



February 12<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 864 OPENING HILL ROAD, MADISON, CT 06443 – CT03XC164 (lat. 41° 21' 26.33" N, long. -72° 38' 19.51" W)**

Dear Ms. Bachman:

Sprint Spectrum, LP ("Sprint") currently maintains wireless telecommunications antennas at the (150-foot level) on an existing (199-foot self-support tower) at the above-referenced address. The property is owned by JAY SHERWOOD, 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 and add three (3) new RRHs onto the tower. All the proposed work is contained within the existing fenced area. Please refer to the attached drawings for site plans prepared by Infinigy Engineering.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to TOM BANISCH, FIRST SELECTMAN, and DAVID ANDERSON, TOWN PLANNER of the Town of MADISON. A copy of this letter is also being sent to JUSTINE PAUL the manager for AMERICAN TOWER CORPORATION who manages the site and to the NO. MADISON VOLUNTEER FIRE DEPARTMENT who owns the land.

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,

A handwritten signature in black ink, appearing to read 'Arthur Perkowski', is written over a light blue circular scribble.

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: TOM BANISCH (FIRST SELECTMAN, MADISON, CT)  
JUSTINE PAUL (Manager, AMERICAN TOWER CORPORATION)  
DAVID ANDERSON (Town Planner / MADISON, CT)  
NO. MADISON VOLUNTEER FIRE DEPARTMENT (Land Owner)



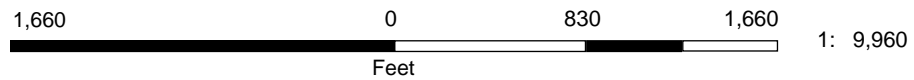
# No. Madison Volunteer Fire Co Inc.



Legend

Location

Notes



This product is for informational purposes and may not have been prepared for, or be suitable for legal, engineering, or surveying purposes. Users of this information should review or consult the primary data and information sources to ascertain the usability of the information.



# OPENING HILL RD

**Location** OPENING HILL RD

**Mblu** 134/ 18/ //

**Acct#** 00665800

**Owner** NORTH MADISON  
VOLUNTEER FIRE DEPT INC

**Assessment** \$93,800

**Appraisal** \$134,000

**PID** 7029

**Building Count** 1

## Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2015	\$0	\$134,000	\$134,000

Assessment			
Valuation Year	Improvements	Land	Total
2015	\$0	\$93,800	\$93,800

## Owner of Record

**Owner** NORTH MADISON VOLUNTEER FIRE DEPT INC

**Sale Price** \$0

**Co-Owner**

**Certificate**

**Book & Page** 196/ 851

**Sale Date**

## Ownership History

Ownership History				
Owner	Sale Price	Certificate	Book & Page	Sale Date
NORTH MADISON VOLUNTEER FIRE DEPT INC	\$0		196/ 851	

## Building Information

### Building 1 : Section 1

**Year Built:**

**Living Area:** 0

Building Attributes	
Field	Description
Style	Vacant Land
Model	
Stories:	



Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Xtra Fixtrs:	
Total Rooms:	
Fireplace(s)	
Xtra FPL Open	

### Building Photo



(http://images.vgsi.com/photos/MadisonCTPhotos//\01\00\72\61

### Building Layout

Building Layout

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

### Extra Features

Extra Features	Legend
No Data for Extra Features	

### Land

#### Land Use

**Use Code** 9030  
**Description** Municipal  
**Zone** RU-1

#### Land Line Valuation

**Size (Acres)** 4.23  
**Depth** 0

### Outbuildings

Outbuildings	Legend
No Data for Outbuildings	

### Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2016	\$0	\$134,000	\$134,000

**Assessment**

<b>Valuation Year</b>	<b>Improvements</b>	<b>Land</b>	<b>Total</b>
2016	\$0	\$93,800	\$93,800

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

SPRINT Existing Facility

Site ID: CT03XC164

N. Madison / Vol. Fire Dept.  
(1173-1245) Durham Road  
Madison, CT 06443

**August 31, 2017**

**EBI Project Number: 6217003876**

Site Compliance Summary	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general population allowable limit:	<b>11.18 %</b>





August 31, 2017

SPRINT

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

Emissions Analysis for Site: **CT03XC164 – N. Madison / Vol. Fire Dept.**

EBI Consulting was directed to analyze the proposed SPRINT facility located at **(1173-1245) Durham Road, Madison, 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.

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 **(1173-1245) Durham Road, Madison, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since SPRINT is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

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



- 6) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 7) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 8) The antennas used in this modeling are the **RFS APXVSP18-C-A20** and the **RFS APXVTM14-C-I20** for transmission in the 850 MHz, 1900 MHz (PCS) and 2500 MHz (BRS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 9) The antenna mounting height centerlines of the proposed antennas are **150 feet** above ground level (AGL) for **Sector A**, **150 feet** above ground level (AGL) for **Sector B** and **150 feet** above ground level (AGL) for Sector C.
- 10) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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





## SPRINT Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	<b>1</b>	Antenna #:	<b>1</b>	Antenna #:	<b>1</b>
Make / Model:	RFS APXVSPPI8-C-A20	Make / Model:	RFS APXVSPPI8-C-A20	Make / Model:	RFS APXVSPPI8-C-A20
Gain:	13.4 / 15.9 dBd	Gain:	13.4 / 15.9 dBd	Gain:	13.4 / 15.9 dBd
Height (AGL):	<b>150 feet</b>	Height (AGL):	<b>150 feet</b>	Height (AGL):	<b>150 feet</b>
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	10	Channel Count	10	Channel Count	10
Total TX Power(W):	220 Watts	Total TX Power(W):	220 Watts	Total TX Power(W):	220 Watts
ERP (W):	7,537.38	ERP (W):	7,537.38	ERP (W):	7,537.38
Antenna A1 MPE%	<b>1.48 %</b>	Antenna B1 MPE%	<b>1.48 %</b>	Antenna C1 MPE%	<b>1.48 %</b>
Antenna #:	<b>2</b>	Antenna #:	<b>2</b>	Antenna #:	<b>2</b>
Make / Model:	RFS APXVTM14-C-I20	Make / Model:	RFS APXVTM14-C-I20	Make / Model:	RFS APXVTM14-C-I20
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	<b>150 feet</b>	Height (AGL):	<b>150 feet</b>	Height (AGL):	<b>150 feet</b>
Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)
Channel Count	8	Channel Count	8	Channel Count	8
Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts
ERP (W):	6,224.72	ERP (W):	6,224.72	ERP (W):	6,224.72
Antenna A2 MPE%	<b>1.08 %</b>	Antenna B2 MPE%	<b>1.08 %</b>	Antenna C2 MPE%	<b>1.08 %</b>

Site Composite MPE%	
Carrier	MPE%
SPRINT – Max per sector	<b>2.56 %</b>
AT&T	2.59 %
Verizon Wireless	6.03 %
<b>Site Total MPE %:</b>	<b>11.18 %</b>

SPRINT Sector A Total:	2.56 %
SPRINT Sector B Total:	2.56 %
SPRINT Sector C Total:	2.56 %
<b>Site Total:</b>	<b>11.18 %</b>

SPRINT _ Max Values per Frequency Band / Technology Per Sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ( $\mu\text{W}/\text{cm}^2$ )	Frequency (MHz)	Allowable MPE ( $\mu\text{W}/\text{cm}^2$ )	Calculated % MPE
Sprint 850 MHz CDMA	1	437.55	150	0.76	850 MHz	567	0.13%
Sprint 850 MHz LTE	2	437.55	150	1.52	850 MHz	567	0.27%
Sprint 1900 MHz (PCS) CDMA	5	622.47	150	5.40	1900 MHz (PCS)	1000	0.54%
Sprint 1900 MHz (PCS) LTE	2	1,556.18	150	5.40	1900 MHz (PCS)	1000	0.54%
Sprint 2500 MHz (BRS) LTE	8	778.09	150	10.79	2500 MHz (BRS)	1000	1.08%
<b>Total:</b>						<b>2.56%</b>	



## Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general population exposure to RF Emissions.

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

SPRINT Sector	Power Density Value (%)
Sector A:	2.56 %
Sector B:	2.56 %
Sector C:	2.56 %
SPRINT Maximum Total (per sector):	2.56 %
Site Total:	11.18 %
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **11.18 %** 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** : 180 ft Self Supported Tower  
**ATC Site Name** : North Madison Volunteer FD, CT  
**ATC Site Number** : 383660  
**Engineering Number** : 12163181\_C3\_01  
**Proposed Carrier** : Sprint Nextel  
**Carrier Site Name** : N. Madison / Vol. Fire Dept.  
**Carrier Site Number** : CT03XC164-A  
**Site Location** : 864 Opening Hill Road  
Madison, CT 06443-0000  
41.356900,-72.640100  
**County** : New Haven  
**Date** : October 26, 2017  
**Max Usage** : 64%  
**Result** : Pass

Prepared By:  
Robert D. Barrett, E.I.  
Structural Engineer I

*Robert D. Barrett*

Reviewed By:

**COA: PEC.0001553**





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## Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 180 ft self supported tower to reflect the change in loading by Sprint Nextel.

## Supporting Documents

<b>Tower Drawings</b>	Rohn Drawing #C981756, dated December 2, 1998
<b>Foundation Drawing</b>	Rohn Drawing #A992935-1, dated July 21, 1999
<b>Geotechnical Report</b>	Clarence Welti Assoc. Job #35130AE, dated June 9, 1997

## 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/ 3/4" radial ice concurrent
<b>Code:</b>	ANSI/TIA-222-G / 2012 IBC / 2016 Connecticut State Building Code
<b>Structure Class:</b>	II
<b>Exposure Category:</b>	B
<b>Topographic Category:</b>	1
<b>Spectral Response:</b>	$S_s = 0.17, S_1 = 0.06$
<b>Site Class:</b>	D - Stiff Soil

## Conclusion

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

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



**Existing and Reserved Equipment**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
180.0	190.8	2	RFS PD455	Side Arms	(3) 7/8" Coax (1) 1/2" Coax (1) 2" Conduit (1) 1" Conduit	--
	186.0	1	4-Bay Dipole			
	183.0	1	2-Bay Dipole			
170.0	170.0	3	Alcatel Lucent RRH ALU 4X45 AWS	Sector Frames	(12) 1 5/8" Coax (2) 1 5/8" Hybrid (1) 1 1/4" Coax	Verizon Wireless
		3	ALU RRH2X60PCS			
		3	ALU RRH4X60LTE			
		6	Commscope SBNHH-1D65B			
		3	Commscope LNX6514DS-A1M			
		1	Andrew 8' MW Dish			
		1	Antel BXA-70063/6CF			
		2	Antel BXA-70063/4CF			
		6	RFS FD9R6004/2C-3L			
		2	RFS DB-T1-6Z-8AB-0Z			
160.0	160.0	12	Andrew DB844H90E-XY	Sector Frames	(12) 1 5/8" Coax	Sprint Nextel
150.0	150.0	3	ALU 800MHz 2X50W RRH w/ Filter	Sector Frames	(3) 1 1/4" Hybriflex	
		3	ALU 1900MHz 4X45 RRH			
		3	RFS APXVSP18-C-A20			
140.0	140.0	1	Raycap DC6-48-60-18-8F	Sector Frames	(12) 1 1/4" Coax (2) 0.76" 8 AWG 6 (1) 0.39" Fiber	AT&T Mobility
		6	Ericsson RRUS-11			
		6	KMW AM-X-CD-16-65-00T-RET			
		6	Powerwave LGP21901			
		6	Powerwave LGP21401			
		6	Powerwave 7770			
130.0	130.0	3	RFS ATMAP1412D-1A120	T-Arms	(12) 1 5/8" Coax	T-Mobile
		3	Commscope LNX-6515DS-VTM			
		3	EMS RR90_17_02DP			
125.0	125.0	1	Sinclair SC323-HF2LDF	Side Arm	(1) 7/8" Coax	Town of Madison, CT
90.0	90.0	1	RFI FSA10-67-DIN	Side Arms	(2) 7/8" Coax	
		1	Sinclair SC323-HF2LDF			
75.0	75.0	1	PCTEL GPS-TMG-HR-26N	Stand-Off	(1) 1/2" Coax	Sprint Nextel

**Equipment to be Removed**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
150.0	150.0	6	Andrew DB980H90E-M	-	(6) 1 5/8" Coax	Sprint Nextel



**Proposed Equipment**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
150.0	150.0	3	ALU TD-RRH8X20	Sector Frames	(1) 1 1/4" Hybriflex	Sprint Nextel
		3	RFS APXVTM14-C-I20			

<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 alongside existing Sprint Nextel coax.

**Structure Usages**

Structural Component	Controlling Usage	Pass/Fail
Legs	49%	Pass
Diagonals	64%	Pass
Horizontals	51%	Pass
Anchor Bolts	36%	Pass
Leg Bolts	46%	Pass

**Foundations**

Reaction Component	Analysis Reactions	% of Usage
Uplift (Kips)	282.3	58%
Axial (Kips)	323.3	26%
Shear (Kips)	38.2	10%

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, Twist and Sway\***

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Twist (°)	Sway (Rotation) (°)
170.0	Andrew 8' MW Dish	Verizon Wireless	0.172	0.007	0.118
150.0	ALU TD-RRH8X20	Sprint Nextel	0.132	0.006	0.111
	RFS APXVTM14-C-I20				

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



## **Standard Conditions**

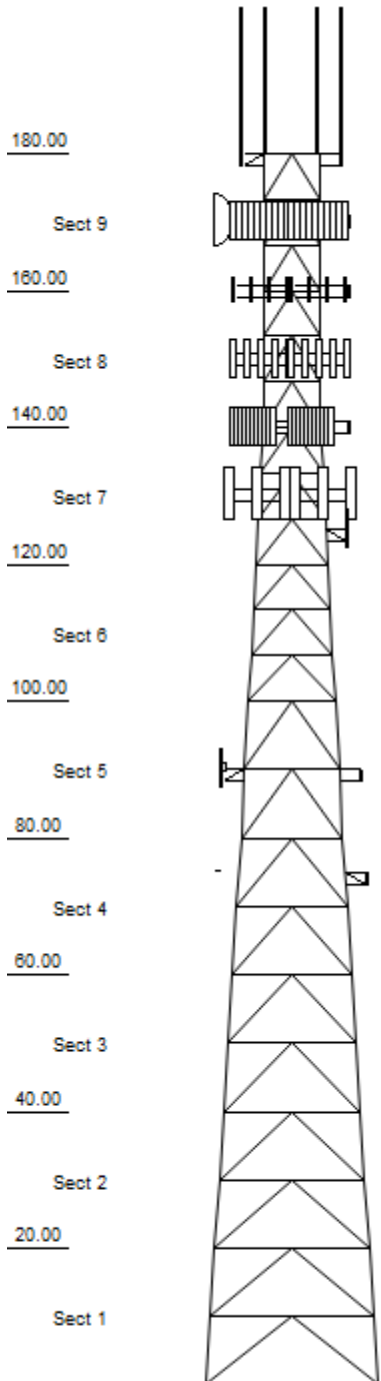
All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessary limited, to:

- 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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Loads: 101 mph no ice  
 50 mph w/ 3/4" radial ice  
 Site Class: D Ss: 0.17 S1: 0.06  
 60 mph Serviceability

Job Information			
Tower : 383660	Location : North Madison Volunteer FD, CT		
Code : ANSI/TIA-222-G	Shape : Triangle	Base Width : 25.33 ft	
Client : Sprint Nextel			Top Width : 8.54 ft

Sections Properties				
Section	Leg Members		Diagonal Members	Horizontal Members
1	PX 50 ksi	10" DIA PIPE	PX 50 ksi 3-1/2" DIA PIPE	PST 50 ksi 3" DIA PIPE
2	PX 50 ksi	10" DIA PIPE	PST 50 ksi 3" DIA PIPE	PST 50 ksi 2-1/2" DIA PIPE
3	PX 50 ksi	8" DIA PIPE	PST 50 ksi 3" DIA PIPE	PST 50 ksi 2-1/2" DIA PIPE
4	PX 50 ksi	8" DIA PIPE	PST 50 ksi 3" DIA PIPE	PST 50 ksi 2" DIA PIPE
5	PSP 50 ksi	ROHN 8 EHS	PST 50 ksi 3" DIA PIPE	PST 50 ksi 2" DIA PIPE
6	PSP 50 ksi	ROHN 6 EHS	PST 50 ksi 2-1/2" DIA PIPE	PST 50 ksi 2" DIA PIPE
7	PSP 50 ksi	ROHN 5 EH	PX 50 ksi 2" DIA PIPE	PST 50 ksi 1-1/2" DIA PIPE
8	PX 50 ksi	4" DIA PIPE	PX 50 ksi 2" DIA PIPE	PST 50 ksi 1-1/2" DIA PIPE
9	PST 50 ksi	3" DIA PIPE	PST 50 ksi 2" DIA PIPE	PST 50 ksi 1-1/2" DIA PIPE

Discrete Appurtenance				
Elev (ft)	Type	Qty	Description	
180.00	Whip	1	2-Bay	Dipole
180.00	Whip	1	4-Bay	Dipole
180.00	Whip	2	RFS PD455	
180.00	Straight Arm	3	Flat Side Arm	
170.00	Panel	3	Alcatel Lucent RRH ALU 4X45 AW	
170.00	Panel	3	ALU RRH2X60PCS	
170.00	Panel	3	ALU RRH4X60LTE	
170.00	Panel	6	Commscope SBNHH-1D65B	
170.00	Panel	3	Commscope LNX6514DS-A1M	
170.00	Dish	1	Andrew 8' MW Dish	
170.00	Mounting Frame	3	Flat Light Sector Frame	
170.00	Panel	1	Antel BXA-70063/6CF	
170.00	Panel	2	Antel BXA-70063/4CF	
170.00	Panel	6	RFS FD9R6004/2C-3L	
170.00	Panel	1	RFS DB-T1-6Z-8AB-OZ	
170.00	Panel	1	RFS DB-T1-6Z-8AB-OZ	
160.00	Panel	12	Andrew DB844H90E-XY	
160.00	Mounting Frame	3	Flat Light Sector Frame	
150.00	Panel	3	ALU 800 MHz 2X50W RRH w/ Filte	
150.00	Panel	3	ALU 1900 MHz 4X45 RRH	
150.00	Panel	3	ALU TD-RRH8X20	
150.00	Panel	3	RFS APXVSP18-C-A20	
150.00	Panel	3	RFS APXVTM14-C-I20	
150.00	Mounting Frame	3	Flat Light Sector Frame	
140.00	Panel	1	Raycap DC6-48-60-18-8F	
140.00	Panel	6	Ericsson RRUS-11	
140.00	Panel	6	KMW AM-X-CD-16-65-00T-RET	
140.00	Panel	6	Powerwave LGP21901	
140.00	Panel	6	Powerwave LGP21401	
140.00	Panel	6	Powerwave 7770	
140.00	Mounting Frame	3	Flat Light Sector Frame	
130.00	Panel	3	RFS ATMAP1412D-1A120	
130.00	Panel	3	Commscope LNX-6515DS-VTM	
130.00	Panel	3	EMS RR90_17_02DP	
130.00	Straight Arm	3	Flat T-Arm	
125.00	Straight Arm	1	Flat Side Arm	
125.00	Whip	1	Sinclair SC323-HF2LDF	
90.00	Panel	1	RFI FSA10-67-DIN	
90.00	Straight Arm	2	Flat Side Arm	
90.00	Whip	1	Sinclair SC323-HF2LDF	
75.00	Panel	1	PCTEL GPS-TMG-HR-26N	
75.00	Straight Arm	1	Stand-Off	

Linear Appurtenance				
Elev (ft)		Qty	Description	
From	To			
0.00	180.00	3	7/8" Coax	



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Job Information		
Tower : 383660	Location : North Madison Volunteer FD, CT	
Code : ANSI/TIA-222-G	Shape : Triangle	Base Width : 25.33 ft
Client : Sprint Nextel	Top Width : 8.54 ft	

0.00	180.00	1	2" Conduit
0.00	180.00	1	1/2" Coax
0.00	180.00	1	1" Conduit
0.00	170.00	1	Waveguide
0.00	170.00	1	1 5/8" Hybrid
0.00	170.00	1	1 5/8" Hybrid
0.00	170.00	12	1 5/8" Coax
0.00	170.00	1	1 1/4" Coax
0.00	160.00	1	Waveguide
0.00	160.00	1	Waveguide
0.00	160.00	12	1 5/8" Coax
0.00	150.00	1	Waveguide
0.00	150.00	3	1 1/4" Hybriflex
0.00	150.00	1	1 1/4" Hybriflex
0.00	140.00	1	Waveguide
0.00	140.00	12	1 1/4" Coax
0.00	140.00	2	0.76" 8 AWG 6
0.00	140.00	1	0.39" Fiber
0.00	130.00	1	Waveguide
0.00	130.00	12	1 5/8" Coax
0.00	125.00	1	7/8" Coax
0.00	90.00	2	7/8" Coax
0.00	75.00	1	1/2" Coax

Global Base Foundation Design Loads			
Load Case	Moment (k-ft)	Vertical (kip)	Horizontal (kip)
DL + WL	6,581.62	69.92	61.78
DL + WL + IL	2,229.24	184.40	22.28

Individual Base Foundation Design Loads		
Vertical (kip)	Uplift (kip)	Horizontal (kip)
323.30	282.30	38.25

Site Number: 383660

Code:

ANSI/TIA-222-G

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Site Name: North Madison Volunteer FD, CT

Engineering Number: 12163181\_C3\_01

10/26/2017 3:52:42 PM

Customer: Sprint Nextel

### Analysis Parameters

Location:	New Haven County, CT	Height (ft):	180
Code:	ANSI/TIA-222-G	Base Elevation (ft):	0.00
Shape:	Triangle	Bottom Face Width (ft):	25.33
Tower Manufacturer:	Rohn	Top Face Width (ft):	8.54
Tower Type:	Self Support	Anchor Bolt Detail Type	c

### Ice & Wind Parameters

Structure Class:	II	Design Windspeed Without Ice:	101 mph
Exposure Category:	B	Design Windspeed With Ice:	50 mph
Topographic Category:	1	Operational Windspeed:	60 mph
Crest Height:	0.0 ft	Design Ice Thickness:	0.75 in

### Seismic Parameters

Analysis Method:	Equivalent Modal Analysis & Equivalent Lateral Force Methods				
Site Class:	D - Stiff Soil				
Period Based on Rayleigh Method (sec):	0.66				
$T_L$ (sec):	6	p:	1.3	$C_S$ :	0.048
$S_S$ :	0.173	$S_1$ :	0.060	$C_S$ , Max:	0.048
$F_a$ :	1.600	$F_V$ :	2.400	$C_S$ , Min:	0.030
$S_{ds}$ :	0.185	$S_{d1}$ :	0.096		

### Load Cases

1.2D + 1.6W Normal	101 mph Normal to Face with No Ice
1.2D + 1.6W 60 deg	101 mph 60 degree with No Ice
1.2D + 1.6W 90 deg	101 mph 90 degree with No Ice
1.2D + 1.6W 120 deg	101 mph 120 degree with No Ice
1.2D + 1.6W 180 deg	101 mph 180 degree with No Ice
1.2D + 1.6W 210 deg	101 mph 210 degree with No Ice
1.2D + 1.6W 240 deg	101 mph 240 degree with No Ice
1.2D + 1.6W 300 deg	101 mph 300 degree with No Ice
1.2D + 1.6W 330 deg	101 mph 330 degree with No Ice
0.9D + 1.6W Normal	101 mph Normal to Face with No Ice (Reduced DL)
0.9D + 1.6W 60 deg	101 mph 60 deg with No Ice (Reduced DL)
0.9D + 1.6W 90 deg	101 mph 90 deg with No Ice (Reduced DL)
0.9D + 1.6W 120 deg	101 mph 120 deg with No Ice (Reduced DL)
0.9D + 1.6W 180 deg	101 mph 180 deg with No Ice (Reduced DL)
0.9D + 1.6W 210 deg	101 mph 210 deg with No Ice (Reduced DL)
0.9D + 1.6W 240 deg	101 mph 240 deg with No Ice (Reduced DL)
0.9D + 1.6W 300 deg	101 mph 300 deg with No Ice (Reduced DL)
0.9D + 1.6W 330 deg	101 mph 330 deg with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi Normal	50 mph Normal with 0.75 in Radial Ice
1.2D + 1.0Di + 1.0Wi 60 deg	50 mph 60 deg with 0.75 in Radial Ice
1.2D + 1.0Di + 1.0Wi 90 deg	50 mph 90 deg with 0.75 in Radial Ice

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## Analysis Parameters

1.2D + 1.0Di + 1.0Wi 120 deg	50 mph 120 deg with 0.75 in Radial Ice
1.2D + 1.0Di + 1.0Wi 180 deg	50 mph 180 deg with 0.75 in Radial Ice
1.2D + 1.0Di + 1.0Wi 210 deg	50 mph 210 deg with 0.75 in Radial Ice
1.2D + 1.0Di + 1.0Wi 240 deg	50 mph 240 deg with 0.75 in Radial Ice
1.2D + 1.0Di + 1.0Wi 300 deg	50 mph 300 deg with 0.75 in Radial Ice
1.2D + 1.0Di + 1.0Wi 330 deg	50 mph 330 deg with 0.75 in Radial Ice
(1.2 + 0.2Sds) * DL + E Normal	Seismic Normal
(1.2 + 0.2Sds) * DL + E 60 deg	Seismic 60 deg
(1.2 + 0.2Sds) * DL + E 90 deg	Seismic 90 deg
(1.2 + 0.2Sds) * DL + E 120 deg	Seismic 120 deg
(1.2 + 0.2Sds) * DL + E 180 deg	Seismic 180 deg
(1.2 + 0.2Sds) * DL + E 210 deg	Seismic 210 deg
(1.2 + 0.2Sds) * DL + E 240 deg	Seismic 240 deg
(1.2 + 0.2Sds) * DL + E 300 deg	Seismic 300 deg
(1.2 + 0.2Sds) * DL + E 330 deg	Seismic 330 deg
(0.9 - 0.2Sds) * DL + E Normal	Seismic (Reduced DL) Normal
(0.9 - 0.2Sds) * DL + E 60 deg	Seismic (Reduced DL) 60 deg
(0.9 - 0.2Sds) * DL + E 90 deg	Seismic (Reduced DL) 90 deg
(0.9 - 0.2Sds) * DL + E 120 deg	Seismic (Reduced DL) 120 deg
(0.9 - 0.2Sds) * DL + E 180 deg	Seismic (Reduced DL) 180 deg
(0.9 - 0.2Sds) * DL + E 210 deg	Seismic (Reduced DL) 210 deg
(0.9 - 0.2Sds) * DL + E 240 deg	Seismic (Reduced DL) 240 deg
(0.9 - 0.2Sds) * DL + E 300 deg	Seismic (Reduced DL) 300 deg
(0.9 - 0.2Sds) * DL + E 330 deg	Seismic (Reduced DL) 330 deg
1.0D + 1.0W Service Normal	Serviceability - 60 mph Wind Normal
1.0D + 1.0W Service 60 deg	Serviceability - 60 mph Wind 60 deg
1.0D + 1.0W Service 90 deg	Serviceability - 60 mph Wind 90 deg
1.0D + 1.0W Service 120 deg	Serviceability - 60 mph Wind 120 deg
1.0D + 1.0W Service 180 deg	Serviceability - 60 mph Wind 180 deg
1.0D + 1.0W Service 210 deg	Serviceability - 60 mph Wind 210 deg
1.0D + 1.0W Service 240 deg	Serviceability - 60 mph Wind 240 deg
1.0D + 1.0W Service 300 deg	Serviceability - 60 mph Wind 300 deg
1.0D + 1.0W Service 330 deg	Serviceability - 60 mph Wind 330 deg

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Site Number: 383660

Code:

ANSI/TIA-222-G

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Site Name: North Madison Volunteer FD, CT

Engineering Number: 12163181\_C3\_01

10/26/2017 3:52:42 PM

Customer: Sprint Nextel

### Tower Loading

#### Discrete Appurtenance Properties 1.2D + 1.6W

Elevation (ft)	Description	Qty	Wt. (lb)	EPA (sf)	Length (ft)	Width (in)	Depth (in)	K <sub>a</sub>	Orient. Factor	Vert. Ecc.(ft)	M <sub>u</sub> (lb-ft)	Q <sub>z</sub> (psf)	F <sub>a</sub> (WL) (lb)	P <sub>a</sub> (DL) (lb)
180.0	2-Bay Dipole	1	18	2.0	6.0	4.0	4.0	0.80	1.00	3.0	165.9	26.07	55	25
180.0	4-Bay Dipole	1	35	3.9	12.0	4.0	4.0	0.80	1.00	6.0	666.8	26.19	111	50
180.0	Flat Side Arm	3	150	6.3	0.0	0.0	0.0	1.00	0.67	0.0	0.0	25.95	447	648
180.0	RFS PD455	2	24	6.0	21.5	2.8	2.8	0.80	1.00	10.8	3715.0	26.38	346	69
170.0	Alcatel Lucent RRH	3	63	2.5	2.2	11.4	5.9	0.80	0.67	0.0	0.0	25.53	138	273
170.0	ALU RRH2X60PCS	3	55	2.2	1.8	12.0	9.4	0.80	0.67	0.0	0.0	25.53	123	238
170.0	ALU RRH4X60LTE	3	53	2.1	1.8	12.0	7.2	0.80	0.67	0.0	0.0	25.53	118	229
170.0	Andrew 8' MW Dish	1	400	83.6	8.0	96.0	0.0	1.00	1.00	0.0	0.0	25.53	2904	576
170.0	Antel BXA-70063/4CF	2	10	4.7	4.0	11.2	5.2	0.80	0.77	0.0	0.0	25.53	202	29
170.0	Antel BXA-70063/6CF	1	17	7.6	5.9	11.2	5.2	0.80	0.77	0.0	0.0	25.53	162	24
170.0	Commscope	3	29	5.1	4.0	11.9	7.1	0.80	0.83	0.0	0.0	25.53	352	124
170.0	Commscope SBNHH-	6	41	8.1	6.0	11.9	7.1	0.80	0.83	0.0	0.0	25.53	1118	351
170.0	Flat Light Sector	3	400	17.9	0.0	0.0	0.0	0.75	0.67	0.0	0.0	25.53	937	1728
170.0	RFS DB-T1-6Z-8AB-	1	44	4.8	2.0	24.0	10.0	0.80	0.67	0.0	0.0	25.53	89	63
170.0	RFS DB-T1-6Z-8AB-	1	44	4.8	2.0	24.0	10.0	0.80	0.67	0.0	0.0	25.53	89	63
170.0	RFS FD9R6004/2C-3L	6	3	0.4	0.5	6.5	1.5	0.80	0.50	0.0	0.0	25.53	31	22
160.0	Andrew DB844H90E-	12	14	3.6	4.0	8.0	4.5	0.80	0.82	0.0	0.0	25.09	970	242
160.0	Flat Light Sector	3	400	17.9	0.0	0.0	0.0	0.75	0.75	0.0	0.0	25.09	1031	1728
150.0	ALU 1900 MHz 4X45	3	60	2.3	2.1	11.1	10.7	0.80	0.67	0.0	0.0	24.63	125	259
150.0	ALU 800 MHz 2X50W	3	64	2.1	1.6	13.0	12.2	0.80	0.67	0.0	0.0	24.63	111	276
150.0	ALU TD-RRH8X20	3	66	3.7	2.1	17.5	5.7	0.80	0.67	0.0	0.0	24.63	199	286
150.0	Flat Light Sector	3	400	17.9	0.0	0.0	0.0	0.75	0.75	0.0	0.0	24.63	1012	1728
150.0	RFS APXVSP18-C-	3	57	8.0	6.0	11.8	7.0	0.80	0.83	0.0	0.0	24.63	535	246
150.0	RFS APXVTM14-C-I20	3	53	6.3	4.7	12.6	6.3	0.80	0.78	0.0	0.0	24.63	398	229
140.0	Ericsson RRUS-11	6	55	3.8	2.1	18.2	6.7	0.80	0.67	0.0	0.0	24.15	400	475
140.0	Flat Light Sector	3	400	17.9	0.0	0.0	0.0	0.75	0.75	0.0	0.0	24.15	992	1728
140.0	KMW AM-X-CD-16-	6	49	8.0	6.0	11.8	5.9	0.80	0.79	0.0	0.0	24.15	999	419
140.0	Powerwave 7770	6	35	5.5	4.6	11.0	5.0	0.80	0.77	0.0	0.0	24.15	669	302
140.0	Powerwave	6	18	0.9	1.2	7.0	2.7	0.80	0.50	0.0	0.0	24.15	75	151
140.0	Powerwave	6	6	0.2	0.3	6.0	3.0	0.80	0.50	0.0	0.0	24.15	18	48
140.0	Raycap DC6-48-60-	1	19	1.3	2.0	11.0	11.0	0.80	1.00	0.0	0.0	24.15	34	27
130.0	Commscope LNX-	3	50	11.4	8.0	11.9	7.1	0.80	0.84	0.0	0.0	23.64	742	217
130.0	EMS RR90_17_02DP	3	14	4.4	4.7	8.0	2.8	0.80	0.73	0.0	0.0	23.64	246	58
130.0	Flat T-Arm	3	250	12.9	0.0	0.0	0.0	0.75	0.75	0.0	0.0	23.64	700	1080
130.0	RFS ATMAP1412D-	3	13	1.0	1.0	10.0	4.0	0.80	0.50	0.0	0.0	23.64	39	56
125.0	Flat Side Arm	1	150	6.3	0.0	0.0	0.0	1.00	1.00	0.0	0.0	23.38	200	216
125.0	Sinclair SC323-	1	6	1.1	5.6	2.0	2.0	1.00	1.00	0.0	0.0	23.38	36	9
90.00	Flat Side Arm	2	150	6.3	0.0	0.0	0.0	0.90	0.90	0.0	0.0	21.29	295	432
90.00	RFI FSA10-67-DIN	1	9	1.4	1.7	23.5	10.0	1.00	1.00	0.0	0.0	21.29	41	13
90.00	Sinclair SC323-	1	6	1.1	5.6	2.0	2.0	1.00	1.00	0.0	0.0	21.29	33	9
75.00	PCTEL GPS-TMG-HR-	1	1	0.2	0.4	3.2	3.2	1.00	1.00	0.0	0.0	20.21	4	1
75.00	Stand-Off	1	75	2.5	0.0	0.0	0.0	1.00	1.00	0.0	0.0	20.21	69	108
Totals		127	10318	785.4										

#### Discrete Appurtenance Properties 0.9D + 1.6W

Elevation (ft)	Description	Qty	Wt. (lb)	EPA (sf)	Length (ft)	Width (in)	Depth (in)	K <sub>a</sub>	Orient. Factor	Vert. Ecc.(ft)	M <sub>u</sub> (lb-ft)	Q <sub>z</sub> (psf)	F <sub>a</sub> (WL) (lb)	P <sub>a</sub> (DL) (lb)
180.0	2-Bay Dipole	1	18	2.0	6.0	4.0	4.0	0.80	1.00	3.0	165.9	26.07	55	14
180.0	4-Bay Dipole	1	35	3.9	12.0	4.0	4.0	0.80	1.00	6.0	666.8	26.19	111	28
180.0	Flat Side Arm	3	150	6.3	0.0	0.0	0.0	1.00	0.67	0.0	0.0	25.95	447	365
180.0	RFS PD455	2	24	6.0	21.5	2.8	2.8	0.80	1.00	10.8	3715.0	26.38	346	39

### Tower Loading

170.0	Alcatel Lucent RRH	3	63	2.5	2.2	11.4	5.9	0.80	0.67	0.0	0.0	25.53	138	154
170.0	ALU RRH2X60PCS	3	55	2.2	1.8	12.0	9.4	0.80	0.67	0.0	0.0	25.53	123	134
170.0	ALU RRH4X60LTE	3	53	2.1	1.8	12.0	7.2	0.80	0.67	0.0	0.0	25.53	118	129
170.0	Andrew 8' MW Dish	1	400	83.6	8.0	96.0	0.0	1.00	1.00	0.0	0.0	25.53	2904	324
170.0	Antel BXA-70063/4CF	2	10	4.7	4.0	11.2	5.2	0.80	0.77	0.0	0.0	25.53	202	16
170.0	Antel BXA-70063/6CF	1	17	7.6	5.9	11.2	5.2	0.80	0.77	0.0	0.0	25.53	162	14
170.0	Commscope	3	29	5.1	4.0	11.9	7.1	0.80	0.83	0.0	0.0	25.53	352	70
170.0	Commscope SBNHH-	6	41	8.1	6.0	11.9	7.1	0.80	0.83	0.0	0.0	25.53	1118	197
170.0	Flat Light Sector	3	400	17.9	0.0	0.0	0.0	0.75	0.67	0.0	0.0	25.53	937	972
170.0	RFS DB-T1-6Z-8AB-	1	44	4.8	2.0	24.0	10.0	0.80	0.67	0.0	0.0	25.53	89	36
170.0	RFS DB-T1-6Z-8AB-	1	44	4.8	2.0	24.0	10.0	0.80	0.67	0.0	0.0	25.53	89	36
170.0	RFS FD9R6004/2C-3L	6	3	0.4	0.5	6.5	1.5	0.80	0.50	0.0	0.0	25.53	31	13
160.0	Andrew DB844H90E-	12	14	3.6	4.0	8.0	4.5	0.80	0.82	0.0	0.0	25.09	970	136
160.0	Flat Light Sector	3	400	17.9	0.0	0.0	0.0	0.75	0.75	0.0	0.0	25.09	1031	972
150.0	ALU 1900 MHz 4X45	3	60	2.3	2.1	11.1	10.7	0.80	0.67	0.0	0.0	24.63	125	146
150.0	ALU 800 MHz 2X50W	3	64	2.1	1.6	13.0	12.2	0.80	0.67	0.0	0.0	24.63	111	156
150.0	ALU TD-RRH8X20	3	66	3.7	2.1	17.5	5.7	0.80	0.67	0.0	0.0	24.63	199	161
150.0	Flat Light Sector	3	400	17.9	0.0	0.0	0.0	0.75	0.75	0.0	0.0	24.63	1012	972
150.0	RFS APXVSP18-C-	3	57	8.0	6.0	11.8	7.0	0.80	0.83	0.0	0.0	24.63	535	139
150.0	RFS APXVTM14-C-I20	3	53	6.3	4.7	12.6	6.3	0.80	0.78	0.0	0.0	24.63	398	129
140.0	Ericsson RRUS-11	6	55	3.8	2.1	18.2	6.7	0.80	0.67	0.0	0.0	24.15	400	267
140.0	Flat Light Sector	3	400	17.9	0.0	0.0	0.0	0.75	0.75	0.0	0.0	24.15	992	972
140.0	KMW AM-X-CD-16-	6	49	8.0	6.0	11.8	5.9	0.80	0.79	0.0	0.0	24.15	999	236
140.0	Powerwave 7770	6	35	5.5	4.6	11.0	5.0	0.80	0.77	0.0	0.0	24.15	669	170
140.0	Powerwave	6	18	0.9	1.2	7.0	2.7	0.80	0.50	0.0	0.0	24.15	75	85
140.0	Powerwave	6	6	0.2	0.3	6.0	3.0	0.80	0.50	0.0	0.0	24.15	18	27
140.0	Raycap DC6-48-60-	1	19	1.3	2.0	11.0	11.0	0.80	1.00	0.0	0.0	24.15	34	15
130.0	Commscope LNX-	3	50	11.4	8.0	11.9	7.1	0.80	0.84	0.0	0.0	23.64	742	122
130.0	EMS RR90_17_02DP	3	14	4.4	4.7	8.0	2.8	0.80	0.73	0.0	0.0	23.64	246	33
130.0	Flat T-Arm	3	250	12.9	0.0	0.0	0.0	0.75	0.75	0.0	0.0	23.64	700	608
130.0	RFS ATMAP1412D-	3	13	1.0	1.0	10.0	4.0	0.80	0.50	0.0	0.0	23.64	39	32
125.0	Flat Side Arm	1	150	6.3	0.0	0.0	0.0	1.00	1.00	0.0	0.0	23.38	200	122
125.0	Sinclair SC323-	1	6	1.1	5.6	2.0	2.0	1.00	1.00	0.0	0.0	23.38	36	5
90.00	Flat Side Arm	2	150	6.3	0.0	0.0	0.0	0.90	0.90	0.0	0.0	21.29	295	243
90.00	RFI FSA10-67-DIN	1	9	1.4	1.7	23.5	10.0	1.00	1.00	0.0	0.0	21.29	41	7
90.00	Sinclair SC323-	1	6	1.1	5.6	2.0	2.0	1.00	1.00	0.0	0.0	21.29	33	5
75.00	PCTEL GPS-TMG-HR-	1	1	0.2	0.4	3.2	3.2	1.00	1.00	0.0	0.0	20.21	4	0
75.00	Stand-Off	1	75	2.5	0.0	0.0	0.0	1.00	1.00	0.0	0.0	20.21	69	61
Totals		127	10318	785.4										

### Discrete Appurtenance Properties 1.2D + 1.0Di + 1.0Wi

Elevation (ft)	Description	Qty	Ice Wt (lb)	Ice EPA (sf)	Length (ft)	Width (in)	Depth (in)	K <sub>a</sub>	Orient. Factor	Vert. Ecc.(ft)	M <sub>u</sub> (lb-ft)	Q <sub>z</sub> (psf)	F <sub>a</sub> (WL) (lb)	P <sub>a</sub> (DL) (lb)
180.0	2-Bay Dipole	1	71	4.6	6.0	4.0	4.0	0.80	1.00	3.0	60.1	6.39	20	89
180.0	4-Bay Dipole	1	142	9.2	12.0	4.0	4.0	0.80	1.00	6.0	241.6	6.42	40	178
180.0	Flat Side Arm	3	224	8.8	0.0	0.0	0.0	1.00	0.67	0.0	0.0	6.36	96	915
180.0	RFS PD455	2	299	13.8	21.5	2.8	2.8	0.80	1.00	10.8	1304.9	6.47	121	728
170.0	Alcatel Lucent RRH	3	142	3.2	2.2	11.4	5.9	0.80	0.67	0.0	0.0	6.26	27	555
170.0	ALU RRH2X60PCS	3	127	3.2	1.8	12.0	9.4	0.80	0.67	0.0	0.0	6.26	28	497
170.0	ALU RRH4X60LTE	3	127	2.8	1.8	12.0	7.2	0.80	0.67	0.0	0.0	6.26	24	497
170.0	Andrew 8' MW Dish	1	1396	89.8	8.0	96.0	0.0	1.00	1.00	0.0	0.0	6.26	478	1771
170.0	Antel BXA-70063/4CF	2	133	5.7	4.0	11.2	5.2	0.80	0.77	0.0	0.0	6.26	37	324
170.0	Antel BXA-70063/6CF	1	194	8.9	5.9	11.2	5.2	0.80	0.77	0.0	0.0	6.26	29	237
170.0	Commscope	3	173	6.1	4.0	11.9	7.1	0.80	0.83	0.0	0.0	6.26	65	642
170.0	Commscope SBNHH-	6	245	9.4	6.0	11.9	7.1	0.80	0.83	0.0	0.0	6.26	199	1824

### Tower Loading

170.0	Flat Light Sector	3	705	33.2	0.0	0.0	0.0	0.75	0.67	0.0	0.0	6.26	266	2827
170.0	RFS DB-T1-6Z-8AB-	1	190	5.7	2.0	24.0	10.0	0.80	0.67	0.0	0.0	6.26	16	238
170.0	RFS DB-T1-6Z-8AB-	1	190	5.7	2.0	24.0	10.0	0.80	0.67	0.0	0.0	6.26	16	238
170.0	RFS FD9R6004/2C-3L	6	16	0.6	0.5	6.5	1.5	0.80	0.50	0.0	0.0	6.26	7	119
160.0	Andrew DB844H90E-	12	111	4.5	4.0	8.0	4.5	0.80	0.82	0.0	0.0	6.15	185	1642
160.0	Flat Light Sector	3	702	33.0	0.0	0.0	0.0	0.75	0.75	0.0	0.0	6.15	291	2814
150.0	ALU 1900 MHz 4X45	3	155	3.0	2.1	11.1	10.7	0.80	0.67	0.0	0.0	6.04	25	602
150.0	ALU 800 MHz 2X50W	3	155	2.7	1.6	13.0	12.2	0.80	0.67	0.0	0.0	6.04	22	603
150.0	ALU TD-RRH8X20	3	156	4.9	2.1	17.5	5.7	0.80	0.67	0.0	0.0	6.04	40	607
150.0	Flat Light Sector	3	702	33.0	0.0	0.0	0.0	0.75	0.75	0.0	0.0	6.04	286	2814
150.0	RFS APXVSP18-C-	3	257	9.3	6.0	11.8	7.0	0.80	0.83	0.0	0.0	6.04	95	965
150.0	RFS APXVTM14-C-I20	3	191	8.5	4.7	12.6	6.3	0.80	0.78	0.0	0.0	6.04	82	725
140.0	Ericsson RRUS-11	6	158	4.6	2.1	18.2	6.7	0.80	0.67	0.0	0.0	5.92	74	1219
140.0	Flat Light Sector	3	697	32.8	0.0	0.0	0.0	0.75	0.75	0.0	0.0	5.92	278	2798
140.0	KMW AM-X-CD-16-	6	234	9.3	6.0	11.8	5.9	0.80	0.79	0.0	0.0	5.92	177	1755
140.0	Powerwave 7770	6	168	6.5	4.6	11.0	5.0	0.80	0.77	0.0	0.0	5.92	122	1259
140.0	Powerwave	6	45	1.2	1.2	7.0	2.7	0.80	0.50	0.0	0.0	5.92	15	351
140.0	Powerwave	6	18	0.4	0.3	6.0	3.0	0.80	0.50	0.0	0.0	5.92	5	136
140.0	Raycap DC6-48-60-	1	110	2.8	2.0	11.0	11.0	0.80	1.00	0.0	0.0	5.92	11	137
130.0	Commscope LNX-	3	309	13.1	8.0	11.9	7.1	0.80	0.84	0.0	0.0	5.79	130	1150
130.0	EMS RR90_17_02DP	3	110	5.3	4.7	8.0	2.8	0.80	0.73	0.0	0.0	5.79	46	407
130.0	Flat T-Arm	3	456	21.0	0.0	0.0	0.0	0.75	0.75	0.0	0.0	5.79	174	1823
130.0	RFS ATMAP1412D-	3	47	1.4	1.0	10.0	4.0	0.80	0.50	0.0	0.0	5.79	8	180
125.0	Flat Side Arm	1	222	8.7	0.0	0.0	0.0	1.00	1.00	0.0	0.0	5.73	43	303
125.0	Sinclair SC323-	1	66	2.5	5.6	2.0	2.0	1.00	1.00	0.0	0.0	5.73	12	80
90.00	Flat Side Arm	2	220	8.6	0.0	0.0	0.0	0.90	0.90	0.0	0.0	5.22	62	599
90.00	RFI FSA10-67-DIN	1	127	4.7	1.7	23.5	10.0	1.00	1.00	0.0	0.0	5.22	21	154
90.00	Sinclair SC323-	1	62	2.5	5.6	2.0	2.0	1.00	1.00	0.0	0.0	5.22	11	76
75.00	PCTEL GPS-TMG-HR-	1	10	0.3	0.4	3.2	3.2	1.00	1.00	0.0	0.0	4.95	1	12
75.00	Stand-Off	1	109	3.7	0.0	0.0	0.0	1.00	1.00	0.0	0.0	4.95	16	149
Totals		127	27139	1127.7										

### Discrete Appurtenance Properties 1.0D + 1.0W Service

Elevation (ft)	Description	Qty	Wt. (lb)	EPA (sf)	Length (ft)	Width (in)	Depth (in)	K <sub>a</sub>	Orient. Factor	Vert. Ecc.(ft)	M <sub>u</sub> (lb-ft)	Q <sub>z</sub> (psf)	F <sub>a</sub> (WL) (lb)	P <sub>a</sub> (DL) (lb)
180.0	2-Bay Dipole	1	18	2.0	6.0	4.0	4.0	0.80	1.00	3.0	36.6	9.20	12	18
180.0	4-Bay Dipole	1	35	3.9	12.0	4.0	4.0	0.80	1.00	6.0	147.1	9.24	25	35
180.0	Flat Side Arm	3	150	6.3	0.0	0.0	0.0	1.00	0.67	0.0	0.0	9.16	99	450
180.0	RFS PD455	2	24	6.0	21.5	2.8	2.8	0.80	1.00	10.8	819.4	9.31	76	48
170.0	Alcatel Lucent RRH	3	63	2.5	2.2	11.4	5.9	0.80	0.67	0.0	0.0	9.01	30	190
170.0	ALU RRH2X60PCS	3	55	2.2	1.8	12.0	9.4	0.80	0.67	0.0	0.0	9.01	27	165
170.0	ALU RRH4X60LTE	3	53	2.1	1.8	12.0	7.2	0.80	0.67	0.0	0.0	9.01	26	159
170.0	Andrew 8' MW Dish	1	400	83.6	8.0	96.0	0.0	1.00	1.00	0.0	0.0	9.01	640	400
170.0	Antel BXA-70063/4CF	2	10	4.7	4.0	11.2	5.2	0.80	0.77	0.0	0.0	9.01	45	20
170.0	Antel BXA-70063/6CF	1	17	7.6	5.9	11.2	5.2	0.80	0.77	0.0	0.0	9.01	36	17
170.0	Commscope	3	29	5.1	4.0	11.9	7.1	0.80	0.83	0.0	0.0	9.01	78	86
170.0	Commscope SBNHH-	6	41	8.1	6.0	11.9	7.1	0.80	0.83	0.0	0.0	9.01	246	244
170.0	Flat Light Sector	3	400	17.9	0.0	0.0	0.0	0.75	0.67	0.0	0.0	9.01	207	1200
170.0	RFS DB-T1-6Z-8AB-	1	44	4.8	2.0	24.0	10.0	0.80	0.67	0.0	0.0	9.01	20	44
170.0	RFS DB-T1-6Z-8AB-	1	44	4.8	2.0	24.0	10.0	0.80	0.67	0.0	0.0	9.01	20	44
170.0	RFS FD9R6004/2C-3L	6	3	0.4	0.5	6.5	1.5	0.80	0.50	0.0	0.0	9.01	7	16
160.0	Andrew DB844H90E-	12	14	3.6	4.0	8.0	4.5	0.80	0.82	0.0	0.0	8.85	214	168
160.0	Flat Light Sector	3	400	17.9	0.0	0.0	0.0	0.75	0.75	0.0	0.0	8.85	227	1200
150.0	ALU 1900 MHz 4X45	3	60	2.3	2.1	11.1	10.7	0.80	0.67	0.0	0.0	8.69	28	180
150.0	ALU 800 MHz 2X50W	3	64	2.1	1.6	13.0	12.2	0.80	0.67	0.0	0.0	8.69	24	192



Site Number: 383660

Code:

ANSI/TIA-222-G

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Site Name: North Madison Volunteer FD, CT

Engineering Number: 12163181\_C3\_01

10/26/2017 3:52:42 PM

Customer: Sprint Nextel

### Tower Loading

150.0	ALU TD-RRH8X20	3	66	3.7	2.1	17.5	5.7	0.80	0.67	0.0	0.0	8.69	44	198
150.0	Flat Light Sector	3	400	17.9	0.0	0.0	0.0	0.75	0.75	0.0	0.0	8.69	223	1200
150.0	RFS APXVSPP18-C-	3	57	8.0	6.0	11.8	7.0	0.80	0.83	0.0	0.0	8.69	118	171
150.0	RFS APXVTM14-C-I20	3	53	6.3	4.7	12.6	6.3	0.80	0.78	0.0	0.0	8.69	88	159
140.0	Ericsson RRUS-11	6	55	3.8	2.1	18.2	6.7	0.80	0.67	0.0	0.0	8.52	88	330
140.0	Flat Light Sector	3	400	17.9	0.0	0.0	0.0	0.75	0.75	0.0	0.0	8.52	219	1200
140.0	KMW AM-X-CD-16-	6	49	8.0	6.0	11.8	5.9	0.80	0.79	0.0	0.0	8.52	220	291
140.0	Powerwave 7770	6	35	5.5	4.6	11.0	5.0	0.80	0.77	0.0	0.0	8.52	148	210
140.0	Powerwave	6	18	0.9	1.2	7.0	2.7	0.80	0.50	0.0	0.0	8.52	17	105
140.0	Powerwave	6	6	0.2	0.3	6.0	3.0	0.80	0.50	0.0	0.0	8.52	4	33
140.0	Raycap DC6-48-60-	1	19	1.3	2.0	11.0	11.0	0.80	1.00	0.0	0.0	8.52	7	19
130.0	Commscope LNX-	3	50	11.4	8.0	11.9	7.1	0.80	0.84	0.0	0.0	8.34	164	151
130.0	EMS RR90_17_02DP	3	14	4.4	4.7	8.0	2.8	0.80	0.73	0.0	0.0	8.34	54	41
130.0	Flat T-Arm	3	250	12.9	0.0	0.0	0.0	0.75	0.75	0.0	0.0	8.34	154	750
130.0	RFS ATMAP1412D-	3	13	1.0	1.0	10.0	4.0	0.80	0.50	0.0	0.0	8.34	9	39
125.0	Flat Side Arm	1	150	6.3	0.0	0.0	0.0	1.00	1.00	0.0	0.0	8.25	44	150
125.0	Sinclair SC323-	1	6	1.1	5.6	2.0	2.0	1.00	1.00	0.0	0.0	8.25	8	6
90.00	Flat Side Arm	2	150	6.3	0.0	0.0	0.0	0.90	0.90	0.0	0.0	7.51	65	300
90.00	RFI FSA10-67-DIN	1	9	1.4	1.7	23.5	10.0	1.00	1.00	0.0	0.0	7.51	9	9
90.00	Sinclair SC323-	1	6	1.1	5.6	2.0	2.0	1.00	1.00	0.0	0.0	7.51	7	6
75.00	PCTEL GPS-TMG-HR-	1	1	0.2	0.4	3.2	3.2	1.00	1.00	0.0	0.0	7.13	1	1
75.00	Stand-Off	1	75	2.5	0.0	0.0	0.0	1.00	1.00	0.0	0.0	7.13	15	75
	Totals	127	10318	785.4										

Site Number: 383660

Code: ANSI/TIA-222-G

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Site Name: North Madison Volunteer FD, CT

Engineering Number: 12163181\_C3\_01

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Customer: Sprint Nextel

### Tower Loading

#### Linear Appurtenance Properties

Elev From (ft)	Elev To (ft)	Description	Qty	Width (in)	Weight (lb/ft)	Pct In Block	Spread On Faces	Bundling Arrangement	Cluster Dia (in)	Out Of Zone	Spacing (in)	Orientation Factor	Ka Override
0.00	180.0	1" Conduit	1	1.30	1.68	0	2	Individual	0.00	N	1.00	1.00	0.00
0.00	180.0	1/2" Coax	1	0.63	0.15	0	2	Individual	0.00	N	1.00	1.00	0.00
0.00	180.0	2" Conduit	1	2.38	3.65	0	2	Individual	0.00	N	1.00	1.00	0.00
0.00	180.0	7/8" Coax	3	1.09	0.33	0	2	Individual	0.00	N	1.00	1.00	0.00
0.00	170.0	1 1/4" Coax	1	1.55	0.63	0	2	Individual	0.00	N	1.00	1.00	0.00
0.00	170.0	1 5/8" Coax	12	1.98	0.82	0	2	Individual	0.00	N	1.00	1.00	0.00
0.00	170.0	1 5/8" Hybrid	1	1.63	1.61	0	2	Individual	0.00	N	1.00	1.00	0.01
0.00	170.0	1 5/8" Hybrid	1	1.63	1.61	0	2	Individual	0.00	N	1.00	1.00	0.01
0.00	170.0	Waveguide	1	1.50	6.00	0	2	Individual	0.00	N	1.00	1.00	0.00
0.00	160.0	1 5/8" Coax	12	1.98	0.82	0	1	Individual	0.00	N	1.00	1.00	0.00
0.00	160.0	Waveguide	1	1.50	6.00	0	1	Individual	0.00	N	1.00	1.00	0.00
0.00	160.0	Waveguide	1	1.50	6.00	0	1	Individual	0.00	N	1.00	1.00	0.00
0.00	150.0	1 1/4" Hybriflex	1	1.54	1.00	0	2	Individual	0.00	N	1.00	1.00	0.00
0.00	150.0	1 1/4" Hybriflex	3	1.54	1.00	0	2	Individual	0.00	N	1.00	1.00	0.00
0.00	150.0	Waveguide	1	1.50	6.00	0	2	Individual	0.00	N	1.00	1.00	0.00
0.00	140.0	0.39" Fiber	1	0.39	0.07	0	3	Individual	0.00	N	1.00	1.00	0.00
0.00	140.0	0.76" 8 AWG 6	2	0.76	0.53	0	3	Individual	0.00	N	1.00	1.00	0.00
0.00	140.0	1 1/4" Coax	12	1.55	0.63	0	3	Individual	0.00	N	1.00	1.00	0.00
0.00	140.0	Waveguide	1	1.50	6.00	0	3	Individual	0.00	N	1.00	1.00	0.00
0.00	130.0	1 5/8" Coax	12	1.98	0.82	50	3	Block	0.00	N	0.00	1.00	0.00
0.00	130.0	Waveguide	1	1.50	6.00	0	3	Individual	0.00	N	1.00	1.00	0.00
0.00	125.0	7/8" Coax	1	1.09	0.33	0	Lin App	Individual	0.00	N	1.00	1.00	0.00
0.00	90.00	7/8" Coax	2	1.09	0.33	0	Lin App	Individual	0.00	N	1.00	1.00	0.00
0.00	75.00	1/2" Coax	1	0.63	0.15	0	2	Individual	0.00	N	1.00	1.00	0.00

Site Number: 383660

Code: ANSI/TIA-222-G

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Site Name: North Madison Volunteer FD, CT

Engineering Number: 12163181\_C3\_01

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Customer: Sprint Nextel

### Force/Stress Summary

Section: 1		1		Bot Elev (ft): 0.00				Height (ft): 20.000							
		Pu	Len	Bracing %			F'y	Phic Pn	Num	Shear	Bear				
		(kip)	(ft)	X	Y	Z	(ksi)	(kip)	phiRnv	phiRn	Use	Controls			
Max Compression Member		Load Case		KL/R				Bolts	Holes	(kip)	(kip)	%			
LEG	PX - 10" DIA PIPE	-309.58	1.2D + 1.6W	10.03	100	100	33.1	50.0	668.58	0	0	0.00	0.00	46	Member X
HORIZ	PST - 3" DIA PIPE	-8.98	1.2D + 1.6W 90	12.04	100	100	124.6	50.0	32.47	2	0	0.00	40.44	27	Member X
DIAG	PX - 3-1/2" DIA PIPE	-12.81	1.2D + 1.6W 90	16.14	100	100	147.9	50.0	38.02	3	0	0.00	89.29	33	Member X

Max Tension Member		Pu	Load Case	Fy	Fu	Phit Pn	Num	Num	Shear	Bear	Blk Shear	Use	Controls	
		(kip)		(ksi)	(ksi)	(kip)	Bolts	Holes	phiRnv	phiRn	phi Pn	%		
									(kip)	(kip)	(kip)			
LEG	PX - 10" DIA PIPE	270.69	0.9D + 1.6W 60	50	65	724.50	0	0	0.00	0.00			37	Member
HORIZ	PST - 3" DIA PIPE	9.92	1.2D + 1.6W 90	50	65	100.35	2	0	0.00	32.43	0.00		30	Bolt Bear
DIAG	PX - 3-1/2" DIA PIPE	12.43	1.2D + 1.6W 90	50	65	165.60	3	0	0.00	77.51	0.00		16	Bolt Bear

Max Splice Forces		Pu	Load Case	phiRnt	Use	Num		
		(kip)		(kip)	%	Bolts	Bolt Type	
Top Tension		256.68	0.9D + 1.6W 180	0.00	0	0		
Top Compression		292.62	1.2D + 1.6W	0.00	0			
Bot Tension		284.55	0.9D + 1.6W 180	969.12	36	16	1" A354-BC	
Bot Compression		324.47	1.2D + 1.6W	0.00	0			

Section: 2		2		Bot Elev (ft): 20.00				Height (ft): 20.000							
		Pu	Len	Bracing %			F'y	Phic Pn	Num	Shear	Bear				
		(kip)	(ft)	X	Y	Z	(ksi)	(kip)	phiRnv	phiRn	Use	Controls			
Max Compression Member		Load Case		KL/R				Bolts	Holes	(kip)	(kip)	%			
LEG	PX - 10" DIA PIPE	-277.80	1.2D + 1.6W	10.03	100	100	33.1	50.0	668.58	0	0	0.00	0.00	41	Member X
HORIZ	PST - 2-1/2" DIA PIP	-8.91	0.9D + 1.6W 90	10.79	100	100	136.7	50.0	20.59	2	0	0.00	31.67	43	Member X
DIAG	PST - 3" DIA PIPE	-13.19	1.2D + 1.6W 90	15.18	100	100	157.0	50.0	20.43	3	0	0.00	50.54	64	Member X

Max Tension Member		Pu	Load Case	Fy	Fu	Phit Pn	Num	Num	Shear	Bear	Blk Shear	Use	Controls	
		(kip)		(ksi)	(ksi)	(kip)	Bolts	Holes	phiRnv	phiRn	phi Pn	%		
									(kip)	(kip)	(kip)			
LEG	PX - 10" DIA PIPE	239.54	1.2D + 1.6W 60	50	65	724.50	0	0	0.00	0.00			33	Member
HORIZ	PST - 2-1/2" DIA PIP	9.35	1.2D + 1.6W 90	50	65	76.68	2	0	0.00	25.33	0.00		36	Bolt Bear
DIAG	PST - 3" DIA PIPE	12.32	0.9D + 1.6W 90	50	65	100.35	3	0	0.00	43.80	0.00		28	Bolt Bear

Max Splice Forces		Pu	Load Case	phiRnt	Use	Num		
		(kip)		(kip)	%	Bolts	Bolt Type	
Top Tension		229.61	0.9D + 1.6W 180	0.00	0	0		
Top Compression		260.28	1.2D + 1.6W	0.00	0			
Bot Tension		256.68	0.9D + 1.6W 180	654.24	39	12	1 A325	
Bot Compression		292.62	1.2D + 1.6W	0.00	0			

Site Number: 383660

Code: ANSI/TIA-222-G

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Site Name: North Madison Volunteer FD, CT

Engineering Number: 12163181\_C3\_01

10/26/2017 3:52:43 PM

Customer: Sprint Nextel

### Force/Stress Summary

Section: 3		3		Bot Elev (ft): 40.00				Height (ft): 20.000							
		Pu	Len	Bracing %			F'y	Phic Pn Num	Num	Shear	Bear	Use			
		(kip)	(ft)	X	Y	Z	KL/R	(ksi)	(kip)	Bolts	Holes	phiRnv	phiRn	%	Controls
Max Compression Member		Load Case										(kip)	(kip)		
LEG	PX - 8" DIA PIPE	-245.23	10.03	100	100	100	41.8	50.0	506.95	0	0	0.00	0.00	48	Member X
HORIZ	PST - 2-1/2" DIA PIP	-8.02	9.503	100	100	100	120.4	50.0	26.55	2	0	0.00	31.67	30	Member X
DIAG	PST - 3" DIA PIPE	-12.58	14.26	100	100	100	147.6	50.0	23.13	3	0	0.00	50.54	54	Member X

Max Tension Member		Pu	Fy	Fu	Phit Pn Num	Num	Shear	Bear	Blk Shear	Use			
		(kip)	(ksi)	(ksi)	(kip)	Bolts	Holes	phiRnv	phiRn	phit Pn	%	Controls	
		Load Case						(kip)	(kip)	(kip)			
LEG	PX - 8" DIA PIPE	213.22	50	65	576.00	0	0	0.00	0.00		37	Member	
HORIZ	PST - 2-1/2" DIA PIP	8.35	50	65	76.68	2	0	0.00	25.33	0.00	32	Bolt Bear	
DIAG	PST - 3" DIA PIPE	11.63	50	65	100.35	3	0	0.00	43.80	0.00	26	Bolt Bear	

Max Splice Forces		Pu	phiRnt	Use	Num	Bolt Type	
		(kip)	(kip)	%	Bolts		
		Load Case					
Top Tension		201.86	0.00	0	0		
Top Compression		227.74	0.00	0			
Bot Tension		229.61	654.24	35	12	1 A325	
Bot Compression		260.28	0.00	0			

Section: 4		4		Bot Elev (ft): 60.00				Height (ft): 20.000							
		Pu	Len	Bracing %			F'y	Phic Pn Num	Num	Shear	Bear	Use			
		(kip)	(ft)	X	Y	Z	KL/R	(ksi)	(kip)	Bolts	Holes	phiRnv	phiRn	%	Controls
Max Compression Member		Load Case										(kip)	(kip)		
LEG	PX - 8" DIA PIPE	-210.61	10.03	100	100	100	41.8	50.0	507.00	0	0	0.00	0.00	41	Member X
HORIZ	PST - 2" DIA PIPE	-7.91	8.214	100	100	100	125.2	50.0	15.41	2	0	0.00	24.02	51	Member X
DIAG	PST - 3" DIA PIPE	-13.25	13.35	100	100	100	138.1	50.0	26.41	3	0	0.00	50.54	50	Member X

Max Tension Member		Pu	Fy	Fu	Phit Pn Num	Num	Shear	Bear	Blk Shear	Use			
		(kip)	(ksi)	(ksi)	(kip)	Bolts	Holes	phiRnv	phiRn	phit Pn	%	Controls	
		Load Case						(kip)	(kip)	(kip)			
LEG	PX - 8" DIA PIPE	186.50	50	65	576.00	0	0	0.00	0.00		32	Member	
HORIZ	PST - 2" DIA PIPE	8.15	50	65	48.15	2	0	0.00	19.22	0.00	42	Bolt Bear	
DIAG	PST - 3" DIA PIPE	12.43	50	65	100.35	3	0	0.00	43.80	0.00	28	Bolt Bear	

Max Splice Forces		Pu	phiRnt	Use	Num	Bolt Type	
		(kip)	(kip)	%	Bolts		
		Load Case					
Top Tension		169.83	0.00	0	0		
Top Compression		191.24	0.00	0			
Bot Tension		201.86	436.16	46	8	1 A325	
Bot Compression		227.74	0.00	0			

Site Number: 383660

Code: ANSI/TIA-222-G

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Site Name: North Madison Volunteer FD, CT

Engineering Number: 12163181\_C3\_01

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Customer: Sprint Nextel

### Force/Stress Summary

Section: 5		5		Bot Elev (ft): 80.00				Height (ft): 20.000								
		Pu	Len	Bracing %			F'y	Phic Pn	Num	Shear	Bear	Use				
Max Compression Member		(kip)	Load Case	(ft)	X	Y	Z	KL/R	(ksi)	(kip)	Bolts	Holes	phiRnv	phiRn	%	Controls
LEG	PSP - ROHN 8 EHS	-171.23	1.2D + 1.6W	10.02	100	100	100	41.2	50.0	386.39	0	0	0.00	0.00	44	Member X
	HORIZPST - 2" DIA PIPE	-8.03	1.2D + 1.6W 90	7.026	100	100	100	107.1	50.0	20.80	2	0	0.00	24.02	38	Member X
	DIAG PST - 3" DIA PIPE	-14.53	1.2D + 1.6W 90	12.55	100	100	100	129.9	50.0	29.85	3	0	0.00	50.54	48	Member X

Max Tension Member		Pu	Load Case	Fy	Fu	Phit Pn	Num	Num	Shear	Bear	Blk Shear	Use	
		(kip)		(ksi)	(ksi)	(kip)	Bolts	Holes	phiRnv	phiRn	phit Pn	%	
									(kip)	(kip)	(kip)	Controls	
LEG	PSP - ROHN 8 EHS	148.74	1.2D + 1.6W 60	50	65	437.40	0	0	0.00	0.00		34	Member
	HORIZ PST - 2" DIA PIPE	8.15	1.2D + 1.6W 90	50	65	48.15	2	0	0.00	19.22	0.00	42	Bolt Bear
	DIAG PST - 3" DIA PIPE	13.86	1.2D + 1.6W 90	50	65	100.35	3	0	0.00	43.80	0.00	31	Bolt Bear

Max Splice Forces		Pu	Load Case	phiRnt	Use	Num	Bolt Type	
		(kip)		(kip)	%	Bolts		
Top Tension		132.16	0.9D + 1.6W 180	0.00	0	0		
Top Compression		149.41	1.2D + 1.6W	0.00	0			
Bot Tension		169.83	0.9D + 1.6W 180	436.16	39	8	1 A325	
Bot Compression		191.24	1.2D + 1.6W	0.00	0			

Section: 6		6		Bot Elev (ft): 100.0				Height (ft): 20.000								
		Pu	Len	Bracing %			F'y	Phic Pn	Num	Shear	Bear	Use				
Max Compression Member		(kip)	Load Case	(ft)	X	Y	Z	KL/R	(ksi)	(kip)	Bolts	Holes	phiRnv	phiRn	%	Controls
LEG	PSP - ROHN 6 EHS	-135.44	1.2D + 1.6W	6.68	100	100	100	36.0	50.0	274.62	0	0	0.00	0.00	49	Member X
	HORIZPST - 2" DIA PIPE	-7.33	1.2D + 1.6W 90	6.108	100	100	100	93.1	50.0	25.54	2	0	0.00	24.02	28	Member X
	DIAG PST - 2-1/2" DIA PIP	-11.34	1.2D + 1.6W 90	9.288	100	100	100	117.7	50.0	27.79	3	0	0.00	47.50	40	Member X

Max Tension Member		Pu	Load Case	Fy	Fu	Phit Pn	Num	Num	Shear	Bear	Blk Shear	Use	
		(kip)		(ksi)	(ksi)	(kip)	Bolts	Holes	phiRnv	phiRn	phit Pn	%	
									(kip)	(kip)	(kip)	Controls	
LEG	PSP - ROHN 6 EHS	119.05	0.9D + 1.6W 60	50	65	301.95	0	0	0.00	0.00		39	Member
	HORIZ PST - 2" DIA PIPE	7.46	1.2D + 1.6W 90	50	65	48.15	2	0	0.00	19.22	0.00	38	Bolt Bear
	DIAG PST - 2-1/2" DIA PIP	10.90	1.2D + 1.6W 90	50	65	76.68	3	0	0.00	41.17	0.00	26	Bolt Bear

Max Splice Forces		Pu	Load Case	phiRnt	Use	Num	Bolt Type	
		(kip)		(kip)	%	Bolts		
Top Tension		91.10	0.9D + 1.6W 180	0.00	0	0		
Top Compression		104.62	1.2D + 1.6W	0.00	0			
Bot Tension		132.16	0.9D + 1.6W 180	436.16	30	8	1 A325	
Bot Compression		149.41	1.2D + 1.6W	0.00	0			

Site Number: 383660

Code: ANSI/TIA-222-G

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Site Name: North Madison Volunteer FD, CT

Engineering Number: 12163181\_C3\_01

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Customer: Sprint Nextel

### Force/Stress Summary

Section: 7		7		Bot Elev (ft): 120.0				Height (ft): 20.000							
		Pu	Len	Bracing %			F'y	Phic Pn	Num	Shear	Bear			Use	
		(kip)	(ft)	X	Y	Z	(ksi)	(kip)	Boles	Holes	phiRnv	phiRn	%	Controls	
		Load Case		KL/R							(kip)	(kip)			
<b>Max Compression Member</b>															
LEG	PSP - ROHN 5 EH	-89.49	1.2D + 1.6W	6.68	100	100	100	43.6	50.0	239.34	0	0	0.00	0.00	37 Member X
HORIZ	PST - 1-1/2" DIA PIP	-6.76	1.2D + 1.6W 90	5.049	100	100	100	97.2	50.0	18.01	2	0	0.00	22.62	37 Member X
DIAG	PX - 2" DIA PIPE	-11.48	1.2D + 1.6W 90	8.579	99	99	99	133.1	50.0	18.89	3	0	0.00	51.01	60 Member X
<b>Max Tension Member</b>															
LEG	PSP - ROHN 5 EH	76.99	0.9D + 1.6W 180	50	65	274.95	0	0	0.00	0.00				28 Member	
HORIZ	PST - 1-1/2" DIA PIP	6.84	1.2D + 1.6W 90	50	65	35.96	2	0	0.00	18.10			0.00	37 Bolt Bear	
DIAG	PX - 2" DIA PIPE	11.14	1.2D + 1.6W 90	50	65	66.60	3	0	0.00	44.21			0.00	25 Bolt Bear	
<b>Max Splice Forces</b>															
		Pu	Load Case	phiRnt	Use	Num									
		(kip)		(kip)	%	Boles	Bolt Type								
	Top Tension	48.21	0.9D + 1.6W 180	0.00	0	0									
	Top Compression	58.06	1.2D + 1.6W	0.00	0										
	Bot Tension	91.10	0.9D + 1.6W 180	327.12	28	6	1 A325								
	Bot Compression	104.62	1.2D + 1.6W	0.00	0										

Section: 8		8		Bot Elev (ft): 140.0				Height (ft): 20.000							
		Pu	Len	Bracing %			F'y	Phic Pn	Num	Shear	Bear			Use	
		(kip)	(ft)	X	Y	Z	(ksi)	(kip)	Boles	Holes	phiRnv	phiRn	%	Controls	
		Load Case		KL/R							(kip)	(kip)			
<b>Max Compression Member</b>															
LEG	PX - 4" DIA PIPE	-41.21	1.2D + 1.6W	6.67	100	100	100	54.1	50.0	160.28	0	0	0.00	0.00	25 Member X
HORIZ	PST - 1-1/2" DIA PIP	-5.69	1.2D + 1.6W 90	4.340	100	100	100	83.6	50.0	21.57	2	0	0.00	22.62	26 Member X
DIAG	PX - 2" DIA PIPE	-11.04	1.2D + 1.6W 90	7.963	100	100	100	124.7	50.0	21.49	3	0	0.00	51.01	51 Member X
<b>Max Tension Member</b>															
LEG	PX - 4" DIA PIPE	33.75	0.9D + 1.6W 180	50	65	198.45	0	0	0.00	0.00				17 Member	
HORIZ	PST - 1-1/2" DIA PIP	5.80	1.2D + 1.6W 90	50	65	35.96	2	0	0.00	18.10			0.00	32 Bolt Bear	
DIAG	PX - 2" DIA PIPE	10.81	1.2D + 1.6W 90	50	65	66.60	3	0	0.00	44.21			0.00	24 Bolt Bear	
<b>Max Splice Forces</b>															
		Pu	Load Case	phiRnt	Use	Num									
		(kip)		(kip)	%	Boles	Bolt Type								
	Top Tension	10.92	0.9D + 1.6W 180	0.00	0	0									
	Top Compression	15.50	1.2D + 1.6W	0.00	0										
	Bot Tension	48.21	0.9D + 1.6W 180	218.08	22	4	1 A325								
	Bot Compression	58.06	1.2D + 1.6W	0.00	0										



Site Number: 383660

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Site Name: North Madison Volunteer FD, CT

Engineering Number: 12163181\_C3\_01

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Customer: Sprint Nextel

### Force/Stress Summary

Section: 9		9		Bot Elev (ft): 160.0		Height (ft): 20.000									
		Pu	Len	Bracing %			F'y	Phic Pn	Num	Shear	Bear			Use	
		(kip)	(ft)	X	Y	Z	(ksi)	(kip)	Bolts	phiRnv	phiRn	(kip)	(kip)	%	
		Load Case		KL/R				Holes					Controls		
<b>Max Compression Member</b>															
LEG	PST - 3" DIA PIPE	-6.69	1.2D + 1.0Di +	6.67	100	100	100	69.0	50.0	70.87	0	0	0.00	0.00	9 Member X
HORIZ	PST - 1-1/2" DIA PIP	-3.27	1.2D + 1.6W	4.299	100	100	100	82.8	50.0	21.78	2	0	0.00	22.62	15 Member X
DIAG	PST - 2" DIA PIPE	-5.85	1.2D + 1.6W 90	7.940	100	100	100	121.1	50.0	16.49	3	0	0.00	36.04	35 Member X
<b>Max Tension Member</b>															
LEG	PST - 3" DIA PIPE	3.05	0.9D + 1.6W 180	50	65	100.35	0	0	0.00	0.00					3 Member
HORIZ	PST - 1-1/2" DIA PIP	3.30	1.2D + 1.6W 60	50	65	35.96	2	0	0.00	18.10			0.00		18 Bolt Bear
DIAG	PST - 2" DIA PIPE	5.73	1.2D + 1.6W 90	50	65	48.15	3	0	0.00	31.23			0.00		18 Bolt Bear
<b>Max Splice Forces</b>															
		Pu	Load Case	phiRnt	Use	Num									
		(kip)		(kip)	%	Bolts	Bolt Type								
	Top Tension	0.00		0.00	0	0									
	Top Compression	0.91	1.2D + 1.0Di +	0.00	0										
	Bot Tension	10.92	0.9D + 1.6W 180	166.24	7	4	7/8 A325								
	Bot Compression	15.50	1.2D + 1.6W	0.00	0										

Site Name: North Madison Volunteer FD, CT  
 Site Number: 383660  
 Engineer: RDB  
 Engineering Number: 12163181\_C3\_01  
 Date: 10/26/17

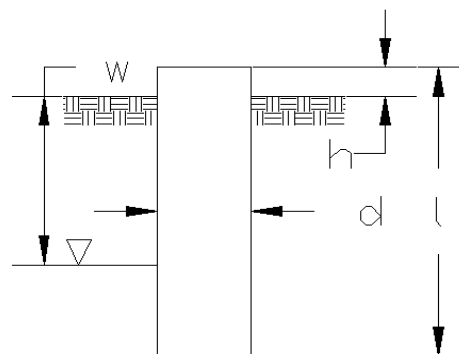
Program Last Updated: 5/13/2014  
 American Tower Corporation

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

Analyze or Design a Foundation? Analyze  
 Foundation Mapped: N  
 Moment (M): 0.0 k-ft  
 Shear/Leg (V): 38.3 k  
 Compression/Leg (P): 323.3 k  
 Uplift/Leg (U): 282.3 k  
 Tower Type (GT / SST / MP): SST

Diameter of Caisson (d):  
 Caisson Embedment (L-h):  
 Caisson Height Above Ground (h):  
 Depth Below Ground Surface to Water Table (w):  
 Unit Weight of Concrete:  
 Unit Weight of Water:  
 Tension Skin Friction/Compression Skin Friction:  
 Pullout Angle:

6.0 ft  
 18.0 ft  
 0.5 ft  
 2.5 ft  
 150.0 pcf  
 62.4 pcf  
 1.00  
 30.0 degrees



**Engineer Notes**

**Soil Mechanical Properties**

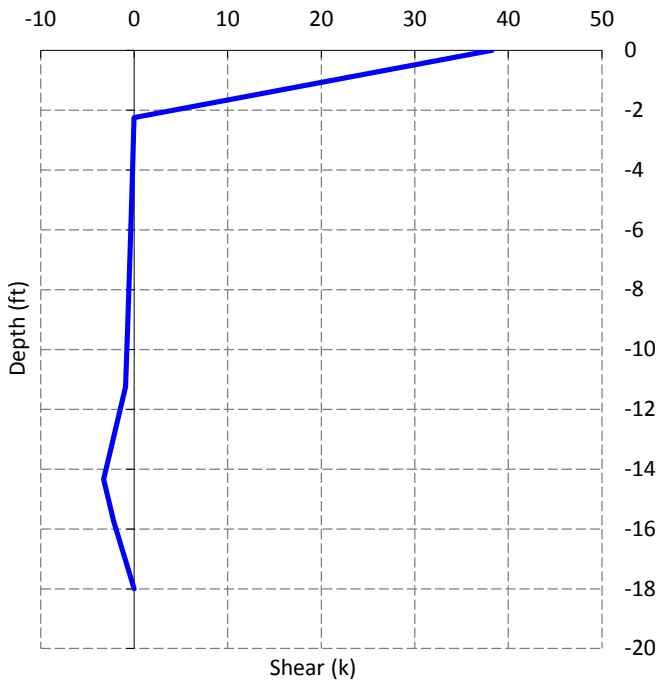
Depth (ft)		$\gamma_{Soil}$	Cohesion	$\phi$	Ultimate Skin	Ultimate Bearing
Top	Bottom	(pcf)	(psf)	(degree)	Friction (psf)	Pressure (psf)
0.0	2.0	125	0	0	0	0
2.0	10.0	125	625	0	313	0
10.0	14.0	135	6250	0	3125	0
14.0	19.0	145	8000	0	5000	36719

Volume of Concrete: 523.1 ft<sup>3</sup> = 19.4 yd<sup>3</sup>  
 Weight of Concrete (Buoyancy Effect Considered): 51.1 k  
 Average Soil Unit Weight: 77.9 pcf  
 Skin Friction Resistance: 659.8 k  
 Compressive Bearing Resistance: 1038.2 k  
 Pullout Weight (Minus Concrete Weight): 647.7 k  
 Nominal Uplift Capacity per Leg ( $\phi_s T_n$ ): 485.8 k  
 Nominal Compressive Capacity per Leg ( $\phi_s P_n$ ): 1273.5 k  
 $P_u$ : 334.5 k  
 $T_u / \phi_s T_n$ : 0.58 Result: OK  
 $P_u / \phi_s P_n$ : 0.26 Result: OK  
 Total Lateral Resistance: 2347.2 k  
 Inflection Point (Below Ground Surface): 14.3 ft  
 Design Overturning Moment At Inflection Point ( $M_D$ ): 567.6 k-ft  
 Nominal Moment Capacity ( $\phi_s M_n$ ): 4527.1 k-ft  
 $M_D / \phi_s M_n$ : 0.13 Result: OK  
 $\phi_s$ : 0.75

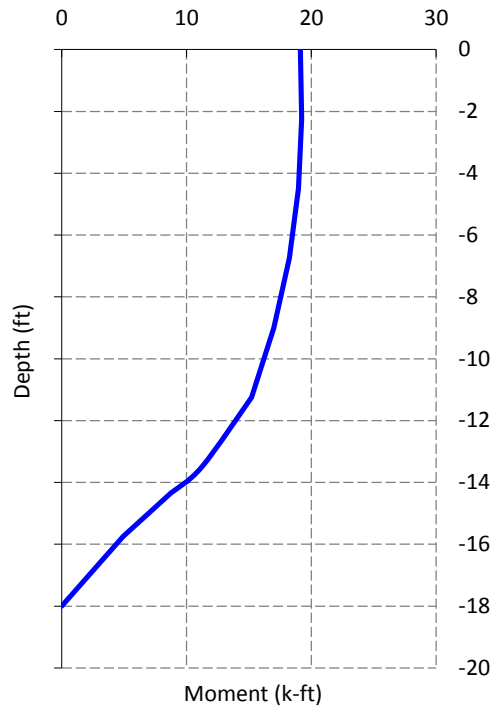
## Caisson Strength Capacity

Concrete Compressive Strength ( $f'_c$ ):	4500 psi
Vertical Steel Rebar Size #:	9
Vertical Steel Rebar Area:	1.00 in <sup>2</sup>
# of Vertical Steel Rebars:	26
Vertical Steel Rebar Yield Strength ( $F_y$ ):	60 ksi
Horizontal Tie / Stirrup Size #:	5
Horizontal Tie / Stirrup Area:	0.31 in <sup>2</sup>
Design Horizontal Tie / Stirrup Spacing:	12.0 in
Horizontal Tie / Stirrup Steel Yield Strength ( $F_y$ ):	60 ksi
Rebar Cage Diameter:	64.0 in
Strength Bending/Tension Reduction Factor ( $\phi_B$ ):	0.90 ACI318-05 - 9.3.2.1
Strength Shear Reduction Factor ( $\phi_V$ ):	0.75 ACI318-05 - 9.3.2.3
Strength Compression Reduction Factor ( $\phi_P$ ):	0.65 ACI318-05 - 9.3.2.2
Steel Elastic Modulus:	29000 ksi
Design Moment ( $M_u$ ):	191.3 k-ft
Nominal Moment Capacity ( $\phi_B M_n$ ):	3662.7 k-ft - ACI318-005 - 10.2
$M_u / \phi_B M_n$ :	0.05 Result: OK
Design Shear ( $V_u$ ):	38.3 k
Nominal Shear Capacity ( $\phi_V V_n$ ):	395.5 k - ACI318-05 - 11.3.1.1 or 11.5.7.2
$V_u / \phi_V V_n$ :	0.10 Result: OK
Design Tension ( $T_u$ ):	282.3 k
Nominal Tension Capacity ( $\phi_T T_n$ ):	1404.0 k - ACI318-05 - 10.2
$T_u / \phi_T T_n$ :	0.20 Result: OK
Design Compression ( $P_u$ ):	334.5 k
Nominal Compression Capacity ( $\phi_P P_n$ ):	8046.5 k - ACI318-05 - 10.3.6.2
$P_u / \phi_P P_n$ :	0.04 Result: OK
Bending Reinforcement Ratio:	0.006 ACI318-05 - 10.8.4 & 10.9.1
$M_u / \phi_B M_n + T_u / \phi_T T_n$ :	0.25 Result: OK

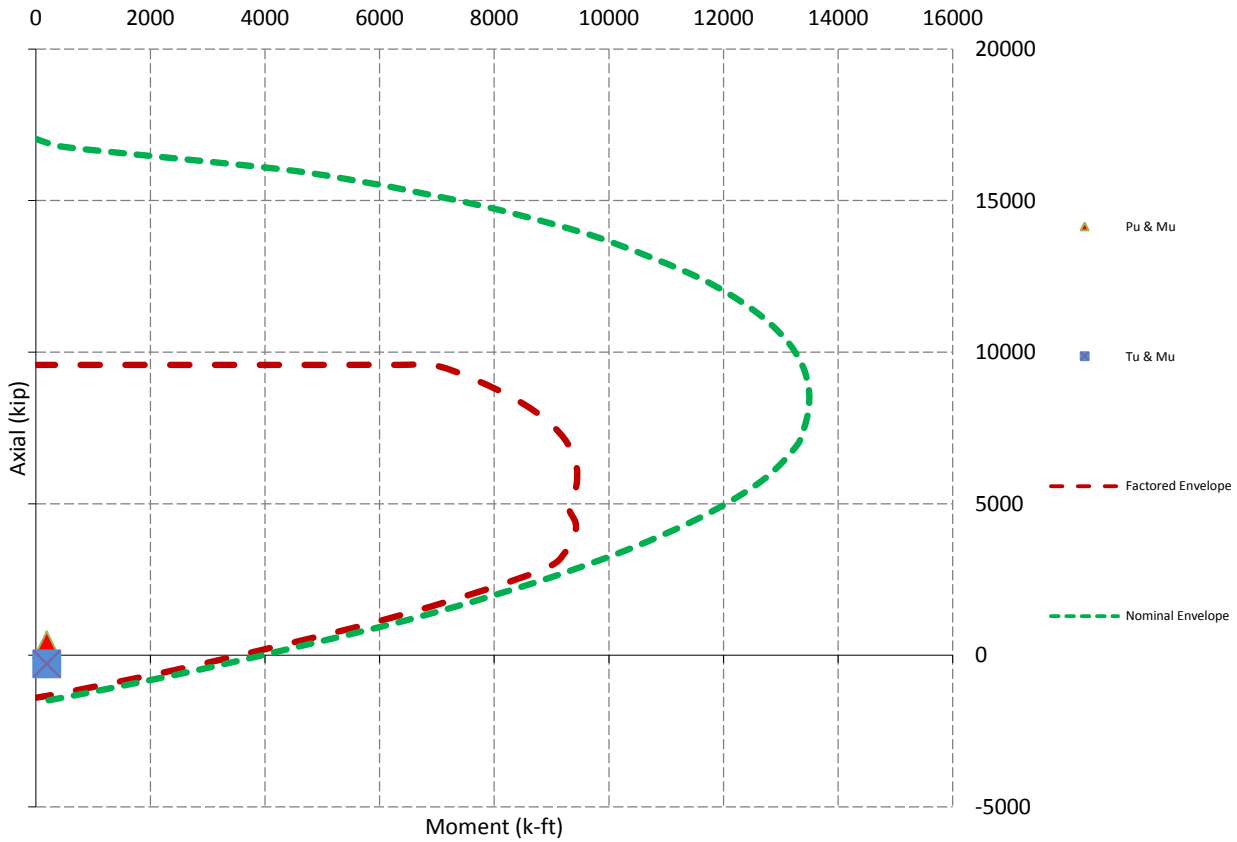
Design Factored Shear / Depth



Design Factored Moment / Depth



Nominal and Factored Moment Capacity and Factored Design Loads



# Sprint



PROJECT: DO MACRO UPGRADE  
 SITE NAME: N. MADISON/ VOL. FIRE DEPT.  
 SITE CASCADE: CT03XC164  
 SITE ADDRESS: 864 OPENING HILL RD.  
 MADISON, CT 06443  
 SITE TYPE: SELF SUPPORT TOWER  
 MARKET: SOUTHERN CONNECTICUT

PLANS PREPARED FOR:



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

PROJECT MANAGER:  
**AIROSMITH**  
 DEVELOPMENT  
 32 CLINTON ST.  
 SARATOGA SPRINGS, NY 12866  
 OFFICE# (518) 306-3740



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REVISIONS:	DESCRIPTION	DATE	BY	REV
ISSUED FOR REVIEW		01/25/16	SKB	0

SITE NAME:  
**N. MADISON/  
 VOL. FIRE DEPT.**

SITE NUMBER:  
**CT03XC164**

SITE ADDRESS:  
**864 OPENING HILL RD.  
 MADISON, CT 06443**

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

SHEET NUMBER:  
**T-1**

**SITE INFORMATION**

**TOWER OWNER:**  
 AMERICAN TOWER CORPORATION  
 10 PRESIDENTIAL WAY  
 WOBURN, MA 01801

**LATITUDE (NAD83):**  
 41° 21' 26.33" N  
 41.35731388

**LONGITUDE (NAD83):**  
 72° 38' 19.51" W  
 -72.63875277

**COUNTY:**  
 NEW HAVEN

**ZONING JURISDICTION:**  
 CONNECTICUT SITING COUNCIL

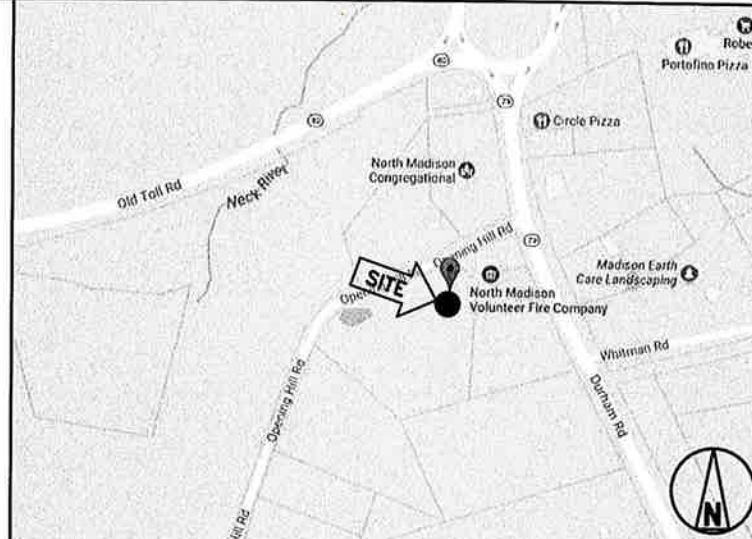
**ZONING DISTRICT:**  
 TBD

**POWER COMPANY:**  
 NATIONAL GRID  
 PHONE: (800) 642-4272

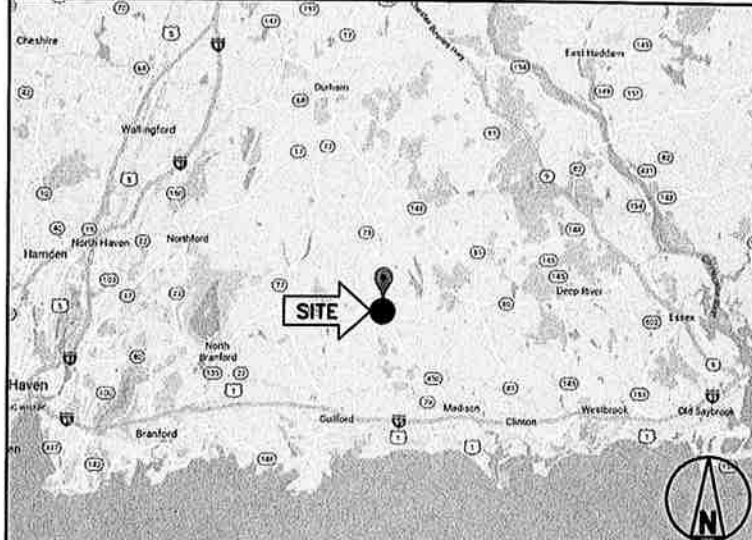
**AAV PROVIDER:**  
 VERIZON  
 PHONE: (800) 837-4966

**PROJECT MANAGER:**  
 AIROSMITH DEVELOPMENT  
 TERRI BURKHOLDER  
 (315)719-2928  
 TBURKHOLDER@AIROSMITHDEVELOPMENT.COM

**AREA MAP**



**LOCATION MAP**



**PROJECT DESCRIPTION**

- SPRINT PROPOSES TO MODIFY AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY.
- INSTALL (3) PANEL ANTENNAS
  - INSTALL (3) 2.5 GHz RRH'S BEHIND ANTENNAS
  - INSTALL (30) JUMPER CABLES
  - INSTALL (1) HYBRID CABLE
  - INSTALL 2.5 EQUIPMENT INSIDE EXISTING N.V. MMBS CABINET

THESE PLANS HAVE BEEN DEVELOPED FOR THE MODIFICATION OF AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY OWNED OR LEASED BY SPRINT IN ACCORDANCE WITH THE SCOPE OF WORK PROVIDED BY SPRINT. INFINIGY HAS INCORPORATED THIS SCOPE OF WORK IN THE PLANS. THESE PLANS ARE NOT FOR CONSTRUCTION UNLESS ACCOMPANIED BY A PASSING STRUCTURAL STABILITY ANALYSIS PREPARED BY A LICENSED STRUCTURAL ENGINEER. STRUCTURAL ANALYSIS MUST INCLUDE BOTH TOWER AND MOUNT.

**APPLICABLE CODES**

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALL IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES.

1. INTERNATIONAL BUILDING CODE (2015 IBC)
2. TIA-222-G OR LATEST EDITION
3. NFPA 780 - LIGHTNING PROTECTION CODE
4. 2011 NATIONAL ELECTRIC CODE OR LATEST EDITION
5. ANY OTHER NATIONAL OR LOCAL APPLICABLE CODES, MOST RECENT EDITIONS
6. CT BUILDING CODE
7. LOCAL BUILDING CODE
8. CITY/COUNTY ORDINANCES



**DRAWING INDEX**

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



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

**SECTION 01 100 – SCOPE OF WORK**

**PART 1 – GENERAL**

- 1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE SPRINT CONSTRUCTION STANDARDS FOR WIRELESS SITES, CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.
- 1.2 RELATED DOCUMENTS:
  - A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.
  - B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HERewith.
- 1.3 PRECEDENCE: SHOULD CONFLICTS OCCUR BETWEEN THE STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES INCLUDING THE STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES AND THE CONSTRUCTION DRAWINGS, INFORMATION ON THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE. NOTIFY SPRINT CONSTRUCTION MANAGER IF THIS OCCURS.
- 1.4 NATIONALLY RECOGNIZED CODES AND STANDARDS:
  - A. THE WORK SHALL COMPLY WITH APPLICABLE NATIONAL AND LOCAL CODES AND STANDARDS, LATEST EDITION, AND PORTIONS THEREOF, INCLUDED BUT NOT LIMITED TO THE FOLLOWING:
    - 1. GR-63-CORE NEBS REQUIREMENTS: PHYSICAL PROTECTION
    - 5. GR-78-CORE GENERIC REQUIREMENTS FOR THE PHYSICAL DESIGN AND MANUFACTURE OF TELECOMMUNICATIONS EQUIPMENT.
    - 3. GR-1089 CORE, ELECTROMAGNETIC COMPATIBILITY AND ELECTRICAL SAFETY -GENERIC CRITERIA FOR NETWORK TELECOMMUNICATIONS EQUIPMENT.
    - 4. NATIONAL FIRE PROTECTION ASSOCIATION CODES AND STANDARDS (NFPA) INCLUDING NFPA 70 (NATIONAL ELECTRICAL CODE - "NEC") AND NFPA 101 (LIFE SAFETY CODE).
    - 5. AMERICAN SOCIETY FOR TESTING OF MATERIALS (ASTM)
    - 6. INSTITUTE OF ELECTRONIC AND ELECTRICAL ENGINEERS (IEEE)
    - 7. AMERICAN CONCRETE INSTITUTE (ACI)
    - 8. AMERICAN WIRE PRODUCERS ASSOCIATION (AWPA)
    - 9. CONCRETE REINFORCING STEEL INSTITUTE (CRSI)
    - 10. AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)
    - 11. PORTLAND CEMENT ASSOCIATION (PCA)
    - 12. NATIONAL CONCRETE MASONRY ASSOCIATION (NCMA)
    - 13. BRICK INDUSTRY ASSOCIATION (BIA)
    - 14. AMERICAN WELDING SOCIETY (AWS)
    - 15. NATIONAL ROOFING CONTRACTORS ASSOCIATION (NRCA)
    - 16. SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA)
    - 17. DOOR AND HARDWARE INSTITUTE (DHI)
    - 18. OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA)
    - 19. APPLICABLE BUILDING CODES INCLUDING UNIFORM BUILDING CODE, SOUTHERN BUILDING CODE, BOCA, AND THE INTERNATIONAL BUILDING CODE.

**1.5 DEFINITIONS:**

- A. WORK: THE SUM OF TASKS AND RESPONSIBILITIES IDENTIFIED IN THE CONTRACT DOCUMENTS.
- B. COMPANY: SPRINT CORPORATION
- C. ENGINEER: SYNONYMOUS WITH ARCHITECT & ENGINEER AND "A&E". THE DESIGN PROFESSIONAL HAVING PROFESSIONAL RESPONSIBILITY FOR DESIGN OF THE PROJECT.
- D. CONTRACTOR: CONSTRUCTION CONTRACTOR; CONSTRUCTION VENDOR; INDIVIDUAL OR ENTITY WHO AFTER EXECUTION OF A CONTRACT IS BOUND TO ACCOMPLISH THE WORK.
- E. THIRD PARTY VENDOR OR AGENCY: A VENDOR OR AGENCY ENGAGED SEPARATELY BY THE COMPANY, A&E, OR CONTRACTOR TO PROVIDE MATERIALS OR TO ACCOMPLISH SPECIFIC TASKS RELATED TO BUT NOT INCLUDED IN THE WORK.
- F. OFCI: OWNER FURNISHED, CONTRACTOR INSTALLED EQUIPMENT.
- G. CONSTRUCTION MANAGER - ALL PROJECTS RELATED COMMUNICATION TO FLOW THROUGH SPRINT REPRESENTATIVE IN CHARGE OF PROJECT...

- 1.6 SITE FAMILIARITY: CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE SPRINT CONSTRUCTION MANAGER PRIOR TO THE COMMENCEMENT OF WORK. NO COMPENSATION WILL BE AWARDED BASED ON CLAIM OF LACK OF KNOWLEDGE OR FIELD CONDITIONS.
  - 1.7 POINT OF CONTACT: COMMUNICATION BETWEEN SPRINT AND THE CONTRACTOR SHALL FLOW THROUGH THE SINGLE SPRINT CONSTRUCTION MANAGER APPOINTED TO MANAGE THE PROJECT FOR SPRINT.
  - 1.8 ON-SITE SUPERVISION: THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL EMPLOY A COMPETENT SUPERINTENDENT WHO SHALL BE IN ATTENDANCE AT THE SITE AT ALL TIMES DURING PERFORMANCE OF THE WORK.
  - 1.9 DRAWINGS, SPECIFICATIONS AND DETAILS REQUIRED AT JOBSITE: THE CONSTRUCTION CONTRACTOR SHALL MAINTAIN A FULL SET OF THE CONSTRUCTION DRAWINGS, STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES AND THE STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES AT THE JOBSITE FROM MOBILIZATION THROUGH CONSTRUCTION COMPLETION.
    - A. THE JOBSITE DRAWINGS, SPECIFICATIONS AND DETAILS SHALL BE CLEARLY MARKED DAILY IN RED PENCIL WITH ANY CHANGES IN CONSTRUCTION OVER WHAT IS DEPICTED IN THE DOCUMENTS. AT CONSTRUCTION COMPLETION, THIS JOBSITE MARKUP SET SHALL BE DELIVERED TO THE COMPANY OR COMPANY'S DESIGNATED REPRESENTATIVE TO BE FORWARDED TO THE COMPANY'S A&E VENDOR FOR PRODUCTION OF "AS-BUILT" DRAWINGS.
    - B. DETAILS ARE INTENDED TO SHOW DESIGN INTENT. MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE WORK. CONTRACTOR SHALL NOTIFY SPRINT CONSTRUCTION MANAGER OF ANY VARIATIONS PRIOR TO PROCEEDING WITH THE WORK.
    - C. DIMENSIONS SHOWN ARE TO FINISH SURFACES UNLESS NOTED OTHERWISE. SPACING BETWEEN EQUIPMENT IS THE REQUIRED CLEARANCE. SHOULD THERE BE ANY QUESTIONS REGARDING THE CONTRACT DOCUMENTS, EXISTING CONDITIONS AND/OR DESIGN INTENT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A CLARIFICATION FROM THE SPRINT CONSTRUCTION MANAGER PRIOR TO PROCEEDING WITH THE WORK.
  - 1.10 USE OF JOB SITE: THE CONTRACTOR SHALL CONFINE ALL CONSTRUCTION AND RELATED OPERATIONS INCLUDING STAGING AND STORAGE OF MATERIALS AND EQUIPMENT, PARKING, TEMPORARY FACILITIES, AND WASTE STORAGE TO THE LEASE PARCEL UNLESS OTHERWISE PERMITTED BY THE CONTRACT DOCUMENTS.
  - 1.11 UTILITIES SERVICES: WHERE NECESSARY TO CUT EXISTING PIPES, ELECTRICAL WIRES, CONDUITS, CABLES, ETC., OF UTILITY SERVICES, OR OF FIRE PROTECTION OR COMMUNICATIONS SYSTEMS, THEY SHALL BE CUT AND CAPPED AT SUITABLE PLACES OR WHERE SHOWN. ALL SUCH ACTIONS SHALL BE COORDINATED WITH THE UTILITY COMPANY INVOLVED.
  - 1.12 PERMITS / FEES: WHEN REQUIRED THAT A PERMIT OR CONNECTION FEE BE PAID TO A PUBLIC UTILITY PROVIDER FOR NEW SERVICE TO THE CONSTRUCTION PROJECT, PAYMENT OF SUCH FEE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
  - 1.13 CONTRACTOR SHALL TAKE ALL MEASURES AND PROVIDE ALL MATERIAL NECESSARY FOR PROTECTING EXISTING EQUIPMENT AND PROPERTY.
  - 1.14 METHODS OF PROCEDURE (MOPS) FOR CONSTRUCTION: CONTRACTOR SHALL PERFORM WORK AS DESCRIBED IN THE FOLLOWING INSTALLATION AND COMMISSIONING MOPS.
- NOTE: IN SHORT-FORM SPECIFICATIONS ON THE DRAWINGS, A/E TO INSERT LIST OF APPLICABLE MOPS INCLUDING EN-2012-001, EN-2013-002, EL-0568, AND TS-0193

**1.15 USE OF ELECTRONIC PROJECT MANAGEMENT SYSTEMS:**

**PART 2 – PRODUCTS (NOT USED)**

**PART 3 – EXECUTION**

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

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

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

**PART 1 – GENERAL**

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

**PART 2 – PRODUCTS (NOT USED)**

**PART 3 – EXECUTION**

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

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

**PART 1 – GENERAL**

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

**PART 2 – PRODUCTS (NOT USED)**

**PART 3 – EXECUTION**

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

PLANS PREPARED FOR:



PLANS PREPARED BY:

**INFINIGY**  
FROM ZERO TO INFINIGY  
the solutions are endless  
1033 Watervliet Shaker Rd | Albany, NY 12203  
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) 308-3740

ENGINEERING LICENSE:



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REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR REVIEW	01/25/18	SKB	0

SITE NAME:

**N. MADISON/  
VOL. FIRE DEPT.**

SITE NUMBER:

**CT03XC164**

SITE ADDRESS:

**864 OPENING HILL RD.  
MADISON, CT 06443**

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 ANTENNA AND COAX SWEEP TESTING AND MAKE ANY AND ALL NECESSARY CORRECTIONS.
  20. REMAIN ON SITE MOBILIZED THROUGHOUT HAND-OFF AND INTEGRATION TO ASSIST AS NEEDED UNTIL SITE IS DEEMED SUBSTANTIALLY COMPLETE AND PLACED "ON AIR."
- 3.2 GENERAL REQUIREMENTS FOR CIVL 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. CIVL 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. CIVL 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 485. 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 - ANTENNA ALIGNMENT TOOL (AAT)

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JOB NUMBER 528-104

PROJECT MANAGER:

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ENGINEERING LICENSE:



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VOL. FIRE DEPT.**

SITE NUMBER:

**CT03XC164**

SITE ADDRESS:

**864 OPENING HILL RD.  
MADISON, CT 06443**

SHEET DESCRIPTION:

**SPRINT SPECIFICATIONS**

SHEET NUMBER:

**SP-2**



**CONTINUE FROM SP-2**

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

**SECTION 01 400 - SUBMITTALS & TESTS**

**PART 1 - GENERAL**

1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

1.2 RELATED DOCUMENTS:

- A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.
- B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

**PART 2 - PRODUCTS (NOT USED)**

**PART 3 - EXECUTION**

3.1 WEEKLY REPORTS:

- A. CONTRACTOR SHALL PROVIDE SPRINT WITH WEEKLY REPORTS SHOWING PROJECT STATUS. THIS STATUS REPORT FORMAT WILL BE PROVIDED TO THE CONTRACTOR BY SPRINT. THE REPORT WILL CONTAIN SITE ID NUMBER, THE MILESTONES FOR EACH SITE, INCLUDING THE BASELINE DATE, ESTIMATED COMPLETION DATE AND ACTUAL COMPLETION DATE.
- B. REPORT INFORMATION WILL BE TRANSMITTED TO SPRINT VIA ELECTRONIC MEANS AS REQUIRED. THIS INFORMATION WILL PROVIDE A BASIS FOR PROGRESS MONITORING AND PAYMENT.

3.2 PROJECT CONFERENCE CALLS:

- A. SPRINT MAY HOLD WEEKLY PROJECT CONFERENCE CALLS. CONTRACTOR WILL BE REQUIRED TO COMMUNICATE SITE STATUS, MILESTONE COMPLETIONS AND UPCOMING MILESTONE PROJECTIONS, AND ANSWER ANY OTHER SITE STATUS QUESTIONS AS NECESSARY.

3.3 PROJECT TRACKING IN SMS:

- A. CONTRACTOR SHALL PROVIDE SCHEDULE UPDATES AND PROJECTIONS IN THE SMS SYSTEM ON A WEEKLY BASIS.

3.4 ADDITIONAL REPORTING:

- A. ADDITIONAL OR ALTERNATE REPORTING REQUIREMENTS MAY BE ADDED TO THE REPORT AS DETERMINED TO BE REASONABLY NECESSARY BY COMPANY.

3.5 PROJECT PHOTOGRAPHS:

- A. FILE DIGITAL PHOTOGRAPHS OF COMPLETED SITE IN JPEG FORMAT IN THE SMS PHOTO LIBRARY FOR THE RESPECTIVE SITE. PHOTOGRAPHS SHALL BE CLEARLY LABELED WITH SITE NUMBER, NAME AND DESCRIPTION, AND SHALL INCLUDE AT A MINIMUM THE FOLLOWING AS APPLICABLE:

1. SHELTER AND TOWER OVERVIEW.
2. TOWER FOUNDATION(S) - FORMS AND STEEL BEFORE POUR (EACH ANCHOR ON GUYED TOWERS).
3. TOWER FOUNDATION(S) POUR WITH VIBRATOR IN USE (EACH ANCHOR ON GUYED TOWERS).
4. TOWER STEEL AS BEING INSTALLED INTO HOLE (SHOW ANCHOR STEEL ON GUYED TOWERS).
5. PHOTOS OF TOWER SECTION STACKING.
6. CONCRETE TESTING / SAMPLES.
7. PLACING OF ANCHOR BOLTS IN TOWER FOUNDATION.
8. BUILDING/WATER TANK FROM ROAD FOR TENANT IMPROVEMENTS OR COMMENTS.
9. SHELTER FOUNDATION--FORMS AND STEEL BEFORE POURING.
10. SHELTER FOUNDATION POUR WITH VIBRATOR IN USE.
11. COAX CABLE ENTRY INTO SHELTER.
12. PLATFORM MECHANICAL CONNECTIONS TO TOWER/MONOPOLE.
13. ROOFTOP PRE AND POST CONSTRUCTION PHOTOS TO INCLUDE PENETRATIONS AND INTERIOR CEILING.
14. PHOTOS OF TOWER TOP COAX LINE COLOR CODING AND COLOR CODING AT GROUND LEVEL.
15. PHOTOS OF ALL APPROPRIATE COMPANY OR REGULATORY SIGNAGE.
16. PHOTOS OF EQUIPMENT BOLT DOWN INSIDE SHELTER.
17. POWER AND TELCO ENTRANCE TO COMPANY ENCLOSURE AND POWER AND TELCO SUPPLY LOCATIONS INCLUDING METER/DISCONNECT.
18. ELECTRICAL TRENCH(S) WITH ELECTRICAL / CONDUIT BEFORE BACKFILL.
19. ELECTRICAL TRENCH(S) WITH FOIL-BACKED TAPE BEFORE FURTHER BACKFILL.
20. TELCO TRENCH WITH TELEPHONE / CONDUIT BEFORE BACKFILL.
21. TELCO TRENCH WITH FOIL-BACKED TAPE BEFORE FURTHER BACKFILL.
22. SHELTER GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADII).
23. TOWER GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADII).

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

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

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PROJECT MANAGER:

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ENGINEERING LICENSE:



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SITE NAME:

**N. MADISON/  
VOL. FIRE DEPT.**

SITE NUMBER:

**CT03XC164**

SITE ADDRESS:

**864 OPENING HILL RD.  
MADISON, CT 06443**

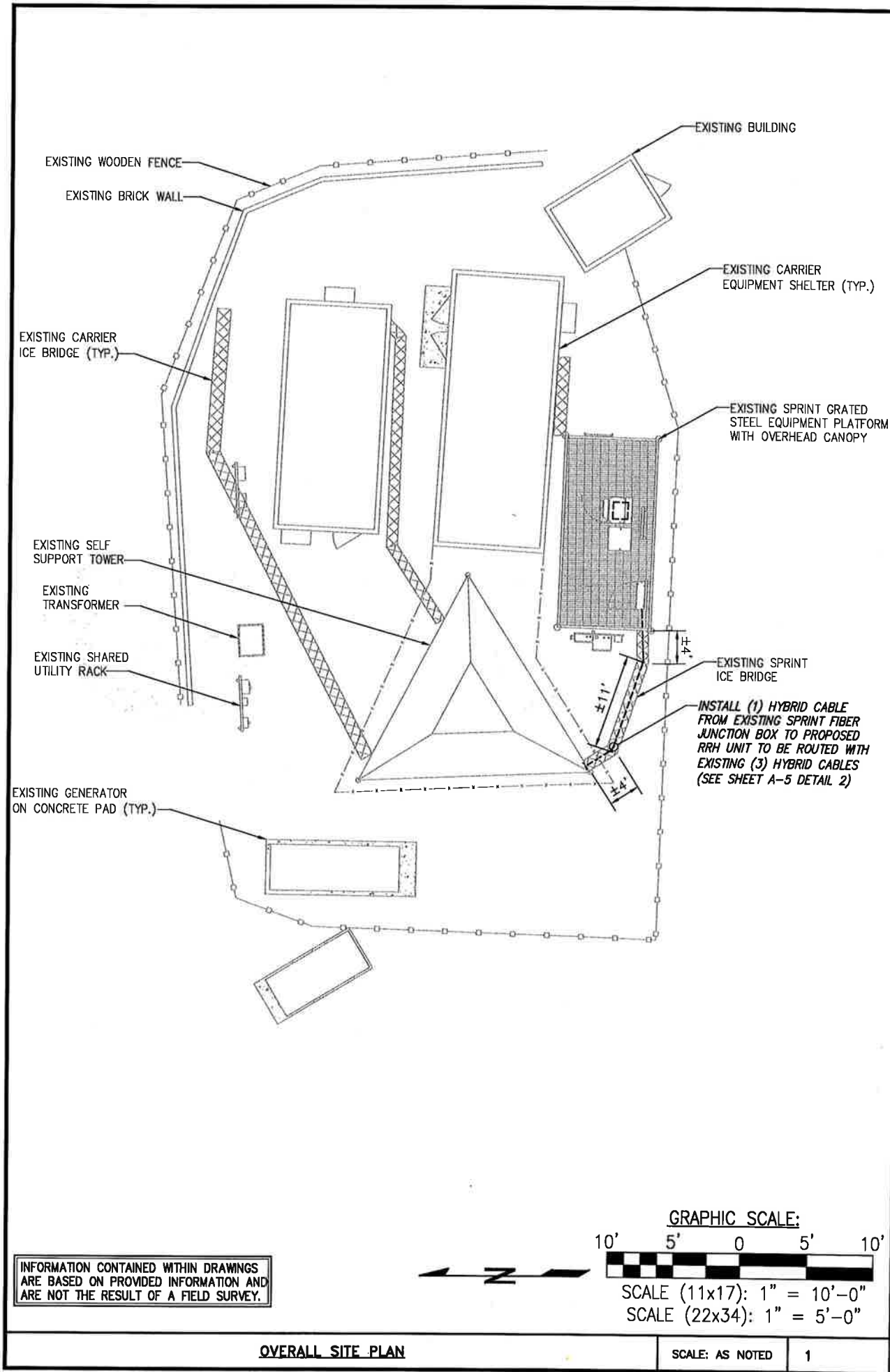
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**SPRINT SPECIFICATIONS**

SHEET NUMBER:

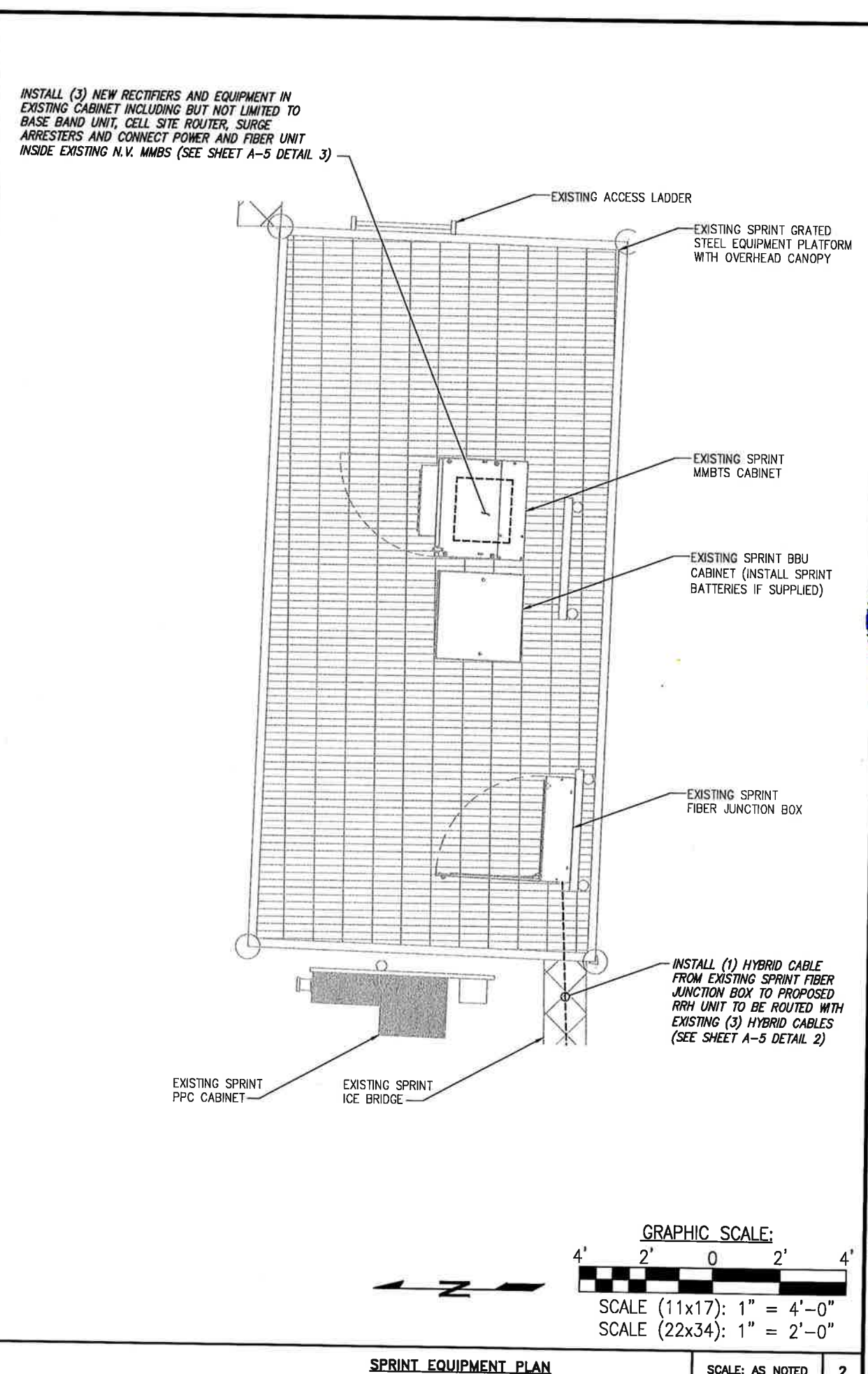
**SP-3**





OVERALL SITE PLAN

SCALE: AS NOTED 1



SPRINT EQUIPMENT PLAN

SCALE: AS NOTED 2

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SHEET DESCRIPTION:

SITE PLAN

SHEET NUMBER:

A-1

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

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

TOP OF TOWER  
ELEV. = ±199'-0" A.G.L.

☉ OF EXISTING/TO BE  
INSTALLED SPRINT ANTENNAS  
ELEV. = 150'-0" A.G.L.

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

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

EXISTING (1) SPRINT  
PANEL ANTENNA TO  
REMAIN EACH SECTOR

EXISTING (1) SPRINT 800 MHz  
RRH MOUNTED TO TOWER LEG  
TO REMAIN EACH SECTOR

EXISTING (1) SPRINT 1900 MHz  
RRH MOUNTED TO TOWER LEG  
TO REMAIN EACH SECTOR

EXISTING SELF  
SUPPORT TOWER

INSTALL (1) HYBRID CABLE FROM  
EXISTING SPRINT FIBER JUNCTION  
BOX TO PROPOSED RRH UNIT TO BE  
ROUTED WITH EXISTING (3) HYBRID  
CABLES (SEE SHEET A-5 DETAIL 2)

GROUND LEVEL

NOTE:

- STRUCTURAL ANALYSIS COMPLETED BY AMERICAN TOWER CORPORATION. FOR ADDITIONAL INFORMATION SEE REPORT TITLED: "STRUCTURAL ANALYSIS REPORT, ATC SITE NUMBER: 307176", DATED: "OCTOBER 26, 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 DO MACRO PROJECT MOUNT ANALYSIS", DATED: "JANUARY 16 2018". ACCORDING TO THE RESULTS OF REVIEW, THE ANTENNA AND RRH SUPPORTS ARE SUFFICIENT TO SUPPORT THE PROPOSED EQUIPMENT.

TOWER ELEVATION

NO SCALE

1

SITE LOADING CHART

SECTOR	EXISTING/ PROPOSED	ANTENNA MODEL #	VENDOR	AZIMUTH	QTY.	REMAIN/ REMOVED	RRH (QTY/MODEL)	CABLE	CABLE LENGTH	RAD CENTER
ALPHA	PROPOSED	APXVTM14-ALU-120	KMW	290°	1	-	(1) 800 MHZ 2X50W RRH W/ FILTER	SEE SHEET A-5 DETAIL 1	±150' AGL	±150' AGL
	EXISTING	APXVSP18-C-A20	RPS	290°	1	REMAIN	(1) TD-RRH8X20-25 W/ SOLAR SHIELD	EXISTING HYBRID		
	--	--	--	--	--	--	(1) 1900 MHZ 4X45 RRH	--		
BETA	PROPOSED	APXVTM14-ALU-120	KMW	10°	1	-	(1) 800 MHZ 2X50W RRH W/ FILTER	SEE SHEET A-5 DETAIL 1	±190*	±150' AGL
	EXISTING	APXVSP18-C-A20	RPS	10°	1	REMAIN	(1) TD-RRH8X20-25 W/ SOLAR SHIELD	EXISTING HYBRID		
	--	--	--	--	--	--	(1) 1900 MHZ 4X45 RRH	--		
GAMMA	PROPOSED	APXVTM14-ALU-120	KMW	170°	1	-	(1) 800 MHZ 2X50W RRH W/ FILTER	SEE SHEET A-5 DETAIL 1	±150' AGL	±150' AGL
	EXISTING	APXVSP18-C-A20	RPS	170°	1	REMAIN	(1) TD-RRH8X20-25 W/ SOLAR SHIELD	EXISTING HYBRID		
	--	--	--	--	--	--	(1) 1900 MHZ 4X45 RRH	--		

PROJECT SCOPE:

INSTALL: (3) PANEL ANTENNAS AND (3) 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

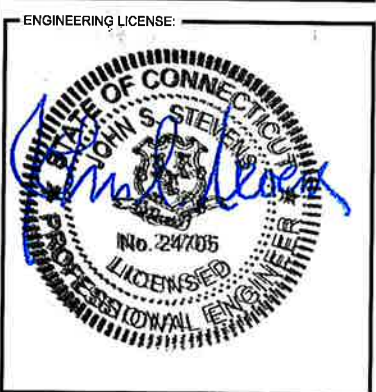
NO SCALE

2



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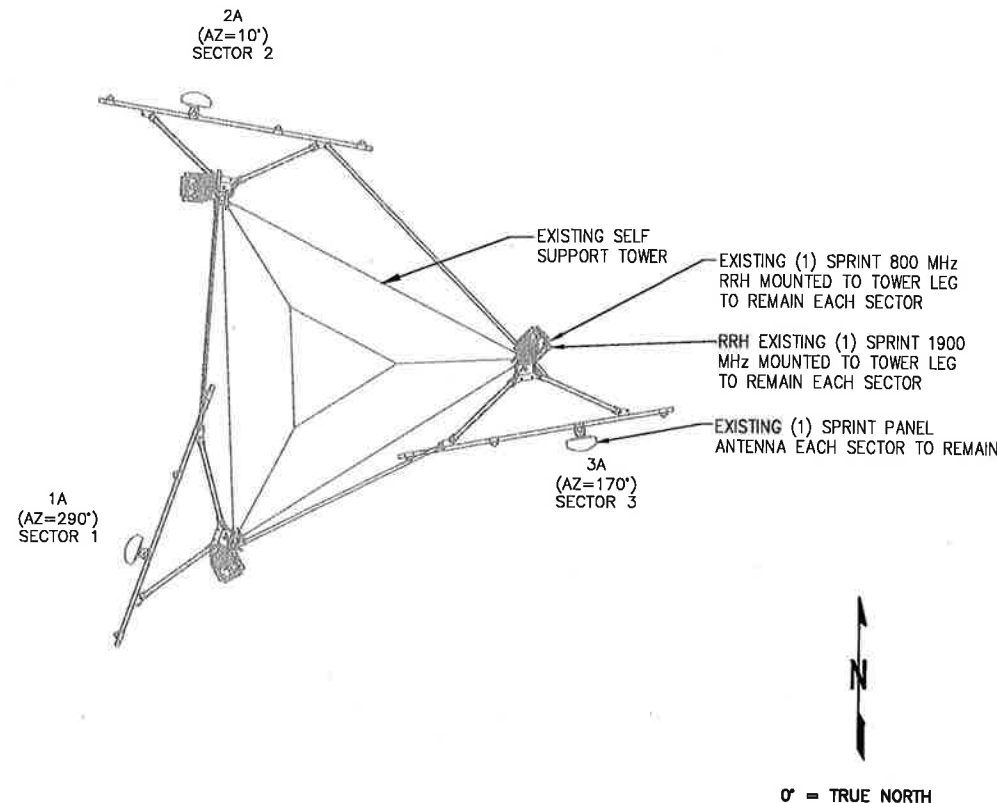
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SHEET DESCRIPTION:  
TOWER ELEVATION

SHEET NUMBER:  
A-2

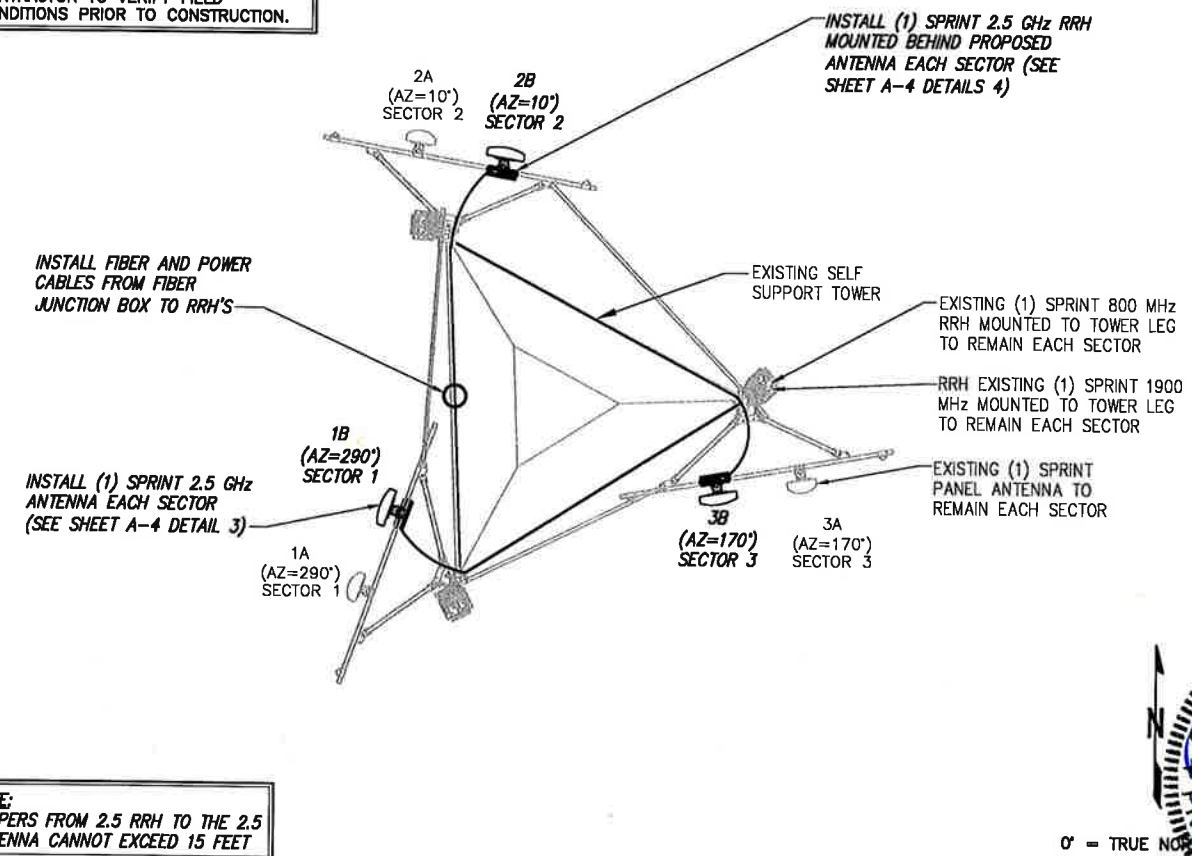




EXISTING ANTENNA & RRH LAYOUT

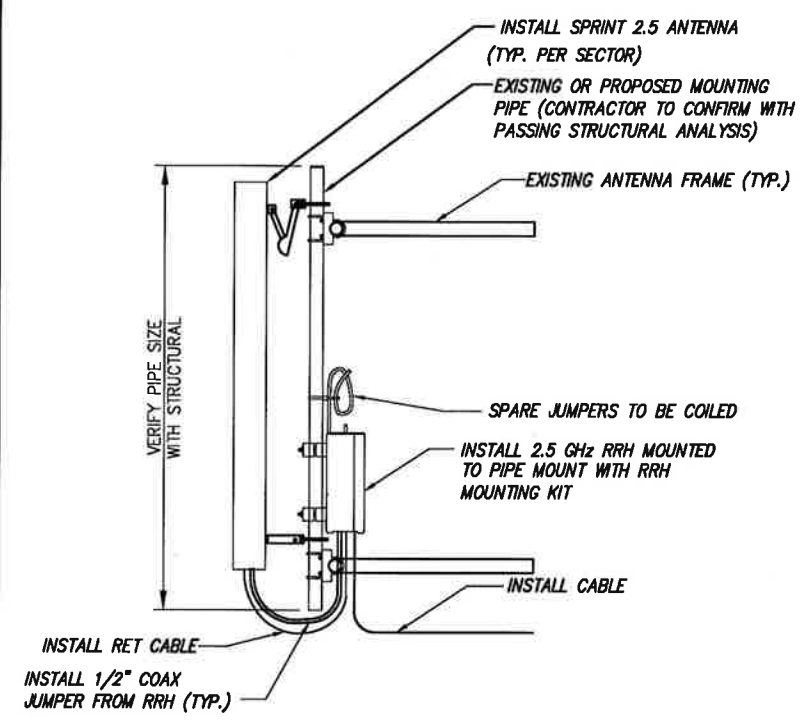
NO SCALE 1

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



FINAL ANTENNA & RRH LAYOUT

NO SCALE 2



TYPICAL 2.5 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:
1. CUT DC CONDUCTORS TO LENGTH.
  2. COIL FIBER CABLE AND SECURE AT SIDE OF RRH.
  3. DO NOT EXCEED BEND RADIUS.

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

DETAIL NOT USED

NO SCALE 4

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PLANS PREPARED BY:

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www.infinigy.com  
JOB NUMBER 526-104

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N. MADISON/  
VOL. FIRE DEPT.

SITE NUMBER:

CT03XC164

SITE ADDRESS:

864 OPENING HILL RD.  
MADISON, CT 06443

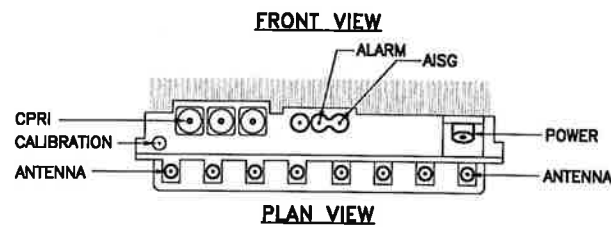
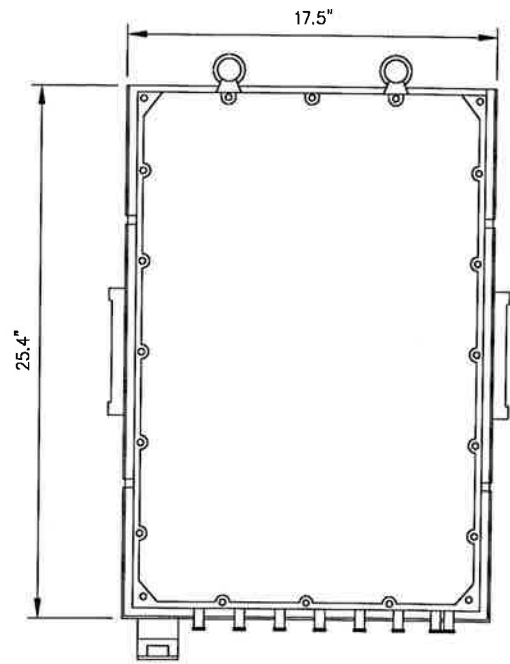
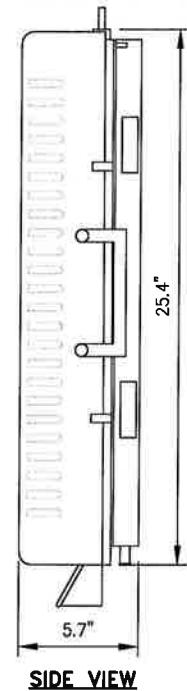
SHEET DESCRIPTION:

ANTENNA LAYOUT  
& MOUNTING DETAILS

SHEET NUMBER:

A-3

RRH: ALCATEL LUCENT TD-RRH8X20  
 COLOR: LIGHT GREY  
 WEIGHT: 70 LBS.



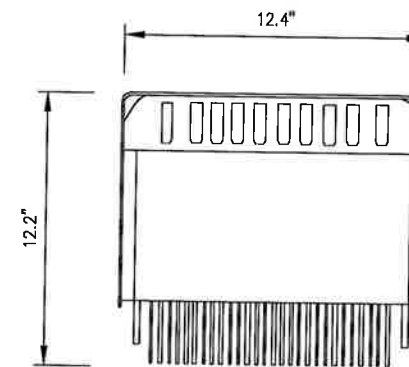
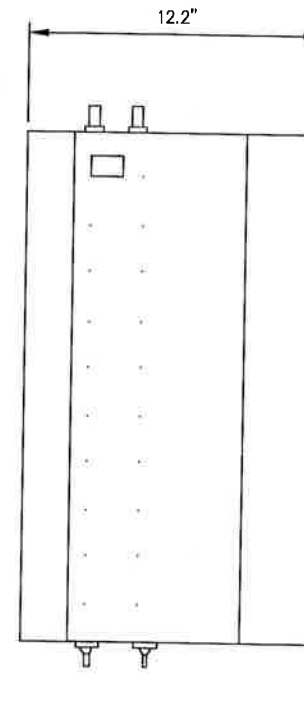
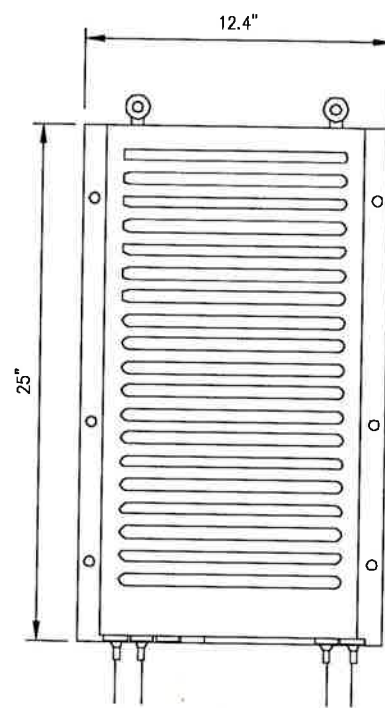
**NOTES**  
 COMPLY WITH MANUFACTURERS INSTRUCTIONS TO ENSURE THAT ALL RRH'S RECEIVE ELECTRICAL POWER WITHIN 24 HOURS OF BEING REMOVED FROM THE MANUFACTURER'S PACKAGING. DO NOT OPEN RRH PACKAGES IN THE RAIN.

2.5 RRH'S

NO SCALE

1

RRH: ALCATEL LUCENT 1900 MHz 4x45 RRH  
 COLOR: LIGHT GREY  
 WEIGHT: 70 LBS.  
 (INCLUDING OPTIONAL SOLAR SHIELD)



FRONT VIEW

SIDE VIEW

TOP VIEW

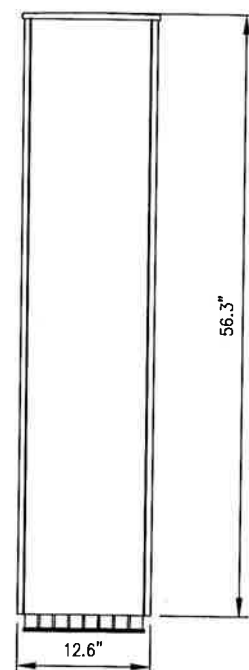
EXISTING 1900 MHZ RRH

NO SCALE

2

ANTENNA RFS APXVTM14-ALU-I20

RADOME MATERIAL: ASA  
 RADOME COLOR: LIGHT GREY  
 DIMENSIONS, HxWxD.in(mim): 56.3"x12.6"x6.3"  
 WEIGHT: 52.9 lbs



SIDE VIEW

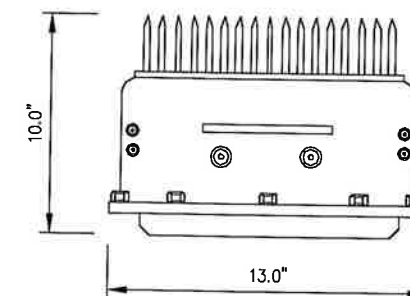
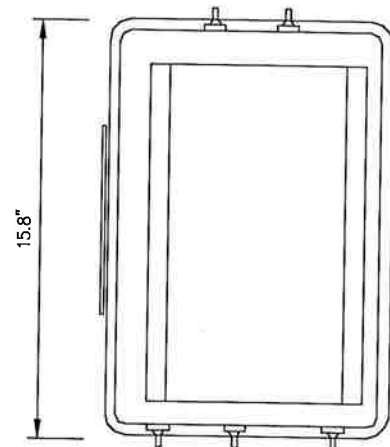
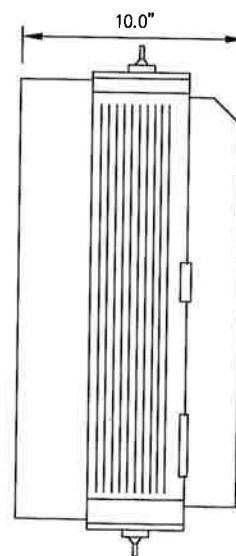
FRONT VIEW

2500 MHZ ANTENNA

NO SCALE

3

RRH: ALCATEL LUCENT RRH 800 MHz 2x50W  
 COLOR: LIGHT GREY  
 WEIGHT: 53 LBS.



SIDE VIEW

FRONT VIEW

PLAN VIEW

EXISTING 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.

PLANS PREPARED FOR:



PLANS PREPARED BY:

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PROJECT MANAGER:

**AIROSMITH**  
 DEVELOPMENT  
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SITE NUMBER:

CT03XC164

SITE ADDRESS:

864 OPENING HILL RD.  
 MADISON, CT 06443

SHEET DESCRIPTION:

EQUIPMENT &  
 MOUNTING DETAILS

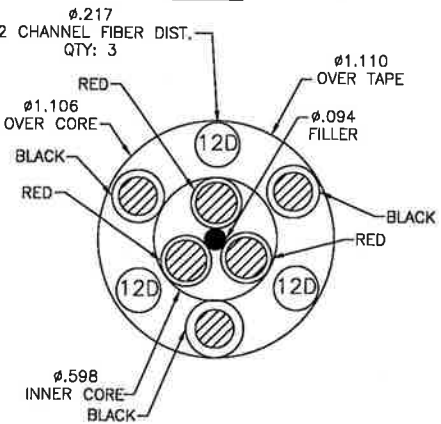
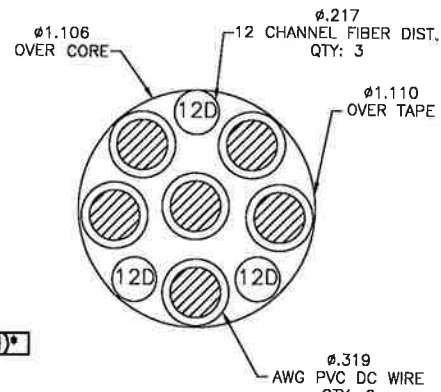
SHEET NUMBER:

A-4



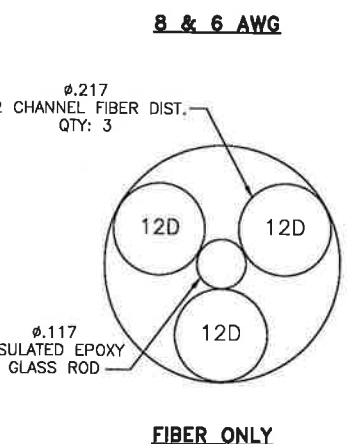
**RFS HYBRIFLEX RISER CABLE SCHEDULE**

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



**RFS HYBRIFLEX JUMPER CABLE SCHEDULE**

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



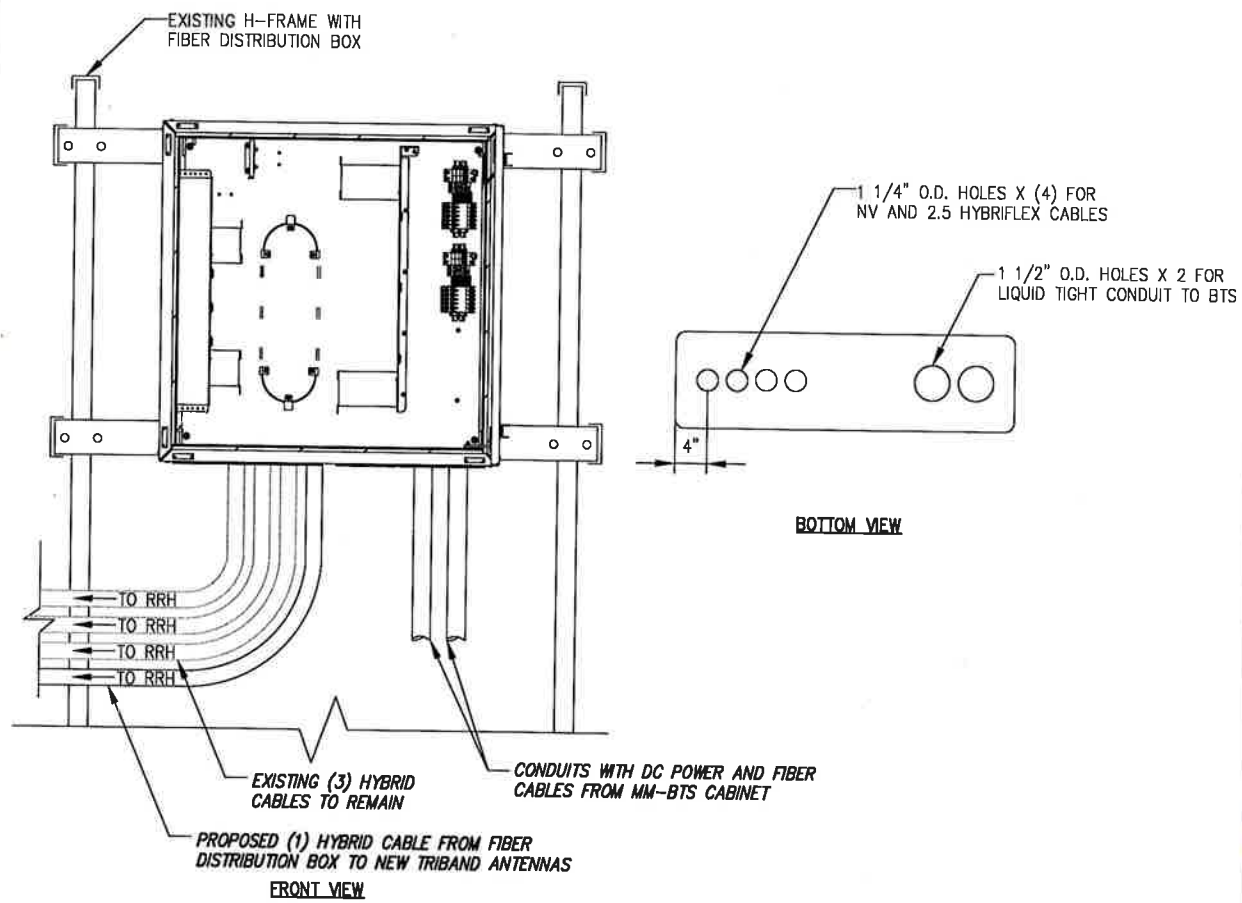
**NOTE:**  
SPRINT CM TO CONFIRM HYBRID OR FIBER RISER CABLE AND HYBRID OR FIBER JUMPER CABLE MODEL NUMBERS IF HYBRID CABLES ARE REQUIRED BEFORE PREPARING BOM.

\* 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.

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

NO SCALE

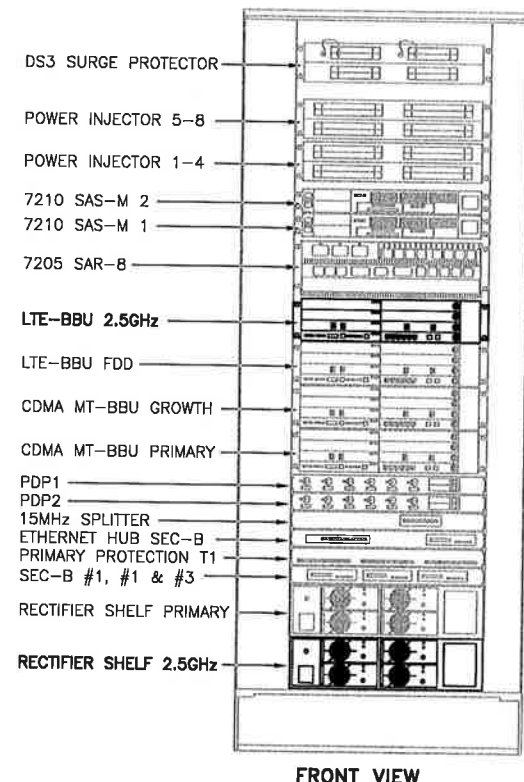
1



**FIBER JUNCTION BOX PENETRATION**

NO SCALE

2



**FRONT VIEW**

**NEW EQUIPMENT IN EXISTING CABINET**

NO SCALE

3

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VOL. FIRE DEPT.**

SITE NUMBER:

**CT03XC164**

SITE ADDRESS:

**864 OPENING HILL RD.  
MADISON, CT 06443**

SHEET DESCRIPTION:

**CIVIL DETAILS**

SHEET NUMBER:

**A-5**



PLANS PREPARED FOR:

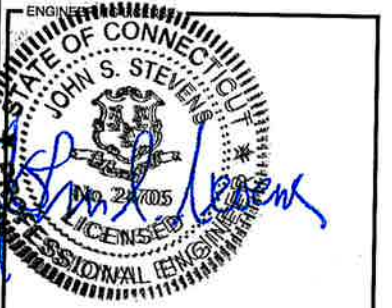


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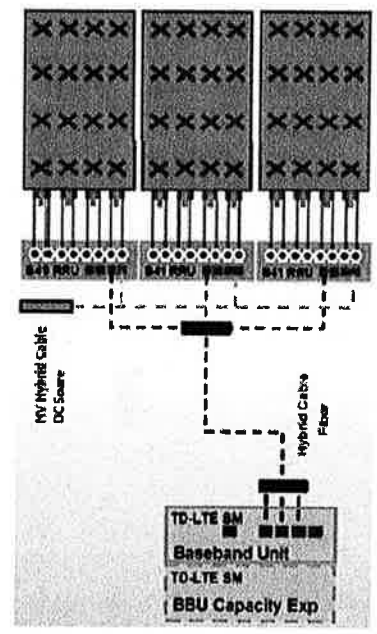
SITE NAME:  
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SITE NUMBER:  
**CT03XC164**

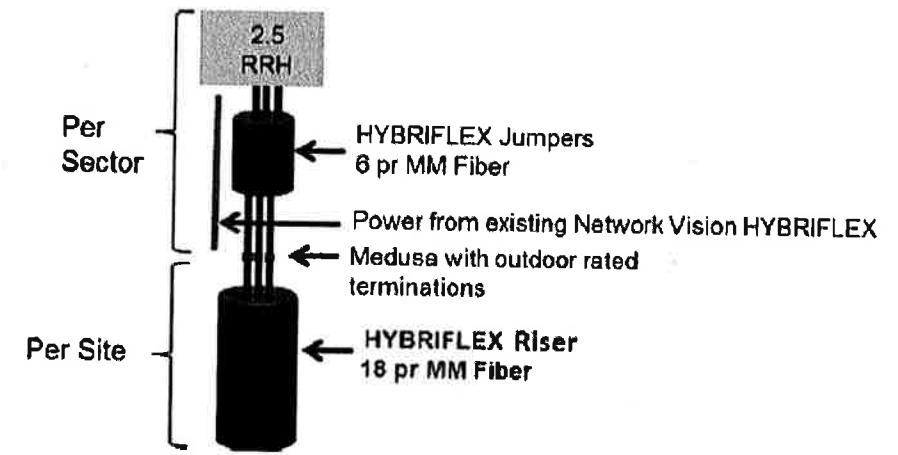
SITE ADDRESS:  
**864 OPENING HILL RD.  
 MADISON, CT 06443**

SHEET DESCRIPTION:  
**PLUMBING DIAGRAM**

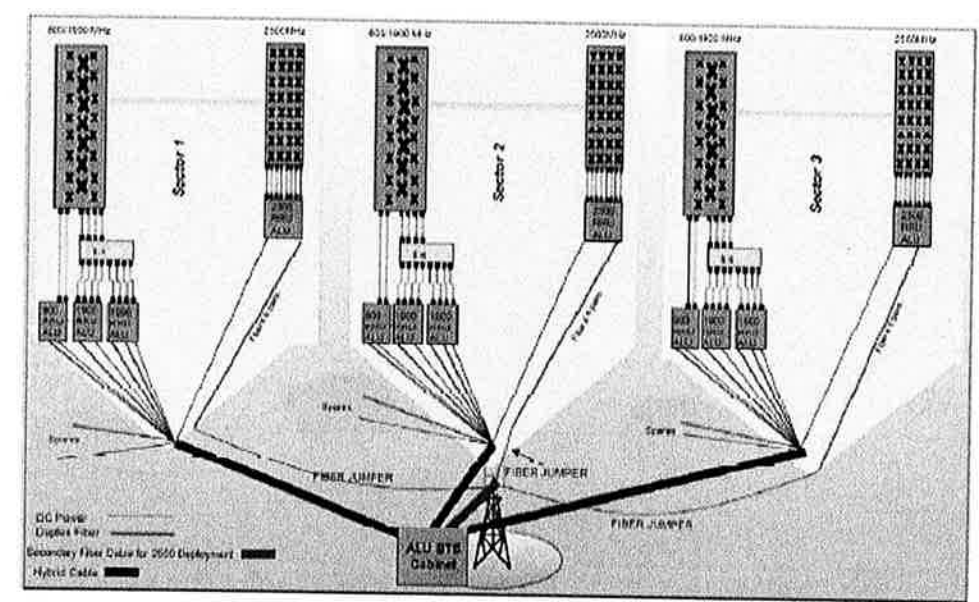
SHEET NUMBER:  
**A-6**



ALU 2500MHz ALU SCENARIO 1 1  
A-6

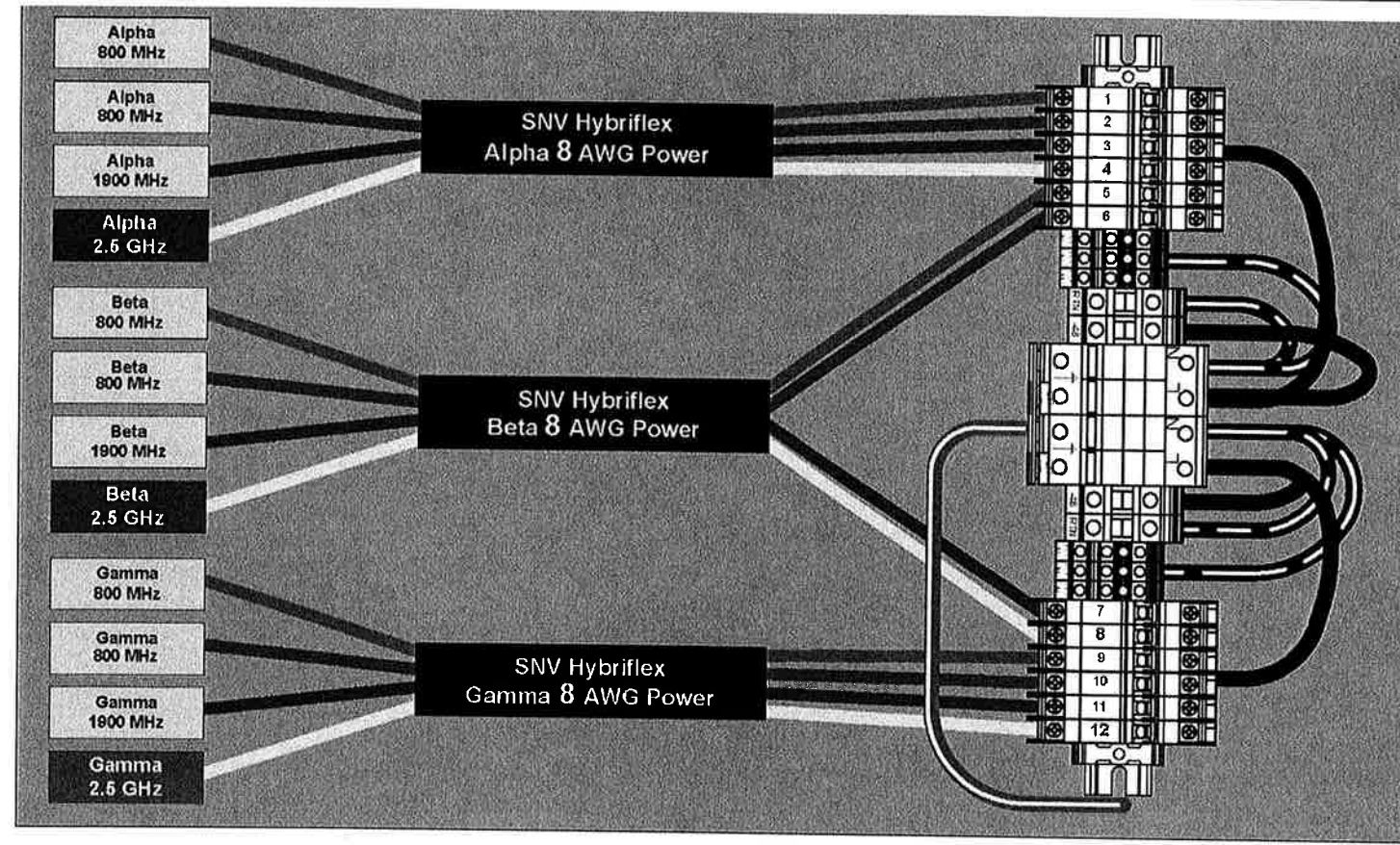


RFS 2500MHz ALU SCENARIO 1 2  
A-6



RAN WIRING DIAGRAM: ALU EQUIPMENT 3  
A-6





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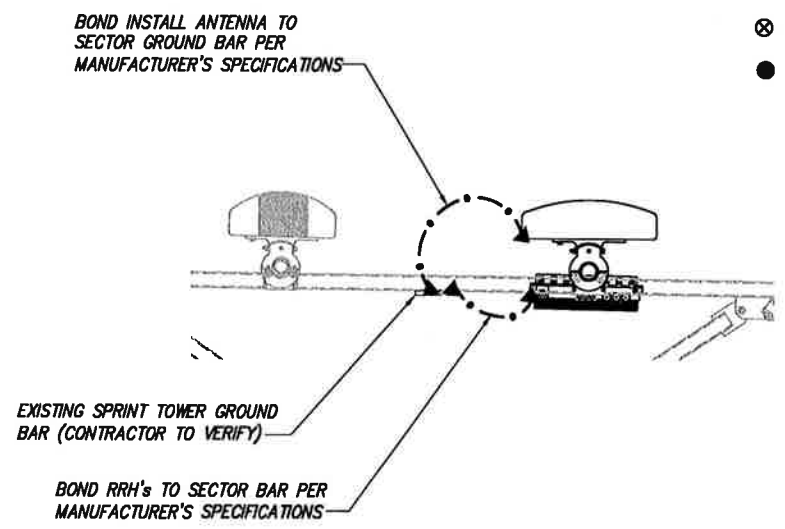
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**RRH TO DISTRIBUTION BOX POWER CONNECTIVITY**

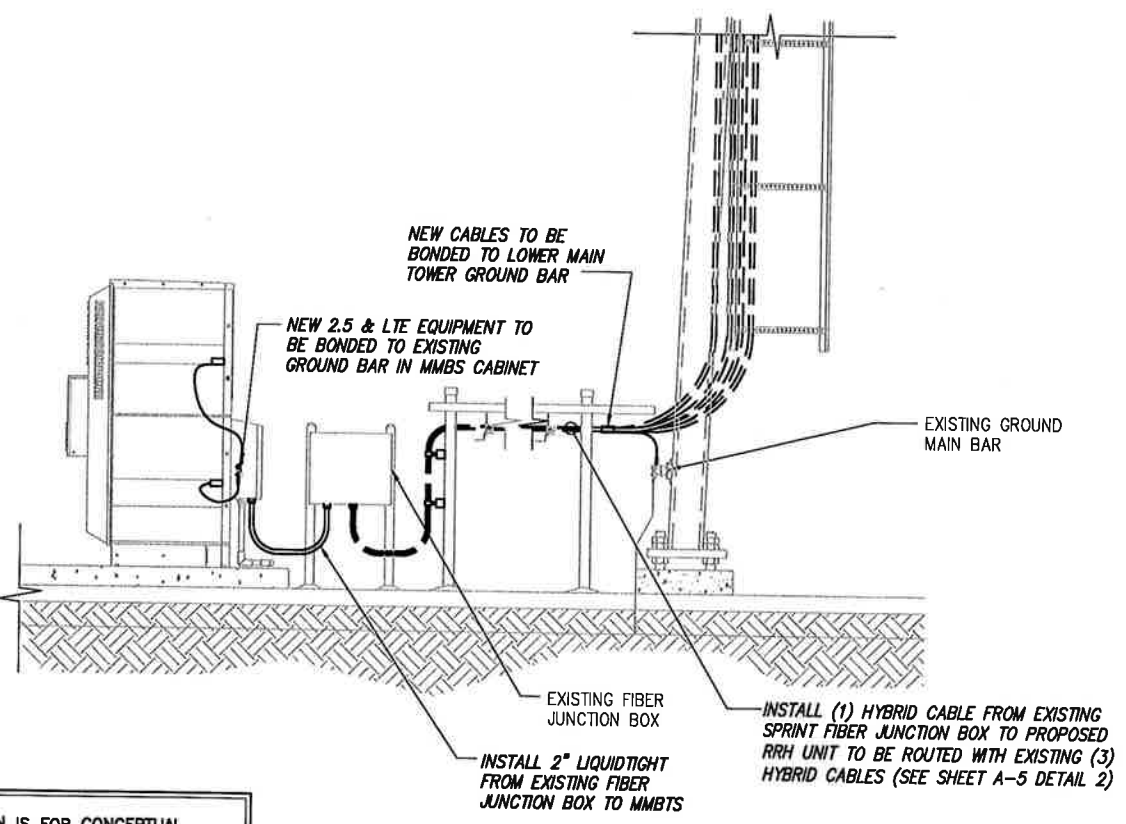
NO SCALE 1

- LEGEND:**
- G — EXISTING GROUND RING
  - CADWELD CONNECTION (EXOTHERMIC WELD)
  - ▲ MECHANICAL CONNECTION
  - ⊗ GROUND ROD
  - CABLE GROUND KIT



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

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VOL. FIRE DEPT.**

SITE NUMBER:  
**CT03XC164**

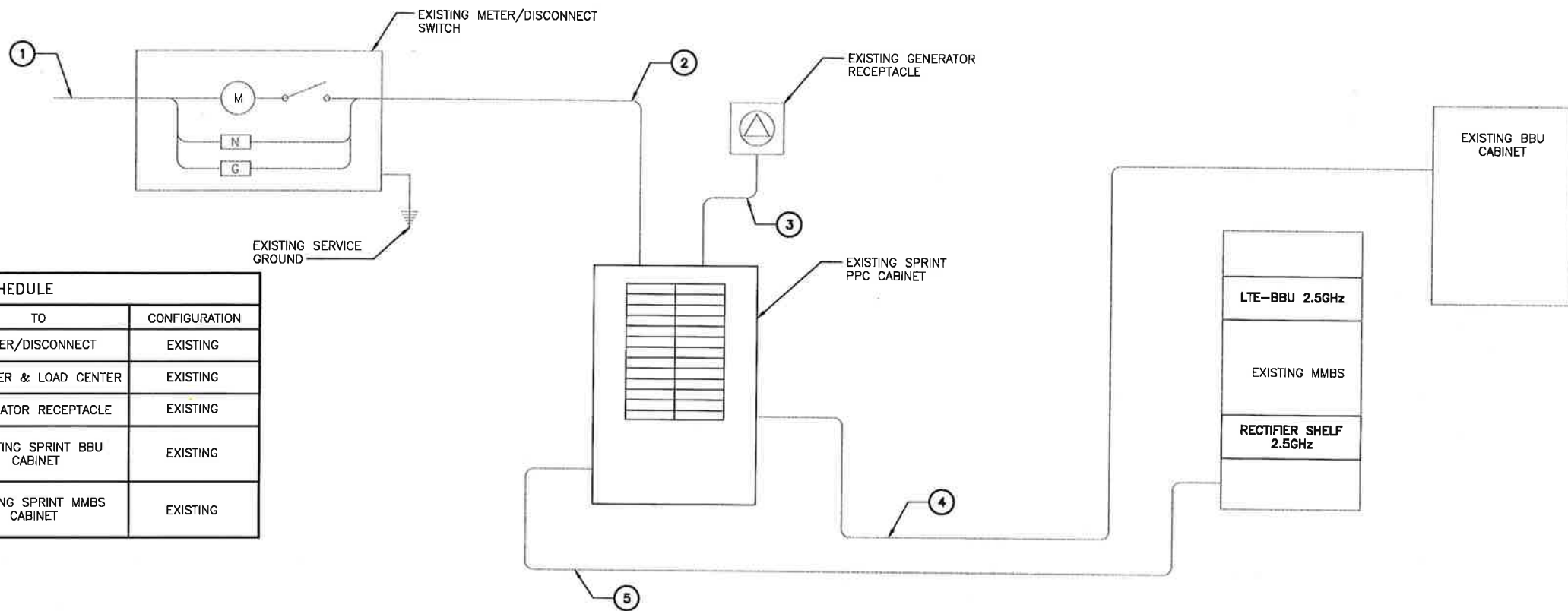
SITE ADDRESS:  
**864 OPENING HILL RD.  
MADISON, CT 06443**

SHEET DESCRIPTION:  
**ELECTRICAL &  
GROUNDING PLAN**

SHEET NUMBER:  
**E-1**



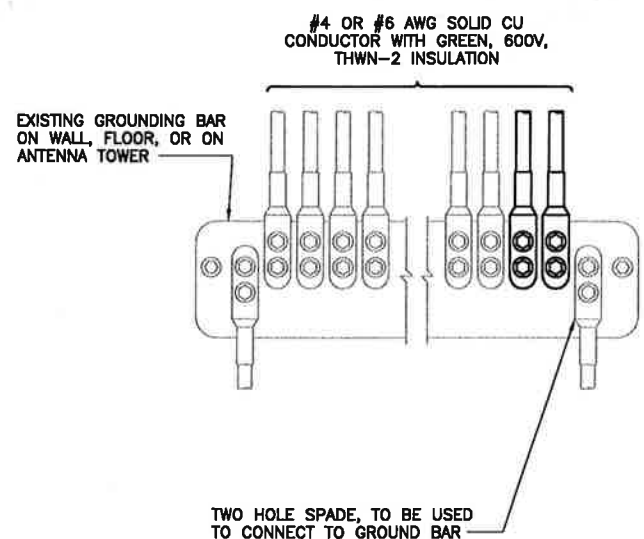
**NOTES**  
 CG SHALL REFERENCE ALL SPECS FOR "CONNECTING THE POWER SUPPLY" OF THE NEW INSTALLATION DOCUMENTS, FOR ALL CONNECTION SPECIFICATIONS.



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**

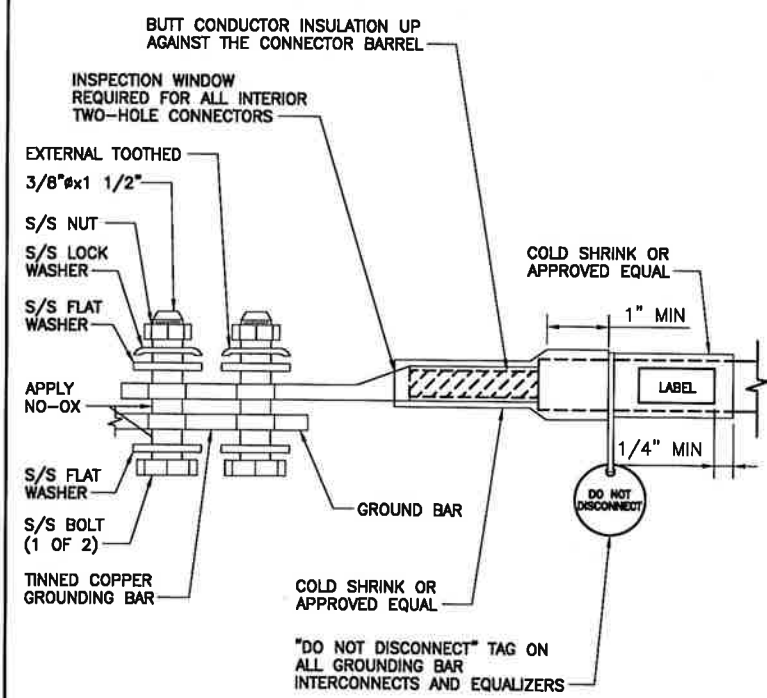
NO SCALE 1



**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.

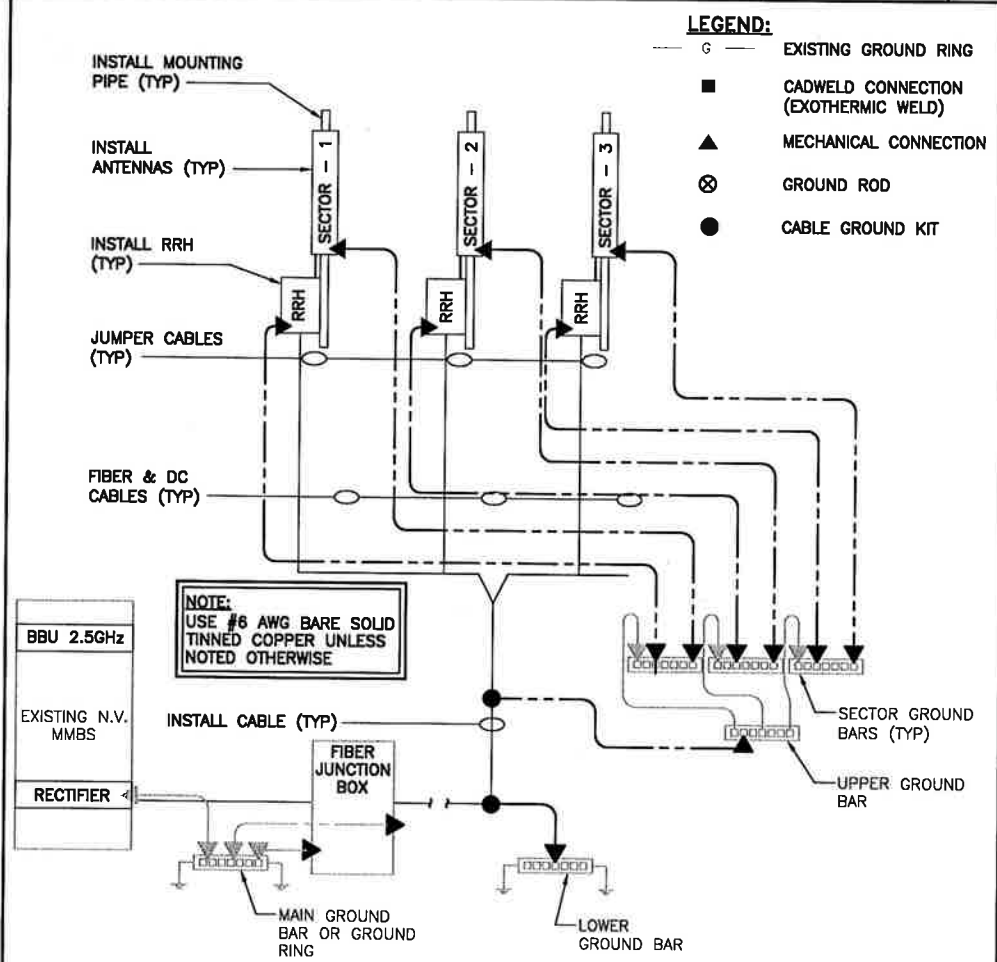
**INSTALLATION OF GROUNDING CONDUCTOR TO GROUNDING BAR**

NO SCALE 2



**TWO HOLE LUG**

NO SCALE 3



**GROUNDING RISER DIAGRAM**

NO SCALE 4



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SITE ADDRESS:  
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 MADISON, CT 06443**

SHEET DESCRIPTION:  
**ELECTRICAL &  
 GROUNDING DETAILS**

SHEET NUMBER:  
**E-2**