COLOR: LIGHT GREY  
WEIGHT: 70 LBS.

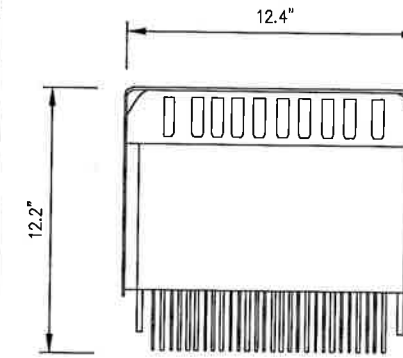
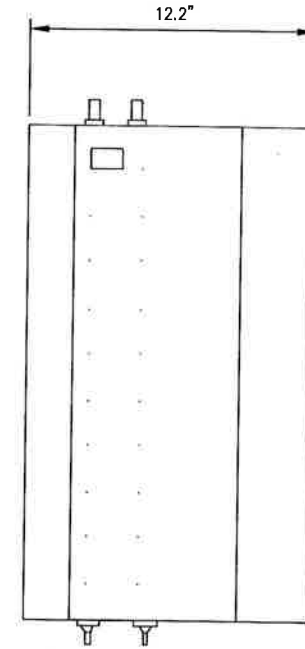
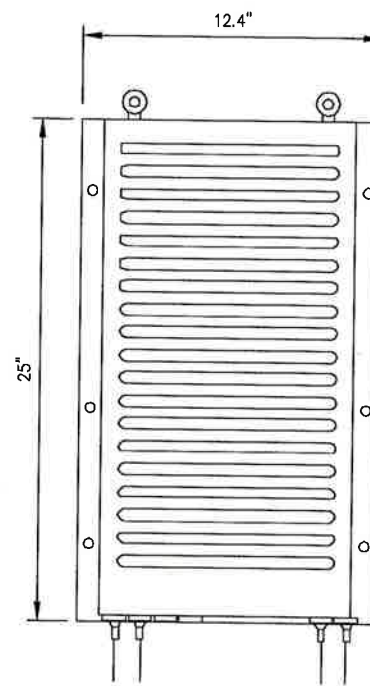


**NOTES**

COMPLY WITH MANUFACTURERS INSTRUCTIONS TO ENSURE THAT ALL RRH'S RECEIVE ELECTRICAL POWER WITHIN 24 HOURS OF BEING REMOVED FROM THE MANUFACTURER'S PACKAGING. DO NOT OPEN RRH PACKAGES IN THE RAIN.

RRH: ALCATEL LUCENT 1900 MHz

COLOR: LIGHT GREY  
WEIGHT: 70 LBS.  
(INCLUDING OPTIONAL SOLAR SHIELD)



FRONT VIEW

SIDE VIEW

TOP VIEW

PLANS PREPARED FOR:



PLANS PREPARED BY:

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**AIRSMITH**  
DEVELOPMENT

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COLUMBIA, CT 06237

SHEET DESCRIPTION:

EQUIPMENT &  
MOUNTING DETAILS

SHEET NUMBER:

A-4

2.5 GHz RRH

NO SCALE

1

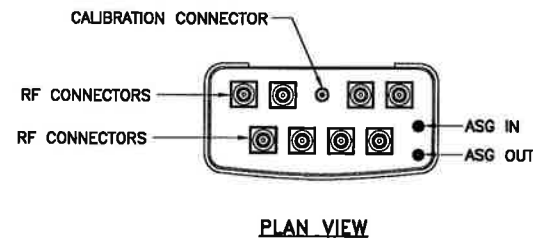
1900 MHz RRH

NO SCALE

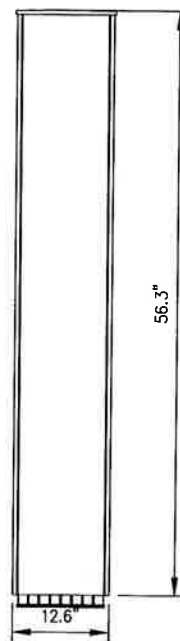
2

**ANTENNA RFS APXVTM14-ALU-120**

RADOME MATERIAL: ASA  
RADOME COLOR: LIGHT GREY  
DIMENSIONS, HxWxD.in(mim): 56.3"x12.6"x6.3" (1549x439x300mm)  
WEIGHT: 56.2 lbs  
CONNECTORS: (8) 4.1/9.5 DIN FEMALE  
(1) NF - CALIBRATION CONNECTOR



SIDE VIEW



FRONT VIEW

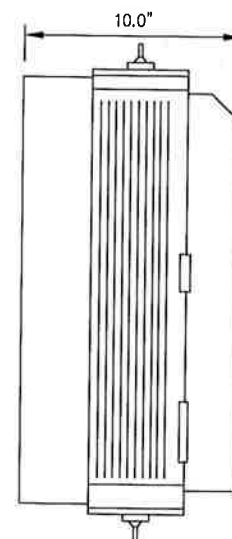
2.5 ANTENNA DETAIL

NO SCALE

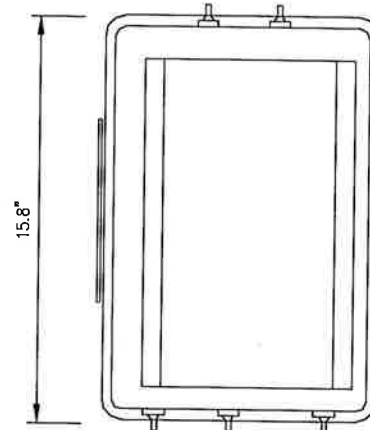
3

RRH: ALCATEL LUCENT RRH 800 MHz 2x50W

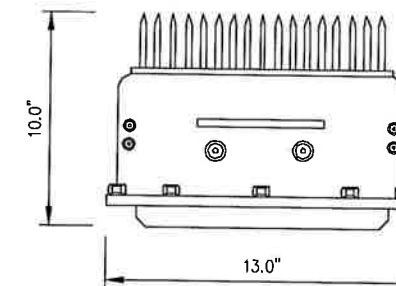
COLOR: LIGHT GREY  
WEIGHT: 53 LBS.



SIDE VIEW



FRONT VIEW



PLAN VIEW

**NOTES**

COMPLY WITH MANUFACTURERS INSTRUCTIONS TO ENSURE THAT ALL RRH'S RECEIVE ELECTRICAL POWER WITHIN 24 HOURS OF BEING REMOVED FROM THE MANUFACTURER'S PACKAGING. DO NOT OPEN RRH PACKAGES IN THE RAIN.

800 MHz RRH

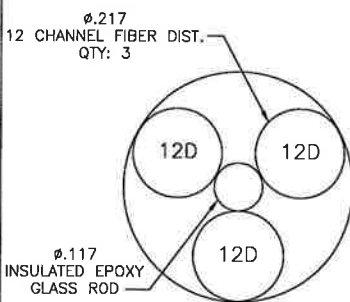
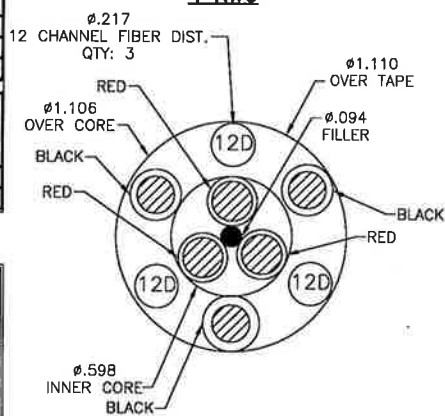
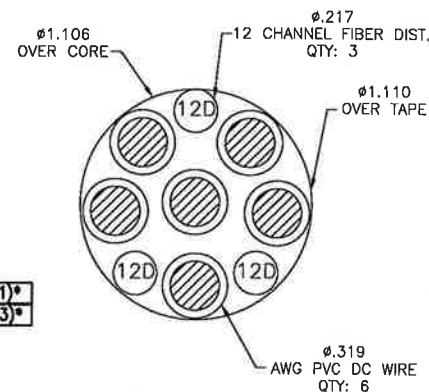
NO SCALE

4



**RFS HYBRIFLEX RISER CABLE SCHEDULE**

Fiber Only (Existing DC Power)	Hybrid cable MN: H8058-M12-050F 12x multi-mode fiber pairs, Top: Outdoor protected connectors, Bottom: LC Connectors, 5/8 cable, 50 ft	50 ft
	MN: H8058-M12-075F	75 ft
	MN: H8058-M12-100F	100 ft
	MN: H8058-M12-125F	125 ft
	MN: H8058-M12-150F	150 ft
	MN: H8058-M12-175F	175 ft
8 AWG Power	Hybrid cable MN: H8114-08U3M12-050F 3x 8 AWG power pairs, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/4 cable, 50 ft	50 ft
	MN: H8114-08U3M12-075F	75 ft
	MN: H8114-08U3M12-100F	100 ft
	MN: H8114-08U3M12-125F	125 ft
	MN: H8114-08U3M12-150F	150 ft
	MN: H8114-08U3M12-175F	175 ft
6 AWG Power	Hybrid cable MN: H8114-13U3M12-225F 3x 6 AWG power pair, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/4 cable, 225 ft	225 ft
	MN: H8114-13U3M12-250F	250 ft
	MN: H8114-13U3M12-300F	300 ft
4 AWG Power	Hybrid cable MN: H8114-21U3M12-325F 3x 4 AWG power pair, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/4 cable, 325 ft	325 ft
	MN: H8114-21U3M12-350F	350 ft
	MN: H8114-21U3M12-375F	375 ft



**RFS HYBRIFLEX JUMPER CABLE SCHEDULE**

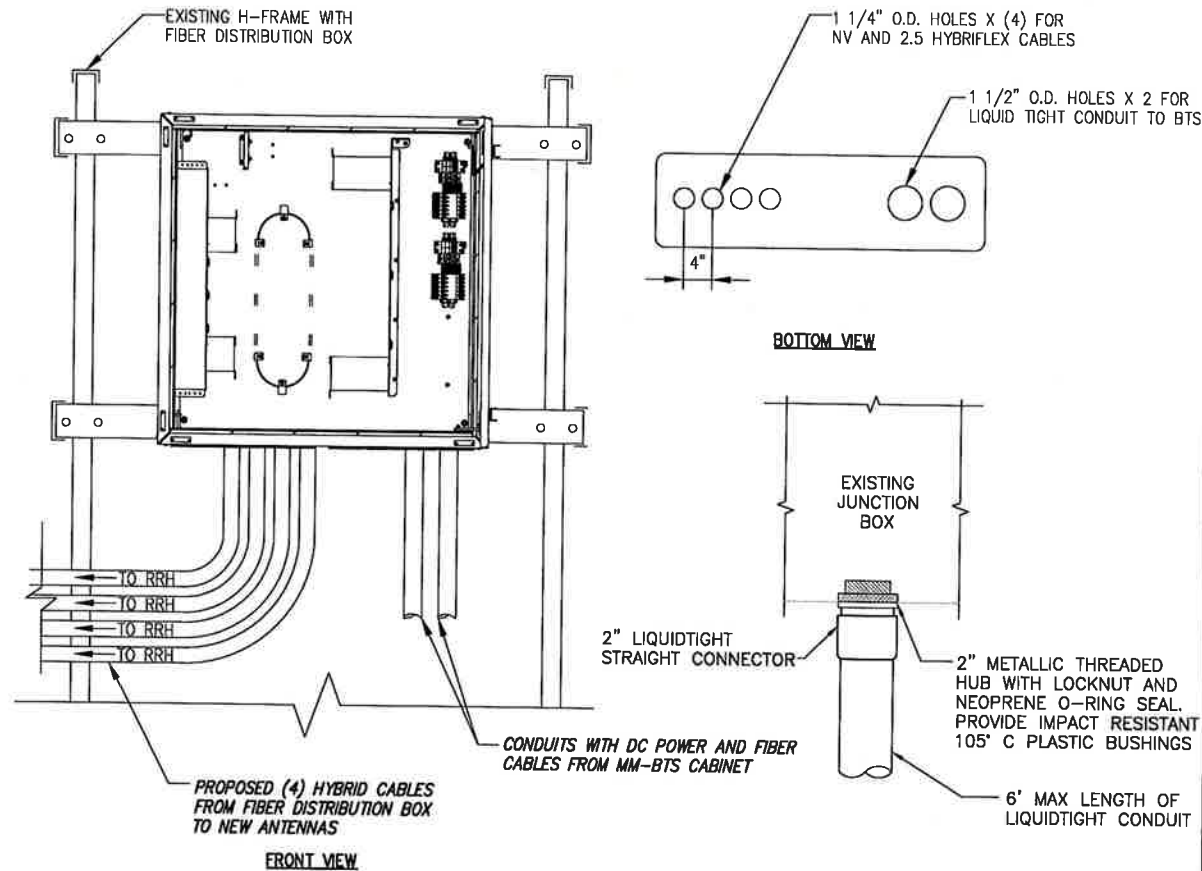
Fiber Only	Hybrid Jumper cable MN: HBF012-M3-SF1 5 ft, 3x multi-mode fiber pairs, Outdoor & LC connectors, 1/2 cable	5 ft
	MN: HBF012-M3-10F1	10 ft
	MN: HBF012-M3-15F1	15 ft
	MN: HBF012-M3-20F1	20 ft
	MN: HBF012-M3-25F1	25 ft
	MN: HBF012-M3-30F1	30 ft
8 AWG Power	Hybrid Jumper cable MN: HBF058-08U1M3-SF1 5 ft, 1x 8 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC Connectors, 5/8 cable	5 ft
	MN: HBF058-08U1M3-10F1	10 ft
	MN: HBF058-08U1M3-15F1	15 ft
	MN: HBF058-08U1M3-20F1	20 ft
	MN: HBF058-08U1M3-25F1	25 ft
	MN: HBF058-08U1M3-30F1	30 ft
6 AWG Power	Hybrid Jumper cable MN: HBF058-13U1M3-SF1 5 ft, 1x 6 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC Connectors, 5/8 cable	5 ft
	MN: HBF058-13U1M3-10F1	10 ft
	MN: HBF058-13U1M3-15F1	15 ft
	MN: HBF058-13U1M3-20F1	20 ft
	MN: HBF058-13U1M3-25F1	25 ft
	MN: HBF058-13U1M3-30F1	30 ft
4 AWG Power	Hybrid Jumper cable MN: HBF078-21U1M3-SF1 5 ft, 1x 4 AWG power pair, 3x multi-mode fiber pairs, Outdoor & LC Connectors, 7/8 cable	5 ft
	MN: HBF078-21U1M3-10F1	10 ft
	MN: HBF078-21U1M3-15F1	15 ft
	MN: HBF078-21U1M3-20F1	20 ft
	MN: HBF078-21U1M3-25F1	25 ft
	MN: HBF078-21U1M3-30F1	30 ft

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

**2.5 CABLE CROSS SECTION DATA**

NO SCALE

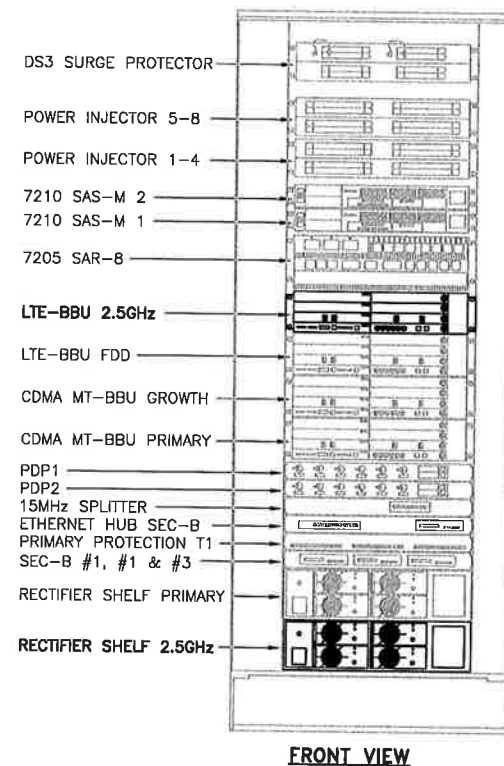
1



**FIBER JUNCTION BOX PENETRATION**

NO SCALE

2



**FRONT VIEW**

**NEW EQUIPMENT IN EXISTING CABINET**

NO SCALE

3

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PLANS PREPARED BY:

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JOB NUMBER: 526-104

PROJECT MANAGER:

**AIRSMITH**  
DEVELOPMENT  
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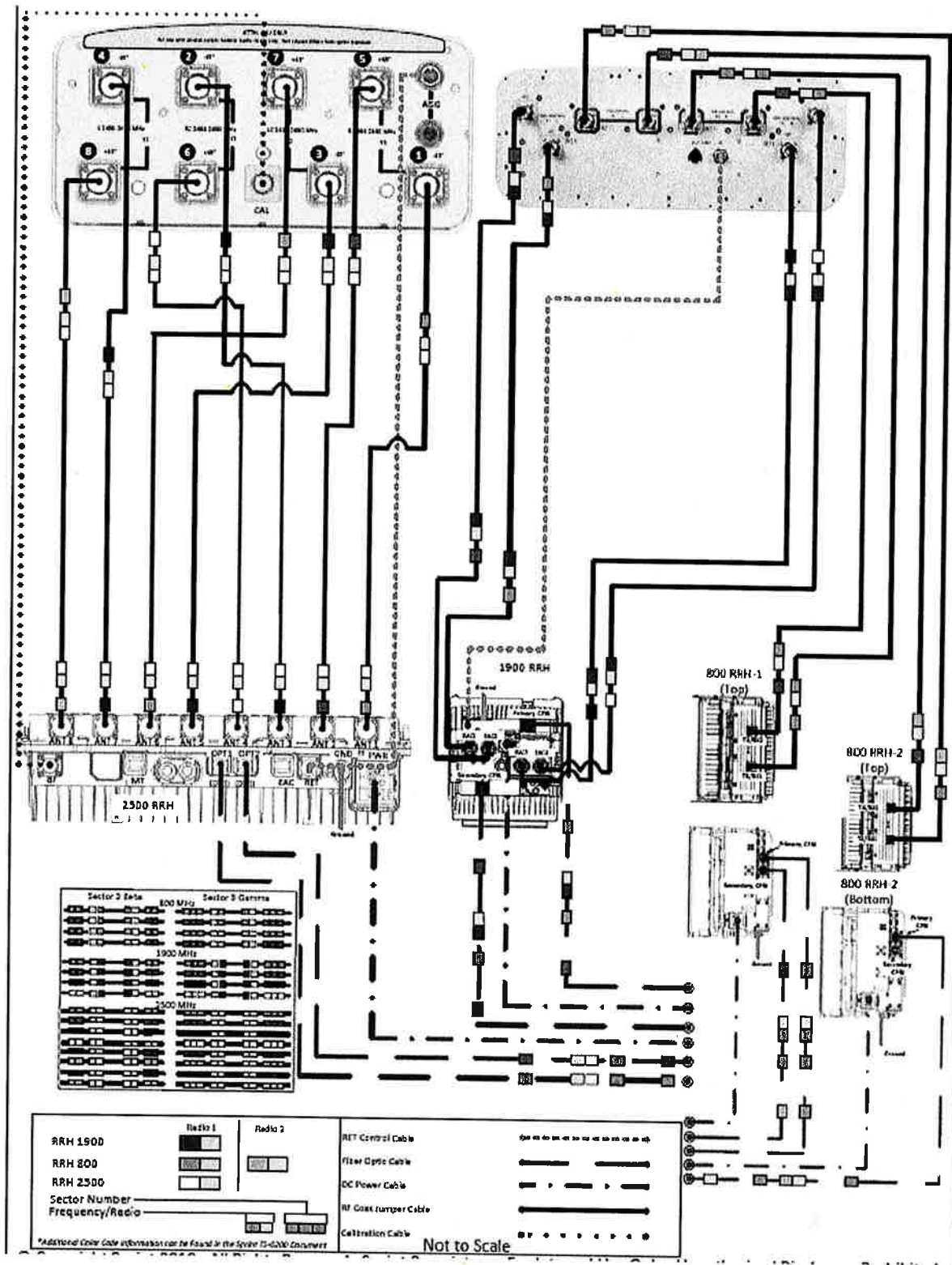
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SHEET DESCRIPTION:  
**CIVIL DETAILS**

SHEET NUMBER:  
**A-5**

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



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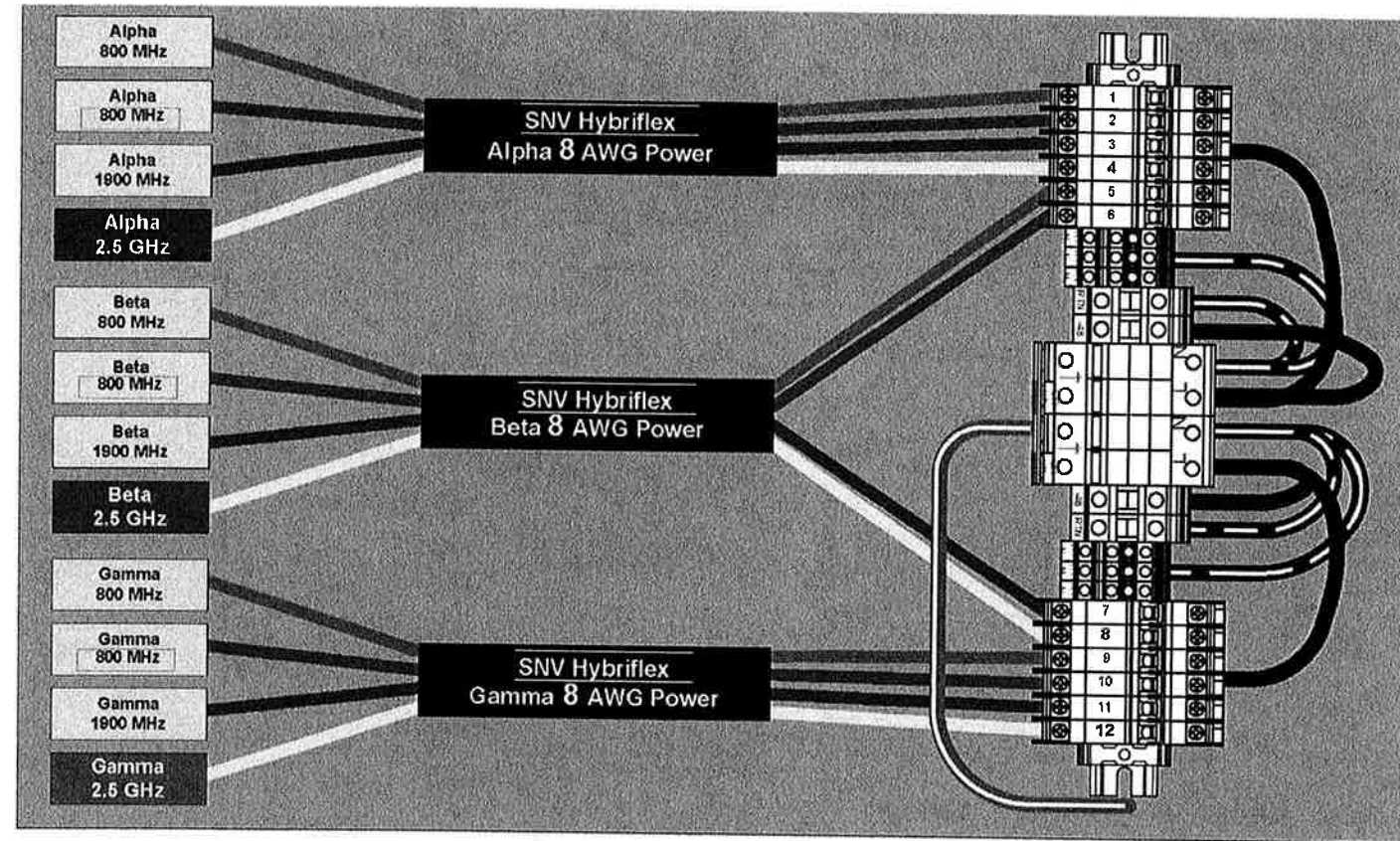
SITE NAME:  
**COLUMBIA/NEXTEL**

SITE NUMBER:  
**CT33XC014**

SITE ADDRESS:  
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 COLUMBIA, CT 06237**

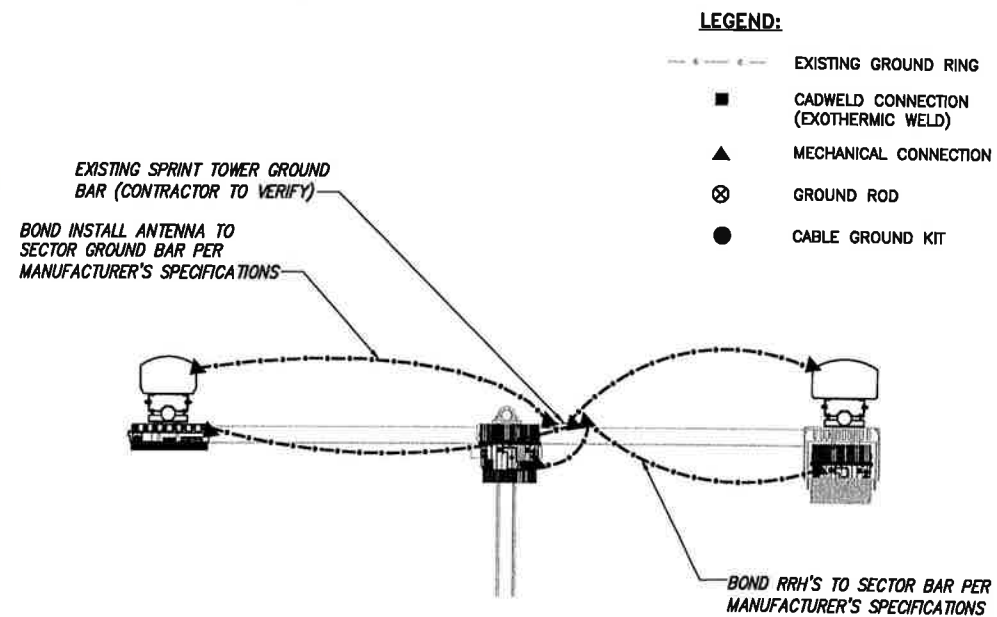
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**PLUMBING DIAGRAM**

SHEET NUMBER:  
**A-6**



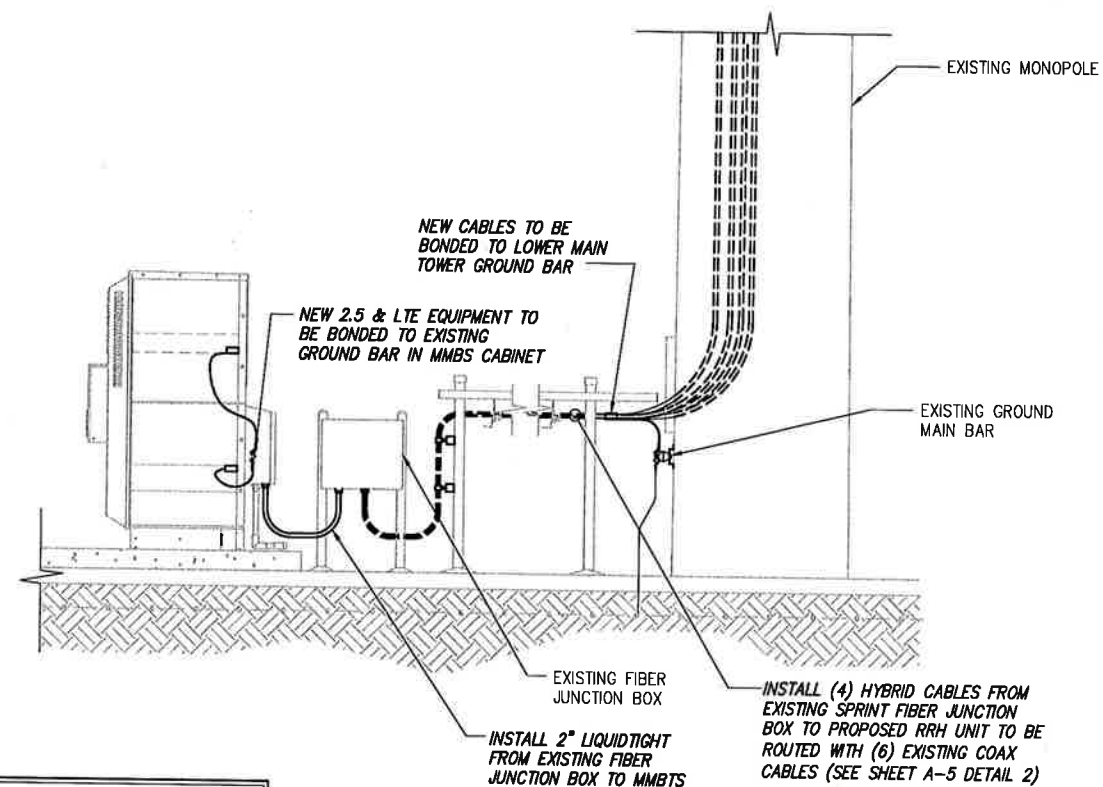
RRH TO DISTRIBUTION BOX POWER CONNECTIVITY

NO SCALE 1



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE 2



NOTE:  
DEPICTION IS FOR CONCEPTUAL PURPOSES ONLY. CONTRACTOR IS TO FIELD VERIFY PRIOR TO CONSTRUCTION

TYPICAL EQUIPMENT GROUNDING PLAN (ELEVATION)

NO SCALE 3

PLANS PREPARED FOR:



PLANS PREPARED BY:

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DEVELOPMENT

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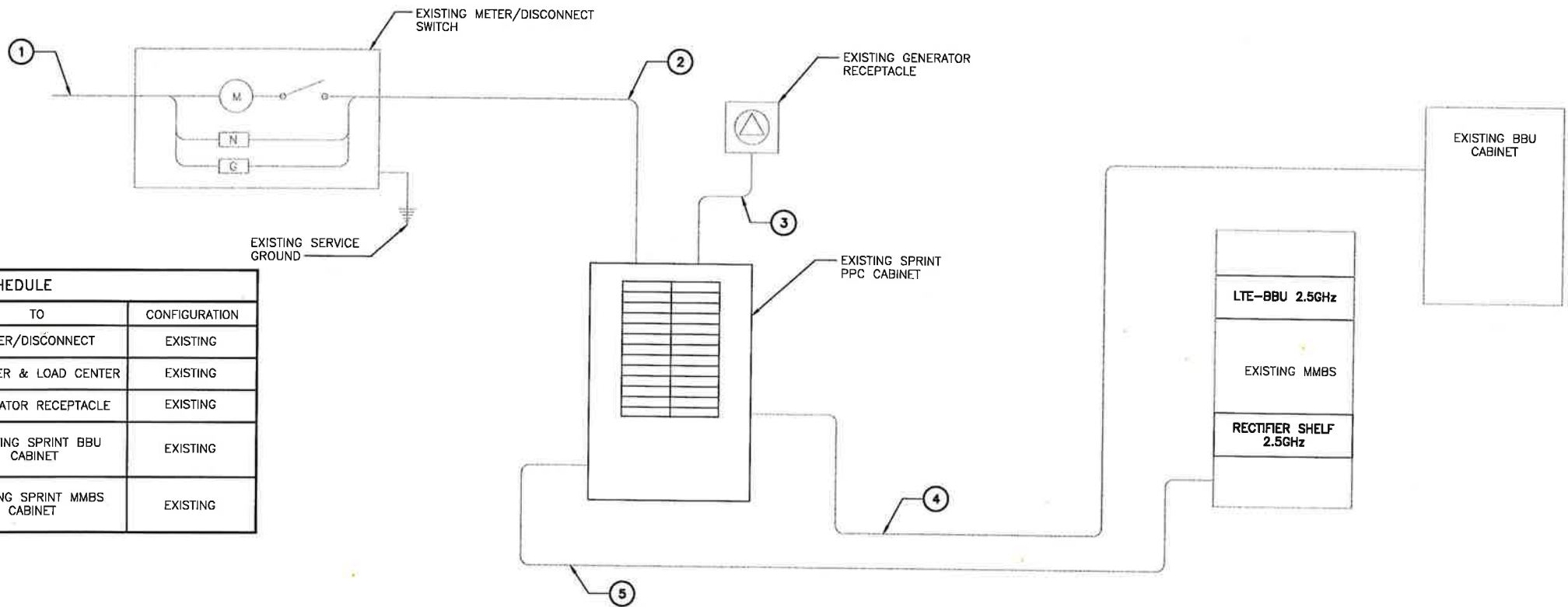
SHEET DESCRIPTION:

ELECTRICAL &  
GROUNDING PLAN

SHEET NUMBER:

E-1

**NOTES**  
 CG SHALL REFERENCE ALL SPECS FOR "CONNECTING THE POWER SUPPLY" OF THE NEW INSTALLATION DOCUMENTS, FOR ALL CONNECTION SPECIFICATIONS.



CIRCUIT SCHEDULE			
NO	FROM	TO	CONFIGURATION
①	UTILITY SOURCE	METER/DISCONNECT	EXISTING
②	METER/DISCONNECT	TRANSFER & LOAD CENTER	EXISTING
③	TRANSFER & LOAD CENTER	GENERATOR RECEPTACLE	EXISTING
④	TRANSFER & LOAD CENTER	EXISTING SPRINT BBU CABINET	EXISTING
⑤	TRANSFER & LOAD CENTER	EXISTING SPRINT MMBS CABINET	EXISTING

PLANS PREPARED FOR:

PLANS PREPARED BY:

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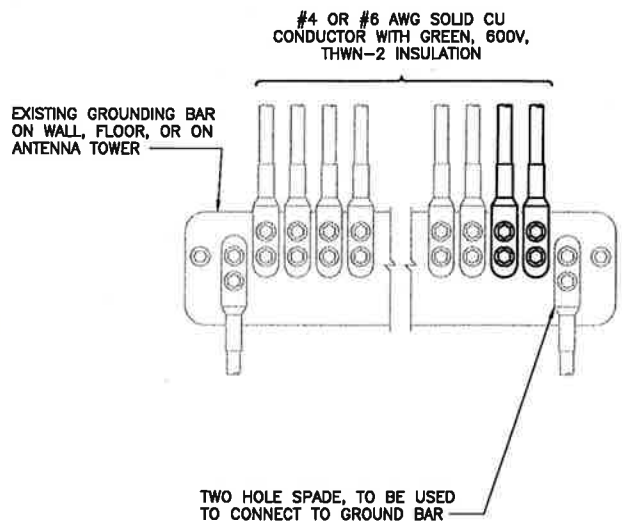
**ELECTRICAL &  
 GROUNDING DETAILS**

SHEET NUMBER:

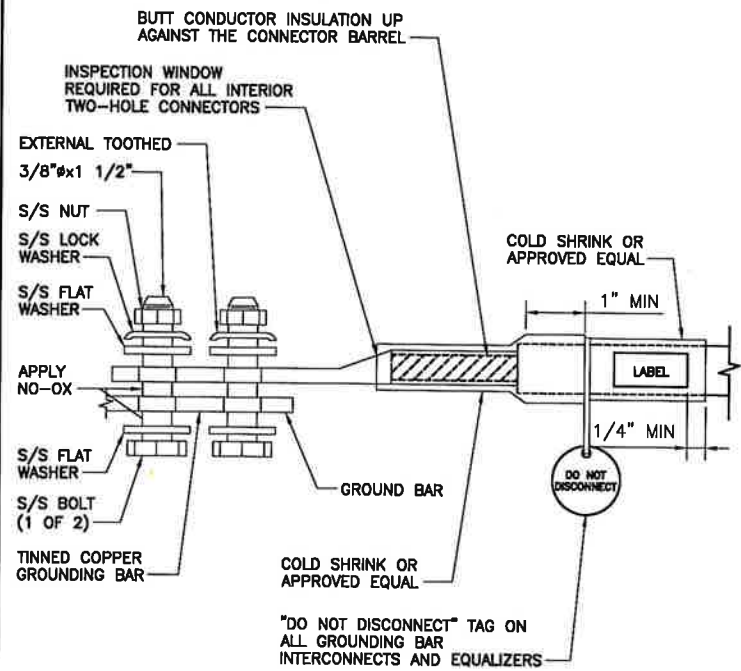
**E-2**

**ELECTRICAL ONE-LINE DIAGRAM**

NO SCALE 1



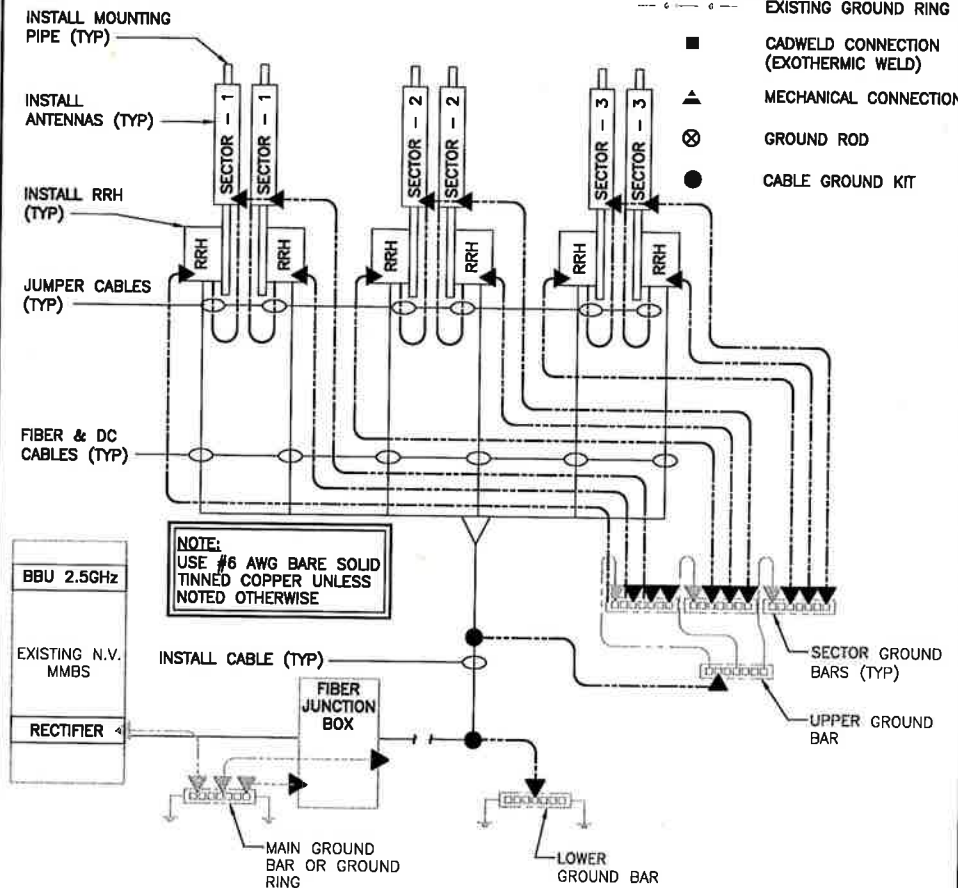
- NOTES**
1. APPLY NO-OX TO LUG AND BAR CONTACT SURFACE. DO NOT COAT INLINE LUG.
  2. IF STOLEN GROUND BARS ARE ENCOUNTERED, CONTACT SPRINT CM FOR REPLACEMENT THREADED ROD KIT.



NO SCALE 2

**TWO HOLE LUG**

NO SCALE 3



**GROUNDING RISER DIAGRAM**

NO SCALE 4

**INSTALLATION OF GROUNDING CONDUCTOR TO GROUNDING BAR**