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August 6th, 2018

EM-SPRINT-148-180808

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

RECEIVED
AUG 8 2018
Connecticut Siting Council

RE: Notice of Exempt Modification – Antenna Swap for wireless facility located at 1012 NORTHROP ROAD, WALLINGFORD, CONNECTICUT – CT52XC132 (lat. 41° 29' 21.48" N, long. -21° 46' 5.88" W)

ORIGINAL

Dear Ms. Bachman:

Sprint Spectrum, LP ("Sprint") currently maintains wireless telecommunications antennas at the (150-foot level) on an existing (150-foot Monopole Tower) at the above-referenced address. The property is owned by AT&T WIRELESS PCS INC and the tower is owned by American Tower Corporation.

Sprint's proposed work involves antenna replacement and tower work. Sprint intends to replace three (3) antennas, adding three (3) new antennas, and add twelve (12) new RRHs onto the tower. All the proposed work is contained within the existing fenced area. Please refer to the attached drawings for site plans prepared by Infinigy Engineering. The Structural Analysis prepared by American Tower Corporation contains "existing" noted contracted equipment which is not on the tower.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to WILLIAM DICKINSON, JR., MAYOR, and KACIE HAND, TOWN PLANNER of the TOWN of WALLINGFORD. A copy of this letter is also being sent to JUSTINE PAUL the manager for AMERICAN TOWER CORPORATION who manages the tower and AT&T WIRELESS PCS INC who owns the land.

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

1. The proposed modifications will not result in an increase in the height of the existing tower.
2. The antennas work is a one-for-one replacement of facility components.

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

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3. The proposed modifications will include the addition of ground base equipment as depicted on the attached drawings; however, the proposed equipment will not require an extension of the site boundaries.

4. The proposed modifications will not increase noise levels at the facility by six decibels or more.

5. The additional ground based equipment will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) adopted safety standard.

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

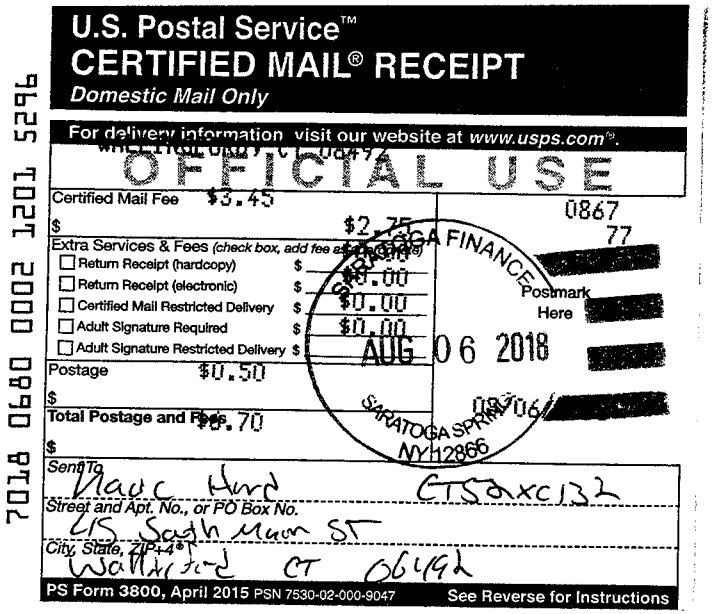
If you have any questions or require any additional information regarding this request, please do not hesitate to give me a call at (518) 350-4222 or email me to aperkowski@airosmithdevelopment.com

Kind Regards,

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

Attachment

CC: WILLIAM DICKINSON, JR. (MAYOR, Wallingford, CT)
JUSTINE PAUL (Manager, AMERICAN TOWER CORPORATION)
KACIE HAND (TOWN PLANNER, Wallingford, CT)
AT&T WIRELESS PCS INC (Land Owner)



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Street and Apt. No., or PO Box No. 15 South Main ST

City, State, ZIP+4® Wallingford CT 06492

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

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Sent To Josh Pal CT52xc132

Street and Apt. No., or PO Box No. 10 President Cir

City, State, ZIP+4® Woburn MA 01801

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

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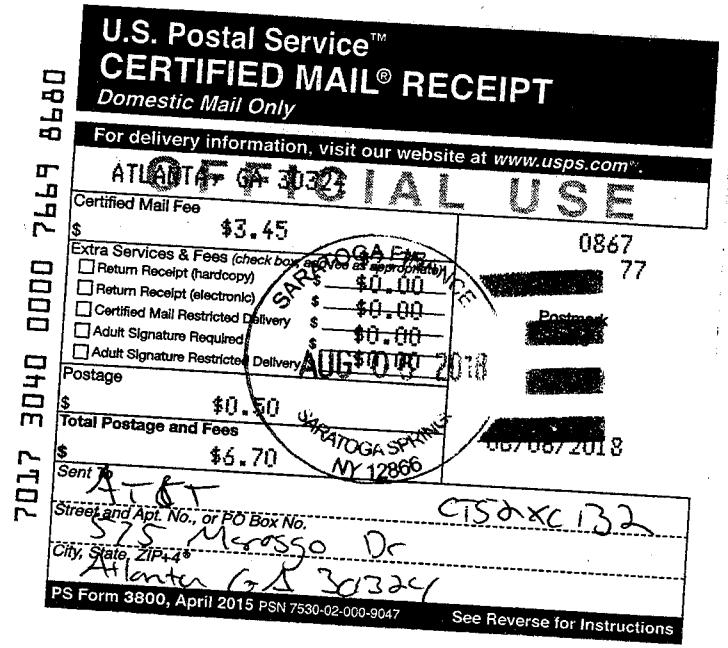

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Street and Apt. No., or PO Box No. 575 Morosso Dr

City, State, ZIP+4® Atlanta GA 30324

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

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Here

AUG 06 2018

SARATOGA FINANCE SARATOGA SPRINGS NY 12866

Sent To William Dykinson CT52xc132

Street and Apt. No., or PO Box No. 15 South Main ST

City, State, ZIP+4® Wallingford CT 06492

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

7017 3040 0000 7669 8673

Lot Classification:C/O AT&T MOBILITY

Street Name	NORTHROP RD
Street Number	1000
Building Area	288
Land Area AC.	0.00
Zoning	IX
Model Description	Ind/Comm
Grantee	AT&T WIRELESS PCS INC
Co Grantees Name	C/O AT&T MOBILITY
Mailing Address	575 MOROSGO DR
City	ATLANTA
State	GA
Zipcode	30,324
Sale Date	
Price	
Total Appraised Land	0
Total Appraised Improvements	86,700
Total Appraised Parcel	86,700
Style Description	Telephone Building
Heat Fuel	Electric
Heat Type	Hot Air-no Duc
AC Type	Heat Pump
Utility Description 1	Public Water
Utility Description 2	
Utility Description 3	
Occupancy Description	TEL REL TW M96

Northrop Rd
91
Carpenter Ln
Thorpe Ave
UConn/CTDEEP, Esri, HERE, Garmin, INCREMENT P, NGA, USGS

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

SPRINT Existing Facility

Site ID: CT52XC132

Parsonage Hill
1012 Northrop Road
Wallingford Center, CT 06492

July 26, 2018

EBI Project Number: 6218000559

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	10.53 %

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

EBI Consulting
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July 26, 2018

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

Emissions Analysis for Site: **CT52XC132 – Parsonage Hill**

EBI Consulting was directed to analyze the proposed SPRINT facility located at **1012 Northrop Road, Wallingford Center, 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) and 2500 MHz (BRS) 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 **1012 Northrop Road, Wallingford Center, 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 (11 GHz) backhaul channel was considered for sector A. This channel has a transmit power of 1 Watt.

7) 1 Microwave (18 GHz) backhaul channel was considered for sector B. This channel has a transmit power of 1 Watt

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 RFS APXVTM14-ALU-I20** panel antennas for transmission in the 850 MHz, 1900 MHz (PCS) and 2500 MHz (BRS) frequency bands as well as the **Dragonwave A-ANT-11G-2-C & Dragonwave A-ANT-18G-2-C** microwave dishes for sectors A & B 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 and microwave dishes are **150 feet** above ground level (AGL) for **Sector A**, **150 feet** above ground level (AGL) for **Sector B** and **150 feet** above ground level (AGL) for Sector C.

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.

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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):	**150 feet**	Height (AGL):	**150 feet**	Height (AGL):	**150 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%	**1.57 %**	Antenna B1 MPE%	**1.57%**	Antenna C1 MPE%	**1.57 %**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	RFS APXVTM14-ALU-I20	Make / Model:	RFS APXVTM14-ALU-I20	Make / Model:	RFS APXVTM14-ALU-I20
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	**150 feet**	Height (AGL):	**150 feet**	Height (AGL):	**150 feet**
Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)
Channel Count	8	Channel Count	8	Channel Count	8
Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts
ERP (W):	6,224.72	ERP (W):	6,224.72	ERP (W):	6,224.72
Antenna A2 MPE%	**1.08 %**	Antenna B2 MPE%	**1.08 %**	Antenna C2 MPE%	**1.08 %**

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-11G-2-C	32.35 dBd	150	11 GHz	1	1	1,717.91	**0.03**	A
Dragonwave A-ANT-18G-2-C	36.45 dBd	150	18 GHz	1	1	4,415.70	**0.08**	B

Site Composite MPE%	
Carrier	**MPE%**
SPRINT – Sector B	**2.73 %**
AT&T	3.97 %
MetroPCS	1.24 %
Nextel	0.28 %
Clearwire	0.11 %
T-Mobile	2.20 %
Site Total MPE %:	**10.53 %**

SPRINT Sector A Total:	2.69 %
SPRINT Sector B Total:	2.73 %
SPRINT Sector C Total:	2.66 %
Site Total:	10.53 %

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Sprint Maximum Power Values (Sector B)

SPRINT _ Frequency Band / Technology (Sector B)	# 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	150	0.65	850 MHz	567	0.11%
Sprint 850 MHz LTE	2	941.82	150	3.27	850 MHz	567	0.58%
Sprint 1900 MHz (PCS) CDMA	5	511.82	150	4.44	1900 MHz (PCS)	1000	0.44%
Sprint 1900 MHz (PCS) LTE	2	1,279.56	150	4.44	1900 MHz (PCS)	1000	0.44%
Sprint 2500 MHz (BRS) LTE	8	778.09	150	10.79	2500 MHz (BRS)	1000	1.08%
Sprint 18 GHz Microwave	1	4,415.70	150	0.77	18 GHz	1000	0.08%
						Total:	**2.73%**

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:	2.69 %
Sector B:	2.73 %
Sector C:	2.66 %
SPRINT Maximum MPE % (Sector B):	2.73 %
Site Total:	10.53 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **10.53 %** 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.

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1033 WATERVLIET SHAKER RD, ALBANY, NY 12205

Mount Analysis Report

June 18, 2018

Cascade Name	CT52XC132
Site Name	Parsonage Hill
Infinigy Job Number	526-104
Client	Airosmith
Carrier	Sprint
Site Location	1012 Northrop Road Wallingford Center, CT 06492 41° 29' 21.48" N NAD83 72° 46' 05.88" W NAD83
Mount Centerline EL.	150.0 ft
Mount Classification	Platform
Failing Mount Usage	**>200.0%**
Passing Mount Usage	**81.3%**
Overall Result	**Contingent Pass – See Required Modification Below**
Notes	**Replace existing mounts with new SitePro1 RMQP-496 prior to the installation of propose appurtenances.**

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

Brenden Archer
Structural Engineer I

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Supporting Documentation..... 3

Analysis Code Requirements..... 3

Conclusion..... 3

Final Configuration Loading..... 4

Structure Usages..... 4

Assumptions and Limitations..... 4

Calculations..... Appended

Introduction

Infinigy Engineering has been requested to perform a mount analysis on the existing Sprint mounts. All supporting documents have been obtained from the client and are assumed to be accurate and applicable to this site. The mount was analyzed using RISA-3D Version 16.0.4 analysis software.

Supporting Documentation

Collocation Application	Sprint Project #OAA713368, dated March 14, 2018
Construction Drawings	Infinigy Engineering Job #526-104, dated June 12, 2018

Analysis Code Requirements

Wind Speed	93 mph (3-Second Gust, V_{ASD}) / 120 mph (3-Second Gust, V_{ULT})
TIA Revision	ANSI/TIA-222-G
Adopted IBC	2012 IBC / 2016 Connecticut State Building Code
Structure Class	II
Exposure Category	B
Topographic Category	1
Calculated Crest Height	0 ft

Conclusion

Upon reviewing the results of this analysis, it is our opinion that the existing mount meets the specified TIA code requirements. The existing mounts 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:

Brenden Archer
Structural Engineer I | Infinigy
1033 Watervliet Shaker Road, Albany, NY 12205
(O) (518) 690-0790
barcher@infinigy.com | www.infinigy.com

Final Configuration

Mount CL (ft)	Rad. HT (ft)	Vert. O/S (ft)	Horiz. O/S (ft)(1)	Qty	Appurtenance	Carrier
150.0	150.0	0.0	0.0	3	Commscope NNVV-65B-R4	Sprint
			12.0	3	RFS APXVTM14-ALU-I20	
			0.0	3	Alcatel Lucent 1900 MHz 4x45 RRH	
			0.0,12.0	6	Alcatel Lucent 800 MHz 2x50W RRH	
			12.0	3	Alcatel Lucent TD-RRH8x20-25	
			6.0	1	DragonWave A-ANT-11G-2-C	
			6.0	2	DragonWave Horizon Compact	
			6.0	1	DragonWave A-ANT-18G-2-C	

(1)Horizontal Offset is defined as the distance from the left most edge of the mount face horizontal when viewed facing the tower.

Structure Usages

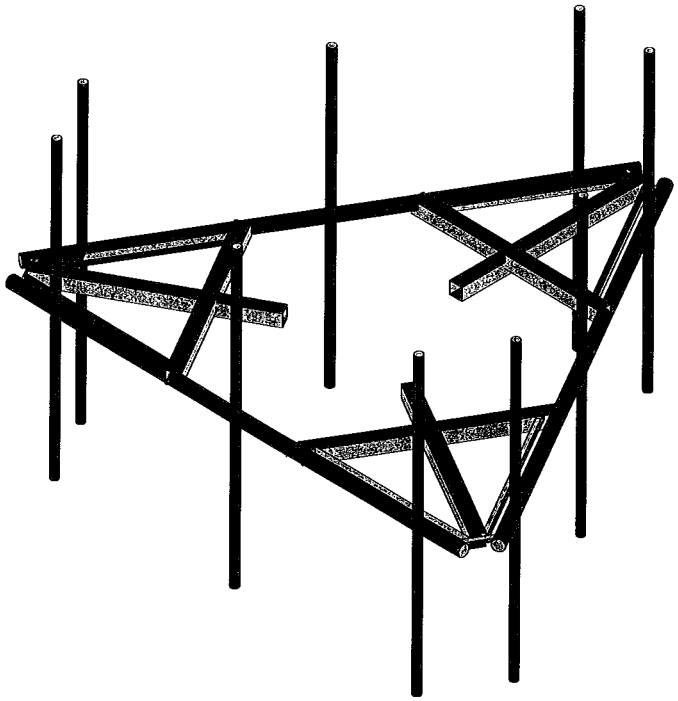
Horizontal	25.0	Pass
Standoff	81.3	Pass
Mount Pipe	67.3	Pass
Results	**81.3**	**Pass**

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	CT52XC132	June 18, 2018 at 3:13 PM
BDA		Proposed_CT52XC132.r3d
526-104		

Site Name:	CT52XC192
Client:	AT&T
Carrier:	Sprint
Engineer:	EDA
Date:	6/18/2018

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INFINIGY WIND LOAD CALCULATOR 3.0.2

Site Information Inputs:

Adopted Building Code:	2012 IBC
Structure Load Standard:	TIA-222-G
Antenna Load Standard:	TIA-222-G
Structure Risk Category:	II
Structure Type:	Mount on Horn
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):	150.0	ft
Side Face Angle (θ):	30	degrees
Exposure Category:	C	
Topographic Category:	1	

Wind with No Ice		
q_z (psf)	Gh	F_{ST} (psf)
31.54	1.00	**37.85**

Wind with Ice		
q_z (psf)	Gh	F_{ST} (psf)
8.38	1.00	**22.46**

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)
CommScope NNVV-65B-R4	150.0	3	1.00	Flat	Flat	31.54	12.27	387.05	181.36	232.78	335.63
RFS APXVTM14-ALU-I20	150.0	3	1.00	Flat	Flat	31.54	6.34	200.05	113.78	135.35	178.48
ALU C900 MHz 4x45 RRH	150.0	3	1.00	Flat	Flat	31.54	2.32	73.23	70.59	71.25	72.57
ALU TD-RRH2x20-25 W/ S/S	150.0	3	1.00	Flat	Flat	31.54	4.05	127.60	48.34	68.15	107.79
ALU RRH2x50-08	150.0	3	1.00	Flat	Flat	31.54	1.70	53.65	40.44	43.74	50.35
DragonWave-X ANT-11C-2-C	150.0	1	1.00	Flat	Flat	31.54	5.72	180.43	44.18	78.24	146.36
DragonWave Horizon Compact	150.0	1	1.00	Flat	Flat	31.54	0.72	22.73	11.61	14.39	19.95
DragonWave-X ANT-18C-2-C	150.0	1	1.00	Flat	Flat	31.54	5.72	180.43	44.18	78.24	146.36
ALU RRH2x50-08	150.0	3	1.00	Flat	Flat	31.54	1.70	53.65	40.44	43.74	50.35
DragonWave Horizon Compact	150.0	1	1.00	Flat	Flat	31.54	0.72	22.73	11.61	14.39	19.95

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			RIGID	None	None	RIGID	Typical
3	M3	N5	N8			HSS 4"x4"x1/4"	Beam	None	A53 Gr.B	Typical
4	M4	N9	N10			RIGID	None	None	RIGID	Typical
5	M5	N6	N11			HSS 4"x4"x1/4"	Beam	None	A53 Gr.B	Typical
6	M6	N12	N13			RIGID	None	None	RIGID	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	General				
2	RIGID		3	36	0
3	Total General		3	36	0
4					
5	Hot Rolled Steel				
6	A36 Gr.36	L2x2x2	6	303.1	0
7	A53 Gr.B	HSS4x4x4	6	374.3	.4
8	A53 Gr.B	PIPE_2.0	9	864	.2
9	A53 Gr.B	PIPE_3.0	3	450	.3
10	Total HR Steel		24	1991.4	.9

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut..	Area(M...	Surface...
1	Self Weight	DL		-1			28		3	
2	Wind Load AZI 000	WLZ					28		1	
3	Wind Load AZI 090	WLX					28		1	
4	Ice Weight	OL1					28	27		
5	Wind + Ice Load AZI 000	OL2					28		1	
6	Wind + Ice Load AZI 090	OL3					28		1	
7	Service Live 1	LL				6				
8	BLC 1 Transient Area Loads	None						45		
9	BLC 2 Transient Area Loads	None						26		
10	BLC 3 Transient Area Loads	None						22		

Basic Load Cases (Continued)

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut..	Area(M...	Surface...
11	BLC 5 Transient Area Loads	None						26		
12	BLC 6 Transient Area Loads	None						22		

Load Combinations

	Description	So..	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
1	1.4D	Yes	Y		DL	1.4																
2	1.2D + 1.6W AZI 000	Yes	Y		DL	1.2	W...	1.6														
3	1.2D + 1.6W AZI 030	Yes	Y		DL	1.2	W...	1.3...	W...	.8												
4	1.2D + 1.6W AZI 060	Yes	Y		DL	1.2	W...	.8	W...	1.3...												
5	1.2D + 1.6W AZI 090	Yes	Y		DL	1.2			W...	1.6												
6	1.2D + 1.6W AZI 120	Yes	Y		DL	1.2	W...	-.8	W...	1.3...												
7	1.2D + 1.6W AZI 150	Yes	Y		DL	1.2	W...	-1.3...	W...	.8												
8	1.2D + 1.6W AZI 180	Yes	Y		DL	1.2	W...	-1.6														
9	1.2D + 1.6W AZI 210	Yes	Y		DL	1.2	W...	-1.3...	W...	-.8												
10	1.2D + 1.6W AZI 240	Yes	Y		DL	1.2	W...	-.8	W...	-1.3...												
11	1.2D + 1.6W AZI 270	Yes	Y		DL	1.2			W...	-1.6												
12	1.2D + 1.6W AZI 300	Yes	Y		DL	1.2	W...	.8	W...	-1.3...												
13	1.2D + 1.6W AZI 330	Yes	Y		DL	1.2	W...	1.3...	W...	-.8												
14	0.9D + 1.6W AZI 000	Yes	Y		DL	.9	W...	1.6														
15	0.9D + 1.6W AZI 030	Yes	Y		DL	.9	W...	1.3...	W...	.8												
16	0.9D + 1.6W AZI 060	Yes	Y		DL	.9	W...	.8	W...	1.3...												
17	0.9D + 1.6W AZI 090	Yes	Y		DL	.9			W...	1.6												
18	0.9D + 1.6W AZI 120	Yes	Y		DL	.9	W...	-.8	W...	1.3...												
19	0.9D + 1.6W AZI 150	Yes	Y		DL	.9	W...	-1.3...	W...	.8												
20	0.9D + 1.6W AZI 180	Yes	Y		DL	.9	W...	-1.6														
21	0.9D + 1.6W AZI 210	Yes	Y		DL	.9	W...	-1.3...	W...	-.8												
22	0.9D + 1.6W AZI 240	Yes	Y		DL	.9	W...	-.8	W...	-1.3...												
23	0.9D + 1.6W AZI 270	Yes	Y		DL	.9			W...	-1.6												
24	0.9D + 1.6W AZI 300	Yes	Y		DL	.9	W...	.8	W...	-1.3...												
25	0.9D + 1.6W AZI 330	Yes	Y		DL	.9	W...	1.3...	W...	-.8												
26	1.2D + 1.0Di	Yes	Y		DL	1.2	OL1	1														
27	1.2D + 1.0Di + 1.0Wi A...	Yes	Y		DL	1.2	OL1	1	OL2	1												
28	1.2D + 1.0Di + 1.0Wi A...	Yes	Y		DL	1.2	OL1	1	OL2	.866	OL3	.5										
29	1.2D + 1.0Di + 1.0Wi A...	Yes	Y		DL	1.2	OL1	1	OL2	.5	OL3	.866										
30	1.2D + 1.0Di + 1.0Wi A...	Yes	Y		DL	1.2	OL1	1			OL3	1										
31	1.2D + 1.0Di + 1.0Wi A...	Yes	Y		DL	1.2	OL1	1	OL2	-.5	OL3	.866										
32	1.2D + 1.0Di + 1.0Wi A...	Yes	Y		DL	1.2	OL1	1	OL2	-.866	OL3	.5										
33	1.2D + 1.0Di + 1.0Wi A...	Yes	Y		DL	1.2	OL1	1	OL2	-1												
34	1.2D + 1.0Di + 1.0Wi A...	Yes	Y		DL	1.2	OL1	1	OL2	-.866	OL3	-.5										
35	1.2D + 1.0Di + 1.0Wi A...	Yes	Y		DL	1.2	OL1	1	OL2	-.5	OL3	-.866										
36	1.2D + 1.0Di + 1.0Wi A...	Yes	Y		DL	1.2	OL1	1			OL3	-1										
37	1.2D + 1.0Di + 1.0Wi A...	Yes	Y		DL	1.2	OL1	1	OL2	.5	OL3	-.866										
38	1.2D + 1.0Di + 1.0Wi A...	Yes	Y		DL	1.2	OL1	1	OL2	.866	OL3	-.5										
39	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5	W...	.111												
40	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5	W...	.096	W...	.056										
41	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5	W...	.056	W...	.096										
42	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5			W...	.111										
43	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5	W...	-.056	W...	.096										
44	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5	W...	-.096	W...	.056										
45	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5	W...	-.111												
46	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5	W...	-.096	W...	-.056										
47	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5	W...	-.056	W...	-.096										
48	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5			W...	-.111										
49	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5	W...	.056	W...	-.096										
50	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5	W...	.096	W...	-.056										

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N6	max	2196.16	17	2594.181	27	1646.534	14	7765.568	33	7107.988	11	26.942	17
2		min	-2196.16	11	721.388	20	-1646.534	8	1911.278	14	-7087.229	5	-1793.127	36
3	N5	max	2718.106	4	2793.918	31	2018.423	2	-649.964	20	2130.257	6	6347.912	30
4		min	-2719.478	22	738.189	24	-2018.186	20	-3077.502	27	-2129.364	24	1338.934	23
5	N1	max	2014.473	19	2126.205	37	1835.866	14	-1046.418	18	1634.717	16	-1578.995	14
6		min	-2014.435	13	605.034	18	-1836.104	8	-3861.918	36	-1634.152	10	-5690.647	31
7	Totals:	max	5654.662	5	7497.456	29	5500.823	2						
8		min	-5654.662	23	2129.369	22	-5500.823	20						

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

	Member	Shape	Code Check	Lo...	...	Shear C...	Loc[in]	...	LC	phi*Pnc...	phi*Pnt ...	phi*...	phi*...	...	Eqn
1	M5	HSS4x...	.813	0	...	.261	0	y	36	97436....	106155	1231...	1231.....		H1-...
2	MP3	PIPE_2.0	.673	48	8	.049	48		20	14916....	32130	1871...	1871.....		H1-...
3	M3	HSS4x...	.614	0	...	.155	0	y	32	97436....	106155	1231...	1231.....		H1-...
4	MP9	PIPE_2.0	.606	48	...	.045	48		23	14916....	32130	1871...	1871.....		H1-...
5	MP6	PIPE_2.0	.606	48	5	.045	48		17	14916....	32130	1871...	1871.....		H1-...
6	M1	HSS4x...	.594	0	...	.122	0	y	37	97437.38	106155	1231...	1231.....		H1-...
7	M8	PIPE_3.0	.250	95.....		.055	4.688		8	28250....	65205	5748...	5748.....		H1-...
8	M16	L2x2x2	.225	50.....		.012	50.52	z	29	6508.508	15908.4	402....	806....	...	H2-1
9	MP1	PIPE_2.0	.223	48	8	.022	48		8	14916....	32130	1871...	1871.....		H1-...
10	M10	HSS4x...	.222	31.....		.067	31.26	y	38	97364.86	106155	1231...	1231.....		H1-...
11	M13	L2x2x2	.212	50.....		.012	50.52	y	27	6508.508	15908.4	402....	779....	...	H2-1
12	MP8	PIPE_2.0	.211	48	...	.033	48		23	14916....	32130	1871...	1871.....		H1-...
13	MP5	PIPE_2.0	.211	48	5	.033	48		17	14916....	32130	1871...	1871.....		H1-...
14	M18	L2x2x2	.210	50.....		.013	50.52	z	27	6508.508	15908.4	402....	803....	...	H2-1
15	MP4	PIPE_2.0	.205	48	5	.020	48		5	14916....	32130	1871...	1871.....		H1-...
16	MP7	PIPE_2.0	.205	48	5	.020	48		5	14916....	32130	1871...	1871.....		H1-...
17	M14	L2x2x2	.202	50.....		.012	50.52	z	35	6508.508	15908.4	402....	800....	...	H2-1
18	M12	HSS4x...	.192	30.....		.048	30.6...	y	5	97364.86	106155	1231...	1231.....		H1-...
19	M15	L2x2x2	.174	50.....		.011	50.52	y	30	6508.508	15908.4	402....	803....	...	H2-1
20	M7	PIPE_3.0	.165	53.....		.093	4.687		4	28250....	65205	5748...	5748.....		H1-...
21	M17	L2x2x2	.163	50.....		.012	50.52	y	34	6508.508	15908.4	402....	803....	...	H2-1
22	M9	PIPE_3.0	.161	54.....		.092	54.6...		12	28250....	65205	5748...	5748.....		H1-...
23	M11	HSS4x...	.112	31.....		.054	31.26	y	30	97364.86	106155	1231...	1231.....		H1-...
24	MP2	PIPE_2.0	.052	48	7	.005	48		7	14916....	32130	1871...	1871.....		H1-...

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Structural Analysis Report

Structure	:	**150 ft Monopole**
ATC Site Name	:	**Parsonage Hill Aka Wallin, CT**
ATC Site Number	:	**302538**
Engineering Number	:	**OAA713368_C3_04**
Proposed Carrier	:	**Clearwire**
Carrier Site Name	:	**PARSONAGE HILL - 41985**
Carrier Site Number	:	**CT52XC132**
Site Location	:	**922 Northrop Road** **Wallingford, CT 06492-1910** **41.489300,-72.768300**
County	:	**New Haven**
Date	:	**July 6, 2018**
Max Usage	:	**92%**
Result	:	**Pass**

Prepared By:
Charles Dalton Wally, E.I.
Structural Engineer I

Reviewed By:

STATE OF CONNECTICUT
BRYAN K LANIER
32586
LICENSED
PROFESSIONAL ENGINEER

Authorized by "EOR"
Jul 11 2018 11:08 AM cosign

COA: PEC.0001553

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Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 150 ft monopole to reflect the change in loading by Clearwire.

Supporting Documents

Tower Drawings	Valmont Drawing #DC1776A, dated June 29, 1994
Foundation Drawing	SAC Engineering, Valmont Order #11715-94, dated July 21, 1994
Geotechnical Report	AET Project #91294, dated July 8, 1994

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, V_{asd}) / 125 mph (3-Second Gust, V_{ult})
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 3/4" radial ice concurrent
Code:	ANSI/TIA-222-G / 2012 IBC / 2016 Connecticut State Building Code
Structure Class:	II
Exposure Category:	C
Topographic Category:	1
Crest Height:	0 ft
Spectral Response:	Ss = 0.18, 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

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
150.0	150.0	2	DragonWave Horizon Compact	-	(2) 1/2" Coax (2) 2" conduit	Clearwire
		1	DragonWave A-ANT-11G-2-C			
		1	DragonWave A-ANT-18G-2-C			
140.0	145.0	3	Ericsson RRUS 11 B12	T-Arms	(12) 1 5/8" Coax (1) 1 1/4" Hybriflex	T-Mobile
		3	Ericsson AIR 21 B4A/B12P-B5P 6FT			
	144.0	3	Ericsson AIR 21, 1.3 M, B2A B4P			
	140.0	3	Ericsson KRY 112 144/1			
124.0	124.0	6	Powerwave LGP21401	Platform w/Handrails SitePro PRK-SFS and SitePro HRK-14-HD	(12) 1 5/8" Coax (6) 0.78" 8 AWG 6 (3) 0.39" Fiber Trunk (2) 3" conduit	AT&T Mobility
		2	Raycap DC6-48-60-18-8F ("Squid")			
		3	Ericsson RRUS 4478 B14 (15")			
		3	Ericsson RRUS-11 (50 lbs.)			
		3	Ericsson RRUS 32 B66A			
		3	Ericsson RRUS 32 B2			
		3	Ericsson RRUS 32 B30			
		1	Raycap DC6-48-60-18-8C			
		3	Powerwave 7770.00			
		6	CCI OPA-65R-LCUU-H6			
		3	Kathrein 80010965			
109.0	109.0	3	RFS APXV18-206517S-C	Flush	(6) 1 5/8" Coax	Metro PCS

Equipment to be Removed

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
150.0	151.0	1	10' Dipole	Platform w/ Handrails	(1) 7/8" Coax	Other
	150.0	1	72" x 4" Panel			Sprint Nextel
		12	52" x 12" Panel			
133.5	133.5	3	Argus LLPX310R	-	(6) 5/16" Coax	Clearwire
		3	NextNet BTS-2500			

Proposed Equipment

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
150.0	150.0	6	Alcatel-Lucent RRH2x50-08	SitePro1 RMQP-496	(12) 5/16" Coax (4) 1 1/4" Hybriflex	Clearwire
		3	Alcatel-Lucent 1900MHz 4x45 RRH			
		3	Alcatel-Lucent TD-RRH8x20-25 w/ Solar Shield			
		3	RFS APXVTM14-ALU-I20			
		3	Commscope NNVV-65B-R4			

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

Install proposed coax outside the pole shaft. Stacking coax is not allowed.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	81%	Pass
Shaft	86%	Pass
Base Plate	40%	Pass

Foundations

Reaction Component	Original Design Reactions	Factored Design Reactions*	Analysis Reactions	% of Design
Moment (Kips-Ft)	3,567.2	4,815.7	3,954.1	82%
Shear (Kips)	30.5	41.1	37.9	92%

*** 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) (°)
150.0	Alcatel-Lucent RRH2x50-08	Clearwire	2.319	1.509
	Alcatel-Lucent 1900 MHz 4x45 RRH			
	Alcatel-Lucent TD-RRH8x20-25 w/ Solar Shield			
	DragonWave A-ANT-11G-2-C			
	DragonWave A-ANT-18G-2-C			
	RFS APXVTM14-ALU-I20			
	Commscope NNVV-65B-R4			

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

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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.

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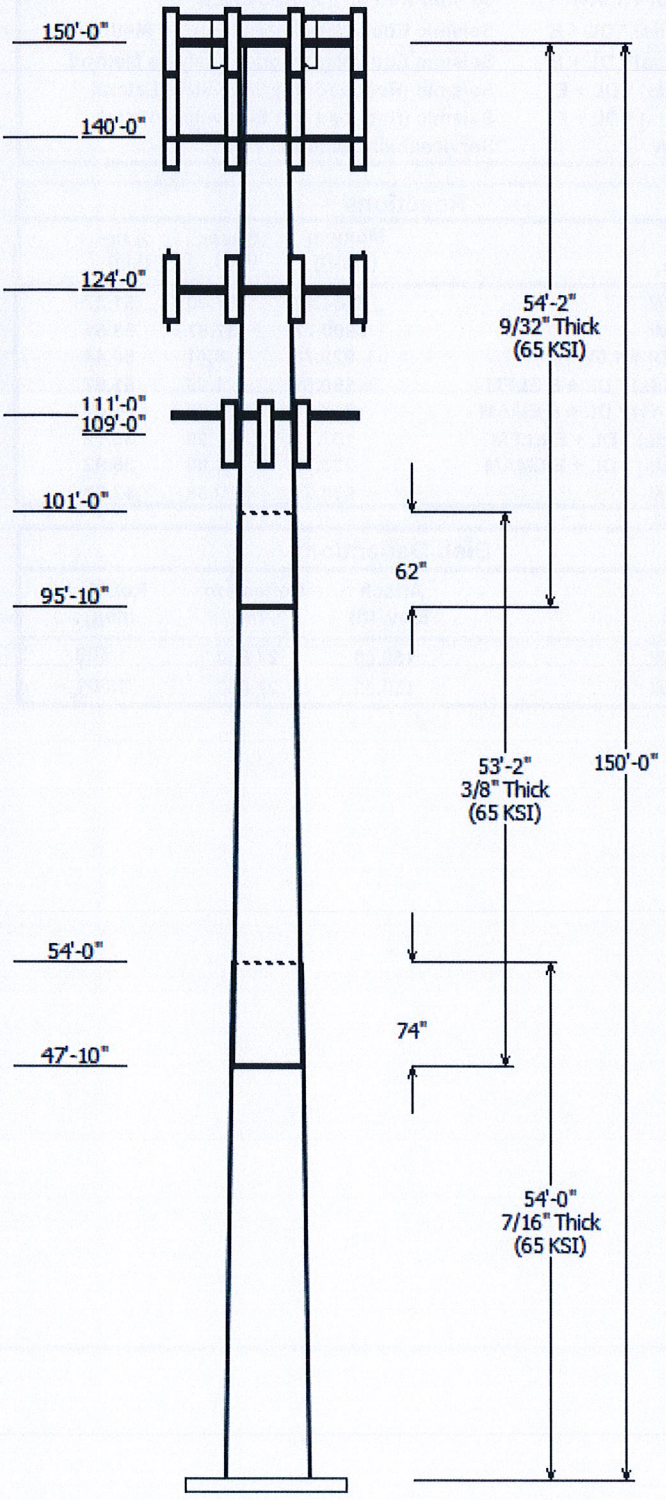


Job Information

Pole :	302538	Code:	ANSI/TIA-222-G
Location :	Parsonage Hill Aka Wallin, CT		
Description :			
Client :	CLEARWIRE CORPORATION	Struct Class :	II
Shape :	12 Sides	Exposure :	C
Height :	150.00 (ft)	Topo :	1
Base Elev (ft):	0.00		
Taper:	0.182000 (in/ft)		

Sections Properties

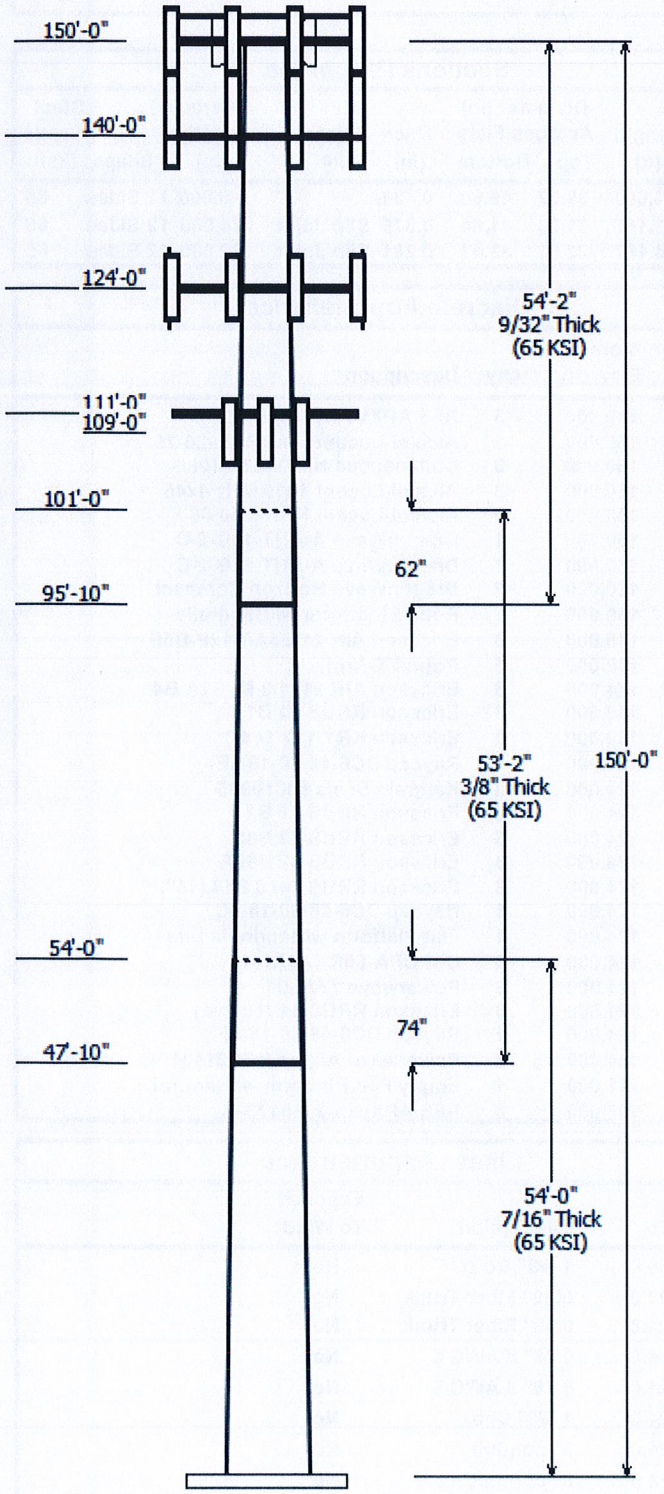
Shaft Section	Length (ft)	Diameter (in) Accross Flats Top	Bottom	Thick (in)	Joint Type	Overlap Length (in)	Shape	Steel Grade (ksi)
1	54.000	39.77	49.60	0.438		0.000	12 Sides	65
2	53.167	31.96	41.64	0.375	Slip Joint	74.000	12 Sides	65
3	54.167	23.61	33.47	0.281	Slip Joint	62.000	12 Sides	65

Discrete Appurtenance

Attach Elev (ft)	Force Elev (ft)	Qty	Description
150.000	150.000	3	RFS APXVTM14-ALU-I20
150.000	150.000	3	Alcatel-Lucent TD-RRH8x20-25
150.000	150.000	3	Commscope NNVV-65B-R4
150.000	150.000	3	Alcatel-Lucent 1900 MHz 4x45
150.000	150.000	6	Alcatel-Lucent RRH2x50-08
150.000	150.000	1	DragonWave A-ANT-18G-2-C
150.000	150.000	1	DragonWave A-ANT-11G-2-C
150.000	150.000	2	DragonWave Horizon Compact
150.000	150.000	1	Round Platform w/ Handrails
140.000	145.000	3	Ericsson AIR 21 B4A/B12P-B5P
140.000	140.000	3	Round T-Arm
140.000	144.000	3	Ericsson AIR 21, 1.3 M, B2A B4
140.000	145.000	3	Ericsson RRUS 11 B12
140.000	140.000	3	Ericsson KRY 112 144/1
124.000	124.000	1	Raycap DC6-48-60-18-8F
124.000	124.000	3	Kathrein Scala 80010965
124.000	124.000	3	Ericsson RRUS 32 B2
124.000	124.000	3	Ericsson RRUS 32 B30
124.000	124.000	3	Ericsson RRUS 32 B66A
124.000	124.000	3	Ericsson RRUS 4478 B14 (15")
124.000	124.000	1	Raycap DC6-48-60-18-8C
124.000	124.000	1	Flat Platform w/Handrails Site
124.000	124.000	6	CCI OPA-65R-LCUU-H6
124.000	124.000	3	Powerwave 7770.00
124.000	124.000	3	Ericsson RRUS-11 (50 lbs.)
124.000	124.000	1	Raycap DC6-48-60-18-8F
124.000	124.000	6	Powerwave Allgon LGP21401
111.000	111.000	1	Empty Flat Platform w/ Handrai
109.000	109.000	3	RFS APXV18-206517S-C

Linear Appurtenance

Elev (ft) From	To	Description	Exposed To Wind
5.000	109.0	1 5/8" Coax	No
5.000	124.0	0.39" Fiber Trunk	No
5.000	124.0	0.39" Fiber Trunk	No
5.000	124.0	0.78" 8 AWG 6	No
5.000	124.0	0.78" 8 AWG 6	No
5.000	124.0	1 5/8" Coax	No
5.000	124.0	3" conduit	No
5.000	124.0	3" conduit	No



5.000	140.0	1 1/4" Hybriflex	No
5.000	140.0	1 5/8" Coax	No
5.000	150.0	1 1/4" Hybriflex	Yes
5.000	150.0	1/2" Coax	Yes
5.000	150.0	2" conduit	Yes
5.000	150.0	5/16" Coax	No

Load Cases

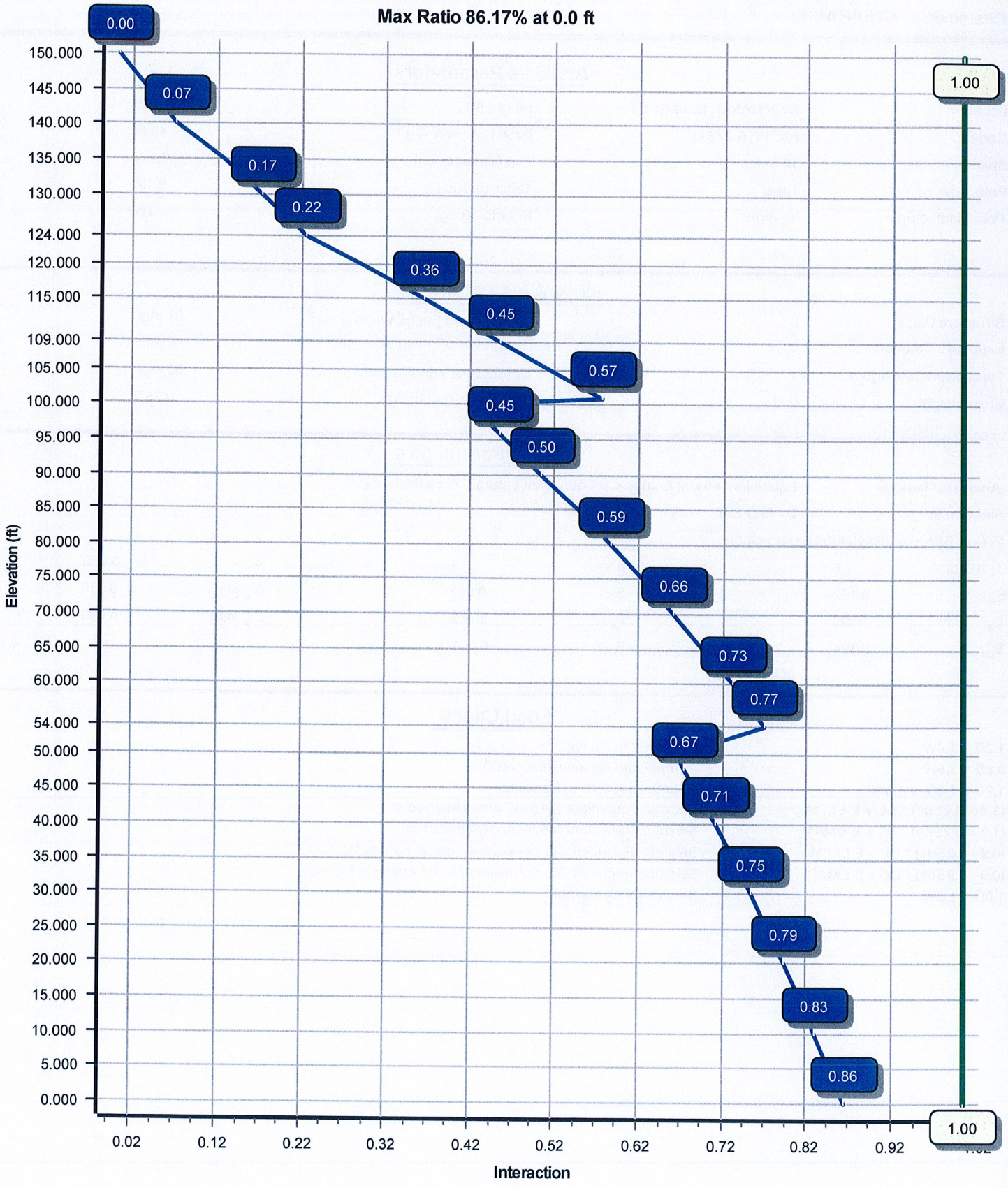
1.2D + 1.6W	97 mph with No Ice
0.9D + 1.6W	97 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 in Radial Ice
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) 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	3954.13	37.90	51.37
0.9D + 1.6W	3900.77	37.87	38.51
1.2D + 1.0Di + 1.0Wi	929.78	8.41	80.44
(1.2 + 0.2Sds) * DL + E ELFM	160.51	1.29	51.67
(1.2 + 0.2Sds) * DL + E EMAM	228.05	1.88	51.67
(0.9 - 0.2Sds) * DL + E ELFM	157.78	1.29	35.92
(0.9 - 0.2Sds) * DL + E EMAM	223.77	1.88	35.92
1.0D + 1.0W	938.71	9.06	42.87

Dish Deflections

Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
1.0D + 1.0W	150.00	27.830	1.509
1.0D + 1.0W	150.00	27.830	1.509


Load Case : 1.2D + 1.6W
Max Ratio 86.17% at 0.0 ft
0.00
0.07
0.17
0.22
0.36
0.45
0.57
0.45
0.50
0.59
0.66
0.73
0.77
0.67
0.71
0.75
0.79
0.83
0.86
1.00
1.00
150.000
145.000
140.000
135.000
130.000
124.000
120.000
115.000
109.000
105.000
100.000
95.000
90.000
85.000
80.000
75.000
70.000
65.000
60.000
54.000
50.000
45.000
40.000
35.000
30.000
25.000
20.000
15.000
10.000
5.000
0.000
Elevation (ft)
0.02
0.12
0.22
0.32
0.42
0.52
0.62
0.72
0.82
0.92
Interaction

Site Number: 302538 Code: ANSI/TIA-222-G © 2007 - 2018 by ATC IP LLC. All rights reserved.

Site Name: Parsonage Hill Aka Wallin, CT Engineering Number:OAA713368_C3_04 7/6/2018 1:24:49 PM

Customer: CLEARWIRE

Analysis Parameters

Location :	NEW HAVEN County, CT	Height (ft) :	150
Code :	ANSI/TIA-222-G	Base Diameter (in) :	49.60
Shape :	12 Sides	Top Diameter (in) :	23.61
Pole Type :	Taper	Taper (in/ft) :	0.182
Pole Manfacturer :	Valmont	Rotation (deg) :	0.00

Ice & Wind Parameters

Structure Class:	II	Design Wind Speed Without Ice:	97 mph
Exposure Category:	C	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):	2.54				
T_L (sec):	6	p:	1	C_s:	0.030
S_s:	0.182	S_1:	0.063	C_s Max:	0.030
F_a:	1.600	F_v:	2.400	C_s Min:	0.030
S_{ds}:	0.194	S_{d1}:	0.101		

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: 302538 Code: ANSI/TIA-222-G © 2007 - 2018 by ATC IP LLC. All rights reserved.

Site Name: Parsonage Hill Aka Wallin, CT Engineering Number:OAA713368_C3_04 7/6/2018 1:24:49 PM

Customer: CLEARWIRE

Shaft Section Properties

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Slip 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)
1-12	54.000	0.4375	65		0.00	11,454	49.60	0.00	69.26	21365.7	27.70	113.37	39.77	54.00	55.41	10942.9	21.68	90.91	0.182000
2-12	53.167	0.3750	65	Slip	74.00	7,958	41.64	47.83	49.83	10833.0	27.08	111.05	31.96	101.00	38.15	4860.0	20.16	85.25	0.182000
3-12	54.167	0.2813	65	Slip	62.00	4,717	33.47	95.83	30.06	4226.0	29.21	119.01	23.61	150.00	21.13	1468.0	19.82	83.95	0.182000
				Shaft Weight		24,130													

Discrete Appurtenance Properties

Attach Elev (ft)	Description	Qty	Distance From Face (ft)	Vert Ecc (ft)	No Ice Weight (lb)	No Ice EPAa (sf)	Orientation Factor
150.00	Alcatel-Lucent 1900 MHz 4x45 R	3	0.000	0.000	60.00	2.320	0.67
150.00	Alcatel-Lucent RRH2x50-08	6	0.000	0.000	52.90	1.700	0.50
150.00	Alcatel-Lucent TD-RRH8x20-25 w	3	0.000	0.000	70.00	4.050	0.67
150.00	Commscope NNVV-65B-R4	3	0.000	0.000	77.40	12.270	0.64
150.00	DragonWave A-ANT-11G-2-C	1	0.000	0.000	27.00	4.690	1.00
150.00	DragonWave A-ANT-18G-2-C	1	0.000	0.000	27.10	4.690	1.00
150.00	DragonWave Horizon Compact	2	0.000	0.000	10.60	0.430	0.50
150.00	RFS APXVTM14-ALU-I20	3	0.000	0.000	56.20	6.340	0.66
150.00	Round Platform w/ Handrails	1	0.000	0.000	2000.00	27.200	1.00
140.00	Ericsson AIR 21 B4A/B12P-B5P 6	3	0.000	5.000	110.00	10.610	0.69
140.00	Ericsson AIR 21, 1.3 M, B2A B4	3	0.000	4.000	83.00	6.050	0.71
140.00	Ericsson KRY 112 144/1	3	0.000	0.000	11.00	0.410	0.50
140.00	Ericsson RRUS 11 B12	3	0.000	5.000	50.70	2.790	0.67
140.00	Round T-Arm	3	0.000	0.000	250.00	9.700	0.67
124.00	CCI OPA-65R-LCUU-H6	6	0.000	0.000	73.00	9.660	0.66
124.00	Ericsson RRUS 32 B2	3	0.000	0.000	53.00	2.740	0.67
124.00	Ericsson RRUS 32 B30	3	0.000	0.000	60.00	2.740	0.67
124.00	Ericsson RRUS 32 B66A	3	0.000	0.000	50.70	2.720	0.67
124.00	Ericsson RRUS 4478 B14 (15")	3	0.000	0.000	59.40	1.650	0.50
124.00	Ericsson RRUS-11 (50 lbs.)	3	0.000	0.000	50.00	2.570	0.67
124.00	Flat Platform w/Handrails Site	1	0.000	0.000	3000.00	49.620	1.00
124.00	Kathrein Scala 80010965	3	0.000	0.000	97.60	13.810	0.62
124.00	Powerwave 7770.00	3	0.000	0.000	35.00	5.510	0.65
124.00	Powerwave Allgon LGP21401	6	0.000	0.000	14.10	1.100	0.50
124.00	Raycap DC6-48-60-18-8C	1	0.000	0.000	16.00	3.050	0.67
124.00	Raycap DC6-48-60-18-8F ("Squid	1	0.000	0.000	31.80	1.280	1.00
124.00	Raycap DC6-48-60-18-8F ("Squid	1	0.000	0.000	31.80	1.280	1.00
111.00	Empty Flat Platform w/ Handrai	1	0.000	0.000	2000.00	42.400	1.00
109.00	RFS APXV18-206517S-C	3	0.000	0.000	26.40	5.170	0.68
Totals	Num Loadings:29	79			11596.10		

Linear Appurtenance Properties

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Diameter (in)	Coax Weight (lb/ft)	Flat	Projected Width (in)	Exposed To Wind	Carrier
5.00	150.00	4	1 1/4" Hybriflex Cable	1.54	1.00	N	0.00	Y	Clearwire
5.00	150.00	2	1/2" Coax	0.63	0.15	N	0.00	Y	Clearwire
5.00	150.00	2	2" conduit	2.38	3.65	N	2.38	Y	Clearwire
5.00	150.00	12	5/16" Coax	0.31	0.05	N	0.00	N	Clearwire
5.00	140.00	1	1 1/4" Hybriflex Cable	1.54	1.00	N	0.00	N	T-Mobile
5.00	140.00	12	1 5/8" Coax	1.98	0.82	N	0.00	N	T-Mobile
5.00	124.00	1	0.39" Fiber Trunk	0.39	0.06	N	0.00	N	AT&T Mobility
5.00	124.00	2	0.39" Fiber Trunk	0.39	0.06	N	0.00	N	AT&T Mobility

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5.00	124.00	2	0.78" 8 AWG 6	0.78	0.59	N	0.00	N	AT&T Mobility
5.00	124.00	4	0.78" 8 AWG 6	0.78	0.59	N	0.00	N	AT&T Mobility
5.00	124.00	12	1 5/8" Coax	1.98	0.82	N	0.00	N	AT&T Mobility
5.00	124.00	1	3" conduit	3.50	7.58	N	0.00	N	AT&T Mobility
5.00	124.00	1	3" conduit	3.50	7.58	N	0.00	N	AT&T Mobility
5.00	109.00	6	1 5/8" Coax	1.98	0.82	N	0.00	N	Metro PCS

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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		0.4375	49.600	69.257	21,365.7	27.70	113.37	74.5	832.2	0.0	0.0
5.00		0.4375	48.690	67.975	20,201.1	27.14	111.29	75.1	801.5	0.0	1,167.4
10.00		0.4375	47.780	66.693	19,079.5	26.58	109.21	75.7	771.4	0.0	1,145.6
15.00		0.4375	46.870	65.412	18,000.3	26.03	107.13	76.3	741.9	0.0	1,123.8
20.00		0.4375	45.960	64.130	16,962.6	25.47	105.05	76.9	713.0	0.0	1,102.0
25.00		0.4375	45.050	62.848	15,965.5	24.91	102.97	77.5	684.6	0.0	1,080.2
30.00		0.4375	44.140	61.566	15,008.3	24.35	100.89	78.2	656.9	0.0	1,058.4
35.00		0.4375	43.230	60.284	14,090.2	23.80	98.81	78.8	629.7	0.0	1,036.6
40.00		0.4375	42.320	59.002	13,210.3	23.24	96.73	79.4	603.0	0.0	1,014.8
45.00		0.4375	41.410	57.720	12,367.8	22.68	94.65	80.0	577.0	0.0	992.9
47.83	Bot - Section 2	0.4375	40.894	56.993	11,906.6	22.37	93.47	80.3	562.5	0.0	553.0
50.00		0.4375	40.500	56.438	11,561.9	22.12	92.57	80.6	551.5	0.0	783.8
54.00	Top - Section 1	0.3750	40.522	48.477	9,973.0	26.27	108.06	76.1	475.5	0.0	1,427.0
55.00		0.3750	40.340	48.257	9,838.0	26.14	107.57	76.2	471.1	0.0	164.6
60.00		0.3750	39.430	47.159	9,181.1	25.49	105.15	76.9	449.8	0.0	811.7
65.00		0.3750	38.520	46.060	8,554.2	24.84	102.72	77.6	429.0	0.0	793.0
70.00		0.3750	37.610	44.961	7,956.5	24.19	100.29	78.3	408.7	0.0	774.3
75.00		0.3750	36.700	43.862	7,387.3	23.54	97.87	79.0	388.9	0.0	755.6
80.00		0.3750	35.790	42.763	6,845.9	22.89	95.44	79.7	369.5	0.0	736.9
85.00		0.3750	34.880	41.665	6,331.6	22.24	93.01	80.5	350.7	0.0	718.2
90.00		0.3750	33.970	40.566	5,843.7	21.59	90.59	81.2	332.3	0.0	699.5
95.00		0.3750	33.060	39.467	5,381.6	20.94	88.16	81.9	314.5	0.0	680.8
95.83	Bot - Section 3	0.3750	32.908	39.284	5,307.0	20.83	87.76	81.9	311.5	0.0	111.7
100.0		0.3750	32.150	38.368	4,944.5	20.29	85.73	81.9	297.1	0.0	971.8
101.0	Top - Section 2	0.2813	32.530	29.206	3,876.9	28.31	115.66	73.8	230.2	0.0	229.8
105.0		0.2813	31.802	28.546	3,620.2	27.62	113.07	74.6	219.9	0.0	393.0
109.0		0.2813	31.074	27.887	3,375.1	26.93	110.49	75.3	209.8	0.0	384.1
110.0		0.2813	30.892	27.722	3,315.7	26.75	109.84	75.5	207.3	0.0	94.6
111.0		0.2813	30.710	27.557	3,256.9	26.58	109.19	75.7	204.9	0.0	94.1
115.0		0.2813	29.982	26.898	3,028.7	25.88	106.60	76.5	195.1	0.0	370.6
120.0		0.2813	29.072	26.074	2,758.7	25.02	103.37	77.4	183.3	0.0	450.6
124.0		0.2813	28.344	25.415	2,554.7	24.32	100.78	78.2	174.1	0.0	350.4
125.0		0.2813	28.162	25.250	2,505.3	24.15	100.13	78.4	171.9	0.0	86.2
130.0		0.2813	27.252	24.426	2,267.9	23.28	96.90	79.3	160.8	0.0	422.6
135.0		0.2813	26.342	23.602	2,046.0	22.42	93.66	80.3	150.0	0.0	408.6
140.0		0.2813	25.432	22.777	1,839.1	21.55	90.43	81.2	139.7	0.0	394.5
145.0		0.2813	24.522	21.953	1,646.6	20.68	87.19	81.9	129.7	0.0	380.5
150.0		0.2813	23.612	21.129	1,468.0	19.82	83.95	81.9	120.1	0.0	366.5
											24,129.8

Site Number: 302538 Code: ANSI/TIA-222-G © 2007 - 2018 by ATC IP LLC. All rights reserved.

Site Name: Parsonage Hill Aka Wallin, CT Engineering Number:OAA713368_C3_04 7/6/2018 1:24:49 PM

Customer: CLEARWIRE

Load Case: 1.2D + 1.6W 97 mph with No Ice 24 Iterations

Gust Response Factor :1.10 Wind Importance Factor :1.00

Dead Load Factor :1.20

Wind Load Factor :1.60

Applied Segment Forces Summary

		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		362.9	0.0					0.0	0.0	362.9	0.0	0.0	0.0
5.00		719.0	1,400.9					0.0	0.0	719.0	1,400.9	0.0	0.0
10.00		705.6	1,374.7					0.0	339.7	705.6	1,714.5	0.0	0.0
15.00		703.0	1,348.6					0.0	339.7	703.0	1,688.3	0.0	0.0
20.00		719.0	1,322.4					0.0	339.7	719.0	1,662.1	0.0	0.0
25.00		739.0	1,296.2					0.0	339.7	739.0	1,635.9	0.0	0.0
30.00		752.6	1,270.1					0.0	339.7	752.6	1,609.8	0.0	0.0
35.00		761.6	1,243.9					0.0	339.7	761.6	1,583.6	0.0	0.0
40.00		766.9	1,217.7					0.0	339.7	766.9	1,557.4	0.0	0.0
45.00		602.5	1,191.5					0.0	339.7	602.5	1,531.3	0.0	0.0
47.83	Bot - Section 2	388.0	663.6					0.0	192.5	388.0	856.1	0.0	0.0
50.00		483.2	940.5					0.0	147.2	483.2	1,087.8	0.0	0.0
54.00	Top - Section 1	391.6	1,712.4					0.0	271.8	391.6	1,984.2	0.0	0.0
55.00		468.5	197.5					0.0	67.9	468.5	265.4	0.0	0.0
60.00		778.4	974.0					0.0	339.7	778.4	1,313.8	0.0	0.0
65.00		773.3	951.6					0.0	339.7	773.3	1,291.3	0.0	0.0
70.00		767.0	929.2					0.0	339.7	767.0	1,268.9	0.0	0.0
75.00		759.4	906.7					0.0	339.7	759.4	1,246.5	0.0	0.0
80.00		750.7	884.3					0.0	339.7	750.7	1,224.0	0.0	0.0
85.00		741.0	861.9					0.0	339.7	741.0	1,201.6	0.0	0.0
90.00		730.4	839.4					0.0	339.7	730.4	1,179.2	0.0	0.0
95.00		422.3	817.0					0.0	339.7	422.3	1,156.7	0.0	0.0
95.83	Bot - Section 3	361.7	134.0					0.0	56.6	361.7	190.6	0.0	0.0
100.00		373.6	1,166.1					0.0	283.1	373.6	1,449.2	0.0	0.0
101.00	Top - Section 2	356.5	275.8					0.0	67.9	356.5	343.8	0.0	0.0
105.00		565.1	471.6					0.0	271.8	565.1	743.4	0.0	0.0
109.00	Appurtenance(s)	349.9	460.9	547.4	0.0	0.0	95.0	0.0	271.8	897.3	827.7	0.0	0.0
110.00		138.6	113.5					0.0	62.0	138.6	175.6	0.0	0.0
111.00	Appurtenance(s)	343.0	112.9	2,209.2	0.0	0.0	2,400.0	0.0	62.0	2,552.2	2,574.9	0.0	0.0
115.00		609.7	444.7					0.0	248.2	609.7	692.9	0.0	0.0
120.00		599.1	540.8					0.0	310.2	599.1	851.0	0.0	0.0
124.00	Appurtenance(s)	328.3	420.5	6,914.7	0.0	0.0	5,783.2	0.0	248.2	7,243.0	6,451.8	0.0	0.0
125.00		385.6	103.4					0.0	27.6	385.6	131.0	0.0	0.0
130.00		633.2	507.1					0.0	137.9	633.2	645.0	0.0	0.0
135.00		616.9	490.3					0.0	137.9	616.9	628.2	0.0	0.0
140.00	Appurtenance(s)	600.2	473.5	2,610.1	0.0	8,348.2	1,816.9	0.0	137.9	3,210.2	2,428.3	0.0	0.0
145.00		583.0	456.6					0.0	72.8	583.0	529.5	0.0	0.0
150.00	Appurtenance(s)	287.1	439.8	4,448.6	0.0	0.0	3,820.2	0.0	72.8	4,735.7	4,332.8	0.0	0.0
								Totals:		38,146.9	51,454.7	0.00	0.00

Site Number: 302538 Code: ANSI/TIA-222-G ©2007 - 2018 by ATC IP LLC. All rights reserved.

Site Name: Parsonage Hill Aka Wallin, CT Engineering Number: OAA713368_C3_04 7/6/2018 1:25:00 PM

Customer: CLEARWIRE

Load Case: 1.2D + 1.6W — 97 mph with No Ice — 24 Iterations

Gust Response Factor: 1.10
Dead Load Factor: 1.20
Wind Load Factor: 1.60

Wind Importance Factor: 1.00

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-51.37	-37.90	0.00	-3,954.13	0.00	3,954.13	4,644.06	2,322.03	9,415.76	4,650.09	0.00	0.00	0.862
5.00	-49.80	-37.40	0.00	-3,764.63	0.00	3,764.63	4,595.29	2,297.65	9,142.89	4,515.33	0.14	-0.26	0.845
10.00	-47.92	-36.90	0.00	-3,577.61	0.00	3,577.61	4,545.11	2,272.56	8,870.98	4,381.04	0.55	-0.52	0.827
15.00	-46.08	-36.39	0.00	-3,393.10	0.00	3,393.10	4,493.53	2,246.77	8,600.18	4,247.31	1.23	-0.78	0.809
20.00	-44.27	-35.85	0.00	-3,211.14	0.00	3,211.14	4,440.55	2,220.28	8,330.66	4,114.20	2.18	-1.04	0.791
25.00	-42.48	-35.27	0.00	-3,031.90	0.00	3,031.90	4,386.17	2,193.08	8,062.58	3,981.80	3.40	-1.30	0.771
30.00	-40.74	-34.67	0.00	-2,855.55	0.00	2,855.55	4,330.38	2,165.19	7,796.08	3,850.19	4.90	-1.56	0.751
35.00	-39.02	-34.04	0.00	-2,682.23	0.00	2,682.23	4,273.19	2,136.59	7,531.34	3,719.45	6.68	-1.82	0.731
40.00	-37.34	-33.39	0.00	-2,512.05	0.00	2,512.05	4,214.59	2,107.30	7,268.52	3,589.65	8.73	-2.08	0.709
45.00	-35.71	-32.85	0.00	-2,345.11	0.00	2,345.11	4,154.60	2,077.30	7,007.76	3,460.87	11.05	-2.35	0.686
47.83	-34.80	-32.51	0.00	-2,252.03	0.00	2,252.03	4,119.98	2,059.99	6,860.98	3,388.38	12.49	-2.50	0.673
50.00	-33.64	-32.08	0.00	-2,181.59	0.00	2,181.59	4,093.20	2,046.60	6,749.23	3,333.19	13.65	-2.61	0.663
54.00	-31.61	-31.66	0.00	-2,053.29	0.00	2,053.29	3,318.39	1,659.20	5,491.78	2,712.18	15.93	-2.82	0.767
55.00	-31.27	-31.27	0.00	-2,021.63	0.00	2,021.63	3,309.51	1,654.75	5,452.02	2,692.55	16.52	-2.87	0.761
60.00	-29.86	-30.57	0.00	-1,865.27	0.00	1,865.27	3,264.25	1,632.12	5,253.88	2,594.69	19.68	-3.15	0.728
65.00	-28.47	-29.86	0.00	-1,712.41	0.00	1,712.41	3,217.59	1,608.79	5,056.96	2,497.44	23.13	-3.43	0.695
70.00	-27.11	-29.15	0.00	-1,563.10	0.00	1,563.10	3,169.52	1,584.76	4,861.43	2,400.88	26.87	-3.70	0.660
75.00	-25.79	-28.42	0.00	-1,417.37	0.00	1,417.37	3,120.06	1,560.03	4,667.43	2,305.07	30.89	-3.97	0.623
80.00	-24.50	-27.70	0.00	-1,275.25	0.00	1,275.25	3,069.19	1,534.59	4,475.14	2,210.10	35.18	-4.23	0.585
85.00	-23.24	-26.97	0.00	-1,136.77	0.00	1,136.77	3,016.92	1,508.46	4,284.71	2,116.06	39.74	-4.48	0.545
90.00	-22.02	-26.23	0.00	-1,001.94	0.00	1,001.94	2,963.24	1,481.62	4,096.29	2,023.00	44.56	-4.72	0.503
95.00	-20.84	-25.76	0.00	-870.78	0.00	870.78	2,909.11	1,454.55	3,911.32	1,931.65	49.62	-4.95	0.458
95.83	-20.64	-25.43	0.00	-849.31	0.00	849.31	2,895.61	1,447.80	3,874.90	1,913.67	50.48	-4.99	0.451
100.00	-19.18	-24.96	0.00	-743.37	0.00	743.37	2,828.11	1,414.06	3,695.36	1,825.00	54.91	-5.16	0.414
101.00	-18.82	-24.61	0.00	-718.41	0.00	718.41	1,940.77	970.39	2,581.63	1,274.97	56.00	-5.21	0.574
105.00	-18.06	-24.03	0.00	-619.97	0.00	619.97	1,916.40	958.20	2,491.16	1,230.29	60.42	-5.36	0.514
109.00	-17.28	-23.09	0.00	-523.85	0.00	523.85	1,891.12	945.56	2,401.02	1,185.77	64.98	-5.54	0.452
110.00	-17.10	-22.95	0.00	-500.76	0.00	500.76	1,884.66	942.33	2,378.55	1,174.68	66.15	-5.58	0.436
111.00	-14.76	-20.18	0.00	-477.81	0.00	477.81	1,878.15	939.07	2,356.11	1,163.59	67.32	-5.63	0.419
115.00	-14.07	-19.55	0.00	-397.07	0.00	397.07	1,851.53	925.76	2,266.63	1,119.40	72.10	-5.78	0.363
120.00	-13.24	-18.90	0.00	-299.34	0.00	299.34	1,816.99	908.49	2,155.56	1,064.55	78.23	-5.94	0.289
124.00	-7.57	-11.03	0.00	-223.75	0.00	223.75	1,788.35	894.17	2,067.42	1,021.02	83.25	-6.05	0.224
125.00	-7.47	-10.64	0.00	-212.73	0.00	212.73	1,781.05	890.52	2,045.49	1,010.19	84.52	-6.08	0.215
130.00	-6.88	-9.95	0.00	-159.54	0.00	159.54	1,743.70	871.85	1,936.59	956.41	90.93	-6.18	0.171
135.00	-6.31	-9.28	0.00	-109.79	0.00	109.79	1,704.95	852.48	1,829.01	903.28	97.44	-6.27	0.125
140.00	-4.24	-5.82	0.00	-55.05	0.00	55.05	1,664.80	832.40	1,722.91	850.88	104.02	-6.33	0.067
145.00	-3.78	-5.19	0.00	-25.93	0.00	25.93	1,618.18	809.09	1,613.39	796.79	110.65	-6.36	0.035
150.00	0.00	-4.74	0.00	0.00	0.00	0.00	1,557.43	778.72	1,493.87	737.76	117.30	-6.37	0.000

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Load Case: 0.9D + 1.6W — 97 mph with No Ice (Reduced DL) — 24 Iterations

Gust Response Factor : 1.10
Dead Load Factor : 0.90
Wind Load Factor : 1.60
Wind Importance 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		362.9	0.0					0.0	0.0	362.9	0.0	0.0	0.0
5.00		719.0	1,050.7					0.0	0.0	719.0	1,050.7	0.0	0.0
10.00		705.6	1,031.1					0.0	254.8	705.6	1,285.8	0.0	0.0
15.00		703.0	1,011.4					0.0	254.8	703.0	1,266.2	0.0	0.0
20.00		719.0	991.8					0.0	254.8	719.0	1,246.6	0.0	0.0
25.00		739.0	972.2					0.0	254.8	739.0	1,227.0	0.0	0.0
30.00		752.6	952.5					0.0	254.8	752.6	1,207.3	0.0	0.0
35.00		761.6	932.9					0.0	254.8	761.6	1,187.7	0.0	0.0
40.00		766.9	913.3					0.0	254.8	766.9	1,168.1	0.0	0.0
45.00		602.5	893.6					0.0	254.8	602.5	1,148.4	0.0	0.0
47.83	Bot - Section 2	388.0	497.7					0.0	144.4	388.0	642.1	0.0	0.0
50.00		483.2	705.4					0.0	110.4	483.2	815.8	0.0	0.0
54.00	Top - Section 1	391.6	1,284.3					0.0	203.8	391.6	1,488.1	0.0	0.0
55.00		468.5	148.1					0.0	51.0	468.5	199.1	0.0	0.0
60.00		778.4	730.5					0.0	254.8	778.4	985.3	0.0	0.0
65.00		773.3	713.7					0.0	254.8	773.3	968.5	0.0	0.0
70.00		767.0	696.9					0.0	254.8	767.0	951.7	0.0	0.0
75.00		759.4	680.1					0.0	254.8	759.4	934.8	0.0	0.0
80.00		750.7	663.2					0.0	254.8	750.7	918.0	0.0	0.0
85.00		741.0	646.4					0.0	254.8	741.0	901.2	0.0	0.0
90.00		730.4	629.6					0.0	254.8	730.4	884.4	0.0	0.0
95.00		422.3	612.7					0.0	254.8	422.3	867.5	0.0	0.0
95.83	Bot - Section 3	361.7	100.5					0.0	42.5	361.7	143.0	0.0	0.0
100.00		373.6	874.6					0.0	212.3	373.6	1,086.9	0.0	0.0
101.00	Top - Section 2	356.5	206.9					0.0	51.0	356.5	257.8	0.0	0.0
105.00		565.1	353.7					0.0	203.8	565.1	557.6	0.0	0.0
109.00	Appurtenance(s)	349.9	345.7	547.4	0.0	0.0	71.3	0.0	203.8	897.3	620.8	0.0	0.0
110.00		138.6	85.2					0.0	46.5	138.6	131.7	0.0	0.0
111.00	Appurtenance(s)	343.0	84.6	2,209.2	0.0	0.0	1,800.0	0.0	46.5	2,552.2	1,931.2	0.0	0.0
115.00		609.7	333.5					0.0	186.1	609.7	519.7	0.0	0.0
120.00		599.1	405.6					0.0	232.6	599.1	638.2	0.0	0.0
124.00	Appurtenance(s)	328.3	315.4	6,914.7	0.0	0.0	4,337.4	0.0	186.1	7,243.0	4,838.9	0.0	0.0
125.00		385.6	77.6					0.0	20.7	385.6	98.3	0.0	0.0
130.00		633.2	380.3					0.0	103.4	633.2	483.7	0.0	0.0
135.00		616.9	367.7					0.0	103.4	616.9	471.1	0.0	0.0
140.00	Appurtenance(s)	600.2	355.1	2,610.1	0.0	8,348.2	1,362.7	0.0	103.4	3,210.2	1,821.2	0.0	0.0
145.00		583.0	342.5					0.0	54.6	583.0	397.1	0.0	0.0
150.00	Appurtenance(s)	287.1	329.9	4,448.6	0.0	0.0	2,865.2	0.0	54.6	4,735.7	3,249.6	0.0	0.0
								Totals:		38,146.9	38,591.0	0.00	0.00

Site Number: 302538 Code: ANSI/TIA-222-G ©2007 - 2018 by ATC IP LLC. All rights reserved.

Site Name: Parsonage Hill Aka Wallin, CT Engineering Number: OAA713368_C3_04 7/6/2018 1:25:12 PM

Customer: CLEARWIRE

Load Case: 0.9D + 1.6W — 97 mph with No Ice (Reduced DL) — 24 Iterations

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

Wind Importance Factor : 1.00

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-38.51	-37.87	0.00	-3,900.77	0.00	3,900.77	4,644.06	2,322.03	9,415.76	4,650.09	0.00	0.00	0.847
5.00	-37.29	-37.32	0.00	-3,711.41	0.00	3,711.41	4,595.29	2,297.65	9,142.89	4,515.33	0.14	-0.25	0.830
10.00	-35.85	-36.76	0.00	-3,524.84	0.00	3,524.84	4,545.11	2,272.56	8,870.98	4,381.04	0.54	-0.51	0.813
15.00	-34.43	-36.20	0.00	-3,341.04	0.00	3,341.04	4,493.53	2,246.77	8,600.18	4,247.31	1.21	-0.76	0.795
20.00	-33.03	-35.61	0.00	-3,160.05	0.00	3,160.05	4,440.55	2,220.28	8,330.66	4,114.20	2.15	-1.02	0.776
25.00	-31.66	-34.99	0.00	-2,982.00	0.00	2,982.00	4,386.17	2,193.08	8,062.58	3,981.80	3.35	-1.28	0.756
30.00	-30.32	-34.34	0.00	-2,807.06	0.00	2,807.06	4,330.38	2,165.19	7,796.08	3,850.19	4.83	-1.54	0.736
35.00	-29.00	-33.68	0.00	-2,635.35	0.00	2,635.35	4,273.19	2,136.59	7,531.34	3,719.45	6.58	-1.79	0.716
40.00	-27.71	-33.00	0.00	-2,466.96	0.00	2,466.96	4,214.59	2,107.30	7,268.52	3,589.65	8.60	-2.05	0.694
45.00	-26.48	-32.44	0.00	-2,301.98	0.00	2,301.98	4,154.60	2,077.30	7,007.76	3,460.87	10.88	-2.31	0.672
47.83	-25.78	-32.09	0.00	-2,210.06	0.00	2,210.06	4,119.98	2,059.99	6,860.98	3,388.38	12.30	-2.46	0.659
50.00	-24.90	-31.64	0.00	-2,140.53	0.00	2,140.53	4,093.20	2,046.60	6,749.23	3,333.19	13.44	-2.57	0.649
54.00	-23.36	-31.23	0.00	-2,013.98	0.00	2,013.98	3,318.39	1,659.20	5,491.78	2,712.18	15.68	-2.77	0.750
55.00	-23.09	-30.82	0.00	-1,982.75	0.00	1,982.75	3,309.51	1,654.75	5,452.02	2,692.55	16.26	-2.82	0.744
60.00	-22.01	-30.10	0.00	-1,828.65	0.00	1,828.65	3,264.25	1,632.12	5,253.88	2,594.69	19.37	-3.10	0.712
65.00	-20.95	-29.37	0.00	-1,678.17	0.00	1,678.17	3,217.59	1,608.79	5,056.96	2,497.44	22.76	-3.37	0.679
70.00	-19.91	-28.64	0.00	-1,531.32	0.00	1,531.32	3,169.52	1,584.76	4,861.43	2,400.88	26.43	-3.64	0.644
75.00	-18.90	-27.90	0.00	-1,388.14	0.00	1,388.14	3,120.06	1,560.03	4,667.43	2,305.07	30.38	-3.90	0.609
80.00	-17.92	-27.17	0.00	-1,248.62	0.00	1,248.62	3,069.19	1,534.59	4,475.14	2,210.10	34.60	-4.15	0.571
85.00	-16.97	-26.43	0.00	-1,112.78	0.00	1,112.78	3,016.92	1,508.46	4,284.71	2,116.06	39.08	-4.40	0.532
90.00	-16.04	-25.70	0.00	-980.62	0.00	980.62	2,963.24	1,481.62	4,096.29	2,023.00	43.81	-4.63	0.490
95.00	-15.16	-25.24	0.00	-852.12	0.00	852.12	2,909.11	1,454.55	3,911.32	1,931.65	48.78	-4.86	0.447
95.83	-15.00	-24.90	0.00	-831.08	0.00	831.08	2,895.61	1,447.80	3,874.90	1,913.67	49.63	-4.89	0.440
100.00	-13.90	-24.46	0.00	-727.35	0.00	727.35	2,828.11	1,414.06	3,695.36	1,825.00	53.98	-5.07	0.404
101.00	-13.63	-24.10	0.00	-702.89	0.00	702.89	1,940.77	970.39	2,581.63	1,274.97	55.04	-5.11	0.559
105.00	-13.06	-23.53	0.00	-606.49	0.00	606.49	1,916.40	958.20	2,491.16	1,230.29	59.38	-5.26	0.500
109.00	-12.49	-22.60	0.00	-512.38	0.00	512.38	1,891.12	945.56	2,401.02	1,185.77	63.86	-5.44	0.439
110.00	-12.35	-22.46	0.00	-489.78	0.00	489.78	1,884.66	942.33	2,378.55	1,174.68	65.01	-5.48	0.424
111.00	-10.64	-19.75	0.00	-467.33	0.00	467.33	1,878.15	939.07	2,356.11	1,163.59	66.16	-5.52	0.408
115.00	-10.13	-19.12	0.00	-388.33	0.00	388.33	1,851.53	925.76	2,266.63	1,119.40	70.84	-5.67	0.353
120.00	-9.51	-18.48	0.00	-292.74	0.00	292.74	1,816.99	908.49	2,155.56	1,064.55	76.86	-5.83	0.281
124.00	-5.43	-10.79	0.00	-218.81	0.00	218.81	1,788.35	894.17	2,067.42	1,021.02	81.79	-5.94	0.217
125.00	-5.36	-10.40	0.00	-208.03	0.00	208.03	1,781.05	890.52	2,045.49	1,010.19	83.03	-5.96	0.209
130.00	-4.93	-9.73	0.00	-156.04	0.00	156.04	1,743.70	871.85	1,936.59	956.41	89.32	-6.06	0.166
135.00	-4.52	-9.07	0.00	-107.41	0.00	107.41	1,704.95	852.48	1,829.01	903.28	95.71	-6.15	0.122
140.00	-3.05	-5.68	0.00	-53.72	0.00	53.72	1,664.80	832.40	1,722.91	850.88	102.17	-6.21	0.065
145.00	-2.72	-5.06	0.00	-25.31	0.00	25.31	1,618.18	809.09	1,613.39	796.79	108.67	-6.24	0.033
150.00	0.00	-4.74	0.00	0.00	0.00	0.00	1,557.43	778.72	1,493.87	737.76	115.20	-6.25	0.000

Site Number: 302538 Code: ANSI/TIA-222-G ©2007 - 2018 by ATC IP LLC. All rights reserved.

Site Name: Parsonage Hill Aka Wallin, CT Engineering Number: OAA713368_C3_04 7/6/2018 1:25:12 PM

Customer: CLEARWIRE

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph with 0.75 in Radial Ice 23 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		75.6	0.0					0.0	0.0	75.6	0.0	0.0	0.0
5.00		150.2	1,775.1					0.0	0.0	150.2	1,775.1	0.0	0.0
10.00		148.1	1,785.8					0.0	440.7	148.1	2,226.5	0.0	0.0
15.00		148.1	1,773.7					0.0	447.2	148.1	2,220.9	0.0	0.0
20.00		151.9	1,754.2					0.0	451.7	151.9	2,205.9	0.0	0.0
25.00		156.5	1,730.8					0.0	455.3	156.5	2,186.1	0.0	0.0
30.00		159.7	1,705.1					0.0	458.3	159.7	2,163.3	0.0	0.0
35.00		162.0	1,677.6					0.0	460.8	162.0	2,138.4	0.0	0.0
40.00		163.5	1,648.9					0.0	463.0	163.5	2,111.9	0.0	0.0
45.00		128.7	1,619.3					0.0	465.0	128.7	2,084.3	0.0	0.0
47.83	Bot - Section 2	82.9	905.3					0.0	264.3	82.9	1,169.6	0.0	0.0
50.00		103.4	1,127.9					0.0	202.5	103.4	1,330.4	0.0	0.0
54.00	Top - Section 1	83.8	2,054.6					0.0	374.6	83.8	2,429.2	0.0	0.0
55.00		100.5	283.1					0.0	93.8	100.5	376.9	0.0	0.0
60.00		167.2	1,395.0					0.0	469.9	167.2	1,865.0	0.0	0.0
65.00		166.5	1,366.8					0.0	471.3	166.5	1,838.2	0.0	0.0
70.00		165.5	1,338.2					0.0	472.6	165.5	1,810.9	0.0	0.0
75.00		164.3	1,309.3					0.0	473.9	164.3	1,783.1	0.0	0.0
80.00		162.8	1,280.0					0.0	475.0	162.8	1,755.0	0.0	0.0
85.00		161.1	1,250.5					0.0	476.1	161.1	1,726.6	0.0	0.0
90.00		159.3	1,220.7					0.0	477.2	159.3	1,697.8	0.0	0.0
95.00		92.2	1,190.7					0.0	478.2	92.2	1,668.8	0.0	0.0
95.83	Bot - Section 3	79.1	196.2					0.0	79.8	79.1	276.0	0.0	0.0
100.00		81.7	1,476.2					0.0	399.3	81.7	1,875.6	0.0	0.0
101.00	Top - Section 2	78.2	350.0					0.0	95.9	78.2	446.0	0.0	0.0
105.00		124.1	763.0					0.0	384.1	124.1	1,147.1	0.0	0.0
109.00	Appurtenance(s)	77.0	747.0	111.9	0.0	0.0	432.9	0.0	384.7	188.9	1,564.6	0.0	0.0
110.00		30.5	184.8					0.0	90.3	30.5	275.2	0.0	0.0
111.00	Appurtenance(s)	75.7	183.8	543.2	0.0	0.0	3,331.2	0.0	90.4	618.9	3,605.4	0.0	0.0
115.00		134.8	722.9					0.0	361.9	134.8	1,084.7	0.0	0.0
120.00		132.9	879.9					0.0	453.0	132.9	1,332.9	0.0	0.0
124.00	Appurtenance(s)	73.0	686.4	1,492.4	0.0	0.0	12,703.8	0.0	363.0	1,565.3	13,753.2	0.0	0.0
125.00		86.0	169.7					0.0	56.4	86.0	226.0	0.0	0.0
130.00		141.6	828.9					0.0	282.3	141.6	1,111.1	0.0	0.0
135.00		138.5	803.2					0.0	283.0	138.5	1,086.2	0.0	0.0
140.00	Appurtenance(s)	135.3	777.4	596.5	0.0	1,611.9	3,833.5	0.0	283.7	731.9	4,894.6	0.0	0.0
145.00		132.1	751.5					0.0	219.3	132.1	970.8	0.0	0.0
150.00	Appurtenance(s)	65.2	725.5	1,061.4	0.0	0.0	7,284.2	0.0	220.0	1,126.6	8,229.7	0.0	0.0
								Totals:		8,445.28	80,443.1	0.00	0.00

Site Number: 302538 Code: ANSI/TIA-222-G ©2007 - 2018 by ATC IP LLC. All rights reserved.

Site Name: Parsonage Hill Aka Wallin, CT Engineering Number: OAA713368_C3_04 7/6/2018 1:25:24 PM

Customer: CLEARWIRE

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph with 0.75 in Radial Ice 23 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	-80.44	-8.41	0.00	-929.78	0.00	929.78	4,644.06	2,322.03	9,415.76	4,650.09	0.00	0.00	0.217
5.00	-78.65	-8.34	0.00	-887.72	0.00	887.72	4,595.29	2,297.65	9,142.89	4,515.33	0.03	-0.06	0.214
10.00	-76.42	-8.27	0.00	-846.00	0.00	846.00	4,545.11	2,272.56	8,870.98	4,381.04	0.13	-0.12	0.210
15.00	-74.19	-8.20	0.00	-804.63	0.00	804.63	4,493.53	2,246.77	8,600.18	4,247.31	0.29	-0.18	0.206
20.00	-71.98	-8.12	0.00	-763.63	0.00	763.63	4,440.55	2,220.28	8,330.66	4,114.20	0.51	-0.25	0.202
25.00	-69.78	-8.03	0.00	-723.03	0.00	723.03	4,386.17	2,193.08	8,062.58	3,981.80	0.80	-0.31	0.198
30.00	-67.61	-7.93	0.00	-682.90	0.00	682.90	4,330.38	2,165.19	7,796.08	3,850.19	1.16	-0.37	0.193
35.00	-65.47	-7.82	0.00	-643.25	0.00	643.25	4,273.19	2,136.59	7,531.34	3,719.45	1.58	-0.43	0.188
40.00	-63.35	-7.71	0.00	-604.13	0.00	604.13	4,214.59	2,107.30	7,268.52	3,589.65	2.07	-0.50	0.183
45.00	-61.26	-7.62	0.00	-565.57	0.00	565.57	4,154.60	2,077.30	7,007.76	3,460.87	2.62	-0.56	0.178
47.83	-60.08	-7.56	0.00	-543.98	0.00	543.98	4,119.98	2,059.99	6,860.98	3,388.38	2.96	-0.59	0.175
50.00	-58.75	-7.48	0.00	-527.61	0.00	527.61	4,093.20	2,046.60	6,749.23	3,333.19	3.24	-0.62	0.173
54.00	-56.32	-7.40	0.00	-497.69	0.00	497.69	3,318.39	1,659.20	5,491.78	2,712.18	3.78	-0.67	0.200
55.00	-55.94	-7.33	0.00	-490.29	0.00	490.29	3,309.51	1,654.75	5,452.02	2,692.55	3.93	-0.69	0.199
60.00	-54.07	-7.21	0.00	-453.62	0.00	453.62	3,264.25	1,632.12	5,253.88	2,594.69	4.68	-0.75	0.191
65.00	-52.22	-7.08	0.00	-417.59	0.00	417.59	3,217.59	1,608.79	5,056.96	2,497.44	5.51	-0.82	0.183
70.00	-50.41	-6.94	0.00	-382.20	0.00	382.20	3,169.52	1,584.76	4,861.43	2,400.88	6.40	-0.89	0.175
75.00	-48.62	-6.80	0.00	-347.49	0.00	347.49	3,120.06	1,560.03	4,667.43	2,305.07	7.37	-0.95	0.166
80.00	-46.86	-6.66	0.00	-313.47	0.00	313.47	3,069.19	1,534.59	4,475.14	2,210.10	8.40	-1.02	0.157
85.00	-45.13	-6.52	0.00	-280.16	0.00	280.16	3,016.92	1,508.46	4,284.71	2,116.06	9.50	-1.08	0.147
90.00	-43.43	-6.37	0.00	-247.58	0.00	247.58	2,963.24	1,481.62	4,096.29	2,023.00	10.66	-1.14	0.137
95.00	-41.76	-6.27	0.00	-215.73	0.00	215.73	2,909.11	1,454.55	3,911.32	1,931.65	11.89	-1.19	0.126
95.83	-41.48	-6.20	0.00	-210.51	0.00	210.51	2,895.61	1,447.80	3,874.90	1,913.67	12.09	-1.20	0.124
100.00	-39.60	-6.10	0.00	-184.67	0.00	184.67	2,828.11	1,414.06	3,695.36	1,825.00	13.17	-1.25	0.115
101.00	-39.16	-6.03	0.00	-178.57	0.00	178.57	1,940.77	970.39	2,581.63	1,274.97	13.43	-1.26	0.160
105.00	-38.01	-5.91	0.00	-154.46	0.00	154.46	1,916.40	958.20	2,491.16	1,230.29	14.50	-1.30	0.145
109.00	-36.45	-5.70	0.00	-130.84	0.00	130.84	1,891.12	945.56	2,401.02	1,185.77	15.61	-1.34	0.130
110.00	-36.17	-5.67	0.00	-125.15	0.00	125.15	1,884.66	942.33	2,378.55	1,174.68	15.89	-1.35	0.126
111.00	-32.58	-4.98	0.00	-119.48	0.00	119.48	1,878.15	939.07	2,356.11	1,163.59	16.17	-1.36	0.120
115.00	-31.49	-4.84	0.00	-99.57	0.00	99.57	1,851.53	925.76	2,266.63	1,119.40	17.33	-1.40	0.106
120.00	-30.16	-4.69	0.00	-75.38	0.00	75.38	1,816.99	908.49	2,155.56	1,064.55	18.82	-1.44	0.087
124.00	-16.45	-2.78	0.00	-56.61	0.00	56.61	1,788.35	894.17	2,067.42	1,021.02	20.04	-1.47	0.065
125.00	-16.23	-2.69	0.00	-53.83	0.00	53.83	1,781.05	890.52	2,045.49	1,010.19	20.35	-1.48	0.062
130.00	-15.12	-2.53	0.00	-40.37	0.00	40.37	1,743.70	871.85	1,936.59	956.41	21.91	-1.50	0.051
135.00	-14.04	-2.37	0.00	-27.72	0.00	27.72	1,704.95	852.48	1,829.01	903.28	23.50	-1.52	0.039
140.00	-9.16	-1.51	0.00	-14.27	0.00	14.27	1,664.80	832.40	1,722.91	850.88	25.10	-1.54	0.022
145.00	-8.20	-1.35	0.00	-6.74	0.00	6.74	1,618.18	809.09	1,613.39	796.79	26.72	-1.55	0.014
150.00	0.00	-1.13	0.00	0.00	0.00	0.00	1,557.43	778.72	1,493.87	737.76	28.34	-1.55	0.000

Site Number: 302538 Code: ANSI/TIA-222-G ©2007 - 2018 by ATC IP LLC. All rights reserved.

Site Name: Parsonage Hill Aka Wallin, CT Engineering Number: OAA713368_C3_04 7/6/2018 1:25:25 PM

Customer: CLEARWIRE

Load Case: 1.0D + 1.0W Serviceability 60 mph 23 Iterations

Gust Response Factor : 1.10 Wind Importance Factor : 1.00

Dead Load Factor : 1.00

Wind Load Factor : 1.00

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		86.8	0.0					0.0	0.0	86.8	0.0	0.0	0.0
5.00		171.9	1,167.4					0.0	0.0	171.9	1,167.4	0.0	0.0
10.00		168.7	1,145.6					0.0	283.1	168.7	1,428.7	0.0	0.0
15.00		168.1	1,123.8					0.0	283.1	168.1	1,406.9	0.0	0.0
20.00		171.9	1,102.0					0.0	283.1	171.9	1,385.1	0.0	0.0
25.00		176.7	1,080.2					0.0	283.1	176.7	1,363.3	0.0	0.0
30.00		180.0	1,058.4					0.0	283.1	180.0	1,341.5	0.0	0.0
35.00		182.1	1,036.6					0.0	283.1	182.1	1,319.7	0.0	0.0
40.00		183.4	1,014.8					0.0	283.1	183.4	1,297.9	0.0	0.0
45.00		144.1	992.9					0.0	283.1	144.1	1,276.0	0.0	0.0
47.83	Bot - Section 2	92.8	553.0					0.0	160.4	92.8	713.4	0.0	0.0
50.00		115.5	783.8					0.0	122.7	115.5	906.5	0.0	0.0
54.00	Top - Section 1	93.6	1,427.0					0.0	226.5	93.6	1,653.5	0.0	0.0
55.00		112.0	164.6					0.0	56.6	112.0	221.2	0.0	0.0
60.00		186.1	811.7					0.0	283.1	186.1	1,094.8	0.0	0.0
65.00		184.9	793.0					0.0	283.1	184.9	1,076.1	0.0	0.0
70.00		183.4	774.3					0.0	283.1	183.4	1,057.4	0.0	0.0
75.00		181.6	755.6					0.0	283.1	181.6	1,038.7	0.0	0.0
80.00		179.5	736.9					0.0	283.1	179.5	1,020.0	0.0	0.0
85.00		177.2	718.2					0.0	283.1	177.2	1,001.3	0.0	0.0
90.00		174.7	699.5					0.0	283.1	174.7	982.6	0.0	0.0
95.00		101.0	680.8					0.0	283.1	101.0	963.9	0.0	0.0
95.83	Bot - Section 3	86.5	111.7					0.0	47.2	86.5	158.8	0.0	0.0
100.00		89.3	971.8					0.0	235.9	89.3	1,207.7	0.0	0.0
101.00	Top - Section 2	85.2	229.8					0.0	56.6	85.2	286.5	0.0	0.0
105.00		135.1	393.0					0.0	226.5	135.1	619.5	0.0	0.0
109.00	Appurtenance(s)	83.7	384.1	130.9	0.0	0.0	79.2	0.0	226.5	214.6	689.7	0.0	0.0
110.00		33.1	94.6					0.0	51.7	33.1	146.3	0.0	0.0
111.00	Appurtenance(s)	82.0	94.1	528.3	0.0	0.0	2,000.0	0.0	51.7	610.3	2,145.8	0.0	0.0
115.00		145.8	370.6					0.0	206.8	145.8	577.4	0.0	0.0
120.00		143.3	450.6					0.0	258.5	143.3	709.1	0.0	0.0
124.00	Appurtenance(s)	78.5	350.4	1,653.5	0.0	0.0	4,819.3	0.0	206.8	1,732.0	5,376.5	0.0	0.0
125.00		92.2	86.2					0.0	23.0	92.2	109.2	0.0	0.0
130.00		151.4	422.6					0.0	114.9	151.4	537.5	0.0	0.0
135.00		147.5	408.6					0.0	114.9	147.5	523.5	0.0	0.0
140.00	Appurtenance(s)	143.5	394.5	624.2	0.0	1,996.3	1,514.1	0.0	114.9	767.7	2,023.5	0.0	0.0
145.00		139.4	380.5					0.0	60.7	139.4	441.2	0.0	0.0
150.00	Appurtenance(s)	68.7	366.5	1,063.8	0.0	0.0	3,183.5	0.0	60.7	1,132.5	3,610.7	0.0	0.0
								Totals:		9,122.19	42,878.9	0.00	0.00

Site Number: 302538 Code: ANSI/TIA-222-G ©2007 - 2018 by ATC IP LLC. All rights reserved.

Site Name: Parsonage Hill Aka Wallin, CT Engineering Number: OAA713368_C3_04 7/6/2018 1:25:36 PM

Customer: CLEARWIRE

Load Case: 1.0D + 1.0W Serviceability 60 mph 23 Iterations

Gust Response Factor : 1.10 Wind Importance Factor : 1.00

Dead Load Factor : 1.00

Wind Load Factor : 1.00

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-42.87	-9.06	0.00	-938.71	0.00	938.71	4,644.06	2,322.03	9,415.76	4,650.09	0.00	0.00	0.211
5.00	-41.70	-8.93	0.00	-893.42	0.00	893.42	4,595.29	2,297.65	9,142.89	4,515.33	0.03	-0.06	0.207
10.00	-40.26	-8.80	0.00	-848.76	0.00	848.76	4,545.11	2,272.56	8,870.98	4,381.04	0.13	-0.12	0.203
15.00	-38.84	-8.67	0.00	-804.75	0.00	804.75	4,493.53	2,246.77	8,600.18	4,247.31	0.29	-0.18	0.198
20.00	-37.45	-8.54	0.00	-761.39	0.00	761.39	4,440.55	2,220.28	8,330.66	4,114.20	0.52	-0.25	0.194
25.00	-36.08	-8.39	0.00	-718.71	0.00	718.71	4,386.17	2,193.08	8,062.58	3,981.80	0.81	-0.31	0.189
30.00	-34.73	-8.24	0.00	-676.76	0.00	676.76	4,330.38	2,165.19	7,796.08	3,850.19	1.16	-0.37	0.184
35.00	-33.40	-8.09	0.00	-635.55	0.00	635.55	4,273.19	2,136.59	7,531.34	3,719.45	1.58	-0.43	0.179
40.00	-32.10	-7.93	0.00	-595.12	0.00	595.12	4,214.59	2,107.30	7,268.52	3,589.65	2.07	-0.49	0.173
45.00	-30.82	-7.80	0.00	-555.48	0.00	555.48	4,154.60	2,077.30	7,007.76	3,460.87	2.62	-0.56	0.168
47.83	-30.10	-7.71	0.00	-533.39	0.00	533.39	4,119.98	2,059.99	6,860.98	3,388.38	2.96	-0.59	0.165
50.00	-29.19	-7.61	0.00	-516.68	0.00	516.68	4,093.20	2,046.60	6,749.23	3,333.19	3.24	-0.62	0.162
54.00	-27.53	-7.51	0.00	-486.24	0.00	486.24	3,318.39	1,659.20	5,491.78	2,712.18	3.78	-0.67	0.188
55.00	-27.31	-7.42	0.00	-478.73	0.00	478.73	3,309.51	1,654.75	5,452.02	2,692.55	3.92	-0.68	0.186
60.00	-26.21	-7.25	0.00	-441.66	0.00	441.66	3,264.25	1,632.12	5,253.88	2,594.69	4.67	-0.75	0.178
65.00	-25.13	-7.07	0.00	-405.43	0.00	405.43	3,217.59	1,608.79	5,056.96	2,497.44	5.49	-0.81	0.170
70.00	-24.06	-6.90	0.00	-370.05	0.00	370.05	3,169.52	1,584.76	4,861.43	2,400.88	6.37	-0.88	0.162
75.00	-23.02	-6.73	0.00	-335.54	0.00	335.54	3,120.06	1,560.03	4,667.43	2,305.07	7.33	-0.94	0.153
80.00	-22.00	-6.56	0.00	-301.89	0.00	301.89	3,069.19	1,534.59	4,475.14	2,210.10	8.34	-1.00	0.144
85.00	-20.99	-6.38	0.00	-269.11	0.00	269.11	3,016.92	1,508.46	4,284.71	2,116.06	9.43	-1.06	0.134
90.00	-20.01	-6.21	0.00	-237.20	0.00	237.20	2,963.24	1,481.62	4,096.29	2,023.00	10.57	-1.12	0.124
95.00	-19.04	-6.10	0.00	-206.16	0.00	206.16	2,909.11	1,454.55	3,911.32	1,931.65	11.77	-1.17	0.113
95.83	-18.88	-6.02	0.00	-201.08	0.00	201.08	2,895.61	1,447.80	3,874.90	1,913.67	11.97	-1.18	0.112
100.00	-17.67	-5.91	0.00	-176.01	0.00	176.01	2,828.11	1,414.06	3,695.36	1,825.00	13.02	-1.22	0.103
101.00	-17.39	-5.83	0.00	-170.10	0.00	170.10	1,940.77	970.39	2,581.63	1,274.97	13.28	-1.23	0.142
105.00	-16.77	-5.69	0.00	-146.80	0.00	146.80	1,916.40	958.20	2,491.16	1,230.29	14.33	-1.27	0.128
109.00	-16.08	-5.47	0.00	-124.04	0.00	124.04	1,891.12	945.56	2,401.02	1,185.77	15.41	-1.31	0.113
110.00	-15.93	-5.43	0.00	-118.57	0.00	118.57	1,884.66	942.33	2,378.55	1,174.68	15.69	-1.32	0.109
111.00	-13.80	-4.78	0.00	-113.14	0.00	113.14	1,878.15	939.07	2,356.11	1,163.59	15.97	-1.33	0.105
115.00	-13.22	-4.63	0.00	-94.03	0.00	94.03	1,851.53	925.76	2,266.63	1,119.40	17.10	-1.37	0.091
120.00	-12.51	-4.47	0.00	-70.89	0.00	70.89	1,816.99	908.49	2,155.56	1,064.55	18.56	-1.41	0.074
124.00	-7.18	-2.61	0.00	-52.99	0.00	52.99	1,788.35	894.17	2,067.42	1,021.02	19.75	-1.43	0.056
125.00	-7.07	-2.52	0.00	-50.38	0.00	50.38	1,781.05	890.52	2,045.49	1,010.19	20.05	-1.44	0.054
130.00	-6.54	-2.36	0.00	-37.79	0.00	37.79	1,743.70	871.85	1,936.59	956.41	21.57	-1.46	0.043
135.00	-6.02	-2.20	0.00	-26.00	0.00	26.00	1,704.95	852.48	1,829.01	903.28	23.11	-1.48	0.032
140.00	-4.02	-1.38	0.00	-13.02	0.00	13.02	1,664.80	832.40	1,722.91	850.88	24.68	-1.50	0.018
145.00	-3.58	-1.23	0.00	-6.14	0.00	6.14	1,618.18	809.09	1,613.39	796.79	26.25	-1.51	0.010
150.00	0.00	-1.13	0.00	0.00	0.00	0.00	1,557.43	778.72	1,493.87	737.76	27.83	-1.51	0.000

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Equivalent Lateral Forces Method Analysis

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

Spectral Response Acceleration for Short Period (S_s):	0.18	
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.06	
Long-Period Transition Period (T_L):	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}):	0.19	
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10	
Seismic Response Coefficient (C_s):	0.03	
Upper Limit C_s	0.03	
Lower Limit C_s	0.03	
Period based on Rayleigh Method (sec):	2.54	
Redundancy Factor (p):	1.00	
Seismic Force Distribution Exponent (k):	2.00	
Total Unfactored Dead Load:	42.88	k
Seismic Base Shear (E):	1.29	k

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

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
37	147.50	427	9,294	0.025	32	529
36	142.50	441	8,960	0.024	31	547
35	137.50	509	9,632	0.026	33	631
34	132.50	523	9,190	0.025	32	648
33	127.50	537	8,738	0.024	30	666
32	124.50	109	1,692	0.005	6	135
31	122.00	557	8,293	0.022	29	690
30	117.50	709	9,790	0.026	34	878
29	113.00	577	7,373	0.020	26	715
28	110.50	146	1,780	0.005	6	181
27	109.50	146	1,754	0.005	6	181
26	107.00	611	6,990	0.019	24	756
25	103.00	620	6,572	0.018	23	767
24	100.50	286	2,893	0.008	10	355
23	97.92	1,208	11,579	0.031	40	1,496
22	95.42	159	1,446	0.004	5	197
21	92.50	964	8,248	0.022	29	1,194
20	87.50	983	7,523	0.020	26	1,217
19	82.50	1,001	6,815	0.018	24	1,240
18	77.50	1,020	6,126	0.017	21	1,264
17	72.50	1,039	5,460	0.015	19	1,287
16	67.50	1,057	4,818	0.013	17	1,310
15	62.50	1,076	4,204	0.011	15	1,333

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14	57.50	1,095	3,620	0.010	13	1,356
13	54.50	221	657	0.002	2	274
12	52.00	1,653	4,471	0.012	16	2,048
11	48.92	906	2,169	0.006	8	1,123
10	46.42	713	1,537	0.004	5	884
9	42.50	1,276	2,305	0.006	8	1,581
8	37.50	1,298	1,825	0.005	6	1,608
7	32.50	1,320	1,394	0.004	5	1,635
6	27.50	1,341	1,014	0.003	4	1,662
5	22.50	1,363	690	0.002	2	1,689
4	17.50	1,385	424	0.001	1	1,716
3	12.50	1,407	220	0.001	1	1,743
2	7.50	1,429	80	0.000	0	1,770
1	2.50	1,167	7	0.000	0	1,446
DragonWave Horizon C	150.00	21	477	0.001	2	26
Alcatel-Lucent RRH2x	150.00	317	7,142	0.019	25	393
Alcatel-Lucent 1900	150.00	180	4,050	0.011	14	223
Alcatel-Lucent TD-RR	150.00	210	4,725	0.013	16	260
DragonWave A-ANT-11G	150.00	27	608	0.002	2	33
DragonWave A-ANT-18G	150.00	27	610	0.002	2	34
RFS APXVTM14-ALU-I20	150.00	169	3,794	0.010	13	209
Commscope NNVV-65B-R	150.00	232	5,225	0.014	18	288
Round Platform w/ Ha	150.00	2,000	45,000	0.121	156	2,478
Ericsson KRY 112 144	140.00	33	647	0.002	2	41
Ericsson RRUS 11 B12	140.00	152	2,981	0.008	10	188
Ericsson AIR 21, 1.3	140.00	249	4,880	0.013	17	308
Round T-Arm	140.00	750	14,700	0.040	51	929
Ericsson AIR 21 B4A/	140.00	330	6,468	0.017	22	409
Powerwave Allgon LGP	124.00	85	1,301	0.004	5	105
Raycap DC6-48-60-18-	124.00	32	489	0.001	2	39
Raycap DC6-48-60-18-	124.00	32	489	0.001	2	39
Ericsson RRUS 4478 B	124.00	178	2,740	0.007	10	221
Ericsson RRUS-11 (50	124.00	150	2,306	0.006	8	186
Ericsson RRUS 32 B66	124.00	152	2,339	0.006	8	188
Ericsson RRUS 32 B30	124.00	180	2,768	0.007	10	223
Ericsson RRUS 32 B2	124.00	159	2,445	0.007	8	197
Raycap DC6-48-60-18-	124.00	16	246	0.001	1	20
Powerwave 7770.00	124.00	105	1,614	0.004	6	130
CCI OPA-65R-LCUU-H6	124.00	438	6,735	0.018	23	543
Kathrein Scala 80010	124.00	293	4,502	0.012	16	363
Flat Platform w/Hand	124.00	3,000	46,128	0.124	160	3,716
Empty Flat Platform	111.00	2,000	24,642	0.066	86	2,478
RFS APXV18-206517S-C	109.00	79	941	0.003	3	98
		42,879	370,574	1.000	1,286	53,120

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)
37	147.50	427	9,294	0.025	32	368
36	142.50	441	8,960	0.024	31	380
35	137.50	509	9,632	0.026	33	439
34	132.50	523	9,190	0.025	32	451
33	127.50	537	8,738	0.024	30	463
32	124.50	109	1,692	0.005	6	94
31	122.00	557	8,293	0.022	29	480
30	117.50	709	9,790	0.026	34	611
29	113.00	577	7,373	0.020	26	497
28	110.50	146	1,780	0.005	6	126
27	109.50	146	1,754	0.005	6	126

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26	107.00	611	6,990	0.019	24	526
25	103.00	620	6,572	0.018	23	534
24	100.50	286	2,893	0.008	10	247
23	97.92	1,208	11,579	0.031	40	1,040
22	95.42	159	1,446	0.004	5	137
21	92.50	964	8,248	0.022	29	830
20	87.50	983	7,523	0.020	26	846
19	82.50	1,001	6,815	0.018	24	862
18	77.50	1,020	6,126	0.017	21	878
17	72.50	1,039	5,460	0.015	19	895
16	67.50	1,057	4,818	0.013	17	911
15	62.50	1,076	4,204	0.011	15	927
14	57.50	1,095	3,620	0.010	13	943
13	54.50	221	657	0.002	2	190
12	52.00	1,653	4,471	0.012	16	1,424
11	48.92	906	2,169	0.006	8	781
10	46.42	713	1,537	0.004	5	614
9	42.50	1,276	2,305	0.006	8	1,099
8	37.50	1,298	1,825	0.005	6	1,118
7	32.50	1,320	1,394	0.004	5	1,136
6	27.50	1,341	1,014	0.003	4	1,155
5	22.50	1,363	690	0.002	2	1,174
4	17.50	1,385	424	0.001	1	1,193
3	12.50	1,407	220	0.001	1	1,212
2	7.50	1,429	80	0.000	0	1,230
1	2.50	1,167	7	0.000	0	1,005
DragonWave Horizon C	150.00	21	477	0.001	2	18
Alcatel-Lucent RRH2x	150.00	317	7,142	0.019	25	273
Alcatel-Lucent 1900	150.00	180	4,050	0.011	14	155
Alcatel-Lucent TD-RR	150.00	210	4,725	0.013	16	181
DragonWave A-ANT-11G	150.00	27	608	0.002	2	23
DragonWave A-ANT-18G	150.00	27	610	0.002	2	23
RFS APXVTM14-ALU-I20	150.00	169	3,794	0.010	13	145
Commscope NNVV-65B-R	150.00	232	5,225	0.014	18	200
Round Platform w/ Ha	150.00	2,000	45,000	0.121	156	1,722
Ericsson KRY 112 144	140.00	33	647	0.002	2	28
Ericsson RRUS 11 B12	140.00	152	2,981	0.008	10	131
Ericsson AIR 21, 1.3	140.00	249	4,880	0.013	17	214
Round T-Arm	140.00	750	14,700	0.040	51	646
Ericsson AIR 21 B4A/	140.00	330	6,468	0.017	22	284
Powerwave Allgon LGP	124.00	85	1,301	0.004	5	73
Raycap DC6-48-60-18-	124.00	32	489	0.001	2	27
Raycap DC6-48-60-18-	124.00	32	489	0.001	2	27
Ericsson RRUS 4478 B	124.00	178	2,740	0.007	10	153
Ericsson RRUS-11 (50	124.00	150	2,306	0.006	8	129
Ericsson RRUS 32 B66	124.00	152	2,339	0.006	8	131
Ericsson RRUS 32 B30	124.00	180	2,768	0.007	10	155
Ericsson RRUS 32 B2	124.00	159	2,445	0.007	8	137
Raycap DC6-48-60-18-	124.00	16	246	0.001	1	14
Powerwave 7770.00	124.00	105	1,614	0.004	6	90
CCI OPA-65R-LCUU-H6	124.00	438	6,735	0.018	23	377
Kathrein Scala 80010	124.00	293	4,502	0.012	16	252
Flat Platform w/Hand	124.00	3,000	46,128	0.124	160	2,584
Empty Flat Platform	111.00	2,000	24,642	0.066	86	1,722
RFS APXV18-206517S-C	109.00	79	941	0.003	3	68
		42,879	370,574	1.000	1,286	36,926

Site Number: 302538 Code: ANSI/TIA-222-G ©2007 - 2018 by ATC IP LLC. All rights reserved.
Site Name: Parsonage Hill Aka Wallin, CT Engineering Number: OAA713368_C3_04 7/6/2018 1:25:36 PM
Customer: CLEARWIRE

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	-51.67	-1.29	0.00	-160.51	0.00	160.51	4,644.06	2,322.03	9,415.76	4,650.09	0.00	0.00	0.046
5.00	-49.90	-1.30	0.00	-154.06	0.00	154.06	4,595.29	2,297.65	9,142.89	4,515.33	0.01	-0.01	0.045
10.00	-48.16	-1.31	0.00	-147.57	0.00	147.57	4,545.11	2,272.56	8,870.98	4,381.04	0.02	-0.02	0.044
15.00	-46.44	-1.31	0.00	-141.03	0.00	141.03	4,493.53	2,246.77	8,600.18	4,247.31	0.05	-0.03	0.044
20.00	-44.75	-1.32	0.00	-134.47	0.00	134.47	4,440.55	2,220.28	8,330.66	4,114.20	0.09	-0.04	0.043
25.00	-43.09	-1.32	0.00	-127.88	0.00	127.88	4,386.17	2,193.08	8,062.58	3,981.80	0.14	-0.05	0.042
30.00	-41.46	-1.32	0.00	-121.27	0.00	121.27	4,330.38	2,165.19	7,796.08	3,850.19	0.20	-0.06	0.041
35.00	-39.85	-1.32	0.00	-114.65	0.00	114.65	4,273.19	2,136.59	7,531.34	3,719.45	0.28	-0.08	0.040
40.00	-38.27	-1.32	0.00	-108.04	0.00	108.04	4,214.59	2,107.30	7,268.52	3,589.65	0.36	-0.09	0.039
45.00	-37.38	-1.32	0.00	-101.44	0.00	101.44	4,154.60	2,077.30	7,007.76	3,460.87	0.46	-0.10	0.038
47.83	-36.26	-1.31	0.00	-97.70	0.00	97.70	4,119.98	2,059.99	6,860.98	3,388.38	0.52	-0.11	0.038
50.00	-34.21	-1.30	0.00	-94.86	0.00	94.86	4,093.20	2,046.60	6,749.23	3,333.19	0.57	-0.11	0.037
54.00	-33.94	-1.30	0.00	-89.67	0.00	89.67	3,318.39	1,659.20	5,491.78	2,712.18	0.66	-0.12	0.043
55.00	-32.58	-1.29	0.00	-88.37	0.00	88.37	3,309.51	1,654.75	5,452.02	2,692.55	0.69	-0.12	0.043
60.00	-31.25	-1.28	0.00	-81.93	0.00	81.93	3,264.25	1,632.12	5,253.88	2,594.69	0.82	-0.13	0.041
65.00	-29.94	-1.26	0.00	-75.55	0.00	75.55	3,217.59	1,608.79	5,056.96	2,497.44	0.97	-0.15	0.040
70.00	-28.65	-1.25	0.00	-69.24	0.00	69.24	3,169.52	1,584.76	4,861.43	2,400.88	1.13	-0.16	0.038
75.00	-27.39	-1.23	0.00	-63.01	0.00	63.01	3,120.06	1,560.03	4,667.43	2,305.07	1.30	-0.17	0.036
80.00	-26.15	-1.20	0.00	-56.87	0.00	56.87	3,069.19	1,534.59	4,475.14	2,210.10	1.49	-0.18	0.034
85.00	-24.93	-1.18	0.00	-50.85	0.00	50.85	3,016.92	1,508.46	4,284.71	2,116.06	1.68	-0.19	0.032
90.00	-23.74	-1.15	0.00	-44.95	0.00	44.95	2,963.24	1,481.62	4,096.29	2,023.00	1.89	-0.20	0.030
95.00	-23.54	-1.15	0.00	-39.19	0.00	39.19	2,909.11	1,454.55	3,911.32	1,931.65	2.11	-0.21	0.028
95.83	-22.04	-1.10	0.00	-38.24	0.00	38.24	2,895.61	1,447.80	3,874.90	1,913.67	2.14	-0.22	0.028
100.00	-21.69	-1.09	0.00	-33.64	0.00	33.64	2,828.11	1,414.06	3,695.36	1,825.00	2.34	-0.22	0.026
101.00	-20.92	-1.07	0.00	-32.54	0.00	32.54	1,940.77	970.39	2,581.63	1,274.97	2.38	-0.23	0.036
105.00	-20.16	-1.05	0.00	-28.26	0.00	28.26	1,916.40	958.20	2,491.16	1,230.29	2.57	-0.23	0.033
109.00	-19.88	-1.04	0.00	-24.08	0.00	24.08	1,891.12	945.56	2,401.02	1,185.77	2.77	-0.24	0.031
110.00	-19.70	-1.03	0.00	-23.04	0.00	23.04	1,884.66	942.33	2,378.55	1,174.68	2.82	-0.24	0.030
111.00	-16.51	-0.91	0.00	-22.01	0.00	22.01	1,878.15	939.07	2,356.11	1,163.59	2.87	-0.24	0.028
115.00	-15.63	-0.87	0.00	-18.38	0.00	18.38	1,851.53	925.76	2,266.63	1,119.40	3.08	-0.25	0.025
120.00	-14.94	-0.84	0.00	-14.02	0.00	14.02	1,816.99	908.49	2,155.56	1,064.55	3.35	-0.26	0.021
124.00	-8.84	-0.55	0.00	-10.65	0.00	10.65	1,788.35	894.17	2,067.42	1,021.02	3.57	-0.26	0.015
125.00	-8.17	-0.52	0.00	-10.10	0.00	10.10	1,781.05	890.52	2,045.49	1,010.19	3.63	-0.27	0.015
130.00	-7.52	-0.48	0.00	-7.51	0.00	7.51	1,743.70	871.85	1,936.59	956.41	3.91	-0.27	0.012
135.00	-6.89	-0.45	0.00	-5.09	0.00	5.09	1,704.95	852.48	1,829.01	903.28	4.19	-0.27	0.010
140.00	-4.47	-0.30	0.00	-2.85	0.00	2.85	1,664.80	832.40	1,722.91	850.88	4.48	-0.28	0.006
145.00	-3.94	-0.27	0.00	-1.34	0.00	1.34	1,618.18	809.09	1,613.39	796.79	4.77	-0.28	0.004
150.00	0.00	-0.25	0.00	0.00	0.00	0.00	1,557.43	778.72	1,493.87	737.76	5.06	-0.28	0.000

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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	-35.92	-1.29	0.00	-157.78	0.00	157.78	4,644.06	2,322.03	9,415.76	4,650.09	0.00	0.00	0.042
5.00	-34.69	-1.29	0.00	-151.33	0.00	151.33	4,595.29	2,297.65	9,142.89	4,515.33	0.01	-0.01	0.041
10.00	-33.48	-1.30	0.00	-144.86	0.00	144.86	4,545.11	2,272.56	8,870.98	4,381.04	0.02	-0.02	0.040
15.00	-32.29	-1.30	0.00	-138.36	0.00	138.36	4,493.53	2,246.77	8,600.18	4,247.31	0.05	-0.03	0.040
20.00	-31.11	-1.31	0.00	-131.84	0.00	131.84	4,440.55	2,220.28	8,330.66	4,114.20	0.09	-0.04	0.039
25.00	-29.96	-1.31	0.00	-125.31	0.00	125.31	4,386.17	2,193.08	8,062.58	3,981.80	0.14	-0.05	0.038
30.00	-28.82	-1.31	0.00	-118.78	0.00	118.78	4,330.38	2,165.19	7,796.08	3,850.19	0.20	-0.06	0.038
35.00	-27.70	-1.30	0.00	-112.24	0.00	112.24	4,273.19	2,136.59	7,531.34	3,719.45	0.27	-0.07	0.037
40.00	-26.60	-1.30	0.00	-105.72	0.00	105.72	4,214.59	2,107.30	7,268.52	3,589.65	0.35	-0.09	0.036
45.00	-25.99	-1.30	0.00	-99.22	0.00	99.22	4,154.60	2,077.30	7,007.76	3,460.87	0.45	-0.10	0.035
47.83	-25.21	-1.29	0.00	-95.54	0.00	95.54	4,119.98	2,059.99	6,860.98	3,388.38	0.51	-0.10	0.034
50.00	-23.78	-1.28	0.00	-92.74	0.00	92.74	4,093.20	2,046.60	6,749.23	3,333.19	0.56	-0.11	0.034
54.00	-23.59	-1.28	0.00	-87.64	0.00	87.64	3,318.39	1,659.20	5,491.78	2,712.18	0.65	-0.12	0.039
55.00	-22.65	-1.26	0.00	-86.36	0.00	86.36	3,309.51	1,654.75	5,452.02	2,692.55	0.68	-0.12	0.039
60.00	-21.72	-1.25	0.00	-80.04	0.00	80.04	3,264.25	1,632.12	5,253.88	2,594.69	0.81	-0.13	0.038
65.00	-20.81	-1.24	0.00	-73.78	0.00	73.78	3,217.59	1,608.79	5,056.96	2,497.44	0.95	-0.14	0.036
70.00	-19.92	-1.22	0.00	-67.59	0.00	67.59	3,169.52	1,584.76	4,861.43	2,400.88	1.11	-0.15	0.034
75.00	-19.04	-1.20	0.00	-61.49	0.00	61.49	3,120.06	1,560.03	4,667.43	2,305.07	1.28	-0.17	0.033
80.00	-18.18	-1.18	0.00	-55.49	0.00	55.49	3,069.19	1,534.59	4,475.14	2,210.10	1.46	-0.18	0.031
85.00	-17.33	-1.15	0.00	-49.60	0.00	49.60	3,016.92	1,508.46	4,284.71	2,116.06	1.65	-0.19	0.029
90.00	-16.50	-1.12	0.00	-43.84	0.00	43.84	2,963.24	1,481.62	4,096.29	2,023.00	1.85	-0.20	0.027
95.00	-16.36	-1.12	0.00	-38.22	0.00	38.22	2,909.11	1,454.55	3,911.32	1,931.65	2.06	-0.21	0.025
95.83	-15.32	-1.08	0.00	-37.29	0.00	37.29	2,895.61	1,447.80	3,874.90	1,913.67	2.10	-0.21	0.025
100.00	-15.08	-1.07	0.00	-32.80	0.00	32.80	2,828.11	1,414.06	3,695.36	1,825.00	2.29	-0.22	0.023
101.00	-14.54	-1.04	0.00	-31.74	0.00	31.74	1,940.77	970.39	2,581.63	1,274.97	2.33	-0.22	0.032
105.00	-14.02	-1.02	0.00	-27.56	0.00	27.56	1,916.40	958.20	2,491.16	1,230.29	2.52	-0.23	0.030
109.00	-13.82	-1.01	0.00	-23.48	0.00	23.48	1,891.12	945.56	2,401.02	1,185.77	2.72	-0.24	0.027
110.00	-13.70	-1.00	0.00	-22.47	0.00	22.47	1,884.66	942.33	2,378.55	1,174.68	2.76	-0.24	0.026
111.00	-11.48	-0.88	0.00	-21.47	0.00	21.47	1,878.15	939.07	2,356.11	1,163.59	2.81	-0.24	0.025
115.00	-10.87	-0.85	0.00	-17.93	0.00	17.93	1,851.53	925.76	2,266.63	1,119.40	3.02	-0.25	0.022
120.00	-10.39	-0.82	0.00	-13.68	0.00	13.68	1,816.99	908.49	2,155.56	1,064.55	3.28	-0.25	0.019
124.00	-6.14	-0.54	0.00	-10.40	0.00	10.40	1,788.35	894.17	2,067.42	1,021.02	3.49	-0.26	0.014
125.00	-5.68	-0.51	0.00	-9.87	0.00	9.87	1,781.05	890.52	2,045.49	1,010.19	3.55	-0.26	0.013
130.00	-5.23	-0.47	0.00	-7.34	0.00	7.34	1,743.70	871.85	1,936.59	956.41	3.82	-0.26	0.011
135.00	-4.79	-0.44	0.00	-4.97	0.00	4.97	1,704.95	852.48	1,829.01	903.28	4.10	-0.27	0.008
140.00	-3.11	-0.30	0.00	-2.79	0.00	2.79	1,664.80	832.40	1,722.91	850.88	4.38	-0.27	0.005
145.00	-2.74	-0.26	0.00	-1.31	0.00	1.31	1,618.18	809.09	1,613.39	796.79	4.67	-0.27	0.003
150.00	0.00	-0.25	0.00	0.00	0.00	0.00	1,557.43	778.72	1,493.87	737.76	4.95	-0.27	0.000

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Equivalent Modal Forces Analysis

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

Spectral Response Acceleration for Short Period (S_s):	0.18
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.06
Importance Factor (I_E):	1.00
Site Coefficient F_a:	1.60
Site Coefficient F_v	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.19
Desing Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10
Period Based on Rayleigh Method (sec):	2.54
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)
37	147.50	427	1.828	1.667	1.025	0.328	93	529
36	142.50	441	1.706	1.144	0.823	0.254	75	547
35	137.50	509	1.588	0.742	0.654	0.188	64	631
34	132.50	523	1.475	0.441	0.513	0.131	46	648
33	127.50	537	1.366	0.222	0.397	0.082	29	666
32	124.50	109	1.302	0.123	0.338	0.056	4	135
31	122.00	557	1.250	0.057	0.294	0.037	14	690
30	117.50	709	1.160	-0.030	0.226	0.007	3	878
29	113.00	577	1.073	-0.084	0.170	-0.017	-6	715
28	110.50	146	1.026	-0.103	0.144	-0.027	-3	181
27	109.50	146	1.007	-0.108	0.135	-0.031	-3	181
26	107.00	611	0.962	-0.117	0.113	-0.038	-16	756
25	103.00	620	0.891	-0.122	0.084	-0.046	-19	767
24	100.50	286	0.848	-0.119	0.069	-0.049	-9	355
23	97.92	1,208	0.805	-0.113	0.055	-0.049	-40	1,496
22	95.42	159	0.765	-0.104	0.044	-0.048	-5	197
21	92.50	964	0.719	-0.092	0.034	-0.044	-28	1,194
20	87.50	983	0.643	-0.068	0.020	-0.032	-21	1,217
19	82.50	1,001	0.572	-0.043	0.012	-0.016	-11	1,240
18	77.50	1,020	0.505	-0.018	0.007	0.003	2	1,264
17	72.50	1,039	0.442	0.005	0.006	0.020	14	1,287
16	67.50	1,057	0.383	0.023	0.007	0.035	24	1,310
15	62.50	1,076	0.328	0.039	0.010	0.045	32	1,333
14	57.50	1,095	0.278	0.050	0.014	0.051	37	1,356
13	54.50	221	0.250	0.055	0.017	0.053	8	274
12	52.00	1,653	0.227	0.059	0.020	0.054	59	2,048
11	48.92	906	0.201	0.063	0.023	0.054	33	1,123
10	46.42	713	0.181	0.065	0.026	0.054	26	884
9	42.50	1,276	0.152	0.068	0.030	0.054	46	1,581
8	37.50	1,298	0.118	0.070	0.035	0.053	46	1,608
7	32.50	1,320	0.089	0.071	0.039	0.051	45	1,635
6	27.50	1,341	0.064	0.072	0.041	0.050	45	1,662
5	22.50	1,363	0.043	0.070	0.042	0.049	44	1,689
4	17.50	1,385	0.026	0.067	0.040	0.046	43	1,716

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3	12.50	1,407	0.013	0.059	0.034	0.042	39	1,743
2	7.50	1,429	0.005	0.044	0.025	0.033	32	1,770
1	2.50	1,167	0.001	0.018	0.010	0.016	12	1,446
DragonWave Horizon C	150.00	21	1.890	1.980	1.140	0.368	5	26
Alcatel-Lucent RRH2x	150.00	317	1.890	1.980	1.140	0.368	78	393
Alcatel-Lucent 1900	150.00	180	1.890	1.980	1.140	0.368	44	223
Alcatel-Lucent TD-RR	150.00	210	1.890	1.980	1.140	0.368	51	260
DragonWave A-ANT-11G	150.00	27	1.890	1.980	1.140	0.368	7	33
DragonWave A-ANT-18G	150.00	27	1.890	1.980	1.140	0.368	7	34
RFS APXVTM14-ALU-I20	150.00	169	1.890	1.980	1.140	0.368	41	209
Commscope NNVV-	150.00	232	1.890	1.980	1.140	0.368	57	288
Round Platform w/ Ha	150.00	2,000	1.890	1.980	1.140	0.368	490	2,478
Ericsson KRY 112 144	140.00	33	1.646	0.929	0.735	0.220	5	41
Ericsson RRUS 11 B12	140.00	152	1.646	0.929	0.735	0.220	22	188
Ericsson AIR 21, 1.3	140.00	249	1.646	0.929	0.735	0.220	36	308
Round T-Arm	140.00	750	1.646	0.929	0.735	0.220	110	929
Ericsson AIR 21 B4A/	140.00	330	1.646	0.929	0.735	0.220	48	409
Powerwave Allgon LGP	124.00	85	1.292	0.109	0.329	0.052	3	105
Raycap DC6-48-60-18-	124.00	32	1.292	0.109	0.329	0.052	1	39
Raycap DC6-48-60-18-	124.00	32	1.292	0.109	0.329	0.052	1	39
Ericsson RRUS 4478 B	124.00	178	1.292	0.109	0.329	0.052	6	221
Ericsson RRUS-11 (50	124.00	150	1.292	0.109	0.329	0.052	5	186
Ericsson RRUS 32 B66	124.00	152	1.292	0.109	0.329	0.052	5	188
Ericsson RRUS 32 B30	124.00	180	1.292	0.109	0.329	0.052	6	223
Ericsson RRUS 32 B2	124.00	159	1.292	0.109	0.329	0.052	6	197
Raycap DC6-48-60-18-	124.00	16	1.292	0.109	0.329	0.052	1	20
Powerwave 7770.00	124.00	105	1.292	0.109	0.329	0.052	4	130
CCI OPA-65R-LCUU-H6	124.00	438	1.292	0.109	0.329	0.052	15	543
Kathrein Scala 80010	124.00	293	1.292	0.109	0.329	0.052	10	363
Flat Platform w/Hand	124.00	3,000	1.292	0.109	0.329	0.052	104	3,716
Empty Flat Platform	111.00	2,000	1.035	-0.099	0.149	-0.025	-33	2,478
RFS APXV18-206517S-C	109.00	79	0.998	-0.110	0.130	-0.032	-2	98
		42,879	68.352	27.846	24.064	6.471	1,887	53,120

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

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
37	147.50	427	1.828	1.667	1.025	0.328	93	368
36	142.50	441	1.706	1.144	0.823	0.254	75	380
35	137.50	509	1.588	0.742	0.654	0.188	64	439
34	132.50	523	1.475	0.441	0.513	0.131	46	451
33	127.50	537	1.366	0.222	0.397	0.082	29	463
32	124.50	109	1.302	0.123	0.338	0.056	4	94
31	122.00	557	1.250	0.057	0.294	0.037	14	480
30	117.50	709	1.160	-0.030	0.226	0.007	3	611
29	113.00	577	1.073	-0.084	0.170	-0.017	-6	497
28	110.50	146	1.026	-0.103	0.144	-0.027	-3	126
27	109.50	146	1.007	-0.108	0.135	-0.031	-3	126
26	107.00	611	0.962	-0.117	0.113	-0.038	-16	526
25	103.00	620	0.891	-0.122	0.084	-0.046	-19	534
24	100.50	286	0.848	-0.119	0.069	-0.049	-9	247
23	97.92	1,208	0.805	-0.113	0.055	-0.049	-40	1,040
22	95.42	159	0.765	-0.104	0.044	-0.048	-5	137
21	92.50	964	0.719	-0.092	0.034	-0.044	-28	830
20	87.50	983	0.643	-0.068	0.020	-0.032	-21	846
19	82.50	1,001	0.572	-0.043	0.012	-0.016	-11	862
18	77.50	1,020	0.505	-0.018	0.007	0.003	2	878
17	72.50	1,039	0.442	0.005	0.006	0.020	14	895

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16	67.50	1,057	0.383	0.023	0.007	0.035	24	911
15	62.50	1,076	0.328	0.039	0.010	0.045	32	927
14	57.50	1,095	0.278	0.050	0.014	0.051	37	943
13	54.50	221	0.250	0.055	0.017	0.053	8	190
12	52.00	1,653	0.227	0.059	0.020	0.054	59	1,424
11	48.92	906	0.201	0.063	0.023	0.054	33	781
10	46.42	713	0.181	0.065	0.026	0.054	26	614
9	42.50	1,276	0.152	0.068	0.030	0.054	46	1,099
8	37.50	1,298	0.118	0.070	0.035	0.053	46	1,118
7	32.50	1,320	0.089	0.071	0.039	0.051	45	1,136
6	27.50	1,341	0.064	0.072	0.041	0.050	45	1,155
5	22.50	1,363	0.043	0.070	0.042	0.049	44	1,174
4	17.50	1,385	0.026	0.067	0.040	0.046	43	1,193
3	12.50	1,407	0.013	0.059	0.034	0.042	39	1,212
2	7.50	1,429	0.005	0.044	0.025	0.033	32	1,230
1	2.50	1,167	0.001	0.018	0.010	0.016	12	1,005
DragonWave Horizon C	150.00	21	1.890	1.980	1.140	0.368	5	18
Alcatel-Lucent RRH2x	150.00	317	1.890	1.980	1.140	0.368	78	273
Alcatel-Lucent 1900	150.00	180	1.890	1.980	1.140	0.368	44	155
Alcatel-Lucent TD-RR	150.00	210	1.890	1.980	1.140	0.368	51	181
DragonWave A-ANT-11G	150.00	27	1.890	1.980	1.140	0.368	7	23
DragonWave A-ANT-18G	150.00	27	1.890	1.980	1.140	0.368	7	23
RFS APXVTM14-ALU-I20	150.00	169	1.890	1.980	1.140	0.368	41	145
Commscope NNVV-	150.00	232	1.890	1.980	1.140	0.368	57	200
Round Platform w/ Ha	150.00	2,000	1.890	1.980	1.140	0.368	490	1,722
Ericsson KRY 112 144	140.00	33	1.646	0.929	0.735	0.220	5	28
Ericsson RRUS 11 B12	140.00	152	1.646	0.929	0.735	0.220	22	131
Ericsson AIR 21, 1.3	140.00	249	1.646	0.929	0.735	0.220	36	214
Round T-Arm	140.00	750	1.646	0.929	0.735	0.220	110	646
Ericsson AIR 21 B4A/	140.00	330	1.646	0.929	0.735	0.220	48	284
Powerwave Allgon LGP	124.00	85	1.292	0.109	0.329	0.052	3	73
Raycap DC6-48-60-18-	124.00	32	1.292	0.109	0.329	0.052	1	27
Raycap DC6-48-60-18-	124.00	32	1.292	0.109	0.329	0.052	1	27
Ericsson RRUS 4478 B	124.00	178	1.292	0.109	0.329	0.052	6	153
Ericsson RRUS-11 (50	124.00	150	1.292	0.109	0.329	0.052	5	129
Ericsson RRUS 32 B66	124.00	152	1.292	0.109	0.329	0.052	5	131
Ericsson RRUS 32 B30	124.00	180	1.292	0.109	0.329	0.052	6	155
Ericsson RRUS 32 B2	124.00	159	1.292	0.109	0.329	0.052	6	137
Raycap DC6-48-60-18-	124.00	16	1.292	0.109	0.329	0.052	1	14
Powerwave 7770.00	124.00	105	1.292	0.109	0.329	0.052	4	90
CCI OPA-65R-LCUU-H6	124.00	438	1.292	0.109	0.329	0.052	15	377
Kathrein Scala 80010	124.00	293	1.292	0.109	0.329	0.052	10	252
Flat Platform w/Hand	124.00	3,000	1.292	0.109	0.329	0.052	104	2,584
Empty Flat Platform	111.00	2,000	1.035	-0.099	0.149	-0.025	-33	1,722
RFS APXV18-206517S-C	109.00	79	0.998	-0.110	0.130	-0.032	-2	68
		42,879	68.352	27.846	24.064	6.471	1,887	36,926

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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	-51.67	-1.88	0.00	-228.05	0.00	228.05	4,644.06	2,322.03	9,415.76	4,650.09	0.00	0.00	0.060
5.00	-49.90	-1.86	0.00	-218.64	0.00	218.64	4,595.29	2,297.65	9,142.89	4,515.33	0.01	-0.01	0.059
10.00	-48.16	-1.83	0.00	-209.33	0.00	209.33	4,545.11	2,272.56	8,870.98	4,381.04	0.03	-0.03	0.058
15.00	-46.44	-1.80	0.00	-200.16	0.00	200.16	4,493.53	2,246.77	8,600.18	4,247.31	0.07	-0.05	0.057
20.00	-44.75	-1.77	0.00	-191.14	0.00	191.14	4,440.55	2,220.28	8,330.66	4,114.20	0.13	-0.06	0.057
25.00	-43.09	-1.74	0.00	-182.29	0.00	182.29	4,386.17	2,193.08	8,062.58	3,981.80	0.20	-0.08	0.056
30.00	-41.46	-1.70	0.00	-173.62	0.00	173.62	4,330.38	2,165.19	7,796.08	3,850.19	0.29	-0.09	0.055
35.00	-39.85	-1.66	0.00	-165.12	0.00	165.12	4,273.19	2,136.59	7,531.34	3,719.45	0.39	-0.11	0.054
40.00	-38.27	-1.62	0.00	-156.81	0.00	156.81	4,214.59	2,107.30	7,268.52	3,589.65	0.51	-0.12	0.053
45.00	-37.38	-1.60	0.00	-148.69	0.00	148.69	4,154.60	2,077.30	7,007.76	3,460.87	0.65	-0.14	0.052
47.83	-36.26	-1.57	0.00	-144.15	0.00	144.15	4,119.98	2,059.99	6,860.98	3,388.38	0.74	-0.15	0.051
50.00	-34.21	-1.52	0.00	-140.74	0.00	140.74	4,093.20	2,046.60	6,749.23	3,333.19	0.81	-0.16	0.051
54.00	-33.94	-1.51	0.00	-134.68	0.00	134.68	3,318.39	1,659.20	5,491.78	2,712.18	0.95	-0.17	0.060
55.00	-32.58	-1.48	0.00	-133.16	0.00	133.16	3,309.51	1,654.75	5,452.02	2,692.55	0.98	-0.17	0.059
60.00	-31.25	-1.45	0.00	-125.78	0.00	125.78	3,264.25	1,632.12	5,253.88	2,594.69	1.18	-0.19	0.058
65.00	-29.94	-1.43	0.00	-118.52	0.00	118.52	3,217.59	1,608.79	5,056.96	2,497.44	1.39	-0.21	0.057
70.00	-28.65	-1.42	0.00	-111.36	0.00	111.36	3,169.52	1,584.76	4,861.43	2,400.88	1.62	-0.23	0.055
75.00	-27.39	-1.42	0.00	-104.24	0.00	104.24	3,120.06	1,560.03	4,667.43	2,305.07	1.88	-0.25	0.054
80.00	-26.14	-1.44	0.00	-97.12	0.00	97.12	3,069.19	1,534.59	4,475.14	2,210.10	2.15	-0.27	0.052
85.00	-24.93	-1.46	0.00	-89.92	0.00	89.92	3,016.92	1,508.46	4,284.71	2,116.06	2.44	-0.29	0.051
90.00	-23.73	-1.49	0.00	-82.61	0.00	82.61	2,963.24	1,481.62	4,096.29	2,023.00	2.76	-0.31	0.049
95.00	-23.53	-1.50	0.00	-75.15	0.00	75.15	2,909.11	1,454.55	3,911.32	1,931.65	3.09	-0.33	0.047
95.83	-22.04	-1.54	0.00	-73.90	0.00	73.90	2,895.61	1,447.80	3,874.90	1,913.67	3.15	-0.33	0.046
100.00	-21.68	-1.55	0.00	-67.50	0.00	67.50	2,828.11	1,414.06	3,695.36	1,825.00	3.44	-0.35	0.045
101.00	-20.91	-1.56	0.00	-65.95	0.00	65.95	1,940.77	970.39	2,581.63	1,274.97	3.52	-0.35	0.063
105.00	-20.16	-1.58	0.00	-59.69	0.00	59.69	1,916.40	958.20	2,491.16	1,230.29	3.82	-0.37	0.059
109.00	-19.88	-1.59	0.00	-53.37	0.00	53.37	1,891.12	945.56	2,401.02	1,185.77	4.13	-0.38	0.056
110.00	-19.70	-1.59	0.00	-51.78	0.00	51.78	1,884.66	942.33	2,378.55	1,174.68	4.21	-0.39	0.055
111.00	-16.50	-1.61	0.00	-50.19	0.00	50.19	1,878.15	939.07	2,356.11	1,163.59	4.30	-0.39	0.052
115.00	-15.63	-1.61	0.00	-43.74	0.00	43.74	1,851.53	925.76	2,266.63	1,119.40	4.63	-0.41	0.048
120.00	-14.93	-1.59	0.00	-35.70	0.00	35.70	1,816.99	908.49	2,155.56	1,064.55	5.07	-0.43	0.042
124.00	-8.83	-1.38	0.00	-29.33	0.00	29.33	1,788.35	894.17	2,067.42	1,021.02	5.43	-0.44	0.034
125.00	-8.16	-1.34	0.00	-27.95	0.00	27.95	1,781.05	890.52	2,045.49	1,010.19	5.53	-0.44	0.032
130.00	-7.52	-1.29	0.00	-21.23	0.00	21.23	1,743.70	871.85	1,936.59	956.41	6.00	-0.46	0.027
135.00	-6.89	-1.23	0.00	-14.76	0.00	14.76	1,704.95	852.48	1,829.01	903.28	6.49	-0.47	0.020
140.00	-4.47	-0.91	0.00	-8.62	0.00	8.62	1,664.80	832.40	1,722.91	850.88	6.98	-0.48	0.013
145.00	-3.94	-0.81	0.00	-4.07	0.00	4.07	1,618.18	809.09	1,613.39	796.79	7.49	-0.48	0.008
150.00	0.00	-0.78	0.00	0.00	0.00	0.00	1,557.43	778.72	1,493.87	737.76	7.99	-0.48	0.000

Site Number: 302538 Code: ANSI/TIA-222-G ©2007 - 2018 by ATC IP LLC. All rights reserved.

Site Name: Parsonage Hill Aka Wallin, CT Engineering Number: OAA713368_C3_04 7/6/2018 1:25:37 PM

Customer: CLEARWIRE

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	-35.92	-1.88	0.00	-223.77	0.00	223.77	4,644.06	2,322.03	9,415.76	4,650.09	0.00	0.00	0.056
5.00	-34.69	-1.85	0.00	-214.38	0.00	214.38	4,595.29	2,297.65	9,142.89	4,515.33	0.01	-0.01	0.055
10.00	-33.48	-1.82	0.00	-205.11	0.00	205.11	4,545.11	2,272.56	8,870.98	4,381.04	0.03	-0.03	0.054
15.00	-32.28	-1.79	0.00	-195.99	0.00	195.99	4,493.53	2,246.77	8,600.18	4,247.31	0.07	-0.04	0.053
20.00	-31.11	-1.75	0.00	-187.04	0.00	187.04	4,440.55	2,220.28	8,330.66	4,114.20	0.12	-0.06	0.052
25.00	-29.95	-1.71	0.00	-178.28	0.00	178.28	4,386.17	2,193.08	8,062.58	3,981.80	0.19	-0.07	0.052
30.00	-28.82	-1.67	0.00	-169.72	0.00	169.72	4,330.38	2,165.19	7,796.08	3,850.19	0.28	-0.09	0.051
35.00	-27.70	-1.64	0.00	-161.34	0.00	161.34	4,273.19	2,136.59	7,531.34	3,719.45	0.38	-0.11	0.050
40.00	-26.60	-1.59	0.00	-153.17	0.00	153.17	4,214.59	2,107.30	7,268.52	3,589.65	0.50	-0.12	0.049
45.00	-25.99	-1.57	0.00	-145.19	0.00	145.19	4,154.60	2,077.30	7,007.76	3,460.87	0.64	-0.14	0.048
47.83	-25.20	-1.54	0.00	-140.74	0.00	140.74	4,119.98	2,059.99	6,860.98	3,388.38	0.72	-0.15	0.048
50.00	-23.78	-1.48	0.00	-137.40	0.00	137.40	4,093.20	2,046.60	6,749.23	3,333.19	0.79	-0.15	0.047
54.00	-23.59	-1.48	0.00	-131.46	0.00	131.46	3,318.39	1,659.20	5,491.78	2,712.18	0.93	-0.17	0.056
55.00	-22.65	-1.44	0.00	-129.98	0.00	129.98	3,309.51	1,654.75	5,452.02	2,692.55	0.96	-0.17	0.055
60.00	-21.72	-1.42	0.00	-122.77	0.00	122.77	3,264.25	1,632.12	5,253.88	2,594.69	1.15	-0.19	0.054
65.00	-20.81	-1.39	0.00	-115.69	0.00	115.69	3,217.59	1,608.79	5,056.96	2,497.44	1.36	-0.21	0.053
70.00	-19.91	-1.38	0.00	-108.72	0.00	108.72	3,169.52	1,584.76	4,861.43	2,400.88	1.59	-0.23	0.052
75.00	-19.04	-1.38	0.00	-101.80	0.00	101.80	3,120.06	1,560.03	4,667.43	2,305.07	1.84	-0.25	0.050
80.00	-18.17	-1.40	0.00	-94.88	0.00	94.88	3,069.19	1,534.59	4,475.14	2,210.10	2.10	-0.26	0.049
85.00	-17.33	-1.42	0.00	-87.90	0.00	87.90	3,016.92	1,508.46	4,284.71	2,116.06	2.39	-0.28	0.047
90.00	-16.49	-1.45	0.00	-80.80	0.00	80.80	2,963.24	1,481.62	4,096.29	2,023.00	2.70	-0.30	0.046
95.00	-16.36	-1.46	0.00	-73.55	0.00	73.55	2,909.11	1,454.55	3,911.32	1,931.65	3.02	-0.32	0.044
95.83	-15.32	-1.49	0.00	-72.34	0.00	72.34	2,895.61	1,447.80	3,874.90	1,913.67	3.08	-0.32	0.043
100.00	-15.07	-1.50	0.00	-66.11	0.00	66.11	2,828.11	1,414.06	3,695.36	1,825.00	3.37	-0.34	0.042
101.00	-14.54	-1.52	0.00	-64.61	0.00	64.61	1,940.77	970.39	2,581.63	1,274.97	3.44	-0.34	0.058
105.00	-14.01	-1.54	0.00	-58.52	0.00	58.52	1,916.40	958.20	2,491.16	1,230.29	3.73	-0.36	0.055
109.00	-13.82	-1.54	0.00	-52.37	0.00	52.37	1,891.12	945.56	2,401.02	1,185.77	4.04	-0.38	0.051
110.00	-13.69	-1.55	0.00	-50.82	0.00	50.82	1,884.66	942.33	2,378.55	1,174.68	4.12	-0.38	0.051
111.00	-11.47	-1.57	0.00	-49.27	0.00	49.27	1,878.15	939.07	2,356.11	1,163.59	4.20	-0.38	0.048
115.00	-10.86	-1.57	0.00	-42.98	0.00	42.98	1,851.53	925.76	2,266.63	1,119.40	4.53	-0.40	0.044
120.00	-10.38	-1.56	0.00	-35.12	0.00	35.12	1,816.99	908.49	2,155.56	1,064.55	4.96	-0.42	0.039
124.00	-6.14	-1.35	0.00	-28.90	0.00	28.90	1,788.35	894.17	2,067.42	1,021.02	5.31	-0.43	0.032
125.00	-5.67	-1.32	0.00	-27.54	0.00	27.54	1,781.05	890.52	2,045.49	1,010.19	5.41	-0.43	0.030
130.00	-5.22	-1.28	0.00	-20.93	0.00	20.93	1,743.70	871.85	1,936.59	956.41	5.87	-0.45	0.025
135.00	-4.78	-1.21	0.00	-14.55	0.00	14.55	1,704.95	852.48	1,829.01	903.28	6.34	-0.46	0.019
140.00	-3.10	-0.90	0.00	-8.51	0.00	8.51	1,664.80	832.40	1,722.91	850.88	6.83	-0.47	0.012
145.00	-2.73	-0.80	0.00	-4.01	0.00	4.01	1,618.18	809.09	1,613.39	796.79	7.32	-0.47	0.007
150.00	0.00	-0.78	0.00	0.00	0.00	0.00	1,557.43	778.72	1,493.87	737.76	7.82	-0.47	0.000

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Analysis Summary

Load Case	Reactions Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Max Usage Elev (ft)	Interaction Ratio
1.2D + 1.6W	37.90	0.00	51.37	0.00	0.00	3954.13	0.00	0.86
0.9D + 1.6W	37.87	0.00	38.51	0.00	0.00	3900.77	0.00	0.85
1.2D + 1.0Di + 1.0Wi	8.41	0.00	80.44	0.00	0.00	929.78	0.00	0.22
(1.2 + 0.2Sds) * DL + E ELFM	1.29	0.00	51.67	0.00	0.00	160.51	0.00	0.05
(1.2 + 0.2Sds) * DL + E EMAM	1.88	0.00	51.67	0.00	0.00	228.05	101.00	0.06
(0.9 - 0.2Sds) * DL + E ELFM	1.29	0.00	35.92	0.00	0.00	157.78	0.00	0.04
(0.9 - 0.2Sds) * DL + E EMAM	1.88	0.00	35.92	0.00	0.00	223.77	101.00	0.06
1.0D + 1.0W	9.06	0.00	42.87	0.00	0.00	938.71	0.00	0.21

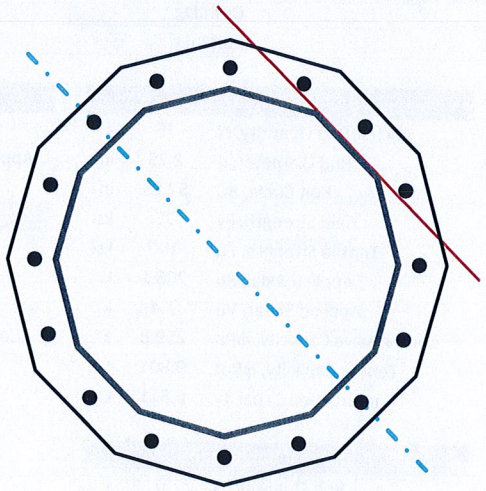
Base Plate & Anchor Rod Analysis

Pole Dimensions		
Number of Sides	12	-
Diameter	49.6	in
Thickness	0.4375	in
Orientation Offset		°

Base Reactions		
Moment, Mu	3954.1	k-ft
Axial, Pu	51.4	k
Shear, Vu	37.9	k
Neutral Axis	315	°

Report Capacities		
Component	Capacity	Result
Base Plate	40%	Pass
Anchor Rods	81%	Pass
Dwyidag	-	-

Base Plate		
Number of Sides	12	-
Diameter, ø	63.85	in
Thickness	2 3/4	in
Grade	A572-60	-
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	75	ksi
Clip	N/A	in
Orientation Offset		°
Anchor Rod Detail	c	η=0.55
Clear Distance	N/A	in
Applied Moment, Mu	1525.0	k
Bending Stress, ϕMn	3812.3	k



Original Anchor Rods		
Arrangement	Radial	-
Quantity	16	-
Diameter, ø	2 1/4	in
Bolt Circle	57.85	in
Grade	A615-75	
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Spacing	11.4	in
Orientation Offset		°
Applied Force, Pu	208.1	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	37.9	3954.1	1.00
Anchor Rod Forces	37.9	3954.1	1.00
Additional Bolt (Grp1) Forces			
Additional Bolt (Grp2) Forces			
Dywidag Forces			
Stiffener Forces			

Geometric Properties

Section	Gross Area	Net Area	Individual Inertia	Threads per Inch	Moment of Inertia
	in²	in²	in⁴	#	in⁴
Pole	66.8020	5.5668	0.3568		20186.43
Bolt	3.9761	3.2477	0.8393	4.5	21751.01
Bolt1					
Bolt2					
Dywidag					
Stiffener					

Base Plate		
Shape	12	-
Width, W	63.85	in
Thickness, t	2.75	in
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	75	ksi
Base Plate Chord	40.208	in
Detail Type	c	-
Detail Factor	0.55	-
Clear Distance	N/A	-

External Base Plate		
Chord Length AA	40.448	in
Additional AA	5.500	in
Section Modulus, Z	86.870	in^3
Applied Moment, Mu	1525.0	k-ft
Bending Capacity, ϕMn	4691.0	k-ft
Capacity, Mu/ϕMn	0.325	OK
Chord Length AB	38.689	in
Additional AB	5.500	in
Section Modulus, Z	83.545	in^3
Applied Moment, Mu	1003.4	k-ft
Bending Capacity, ϕMn	4511.4	k-ft
Capacity, Mu/ϕMn	0.222	OK
Bend Line Length	37.341	in
Additional Bend Line	0.000	in
Section Modulus, Z	70.597	in^3
Applied Moment, Mu	1525.0	k-ft
Bending Capacity, ϕMn	3812.3	k-ft
Capacity, Mu/ϕMn	0.400	OK

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		

Anchor Rods		
Anchor Rod Quantity, N	16	-
Rod Diameter, d	2.25	in
Bolt Circle, BC	57.85	in
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	208.1	k
Applied Shear, Vu	1.4	k
Compressive Capacity, ϕPn	259.8	k
Tensile Capacity, ϕRnt	0.801	OK
Interaction Capacity	0.811	OK

Additional Bolt Group 1		
Bolt Quantity, N	0	-
Bolt Diameter, d	0	in
Bolt Circle, BC	0	in
Yield Strength, Fy	0	ksi
Tensile Strength, Fu	0	ksi
Applied Axial, Pu	0.0	k
Applied Shear, Vu	0.0	k
Compressive Capacity, ϕPn	0.0	k
Compressive Capacity, ϕPn		
Interaction Capacity		

Additional Bolt Group 2		
Bolt Quantity, N	0	-
Bolt Diameter, d	0	in
Bolt Circle, BC	0	in
Yield Strength, Fy	0	ksi
Tensile Strength, Fu	0	ksi
Applied Axial, Pu	0.0	k
Applied Shear, Vu	0.0	k
Compressive Capacity, ϕPn	0.0	k
Compressive Capacity, ϕPn		
Interaction Capacity		

Dywidag Reinforcement		
Dywidag Quantity, N	0	-
Dywidag Diameter, d	2.5	in
Bolt Circle, BC	56.48	in
Yield Strength, Fy	80	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	0.0	k
Compressive Capacity, ϕPn	0.0	k
Capacity, Pu/ϕPn		

Base Plate Stiffeners		
Applied Axial Force, Pu	0.0	k
Applied Horizontal Force, Vu	0.00	k

Vertical Weld		
Vert.-to-Stiffener $a=e_x/l$	#DIV/0!	-
Spacing Ratio, k	#DIV/0!	-
Weld Coefficient, C	#DIV/0!	-
Compressive Capacity, ϕPn	#DIV/0!	k
Vert.-to-Plate $a=e_x/l$	#DIV/0!	-
Spacing Ratio, k	#DIV/0!	-
Weld Coefficient, C	#DIV/0!	-
Shear Capacity, ϕVn	#DIV/0!	k
$P_u/\phi_P P_n + V_u/\phi_V V_n$		

Horizontal Weld		
Horz.-to-Stiffener $a=e_x/l$	0.000	-
Spacing Ratio, k	#DIV/0!	-
Weld Coefficient, C	#DIV/0!	-
Effective Fillet	0.000	in
Compressive Capacity, ϕPn	#DIV/0!	k
Horz.-to-Pole $a=e_x/l$	#DIV/0!	-
Spacing Ratio, k	#DIV/0!	-
Weld Coefficient, C	#DIV/0!	-
Shear Capacity, ϕVn	#DIV/0!	k
$P_u/\phi_P P_n + V_u/\phi_V V_n$		

Plate Tension		
Gross Cross Section	0.000	in^2
Net Cross Section	0.000	in^2
Tensile Capacity, ϕTn	0.0	k
Capacity, Tu/ϕTn		

Plate Compression		
Radius of Gyration	#DIV/0!	in^3
kl/r	#DIV/0!	-
$4.71\sqrt{(E/Fy)}$	0.00	-
Buckling Stress(Fe)	0.0	-
Crit. Buckling Stress(Fcr)	0.0	ksi
Compressive Capacity, ϕPn	0.0	k
Capacity, Pu/ϕPn		

Sprint

PROJECT:	DO MACRO UPGRADE
SITE NAME:	PARSONAGE HILL
SITE CASCADE:	CT52XC132
SITE ADDRESS:	1012 NORTHROP ROAD WALLINGFORD CENTER, CT 06492
SITE TYPE:	MONOPOLE TOWER
MARKET:	SOUTHERN CONNECTICUT

SITE INFORMATION

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

LATITUDE (NAD83):
41° 29' 21.46"
N 41.48930000°

LONGITUDE (NAD83):
72° 46' 5.88"
W -72.76830000°

COUNTY:
NEW HAVEN

ZONING JURISDICTION:
CONNECTICUT SITING COUNCIL/
TOWN OF WALLINGFORD (SUP)

ZONING DISTRICT:
TBD

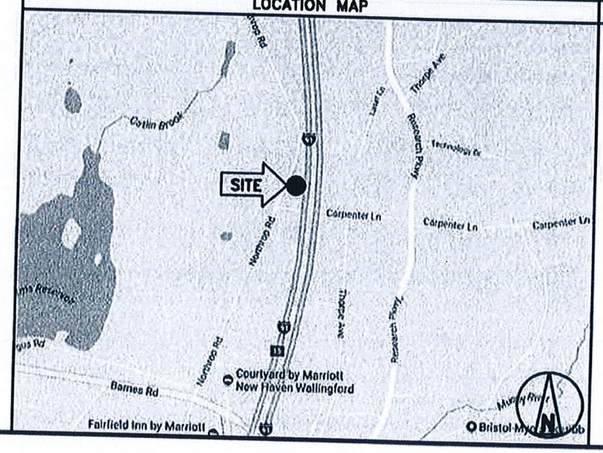
POWER COMPANY:
TBD

AAV PROVIDER:
FRONTIER
PHONE: (800) 921-8101

PROJECT MANAGER:
AIROSMITH DEVELOPMENT
TERRI BURKHOLDER
(315)719-2926
TBURKHOLDER@AIROSMITHDEVELOPMENT.COM

AREA MAP

LOCATION MAP



PROJECT DESCRIPTION

SPRINT PROPOSES TO MODIFY AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY.

- REMOVE (3) EXISTING PANEL ANTENNAS AND RRH's
- INSTALL (6) PANEL ANTENNAS
- INSTALL (3) 1900 MHz, (6) 800 MHz & (3) 2.5 GHz RRH'S BEHIND ANTENNAS
- INSTALL (48) JUMPER CABLES
- INSTALL (4) HYBRID CABLE
- REMOVE EXISTING CLEARWIRE GROUND EQUIPMENT
- INSTALL (2) EQUIPMENT CABINETS WITHIN EXISTING LEASE AREA
- INSTALL 7' x 7' CONCRETE EQUIPMENT PAD

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
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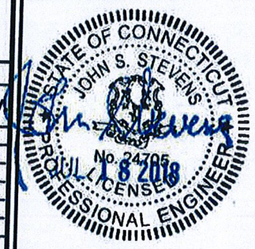
SP-2	SPRINT SPECIFICATIONS	0
SP-3	SPRINT SPECIFICATIONS	0
A-1	SITE PLAN	0
A-2	TOWER ELEVATION	0
A-3	ANTENNA LAYOUT & MOUNTING DETAILS	0
A-4	EQUIPMENT & MOUNTING DETAILS	0
A-5	EQUIPMENT & MOUNTING DETAILS	0
A-6	EQUIPMENT DETAILS	0
A-7	CIVIL DETAILS	0
A-8	PLUMBING DIAGRAM	0
E-1	ONE LINE & NOTES	0
E-2	ELECTRICAL & GROUNDING DETAILS	0
E-3	ELECTRICAL & GROUNDING DETAILS	0

PLANS PREPARED FOR:
Sprint
6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:
INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless
1033 Watervliet Shaker Rd | Albany, NY 12205
Phone: 518-690-0790 | Fax: 518-690-0793
www.infinigy.com
JOB NUMBER 826-104

MLA PARTNER:
AIROSMITH DEVELOPMENT
32 CLINTON ST.
SARATOGA SPRINGS, NY 12866
OFFICE#. (518) 308-3740

ENGINEERING LICENSE:



JUL 18 2018

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REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR PERMIT	06/26/18	MAP	0

SITE NAME:
PARSONAGE HILL

SITE CASCADE:
CT52XC132

SITE ADDRESS:
1012 NORTHROP ROAD
WALLINGFORD CNTR, CT 06492

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
6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless
1033 Watervliet Shaker Rd | Albany, NY 12205
Phone: 518-690-0790 | Fax: 518-690-0793
www.infinigy.com
JOB NUMBER 525-104

MLA PARTNER:

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

ENGINEERING LICENSE:

STATE OF CONNECTICUT
JOHN D. STEVENS
OCT 16 2018
LICENSED PROFESSIONAL ENGINEER

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REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR PERMIT	06/26/18	MAP	0

SITE NAME:

PARSONAGE HILL

SITE CASCADE:

CT52XC132

SITE ADDRESS:

1012 NORTHROP ROAD
WALLINGFORD CNTR, CT 06492

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)

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Overland Park, Kansas 66251

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STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
PROFESSIONAL ENGINEER
6/8/2018

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REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR PERMIT	06/26/18	MAP	0

SITE NAME:

PARSONAGE HILL

SITE CASCADE:

CT52XC132

SITE ADDRESS:

1012 NORTHROP ROAD
WALLINGFORD CNTR, CT 06492

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.

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REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR PERMIT	06/26/18	MAP	0

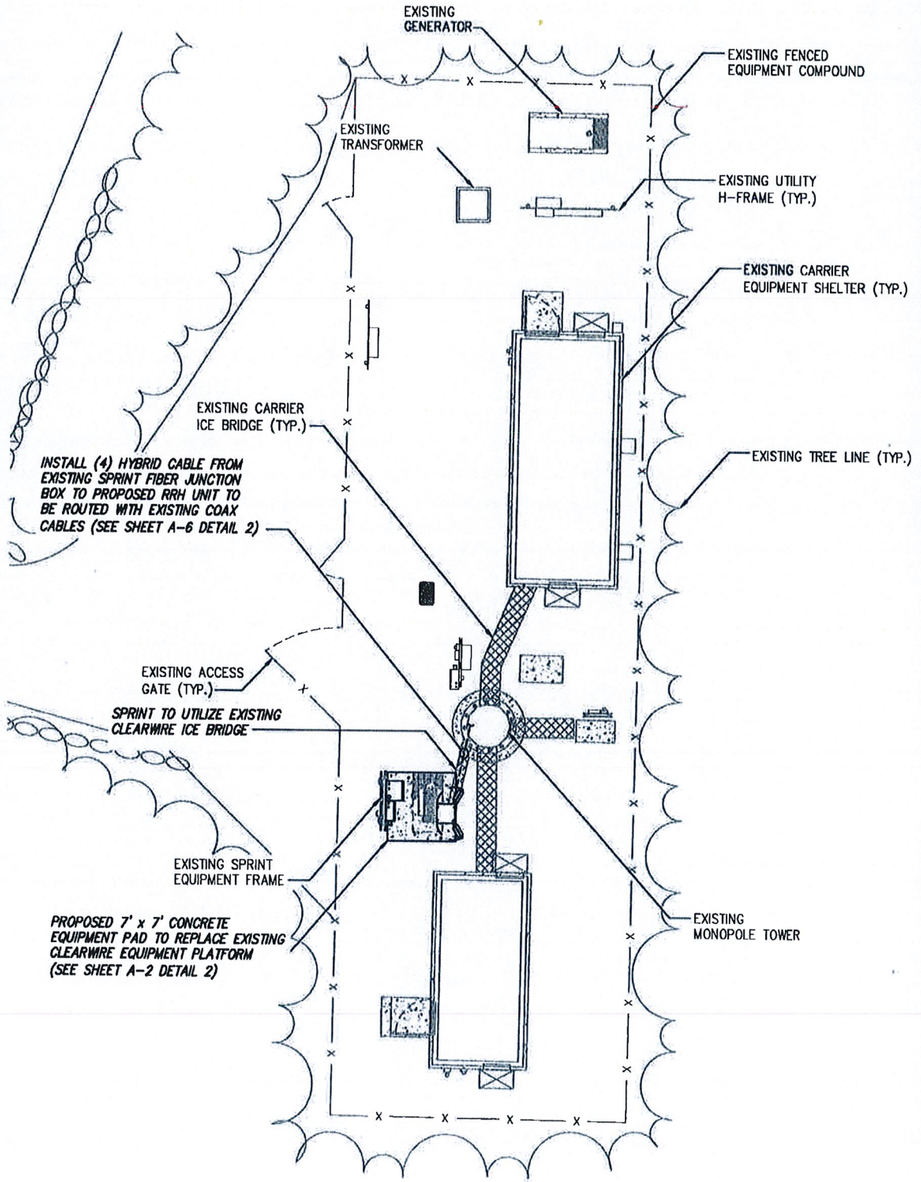
SITE NAME:
PARSONAGE HILL

SITE CASCADE:
CT52XC132

SITE ADDRESS:
1012 NORTHROP ROAD
WALLINGFORD CNTR, CT 06492

SHEET DESCRIPTION:
SPRINT SPECIFICATIONS

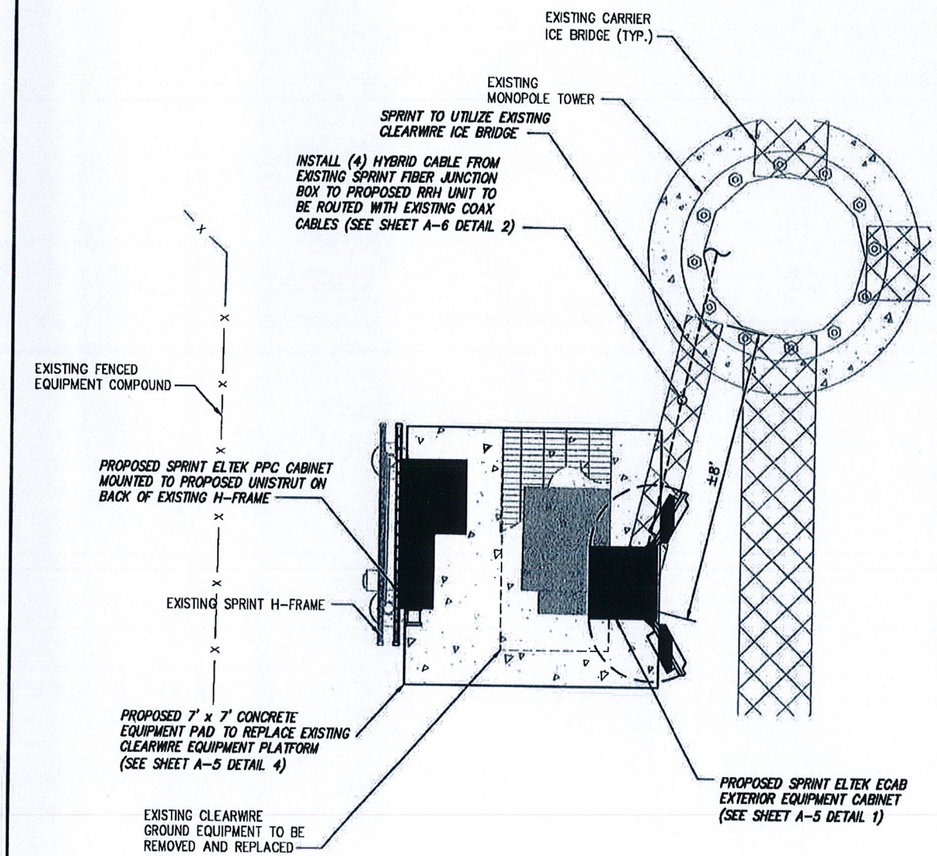
SHEET NUMBER:
SP-3



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

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

OVERALL SITE PLAN | SCALE: AS NOTED | 1



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
6580 Sprint Parkway
Overland Park, Kansas 66251

PLANS PREPARED BY:
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www.infinigy.com
JOB NUMBER 526-104

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

ENGINEERING LICENSE:
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JOHN S. STEVENS
No. 24705
1.8.2018
PROFESSIONAL ENGINEER

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REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR PERMIT	06/26/18	MAP	0

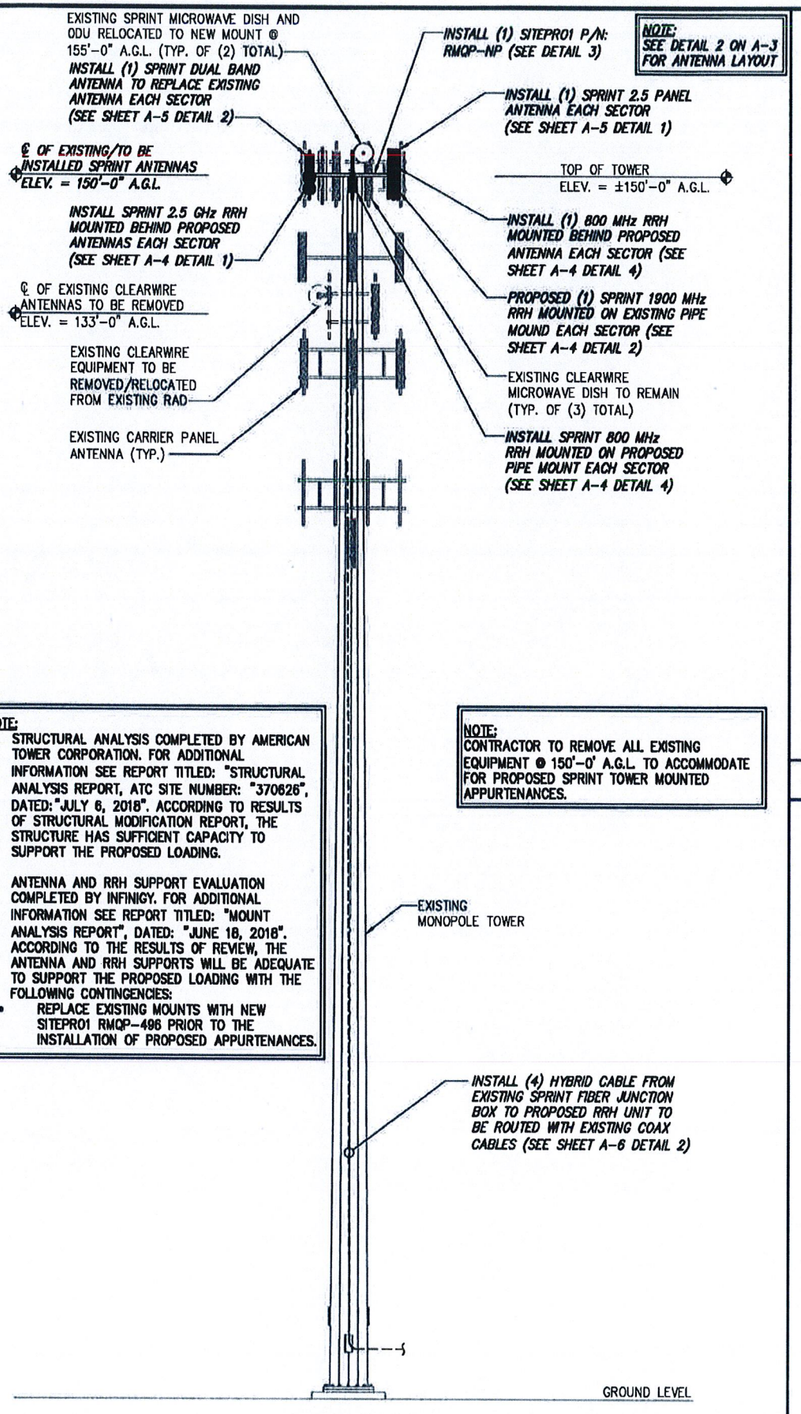
SITE NAME:
PARSONAGE HILL

SITE CASCADE:
CT52XC132

SITE ADDRESS:
1012 NORTHROP ROAD
WALLINGFORD CNTR, CT 06492

SHEET DESCRIPTION:
SITE PLAN

SHEET NUMBER:
A-1



NOTE:
- STRUCTURAL ANALYSIS COMPLETED BY AMERICAN TOWER CORPORATION. FOR ADDITIONAL INFORMATION SEE REPORT TITLED: "STRUCTURAL ANALYSIS REPORT, ATC SITE NUMBER: "370626", DATED: "JULY 6, 2018". ACCORDING TO RESULTS OF STRUCTURAL MODIFICATION REPORT, THE STRUCTURE HAS SUFFICIENT CAPACITY TO SUPPORT THE PROPOSED LOADING.
- ANTENNA AND RRH SUPPORT EVALUATION COMPLETED BY INFINIGY. FOR ADDITIONAL INFORMATION SEE REPORT TITLED: "MOUNT ANALYSIS REPORT", DATED: "JUNE 18, 2018". ACCORDING TO THE RESULTS OF REVIEW, THE ANTENNA AND RRH SUPPORTS WILL BE ADEQUATE TO SUPPORT THE PROPOSED LOADING WITH THE FOLLOWING CONTINGENCIES:
  - ** REPLACE EXISTING MOUNTS WITH NEW SITEPRO1 RMQP-496 PRIOR TO THE INSTALLATION OF PROPOSED APPURTENANCES.

NOTE:
CONTRACTOR TO REMOVE ALL EXISTING EQUIPMENT @ 150'-0' A.G.L. TO ACCOMMODATE FOR PROPOSED SPRINT TOWER MOUNTED APPURTENANCES.

TOWER ELEVATION | NO SCALE | 1

SITE LOADING CHART

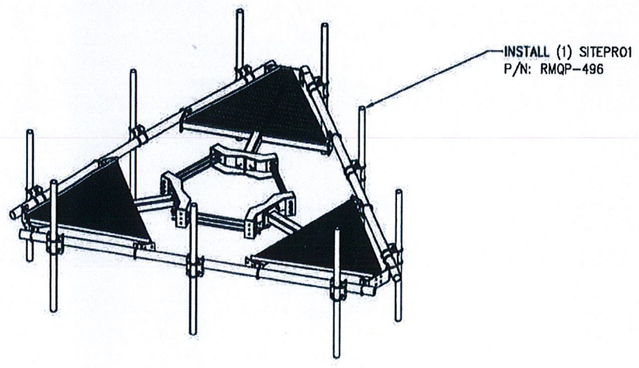
SECTOR	EXISTING/ PROPOSED	ANTENNA MODEL #	VENDOR	AZIMUTH	QTY.	REMAIN/ REMOVED	RRH (QTY/MODEL)	CABLE	CABLE LENGTH	RAD CENTER
ALPHA	PROPOSED	NNVV-65B-R4	COMMSCOPE	0°	1	-	(2) 800 MHZ 2X50W RRH	SEE SHEET A-5 DETAIL 1	±178'*	±150' AGL
	PROPOSED	APXVTM14-ALU-120	RFS	0°	1	-	(1) TD-RRHBX20-25 W/ SOLAR SHIELD	SEE SHEET A-5 DETAIL 1		
	EXISTING	LLPX310R	ARGUS	0°	1	REMOVE	(1) 1900 MHz 4X45 RRH	EXISTING COAX		
BETA	PROPOSED	NNVV-65B-R4	COMMSCOPE	120°	1	-	(2) 800 MHZ 2X50W RRH	SEE SHEET A-5 DETAIL 1		±150' AGL
	PROPOSED	APXVTM14-ALU-120	RFS	120°	1	-	(1) TD-RRHBX20-25 W/ SOLAR SHIELD	SEE SHEET A-5 DETAIL 1		
	EXISTING	LLPX310R	ARGUS	120°	1	REMOVE	(1) 1900 MHz 4X45 RRH	EXISTING COAX		
GAMMA	PROPOSED	NNVV-65B-R4	COMMSCOPE	240°	1	-	(2) 800 MHZ 2X50W RRH	SEE SHEET A-5 DETAIL 1		±150' AGL
	PROPOSED	APXVTM14-ALU-120	RFS	240°	1	-	(1) TD-RRHBX20-25 W/ SOLAR SHIELD	SEE SHEET A-5 DETAIL 1		
	EXISTING	LLPX310R	ARGUS	240°	1	REMOVE	(1) 1900 MHz 4X45 RRH	EXISTING COAX		

PROJECT SCOPE:

REMOVE: (3) PANEL ANTENNAS AND (3) RRH'S INSTALL: (6) PANEL ANTENNAS AND (12) 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

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No. 24778
LICENSED PROFESSIONAL ENGINEER
JUL 18 2018

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SITE ADDRESS:

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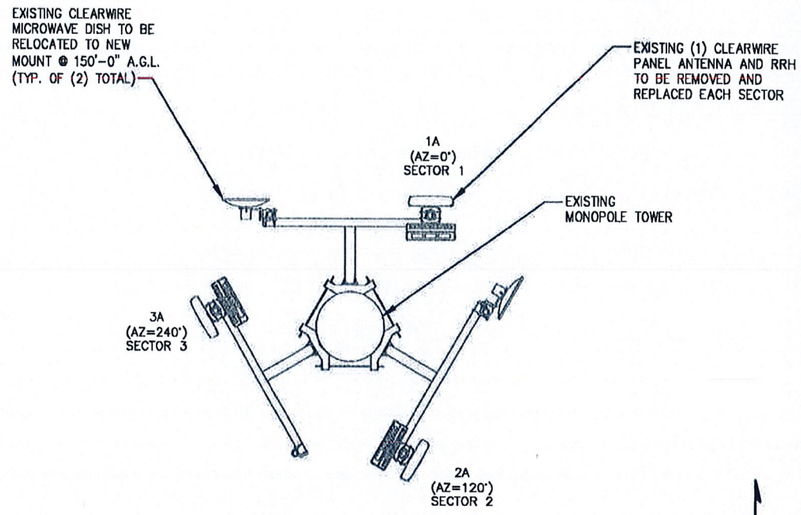
WALLINGFORD CNTR, CT 06492

SHEET DESCRIPTION:

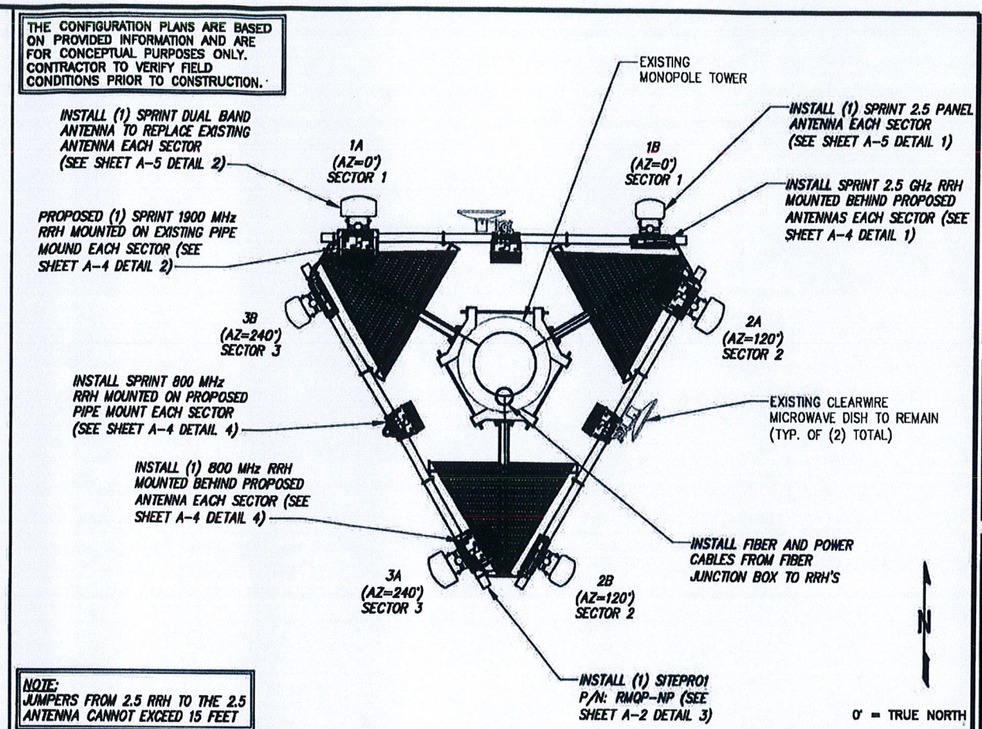
TOWER ELEVATION

SHEET NUMBER:

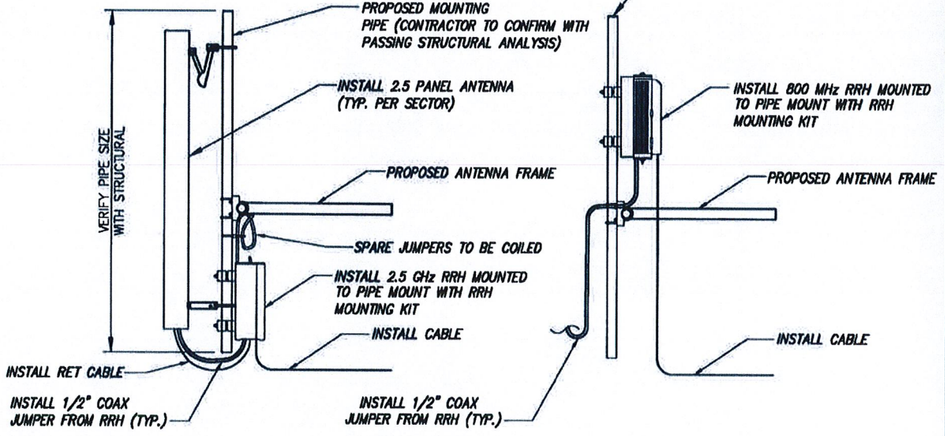
A-2



EXISTING ANTENNA & RRH LAYOUT @ 133' A.G.L. | NO SCALE | 1



FINAL ANTENNA & RRH LAYOUT @ 150' A.G.L. | NO SCALE | 2

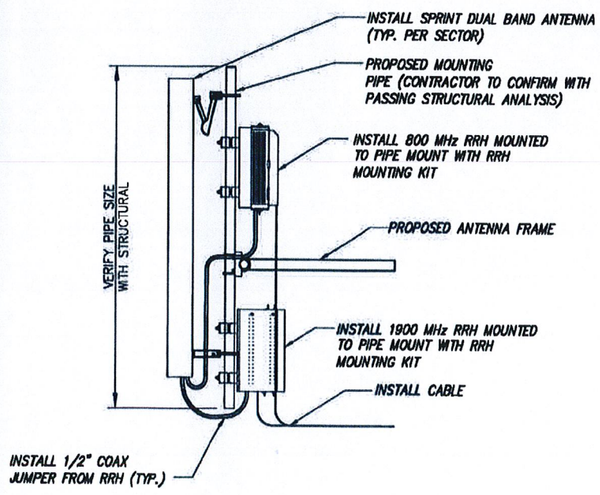


NOTE: CONTRACTOR TO POSITION RRH ON MOUNT BEHIND ANTENNA SUCH THAT THE RRH DOES NOT INTERFERE WITH THE EXISTING PLATFORM/T-ARM MOUNTING HARDWARE.

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 & RRH MOUNTING DETAILS | NO SCALE | 3



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3. DO NO EXCEED BEND RADIUS.

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

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SITE ADDRESS:
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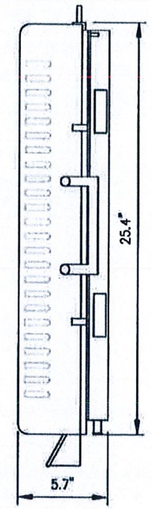
WALLINGFORD CNTR, CT 06492

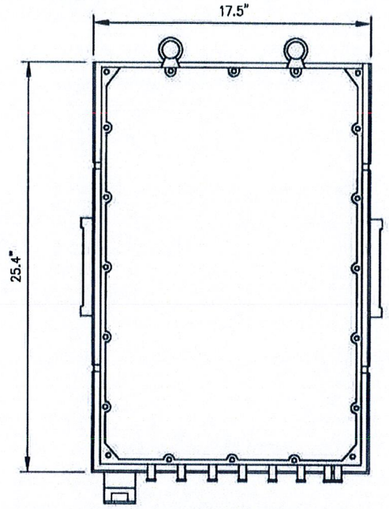
SHEET DESCRIPTION:
ANTENNA LAYOUT & MOUNTING DETAILS

SHEET NUMBER:
A-3

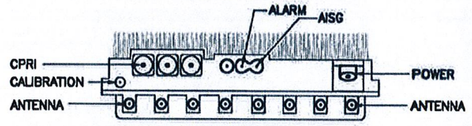
RRH: ALCATEL LUCENT TD-RRH8X20
COLOR: LIGHT GREY
WEIGHT: 70 LBS.



SIDE VIEW



FRONT VIEW



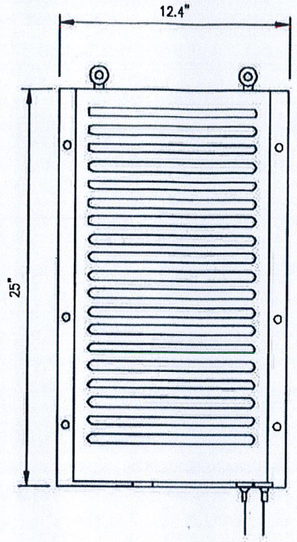
PLAN VIEW

NOTES

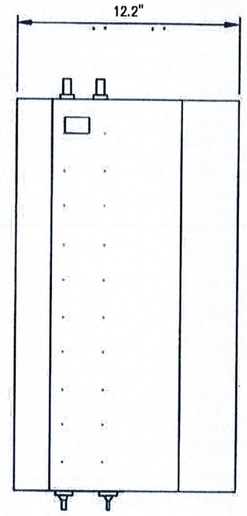
COMPLY WITH MANUFACTURERS INSTRUCTIONS TO ENSURE THAT ALL RRH'S RECEIVE ELECTRICAL POWER WITHIN 24 HOURS OF BEING REMOVED FROM THE MANUFACTURER'S PACKAGING. DO NOT OPEN RRH PACKAGES IN THE RAIN.

2.5 RRH'S | NO SCALE | 1

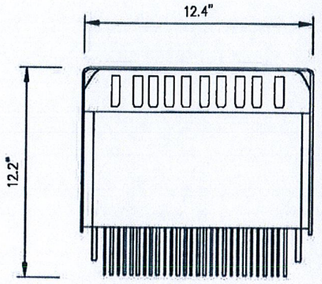
RRH: ALCATEL LUCENT 1900 MHz
COLOR: LIGHT GREY
WEIGHT: 70 LBS.
(INCLUDING OPTIONAL SOLAR SHIELD)



FRONT VIEW



SIDE VIEW



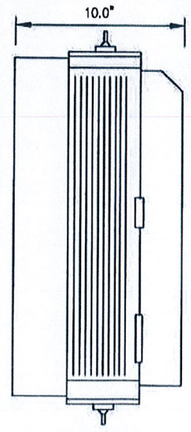
TOP VIEW

1900 MHz RRH | NO SCALE | 2

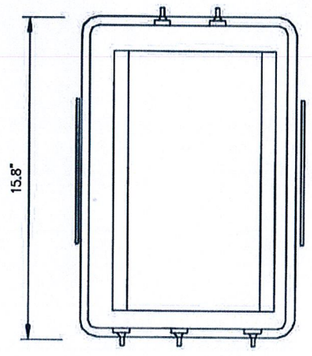
RRH: ALCATEL LUCENT RRH 800 MHz 2x50W
COLOR: LIGHT GREY
WEIGHT: 53 LBS.

NOTES

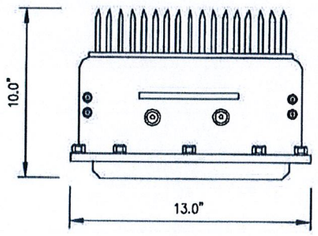
COMPLY WITH MANUFACTURERS INSTRUCTIONS TO ENSURE THAT ALL RRH'S RECEIVE ELECTRICAL POWER WITHIN 24 HOURS OF BEING REMOVED FROM THE MANUFACTURER'S PACKAGING. DO NOT OPEN RRH PACKAGES IN THE RAIN.



SIDE VIEW



FRONT VIEW



PLAN VIEW

DETAIL NOT USED | NO SCALE | 3

800 MHz RRH | NO SCALE | 4

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6/18/2018

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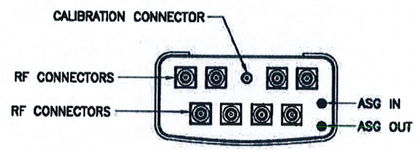
WALLINGFORD CNTR, CT 06492

SHEET DESCRIPTION:
EQUIPMENT & MOUNTING DETAILS

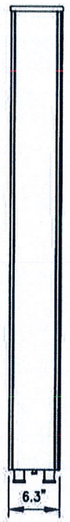
SHEET NUMBER:
A-4

ANTENNA RFS APXVTM14-ALU-I20

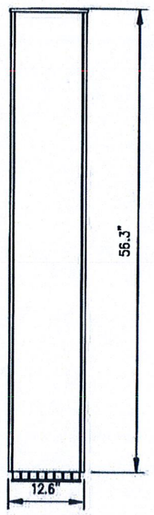
RADOME MATERIAL:	ASA
RADOME COLOR:	LIGHT GREY
DIMENSIONS, HxWxD.in(mim):	56.3"x12.6"x6.3" (1549x439x300mm)
WEIGHT:	56.2 lbs
CONNECTORS:	(8) 4.1/9.5 DIN FEMALE (1) NF – CALIBRATION CONNECTOR



PLAN VIEW



SIDE VIEW

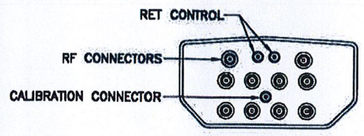


FRONT VIEW

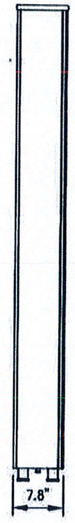
2.5 ANTENNA DETAIL — NO SCALE — 1

ANTENNA COMMSCOPE NNVV-65B-R4

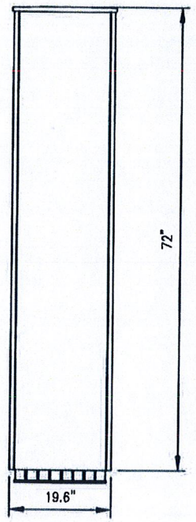
RADOME MATERIAL:	FIBERGLASS
RADOME COLOR:	LIGHT GREY
DIMENSIONS, HxWxD.in(mim):	72"x19.6"x7.8" (1829x498x198mm)
WEIGHT:	77.4 lbs
CONNECTORS:	(2) 7/16" DIN FEMALE (8) 4.1/9.5 DIN FEMALE



PLAN VIEW



SIDE VIEW



FRONT VIEW

DUAL BAND ANTENNA — NO SCALE — 2

DETAIL NOT USED — NO SCALE — 3

DETAIL NOT USED — NO SCALE — 4

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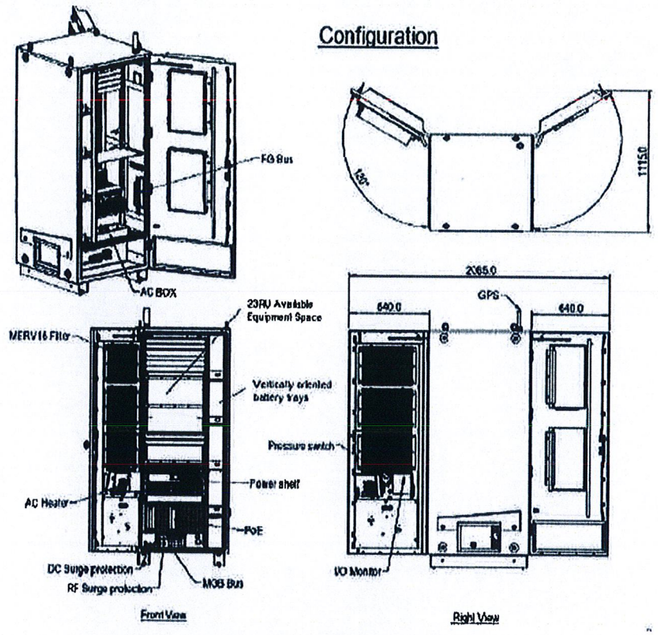
SHEET DESCRIPTION:

EQUIPMENT & MOUNTING DETAILS

SHEET NUMBER:

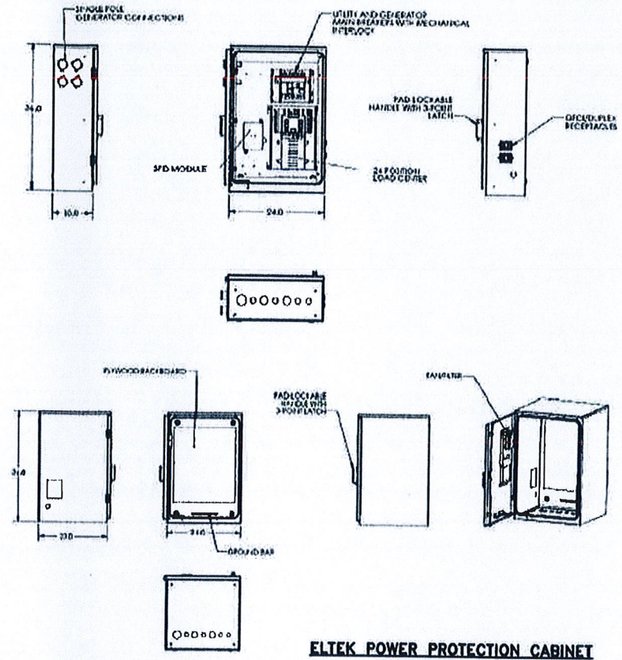
A-5

Configuration



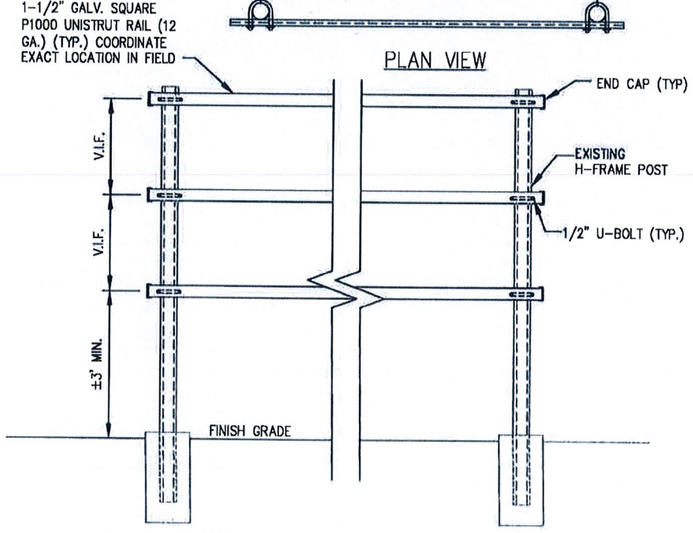
ELTEK ECAB EXTERIOR CABINET
P/N: ESOA220-SCA02

EQUIPMENT CABINET DETAIL | NO SCALE | 1

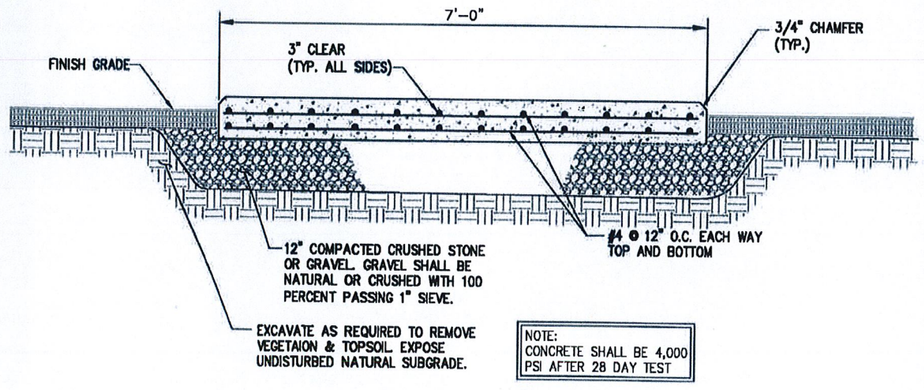


ELTEK POWER PROTECTION CABINET
P/N: 5811122212

EQUIPMENT CABINET DETAIL | NO SCALE | 2



H-FRAME DETAIL | NO SCALE | 3



EQUIPMENT CABINET FOUNDATION | NO SCALE | 4

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CT52XC132

SITE ADDRESS:

1012 NORTHROP ROAD
WALLINGFORD CNTR, CT 06492

SHEET DESCRIPTION:

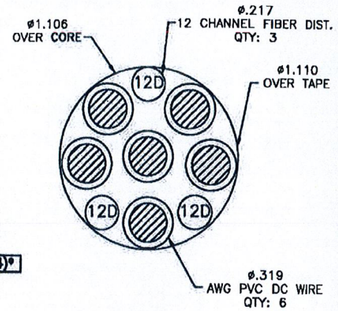
EQUIPMENT DETAILS

SHEET NUMBER:

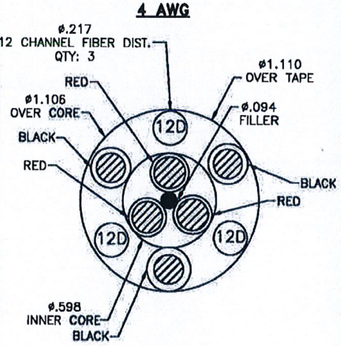
A-6

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 3x8 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 3x6 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 3x4 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



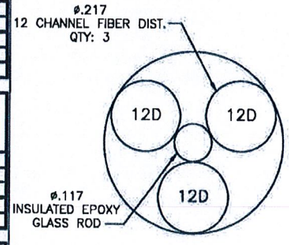
4 AWG



8 & 6 AWG

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, 3x 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, 3x 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, 3x 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

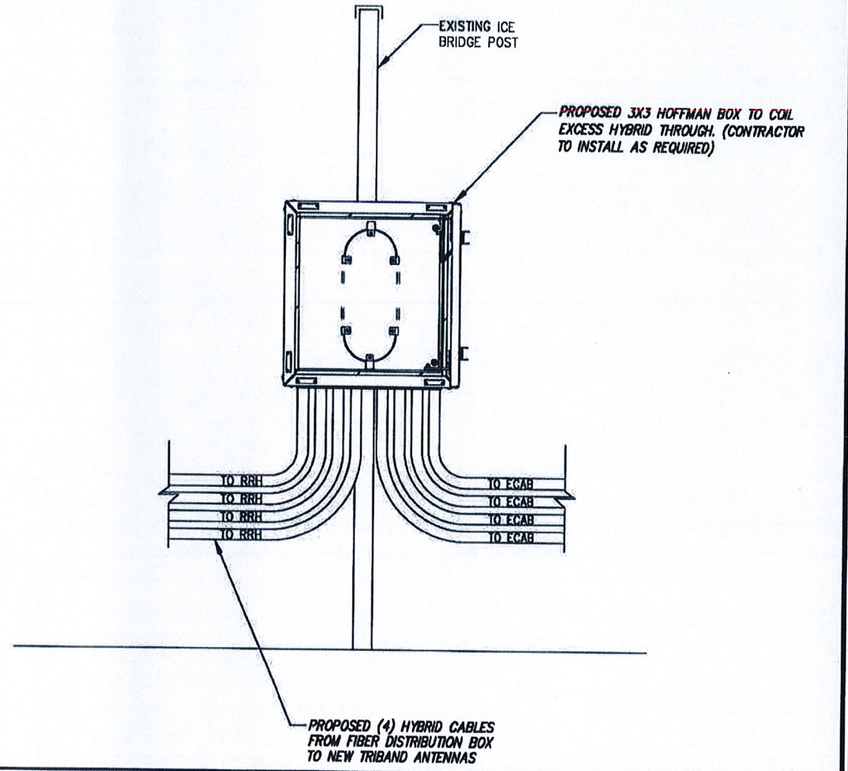


FIBER ONLY

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

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

800/1900/2500 CROSS SECTION DATA | NO SCALE | 1



OPTIONAL HYBRID SLACK BOX | NO SCALE | 2

DETAIL NOT USED | NO SCALE | 3

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6/18/2018

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REVISIONS:

DESCRIPTION	DATE	BY	REV
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SITE NAME:
PARSONAGE HILL

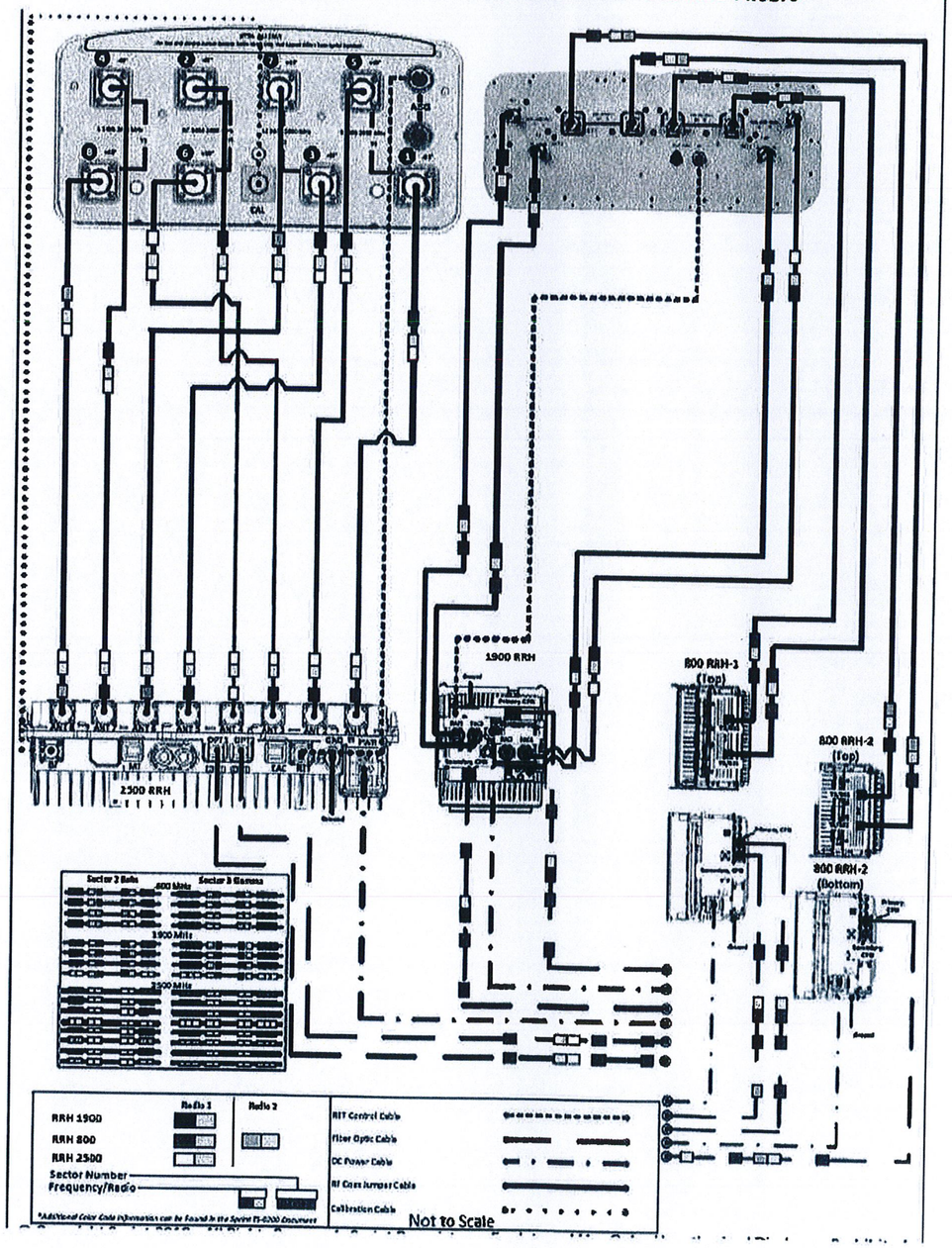
SITE CASCADE:
CT52XC132

SITE ADDRESS:
1012 NORTHROP ROAD
WALLINGFORD CNTR, CT 06492

SHEET DESCRIPTION:
CIVIL DETAILS

SHEET NUMBER:
A-7

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



PLUMBING DIAGRAM | NO SCALE | 1

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CT52XC132

SITE ADDRESS:

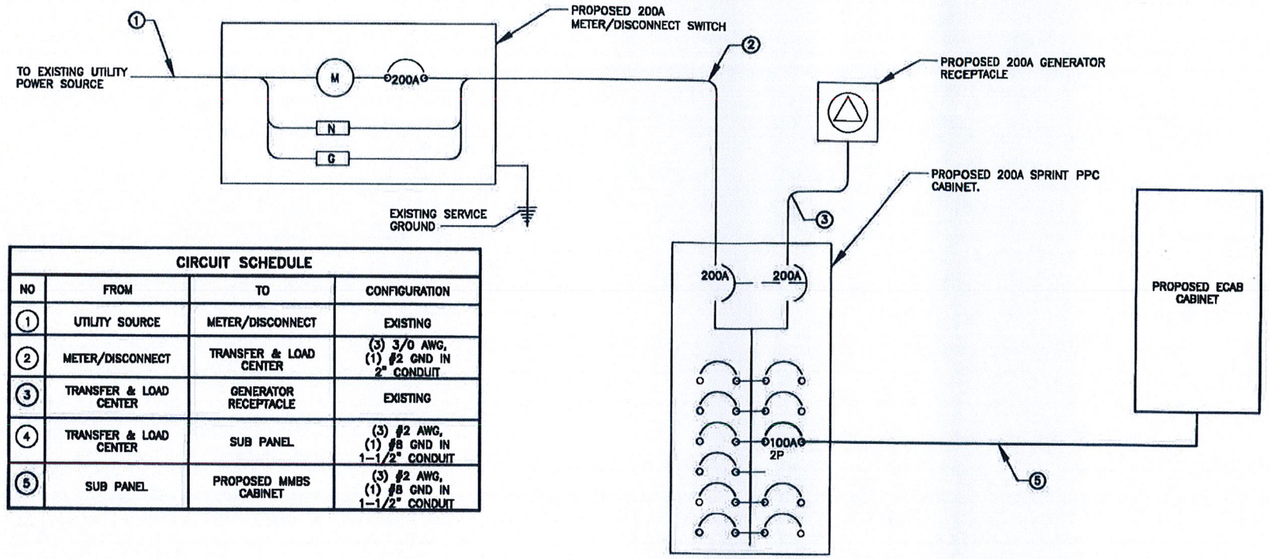
1012 NORTHROP ROAD
WALLINGFORD CNTR, CT 06492

SHEET DESCRIPTION:

PLUMBING DIAGRAM

SHEET NUMBER:

A-8



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. 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

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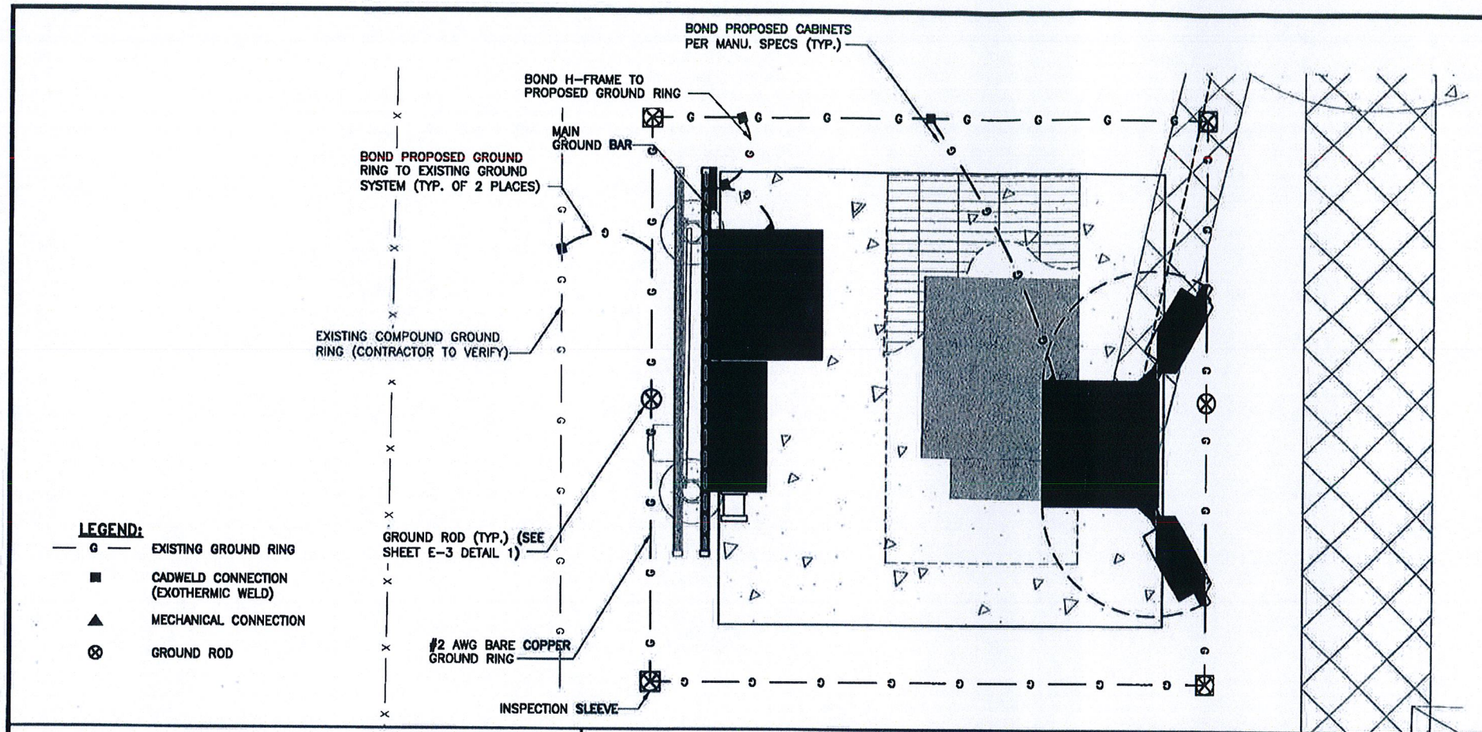
PARSONAGE HILL

SITE CASCADE:
CT52XC132

SITE ADDRESS:
1012 NORTHROP ROAD
WALLINGFORD CNTR, CT 06492

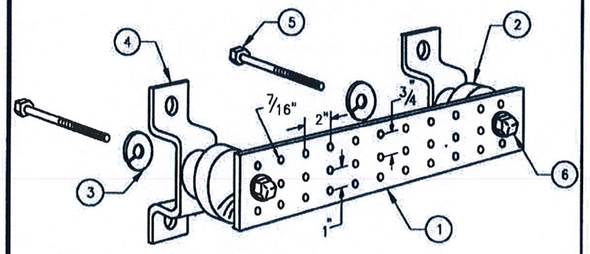
SHEET DESCRIPTION:
ELECTRICAL & GROUNDING PLAN

SHEET NUMBER:
E-1



GROUNDING PLAN

NO SCALE | 1



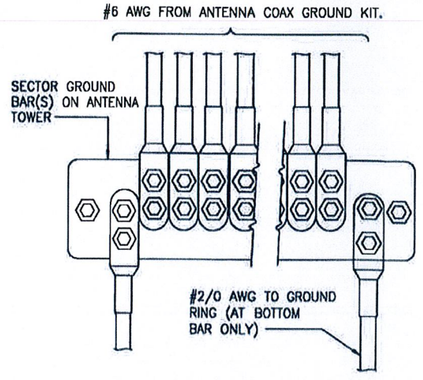
LEGEND

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

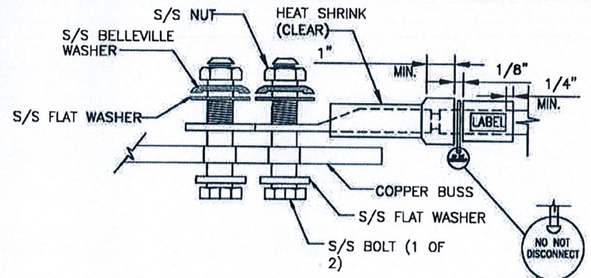
TINNED GROUND BAR DETAIL | NO SCALE | 2

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.

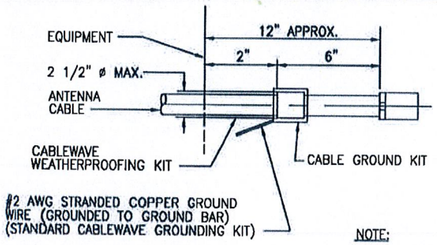


ANTENNA GROUND WIRE INSTALLATION | NO SCALE | 3



NOTE:
ALL MECHANICAL EXTERNAL TERMINATION SURFACES SHALL BE TREATED WITH T&B KOPR-SHIELD CPB 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

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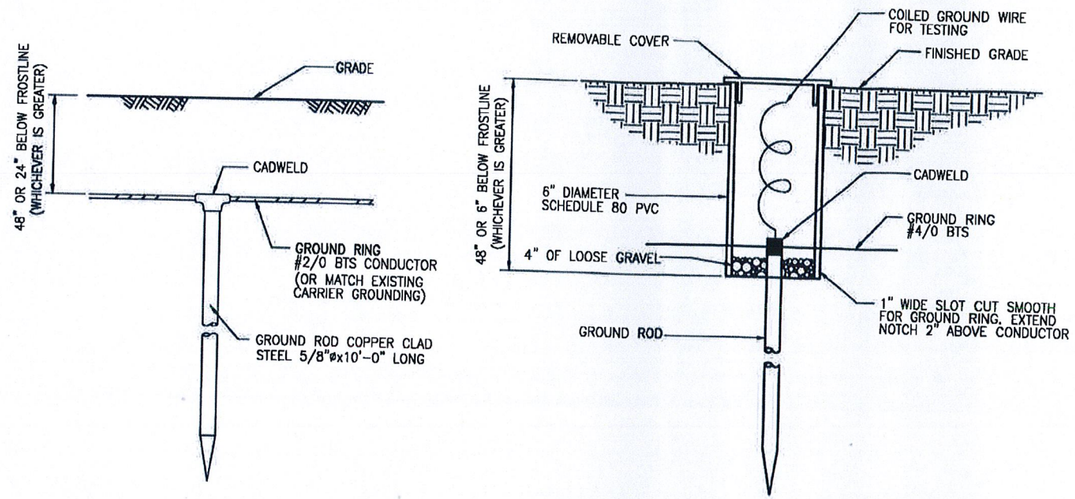
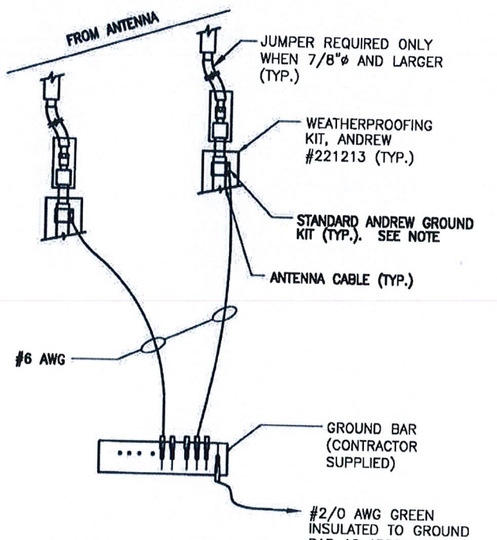
SHEET DESCRIPTION:
ONE LINE & NOTES

SHEET NUMBER:
E-2



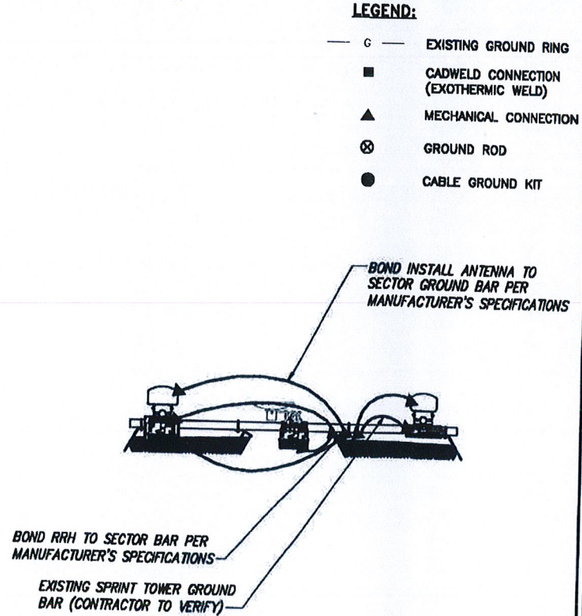
GROUND ROD & INSPECTION SLEEVE DETAIL

NO SCALE | 1

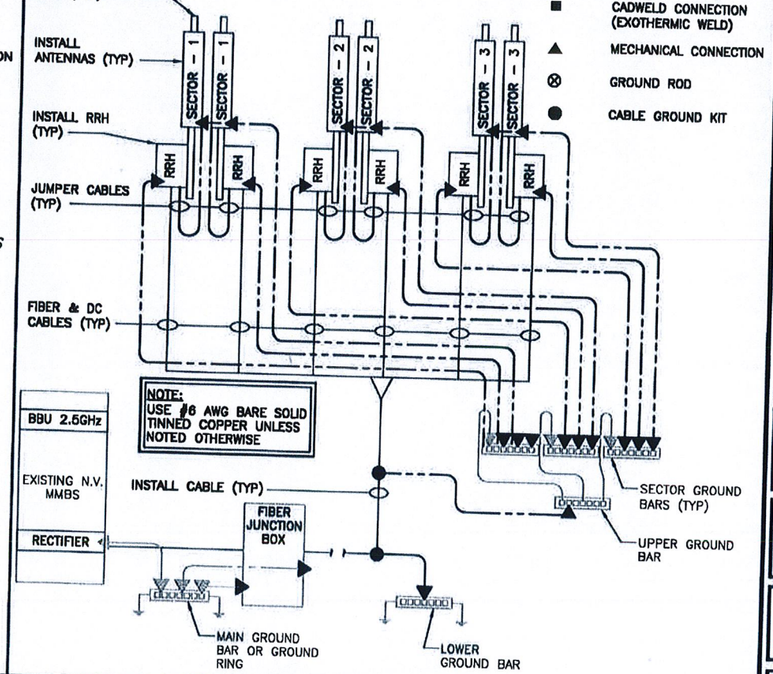


NOTE: DO NOT INSTALL CABLE GROUND KIT AT A BEND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE

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



TYPICAL ANTENNA GROUNDING PLAN | NO SCALE | 3



GROUNDING RISER DIAGRAM | NO SCALE | 4

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E-3