AIROSMITH DEVELOPMENT
We do it right the first time.

May 16th, 2019

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 668 JONES HILL ROAD, WEST HAVEN, CONNECTICUT – CT52XC076 (lat. 41° 15' 23.044" N, long. - 72° 58' 20.491" W)

Dear Ms. Bachman:

Sprint Spectrum, LP ("Sprint") currently maintains wireless telecommunications antennas at the (151-foot level) on an existing (150-foot Monopole Tower) at the above-referenced address. The property and the tower are owned by AMERICAN TOWER CORPORATION.

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

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to NANCY ROSSI, MAYOR and FRED MESSORE, COMMISSIONER of the City of West Haven. A copy of this letter is also being sent to JUSTINE PAUL the manager for AMERICAN TOWER CORPORATION who manages the tower and 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

32 Clinton Street, Saratoga Springs, NY 12866
Office 518-306-1733 – Fax 518-306-1711
www.airosmithdevelopment.com

AIROSMITH DEVELOPMENT
We do it right the first time.

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) 871-3707 or email me to aperkowski@airosmithdevelopment.com

Kind Regards,

Art Perkowski
Airosmith Development Inc.
32 Clinton Street
Saratoga Springs, NY 12866
518-350-4222 fax
518-871-3707 cell
APerkowski@airosmithdevelopment.com

Attachment

CC: NANCY ROSSI (MAYOR, West Haven, CT)
Justine Paul (American Tower Corporation)
Fred Messore (COMMISSIONER, West Haven, CT)

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at www.usps.com®.

WEST HAVEN, CT 06516

OFFICIAL USE

Certified Mail Fee $3.45
$2.75
Extra Services & Fees (check box, add fee as appropriate)
Return Receipt (hardcopy) $0.00
Return Receipt (electronic) $0.00
Certified Mail Restricted Delivery $0.00
Adult Signature Required $0.00
Adult Signature Restricted Delivery $
Postage $0.50
Total Postage and Fees $6.70

0867 17
SARATOGA FINANCE
Postmark Here
AUG 17 2018
SARATOGA SPRINGS, NY 12866
08/17/2018

Sent To Nancy Rossi CT52xCC076
Street and Apt. No., or PO Box No. 355 Main St 3rd Floor
City, State, ZIP+4® West Haven CT 06516

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

7018 0680 0002 1201 6064

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at www.usps.com®.

WEST HAVEN, CT 06516

OFFICIAL USE

Certified Mail Fee $3.45
$2.75
Extra Services & Fees (check box, add fee as appropriate)
Return Receipt (hardcopy) $0.00
Return Receipt (electronic) $0.00
Certified Mail Restricted Delivery $0.00
Adult Signature Required $0.00
Adult Signature Restricted Delivery $
Postage $0.50
Total Postage and Fees $6.70

0867 17
SARATOGA FINANCE
Postmark Here
AUG 17 20
SARATOGA SPRINGS, NY 12866
08/17/2018

Sent To Fred Messore CT52xCC076
Street and Apt. No., or PO Box No. 355 Main St
City, State, ZIP+4® West Haven CT 06516

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

7018 0680 0002 1201 5173

U.S. Postal Service™
CERTIFIED MAIL® RECEIPT
Domestic Mail Only

For delivery information, visit our website at www.usps.com®.

WOBURN, MA 01801

OFFICIAL USE

Certified Mail Fee $3.45
$2.75
Extra Services & Fees (check box, add fee as appropriate)
Return Receipt (hardcopy) $0.00
Return Receipt (electronic) $0.00
Certified Mail Restricted Delivery $0.00
Adult Signature Required $0.00
Adult Signature Restricted Delivery $
Postage $0.50
Total Postage and Fees $6.70

0867 17
SARATOGA FINANCE
Postmark Here
AUG 17 2018
SARATOGA SPRINGS, NY 12866
08/17/2018

Sent To Estate Rep CT52xCC076
Street and Apt. No., or PO Box No. 10 Residential Way
City, State, ZIP+4® Woburn MA 01801

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

7018 0680 0002 1201 6057

City of West Haven, CT
Property Listing Report

Parcel ID	019-0001-0-000A-C	Account	00019113

Property Information

Owner	AMERICAN TOWERS INC.
Co-Owner	ATTN TAX DEPT
Address	668 JONES HILL RD
Mailing Address	PO BOX 723597 ATLANTA GA 31139
Land Use	431V TEL REL TW MDL-00
Land Class	I

Vision ID	102767
Census Tract	
Neighborhood	
Zoning Code	
Acreage	0
Utilities	

Photo

Sketch

Primary Construction Details

Actual Year Built		Bedrooms		Exterior Walls	
Effective Year Built		Full Bathrooms		Interior Walls	
Stories		Half Bathrooms		Heating Type	
Building Style		Bath Style		Heating Fuel	
Building Use		Kitchen Style		AC Type	
Building Condition		Roof Style		Gross Bldg Area	
Total Rooms		Roof Cover		Total Living Area	0

Report Created On 8/17/2018

Valuation Summary (Assessed value = 70% of Appraised Value)

Item	Appraised	Assessed
Buildings	0	0
Outbuildings	431800	302260
Improvements	431800	302260
Extras	0	0
Land	0	0
Total	431800	302260

Outbuilding and Extra Items

Description	Units
FENCE-6' CHAIN	200 L.F.
TOWER	2 SITES
CELL SHED	288 S.F.

Sub Areas

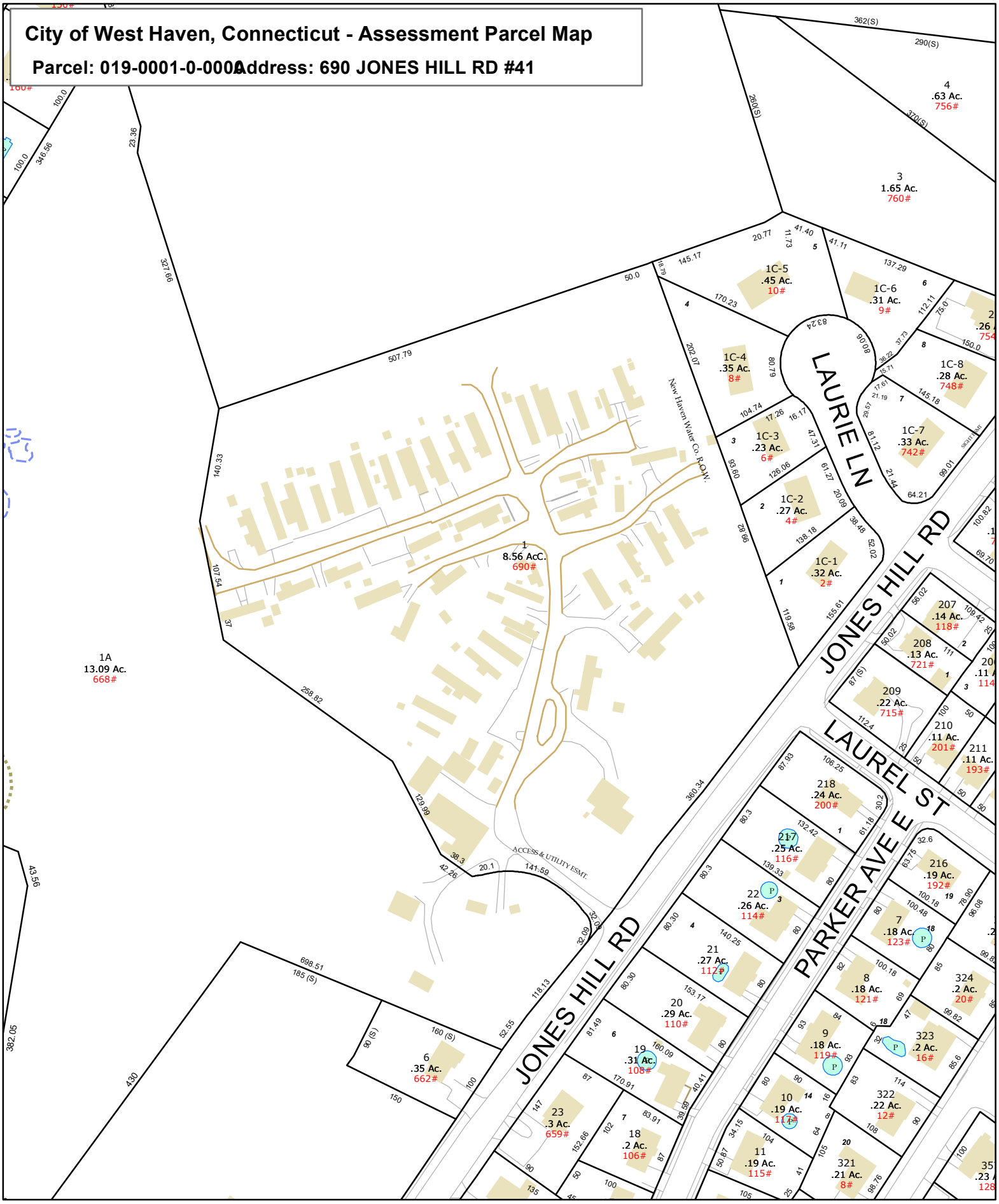
Subarea Type	Gross Area (sq ft)	Living Area (sq ft)
Total Area		

Sales History

Owner of Record	Book/ Page	Sale Date	Sale Price
AMERICAN TOWERS INC.	000/ 000	10/1/2010	0

City of West Haven, Connecticut - Assessment Parcel Map

Parcel: 019-0001-0-000A Address: 690 JONES HILL RD #41



N

Approximate Scale: 1 inch = 150 feet

0 45 90 180 270 360 Feet

Map Produced: January 2015

EBI Consulting
environmental | engineering | due diligence

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

SPRINT Existing Facility

Site ID: CT52XC076

West Haven & RT 162 CT
668 Jones Hill Road
West Haven, CT 06516

July 27, 2018

EBI Project Number: 6218005218

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	11.99 %

21 B Street · Burlington, MA 01803 · Tel: (781) 273.2500 · Fax: (781) 273.3311

EBI Consulting
environmental | engineering | due diligence

July 27, 2018

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

Emissions Analysis for Site: **CT52XC076 – West Haven & RT 162 CT**

EBI Consulting was directed to analyze the proposed SPRINT facility located at **668 Jones Hill Road, West Haven, 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 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

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

General population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 850 MHz Band is approximately 567 $\mu W/cm^2$. The general population exposure limit for the 1900 MHz (PCS), 2500 MHz (BRS), 11 GHz microwave and 23 GHz microwave bands is 1000 $\mu W/cm^2$. 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 **668 Jones Hill Road, West Haven, 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 for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

1) 1 CDMA channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.

2) 2 LTE channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 50 Watts per Channel.

3) 5 CDMA channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 16 Watts per Channel.

4) 2 LTE channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

5) 8 LTE channels (2500 MHz (BRS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.

6) 1 microwave (23 GHz) backhaul channel was considered for sector A. This channel has a transmit power of 1 Watt.

7) 2 microwave (11 GHz) backhaul channels were considered for sectors B & C. These channels have a transmit power of 1 Watt per channel.

8) 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.

9) 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 for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, 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.

10) The antennas used in this modeling are the **Commscope NNVV-65B-R4 and the Nokia AAHC** for transmission in the 850 MHz, 1900 MHz (PCS) and 2500 MHz (BRS) frequency bands and the **Dragonwave A-ANT-23G-1-C** and **Dragonwave A-ANT-11G-2-C** for the 23 GHz and 11 GHz microwave links respectively. 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 for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, 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.

11) The antenna mounting height centerlines of the proposed panel antennas are **154 feet** above ground level (AGL) for **Sectors A, B & C.** The antenna mounting height centerlines of the proposed microwave dishes are **151 feet** above ground level (AGL) for **Sectors A, B & C**

12) 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 #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	Commscope NNVV-65B-R4	Make / Model:	Commscope NNVV-65B-R4	Make / Model:	Commscope NNVV-65B-R4
Gain:	12.75 / 15.05 dBd	Gain:	12.75 / 15.05 dBd	Gain:	12.75 / 15.05 dBd
Height (AGL):	**154 feet**	Height (AGL):	**154 feet**	Height (AGL):	**154 feet**
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	10	Channel Count	10	Channel Count	10
Total TX Power(W):	280 Watts	Total TX Power(W):	280 Watts	Total TX Power(W):	280 Watts
ERP (W):	7,378.61	ERP (W):	7,378.61	ERP (W):	7,378.61
Antenna A1 MPE%	**1.50 %**	Antenna B1 MPE%	**1.50 %**	Antenna C1 MPE%	**1.50 %**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Nokia AAHC	Make / Model:	Nokia AAHC	Make / Model:	Nokia AAHC
Gain:	15.05 dBd	Gain:	15.05 dBd	Gain:	15.05 dBd
Height (AGL):	**154 feet**	Height (AGL):	**154 feet**	Height (AGL):	**154 feet**
Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)
Channel Count	8	Channel Count	8	Channel Count	8
Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts
ERP (W):	5,118.23	ERP (W):	5,118.23	ERP (W):	5,118.23
Antenna A2 MPE%	**0.84 %**	Antenna B2 MPE%	**0.84 %**	Antenna C2 MPE%	**0.84 %**

Microwave Backhaul Data

Antenna Type:	Gain (dBd)	Height (feet AGL):	Frequency Bands	Channel Count	Total TX Power(W)	ERP (W)	MPE %	Sector
Dragonwave A-ANT-23G-1-C	33.15 dBd	151	23 GHz	1	1	2,065.38	**0.03**	A
Dragonwave A-ANT-11G-2-C	32.35 dBd	151	11 GHz	1	1	1,717.91	**0.02**	B
Dragonwave A-ANT-11G-2-C	32.35 dBd	151	11 GHz	1	1	1,717.91	**0.02**	C

Site Composite MPE%	
Carrier	**MPE%**
SPRINT –Sector A	**2.37 %**
T-Mobile	1.53 %
Clearwire	0.12 %
MetroPCS	1.02 %
Computer Hospital	0.23 %
Verizon Wireless	2.42 %
AT&T	4.30 %
Site Total MPE %:	**11.99 %**

SPRINT Sector A Total:	2.37 %
SPRINT Sector B Total:	2.36 %
SPRINT Sector C Total:	2.36 %
Site Total:	11.99 %

Sprint Maximum Power Values (Sector A)

SPRINT _ Frequency Band / Technology (All Sectors)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
Sprint 850 MHz CDMA	1	376.73	154	0.62	850 MHz	567	0.11%
Sprint 850 MHz LTE	2	941.82	154	3.09	850 MHz	567	0.55%
Sprint 1900 MHz (PCS) CDMA	5	511.82	154	4.20	1900 MHz (PCS)	1000	0.42%
Sprint 1900 MHz (PCS) LTE	2	1,279.56	154	4.20	1900 MHz (PCS)	1000	0.42%
Sprint 2500 MHz (BRS) LTE	8	639.78	154	8.40	2500 MHz (BRS)	1000	0.84%
Sprint 23 GHz Microwave	1	2,065.38	154	0.34	23 GHz	1000	0.03%
						Total:	**2.37%**

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:	2.37 %
Sector B:	2.36 %
Sector C:	2.36 %
SPRINT Maximum MPE % (Sector A):	2.37 %
Site Total:	11.99 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **11.99 %** 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.

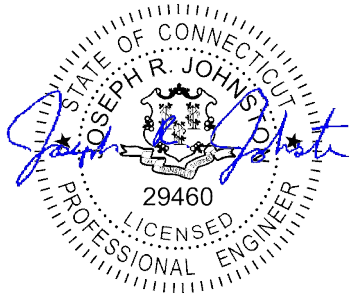
INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless

1033 WATERVLIET SHAKER RD, ALBANY, NY 12205

Mount Analysis Report

April 1, 2019

Site Name	West Haven & RT 162 CT
Site ID	CT52XC076
Client	Airosmith
Carrier	Sprint
Infinigy Job Number	526-104
Site Location	668 Jones Hill Road West Haven, CT 06516 41° 15' 23.04" N NAD83 72° 58' 20.49" W NAD83
Mount Centerline EL.	151.0 ft
Mount Classification	Platform
Mount Usage	**63.5%**
Overall Result	**Contingent Pass**
Note	**Mount must be replaced with new SitePro1 RMQP-396 prior to installation of proposed appurtenances.**



04-01-19

Kevin Berger Jr.

Contents

Introduction

Infinigy Engineering has been requested to perform a mount analysis on the existing Sprint mounts. All supporting documents have been obtained from the client and are assumed to be accurate and applicable to this site. The mount was analyzed using RISA-3D Version 17.0.2 analysis software.

Supporting Documentation

Construction Drawing	Infinigy Engineering Job #526-104, dated October 29, 2018
RFDS	Sprint Site ID #CT52XC076, dated March 13, 2017
Structural Analysis	American Tower Corporation, dated January 8, 2018

Analysis Code Requirements

Wind Speed	97 mph (3-Second Gust, V_{ASD}) / 125 mph (3-Second Gust, V_{ULT})
Wind Speed w/ ice	50 mph (3-Second Gust, V_{ASD}) w/ 0.75" ice
TIA Revision	ANSI/TIA-222-G
Adopted IBC	2015 IBC/ 2018 Connecticut State Building Code
Structure Class	II
Exposure Category	C
Topographic Category	1
Calculated Crest Height	0 ft

Conclusion

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

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

Kevin Berger Jr.
1033 Watervliet Shaker Road
Albany NY 12205
(O) 518-690-0790 | Structural@Infinigy.com

Final Configuration Loading

Mount CL (ft)	Rad. HT(ft)	Vert. O/S(ft)	Horiz. O/S(ft)(1)	Qty	Appurtenance(2)	Carrier
151.0	151.0	0.0	1.3	3	Nokia 2.56 MAA-AAHC	Sprint
			11.2	3	RFS APXVFRR12X-C-120	
			1.3, 6.3	6	ALU RRH 800 Mhz 2x50W	
			11.2	3	ALU RRH 1900 Mhz 4x45	
			6.3	1	2' Clearwire Dish	
			6.3	1	1' Clearwire Dish	

(1)Horizontal Offset is defined as the distance from the left most edge of the mount when viewed facing the tower.
(2)Radios are mounted behind antennas at respective locations see appended documents for vertical locations.

Structure Usages

Standoff	63.5%	Pass
Horizontal	19.3%	Pass
Mount Pipe	39.1%	Pass
Results	**63.5%**	**Pass**

Mount Connection Reactions

Reaction Data	Design Reactions	Analysis Reactions	Result
Max Tension (lb)	19660.0	1611.2	8.2%
Max Shear (lb)	12020.0	2257.3	21.4%
Unity Check	--	--	29.6%

***Assumed (2) 5/8" A307 Anchors. Contractor to field to verify anchor diameters prior to proper installation.**

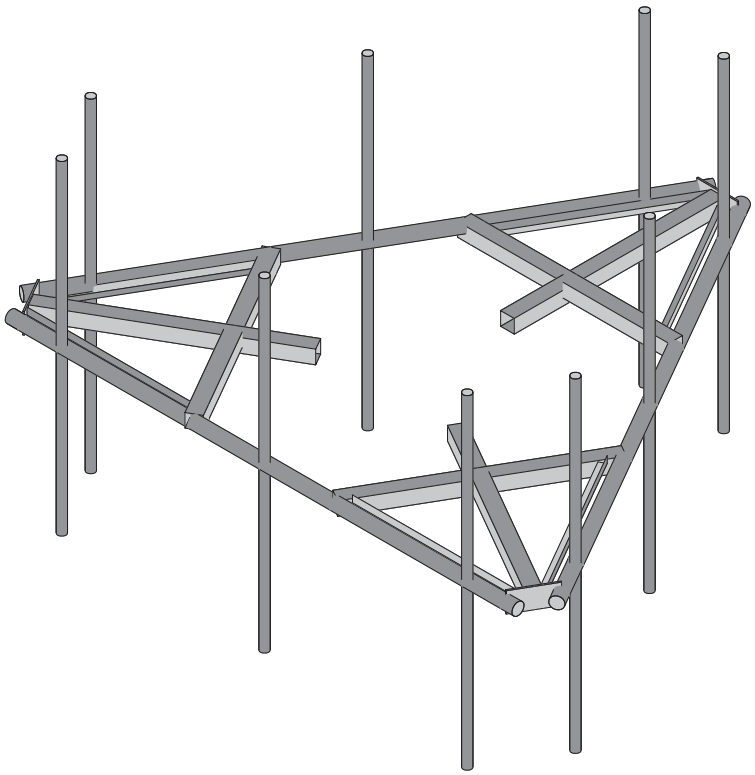
- Mount Connection reactions are acceptable per code calculate capacity.

Assumptions and Limitations

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

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

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



Envelope Only Solution

Infinigy Engineering, PLLC.	CT52XC076	Final Configuration
KLB		Apr 1, 2019 at 11:42 AM
526-104		CT52XC076.r3d

Site Name:	CT52XC076
Client:	Airosmith
Carrier:	Sprint
Engineer:	KLB
Date:	4/1/2019

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless

INFINIGY WIND LOAD CALCULATOR 3.0.2

Site Information Inputs:

Adopted Building Code:	2015 IBC
Structure Load Standard:	TIA-222-G
Antenna Load Standard:	TIA-222-G
Structure Risk Category:	II
Structure Type:	Mount - Platform
Number of Sectors:	3
Structure Shape 1:	Round

Rooftop Inputs:

Rooftop Wind Speed-Up?:	No

Wind Loading Inputs:

Design Wind Velocity:	97	mph (nominal 3-second gust)
Wind Centerline 1 (z_1):	151.0	ft
Side Face Angle (θ):	60	degrees
Exposure Category:	C	
Topographic Category:	1	

Wind with No Ice		
q_z (psf)	Gh	F_{ST} (psf)
31.59	1.00	**37.90**

Wind with Ice		
q_z (psf)	Gh	F_{ST} (psf)
8.39	1.00	**23.79**

Ice Loading Inputs:

Is Ice Loading Needed?:	Yes	
Ice Wind Velocity:	50	mph (nominal 3-second gust)
Base Ice Thickness:	0.75	in

Input Appurtenance Information and Load Placements:

Appurtenance Name	Elevation (ft)	Total Quantity	Ka	Front Shape	Side Shape	q_z (psf)	EPA (ft^2)	Fz (lbs)	Fx (lbs)	Fz(60) (lbs)	Fx(30) (lbs)
Nokia 2.56 MAA-AAHC (64T64R)	151.0	3	1.00	Flat	Flat	31.59	4.20	132.74	66.92	83.38	116.29
RFS APXVFRR12X-C-120	151.0	3	1.00	Flat	Flat	31.59	4.99	157.74	113.03	124.21	146.56
ALU RRH 800 Mhz 2x50W	151.0	3	1.00	Flat	Flat	31.59	1.71	54.06	41.59	44.71	50.94
ALU RRH 800 Mhz 2x50W	151.0	3	1.00	Flat	Flat	31.59	1.71	54.06	41.59	44.71	50.94
ALU RRH 1900 Mhz 4x45	151.0	3	1.00	Flat	Flat	31.59	2.58	81.60	80.28	80.61	81.27
2' Clearwire Dish	151.0	1	1.00	Round	Round	31.59	2.35	74.14	28.64	40.02	62.76
1' Clearwire Dish	151.0	1	1.00	Round	Round	31.59	0.68	21.50	12.28	14.59	19.19

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N1	N2			HSS 4"x4"x1/4"	Beam	None	A53 Gr.B	Typical
2	M2	N3	N4			Corner Plate	Beam	None	A53 Gr.B	Typical
3	M3	N5	N8			HSS 4"x4"x1/4"	Beam	None	A53 Gr.B	Typical
4	M4	N9	N10			Corner Plate	Beam	None	A53 Gr.B	Typical
5	M5	N6	N11			HSS 4"x4"x1/4"	Beam	None	A53 Gr.B	Typical
6	M6	N12	N13			Corner Plate	Beam	None	A53 Gr.B	Typical
7	M7	N16	N15			3" STD Pipe	Beam	None	A53 Gr.B	Typical
8	M8	N19	N18			3" STD Pipe	Beam	None	A53 Gr.B	Typical
9	M9	N22	N21			3" STD Pipe	Beam	None	A53 Gr.B	Typical
10	M10	N26	N27			HSS 4"x4"x1/4"	Beam	None	A53 Gr.B	Typical
11	M11	N28	N29			HSS 4"x4"x1/4"	Beam	None	A53 Gr.B	Typical
12	M12	N30	N31			HSS 4"x4"x1/4"	Beam	None	A53 Gr.B	Typical
13	M13	N33	N34			L2"x2"x1/8"	Beam	None	A36 Gr.36	Typical
14	M14	N32	N35		270	L2"x2"x1/8"	Beam	None	A36 Gr.36	Typical
15	M15	N37	N38			L2"x2"x1/8"	Beam	None	A36 Gr.36	Typical
16	M16	N36	N39		270	L2"x2"x1/8"	Beam	None	A36 Gr.36	Typical
17	M17	N41	N42			L2"x2"x1/8"	Beam	None	A36 Gr.36	Typical
18	M18	N40	N43		270	L2"x2"x1/8"	Beam	None	A36 Gr.36	Typical
19	MP1	N100	N101			2" STD Pipe	Beam	None	A53 Gr.B	Typical
20	MP2	N102	N103			2" STD Pipe	Beam	None	A53 Gr.B	Typical
21	MP3	N104	N105			2" STD Pipe	Beam	None	A53 Gr.B	Typical
22	MP7	N112	N113			2" STD Pipe	Beam	None	A53 Gr.B	Typical
23	MP8	N114	N115			2" STD Pipe	Beam	None	A53 Gr.B	Typical
24	MP9	N116	N117			2" STD Pipe	Beam	None	A53 Gr.B	Typical
25	MP4	N106	N107			2" STD Pipe	Beam	None	A53 Gr.B	Typical
26	MP5	N108	N109			2" STD Pipe	Beam	None	A53 Gr.B	Typical
27	MP6	N110	N111			2" STD Pipe	Beam	None	A53 Gr.B	Typical

Material Takeoff

	Material	Size	Pieces	Length[in]	Weight[K]
1	Hot Rolled Steel				
2	A36 Gr.36	L2x2x2	6	303.1	0
3	A53 Gr.B	6"x0.37" Plate	3	36	0
4	A53 Gr.B	HSS4X4X4	6	374.3	.4
5	A53 Gr.B	PIPE_2.0	9	864	.2
6	A53 Gr.B	PIPE_3.0	3	450	.3
7	Total HR Steel		27	2027.4	.9

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
1	Self Weight	DL		-1			23		3	
2	Wind Load AZI 000	WLZ					23		1	
3	Wind Load AZI 090	WLX					23		1	
4	Ice Weight	OL1					23	27	3	
5	Wind + Ice Load AZI ...	OL2					23		1	
6	Wind + Ice Load AZI ...	OL3					23		1	
7	Service Live 1	LL				6				
8	BLC 1 Transient Area...	None						60		
9	BLC 2 Transient Area...	None						26		
10	BLC 3 Transient Area...	None						22		
11	BLC 4 Transient Area...	None						60		
12	BLC 5 Transient Area...	None						26		
13	BLC 6 Transient Area...	None						22		

Load Combinations

	Description	Sol..	PD..	SR..	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...
1	1.4D	Yes	Y		DL	1.4																		
2	1.2D + 1.6..	Yes	Y		DL	1.2	WLZ	1.6																
3	1.2D + 1.6..	Yes	Y		DL	1.2	WLZ	1.386	W...	.8														
4	1.2D + 1.6..	Yes	Y		DL	1.2	WLZ	.8	W...	1.386														
5	1.2D + 1.6..	Yes	Y		DL	1.2			W...	1.6														
6	1.2D + 1.6..	Yes	Y		DL	1.2	WLZ	-.8	W...	1.386														
7	1.2D + 1.6..	Yes	Y		DL	1.2	WLZ	-1.3...	W...	.8														
8	1.2D + 1.6..	Yes	Y		DL	1.2	WLZ	-1.6																
9	1.2D + 1.6..	Yes	Y		DL	1.2	WLZ	-1.3...	W...	-.8														
10	1.2D + 1.6..	Yes	Y		DL	1.2	WLZ	-.8	W...	-1.3...														
11	1.2D + 1.6..	Yes	Y		DL	1.2			W...	-1.6														
12	1.2D + 1.6..	Yes	Y		DL	1.2	WLZ	.8	W...	-1.3...														
13	1.2D + 1.6..	Yes	Y		DL	1.2	WLZ	1.386	W...	-.8														
14	0.9D + 1.6..	Yes	Y		DL	.9	WLZ	1.6																
15	0.9D + 1.6..	Yes	Y		DL	.9	WLZ	1.386	W...	.8														
16	0.9D + 1.6..	Yes	Y		DL	.9	WLZ	.8	W...	1.386														
17	0.9D + 1.6..	Yes	Y		DL	.9			W...	1.6														
18	0.9D + 1.6..	Yes	Y		DL	.9	WLZ	-.8	W...	1.386														
19	0.9D + 1.6..	Yes	Y		DL	.9	WLZ	-1.3...	W...	.8														
20	0.9D + 1.6..	Yes	Y		DL	.9	WLZ	-1.6																
21	0.9D + 1.6..	Yes	Y		DL	.9	WLZ	-1.3...	W...	-.8														
22	0.9D + 1.6..	Yes	Y		DL	.9	WLZ	-.8	W...	-1.3...														
23	0.9D + 1.6..	Yes	Y		DL	.9			W...	-1.6														
24	0.9D + 1.6..	Yes	Y		DL	.9	WLZ	.8	W...	-1.3...														
25	0.9D + 1.6..	Yes	Y		DL	.9	WLZ	1.386	W...	-.8														
26	1.2D + 1.0..	Yes	Y		DL	1.2	OL1	1																
27	1.2D + 1.0..	Yes	Y		DL	1.2	OL1	1	OL2	1														
28	1.2D + 1.0..	Yes	Y		DL	1.2	OL1	1	OL2	.866	OL3	.5												
29	1.2D + 1.0..	Yes	Y		DL	1.2	OL1	1	OL2	.5	OL3	.866												
30	1.2D + 1.0..	Yes	Y		DL	1.2	OL1	1			OL3	1												
31	1.2D + 1.0..	Yes	Y		DL	1.2	OL1	1	OL2	-.5	OL3	.866												
32	1.2D + 1.0..	Yes	Y		DL	1.2	OL1	1	OL2	-.866	OL3	.5												
33	1.2D + 1.0..	Yes	Y		DL	1.2	OL1	1	OL2	-1														
34	1.2D + 1.0..	Yes	Y		DL	1.2	OL1	1	OL2	-.866	OL3	-.5												
35	1.2D + 1.0..	Yes	Y		DL	1.2	OL1	1	OL2	-.5	OL3	-.866												
36	1.2D + 1.0..	Yes	Y		DL	1.2	OL1	1			OL3	-1												
37	1.2D + 1.0..	Yes	Y		DL	1.2	OL1	1	OL2	.5	OL3	-.866												
38	1.2D + 1.0..	Yes	Y		DL	1.2	OL1	1	OL2	.866	OL3	-.5												
39	1.2D + 1.5..	Yes	Y		DL	1.2	LL	1.5	WLZ	.111														
40	1.2D + 1.5..	Yes	Y		DL	1.2	LL	1.5	WLZ	.096	W...	.056												
41	1.2D + 1.5..	Yes	Y		DL	1.2	LL	1.5	WLZ	.056	W...	.096												
42	1.2D + 1.5..	Yes	Y		DL	1.2	LL	1.5			W...	.111												
43	1.2D + 1.5..	Yes	Y		DL	1.2	LL	1.5	WLZ	-.056	W...	.096												
44	1.2D + 1.5..	Yes	Y		DL	1.2	LL	1.5	WLZ	-.096	W...	.056												
45	1.2D + 1.5..	Yes	Y		DL	1.2	LL	1.5	WLZ	-.111														
46	1.2D + 1.5..	Yes	Y		DL	1.2	LL	1.5	WLZ	-.096	W...	-.056												
47	1.2D + 1.5..	Yes	Y		DL	1.2	LL	1.5	WLZ	-.056	W...	-.096												
48	1.2D + 1.5..	Yes	Y		DL	1.2	LL	1.5			W...	-.111												
49	1.2D + 1.5..	Yes	Y		DL	1.2	LL	1.5	WLZ	.056	W...	-.096												
50	1.2D + 1.5..	Yes	Y		DL	1.2	LL	1.5	WLZ	.096	W...	-.056												

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N6	max	1402.348	17	2124.757	38	1204.282	14	6782.787	39	4649.602	11	104.256	23
2		min	-1402.348	11	668.072	14	-1204.282	8	1822.041	20	-4646.674	5	-827.617	30
3	N5	max	1611.234	4	2257.253	35	1430.641	14	-573.156	14	1699.159	6	4967.801	46
4		min	-1610.853	22	662.228	16	-1430.799	8	-3547.669	33	-1695.698	24	1287.12	15
5	N1	max	1511.629	18	2065.963	29	1413.09	2	-513.313	14	1719.549	16	-1006.429	24
6		min	-1511.965	12	585.742	22	-1412.931	20	-3865.732	33	-1723.207	10	-4894.98	43
7	Totals:	max	3892.216	17	6429.058	38	4048.003	14						
8		min	-3892.216	11	1990.715	14	-4048.003	8						

Envelope AISC 15th(360-16): LRFD Steel Code Checks

	Member	Shape	Code Check	Loc[in]	LC	Shear ...	Loc[in]	Dir	LC	phi*Pnc ...	phi*Pnt [...	phi*Mn y...	phi*Mn z...	Cb	Eqn
1	M5	HSS4X4X4	.635	0	36	.153	0	y	30	97436.9...	106155	12311.25	12311.25	2....	H1-1b
2	M1	HSS4X4X4	.531	0	34	.161	0	y	34	97437.38	106155	12311.25	12311.25	2....	H1-1b
3	M3	HSS4X4X4	.530	0	31	.135	0	y	33	97436.9...	106155	12311.25	12311.25	2....	H1-1b
4	MP3	PIPE_2.0	.391	48	8	.027	48		8	14916.0...	32130	1871.625	1871.625	1....	H1-1b
5	M13	L2x2x2	.357	50.52	20	.013	50.52	z	2	6606.013	15908.4	402.563	784.952	2....	H2-1
6	M18	L2x2x2	.352	50.52	20	.013	50.52	y	2	6606.013	15908.4	402.563	784.918	2....	H2-1
7	MP9	PIPE_2.0	.349	48	11	.024	48		11	14916.0...	32130	1871.625	1871.625	1....	H1-1b
8	MP6	PIPE_2.0	.348	48	11	.024	48		11	14916.0...	32130	1871.625	1871.625	1....	H1-1b
9	MP1	PIPE_2.0	.324	48	8	.019	48		8	14916.0...	32130	1871.625	1871.625	1....	H1-1b
10	MP7	PIPE_2.0	.305	48	5	.018	48		5	14916.0...	32130	1871.625	1871.625	1....	H1-1b
11	MP4	PIPE_2.0	.305	48	5	.018	48		5	14916.0...	32130	1871.625	1871.625	1....	H1-1b
12	M4	6"x0.37" Pla...	.277	6	9	.180	0	y	8	36343.6...	69930	538.125	8741.25	1....	H1-1b
13	M2	6"x0.37" Pla...	.275	6	8	.224	8.125	y	2	36343.6...	69930	538.125	8741.25	1....	H1-1b
14	M16	L2x2x2	.251	50.52	29	.012	50.52	z	32	6606.013	15908.4	402.563	794.201	2....	H2-1
15	M15	L2x2x2	.241	50.52	31	.014	50.52	y	31	6606.013	15908.4	402.563	822.918	2....	H2-1
16	M17	L2x2x2	.223	50.52	36	.014	50.52	y	35	6606.013	15908.4	402.563	825.863	2....	H2-1
17	M14	L2x2x2	.215	50.52	36	.012	50.52	z	29	6606.013	15908.4	402.563	807.163	2....	H2-1
18	M8	PIPE_3.0	.193	95.3...	27	.097	53.1...		8	28250.5...	65205	5748.75	5748.75	1....	H1-1b
19	M12	HSS4X4X4	.184	31.26	34	.102	58.6...	z	2	97364.86	106155	12311.25	12311.25	1....	H1-1b
20	MP2	PIPE_2.0	.180	48	8	.017	48		8	14916.0...	32130	1871.625	1871.625	1....	H1-1b
21	MP5	PIPE_2.0	.172	48	5	.017	48		17	14916.0...	32130	1871.625	1871.625	1....	H1-1b
22	M10	HSS4X4X4	.166	31.26	37	.063	31.26	z	12	97364.86	106155	12311.25	12311.25	1....	H1-1b
23	M11	HSS4X4X4	.166	31.26	32	.111	3.907	z	8	97364.86	106155	12311.25	12311.25	1....	H1-1b
24	M6	6"x0.37" Pla...	.162	6	3	.233	3.875	y	6	36343.6...	69930	538.125	8741.25	1....	H1-1b
25	MP8	PIPE_2.0	.140	48	11	.013	48		11	14916.0...	32130	1871.625	1871.625	1....	H1-1b
26	M7	PIPE_3.0	.112	53.1...	37	.080	53.1...		4	28250.5...	65205	5748.75	5748.75	2....	H1-1b
27	M9	PIPE_3.0	.090	53.1...	10	.077	53.1...		12	28250.5...	65205	5748.75	5748.75	1....	H1-1b

AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure	:	**149 ft Monopole**
ATC Site Name	:	**West Haven & RT 162 CT, CT**
ATC Site Number	:	**243036**
Engineering Number	:	**OAA714853_C3_09**
Proposed Carrier	:	**Clearwire Corporation**
Carrier Site Name	:	**West Haven & RT 162 CT**
Carrier Site Number	:	**CT52XC076**
Site Location	:	**668 Jones Hill Road** **West Haven, CT 06516-6311** **41.256400,-72.972400**
County	:	**New Haven**
Date	:	**April 26, 2019**
Max Usage	:	**100%**
Result	:	**Pass**

Prepared By:
Peter Giordano
Structural Engineer II

Peter J. Giordano

Reviewed By:

COA: PEC.0001553

AMERICAN TOWER CORPORATION

Table of Contents

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 149 ft monopole to reflect the change in loading by Clearwire Corporation.

Supporting Documents

Tower Drawings	Sabre Job #06-08204, dated August 19, 2005
Foundation Drawing	Sabre Job #06-10095, dated October 12, 2005
Geotechnical Report	EBI Project #61051509, dated July 12, 2005

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.

Basic Wind Speed:	97 mph (3-Second Gust, Vasd) / 125 mph (3-Second Gust, Vult)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 3/4" radial ice concurrent
Code:	ANSI/TIA-222-G / 2015 IBC / 2018 Connecticut State Building Code
Structure Class:	II
Exposure Category:	B
Topographic Category:	1
Crest Height:	0 ft
Spectral Response:	Ss = 0.19, S_1 = 0.06
Site Class:	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. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.

Existing and Reserved Equipment

Elev.[1] (ft)	Qty	Antenna	Mount Type	Lines	Carrier
151.0	3	DragonWave Horizon Compact	-	(3) 1/2" Coax	CLEARWIRE CORPORATION
	2	DragonWave A-ANT-11G-2-C			
	1	DragonWave A-ANT-23G-1-C			
143.0	3	RFS APXVAARR24_43-U-NA20	Platform with SitePro1 HRK12-3HD Handrail Kit	(3) 1 5/8" (1.63"-41.3mm) Fiber (12) 1 5/8" Coax	T-MOBILE
	3	Ericsson Air 3246 B66			
	3	Ericsson AIR-32 B2A/B66Aa			
	3	Ericsson Radio 4449 B12,B71			
	3	Ericsson KRY 112 144/1			
	3	Ericsson KRY 112 144/2			
137.0	3	Alcatel-Lucent RRH2x40-AWS	Low Profile Platform	(1) 1 5/8" (1.63"-41.3mm) Fiber (12) 1 5/8" Coax	VERIZON WIRELESS
134.0	3	Amphenol Antel BXA-171063-12BF-EDIN-X			
	3	Commscope LNX-6514DS-A1M			
	1	RFS DB-T1-6Z-8AB-0Z			
	3	Andrew DB854DG65ESX			
	3	Antel BXA-185085/12CF ___			
	6	RFS FD9R6004/2C-3L			
125.0	1	Raycap DC6-48-60-0-8F (24" Height)	Platform with Handrails	(2) 0.39" (10mm) Fiber Trunk (2) 0.39" (9.8mm) Cable (4) 0.78" (19.7mm) 8 AWG 6 (1) 3" conduit	AT&T MOBILITY
	3	Ericsson RRUS 4449 B5, B12			
	3	CCI CCI-HPA-65R-BUU-H8			
	6	Kathrein Scala 80010966			
	3	Ericsson 8843 Rev 2			
	1	Raycap DC6-48-60-0-8F (24" Height)			
	3	Ericsson Radio 4415 B30			
	1	Raycap DC6-48-60-0-8F			
115.0	3	RFS APXV18-206517S-C	Flush	(6) 1 5/8" Coax	METRO PCS INC
106.0	1	Generic 3' Dish w/ Radome	Side Arm	(1) 0.28" (7mm) RG-6	OTHER
	1	Proxim 5054-R-LR			

Equipment to be Removed

Elev.[1] (ft)	Qty	Antenna	Mount Type	Lines	Carrier
151.0	3	Argus LLPX310R	Flush	(6) 5/16" (0.31"-7.9mm) Coax	CLEARWIRE CORPORATION
	3	NextNet BTS-2500			

Proposed Equipment

Elev.[1] (ft)	Qty	Antenna	Mount Type	Lines	Carrier
151.0	6	Alcatel-Lucent RRH2x50-08	SitePro1 RMQP-3 Series Low Profile Platform	(3) 1 1/4" Hybriflex Cable (1) 1.7" (43.2mm) Hybrid	CLEARWIRE CORPORATION
	3	Alcatel-Lucent 1900 MHz 4X45 RRH			
	3	Nokia 2.5G MAA - AAHC(64T64R)			
	3	RFS APXVFRR12X-C-I20			

[1] Contracted elevations are shown for appurtenances within contracted installation tolerances. Appurtenances outside of contract limits are shown at installed elevations.

Install proposed lines inside the pole shaft.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	58%	Pass
Shaft	100%	Pass
Base Plate	47%	Pass

Foundations

Reaction Component	Original Design Reactions	Factored Design Reactions*	Analysis Reactions	% of Design
Moment (Kips-Ft)	2,840.0	3,834.0	2,923.1	76%
Shear (Kips)	26.3	35.5	25.0	70%

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

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

Deflection and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
151.0	DragonWave A-ANT-23G-1-C	CLEARWIRE CORPORATION	0.000	0.000
	Alcatel-Lucent RRH2x50-08			
	Alcatel-Lucent 1900 MHz 4X45 RRH			
	Nokia 2.5G MAA - AAHC(64T64R)			
	DragonWave A-ANT-11G-2-C			
	RFS APXVFRR12X-C-I20			
106.0	Generic 3' Dish w/ Radome	OTHER	1.109	1.323

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

Standard Conditions

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

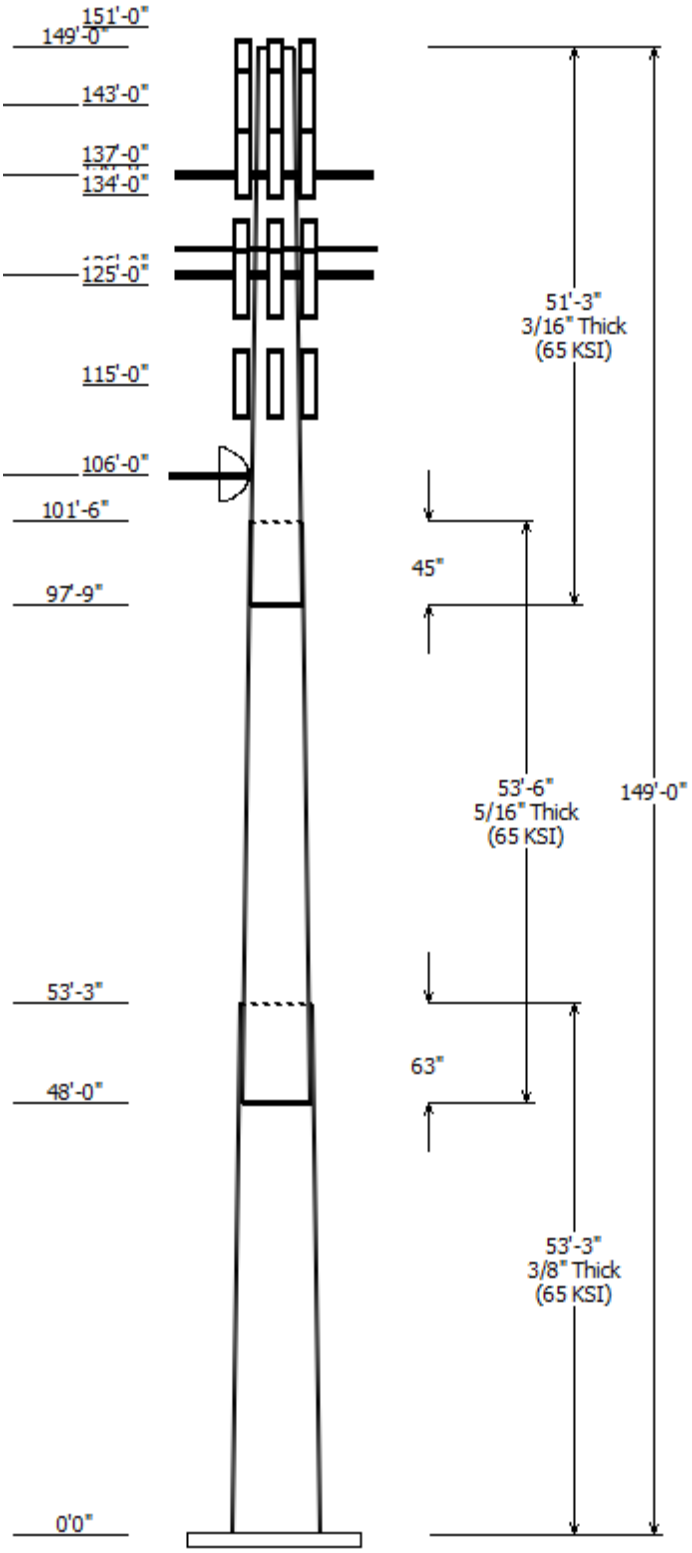
- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

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

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

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

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



Job Information

Pole :	243036	Code:	ANSI/TIA-222-G
Location :	WEST HAVEN & RT 162 CT, CT		
Description :	Tower Model Verified: 12/13/2012		
Client :	CLEARWIRE CORPORATION	Struct Class :	II
Shape :	18 Sides	Exposure :	B
Height :	149.00 (ft)	Topo :	1
Base Elev (ft):	0.00		
Taper:	0.234964 (in/ft)		

Sections Properties

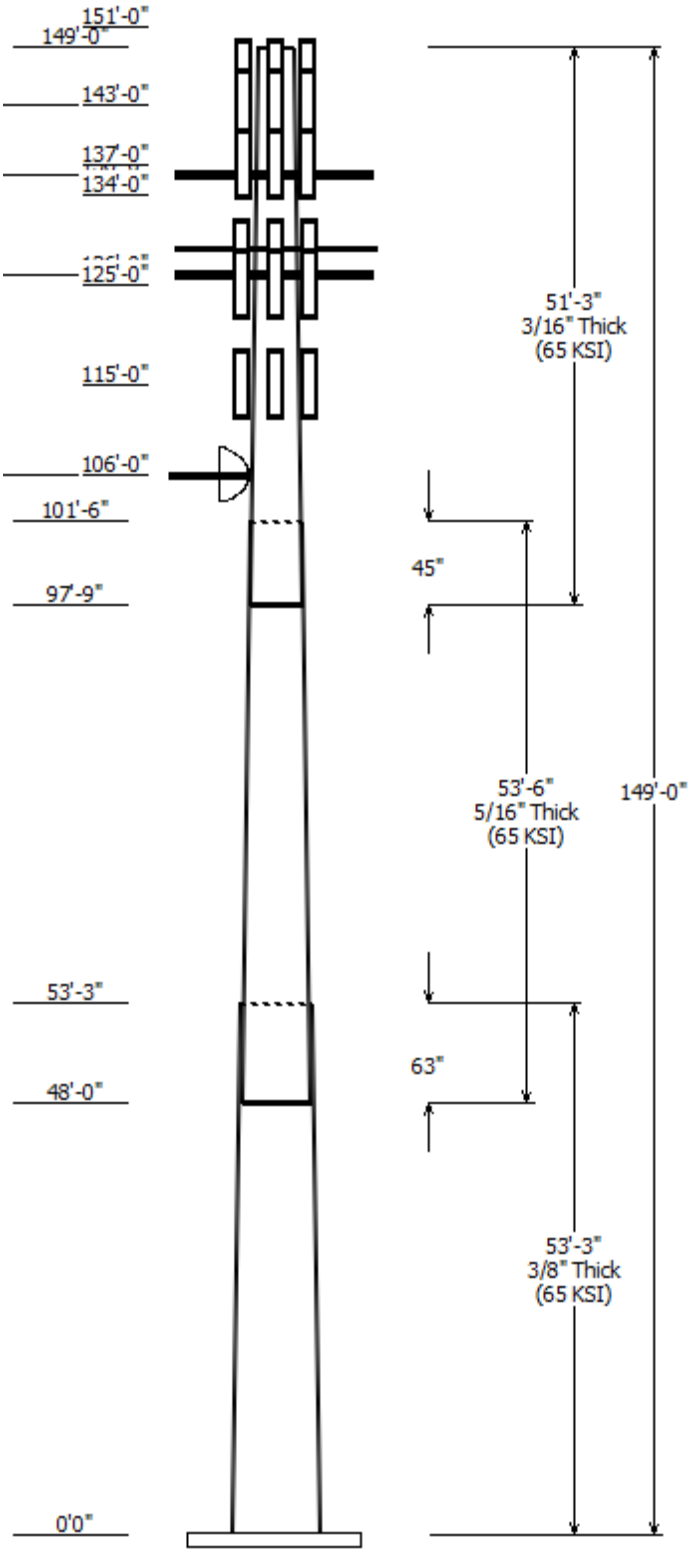
Shaft Section	Length (ft)	Diameter (in) Accross Flats Top	Bottom	Thick (in)	Joint Type	Overlap Length (in)	Shape	Steel Grade (ksi)
1	53.250	39.49	52.01	0.375		0.000	18 Sides	65
2	53.500	28.78	41.35	0.313	Slip Joint	63.000	18 Sides	65
3	51.250	18.00	30.04	0.188	Slip Joint	45.000	18 Sides	65

Discrete Appurtenance

Attach Elev (ft)	Force Elev (ft)	Qty	Description
151.000	151.000	3	RFS APXVFRR12X-C-I20
151.000	148.000	2	DragonWave A-ANT-11G-2-C
151.000	151.000	3	Nokia 2.5G MAA -
151.000	151.000	3	Alcatel-Lucent 1900 MHz 4X45
151.000	151.000	6	Alcatel-Lucent RRH2x50-08
151.000	148.000	1	DragonWave A-ANT-23G-1-C
151.000	148.000	3	DragonWave Horizon Compact
149.000	149.000	1	SitePro1 RMQP-3XX Low
143.000	143.000	1	Platform with SitePro1 HRK12-
143.000	143.000	3	Ericsson KRY 112 144/1
143.000	143.000	3	Ericsson KRY 112 144/2
143.000	143.000	3	RFS APXVAARR24_43-U-NA20
143.000	143.000	3	Ericsson Air 3246 B66
143.000	144.000	3	Ericsson AIR-32 B2A/B66Aa
143.000	143.000	3	Ericsson Radio 4449 B12,B71
137.000	137.000	3	Alcatel-Lucent RRH2x40-AWS
136.000	136.000	1	Round Low Profile Platform
134.000	137.000	3	Commscope LNX-6514DS-A1M
134.000	137.000	3	Andrew DB854DG65ESX
134.000	136.000	1	RFS DB-T1-6Z-8AB-0Z
134.000	137.000	3	Antel BXA-185085/12CF ___
134.000	136.000	3	Amphenol Antel BXA-171063-
134.000	136.000	6	RFS FD9R6004/2C-3L
126.000	126.000	1	Round Platform w/ Handrails
125.000	125.000	6	Kathrein Scala 80010966
125.000	126.000	3	CCI CCI-HPA-65R-BUU-H8
125.000	125.000	3	Ericsson RRUS 4449 B5, B12
125.000	125.000	3	Ericsson Radio 4415 B30
125.000	125.000	3	Ericsson 8843 Rev 2
125.000	126.000	1	Raycap DC6-48-60-0-8F (24" Hei
125.000	126.000	1	Raycap DC6-48-60-0-8F (24" Hei
125.000	125.000	1	Raycap DC6-48-60-0-8F
115.000	115.000	3	RFS APXV18-206517S-C
106.000	106.000	1	Flat Side Arm
106.000	106.000	1	Generic 3' Dish w/ Radome
106.000	106.000	1	Proxim 5054-R-LR

Linear Appurtenance

Elev (ft) From	To	Description	Exposed To Wind
4.000	106.0	0.28" (7mm) RG-6	No
4.000	115.0	1 5/8" Coax	No
4.000	125.0	0.39" (10mm)	No



4.000	125.0	0.39" (10mm)	No
4.000	125.0	0.39" (9.8mm)	No
4.000	125.0	0.78" (19.7mm) 8	No
4.000	125.0	0.78" (19.7mm) 8	No
4.000	125.0	3" conduit	No
4.000	134.0	1 5/8" (1.63"-	No
4.000	134.0	1 5/8" Coax	No
4.000	143.0	1 5/8" Coax	No
4.000	151.0	1.7" (43.2mm)	No
4.000	151.0	1/2" Coax	No
0.000	151.0	1 1/4" Hybriflex	No
0.000	143.0	1 5/8" (1.63"-	No

Load Cases

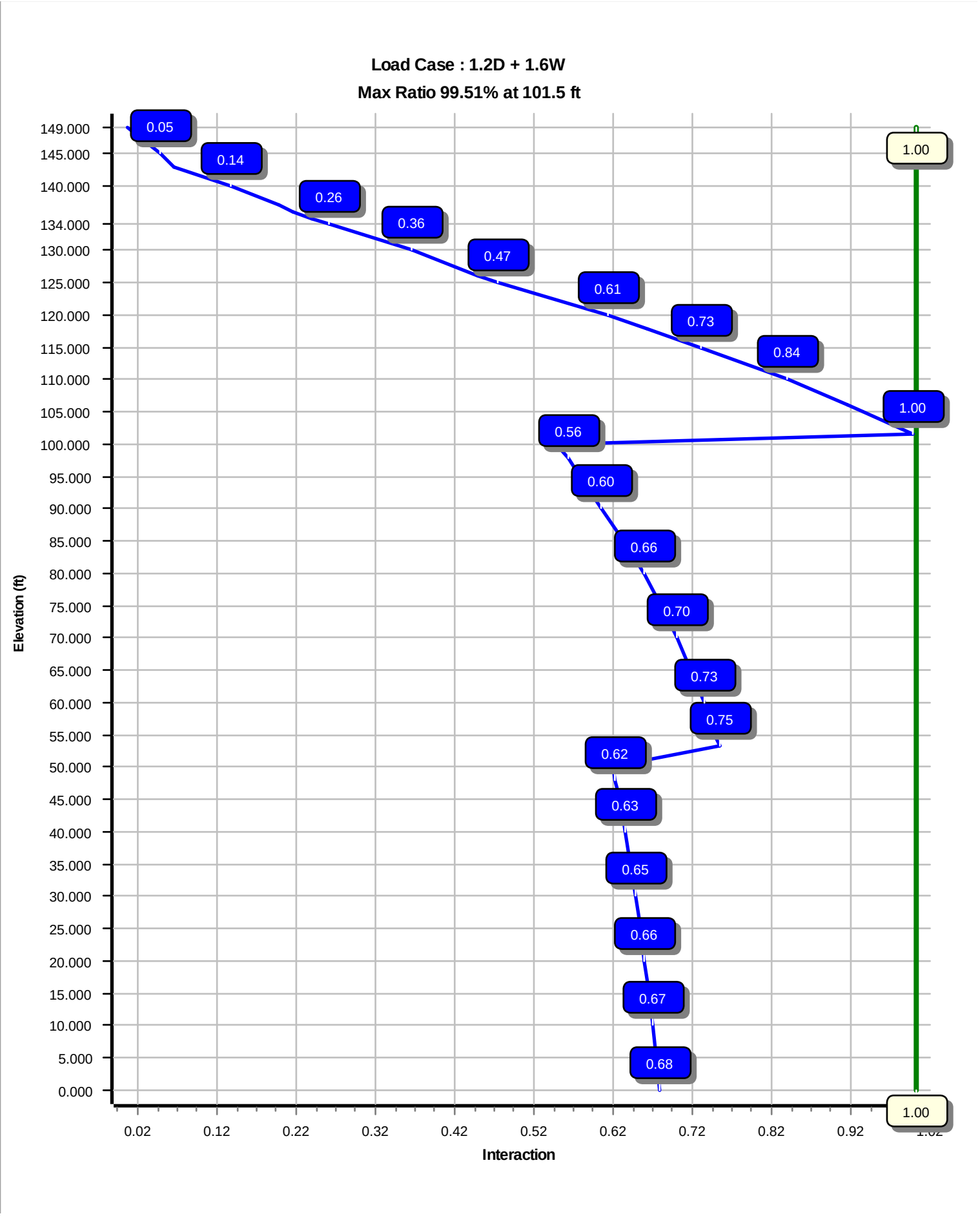
1.2D + 1.6W	97 mph with No Ice
0.9D + 1.6W	97 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 in Radial Ice
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Lateral
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Modal
1.0D + 1.0W	Serviceability 60 mph

Reactions

Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.6W	2923.11	24.95	44.55
0.9D + 1.6W	2872.96	24.93	33.40
1.2D + 1.0Di + 1.0Wi	846.39	6.99	73.29
(1.2 + 0.2Sds) * DL + E ELFM	136.03	1.04	43.40
(1.2 + 0.2Sds) * DL + E EMAM	269.30	2.13	43.40
(0.9 - 0.2Sds) * DL + E ELFM	133.22	1.04	30.10
(0.9 - 0.2Sds) * DL + E EMAM	263.59	2.13	30.10
1.0D + 1.0W	692.42	5.96	37.16

Dish Deflections

Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
1.0D + 1.0W	106.00	13.296	1.322
1.0D + 1.0W	149.00	28.314	1.843
1.0D + 1.0W	149.00	28.314	1.843


Load Case : 1.2D + 1.6W
Max Ratio 99.51% at 101.5 ft
Elevation (ft)
149.000
145.000
140.000
134.000
130.000
125.000
120.000
115.000
110.000
105.000
100.000
95.000
90.000
85.000
80.000
75.000
70.000
65.000
60.000
55.000
50.000
45.000
40.000
35.000
30.000
25.000
20.000
15.000
10.000
5.000
0.000
0.05
0.14
0.26
0.36
0.47
0.61
0.73
0.84
1.00
0.56
0.60
0.66
0.70
0.73
0.75
0.62
0.63
0.65
0.66
0.67
0.68
1.00
1.00
0.02
0.12
0.22
0.32
0.42
0.52
0.62
0.72
0.82
0.92
Interaction

Site Number: 243036 Code: ANSI/TIA-222-G

Site Name: WEST HAVEN & RT 162 CT, CT Engineering Number:OAA714853_C3_09 4/26/2019 2:47:07 PM

Customer: CLEARWIRE

Analysis Parameters

Location :	New Haven County, CT	Height (ft) :	149
Code :	ANSI/TIA-222-G	Base Diameter (in) :	52.01
Shape :	18 Sides	Top Diameter (in) :	18.00
Pole Type :	Taper	Taper (in/ft) :	0.235
Pole Manfacturer :	Sabre	Rotation (deg) :	0.00

Ice & Wind Parameters

Structure Class:	II	Design Wind Speed Without Ice:	97 mph
Exposure Category:	B	Design Wind Speed With Ice:	50 mph
Topographic Category:	1	Operational Wind Speed:	60 mph
Crest Height:	0 ft	Design Ice Thickness:	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):	2.90				
T_L (sec):	6	p:	1	C_s:	0.030
S_s:	0.188	S_1:	0.062	C_s Max:	0.030
F_a:	1.600	F_v:	2.400	C_s Min:	0.030
S_{ds}:	0.201	S_{d1}:	0.099		

Load Cases

1.2D + 1.6W	97 mph with No Ice
0.9D + 1.6W	97 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 in Radial Ice
(1.2 + 0.2Sds) * DL + E ELFM	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E EMAM	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E ELFM	Seismic (Reduced DL) Equivalent Lateral Forces Method
(0.9 - 0.2Sds) * DL + E EMAM	Seismic (Reduced DL) Equivalent Modal Analysis Method
1.0D + 1.0W	Serviceability 60 mph

Site Number: 243036 Code: ANSI/TIA-222-G

Site Name: WEST HAVEN & RT 162 CT, CT Engineering Number:OAA714853_C3_09 4/26/2019 2:47:07 PM

Customer: CLEARWIRE

Shaft Section Properties

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Slip Joint Len (in)	Weight (lb)	Bottom Dia (in)	Bottom Elev (ft)	Bottom Area (in²)	Bottom Ix (in⁴)	Bottom W/t Ratio	Bottom D/t Ratio	Top Dia (in)	Top Elev (ft)	Top Area (in²)	Top Ix (in⁴)	Top W/t Ratio	Top D/t Ratio	Taper (in/ft)
1-18	53.250	0.3750	65		0.00	9,787	52.01	0.00	61.46	20701.4	22.69	138.69	39.49	53.25	46.56	9004.7	16.81	105.33	0.234964
2-18	53.500	0.3125	65	Slip	63.00	6,276	41.35	48.00	40.71	8664.4	21.57	132.34	28.78	101.50	28.24	2892.7	14.48	92.11	0.234964
3-18	51.250	0.1875	65	Slip	45.00	2,473	30.04	97.75	17.77	2000.7	26.49	160.22	18.00	149.00	10.60	424.9	15.16	96.00	0.234964
				Shaft Weight		18,536													

Discrete Appurtenance Properties

Attach Elev (ft)	Description	Qty	Ka	Vert Ecc (ft)	No Ice Weight (lb)	No Ice EPAa (sf)	No Ice Orientation Factor	Ice Weight (lb)	Ice EPAa (sf)	Ice Orientation Factor
151.00	DragonWave Horizon Compact	3	0.80	-3.000	10.60	0.720	0.50	33.09	1.288	0.50
151.00	DragonWave A-ANT-23G-1-C	1	1.00	-3.000	15.00	1.610	1.00	50.33	2.367	1.00
151.00	Alcatel-Lucent RRH2x50-08	6	0.80	0.000	52.90	1.700	0.50	112.16	2.562	0.50
151.00	Alcatel-Lucent 1900 MHz 4X45	3	0.80	0.000	60.00	2.320	0.67	140.59	3.400	0.67
151.00	Nokia 2.5G MAA - AAHC(64T64R)	3	0.80	0.000	103.60	4.200	0.64	216.34	5.540	0.64
151.00	DragonWave A-ANT-11G-2-C	2	1.00	-3.000	27.00	4.690	1.00	124.46	5.964	1.00
151.00	RFS APXVFRR12X-C-I20	3	0.80	0.000	46.00	4.990	0.71	171.02	6.857	0.71
149.00	SitePro1 RMQP-3XX Low Profile	1	1.00	0.000	1,680.00	21.700	1.00	3,084.50	40.144	1.00
143.00	Ericsson KRY 112 144/1	3	0.75	0.000	11.00	0.410	0.50	21.72	0.882	0.50
143.00	Ericsson KRY 112 144/2	3	0.75	0.000	9.70	0.480	0.50	23.84	0.952	0.50
143.00	Ericsson Radio 4449 B12,B71	3	0.75	0.000	74.00	1.640	0.50	129.77	2.481	0.50
143.00	Ericsson AIR-32 B2A/B66Aa	3	0.75	1.000	132.20	6.510	0.71	291.20	8.692	0.71
143.00	Ericsson Air 3246 B66	3	0.75	0.000	180.00	7.940	0.69	2,873.87	10.199	0.69
143.00	RFS APXVAARR24_43-U-NA20	3	0.75	0.000	127.90	20.240	0.63	519.00	23.934	0.63
143.00	Platform with SitePro1 HRK12-	1	1.00	0.000	2,350.00	42.400	1.00	3,980.96	71.827	1.00
137.00	Alcatel-Lucent RRH2x40-AWS	3	0.80	0.000	44.00	2.160	0.67	104.16	3.198	0.67
136.00	Round Low Profile Platform	1	1.00	0.000	1,500.00	21.700	1.00	2,142.65	40.744	1.00
134.00	RFS FD9R6004/2C-3L	6	0.80	2.000	2.60	0.310	0.50	10.52	0.687	0.50
134.00	Amphenol Antel BXA-171063-	3	0.80	2.000	15.00	4.730	0.72	108.73	7.045	0.72
134.00	Antel BXA-185085/12CF ___	3	0.80	3.000	13.00	4.790	0.72	131.38	6.000	0.72
134.00	RFS DB-T1-6Z-8AB-0Z	1	0.80	2.000	44.00	4.800	1.00	168.52	6.206	1.00
134.00	Andrew DB854DG65ESX	3	0.80	3.000	18.50	5.250	0.65	149.40	6.230	0.65
134.00	Commscope LNX-6514DS-A1M	3	0.80	3.000	38.80	8.170	0.69	212.86	10.957	0.69
126.00	Round Platform w/ Handrails	1	1.00	0.000	2,000.00	27.200	1.00	3,275.49	51.262	1.00
125.00	Raycap DC6-48-60-0-8F	1	0.75	0.000	32.80	1.360	1.00	89.88	2.011	1.00
125.00	Raycap DC6-48-60-0-8F (24"	1	0.75	1.000	32.80	1.470	1.00	137.97	2.156	1.00
125.00	Raycap DC6-48-60-0-8F (24"	1	0.75	1.000	32.80	1.470	1.00	137.97	2.156	1.00
125.00	Ericsson 8843 Rev 2	3	0.75	0.000	75.00	1.650	0.50	135.95	2.484	0.50
125.00	Ericsson Radio 4415 B30	3	0.75	0.000	43.00	1.650	0.50	84.39	2.484	0.50
125.00	Ericsson RRUS 4449 B5, B12	3	0.75	0.000	71.00	1.970	0.50	134.29	2.886	0.50
125.00	CCI CCI-HPA-65R-BUU-H8	3	0.75	1.000	68.00	12.980	0.67	320.31	16.496	0.67
125.00	Kathrein Scala 80010966	6	0.75	0.000	114.60	17.360	0.63	429.91	20.982	0.63
115.00	RFS APXV18-206517S-C	3	1.00	0.000	26.40	5.160	0.68	116.61	7.463	0.68
106.00	Proxim 5054-R-LR	1	1.00	0.000	6.00	1.320	1.00	36.21	2.054	1.00
106.00	Generic 3' Dish w/ Radome	1	1.00	0.000	100.00	6.100	1.00	276.10	7.259	1.00
106.00	Flat Side Arm	1	1.00	0.000	150.00	6.300	1.00	220.76	8.678	1.00
Totals	Num Loadings:36	92			12,521.10			34,921.43		

Linear Appurtenance Properties

Load Case Azimuth (deg) :

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Dia (in)	Coax Wt (lb/ft)	Flat	Max Coax / Row	Dist Between Rows (in)	Dist Between Cols (in)	Azimuth (deg)	Dist From Face (in)	Exposed To Wind	Carrier
0.00	151.00	3	1 1/4" Hybriflex Cable	1.54	1.00	N	0	0.00	0.00	0	0.00	N	CLEARWIRE
4.00	151.00	1	1.7" (43.2mm) Hybrid	1.70	1.78	N	0	0.00	0.00	0	0.00	N	CLEARWIRE

4.00	151.00	3	1/2" Coax	0.63	0.15	N	0	0.00	0.00	0	0.00	N	CLEARWIRE
0.00	143.00	3	1 5/8" (1.63"-41.3mm)	1.63	1.61	N	0	0.00	0.00	0	0.00	N	T-MOBILE
4.00	143.00	12	1 5/8" Coax	1.98	0.82	N	0	0.00	0.00	0	0.00	N	T-MOBILE
4.00	134.00	1	1 5/8" (1.63"-41.3mm)	1.63	1.61	N	0	0.00	0.00	0	0.00	N	VERIZON WIRELESS
4.00	134.00	12	1 5/8" Coax	1.98	0.82	N	0	0.00	0.00	0	0.00	N	VERIZON WIRELESS
4.00	125.00	1	0.39" (10mm) Fiber	0.39	0.06	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
4.00	125.00	1	0.39" (10mm) Fiber	0.39	0.06	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
4.00	125.00	2	0.39" (9.8mm) Cable	0.39	0.07	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
4.00	125.00	2	0.78" (19.7mm) 8 AWG	0.78	0.59	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
4.00	125.00	2	0.78" (19.7mm) 8 AWG	0.78	0.59	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
4.00	125.00	1	3" conduit	3.50	7.58	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
4.00	115.00	6	1 5/8" Coax	1.98	0.82	N	0	0.00	0.00	0	0.00	N	METRO PCS INC
4.00	106.00	1	0.28" (7mm) RG-6	0.28	0.03	N	0	0.00	0.00	0	0.00	N	Other

Segment Properties (Max Len : 5. ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	F'y (ksi)	S (in^3)	Z (in^3)	Weight (lb)
0.00		0.3750	52.010	61.456	20,701.4	22.69	138.69	74.7	784.0	0.0	0.0
5.00		0.3750	50.835	60.058	19,320.3	22.14	135.56	75.4	748.6	0.0	1,033.7
10.00		0.3750	49.660	58.659	18,002.0	21.59	132.43	76.0	714.0	0.0	1,009.9
15.00		0.3750	48.485	57.261	16,745.1	21.03	129.29	76.7	680.2	0.0	986.1
20.00		0.3750	47.310	55.863	15,548.1	20.48	126.16	77.3	647.3	0.0	962.3
25.00		0.3750	46.136	54.465	14,409.6	19.93	123.03	78.0	615.2	0.0	938.5
30.00		0.3750	44.961	53.066	13,328.0	19.38	119.90	78.6	583.9	0.0	914.8
35.00		0.3750	43.786	51.668	12,301.9	18.83	116.76	79.3	553.4	0.0	891.0
40.00		0.3750	42.611	50.270	11,329.9	18.27	113.63	79.9	523.7	0.0	867.2
45.00		0.3750	41.436	48.871	10,410.6	17.72	110.50	80.6	494.9	0.0	843.4
48.00	Bot - Section 2	0.3750	40.731	48.032	9,883.6	17.39	108.62	80.9	477.9	0.0	494.6
50.00		0.3750	40.261	47.473	9,542.3	17.17	107.36	81.2	466.8	0.0	600.4
53.25	Top - Section 1	0.3125	40.123	39.485	7,906.5	20.88	128.39	76.8	388.1	0.0	960.8
55.00		0.3125	39.712	39.078	7,664.0	20.64	127.08	77.1	380.1	0.0	233.9
60.00		0.3125	38.537	37.912	6,998.6	19.98	123.32	77.9	357.7	0.0	654.9
65.00		0.3125	37.362	36.747	6,373.0	19.32	119.56	78.7	336.0	0.0	635.1
70.00		0.3125	36.187	35.582	5,785.7	18.66	115.80	79.5	314.9	0.0	615.3
75.00		0.3125	35.012	34.417	5,235.7	17.99	112.04	80.2	294.5	0.0	595.5
80.00		0.3125	33.838	33.251	4,721.7	17.33	108.28	81.0	274.8	0.0	575.6
85.00		0.3125	32.663	32.086	4,242.5	16.67	104.52	81.8	255.8	0.0	555.8
90.00		0.3125	31.488	30.921	3,796.9	16.00	100.76	82.6	237.5	0.0	536.0
95.00		0.3125	30.313	29.756	3,383.6	15.34	97.00	82.6	219.9	0.0	516.2
97.75	Bot - Section 3	0.3125	29.667	29.115	3,169.7	14.98	94.93	82.6	210.4	0.0	275.4
100.0		0.3125	29.138	28.591	3,001.5	14.68	93.24	82.6	202.9	0.0	355.7
101.5	Top - Section 2	0.1875	29.161	17.242	1,828.7	25.66	155.52	71.2	123.5	0.0	233.6
105.0		0.1875	28.338	16.753	1,677.4	24.89	151.14	72.1	116.6	0.0	202.4
106.0		0.1875	28.103	16.613	1,635.7	24.67	149.89	72.4	114.6	0.0	56.8
110.0		0.1875	27.164	16.054	1,476.0	23.78	144.87	73.4	107.0	0.0	222.3
115.0		0.1875	25.989	15.354	1,291.4	22.68	138.61	74.7	97.9	0.0	267.2
117.9		0.1875	25.299	14.944	1,190.5	22.03	134.93	75.5	92.7	0.0	151.4
120.0		0.1875	24.814	14.655	1,122.9	21.57	132.34	76.0	89.1	0.0	103.9
125.0		0.1875	23.639	13.956	969.8	20.47	126.08	77.3	80.8	0.0	243.4
126.0		0.1875	23.404	13.816	940.9	20.25	124.82	77.6	79.2	0.0	47.3
130.0		0.1875	22.464	13.257	831.2	19.36	119.81	78.6	72.9	0.0	184.2
134.0		0.1875	21.524	12.698	730.4	18.48	114.80	79.7	66.8	0.0	176.6
135.0		0.1875	21.290	12.558	706.5	18.26	113.54	79.9	65.4	0.0	43.0
136.0		0.1875	21.055	12.418	683.2	18.04	112.29	80.2	63.9	0.0	42.5
137.0		0.1875	20.820	12.278	660.4	17.82	111.04	80.4	62.5	0.0	42.0
140.0		0.1875	20.115	11.859	595.0	17.15	107.28	81.2	58.3	0.0	123.2
143.0		0.1875	19.410	11.439	534.0	16.49	103.52	82.0	54.2	0.0	118.9
145.0		0.1875	18.940	11.160	495.8	16.05	101.01	82.5	51.6	0.0	76.9
149.0		0.1875	18.000	10.600	424.9	15.16	96.00	82.6	46.5	0.0	148.1
											18,536.1

Site Number: 243036 Code: ANSI/TIA-222-G

Site Name: WEST HAVEN & RT 162 CT, CT Engineering Number:OAA714853_C3_09 4/26/2019 2:47:08 PM

Customer: CLEARWIRE

Load Case: 1.2D + 1.6W 97 mph with No Ice 27 Iterations

Gust Response Factor :1.10 Wind Importance Factor 1.00

Dead Load Factor :1.20

Wind Load Factor :1.60

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		199.3	0.0					0.0	0.0	199.3	0.0	0.0	0.0
5.00		394.1	1,240.5					0.0	93.4	394.1	1,333.8	0.0	0.0
10.00		385.0	1,211.9					0.0	279.0	385.0	1,490.9	0.0	0.0
15.00		375.9	1,183.4					0.0	279.0	375.9	1,462.4	0.0	0.0
20.00		366.8	1,154.8					0.0	279.0	366.8	1,433.8	0.0	0.0
25.00		357.7	1,126.3					0.0	279.0	357.7	1,405.3	0.0	0.0
30.00		352.7	1,097.7					0.0	279.0	352.7	1,376.7	0.0	0.0
35.00		354.8	1,069.2					0.0	279.0	354.8	1,348.2	0.0	0.0
40.00		358.7	1,040.6					0.0	279.0	358.7	1,319.6	0.0	0.0
45.00		288.5	1,012.1					0.0	279.0	288.5	1,291.1	0.0	0.0
48.00	Bot - Section 2	181.8	593.5					0.0	167.4	181.8	760.9	0.0	0.0
50.00		192.7	720.5					0.0	111.6	192.7	832.1	0.0	0.0
53.25	Top - Section 1	183.4	1,153.0					0.0	181.4	183.4	1,334.4	0.0	0.0
55.00		247.0	280.7					0.0	97.7	247.0	378.3	0.0	0.0
60.00		364.4	785.9					0.0	279.0	364.4	1,064.9	0.0	0.0
65.00		361.5	762.1					0.0	279.0	361.5	1,041.1	0.0	0.0
70.00		357.6	738.4					0.0	279.0	357.6	1,017.4	0.0	0.0
75.00		352.9	714.6					0.0	279.0	352.9	993.6	0.0	0.0
80.00		347.4	690.8					0.0	279.0	347.4	969.8	0.0	0.0
85.00		341.2	667.0					0.0	279.0	341.2	946.0	0.0	0.0
90.00		334.3	643.2					0.0	279.0	334.3	922.2	0.0	0.0
95.00		254.7	619.4					0.0	279.0	254.7	898.4	0.0	0.0
97.75	Bot - Section 3	162.4	330.5					0.0	153.5	162.4	484.0	0.0	0.0
100.00		121.4	426.9					0.0	125.6	121.4	552.4	0.0	0.0
101.50	Top - Section 2	159.4	280.3					0.0	83.7	159.4	364.0	0.0	0.0
105.00		142.5	242.9					0.0	195.3	142.5	438.2	0.0	0.0
106.00	Appurtenance(s)	155.0	68.1	555.2	0.0	0.0	307.2	0.0	55.8	710.3	431.1	0.0	0.0
110.00		274.1	266.8					0.0	223.1	274.1	489.8	0.0	0.0
115.00	Appurtenance(s)	236.5	320.6	436.0	0.0	0.0	95.0	0.0	278.8	672.6	694.5	0.0	0.0
117.94		145.6	181.7					0.0	146.5	145.6	328.2	0.0	0.0
120.00		199.9	124.6					0.0	102.8	199.9	227.5	0.0	0.0
125.00	Appurtenance(s)	168.0	292.1	3,308.2	0.0	925.7	1,868.4	0.0	249.3	3,476.1	2,409.8	0.0	0.0
126.00	Appurtenance(s)	135.2	56.7	1,156.4	0.0	0.0	2,400.0	0.0	37.6	1,291.7	2,494.3	0.0	0.0
130.00		212.0	221.1					0.0	150.5	212.0	371.6	0.0	0.0
134.00	Appurtenance(s)	129.7	212.0	1,860.6	0.0	5,027.4	378.6	0.0	150.5	1,990.3	741.0	0.0	0.0
135.00		50.8	51.6					0.0	23.9	50.8	75.4	0.0	0.0
136.00	Appurtenance(s)	50.3	51.0	943.0	0.0	0.0	1,800.0	0.0	23.9	993.3	1,874.9	0.0	0.0
137.00	Appurtenance(s)	98.8	50.4	151.2	0.0	0.0	158.4	0.0	23.9	250.1	232.7	0.0	0.0
140.00		145.4	147.8					0.0	71.6	145.4	219.5	0.0	0.0
143.00	Appurtenance(s)	118.2	142.7	4,262.0	0.0	459.4	4,745.3	0.0	71.6	4,380.2	4,959.6	0.0	0.0
145.00		136.9	92.3					0.0	12.6	136.9	104.8	0.0	0.0
149.00	Appurtenance(s)	90.3	177.7	967.9	0.0	0.0	2,016.0	0.0	25.1	1,058.1	2,218.8	0.0	0.0
								Totals:		23,525.4	43,333.0	0.00	0.00

Site Number: 243036 Code: ANSI/TIA-222-G

Site Name: WEST HAVEN & RT 162 CT, CT Engineering Number:OAA714853_C3_09 4/26/2019 2:47:13 PM

Customer: CLEARWIRE

Load Case: 1.2D + 1.6W 97 mph with No Ice 27 Iterations

Gust Response Factor :1.10 Wind Importance Factor 1.00

Dead Load Factor :1.20

Wind Load Factor :1.60

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-44.55	-24.95	0.00	-2,923.11	0.00	2,923.11	4,132.29	2,066.14	8,772.59	4,392.82	0.00	0.00	0.676
5.00	-43.13	-24.70	0.00	-2,798.36	0.00	2,798.36	4,073.39	2,036.69	8,449.37	4,230.97	0.11	-0.20	0.672
10.00	-41.55	-24.46	0.00	-2,674.84	0.00	2,674.84	4,012.85	2,006.43	8,128.58	4,070.33	0.42	-0.40	0.668
15.00	-40.00	-24.22	0.00	-2,552.54	0.00	2,552.54	3,950.68	1,975.34	7,810.43	3,911.02	0.95	-0.60	0.663
20.00	-38.49	-23.98	0.00	-2,431.46	0.00	2,431.46	3,886.87	1,943.43	7,495.19	3,753.17	1.69	-0.82	0.658
25.00	-37.00	-23.74	0.00	-2,311.58	0.00	2,311.58	3,821.43	1,910.71	7,183.08	3,596.88	2.66	-1.03	0.652
30.00	-35.53	-23.50	0.00	-2,192.89	0.00	2,192.89	3,754.35	1,877.17	6,874.35	3,442.28	3.87	-1.26	0.647
35.00	-34.10	-23.25	0.00	-2,075.40	0.00	2,075.40	3,685.64	1,842.82	6,569.23	3,289.50	5.30	-1.48	0.640
40.00	-32.70	-22.99	0.00	-1,959.16	0.00	1,959.16	3,615.29	1,807.64	6,267.96	3,138.64	6.98	-1.72	0.633
45.00	-31.34	-22.76	0.00	-1,844.22	0.00	1,844.22	3,543.30	1,771.65	5,970.78	2,989.83	8.91	-1.96	0.626
48.00	-30.54	-22.62	0.00	-1,775.93	0.00	1,775.93	3,499.33	1,749.66	5,794.53	2,901.57	10.18	-2.10	0.621
50.00	-29.66	-22.47	0.00	-1,730.69	0.00	1,730.69	3,469.68	1,734.84	5,677.92	2,843.18	11.09	-2.20	0.617
53.25	-28.29	-22.29	0.00	-1,657.67	0.00	1,657.67	2,730.90	1,365.45	4,467.29	2,236.97	12.64	-2.37	0.752
55.00	-27.84	-22.12	0.00	-1,618.66	0.00	1,618.66	2,712.29	1,356.15	4,390.67	2,198.60	13.53	-2.46	0.747
60.00	-26.69	-21.85	0.00	-1,508.05	0.00	1,508.05	2,658.02	1,329.01	4,173.50	2,089.85	16.26	-2.75	0.732
65.00	-25.55	-21.57	0.00	-1,398.81	0.00	1,398.81	2,602.11	1,301.05	3,959.12	1,982.50	19.30	-3.05	0.716
70.00	-24.44	-21.28	0.00	-1,290.97	0.00	1,290.97	2,544.56	1,272.28	3,747.77	1,876.67	22.65	-3.35	0.698
75.00	-23.36	-21.00	0.00	-1,184.56	0.00	1,184.56	2,485.39	1,242.69	3,539.70	1,772.48	26.31	-3.65	0.678
80.00	-22.31	-20.70	0.00	-1,079.59	0.00	1,079.59	2,424.57	1,212.29	3,335.13	1,670.04	30.30	-3.96	0.656
85.00	-21.28	-20.41	0.00	-976.07	0.00	976.07	2,362.12	1,181.06	3,134.31	1,569.49	34.60	-4.27	0.631
90.00	-20.27	-20.12	0.00	-874.01	0.00	874.01	2,297.27	1,148.64	2,936.51	1,470.44	39.23	-4.58	0.604
95.00	-19.32	-19.87	0.00	-773.43	0.00	773.43	2,210.70	1,105.35	2,718.30	1,361.17	44.19	-4.89	0.577
97.75	-18.80	-19.72	0.00	-718.78	0.00	718.78	2,163.09	1,081.54	2,601.88	1,302.87	47.05	-5.06	0.561
100.00	-18.22	-19.58	0.00	-674.42	0.00	674.42	2,124.13	1,062.07	2,508.52	1,256.12	49.47	-5.20	0.546
101.50	-17.82	-19.44	0.00	-645.04	0.00	645.04	1,105.19	552.59	1,317.56	659.76	51.11	-5.29	0.995
105.00	-17.34	-19.30	0.00	-577.01	0.00	577.01	1,087.53	543.77	1,259.48	630.68	55.07	-5.50	0.932
106.00	-16.91	-18.62	0.00	-557.70	0.00	557.70	1,082.34	541.17	1,242.93	622.39	56.23	-5.60	0.913
110.00	-16.32	-18.41	0.00	-483.21	0.00	483.21	1,060.92	530.46	1,177.04	589.40	61.07	-5.96	0.836
115.00	-15.60	-17.76	0.00	-391.14	0.00	391.14	1,032.68	516.34	1,095.47	548.55	67.53	-6.38	0.729
117.94	-15.23	-17.63	0.00	-338.97	0.00	338.97	1,015.32	507.66	1,048.03	524.80	71.53	-6.62	0.662
120.00	-14.95	-17.47	0.00	-302.61	0.00	302.61	1,002.79	501.40	1,014.98	508.24	74.42	-6.78	0.612
125.00	-12.94	-13.77	0.00	-214.33	0.00	214.33	971.28	485.64	935.83	468.61	81.68	-7.10	0.472
126.00	-10.59	-12.20	0.00	-200.56	0.00	200.56	964.78	482.39	920.18	460.77	83.17	-7.17	0.447
130.00	-10.21	-11.98	0.00	-151.75	0.00	151.75	938.12	469.06	858.24	429.76	89.26	-7.38	0.365
134.00	-9.72	-9.93	0.00	-98.79	0.00	98.79	910.42	455.21	797.47	399.33	95.50	-7.55	0.259
135.00	-9.64	-9.88	0.00	-88.86	0.00	88.86	903.33	451.67	782.47	391.82	97.08	-7.59	0.238
136.00	-7.91	-8.65	0.00	-78.99	0.00	78.99	896.18	448.09	767.56	384.35	98.67	-7.62	0.215
137.00	-7.71	-8.38	0.00	-70.34	0.00	70.34	888.96	444.48	752.72	376.92	100.27	-7.66	0.196
140.00	-7.50	-8.21	0.00	-45.21	0.00	45.21	866.91	433.46	708.75	354.90	105.09	-7.73	0.136
143.00	-3.18	-3.20	0.00	-20.13	0.00	20.13	844.27	422.14	665.60	333.29	109.95	-7.78	0.064
145.00	-3.09	-3.05	0.00	-13.72	0.00	13.72	828.85	414.43	637.31	319.13	113.20	-7.80	0.047
149.00	0.00	-2.61	0.00	-1.51	0.00	1.51	787.55	393.77	574.90	287.88	119.72	-7.81	0.005

Site Number: 243036 Code: ANSI/TIA-222-G

Site Name: WEST HAVEN & RT 162 CT, CT Engineering Number:OAA714853_C3_09 4/26/2019 2:47:14 PM

Customer: CLEARWIRE

Load Case: 0.9D + 1.6W — 97 mph with No Ice (Reduced DL) — 26 Iterations

Gust Response Factor :1.10 Wind Importance Factor 1.00

Dead Load Factor :0.90

Wind Load Factor :1.60

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		199.3	0.0					0.0	0.0	199.3	0.0	0.0	0.0
5.00		394.1	930.3					0.0	70.0	394.1	1,000.4	0.0	0.0
10.00		385.0	908.9					0.0	209.2	385.0	1,118.2	0.0	0.0
15.00		375.9	887.5					0.0	209.2	375.9	1,096.8	0.0	0.0
20.00		366.8	866.1					0.0	209.2	366.8	1,075.4	0.0	0.0
25.00		357.7	844.7					0.0	209.2	357.7	1,053.9	0.0	0.0
30.00		352.7	823.3					0.0	209.2	352.7	1,032.5	0.0	0.0
35.00		354.8	801.9					0.0	209.2	354.8	1,011.1	0.0	0.0
40.00		358.7	780.5					0.0	209.2	358.7	989.7	0.0	0.0
45.00		288.5	759.0					0.0	209.2	288.5	968.3	0.0	0.0
48.00	Bot - Section 2	181.8	445.2					0.0	125.5	181.8	570.7	0.0	0.0
50.00		192.7	540.4					0.0	83.7	192.7	624.1	0.0	0.0
53.25	Top - Section 1	183.4	864.8					0.0	136.0	183.4	1,000.8	0.0	0.0
55.00		247.0	210.5					0.0	73.2	247.0	283.8	0.0	0.0
60.00		364.4	589.5					0.0	209.2	364.4	798.7	0.0	0.0
65.00		361.5	571.6					0.0	209.2	361.5	780.9	0.0	0.0
70.00		357.6	553.8					0.0	209.2	357.6	763.0	0.0	0.0
75.00		352.9	535.9					0.0	209.2	352.9	745.2	0.0	0.0
80.00		347.4	518.1					0.0	209.2	347.4	727.3	0.0	0.0
85.00		341.2	500.2					0.0	209.2	341.2	709.5	0.0	0.0
90.00		334.3	482.4					0.0	209.2	334.3	691.6	0.0	0.0
95.00		254.7	464.6					0.0	209.2	254.7	673.8	0.0	0.0
97.75	Bot - Section 3	162.4	247.9					0.0	115.1	162.4	363.0	0.0	0.0
100.00		121.4	320.2					0.0	94.2	121.4	414.3	0.0	0.0
101.50	Top - Section 2	159.4	210.2					0.0	62.8	159.4	273.0	0.0	0.0
105.00		142.5	182.2					0.0	146.5	142.5	328.7	0.0	0.0
106.00	Appurtenance(s)	155.0	51.1	555.2	0.0	0.0	230.4	0.0	41.8	710.3	323.3	0.0	0.0
110.00		274.1	200.1					0.0	167.3	274.1	367.4	0.0	0.0
115.00	Appurtenance(s)	236.5	240.5	436.0	0.0	0.0	71.3	0.0	209.1	672.6	520.9	0.0	0.0
117.94		145.6	136.3					0.0	109.8	145.6	246.1	0.0	0.0
120.00		199.9	93.5					0.0	77.1	199.9	170.6	0.0	0.0
125.00	Appurtenance(s)	168.0	219.1	3,308.2	0.0	925.7	1,401.3	0.0	187.0	3,476.1	1,807.3	0.0	0.0
126.00	Appurtenance(s)	135.2	42.5	1,156.4	0.0	0.0	1,800.0	0.0	28.2	1,291.7	1,870.7	0.0	0.0
130.00		212.0	165.8					0.0	112.9	212.0	278.7	0.0	0.0
134.00	Appurtenance(s)	129.7	159.0	1,860.6	0.0	5,027.4	283.9	0.0	112.9	1,990.3	555.8	0.0	0.0
135.00		50.8	38.7					0.0	17.9	50.8	56.6	0.0	0.0
136.00	Appurtenance(s)	50.3	38.2	943.0	0.0	0.0	1,350.0	0.0	17.9	993.3	1,406.2	0.0	0.0
137.00	Appurtenance(s)	98.8	37.8	151.2	0.0	0.0	118.8	0.0	17.9	250.1	174.5	0.0	0.0
140.00		145.4	110.9					0.0	53.7	145.4	164.6	0.0	0.0
143.00	Appurtenance(s)	118.2	107.0	4,262.0	0.0	459.4	3,559.0	0.0	53.7	4,380.2	3,719.7	0.0	0.0
145.00		136.9	69.2					0.0	9.4	136.9	78.6	0.0	0.0
149.00	Appurtenance(s)	90.3	133.3	967.9	0.0	0.0	1,512.0	0.0	18.8	1,058.1	1,664.1	0.0	0.0
								Totals:		23,525.4	32,499.8	0.00	0.00

Load Case: 0.9D + 1.6W — 97 mph with No Ice (Reduced DL) — 26 Iterations

Gust Response Factor :1.10 Wind Importance Factor 1.00
Dead Load Factor :0.90
Wind Load Factor :1.60

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-33.40	-24.93	0.00	-2,872.96	0.00	2,872.96	4,132.29	2,066.14	8,772.59	4,392.82	0.00	0.00	0.662
5.00	-32.32	-24.64	0.00	-2,748.31	0.00	2,748.31	4,073.39	2,036.69	8,449.37	4,230.97	0.10	-0.19	0.658
10.00	-31.11	-24.36	0.00	-2,625.10	0.00	2,625.10	4,012.85	2,006.43	8,128.58	4,070.33	0.41	-0.39	0.653
15.00	-29.93	-24.08	0.00	-2,503.29	0.00	2,503.29	3,950.68	1,975.34	7,810.43	3,911.02	0.93	-0.59	0.648
20.00	-28.78	-23.81	0.00	-2,382.87	0.00	2,382.87	3,886.87	1,943.43	7,495.19	3,753.17	1.66	-0.80	0.642
25.00	-27.64	-23.54	0.00	-2,263.82	0.00	2,263.82	3,821.43	1,910.71	7,183.08	3,596.88	2.62	-1.01	0.637
30.00	-26.53	-23.27	0.00	-2,146.12	0.00	2,146.12	3,754.35	1,877.17	6,874.35	3,442.28	3.79	-1.23	0.631
35.00	-25.43	-22.99	0.00	-2,029.78	0.00	2,029.78	3,685.64	1,842.82	6,569.23	3,289.50	5.20	-1.45	0.624
40.00	-24.36	-22.70	0.00	-1,914.83	0.00	1,914.83	3,615.29	1,807.64	6,267.96	3,138.64	6.85	-1.68	0.617
45.00	-23.33	-22.46	0.00	-1,801.31	0.00	1,801.31	3,543.30	1,771.65	5,970.78	2,989.83	8.73	-1.92	0.609
48.00	-22.72	-22.31	0.00	-1,733.93	0.00	1,733.93	3,499.33	1,749.66	5,794.53	2,901.57	9.98	-2.06	0.604
50.00	-22.05	-22.14	0.00	-1,689.31	0.00	1,689.31	3,469.68	1,734.84	5,677.92	2,843.18	10.87	-2.16	0.601
53.25	-21.01	-21.97	0.00	-1,617.35	0.00	1,617.35	2,730.90	1,365.45	4,467.29	2,236.97	12.39	-2.32	0.731
55.00	-20.67	-21.78	0.00	-1,578.91	0.00	1,578.91	2,712.29	1,356.15	4,390.67	2,198.60	13.26	-2.41	0.726
60.00	-19.78	-21.47	0.00	-1,470.04	0.00	1,470.04	2,658.02	1,329.01	4,173.50	2,089.85	15.93	-2.69	0.711
65.00	-18.91	-21.17	0.00	-1,362.67	0.00	1,362.67	2,602.11	1,301.05	3,959.12	1,982.50	18.90	-2.98	0.695
70.00	-18.06	-20.87	0.00	-1,256.82	0.00	1,256.82	2,544.56	1,272.28	3,747.77	1,876.67	22.18	-3.27	0.677
75.00	-17.23	-20.56	0.00	-1,152.49	0.00	1,152.49	2,485.39	1,242.69	3,539.70	1,772.48	25.76	-3.57	0.657
80.00	-16.42	-20.25	0.00	-1,049.70	0.00	1,049.70	2,424.57	1,212.29	3,335.13	1,670.04	29.66	-3.87	0.636
85.00	-15.63	-19.94	0.00	-948.45	0.00	948.45	2,362.12	1,181.06	3,134.31	1,569.49	33.86	-4.17	0.611
90.00	-14.87	-19.64	0.00	-848.74	0.00	848.74	2,297.27	1,148.64	2,936.51	1,470.44	38.39	-4.47	0.584
95.00	-14.14	-19.39	0.00	-750.56	0.00	750.56	2,210.70	1,105.35	2,718.30	1,361.17	43.22	-4.77	0.558
97.75	-13.74	-19.23	0.00	-697.25	0.00	697.25	2,163.09	1,081.54	2,601.88	1,302.87	46.02	-4.94	0.542
100.00	-13.30	-19.10	0.00	-653.99	0.00	653.99	2,124.13	1,062.07	2,508.52	1,256.12	48.37	-5.07	0.527
101.50	-12.99	-18.95	0.00	-625.34	0.00	625.34	1,105.19	552.59	1,317.56	659.76	49.98	-5.16	0.961
105.00	-12.63	-18.81	0.00	-559.02	0.00	559.02	1,087.53	543.77	1,259.48	630.68	53.84	-5.37	0.899
106.00	-12.30	-18.12	0.00	-540.21	0.00	540.21	1,082.34	541.17	1,242.93	622.39	54.97	-5.46	0.880
110.00	-11.84	-17.89	0.00	-467.73	0.00	467.73	1,060.92	530.46	1,177.04	589.40	59.69	-5.81	0.806
115.00	-11.30	-17.23	0.00	-378.27	0.00	378.27	1,032.68	516.34	1,095.47	548.55	65.99	-6.22	0.702
117.94	-11.02	-17.09	0.00	-327.66	0.00	327.66	1,015.32	507.66	1,048.03	524.80	69.88	-6.45	0.636
120.00	-10.80	-16.92	0.00	-292.41	0.00	292.41	1,002.79	501.40	1,014.98	508.24	72.69	-6.60	0.587
125.00	-9.37	-13.29	0.00	-206.87	0.00	206.87	971.28	485.64	935.83	468.61	79.77	-6.92	0.452
126.00	-7.64	-11.80	0.00	-193.58	0.00	193.58	964.78	482.39	920.18	460.77	81.22	-6.97	0.429
130.00	-7.36	-11.58	0.00	-146.40	0.00	146.40	938.12	469.06	858.24	429.76	87.14	-7.18	0.349
134.00	-7.04	-9.54	0.00	-95.07	0.00	95.07	910.42	455.21	797.47	399.33	93.22	-7.35	0.246
135.00	-6.99	-9.49	0.00	-85.52	0.00	85.52	903.33	451.67	782.47	391.82	94.76	-7.38	0.226
136.00	-5.71	-8.33	0.00	-76.03	0.00	76.03	896.18	448.09	767.56	384.35	96.30	-7.42	0.205
137.00	-5.57	-8.06	0.00	-67.71	0.00	67.71	888.96	444.48	752.72	376.92	97.86	-7.45	0.186
140.00	-5.41	-7.90	0.00	-43.52	0.00	43.52	866.91	433.46	708.75	354.90	102.55	-7.52	0.129
143.00	-2.30	-3.07	0.00	-19.36	0.00	19.36	844.27	422.14	665.60	333.29	107.28	-7.56	0.061
145.00	-2.24	-2.93	0.00	-13.22	0.00	13.22	828.85	414.43	637.31	319.13	110.44	-7.58	0.044
149.00	0.00	-2.61	0.00	-1.51	0.00	1.51	787.55	393.77	574.90	287.88	116.78	-7.60	0.005

Site Number: 243036 Code: ANSI/TIA-222-G

Site Name: WEST HAVEN & RT 162 CT, CT Engineering Number:OAA714853_C3_09 4/26/2019 2:47:20 PM

Customer: CLEARWIRE

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph with 0.75 in Radial Ice 26 Iterations

Gust Response Factor :1.10 Ice Dead Load Factor :1.00 Wind Importance Factor :1.00

Dead Load Factor :1.20 Ice Importance Factor :1.00

Wind Load Factor :1.00

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		63.8	0.0					0.0	0.0	63.8	0.0	0.0	0.0
5.00		126.6	1,617.9					0.0	93.4	126.6	1,711.3	0.0	0.0
10.00		124.3	1,624.7					0.0	279.0	124.3	1,903.7	0.0	0.0
15.00		121.7	1,608.4					0.0	279.0	121.7	1,887.4	0.0	0.0
20.00		119.1	1,584.4					0.0	279.0	119.1	1,863.4	0.0	0.0
25.00		116.5	1,556.5					0.0	279.0	116.5	1,835.5	0.0	0.0
30.00		115.2	1,526.1					0.0	279.0	115.2	1,805.1	0.0	0.0
35.00		116.2	1,494.0					0.0	279.0	116.2	1,773.0	0.0	0.0
40.00		117.8	1,460.6					0.0	279.0	117.8	1,739.6	0.0	0.0
45.00		94.9	1,426.2					0.0	279.0	94.9	1,705.2	0.0	0.0
48.00	Bot - Section 2	59.9	840.2					0.0	167.4	59.9	1,007.6	0.0	0.0
50.00		63.6	886.5					0.0	111.6	63.6	998.1	0.0	0.0
53.25	Top - Section 1	60.6	1,419.2					0.0	181.4	60.6	1,600.6	0.0	0.0
55.00		81.7	423.3					0.0	97.7	81.7	521.0	0.0	0.0
60.00		120.8	1,184.4					0.0	279.0	120.8	1,463.4	0.0	0.0
65.00		120.2	1,152.3					0.0	279.0	120.2	1,431.3	0.0	0.0
70.00		119.3	1,119.8					0.0	279.0	119.3	1,398.8	0.0	0.0
75.00		118.1	1,086.9					0.0	279.0	118.1	1,365.9	0.0	0.0
80.00		116.7	1,053.7					0.0	279.0	116.7	1,332.7	0.0	0.0
85.00		115.0	1,020.2					0.0	279.0	115.0	1,299.2	0.0	0.0
90.00		113.1	986.4					0.0	279.0	113.1	1,265.4	0.0	0.0
95.00		86.5	952.4					0.0	279.0	86.5	1,231.4	0.0	0.0
97.75	Bot - Section 3	55.3	510.7					0.0	153.5	55.3	664.2	0.0	0.0
100.00		41.4	574.0					0.0	125.6	41.4	699.5	0.0	0.0
101.50	Top - Section 2	54.5	377.4					0.0	83.7	54.5	461.1	0.0	0.0
105.00		48.7	464.1					0.0	195.3	48.7	659.4	0.0	0.0
106.00	Appurtenance(s)	53.2	131.0	120.9	0.0	0.0	493.0	0.0	55.8	174.1	679.8	0.0	0.0
110.00		94.4	510.8					0.0	223.1	94.4	733.9	0.0	0.0
115.00	Appurtenance(s)	81.8	614.5	104.7	0.0	0.0	285.5	0.0	278.8	186.5	1,178.9	0.0	0.0
117.94		50.5	350.7					0.0	146.5	50.5	497.2	0.0	0.0
120.00		69.7	241.4					0.0	102.8	69.7	344.3	0.0	0.0
125.00	Appurtenance(s)	58.7	563.5	690.3	0.0	198.4	4,295.4	0.0	249.3	749.0	5,108.2	0.0	0.0
126.00	Appurtenance(s)	47.5	110.6	361.9	0.0	0.0	3,275.5	0.0	37.6	409.5	3,423.7	0.0	0.0
130.00		74.8	429.1					0.0	150.5	74.8	579.6	0.0	0.0
134.00	Appurtenance(s)	46.0	412.6	412.0	0.0	1,100.6	1,818.8	0.0	150.5	458.0	2,381.8	0.0	0.0
135.00		18.1	101.3					0.0	23.9	18.1	125.2	0.0	0.0
136.00	Appurtenance(s)	17.9	100.3	294.0	0.0	0.0	2,142.7	0.0	23.9	311.9	2,266.8	0.0	0.0
137.00	Appurtenance(s)	35.3	99.2	37.2	0.0	0.0	286.8	0.0	23.9	72.5	409.9	0.0	0.0
140.00		52.1	289.9					0.0	71.6	52.1	361.5	0.0	0.0
143.00	Appurtenance(s)	42.6	280.5	1,027.5	0.0	101.9	15,170.9	0.0	71.6	1,070.1	15,523.0	0.0	0.0
145.00		49.6	182.3					0.0	12.6	49.6	194.8	0.0	0.0
149.00	Appurtenance(s)	32.8	349.9	297.3	0.0	0.0	3,084.5	0.0	25.1	330.2	3,459.5	0.0	0.0
								Totals:		6,662.25	70,891.5	0.00	0.00

Site Number: 243036 Code: ANSI/TIA-222-G

Site Name: WEST HAVEN & RT 162 CT, CT Engineering Number:OAA714853_C3_09 4/26/2019 2:47:26 PM

Customer: CLEARWIRE

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph with 0.75 in Radial Ice 26 Iterations

Gust Response Factor :1.10 Ice Dead Load Factor :1.00 Wind Importance Factor :1.00

Dead Load Factor :1.20 Ice Importance Factor :1.00

Wind Load Factor :1.00

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-73.29	-6.99	0.00	-846.39	0.00	846.39	4,132.29	2,066.14	8,772.59	4,392.82	0.00	0.00	0.210
5.00	-71.57	-6.93	0.00	-811.45	0.00	811.45	4,073.39	2,036.69	8,449.37	4,230.97	0.03	-0.06	0.209
10.00	-69.66	-6.88	0.00	-776.79	0.00	776.79	4,012.85	2,006.43	8,128.58	4,070.33	0.12	-0.12	0.208
15.00	-67.77	-6.82	0.00	-742.40	0.00	742.40	3,950.68	1,975.34	7,810.43	3,911.02	0.27	-0.18	0.207
20.00	-65.90	-6.77	0.00	-708.28	0.00	708.28	3,886.87	1,943.43	7,495.19	3,753.17	0.49	-0.24	0.206
25.00	-64.06	-6.72	0.00	-674.43	0.00	674.43	3,821.43	1,910.71	7,183.08	3,596.88	0.77	-0.30	0.204
30.00	-62.24	-6.66	0.00	-640.85	0.00	640.85	3,754.35	1,877.17	6,874.35	3,442.28	1.12	-0.37	0.203
35.00	-60.46	-6.60	0.00	-607.55	0.00	607.55	3,685.64	1,842.82	6,569.23	3,289.50	1.54	-0.43	0.201
40.00	-58.72	-6.54	0.00	-574.52	0.00	574.52	3,615.29	1,807.64	6,267.96	3,138.64	2.03	-0.50	0.199
45.00	-57.01	-6.49	0.00	-541.80	0.00	541.80	3,543.30	1,771.65	5,970.78	2,989.83	2.59	-0.57	0.197
48.00	-56.00	-6.45	0.00	-522.34	0.00	522.34	3,499.33	1,749.66	5,794.53	2,901.57	2.96	-0.61	0.196
50.00	-54.99	-6.42	0.00	-509.43	0.00	509.43	3,469.68	1,734.84	5,677.92	2,843.18	3.23	-0.64	0.195
53.25	-53.39	-6.37	0.00	-488.57	0.00	488.57	2,730.90	1,365.45	4,467.29	2,236.97	3.68	-0.69	0.238
55.00	-52.86	-6.34	0.00	-477.42	0.00	477.42	2,712.29	1,356.15	4,390.67	2,198.60	3.94	-0.72	0.237
60.00	-51.39	-6.28	0.00	-445.73	0.00	445.73	2,658.02	1,329.01	4,173.50	2,089.85	4.74	-0.80	0.233
65.00	-49.95	-6.21	0.00	-414.36	0.00	414.36	2,602.11	1,301.05	3,959.12	1,982.50	5.63	-0.89	0.228
70.00	-48.55	-6.14	0.00	-383.30	0.00	383.30	2,544.56	1,272.28	3,747.77	1,876.67	6.61	-0.98	0.223
75.00	-47.17	-6.08	0.00	-352.58	0.00	352.58	2,485.39	1,242.69	3,539.70	1,772.48	7.69	-1.07	0.218
80.00	-45.83	-6.01	0.00	-322.20	0.00	322.20	2,424.57	1,212.29	3,335.13	1,670.04	8.86	-1.16	0.212
85.00	-44.53	-5.94	0.00	-292.16	0.00	292.16	2,362.12	1,181.06	3,134.31	1,569.49	10.12	-1.26	0.205
90.00	-43.26	-5.87	0.00	-262.47	0.00	262.47	2,297.27	1,148.64	2,936.51	1,470.44	11.49	-1.35	0.197
95.00	-42.02	-5.80	0.00	-233.14	0.00	233.14	2,210.70	1,105.35	2,718.30	1,361.17	12.95	-1.44	0.190
97.75	-41.35	-5.76	0.00	-217.18	0.00	217.18	2,163.09	1,081.54	2,601.88	1,302.87	13.80	-1.49	0.186
100.00	-40.65	-5.73	0.00	-204.21	0.00	204.21	2,124.13	1,062.07	2,508.52	1,256.12	14.51	-1.54	0.182
101.50	-40.19	-5.70	0.00	-195.62	0.00	195.62	1,105.19	552.59	1,317.56	659.76	15.00	-1.56	0.333
105.00	-39.53	-5.66	0.00	-175.69	0.00	175.69	1,087.53	543.77	1,259.48	630.68	16.17	-1.63	0.315
106.00	-38.84	-5.52	0.00	-170.03	0.00	170.03	1,082.34	541.17	1,242.93	622.39	16.51	-1.66	0.309
110.00	-38.10	-5.48	0.00	-147.97	0.00	147.97	1,060.92	530.46	1,177.04	589.40	17.95	-1.77	0.287
115.00	-36.92	-5.32	0.00	-120.57	0.00	120.57	1,032.68	516.34	1,095.47	548.55	19.87	-1.90	0.256
117.94	-36.42	-5.29	0.00	-104.95	0.00	104.95	1,015.32	507.66	1,048.03	524.80	21.06	-1.97	0.236
120.00	-36.07	-5.26	0.00	-94.03	0.00	94.03	1,002.79	501.40	1,014.98	508.24	21.93	-2.02	0.221
125.00	-30.99	-4.36	0.00	-67.55	0.00	67.55	971.28	485.64	935.83	468.61	24.10	-2.12	0.176
126.00	-27.58	-3.84	0.00	-63.19	0.00	63.19	964.78	482.39	920.18	460.77	24.55	-2.14	0.166
130.00	-27.00	-3.77	0.00	-47.83	0.00	47.83	938.12	469.06	858.24	429.76	26.37	-2.21	0.140
134.00	-24.64	-3.24	0.00	-31.63	0.00	31.63	910.42	455.21	797.47	399.33	28.24	-2.26	0.106
135.00	-24.51	-3.22	0.00	-28.40	0.00	28.40	903.33	451.67	782.47	391.82	28.72	-2.28	0.100
136.00	-22.26	-2.82	0.00	-25.18	0.00	25.18	896.18	448.09	767.56	384.35	29.20	-2.29	0.090
137.00	-21.85	-2.74	0.00	-22.36	0.00	22.36	888.96	444.48	752.72	376.92	29.68	-2.30	0.084
140.00	-21.49	-2.68	0.00	-14.14	0.00	14.14	866.91	433.46	708.75	354.90	31.13	-2.32	0.065
143.00	-6.02	-0.98	0.00	-6.01	0.00	6.01	844.27	422.14	665.60	333.29	32.59	-2.33	0.025
145.00	-5.83	-0.92	0.00	-4.05	0.00	4.05	828.85	414.43	637.31	319.13	33.57	-2.34	0.020
149.00	0.00	-0.68	0.00	-0.36	0.00	0.36	787.55	393.77	574.90	287.88	35.53	-2.34	0.001

Load Case: 1.0D + 1.0W Serviceability 60 mph 25 Iterations

Gust Response Factor :1.10 Wind Importance Factor 1.00
Dead Load Factor :1.00
Wind Load Factor :1.00

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		47.7	0.0					0.0	0.0	47.7	0.0	0.0	0.0
5.00		94.2	1,033.7					0.0	77.8	94.2	1,111.5	0.0	0.0
10.00		92.1	1,009.9					0.0	232.5	92.1	1,242.4	0.0	0.0
15.00		89.9	986.1					0.0	232.5	89.9	1,218.6	0.0	0.0
20.00		87.7	962.3					0.0	232.5	87.7	1,194.8	0.0	0.0
25.00		85.5	938.5					0.0	232.5	85.5	1,171.0	0.0	0.0
30.00		84.3	914.8					0.0	232.5	84.3	1,147.3	0.0	0.0
35.00		84.8	891.0					0.0	232.5	84.8	1,123.5	0.0	0.0
40.00		85.8	867.2					0.0	232.5	85.8	1,099.7	0.0	0.0
45.00		69.0	843.4					0.0	232.5	69.0	1,075.9	0.0	0.0
48.00	Bot - Section 2	43.5	494.6					0.0	139.5	43.5	634.1	0.0	0.0
50.00		46.1	600.4					0.0	93.0	46.1	693.4	0.0	0.0
53.25	Top - Section 1	43.9	960.8					0.0	151.1	43.9	1,112.0	0.0	0.0
55.00		59.1	233.9					0.0	81.4	59.1	315.3	0.0	0.0
60.00		87.1	654.9					0.0	232.5	87.1	887.4	0.0	0.0
65.00		86.4	635.1					0.0	232.5	86.4	867.6	0.0	0.0
70.00		85.5	615.3					0.0	232.5	85.5	847.8	0.0	0.0
75.00		84.4	595.5					0.0	232.5	84.4	828.0	0.0	0.0
80.00		83.1	575.6					0.0	232.5	83.1	808.1	0.0	0.0
85.00		81.6	555.8					0.0	232.5	81.6	788.3	0.0	0.0
90.00		80.0	536.0					0.0	232.5	80.0	768.5	0.0	0.0
95.00		60.9	516.2					0.0	232.5	60.9	748.7	0.0	0.0
97.75	Bot - Section 3	38.8	275.4					0.0	127.9	38.8	403.3	0.0	0.0
100.00		29.0	355.7					0.0	104.6	29.0	460.3	0.0	0.0
101.50	Top - Section 2	38.1	233.6					0.0	69.8	38.1	303.3	0.0	0.0
105.00		34.1	202.4					0.0	162.7	34.1	365.2	0.0	0.0
106.00	Appurtenance(s)	37.1	56.8	132.8	0.0	0.0	256.0	0.0	46.5	169.8	359.3	0.0	0.0
110.00		65.5	222.3					0.0	185.9	65.5	408.2	0.0	0.0
115.00	Appurtenance(s)	56.6	267.2	104.3	0.0	0.0	79.2	0.0	232.4	160.8	578.7	0.0	0.0
117.94		34.8	151.4					0.0	122.1	34.8	273.5	0.0	0.0
120.00		47.8	103.9					0.0	85.7	47.8	189.6	0.0	0.0
125.00	Appurtenance(s)	40.2	243.4	791.1	0.0	221.4	1,557.0	0.0	207.8	831.3	2,008.1	0.0	0.0
126.00	Appurtenance(s)	32.3	47.3	276.5	0.0	0.0	2,000.0	0.0	31.4	308.9	2,078.6	0.0	0.0
130.00		50.7	184.2					0.0	125.4	50.7	309.6	0.0	0.0
134.00	Appurtenance(s)	31.0	176.6	444.9	0.0	1,202.2	315.5	0.0	125.4	476.0	617.5	0.0	0.0
135.00		12.1	43.0					0.0	19.9	12.1	62.9	0.0	0.0
136.00	Appurtenance(s)	12.0	42.5	225.5	0.0	0.0	1,500.0	0.0	19.9	237.5	1,562.4	0.0	0.0
137.00	Appurtenance(s)	23.6	42.0	36.2	0.0	0.0	132.0	0.0	19.9	59.8	193.9	0.0	0.0
140.00		34.8	123.2					0.0	59.7	34.8	182.9	0.0	0.0
143.00	Appurtenance(s)	28.3	118.9	1,019.2	0.0	109.8	3,954.4	0.0	59.7	1,047.5	4,133.0	0.0	0.0
145.00		32.7	76.9					0.0	10.5	32.7	87.4	0.0	0.0
149.00	Appurtenance(s)	21.6	148.1	231.5	0.0	0.0	1,680.0	0.0	20.9	253.0	1,849.0	0.0	0.0
								Totals:		5,625.71	36,110.8	0.00	0.00

Load Case: 1.0D + 1.0W Serviceability 60 mph 25 Iterations

Gust Response Factor :1.10 Wind Importance Factor 1.00
Dead Load Factor :1.00
Wind Load Factor :1.00

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-37.16	-5.96	0.00	-692.42	0.00	692.42	4,132.29	2,066.14	8,772.59	4,392.82	0.00	0.00	0.167
5.00	-36.04	-5.90	0.00	-662.61	0.00	662.61	4,073.39	2,036.69	8,449.37	4,230.97	0.02	-0.05	0.165
10.00	-34.79	-5.83	0.00	-633.12	0.00	633.12	4,012.85	2,006.43	8,128.58	4,070.33	0.10	-0.09	0.164
15.00	-33.57	-5.77	0.00	-603.95	0.00	603.95	3,950.68	1,975.34	7,810.43	3,911.02	0.22	-0.14	0.163
20.00	-32.37	-5.71	0.00	-575.11	0.00	575.11	3,886.87	1,943.43	7,495.19	3,753.17	0.40	-0.19	0.162
25.00	-31.19	-5.65	0.00	-546.57	0.00	546.57	3,821.43	1,910.71	7,183.08	3,596.88	0.63	-0.24	0.160
30.00	-30.04	-5.58	0.00	-518.34	0.00	518.34	3,754.35	1,877.17	6,874.35	3,442.28	0.92	-0.30	0.159
35.00	-28.91	-5.52	0.00	-490.42	0.00	490.42	3,685.64	1,842.82	6,569.23	3,289.50	1.26	-0.35	0.157
40.00	-27.81	-5.45	0.00	-462.83	0.00	462.83	3,615.29	1,807.64	6,267.96	3,138.64	1.65	-0.41	0.155
45.00	-26.73	-5.40	0.00	-435.56	0.00	435.56	3,543.30	1,771.65	5,970.78	2,989.83	2.11	-0.46	0.153
48.00	-26.09	-5.36	0.00	-419.36	0.00	419.36	3,499.33	1,749.66	5,794.53	2,901.57	2.41	-0.50	0.152
50.00	-25.40	-5.32	0.00	-408.64	0.00	408.64	3,469.68	1,734.84	5,677.92	2,843.18	2.62	-0.52	0.151
53.25	-24.28	-5.28	0.00	-391.33	0.00	391.33	2,730.90	1,365.45	4,467.29	2,236.97	2.99	-0.56	0.184
55.00	-23.96	-5.24	0.00	-382.09	0.00	382.09	2,712.29	1,356.15	4,390.67	2,198.60	3.20	-0.58	0.183
60.00	-23.07	-5.17	0.00	-355.89	0.00	355.89	2,658.02	1,329.01	4,173.50	2,089.85	3.85	-0.65	0.179
65.00	-22.20	-5.10	0.00	-330.04	0.00	330.04	2,602.11	1,301.05	3,959.12	1,982.50	4.56	-0.72	0.175
70.00	-21.35	-5.03	0.00	-304.54	0.00	304.54	2,544.56	1,272.28	3,747.77	1,876.67	5.36	-0.79	0.171
75.00	-20.51	-4.96	0.00	-279.38	0.00	279.38	2,485.39	1,242.69	3,539.70	1,772.48	6.22	-0.86	0.166
80.00	-19.70	-4.89	0.00	-254.58	0.00	254.58	2,424.57	1,212.29	3,335.13	1,670.04	7.16	-0.93	0.161
85.00	-18.91	-4.82	0.00	-230.13	0.00	230.13	2,362.12	1,181.06	3,134.31	1,569.49	8.18	-1.01	0.155
90.00	-18.13	-4.75	0.00	-206.04	0.00	206.04	2,297.27	1,148.64	2,936.51	1,470.44	9.28	-1.08	0.148
95.00	-17.38	-4.69	0.00	-182.30	0.00	182.30	2,210.70	1,105.35	2,718.30	1,361.17	10.45	-1.15	0.142
97.75	-16.98	-4.65	0.00	-169.40	0.00	169.40	2,163.09	1,081.54	2,601.88	1,302.87	11.13	-1.19	0.138
100.00	-16.51	-4.62	0.00	-158.93	0.00	158.93	2,124.13	1,062.07	2,508.52	1,256.12	11.70	-1.23	0.134
101.50	-16.21	-4.59	0.00	-152.00	0.00	152.00	1,105.19	552.59	1,317.56	659.76	12.09	-1.25	0.245
105.00	-15.84	-4.56	0.00	-135.94	0.00	135.94	1,087.53	543.77	1,259.48	630.68	13.02	-1.30	0.230
106.00	-15.48	-4.39	0.00	-131.38	0.00	131.38	1,082.34	541.17	1,242.93	622.39	13.30	-1.32	0.225
110.00	-15.07	-4.34	0.00	-113.81	0.00	113.81	1,060.92	530.46	1,177.04	589.40	14.44	-1.41	0.207
115.00	-14.49	-4.19	0.00	-92.10	0.00	92.10	1,032.68	516.34	1,095.47	548.55	15.97	-1.51	0.182
117.94	-14.21	-4.16	0.00	-79.80	0.00	79.80	1,015.32	507.66	1,048.03	524.80	16.91	-1.56	0.166
120.00	-14.02	-4.12	0.00	-71.23	0.00	71.23	1,002.79	501.40	1,014.98	508.24	17.60	-1.60	0.154
125.00	-12.03	-3.24	0.00	-50.43	0.00	50.43	971.28	485.64	935.83	468.61	19.32	-1.68	0.120
126.00	-9.96	-2.87	0.00	-47.19	0.00	47.19	964.78	482.39	920.18	460.77	19.67	-1.69	0.113
130.00	-9.65	-2.82	0.00	-35.70	0.00	35.70	938.12	469.06	858.24	429.76	21.11	-1.74	0.093
134.00	-9.05	-2.33	0.00	-23.21	0.00	23.21	910.42	455.21	797.47	399.33	22.58	-1.78	0.068
135.00	-8.99	-2.32	0.00	-20.88	0.00	20.88	903.33	451.67	782.47	391.82	22.96	-1.79	0.063
136.00	-7.43	-2.03	0.00	-18.56	0.00	18.56	896.18	448.09	767.56	384.35	23.33	-1.80	0.057
137.00	-7.24	-1.97	0.00	-16.53	0.00	16.53	888.96	444.48	752.72	376.92	23.71	-1.81	0.052
140.00	-7.06	-1.93	0.00	-10.62	0.00	10.62	866.91	433.46	708.75	354.90	24.85	-1.82	0.038
143.00	-2.96	-0.75	0.00	-4.73	0.00	4.73	844.27	422.14	665.60	333.29	26.00	-1.83	0.018
145.00	-2.87	-0.72	0.00	-3.22	0.00	3.22	828.85	414.43	637.31	319.13	26.77	-1.84	0.014
149.00	0.00	-0.62	0.00	-0.36	0.00	0.36	787.55	393.77	574.90	287.88	28.31	-1.84	0.001

Equivalent Lateral Forces Method Analysis

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

Spectral Response Acceleration for Short Period (S_s):	0.19	
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.06	
Long-Period Transition Period (T_L):	6	
Importance Factor (I_E):	1.00	
Site Coefficient F_a:	1.60	
Site Coeffiecient F_v:	2.40	
Response Modification Coefficient (R):	1.50	
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.20	
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10	
Seismic Response Coefficient (C_s):	0.03	
Upper Limit C_s	0.03	
Lower Limit C_s	0.03	
Period based on Rayleigh Method (sec):	2.90	
Redundancy Factor (p):	1.00	
Seismic Force Distribution Exponent (k):	2.00	
Total Unfactored Dead Load:	37.16	k
Seismic Base Shear (E):	1.11	k

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

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
41	147.00	169	3,652	0.010	11	210
40	144.00	87	1,811	0.005	6	108
39	141.50	179	3,576	0.010	11	222
38	138.50	183	3,508	0.010	11	227
37	136.50	62	1,154	0.003	4	77
36	135.50	62	1,146	0.003	4	77
35	134.50	63	1,137	0.003	4	78
34	132.00	302	5,263	0.015	16	375
33	128.00	310	5,073	0.014	16	384
32	125.50	79	1,238	0.003	4	97
31	122.50	451	6,770	0.019	21	559
30	118.97	190	2,683	0.008	8	235
29	116.47	273	3,710	0.010	12	339
28	112.50	500	6,322	0.018	20	619
27	108.00	408	4,761	0.013	15	506
26	105.50	103	1,149	0.003	4	128
25	103.25	365	3,893	0.011	12	453
24	100.75	303	3,079	0.009	10	376
23	98.88	460	4,500	0.013	14	571
22	96.38	403	3,746	0.010	12	500
21	92.50	749	6,406	0.018	20	928
20	87.50	768	5,884	0.016	18	953
19	82.50	788	5,366	0.015	17	978

18	77.50	808	4,854	0.014	15	1,002
17	72.50	828	4,352	0.012	14	1,027
16	67.50	848	3,863	0.011	12	1,051
15	62.50	868	3,389	0.009	11	1,076
14	57.50	887	2,934	0.008	9	1,101
13	54.13	315	924	0.003	3	391
12	51.63	1,112	2,964	0.008	9	1,379
11	49.00	693	1,665	0.005	5	860
10	46.50	634	1,371	0.004	4	786
9	42.50	1,076	1,943	0.005	6	1,334
8	37.50	1,100	1,546	0.004	5	1,364
7	32.50	1,123	1,187	0.003	4	1,393
6	27.50	1,147	868	0.002	3	1,423
5	22.50	1,171	593	0.002	2	1,452
4	17.50	1,195	366	0.001	1	1,482
3	12.50	1,219	190	0.001	1	1,511
2	7.50	1,242	70	0.000	0	1,541
1	2.50	1,112	7	0.000	0	1,378
DragonWave Horizon C	151.00	32	725	0.002	2	39
DragonWave A-ANT-23G	151.00	15	342	0.001	1	19
Alcatel-Lucent RRH2x	151.00	317	7,237	0.020	23	394
Alcatel-Lucent 1900	151.00	180	4,104	0.012	13	223
Nokia 2.5G MAA - AAH	151.00	311	7,087	0.020	22	385
DragonWave A-ANT-11G	151.00	54	1,231	0.003	4	67
RFS APXVFRR12X-C-I20	151.00	138	3,147	0.009	10	171
SitePro1 RMQP-3XX Lo	149.00	1,680	37,298	0.105	117	2,083
Ericsson KRY 112 144	143.00	33	675	0.002	2	41
Ericsson KRY 112 144	143.00	29	595	0.002	2	36
Ericsson Radio 4449	143.00	222	4,540	0.013	14	275
Ericsson AIR-32 B2A/	143.00	397	8,110	0.023	25	492
Ericsson Air 3246 B6	143.00	540	11,042	0.031	34	670
RFS APXVAARR24_43-U-	143.00	384	7,846	0.022	25	476
Platform with SitePr	143.00	2,350	48,055	0.135	150	2,914
Alcatel-Lucent RRH2x	137.00	132	2,478	0.007	8	164
Round Low Profile Pl	136.00	1,500	27,744	0.078	87	1,860
RFS FD9R6004/2C-3L	134.00	16	280	0.001	1	19
Amphenol Antel BXA-1	134.00	45	808	0.002	3	56
Antel BXA-185085/12C	134.00	39	700	0.002	2	48
RFS DB-T1-6Z-8AB-0Z	134.00	44	790	0.002	2	55
Andrew DB854DG65ESX	134.00	56	997	0.003	3	69
Commscope LNX-6514DS	134.00	116	2,090	0.006	7	144
Round Platform w/ Ha	126.00	2,000	31,752	0.089	99	2,480
Raycap DC6-48-60-0-8	125.00	33	513	0.001	2	41
Raycap DC6-48-60-0-8	125.00	33	513	0.001	2	41
Raycap DC6-48-60-0-8	125.00	33	513	0.001	2	41
Ericsson 8843 Rev 2	125.00	225	3,516	0.010	11	279
Ericsson Radio 4415	125.00	129	2,016	0.006	6	160
Ericsson RRUS 4449 B	125.00	213	3,328	0.009	10	264
CCI CCI-HPA-65R-BUU-	125.00	204	3,188	0.009	10	253
Kathrein Scala 80010	125.00	688	10,744	0.030	34	853
RFS APXV18-206517S-C	115.00	79	1,047	0.003	3	98
Proxim 5054-R-LR	106.00	6	67	0.000	0	7
Generic 3' Dish w/ R	106.00	100	1,124	0.003	4	124
Flat Side Arm	106.00	150	1,685	0.005	5	186
		37,158	356,838	1.000	1,115	46,080

Load Case (0.9 - 0.2Sds) * DL + E ELFM Seismic (Reduced DL) Equivalent Lateral Forces Method

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)

41	147.00	169	3,652	0.010	11	145
40	144.00	87	1,811	0.005	6	75
39	141.50	179	3,576	0.010	11	154
38	138.50	183	3,508	0.010	11	157
37	136.50	62	1,154	0.003	4	53
36	135.50	62	1,146	0.003	4	54
35	134.50	63	1,137	0.003	4	54
34	132.00	302	5,263	0.015	16	260
33	128.00	310	5,073	0.014	16	266
32	125.50	79	1,238	0.003	4	68
31	122.50	451	6,770	0.019	21	388
30	118.97	190	2,683	0.008	8	163
29	116.47	273	3,710	0.010	12	235
28	112.50	500	6,322	0.018	20	430
27	108.00	408	4,761	0.013	15	351
26	105.50	103	1,149	0.003	4	89
25	103.25	365	3,893	0.011	12	314
24	100.75	303	3,079	0.009	10	261
23	98.88	460	4,500	0.013	14	396
22	96.38	403	3,746	0.010	12	347
21	92.50	749	6,406	0.018	20	644
20	87.50	768	5,884	0.016	18	661
19	82.50	788	5,366	0.015	17	678
18	77.50	808	4,854	0.014	15	695
17	72.50	828	4,352	0.012	14	712
16	67.50	848	3,863	0.011	12	729
15	62.50	868	3,389	0.009	11	746
14	57.50	887	2,934	0.008	9	763
13	54.13	315	924	0.003	3	271
12	51.63	1,112	2,964	0.008	9	956
11	49.00	693	1,665	0.005	5	596
10	46.50	634	1,371	0.004	4	545
9	42.50	1,076	1,943	0.005	6	925
8	37.50	1,100	1,546	0.004	5	946
7	32.50	1,123	1,187	0.003	4	966
6	27.50	1,147	868	0.002	3	987
5	22.50	1,171	593	0.002	2	1,007
4	17.50	1,195	366	0.001	1	1,027
3	12.50	1,219	190	0.001	1	1,048
2	7.50	1,242	70	0.000	0	1,068
1	2.50	1,112	7	0.000	0	956
DragonWave Horizon C	151.00	32	725	0.002	2	27
DragonWave A-ANT-23G	151.00	15	342	0.001	1	13
Alcatel-Lucent RRH2x	151.00	317	7,237	0.020	23	273
Alcatel-Lucent 1900	151.00	180	4,104	0.012	13	155
Nokia 2.5G MAA - AAH	151.00	311	7,087	0.020	22	267
DragonWave A-ANT-11G	151.00	54	1,231	0.003	4	46
RFS APXVFRR12X-C-I20	151.00	138	3,147	0.009	10	119
SitePro1 RMQP-3XX Lo	149.00	1,680	37,298	0.105	117	1,445
Ericsson KRY 112 144	143.00	33	675	0.002	2	28
Ericsson KRY 112 144	143.00	29	595	0.002	2	25
Ericsson Radio 4449	143.00	222	4,540	0.013	14	191
Ericsson AIR-32 B2A/	143.00	397	8,110	0.023	25	341
Ericsson Air 3246 B6	143.00	540	11,042	0.031	34	464
RFS APXVAARR24_43-U-	143.00	384	7,846	0.022	25	330
Platform with SitePr	143.00	2,350	48,055	0.135	150	2,021
Alcatel-Lucent RRH2x	137.00	132	2,478	0.007	8	114
Round Low Profile Pl	136.00	1,500	27,744	0.078	87	1,290
RFS FD9R6004/2C-3L	134.00	16	280	0.001	1	13
Amphenol Antel BXA-1	134.00	45	808	0.002	3	39
Antel BXA-185085/12C	134.00	39	700	0.002	2	34
RFS DB-T1-6Z-8AB-0Z	134.00	44	790	0.002	2	38
Andrew DB854DG65ESX	134.00	56	997	0.003	3	48
Commscope LNX-6514DS	134.00	116	2,090	0.006	7	100

Round Platform w/ Ha	126.00	2,000	31,752	0.089	99	1,720
Raycap DC6-48-60-0-8	125.00	33	513	0.001	2	28
Raycap DC6-48-60-0-8	125.00	33	513	0.001	2	28
Raycap DC6-48-60-0-8	125.00	33	513	0.001	2	28
Ericsson 8843 Rev 2	125.00	225	3,516	0.010	11	193
Ericsson Radio 4415	125.00	129	2,016	0.006	6	111
Ericsson RRUS 4449 B	125.00	213	3,328	0.009	10	183
CCI CCI-HPA-65R-BUU-	125.00	204	3,188	0.009	10	175
Kathrein Scala 80010	125.00	688	10,744	0.030	34	591
RFS APXV18-206517S-C	115.00	79	1,047	0.003	3	68
Proxim 5054-R-LR	106.00	6	67	0.000	0	5
Generic 3' Dish w/ R	106.00	100	1,124	0.003	4	86
Flat Side Arm	106.00	150	1,685	0.005	5	129
		37,158	356,838	1.000	1,115	31,952

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

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-43.40	-1.04	0.00	-136.03	0.00	136.03	4,132.29	2,066.14	8,772.59	4,392.82	0.00	0.00	0.041
5.00	-41.86	-1.05	0.00	-130.82	0.00	130.82	4,073.39	2,036.69	8,449.37	4,230.97	0.00	-0.01	0.041
10.00	-40.35	-1.06	0.00	-125.57	0.00	125.57	4,012.85	2,006.43	8,128.58	4,070.33	0.02	-0.02	0.041
15.00	-38.87	-1.06	0.00	-120.29	0.00	120.29	3,950.68	1,975.34	7,810.43	3,911.02	0.04	-0.03	0.041
20.00	-37.42	-1.06	0.00	-114.99	0.00	114.99	3,886.87	1,943.43	7,495.19	3,753.17	0.08	-0.04	0.040
25.00	-35.99	-1.07	0.00	-109.67	0.00	109.67	3,821.43	1,910.71	7,183.08	3,596.88	0.12	-0.05	0.040
30.00	-34.60	-1.07	0.00	-104.33	0.00	104.33	3,754.35	1,877.17	6,874.35	3,442.28	0.18	-0.06	0.040
35.00	-33.24	-1.07	0.00	-98.99	0.00	98.99	3,685.64	1,842.82	6,569.23	3,289.50	0.25	-0.07	0.039
40.00	-31.90	-1.07	0.00	-93.65	0.00	93.65	3,615.29	1,807.64	6,267.96	3,138.64	0.33	-0.08	0.039
45.00	-31.12	-1.07	0.00	-88.31	0.00	88.31	3,543.30	1,771.65	5,970.78	2,989.83	0.42	-0.09	0.038
48.00	-30.25	-1.06	0.00	-85.12	0.00	85.12	3,499.33	1,749.66	5,794.53	2,901.57	0.48	-0.10	0.038
50.00	-28.88	-1.05	0.00	-82.99	0.00	82.99	3,469.68	1,734.84	5,677.92	2,843.18	0.52	-0.10	0.038
53.25	-28.48	-1.05	0.00	-79.56	0.00	79.56	2,730.90	1,365.45	4,467.29	2,236.97	0.60	-0.11	0.046
55.00	-27.38	-1.05	0.00	-77.72	0.00	77.72	2,712.29	1,356.15	4,390.67	2,198.60	0.64	-0.12	0.045
60.00	-26.31	-1.04	0.00	-72.48	0.00	72.48	2,658.02	1,329.01	4,173.50	2,089.85	0.77	-0.13	0.045
65.00	-25.26	-1.03	0.00	-67.28	0.00	67.28	2,602.11	1,301.05	3,959.12	1,982.50	0.91	-0.14	0.044
70.00	-24.23	-1.02	0.00	-62.12	0.00	62.12	2,544.56	1,272.28	3,747.77	1,876.67	1.07	-0.16	0.043
75.00	-23.23	-1.01	0.00	-57.01	0.00	57.01	2,485.39	1,242.69	3,539.70	1,772.48	1.25	-0.17	0.042
80.00	-22.25	-1.00	0.00	-51.96	0.00	51.96	2,424.57	1,212.29	3,335.13	1,670.04	1.44	-0.19	0.040
85.00	-21.30	-0.98	0.00	-46.98	0.00	46.98	2,362.12	1,181.06	3,134.31	1,569.49	1.64	-0.20	0.039
90.00	-20.37	-0.96	0.00	-42.08	0.00	42.08	2,297.27	1,148.64	2,936.51	1,470.44	1.86	-0.22	0.037
95.00	-19.87	-0.95	0.00	-37.27	0.00	37.27	2,210.70	1,105.35	2,718.30	1,361.17	2.10	-0.23	0.036
97.75	-19.30	-0.94	0.00	-34.66	0.00	34.66	2,163.09	1,081.54	2,601.88	1,302.87	2.24	-0.24	0.036
100.00	-18.92	-0.93	0.00	-32.55	0.00	32.55	2,124.13	1,062.07	2,508.52	1,256.12	2.35	-0.25	0.035
101.50	-18.47	-0.92	0.00	-31.15	0.00	31.15	1,105.19	552.59	1,317.56	659.76	2.43	-0.25	0.064
105.00	-18.34	-0.92	0.00	-27.94	0.00	27.94	1,087.53	543.77	1,259.48	630.68	2.62	-0.26	0.061
106.00	-17.52	-0.89	0.00	-27.03	0.00	27.03	1,082.34	541.17	1,242.93	622.39	2.68	-0.27	0.060
110.00	-16.90	-0.87	0.00	-23.46	0.00	23.46	1,060.92	530.46	1,177.04	589.40	2.91	-0.29	0.056
115.00	-16.46	-0.86	0.00	-19.10	0.00	19.10	1,032.68	516.34	1,095.47	548.55	3.22	-0.31	0.051
117.94	-16.22	-0.85	0.00	-16.57	0.00	16.57	1,015.32	507.66	1,048.03	524.80	3.41	-0.32	0.048
120.00	-15.66	-0.83	0.00	-14.80	0.00	14.80	1,002.79	501.40	1,014.98	508.24	3.55	-0.33	0.045
125.00	-13.64	-0.74	0.00	-10.64	0.00	10.64	971.28	485.64	935.83	468.61	3.90	-0.34	0.037
126.00	-10.77	-0.61	0.00	-9.89	0.00	9.89	964.78	482.39	920.18	460.77	3.97	-0.34	0.033
130.00	-10.40	-0.60	0.00	-7.44	0.00	7.44	938.12	469.06	858.24	429.76	4.27	-0.35	0.028
134.00	-9.93	-0.57	0.00	-5.05	0.00	5.05	910.42	455.21	797.47	399.33	4.57	-0.36	0.024
135.00	-9.85	-0.57	0.00	-4.48	0.00	4.48	903.33	451.67	782.47	391.82	4.64	-0.37	0.022
136.00	-7.91	-0.47	0.00	-3.91	0.00	3.91	896.18	448.09	767.56	384.35	4.72	-0.37	0.019
137.00	-7.52	-0.45	0.00	-3.45	0.00	3.45	888.96	444.48	752.72	376.92	4.80	-0.37	0.018
140.00	-7.30	-0.43	0.00	-2.11	0.00	2.11	866.91	433.46	708.75	354.90	5.03	-0.37	0.014
143.00	-2.29	-0.14	0.00	-0.81	0.00	0.81	844.27	422.14	665.60	333.29	5.27	-0.37	0.005
145.00	-2.08	-0.13	0.00	-0.52	0.00	0.52	828.85	414.43	637.31	319.13	5.42	-0.37	0.004
149.00	0.00	-0.12	0.00	0.00	0.00	0.00	787.55	393.77	574.90	287.88	5.74	-0.38	0.000

Load Case (0.9 - 0.2Sds) * DL + E ELFM Seismic (Reduced DL) Equivalent Lateral Forces Method

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-30.10	-1.04	0.00	-133.22	0.00	133.22	4,132.29	2,066.14	8,772.59	4,392.82	0.00	0.00	0.038
5.00	-29.03	-1.05	0.00	-128.01	0.00	128.01	4,073.39	2,036.69	8,449.37	4,230.97	0.00	-0.01	0.037
10.00	-27.98	-1.05	0.00	-122.78	0.00	122.78	4,012.85	2,006.43	8,128.58	4,070.33	0.02	-0.02	0.037
15.00	-26.95	-1.05	0.00	-117.54	0.00	117.54	3,950.68	1,975.34	7,810.43	3,911.02	0.04	-0.03	0.037
20.00	-25.94	-1.05	0.00	-112.28	0.00	112.28	3,886.87	1,943.43	7,495.19	3,753.17	0.08	-0.04	0.037
25.00	-24.96	-1.06	0.00	-107.00	0.00	107.00	3,821.43	1,910.71	7,183.08	3,596.88	0.12	-0.05	0.036
30.00	-23.99	-1.06	0.00	-101.73	0.00	101.73	3,754.35	1,877.17	6,874.35	3,442.28	0.18	-0.06	0.036
35.00	-23.05	-1.05	0.00	-96.45	0.00	96.45	3,685.64	1,842.82	6,569.23	3,289.50	0.24	-0.07	0.036
40.00	-22.12	-1.05	0.00	-91.18	0.00	91.18	3,615.29	1,807.64	6,267.96	3,138.64	0.32	-0.08	0.035
45.00	-21.57	-1.05	0.00	-85.93	0.00	85.93	3,543.30	1,771.65	5,970.78	2,989.83	0.41	-0.09	0.035
48.00	-20.98	-1.04	0.00	-82.79	0.00	82.79	3,499.33	1,749.66	5,794.53	2,901.57	0.47	-0.10	0.035
50.00	-20.02	-1.04	0.00	-80.70	0.00	80.70	3,469.68	1,734.84	5,677.92	2,843.18	0.51	-0.10	0.034
53.25	-19.75	-1.03	0.00	-77.33	0.00	77.33	2,730.90	1,365.45	4,467.29	2,236.97	0.58	-0.11	0.042
55.00	-18.99	-1.03	0.00	-75.52	0.00	75.52	2,712.29	1,356.15	4,390.67	2,198.60	0.62	-0.11	0.041
60.00	-18.24	-1.02	0.00	-70.38	0.00	70.38	2,658.02	1,329.01	4,173.50	2,089.85	0.75	-0.13	0.041
65.00	-17.51	-1.01	0.00	-65.29	0.00	65.29	2,602.11	1,301.05	3,959.12	1,982.50	0.89	-0.14	0.040
70.00	-16.80	-1.00	0.00	-60.24	0.00	60.24	2,544.56	1,272.28	3,747.77	1,876.67	1.05	-0.16	0.039
75.00	-16.10	-0.99	0.00	-55.25	0.00	55.25	2,485.39	1,242.69	3,539.70	1,772.48	1.22	-0.17	0.038
80.00	-15.43	-0.97	0.00	-50.32	0.00	50.32	2,424.57	1,212.29	3,335.13	1,670.04	1.40	-0.18	0.036
85.00	-14.77	-0.95	0.00	-45.47	0.00	45.47	2,362.12	1,181.06	3,134.31	1,569.49	1.60	-0.20	0.035
90.00	-14.12	-0.93	0.00	-40.70	0.00	40.70	2,297.27	1,148.64	2,936.51	1,470.44	1.82	-0.21	0.034
95.00	-13.77	-0.92	0.00	-36.03	0.00	36.03	2,210.70	1,105.35	2,718.30	1,361.17	2.05	-0.23	0.033
97.75	-13.38	-0.91	0.00	-33.48	0.00	33.48	2,163.09	1,081.54	2,601.88	1,302.87	2.18	-0.24	0.032
100.00	-13.12	-0.90	0.00	-31.44	0.00	31.44	2,124.13	1,062.07	2,508.52	1,256.12	2.29	-0.24	0.031
101.50	-12.80	-0.89	0.00	-30.08	0.00	30.08	1,105.19	552.59	1,317.56	659.76	2.37	-0.25	0.057
105.00	-12.72	-0.89	0.00	-26.97	0.00	26.97	1,087.53	543.77	1,259.48	630.68	2.55	-0.26	0.054
106.00	-12.14	-0.86	0.00	-26.09	0.00	26.09	1,082.34	541.17	1,242.93	622.39	2.61	-0.26	0.053
110.00	-11.71	-0.84	0.00	-22.63	0.00	22.63	1,060.92	530.46	1,177.04	589.40	2.83	-0.28	0.049
115.00	-11.41	-0.83	0.00	-18.41	0.00	18.41	1,032.68	516.34	1,095.47	548.55	3.13	-0.30	0.045
117.94	-11.25	-0.82	0.00	-15.97	0.00	15.97	1,015.32	507.66	1,048.03	524.80	3.32	-0.31	0.042
120.00	-10.86	-0.80	0.00	-14.27	0.00	14.27	1,002.79	501.40	1,014.98	508.24	3.46	-0.32	0.039
125.00	-9.45	-0.72	0.00	-10.25	0.00	10.25	971.28	485.64	935.83	468.61	3.79	-0.33	0.032
126.00	-7.47	-0.59	0.00	-9.53	0.00	9.53	964.78	482.39	920.18	460.77	3.86	-0.33	0.028
130.00	-7.21	-0.57	0.00	-7.17	0.00	7.17	938.12	469.06	858.24	429.76	4.15	-0.34	0.024
134.00	-6.88	-0.55	0.00	-4.87	0.00	4.87	910.42	455.21	797.47	399.33	4.44	-0.35	0.020
135.00	-6.83	-0.55	0.00	-4.32	0.00	4.32	903.33	451.67	782.47	391.82	4.52	-0.35	0.019
136.00	-5.49	-0.45	0.00	-3.77	0.00	3.77	896.18	448.09	767.56	384.35	4.59	-0.36	0.016
137.00	-5.22	-0.43	0.00	-3.32	0.00	3.32	888.96	444.48	752.72	376.92	4.66	-0.36	0.015
140.00	-5.06	-0.42	0.00	-2.03	0.00	2.03	866.91	433.46	708.75	354.90	4.89	-0.36	0.012
143.00	-1.59	-0.14	0.00	-0.78	0.00	0.78	844.27	422.14	665.60	333.29	5.12	-0.36	0.004
145.00	-1.44	-0.13	0.00	-0.50	0.00	0.50	828.85	414.43	637.31	319.13	5.27	-0.36	0.003
149.00	0.00	-0.12	0.00	0.00	0.00	0.00	787.55	393.77	574.90	287.88	5.57	-0.36	0.000

Equivalent Modal Analysis Method

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

Spectral Response Acceleration for Short Period (S_s):	0.19
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.06
Importance Factor (I_E):	1.00
Site Coefficient F_a:	1.60
Site Coefficient F_v	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.20
Desing Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10
Period Based on Rayleigh Method (sec):	2.90
Redundancy Factor (p):	1.00

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

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
41	147.00	169	1.840	1.725	1.047	0.344	39	210
40	144.00	87	1.765	1.385	0.919	0.296	17	108
39	141.50	179	1.705	1.139	0.822	0.259	31	222
38	138.50	183	1.633	0.884	0.716	0.217	26	227
37	136.50	62	1.586	0.736	0.651	0.190	8	77
36	135.50	62	1.563	0.669	0.621	0.178	7	77
35	134.50	63	1.540	0.605	0.592	0.165	7	78
34	132.00	302	1.483	0.461	0.523	0.136	27	375
33	128.00	310	1.395	0.274	0.426	0.093	19	384
32	125.50	79	1.341	0.181	0.373	0.070	4	97
31	122.50	451	1.278	0.091	0.317	0.044	13	559
30	118.97	190	1.205	0.009	0.258	0.017	2	235
29	116.47	273	1.155	-0.034	0.222	0.000	0	339
28	112.50	500	1.077	-0.082	0.173	-0.022	-7	619
27	108.00	408	0.993	-0.112	0.128	-0.042	-11	506
26	105.50	103	0.948	-0.119	0.107	-0.050	-3	128
25	103.25	365	0.908	-0.122	0.090	-0.055	-13	453
24	100.75	303	0.864	-0.120	0.074	-0.059	-12	376
23	98.88	460	0.832	-0.117	0.064	-0.061	-19	571
22	96.38	403	0.791	-0.110	0.051	-0.062	-17	500
21	92.50	749	0.728	-0.095	0.036	-0.058	-29	928
20	87.50	768	0.652	-0.071	0.021	-0.047	-24	953
19	82.50	788	0.579	-0.045	0.012	-0.028	-15	978
18	77.50	808	0.511	-0.020	0.008	-0.006	-3	1,002
17	72.50	828	0.447	0.002	0.006	0.017	9	1,027
16	67.50	848	0.388	0.022	0.007	0.035	20	1,051
15	62.50	868	0.333	0.037	0.010	0.048	28	1,076
14	57.50	887	0.281	0.049	0.014	0.056	33	1,101
13	54.13	315	0.249	0.055	0.017	0.058	12	391
12	51.63	1,112	0.227	0.059	0.020	0.060	44	1,379
11	49.00	693	0.204	0.062	0.023	0.060	28	860
10	46.50	634	0.184	0.065	0.025	0.060	25	786
9	42.50	1,076	0.154	0.068	0.030	0.060	43	1,334
8	37.50	1,100	0.120	0.070	0.034	0.058	43	1,364

7	32.50	1,123	0.090	0.071	0.038	0.057	43	1,393
6	27.50	1,147	0.064	0.072	0.041	0.056	43	1,423
5	22.50	1,171	0.043	0.071	0.042	0.054	42	1,452
4	17.50	1,195	0.026	0.067	0.040	0.052	41	1,482
3	12.50	1,219	0.013	0.059	0.034	0.047	38	1,511
2	7.50	1,242	0.005	0.044	0.025	0.038	32	1,541
1	2.50	1,112	0.001	0.018	0.010	0.019	14	1,378
DragonWave Horizon C	151.00	32	1.941	2.261	1.240	0.413	9	39
DragonWave A-ANT-23G	151.00	15	1.941	2.261	1.240	0.413	4	19
Alcatel-Lucent RRH2x	151.00	317	1.941	2.261	1.240	0.413	87	394
Alcatel-Lucent 1900	151.00	180	1.941	2.261	1.240	0.413	50	223
Nokia 2.5G MAA - AAH	151.00	311	1.941	2.261	1.240	0.413	85	385
DragonWave A-ANT-11G	151.00	54	1.941	2.261	1.240	0.413	15	67
RFS APXVFRR12X-C-I20	151.00	138	1.941	2.261	1.240	0.413	38	171
SitePro1 RMQP-3XX Lo	149.00	1,680	1.890	1.980	1.140	0.377	423	2,083
Ericsson KRY 112 144	143.00	33	1.741	1.283	0.879	0.281	6	41
Ericsson KRY 112 144	143.00	29	1.741	1.283	0.879	0.281	5	36
Ericsson Radio 4449	143.00	222	1.741	1.283	0.879	0.281	42	275
Ericsson AIR-32 B2A/	143.00	397	1.741	1.283	0.879	0.281	74	492
Ericsson Air 3246 B6	143.00	540	1.741	1.283	0.879	0.281	101	670
RFS APXVAARR24_43-U-	143.00	384	1.741	1.283	0.879	0.281	72	476
Platform with SitePr	143.00	2,350	1.741	1.283	0.879	0.281	440	2,914
Alcatel-Lucent RRH2x	137.00	132	1.598	0.772	0.667	0.197	17	164
Round Low Profile Pl	136.00	1,500	1.575	0.702	0.636	0.184	184	1,860
RFS FD9R6004/2C-3L	134.00	16	1.529	0.574	0.577	0.159	2	19
Amphenol Antel BXA-1	134.00	45	1.529	0.574	0.577	0.159	5	56
Antel BXA-185085/12C	134.00	39	1.529	0.574	0.577	0.159	4	48
RFS DB-T1-6Z-8AB-0Z	134.00	44	1.529	0.574	0.577	0.159	5	55
Andrew DB854DG65ESX	134.00	56	1.529	0.574	0.577	0.159	6	69
Commscope LNX-	134.00	116	1.529	0.574	0.577	0.159	12	144
Round Platform w/ Ha	126.00	2,000	1.352	0.198	0.384	0.074	99	2,480
Raycap DC6-48-60-0-8	125.00	33	1.330	0.164	0.363	0.065	1	41
Raycap DC6-48-60-0-8	125.00	33	1.330	0.164	0.363	0.065	1	41
Raycap DC6-48-60-0-8	125.00	33	1.330	0.164	0.363	0.065	1	41
Ericsson 8843 Rev 2	125.00	225	1.330	0.164	0.363	0.065	10	279
Ericsson Radio 4415	125.00	129	1.330	0.164	0.363	0.065	6	160
Ericsson RRUS 4449 B	125.00	213	1.330	0.164	0.363	0.065	9	264
CCI CCI-HPA-65R-BUU-	125.00	204	1.330	0.164	0.363	0.065	9	253
Kathrein Scala 80010	125.00	688	1.330	0.164	0.363	0.065	30	853
RFS APXV18-206517S-C	115.00	79	1.126	-0.054	0.203	-0.009	0	98
Proxim 5054-R-LR	106.00	6	0.957	-0.118	0.111	-0.048	0	7
Generic 3' Dish w/ R	106.00	100	0.957	-0.118	0.111	-0.048	-3	124
Flat Side Arm	106.00	150	0.957	-0.118	0.111	-0.048	-5	186
		37,158	87.197	40.813	33.230	9.358	2,427	46,080

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

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
41	147.00	169	1.840	1.725	1.047	0.344	39	145
40	144.00	87	1.765	1.385	0.919	0.296	17	75
39	141.50	179	1.705	1.139	0.822	0.259	31	154
38	138.50	183	1.633	0.884	0.716	0.217	26	157
37	136.50	62	1.586	0.736	0.651	0.190	8	53
36	135.50	62	1.563	0.669	0.621	0.178	7	54
35	134.50	63	1.540	0.605	0.592	0.165	7	54
34	132.00	302	1.483	0.461	0.523	0.136	27	260
33	128.00	310	1.395	0.274	0.426	0.093	19	266
32	125.50	79	1.341	0.181	0.373	0.070	4	68

31	122.50	451	1.278	0.091	0.317	0.044	13	388
30	118.97	190	1.205	0.009	0.258	0.017	2	163
29	116.47	273	1.155	-0.034	0.222	0.000	0	235
28	112.50	500	1.077	-0.082	0.173	-0.022	-7	430
27	108.00	408	0.993	-0.112	0.128	-0.042	-11	351
26	105.50	103	0.948	-0.119	0.107	-0.050	-3	89
25	103.25	365	0.908	-0.122	0.090	-0.055	-13	314
24	100.75	303	0.864	-0.120	0.074	-0.059	-12	261
23	98.88	460	0.832	-0.117	0.064	-0.061	-19	396
22	96.38	403	0.791	-0.110	0.051	-0.062	-17	347
21	92.50	749	0.728	-0.095	0.036	-0.058	-29	644
20	87.50	768	0.652	-0.071	0.021	-0.047	-24	661
19	82.50	788	0.579	-0.045	0.012	-0.028	-15	678
18	77.50	808	0.511	-0.020	0.008	-0.006	-3	695
17	72.50	828	0.447	0.002	0.006	0.017	9	712
16	67.50	848	0.388	0.022	0.007	0.035	20	729
15	62.50	868	0.333	0.037	0.010	0.048	28	746
14	57.50	887	0.281	0.049	0.014	0.056	33	763
13	54.13	315	0.249	0.055	0.017	0.058	12	271
12	51.63	1,112	0.227	0.059	0.020	0.060	44	956
11	49.00	693	0.204	0.062	0.023	0.060	28	596
10	46.50	634	0.184	0.065	0.025	0.060	25	545
9	42.50	1,076	0.154	0.068	0.030	0.060	43	925
8	37.50	1,100	0.120	0.070	0.034	0.058	43	946
7	32.50	1,123	0.090	0.071	0.038	0.057	43	966
6	27.50	1,147	0.064	0.072	0.041	0.056	43	987
5	22.50	1,171	0.043	0.071	0.042	0.054	42	1,007
4	17.50	1,195	0.026	0.067	0.040	0.052	41	1,027
3	12.50	1,219	0.013	0.059	0.034	0.047	38	1,048
2	7.50	1,242	0.005	0.044	0.025	0.038	32	1,068
1	2.50	1,112	0.001	0.018	0.010	0.019	14	956
DragonWave Horizon C	151.00	32	1.941	2.261	1.240	0.413	9	27
DragonWave A-ANT-23G	151.00	15	1.941	2.261	1.240	0.413	4	13
Alcatel-Lucent RRH2x	151.00	317	1.941	2.261	1.240	0.413	87	273
Alcatel-Lucent 1900	151.00	180	1.941	2.261	1.240	0.413	50	155
Nokia 2.5G MAA - AAH	151.00	311	1.941	2.261	1.240	0.413	85	267
DragonWave A-ANT-11G	151.00	54	1.941	2.261	1.240	0.413	15	46
RFS APXVFRR12X-C-I20	151.00	138	1.941	2.261	1.240	0.413	38	119
SitePro1 RMQP-3XX Lo	149.00	1,680	1.890	1.980	1.140	0.377	423	1,445
Ericsson KRY 112 144	143.00	33	1.741	1.283	0.879	0.281	6	28
Ericsson KRY 112 144	143.00	29	1.741	1.283	0.879	0.281	5	25
Ericsson Radio 4449	143.00	222	1.741	1.283	0.879	0.281	42	191
Ericsson AIR-32 B2A/	143.00	397	1.741	1.283	0.879	0.281	74	341
Ericsson Air 3246 B6	143.00	540	1.741	1.283	0.879	0.281	101	464
RFS APXVAARR24_43-U-	143.00	384	1.741	1.283	0.879	0.281	72	330
Platform with SitePr	143.00	2,350	1.741	1.283	0.879	0.281	440	2,021
Alcatel-Lucent RRH2x	137.00	132	1.598	0.772	0.667	0.197	17	114
Round Low Profile Pl	136.00	1,500	1.575	0.702	0.636	0.184	184	1,290
RFS FD9R6004/2C-3L	134.00	16	1.529	0.574	0.577	0.159	2	13
Amphenol Antel BXA-1	134.00	45	1.529	0.574	0.577	0.159	5	39
Antel BXA-185085/12C	134.00	39	1.529	0.574	0.577	0.159	4	34
RFS DB-T1-6Z-8AB-0Z	134.00	44	1.529	0.574	0.577	0.159	5	38
Andrew DB854DG65ESX	134.00	56	1.529	0.574	0.577	0.159	6	48
Commscope LNX-	134.00	116	1.529	0.574	0.577	0.159	12	100
Round Platform w/ Ha	126.00	2,000	1.352	0.198	0.384	0.074	99	1,720
Raycap DC6-48-60-0-8	125.00	33	1.330	0.164	0.363	0.065	1	28
Raycap DC6-48-60-0-8	125.00	33	1.330	0.164	0.363	0.065	1	28
Raycap DC6-48-60-0-8	125.00	33	1.330	0.164	0.363	0.065	1	28
Ericsson 8843 Rev 2	125.00	225	1.330	0.164	0.363	0.065	10	193
Ericsson Radio 4415	125.00	129	1.330	0.164	0.363	0.065	6	111
Ericsson RRUS 4449 B	125.00	213	1.330	0.164	0.363	0.065	9	183
CCI CCI-HPA-65R-BUU-	125.00	204	1.330	0.164	0.363	0.065	9	175
Kathrein Scala 80010	125.00	688	1.330	0.164	0.363	0.065	30	591
RFS APXV18-206517S-C	115.00	79	1.126	-0.054	0.203	-0.009	0	68

Proxim 5054-R-LR	106.00	6	0.957	-0.118	0.111	-0.048	0	5
Generic 3' Dish w/ R	106.00	100	0.957	-0.118	0.111	-0.048	-3	86
Flat Side Arm	106.00	150	0.957	-0.118	0.111	-0.048	-5	129
		37,158	87.197	40.813	33.230	9.358	2,427	31,952

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

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-43.40	-2.13	0.00	-269.30	0.00	269.30	4,132.29	2,066.14	8,772.59	4,392.82	0.00	0.00	0.072
5.00	-41.86	-2.11	0.00	-258.65	0.00	258.65	4,073.39	2,036.69	8,449.37	4,230.97	0.01	-0.02	0.071
10.00	-40.35	-2.09	0.00	-248.08	0.00	248.08	4,012.85	2,006.43	8,128.58	4,070.33	0.04	-0.04	0.071
15.00	-38.87	-2.06	0.00	-237.64	0.00	237.64	3,950.68	1,975.34	7,810.43	3,911.02	0.09	-0.06	0.071
20.00	-37.41	-2.03	0.00	-227.35	0.00	227.35	3,886.87	1,943.43	7,495.19	3,753.17	0.16	-0.08	0.070
25.00	-35.99	-2.00	0.00	-217.22	0.00	217.22	3,821.43	1,910.71	7,183.08	3,596.88	0.25	-0.10	0.070
30.00	-34.60	-1.96	0.00	-207.24	0.00	207.24	3,754.35	1,877.17	6,874.35	3,442.28	0.36	-0.12	0.069
35.00	-33.23	-1.93	0.00	-197.42	0.00	197.42	3,685.64	1,842.82	6,569.23	3,289.50	0.49	-0.14	0.069
40.00	-31.90	-1.90	0.00	-187.77	0.00	187.77	3,615.29	1,807.64	6,267.96	3,138.64	0.65	-0.16	0.069
45.00	-31.11	-1.88	0.00	-178.29	0.00	178.29	3,543.30	1,771.65	5,970.78	2,989.83	0.83	-0.18	0.068
48.00	-30.25	-1.85	0.00	-172.65	0.00	172.65	3,499.33	1,749.66	5,794.53	2,901.57	0.95	-0.20	0.068
50.00	-28.87	-1.81	0.00	-168.94	0.00	168.94	3,469.68	1,734.84	5,677.92	2,843.18	1.04	-0.21	0.068
53.25	-28.48	-1.80	0.00	-163.06	0.00	163.06	2,730.90	1,365.45	4,467.29	2,236.97	1.18	-0.22	0.083
55.00	-27.38	-1.78	0.00	-159.90	0.00	159.90	2,712.29	1,356.15	4,390.67	2,198.60	1.27	-0.23	0.083
60.00	-26.30	-1.76	0.00	-151.02	0.00	151.02	2,658.02	1,329.01	4,173.50	2,089.85	1.53	-0.26	0.082
65.00	-25.25	-1.75	0.00	-142.23	0.00	142.23	2,602.11	1,301.05	3,959.12	1,982.50	1.82	-0.29	0.081
70.00	-24.22	-1.74	0.00	-133.50	0.00	133.50	2,544.56	1,272.28	3,747.77	1,876.67	2.14	-0.32	0.081
75.00	-23.22	-1.75	0.00	-124.78	0.00	124.78	2,485.39	1,242.69	3,539.70	1,772.48	2.49	-0.35	0.080
80.00	-22.24	-1.78	0.00	-116.00	0.00	116.00	2,424.57	1,212.29	3,335.13	1,670.04	2.88	-0.39	0.079
85.00	-21.29	-1.81	0.00	-107.12	0.00	107.12	2,362.12	1,181.06	3,134.31	1,569.49	3.31	-0.42	0.077
90.00	-20.36	-1.84	0.00	-98.10	0.00	98.10	2,297.27	1,148.64	2,936.51	1,470.44	3.76	-0.46	0.076
95.00	-19.86	-1.86	0.00	-88.90	0.00	88.90	2,210.70	1,105.35	2,718.30	1,361.17	4.26	-0.49	0.074
97.75	-19.28	-1.88	0.00	-83.77	0.00	83.77	2,163.09	1,081.54	2,601.88	1,302.87	4.55	-0.51	0.073
100.00	-18.91	-1.90	0.00	-79.54	0.00	79.54	2,124.13	1,062.07	2,508.52	1,256.12	4.79	-0.53	0.072
101.50	-18.45	-1.91	0.00	-76.70	0.00	76.70	1,105.19	552.59	1,317.56	659.76	4.96	-0.54	0.133
105.00	-18.32	-1.92	0.00	-70.01	0.00	70.01	1,087.53	543.77	1,259.48	630.68	5.36	-0.56	0.128
106.00	-17.50	-1.94	0.00	-68.09	0.00	68.09	1,082.34	541.17	1,242.93	622.39	5.48	-0.57	0.126
110.00	-16.88	-1.95	0.00	-60.34	0.00	60.34	1,060.92	530.46	1,177.04	589.40	5.98	-0.62	0.118
115.00	-16.44	-1.96	0.00	-50.57	0.00	50.57	1,032.68	516.34	1,095.47	548.55	6.66	-0.67	0.108
117.94	-16.20	-1.96	0.00	-44.80	0.00	44.80	1,015.32	507.66	1,048.03	524.80	7.08	-0.70	0.101
120.00	-15.64	-1.95	0.00	-40.75	0.00	40.75	1,002.79	501.40	1,014.98	508.24	7.39	-0.72	0.096
125.00	-13.62	-1.86	0.00	-30.98	0.00	30.98	971.28	485.64	935.83	468.61	8.18	-0.77	0.080
126.00	-10.75	-1.71	0.00	-29.12	0.00	29.12	964.78	482.39	920.18	460.77	8.34	-0.78	0.074
130.00	-10.38	-1.68	0.00	-22.29	0.00	22.29	938.12	469.06	858.24	429.76	9.01	-0.81	0.063
134.00	-9.91	-1.64	0.00	-15.56	0.00	15.56	910.42	455.21	797.47	399.33	9.70	-0.84	0.050
135.00	-9.83	-1.63	0.00	-13.92	0.00	13.92	903.33	451.67	782.47	391.82	9.87	-0.84	0.046
136.00	-7.90	-1.41	0.00	-12.29	0.00	12.29	896.18	448.09	767.56	384.35	10.05	-0.85	0.041
137.00	-7.51	-1.36	0.00	-10.88	0.00	10.88	888.96	444.48	752.72	376.92	10.23	-0.85	0.037
140.00	-7.29	-1.33	0.00	-6.80	0.00	6.80	866.91	433.46	708.75	354.90	10.77	-0.86	0.028
143.00	-2.29	-0.50	0.00	-2.81	0.00	2.81	844.27	422.14	665.60	333.29	11.31	-0.87	0.011
145.00	-2.08	-0.45	0.00	-1.82	0.00	1.82	828.85	414.43	637.31	319.13	11.68	-0.87	0.008
149.00	0.00	-0.42	0.00	0.00	0.00	0.00	787.55	393.77	574.90	287.88	12.41	-0.87	0.000

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

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-30.10	-2.13	0.00	-263.59	0.00	263.59	4,132.29	2,066.14	8,772.59	4,392.82	0.00	0.00	0.067
5.00	-29.03	-2.11	0.00	-252.94	0.00	252.94	4,073.39	2,036.69	8,449.37	4,230.97	0.01	-0.02	0.067
10.00	-27.98	-2.08	0.00	-242.41	0.00	242.41	4,012.85	2,006.43	8,128.58	4,070.33	0.04	-0.04	0.067
15.00	-26.95	-2.04	0.00	-232.02	0.00	232.02	3,950.68	1,975.34	7,810.43	3,911.02	0.09	-0.05	0.066
20.00	-25.94	-2.01	0.00	-221.80	0.00	221.80	3,886.87	1,943.43	7,495.19	3,753.17	0.15	-0.07	0.066
25.00	-24.95	-1.97	0.00	-211.75	0.00	211.75	3,821.43	1,910.71	7,183.08	3,596.88	0.24	-0.09	0.065
30.00	-23.99	-1.94	0.00	-201.88	0.00	201.88	3,754.35	1,877.17	6,874.35	3,442.28	0.35	-0.11	0.065
35.00	-23.04	-1.90	0.00	-192.19	0.00	192.19	3,685.64	1,842.82	6,569.23	3,289.50	0.48	-0.14	0.065
40.00	-22.12	-1.87	0.00	-182.68	0.00	182.68	3,615.29	1,807.64	6,267.96	3,138.64	0.63	-0.16	0.064
45.00	-21.57	-1.85	0.00	-173.35	0.00	173.35	3,543.30	1,771.65	5,970.78	2,989.83	0.81	-0.18	0.064
48.00	-20.97	-1.82	0.00	-167.82	0.00	167.82	3,499.33	1,749.66	5,794.53	2,901.57	0.93	-0.19	0.064
50.00	-20.02	-1.78	0.00	-164.18	0.00	164.18	3,469.68	1,734.84	5,677.92	2,843.18	1.01	-0.20	0.064
53.25	-19.75	-1.77	0.00	-158.40	0.00	158.40	2,730.90	1,365.45	4,467.29	2,236.97	1.15	-0.22	0.078
55.00	-18.98	-1.74	0.00	-155.31	0.00	155.31	2,712.29	1,356.15	4,390.67	2,198.60	1.24	-0.23	0.078
60.00	-18.24	-1.72	0.00	-146.62	0.00	146.62	2,658.02	1,329.01	4,173.50	2,089.85	1.49	-0.26	0.077
65.00	-17.51	-1.70	0.00	-138.04	0.00	138.04	2,602.11	1,301.05	3,959.12	1,982.50	1.77	-0.28	0.076
70.00	-16.79	-1.70	0.00	-129.53	0.00	129.53	2,544.56	1,272.28	3,747.77	1,876.67	2.09	-0.31	0.076
75.00	-16.10	-1.71	0.00	-121.04	0.00	121.04	2,485.39	1,242.69	3,539.70	1,772.48	2.43	-0.34	0.075
80.00	-15.42	-1.73	0.00	-112.51	0.00	112.51	2,424.57	1,212.29	3,335.13	1,670.04	2.81	-0.38	0.074
85.00	-14.76	-1.75	0.00	-103.88	0.00	103.88	2,362.12	1,181.06	3,134.31	1,569.49	3.22	-0.41	0.072
90.00	-14.11	-1.79	0.00	-95.12	0.00	95.12	2,297.27	1,148.64	2,936.51	1,470.44	3.67	-0.44	0.071
95.00	-13.76	-1.81	0.00	-86.19	0.00	86.19	2,210.70	1,105.35	2,718.30	1,361.17	4.15	-0.48	0.070
97.75	-13.37	-1.83	0.00	-81.23	0.00	81.23	2,163.09	1,081.54	2,601.88	1,302.87	4.43	-0.50	0.069
100.00	-13.11	-1.84	0.00	-77.12	0.00	77.12	2,124.13	1,062.07	2,508.52	1,256.12	4.67	-0.51	0.068
101.50	-12.79	-1.85	0.00	-74.36	0.00	74.36	1,105.19	552.59	1,317.56	659.76	4.83	-0.52	0.124
105.00	-12.70	-1.86	0.00	-67.88	0.00	67.88	1,087.53	543.77	1,259.48	630.68	5.22	-0.55	0.119
106.00	-12.13	-1.88	0.00	-66.02	0.00	66.02	1,082.34	541.17	1,242.93	622.39	5.34	-0.56	0.117
110.00	-11.70	-1.89	0.00	-58.50	0.00	58.50	1,060.92	530.46	1,177.04	589.40	5.82	-0.60	0.110
115.00	-11.39	-1.90	0.00	-49.04	0.00	49.04	1,032.68	516.34	1,095.47	548.55	6.48	-0.65	0.100
117.94	-11.23	-1.90	0.00	-43.47	0.00	43.47	1,015.32	507.66	1,048.03	524.80	6.89	-0.68	0.094
120.00	-10.84	-1.89	0.00	-39.55	0.00	39.55	1,002.79	501.40	1,014.98	508.24	7.19	-0.70	0.089
125.00	-9.43	-1.80	0.00	-30.12	0.00	30.12	971.28	485.64	935.83	468.61	7.96	-0.75	0.074
126.00	-7.45	-1.66	0.00	-28.32	0.00	28.32	964.78	482.39	920.18	460.77	8.11	-0.76	0.069
130.00	-7.19	-1.63	0.00	-21.68	0.00	21.68	938.12	469.06	858.24	429.76	8.76	-0.79	0.058
134.00	-6.86	-1.59	0.00	-15.14	0.00	15.14	910.42	455.21	797.47	399.33	9.43	-0.81	0.045
135.00	-6.81	-1.58	0.00	-13.55	0.00	13.55	903.33	451.67	782.47	391.82	9.60	-0.82	0.042
136.00	-5.47	-1.37	0.00	-11.97	0.00	11.97	896.18	448.09	767.56	384.35	9.77	-0.82	0.037
137.00	-5.20	-1.33	0.00	-10.60	0.00	10.60	888.96	444.48	752.72	376.92	9.95	-0.83	0.034
140.00	-5.05	-1.29	0.00	-6.62	0.00	6.62	866.91	433.46	708.75	354.90	10.47	-0.84	0.024
143.00	-1.58	-0.48	0.00	-2.75	0.00	2.75	844.27	422.14	665.60	333.29	11.00	-0.85	0.010
145.00	-1.44	-0.44	0.00	-1.78	0.00	1.78	828.85	414.43	637.31	319.13	11.36	-0.85	0.007
149.00	0.00	-0.42	0.00	0.00	0.00	0.00	787.55	393.77	574.90	287.88	12.07	-0.85	0.000

Analysis Summary

	Reactions						Max Usage	
Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.6W	24.95	0.00	44.55	0.00	0.00	2923.11	101.50	1.00
0.9D + 1.6W	24.93	0.00	33.40	0.00	0.00	2872.96	101.50	0.96
1.2D + 1.0Di + 1.0Wi	6.99	0.00	73.29	0.00	0.00	846.39	101.50	0.33
(1.2 + 0.2Sds) * DL + E ELFM	1.04	0.00	43.40	0.00	0.00	136.03	101.50	0.06
(1.2 + 0.2Sds) * DL + E EMAM	2.13	0.00	43.40	0.00	0.00	269.30	101.50	0.13
(0.9 - 0.2Sds) * DL + E ELFM	1.04	0.00	30.10	0.00	0.00	133.22	101.50	0.06
(0.9 - 0.2Sds) * DL + E EMAM	2.13	0.00	30.10	0.00	0.00	263.59	101.50	0.12
1.0D + 1.0W	5.96	0.00	37.16	0.00	0.00	692.42	101.50	0.25

Base Plate & Anchor Rod Analysis

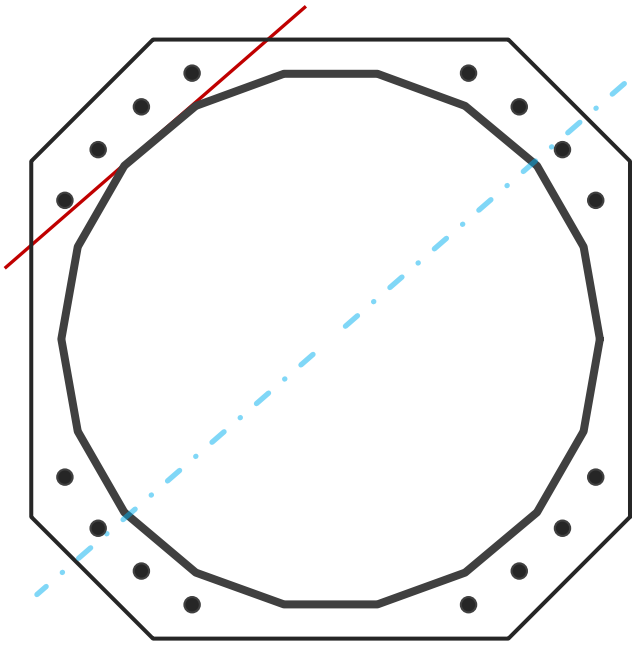
Pole Dimensions		
Number of Sides	18	-
Diameter	52.01	in
Thickness	0.375	in
Orientation Offset	0	°

Base Reactions		
Moment, Mu	2923.1	k-ft
Axial, Pu	44.6	k
Shear, Vu	25.0	k
Neutral Axis	41	°

Report Capacities		
Component	Capacity	Result
Base Plate	47%	Pass
Anchor Rods	58%	Pass
Dwyidag	-	-

Base Plate		
Shape	Square	-
Width	59	in
Thickness	2 3/4	in
Grade	Other	-
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	80	ksi
Clip	12	in
Orientation Offset	0	°
Anchor Rod Detail	d	η=0.5
Clear Distance	3	in
Applied Moment, Mu	1508.4	k
Bending Stress, ϕMn	3183.1	k

Original Anchor Rods		
Arrangement	Cluster	-
Quantity	16	-
Diameter, ø	2 1/4	in
Bolt Circle	59	in
Grade	A615-75	
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Spacing	6.0	in
Orientation Offset	0	°
Applied Force, Pu	151.3	k
Anchor Rods, ϕPn	259.8	k



Calculations for Monopole Base Plate & Anchor Rod Analysis

Reaction Distribution

Reaction	Shear Vu	Moment Mu	Factor
-	k	k-ft	-
Base Forces	25.0	2923.1	1.00
Anchor Rod Forces	25.0	2923.1	1.00
Additional Bolt (Grp1) Forces	0.0	0.0	0.00
Additional Bolt (Grp2) Forces	0.0	0.0	0.00
Dywidag Forces	0.0	0.0	0.00
Stiffener Forces	0.0	0.0	0.00

Geometric Properties

Section	Gross Area	Net Area	Individual Inertia	Threads per Inch	Moment of Inertia
-	in^2	in^2	in^4	#	in^4
Pole	60.5227	3.3624	0.1582		20173.34
Bolt	3.9761	3.2477	0.8393	4.5	22623.84
Bolt1	0.0000	0.0000	0.0000	0	0.00
Bolt2	0.0000	0.0000	0.0000	0	0.00
Dywidag	0.0000	0.0000	0.0000		0.00
Stiffener	0.0000	0.0000	0.0000		0.00

Base Plate		
Shape	Square	-
Width, W	59	in
Thickness, t	2.75	in
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	80	ksi
Base Plate Chord	27.856	in
Detail Type	d	-
Detail Factor	0.50	-
Clear Distance	3	-

Anchor Rods		
Anchor Rod Quantity, N	16	-
Rod Diameter, d	2.25	in
Bolt Circle, BC	59	in
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	151.3	k
Applied Shear, Vu	0.1	k
Compressive Capacity, ϕPn	259.8	k
Tensile Capacity, ϕRnt	0.582	OK
Interaction Capacity	0.583	OK

External Base Plate		
Chord Length AA	31.179	in
Additional AA	0.000	in
Section Modulus, Z	58.947	in^3
Applied Moment, Mu	1508.4	k-ft
Bending Capacity, ϕMn	3183.1	k-ft
Capacity, Mu/ϕMn	0.474	OK
Chord Length AB	30.372	in
Additional AB	0.000	in
Section Modulus, Z	57.423	in^3
Applied Moment, Mu	1271.1	k-ft
Bending Capacity, ϕMn	3100.8	k-ft
Capacity, Mu/ϕMn	0.410	OK
Bend Line Length	0.000	in
Additional Bend Line	0.000	in
Section Modulus, Z	0.000	in^3
Applied Moment, Mu	0.0	k-ft
Bending Capacity, ϕMn	0.0	k-ft
Capacity, Mu/ϕMn		

Internal Base Plate		
Arc Length	0.000	in
Section Modulus, Z	0.000	in^3
Moment Arm	0.000	in
Applied Moment, Mu	0.0	k-ft
Bending Capacity, ϕMn	0.0	k-ft
Capacity, Mu/ϕMn		

Sprint

PROJECT:	DO MACRO UPGRADE
SITE NAME:	WEST HAVEN & RT 162 CT
SITE CASCADE:	CT52XC076
SITE ADDRESS:	668 JONES HILL ROAD WEST HAVEN, CT 06516
SITE TYPE:	MONOPOLE TOWER
MARKET:	SOUTHERN CONNECTICUT

SITE INFORMATION

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

LATITUDE (NAD83):
41° 15' 23.044" N
41.25640106

LONGITUDE (NAD83):
72° 58' 20.491" W
-72.97235870

COUNTY:
NEW HAVEN

ZONING JURISDICTION:
CONNECTICUT SITING COUNCIL

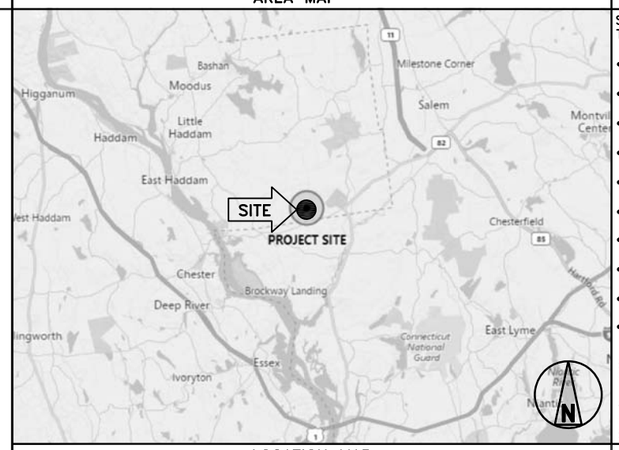
ZONING DISTRICT:
TBD

POWER COMPANY:
CL&P
PHONE: (800) 286-2000

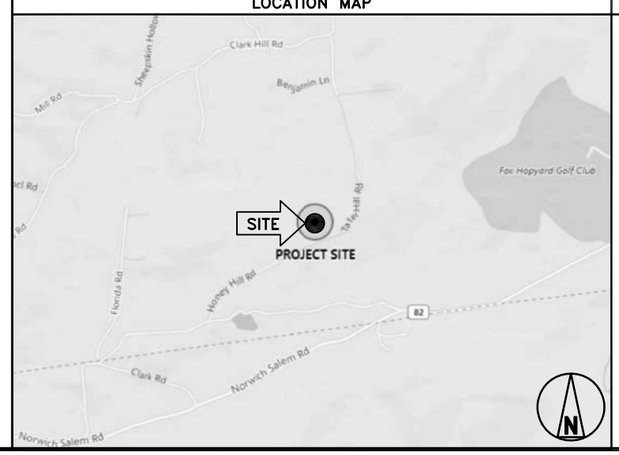
AAV PROVIDER:
AT&T
PHONE: (800) 288-2020

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.

- REMOVE (3) PANEL ANTENNAS AND RRH'S
- INSTALL (6) PANEL ANTENNAS
- INSTALL (6) 800 MHz RRH'S NEAR ANTENNAS
- INSTALL (3) 1900 MHz RRH'S NEAR ANTENNAS
- INSTALL (24) JUMPER CABLES
- INSTALL (4) HYBRID CABLES
- REMOVE EXISTING CLEARWIRE GROUND EQUIPMENT
- INSTALL (2) EQUIPMENT CABINETS WITHIN EXISTING LEASE AREA
- INSTALL 7'x7' CONCRETE EQUIPMENT PAD
- 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

811 Know what's below. Call before you dig. www.call811.com

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	EQUIPMENT DETAILS	0
A-6	CIVIL DETAILS	0
A-7	PLUMBING DIAGRAM	0
E-1	ONE LINE & NOTES	0
E-2	ELECTRICAL & GROUNDING DETAILS	0
E-3	ELECTRICAL & GROUNDING DETAILS	0

PLANS PREPARED FOR:
Sprint

PLANS PREPARED BY:
INFINIGY
INFINIGY ENGINEERING, PLLC
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793
JOB NUMBER 526-104

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

ENGINEERING LICENSE:
STATE OF CONNECTICUT
JOHN STEVENS
24705
LICENSED PROFESSIONAL ENGINEER
05/16/2019

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR PERMIT	02/13/19	MAP	0

SITE NAME:
WEST HAVEN & RT 162 CT

SITE NUMBER:
CT52XC076

SITE ADDRESS:
668 JONES HILL ROAD
WEST HAVEN, CT 06516

SHEET DESCRIPTION:
TITLE SHEET & PROJECT DATA

SHEET NUMBER:
T-1

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:

Sprint

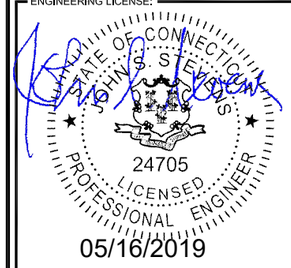
PLANS PREPARED BY:

INFINIGY ENGINEERING, PLLC
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793
JOB NUMBER 526-104

PROJECT MANAGER:

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

ENGINEERING LICENSE:



05/16/2019

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR PERMIT	02/13/19	MAP	0

SITE NAME:

WEST HAVEN & RT 162 CT

SITE NUMBER:

CT52XC076

SITE ADDRESS:

668 JONES HILL ROAD
WEST HAVEN, CT 06516

SHEET DESCRIPTION:

SPRINT SPECIFICATIONS

SHEET NUMBER:

SP-1

CONTINUE FROM SP-1

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

3.2 GENERAL REQUIREMENTS FOR CIVIL CONSTRUCTION:

A. CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH. AT THE COMPLETION OF THE WORK, CONTRACTOR SHALL REMOVE FROM THE SITE ALL REMAINING RUBBISH, IMPLEMENTS, TEMPORARY FACILITIES, AND SURPLUS MATERIALS.

B. EQUIPMENT ROOMS SHALL AT ALL TIMES BE MAINTAINED "BROOM CLEAN" AND CLEAR OF DEBRIS.

C. CONTRACTOR SHALL TAKE ALL REASONABLE PRECAUTIONS TO DISCOVER AND LOCATE ANY HAZARDOUS CONDITION.

1. IN THE EVENT CONTRACTOR ENCOUNTERS ANY HAZARDOUS CONDITION WHICH HAS NOT BEEN ABATED OR OTHERWISE MITIGATED, CONTRACTOR AND ALL OTHER PERSONS SHALL IMMEDIATELY STOP WORK IN THE AFFECTED AREA AND NOTIFY COMPANY IN WRITING. THE WORK IN THE AFFECTED AREA SHALL NOT BE RESUMED EXCEPT BY WRITTEN NOTIFICATION BY COMPANY.
2. CONTRACTOR AGREES TO USE CARE WHILE ON THE SITE AND SHALL NOT TAKE ANY ACTION THAT WILL OR MAY RESULT IN OR CAUSE THE HAZARDOUS CONDITION TO BE FURTHER RELEASED IN THE ENVIRONMENT, OR TO FURTHER EXPOSE INDIVIDUALS TO THE HAZARD.

D. CONTRACTOR'S ACTIVITIES SHALL BE RESTRICTED TO THE PROJECT LIMITS. SHOULD AREAS OUTSIDE THE PROJECT LIMITS BE AFFECTED BY CONTRACTOR'S ACTIVITIES, CONTRACTOR SHALL IMMEDIATELY RETURN THEM TO ORIGINAL CONDITION

E. CONDUCT TESTING AS REQUIRED HEREIN.

3.3 DELIVERABLES:

A. CONTRACTOR SHALL REVIEW, APPROVE, AND SUBMIT TO SPRINT SHOP DRAWINGS, PRODUCT DATA, SAMPLES, AND SIMILAR SUBMITTALS AS REQUIRED HEREINAFTER

B. PROVIDE DOCUMENTATION INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING. DOCUMENTATION SHALL BE FORWARDED IN ORIGINAL FORMAT AND/OR UPLOADED INTO SMS.

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

SECTION 01 400 – SUBMITTALS & TESTS

PART 1 – GENERAL

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

1.2 RELATED DOCUMENTS:

A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.

B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.

1.3 SUBMITTALS:

A. THE WORK IN ALL ASPECTS SHALL COMPLY WITH THE CONSTRUCTION DRAWINGS AND THESE SPECIFICATIONS.

B. SUBMIT THE FOLLOWING TO COMPANY REPRESENTATIVE FOR APPROVAL.

1. CONCRETE MIX-DESIGNS FOR TOWER FOUNDATIONS, ANCHORS PIERS, AND CONCRETE PAVING.
2. CONCRETE BREAK TESTS AS SPECIFIED HEREIN.
3. SPECIAL FINISHES FOR INTERIOR SPACES, IF ANY.
4. ALL EQUIPMENT AND MATERIALS SO IDENTIFIED ON THE CONSTRUCTION DRAWINGS.
5. CHEMICAL GROUNDING DESIGN

D. ALTERNATES: AT THE COMPANY'S REQUEST, ANY ALTERNATIVES TO THE MATERIALS OR METHODS SPECIFIED SHALL BE SUBMITTED TO SPRINT'S CONSTRUCTION MANAGER FOR APPROVAL PRIOR TO BEING SHIPPED TO SITE. SPRINT WILL REVIEW AND APPROVE ONLY THOSE REQUESTS MADE IN WRITING. NO VERBAL APPROVALS WILL BE CONSIDERED. SUBMITTAL FOR APPROVAL SHALL INCLUDE A STATEMENT OF COST REDUCTION PROPOSED FOR USE OF ALTERNATE PRODUCT.

1.4 TESTS AND INSPECTIONS:

A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION TESTS, INSPECTIONS AND PROJECT DOCUMENTATION.

B. CONTRACTOR SHALL ACCOMPLISH TESTING INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

1. COAX SWEEPS AND FIBER TESTS PER TS-0200 REV 4 ANTENNA LINE ACCEPTANCE STANDARDS.
2. AGL, AZIMUTH AND DOWNTILT USING ELECTRONIC COMMERCIAL MADE-FOR-THE-PURPOSE ANTENNA ALIGNMENT TOOL.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CORRECTIONS TO ANY WORK IDENTIFIED AS UNACCEPTABLE IN SITE INSPECTION ACTIVITIES AND/OR AS A RESULT OF TESTING.

C. REQUIRED CLOSEOUT DOCUMENTATION INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING;

1. AZIMUTH, DOWNTILT, AGL – UPLOAD REPORT FROM ANTENNA ALIGNMENT TOOL TO SITERRA TASK 465. INSTALLED AZIMUTH, DOWNTILT, AND AGL MUST CONFORM TO THE RF DATA SHEETS. SWEEP AND FIBER TESTS
2. SCANABLE BARCODE PHOTOGRAPHS OF TOWER TOP AND INACCESSIBLE SERIALIZED EQUIPMENT
3. ALL AVAILABLE JURISDICTIONAL INFORMATION
4. PDF SCAN OF REDLINES PRODUCED IN FIELD
5. ELECTRONIC AS-BUILT DRAWINGS IN AUTOCAD AND PDF FORMATS. ANY FIELD CHANGE MUST BE REFLECTED BY MODIFYING THE PLANS, ELEVATIONS, AND DETAILS IN THE DRAWING SETS. GENERAL NOTES INDICATING MODIFICATIONS WILL NOT BE ACCEPTED. CHANGES SHALL BE HIGHLIGHTED AS "CLOUDS" IDENTIFIED AS THE "AS-BUILT" CONDITION.
6. LIEN WAIVERS
7. FINAL PAYMENT APPLICATION
8. REQUIRED FINAL CONSTRUCTION PHOTOS
9. CONSTRUCTION AND COMMISSIONING CHECKLIST COMPLETE WITH NO DEFICIENT ITEMS
10. ALL POST NTP TASKS INCLUDING DOCUMENT UPLOADS COMPLETED IN SITERRA (SPRINTS DOCUMENT REPOSITORY OF RECORD).

1.5 COMMISSIONING: PERFORM ALL COMMISSIONING AS REQUIRED BY APPLICABLE MOPs

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

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 REQUIREMENTS FOR TESTING:

A. THIRD PARTY TESTING AGENCY:

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

3.2 REQUIRED TESTS:

A. CONTRACTOR SHALL ACCOMPLISH TESTING INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

1. CONCRETE CYLINDER BREAK TESTS FOR THE TOWER AND ANCHOR FOUNDATIONS AS SPECIFIED IN SECTION: PORTLAND CEMENT CONCRETE PAVING.
2. ASPHALT ROADWAY COMPACTED THICKNESS, SURFACE SMOOTHNESS, AND COMPACTED DENSITY TESTING AS SPECIFIED IN SECTION: HOT MIX ASPHALT PAVING.
3. FIELD QUALITY CONTROL TESTING AS SPECIFIED IN SECTION: PORTLAND CEMENT CONCRETE PAVING.
4. TESTING REQUIRED UNDER SECTION: AGGREGATE BASE FOR ACCESS ROADS, PADS AND ANCHOR LOCATIONS
5. STRUCTURAL BACKFILL COMPACTION TESTS FOR THE TOWER FOUNDATION.
6. SITE RESISTANCE TO EARTH TESTING PER EXHIBIT: CELL SITE GROUNDING SYSTEM DESIGN.
7. ANTENNA AND COAX SWEEP TESTS PER EXHIBIT: ANTENNA TRANSMISSION LINE ACCEPTANCE STANDARDS.
8. GROUNDING AT ANTENNA MASTS FOR GPS AND ANTENNAS
9. ALL OTHER TESTS REQUIRED BY COMPANY OR JURISDICTION.

3.3 REQUIRED INSPECTIONS

A. SCHEDULE INSPECTIONS WITH COMPANY REPRESENTATIVE.

B. CONDUCT INSPECTIONS INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

1. GROUNDING SYSTEM INSTALLATION PRIOR TO EARTH CONCEALMENT DOCUMENTED WITH DIGITAL PHOTOGRAPHS BY CONTRACTOR, APPROVED BY A&E OR SPRINT REPRESENTATIVE.
2. FORMING FOR CONCRETE AND REBAR PLACEMENT PRIOR TO POUR DOCUMENTED WITH DIGITAL PHOTOGRAPHS BY CONTRACTOR, APPROVED BY A&E OR SPRINT REPRESENTATIVE.
3. COMPACTION OF BACKFILL MATERIALS; AGGREGATE BASE FOR ROADS, PADS, AND ANCHORS; ASPHALT PAVING; AND SHAFT BACKFILL FOR CONCRETE AND WOOD POLES, BY INDEPENDENT THIRD PARTY AGENCY.
4. PRE- AND POST-CONSTRUCTION ROOFTOP AND STRUCTURAL INSPECTIONS ON EXISTING FACILITIES.
5. TOWER ERECTION SECTION STACKING AND PLATFORM ATTACHMENT DOCUMENTED BY DIGITAL PHOTOGRAPHS BY THIRD PARTY AGENCY.
6. ANTENNA AZIMUTH , DOWN TILT AND PER SUNLIGHT TOOL SUNSIGHT INSTRUMENTS – ANTENNALIGN ALIGNMENT TOOL (AAT)

PLANS PREPARED FOR:

Sprint

PLANS PREPARED BY:

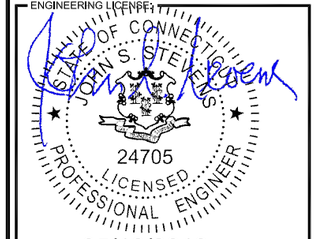
INFINIGY

INFINIGY ENGINEERING, PLLC
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793
JOB NUMBER 526-104

PROJECT MANAGER:

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

ENGINEERING LICENSE:



05/16/2019

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR PERMIT	02/13/19	MAP	0

SITE NAME:

WEST HAVEN &
RT 162 CT

SITE NUMBER:

CT52XC076

SITE ADDRESS:

668 JONES HILL ROAD
WEST HAVEN, CT 06516

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. 1SHELTER AND TOWER OVERVIEW.

2. TOWER FOUNDATION(S) – FORMS AND STEEL BEFORE POUR (EACH ANCHOR ON GUYED TOWERS).

3. TOWER FOUNDATION(S) POUR WITH VIBRATOR IN USE (EACH ANCHOR ON GUYED TOWERS).

4. TOWER STEEL AS BEING INSTALLED INTO HOLE (SHOW ANCHOR STEEL ON GUYED TOWERS).

5. PHOTOS OF TOWER SECTION STACKING.

6. CONCRETE TESTING / SAMPLES.

7. PLACING OF ANCHOR BOLTS IN TOWER FOUNDATION.

8. BUILDING/WATER TANK FROM ROAD FOR TENANT IMPROVEMENTS OR COMMENTS.

9. SHELTER FOUNDATION--FORMS AND STEEL BEFORE POURING.

10. SHELTER FOUNDATION POUR WITH VIBRATOR IN USE.

11. COAX CABLE ENTRY INTO SHELTER.

12. PLATFORM MECHANICAL CONNECTIONS TO TOWER/MONOPOLE.

13. ROOFTOP PRE AND POST CONSTRUCTION PHOTOS TO INCLUDE PENETRATIONS AND INTERIOR CEILING.

14. PHOTOS OF TOWER TOP COAX LINE COLOR CODING AND COLOR CODING AT GROUND LEVEL.

15. PHOTOS OF ALL APPROPRIATE COMPANY OR REGULATORY SIGNAGE.

16. PHOTOS OF EQUIPMENT BOLT DOWN INSIDE SHELTER.

17. POWER AND TELCO ENTRANCE TO COMPANY ENCLOSURE AND POWER AND TELCO SUPPLY LOCATIONS INCLUDING METER/DISCONNECT.

18. ELECTRICAL TRENCH(S) WITH ELECTRICAL / CONDUIT BEFORE BACKFILL.

19. ELECTRICAL TRENCH(S) WITH FOIL-BACKED TAPE BEFORE FURTHER BACKFILL.

20. TELCO TRENCH WITH TELEPHONE / CONDUIT BEFORE BACKFILL.

21. TELCO TRENCH WITH FOIL-BACKED TAPE BEFORE FURTHER BACKFILL.

22. SHELTER GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADII).

23. TOWER GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADII).

24. FENCE GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADII).

25. ALL BTS GROUND CONNECTIONS.

26. ALL GROUND TEST WELLS.

27. ANTENNA GROUND BAR AND EQUIPMENT GROUND BAR.

28. ADDITIONAL GROUNDING POINTS ON TOWERS ABOVE 200'.

29. HVAC UNITS INCLUDING CONDENSERS ON SPLIT SYSTEMS.

30. GPS ANTENNAS.

31. CABLE TRAY AND/OR WAVEGUIDE BRIDGE.

32. DOGHOUSE/CABLE EXIT FROM ROOF.

33. EACH SECTOR OF ANTENNAS; ONE PHOTOGRAPH LOOKING AT THE SECTOR AND ONE FROM BEHIND SHOWING THE PROJECTED COVERAGE AREA.

34. MASTER BUS BAR.

35. TELCO BOARD AND NIU.

36. ELECTRICAL DISTRIBUTION WALL.

37. CABLE ENTRY WITH SURGE SUPPRESSION.

38. ENTRANCE TO EQUIPMENT ROOM.

39. COAX WEATHERPROOFING-TOP AND BOTTOM OF TOWER.

40. COAX GROUNDING -TOP AND BOTTOM OF TOWER.

41. ANTENNA AND MAST GROUNDING.

42. LANDSCAPING – WHERE APPLICABLE.

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

PLANS PREPARED FOR:

Sprint

PLANS PREPARED BY:

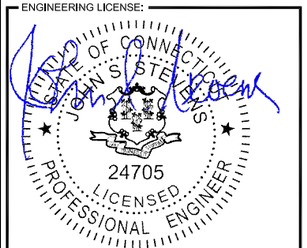
INFINIGY

INFINIGY ENGINEERING, PLLC
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793
JOB NUMBER 526-104

PROJECT MANAGER:

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

ENGINEERING LICENSE:



DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR PERMIT	02/13/19	MAP	0

SITE NAME:

WEST HAVEN &
RT 162 CT

SITE NUMBER:

CT52XC076

SITE ADDRESS:

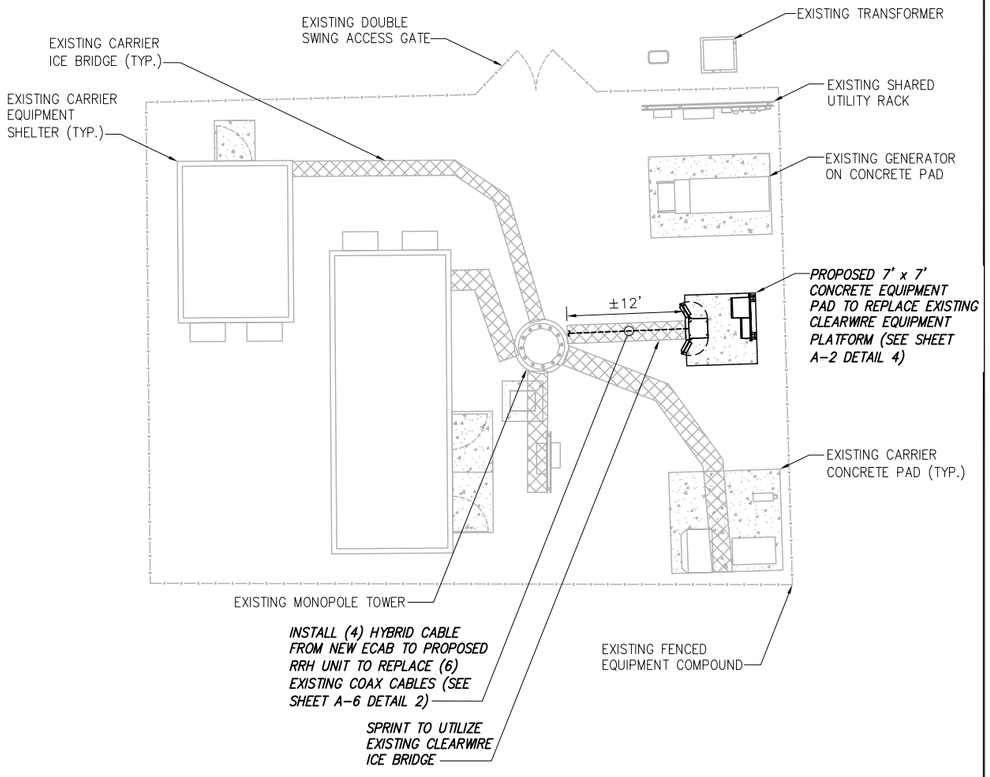
668 JONES HILL ROAD
WEST HAVEN, CT 06516

SHEET DESCRIPTION:

SPRINT SPECIFICATIONS

SHEET NUMBER:

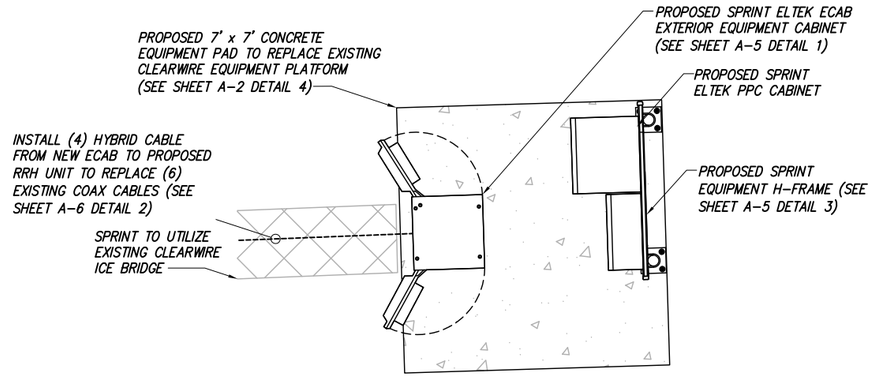
SP-3



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

GRAPHIC SCALE:
15' 7.5' 0 7.5' 15'
SCALE (11x17): 1" = 15'-0"
SCALE (22x34): 1" = 7'-6"

OVERALL SITE PLAN | SCALE: AS NOTED | 1



GRAPHIC SCALE:
4' 2' 0 2' 4'
SCALE (11x17): 1" = 4'-0"
SCALE (22x34): 1" = 2'-0"

SPRINT EQUIPMENT PLAN | SCALE: AS NOTED | 2

PLANS PREPARED FOR:
Sprint

PLANS PREPARED BY:
INFINIGY
INFINIGY ENGINEERING, PLLC
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793
JOB NUMBER 526-104

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

ENGINEERING LICENSE:
STATE OF CONNECTICUT
JOHN S. STEVENS
24705
LICENSED PROFESSIONAL ENGINEER
05/16/2019

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR PERMIT	02/13/19	MAP	0

SITE NAME:
WEST HAVEN & RT 162 CT

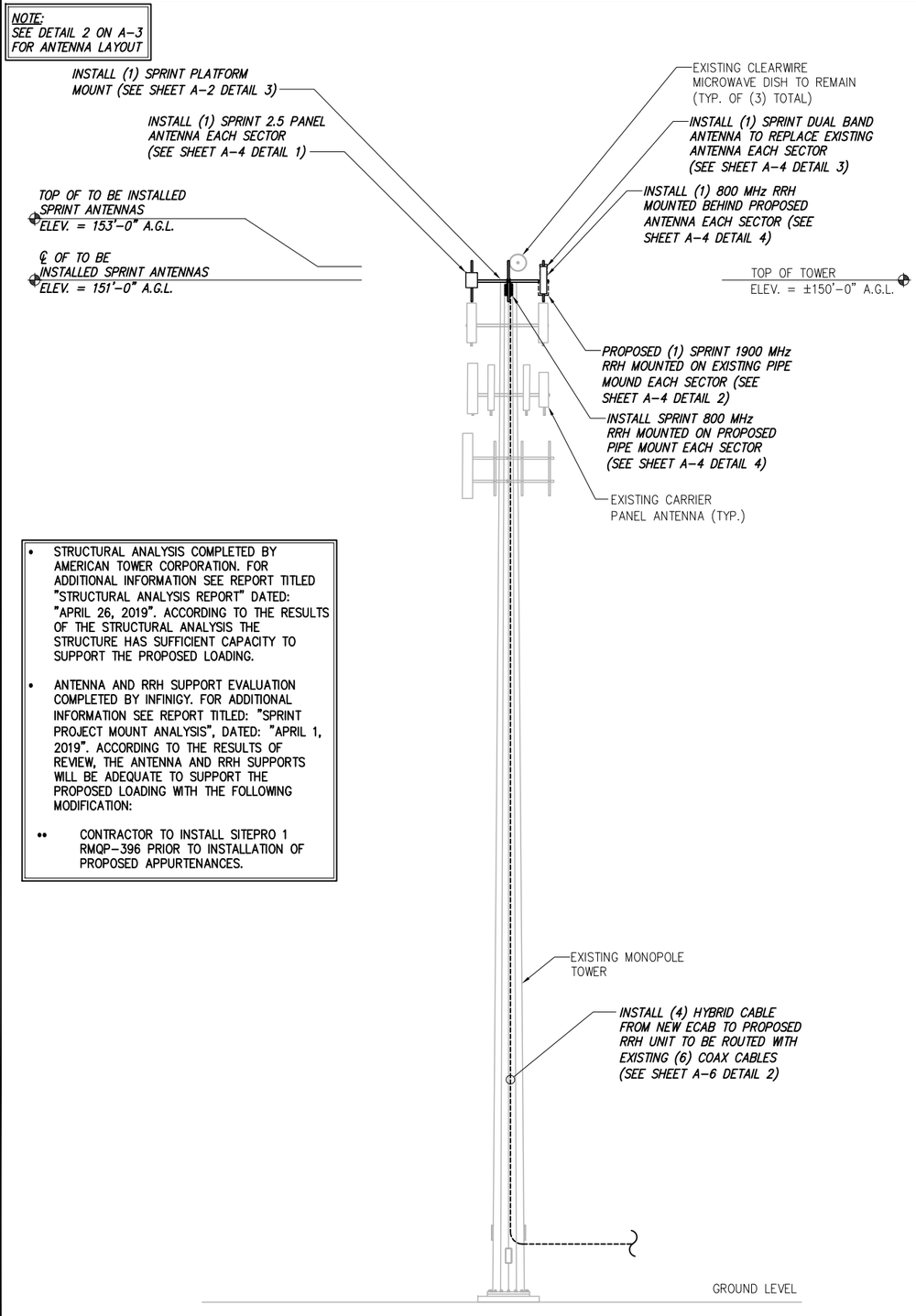
SITE NUMBER:
CT52XC076

SITE ADDRESS:
668 JONES HILL ROAD
WEST HAVEN, CT 06516

SHEET DESCRIPTION:
SITE PLAN

SHEET NUMBER:
A-1

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



- STRUCTURAL ANALYSIS COMPLETED BY AMERICAN TOWER CORPORATION. FOR ADDITIONAL INFORMATION SEE REPORT TITLED "STRUCTURAL ANALYSIS REPORT" DATED: "APRIL 26, 2019". ACCORDING TO THE RESULTS OF THE STRUCTURAL ANALYSIS THE STRUCTURE HAS SUFFICIENT CAPACITY TO SUPPORT THE PROPOSED LOADING.
- ANTENNA AND RRH SUPPORT EVALUATION COMPLETED BY INFINIGY. FOR ADDITIONAL INFORMATION SEE REPORT TITLED: "SPRINT PROJECT MOUNT ANALYSIS", DATED: "APRIL 1, 2019". ACCORDING TO THE RESULTS OF REVIEW, THE ANTENNA AND RRH SUPPORTS WILL BE ADEQUATE TO SUPPORT THE PROPOSED LOADING WITH THE FOLLOWING MODIFICATION:

•• CONTRACTOR TO INSTALL SITEPRO 1 RMQP-396 PRIOR TO INSTALLATION OF PROPOSED APPURTENANCES.

TOWER ELEVATION | NO SCALE | 1

SITE LOADING CHART

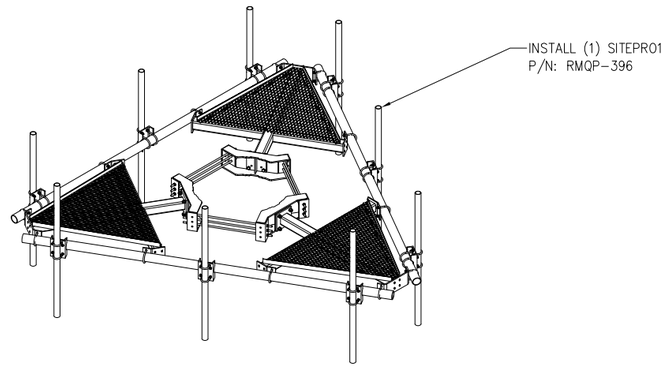
SECTOR	EXISTING/ PROPOSED	ANTENNA MODEL #	VENDOR	AZIMUTH	QTY.	REMAIN/ REMOVED	RRH (QTY/MODEL)	CABLE	CABLE LENGTH	RAD CENTER
ALPHA	PROPOSED	2.5G MAA – AAHC (64T64R)	NOKIA	35°	1	–	(2) 800 MHZ 2X50W RRH W/ FILTER	SEE SHEET A-5 DETAIL 1	±182'*	±151' AGL
	PROPOSED	APXVFRR12X-C-I20	COMMSCOPE	35°	1	–		SEE SHEET A-5 DETAIL 1		
	EXISTING	LLPX310R	ARGUS	35°	1	REMOVE	(1) 1900 MHz 4X45 RRH	EXISTING COAX		
BETA	PROPOSED	2.5G MAA – AAHC (64T64R)	NOKIA	155°	1	–	(2) 800 MHZ 2X50W RRH W/ FILTER	SEE SHEET A-5 DETAIL 1		±151' AGL
	PROPOSED	APXVFRR12X-C-I20	COMMSCOPE	155°	1	–		SEE SHEET A-5 DETAIL 1		
	EXISTING	LLPX310R	ARGUS	155°	1	REMOVE	(1) 1900 MHz 4X45 RRH	EXISTING COAX		
GAMMA	PROPOSED	2.5G MAA – AAHC (64T64R)	NOKIA	275°	1	–	(2) 800 MHZ 2X50W RRH W/ FILTER	SEE SHEET A-5 DETAIL 1		±151' AGL
	PROPOSED	APXVFRR12X-C-I20	COMMSCOPE	275°	1	–		SEE SHEET A-5 DETAIL 1		
	EXISTING	LLPX310R	ARGUS	275°	1	REMOVE	(1) 1900 MHz 4X45 RRH	EXISTING COAX		

PROJECT SCOPE:

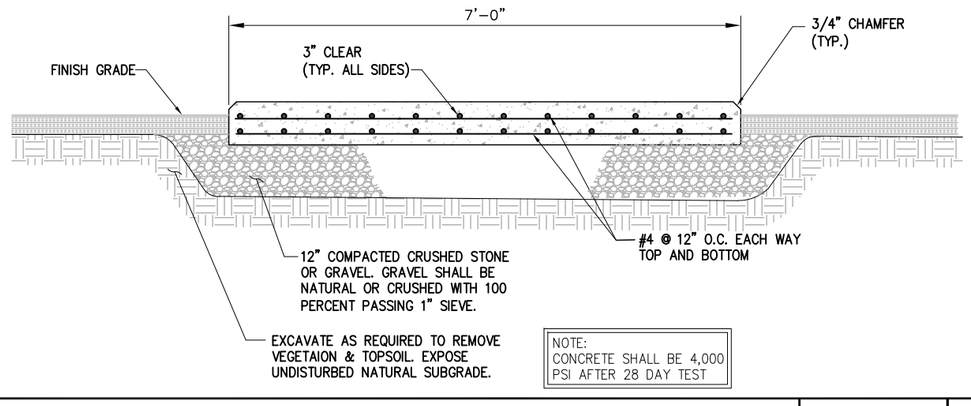
REMOVE: (3) PANEL ANTENNAS INSTALL: (6) PANEL ANTENNAS AND (9) RRH'S

* 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



MOUNT DETAIL | NO SCALE | 3



EQUIPMENT CABINET FOUNDATION | NO SCALE | 4

PLANS PREPARED FOR:
Sprint

PLANS PREPARED BY:
INFINIGY
INFINIGY ENGINEERING, PLLC
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793
JOB NUMBER 526-104

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

ENGINEERING LICENSE:
STATE OF CONNECTICUT
JOHN S. STEVENS
24705
LICENSED PROFESSIONAL ENGINEER
05/16/2019

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR PERMIT	02/13/19	MAP	0

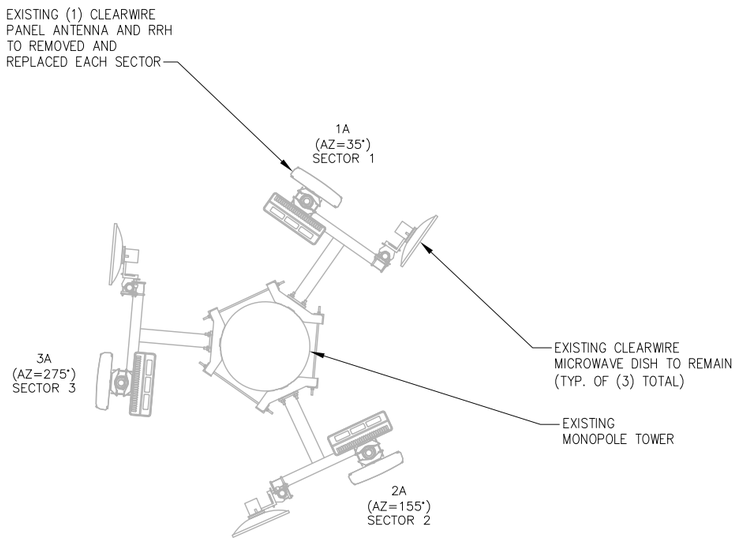
SITE NAME:
WEST HAVEN & RT 162 CT

SITE NUMBER:
CT52XC076

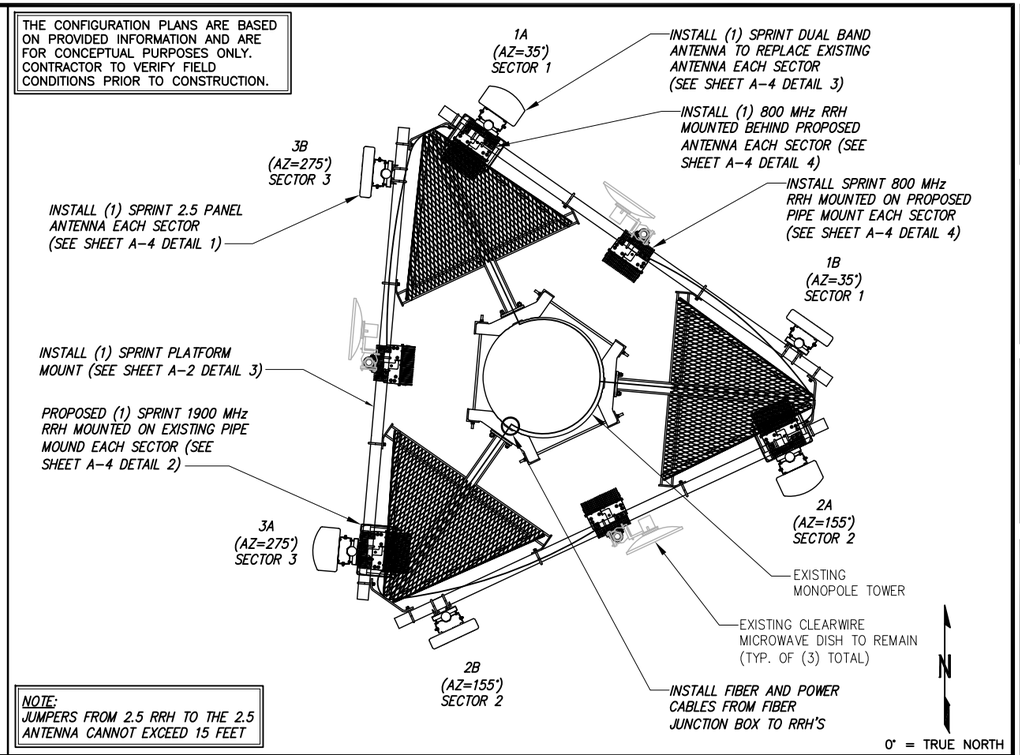
SITE ADDRESS:
668 JONES HILL ROAD
WEST HAVEN, CT 06516

SHEET DESCRIPTION:
TOWER ELEVATION

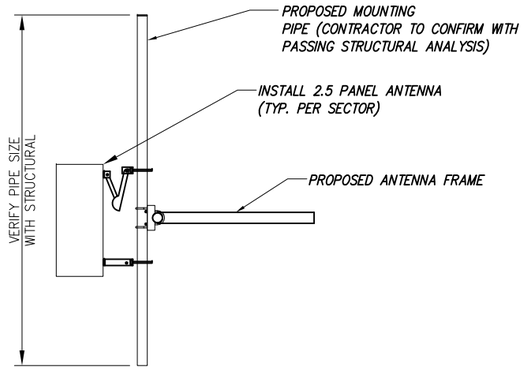
SHEET NUMBER:
A-2



EXISTING ANTENNA LAYOUT | NO SCALE | 1



FINAL ANTENNA & RRH LAYOUT | NO SCALE | 2

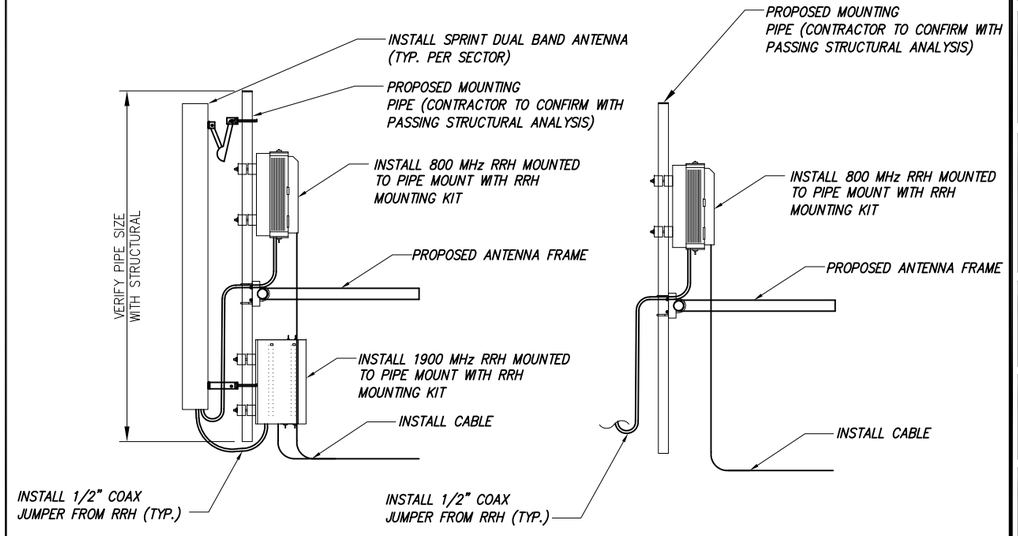


NOTE: CONTRACTOR TO POSITION RRH ON MOUNT BEHIND ANTENNA SUCH THAT THE RRH DOES NOT INTERFERE WITH THE EXISTING PLATFORM/T-ARM MOUNTING HARDWARE.

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 NO EXCEED BEND RADIUS.

TYPICAL 2.5 ANTENNA 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 NO EXCEED BEND RADIUS.

TYPICAL DUAL BAND ANTENNA & RRH MOUNTING DETAILS | NO SCALE | 4

PLANS PREPARED FOR:
Sprint

PLANS PREPARED BY:
INFINIGY
INFINIGY ENGINEERING, PLLC
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793
JOB NUMBER 526-104

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

ENGINEERING LICENSE:
STATE OF CONNECTICUT
JOHN S. STEVENS
24705
LICENSED PROFESSIONAL ENGINEER
05/16/2019

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR PERMIT	02/13/19	MAP	0

SITE NAME:
WEST HAVEN & RT 162 CT

SITE NUMBER:
CT52XC076

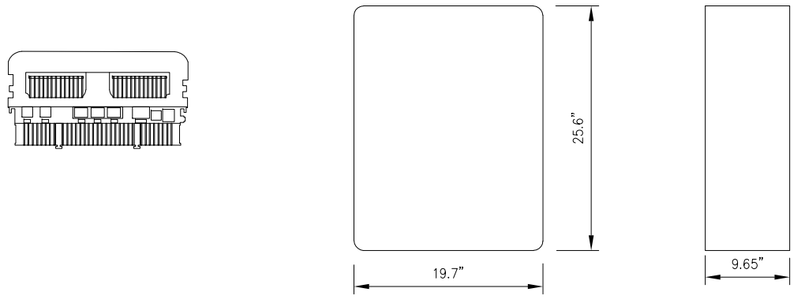
SITE ADDRESS:
668 JONES HILL ROAD
WEST HAVEN, CT 06516

SHEET DESCRIPTION:
ANTENNA LAYOUT & MOUNTING DETAILS

SHEET NUMBER:
A-3

ANTENNA NOKIA AAHC

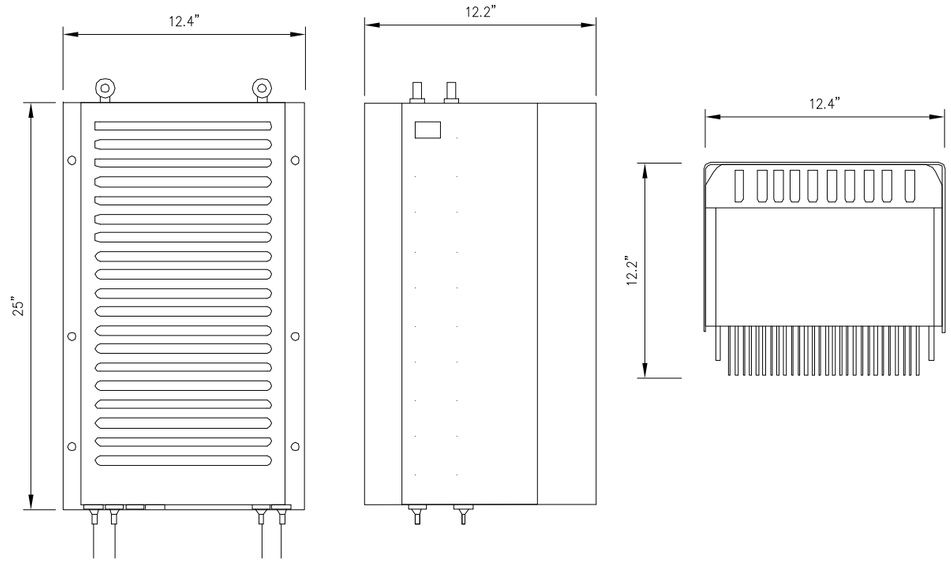
RADOME MATERIAL:	FIBERGLASS
RADOME COLOR:	LIGHT GREY
DIMENSIONS, HxWxD.in(mim):	25.6"x19.7"x9.9" (651x501x245mm)
WEIGHT:	99.2 lbs
CONNECTORS:	(2) 7/16" DIN FEMALE
	(8) 4.1/9.5 DIN FEMALE



2.5 ANTENNA DETAIL | NO SCALE | 1

RRH: ALCATEL LUCENT 1900 MHz

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

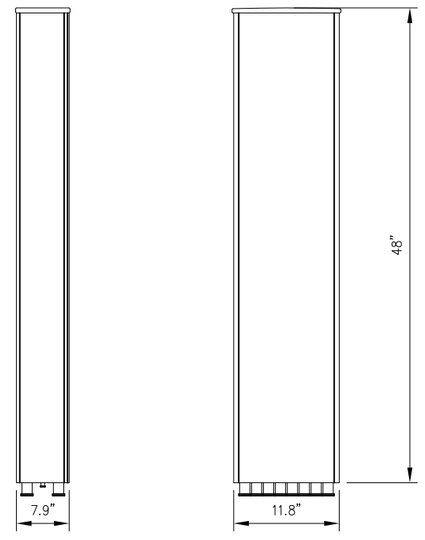


FRONT VIEW | SIDE VIEW | TOP VIEW

1900 MHz RRH | NO SCALE | 2

ANTENNA RFS APXVFRR12X-C-I20

RADOME MATERIAL:	ASA
RADOME COLOR:	LIGHT GREY
DIMENSIONS, HxWxD.in(mim):	48"x11.8"x7.9"
WEIGHT:	46 lbs

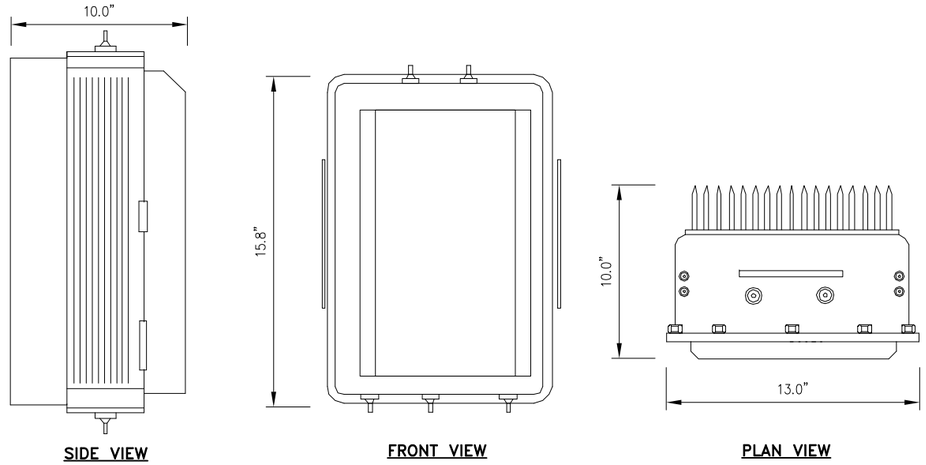


SIDE VIEW | FRONT VIEW

DUAL BAND ANTENNA | NO SCALE | 3

RRH: ALCATEL LUCENT RRH 800 MHz 2x50W

COLOR: LIGHT GREY
WEIGHT: 53 LBS.



SIDE VIEW | FRONT VIEW | PLAN VIEW

NOTES

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

800 MHz RRH | NO SCALE | 4

PLANS PREPARED FOR:
Sprint

PLANS PREPARED BY:
INFINIGY
INFINIGY ENGINEERING, PLLC
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793
JOB NUMBER 526-104

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

ENGINEERING LICENSE:
STATE OF CONNECTICUT
JOHN S. STEVENS
24705
LICENSED PROFESSIONAL ENGINEER
05/16/2019

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR PERMIT	02/13/19	MAP	0

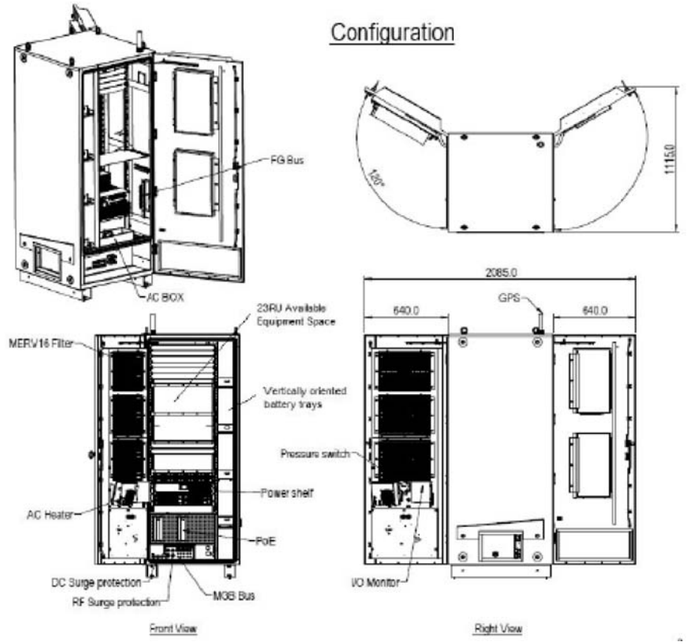
SITE NAME:
WEST HAVEN &
RT 162 CT

SITE NUMBER:
CT52XC076

SITE ADDRESS:
668 JONES HILL ROAD
WEST HAVEN, CT 06516

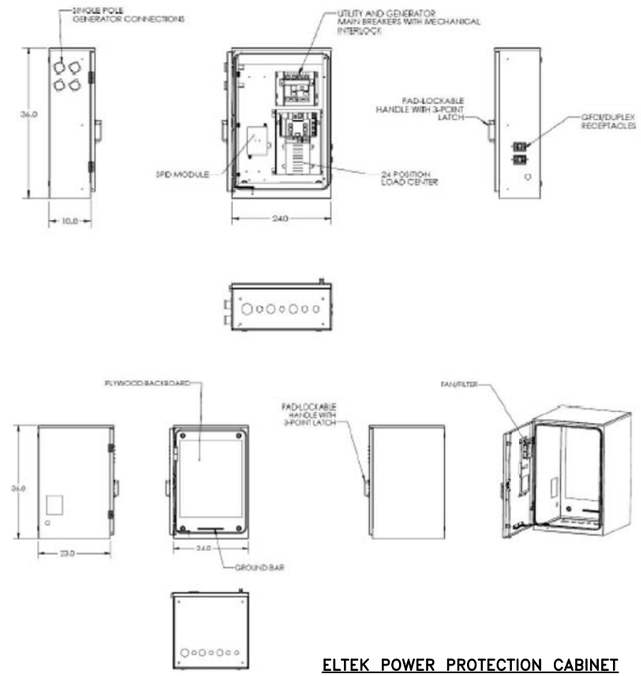
SHEET DESCRIPTION:
EQUIPMENT &
MOUNTING DETAILS

SHEET NUMBER:
A-4



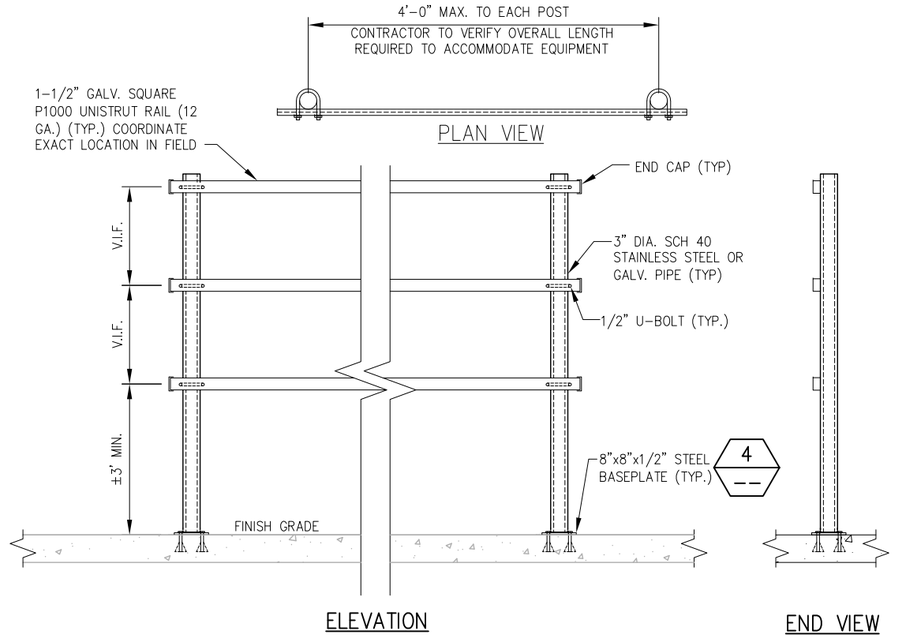
ELTEK ECAB EXTERIOR CABINET
P/N: ESOA220-SCA02

EQUIPMENT CABINET DETAIL	NO SCALE	1

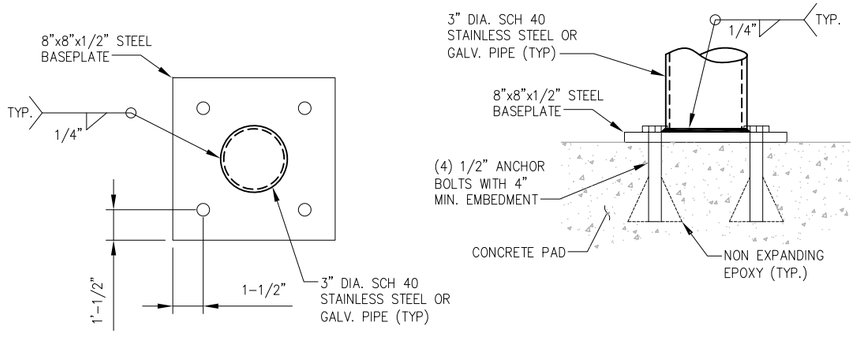


ELTEK POWER PROTECTION CABINET
P/N: 5811122212

EQUIPMENT CABINET DETAIL	NO SCALE	2



H-FRAME DETAIL	NO SCALE	3



SUPPORT POST MOUNTING DETAIL	NO SCALE	4

PLANS PREPARED FOR:
Sprint

PLANS PREPARED BY:
INFINIGY
INFINIGY ENGINEERING, PLLC
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793
JOB NUMBER 526-104

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

ENGINEERING LICENSE:
STATE OF CONNECTICUT
JOHN S. STEVENS
24705
LICENSED PROFESSIONAL ENGINEER
05/16/2019

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR PERMIT	02/13/19	MAP	0

SITE NAME:
WEST HAVEN & RT 162 CT

SITE NUMBER:
CT52XC076

SITE ADDRESS:
668 JONES HILL ROAD
WEST HAVEN, CT 06516

SHEET DESCRIPTION:
EQUIPMENT & MOUNTING DETAILS

SHEET NUMBER:
A-5

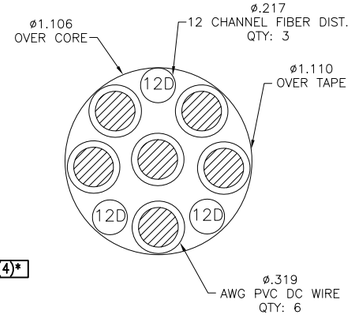
RFS HYBRIFLEX RISER CABLE SCHEDULE

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 (4)*
6 AWG Power	**Hybrid cable** MN: HB114-13U3M12-225F 3x 6 AWG power pair, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/4 cable, 225 ft	225 ft
	MN: HB114-13U3M12-250F	250 ft
	MN: HB114-13U3M12-275F	275 ft
	MN: HB114-13U3M12-300F	300 ft
4 AWG Power	**Hybrid cable** MN: HB114-21U3M12-325F 3x 4 AWG power pair, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/4 cable, 325 ft	325 ft
	MN: HB114-21U3M12-350F	350 ft
	MN: HB114-21U3M12-375F	375 ft

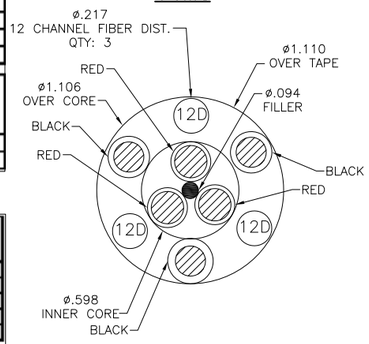
RFS HYBRIFLEX JUMPER CABLE SCHEDULE

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

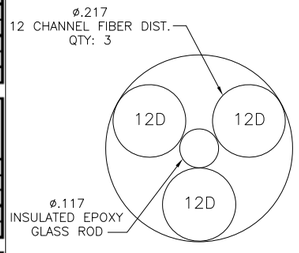
NOTE:
SPRINT CM TO CONFIRM HYBRID OR FIBER RISER CABLE AND HYBRID OR FIBER JUMPER CABLE MODEL NUMBERS IF HYBRID CABLES ARE REQUIRED BEFORE PREPARING BOM.



4 AWG



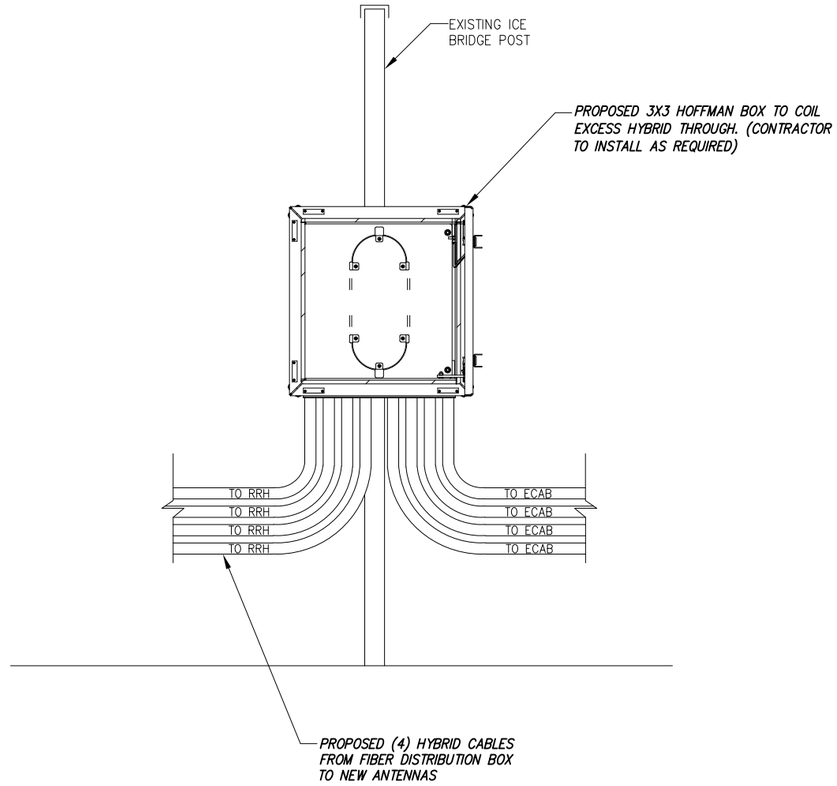
8 & 6 AWG



FIBER ONLY

* 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



OPTIONAL HYBRID SLACK BOX | NO SCALE | 2

DETAIL NOT USED | NO SCALE | 3

PLANS PREPARED FOR:
Sprint

PLANS PREPARED BY:

INFINIGY
INFINIGY ENGINEERING, PLLC
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793
JOB NUMBER 526-104

PROJECT MANAGER:

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

ENGINEERING LICENSE:
STATE OF CONNECTICUT
JOHN S. STEVENS
24705
LICENSED PROFESSIONAL ENGINEER
05/16/2019

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR PERMIT	02/13/19	MAP	0

SITE NAME:
WEST HAVEN &
RT 162 CT

SITE NUMBER:
CT52XC076

SITE ADDRESS:
668 JONES HILL ROAD
WEST HAVEN, CT 06516

SHEET DESCRIPTION:
CIVIL DETAILS

SHEET NUMBER:
A-6

NOTE:
PLUMBING DIAGRAM NOT AVAILABLE UPON ISSUANCE OF PLANS.

PLUMBING DIAGRAM | NO SCALE | 1

PLANS PREPARED FOR:

Sprint

PLANS PREPARED BY:

INFINIGY

INFINIGY ENGINEERING, PLLC
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793
JOB NUMBER 526-104

PROJECT MANAGER:

AIROSMITH DEVELOPMENT

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

ENGINEERING LICENSE:

STATE OF CONNECTICUT
JOHN S. STEVENS
24705
LICENSED PROFESSIONAL ENGINEER

05/16/2019

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR PERMIT	02/13/19	MAP	0

SITE NAME:

WEST HAVEN &
RT 162 CT

SITE NUMBER:

CT52XC076

SITE ADDRESS:

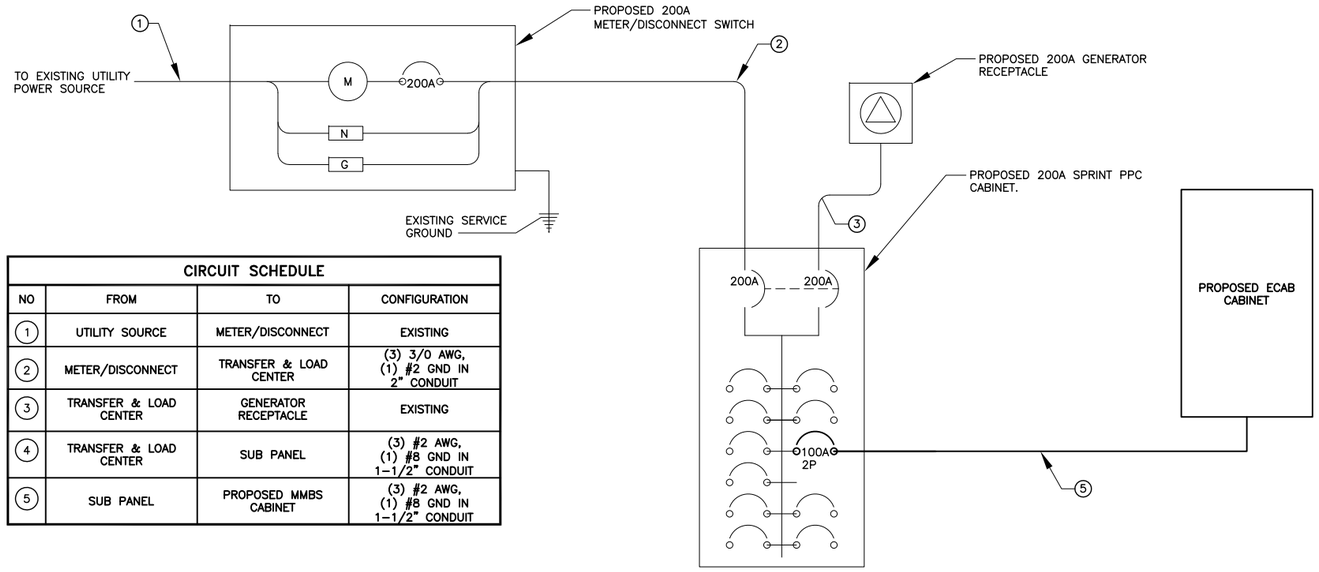
668 JONES HILL ROAD
WEST HAVEN, CT 06516

SHEET DESCRIPTION:

PLUMBING DIAGRAM

SHEET NUMBER:

A-7



CIRCUIT SCHEDULE			
NO	FROM	TO	CONFIGURATION
1	UTILITY SOURCE	METER/DISCONNECT	EXISTING
2	METER/DISCONNECT	TRANSFER & LOAD CENTER	(3) 3/0 AWG, (1) #2 GND IN 2" CONDUIT
3	TRANSFER & LOAD CENTER	GENERATOR RECEPTACLE	EXISTING
4	TRANSFER & LOAD CENTER	SUB PANEL	(3) #2 AWG, (1) #8 GND IN 1-1/2" CONDUIT
5	SUB PANEL	PROPOSED MMBS CABINET	(3) #2 AWG, (1) #8 GND IN 1-1/2" CONDUIT

ONE LINE DIAGRAM | NO SCALE | 1

GENERAL ELECTRICAL NOTES:

1. ALL ELECTRICAL WORK SHALL BE IN ACCORDANCE WITH THE LATEST VERSION OF THE NATIONAL ELECTRICAL CODE AND ALL LOCAL AND STATE CODES, LAWS, AND ORDINANCES.
2. ALL UNDERGROUND CONDUIT SHALL BE PVC SCHEDULE 40 UNLESS OTHERWISE INDICATED. CONDUITS EXPOSED ABOVE GROUND SHALL BE RIGID GALVANIZED STEEL. ALL UNDERGROUND CONDUIT SHALL TRANSITION FROM PVC TO RIGID ABOVE GRADE. PROVIDE 36" SEPARATION BETWEEN UNDERGROUND POWER AND TELEPHONE CONDUITS. SUPPLY UTILITY MARKING TAPE BURIED 12" BELOW GRADE ALONG ENTIRE LENGTH OF UNDERGROUND CONDUITS.
3. ALL CONDUCTORS SHALL BE COPPER WITH THHN/THWN INSULATION. CONTROL CONDUCTORS SHALL BE STRANDED, POWER & LIGHTING CONDUCTORS SHALL BE SOLID FOR #10 & #12 CONDUCTORS AND STRANDED FOR ALL OTHER SIZES.
4. ELECTRICAL DRAWINGS ARE IN PART DIAGRAMMATIC. COORDINATE ELECTRICAL WORK WITH SITE CONDITIONS.
5. LOCATE ALL UNDERGROUND UTILITIES BEFORE TRENCHING. IF CONFLICTS ARISE, CONTACT UTILITY COMPANY AND ENGINEER IMMEDIATELY.
6. ALL EXPOSED CONDUITS SHALL HAVE WEATHERPROOF CAPS NOT DUCT TAPE.
7. PROVIDE 200 LB TEST PULL WIRES IN EACH TELEPHONE AND POWER CONDUIT.
8. PULL BOXES SHALL BE INSTALLED AS NEEDED PER NEC UTILITY REQUIREMENTS.

ELECTRICAL NOTES | NO SCALE | 2

GENERAL GROUNDING NOTES:

1. TO ENSURE PROPER BONDING, ALL CONNECTIONS SHALL BE AS FOLLOWS:
   – #2/0 BARE TINNED SOLID COPPER CONDUCTOR: CADWELD TO RODS OR GROUND RING
   – LUGS AND BUS BAR (UNLESS NOTED OTHERWISE): SANDED CLEAN, COATED WITH OXIDE INHIBITOR AND BOLTED FOR MAXIMUM SURFACE CONTACT. ALL LUGS SHALL BE COPPER (NO ALUMINUM SHALL BE PERMITTED). PROVIDE LOCK WASHERS FOR ALL MECHANICAL CONNECTIONS FOR GROUND CONDUCTORS. USE STAINLESS STEEL HARDWARE THROUGHOUT.
2. ALL GROUNDING CABLE IN CONCRETE OR THROUGH WALLS SHALL BE IN 3/4" PVC CONDUIT. SEAL AROUND CONDUIT THROUGH WALLS. NO METALLIC CONDUIT SHALL BE USED FOR GROUNDING CONDUCTORS.
3. OWNER'S REPRESENTATIVE WILL INSPECT CADWELDS AND CONDUCT MEGGER TEST PRIOR TO BURIAL. MAXIMUM 5 OHMS RESISTANCE IS REQUIRED.
4. DO NOT INSTALL GROUND RING OUTSIDE OF LEASED AREA.
5. MAKE ALL GROUND CONNECTIONS AS SHORT AND DIRECT AS POSSIBLE. AVOID SHARP BENDS. ALL BENDS SHALL BE A MINIMUM 8" RADIUS AND NO GREATER THAN 90 DEGREES.
6. ALL CADWELDS TO BURIED GROUND RING SHALL BE THE PARALLEL TYPE, EXCEPT FOR THE GROUND RODS WHICH SHALL BE THE TEE TYPE.
7. BOND SERVICE CONDUITS TO GROUND RING AS THEY CROSS. DO NOT EXOTHERMICALLY WELD TO CONDUITS.
8. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION MANAGER WHEN THE GROUNDING SYSTEM IS COMPLETE. THE CONSTRUCTION MANAGER SHALL INSPECT THE GROUNDING SYSTEM PRIOR TO BACKFILLING.
9. THE MINIMUM SPACING BETWEEN GROUND RODS SHALL BE 10'–0" (MAX. 15'–0").
10. BOND CIGBE TO EXTERNAL GROUND RING WITH 2 RUNS OF #2 BARE, TINNED, SOLID COPPER CONDUCTOR IN PVC. CONNECT BAR END WITH 2 HOLE LUG, AND "CADWELD" THE OTHER END TO THE EXTERNAL GROUND ROD.
11. THE PREFERRED LOCATION FOR COAX GROUNDING IS AT THE BASE OF THE TOWER PRIOR TO THE COAX BEND. BONDING IS SHOWN ON THE ICE BRIDGE DUE TO DIFFICULTY WITH WELDING OR ATTACHING TO TOWER LEGS. CONTRACTOR SHALL ADVISE CONSTRUCTION MANAGER PRIOR TO PLACING CIGBE ON ICE BRIDGE IF MOUNTING TO TOWER LEG IS POSSIBLE.
12. BONDING OF THE GROUNDED CONDUCTOR (NEUTRAL) AND THE GROUNDING CONDUCTOR SHALL BE AT THE SERVICE DISCONNECTING MEANS. BONDING JUMPER SHALL BE INSTALLED PER N.E.C. ARTICLE 250–30.

GROUNDING NOTES | NO SCALE | 3

PLANS PREPARED FOR:

Sprint

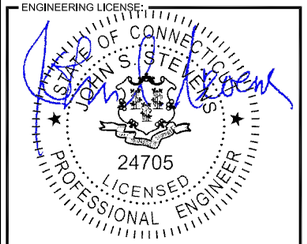
PLANS PREPARED BY:

INFINIGY
INFINIGY ENGINEERING, PLLC
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793
JOB NUMBER 526-104

PROJECT MANAGER:

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

ENGINEERING LICENSE:



05/16/2019

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR PERMIT	02/13/19	MAP	0

SITE NAME:

WEST HAVEN & RT 162 CT

SITE NUMBER:

CT52XC076

SITE ADDRESS:

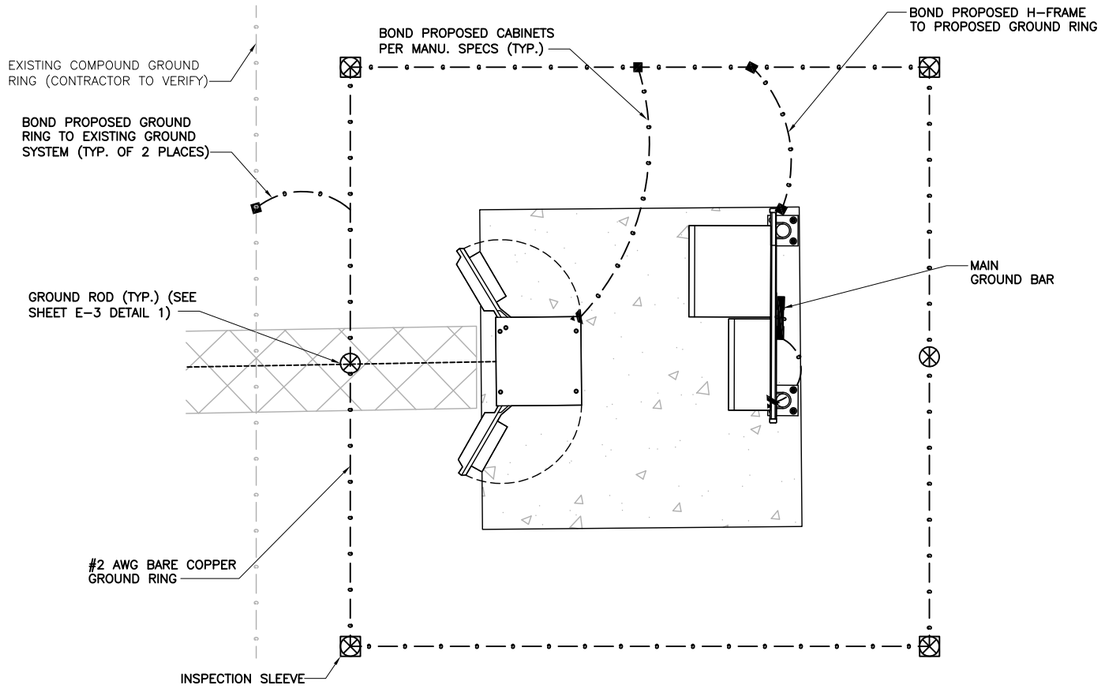
668 JONES HILL ROAD
WEST HAVEN, CT 06516

SHEET DESCRIPTION:

ELECTRICAL & GROUNDING PLAN

SHEET NUMBER:

E-1

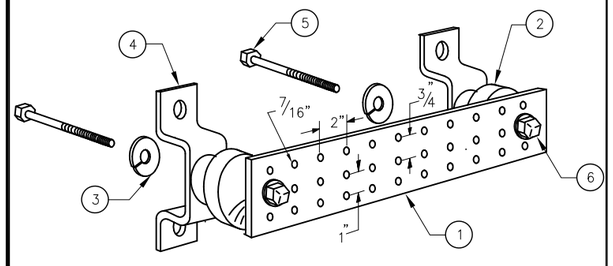


LEGEND:

- EXISTING GROUND RING
- CADWELD CONNECTION (EXOTHERMIC WELD)
- MECHANICAL CONNECTION
- GROUND ROD

GROUNDING PLAN

NO SCALE | 1



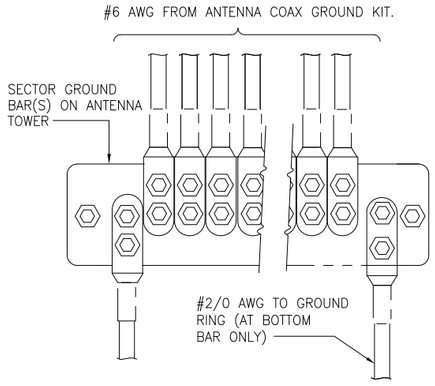
LEGEND

1 – TINNED COPPER GROUND BAR, 1/4"x 4"x 24"
2 – INSULATORS (NO INSULATORS ON TOWER)
3 – 5/8" LOCK WASHERS
4 – MOUNTING BRACKET (MOUNT HORIZONTAL ON VERTICAL CABLE LADDER)
5 – 5/8-11 X 1" H.H.C.S.BOLTS
6 – "LOCTITE" THREAD LOCK (RED) ON ALL REMOVABLE BOLTS

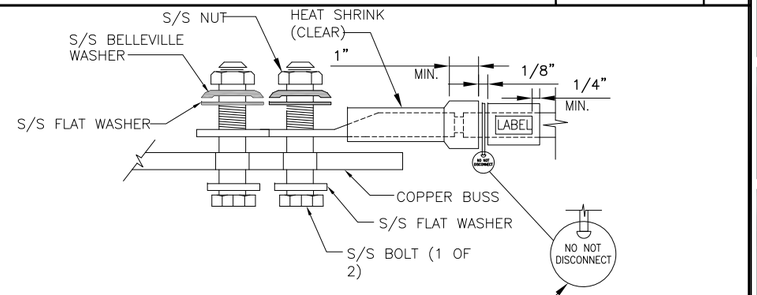
TINNED GROUND BAR DETAIL | NO SCALE | 2

NOTE:

1. COPPER GROUND BAR 1/4"x4"x24" 2-HOLE CONTERS TO MATCH NEMA DOUBLE LUG CONFIGURATION.
2. SIMILAR INSTALLATION FOR TOP AND BOTTOM TOWER GROUND BARS AND FOR COAX ENTRY PORT GROUND BARS.

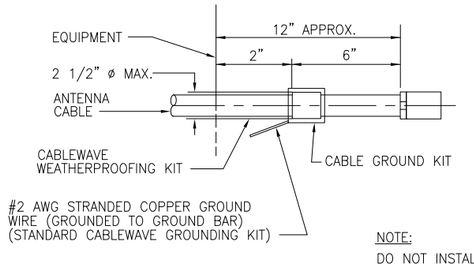


ANTENNA GROUND WIRE INSTALLATION | NO SCALE | 3



NOTE:
ALL MECHANICAL EXTERNAL TERMINATION SURFACES SHALL BE TREATED WITH T&B KOPR-SHIELD CP8 ANTI-OXIDATION COMPOUND.

EQUIPMENT GROUND CONNECTION | NO SCALE | 4



NOTE:
DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.

CABLE GROUND KIT CONNECTION | NO SCALE | 5

PLANS PREPARED FOR:
Sprint

PLANS PREPARED BY:
INFINIGY
INFINIGY ENGINEERING, PLLC
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793
JOB NUMBER 526-104

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

ENGINEERING LICENSE:
STATE OF CONNECTICUT
JOHN S. STEVENS
24705
LICENSED PROFESSIONAL ENGINEER
05/16/2019

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR PERMIT	02/13/19	MAP	0

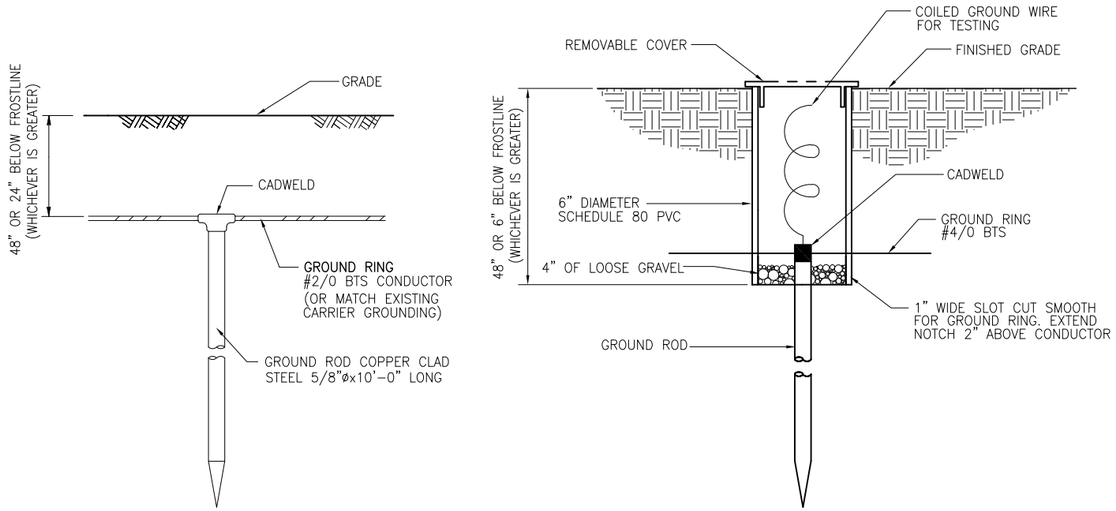
SITE NAME:
WEST HAVEN & RT 162 CT

SITE NUMBER:
CT52XC076

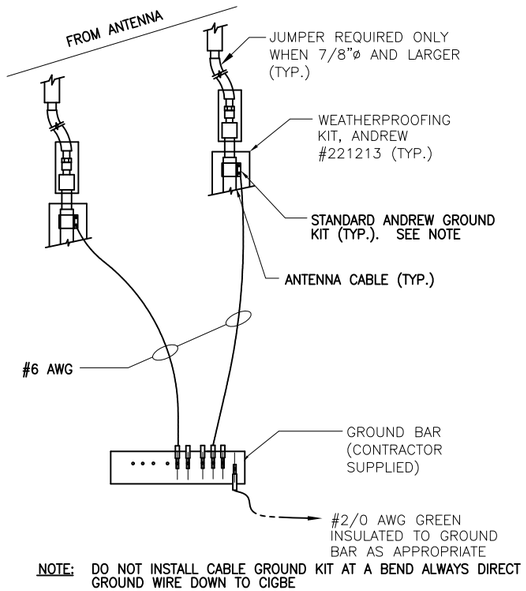
SITE ADDRESS:
668 JONES HILL ROAD
WEST HAVEN, CT 06516

SHEET DESCRIPTION:
ELECTRICAL & GROUNDING PLAN

SHEET NUMBER:
E-2



GROUND ROD & INSPECTION SLEEVE DETAIL | NO SCALE | 1

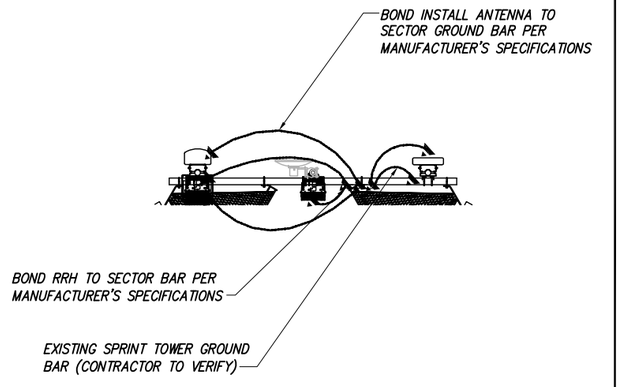


NOTE: DO NOT INSTALL CABLE GROUND KIT AT A BEND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE

CONNECTION OF GROUND WIRES TO GROUND BARS @ ANTENNAS | NO SCALE | 2

LEGEND:

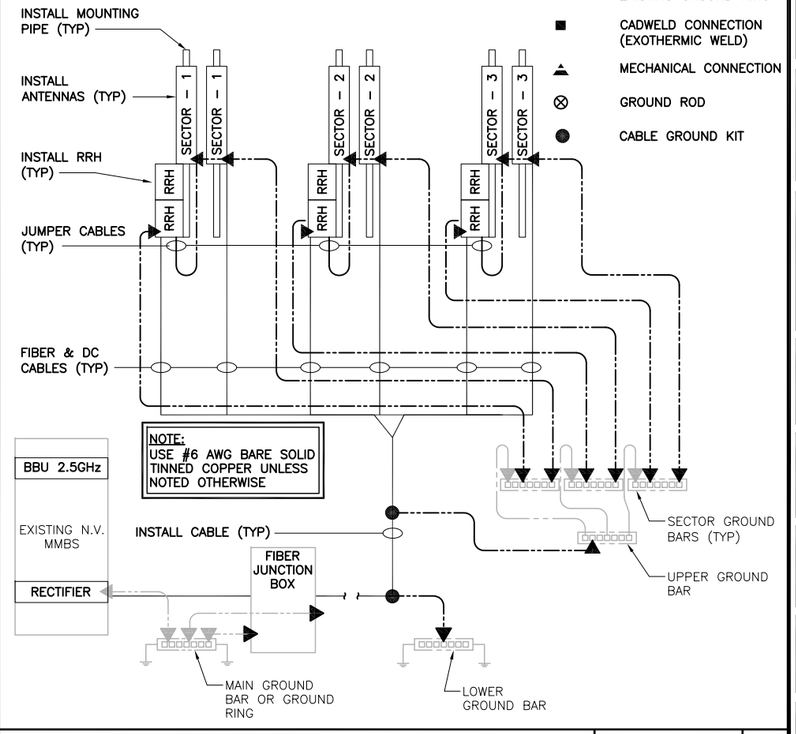
- EXISTING GROUND RING
- CADWELD CONNECTION (EXOTHERMIC WELD)
- MECHANICAL CONNECTION
- GROUND ROD
- CABLE GROUND KIT



TYPICAL ANTENNA GROUNDING PLAN | NO SCALE | 3

LEGEND:

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



GROUNDING RISER DIAGRAM | NO SCALE | 4

PLANS PREPARED FOR:

Sprint

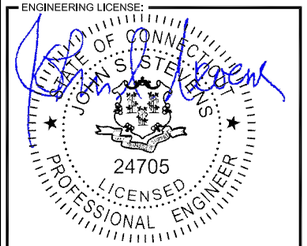
PLANS PREPARED BY:

INFINIGY
INFINIGY ENGINEERING, PLLC
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793
JOB NUMBER 526-104

PROJECT MANAGER:

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

ENGINEERING LICENSE:



05/16/2019

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR PERMIT	02/13/19	MAP	0

SITE NAME:

WEST HAVEN & RT 162 CT

SITE NUMBER:

CT52XC076

SITE ADDRESS:

668 JONES HILL ROAD
WEST HAVEN, CT 06516

SHEET DESCRIPTION:

ELECTRICAL & GROUNDING DETAILS

SHEET NUMBER:

E-3