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PS Form 3800, April 2015 PSN 7500-01-000-9047 See Reverse for Instructions

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Sent To: Leon and Benjamin Price (CT33XC573)  
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City, State, ZIP+4® Andover CT 06232

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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>

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January 30<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 104 Bunker Hill Road, Andover, CONNECTICUT – CT33XC573 (lat. 41° 44' 16.008" N, long. -72° 20' 59.3874" W)**

Dear Ms. Bachman:

Sprint Spectrum, LP ("Sprint") currently maintains wireless telecommunications antennas at the (168-foot level) on an existing (180-foot monopole tower) at the above-referenced address. The property is owned by PRICE LEON & BENJAMIN, and the tower is owned by American Tower Corporation.

Sprint's proposed work involves antenna replacement and tower work. Sprint intends to replace three (3) antennas, move three (3) RRHs from the ground 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. The Structural Analysis prepared by American Tower Corporation contains "existing" noted contracted equipment which is not on the tower

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 ROBERT BURBANK, FIRST SELECTMAN, and JOHN VALENTE, ZONING AGENT of the Town of ANDOVER. A copy of this letter is also being sent to PRICE LEON & BENJAMIN the owner of the property on which the tower is located, and JUSTINE PAUL the manager for AMERICAN TOWER CORPORATION who manages the site.

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,

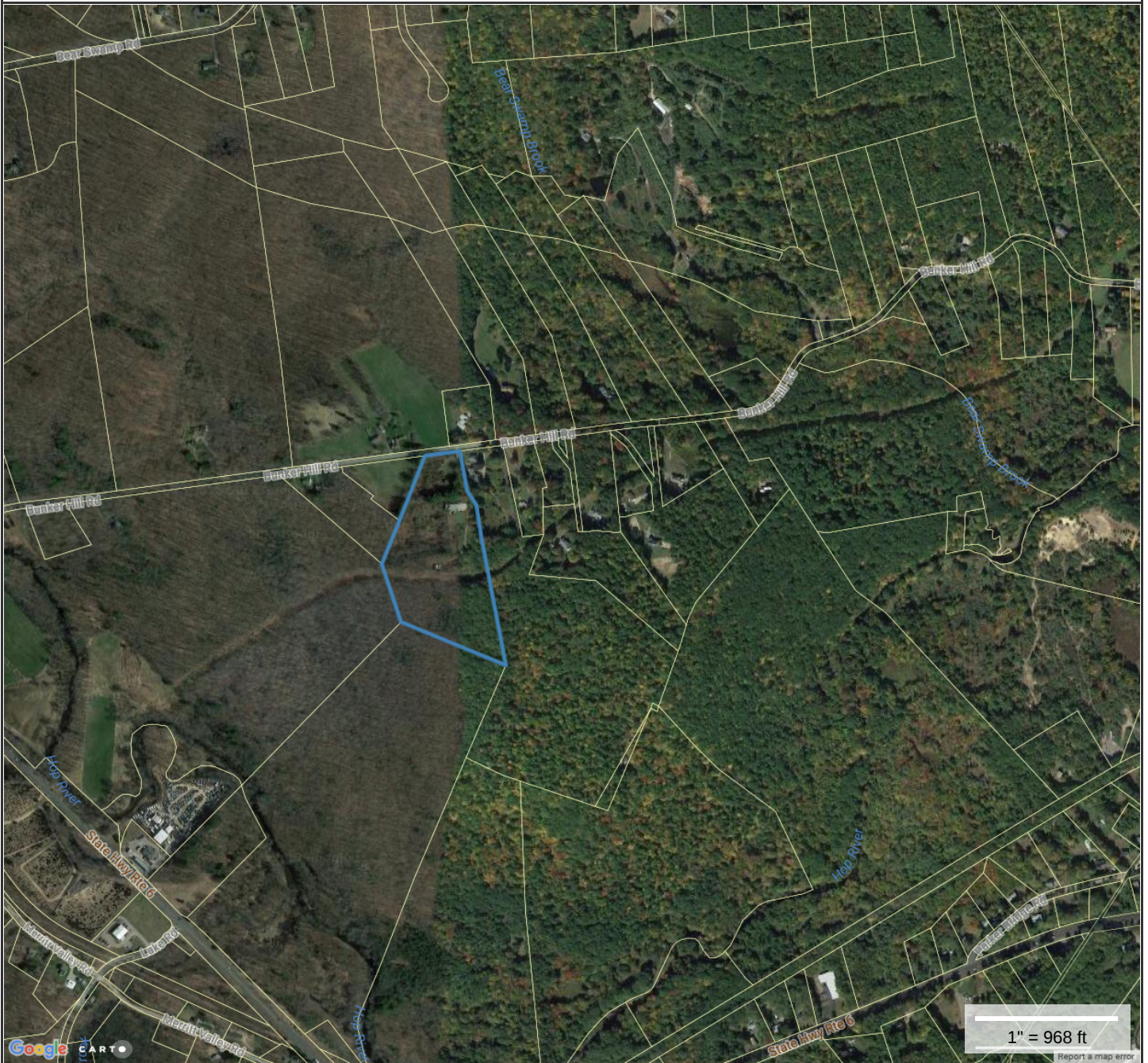


Arthur Perkowski  
Airosmith Development Inc.  
32 Clinton Street  
Saratoga Springs, NY 12866  
518-306-1711 desk & fax  
518-871-3707 cell  
[aperkowski@airosmithdevelopment.com](mailto:aperkowski@airosmithdevelopment.com)

Attachment

CC: PRICE LEON & BENJAMIN (Land Owner)  
ROBERT BURBANK (1<sup>st</sup> Selectman, ANDOVER, CT)  
JUSTINE PAUL (Manager/American Tower Corporation)  
JOHN VALENTE (Zoning Agent / ANDOVER, CT)

# 104 Bunker Hill Road, Andover CT (CT33XC573)



**Property Information**

**Property ID** 09013001-33-36-3  
**Location** 104 BUNKER HILL RD  
**Owner** PRICE LEON & BENJAMIN



**MAP FOR REFERENCE ONLY  
NOT A LEGAL DOCUMENT**

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

# 104 BUNKER HILL RD

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## Property



Address 104 BUNKER HILL RD, ANDOVER  
ID 33-36.3

## Ownership



Owner PRICE LEON & BENJAMIN

## Valuation



Total Assessment \$323,200  
Land Value \$176,200  
Building Value \$0  
Last Sale \$0 on  
Book/Page /

## Land



Area 13.90 A



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

SPRINT Existing Facility

Site ID: CT33XC573

Andover / Nextel  
104 Bunker Hill Road  
Andover, CT 06232

**January 4, 2018**

**EBI Project Number: 6217006074**

Site Compliance Summary	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general population allowable limit:	<b>7.83 %</b>



January 4, 2018

SPRINT

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

## Emissions Analysis for Site: **CT33XC573 – Andover / Nextel**

EBI Consulting was directed to analyze the proposed SPRINT facility located at **104 Bunker Hill Road, Andover, 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 **104 Bunker Hill Road, Andover, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since SPRINT is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

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





- 6) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 7) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 8) The antennas used in this modeling are the **KMW ETCR-654L12H6** 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 **168 feet** above ground level (AGL) for **Sector A**, **168 feet** above ground level (AGL) for **Sector B** and **168 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:	KMW ETCR-654L12H6	Make / Model:	KMW ETCR-654L12H6	Make / Model:	KMW ETCR-654L12H6
Gain:	13.35 / 15.25/15.05 dBd	Gain:	13.35 / 15.25/15.05 dBd	Gain:	13.35 / 15.25/15.05 dBd
Height (AGL):	<b>168 feet</b>	Height (AGL):	<b>168 feet</b>	Height (AGL):	<b>168 feet</b>
Frequency Bands	850 MHz / 1900 MHz (PCS) / 2500 MHz (BRS)	Frequency Bands	850 MHz / 1900 MHz (PCS) / 2500 MHz (BRS)	Frequency Bands	850 MHz / 1900 MHz (PCS) / 2500 MHz (BRS)
Channel Count	18	Channel Count	18	Channel Count	18
Total TX Power(W):	380 Watts	Total TX Power(W):	380 Watts	Total TX Power(W):	380 Watts
ERP (W):	11,775.31	ERP (W):	11,775.31	ERP (W):	11,775.31
Antenna A1 MPE%	<b>1.75 %</b>	Antenna B1 MPE%	<b>1.75 %</b>	Antenna C1 MPE%	<b>1.75 %</b>

Site Composite MPE%	
Carrier	MPE%
SPRINT – Max per sector	<b>1.75 %</b>
AT&T	1.87 %
Verizon Wireless	2.90 %
Nextel	0.19 %
T-Mobile	1.12 %
<b>Site Total MPE %:</b>	<b>7.83 %</b>

SPRINT Sector A Total:	1.75 %
SPRINT Sector B Total:	1.75 %
SPRINT Sector C Total:	1.75 %
<b>Site Total:</b>	<b>7.83 %</b>

SPRINT _ Frequency Band / Technology (All Sectors)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ( $\mu\text{W}/\text{cm}^2$ )	Frequency (MHz)	Allowable MPE ( $\mu\text{W}/\text{cm}^2$ )	Calculated % MPE
Sprint 850 MHz CDMA	1	432.54	168	0.59	850 MHz	567	0.10%
Sprint 850 MHz LTE	2	432.54	168	1.19	850 MHz	567	0.21%
Sprint 1900 MHz (PCS) CDMA	5	535.94	168	3.67	1900 MHz (PCS)	1000	0.37%
Sprint 1900 MHz (PCS) LTE	2	1,339.86	168	3.67	1900 MHz (PCS)	1000	0.37%
Sprint 2500 MHz (BRS) LTE	8	639.78	168	7.01	2500 MHz (BRS)	1000	0.70%
						<b>Total:</b>	<b>1.75%</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:	1.75 %
Sector B:	1.75 %
Sector C:	1.75 %
SPRINT Maximum Total (per sector):	1.75 %
Site Total:	7.83 %
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **7.83 %** 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.



**AMERICAN TOWER®**  
CORPORATION

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## Structural Analysis Report

**Structure** : 178 ft Monopole  
**ATC Site Name** : Andover-bunker Hill Road, CT  
**ATC Site Number** : 302472  
**Engineering Number** : OAA710391\_C3\_02  
**Proposed Carrier** : Sprint Nextel  
**Carrier Site Name** : Andover-Bunker Hill Road  
**Carrier Site Number** : CT33XC573  
**Site Location** : 104 Bunker Hill Road  
Andover, CT 06232-1301  
41.737800,-72.349800  
**County** : Tolland  
**Date** : September 5, 2017  
**Max Usage** : 70%  
**Result** : Pass

Prepared By:  
Aaron Black  
Structural Engineer I

Reviewed By:

**COA: PEC.0001553**



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Calculations .....	Attached



## Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 178 ft monopole to reflect the change in loading by Sprint Nextel.

## Supporting Documents

<b>Tower Drawings</b>	Summit, PJF Job #29200-028, dated January 14, 2000
<b>Foundation Drawing</b>	Summit, PJF Job #29200-012, dated January 14, 2000
<b>Geotechnical Report</b>	Tectonic Project #1170.C966, dated November 30, 1999

## 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>	3
<b>Crest Height:</b>	143 ft
<b>Spectral Response:</b>	$S_s = 0.18$ , $S_1 = 0.06$
<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					
178.0	178.0	12	Powerwave 7120.16.05.00 / A-800-110-13I-0-N	Low Profile Platform	(12) 1 5/8" Coax (1) 1/2" Coax	Sprint Nextel
168.0	168.0	3	72" x 6" Panel	Low Profile Platform	(2) 1 5/8" Coax	
158.0	158.0	6	RFS FD9R6004/2C-3L	Low Profile Platform	(12) 1 5/8" Coax (2) 1.58" Hybrid	Verizon Wireless
		3	Alcatel-Lucent RRH2x60 700			
		3	Alcatel-Lucent B66a RRH4x45 (AWS-3)			
		2	RFS DB-T1-6Z-8AB-OZ			
		6	Antel LPA-80080/4CF ____			
145.0	145.0	6	Andrew SBNHH-1D65B	Low Profile Platform	(12) 1 5/8" Coax	T-Mobile
		3	Kathrein Smart Bias Tee			
		3	Ericsson KRY 112 144/1			
		3	EMS RR90-17-02DP			
135.0	135.0	3	Andrew LNX-6515DS-VTM	Low Profile Platform	(12) 1 1/4" Coax (2) 0.78" 8 AWG 6 (1) 0.39" Cable	AT&T Mobility
		6	LGP LGP21903			
		6	Powerwave LGP21401			
		1	Raycap DC6-48-60-18-8F			
		3	Ericsson RRUS 11 (Band 12) (55 lb)			
		6	Powerwave 7770.00			
3	KMW AM-X-CD-16-65-00T-RET					
110.0	110.0	1	GPS	Standoff	(1) 1/2" Coax	Verizon Wireless
88.0	88.0	1	GPS	Standoff	(2) 1/2" Coax	Sprint Nextel
12.0	12.0	1	PCTEL GPS-TMG-HR-26N	Standoff	(1) 1/2" Coax	AT&T Mobility

**Equipment to be Removed**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
168.0	168.0	6	72" x 6" Panel	-	(4) 1 5/8" Coax	Sprint Nextel

**Proposed Equipment**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
168.0	168.0	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	KMW ETCR-654L12H6			
97.0	97.0	1	GPS	Standoff	(1) 1/2" Coax	

<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	70%	Pass
Shaft	70%	Pass
Base Plate	60%	Pass

**Foundations**

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	4,662.1	57%
Axial (Kips)	60.6	40%
Shear (Kips)	39.3	26%

The structure base reactions resulting from this analysis were found to be acceptable through analysis based on geotechnical and foundation information, therefore no modification or reinforcement of the foundation will be required.

**Deflection and Sway\***

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
168.0	Alcatel-Lucent RRH2x50-08	Sprint Nextel	2.290	1.523
	Alcatel-Lucent 1900 MHz 4X45 RRH			
	Alcatel-Lucent TD-RRH8x20-25 w/ Solar Shield			
	KMW ETCR-654L12H6			
97.0	GPS		0.723	0.912

\*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 are performed on the basis that the information used is current and correct. This information may consist of, but is not necessary limited, to:

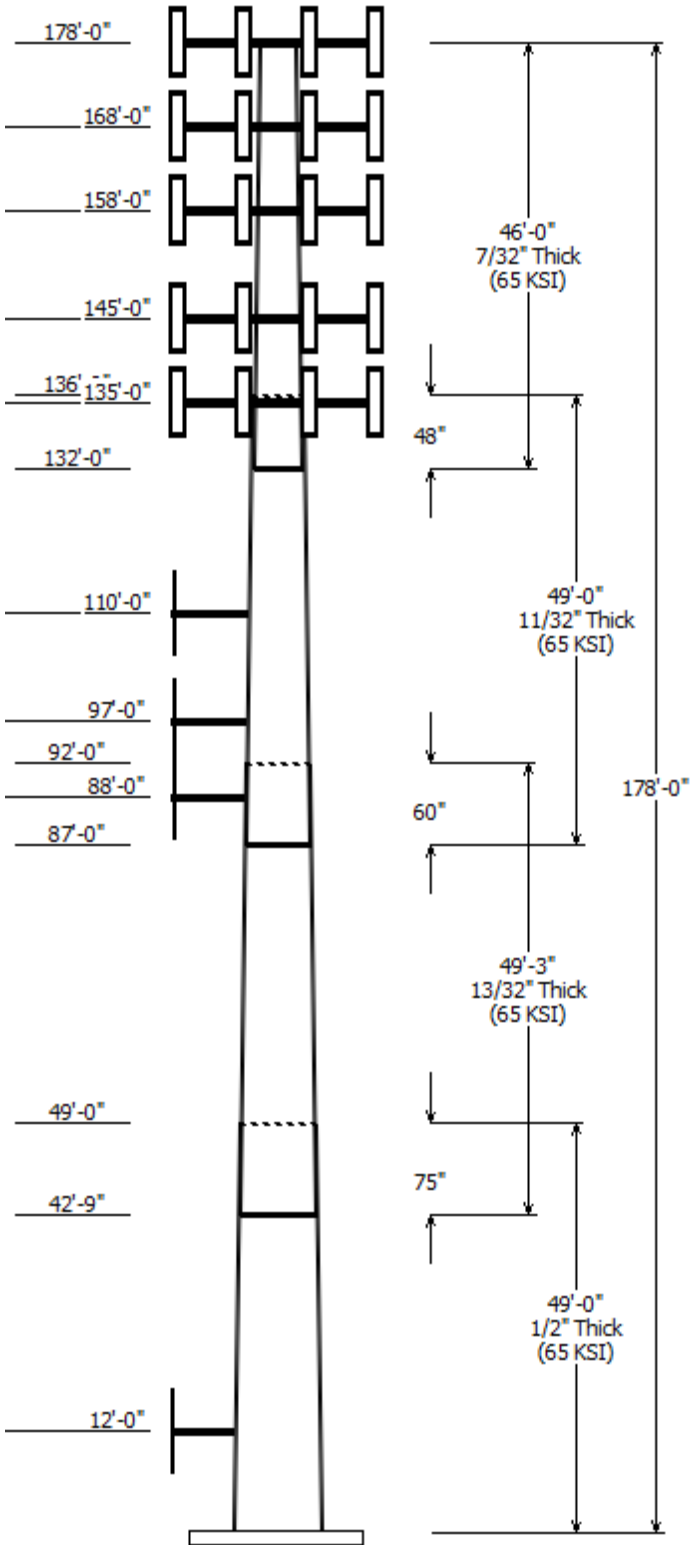
- Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.
- Information from drawings in the possession of American Tower Corporation, or generated by field inspections or measurements of the structure.

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. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and that their capacity has not significantly changed from the "as new" condition.

Unless explicitly agreed by both the client and American Tower Corporation, all services will be performed in accordance with the current revision of ANSI/TIA -222. The design basic wind speed will be determined based on the minimum basic wind speed as prescribed in ANSI/TIA-222. Although every effort is taken to ensure that the loading considered is adequate to meet the requirements of all applicable regulatory entities, we can provide no assurance to meet any other local and state codes or requirements. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement.

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 we supply.

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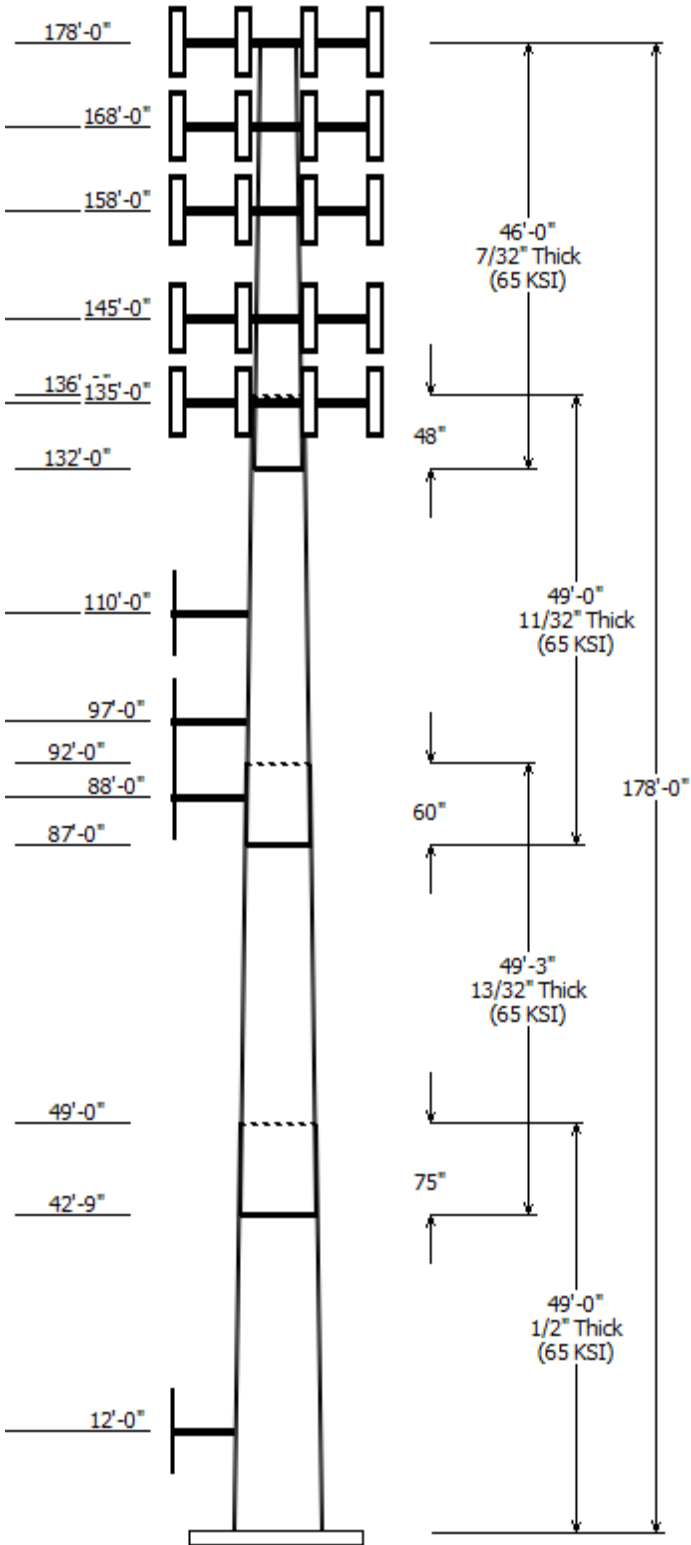


Job Information	
Pole :	302472
Code:	ANSI/TIA-222-G
Description :	178' Summit Monopole
Client :	SPRINT NEXTEL
Struct Class :	II
Location :	Andover-bunker Hill Road, CT
Shape :	18 Sides
Exposure :	B
Height :	178.00 (ft)
Topo :	3
Base Elev (ft):	0.00
Taper:	0.207000(in/ft)

Sections Properties								
Shaft Section	Length (ft)	Diameter (in)		Thick (in)	Joint Type	Overlap Length (in)	Taper (in/ft)	Steel Grade (ksi)
		Across	Flats					
1	49.000	46.76	56.91	0.500		0.000	0.207000	65
2	49.250	38.67	48.87	0.406	Slip Joint	75.000	0.207000	65
3	49.000	30.25	40.40	0.344	Slip Joint	60.000	0.207000	65
4	46.000	22.00	31.52	0.219	Slip Joint	48.000	0.207000	65

Discrete Appurtenance			
Attach Elev (ft)	Force Elev (ft)	Qty	Description
178.000	178.000	1	Flat Low Profile Platform
178.000	178.000	12	Powerwave Allgon
168.000	168.000	3	KMW ETCR-654L12H6
168.000	168.000	3	Alcatel-Lucent TD-RRH8x20-25
168.000	168.000	3	Alcatel-Lucent 1900 MHz 4X45
168.000	168.000	6	Alcatel-Lucent RRH2x50-08
168.000	168.000	1	Round Low Profile Platform
168.000	168.000	3	72" x 6" Panel
158.000	158.000	6	Andrew SBNHH-1D65B
158.000	158.000	2	RFS DB-T1-6Z-8AB-0Z
158.000	158.000	3	Alcatel-Lucent B66a RRH4x45
158.000	158.000	3	Alcatel-Lucent RRH2x60 700
158.000	158.000	6	Antel LPA-80080/4CF
158.000	158.000	6	RFS FD9R6004/2C-3L
158.000	158.000	1	Flat Low Profile Platform
145.000	145.000	1	Round Low Profile Platform
145.000	145.000	3	Andrew LNX-6515DS-VTM
145.000	145.000	3	EMS RR90-17-02DP
145.000	145.000	3	Ericsson KRY 112 144/1
145.000	145.000	3	Kathrein Smart Bias Tee
135.000	135.000	1	Flat Low Profile Platform
135.000	135.000	3	KMW AM-X-CD-16-65-00T-RET
135.000	135.000	6	Powerwave 7770.00
135.000	135.000	3	Ericsson RRUS 11 (Band 12) (55
135.000	135.000	1	Raycap DC6-48-60-18-8F
135.000	135.000	6	Powerwave LGP21401
135.000	135.000	6	LGP Allgon LGP21903
110.000	110.000	1	Standoff
110.000	110.000	1	GPS
97.000	97.000	1	Standoff
97.000	97.000	1	GPS
88.000	88.000	1	Standoff
88.000	88.000	1	GPS
12.000	12.000	1	Standoff
12.000	12.000	1	PCTEL GPS-TMG-HR-26N

Linear Appurtenance			
Elev (ft)		Description	Exposed To Wind
From	To		
0.000	12.000	1/2" Coax	No
0.000	88.000	1/2" Coax	No
0.000	97.000	1/2" Coax	No



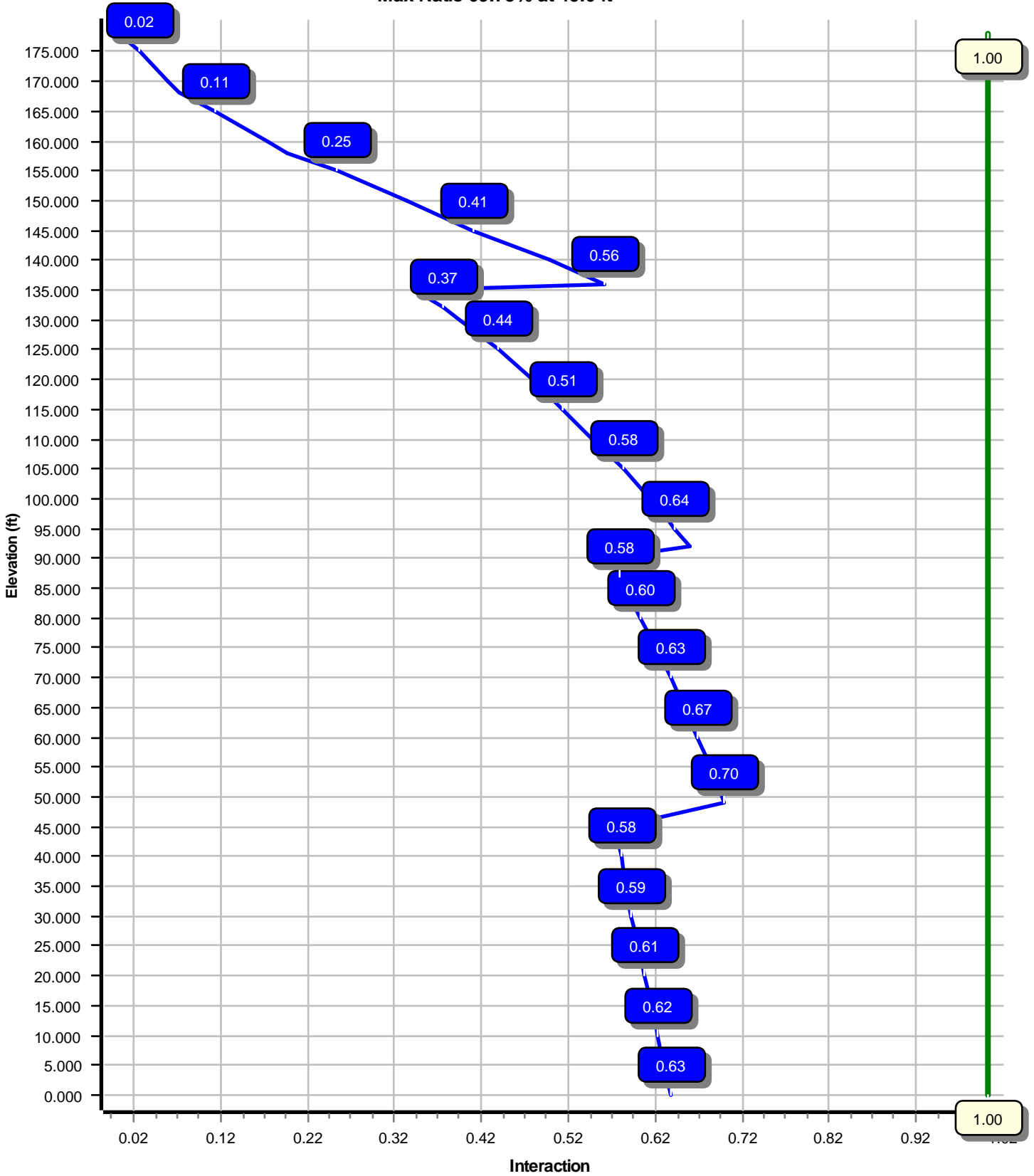
0.000	110.0	1/2" Coax	No
0.000	135.0	0.39" (10 mm)	No
0.000	135.0	0.78" (19.7mm) 8	No
0.000	135.0	1 1/4" Coax	No
0.000	145.0	1 5/8" Coax	No
0.000	158.0	1 5/8" Coax	No
0.000	158.0	1.58" (40.1mm)	No
0.000	168.0	1 1/4" Hybriflex	No
0.000	168.0	1 5/8" Coax	No
0.000	178.0	1 5/8" Coax	No
0.000	178.0	1/2" Coax	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	4662.08	39.26	60.57
0.9D + 1.6W	4600.75	39.24	45.41
1.2D + 1.0Di + 1.0Wi	1308.87	10.94	102.42
(1.2 + 0.2Sds) * DL + E ELFM	283.97	1.97	60.36
(1.2 + 0.2Sds) * DL + E EMAM	319.52	2.47	60.36
(0.9 - 0.2Sds) * DL + E ELFM	279.31	1.97	42.07
(0.9 - 0.2Sds) * DL + E EMAM	313.78	2.46	42.07
1.0D + 1.0W	1020.98	8.66	50.52

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 69.75% at 49.0 ft



Site Number: 302472

Code: ANSI/TIA-222-G

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Site Name: Andover-bunker Hill Road, CT

Engineering Number: OAA710391\_C3\_02

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Customer: SPRINT NEXTEL

Analysis Parameters

Location:	TOLLAND County, CT	Height (ft):	178
Code:	ANSI/TIA-222-G	Base Diameter (in):	56.91
Shape:	18 Sides	Top Diameter (in):	22.00
Pole Type:	Taper	Taper (in/ft) :	0.207
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:	3	Operational Wind Speed:	60 mph
Crest Height:	143.0 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):	2.70		
T <sub>L</sub> (sec):	16	p:	1.3
S <sub>s</sub> :	0.176	S <sub>1</sub> :	0.063
F <sub>a</sub> :	1.600	F <sub>v</sub> :	2.400
S <sub>ds</sub> :	0.188	S <sub>d1</sub> :	0.101
		C <sub>s</sub> :	0.030
		C <sub>s</sub> Max:	0.030
		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: 302472

Code: ANSI/TIA-222-G

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Site Name: Andover-bunker Hill Road, CT

Engineering Number: OAA710391\_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	49.000	0.5000	65		0.00	13,584	56.91	0.00	89.52	35990.1	18.31	113.82	46.76	49.00	73.42	19857.1	14.73	93.53	0.207008
2-18	49.250	0.4063	65	Slip	75.00	9,371	48.87	42.75	62.49	18546.7	19.45	120.30	38.67	92.00	49.35	9131.9	15.02	95.21	0.207008
3-18	49.000	0.3438	65	Slip	60.00	6,364	40.40	87.00	43.70	8859.4	18.96	117.53	30.25	136.00	32.64	3689.5	13.76	88.02	0.207008
4-18	46.000	0.2188	65	Slip	48.00	2,885	31.52	132.00	21.73	2690.8	23.65	144.10	22.00	178.00	15.12	906.4	15.97	100.57	0.207008
Shaft Weight						32,204													

**Discrete Appurtenance Properties**

Attach Elev (ft)	Description	Qty	Weight (lb)	No Ice EPAa (sf)	Orientation Factor	Weight (lb)	Ice EPAa (sf)	Orientation Factor	Distance From Face (ft)	Vert Ecc (ft)
178.00	Flat Low Profile Platform	1	1500.00	26.100	1.00	2,404.57	52.756	1.00	0.000	0.000
178.00	Powerwave Allgon	12	15.40	5.320	0.71	245.99	5.293	0.71	0.000	0.000
168.00	72" x 6" Panel	3	40.00	4.700	0.69	183.03	5.293	0.69	0.000	0.000
168.00	Alcatel-Lucent 1900 MHz	3	60.00	2.320	0.67	204.22	3.288	0.67	0.000	0.000
168.00	Alcatel-Lucent RRH2x50-08	6	52.90	1.700	0.50	162.46	2.495	0.50	0.000	0.000
168.00	Alcatel-Lucent TD-RRH8x20-	3	70.00	4.050	0.67	236.75	5.226	0.67	0.000	0.000
168.00	KMW ETCR-654L12H6	3	84.90	15.710	0.61	560.07	18.100	0.61	0.000	0.000
168.00	Round Low Profile Platform	1	1500.00	21.700	1.00	2,402.97	48.458	1.00	0.000	0.000
158.00	Alcatel-Lucent B66a	3	67.00	2.660	0.67	173.26	2.735	0.67	0.000	0.000
158.00	Alcatel-Lucent RRH2x60 700	3	56.70	2.150	0.67	160.12	2.735	0.67	0.000	0.000
158.00	Andrew SBNHH-1D65B	6	50.70	8.170	0.69	354.54	10.031	0.69	0.000	0.000
158.00	Antel LPA-80080/4CF	6	12.00	5.400	0.64	215.92	3.831	0.64	0.000	0.000
158.00	Flat Low Profile Platform	1	1500.00	26.100	1.00	2,401.58	52.668	1.00	0.000	0.000
158.00	RFS DB-T1-6Z-8AB-OZ	2	44.00	4.800	0.67	257.74	6.045	0.67	0.000	0.000
158.00	RFS FD9R6004/2C-3L	6	2.60	0.370	0.50	25.61	0.718	0.50	0.000	0.000
145.00	Andrew LNX-6515DS-VTM	3	51.30	11.430	0.70	442.63	13.760	0.70	0.000	0.000
145.00	EMS RR90-17-02DP	3	13.50	4.360	0.64	166.31	5.782	0.64	0.000	0.000
145.00	Ericsson KRY 112 144/1	3	11.00	0.410	0.50	38.82	0.775	0.50	0.000	0.000
145.00	Kathrein Smart Bias Tee	3	3.31	0.090	0.50	16.18	0.341	0.50	0.000	0.000
145.00	Round Low Profile Platform	1	1500.00	21.700	1.00	2,400.02	48.370	1.00	0.000	0.000
135.00	Ericsson RRUS 11 (Band 12)	3	55.00	2.520	0.67	176.97	3.447	0.67	0.000	0.000
135.00	Flat Low Profile Platform	1	1500.00	26.100	1.00	2,399.29	52.600	1.00	0.000	0.000
135.00	KMW AM-X-CD-16-65-00T-	3	48.50	8.020	0.67	330.71	9.859	0.67	0.000	0.000
135.00	LGP Allgon LGP21903	6	5.50	0.270	0.50	28.91	0.596	0.50	0.000	0.000
135.00	Powerwave 7770.00	6	35.00	5.510	0.65	238.95	7.013	0.65	0.000	0.000
135.00	Powerwave LGP21401	6	14.10	1.100	0.50	67.98	1.772	0.50	0.000	0.000
135.00	Raycap DC6-48-60-18-8F	1	31.80	1.280	1.00	172.00	3.136	1.00	0.000	0.000
110.00	GPS	1	10.00	1.000	1.00	70.70	1.132	1.00	0.000	0.000
110.00	Standoff	1	75.00	2.500	0.67	256.15	6.123	0.67	0.000	0.000
97.00	GPS	1	10.00	1.000	1.00	70.73	1.132	1.00	0.000	0.000
97.00	Standoff	1	75.00	2.500	0.67	256.20	6.124	0.67	0.000	0.000
88.00	GPS	1	10.00	1.000	1.00	70.77	1.132	1.00	0.000	0.000
88.00	Standoff	1	75.00	2.500	0.67	256.28	6.126	0.67	0.000	0.000
12.00	PCTEL GPS-TMG-HR-26N	1	0.60	0.090	1.00	17.57	0.360	1.00	0.000	0.000
12.00	Standoff	1	75.00	2.500	0.67	157.01	5.234	0.67	0.000	0.000
Totals		106	10855.63			31,436.75			Number of Loadings :	35

**Linear Appurtenance Properties**

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Diameter (in)	Coax Weight (lb/ft)	Projected Width (in)	Exposed To Wind	Carrier	
0.00	178.00	12	1 5/8" Coax	1.98	0.82	N	0.00	N	Sprint Nextel
0.00	178.00	1	1/2" Coax	0.63	0.15	N	0.00	N	Sprint Nextel

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Site Number: 302472

Code: ANSI/TIA-222-G

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Site Name: Andover-bunker Hill Road, CT

Engineering Number: OAA710391\_C3\_02

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Customer: SPRINT NEXTEL

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0.00	168.00	4	1 1/4" Hybriflex Cable	1.54	1.00	N	0.00	N	Sprint Nextel
0.00	168.00	2	1 5/8" Coax	1.98	0.82	N	0.00	N	Sprint Nextel
0.00	158.00	12	1 5/8" Coax	1.98	0.82	N	0.00	N	Verizon
0.00	158.00	2	1.58" (40.1mm) Hybrid	1.58	1.61	N	0.00	N	Verizon
0.00	145.00	12	1 5/8" Coax	1.98	0.82	N	0.00	N	T-Mobile
0.00	135.00	1	0.39" (10 mm) Cable	0.39	0.07	N	0.00	N	AT&T Mobility
0.00	135.00	2	0.78" (19.7mm) 8	0.78	0.59	N	0.00	N	AT&T Mobility
0.00	135.00	12	1 1/4" Coax	1.55	0.63	N	0.00	N	AT&T Mobility
0.00	110.00	1	1/2" Coax	0.63	0.15	N	0.00	N	Verizon
0.00	97.00	1	1/2" Coax	0.63	0.15	N	0.00	N	Sprint Nextel
0.00	88.00	2	1/2" Coax	0.63	0.15	N	0.00	N	Sprint Nextel
0.00	12.00	1	1/2" Coax	0.63	0.15	N	0.00	N	AT&T Mobility

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		0.5000	56.910	89.519	35,990.1	18.31	113.82	79.9	1245.	0.0	0.0
5.00		0.5000	55.875	87.877	34,045.1	17.94	111.75	80.3	1200.	0.0	1,509.1
10.00		0.5000	54.840	86.234	32,171.5	17.58	109.68	80.7	1155.	0.0	1,481.2
12.00		0.5000	54.426	85.577	31,441.7	17.43	108.85	80.9	1137.	0.0	584.6
15.00		0.5000	53.805	84.592	30,367.9	17.21	107.61	81.2	1111.	0.0	868.6
20.00		0.5000	52.770	82.949	28,633.1	16.85	105.54	81.6	1068.	0.0	1,425.3
25.00		0.5000	51.735	81.307	26,965.5	16.48	103.47	82.0	1026.	0.0	1,397.3
30.00		0.5000	50.700	79.664	25,364.1	16.12	101.40	82.4	985.4	0.0	1,369.4
35.00		0.5000	49.665	78.022	23,827.3	15.75	99.33	82.6	944.9	0.0	1,341.4
40.00		0.5000	48.630	76.379	22,353.9	15.39	97.26	82.6	905.4	0.0	1,313.5
42.75	Bot - Section 2	0.5000	48.060	75.476	21,570.0	15.19	96.12	82.6	884.0	0.0	710.5
45.00		0.5000	47.595	74.736	20,942.5	15.02	95.19	82.6	866.7	0.0	1,051.2
49.00	Top - Section 1	0.4063	47.579	60.824	17,100.7	18.89	117.12	79.2	707.9	0.0	1,843.5
50.00		0.4063	47.372	60.557	16,876.6	18.80	116.61	79.3	701.7	0.0	206.5
55.00		0.4063	46.337	59.223	15,785.2	18.35	114.06	79.8	671.0	0.0	1,019.0
60.00		0.4063	45.302	57.888	14,741.9	17.90	111.51	80.3	640.9	0.0	996.3
65.00		0.4063	44.267	56.554	13,745.6	17.45	108.96	80.9	611.6	0.0	973.5
70.00		0.4063	43.232	55.219	12,795.3	17.00	106.42	81.4	582.9	0.0	950.8
75.00		0.4063	42.197	53.884	11,889.8	16.55	103.87	81.9	555.0	0.0	928.1
80.00		0.4063	41.162	52.550	11,028.1	16.10	101.32	82.5	527.7	0.0	905.4
85.00		0.4063	40.127	51.215	10,209.0	15.65	98.77	82.6	501.1	0.0	882.7
87.00	Bot - Section 3	0.4063	39.713	50.681	9,893.1	15.47	97.75	82.6	490.7	0.0	346.7
88.00		0.4063	39.506	50.415	9,737.6	15.38	97.24	82.6	485.5	0.0	320.3
90.00		0.4063	39.092	49.881	9,431.5	15.20	96.23	82.6	475.2	0.0	635.6
92.00	Top - Section 2	0.3438	39.365	42.573	8,190.3	18.43	114.52	79.7	409.8	0.0	628.9
95.00		0.3438	38.744	41.896	7,805.4	18.11	112.71	80.1	396.8	0.0	431.1
97.00		0.3438	38.330	41.444	7,555.7	17.90	111.51	80.3	388.3	0.0	283.6
100.0		0.3438	37.709	40.767	7,191.1	17.58	109.70	80.7	375.6	0.0	419.6
105.0		0.3438	36.674	39.637	6,609.9	17.05	106.69	81.3	355.0	0.0	684.0
110.0		0.3438	35.639	38.508	6,060.9	16.52	103.68	82.0	335.0	0.0	664.8
115.0		0.3438	34.604	37.379	5,543.2	15.99	100.67	82.6	315.5	0.0	645.6
120.0		0.3438	33.569	36.250	5,055.8	15.46	97.66	82.6	296.6	0.0	626.4
125.0		0.3438	32.534	35.120	4,597.9	14.93	94.64	82.6	278.4	0.0	607.1
130.0		0.3438	31.499	33.991	4,168.5	14.39	91.63	82.6	260.7	0.0	587.9
132.0	Bot - Section 4	0.3438	31.085	33.539	4,004.5	14.18	90.43	82.6	253.7	0.0	229.8
135.0		0.3438	30.464	32.862	3,766.7	13.86	88.62	82.6	243.5	0.0	558.6
136.0	Top - Section 3	0.2188	30.694	21.159	2,482.8	22.98	140.32	74.4	159.3	0.0	183.7
140.0		0.2188	29.866	20.584	2,285.9	22.31	136.53	75.2	150.8	0.0	284.1
145.0		0.2188	28.831	19.865	2,054.8	21.48	131.80	76.1	140.4	0.0	344.1
150.0		0.2188	27.796	19.147	1,839.7	20.64	127.07	77.1	130.4	0.0	331.9
155.0		0.2188	26.761	18.428	1,640.3	19.81	122.34	78.1	120.7	0.0	319.6
158.0		0.2188	26.140	17.997	1,527.8	19.31	119.50	78.7	115.1	0.0	185.9
160.0		0.2188	25.726	17.709	1,455.8	18.97	117.61	79.1	111.5	0.0	121.5
165.0		0.2188	24.691	16.991	1,285.6	18.14	112.87	80.1	102.6	0.0	295.2
168.0		0.2188	24.070	16.560	1,190.2	17.64	110.03	80.7	97.4	0.0	171.2
170.0		0.2188	23.656	16.272	1,129.3	17.31	108.14	81.0	94.0	0.0	111.7
175.0		0.2188	22.621	15.554	986.2	16.47	103.41	82.0	85.9	0.0	270.7
178.0		0.2188	22.000	15.122	906.4	15.97	100.57	82.6	81.2	0.0	156.6
											32,204.2



<b>Load Case: 1.2D + 1.6W</b>	<b>101 mph with No Ice</b>	<b>26 Iterations</b>
Gust Response Factor :1.10		Wind Importance Factor :1.00
Dead Load Factor :1.20		
Wind Load Factor :1.60		

**Shaft Segment Forces (Factored)**

Seg Top Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Ap (sf)	EPAs (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		2.18	0.70	37.885	41.67	601.04	0.650	0.000	0.00	0.000	0.00	505.6	0.0	0.0
5.00		2.13	0.70	37.049	40.75	588.97	0.650	0.000	5.00	23.859	15.51	981.1	0.0	1,810.9
10.00		2.04	0.70	35.487	39.03	565.84	0.650	0.000	5.00	23.421	15.22	657.8	0.0	1,777.4
12.00	Appertunance(s)	1.98	0.70	34.476	37.92	550.42	0.650	0.000	2.00	9.246	6.01	447.9	0.0	701.6
15.00		1.94	0.70	33.792	37.17	539.77	0.650	0.000	3.00	13.738	8.93	688.0	0.0	1,042.3
20.00		1.88	0.70	32.759	36.03	523.32	0.650	0.000	5.00	22.546	14.65	821.6	0.0	1,710.3
25.00		1.81	0.70	31.567	34.72	503.74	0.650	0.000	5.00	22.108	14.37	776.9	0.0	1,676.8
30.00		1.75	0.70	30.475	33.52	485.15	0.650	0.000	5.00	21.670	14.09	744.3	0.0	1,643.2
35.00		1.69	0.71	30.182	33.20	473.05	0.650	0.000	5.00	21.232	13.80	728.9	0.0	1,609.7
40.00		1.64	0.74	30.462	33.50	465.44	0.650	0.000	5.00	20.794	13.52	559.3	0.0	1,576.2
42.75	Bot - Section 2	1.60	0.76	30.607	33.66	458.93	0.650	0.000	2.75	11.250	7.31	359.4	0.0	852.6
45.00		1.58	0.86	30.675	33.74	454.51	0.650	0.000	2.25	9.261	6.02	448.1	0.0	1,261.4
49.00	Top - Section 1	1.55	0.79	30.737	33.81	448.82	0.650	0.000	4.00	16.244	10.56	356.3	0.0	2,212.1
50.00		1.53	0.80	30.772	33.84	451.89	0.650	0.000	1.00	4.017	2.61	420.0	0.0	247.8
55.00		1.51	0.82	30.800	33.88	446.18	0.650	0.000	5.00	19.824	12.89	691.0	0.0	1,222.8
60.00		1.47	0.84	30.821	33.90	436.47	0.650	0.000	5.00	19.386	12.60	675.8	0.0	1,195.5
65.00		1.43	0.86	30.818	33.90	426.59	0.650	0.000	5.00	18.948	12.32	660.1	0.0	1,168.3
70.00		1.40	0.88	30.801	33.88	416.62	0.650	0.000	5.00	18.510	12.03	644.2	0.0	1,141.0
75.00		1.37	0.90	30.775	33.85	406.59	0.650	0.000	5.00	18.072	11.75	628.3	0.0	1,113.8
80.00		1.34	0.91	30.745	33.82	396.54	0.650	0.000	5.00	17.634	11.46	612.2	0.0	1,086.5
85.00		1.32	0.93	30.715	33.78	386.50	0.650	0.000	5.00	17.196	11.18	420.7	0.0	1,059.3
87.00	Bot - Section 3	1.30	0.94	30.694	33.76	379.49	0.650	0.000	2.00	6.756	4.39	178.5	0.0	416.1
88.00	Appertunance(s)	1.30	0.95	30.686	33.75	376.49	0.650	0.000	1.00	3.410	2.22	178.6	0.0	384.4
90.00		1.29	0.95	30.678	33.74	373.49	0.650	0.000	2.00	6.767	4.40	236.2	0.0	762.8
92.00	Top - Section 2	1.28	0.96	30.668	33.73	369.49	0.650	0.000	2.00	6.697	4.35	291.3	0.0	754.7
95.00		1.27	0.96	30.657	33.72	371.04	0.650	0.000	3.00	9.914	6.44	288.2	0.0	517.4
97.00	Appertunance(s)	1.26	0.97	30.647	33.71	366.06	0.650	0.000	2.00	6.522	4.24	283.5	0.0	340.3
100.00		1.25	0.98	30.638	33.70	361.09	0.650	0.000	3.00	9.652	6.27	444.8	0.0	503.5
105.00		1.24	0.99	30.628	33.69	353.17	0.650	0.000	5.00	15.736	10.23	543.6	0.0	820.8
110.00	Appertunance(s)	1.22	1.00	30.620	33.68	343.30	0.650	0.000	5.00	15.298	9.94	528.2	0.0	797.7
115.00		1.20	1.02	30.620	33.68	333.47	0.650	0.000	5.00	14.860	9.66	512.9	0.0	774.7
120.00		1.19	1.03	30.627	33.69	323.68	0.650	0.000	5.00	14.422	9.37	497.7	0.0	751.6
125.00		1.17	1.04	30.642	33.70	313.92	0.650	0.000	5.00	13.984	9.09	482.7	0.0	728.6
130.00		1.16	1.05	30.663	33.72	304.20	0.650	0.000	5.00	13.546	8.80	330.5	0.0	705.5
132.00	Bot - Section 4	1.15	1.06	30.683	33.75	297.41	0.650	0.000	2.00	5.296	3.44	232.1	0.0	275.7
135.00	Appertunance(s)	1.15	1.07	30.698	33.76	292.57	0.650	0.000	3.00	7.923	5.15	184.9	0.0	670.3
136.00	Top - Section 3	1.14	1.07	30.712	33.78	288.70	0.650	0.000	1.00	2.606	1.69	225.9	0.0	220.4
140.00		1.14	1.08	30.732	33.80	288.03	0.650	0.000	4.00	10.249	6.66	398.7	0.0	340.9
145.00	Appertunance(s)	1.13	1.09	30.770	33.84	279.34	0.650	0.000	5.00	12.417	8.07	429.7	0.0	412.9
150.00		1.12	1.10	30.819	33.90	269.70	0.650	0.000	5.00	11.979	7.79	415.0	0.0	398.2
155.00		1.11	1.11	30.874	33.96	260.08	0.650	0.000	5.00	11.541	7.50	322.6	0.0	383.6
158.00	Appertunance(s)	1.11	1.12	30.923	34.01	252.38	0.650	0.000	3.00	6.715	4.36	196.5	0.0	223.1
160.00		1.10	1.12	30.955	34.05	247.57	0.650	0.000	2.00	4.389	2.85	266.8	0.0	145.8
165.00		1.10	1.13	31.002	34.10	240.84	0.650	0.000	5.00	10.666	6.93	299.1	0.0	354.2
168.00	Appertunance(s)	1.09	1.14	31.059	34.16	233.14	0.650	0.000	3.00	6.189	4.02	181.8	0.0	205.5
170.00		1.09	1.14	31.097	34.20	228.33	0.650	0.000	2.00	4.039	2.63	246.3	0.0	134.1
175.00		1.08	1.15	31.151	34.26	221.59	0.650	0.000	5.00	9.790	6.36	275.6	0.0	324.9
178.00	Appertunance(s)	1.08	1.16	31.216	34.33	213.88	0.650	0.000	3.00	5.664	3.68	101.1	0.0	187.9
Totals:								178.00				21,400.5	0.0	38,645.1

Site Number: 302472

Code: ANSI/TIA-222-G

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Site Name: Andover-bunker Hill Road, CT

Engineering Number:OAA710391\_C3\_02

9/5/2017 2:56:45 PM

Customer: SPRINT NEXTEL

Load Case: 1.2D + 1.6W

101 mph with No Ice

26 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

Dead Load Factor :1.20

Wind Load Factor :1.60

<b>Load Case: 1.2D + 1.6W</b>	<b>101 mph with No Ice</b>	<b>26 Iterations</b>
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		505.6	0.0					0.0	0.0	505.6	0.0	0.0	0.0
5.00		981.1	1,810.9					0.0	288.5	981.1	2,099.5	0.0	0.0
10.00		657.8	1,777.4					0.0	288.5	657.8	2,065.9	0.0	0.0
12.00	Appertunance(s)	447.9	701.6	106.2	0.0	0.0	90.7	0.0	115.4	554.1	907.7	0.0	0.0
15.00		688.0	1,042.3					0.0	172.6	688.0	1,214.9	0.0	0.0
20.00		821.6	1,710.3					0.0	287.6	821.6	1,998.0	0.0	0.0
25.00		776.9	1,676.8					0.0	287.6	776.9	1,964.4	0.0	0.0
30.00		744.3	1,643.2					0.0	287.6	744.3	1,930.9	0.0	0.0
35.00		728.9	1,609.7					0.0	287.6	728.9	1,897.3	0.0	0.0
40.00		559.3	1,576.2					0.0	287.6	559.3	1,863.8	0.0	0.0
42.75	Bot - Section 2	359.4	852.6					0.0	158.2	359.4	1,010.8	0.0	0.0
45.00		448.1	1,261.4					0.0	129.4	448.1	1,390.9	0.0	0.0
49.00	Top - Section 1	356.3	2,212.1					0.0	230.1	356.3	2,442.3	0.0	0.0
50.00		420.0	247.8					0.0	57.5	420.0	305.3	0.0	0.0
55.00		691.0	1,222.8					0.0	287.6	691.0	1,510.4	0.0	0.0
60.00		675.8	1,195.5					0.0	287.6	675.8	1,483.1	0.0	0.0
65.00		660.1	1,168.3					0.0	287.6	660.1	1,455.9	0.0	0.0
70.00		644.2	1,141.0					0.0	287.6	644.2	1,428.7	0.0	0.0
75.00		628.3	1,113.8					0.0	287.6	628.3	1,401.4	0.0	0.0
80.00		612.2	1,086.5					0.0	287.6	612.2	1,374.2	0.0	0.0
85.00		420.7	1,059.3					0.0	287.6	420.7	1,346.9	0.0	0.0
87.00	Bot - Section 3	178.5	416.1					0.0	115.1	178.5	531.1	0.0	0.0
88.00	Appertunance(s)	178.6	384.4	144.5	0.0	0.0	102.0	0.0	57.5	323.1	543.9	0.0	0.0
90.00		236.2	762.8					0.0	114.3	236.2	877.1	0.0	0.0
92.00	Top - Section 2	291.3	754.7					0.0	114.3	291.3	869.0	0.0	0.0
95.00		288.2	517.4					0.0	171.5	288.2	688.9	0.0	0.0
97.00	Appertunance(s)	283.5	340.3	144.3	0.0	0.0	102.0	0.0	114.3	427.7	556.6	0.0	0.0
100.00		444.8	503.5					0.0	171.0	444.8	674.5	0.0	0.0
105.00		543.6	820.8					0.0	284.9	543.6	1,105.7	0.0	0.0
110.00	Appertunance(s)	528.2	797.7	144.2	0.0	0.0	102.0	0.0	284.9	672.4	1,184.7	0.0	0.0
115.00		512.9	774.7					0.0	284.0	512.9	1,058.7	0.0	0.0
120.00		497.7	751.6					0.0	284.0	497.7	1,035.7	0.0	0.0
125.00		482.7	728.6					0.0	284.0	482.7	1,012.6	0.0	0.0
130.00		330.5	705.5					0.0	284.0	330.5	989.6	0.0	0.0
132.00	Bot - Section 4	232.1	275.7					0.0	113.6	232.1	389.4	0.0	0.0
135.00	Appertunance(s)	184.9	670.3	3,488.9	0.0	0.0	2,603.9	0.0	170.4	3,673.8	3,444.6	0.0	0.0
136.00	Top - Section 3	225.9	220.4					0.0	46.2	225.9	266.7	0.0	0.0
140.00		398.7	340.9					0.0	184.9	398.7	525.8	0.0	0.0
145.00	Appertunance(s)	429.7	412.9	2,612.3	0.0	0.0	2,084.8	0.0	231.2	3,042.0	2,728.9	0.0	0.0
150.00		415.0	398.2					0.0	172.1	415.0	570.4	0.0	0.0
155.00		322.6	383.6					0.0	172.1	322.6	555.7	0.0	0.0
158.00	Appertunance(s)	196.5	223.1	4,548.1	0.0	0.0	2,821.1	0.0	103.3	4,744.5	3,147.5	0.0	0.0
160.00		266.8	145.8					0.0	37.5	266.8	183.3	0.0	0.0
165.00		299.1	354.2					0.0	93.8	299.1	448.0	0.0	0.0
168.00	Appertunance(s)	181.8	205.5	3,654.5	0.0	0.0	3,098.5	0.0	56.3	3,836.3	3,360.3	0.0	0.0
170.00		246.3	134.1					0.0	24.0	246.3	158.0	0.0	0.0
175.00		275.6	324.9					0.0	59.9	275.6	384.8	0.0	0.0
178.00	Appertunance(s)	101.1	187.9	3,428.9	0.0	0.0	2,021.8	0.0	36.0	3,530.0	2,245.6	0.0	0.0

Site Number: 302472

Code: ANSI/TIA-222-G

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Site Name: Andover-bunker Hill Road, CT

Engineering Number: OAA710391\_C3\_02

9/5/2017 2:56:47 PM

Customer: SPRINT NEXTEL

Load Case: 1.2D + 1.6W

101 mph with No Ice

26 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

Dead Load Factor :1.20

Wind Load Factor :1.60

Totals: 39,672.1 60,629.4 0.00 0.00

**Load Case: 1.2D + 1.6W**

101 mph with No Ice

26 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	-60.57	-39.26	0.00	-4,662.08	0.00	4,662.08	6,434.86	3,217.43	14,900.4	7,461.32	0.00	0.00	0.634
5.00	-58.35	-38.46	0.00	-4,465.77	0.00	4,465.77	6,350.74	3,175.37	14,433.5	7,227.48	0.10	-0.18	0.627
10.00	-56.20	-37.92	0.00	-4,273.45	0.00	4,273.45	6,265.35	3,132.68	13,970.9	6,995.84	0.38	-0.36	0.620
12.00	-55.23	-37.45	0.00	-4,197.61	0.00	4,197.61	6,230.84	3,115.42	13,787.1	6,903.82	0.55	-0.44	0.617
15.00	-53.93	-36.90	0.00	-4,085.25	0.00	4,085.25	6,178.70	3,089.35	13,512.8	6,766.48	0.86	-0.55	0.613
20.00	-51.82	-36.22	0.00	-3,900.78	0.00	3,900.78	6,090.77	3,045.39	13,059.5	6,539.47	1.54	-0.74	0.605
25.00	-49.75	-35.58	0.00	-3,719.67	0.00	3,719.67	6,001.58	3,000.79	12,611.0	6,314.89	2.41	-0.93	0.597
30.00	-47.72	-34.96	0.00	-3,541.77	0.00	3,541.77	5,911.12	2,955.56	12,167.6	6,092.85	3.49	-1.12	0.590
35.00	-45.72	-34.35	0.00	-3,366.95	0.00	3,366.95	5,796.61	2,898.31	11,683.4	5,850.41	4.76	-1.31	0.584
40.00	-43.78	-33.86	0.00	-3,195.20	0.00	3,195.20	5,674.58	2,837.29	11,194.2	5,605.46	6.24	-1.51	0.578
42.75	-42.72	-33.55	0.00	-3,102.08	0.00	3,102.08	5,607.46	2,803.73	10,929.6	5,472.97	7.14	-1.62	0.575
45.00	-41.27	-33.15	0.00	-3,026.60	0.00	3,026.60	5,552.55	2,776.27	10,715.5	5,365.75	7.93	-1.71	0.572
49.00	-38.78	-32.79	0.00	-2,893.99	0.00	2,893.99	4,334.74	2,167.37	8,395.94	4,204.21	9.43	-1.87	0.698
50.00	-38.41	-32.45	0.00	-2,861.20	0.00	2,861.20	4,321.48	2,160.74	8,333.21	4,172.80	9.82	-1.91	0.695
55.00	-36.80	-31.86	0.00	-2,698.94	0.00	2,698.94	4,254.40	2,127.20	8,021.52	4,016.72	11.95	-2.15	0.681
60.00	-35.21	-31.27	0.00	-2,539.65	0.00	2,539.65	4,186.06	2,093.03	7,713.24	3,862.35	14.32	-2.38	0.666
65.00	-33.66	-30.69	0.00	-2,383.30	0.00	2,383.30	4,116.45	2,058.22	7,408.53	3,709.77	16.95	-2.62	0.651
70.00	-32.14	-30.11	0.00	-2,229.86	0.00	2,229.86	4,045.56	2,022.78	7,107.57	3,559.07	19.82	-2.86	0.635
75.00	-30.65	-29.54	0.00	-2,079.31	0.00	2,079.31	3,973.41	1,986.71	6,810.50	3,410.31	22.94	-3.10	0.618
80.00	-29.19	-28.97	0.00	-1,931.62	0.00	1,931.62	3,899.99	1,950.00	6,517.51	3,263.60	26.31	-3.34	0.600
85.00	-27.79	-28.55	0.00	-1,786.75	0.00	1,786.75	3,805.04	1,902.52	6,195.74	3,102.48	29.93	-3.58	0.583
87.00	-27.23	-28.38	0.00	-1,729.65	0.00	1,729.65	3,765.38	1,882.69	6,066.61	3,037.81	31.45	-3.67	0.577
88.00	-26.67	-28.05	0.00	-1,701.27	0.00	1,701.27	3,745.55	1,872.77	6,002.55	3,005.74	32.22	-3.72	0.573
90.00	-25.77	-27.80	0.00	-1,645.17	0.00	1,645.17	3,705.89	1,852.94	5,875.46	2,942.10	33.80	-3.82	0.566
92.00	-24.86	-27.51	0.00	-1,589.56	0.00	1,589.56	3,054.73	1,527.36	4,893.34	2,450.31	35.42	-3.92	0.657
95.00	-24.13	-27.23	0.00	-1,507.04	0.00	1,507.04	3,020.24	1,510.12	4,760.42	2,383.75	37.93	-4.06	0.641
97.00	-23.55	-26.81	0.00	-1,452.59	0.00	1,452.59	2,996.99	1,498.50	4,672.40	2,339.67	39.66	-4.17	0.629
100.00	-22.81	-26.40	0.00	-1,372.15	0.00	1,372.15	2,961.74	1,480.87	4,541.28	2,274.01	42.33	-4.33	0.611
105.00	-21.63	-25.87	0.00	-1,240.13	0.00	1,240.13	2,901.98	1,450.99	4,325.26	2,165.84	47.00	-4.59	0.580
110.00	-20.40	-25.19	0.00	-1,110.77	0.00	1,110.77	2,840.94	1,420.47	4,112.52	2,059.32	51.94	-4.84	0.547
115.00	-19.29	-24.67	0.00	-984.80	0.00	984.80	2,777.06	1,388.53	3,901.02	1,953.41	57.14	-5.09	0.511
120.00	-18.20	-24.16	0.00	-861.44	0.00	861.44	2,693.16	1,346.58	3,667.73	1,836.59	62.59	-5.33	0.476
125.00	-17.15	-23.65	0.00	-740.65	0.00	740.65	2,609.26	1,304.63	3,441.64	1,723.38	68.28	-5.55	0.437
130.00	-16.14	-23.26	0.00	-622.42	0.00	622.42	2,525.36	1,262.68	3,222.75	1,613.77	74.20	-5.76	0.392
132.00	-15.74	-23.02	0.00	-575.90	0.00	575.90	2,491.80	1,245.90	3,137.20	1,570.93	76.63	-5.84	0.373
135.00	-12.66	-19.03	0.00	-506.85	0.00	506.85	2,441.46	1,220.73	3,011.04	1,507.76	80.33	-5.96	0.342
136.00	-12.39	-18.79	0.00	-487.83	0.00	487.83	1,416.30	708.15	1,774.76	888.70	81.58	-6.00	0.558
140.00	-11.85	-18.38	0.00	-412.66	0.00	412.66	1,392.36	696.18	1,697.02	849.77	86.66	-6.14	0.495
145.00	-9.41	-15.09	0.00	-320.77	0.00	320.77	1,361.30	680.65	1,600.81	801.59	93.20	-6.36	0.408
150.00	-8.85	-14.64	0.00	-245.31	0.00	245.31	1,328.96	664.48	1,505.82	754.03	99.96	-6.56	0.332
155.00	-8.30	-14.28	0.00	-172.09	0.00	172.09	1,295.36	647.68	1,412.23	707.16	106.90	-6.72	0.250
158.00	-5.73	-9.20	0.00	-129.26	0.00	129.26	1,274.59	637.29	1,356.80	679.41	111.15	-6.80	0.195
160.00	-5.57	-8.92	0.00	-110.86	0.00	110.86	1,260.48	630.24	1,320.18	661.07	114.00	-6.84	0.172
165.00	-5.15	-8.57	0.00	-66.27	0.00	66.27	1,224.34	612.17	1,229.85	615.84	121.20	-6.93	0.112
168.00	-2.28	-4.36	0.00	-40.54	0.00	40.54	1,202.05	601.02	1,176.54	589.15	125.56	-6.97	0.071
170.00	-2.15	-4.10	0.00	-31.82	0.00	31.82	1,186.93	593.46	1,141.40	571.55	128.47	-6.98	0.058
175.00	-1.80	-3.78	0.00	-11.33	0.00	11.33	1,148.25	574.12	1,054.98	528.28	135.78	-7.01	0.023
178.00	0.00	-3.53	0.00	0.00	0.00	0.00	1,123.52	561.76	1,003.37	502.43	140.18	-7.02	0.000

Load Case: 0.9D + 1.6W

101 mph with No Ice (Reduced DL)

26 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

Dead Load Factor :0.90

Wind Load Factor :1.60

Shaft Segment Forces (Factored)

Seg Top	Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Ap (sf)	EPAs (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
	0.00		2.18	0.70	37.885	41.67	601.04	0.650	0.000	0.00	0.000	0.00	505.6	0.0	0.0
	5.00		2.13	0.70	37.049	40.75	588.97	0.650	0.000	5.00	23.859	15.51	981.1	0.0	1,358.2
	10.00		2.04	0.70	35.487	39.03	565.84	0.650	0.000	5.00	23.421	15.22	657.8	0.0	1,333.0
	12.00	Appertunance(s)	1.98	0.70	34.476	37.92	550.42	0.650	0.000	2.00	9.246	6.01	447.9	0.0	526.2
	15.00		1.94	0.70	33.792	37.17	539.77	0.650	0.000	3.00	13.738	8.93	688.0	0.0	781.7
	20.00		1.88	0.70	32.759	36.03	523.32	0.650	0.000	5.00	22.546	14.65	821.6	0.0	1,282.7
	25.00		1.81	0.70	31.567	34.72	503.74	0.650	0.000	5.00	22.108	14.37	776.9	0.0	1,257.6
	30.00		1.75	0.70	30.475	33.52	485.15	0.650	0.000	5.00	21.670	14.09	744.3	0.0	1,232.4
	35.00		1.69	0.71	30.182	33.20	473.05	0.650	0.000	5.00	21.232	13.80	728.9	0.0	1,207.3
	40.00		1.64	0.74	30.462	33.50	465.44	0.650	0.000	5.00	20.794	13.52	559.3	0.0	1,182.1
	42.75	Bot - Section 2	1.60	0.76	30.607	33.66	458.93	0.650	0.000	2.75	11.250	7.31	359.4	0.0	639.5
	45.00		1.58	0.86	30.675	33.74	454.51	0.650	0.000	2.25	9.261	6.02	448.1	0.0	946.1
	49.00	Top - Section 1	1.55	0.79	30.737	33.81	448.82	0.650	0.000	4.00	16.244	10.56	356.3	0.0	1,659.1
	50.00		1.53	0.80	30.772	33.84	451.89	0.650	0.000	1.00	4.017	2.61	420.0	0.0	185.9
	55.00		1.51	0.82	30.800	33.88	446.18	0.650	0.000	5.00	19.824	12.89	691.0	0.0	917.1
	60.00		1.47	0.84	30.821	33.90	436.47	0.650	0.000	5.00	19.386	12.60	675.8	0.0	896.6
	65.00		1.43	0.86	30.818	33.90	426.59	0.650	0.000	5.00	18.948	12.32	660.1	0.0	876.2
	70.00		1.40	0.88	30.801	33.88	416.62	0.650	0.000	5.00	18.510	12.03	644.2	0.0	855.8
	75.00		1.37	0.90	30.775	33.85	406.59	0.650	0.000	5.00	18.072	11.75	628.3	0.0	835.3
	80.00		1.34	0.91	30.745	33.82	396.54	0.650	0.000	5.00	17.634	11.46	612.2	0.0	814.9
	85.00		1.32	0.93	30.715	33.78	386.50	0.650	0.000	5.00	17.196	11.18	420.7	0.0	794.5
	87.00	Bot - Section 3	1.30	0.94	30.694	33.76	379.49	0.650	0.000	2.00	6.756	4.39	178.5	0.0	312.1
	88.00	Appertunance(s)	1.30	0.95	30.686	33.75	376.49	0.650	0.000	1.00	3.410	2.22	178.6	0.0	288.3
	90.00		1.29	0.95	30.678	33.74	373.49	0.650	0.000	2.00	6.767	4.40	236.2	0.0	572.1
	92.00	Top - Section 2	1.28	0.96	30.668	33.73	369.49	0.650	0.000	2.00	6.697	4.35	291.3	0.0	566.0
	95.00		1.27	0.96	30.657	33.72	371.04	0.650	0.000	3.00	9.914	6.44	288.2	0.0	388.0
	97.00	Appertunance(s)	1.26	0.97	30.647	33.71	366.06	0.650	0.000	2.00	6.522	4.24	283.5	0.0	255.2
	100.00		1.25	0.98	30.638	33.70	361.09	0.650	0.000	3.00	9.652	6.27	444.8	0.0	377.7
	105.00		1.24	0.99	30.628	33.69	353.17	0.650	0.000	5.00	15.736	10.23	543.6	0.0	615.6
	110.00	Appertunance(s)	1.22	1.00	30.620	33.68	343.30	0.650	0.000	5.00	15.298	9.94	528.2	0.0	598.3
	115.00		1.20	1.02	30.620	33.68	333.47	0.650	0.000	5.00	14.860	9.66	512.9	0.0	581.0
	120.00		1.19	1.03	30.627	33.69	323.68	0.650	0.000	5.00	14.422	9.37	497.7	0.0	563.7
	125.00		1.17	1.04	30.642	33.70	313.92	0.650	0.000	5.00	13.984	9.09	482.7	0.0	546.4
	130.00		1.16	1.05	30.663	33.72	304.20	0.650	0.000	5.00	13.546	8.80	330.5	0.0	529.1
	132.00	Bot - Section 4	1.15	1.06	30.683	33.75	297.41	0.650	0.000	2.00	5.296	3.44	232.1	0.0	206.8
	135.00	Appertunance(s)	1.15	1.07	30.698	33.76	292.57	0.650	0.000	3.00	7.923	5.15	184.9	0.0	502.7
	136.00	Top - Section 3	1.14	1.07	30.712	33.78	288.70	0.650	0.000	1.00	2.606	1.69	225.9	0.0	165.3
	140.00		1.14	1.08	30.732	33.80	288.03	0.650	0.000	4.00	10.249	6.66	398.7	0.0	255.7
	145.00	Appertunance(s)	1.13	1.09	30.770	33.84	279.34	0.650	0.000	5.00	12.417	8.07	429.7	0.0	309.7
	150.00		1.12	1.10	30.819	33.90	269.70	0.650	0.000	5.00	11.979	7.79	415.0	0.0	298.7
	155.00		1.11	1.11	30.874	33.96	260.08	0.650	0.000	5.00	11.541	7.50	322.6	0.0	287.7
	158.00	Appertunance(s)	1.11	1.12	30.923	34.01	252.38	0.650	0.000	3.00	6.715	4.36	196.5	0.0	167.3
	160.00		1.10	1.12	30.955	34.05	247.57	0.650	0.000	2.00	4.389	2.85	266.8	0.0	109.4
	165.00		1.10	1.13	31.002	34.10	240.84	0.650	0.000	5.00	10.666	6.93	299.1	0.0	265.7
	168.00	Appertunance(s)	1.09	1.14	31.059	34.16	233.14	0.650	0.000	3.00	6.189	4.02	181.8	0.0	154.1
	170.00		1.09	1.14	31.097	34.20	228.33	0.650	0.000	2.00	4.039	2.63	246.3	0.0	100.5
	175.00		1.08	1.15	31.151	34.26	221.59	0.650	0.000	5.00	9.790	6.36	275.6	0.0	243.7
	178.00	Appertunance(s)	1.08	1.16	31.216	34.33	213.88	0.650	0.000	3.00	5.664	3.68	101.1	0.0	140.9
Totals:									178.00			21,400.5	0.0	28,983.8	

Site Number: 302472

Code: ANSI/TIA-222-G

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Site Name: Andover-bunker Hill Road, CT

Engineering Number: OAA710391\_C3\_02

9/5/2017 2:56:47 PM

Customer: SPRINT NEXTEL

Load Case: 0.9D + 1.6W

101 mph with No Ice (Reduced DL)

26 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

Dead Load Factor :0.90

Wind Load Factor :1.60

<b>Load Case:</b> 0.9D + 1.6W	101 mph with No Ice (Reduced DL)	26 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		505.6	0.0					0.0	0.0	505.6	0.0	0.0	0.0
5.00		981.1	1,358.2					0.0	216.4	981.1	1,574.6	0.0	0.0
10.00		657.8	1,333.0					0.0	216.4	657.8	1,549.4	0.0	0.0
12.00	Appertunance(s)	447.9	526.2	106.2	0.0	0.0	68.0	0.0	86.6	554.1	680.8	0.0	0.0
15.00		688.0	781.7					0.0	129.4	688.0	911.2	0.0	0.0
20.00		821.6	1,282.7					0.0	215.7	821.6	1,498.5	0.0	0.0
25.00		776.9	1,257.6					0.0	215.7	776.9	1,473.3	0.0	0.0
30.00		744.3	1,232.4					0.0	215.7	744.3	1,448.2	0.0	0.0
35.00		728.9	1,207.3					0.0	215.7	728.9	1,423.0	0.0	0.0
40.00		559.3	1,182.1					0.0	215.7	559.3	1,397.9	0.0	0.0
42.75	Bot - Section 2	359.4	639.5					0.0	118.7	359.4	758.1	0.0	0.0
45.00		448.1	946.1					0.0	97.1	448.1	1,043.1	0.0	0.0
49.00	Top - Section 1	356.3	1,659.1					0.0	172.6	356.3	1,831.7	0.0	0.0
50.00		420.0	185.9					0.0	43.1	420.0	229.0	0.0	0.0
55.00		691.0	917.1					0.0	215.7	691.0	1,132.8	0.0	0.0
60.00		675.8	896.6					0.0	215.7	675.8	1,112.4	0.0	0.0
65.00		660.1	876.2					0.0	215.7	660.1	1,091.9	0.0	0.0
70.00		644.2	855.8					0.0	215.7	644.2	1,071.5	0.0	0.0
75.00		628.3	835.3					0.0	215.7	628.3	1,051.1	0.0	0.0
80.00		612.2	814.9					0.0	215.7	612.2	1,030.6	0.0	0.0
85.00		420.7	794.5					0.0	215.7	420.7	1,010.2	0.0	0.0
87.00	Bot - Section 3	178.5	312.1					0.0	86.3	178.5	398.4	0.0	0.0
88.00	Appertunance(s)	178.6	288.3	144.5	0.0	0.0	76.5	0.0	43.1	323.1	407.9	0.0	0.0
90.00		236.2	572.1					0.0	85.8	236.2	657.8	0.0	0.0
92.00	Top - Section 2	291.3	566.0					0.0	85.8	291.3	651.8	0.0	0.0
95.00		288.2	388.0					0.0	128.6	288.2	516.7	0.0	0.0
97.00	Appertunance(s)	283.5	255.2	144.3	0.0	0.0	76.5	0.0	85.8	427.7	417.5	0.0	0.0
100.00		444.8	377.7					0.0	128.2	444.8	505.9	0.0	0.0
105.00		543.6	615.6					0.0	213.7	543.6	829.3	0.0	0.0
110.00	Appertunance(s)	528.2	598.3	144.2	0.0	0.0	76.5	0.0	213.7	672.4	888.5	0.0	0.0
115.00		512.9	581.0					0.0	213.0	512.9	794.0	0.0	0.0
120.00		497.7	563.7					0.0	213.0	497.7	776.7	0.0	0.0
125.00		482.7	546.4					0.0	213.0	482.7	759.5	0.0	0.0
130.00		330.5	529.1					0.0	213.0	330.5	742.2	0.0	0.0
132.00	Bot - Section 4	232.1	206.8					0.0	85.2	232.1	292.0	0.0	0.0
135.00	Appertunance(s)	184.9	502.7	3,488.9	0.0	0.0	1,952.9	0.0	127.8	3,673.8	2,583.5	0.0	0.0
136.00	Top - Section 3	225.9	165.3					0.0	34.7	225.9	200.0	0.0	0.0
140.00		398.7	255.7					0.0	138.7	398.7	394.4	0.0	0.0
145.00	Appertunance(s)	429.7	309.7	2,612.3	0.0	0.0	1,563.6	0.0	173.4	3,042.0	2,046.7	0.0	0.0
150.00		415.0	298.7					0.0	129.1	415.0	427.8	0.0	0.0
155.00		322.6	287.7					0.0	129.1	322.6	416.8	0.0	0.0
158.00	Appertunance(s)	196.5	167.3	4,548.1	0.0	0.0	2,115.8	0.0	77.5	4,744.5	2,360.6	0.0	0.0
160.00		266.8	109.4					0.0	28.1	266.8	137.5	0.0	0.0
165.00		299.1	265.7					0.0	70.3	299.1	336.0	0.0	0.0
168.00	Appertunance(s)	181.8	154.1	3,654.5	0.0	0.0	2,323.9	0.0	42.2	3,836.3	2,520.2	0.0	0.0
170.00		246.3	100.5					0.0	18.0	246.3	118.5	0.0	0.0
175.00		275.6	243.7					0.0	45.0	275.6	288.6	0.0	0.0
178.00	Appertunance(s)	101.1	140.9	3,428.9	0.0	0.0	1,516.3	0.0	27.0	3,530.0	1,684.2	0.0	0.0



Site Number: 302472

Code: ANSI/TIA-222-G

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Site Name: Andover-bunker Hill Road, CT

Engineering Number:OAA710391\_C3\_02

9/5/2017 2:56:50 PM

Customer: SPRINT NEXTEL

Load Case: 0.9D + 1.6W

101 mph with No Ice (Reduced DL)

26 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

Dead Load Factor :0.90

Wind Load Factor :1.60

Totals: 39,672.1 45,472.0 0.00 0.00

**Load Case: 0.9D + 1.6W**

101 mph with No Ice (Reduced DL)

26 Iterations

Gust Response Factor :1.10  
 Dead Load Factor :0.90  
 Wind Load Factor :1.60

Wind Importance 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	-45.41	-39.24	0.00	-4,600.75	0.00	4,600.75	6,434.86	3,217.43	14,900.4	7,461.32	0.00	0.00	0.624
5.00	-43.72	-38.39	0.00	-4,404.56	0.00	4,404.56	6,350.74	3,175.37	14,433.5	7,227.48	0.10	-0.18	0.616
10.00	-42.09	-37.82	0.00	-4,212.61	0.00	4,212.61	6,265.35	3,132.68	13,970.9	6,995.84	0.38	-0.36	0.609
12.00	-41.35	-37.33	0.00	-4,136.97	0.00	4,136.97	6,230.84	3,115.42	13,787.1	6,903.82	0.54	-0.43	0.606
15.00	-40.35	-36.74	0.00	-4,024.99	0.00	4,024.99	6,178.70	3,089.35	13,512.8	6,766.48	0.85	-0.54	0.602
20.00	-38.74	-36.02	0.00	-3,841.31	0.00	3,841.31	6,090.77	3,045.39	13,059.5	6,539.47	1.52	-0.73	0.594
25.00	-37.17	-35.35	0.00	-3,661.20	0.00	3,661.20	6,001.58	3,000.79	12,611.0	6,314.89	2.38	-0.91	0.586
30.00	-35.62	-34.70	0.00	-3,484.47	0.00	3,484.47	5,911.12	2,955.56	12,167.6	6,092.85	3.44	-1.10	0.578
35.00	-34.10	-34.05	0.00	-3,310.99	0.00	3,310.99	5,796.61	2,898.31	11,683.4	5,850.41	4.69	-1.29	0.572
40.00	-32.62	-33.54	0.00	-3,140.74	0.00	3,140.74	5,674.58	2,837.29	11,194.2	5,605.46	6.15	-1.48	0.566
42.75	-31.82	-33.22	0.00	-3,048.50	0.00	3,048.50	5,607.46	2,803.73	10,929.6	5,472.97	7.04	-1.59	0.563
45.00	-30.72	-32.81	0.00	-2,973.76	0.00	2,973.76	5,552.55	2,776.27	10,715.5	5,365.75	7.81	-1.68	0.560
49.00	-28.84	-32.44	0.00	-2,842.53	0.00	2,842.53	4,334.74	2,167.37	8,395.94	4,204.21	9.29	-1.84	0.683
50.00	-28.55	-32.09	0.00	-2,810.08	0.00	2,810.08	4,321.48	2,160.74	8,333.21	4,172.80	9.68	-1.88	0.680
55.00	-27.32	-31.47	0.00	-2,649.66	0.00	2,649.66	4,254.40	2,127.20	8,021.52	4,016.72	11.77	-2.11	0.666
60.00	-26.11	-30.85	0.00	-2,492.33	0.00	2,492.33	4,186.06	2,093.03	7,713.24	3,862.35	14.11	-2.34	0.652
65.00	-24.92	-30.25	0.00	-2,338.06	0.00	2,338.06	4,116.45	2,058.22	7,408.53	3,709.77	16.68	-2.58	0.637
70.00	-23.76	-29.65	0.00	-2,186.82	0.00	2,186.82	4,045.56	2,022.78	7,107.57	3,559.07	19.51	-2.81	0.621
75.00	-22.62	-29.06	0.00	-2,038.56	0.00	2,038.56	3,973.41	1,986.71	6,810.50	3,410.31	22.58	-3.04	0.604
80.00	-21.51	-28.48	0.00	-1,893.24	0.00	1,893.24	3,899.99	1,950.00	6,517.51	3,263.60	25.89	-3.28	0.586
85.00	-20.45	-28.06	0.00	-1,750.82	0.00	1,750.82	3,805.04	1,902.52	6,195.74	3,102.48	29.45	-3.52	0.570
87.00	-20.03	-27.89	0.00	-1,694.69	0.00	1,694.69	3,765.38	1,882.69	6,066.61	3,037.81	30.94	-3.61	0.563
88.00	-19.60	-27.56	0.00	-1,666.81	0.00	1,666.81	3,745.55	1,872.77	6,002.55	3,005.74	31.70	-3.66	0.560
90.00	-18.92	-27.32	0.00	-1,611.68	0.00	1,611.68	3,705.89	1,852.94	5,875.46	2,942.10	33.26	-3.76	0.553
92.00	-18.23	-27.02	0.00	-1,557.05	0.00	1,557.05	3,054.73	1,527.36	4,893.34	2,450.31	34.85	-3.85	0.642
95.00	-17.68	-26.74	0.00	-1,475.99	0.00	1,475.99	3,020.24	1,510.12	4,760.42	2,383.75	37.31	-3.99	0.625
97.00	-17.23	-26.32	0.00	-1,422.52	0.00	1,422.52	2,996.99	1,498.50	4,672.40	2,339.67	39.01	-4.10	0.614
100.00	-16.67	-25.90	0.00	-1,343.57	0.00	1,343.57	2,961.74	1,480.87	4,541.28	2,274.01	41.63	-4.25	0.597
105.00	-15.77	-25.36	0.00	-1,214.08	0.00	1,214.08	2,901.98	1,450.99	4,325.26	2,165.84	46.22	-4.51	0.566
110.00	-14.83	-24.68	0.00	-1,087.27	0.00	1,087.27	2,840.94	1,420.47	4,112.52	2,059.32	51.07	-4.76	0.533
115.00	-13.99	-24.16	0.00	-963.85	0.00	963.85	2,777.06	1,388.53	3,901.02	1,953.41	56.17	-5.00	0.499
120.00	-13.16	-23.65	0.00	-843.04	0.00	843.04	2,693.16	1,346.58	3,667.73	1,836.59	61.52	-5.23	0.464
125.00	-12.37	-23.15	0.00	-724.79	0.00	724.79	2,609.26	1,304.63	3,441.64	1,723.38	67.11	-5.45	0.426
130.00	-11.60	-22.77	0.00	-609.07	0.00	609.07	2,525.36	1,262.68	3,222.75	1,613.77	72.92	-5.65	0.382
132.00	-11.30	-22.53	0.00	-563.52	0.00	563.52	2,491.80	1,245.90	3,137.20	1,570.93	75.30	-5.73	0.364
135.00	-9.07	-18.63	0.00	-495.93	0.00	495.93	2,441.46	1,220.73	3,011.04	1,507.76	78.94	-5.85	0.333
136.00	-8.87	-18.40	0.00	-477.30	0.00	477.30	1,416.30	708.15	1,774.76	888.70	80.17	-5.88	0.544
140.00	-8.46	-17.99	0.00	-403.72	0.00	403.72	1,392.36	696.18	1,697.02	849.77	85.15	-6.02	0.482
145.00	-6.70	-14.77	0.00	-313.79	0.00	313.79	1,361.30	680.65	1,600.81	801.59	91.56	-6.24	0.397
150.00	-6.28	-14.33	0.00	-239.95	0.00	239.95	1,328.96	664.48	1,505.82	754.03	98.20	-6.44	0.323
155.00	-5.87	-13.97	0.00	-168.32	0.00	168.32	1,295.36	647.68	1,412.23	707.16	105.01	-6.59	0.243
158.00	-4.06	-8.99	0.00	-126.41	0.00	126.41	1,274.59	637.29	1,356.80	679.41	109.17	-6.67	0.189
160.00	-3.95	-8.71	0.00	-108.43	0.00	108.43	1,260.48	630.24	1,320.18	661.07	111.97	-6.71	0.167
165.00	-3.64	-8.38	0.00	-64.87	0.00	64.87	1,224.34	612.17	1,229.85	615.84	119.03	-6.80	0.109
168.00	-1.59	-4.27	0.00	-39.73	0.00	39.73	1,202.05	601.02	1,176.54	589.15	123.31	-6.83	0.069
170.00	-1.50	-4.01	0.00	-31.19	0.00	31.19	1,186.93	593.46	1,141.40	571.55	126.16	-6.85	0.056
175.00	-1.25	-3.71	0.00	-11.12	0.00	11.12	1,148.25	574.12	1,054.98	528.28	133.34	-6.88	0.022
178.00	0.00	-3.53	0.00	0.00	0.00	0.00	1,123.52	561.76	1,003.37	502.43	137.65	-6.88	0.000

<b>Load Case:</b> 1.2D + 1.0Di + 1.0Wi	50 mph with 1.00 in Radial Ice	26 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		

**Shaft Segment Forces (Factored)**

Seg Top Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Ap (sf)	EPAs (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		2.18	0.70	9.285	10.21	0.000	1.200	0.000	0.00	0.000	0.00	153.0	0.0	0.0
5.00		2.13	0.70	9.080	9.988	0.000	1.200	2.014	5.00	25.538	30.65	298.1	730.4	2,541.3
10.00		2.04	0.70	8.697	9.567	0.000	1.200	2.215	5.00	25.267	30.32	200.8	791.4	2,568.8
12.00	Appertunance(s)	1.98	0.70	8.449	9.294	0.000	1.200	2.278	2.00	10.005	12.01	137.2	323.6	1,025.2
15.00		1.94	0.70	8.282	9.110	0.000	1.200	2.309	3.00	14.892	17.87	211.2	486.8	1,529.1
20.00		1.88	0.70	8.028	8.831	0.000	1.200	2.344	5.00	24.499	29.40	252.8	809.0	2,519.3
25.00		1.81	0.70	7.736	8.510	0.000	1.200	2.373	5.00	24.085	28.90	239.6	804.0	2,480.7
30.00		1.75	0.70	7.469	8.216	0.000	1.200	2.391	5.00	23.662	28.39	230.1	795.0	2,438.2
35.00		1.69	0.71	7.397	8.136	0.000	1.200	2.403	5.00	23.234	27.88	225.8	783.6	2,393.3
40.00		1.64	0.74	7.466	8.212	0.000	1.200	2.411	5.00	22.803	27.36	173.5	770.6	2,346.8
42.75	Bot - Section 2	1.60	0.76	7.501	8.251	0.000	1.200	2.415	2.75	12.357	14.83	111.6	419.8	1,272.4
45.00		1.58	0.78	7.518	8.269	0.000	1.200	2.417	2.25	10.167	12.20	139.2	346.1	1,607.6
49.00	Top - Section 1	1.55	0.79	7.533	8.286	0.000	1.200	2.419	4.00	17.857	21.43	110.8	605.8	2,817.9
50.00		1.53	0.80	7.541	8.296	0.000	1.200	2.419	1.00	4.421	5.30	130.8	150.9	398.7
55.00		1.51	0.82	7.548	8.303	0.000	1.200	2.420	5.00	21.841	26.21	215.5	738.9	1,961.7
60.00		1.47	0.84	7.553	8.309	0.000	1.200	2.421	5.00	21.403	25.68	211.2	723.4	1,918.9
65.00		1.43	0.86	7.553	8.308	0.000	1.200	2.421	5.00	20.965	25.16	206.8	707.7	1,876.0
70.00		1.40	0.88	7.549	8.303	0.000	1.200	2.420	5.00	20.527	24.63	202.3	691.8	1,832.9
75.00		1.37	0.90	7.542	8.296	0.000	1.200	2.420	5.00	20.089	24.11	197.7	675.9	1,789.7
80.00		1.34	0.91	7.535	8.288	0.000	1.200	2.419	5.00	19.650	23.58	193.2	660.0	1,746.5
85.00		1.32	0.93	7.527	8.280	0.000	1.200	2.418	5.00	19.211	23.05	133.0	644.1	1,703.4
87.00	Bot - Section 3	1.30	0.94	7.522	8.275	0.000	1.200	2.417	2.00	7.562	9.07	56.5	255.1	671.1
88.00	Appertunance(s)	1.30	0.95	7.520	8.272	0.000	1.200	2.417	1.00	3.813	4.58	56.5	129.0	513.4
90.00		1.29	0.95	7.518	8.270	0.000	1.200	2.417	2.00	7.573	9.09	74.8	255.4	1,018.2
92.00	Top - Section 2	1.28	0.96	7.516	8.268	0.000	1.200	2.417	2.00	7.503	9.00	92.4	252.9	1,007.6
95.00		1.27	0.96	7.513	8.265	0.000	1.200	2.416	3.00	11.122	13.35	91.5	373.6	891.0
97.00	Appertunance(s)	1.26	0.97	7.511	8.262	0.000	1.200	2.416	2.00	7.327	8.79	90.1	246.5	586.8
100.00		1.25	0.98	7.509	8.259	0.000	1.200	2.416	3.00	10.859	13.03	141.7	364.1	867.7
105.00		1.24	0.99	7.506	8.257	0.000	1.200	2.415	5.00	17.748	21.30	173.7	591.1	1,411.9
110.00	Appertunance(s)	1.22	1.00	7.504	8.255	0.000	1.200	2.415	5.00	17.310	20.77	169.3	575.4	1,373.2
115.00		1.20	1.02	7.504	8.255	0.000	1.200	2.415	5.00	16.872	20.25	165.0	559.8	1,334.4
120.00		1.19	1.03	7.506	8.257	0.000	1.200	2.415	5.00	16.435	19.72	160.7	544.1	1,295.8
125.00		1.17	1.04	7.509	8.260	0.000	1.200	2.416	5.00	15.997	19.20	156.5	528.6	1,257.1
130.00		1.16	1.05	7.515	8.266	0.000	1.200	2.416	5.00	15.560	18.67	107.5	513.0	1,218.5
132.00	Bot - Section 4	1.15	1.06	7.519	8.271	0.000	1.200	2.417	2.00	6.101	7.32	75.6	202.8	478.5
135.00	Appertunance(s)	1.15	1.07	7.523	8.276	0.000	1.200	2.417	3.00	9.132	10.96	60.3	302.5	972.8
136.00	Top - Section 3	1.14	1.07	7.527	8.280	0.000	1.200	2.418	1.00	3.009	3.61	73.9	100.2	320.6
140.00		1.14	1.08	7.532	8.285	0.000	1.200	2.418	4.00	11.861	14.23	130.8	391.0	731.9
145.00	Appertunance(s)	1.13	1.09	7.541	8.295	0.000	1.200	2.419	5.00	14.433	17.32	141.6	473.3	886.2
150.00		1.12	1.10	7.553	8.308	0.000	1.200	2.421	5.00	13.997	16.80	137.5	457.8	856.1
155.00		1.11	1.11	7.566	8.323	0.000	1.200	2.422	5.00	13.560	16.27	107.4	442.4	826.0
158.00	Appertunance(s)	1.11	1.12	7.578	8.336	0.000	1.200	2.424	3.00	7.926	9.51	65.7	260.0	483.1
160.00		1.10	1.12	7.586	8.345	0.000	1.200	2.424	2.00	5.197	6.24	89.6	170.9	316.7
165.00		1.10	1.13	7.598	8.358	0.000	1.200	2.426	5.00	12.687	15.22	100.8	411.7	765.9
168.00	Appertunance(s)	1.09	1.14	7.612	8.373	0.000	1.200	2.427	3.00	7.403	8.88	61.6	241.5	447.0
170.00		1.09	1.14	7.621	8.383	0.000	1.200	2.428	2.00	4.848	5.82	83.9	158.6	292.6
175.00		1.08	1.15	7.634	8.398	0.000	1.200	2.430	5.00	11.815	14.18	94.3	380.9	705.8
178.00	Appertunance(s)	1.08	1.16	7.650	8.415	0.000	1.200	2.432	3.00	6.879	8.26	34.7	223.0	410.9
Totals:								178.00				6,767.9	22,064.0	60,709.1

Site Number: 302472

Code: ANSI/TIA-222-G

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Site Name: Andover-bunker Hill Road, CT

Engineering Number: OAA710391\_C3\_02

9/5/2017 2:56:50 PM

Customer: SPRINT NEXTEL

Load Case: 1.2D + 1.0Di + 1.0Wi

50 mph with 1.00 in Radial Ice

26 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

<b>Load Case:</b> 1.2D + 1.0Di + 1.0Wi	50 mph with 1.00 in Radial Ice	26 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		153.0	0.0					0.0	0.0	153.0	0.0	0.0	0.0
5.00		298.1	2,541.3					0.0	288.5	298.1	2,829.8	0.0	0.0
10.00		200.8	2,568.8					0.0	288.5	200.8	2,857.3	0.0	0.0
12.00	Appertunance(s)	137.2	1,025.2	35.6	0.0	0.0	264.7	0.0	115.4	172.8	1,405.3	0.0	0.0
15.00		211.2	1,529.1					0.0	172.6	211.2	1,701.7	0.0	0.0
20.00		252.8	2,519.3					0.0	287.6	252.8	2,807.0	0.0	0.0
25.00		239.6	2,480.7					0.0	287.6	239.6	2,768.4	0.0	0.0
30.00		230.1	2,438.2					0.0	287.6	230.1	2,725.9	0.0	0.0
35.00		225.8	2,393.3					0.0	287.6	225.8	2,680.9	0.0	0.0
40.00		173.5	2,346.8					0.0	287.6	173.5	2,634.4	0.0	0.0
42.75	Bot - Section 2	111.6	1,272.4					0.0	158.2	111.6	1,430.6	0.0	0.0
45.00		139.2	1,607.6					0.0	129.4	139.2	1,737.0	0.0	0.0
49.00	Top - Section 1	110.8	2,817.9					0.0	230.1	110.8	3,048.0	0.0	0.0
50.00		130.8	398.7					0.0	57.5	130.8	456.2	0.0	0.0
55.00		215.5	1,961.7					0.0	287.6	215.5	2,249.3	0.0	0.0
60.00		211.2	1,918.9					0.0	287.6	211.2	2,206.6	0.0	0.0
65.00		206.8	1,876.0					0.0	287.6	206.8	2,163.6	0.0	0.0
70.00		202.3	1,832.9					0.0	287.6	202.3	2,120.5	0.0	0.0
75.00		197.7	1,789.7					0.0	287.6	197.7	2,077.3	0.0	0.0
80.00		193.2	1,746.5					0.0	287.6	193.2	2,034.2	0.0	0.0
85.00		133.0	1,703.4					0.0	287.6	133.0	1,991.0	0.0	0.0
87.00	Bot - Section 3	56.5	671.1					0.0	115.1	56.5	786.2	0.0	0.0
88.00	Appertunance(s)	56.5	513.4	43.3	0.0	0.0	419.1	0.0	57.5	99.8	989.9	0.0	0.0
90.00		74.8	1,018.2					0.0	114.3	74.8	1,132.5	0.0	0.0
92.00	Top - Section 2	92.4	1,007.6					0.0	114.3	92.4	1,121.9	0.0	0.0
95.00		91.5	891.0					0.0	171.5	91.5	1,062.5	0.0	0.0
97.00	Appertunance(s)	90.1	586.8	43.2	0.0	0.0	418.9	0.0	114.3	133.4	1,120.1	0.0	0.0
100.00		141.7	867.7					0.0	171.0	141.7	1,038.6	0.0	0.0
105.00		173.7	1,411.9					0.0	284.9	173.7	1,696.9	0.0	0.0
110.00	Appertunance(s)	169.3	1,373.2	43.2	0.0	0.0	268.8	0.0	284.9	212.5	1,926.9	0.0	0.0
115.00		165.0	1,334.4					0.0	284.0	165.0	1,618.5	0.0	0.0
120.00		160.7	1,295.8					0.0	284.0	160.7	1,579.8	0.0	0.0
125.00		156.5	1,257.1					0.0	284.0	156.5	1,541.2	0.0	0.0
130.00		107.5	1,218.5					0.0	284.0	107.5	1,502.6	0.0	0.0
132.00	Bot - Section 4	75.6	478.5					0.0	113.6	75.6	592.1	0.0	0.0
135.00	Appertunance(s)	60.3	972.8	861.5	0.0	0.0	6,343.4	0.0	170.4	921.8	7,486.6	0.0	0.0
136.00	Top - Section 3	73.9	320.6					0.0	46.2	73.9	366.9	0.0	0.0
140.00		130.8	731.9					0.0	184.9	130.8	916.8	0.0	0.0
145.00	Appertunance(s)	141.6	886.2	678.3	0.0	0.0	4,539.3	0.0	231.2	819.9	5,656.7	0.0	0.0
150.00		137.5	856.1					0.0	172.1	137.5	1,028.2	0.0	0.0
155.00		107.4	826.0					0.0	172.1	107.4	998.2	0.0	0.0
158.00	Appertunance(s)	65.7	483.1	956.4	0.0	0.0	7,763.8	0.0	103.3	1,022.1	8,350.2	0.0	0.0
160.00		89.6	316.7					0.0	37.5	89.6	354.2	0.0	0.0
165.00		100.8	765.9					0.0	93.8	100.8	859.7	0.0	0.0
168.00	Appertunance(s)	61.6	447.0	866.4	0.0	0.0	7,246.4	0.0	56.3	928.0	7,749.6	0.0	0.0
170.00		83.9	292.6					0.0	24.0	83.9	316.6	0.0	0.0
175.00		94.3	705.8					0.0	59.9	94.3	765.7	0.0	0.0
178.00	Appertunance(s)	34.7	410.9	748.1	0.0	0.0	5,493.4	0.0	36.0	782.9	5,940.3	0.0	0.0

Site Number: 302472

Code: ANSI/TIA-222-G

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Site Name: Andover-bunker Hill Road, CT

Engineering Number: OAA710391\_C3\_02

9/5/2017 2:56:53 PM

Customer: SPRINT NEXTEL

Load Case: 1.2D + 1.0Di + 1.0Wi

50 mph with 1.00 in Radial Ice

26 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

Totals: 11,044.0 102,424. 0.00 0.00

Site Number: 302472

Code: ANSI/TIA-222-G

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Site Name: Andover-bunker Hill Road, CT

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26 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	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	-102.42	-10.94	0.00	-1,308.87	0.00	1,308.87	6,434.86	3,217.43	14,900.4	7,461.32	0.00	0.00	0.191
5.00	-99.58	-10.73	0.00	-1,254.19	0.00	1,254.19	6,350.74	3,175.37	14,433.5	7,227.48	0.03	-0.05	0.189
10.00	-96.72	-10.58	0.00	-1,200.56	0.00	1,200.56	6,265.35	3,132.68	13,970.9	6,995.84	0.11	-0.10	0.187
12.00	-95.31	-10.45	0.00	-1,179.39	0.00	1,179.39	6,230.84	3,115.42	13,787.1	6,903.82	0.16	-0.12	0.186
15.00	-93.60	-10.30	0.00	-1,148.04	0.00	1,148.04	6,178.70	3,089.35	13,512.8	6,766.48	0.24	-0.15	0.185
20.00	-90.78	-10.13	0.00	-1,096.52	0.00	1,096.52	6,090.77	3,045.39	13,059.5	6,539.47	0.43	-0.21	0.183
25.00	-88.01	-9.96	0.00	-1,045.89	0.00	1,045.89	6,001.58	3,000.79	12,611.0	6,314.89	0.68	-0.26	0.180
30.00	-85.27	-9.79	0.00	-996.10	0.00	996.10	5,911.12	2,955.56	12,167.6	6,092.85	0.98	-0.31	0.178
35.00	-82.58	-9.63	0.00	-947.13	0.00	947.13	5,796.61	2,898.31	11,683.4	5,850.41	1.34	-0.37	0.176
40.00	-79.94	-9.50	0.00	-898.97	0.00	898.97	5,674.58	2,837.29	11,194.2	5,605.46	1.75	-0.42	0.174
42.75	-78.51	-9.42	0.00	-872.85	0.00	872.85	5,607.46	2,803.73	10,929.6	5,472.97	2.01	-0.45	0.173
45.00	-76.77	-9.31	0.00	-851.66	0.00	851.66	5,552.55	2,776.27	10,715.5	5,365.75	2.23	-0.48	0.173
49.00	-73.72	-9.21	0.00	-814.42	0.00	814.42	4,334.74	2,167.37	8,395.94	4,204.21	2.65	-0.53	0.211
50.00	-73.25	-9.12	0.00	-805.21	0.00	805.21	4,321.48	2,160.74	8,333.21	4,172.80	2.76	-0.54	0.210
55.00	-71.00	-8.97	0.00	-759.59	0.00	759.59	4,254.40	2,127.20	8,021.52	4,016.72	3.36	-0.60	0.206
60.00	-68.78	-8.81	0.00	-714.75	0.00	714.75	4,186.06	2,093.03	7,713.24	3,862.35	4.03	-0.67	0.202
65.00	-66.61	-8.66	0.00	-670.69	0.00	670.69	4,116.45	2,058.22	7,408.53	3,709.77	4.76	-0.74	0.197
70.00	-64.48	-8.50	0.00	-627.41	0.00	627.41	4,045.56	2,022.78	7,107.57	3,559.07	5.57	-0.80	0.192
75.00	-62.40	-8.35	0.00	-584.90	0.00	584.90	3,973.41	1,986.71	6,810.50	3,410.31	6.45	-0.87	0.187
80.00	-60.36	-8.19	0.00	-543.16	0.00	543.16	3,899.99	1,950.00	6,517.51	3,263.60	7.40	-0.94	0.182
85.00	-58.36	-8.07	0.00	-502.20	0.00	502.20	3,805.04	1,902.52	6,195.74	3,102.48	8.42	-1.01	0.177
87.00	-57.58	-8.02	0.00	-486.05	0.00	486.05	3,765.38	1,882.69	6,066.61	3,037.81	8.84	-1.03	0.175
88.00	-56.59	-7.93	0.00	-478.02	0.00	478.02	3,745.55	1,872.77	6,002.55	3,005.74	9.06	-1.05	0.174
90.00	-55.45	-7.86	0.00	-462.17	0.00	462.17	3,705.89	1,852.94	5,875.46	2,942.10	9.51	-1.07	0.172
92.00	-54.33	-7.78	0.00	-446.45	0.00	446.45	3,054.73	1,527.36	4,893.34	2,450.31	9.96	-1.10	0.200
95.00	-53.26	-7.70	0.00	-423.12	0.00	423.12	3,020.24	1,510.12	4,760.42	2,383.75	10.67	-1.14	0.195
97.00	-52.14	-7.58	0.00	-407.73	0.00	407.73	2,996.99	1,498.50	4,672.40	2,339.67	11.15	-1.17	0.192
100.00	-51.10	-7.47	0.00	-385.00	0.00	385.00	2,961.74	1,480.87	4,541.28	2,274.01	11.91	-1.22	0.187
105.00	-49.39	-7.32	0.00	-347.67	0.00	347.67	2,901.98	1,450.99	4,325.26	2,165.84	13.22	-1.29	0.178
110.00	-47.46	-7.12	0.00	-311.09	0.00	311.09	2,840.94	1,420.47	4,112.52	2,059.32	14.61	-1.36	0.168
115.00	-45.84	-6.97	0.00	-275.51	0.00	275.51	2,777.06	1,388.53	3,901.02	1,953.41	16.07	-1.43	0.158
120.00	-44.26	-6.82	0.00	-240.68	0.00	240.68	2,693.16	1,346.58	3,667.73	1,836.59	17.61	-1.50	0.148
125.00	-42.72	-6.66	0.00	-206.60	0.00	206.60	2,609.26	1,304.63	3,441.64	1,723.38	19.21	-1.56	0.136
130.00	-41.21	-6.54	0.00	-173.28	0.00	173.28	2,525.36	1,262.68	3,222.75	1,613.77	20.87	-1.62	0.124
132.00	-40.62	-6.47	0.00	-160.20	0.00	160.20	2,491.80	1,245.90	3,137.20	1,570.93	21.56	-1.64	0.118
135.00	-33.16	-5.34	0.00	-140.78	0.00	140.78	2,441.46	1,220.73	3,011.04	1,507.76	22.60	-1.67	0.107
136.00	-32.79	-5.27	0.00	-135.44	0.00	135.44	1,416.30	708.15	1,774.76	888.70	22.95	-1.68	0.176
140.00	-31.88	-5.15	0.00	-114.34	0.00	114.34	1,392.36	696.18	1,697.02	849.77	24.38	-1.72	0.158
145.00	-26.24	-4.18	0.00	-88.62	0.00	88.62	1,361.30	680.65	1,600.81	801.59	26.21	-1.79	0.130
150.00	-25.22	-4.03	0.00	-67.72	0.00	67.72	1,328.96	664.48	1,505.82	754.03	28.11	-1.84	0.109
155.00	-24.22	-3.90	0.00	-47.57	0.00	47.57	1,295.36	647.68	1,412.23	707.16	30.06	-1.88	0.086
158.00	-15.91	-2.61	0.00	-35.86	0.00	35.86	1,274.59	637.29	1,356.80	679.41	31.26	-1.91	0.065
160.00	-15.56	-2.52	0.00	-30.63	0.00	30.63	1,260.48	630.24	1,320.18	661.07	32.06	-1.92	0.059
165.00	-14.70	-2.39	0.00	-18.06	0.00	18.06	1,224.34	612.17	1,229.85	615.84	34.08	-1.94	0.041
168.00	-6.99	-1.20	0.00	-10.89	0.00	10.89	1,202.05	601.02	1,176.54	589.15	35.30	-1.95	0.024
170.00	-6.67	-1.11	0.00	-8.49	0.00	8.49	1,186.93	593.46	1,141.40	571.55	36.12	-1.96	0.020
175.00	-5.91	-0.99	0.00	-2.96	0.00	2.96	1,148.25	574.12	1,054.98	528.28	38.17	-1.96	0.011
178.00	0.00	-0.78	0.00	0.00	0.00	0.00	1,123.52	561.76	1,003.37	502.43	39.41	-1.96	0.000

<b>Load Case: 1.0D + 1.0W</b>	<b>Serviceability 60 mph</b>	<b>24 Iterations</b>
Gust Response Factor :1.10		Wind Importance Factor :1.00
Dead Load Factor :1.00		
Wind Load Factor :1.00		

**Shaft Segment Forces (Factored)**

Seg Top Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Ap (sf)	EPAs (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		2.18	0.70	13.370	14.70	357.05	0.650	0.000	0.00	0.000	0.00	111.5	0.0	0.0
5.00		2.13	0.70	13.075	14.38	349.88	0.650	0.000	5.00	23.859	15.51	216.4	0.0	1,509.1
10.00		2.04	0.70	12.524	13.77	336.14	0.650	0.000	5.00	23.421	15.22	145.1	0.0	1,481.2
12.00	Appertunance(s)	1.98	0.70	12.167	13.38	326.98	0.650	0.000	2.00	9.246	6.01	98.8	0.0	584.6
15.00		1.94	0.70	11.925	13.11	320.65	0.650	0.000	3.00	13.738	8.93	151.7	0.0	868.6
20.00		1.88	0.70	11.561	12.71	310.88	0.650	0.000	5.00	22.546	14.65	181.2	0.0	1,425.3
25.00		1.81	0.70	11.140	12.25	299.25	0.650	0.000	5.00	22.108	14.37	171.4	0.0	1,397.3
30.00		1.75	0.70	10.755	11.83	288.20	0.650	0.000	5.00	21.670	14.09	164.2	0.0	1,369.4
35.00		1.69	0.71	10.651	11.71	281.02	0.650	0.000	5.00	21.232	13.80	160.8	0.0	1,341.4
40.00		1.64	0.74	10.750	11.82	276.50	0.650	0.000	5.00	20.794	13.52	123.4	0.0	1,313.5
42.75	Bot - Section 2	1.60	0.76	10.801	11.88	272.63	0.650	0.000	2.75	11.250	7.31	79.3	0.0	710.5
45.00		1.58	0.78	10.825	11.90	270.01	0.650	0.000	2.25	9.261	6.02	98.8	0.0	1,051.2
49.00	Top - Section 1	1.55	0.79	10.847	11.93	266.62	0.650	0.000	4.00	16.244	10.56	78.6	0.0	1,843.5
50.00		1.53	0.80	10.860	11.94	268.44	0.650	0.000	1.00	4.017	2.61	92.6	0.0	206.5
55.00		1.51	0.82	10.870	11.95	265.05	0.650	0.000	5.00	19.824	12.89	152.4	0.0	1,019.0
60.00		1.47	0.84	10.877	11.96	259.29	0.650	0.000	5.00	19.386	12.60	149.1	0.0	996.3
65.00		1.43	0.86	10.876	11.96	253.42	0.650	0.000	5.00	18.948	12.32	145.6	0.0	973.5
70.00		1.40	0.88	10.870	11.95	247.49	0.650	0.000	5.00	18.510	12.03	142.1	0.0	950.8
75.00		1.37	0.90	10.861	11.94	241.54	0.650	0.000	5.00	18.072	11.75	138.6	0.0	928.1
80.00		1.34	0.91	10.850	11.93	235.57	0.650	0.000	5.00	17.634	11.46	135.0	0.0	905.4
85.00		1.32	0.93	10.839	11.92	229.60	0.650	0.000	5.00	17.196	11.18	92.8	0.0	882.7
87.00	Bot - Section 3	1.30	0.94	10.832	11.91	225.44	0.650	0.000	2.00	6.756	4.39	39.4	0.0	346.7
88.00	Appertunance(s)	1.30	0.95	10.829	11.91	223.65	0.650	0.000	1.00	3.410	2.22	39.4	0.0	320.3
90.00		1.29	0.95	10.827	11.90	221.87	0.650	0.000	2.00	6.767	4.40	52.1	0.0	635.6
92.00	Top - Section 2	1.28	0.96	10.823	11.90	219.50	0.650	0.000	2.00	6.697	4.35	64.3	0.0	628.9
95.00		1.27	0.96	10.819	11.90	220.42	0.650	0.000	3.00	9.914	6.44	63.6	0.0	431.1
97.00	Appertunance(s)	1.26	0.97	10.815	11.89	217.46	0.650	0.000	2.00	6.522	4.24	62.5	0.0	283.6
100.00		1.25	0.98	10.812	11.89	214.51	0.650	0.000	3.00	9.652	6.27	98.1	0.0	419.6
105.00		1.24	0.99	10.809	11.89	209.80	0.650	0.000	5.00	15.736	10.23	119.9	0.0	684.0
110.00	Appertunance(s)	1.22	1.00	10.806	11.88	203.94	0.650	0.000	5.00	15.298	9.94	116.5	0.0	664.8
115.00		1.20	1.02	10.806	11.88	198.10	0.650	0.000	5.00	14.860	9.66	113.1	0.0	645.6
120.00		1.19	1.03	10.809	11.88	192.28	0.650	0.000	5.00	14.422	9.37	109.8	0.0	626.4
125.00		1.17	1.04	10.814	11.89	186.49	0.650	0.000	5.00	13.984	9.09	106.5	0.0	607.1
130.00		1.16	1.05	10.821	11.90	180.71	0.650	0.000	5.00	13.546	8.80	72.9	0.0	587.9
132.00	Bot - Section 4	1.15	1.06	10.828	11.91	176.68	0.650	0.000	2.00	5.296	3.44	51.2	0.0	229.8
135.00	Appertunance(s)	1.15	1.07	10.834	11.91	173.80	0.650	0.000	3.00	7.923	5.15	40.8	0.0	558.6
136.00	Top - Section 3	1.14	1.07	10.839	11.92	171.50	0.650	0.000	1.00	2.606	1.69	49.8	0.0	183.7
140.00		1.14	1.08	10.845	11.93	171.10	0.650	0.000	4.00	10.249	6.66	87.9	0.0	284.1
145.00	Appertunance(s)	1.13	1.09	10.859	11.94	165.94	0.650	0.000	5.00	12.417	8.07	94.8	0.0	344.1
150.00		1.12	1.10	10.876	11.96	160.22	0.650	0.000	5.00	11.979	7.79	91.5	0.0	331.9
155.00		1.11	1.11	10.896	11.98	154.50	0.650	0.000	5.00	11.541	7.50	71.2	0.0	319.6
158.00	Appertunance(s)	1.11	1.12	10.913	12.00	149.93	0.650	0.000	3.00	6.715	4.36	43.3	0.0	185.9
160.00		1.10	1.12	10.924	12.01	147.07	0.650	0.000	2.00	4.389	2.85	58.9	0.0	121.5
165.00		1.10	1.13	10.941	12.03	143.07	0.650	0.000	5.00	10.666	6.93	66.0	0.0	295.2
168.00	Appertunance(s)	1.09	1.14	10.961	12.05	138.50	0.650	0.000	3.00	6.189	4.02	40.1	0.0	171.2
170.00		1.09	1.14	10.974	12.07	135.64	0.650	0.000	2.00	4.039	2.63	54.3	0.0	111.7
175.00		1.08	1.15	10.993	12.09	131.64	0.650	0.000	5.00	9.790	6.36	60.8	0.0	270.7
178.00	Appertunance(s)	1.08	1.16	11.016	12.11	127.06	0.650	0.000	3.00	5.664	3.68	22.3	0.0	156.6
Totals:								178.00				4,720.2	0.0	32,204.2



Site Number: 302472

Code: ANSI/TIA-222-G

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Site Name: Andover-bunker Hill Road, CT

Engineering Number: OAA710391\_C3\_02

9/5/2017 2:56:53 PM

Customer: SPRINT NEXTEL

Load Case: 1.0D + 1.0W

Serviceability 60 mph

24 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

Dead Load Factor :1.00

Wind Load Factor :1.00

<b>Load Case: 1.0D + 1.0W</b>	<b>Serviceability 60 mph</b>	<b>24 Iterations</b>
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		111.5	0.0					0.0	0.0	111.5	0.0	0.0	0.0
5.00		216.4	1,509.1					0.0	240.5	216.4	1,749.6	0.0	0.0
10.00		145.1	1,481.2					0.0	240.5	145.1	1,721.6	0.0	0.0
12.00	Appertunance(s)	98.8	584.6	23.4	0.0	0.0	75.6	0.0	96.2	122.2	756.4	0.0	0.0
15.00		151.7	868.6					0.0	143.8	151.7	1,012.4	0.0	0.0
20.00		181.2	1,425.3					0.0	239.7	181.2	1,665.0	0.0	0.0
25.00		171.4	1,397.3					0.0	239.7	171.4	1,637.0	0.0	0.0
30.00		164.2	1,369.4					0.0	239.7	164.2	1,609.1	0.0	0.0
35.00		160.8	1,341.4					0.0	239.7	160.8	1,581.1	0.0	0.0
40.00		123.4	1,313.5					0.0	239.7	123.4	1,553.2	0.0	0.0
42.75	Bot - Section 2	79.3	710.5					0.0	131.8	79.3	842.3	0.0	0.0
45.00		98.8	1,051.2					0.0	107.9	98.8	1,159.1	0.0	0.0
49.00	Top - Section 1	78.6	1,843.5					0.0	191.8	78.6	2,035.2	0.0	0.0
50.00		92.6	206.5					0.0	47.9	92.6	254.5	0.0	0.0
55.00		152.4	1,019.0					0.0	239.7	152.4	1,258.7	0.0	0.0
60.00		149.1	996.3					0.0	239.7	149.1	1,236.0	0.0	0.0
65.00		145.6	973.5					0.0	239.7	145.6	1,213.2	0.0	0.0
70.00		142.1	950.8					0.0	239.7	142.1	1,190.5	0.0	0.0
75.00		138.6	928.1					0.0	239.7	138.6	1,167.8	0.0	0.0
80.00		135.0	905.4					0.0	239.7	135.0	1,145.1	0.0	0.0
85.00		92.8	882.7					0.0	239.7	92.8	1,122.4	0.0	0.0
87.00	Bot - Section 3	39.4	346.7					0.0	95.9	39.4	442.6	0.0	0.0
88.00	Appertunance(s)	39.4	320.3	31.9	0.0	0.0	85.0	0.0	47.9	71.3	453.3	0.0	0.0
90.00		52.1	635.6					0.0	95.3	52.1	730.9	0.0	0.0
92.00	Top - Section 2	64.3	628.9					0.0	95.3	64.3	724.2	0.0	0.0
95.00		63.6	431.1					0.0	142.9	63.6	574.1	0.0	0.0
97.00	Appertunance(s)	62.5	283.6	31.8	0.0	0.0	85.0	0.0	95.3	94.3	463.9	0.0	0.0
100.00		98.1	419.6					0.0	142.5	98.1	562.1	0.0	0.0
105.00		119.9	684.0					0.0	237.5	119.9	921.4	0.0	0.0
110.00	Appertunance(s)	116.5	664.8	31.8	0.0	0.0	85.0	0.0	237.5	148.3	987.2	0.0	0.0
115.00		113.1	645.6					0.0	236.7	113.1	882.3	0.0	0.0
120.00		109.8	626.4					0.0	236.7	109.8	863.1	0.0	0.0
125.00		106.5	607.1					0.0	236.7	106.5	843.8	0.0	0.0
130.00		72.9	587.9					0.0	236.7	72.9	824.6	0.0	0.0
132.00	Bot - Section 4	51.2	229.8					0.0	94.7	51.2	324.5	0.0	0.0
135.00	Appertunance(s)	40.8	558.6	769.5	0.0	0.0	2,169.9	0.0	142.0	810.3	2,870.5	0.0	0.0
136.00	Top - Section 3	49.8	183.7					0.0	38.5	49.8	222.2	0.0	0.0
140.00		87.9	284.1					0.0	154.1	87.9	438.2	0.0	0.0
145.00	Appertunance(s)	94.8	344.1	576.2	0.0	0.0	1,737.3	0.0	192.7	671.0	2,274.1	0.0	0.0
150.00		91.5	331.9					0.0	143.5	91.5	475.3	0.0	0.0
155.00		71.2	319.6					0.0	143.5	71.2	463.1	0.0	0.0
158.00	Appertunance(s)	43.3	185.9	1,003.2	0.0	0.0	2,350.9	0.0	86.1	1,046.5	2,622.9	0.0	0.0
160.00		58.9	121.5					0.0	31.3	58.9	152.8	0.0	0.0
165.00		66.0	295.2					0.0	78.2	66.0	373.3	0.0	0.0
168.00	Appertunance(s)	40.1	171.2	806.1	0.0	0.0	2,582.1	0.0	46.9	846.2	2,800.2	0.0	0.0
170.00		54.3	111.7					0.0	20.0	54.3	131.7	0.0	0.0
175.00		60.8	270.7					0.0	50.0	60.8	320.7	0.0	0.0
178.00	Appertunance(s)	22.3	156.6	756.3	0.0	0.0	1,684.8	0.0	30.0	778.6	1,871.3	0.0	0.0

Site Number: 302472

Code: ANSI/TIA-222-G

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Site Name: Andover-bunker Hill Road, CT

Engineering Number: OAA710391\_C3\_02

9/5/2017 2:56:56 PM

Customer: SPRINT NEXTEL

Load Case: 1.0D + 1.0W

Serviceability 60 mph

24 Iterations

Gust Response Factor :1.10

Wind Importance Factor :1.00

Dead Load Factor :1.00

Wind Load Factor :1.00

Totals: 8,750.35 50,524.5 0.00 0.00

Load Case: 1.0D + 1.0W

Serviceability 60 mph

24 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	-50.52	-8.66	0.00	-1,020.98	0.00	1,020.98	6,434.86	3,217.43	14,900.4	7,461.32	0.00	0.00	0.145
5.00	-48.77	-8.47	0.00	-977.70	0.00	977.70	6,350.74	3,175.37	14,433.5	7,227.48	0.02	-0.04	0.143
10.00	-47.04	-8.35	0.00	-935.35	0.00	935.35	6,265.35	3,132.68	13,970.9	6,995.84	0.08	-0.08	0.141
12.00	-46.28	-8.24	0.00	-918.65	0.00	918.65	6,230.84	3,115.42	13,787.1	6,903.82	0.12	-0.10	0.140
15.00	-45.26	-8.11	0.00	-893.93	0.00	893.93	6,178.70	3,089.35	13,512.8	6,766.48	0.19	-0.12	0.139
20.00	-43.59	-7.96	0.00	-853.36	0.00	853.36	6,090.77	3,045.39	13,059.5	6,539.47	0.34	-0.16	0.138
25.00	-41.95	-7.81	0.00	-813.56	0.00	813.56	6,001.58	3,000.79	12,611.0	6,314.89	0.53	-0.20	0.136
30.00	-40.34	-7.67	0.00	-774.50	0.00	774.50	5,911.12	2,955.56	12,167.6	6,092.85	0.76	-0.24	0.134
35.00	-38.75	-7.53	0.00	-736.13	0.00	736.13	5,796.61	2,898.31	11,683.4	5,850.41	1.04	-0.29	0.133
40.00	-37.20	-7.42	0.00	-698.47	0.00	698.47	5,674.58	2,837.29	11,194.2	5,605.46	1.37	-0.33	0.131
42.75	-36.35	-7.35	0.00	-678.05	0.00	678.05	5,607.46	2,803.73	10,929.6	5,472.97	1.56	-0.35	0.130
45.00	-35.19	-7.26	0.00	-661.51	0.00	661.51	5,552.55	2,776.27	10,715.5	5,365.75	1.73	-0.37	0.130
49.00	-33.15	-7.18	0.00	-632.45	0.00	632.45	4,334.74	2,167.37	8,395.94	4,204.21	2.06	-0.41	0.158
50.00	-32.89	-7.11	0.00	-625.27	0.00	625.27	4,321.48	2,160.74	8,333.21	4,172.80	2.15	-0.42	0.157
55.00	-31.63	-6.97	0.00	-589.74	0.00	589.74	4,254.40	2,127.20	8,021.52	4,016.72	2.62	-0.47	0.154
60.00	-30.39	-6.84	0.00	-554.87	0.00	554.87	4,186.06	2,093.03	7,713.24	3,862.35	3.13	-0.52	0.151
65.00	-29.17	-6.71	0.00	-520.67	0.00	520.67	4,116.45	2,058.22	7,408.53	3,709.77	3.71	-0.57	0.147
70.00	-27.98	-6.58	0.00	-487.12	0.00	487.12	4,045.56	2,022.78	7,107.57	3,559.07	4.34	-0.62	0.144
75.00	-26.80	-6.45	0.00	-454.21	0.00	454.21	3,973.41	1,986.71	6,810.50	3,410.31	5.02	-0.68	0.140
80.00	-25.66	-6.33	0.00	-421.94	0.00	421.94	3,899.99	1,950.00	6,517.51	3,263.60	5.76	-0.73	0.136
85.00	-24.53	-6.24	0.00	-390.30	0.00	390.30	3,805.04	1,902.52	6,195.74	3,102.48	6.55	-0.78	0.132
87.00	-24.09	-6.20	0.00	-377.83	0.00	377.83	3,765.38	1,882.69	6,066.61	3,037.81	6.88	-0.80	0.131
88.00	-23.63	-6.13	0.00	-371.63	0.00	371.63	3,745.55	1,872.77	6,002.55	3,005.74	7.05	-0.81	0.130
90.00	-22.90	-6.07	0.00	-359.38	0.00	359.38	3,705.89	1,852.94	5,875.46	2,942.10	7.39	-0.84	0.128
92.00	-22.17	-6.01	0.00	-347.24	0.00	347.24	3,054.73	1,527.36	4,893.34	2,450.31	7.75	-0.86	0.149
95.00	-21.60	-5.95	0.00	-329.21	0.00	329.21	3,020.24	1,510.12	4,760.42	2,383.75	8.30	-0.89	0.145
97.00	-21.13	-5.86	0.00	-317.32	0.00	317.32	2,996.99	1,498.50	4,672.40	2,339.67	8.68	-0.91	0.143
100.00	-20.57	-5.76	0.00	-299.76	0.00	299.76	2,961.74	1,480.87	4,541.28	2,274.01	9.26	-0.95	0.139
105.00	-19.64	-5.65	0.00	-270.93	0.00	270.93	2,901.98	1,450.99	4,325.26	2,165.84	10.28	-1.00	0.132
110.00	-18.65	-5.50	0.00	-242.69	0.00	242.69	2,840.94	1,420.47	4,112.52	2,059.32	11.36	-1.06	0.124
115.00	-17.77	-5.39	0.00	-215.19	0.00	215.19	2,777.06	1,388.53	3,901.02	1,953.41	12.50	-1.11	0.117
120.00	-16.90	-5.27	0.00	-188.26	0.00	188.26	2,693.16	1,346.58	3,667.73	1,836.59	13.69	-1.16	0.109
125.00	-16.06	-5.16	0.00	-161.89	0.00	161.89	2,609.26	1,304.63	3,441.64	1,723.38	14.94	-1.21	0.100
130.00	-15.23	-5.08	0.00	-136.07	0.00	136.07	2,525.36	1,262.68	3,222.75	1,613.77	16.24	-1.26	0.090
132.00	-14.91	-5.03	0.00	-125.91	0.00	125.91	2,491.80	1,245.90	3,137.20	1,570.93	16.77	-1.28	0.086
135.00	-12.05	-4.16	0.00	-110.82	0.00	110.82	2,441.46	1,220.73	3,011.04	1,507.76	17.58	-1.30	0.078
136.00	-11.83	-4.11	0.00	-106.66	0.00	106.66	1,416.30	708.15	1,774.76	888.70	17.85	-1.31	0.128
140.00	-11.39	-4.02	0.00	-90.24	0.00	90.24	1,392.36	696.18	1,697.02	849.77	18.96	-1.34	0.114
145.00	-9.13	-3.30	0.00	-70.15	0.00	70.15	1,361.30	680.65	1,600.81	801.59	20.39	-1.39	0.094
150.00	-8.66	-3.20	0.00	-53.65	0.00	53.65	1,328.96	664.48	1,505.82	754.03	21.88	-1.43	0.078
155.00	-8.20	-3.12	0.00	-37.64	0.00	37.64	1,295.36	647.68	1,412.23	707.16	23.40	-1.47	0.060
158.00	-5.60	-2.01	0.00	-28.27	0.00	28.27	1,274.59	637.29	1,356.80	679.41	24.33	-1.49	0.046
160.00	-5.45	-1.95	0.00	-24.25	0.00	24.25	1,260.48	630.24	1,320.18	661.07	24.95	-1.50	0.041
165.00	-5.08	-1.87	0.00	-14.51	0.00	14.51	1,224.34	612.17	1,229.85	615.84	26.53	-1.52	0.028
168.00	-2.30	-0.95	0.00	-8.88	0.00	8.88	1,202.05	601.02	1,176.54	589.15	27.48	-1.52	0.017
170.00	-2.17	-0.90	0.00	-6.97	0.00	6.97	1,186.93	593.46	1,141.40	571.55	28.12	-1.53	0.014
175.00	-1.85	-0.83	0.00	-2.48	0.00	2.48	1,148.25	574.12	1,054.98	528.28	29.72	-1.53	0.006
178.00	0.00	-0.78	0.00	0.00	0.00	0.00	1,123.52	561.76	1,003.37	502.43	30.69	-1.53	0.000

### Equivalent Lateral Forces Method Analysis

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

Spectral Response Acceleration for Short Period ( $S_s$ ):	0.18
Spectral Response Acceleration at 1.0 Second Period ( $S_1$ ):	0.06
Long-Period Transition Period ( $T_L$ ):	16
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):	2.70
Redundancy Factor ( $\rho$ ):	1.30
Seismic Force Distribution Exponent (k):	2.00
Total Unfactored Dead Load:	50.52 k
Seismic Base Shear (E):	1.97 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)
47	176.50	187	5,811	0.011	22	231
46	172.50	321	9,543	0.018	36	397
45	169.00	132	3,761	0.007	14	163
44	166.50	218	6,047	0.011	23	270
43	162.50	373	9,859	0.019	37	462
42	159.00	153	3,862	0.007	14	189
41	156.50	272	6,662	0.013	25	337
40	152.50	463	10,770	0.020	40	573
39	147.50	475	10,341	0.020	39	588
38	142.50	537	10,899	0.021	41	664
37	138.00	438	8,345	0.016	31	542
36	135.50	222	4,080	0.008	15	275
35	133.50	701	12,486	0.024	47	867
34	131.00	324	5,568	0.011	21	402
33	127.50	825	13,405	0.025	50	1,021
32	122.50	844	12,663	0.024	47	1,044
31	117.50	863	11,916	0.023	45	1,068
30	112.50	882	11,166	0.021	42	1,092
29	107.50	902	10,426	0.020	39	1,117
28	102.50	921	9,681	0.018	36	1,140
27	98.50	562	5,454	0.010	20	696
26	96.00	379	3,492	0.007	13	469
25	93.50	574	5,019	0.010	19	710

Site Number: 302472

Code: ANSI/TIA-222-G

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Site Name: Andover-bunker Hill Road, CT

Engineering Number: OAA710391\_C3\_02

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Customer: SPRINT NEXTEL

24	91.00	724	5,997	0.011	22	896
23	89.00	731	5,790	0.011	22	905
22	87.50	368	2,820	0.005	11	456
21	86.00	443	3,274	0.006	12	548
20	82.50	1,122	7,640	0.015	29	1,389
19	77.50	1,145	6,878	0.013	26	1,417
18	72.50	1,168	6,138	0.012	23	1,445
17	67.50	1,191	5,424	0.010	20	1,473
16	62.50	1,213	4,739	0.009	18	1,501
15	57.50	1,236	4,086	0.008	15	1,530
14	52.50	1,259	3,469	0.007	13	1,558
13	49.50	254	623	0.001	2	315
12	47.00	2,035	4,496	0.009	17	2,519
11	43.88	1,159	2,231	0.004	8	1,434
10	41.38	842	1,442	0.003	5	1,042
9	37.50	1,553	2,184	0.004	8	1,922
8	32.50	1,581	1,670	0.003	6	1,957
7	27.50	1,609	1,217	0.002	5	1,991
6	22.50	1,637	829	0.002	3	2,026
5	17.50	1,665	510	0.001	2	2,060
4	13.50	1,012	185	0.000	1	1,253
3	11.00	681	82	0.000	0	843
2	7.50	1,722	97	0.000	0	2,131
1	2.50	1,750	11	0.000	0	2,165
Powerwave Allgon 712	178.00	185	5,855	0.011	22	229
Flat Low Profile Pla	178.00	1,500	47,526	0.090	178	1,856
Alcatel-Lucent RRH2x	168.00	317	8,958	0.017	34	393
Alcatel-Lucent 1900	168.00	180	5,080	0.010	19	223
Alcatel-Lucent TD-RR	168.00	210	5,927	0.011	22	260
72" x 6" Panel	168.00	120	3,387	0.006	13	149
KMW ETCR-654L12H6	168.00	255	7,189	0.014	27	315
Round Low Profile PI	168.00	1,500	42,336	0.080	158	1,856
RFS FD9R6004/2C-3L	158.00	16	389	0.001	1	19
Alcatel-Lucent RRH2x	158.00	170	4,246	0.008	16	211
Alcatel-Lucent B66a	158.00	201	5,018	0.010	19	249
RFS DB-T1-6Z-8AB-OZ	158.00	88	2,197	0.004	8	109
Antel LPA-80080/4CF	158.00	72	1,797	0.003	7	89
Andrew SBNHH-1D65B	158.00	304	7,594	0.014	28	376
Flat Low Profile Pla	158.00	1,500	37,446	0.071	140	1,856
Kathrein Smart Bias	145.00	10	209	0.000	1	12
Ericsson KRY 112 144	145.00	33	694	0.001	3	41
EMS RR90-17-02DP	145.00	41	852	0.002	3	50
Andrew LNX-6515DS-VT	145.00	154	3,236	0.006	12	190
Round Low Profile PI	145.00	1,500	31,538	0.060	118	1,856
LGP Allgon LGP21903	135.00	33	601	0.001	2	41
Powerwave LGP21401	135.00	85	1,542	0.003	6	105
Raycap DC6-48-60-18-	135.00	32	580	0.001	2	39
Ericsson RRUS 11 (Ba	135.00	165	3,007	0.006	11	204
Powerwave 7770.00	135.00	210	3,827	0.007	14	260
KMW AM-X-CD-16-65-00	135.00	146	2,652	0.005	10	180
Flat Low Profile Pla	135.00	1,500	27,338	0.052	102	1,856
GPS	110.00	10	121	0.000	0	12
Standoff	110.00	75	908	0.002	3	93
GPS	97.00	10	94	0.000	0	12
Standoff	97.00	75	706	0.001	3	93
GPS	88.00	10	77	0.000	0	12
Standoff	88.00	75	581	0.001	2	93
PCTEL GPS-TMG-HR-26N	12.00	1	0	0.000	0	1
Standoff	12.00	75	11	0.000	0	93
		50,524	526,605	1.000	1,970	62,526

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

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)
47	176.50	187	5,811	0.011	22	161
46	172.50	321	9,543	0.018	36	277
45	169.00	132	3,761	0.007	14	114
44	166.50	218	6,047	0.011	23	188
43	162.50	373	9,859	0.019	37	322
42	159.00	153	3,862	0.007	14	132
41	156.50	272	6,662	0.013	25	235
40	152.50	463	10,770	0.020	40	399
39	147.50	475	10,341	0.020	39	410
38	142.50	537	10,899	0.021	41	463
37	138.00	438	8,345	0.016	31	378
36	135.50	222	4,080	0.008	15	192
35	133.50	701	12,486	0.024	47	604
34	131.00	324	5,568	0.011	21	280
33	127.50	825	13,405	0.025	50	711
32	122.50	844	12,663	0.024	47	728
31	117.50	863	11,916	0.023	45	744
30	112.50	882	11,166	0.021	42	761
29	107.50	902	10,426	0.020	39	778
28	102.50	921	9,681	0.018	36	795
27	98.50	562	5,454	0.010	20	485
26	96.00	379	3,492	0.007	13	327
25	93.50	574	5,019	0.010	19	495
24	91.00	724	5,997	0.011	22	625
23	89.00	731	5,790	0.011	22	630
22	87.50	368	2,820	0.005	11	318
21	86.00	443	3,274	0.006	12	382
20	82.50	1,122	7,640	0.015	29	968
19	77.50	1,145	6,878	0.013	26	988
18	72.50	1,168	6,138	0.012	23	1,007
17	67.50	1,191	5,424	0.010	20	1,027
16	62.50	1,213	4,739	0.009	18	1,046
15	57.50	1,236	4,086	0.008	15	1,066
14	52.50	1,259	3,469	0.007	13	1,086
13	49.50	254	623	0.001	2	219
12	47.00	2,035	4,496	0.009	17	1,755
11	43.88	1,159	2,231	0.004	8	1,000
10	41.38	842	1,442	0.003	5	726
9	37.50	1,553	2,184	0.004	8	1,340
8	32.50	1,581	1,670	0.003	6	1,364
7	27.50	1,609	1,217	0.002	5	1,388
6	22.50	1,637	829	0.002	3	1,412
5	17.50	1,665	510	0.001	2	1,436
4	13.50	1,012	185	0.000	1	873
3	11.00	681	82	0.000	0	587
2	7.50	1,722	97	0.000	0	1,485
1	2.50	1,750	11	0.000	0	1,509
Powerwave Allgon 712	178.00	185	5,855	0.011	22	159
Flat Low Profile Pla	178.00	1,500	47,526	0.090	178	1,294
Alcatel-Lucent RRH2x	168.00	317	8,958	0.017	34	274
Alcatel-Lucent 1900	168.00	180	5,080	0.010	19	155
Alcatel-Lucent TD-RR	168.00	210	5,927	0.011	22	181
72" x 6" Panel	168.00	120	3,387	0.006	13	103
KMW ETCR-654L12H6	168.00	255	7,189	0.014	27	220
Round Low Profile PI	168.00	1,500	42,336	0.080	158	1,294
RFS FD9R6004/2C-3L	158.00	16	389	0.001	1	13
Alcatel-Lucent RRH2x	158.00	170	4,246	0.008	16	147

Site Number: 302472

Code: ANSI/TIA-222-G

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Site Name: Andover-bunker Hill Road, CT

Engineering Number:OAA710391\_C3\_02

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Customer: SPRINT NEXTEL

Alcatel-Lucent B66a	158.00	201	5,018	0.010	19	173
RFS DB-T1-6Z-8AB-OZ	158.00	88	2,197	0.004	8	76
Antel LPA-80080/4CF	158.00	72	1,797	0.003	7	62
Andrew SBNHH-1D65B	158.00	304	7,594	0.014	28	262
Flat Low Profile Pla	158.00	1,500	37,446	0.071	140	1,294
Kathrein Smart Bias	145.00	10	209	0.000	1	9
Ericsson KRY 112 144	145.00	33	694	0.001	3	28
EMS RR90-17-02DP	145.00	41	852	0.002	3	35
Andrew LNX-6515DS-VT	145.00	154	3,236	0.006	12	133
Round Low Profile PI	145.00	1,500	31,538	0.060	118	1,294
LGP Allgon LGP21903	135.00	33	601	0.001	2	28
Powerwave LGP21401	135.00	85	1,542	0.003	6	73
Raycap DC6-48-60-18-	135.00	32	580	0.001	2	27
Ericsson RRUS 11 (Ba	135.00	165	3,007	0.006	11	142
Powerwave 7770.00	135.00	210	3,827	0.007	14	181
KMW AM-X-CD-16-65-00	135.00	146	2,652	0.005	10	125
Flat Low Profile Pla	135.00	1,500	27,338	0.052	102	1,294
GPS	110.00	10	121	0.000	0	9
Standoff	110.00	75	908	0.002	3	65
GPS	97.00	10	94	0.000	0	9
Standoff	97.00	75	706	0.001	3	65
GPS	88.00	10	77	0.000	0	9
Standoff	88.00	75	581	0.001	2	65
PCTEL GPS-TMG-HR-26N	12.00	1	0	0.000	0	1
Standoff	12.00	75	11	0.000	0	65
		50,524	526,605	1.000	1,970	43,575



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	-60.36	-1.97	0.00	-283.97	0.00	283.97	6,434.86	3,217.43	14,900.4	7,461.32	0.00	0.00	0.047
5.00	-58.23	-1.99	0.00	-274.09	0.00	274.09	6,350.74	3,175.37	14,433.5	7,227.48	0.01	-0.01	0.047
10.00	-57.39	-1.99	0.00	-264.16	0.00	264.16	6,265.35	3,132.68	13,970.9	6,995.84	0.02	-0.02	0.047
12.00	-56.04	-2.00	0.00	-260.18	0.00	260.18	6,230.84	3,115.42	13,787.1	6,903.82	0.03	-0.03	0.047
15.00	-53.98	-2.00	0.00	-254.19	0.00	254.19	6,178.70	3,089.35	13,512.8	6,766.48	0.05	-0.03	0.046
20.00	-51.95	-2.01	0.00	-244.17	0.00	244.17	6,090.77	3,045.39	13,059.5	6,539.47	0.09	-0.05	0.046
25.00	-49.96	-2.01	0.00	-234.12	0.00	234.12	6,001.58	3,000.79	12,611.0	6,314.89	0.15	-0.06	0.045
30.00	-48.00	-2.02	0.00	-224.06	0.00	224.06	5,911.12	2,955.56	12,167.6	6,092.85	0.22	-0.07	0.045
35.00	-46.08	-2.01	0.00	-213.98	0.00	213.98	5,796.61	2,898.31	11,683.4	5,850.41	0.29	-0.08	0.045
40.00	-45.04	-2.02	0.00	-203.91	0.00	203.91	5,674.58	2,837.29	11,194.2	5,605.46	0.39	-0.09	0.044
42.75	-43.60	-2.01	0.00	-198.36	0.00	198.36	5,607.46	2,803.73	10,929.6	5,472.97	0.44	-0.10	0.044
45.00	-41.09	-1.99	0.00	-193.84	0.00	193.84	5,552.55	2,776.27	10,715.5	5,365.75	0.49	-0.11	0.044
49.00	-40.77	-2.00	0.00	-185.87	0.00	185.87	4,334.74	2,167.37	8,395.94	4,204.21	0.59	-0.12	0.054
50.00	-39.21	-1.99	0.00	-183.87	0.00	183.87	4,321.48	2,160.74	8,333.21	4,172.80	0.61	-0.12	0.053
55.00	-37.68	-1.98	0.00	-173.95	0.00	173.95	4,254.40	2,127.20	8,021.52	4,016.72	0.75	-0.14	0.052
60.00	-36.18	-1.96	0.00	-164.07	0.00	164.07	4,186.06	2,093.03	7,713.24	3,862.35	0.90	-0.15	0.051
65.00	-34.71	-1.95	0.00	-154.24	0.00	154.24	4,116.45	2,058.22	7,408.53	3,709.77	1.06	-0.17	0.050
70.00	-33.26	-1.93	0.00	-144.49	0.00	144.49	4,045.56	2,022.78	7,107.57	3,559.07	1.24	-0.18	0.049
75.00	-31.84	-1.91	0.00	-134.84	0.00	134.84	3,973.41	1,986.71	6,810.50	3,410.31	1.44	-0.20	0.048
80.00	-30.45	-1.88	0.00	-125.29	0.00	125.29	3,899.99	1,950.00	6,517.51	3,263.60	1.66	-0.21	0.046
85.00	-29.91	-1.88	0.00	-115.87	0.00	115.87	3,805.04	1,902.52	6,195.74	3,102.48	1.89	-0.23	0.045
87.00	-29.45	-1.87	0.00	-112.12	0.00	112.12	3,765.38	1,882.69	6,066.61	3,037.81	1.98	-0.23	0.045
88.00	-28.44	-1.84	0.00	-110.25	0.00	110.25	3,745.55	1,872.77	6,002.55	3,005.74	2.03	-0.24	0.044
90.00	-27.54	-1.82	0.00	-106.57	0.00	106.57	3,705.89	1,852.94	5,875.46	2,942.10	2.13	-0.24	0.044
92.00	-26.83	-1.80	0.00	-102.94	0.00	102.94	3,054.73	1,527.36	4,893.34	2,450.31	2.24	-0.25	0.051
95.00	-26.36	-1.79	0.00	-97.54	0.00	97.54	3,020.24	1,510.12	4,760.42	2,383.75	2.40	-0.26	0.050
97.00	-25.56	-1.76	0.00	-93.97	0.00	93.97	2,996.99	1,498.50	4,672.40	2,339.67	2.51	-0.27	0.049
100.00	-24.42	-1.73	0.00	-88.68	0.00	88.68	2,961.74	1,480.87	4,541.28	2,274.01	2.68	-0.28	0.047
105.00	-23.31	-1.69	0.00	-80.03	0.00	80.03	2,901.98	1,450.99	4,325.26	2,165.84	2.98	-0.29	0.045
110.00	-22.11	-1.64	0.00	-71.58	0.00	71.58	2,840.94	1,420.47	4,112.52	2,059.32	3.29	-0.31	0.043
115.00	-21.04	-1.60	0.00	-63.36	0.00	63.36	2,777.06	1,388.53	3,901.02	1,953.41	3.63	-0.33	0.040
120.00	-20.00	-1.55	0.00	-55.36	0.00	55.36	2,693.16	1,346.58	3,667.73	1,836.59	3.98	-0.34	0.038
125.00	-18.98	-1.50	0.00	-47.60	0.00	47.60	2,609.26	1,304.63	3,441.64	1,723.38	4.34	-0.36	0.035
130.00	-18.57	-1.48	0.00	-40.10	0.00	40.10	2,525.36	1,262.68	3,222.75	1,613.77	4.72	-0.37	0.032
132.00	-17.71	-1.43	0.00	-37.14	0.00	37.14	2,491.80	1,245.90	3,137.20	1,570.93	4.88	-0.37	0.031
135.00	-14.75	-1.25	0.00	-32.85	0.00	32.85	2,441.46	1,220.73	3,011.04	1,507.76	5.11	-0.38	0.028
136.00	-14.21	-1.21	0.00	-31.61	0.00	31.61	1,416.30	708.15	1,774.76	888.70	5.19	-0.38	0.046
140.00	-13.54	-1.17	0.00	-26.75	0.00	26.75	1,392.36	696.18	1,697.02	849.77	5.52	-0.39	0.041
145.00	-10.80	-0.98	0.00	-20.89	0.00	20.89	1,361.30	680.65	1,600.81	801.59	5.94	-0.41	0.034
150.00	-10.23	-0.94	0.00	-15.99	0.00	15.99	1,328.96	664.48	1,505.82	754.03	6.37	-0.42	0.029
155.00	-9.89	-0.91	0.00	-11.30	0.00	11.30	1,295.36	647.68	1,412.23	707.16	6.82	-0.43	0.024
158.00	-6.80	-0.66	0.00	-8.56	0.00	8.56	1,274.59	637.29	1,356.80	679.41	7.09	-0.44	0.018
160.00	-6.34	-0.62	0.00	-7.25	0.00	7.25	1,260.48	630.24	1,320.18	661.07	7.28	-0.44	0.016
165.00	-6.07	-0.59	0.00	-4.17	0.00	4.17	1,224.34	612.17	1,229.85	615.84	7.74	-0.44	0.012
168.00	-2.71	-0.28	0.00	-2.40	0.00	2.40	1,202.05	601.02	1,176.54	589.15	8.02	-0.45	0.006
170.00	-2.31	-0.24	0.00	-1.85	0.00	1.85	1,186.93	593.46	1,141.40	571.55	8.21	-0.45	0.005
175.00	-2.08	-0.22	0.00	-0.65	0.00	0.65	1,148.25	574.12	1,054.98	528.28	8.68	-0.45	0.003
178.00	0.00	-0.20	0.00	0.00	0.00	0.00	1,123.52	561.76	1,003.37	502.43	8.96	-0.45	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	-42.07	-1.97	0.00	-279.31	0.00	279.31	6,434.86	3,217.43	14,900.4	7,461.32	0.00	0.00	0.044
5.00	-40.58	-1.98	0.00	-269.44	0.00	269.44	6,350.74	3,175.37	14,433.5	7,227.48	0.01	-0.01	0.044
10.00	-39.99	-1.99	0.00	-259.54	0.00	259.54	6,265.35	3,132.68	13,970.9	6,995.84	0.02	-0.02	0.043
12.00	-39.05	-1.99	0.00	-255.57	0.00	255.57	6,230.84	3,115.42	13,787.1	6,903.82	0.03	-0.03	0.043
15.00	-37.62	-1.99	0.00	-249.60	0.00	249.60	6,178.70	3,089.35	13,512.8	6,766.48	0.05	-0.03	0.043
20.00	-36.21	-1.99	0.00	-239.65	0.00	239.65	6,090.77	3,045.39	13,059.5	6,539.47	0.09	-0.04	0.043
25.00	-34.82	-2.00	0.00	-229.67	0.00	229.67	6,001.58	3,000.79	12,611.0	6,314.89	0.15	-0.06	0.042
30.00	-33.45	-2.00	0.00	-219.69	0.00	219.69	5,911.12	2,955.56	12,167.6	6,092.85	0.21	-0.07	0.042
35.00	-32.11	-1.99	0.00	-209.71	0.00	209.71	5,796.61	2,898.31	11,683.4	5,850.41	0.29	-0.08	0.041
40.00	-31.39	-1.99	0.00	-199.75	0.00	199.75	5,674.58	2,837.29	11,194.2	5,605.46	0.38	-0.09	0.041
42.75	-30.39	-1.98	0.00	-194.28	0.00	194.28	5,607.46	2,803.73	10,929.6	5,472.97	0.44	-0.10	0.041
45.00	-28.63	-1.97	0.00	-189.81	0.00	189.81	5,552.55	2,776.27	10,715.5	5,365.75	0.48	-0.11	0.041
49.00	-28.41	-1.97	0.00	-181.94	0.00	181.94	4,334.74	2,167.37	8,395.94	4,204.21	0.58	-0.12	0.050
50.00	-27.33	-1.96	0.00	-179.97	0.00	179.97	4,321.48	2,160.74	8,333.21	4,172.80	0.60	-0.12	0.049
55.00	-26.26	-1.95	0.00	-170.18	0.00	170.18	4,254.40	2,127.20	8,021.52	4,016.72	0.73	-0.13	0.049
60.00	-25.21	-1.93	0.00	-160.45	0.00	160.45	4,186.06	2,093.03	7,713.24	3,862.35	0.88	-0.15	0.048
65.00	-24.19	-1.92	0.00	-150.78	0.00	150.78	4,116.45	2,058.22	7,408.53	3,709.77	1.04	-0.16	0.047
70.00	-23.18	-1.90	0.00	-141.20	0.00	141.20	4,045.56	2,022.78	7,107.57	3,559.07	1.22	-0.18	0.045
75.00	-22.19	-1.87	0.00	-131.72	0.00	131.72	3,973.41	1,986.71	6,810.50	3,410.31	1.41	-0.19	0.044
80.00	-21.22	-1.85	0.00	-122.35	0.00	122.35	3,899.99	1,950.00	6,517.51	3,263.60	1.62	-0.21	0.043
85.00	-20.84	-1.84	0.00	-113.11	0.00	113.11	3,805.04	1,902.52	6,195.74	3,102.48	1.85	-0.22	0.042
87.00	-20.52	-1.83	0.00	-109.44	0.00	109.44	3,765.38	1,882.69	6,066.61	3,037.81	1.94	-0.23	0.041
88.00	-19.82	-1.80	0.00	-107.61	0.00	107.61	3,745.55	1,872.77	6,002.55	3,005.74	1.99	-0.23	0.041
90.00	-19.19	-1.78	0.00	-104.01	0.00	104.01	3,705.89	1,852.94	5,875.46	2,942.10	2.09	-0.24	0.041
92.00	-18.70	-1.76	0.00	-100.45	0.00	100.45	3,054.73	1,527.36	4,893.34	2,450.31	2.19	-0.24	0.047
95.00	-18.37	-1.75	0.00	-95.17	0.00	95.17	3,020.24	1,510.12	4,760.42	2,383.75	2.35	-0.25	0.046
97.00	-17.81	-1.73	0.00	-91.67	0.00	91.67	2,996.99	1,498.50	4,672.40	2,339.67	2.46	-0.26	0.045
100.00	-17.02	-1.69	0.00	-86.49	0.00	86.49	2,961.74	1,480.87	4,541.28	2,274.01	2.63	-0.27	0.044
105.00	-16.24	-1.65	0.00	-78.04	0.00	78.04	2,901.98	1,450.99	4,325.26	2,165.84	2.92	-0.29	0.042
110.00	-15.41	-1.61	0.00	-69.79	0.00	69.79	2,840.94	1,420.47	4,112.52	2,059.32	3.23	-0.30	0.039
115.00	-14.66	-1.56	0.00	-61.76	0.00	61.76	2,777.06	1,388.53	3,901.02	1,953.41	3.55	-0.32	0.037
120.00	-13.93	-1.51	0.00	-53.95	0.00	53.95	2,693.16	1,346.58	3,667.73	1,836.59	3.89	-0.33	0.035
125.00	-13.22	-1.46	0.00	-46.39	0.00	46.39	2,609.26	1,304.63	3,441.64	1,723.38	4.25	-0.35	0.032
130.00	-12.94	-1.44	0.00	-39.08	0.00	39.08	2,525.36	1,262.68	3,222.75	1,613.77	4.62	-0.36	0.029
132.00	-12.34	-1.39	0.00	-36.19	0.00	36.19	2,491.80	1,245.90	3,137.20	1,570.93	4.77	-0.37	0.028
135.00	-10.28	-1.22	0.00	-32.02	0.00	32.02	2,441.46	1,220.73	3,011.04	1,507.76	5.01	-0.37	0.025
136.00	-9.90	-1.18	0.00	-30.80	0.00	30.80	1,416.30	708.15	1,774.76	888.70	5.09	-0.38	0.042
140.00	-9.44	-1.14	0.00	-26.07	0.00	26.07	1,392.36	696.18	1,697.02	849.77	5.40	-0.38	0.037
145.00	-7.53	-0.96	0.00	-20.36	0.00	20.36	1,361.30	680.65	1,600.81	801.59	5.81	-0.40	0.031
150.00	-7.13	-0.91	0.00	-15.58	0.00	15.58	1,328.96	664.48	1,505.82	754.03	6.24	-0.41	0.026
155.00	-6.89	-0.89	0.00	-11.01	0.00	11.01	1,295.36	647.68	1,412.23	707.16	6.67	-0.42	0.021
158.00	-4.74	-0.64	0.00	-8.35	0.00	8.35	1,274.59	637.29	1,356.80	679.41	6.94	-0.43	0.016
160.00	-4.41	-0.60	0.00	-7.07	0.00	7.07	1,260.48	630.24	1,320.18	661.07	7.12	-0.43	0.014
165.00	-4.23	-0.58	0.00	-4.07	0.00	4.07	1,224.34	612.17	1,229.85	615.84	7.57	-0.43	0.010
168.00	-1.89	-0.27	0.00	-2.34	0.00	2.34	1,202.05	601.02	1,176.54	589.15	7.85	-0.44	0.006
170.00	-1.61	-0.23	0.00	-1.80	0.00	1.80	1,186.93	593.46	1,141.40	571.55	8.03	-0.44	0.005
175.00	-1.45	-0.21	0.00	-0.63	0.00	0.63	1,148.25	574.12	1,054.98	528.28	8.49	-0.44	0.002
178.00	0.00	-0.20	0.00	0.00	0.00	0.00	1,123.52	561.76	1,003.37	502.43	8.77	-0.44	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 ( $S_s$ ):	0.18
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):	2.70
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)
47	176.50	187	1.858	1.817	1.081	0.335	54	231
46	172.50	321	1.775	1.427	0.935	0.285	79	397
45	169.00	132	1.704	1.136	0.820	0.244	28	163
44	166.50	218	1.654	0.954	0.745	0.216	41	270
43	162.50	373	1.575	0.704	0.637	0.175	57	462
42	159.00	153	1.508	0.521	0.552	0.142	19	189
41	156.50	272	1.461	0.410	0.498	0.120	28	337
40	152.50	463	1.387	0.260	0.419	0.087	35	573
39	147.50	475	1.298	0.117	0.334	0.052	21	588
38	142.50	537	1.211	0.016	0.263	0.022	10	664
37	138.00	438	1.136	-0.047	0.210	-0.001	0	542
36	135.50	222	1.095	-0.073	0.184	-0.012	-2	275
35	133.50	701	1.063	-0.088	0.165	-0.019	-12	867
34	131.00	324	1.024	-0.103	0.143	-0.028	-8	402
33	127.50	825	0.970	-0.116	0.117	-0.037	-26	1,021
32	122.50	844	0.895	-0.122	0.085	-0.046	-33	1,044
31	117.50	863	0.824	-0.116	0.061	-0.049	-37	1,068
30	112.50	882	0.755	-0.102	0.042	-0.048	-36	1,092
29	107.50	902	0.689	-0.084	0.028	-0.041	-32	1,117
28	102.50	921	0.627	-0.063	0.018	-0.030	-24	1,140
27	98.50	562	0.579	-0.045	0.012	-0.018	-9	696
26	96.00	379	0.550	-0.034	0.010	-0.011	-4	469
25	93.50	574	0.521	-0.024	0.008	-0.003	-1	710
24	91.00	724	0.494	-0.014	0.007	0.005	3	896
23	89.00	731	0.472	-0.006	0.006	0.011	7	905
22	87.50	368	0.457	-0.001	0.006	0.015	5	456
21	86.00	443	0.441	0.005	0.006	0.019	7	548
20	82.50	1,122	0.406	0.016	0.006	0.028	27	1,389
19	77.50	1,145	0.358	0.031	0.008	0.038	38	1,417
18	72.50	1,168	0.314	0.042	0.011	0.045	46	1,445
17	67.50	1,191	0.272	0.051	0.015	0.050	51	1,473
16	62.50	1,213	0.233	0.058	0.019	0.052	55	1,501
15	57.50	1,236	0.197	0.063	0.024	0.053	57	1,530
14	52.50	1,259	0.164	0.067	0.028	0.053	58	1,558

Site Number: 302472

Code: ANSI/TIA-222-G

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Site Name: Andover-bunker Hill Road, CT

Engineering Number: OAA710391\_C3\_02

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Customer: SPRINT NEXTEL

13	49.50	254	0.146	0.068	0.031	0.052	12	315
12	47.00	2,035	0.132	0.069	0.033	0.052	92	2,519
11	43.88	1,159	0.115	0.070	0.035	0.051	52	1,434
10	41.38	842	0.102	0.071	0.037	0.051	37	1,042
9	37.50	1,553	0.084	0.071	0.039	0.050	67	1,922
8	32.50	1,581	0.063	0.072	0.041	0.049	67	1,957
7	27.50	1,609	0.045	0.071	0.042	0.048	67	1,991
6	22.50	1,637	0.030	0.068	0.041	0.046	65	2,026
5	17.50	1,665	0.018	0.063	0.037	0.043	62	2,060
4	13.50	1,012	0.011	0.056	0.033	0.039	35	1,253
3	11.00	681	0.007	0.050	0.029	0.036	21	843
2	7.50	1,722	0.003	0.039	0.022	0.030	44	2,131
1	2.50	1,750	0.000	0.016	0.008	0.013	20	2,165
Powerwave Allgon 712	178.00	185	1.890	1.980	1.140	0.355	57	229
Flat Low Profile Pla	178.00	1,500	1.890	1.980	1.140	0.355	462	1,856
Alcatel-Lucent RRH2x	168.00	317	1.684	1.061	0.790	0.232	64	393
Alcatel-Lucent 1900	168.00	180	1.684	1.061	0.790	0.232	36	223
Alcatel-Lucent TD-RR	168.00	210	1.684	1.061	0.790	0.232	42	260
72" x 6" Panel	168.00	120	1.684	1.061	0.790	0.232	24	149
KMW ETCR-654L12H6	168.00	255	1.684	1.061	0.790	0.232	51	315
Round Low Profile PI	168.00	1,500	1.684	1.061	0.790	0.232	302	1,856
RFS FD9R6004/2C-3L	158.00	16	1.489	0.475	0.530	0.133	2	19
Alcatel-Lucent RRH2x	158.00	170	1.489	0.475	0.530	0.133	20	211
Alcatel-Lucent B66a	158.00	201	1.489	0.475	0.530	0.133	23	249
RFS DB-T1-6Z-8AB-0Z	158.00	88	1.489	0.475	0.530	0.133	10	109
Antel LPA-80080/4CF	158.00	72	1.489	0.475	0.530	0.133	8	89
Andrew SBNHH-1D65B	158.00	304	1.489	0.475	0.530	0.133	35	376
Flat Low Profile Pla	158.00	1,500	1.489	0.475	0.530	0.133	173	1,856
Kathrein Smart Bias	145.00	10	1.254	0.062	0.297	0.036	0	12
Ericsson KRY 112 144	145.00	33	1.254	0.062	0.297	0.036	1	41
EMS RR90-17-02DP	145.00	41	1.254	0.062	0.297	0.036	1	50
Andrew LNX-6515DS-VT	145.00	154	1.254	0.062	0.297	0.036	5	190
Round Low Profile PI	145.00	1,500	1.254	0.062	0.297	0.036	47	1,856
LGP Allgon LGP21903	135.00	33	1.087	-0.077	0.179	-0.014	0	41
Powerwave LGP21401	135.00	85	1.087	-0.077	0.179	-0.014	-1	105
Raycap DC6-48-60-18-	135.00	32	1.087	-0.077	0.179	-0.014	0	39
Ericsson RRUS 11 (Ba	135.00	165	1.087	-0.077	0.179	-0.014	-2	204
Powerwave 7770.00	135.00	210	1.087	-0.077	0.179	-0.014	-2	260
KMW AM-X-CD-16-65-00	135.00	146	1.087	-0.077	0.179	-0.014	-2	180
Flat Low Profile Pla	135.00	1,500	1.087	-0.077	0.179	-0.014	-18	1,856
GPS	110.00	10	0.722	-0.093	0.034	-0.045	0	12
Standoff	110.00	75	0.722	-0.093	0.034	-0.045	-3	93
GPS	97.00	10	0.561	-0.039	0.011	-0.014	0	12
Standoff	97.00	75	0.561	-0.039	0.011	-0.014	-1	93
GPS	88.00	10	0.462	-0.003	0.006	0.014	0	12
Standoff	88.00	75	0.462	-0.003	0.006	0.014	1	93
PCTEL GPS-TMG-HR-	12.00	1	0.009	0.053	0.030	0.038	0	1
Standoff	12.00	75	0.009	0.053	0.030	0.038	2	93
		50,524	72.418	20.698	21.559	5.374	2,481	62,526

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)
47	176.50	187	1.858	1.817	1.081	0.335	54	161
46	172.50	321	1.775	1.427	0.935	0.285	79	277
45	169.00	132	1.704	1.136	0.820	0.244	28	114
44	166.50	218	1.654	0.954	0.745	0.216	41	188
43	162.50	373	1.575	0.704	0.637	0.175	57	322

42	159.00	153	1.508	0.521	0.552	0.142	19	132
41	156.50	272	1.461	0.410	0.498	0.120	28	235
40	152.50	463	1.387	0.260	0.419	0.087	35	399
39	147.50	475	1.298	0.117	0.334	0.052	21	410
38	142.50	537	1.211	0.016	0.263	0.022	10	463
37	138.00	438	1.136	-0.047	0.210	-0.001	0	378
36	135.50	222	1.095	-0.073	0.184	-0.012	-2	192
35	133.50	701	1.063	-0.088	0.165	-0.019	-12	604
34	131.00	324	1.024	-0.103	0.143	-0.028	-8	280
33	127.50	825	0.970	-0.116	0.117	-0.037	-26	711
32	122.50	844	0.895	-0.122	0.085	-0.046	-33	728
31	117.50	863	0.824	-0.116	0.061	-0.049	-37	744
30	112.50	882	0.755	-0.102	0.042	-0.048	-36	761
29	107.50	902	0.689	-0.084	0.028	-0.041	-32	778
28	102.50	921	0.627	-0.063	0.018	-0.030	-24	795
27	98.50	562	0.579	-0.045	0.012	-0.018	-9	485
26	96.00	379	0.550	-0.034	0.010	-0.011	-4	327
25	93.50	574	0.521	-0.024	0.008	-0.003	-1	495
24	91.00	724	0.494	-0.014	0.007	0.005	3	625
23	89.00	731	0.472	-0.006	0.006	0.011	7	630
22	87.50	368	0.457	-0.001	0.006	0.015	5	318
21	86.00	443	0.441	0.005	0.006	0.019	7	382
20	82.50	1,122	0.406	0.016	0.006	0.028	27	968
19	77.50	1,145	0.358	0.031	0.008	0.038	38	988
18	72.50	1,168	0.314	0.042	0.011	0.045	46	1,007
17	67.50	1,191	0.272	0.051	0.015	0.050	51	1,027
16	62.50	1,213	0.233	0.058	0.019	0.052	55	1,046
15	57.50	1,236	0.197	0.063	0.024	0.053	57	1,066
14	52.50	1,259	0.164	0.067	0.028	0.053	58	1,086
13	49.50	254	0.146	0.068	0.031	0.052	12	219
12	47.00	2,035	0.132	0.069	0.033	0.052	92	1,755
11	43.88	1,159	0.115	0.070	0.035	0.051	52	1,000
10	41.38	842	0.102	0.071	0.037	0.051	37	726
9	37.50	1,553	0.084	0.071	0.039	0.050	67	1,340
8	32.50	1,581	0.063	0.072	0.041	0.049	67	1,364
7	27.50	1,609	0.045	0.071	0.042	0.048	67	1,388
6	22.50	1,637	0.030	0.068	0.041	0.046	65	1,412
5	17.50	1,665	0.018	0.063	0.037	0.043	62	1,436
4	13.50	1,012	0.011	0.056	0.033	0.039	35	873
3	11.00	681	0.007	0.050	0.029	0.036	21	587
2	7.50	1,722	0.003	0.039	0.022	0.030	44	1,485
1	2.50	1,750	0.000	0.016	0.008	0.013	20	1,509
Powerwave Allgon 712	178.00	185	1.890	1.980	1.140	0.355	57	159
Flat Low Profile Pla	178.00	1,500	1.890	1.980	1.140	0.355	462	1,294
Alcatel-Lucent RRH2x	168.00	317	1.684	1.061	0.790	0.232	64	274
Alcatel-Lucent 1900	168.00	180	1.684	1.061	0.790	0.232	36	155
Alcatel-Lucent TD-RR	168.00	210	1.684	1.061	0.790	0.232	42	181
72" x 6" Panel	168.00	120	1.684	1.061	0.790	0.232	24	103
KMW ETCR-654L12H6	168.00	255	1.684	1.061	0.790	0.232	51	220
Round Low Profile PI	168.00	1,500	1.684	1.061	0.790	0.232	302	1,294
RFS FD9R6004/2C-3L	158.00	16	1.489	0.475	0.530	0.133	2	13
Alcatel-Lucent RRH2x	158.00	170	1.489	0.475	0.530	0.133	20	147
Alcatel-Lucent B66a	158.00	201	1.489	0.475	0.530	0.133	23	173
RFS DB-T1-6Z-8AB-0Z	158.00	88	1.489	0.475	0.530	0.133	10	76
Antel LPA-80080/4CF	158.00	72	1.489	0.475	0.530	0.133	8	62
Andrew SBNHH-1D65B	158.00	304	1.489	0.475	0.530	0.133	35	262
Flat Low Profile Pla	158.00	1,500	1.489	0.475	0.530	0.133	173	1,294
Kathrein Smart Bias	145.00	10	1.254	0.062	0.297	0.036	0	9
Ericsson KRY 112 144	145.00	33	1.254	0.062	0.297	0.036	1	28
EMS RR90-17-02DP	145.00	41	1.254	0.062	0.297	0.036	1	35
Andrew LNX-6515DS-VT	145.00	154	1.254	0.062	0.297	0.036	5	133
Round Low Profile PI	145.00	1,500	1.254	0.062	0.297	0.036	47	1,294
LGP Allgon LGP21903	135.00	33	1.087	-0.077	0.179	-0.014	0	28
Powerwave LGP21401	135.00	85	1.087	-0.077	0.179	-0.014	-1	73

Site Number: 302472

Code: ANSI/TIA-222-G

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Site Name: Andover-bunker Hill Road, CT

Engineering Number: OAA710391\_C3\_02

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Raycap DC6-48-60-18-	135.00	32	1.087	-0.077	0.179	-0.014	0	27
Ericsson RRUS 11 (Ba	135.00	165	1.087	-0.077	0.179	-0.014	-2	142
Powerwave 7770.00	135.00	210	1.087	-0.077	0.179	-0.014	-2	181
KMW AM-X-CD-16-65-00	135.00	146	1.087	-0.077	0.179	-0.014	-2	125
Flat Low Profile Pla	135.00	1,500	1.087	-0.077	0.179	-0.014	-18	1,294
GPS	110.00	10	0.722	-0.093	0.034	-0.045	0	9
Standoff	110.00	75	0.722	-0.093	0.034	-0.045	-3	65
GPS	97.00	10	0.561	-0.039	0.011	-0.014	0	9
Standoff	97.00	75	0.561	-0.039	0.011	-0.014	-1	65
GPS	88.00	10	0.462	-0.003	0.006	0.014	0	9
Standoff	88.00	75	0.462	-0.003	0.006	0.014	1	65
PCTEL GPS-TMG-HR-	12.00	1	0.009	0.053	0.030	0.038	0	1
Standoff	12.00	75	0.009	0.053	0.030	0.038	2	65
		50,524	72.418	20.698	21.559	5.374	2,481	43,575

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	-60.36	-2.47	0.00	-319.52	0.00	319.52	6,434.86	3,217.43	14,900.4	7,461.32	0.00	0.00	0.052
5.00	-58.23	-2.44	0.00	-307.19	0.00	307.19	6,350.74	3,175.37	14,433.5	7,227.48	0.01	-0.01	0.052
10.00	-57.39	-2.42	0.00	-295.01	0.00	295.01	6,265.35	3,132.68	13,970.9	6,995.84	0.03	-0.02	0.051
12.00	-56.04	-2.39	0.00	-290.17	0.00	290.17	6,230.84	3,115.42	13,787.1	6,903.82	0.04	-0.03	0.051
15.00	-53.98	-2.34	0.00	-282.99	0.00	282.99	6,178.70	3,089.35	13,512.8	6,766.48	0.06	-0.04	0.051
20.00	-51.95	-2.28	0.00	-271.31	0.00	271.31	6,090.77	3,045.39	13,059.5	6,539.47	0.11	-0.05	0.050
25.00	-49.96	-2.23	0.00	-259.90	0.00	259.90	6,001.58	3,000.79	12,611.0	6,314.89	0.17	-0.06	0.049
30.00	-48.00	-2.17	0.00	-248.77	0.00	248.77	5,911.12	2,955.56	12,167.6	6,092.85	0.24	-0.08	0.049
35.00	-46.08	-2.11	0.00	-237.94	0.00	237.94	5,796.61	2,898.31	11,683.4	5,850.41	0.33	-0.09	0.049
40.00	-45.04	-2.08	0.00	-227.40	0.00	227.40	5,674.58	2,837.29	11,194.2	5,605.46	0.43	-0.11	0.049
42.75	-43.60	-2.03	0.00	-221.69	0.00	221.69	5,607.46	2,803.73	10,929.6	5,472.97	0.49	-0.11	0.048
45.00	-41.09	-1.94	0.00	-217.12	0.00	217.12	5,552.55	2,776.27	10,715.5	5,365.75	0.55	-0.12	0.048
49.00	-40.77	-1.93	0.00	-209.37	0.00	209.37	4,334.74	2,167.37	8,395.94	4,204.21	0.65	-0.13	0.059
50.00	-39.21	-1.88	0.00	-207.44	0.00	207.44	4,321.48	2,160.74	8,333.21	4,172.80	0.68	-0.13	0.059
55.00	-37.68	-1.83	0.00	-198.05	0.00	198.05	4,254.40	2,127.20	8,021.52	4,016.72	0.83	-0.15	0.058
60.00	-36.18	-1.78	0.00	-188.91	0.00	188.91	4,186.06	2,093.03	7,713.24	3,862.35	1.00	-0.17	0.058
65.00	-34.71	-1.73	0.00	-180.02	0.00	180.02	4,116.45	2,058.22	7,408.53	3,709.77	1.19	-0.19	0.057
70.00	-33.26	-1.69	0.00	-171.34	0.00	171.34	4,045.56	2,022.78	7,107.57	3,559.07	1.39	-0.20	0.056
75.00	-31.84	-1.66	0.00	-162.87	0.00	162.87	3,973.41	1,986.71	6,810.50	3,410.31	1.61	-0.22	0.056
80.00	-30.45	-1.64	0.00	-154.56	0.00	154.56	3,899.99	1,950.00	6,517.51	3,263.60	1.86	-0.24	0.055
85.00	-29.91	-1.64	0.00	-146.37	0.00	146.37	3,805.04	1,902.52	6,195.74	3,102.48	2.12	-0.26	0.055
87.00	-29.45	-1.63	0.00	-143.10	0.00	143.10	3,765.38	1,882.69	6,066.61	3,037.81	2.23	-0.27	0.055
88.00	-28.44	-1.62	0.00	-141.47	0.00	141.47	3,745.55	1,872.77	6,002.55	3,005.74	2.29	-0.27	0.055
90.00	-27.54	-1.62	0.00	-138.22	0.00	138.22	3,705.89	1,852.94	5,875.46	2,942.10	2.41	-0.28	0.054
92.00	-26.83	-1.62	0.00	-134.99	0.00	134.99	3,054.73	1,527.36	4,893.34	2,450.31	2.53	-0.29	0.064
95.00	-26.36	-1.63	0.00	-130.12	0.00	130.12	3,020.24	1,510.12	4,760.42	2,383.75	2.71	-0.30	0.063
97.00	-25.56	-1.64	0.00	-126.87	0.00	126.87	2,996.99	1,498.50	4,672.40	2,339.67	2.84	-0.31	0.063
100.00	-24.42	-1.66	0.00	-121.95	0.00	121.95	2,961.74	1,480.87	4,541.28	2,274.01	3.04	-0.33	0.062
105.00	-23.30	-1.70	0.00	-113.63	0.00	113.63	2,901.98	1,450.99	4,325.26	2,165.84	3.40	-0.35	0.060
110.00	-22.11	-1.74	0.00	-105.14	0.00	105.14	2,840.94	1,420.47	4,112.52	2,059.32	3.77	-0.37	0.059
115.00	-21.04	-1.78	0.00	-96.44	0.00	96.44	2,777.06	1,388.53	3,901.02	1,953.41	4.18	-0.40	0.057
120.00	-19.99	-1.81	0.00	-87.55	0.00	87.55	2,693.16	1,346.58	3,667.73	1,836.59	4.60	-0.42	0.055
125.00	-18.97	-1.84	0.00	-78.49	0.00	78.49	2,609.26	1,304.63	3,441.64	1,723.38	5.06	-0.44	0.053
130.00	-18.57	-1.85	0.00	-69.29	0.00	69.29	2,525.36	1,262.68	3,222.75	1,613.77	5.53	-0.47	0.050
132.00	-17.70	-1.86	0.00	-65.60	0.00	65.60	2,491.80	1,245.90	3,137.20	1,570.93	5.73	-0.48	0.049
135.00	-14.74	-1.86	0.00	-60.03	0.00	60.03	2,441.46	1,220.73	3,011.04	1,507.76	6.03	-0.49	0.046
136.00	-14.20	-1.86	0.00	-58.17	0.00	58.17	1,416.30	708.15	1,774.76	888.70	6.14	-0.49	0.075
140.00	-13.53	-1.85	0.00	-50.73	0.00	50.73	1,392.36	696.18	1,697.02	849.77	6.56	-0.51	0.069
145.00	-10.79	-1.75	0.00	-41.48	0.00	41.48	1,361.30	680.65	1,600.81	801.59	7.11	-0.54	0.060
150.00	-10.22	-1.72	0.00	-32.71	0.00	32.71	1,328.96	664.48	1,505.82	754.03	7.69	-0.56	0.051
155.00	-9.88	-1.69	0.00	-24.12	0.00	24.12	1,295.36	647.68	1,412.23	707.16	8.29	-0.59	0.042
158.00	-6.79	-1.37	0.00	-19.05	0.00	19.05	1,274.59	637.29	1,356.80	679.41	8.66	-0.60	0.033
160.00	-6.33	-1.31	0.00	-16.32	0.00	16.32	1,260.48	630.24	1,320.18	661.07	8.91	-0.60	0.030
165.00	-6.06	-1.27	0.00	-9.77	0.00	9.77	1,224.34	612.17	1,229.85	615.84	9.55	-0.62	0.021
168.00	-2.71	-0.68	0.00	-5.98	0.00	5.98	1,202.05	601.02	1,176.54	589.15	9.94	-0.62	0.012
170.00	-2.31	-0.60	0.00	-4.61	0.00	4.61	1,186.93	593.46	1,141.40	571.55	10.20	-0.62	0.010
175.00	-2.08	-0.54	0.00	-1.62	0.00	1.62	1,148.25	574.12	1,054.98	528.28	10.86	-0.63	0.005
178.00	0.00	-0.52	0.00	0.00	0.00	0.00	1,123.52	561.76	1,003.37	502.43	11.26	-0.63	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	-42.07	-2.46	0.00	-313.78	0.00	313.78	6,434.86	3,217.43	14,900.4	7,461.32	0.00	0.00	0.049
5.00	-40.58	-2.43	0.00	-301.46	0.00	301.46	6,350.74	3,175.37	14,433.5	7,227.48	0.01	-0.01	0.048
10.00	-39.99	-2.41	0.00	-289.32	0.00	289.32	6,265.35	3,132.68	13,970.9	6,995.84	0.03	-0.02	0.048
12.00	-39.05	-2.38	0.00	-284.49	0.00	284.49	6,230.84	3,115.42	13,787.1	6,903.82	0.04	-0.03	0.047
15.00	-37.62	-2.32	0.00	-277.36	0.00	277.36	6,178.70	3,089.35	13,512.8	6,766.48	0.06	-0.04	0.047
20.00	-36.21	-2.26	0.00	-265.74	0.00	265.74	6,090.77	3,045.39	13,059.5	6,539.47	0.10	-0.05	0.047
25.00	-34.82	-2.20	0.00	-254.42	0.00	254.42	6,001.58	3,000.79	12,611.0	6,314.89	0.16	-0.06	0.046
30.00	-33.45	-2.14	0.00	-243.40	0.00	243.40	5,911.12	2,955.56	12,167.6	6,092.85	0.24	-0.08	0.046
35.00	-32.11	-2.08	0.00	-232.68	0.00	232.68	5,796.61	2,898.31	11,683.4	5,850.41	0.32	-0.09	0.045
40.00	-31.39	-2.05	0.00	-222.27	0.00	222.27	5,674.58	2,837.29	11,194.2	5,605.46	0.42	-0.10	0.045
42.75	-30.39	-2.00	0.00	-216.63	0.00	216.63	5,607.46	2,803.73	10,929.6	5,472.97	0.49	-0.11	0.045
45.00	-28.63	-1.91	0.00	-212.13	0.00	212.13	5,552.55	2,776.27	10,715.5	5,365.75	0.54	-0.12	0.045
49.00	-28.41	-1.90	0.00	-204.50	0.00	204.50	4,334.74	2,167.37	8,395.94	4,204.21	0.64	-0.13	0.055
50.00	-27.33	-1.85	0.00	-202.60	0.00	202.60	4,321.48	2,160.74	8,333.21	4,172.80	0.67	-0.13	0.055
55.00	-26.26	-1.79	0.00	-193.37	0.00	193.37	4,254.40	2,127.20	8,021.52	4,016.72	0.82	-0.15	0.054
60.00	-25.21	-1.74	0.00	-184.41	0.00	184.41	4,186.06	2,093.03	7,713.24	3,862.35	0.98	-0.16	0.054
65.00	-24.19	-1.70	0.00	-175.69	0.00	175.69	4,116.45	2,058.22	7,408.53	3,709.77	1.16	-0.18	0.053
70.00	-23.18	-1.65	0.00	-167.21	0.00	167.21	4,045.56	2,022.78	7,107.57	3,559.07	1.36	-0.20	0.053
75.00	-22.19	-1.62	0.00	-158.94	0.00	158.94	3,973.41	1,986.71	6,810.50	3,410.31	1.58	-0.22	0.052
80.00	-21.22	-1.59	0.00	-150.85	0.00	150.85	3,899.99	1,950.00	6,517.51	3,263.60	1.82	-0.24	0.052
85.00	-20.84	-1.59	0.00	-142.87	0.00	142.87	3,805.04	1,902.52	6,195.74	3,102.48	2.08	-0.26	0.052
87.00	-20.52	-1.59	0.00	-139.69	0.00	139.69	3,765.38	1,882.69	6,066.61	3,037.81	2.19	-0.26	0.051
88.00	-19.82	-1.58	0.00	-138.10	0.00	138.10	3,745.55	1,872.77	6,002.55	3,005.74	2.24	-0.27	0.051
90.00	-19.19	-1.57	0.00	-134.95	0.00	134.95	3,705.89	1,852.94	5,875.46	2,942.10	2.36	-0.28	0.051
92.00	-18.70	-1.58	0.00	-131.80	0.00	131.80	3,054.73	1,527.36	4,893.34	2,450.31	2.47	-0.28	0.060
95.00	-18.37	-1.58	0.00	-127.07	0.00	127.07	3,020.24	1,510.12	4,760.42	2,383.75	2.65	-0.30	0.059
97.00	-17.81	-1.59	0.00	-123.91	0.00	123.91	2,996.99	1,498.50	4,672.40	2,339.67	2.78	-0.30	0.059
100.00	-17.02	-1.62	0.00	-119.13	0.00	119.13	2,961.74	1,480.87	4,541.28	2,274.01	2.98	-0.32	0.058
105.00	-16.24	-1.65	0.00	-111.05	0.00	111.05	2,901.98	1,450.99	4,325.26	2,165.84	3.32	-0.34	0.057
110.00	-15.40	-1.69	0.00	-102.79	0.00	102.79	2,840.94	1,420.47	4,112.52	2,059.32	3.69	-0.36	0.055
115.00	-14.66	-1.73	0.00	-94.33	0.00	94.33	2,777.06	1,388.53	3,901.02	1,953.41	4.09	-0.39	0.054
120.00	-13.93	-1.76	0.00	-85.68	0.00	85.68	2,693.16	1,346.58	3,667.73	1,836.59	4.50	-0.41	0.052
125.00	-13.22	-1.79	0.00	-76.87	0.00	76.87	2,609.26	1,304.63	3,441.64	1,723.38	4.95	-0.43	0.050
130.00	-12.94	-1.80	0.00	-67.92	0.00	67.92	2,525.36	1,262.68	3,222.75	1,613.77	5.41	-0.46	0.047
132.00	-12.33	-1.81	0.00	-64.32	0.00	64.32	2,491.80	1,245.90	3,137.20	1,570.93	5.60	-0.46	0.046
135.00	-10.27	-1.82	0.00	-58.89	0.00	58.89	2,441.46	1,220.73	3,011.04	1,507.76	5.90	-0.48	0.043
136.00	-9.89	-1.82	0.00	-57.07	0.00	57.07	1,416.30	708.15	1,774.76	888.70	6.00	-0.48	0.071
140.00	-9.43	-1.81	0.00	-49.79	0.00	49.79	1,392.36	696.18	1,697.02	849.77	6.41	-0.50	0.065
145.00	-7.52	-1.72	0.00	-40.74	0.00	40.74	1,361.30	680.65	1,600.81	801.59	6.95	-0.53	0.056
150.00	-7.12	-1.68	0.00	-32.14	0.00	32.14	1,328.96	664.48	1,505.82	754.03	7.52	-0.55	0.048
155.00	-6.88	-1.66	0.00	-23.72	0.00	23.72	1,295.36	647.68	1,412.23	707.16	8.11	-0.57	0.039
158.00	-4.73	-1.35	0.00	-18.75	0.00	18.75	1,274.59	637.29	1,356.80	679.41	8.47	-0.58	0.031
160.00	-4.41	-1.29	0.00	-16.06	0.00	16.06	1,260.48	630.24	1,320.18	661.07	8.72	-0.59	0.028
165.00	-4.22	-1.24	0.00	-9.63	0.00	9.63	1,224.34	612.17	1,229.85	615.84	9.34	-0.60	0.019
168.00	-1.88	-0.67	0.00	-5.90	0.00	5.90	1,202.05	601.02	1,176.54	589.15	9.73	-0.61	0.012
170.00	-1.61	-0.59	0.00	-4.55	0.00	4.55	1,186.93	593.46	1,141.40	571.55	9.98	-0.61	0.009
175.00	-1.45	-0.53	0.00	-1.60	0.00	1.60	1,148.25	574.12	1,054.98	528.28	10.62	-0.62	0.004
178.00	0.00	-0.52	0.00	0.00	0.00	0.00	1,123.52	561.76	1,003.37	502.43	11.01	-0.62	0.000



Site Number: 302472

Code: ANSI/TIA-222-G

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Site Name: Andover-bunker Hill Road, CT

Engineering Number: OAA710391\_C3\_02

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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	39.26	0.00	60.57	0.00	0.00	4662.08	49.00	0.70
0.9D + 1.6W	39.24	0.00	45.41	0.00	0.00	4600.75	49.00	0.68
1.2D + 1.0Di + 1.0Wi	10.94	0.00	102.42	0.00	0.00	1308.87	49.00	0.21
(1.2 + 0.2Sds) * DL + E ELFM	1.97	0.00	60.36	0.00	0.00	283.97	49.00	0.05
(1.2 + 0.2Sds) * DL + E EMAM	2.47	0.00	60.36	0.00	0.00	319.52	136.00	0.08
(0.9 - 0.2Sds) * DL + E ELFM	1.97	0.00	42.07	0.00	0.00	279.31	49.00	0.05
(0.9 - 0.2Sds) * DL + E EMAM	2.46	0.00	42.07	0.00	0.00	313.78	136.00	0.07
1.0D + 1.0W	8.66	0.00	50.52	0.00	0.00	1020.98	49.00	0.16

Site Number: **302472**  
 Site Name: **Andover-bunker Hill Rd, CT**  
 Job Number: **OAA710391**  
 Engineer: **Aaron.Black**  
 Date: **9/5/2017**

Last Updated: 9/1/2017

**Base Plate and Bolt Analysis**

Moment: 4662.1 k-ft  
 Shear/Leg: 39.3 k  
 Compression/Leg: 60.6 k

TIA-222 Code Revision (F/G):

Anchor Bolt Arrangement: G  
 Monopole Shaft Diameter (Across Flats): 56.9 in  
 Lower Monopole Thickness: 0.500 in  
 # of Sides of Pole: 18  
 Monopole Shaft Yield Strength: 65 ksi  
 Baseplate Diameter / Length: 64.00  
 Base Plate Thickness: 3.00 in  
 Base Plate Yield Strength: 50 ksi  
 Baseplate Detail Type: D  
 Include Plate Thickness Beyond Bolt Circle: Y  
 Stress Increase: 1.00  
 Fillet Weld Size: 0.313 in  
 Weld Type (CJP or F/F): CJP  
 Weld Strength: 70 ksi

**Anchor Bolts**

Anchor Bolt Yield Strength: 75 ksi  
 Anchor Bolt Ultimate Strength: 100 ksi  
 Anchor Bolt Diameter: 2.25 in  
 Anchor Bolt Circle: 64.00 in  
 # of Anchor Bolts: 20  
 Minimum Anchor Bolt Separation: 6.00 in  
 Additional Anchor Bolts Installed: N

Failure Mode:	Effective Width (in)	Moment (k-in)	Baseplate Flexural Capacity			Baseplate Shear Capacity			
			S/Z (in <sup>3</sup> )	Capacity (k-in)	Usage	Shear (k)	Area (in <sup>2</sup> )	Capacity (k)	Usage
AA	33.51	1733.7	75.4	3392.4	<b>0.51</b>	858.4	100.5	2713.9	<b>0.32</b>
BA	35.28	2110.5	79.4	3572.0	<b>0.59</b>	858.4	105.8	2857.6	<b>0.30</b>

**Anchor Bolt Capacity**

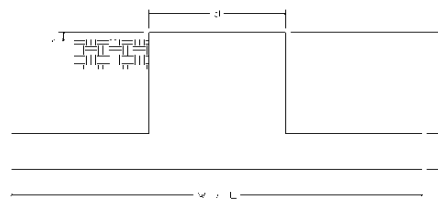
Area of Bolt: 3.25 in<sup>2</sup>  
 Inertia of Bolt: 0.84 in<sup>4</sup>  
 Total Bolt Inertia: 33273.0 in<sup>4</sup>  
 Maximum Bolt Tension: 171.7 k  
 Maximum Bolt Compression: 177.8 k  
 Bolt Shear: 2.0 k  
 Tensile Bolt Capacity: 259.8 k  
 Compressive Bolt Capacity: 259.8 k  
 Shear Bolt Capacity: 140.3 k  
 Interaction Equation: **0.70** Result: OK

**Base Weld Capacity**

Force / Weld: 17.6 k/in  
 Weld Capacity: 29.2 k/in  
 Interaction Equation: **0.60** Result: OK

Site Name: Andover-bunker Hill Rd, CT  
 Site Number: 302472  
 Engineering Number: OAA710391  
 Engineer: Aaron.Black  
 Date: 09/05/17  
 Tower Type: MP

Program Last Updated: 5/13/2014



**Design Loads (Factored) - Analysis per TIA-222-G Standards**

Design / Analysis / Mapping:

	Analysis		
Compression/Leg:	60.6 k	Concrete Strength ( $f'_c$ ):	3000 psi
Uplift/Leg:	0.0 k	Pad Tension Steel Depth:	44.00 in
Total Shear:	39.3 k	$\phi_{\text{Shear}}$ :	0.75
Moment:	4662.1 k-ft	$\phi_{\text{Flexure / Tension}}$ :	0.90
Tower + Appurtenance Weight:	60.6 k	$\phi_{\text{Compression}}$ :	0.65
Depth to Base of Foundation (l + t - h):	9.50 ft	$\beta$ :	0.85
Diameter of Pier (d):	8.00 ft	Bottom Pad Rebar Size #:	11
Height of Pier above Ground (h):	0.50	# of Bottom Pad Rebar:	24
Width of Pad (W):	24.00 ft	Pad Bottom Steel Area:	37.44 in <sup>2</sup>
Length of Pad (L):	24.00 ft	Pad Steel $F_y$ :	60000 psi
Thickness of Pad (t):	4.00 ft	Top Pad Rebar Size #:	11
Tower Leg Center to Center:	0.00 ft	# of Top Pad Rebar:	24
Number of Tower Legs:	1.0 (1 if MP or GT)	Pad Top Steel Area:	37.44 in <sup>2</sup>
Tower Center from Mat Center:	0.00 ft	Pier Rebar Size #:	11
Depth Below Ground Surface to Water Table:	99.00 ft	Pier Steel Area (Single Bar):	1.56 in <sup>2</sup>
Unit Weight of Concrete:	150.0 pcf	# of Pier Rebar:	40
Unit Weight of Soil Above Water Table:	110.0 pcf	Pier Steel $F_y$ :	60000 psi
Unit Weight of Water:	62.4 pcf	Pier Cage Diameter:	88.0 in
Unit Weight of Soil Below Water Table:	47.6 pcf	Rebar Strain Limit:	0.008
Friction Angle of Uplift:	15.0 Degrees	Steel Elastic Modulus:	29000 ksi
Ultimate Coefficient of Shear Friction:	0.35	Tie Rebar Size #:	5
Ultimate Compressive Bearing Pressure:	12000.0 psf	Tie Steel Area (Single Bar):	0.31 in <sup>2</sup>
Ultimate Passive Pressure on Pad Face:	0.0 psf	Tie Spacing:	12 in
$\phi_{\text{Soil and Concrete Weight}}$ :	0.9	Tie Steel $F_y$ :	40 psi
$\phi_{\text{Soil}}$ :	0.75		

**Overturning Moment Usage**

Design OTM: 5054.7 k-ft  
 OTM Resistance: 8915.2 k-ft  
 Design OTM / OTM Resistance: 0.57 Result: OK

**Soil Bearing Pressure Usage**

Net Bearing Pressure: 3559 psf  
 Factored Nominal Bearing Pressure: 9000 psf  
 Net Bearing Pressure/Factored Nominal Bearing Pressure: 0.40 Result: OK  
 Load Direction Controlling Design Bearing Pressure: Diagonal to Pad Edge

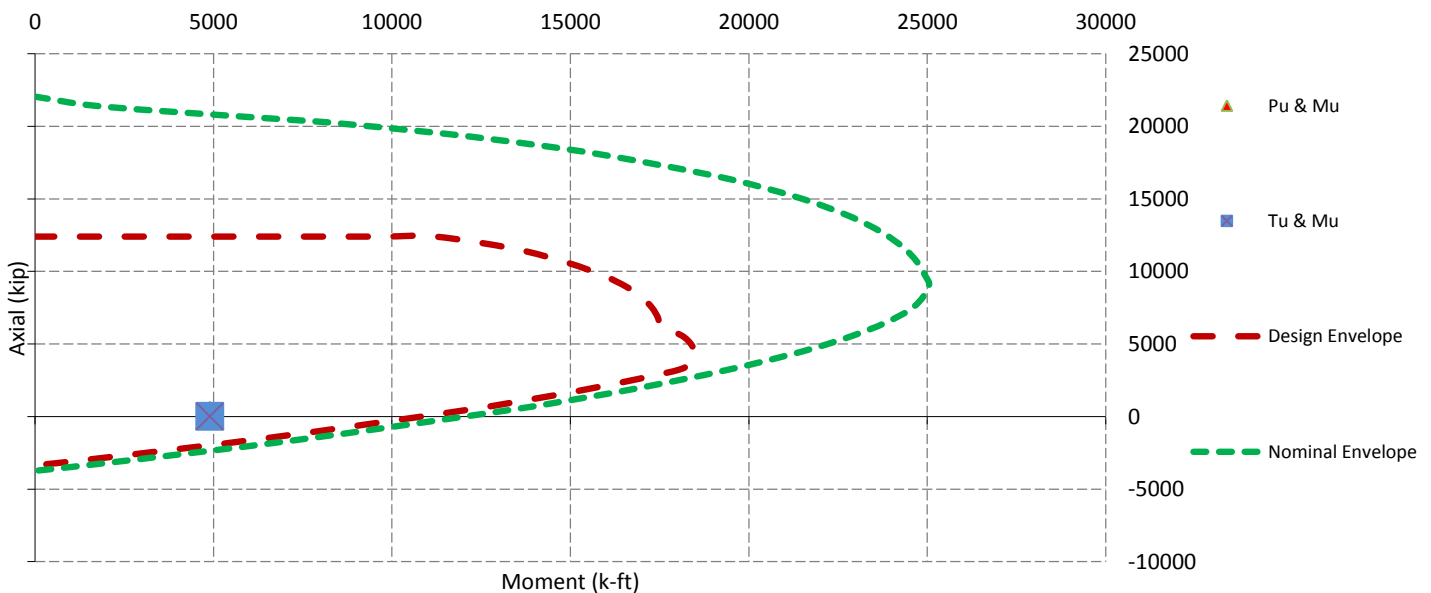
**Sliding Factor of Safety**

Total Factored Sliding Resistance: 199.3 k  
 Sliding Design / Sliding Resistance: 0.20 Result: OK

## One Way Shear, Flexural Capacity, and Punching Shear

Factored One Way Shear ( $V_u$ ):	208.6 k
One Way Shear Capacity ( $\phi V_c$ ):	807.2 k - ACI11.3.1.1
$V_u / \phi V_c$ :	0.26 Result: OK
Load Direction Controlling Shear Capacity:	Diagonal to Pad Edge
Lower Steel Pad Factored Moment ( $M_u$ ):	1715.1 k-ft
Lower Steel Pad Moment Capacity ( $\phi M_n$ ):	7594.6 k-ft - ACI10.3
$M_u / \phi M_n$ :	0.23 Result: OK
Load Direction Controlling Flexural Capacity:	Diagonal to Pad Edge
Upper Steel Pad Factored Moment ( $M_u$ ):	1144.2 k-ft
Upper Steel Pad Moment Capacity ( $\phi M_n$ ):	7194.1 k-ft
$M_u / \phi M_n$ :	0.16 Result: OK
Lower Pad Flexural Reinforcement Ratio:	0.0030 OK - Minimum Reinforcement Ratio Met - ACI10.5.1
Upper Pad Flexural Reinforcement Ratio:	0.0030 OK - Minimum Reinforcement Ratio Met - ACI10.5.1
Lower Pad Reinforcement Spacing:	12 in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
Upper Pad Reinforcement Spacing:	12 in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
Factored Punching Shear ( $V_u$ ):	0.0 k
Nominal Punching Shear Capacity ( $\phi_c V_n$ ):	3179.9 k - ACI11.12.2.1
$V_u / \phi V_c$ :	0.00 Result: OK
Factored Moment in Pier ( $M_u$ ):	4897.6 k-ft
Pier Moment Capacity ( $\phi M_n$ ):	12085.4 k-ft
$M_u / \phi M_n$ :	0.41 Result: OK
Factored Shear in Pier ( $V_u$ ):	39.3 k
Pier Shear Capacity ( $\phi V_n$ ):	597.2 k
$V_u / \phi V_c$ :	0.07 Result: OK
Pier Shear Reinforcement Ratio:	0.0005 No Ties Necessary for Shear - ACI11.5.6.1
Factored Tension in Pier ( $T_u$ ):	0.0 k
Pier Tension Capacity ( $\phi T_n$ ):	3369.6 k
$T_u / \phi T_n$ :	0.00 Result: OK
Factored Compression in Pier ( $P_u$ ):	60.6 k
Pier Compression Capacity ( $\phi P_n$ ):	9515.1 k - ACI10.3.6.2
$P_u / \phi P_n$ :	0.01 Result: OK
Pier Compression Reinforcement Ratio:	0.009 OK - Reinforcement Ratio Met - ACI10.9.1 & 10.8.4
$M_u / \phi_B M_n + T_u / \phi_T T_n$ :	0.41 Result: OK

Nominal and Design Moment Capacity and Factored Design Loads



# Sprint



PROJECT: DO MACRO UPGRADE  
 SITE NAME: ANDOVER / NEXTEL  
 SITE CASCADE: CT33XC573  
 SITE ADDRESS: 104 BUNKER HILL RD.  
 ANDOVER, CT 06232  
 SITE TYPE: MONOPOLE TOWER  
 MARKET: NORTHERN CONNECTICUT

PLANS PREPARED FOR:  
**Sprint**

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 12868  
 OFFICE# (518) 308-3740

ENGINEERING LICENSE:  
  
 JOHN S. STEVENS  
 No. 24705  
 PROFESSIONAL ENGINEER

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REVISIONS:	DESCRIPTION	DATE	BY	REV
ISSUED FOR PERMIT		12/22/17	JDL	0

SITE NAME:  
**ANDOVER / NEXTEL**

SITE NUMBER:  
**CT33XC573**

SITE ADDRESS:  
**104 BUNKER HILL RD.  
 ANDOVER, CT 06232**

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° 44' 18.008" N            41.73778°</p> <p><b>LONGITUDE (NAD83):</b>            -72° 20' 59.3874" W            -72.34983°</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) 288-2000</p> <p><b>AAV PROVIDER:</b>            AT&amp;T            (800) 288-2020</p> <p><b>PROJECT MANAGER:</b>            AIROSMITH DEVELOPMENT            TERRI BURKHOLDER            (315) 719-2928            TBURKHOLDER@AIROSMITHDEVELOPMENT.COM</p>		<p>SPRINT PROPOSES TO MODIFY AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY.</p> <ul style="list-style-type: none"> <li>REMOVE (3) PANEL ANTENNAS, (3) EXISTING PANEL ANTENNAS TO REMAIN</li> <li>INSTALL (3) PANEL ANTENNAS</li> <li>RELOCATE (3) RRRHS BEHIND ANTENNAS</li> <li>INSTALL (3) 2.5 GHz &amp; (6) 800 MHz RRR'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>	<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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		<p><b>APPLICABLE CODES</b></p> <p>ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALL IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES.</p> <ol style="list-style-type: none"> <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>																																								



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:



PROJECT MANAGER:



ENGINEERING LICENSE:



DRAWING NOTICE:

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REVISIONS	DESCRIPTION	DATE	BY	REV
ISSUED FOR PERMIT		12/22/17	JDL	0

SITE NAME:

ANDOVER / NEXTEL

SITE NUMBER:

CT33XC573

SITE ADDRESS:

104 BUNKER HILL RD.  
ANDOVER, CT 06232

SHEET DESCRIPTION:

SPRINT SPECIFICATIONS

SHEET NUMBER:

SP-1

CONTINUE FROM SP-1

1. PERFORM ANY REQUIRED SITE ENVIRONMENTAL MITIGATION.
  2. PREPARE GROUND SITES; PROVIDE DE-GRUBBING; AND ROUGH AND FINAL GRADING, AND COMPOUND SURFACE TREATMENTS.
  3. MANAGE AND CONDUCT ALL ACTIVITIES FOR INSTALLATION OF UTILITIES INCLUDING ELECTRICAL AND TELCO BACKHAUL.
  4. INSTALL UNDERGROUND FACILITIES INCLUDING UNDERGROUND POWER AND COMMUNICATIONS CONDUITS, AND UNDERGROUND GROUNDING SYSTEM.
  5. INSTALL ABOVE GROUND GROUNDING SYSTEMS.
  6. PROVIDE NEW HVAC INSTALLATIONS AND MODIFICATIONS.
  7. INSTALL "H-FRAMES", CABINETS AND SHELTERS AS INDICATED.
  8. INSTALL ROADS, ACCESS WAYS, CURBS AND DRAINS AS INDICATED.
  9. ACCOMPLISH REQUIRED MODIFICATION OF EXISTING FACILITIES.
  10. PROVIDE ANTENNA SUPPORT STRUCTURE FOUNDATIONS.
  11. PROVIDE SLABS AND EQUIPMENT PLATFORMS.
  12. INSTALL COMPOUND FENCING, SIGHT SHIELDING, LANDSCAPING AND ACCESS BARRIERS.
  13. PERFORM INSPECTION AND MATERIAL TESTING AS REQUIRED HEREINAFTER.
  14. CONDUCT SITE RESISTANCE TO EARTH TESTING AS REQUIRED HEREINAFTER
  15. INSTALL FIXED GENERATOR SETS AND OTHER STANDBY POWER SOLUTIONS.
  16. INSTALL TOWERS, ANTENNA SUPPORT STRUCTURES AND PLATFORMS ON EXISTING TOWERS AS REQUIRED.
  17. INSTALL CELL SITE RADIOS, MICROWAVE, GPS, COAXIAL MAINLINE, ANTENNAS, CROSS BAND COUPLERS, TOWER TOP AMPLIFIERS, LOW NOISE AMPLIFIERS AND RELATED EQUIPMENT.
  18. PERFORM, DOCUMENT, AND CLOSE OUT ANY CONSTRUCTION CONTROL DOCUMENTS THAT MAY BE REQUIRED BY GOVERNMENT AGENCIES AND LANDLORDS.
  19. PERFORM ANTENNAL AND COAX SWEEP TESTING AND MAKE ANY AND ALL NECESSARY CORRECTIONS.
  20. REMAIN ON SITE MOBILIZED THROUGHOUT HAND-OFF AND INTEGRATION TO ASSIST AS NEEDED UNTIL SITE IS DEEMED SUBSTANTIALLY COMPLETE AND PLACED "ON AIR."
- 3.2 GENERAL REQUIREMENTS FOR CIVIL CONSTRUCTION:
- A. CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH. AT THE COMPLETION OF THE WORK, CONTRACTOR SHALL REMOVE FROM THE SITE ALL REMAINING RUBBISH, IMPLEMENTS, TEMPORARY FACILITIES, AND SURPLUS MATERIALS.
- B. EQUIPMENT ROOMS SHALL AT ALL TIMES BE MAINTAINED "BROOM CLEAN" AND CLEAR OF DEBRIS.
- C. CONTRACTOR SHALL TAKE ALL REASONABLE PRECAUTIONS TO DISCOVER AND LOCATE ANY HAZARDOUS CONDITION.
1. IN THE EVENT CONTRACTOR ENCOUNTERS ANY HAZARDOUS CONDITION WHICH HAS NOT BEEN ABATED OR OTHERWISE MITIGATED, CONTRACTOR AND ALL OTHER PERSONS SHALL IMMEDIATELY STOP WORK IN THE AFFECTED AREA AND NOTIFY COMPANY IN WRITING. THE WORK IN THE AFFECTED AREA SHALL NOT BE RESUMED EXCEPT BY WRITTEN NOTIFICATION BY COMPANY.
  2. CONTRACTOR AGREES TO USE CARE WHILE ON THE SITE AND SHALL NOT TAKE ANY ACTION THAT WILL OR MAY RESULT IN OR CAUSE THE HAZARDOUS CONDITION TO BE FURTHER RELEASED IN THE ENVIRONMENT, OR TO FURTHER EXPOSE INDIVIDUALS TO THE HAZARD.
- D. CONTRACTOR'S ACTIVITIES SHALL BE RESTRICTED TO THE PROJECT LIMITS. SHOULD AREAS OUTSIDE THE PROJECT LIMITS BE AFFECTED BY CONTRACTOR'S ACTIVITIES, CONTRACTOR SHALL IMMEDIATELY RETURN THEM TO ORIGINAL CONDITION
- E. CONDUCT TESTING AS REQUIRED HEREIN.
- 3.3 DELIVERABLES:
- A. CONTRACTOR SHALL REVIEW, APPROVE, AND SUBMIT TO SPRINT SHOP DRAWINGS, PRODUCT DATA, SAMPLES, AND SIMILAR SUBMITTALS AS REQUIRED HEREINAFTER
- B. PROVIDE DOCUMENTATION INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING. DOCUMENTATION SHALL BE FORWARDED IN ORIGINAL FORMAT AND/OR UPLOADED INTO SMS.
1. ALL CORRESPONDENCE AND PRELIMINARY CONSTRUCTION REPORTS.
  2. PROJECT PROGRESS REPORTS.
  3. CIVIL CONSTRUCTION START DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
  4. ELECTRICAL SERVICE COMPLETION DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).

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

SECTION 01 400 - SUBMITTALS & TESTS

PART 1 - GENERAL

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

1.4 TESTS AND INSPECTIONS:

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

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

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

- 3.1 REQUIREMENTS FOR TESTING:
- A. THIRD PARTY TESTING AGENCY:
1. WHEN THE USE OF A THIRD PARTY INDEPENDENT TESTING AGENCY IS REQUIRED, THE AGENCY THAT IS SELECTED MUST PERFORM SUCH WORK ON A REGULAR BASIS IN THE STATE WHERE THE PROJECT IS LOCATED AND HAVE A THOROUGH UNDERSTANDING OF LOCAL AVAILABLE MATERIALS, INCLUDING THE SOIL, ROCK, AND GROUNDWATER CONDITIONS.
  2. THE THIRD PARTY TESTING AGENCY IS TO BE FAMILIAR WITH THE APPLICABLE REQUIREMENTS FOR THE TESTS TO BE DONE, EQUIPMENT TO BE USED, AND ASSOCIATED HEALTH AND SAFETY ISSUES.
  3. EXPERIENCE IN SOILS, CONCRETE, MASONRY, AGGREGATE, AND ASPHALT TESTING USING ASTM, AASHTO, AND OTHER METHODS IS NEEDED.
  4. EXPERIENCE IN SOILS, CONCRETE, MASONRY, AGGREGATE, AND ASPHALT TESTING USING ASTM, AASHTO, AND OTHER METHODS IS NEEDED.
- 3.2 REQUIRED TESTS:
- A. CONTRACTOR SHALL ACCOMPLISH TESTING INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
1. CONCRETE CYLINDER BREAK TESTS FOR THE TOWER AND ANCHOR FOUNDATIONS AS SPECIFIED IN SECTION: PORTLAND CEMENT CONCRETE PAVING.
  2. ASPHALT ROADWAY COMPACTED THICKNESS, SURFACE SMOOTHNESS, AND COMPACTED DENSITY TESTING AS SPECIFIED IN SECTION: HOT MIX ASPHALT PAVING.
  3. FIELD QUALITY CONTROL TESTING AS SPECIFIED IN SECTION: PORTLAND CEMENT CONCRETE PAVING.
  4. TESTING REQUIRED UNDER SECTION: AGGREGATE BASE FOR ACCESS ROADS, PADS AND ANCHOR LOCATIONS
  5. STRUCTURAL BACKFILL COMPACTION TESTS FOR THE TOWER FOUNDATION.
  6. SITE RESISTANCE TO EARTH TESTING PER EXHIBIT: CELL SITE GROUNDING SYSTEM DESIGN.
  7. ANTENNA AND COAX SWEEP TESTS PER EXHIBIT: ANTENNA TRANSMISSION LINE ACCEPTANCE STANDARDS.
  8. GROUNDING AT ANTENNA MASTS FOR GPS AND ANTENNAS
  9. ALL OTHER TESTS REQUIRED BY COMPANY OR JURISDICTION.

3.3 REQUIRED INSPECTIONS

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

PLANS PREPARED FOR:



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JOB NUMBER 526-104

PROJECT MANAGER:

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

ENGINEERING LICENSE:



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SPRINT SPECIFICATIONS

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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 CLOSEDOUT 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:



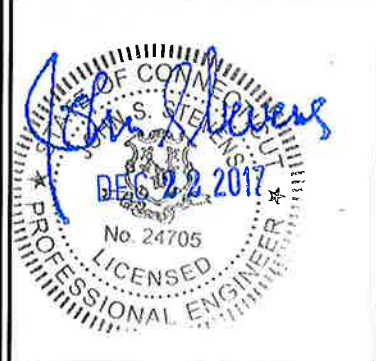
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www.infinigy.com  
JOB NUMBER 526-104

PROJECT MANAGER:

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

ENGINEERING LICENSE:



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SHEET DESCRIPTION:

**SPRINT SPECIFICATIONS**

SHEET NUMBER:

**SP-3**





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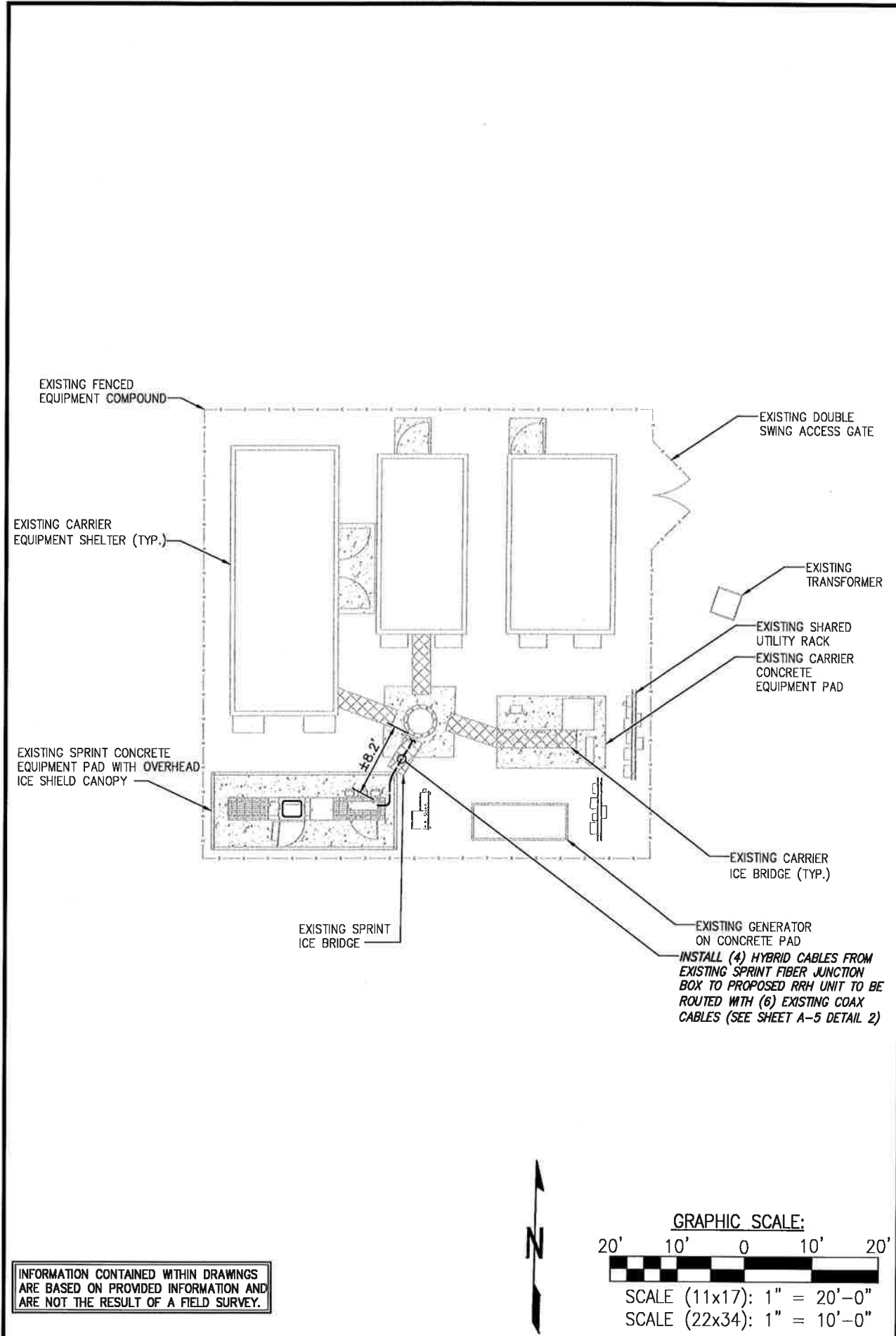
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CT33XC573

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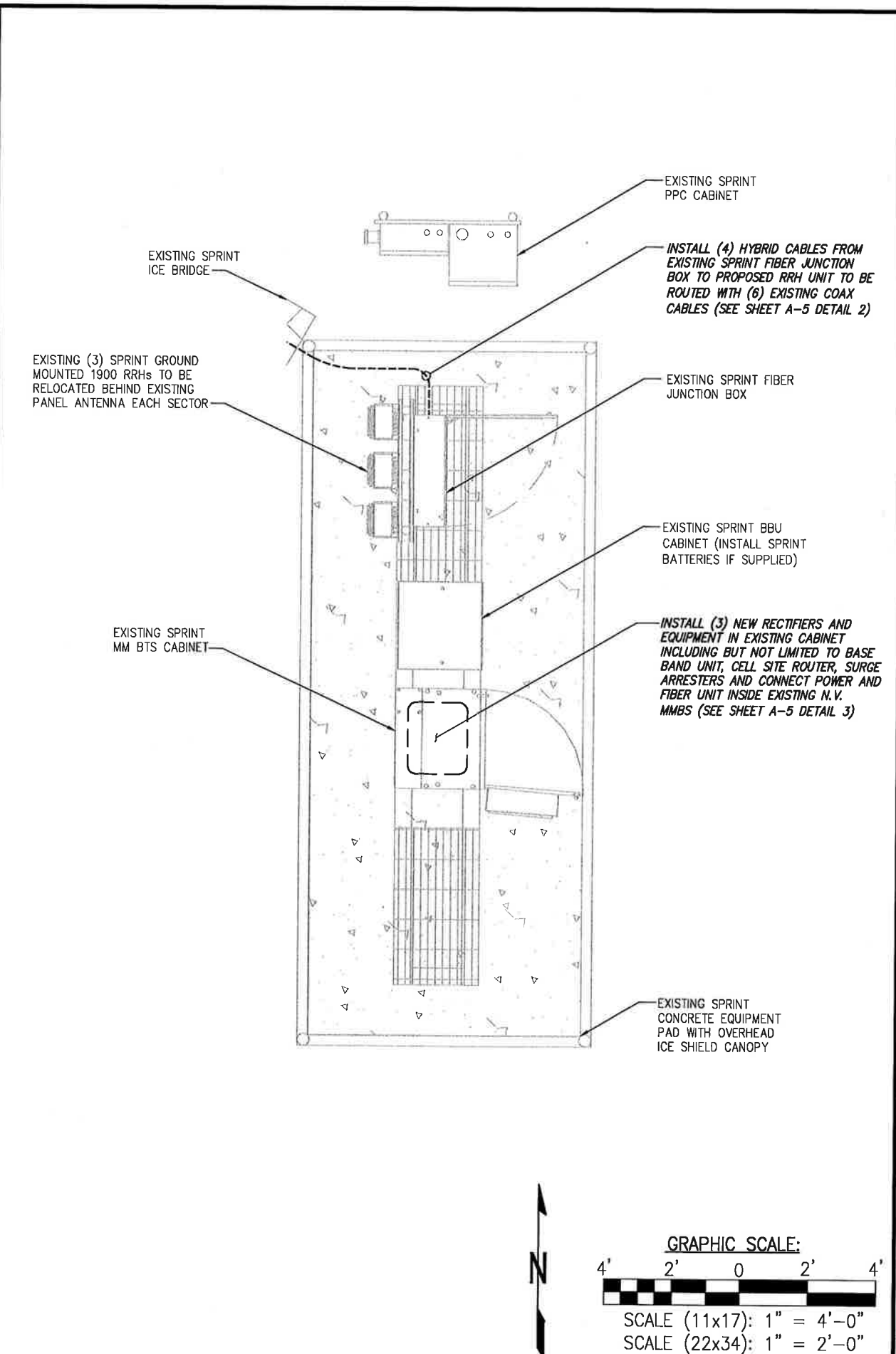
SITE PLAN

A-1



OVERALL SITE PLAN

SCALE: AS NOTED 1



SPRINT EQUIPMENT PLAN

SCALE: AS NOTED 2

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

TOP OF TOWER  
ELEV. = ±180' A.G.L.

Q OF EXISTING/TO BE  
INSTALLED SPRINT ANTENNAS  
ELEV. = 168' A.G.L.

EXISTING (1) SPRINT  
PANEL ANTENNA TO  
REMAIN EACH SECTOR

INSTALL (1) SPRINT 800 MHz  
RRH MOUNTED BEHIND EXISTING  
PANEL ANTENNA EACH SECTOR

EXISTING (3) SPRINT GROUND  
MOUNTED 1900 RRHs TO BE  
RELOCATED BEHIND EXISTING  
PANEL ANTENNA EACH SECTOR

EXISTING CARRIER  
PANEL ANTENNA (TYP.)

INSTALL (1) SPRINT TRIBAND  
TO REPLACE EXISTING  
ANTENNA EACH SECTOR

INSTALL (1) SPRINT 800 MHz  
RRH MOUNTED BEHIND PROPOSED  
ANTENNA EACH SECTOR

INSTALL (1) SPRINT 2.5 GHz RRH  
MOUNTED BEHIND PROPOSED  
ANTENNA EACH SECTOR

**NOTE:**

- STRUCTURAL ANALYSIS COMPLETED BY AMERICAN TOWER CORPORATION. FOR ADDITIONAL INFORMATION SEE REPORT TITLED: "STRUCTURAL ANALYSIS REPORT, ATC SITE NUMBER: 302472", DATED: "SEPTEMBER 5, 2017". ACCORDING TO RESULTS OF STRUCTURAL MODIFICATION REPORT, THE STRUCTURE HAS SUFFICIENT CAPACITY TO SUPPORT THE PROPOSED LOADING.
- ANTENNA AND RRH SUPPORT EVALUATION COMPLETED BY INFINIGY. FOR ADDITIONAL INFORMATION SEE REPORT TITLED: "SPRINT PROJECT MOUNT ANALYSIS", DATED: "DECEMBER 11, 2017". ACCORDING TO THE RESULTS OF REVIEW, THE ANTENNA AND RRH SUPPORTS WILL BE ADEQUATE TO SUPPORT THE PROPOSED LOADING.

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		ETCR-654L12H6	KMW	0°	1	-	(2) 800 MHz 2X50W RRH W/ FILTER	SEE SHEET A-5 DETAIL 1	±168' AGL	±168' AGL
	EXISTING	72"x6" PANEL	GENERIC	0°	1	REMOVE	(1) TD-RRH8X20-25 W/ SOLAR SHIELD	---		
	EXISTING	72"x6" PANEL	GENERIC	0°	1	REMAIN	(1) 1900 MHz 4X45 RRH	EXISTING COAX		
BETA		ETCR-654L12H6	KMW	120°	1	-	(2) 800 MHz 2X50W RRH W/ FILTER	SEE SHEET A-5 DETAIL 1	±199'	±168' AGL
	EXISTING	72"x6" PANEL	GENERIC	120°	1	REMOVE	(1) TD-RRH8X20-25 W/ SOLAR SHIELD	---		
	EXISTING	72"x6" PANEL	GENERIC	120°	1	REMAIN	(1) 1900 MHz 4X45 RRH	EXISTING COAX		
GAMMA		ETCR-654L12H6	KMW	240°	1	-	(2) 800 MHz 2X50W RRH W/ FILTER	SEE SHEET A-5 DETAIL 1	±168' AGL	±168' AGL
	EXISTING	72"x6" PANEL	GENERIC	240°	1	REMOVE	(1) TD-RRH8X20-25 W/ SOLAR SHIELD	---		
	EXISTING	72"x6" PANEL	GENERIC	240°	1	REMAIN	(1) 1900 MHz 4X45 RRH	EXISTING COAX		

**PROJECT SCOPE:**  
REMOVE: (3) PANEL ANTENNAS INSTALL: (3) PANEL ANTENNAS (3) 2.5 GHz RRH'S AND (6) 800 MHz RRH'S  
RELOCATE: (3) EXISTING 1900 MHz 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

DETAIL NOT USED

NO SCALE

3

PLANS PREPARED FOR:



PLANS PREPARED BY:

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**AIRSMITH**  
DEVELOPMENT  
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SITE NAME:

ANDOVER / NEXTEL

SITE NUMBER:

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SHEET DESCRIPTION:

TOWER ELEVATION

SHEET NUMBER:

A-2



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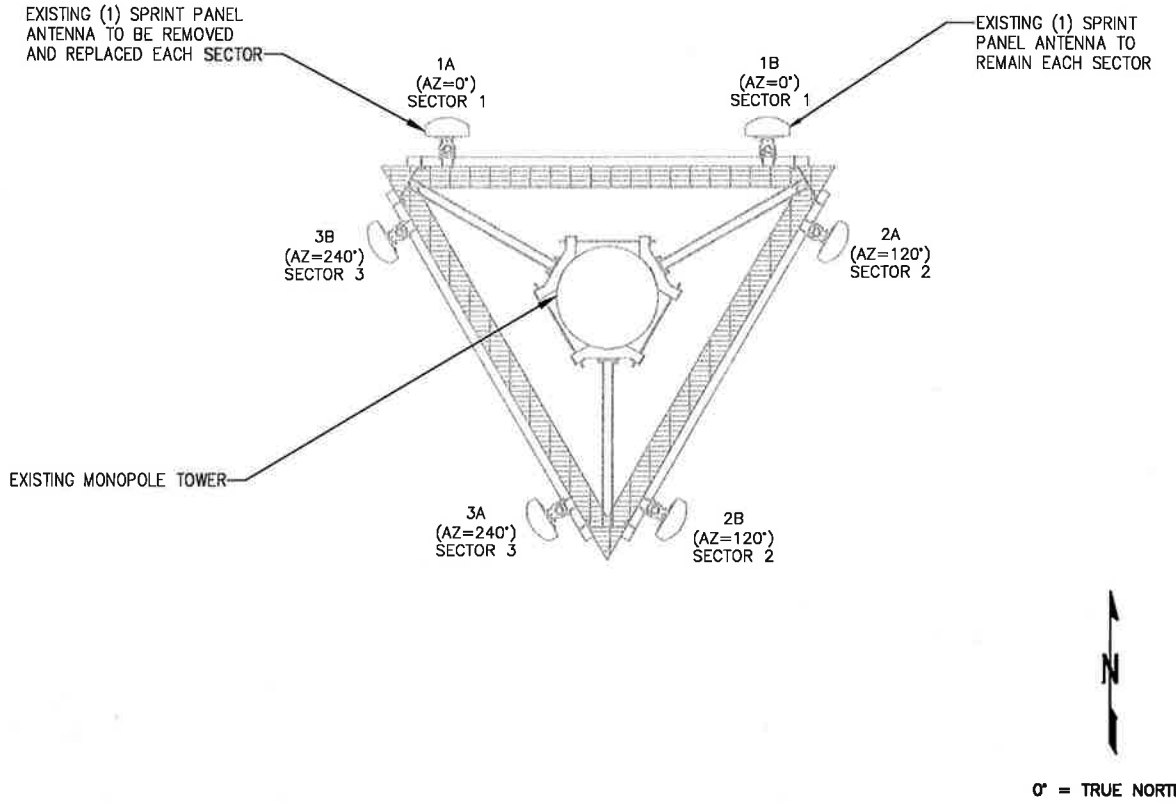
CT33XC573

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ANTENNA LAYOUT & MOUNTING DETAILS

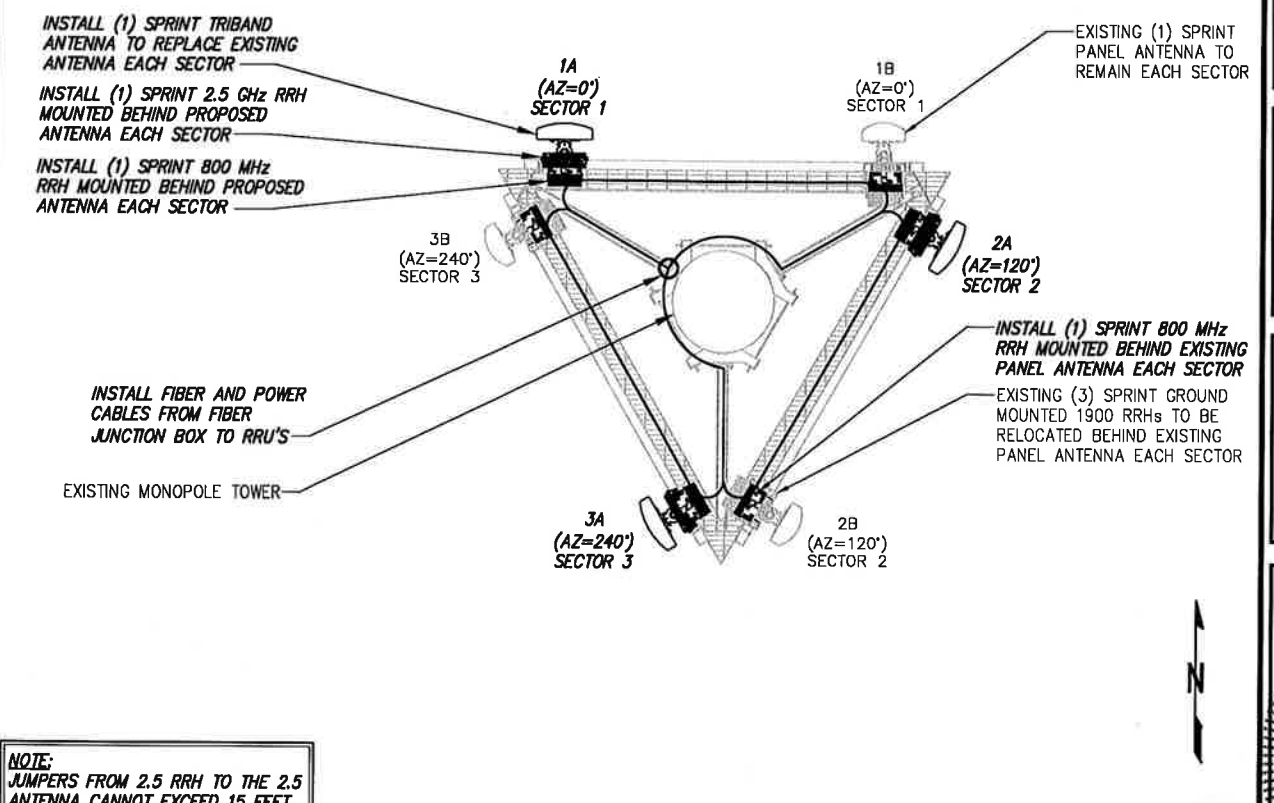
A-3

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



EXISTING ANTENNA LAYOUT

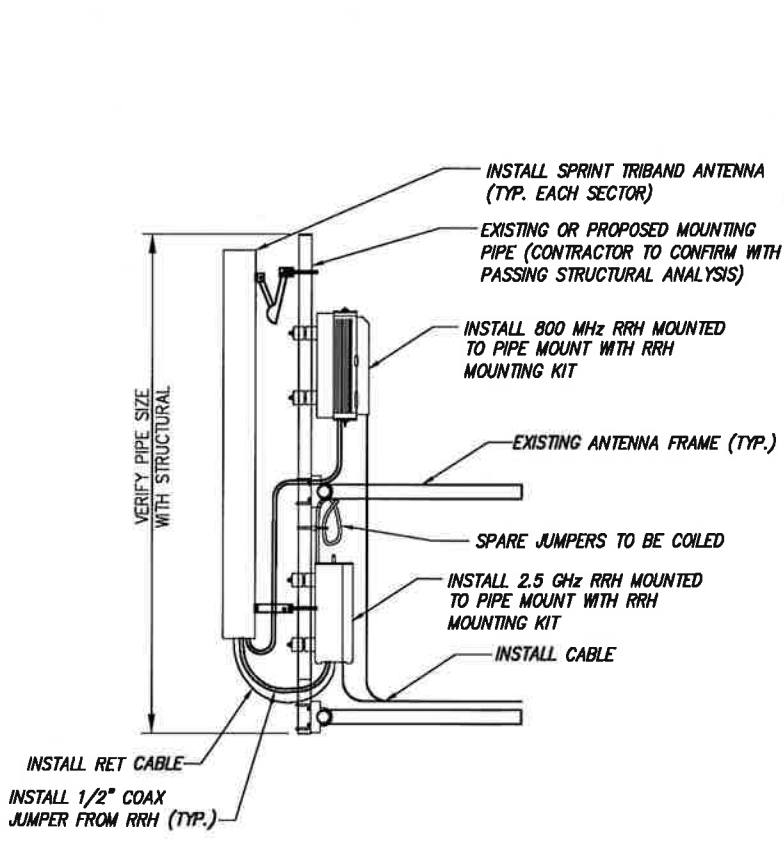
NO SCALE 1



FINAL ANTENNA AND RRH LAYOUT

NO SCALE 2

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



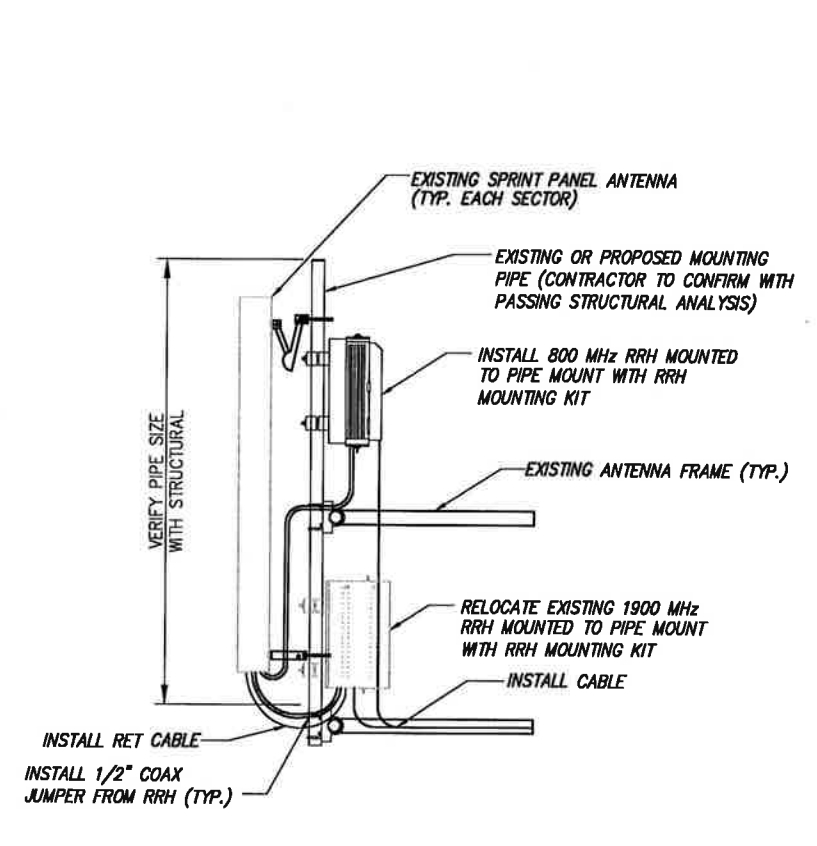
TYPICAL ANTENNA & RRH MOUNTING DETAILS

NO SCALE 3

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.



TYPICAL ANTENNA & RRH MOUNTING DETAILS

NO SCALE 4

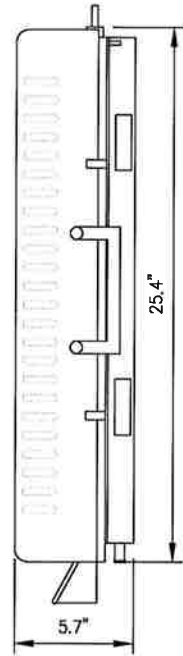
NOTE: CONTRACTOR TO POSITION RRH ON MOUNT BEHIND ANTENNA SUCH THAT THE RRH DOES NOT INTERFERE WITH THE EXISTING PLATFORM/T-ARM MOUNTING HARDWARE.

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

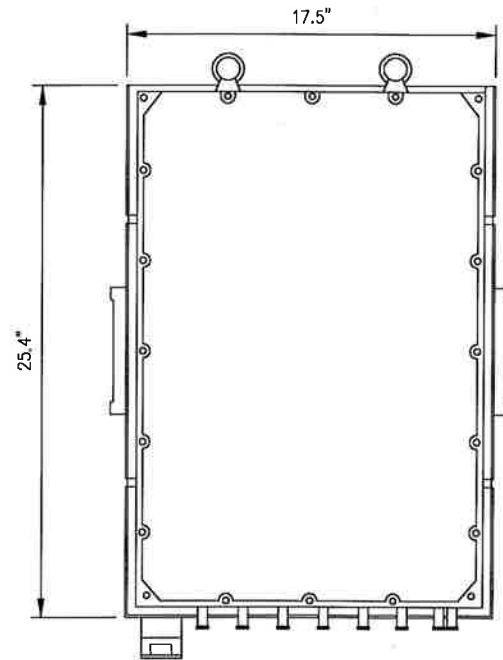
- NOTES:
- CUT DC CONDUCTORS TO LENGTH.
  - COIL FIBER CABLE AND SECURE AT SIDE OF RRH.
  - DO NOT EXCEED BEND RADIUS.

RRH: ALCATEL LUCENT TD-RRH8X20

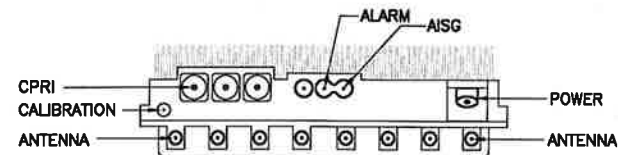
COLOR: LIGHT GREY  
WEIGHT: 70 LBS.



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.

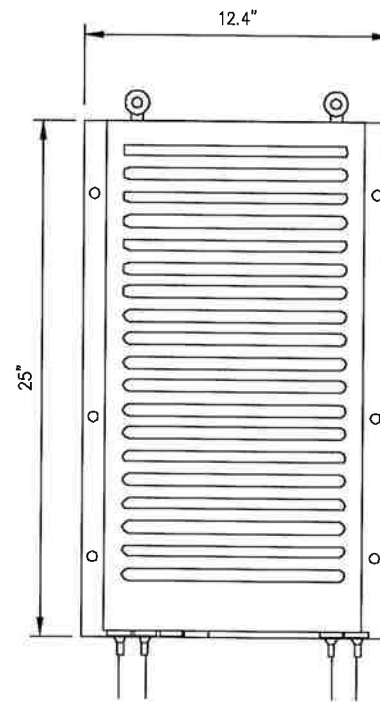
2.5 RRH'S

NO SCALE

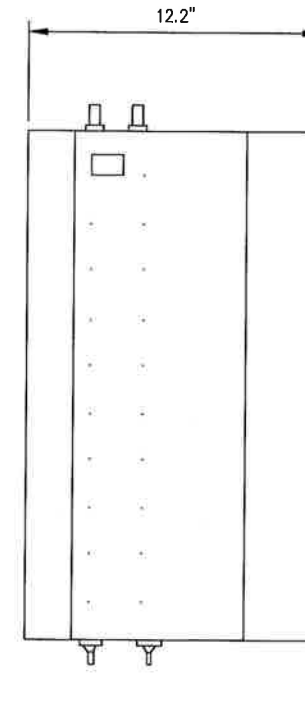
1

RRH: ALCATEL LUCENT 1900 MHz

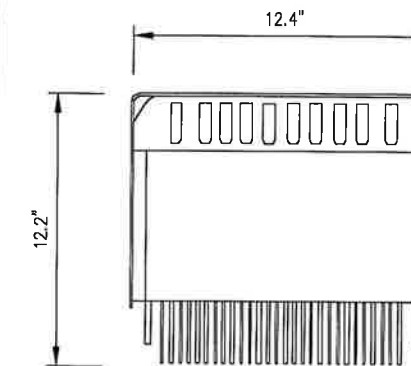
COLOR: LIGHT GREY  
WEIGHT: 70 LBS.  
(INCLUDING OPTIONAL SOLAR SHIELD)



FRONT VIEW



SIDE VIEW



TOP VIEW

1900 MHz RRH

NO SCALE

2

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PROJECT MANAGER:

**AIRSMITH**  
DEVELOPMENT

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SHEET DESCRIPTION:

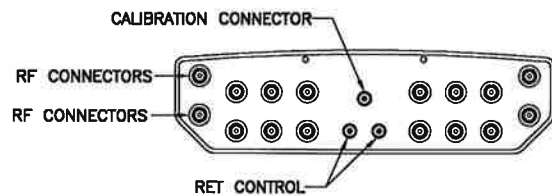
EQUIPMENT &  
MOUNTING DETAILS

SHEET NUMBER:

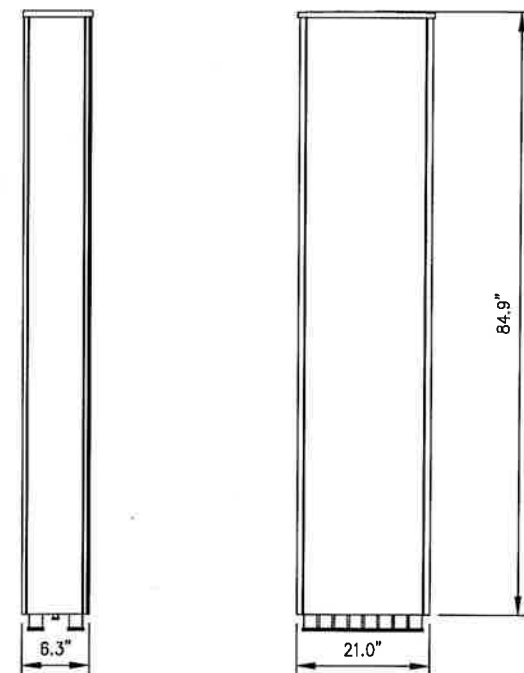
A-4

**ANTENNA KMW ETCR-654L12H6**

RADOME MATERIAL: ASA  
RADOME COLOR: LIGHT GREY  
DIMENSIONS, HxWxD.in(mim): 84.9"x21.0"x6.3" (2156x533x160mm)  
WEIGHT: 84.9 lbs  
CONNECTORS: (8) 7/16" DIN FEMALE  
(8) MINI DIN FEMALE  
(1) N TYPE(CAL PORT, FEMALE)



PLAN VIEW



SIDE VIEW

FRONT VIEW

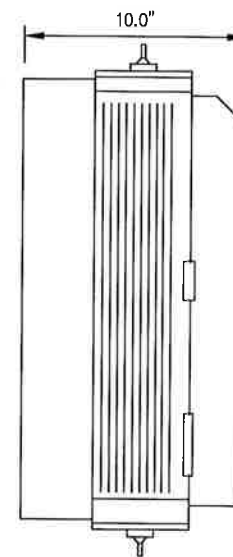
TRIBAND ANTENNA

NO SCALE

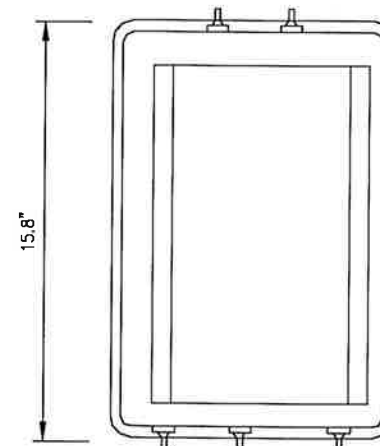
3

**RRH: ALCATEL LUCENT RRH 800 MHz 2x50W**

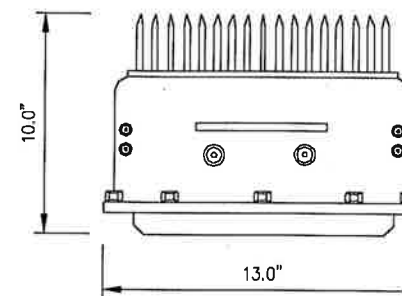
COLOR: LIGHT GREY  
WEIGHT: 53 LBS.



SIDE VIEW



FRONT VIEW



PLAN VIEW

800 MHz RRH

NO SCALE

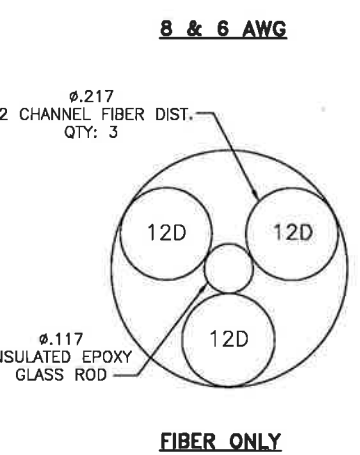
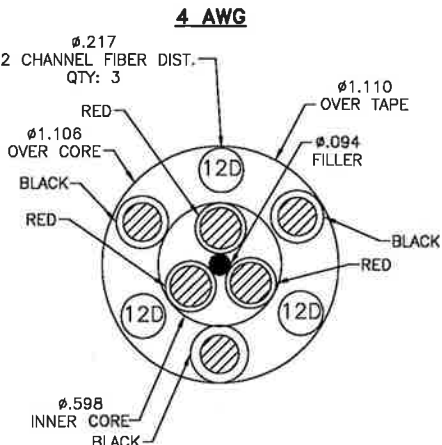
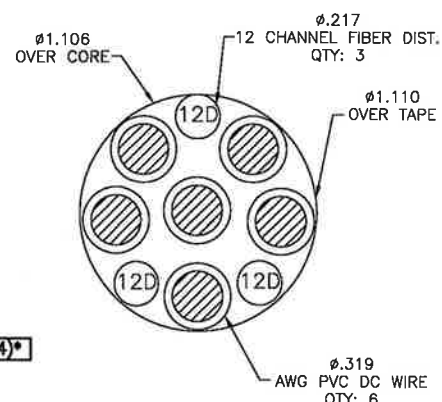
4

**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.

**RFS HYBRIFLEX RISER CABLE SCHEDULE**

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

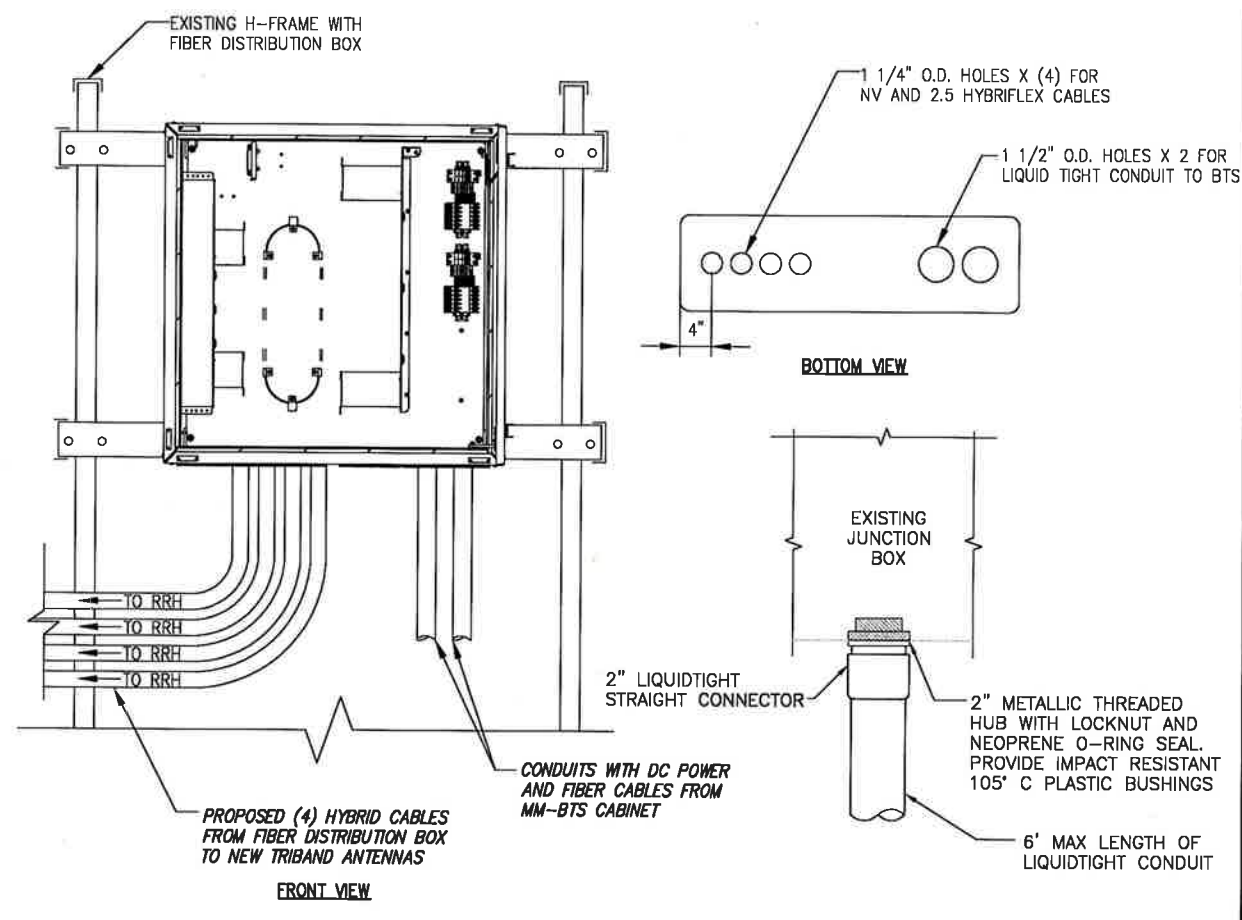


**RFS HYBRIFLEX JUMPER CABLE SCHEDULE**

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

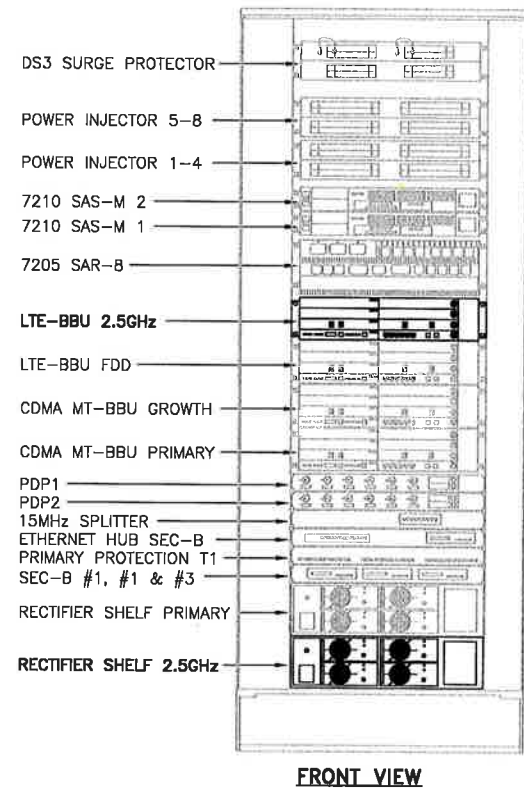
**NOTE:**  
SPRINT CM TO CONFIRM HYBRID OR FIBER RISER CABLE AND HYBRID OR FIBER JUMPER CABLE MODEL NUMBERS IF HYBRID CABLES ARE REQUIRED BEFORE PREPARING BOM.

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



**FIBER JUNCTION BOX & PENETRATION**

NO SCALE 2



**FRONT VIEW**

**NEW EQUIPMENT IN EXISTING CABINET**

NO SCALE 3

**800/1900/2500 CABLE CROSS SECTION DATA**

NO SCALE 1

PLANS PREPARED FOR:

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SITE NAME:

**ANDOVER / NEXTEL**

SITE NUMBER:

**CT33XC573**

SITE ADDRESS:

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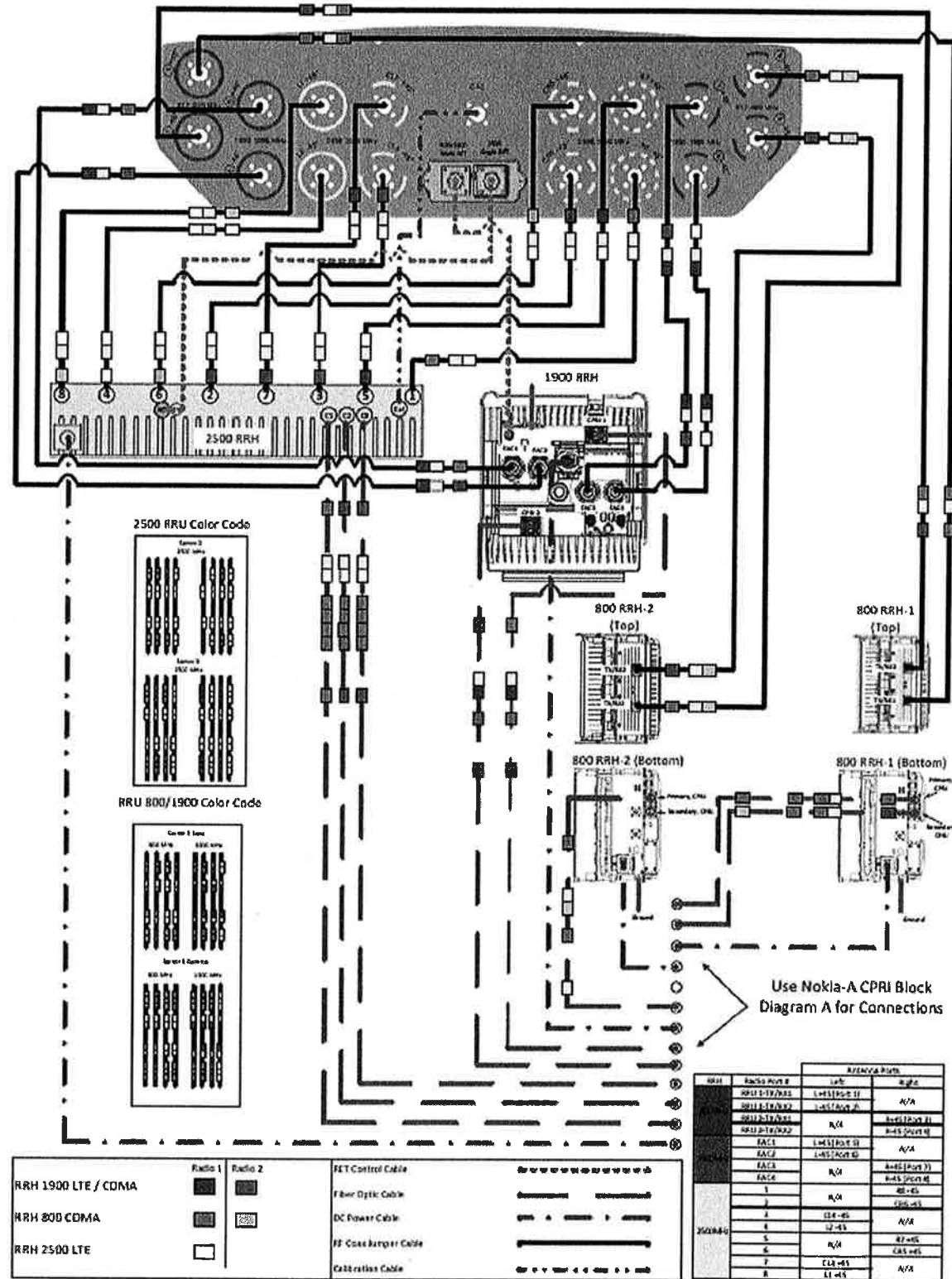
SHEET DESCRIPTION:

**CIVIL DETAILS**

SHEET NUMBER:

**A-5**

KMW 16 Port Nokia-A RRH 800, 1900, and 2500 (Sprint Scenario 4)



Not to Scale

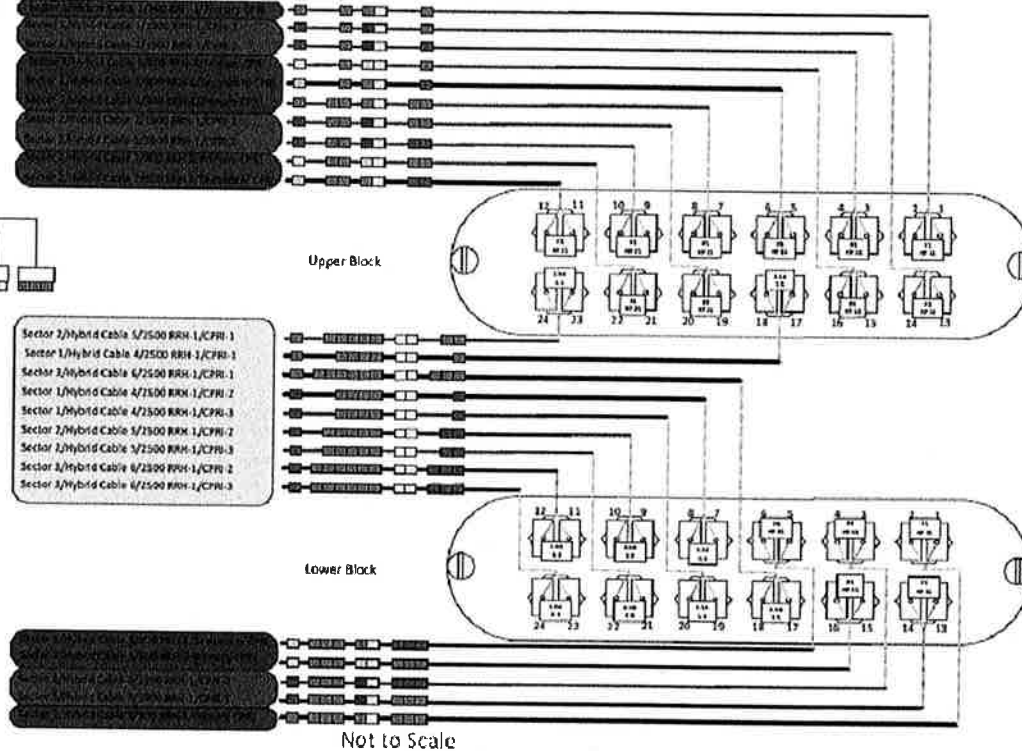
Each Sector is Equipped with:  
Two 800 RRH  
One 1900 RRH  
One 2500 RRH

Sector Number  
Frequency/Radio  
Hybrid Cable Number  
Fiber Pair Cable Number

Sector	Radio	Hybrid Cable	Fiber Pair	Notes
1	2500	1	1	
1	1900	2	2	
1	800	3	3	
2	2500	4	4	
2	1900	5	5	
2	800	6	6	
3	2500	7	7	
3	1900	8	8	
3	800	9	9	

Frequency	Radio	Notes
2500 MHz	2500	
1900 MHz	1900	
800 MHz	800	

CPRI Block Connections for Sprint Scenario 4



RRH	Radio	ATENCA	Port
1900	1900	L-451 Port 1	A/A
1900	1900	L-451 Port 2	A/A
1900	1900	L-451 Port 3	A/A
1900	1900	L-451 Port 4	A/A
1900	1900	L-451 Port 5	A/A
1900	1900	L-451 Port 6	A/A
1900	1900	L-451 Port 7	A/A
1900	1900	L-451 Port 8	A/A
1900	1900	L-451 Port 9	A/A
1900	1900	L-451 Port 10	A/A
1900	1900	L-451 Port 11	A/A
1900	1900	L-451 Port 12	A/A
1900	1900	L-451 Port 13	A/A
1900	1900	L-451 Port 14	A/A
1900	1900	L-451 Port 15	A/A
1900	1900	L-451 Port 16	A/A
1900	1900	L-451 Port 17	A/A
1900	1900	L-451 Port 18	A/A
1900	1900	L-451 Port 19	A/A
1900	1900	L-451 Port 20	A/A
1900	1900	L-451 Port 21	A/A
1900	1900	L-451 Port 22	A/A
1900	1900	L-451 Port 23	A/A
1900	1900	L-451 Port 24	A/A
1900	1900	L-451 Port 25	A/A
1900	1900	L-451 Port 26	A/A
1900	1900	L-451 Port 27	A/A
1900	1900	L-451 Port 28	A/A
1900	1900	L-451 Port 29	A/A
1900	1900	L-451 Port 30	A/A
1900	1900	L-451 Port 31	A/A
1900	1900	L-451 Port 32	A/A

PLANS PREPARED FOR:

# Sprint

PLANS PREPARED BY:

## INFINIGY

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Phone: 518-690-0790 | Fax: 518-690-0793  
www.infinigy.com  
JOB NUMBER 526-104

PROJECT MANAGER:

## AIRSMITH DEVELOPMENT

32 CLINTON ST.  
SARATOGA SPRINGS, NY 12866  
OFFICE# (518) 306-3740

ENGINEERING LICENSE:

STATE OF CONNECTICUT  
JOHN S. SMITH  
DEC 22 2017  
No. 24705  
PROFESSIONAL ENGINEER

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REVISIONS:

DESCRIPTION	DATE	BY	REV.

ISSUED FOR PERMIT: 12/22/17 JDL 0

SITE NAME:

ANDOVER / NEXTEL

SITE NUMBER:

CT33XC573

SITE ADDRESS:

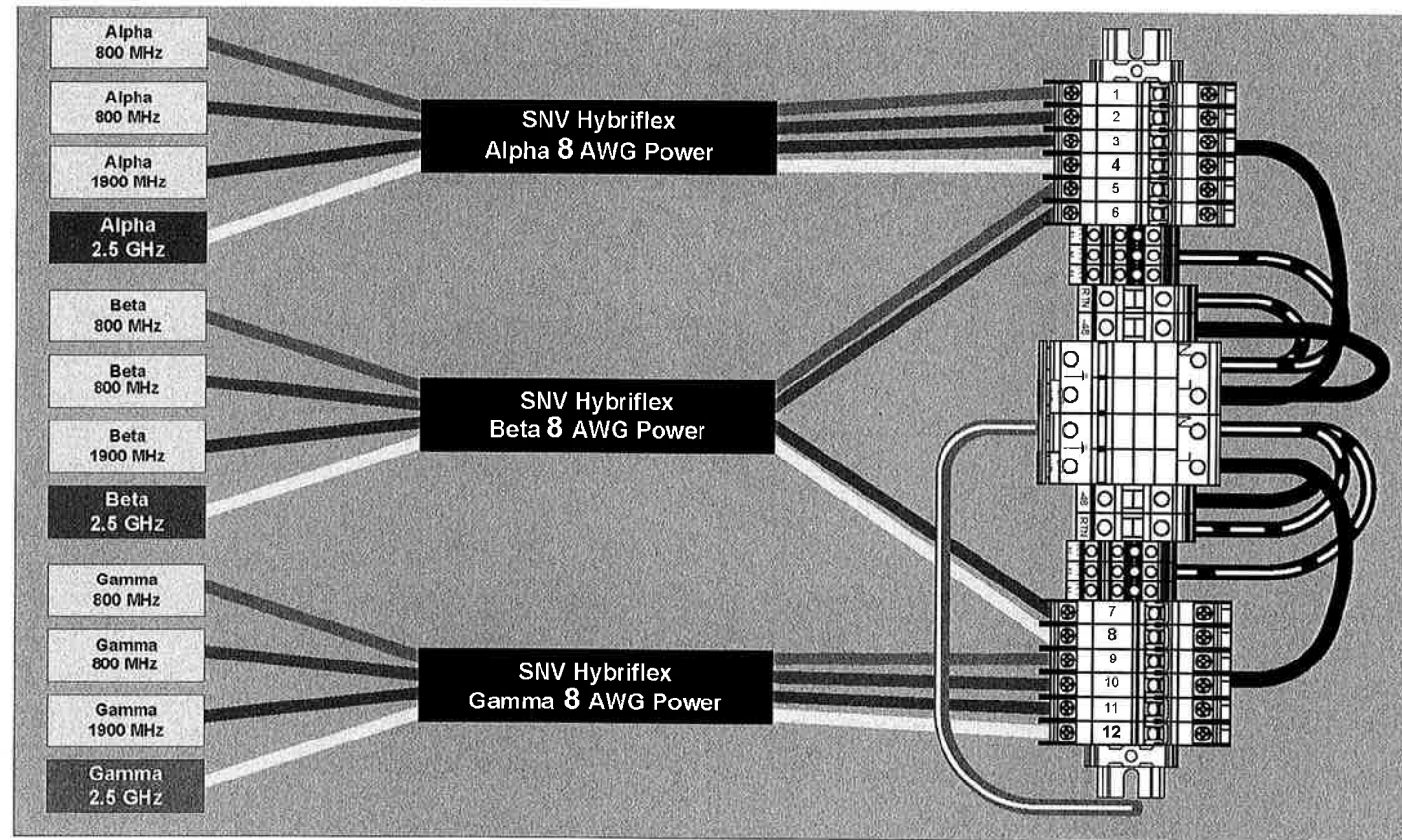
104 BUNKER HILL RD.  
ANDOVER, CT 06232

SHEET DESCRIPTION:

PLUMBING DIAGRAM

SHEET NUMBER:

A-6



RRH TO DISTRIBUTION BOX POWER CONNECTIVITY

NO SCALE

1

**LEGEND:**

- EXISTING GROUND RING
- CADWELD CONNECTION (EXOTHERMIC WELD)
- ▲ MECHANICAL CONNECTION
- ⊗ GROUND ROD
- CABLE GROUND KIT

BOND INSTALL ANTENNA TO SECTOR GROUND BAR PER MANUFACTURER'S SPECIFICATIONS



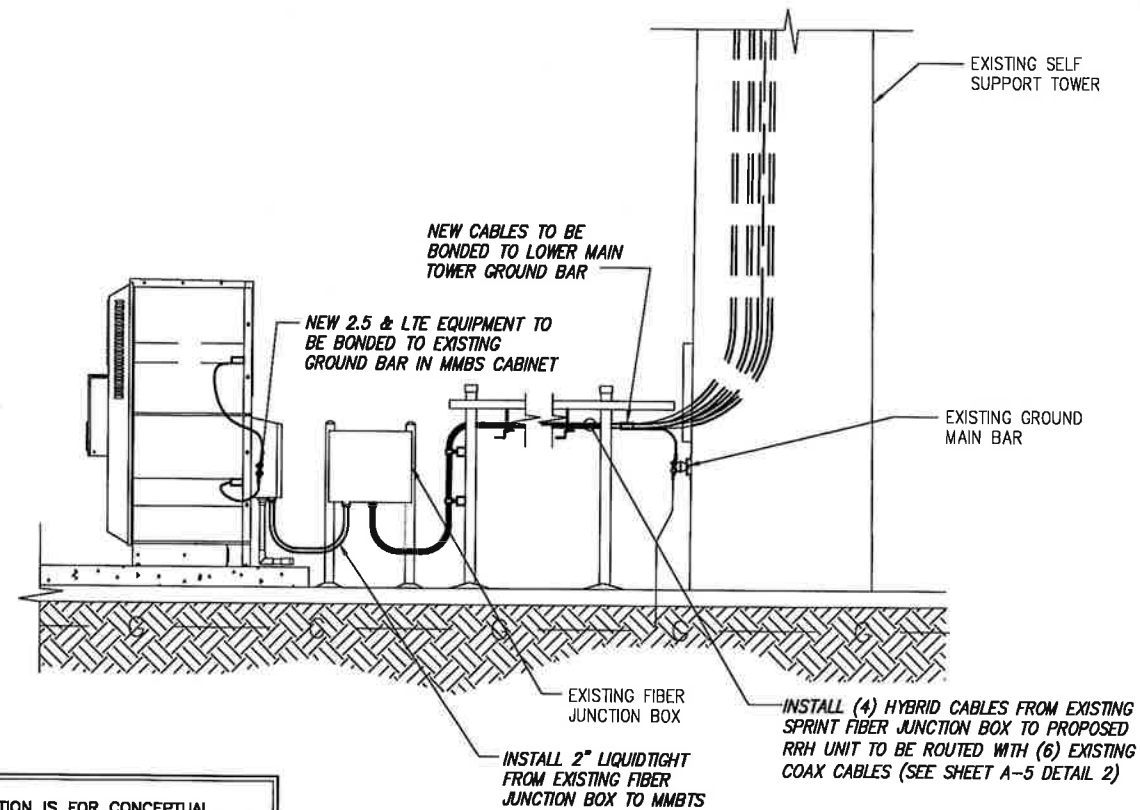
BOND RRU TO SECTOR BAR PER MANUFACTURER'S SPECIFICATIONS

EXISTING SPRINT TOWER GROUND BAR (CONTRACTOR TO VERIFY)

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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JOB NUMBER 526-104

PROJECT MANAGER:



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SARATOGA SPRINGS, NY 12886  
OFFICE# (518) 306-3740

ENGINEERING LICENSE:



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ISSUED FOR PERMIT		12/22/17	JDL	0

SITE NAME:

ANDOVER / NEXTEL

SITE NUMBER:

CT33XC573

SITE ADDRESS:

104 BUNKER HILL RD.  
ANDOVER, CT 06232

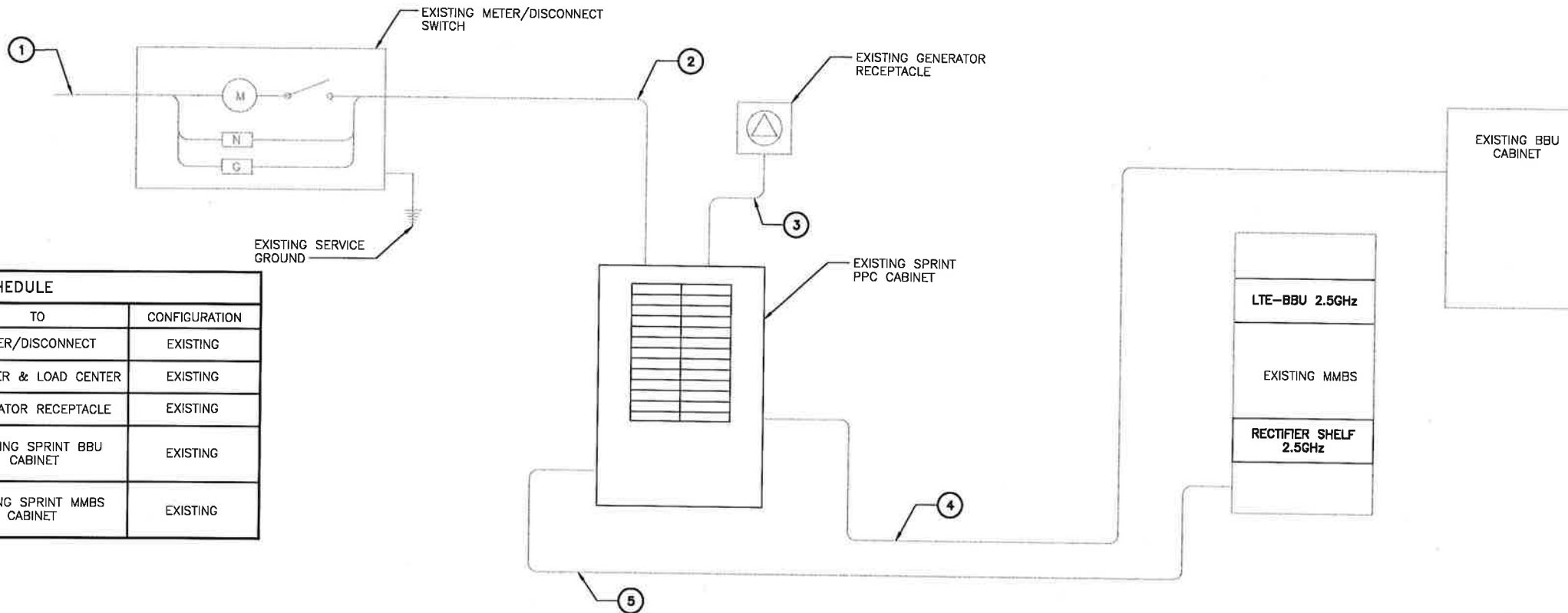
SHEET DESCRIPTION:

ELECTRICAL &  
GROUNDING PLAN

SHEET NUMBER:

E-1

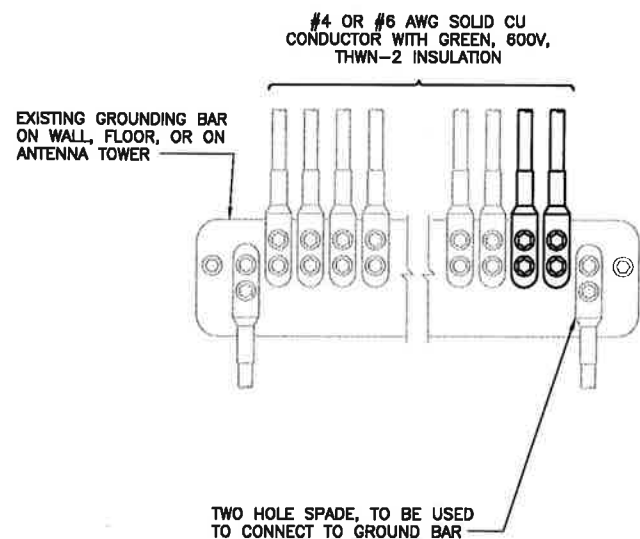
**NOTES**  
 CG SHALL REFERENCE ALL SPECS FOR "CONNECTING THE POWER SUPPLY" OF THE NEW INSTALLATION DOCUMENTS, FOR ALL CONNECTION SPECIFICATIONS.



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

ELECTRICAL ONE-LINE DIAGRAM

NO SCALE 1

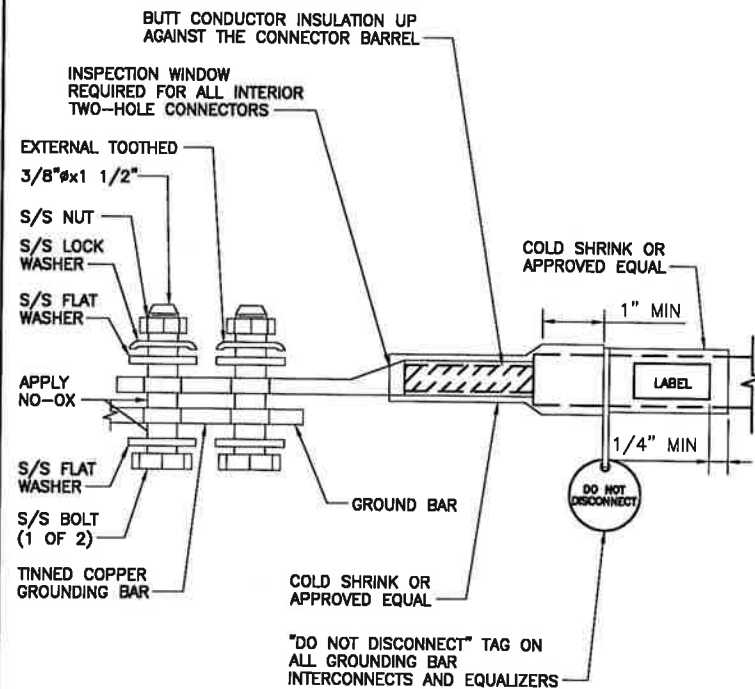


**NOTES**  
 1. APPLY NO-OX TO LUG AND BAR CONTACT SURFACE. DO NOT COAT INLINE LUG.  
 2. IF STOLEN GROUND BARS ARE ENCOUNTERED, CONTACT SPRINT CM FOR REPLACEMENT THREADED ROD KIT.

INSTALLATION OF GROUNDING CONDUCTOR TO GROUNDING BAR

NO SCALE

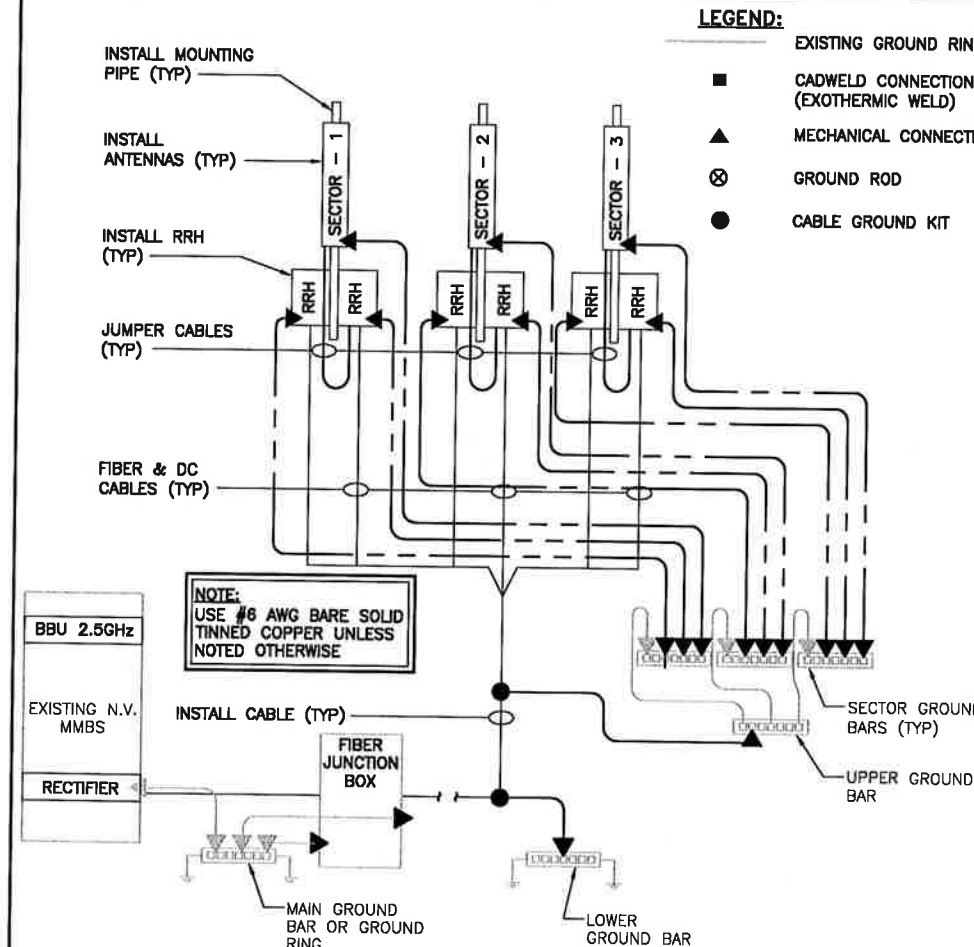
2



TWO HOLE LUG

NO SCALE

3



GROUNDING RISER DIAGRAM

NO SCALE

4



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 www.infinigy.com  
 JOB NUMBER 525-104

PROJECT MANAGER:  
**AIROSMITH**  
 DEVELOPMENT  
 32 CLINTON ST.  
 SARATOGA SPRINGS, NY 12868  
 OFFICE# (518) 308-3740



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SITE NAME:  
**ANDOVER / NEXTEL**

SITE NUMBER:  
**CT33XC573**

SITE ADDRESS:  
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 ANDOVER, CT 06232**

SHEET DESCRIPTION:  
**ELECTRICAL &  
 GROUNDING DETAILS**

SHEET NUMBER:  
**E-2**