AIROSMITH DEVELOPMENT
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July 9th, 2018

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

RE: Notice of Exempt Modification – Antenna Swap for wireless facility located at 305 WWEST SERVICE ROAD, HARTFORD, CONNECTICUT – CT52XC051 (lat. 41° 47' 56.4" N, long. - 72° 39' 25.6" W)

Dear Ms. Bachman:

Sprint Spectrum, LP ("Sprint") currently maintains wireless telecommunications antennas at the (90-foot level) on an existing (153-foot Monopole Tower) at the above-referenced address. The property is owned by 305 W SERVICE RD ASSOCIATES LLC, and the tower are owned by American Tower Corporation.

Sprint's proposed work involves antenna replacement and tower work. Sprint intends to replace three (3) antennas, adding three (3) new antennas, and add nine (9) new RRHs onto the tower. All the proposed work is contained within the existing fenced area. Please refer to the attached drawings for site plans prepared by Infinigy Engineering. 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 LUKE BRONIN, MAYOR, and KILEY GOSSELIN, DIRECTOR OF PLANNING AND ZONING of the City of HARTFORD. A copy of this letter is also being sent to JUSTINE PAUL the manager for AMERICAN TOWER CORPORATION who manages the tower and 305 W SERVICE RD ASSOCIATES LLC 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: LUKE BRONIN (MAYOR, Hartford, CT)
JUSTINE PAUL (Manager, AMERICAN TOWER CORPORATION)
KILEY GOSSELIN (DIRECTOR OF PLANNING AND ZONING, Hartford, CT)
305 W SERVICE RD ASSOCIATES LLC (Land Owner)

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BROAD BROOK, CT 06016

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07/09/2018

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Street and Apt. No., or PO Box No.: 79 Pyc Brook ST
City, State, ZIP+4®: Broad Brook, CT 06016

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

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07/09/2018

Sent To: Justine Paul CT52xc051
Street and Apt. No., or PO Box No.: 10 Presidential Way
City, State, ZIP+4®: Woburn MA 01801

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Street and Apt. No., or PO Box No.: 550 Main ST
City, State, ZIP+4®: Hartford CT 06103

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

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Total Postage and Fees $6.70

SARATOGA FINANCE JUL 09 2018 SARATOGA SPRINGS, NY 12866

0867 77

Postmark Here

07/09/2018

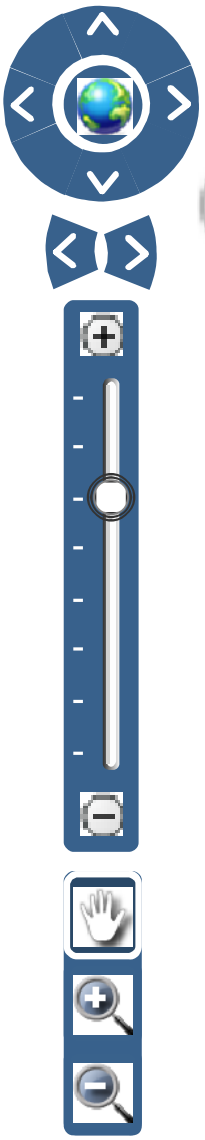
Sent To: Mayor Luke Bronin CT52xc051
Street and Apt. No., or PO Box No.: 550 Main ST
City, State, ZIP+4®: Hartford CT 06103

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

7018 0680 0002 1201 6255

Property Viewer

City of Hartford - GIS Services



Identify

Clear

Parcels

GIS Parcel ID: 304074014
Owner Full Name: 305 W SERVICE RD ASSOC LLC
Owner2 First Name:
Owner2 Last Name:
Owner3 First Name:
Owner3 Last Name:
Mailing Address1: 79 RYE ST
Mailing Address2:
Mailing Street:
City: BROAD BROOK
State: CT
Zip: 06016-9555
Living Units: Null
Year Built: 1960
Total Acreage: 85813
Story Height: 1.0
Bedrooms: Null

Parcels

GIS Parcel ID: 304074014

City of Hartford Assessor Map

Legend

- Parcel ID
- Duplicate Parcel ID
- Exempt ID
- Building ID
- Air Right ID
- Parcels
- Tax Map Grid
- City Boundary Line
- Building
- Building Under Construction
- House Trailer
- Foundation
- Greenhouse
- Cement Pad
- Deck
- Patio
- Pool
- Tunnel
- Trail
- Railroad
- Abandoned Railroad
- Fence
- Ruins
- Tree
- Hedge
- Vegetation
- 161507165 Parcel ID
- *7500 sf or Ac* Parcel Area
- 88 Street Address
- *11-19* Condo Lot Range
- *11D* Condo Unit
- Driveway and Parking Lot Paved
- Driveway and Parking Lot Unpaved
- Sidewalk
- Private Sidewalk and Steps
- Runway
- Bridge
- Road Edge Paved
- Road Edge Unpaved
- Wharf and Pier
- Fuel Tank
- Water Tank

Golf Course
- Fairway
- Green
- Sand Trap
- Tee
- Swamp
- Water
- River or Stream

Key Map

DISCLAIMER:

The planimetric and topographic information depicted on this map was compiled by The James Sewell Company and is based on an aerial flight performed in April 2006. In addition, the City's GIS staff has been updating limited planimetric features based on information on file in various City departments. The parcel and property information depicted on this map has been compiled from recorded deeds, maps, assessor records, and other public records on file in the City of Hartford. The intent of this map is to depict a graphical representation of real property information relative to the planimetric features for the City of Hartford and is subject to change as a more accurate survey may disclose.
The City of Hartford and the mapping company assume no legal responsibility for the information contained in this data.

THIS MAP IS NOT TO BE USED FOR THE TRANSFER OF PROPERTY.

Horizontal Datum: Connecticut State Plane Coordinates (NAD 83 feet)
Vertical Datum: North American Vertical Datum (NAVD 88 feet)

N W E S

Date: October 1, 2015

0 25 50 100 150 200 Feet

Map Sheet 304

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

SPRINT Existing Facility

Site ID: CT52XC051

Whiteys Repair Auto Body
305 W. Service Road
Hartford, CT 06120

July 5, 2018

EBI Project Number: 6218004786

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	17.52 %

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

EBI Consulting
environmental | engineering | due diligence

July 5, 2018

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

Emissions Analysis for Site: **CT52XC051 – Whiteys Repair Auto Body**

EBI Consulting was directed to analyze the proposed SPRINT facility located at **305 W. Service Road, Hartford, CT**, for the purpose of determining whether the emissions from the Proposed SPRINT Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

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

General population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 850 MHz Band is approximately 567 $\mu W/cm^2$. The general population exposure limit for the 1900 MHz (PCS), 2500 MHz (BRS) and 18 GHz microwave bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed SPRINT Wireless antenna facility located at **305 W. Service Road, Hartford, 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 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 backhaul channel (18 GHz) was considered for Sectors A & B. These channels have a transmit power of 1 Watt.

7) 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.

8) 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 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.

9) The antennas used in this modeling are the **Commscope NNVV-65B-R4 and the Nokia AAHC** for transmission in the 850 MHz, 1900 MHz (PCS) and 2500 MHz (BRS) frequency bands and the **Andrew VHLP2-18** parabolic microwave dish for the 18 GHz microwave backhaul. 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 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.

10) The antenna mounting height centerlines of the proposed panel antennas and microwave dishes are **90 feet** above ground level (AGL) for **Sector A**, **90 feet** above ground level (AGL) for **Sector B** and **90 feet** above ground level (AGL) for Sector C.

11) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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

SPRINT Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	Commscope NNVV-65B-R4	Make / Model:	Commscope NNVV-65B-R4	Make / Model:	Commscope NNVV-65B-R4
Gain:	12.75 / 15.05 dBd	Gain:	12.75 / 15.05 dBd	Gain:	12.75 / 15.05 dBd
Height (AGL):	**90 feet**	Height (AGL):	**90 feet**	Height (AGL):	**90 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%	**4.63 %**	Antenna B1 MPE%	**4.63 %**	Antenna C1 MPE%	**4.63 %**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Nokia AAHC	Make / Model:	Nokia AAHC	Make / Model:	Nokia AAHC
Gain:	15.05 dBd	Gain:	15.05 dBd	Gain:	15.05 dBd
Height (AGL):	**90 feet**	Height (AGL):	**90 feet**	Height (AGL):	**90 feet**
Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)	Frequency Bands	2500 MHz (BRS)
Channel Count	8	Channel Count	8	Channel Count	8
Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts	Total TX Power(W):	160 Watts
ERP (W):	5,118.23	ERP (W):	5,118.23	ERP (W):	5,118.23
Antenna A2 MPE%	**2.61 %**	Antenna B2 MPE%	**2.61 %**	Antenna C2 MPE%	**2.61 %**

Microwave Backhaul Data

Antenna Type:	Gain (dBd)	Height (feet AGL):	Frequency Bands	Channel Count	Total TX Power(W)	ERP (W)	MPE %	Sector
Andrew VHLP2-18	36.85 dBd	90	18 GHz	1	1	4841.70	**0.25**	A
Andrew VHLP2-18	36.85 dBd	90	18 GHz	1	1	4841.70	**0.25**	B

Site Composite MPE%	
Carrier	**MPE%**
SPRINT – Sectors A & B	**7.49 %**
Northcoast	0.20 %
Nextel	0.28 %
Clearwire	0.26 %
Sensus (CL&P)	0.14 %
Verizon Wireless	5.72 %
T-Mobile	3.43 %
Site Total MPE %:	**17.52 %**

SPRINT Sector A Total:	7.49 %
SPRINT Sector B Total:	7.49 %
SPRINT Sector C Total:	7.25 %
Site Total:	17.52 %

SPRINT _ Frequency Band / Technology Max Power Values (Sectors A & 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	90	1.92	850 MHz	567	0.34%
Sprint 850 MHz LTE	2	941.82	90	9.60	850 MHz	567	1.69%
Sprint 1900 MHz (PCS) CDMA	5	511.82	90	13.04	1900 MHz (PCS)	1000	1.30%
Sprint 1900 MHz (PCS) LTE	2	1,279.56	90	13.04	1900 MHz (PCS)	1000	1.30%
Sprint 2500 MHz (BRS) LTE	8	639.78	90	26.08	2500 MHz (BRS)	1000	2.61%
Sprint 18 GHz Microwave	1	4,841.72	90	2.47	18 GHz	1000	0.25%
						Total:	**7.49%**

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:	7.49 %
Sector B:	7.49 %
Sector C:	7.25 %
SPRINT Maximum Total (Sectors A & B):	7.49 %
Site Total:	17.52 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **17.52 %** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure	:	**147.9 ft Monopole**
ATC Site Name	:	**West Service Road, CT**
ATC Site Number	:	**302466**
Engineering Number	:	**OAA713356_C3_03**
Proposed Carrier	:	**Clearwire**
Carrier Site Name	:	**Whteys Repair Auto Body**
Carrier Site Number	:	**CT52XC051**
Site Location	:	**305 W. Service Rd.** **Hartford, CT 06120-0001** **41.799500,-72.656700**
County	:	**Hartford**
Date	:	**June 11, 2018**
Max Usage	:	**68%**
Result	:	**Pass**

Prepared By:
Tyler Ferguson, E.I.
Structural Engineer I

Reviewed By:

COA: PEC.0001553

AMERICAN TOWER®
CORPORATION

Table of Contents

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 147.9 ft monopole to reflect the change in loading by Clearwire.

Supporting Documents

Tower Drawings	FWT Job #18053, dated September 10, 1998
Foundation Drawing	FWT Job #18054, dated September 10, 1998
Geotechnical Report	Gibble Norden Champion Project #98134.09, dated September 8, 1998

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/ 1" 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	8	Andrew DB844H90E-XY	Platform w/ Handrails	(12) 1 1/4" Coax	Sprint Nextel
		4	Andrew 844G65VTZASX			
135.0	138.0	9	48" x 4" Panel	Low Profile Platform	(9) 1 5/8" Coax	AT&T Mobility
125.0	126.0	3	Ericsson KRY 112 144/1	T-Arms	(12) 1 5/8" Coax (1) 1 5/8" Fiber (1) 1 5/8" Hybriflex	T-Mobile
		3	Ericsson RRUS 11 B12			
		3	Ericsson AIR 21, 1.3 M, B2A B4P			
		3	Ericsson AIR-32 B2A/B66Aa			
		3	Andrew LNX-6515DS-VTM			
115.0	116.0	3	Alcatel-Lucent RRH2X60-1900	Low Profile Platform	(18) 1 5/8" Coax (2) 1 5/8" Fiber	Verizon
		3	Alcatel-Lucent RRH2x60 700			
		3	Alcatel-Lucent B66A RRH 4x45			
		2	RFS DB-T1-6Z-8AB-0Z			
		6	Antel BXA-70063-6CF-EDIN-X			
		6	Commscope SBNHH-1D65B			
103.0	107.0	1	Antel BCD-87010 ___ 25	Stand-Off	(1) 7/8" Coax	Sensus USA
90.0	90.0	2	DragonWave Horizon Compact	Site Pro RMV5-296 T-Arms	(6) 5/16" Coax (2) 1/2" Coax	Clearwire

Equipment to be Removed

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
90.0	90.0	3	Argus LLPX310R	-	-	Clearwire
		3	NextNet BTS-2500			
		2	DragonWave A-ANT-18G-2-C			

Proposed Equipment

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
90.0	90.0	6	Alcatel-Lucent RRH2x50-08	Site Pro RMV5-296 T-Arms	(3) 1 1/4" Hybriflex (2) 2" conduit (1) 1.7" Hybrid	Clearwire
		3	Alcatel-Lucent 1900MHz RRH (65MHz) w/ solar shield			
		1	18" x 18" x 4" Junction Box			
		3	Nokia 2.5G MAA - AAHC(64T64R)			
		2	Andrew VHLP2-18			
		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 inside the pole shaft.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	63%	Pass
Shaft	68%	Pass
Base Plate	22%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	3,339.6	68%
Axial (Kips)	50.4	4%
Shear (Kips)	32.6	48%

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

Deflection and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
90.0	Alcatel-Lucent RRH2x50-08	Clearwire	0.576	0.704
	Alcatel-Lucent 1900MHz RRH (65MHz) w/ solar shield			
	18" x 18" x 4" Junction Box			
	Nokia 2.5G MAA - AAHC(64T64R)			
	Andrew VHLP2-18			
	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**

AMERICAN TOWER®
CORPORATION

Standard Conditions

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

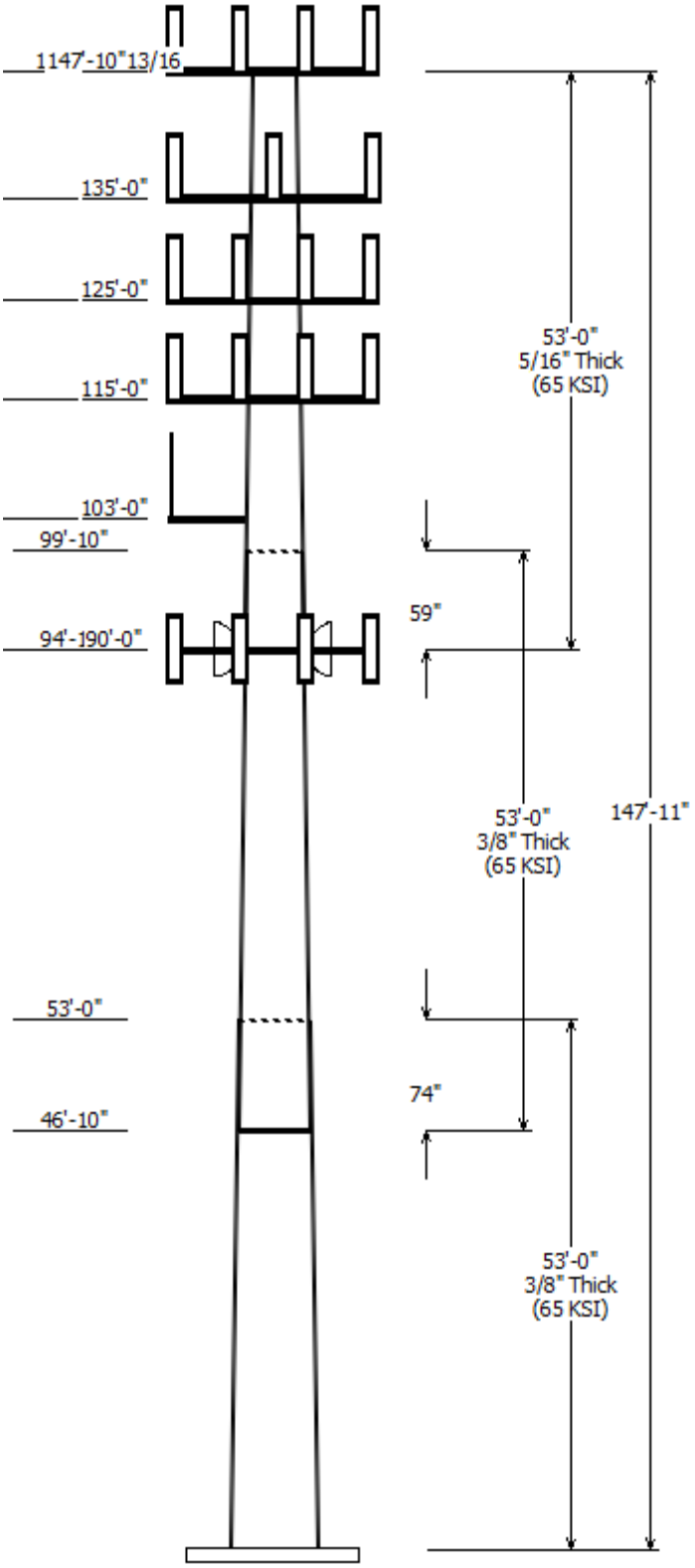
- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

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

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

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

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



Job Information

Pole :	302466	Code:	ANSI/TIA-222-G
Location :	West Service Road, CT		
Description :			
Client :	CLEARWIRE CORPORATION	Struct Class :	II
Shape :	18 Sides	Exposure :	C
Height :	147.92 (ft)	Topo :	1
Base Elev (ft):	0.00		
Taper:	0.214564 (in/ft)		

Sections Properties

Shaft Section	Length (ft)	Diameter (in) Accross Flats Top	Bottom	Thick (in)	Joint Type	Overlap Length (in)	Shape	Steel Grade (ksi)
1	53.000	45.20	56.58	0.375		0.000	18 Sides	65
2	53.000	35.90	47.28	0.375	Slip Joint	74.000	18 Sides	65
3	53.000	26.21	37.58	0.313	Slip Joint	59.000	18 Sides	65

Discrete Appurtenance

Attach Elev (ft)	Force Elev (ft)	Qty	Description
147.900	150.000	1	Flat Platform w/ Handrails
147.900	150.000	4	Andrew 844G65VTZASX
147.900	150.000	8	Andrew DB844H90E-XY
135.000	135.000	1	Flat Low Profile Platform
135.000	138.000	9	48" x 4" Panel
125.000	126.000	3	Ericsson RRUS 11 B12
125.000	126.000	3	Andrew LNX-6515DS-VTM
125.000	126.000	3	Ericsson AIR-32 B2A/B66Aa
125.000	126.000	3	Ericsson AIR 21, 1.3 M, B2A B4
125.000	126.000	3	Ericsson KRY 112 144/1
125.000	125.000	3	Round T-Arm
115.000	116.000	3	Alcatel-Lucent B66A RRH 4x45
115.000	116.000	6	Commscope SBNHH-1D65B
115.000	116.000	2	RFS DB-T1-6Z-8AB-0Z
115.000	116.000	3	Alcatel-Lucent RRH2x60 700
115.000	116.000	3	Alcatel-Lucent RRH2X60-1900
115.000	116.000	6	Amphenol Antel BXA-70063-
115.000	115.000	1	Flat Low Profile Platform
103.000	107.000	1	Antel BCD-87010 ___ 25
103.000	103.000	1	Stand-Off
90.000	90.000	3	Commscope NNVV-65B-R4
90.000	90.000	3	Nokia 2.5G MAA -
90.000	90.000	1	18" x 18" x 4" Junction Box
90.000	90.000	2	Andrew VHLP2-18
90.000	90.000	3	Alcatel-Lucent 1900MHz RRH
90.000	90.000	6	Alcatel-Lucent RRH2x50-08
90.000	90.000	3	Flat T-Arm
90.000	90.000	2	DragonWave Horizon Compact

Linear Appurtenance

Elev (ft) From	To	Description	Exposed To Wind
5.000	90.000	1 1/4" Hybriflex	No
5.000	90.000	1.7" (43.2mm)	No
5.000	90.000	1/2" Coax	Yes
5.000	90.000	2" conduit	Yes
5.000	90.000	5/16" (0.31"-	No
5.000	103.0	7/8" Coax	Yes
5.000	115.0	1 5/8" (1.63"-	Yes
5.000	115.0	1 5/8" Coax	No
5.000	115.0	1 5/8" Coax	Yes

5.000	125.0	1 5/8" (1.63"-	No
5.000	125.0	1 5/8" Coax	Yes
5.000	125.0	1 5/8" Coax	No
5.000	125.0	1 5/8" Hybriflex	Yes
5.000	135.0	1 5/8" Coax	No
5.000	147.9	1 1/4" Coax	No

Load Cases

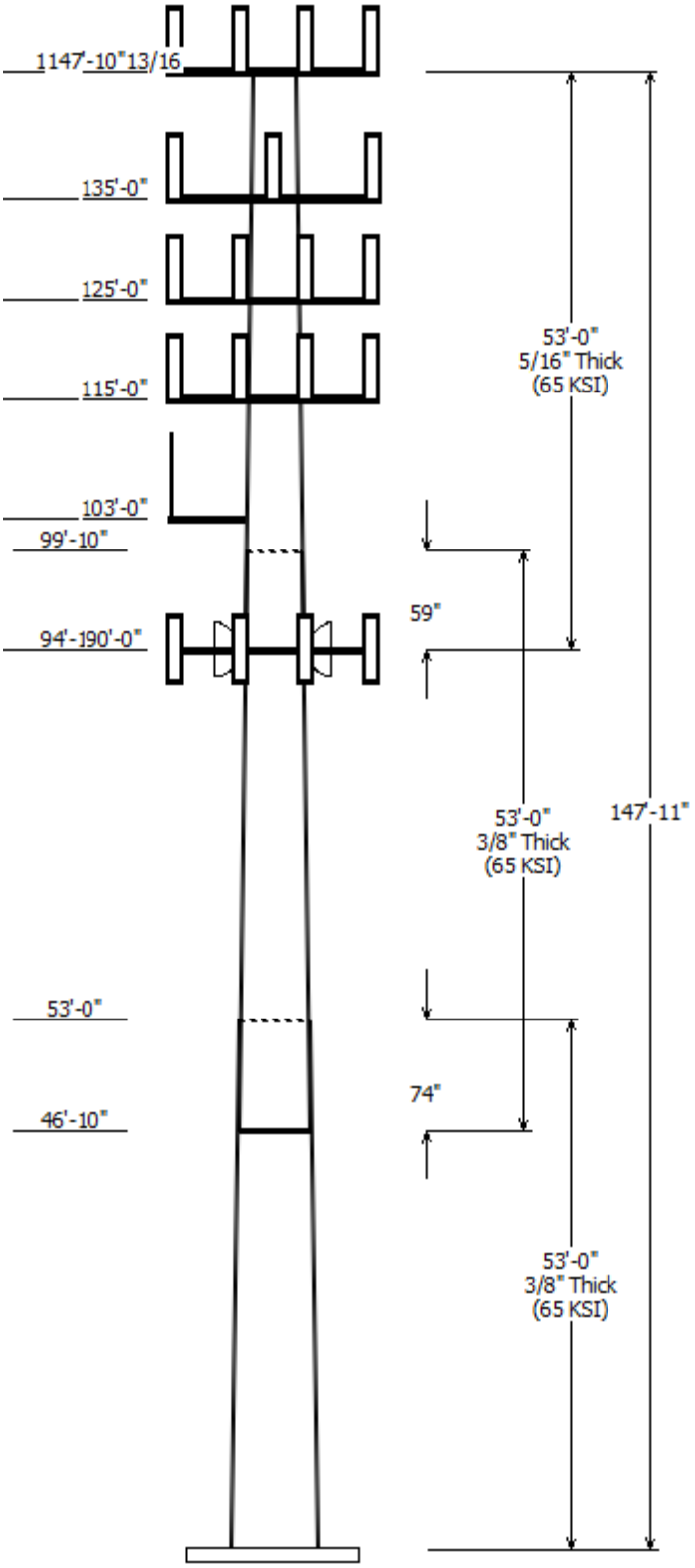
1.2D + 1.6W	97 mph with No Ice
0.9D + 1.6W	97 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 1.00 in Radial Ice
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Lateral
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Modal
1.0D + 1.0W	Serviceability 60 mph

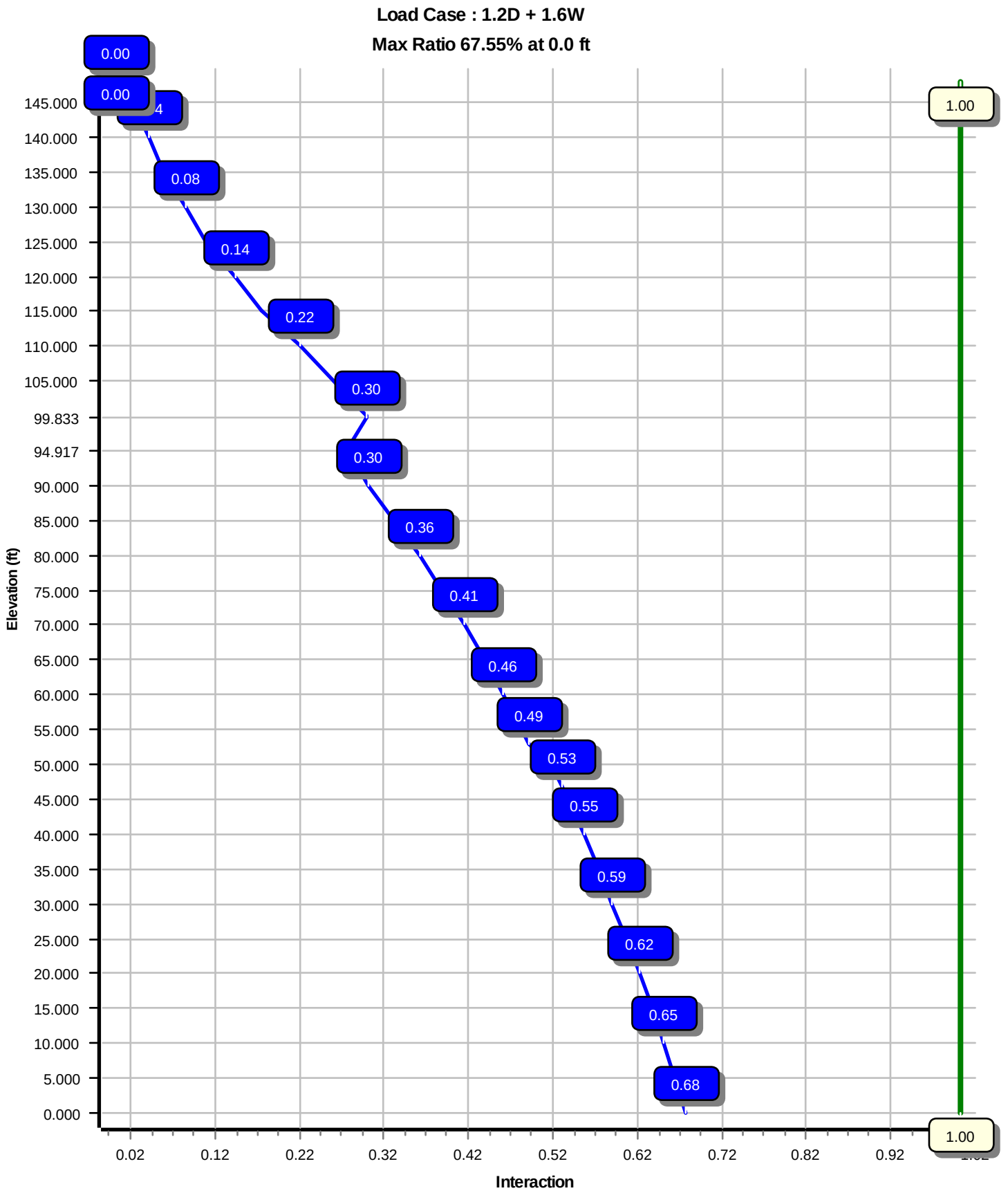
Reactions

Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.6W	3339.60	32.58	50.44
0.9D + 1.6W	3263.70	32.05	37.82
1.2D + 1.0Di + 1.0Wi	973.87	9.40	95.43
(1.2 + 0.2Sds) * DL + E ELFM	208.30	1.83	50.72
(1.2 + 0.2Sds) * DL + E EMAM	242.45	2.12	50.72
(0.9 - 0.2Sds) * DL + E ELFM	205.97	1.83	35.27
(0.9 - 0.2Sds) * DL + E EMAM	239.54	2.12	35.27
1.0D + 1.0W	783.31	7.67	42.07

Dish Deflections

Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
1.0D + 1.0W	90.00	6.915	0.704




Load Case : 1.2D + 1.6W
Max Ratio 67.55% at 0.0 ft
0.00
0.00
0.08
0.14
0.22
0.30
0.30
0.36
0.41
0.46
0.49
0.53
0.55
0.59
0.62
0.65
0.68
1.00
1.00
145.000
140.000
135.000
130.000
125.000
120.000
115.000
110.000
105.000
99.833
94.917
90.000
85.000
80.000
75.000
70.000
65.000
60.000
55.000
50.000
45.000
40.000
35.000
30.000
25.000
20.000
15.000
10.000
5.000
0.000
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:	302466	Code: ANSI/TIA-222-G	
Site Name:	West Service Road, CT	Engineering Number:OAA713356_C3_03	6/11/2018 4:51:24 PM
Customer:	CLEARWIRE		

Analysis Parameters

Location :	HARTFORD County, CT	Height (ft) :	147.9167
Code :	ANSI/TIA-222-G	Base Diameter (in) :	56.58
Shape :	18 Sides	Top Diameter (in) :	26.22
Pole Type :	Taper	Taper (in/ft) :	0.215
Pole Manfacturer :	FWT	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:	1.00 in

Seismic Parameters

Analysis Method:	Equivalent Modal Analysis & Equivalent Lateral Force Methods				
Site Class:	D - Stiff Soil				
Period Based on Rayleigh Method (sec):	2.05				
T_L (sec):	6	p:	1.3	C_s:	0.033
S_s:	0.181	S_1:	0.064	C_s Max:	0.033
F_a:	1.600	F_v:	2.400	C_s Min:	0.030
S_{ds}:	0.193	S_{d1}:	0.102		

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 1.00 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: 302466 Code: ANSI/TIA-222-G

Site Name: West Service Road, CT Engineering Number:OAA713356_C3_03 6/11/2018 4:51:24 PM

Customer: CLEARWIRE

Shaft Section Properties

							Bottom						Top						
Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Slip Joint Type	Slip Joint Len (in)	Weight (lb)	Dia (in)	Elev (ft)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Taper (in/ft)
1-18	53.000	0.3750	65		0.00	10,844	56.58	0.00	66.90	26698.9	24.84	150.88	45.20	53.00	53.36	13550.7	19.49	120.55	0.214564
2-18	53.000	0.3750	65	Slip	74.00	8,848	47.28	46.83	55.83	15518.8	20.47	126.08	35.90	99.83	42.29	6747.0	15.12	95.76	0.214564
3-18	53.000	0.3125	65	Slip	59.00	5,651	37.58	94.92	36.97	6490.8	19.45	120.28	26.21	147.92	25.69	2178.3	13.03	83.89	0.214564
				Shaft Weight		25,343													

Discrete Appurtenance Properties

Attach Elev (ft)	Description	Qty	Distance From Face (ft)	Vert Ecc (ft)	Weight (lb)	No Ice EPAa (sf)	Orientation Factor
147.90	Andrew 844G65VTZASX	4	0.000	2.100	16.00	5.310	0.71
147.90	Andrew DB844H90E-XY	8	0.000	2.100	14.00	3.610	0.74
147.90	Flat Platform w/ Handrails	1	0.000	2.100	2000.00	42.400	1.00
135.00	48" x 4" Panel	9	0.000	3.000	20.00	2.090	0.69
135.00	Flat Low Profile Platform	1	0.000	0.000	1500.00	26.100	1.00
125.00	Andrew LNX-6515DS-VTM	3	0.000	1.000	51.30	11.430	0.70
125.00	Ericsson AIR 21, 1.3 M, B2A B4	3	0.000	1.000	83.00	6.050	0.71
125.00	Ericsson AIR-32 B2A/B66Aa	3	0.000	1.000	132.20	6.510	0.71
125.00	Ericsson KRY 112 144/1	3	0.000	1.000	11.00	0.410	0.50
125.00	Ericsson RRUS 11 B12	3	0.000	1.000	50.70	2.790	0.50
125.00	Round T-Arm	3	0.000	0.000	250.00	9.700	0.67
115.00	Alcatel-Lucent B66A RRH 4x45	3	0.000	1.000	67.00	2.580	0.50
115.00	Alcatel-Lucent RRH2x60 700	3	0.000	1.000	56.70	2.150	0.50
115.00	Alcatel-Lucent RRH2X60-1900	3	0.000	1.000	43.00	1.880	0.50
115.00	Amphenol Antel BXA-70063-6CF-	6	0.000	1.000	17.00	7.570	0.66
115.00	Commscope SBNHH-1D65B	6	0.000	1.000	50.70	8.170	0.69
115.00	Flat Low Profile Platform	1	0.000	0.000	1500.00	26.100	1.00
115.00	RFS DB-T1-6Z-8AB-0Z	2	0.000	1.000	44.00	4.800	0.50
103.00	Antel BCD-87010 ___ 25	1	0.000	4.000	26.50	2.900	1.00
103.00	Stand-Off	1	0.000	0.000	75.00	2.500	1.00
90.00	18" x 18" x 4" Junction Box	1	0.000	0.000	21.00	2.700	0.50
90.00	Alcatel-Lucent 1900MHz RRH (65	3	0.000	0.000	60.00	2.580	0.50
90.00	Alcatel-Lucent RRH2x50-08	6	0.000	0.000	52.90	1.700	0.50
90.00	Andrew VHLP2-18	2	0.000	0.000	27.00	4.680	1.00
90.00	Commscope NNVV-65B-R4	3	0.000	0.000	77.40	12.270	0.64
90.00	DragonWave Horizon Compact	2	0.000	0.000	10.60	0.430	0.50
90.00	Flat T-Arm	3	0.000	0.000	250.00	12.900	0.67
90.00	Nokia 2.5G MAA - AAHC(64T64R)	3	0.000	0.000	103.60	4.200	0.64
Totals	Num Loadings:28	90			10073.00		

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	147.90	12	1 1/4" Coax	1.55	0.63	N	0.00	N	Sprint Nextel
5.00	135.00	9	1 5/8" Coax	1.98	0.82	N	0.00	N	AT&T Mobility
5.00	125.00	1	1 5/8" (1.63"-41.3mm)	1.63	1.61	N	0.00	N	T-Mobile
5.00	125.00	6	1 5/8" Coax	1.98	0.82	N	3.96	Y	T-Mobile
5.00	125.00	6	1 5/8" Coax	1.98	0.82	N	0.00	N	T-Mobile
5.00	125.00	1	1 5/8" Hybriflex	1.98	1.30	N	0.00	Y	T-Mobile
5.00	115.00	2	1 5/8" (1.63"-41.3mm)	1.63	1.61	N	0.00	Y	Verizon
5.00	115.00	12	1 5/8" Coax	1.98	0.82	N	0.00	N	Verizon

5.00	115.00	6	1 5/8" Coax	1.98	0.82	N	0.00	Y	Verizon
5.00	103.00	1	7/8" Coax	1.09	0.33	N	1.09	Y	Sensus USA
5.00	90.00	3	1 1/4" Hybriflex Cable	1.54	1.00	N	0.00	N	Clearwire
5.00	90.00	1	1.7" (43.2mm) Hybrid	1.70	1.78	N	0.00	N	Clearwire
5.00	90.00	2	1/2" Coax	0.63	0.15	N	0.00	Y	Clearwire
5.00	90.00	2	2" conduit	2.38	3.65	N	0.00	Y	Clearwire
5.00	90.00	6	5/16" (0.31"-7.9mm)	0.31	0.05	N	0.00	N	Clearwire

Segment Properties (Max Len : 5. ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	F'y (ksi)	S (in^3)	Z (in^3)	Weight (lb)
0.00		0.3750	56.580	66.895	26,698.9	24.84	150.88	72.2	929.4	0.0	0.0
5.00		0.3750	55.507	65.618	25,199.0	24.34	148.02	72.8	894.2	0.0	1,127.3
10.00		0.3750	54.434	64.341	23,756.4	23.83	145.16	73.4	859.6	0.0	1,105.6
15.00		0.3750	53.361	63.065	22,369.9	23.33	142.30	74.0	825.7	0.0	1,083.8
20.00		0.3750	52.288	61.788	21,038.5	22.82	139.44	74.6	792.5	0.0	1,062.1
25.00		0.3750	51.216	60.511	19,760.9	22.32	136.57	75.2	760.0	0.0	1,040.4
30.00		0.3750	50.143	59.234	18,536.2	21.81	133.71	75.7	728.1	0.0	1,018.7
35.00		0.3750	49.070	57.957	17,363.1	21.31	130.85	76.3	696.9	0.0	996.9
40.00		0.3750	47.997	56.680	16,240.6	20.81	127.99	76.9	666.5	0.0	975.2
45.00		0.3750	46.924	55.403	15,167.5	20.30	125.13	77.5	636.6	0.0	953.5
46.83	Bot - Section 2	0.3750	46.531	54.935	14,786.3	20.12	124.08	77.7	625.9	0.0	344.2
50.00		0.3750	45.851	54.126	14,142.8	19.80	122.27	78.1	607.5	0.0	1,184.8
53.00	Top - Section 1	0.3750	45.958	54.253	14,242.2	19.85	122.55	78.1	610.4	0.0	1,106.4
55.00		0.3750	45.529	53.742	13,843.8	19.64	121.41	78.3	598.9	0.0	367.5
60.00		0.3750	44.456	52.465	12,880.3	19.14	118.55	78.9	570.7	0.0	903.5
65.00		0.3750	43.383	51.188	11,962.6	18.64	115.69	79.5	543.1	0.0	881.8
70.00		0.3750	42.310	49.912	11,089.5	18.13	112.83	80.1	516.2	0.0	860.1
75.00		0.3750	41.237	48.635	10,260.0	17.63	109.97	80.7	490.0	0.0	838.3
80.00		0.3750	40.165	47.358	9,472.9	17.12	107.11	81.3	464.5	0.0	816.6
85.00		0.3750	39.092	46.081	8,727.1	16.62	104.24	81.9	439.7	0.0	794.9
90.00		0.3750	38.019	44.804	8,021.6	16.11	101.38	82.4	415.6	0.0	773.2
94.92	Bot - Section 3	0.3750	36.964	43.548	7,365.9	15.62	98.57	82.6	392.5	0.0	739.1
95.00		0.3750	36.946	43.527	7,355.1	15.61	98.52	82.6	392.1	0.0	22.8
99.83	Top - Section 2	0.3125	36.534	35.926	5,955.2	18.85	116.91	79.2	321.1	0.0	1,305.1
100.0		0.3125	36.498	35.890	5,937.6	18.83	116.79	79.3	320.4	0.0	20.4
103.0		0.3125	35.855	35.252	5,626.3	18.47	114.73	79.7	309.1	0.0	363.1
105.0		0.3125	35.425	34.826	5,425.0	18.23	113.36	80.0	301.6	0.0	238.5
110.0		0.3125	34.353	33.762	4,942.7	17.62	109.93	80.7	283.4	0.0	583.5
115.0		0.3125	33.280	32.698	4,490.0	17.01	106.50	81.4	265.7	0.0	565.4
120.0		0.3125	32.207	31.634	4,065.8	16.41	103.06	82.1	248.6	0.0	547.3
125.0		0.3125	31.134	30.570	3,669.1	15.80	99.63	82.6	232.1	0.0	529.2
130.0		0.3125	30.061	29.506	3,299.2	15.20	96.20	82.6	216.2	0.0	511.1
135.0		0.3125	28.989	28.442	2,955.0	14.59	92.76	82.6	200.8	0.0	493.0
140.0		0.3125	27.916	27.378	2,635.6	13.99	89.33	82.6	186.0	0.0	474.9
145.0		0.3125	26.843	26.314	2,340.0	13.38	85.90	82.6	171.7	0.0	456.8
147.9		0.3125	26.221	25.697	2,179.2	13.03	83.91	82.6	163.7	0.0	256.6
147.9		0.3125	26.217	25.693	2,178.3	13.03	83.89	82.6	163.7	0.0	1.5
											25,342.5

Site Number: 302466 Code: ANSI/TIA-222-G

Site Name: West Service Road, CT Engineering Number:OAA713356_C3_03 6/11/2018 4:51:24 PM

Customer: CLEARWIRE

Load Case: 1.2D + 1.6W 97 mph with No Ice 22 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		263.8	0.0					0.0	0.0	263.8	0.0	0.0	0.0
5.00		522.6	1,352.7					0.0	0.0	522.6	1,352.7	0.0	0.0
10.00		512.5	1,326.7					0.0	352.1	512.5	1,678.7	0.0	0.0
15.00		510.2	1,300.6					0.0	352.1	510.2	1,652.7	0.0	0.0
20.00		521.5	1,274.5					0.0	352.1	521.5	1,626.6	0.0	0.0
25.00		535.6	1,248.5					0.0	352.1	535.6	1,600.5	0.0	0.0
30.00		545.3	1,222.4					0.0	352.1	545.3	1,574.5	0.0	0.0
35.00		553.4	1,196.3					0.0	352.1	553.4	1,548.4	0.0	0.0
40.00		560.5	1,170.3					0.0	352.1	560.5	1,522.3	0.0	0.0
45.00		385.7	1,144.2					0.0	352.1	385.7	1,496.2	0.0	0.0
46.83	Bot - Section 2	286.9	413.0					0.0	129.1	286.9	542.1	0.0	0.0
50.00		356.9	1,421.8					0.0	223.0	356.9	1,644.7	0.0	0.0
53.00	Top - Section 1	289.5	1,327.6					0.0	211.2	289.5	1,538.9	0.0	0.0
55.00		405.1	441.0					0.0	140.8	405.1	581.8	0.0	0.0
60.00		579.4	1,084.2					0.0	352.1	579.4	1,436.3	0.0	0.0
65.00		579.7	1,058.1					0.0	352.1	579.7	1,410.2	0.0	0.0
70.00		579.0	1,032.1					0.0	352.1	579.0	1,384.1	0.0	0.0
75.00		577.6	1,006.0					0.0	352.1	577.6	1,358.0	0.0	0.0
80.00		575.5	979.9					0.0	352.1	575.5	1,332.0	0.0	0.0
85.00		572.7	953.9					0.0	352.1	572.7	1,305.9	0.0	0.0
90.00	Appurtenance(s)	564.6	927.8	3,126.0	0.0	0.0	2,263.9	0.0	352.1	3,690.6	3,543.8	0.0	0.0
94.92	Bot - Section 3	283.8	886.9					0.0	271.4	283.8	1,158.3	0.0	0.0
95.00		281.8	27.4					0.0	4.6	281.8	32.0	0.0	0.0
99.83	Top - Section 2	286.5	1,566.1					0.0	266.8	286.5	1,832.8	0.0	0.0
100.00		179.2	24.4					0.0	9.2	179.2	33.6	0.0	0.0
103.00	Appurtenance(s)	273.4	435.7	278.2	0.0	599.7	121.8	0.0	165.6	551.5	723.1	0.0	0.0
105.00		360.6	286.2					0.0	109.6	360.6	395.8	0.0	0.0
110.00		511.2	700.2					0.0	274.0	511.2	974.2	0.0	0.0
115.00	Appurtenance(s)	505.2	678.5	4,673.3	0.0	3,303.2	2,993.2	0.0	274.0	5,178.5	3,945.6	0.0	0.0
120.00		498.8	656.7					0.0	166.1	498.8	822.9	0.0	0.0
125.00	Appurtenance(s)	473.4	635.0	3,159.5	0.0	2,378.3	2,081.5	0.0	166.1	3,633.0	2,882.6	0.0	0.0
130.00		445.3	613.3					0.0	89.6	445.3	702.9	0.0	0.0
135.00	Appurtenance(s)	432.8	591.6	1,983.5	0.0	1,699.1	2,016.0	0.0	89.6	2,416.3	2,697.2	0.0	0.0
140.00		420.0	569.8					0.0	45.4	420.0	615.2	0.0	0.0
145.00		323.6	548.1					0.0	45.4	323.6	593.5	0.0	0.0
147.90		117.5	307.9					0.0	26.3	117.5	334.3	0.0	0.0
147.92		0.7	1.8					0.0	0.0	0.7	1.8	0.0	0.0
								Totals:		28,892.3	47,876.1	0.00	0.00

Site Number: 302466 Code: ANSI/TIA-222-G

Site Name: West Service Road, CT Engineering Number:OAA713356_C3_03 6/11/2018 4:51:29 PM

Customer: CLEARWIRE

Load Case: 1.2D + 1.6W 97 mph with No Ice 22 Iterations

Gust Response Factor :1.10 Wind Importance Factor 1.00

Dead Load Factor :1.20

Wind Load Factor :1.60

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-50.44	-32.58	0.00	-3,339.60	0.00	3,339.60	4,345.86	2,172.93	10,048.4	5,031.69	0.00	0.00	0.676
5.00	-48.99	-32.20	0.00	-3,176.72	0.00	3,176.72	4,297.95	2,148.97	9,746.71	4,880.60	0.09	-0.17	0.663
10.00	-47.21	-31.83	0.00	-3,015.71	0.00	3,015.71	4,248.67	2,124.33	9,446.21	4,730.12	0.37	-0.35	0.649
15.00	-45.47	-31.44	0.00	-2,856.59	0.00	2,856.59	4,198.03	2,099.01	9,147.11	4,580.35	0.83	-0.52	0.635
20.00	-43.75	-31.04	0.00	-2,699.37	0.00	2,699.37	4,146.02	2,073.01	8,849.60	4,431.38	1.47	-0.70	0.620
25.00	-42.06	-30.61	0.00	-2,544.17	0.00	2,544.17	4,092.65	2,046.33	8,553.86	4,283.29	2.30	-0.88	0.604
30.00	-40.41	-30.17	0.00	-2,391.11	0.00	2,391.11	4,037.92	2,018.96	8,260.08	4,136.18	3.32	-1.06	0.588
35.00	-38.78	-29.70	0.00	-2,240.28	0.00	2,240.28	3,981.83	1,990.91	7,968.43	3,990.14	4.52	-1.23	0.571
40.00	-37.18	-29.22	0.00	-2,091.77	0.00	2,091.77	3,924.37	1,962.18	7,679.09	3,845.25	5.91	-1.41	0.554
45.00	-35.63	-28.87	0.00	-1,945.67	0.00	1,945.67	3,865.54	1,932.77	7,392.26	3,701.62	7.48	-1.59	0.535
46.83	-35.05	-28.63	0.00	-1,892.73	0.00	1,892.73	3,843.63	1,921.82	7,287.75	3,649.29	8.10	-1.65	0.528
50.00	-33.37	-28.28	0.00	-1,802.09	0.00	1,802.09	3,805.35	1,902.68	7,108.10	3,559.34	9.24	-1.77	0.515
53.00	-31.79	-27.99	0.00	-1,717.24	0.00	1,717.24	3,811.38	1,905.69	7,136.14	3,573.37	10.38	-1.87	0.489
55.00	-31.17	-27.63	0.00	-1,661.26	0.00	1,661.26	3,786.98	1,893.49	7,023.15	3,516.80	11.18	-1.94	0.481
60.00	-29.68	-27.09	0.00	-1,523.09	0.00	1,523.09	3,725.02	1,862.51	6,742.75	3,376.39	13.31	-2.11	0.459
65.00	-28.22	-26.53	0.00	-1,387.65	0.00	1,387.65	3,661.69	1,830.85	6,465.46	3,237.53	15.60	-2.27	0.437
70.00	-26.79	-25.97	0.00	-1,254.99	0.00	1,254.99	3,597.00	1,798.50	6,191.44	3,100.32	18.06	-2.42	0.412
75.00	-25.39	-25.40	0.00	-1,125.14	0.00	1,125.14	3,530.95	1,765.48	5,920.88	2,964.84	20.68	-2.58	0.387
80.00	-24.02	-24.82	0.00	-998.14	0.00	998.14	3,463.54	1,731.77	5,653.97	2,831.19	23.46	-2.72	0.360
85.00	-22.69	-24.24	0.00	-874.02	0.00	874.02	3,394.76	1,697.38	5,390.88	2,699.44	26.39	-2.87	0.331
90.00	-19.29	-20.42	0.00	-752.80	0.00	752.80	3,324.61	1,662.31	5,131.80	2,569.71	29.46	-3.00	0.299
94.92	-18.13	-20.09	0.00	-652.41	0.00	652.41	3,235.43	1,617.72	4,852.80	2,430.01	32.62	-3.12	0.274
95.00	-18.09	-19.83	0.00	-650.74	0.00	650.74	3,233.85	1,616.93	4,848.03	2,427.62	32.67	-3.12	0.274
99.83	-16.26	-19.46	0.00	-554.90	0.00	554.90	2,561.72	1,280.86	3,809.84	1,907.75	35.89	-3.24	0.297
100.00	-16.22	-19.29	0.00	-551.66	0.00	551.66	2,559.96	1,279.98	3,803.43	1,904.54	36.00	-3.24	0.296
103.00	-15.51	-18.71	0.00	-493.20	0.00	493.20	2,527.98	1,263.99	3,688.52	1,847.00	38.06	-3.31	0.273
105.00	-15.11	-18.35	0.00	-455.78	0.00	455.78	2,506.38	1,253.19	3,612.47	1,808.92	39.46	-3.36	0.258
110.00	-14.14	-17.81	0.00	-364.03	0.00	364.03	2,451.44	1,225.72	3,424.37	1,714.73	43.04	-3.47	0.218
115.00	-10.50	-12.41	0.00	-271.70	0.00	271.70	2,395.13	1,197.56	3,239.31	1,622.06	46.72	-3.56	0.172
120.00	-9.70	-11.87	0.00	-209.64	0.00	209.64	2,337.45	1,168.73	3,057.47	1,531.01	50.50	-3.64	0.141
125.00	-7.05	-8.07	0.00	-147.90	0.00	147.90	2,271.21	1,135.60	2,869.92	1,437.09	54.34	-3.70	0.106
130.00	-6.37	-7.58	0.00	-107.56	0.00	107.56	2,192.15	1,096.08	2,672.64	1,338.31	58.24	-3.75	0.083
135.00	-3.83	-5.00	0.00	-67.93	0.00	67.93	2,113.10	1,056.55	2,482.39	1,243.04	62.19	-3.79	0.056
140.00	-3.25	-4.54	0.00	-42.94	0.00	42.94	2,034.04	1,017.02	2,299.16	1,151.29	66.17	-3.82	0.039
145.00	-2.67	-4.18	0.00	-20.25	0.00	20.25	1,954.99	977.49	2,122.95	1,063.05	70.17	-3.83	0.020
147.90	0.00	0.00	0.00	0.00	0.00	0.00	1,909.14	954.57	2,023.97	1,013.49	72.50	-3.84	0.000
147.92	0.00	0.00	0.00	0.00	0.00	0.00	1,908.87	954.44	2,023.41	1,013.21	72.51	-3.84	0.000

Site Number: 302466 Code: ANSI/TIA-222-G

Site Name: West Service Road, CT Engineering Number:OAA713356_C3_03 6/11/2018 4:51:29 PM

Customer: CLEARWIRE

Load Case: 0.9D + 1.6W 97 mph with No Ice (Reduced DL) 22 Iterations

Gust Response Factor :1.10 Wind Importance Factor 1.00

Dead Load Factor :0.90

Wind Load Factor :1.60

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		263.8	0.0					0.0	0.0	263.8	0.0	0.0	0.0
5.00		522.6	1,014.6					0.0	0.0	522.6	1,014.6	0.0	0.0
10.00		512.5	995.0					0.0	264.0	512.5	1,259.0	0.0	0.0
15.00		510.2	975.5					0.0	264.0	510.2	1,239.5	0.0	0.0
20.00		521.5	955.9					0.0	264.0	521.5	1,219.9	0.0	0.0
25.00		535.6	936.3					0.0	264.0	535.6	1,200.4	0.0	0.0
30.00		545.1	916.8					0.0	264.0	545.1	1,180.8	0.0	0.0
35.00		551.1	897.2					0.0	264.0	551.1	1,161.3	0.0	0.0
40.00		554.5	877.7					0.0	264.0	554.5	1,141.7	0.0	0.0
45.00		379.7	858.1					0.0	264.0	379.7	1,122.2	0.0	0.0
46.83	Bot - Section 2	280.8	309.8					0.0	96.8	280.8	406.6	0.0	0.0
50.00		348.1	1,066.3					0.0	167.2	348.1	1,233.6	0.0	0.0
53.00	Top - Section 1	281.9	995.7					0.0	158.4	281.9	1,154.2	0.0	0.0
55.00		393.3	330.7					0.0	105.6	393.3	436.4	0.0	0.0
60.00		559.5	813.2					0.0	264.0	559.5	1,077.2	0.0	0.0
65.00		555.3	793.6					0.0	264.0	555.3	1,057.6	0.0	0.0
70.00		550.1	774.0					0.0	264.0	550.1	1,038.1	0.0	0.0
75.00		544.0	754.5					0.0	264.0	544.0	1,018.5	0.0	0.0
80.00		537.1	734.9					0.0	264.0	537.1	999.0	0.0	0.0
85.00		529.5	715.4					0.0	264.0	529.5	979.4	0.0	0.0
90.00	Appurtenance(s)	516.9	695.8	3,126.0	0.0	0.0	1,697.9	0.0	264.0	3,642.9	2,657.8	0.0	0.0
94.92	Bot - Section 3	258.5	665.2					0.0	203.5	258.5	868.7	0.0	0.0
95.00		254.0	20.5					0.0	3.4	254.0	24.0	0.0	0.0
99.83	Top - Section 2	258.2	1,174.5					0.0	200.1	258.2	1,374.6	0.0	0.0
100.00		161.1	18.3					0.0	6.9	161.1	25.2	0.0	0.0
103.00	Appurtenance(s)	253.4	326.8	278.2	0.0	599.7	91.3	0.0	124.2	531.5	542.4	0.0	0.0
105.00		349.0	214.6					0.0	82.2	349.0	296.8	0.0	0.0
110.00		491.2	525.1					0.0	205.5	491.2	730.6	0.0	0.0
115.00	Appurtenance(s)	480.4	508.8	4,673.3	0.0	3,303.2	2,244.9	0.0	205.5	5,153.7	2,959.2	0.0	0.0
120.00		469.1	492.5					0.0	124.6	469.1	617.1	0.0	0.0
125.00	Appurtenance(s)	457.4	476.3	3,159.5	0.0	2,378.3	1,561.1	0.0	124.6	3,616.9	2,162.0	0.0	0.0
130.00		445.3	460.0					0.0	67.2	445.3	527.2	0.0	0.0
135.00	Appurtenance(s)	432.8	443.7	1,983.5	0.0	1,699.1	1,512.0	0.0	67.2	2,416.3	2,022.9	0.0	0.0
140.00		420.0	427.4					0.0	34.0	420.0	461.4	0.0	0.0
145.00		323.6	411.1					0.0	34.0	323.6	445.1	0.0	0.0
147.90		117.5	231.0					0.0	19.7	117.5	250.7	0.0	0.0
147.92		0.7	1.3					0.0	0.0	0.7	1.3	0.0	0.0
								Totals:		28,385.6	35,907.0	0.00	0.00

Site Number: 302466 Code: ANSI/TIA-222-G

Site Name: West Service Road, CT Engineering Number:OAA713356_C3_03 6/11/2018 4:51:33 PM

Customer: CLEARWIRE

Load Case: 0.9D + 1.6W 97 mph with No Ice (Reduced DL) 22 Iterations

Gust Response Factor :1.10 Wind Importance Factor 1.00

Dead Load Factor :0.90

Wind Load Factor :1.60

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-37.82	-32.05	0.00	-3,263.70	0.00	3,263.70	4,345.86	2,172.93	10,048.4	5,031.69	0.00	0.00	0.658
5.00	-36.71	-31.63	0.00	-3,103.45	0.00	3,103.45	4,297.95	2,148.97	9,746.71	4,880.60	0.09	-0.17	0.645
10.00	-35.36	-31.22	0.00	-2,945.28	0.00	2,945.28	4,248.67	2,124.33	9,446.21	4,730.12	0.36	-0.34	0.631
15.00	-34.03	-30.81	0.00	-2,789.17	0.00	2,789.17	4,198.03	2,099.01	9,147.11	4,580.35	0.81	-0.51	0.617
20.00	-32.73	-30.37	0.00	-2,635.14	0.00	2,635.14	4,146.02	2,073.01	8,849.60	4,431.38	1.44	-0.68	0.603
25.00	-31.44	-29.91	0.00	-2,483.29	0.00	2,483.29	4,092.65	2,046.33	8,553.86	4,283.29	2.25	-0.86	0.588
30.00	-30.18	-29.44	0.00	-2,333.73	0.00	2,333.73	4,037.92	2,018.96	8,260.08	4,136.18	3.24	-1.03	0.572
35.00	-28.94	-28.95	0.00	-2,186.53	0.00	2,186.53	3,981.83	1,990.91	7,968.43	3,990.14	4.42	-1.20	0.555
40.00	-27.73	-28.46	0.00	-2,041.76	0.00	2,041.76	3,924.37	1,962.18	7,679.09	3,845.25	5.77	-1.38	0.538
45.00	-26.56	-28.10	0.00	-1,899.47	0.00	1,899.47	3,865.54	1,932.77	7,392.26	3,701.62	7.31	-1.55	0.520
46.83	-26.12	-27.85	0.00	-1,847.94	0.00	1,847.94	3,843.63	1,921.82	7,287.75	3,649.29	7.91	-1.61	0.513
50.00	-24.84	-27.51	0.00	-1,759.75	0.00	1,759.75	3,805.35	1,902.68	7,108.10	3,559.34	9.02	-1.72	0.501
53.00	-23.66	-27.23	0.00	-1,677.20	0.00	1,677.20	3,811.38	1,905.69	7,136.14	3,573.37	10.14	-1.83	0.476
55.00	-23.18	-26.87	0.00	-1,622.74	0.00	1,622.74	3,786.98	1,893.49	7,023.15	3,516.80	10.92	-1.90	0.468
60.00	-22.05	-26.34	0.00	-1,488.38	0.00	1,488.38	3,725.02	1,862.51	6,742.75	3,376.39	13.00	-2.06	0.447
65.00	-20.94	-25.80	0.00	-1,356.69	0.00	1,356.69	3,661.69	1,830.85	6,465.46	3,237.53	15.23	-2.21	0.425
70.00	-19.86	-25.26	0.00	-1,227.69	0.00	1,227.69	3,597.00	1,798.50	6,191.44	3,100.32	17.64	-2.37	0.402
75.00	-18.80	-24.72	0.00	-1,101.39	0.00	1,101.39	3,530.95	1,765.48	5,920.88	2,964.84	20.20	-2.52	0.377
80.00	-17.77	-24.18	0.00	-977.78	0.00	977.78	3,463.54	1,731.77	5,653.97	2,831.19	22.91	-2.66	0.351
85.00	-16.76	-23.65	0.00	-856.86	0.00	856.86	3,394.76	1,697.38	5,390.88	2,699.44	25.77	-2.80	0.323
90.00	-14.25	-19.91	0.00	-738.61	0.00	738.61	3,324.61	1,662.31	5,131.80	2,569.71	28.78	-2.93	0.292
94.92	-13.37	-19.62	0.00	-640.73	0.00	640.73	3,235.43	1,617.72	4,852.80	2,430.01	31.86	-3.05	0.268
95.00	-13.34	-19.38	0.00	-639.10	0.00	639.10	3,233.85	1,616.93	4,848.03	2,427.62	31.91	-3.05	0.268
99.83	-11.97	-19.06	0.00	-545.44	0.00	545.44	2,561.72	1,280.86	3,809.84	1,907.75	35.06	-3.16	0.291
100.00	-11.94	-18.90	0.00	-542.27	0.00	542.27	2,559.96	1,279.98	3,803.43	1,904.54	35.17	-3.17	0.290
103.00	-11.41	-18.35	0.00	-484.96	0.00	484.96	2,527.98	1,263.99	3,688.52	1,847.00	37.18	-3.24	0.267
105.00	-11.10	-18.00	0.00	-448.25	0.00	448.25	2,506.38	1,253.19	3,612.47	1,808.92	38.55	-3.29	0.252
110.00	-10.37	-17.49	0.00	-358.24	0.00	358.24	2,451.44	1,225.72	3,424.37	1,714.73	42.05	-3.39	0.213
115.00	-7.71	-12.18	0.00	-267.49	0.00	267.49	2,395.13	1,197.56	3,239.31	1,622.06	45.65	-3.48	0.168
120.00	-7.11	-11.68	0.00	-206.61	0.00	206.61	2,337.45	1,168.73	3,057.47	1,531.01	49.34	-3.56	0.138
125.00	-5.17	-7.94	0.00	-145.83	0.00	145.83	2,271.21	1,135.60	2,869.92	1,437.09	53.10	-3.62	0.104
130.00	-4.67	-7.47	0.00	-106.13	0.00	106.13	2,192.15	1,096.08	2,672.64	1,338.31	56.92	-3.67	0.081
135.00	-2.80	-4.93	0.00	-67.11	0.00	67.11	2,113.10	1,056.55	2,482.39	1,243.04	60.78	-3.71	0.055
140.00	-2.37	-4.48	0.00	-42.48	0.00	42.48	2,034.04	1,017.02	2,299.16	1,151.29	64.67	-3.73	0.038
145.00	-1.94	-4.13	0.00	-20.09	0.00	20.09	1,954.99	977.49	2,122.95	1,063.05	68.59	-3.75	0.020
147.90	0.00	0.00	0.00	0.00	0.00	0.00	1,909.14	954.57	2,023.97	1,013.49	70.87	-3.76	0.000
147.92	0.00	0.00	0.00	0.00	0.00	0.00	1,908.87	954.44	2,023.41	1,013.21	70.88	-3.76	0.000

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph with 1.00 in Radial Ice 22 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		85.3	0.0					0.0	0.0	85.3	0.0	0.0	0.0
5.00		169.5	1,904.9					0.0	0.0	169.5	1,904.9	0.0	0.0
10.00		167.2	1,933.3					0.0	750.5	167.2	2,683.8	0.0	0.0
15.00		167.1	1,927.9					0.0	776.8	167.1	2,704.7	0.0	0.0
20.00		171.3	1,911.3					0.0	795.4	171.3	2,706.7	0.0	0.0
25.00		176.5	1,889.1					0.0	809.8	176.5	2,698.9	0.0	0.0
30.00		180.1	1,863.3					0.0	821.8	180.1	2,685.1	0.0	0.0
35.00		182.6	1,835.0					0.0	832.0	182.6	2,667.0	0.0	0.0
40.00		184.2	1,804.9					0.0	841.0	184.2	2,645.9	0.0	0.0
45.00		126.4	1,773.3					0.0	849.1	126.4	2,622.4	0.0	0.0
46.83	Bot - Section 2	93.6	643.7					0.0	313.2	93.6	956.9	0.0	0.0
50.00		116.1	1,823.0					0.0	543.1	116.1	2,366.2	0.0	0.0
53.00	Top - Section 1	94.2	1,705.2					0.0	517.0	94.2	2,222.2	0.0	0.0
55.00		131.7	691.6					0.0	345.9	131.7	1,037.6	0.0	0.0
60.00		187.7	1,700.8					0.0	869.1	187.7	2,569.9	0.0	0.0
65.00		186.8	1,665.8					0.0	874.8	186.8	2,540.6	0.0	0.0
70.00		185.6	1,630.2					0.0	880.1	185.6	2,510.3	0.0	0.0
75.00		184.1	1,594.1					0.0	885.1	184.1	2,479.2	0.0	0.0
80.00		182.3	1,557.5					0.0	889.9	182.3	2,447.3	0.0	0.0
85.00		180.3	1,520.5					0.0	894.3	180.3	2,414.8	0.0	0.0
90.00	Appurtenance(s)	176.6	1,483.1	740.6	0.0	0.0	5,867.0	0.0	898.6	917.2	8,248.7	0.0	0.0
94.92	Bot - Section 3	88.5	1,421.7					0.0	697.7	88.5	2,119.4	0.0	0.0
95.00		87.1	36.6					0.0	11.8	87.1	48.5	0.0	0.0
99.83	Top - Section 2	88.5	2,088.9					0.0	688.7	88.5	2,777.6	0.0	0.0
100.00		55.4	42.5					0.0	23.8	55.4	66.3	0.0	0.0
103.00	Appurtenance(s)	87.2	756.0	95.0	0.0	252.2	209.1	0.0	428.9	182.2	1,394.0	0.0	0.0
105.00		120.5	497.8					0.0	269.4	120.5	767.2	0.0	0.0
110.00		170.1	1,216.0					0.0	675.1	170.1	1,891.1	0.0	0.0
115.00	Appurtenance(s)	167.0	1,181.5	1,123.2	0.0	679.6	8,119.1	0.0	677.4	1,290.2	9,978.0	0.0	0.0
120.00		163.8	1,146.9					0.0	363.0	163.8	1,509.8	0.0	0.0
125.00	Appurtenance(s)	160.5	1,112.0	759.9	0.0	485.8	5,702.6	0.0	364.0	920.4	7,178.6	0.0	0.0
130.00		157.0	1,076.9					0.0	89.6	157.0	1,166.6	0.0	0.0
135.00	Appurtenance(s)	153.5	1,041.7	607.6	0.0	435.3	3,428.9	0.0	89.6	761.0	4,560.2	0.0	0.0
140.00		149.8	1,006.2					0.0	45.4	149.8	1,051.6	0.0	0.0
145.00		115.9	970.6					0.0	45.4	115.9	1,016.0	0.0	0.0
147.90		42.2	548.5					0.0	26.3	42.2	574.8	0.0	0.0
147.92		0.2	3.1					0.0	0.0	0.2	3.1	0.0	0.0
								Totals:		8,462.71	89,215.8	0.00	0.00

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph with 1.00 in Radial Ice 22 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	-95.43	-9.40	0.00	-973.87	0.00	973.87	4,345.86	2,172.93	10,048.4	5,031.69	0.00	0.00	0.216
5.00	-93.51	-9.31	0.00	-926.88	0.00	926.88	4,297.95	2,148.97	9,746.71	4,880.60	0.03	-0.05	0.212
10.00	-90.82	-9.22	0.00	-880.33	0.00	880.33	4,248.67	2,124.33	9,446.21	4,730.12	0.11	-0.10	0.208
15.00	-88.11	-9.13	0.00	-834.23	0.00	834.23	4,198.03	2,099.01	9,147.11	4,580.35	0.24	-0.15	0.203
20.00	-85.39	-9.02	0.00	-788.60	0.00	788.60	4,146.02	2,073.01	8,849.60	4,431.38	0.43	-0.20	0.199
25.00	-82.69	-8.91	0.00	-743.48	0.00	743.48	4,092.65	2,046.33	8,553.86	4,283.29	0.67	-0.26	0.194
30.00	-80.00	-8.79	0.00	-698.92	0.00	698.92	4,037.92	2,018.96	8,260.08	4,136.18	0.97	-0.31	0.189
35.00	-77.32	-8.66	0.00	-654.97	0.00	654.97	3,981.83	1,990.91	7,968.43	3,990.14	1.32	-0.36	0.184
40.00	-74.67	-8.53	0.00	-611.65	0.00	611.65	3,924.37	1,962.18	7,679.09	3,845.25	1.73	-0.41	0.178
45.00	-72.04	-8.43	0.00	-569.02	0.00	569.02	3,865.54	1,932.77	7,392.26	3,701.62	2.18	-0.46	0.172
46.83	-71.08	-8.36	0.00	-553.57	0.00	553.57	3,843.63	1,921.82	7,287.75	3,649.29	2.37	-0.48	0.170
50.00	-68.71	-8.26	0.00	-527.10	0.00	527.10	3,805.35	1,902.68	7,108.10	3,559.34	2.70	-0.52	0.166
53.00	-66.49	-8.17	0.00	-502.33	0.00	502.33	3,811.38	1,905.69	7,136.14	3,573.37	3.03	-0.55	0.158
55.00	-65.45	-8.07	0.00	-485.98	0.00	485.98	3,786.98	1,893.49	7,023.15	3,516.80	3.27	-0.57	0.155
60.00	-62.87	-7.91	0.00	-445.63	0.00	445.63	3,725.02	1,862.51	6,742.75	3,376.39	3.89	-0.62	0.149
65.00	-60.33	-7.74	0.00	-406.08	0.00	406.08	3,661.69	1,830.85	6,465.46	3,237.53	4.56	-0.66	0.142
70.00	-57.82	-7.57	0.00	-367.36	0.00	367.36	3,597.00	1,798.50	6,191.44	3,100.32	5.28	-0.71	0.135
75.00	-55.33	-7.40	0.00	-329.50	0.00	329.50	3,530.95	1,765.48	5,920.88	2,964.84	6.04	-0.75	0.127
80.00	-52.88	-7.22	0.00	-292.50	0.00	292.50	3,463.54	1,731.77	5,653.97	2,831.19	6.86	-0.80	0.119
85.00	-50.47	-7.04	0.00	-256.38	0.00	256.38	3,394.76	1,697.38	5,390.88	2,699.44	7.71	-0.84	0.110
90.00	-42.23	-6.03	0.00	-221.16	0.00	221.16	3,324.61	1,662.31	5,131.80	2,569.71	8.61	-0.88	0.099
94.92	-40.11	-5.92	0.00	-191.51	0.00	191.51	3,235.43	1,617.72	4,852.80	2,430.01	9.53	-0.91	0.091
95.00	-40.06	-5.85	0.00	-191.02	0.00	191.02	3,233.85	1,616.93	4,848.03	2,427.62	9.55	-0.91	0.091
99.83	-37.28	-5.72	0.00	-162.76	0.00	162.76	2,561.72	1,280.86	3,809.84	1,907.75	10.49	-0.95	0.100
100.00	-37.22	-5.67	0.00	-161.81	0.00	161.81	2,559.96	1,279.98	3,803.43	1,904.54	10.53	-0.95	0.100
103.00	-35.82	-5.48	0.00	-144.53	0.00	144.53	2,527.98	1,263.99	3,688.52	1,847.00	11.13	-0.97	0.092
105.00	-35.06	-5.36	0.00	-133.57	0.00	133.57	2,506.38	1,253.19	3,612.47	1,808.92	11.54	-0.98	0.088
110.00	-33.17	-5.18	0.00	-106.76	0.00	106.76	2,451.44	1,225.72	3,424.37	1,714.73	12.58	-1.02	0.076
115.00	-23.21	-3.72	0.00	-80.21	0.00	80.21	2,395.13	1,197.56	3,239.31	1,622.06	13.66	-1.04	0.059
120.00	-21.70	-3.53	0.00	-61.63	0.00	61.63	2,337.45	1,168.73	3,057.47	1,531.01	14.77	-1.06	0.050
125.00	-14.54	-2.48	0.00	-43.49	0.00	43.49	2,271.21	1,135.60	2,869.92	1,437.09	15.89	-1.08	0.037
130.00	-13.38	-2.30	0.00	-31.08	0.00	31.08	2,192.15	1,096.08	2,672.64	1,338.31	17.03	-1.10	0.029
135.00	-8.83	-1.46	0.00	-19.12	0.00	19.12	2,113.10	1,056.55	2,482.39	1,243.04	18.19	-1.11	0.020
140.00	-7.79	-1.29	0.00	-11.84	0.00	11.84	2,034.04	1,017.02	2,299.16	1,151.29	19.36	-1.12	0.014
145.00	-6.77	-1.15	0.00	-5.40	0.00	5.40	1,954.99	977.49	2,122.95	1,063.05	20.53	-1.12	0.009
147.90	0.00	0.00	0.00	0.00	0.00	0.00	1,909.14	954.57	2,023.97	1,013.49	21.21	-1.12	0.000
147.92	0.00	0.00	0.00	0.00	0.00	0.00	1,908.87	954.44	2,023.41	1,013.21	21.21	-1.12	0.000

Load Case: 1.0D + 1.0W Serviceability 60 mph 21 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		63.1	0.0					0.0	0.0	63.1	0.0	0.0	0.0
5.00		125.0	1,127.3					0.0	0.0	125.0	1,127.3	0.0	0.0
10.00		122.5	1,105.6					0.0	293.4	122.5	1,398.9	0.0	0.0
15.00		122.0	1,083.8					0.0	293.4	122.0	1,377.2	0.0	0.0
20.00		124.7	1,062.1					0.0	293.4	124.7	1,355.5	0.0	0.0
25.00		128.1	1,040.4					0.0	293.4	128.1	1,333.8	0.0	0.0
30.00		130.3	1,018.7					0.0	293.4	130.3	1,312.0	0.0	0.0
35.00		131.8	996.9					0.0	293.4	131.8	1,290.3	0.0	0.0
40.00		132.6	975.2					0.0	293.4	132.6	1,268.6	0.0	0.0
45.00		90.8	953.5					0.0	293.4	90.8	1,246.9	0.0	0.0
46.83	Bot - Section 2	67.1	344.2					0.0	107.6	67.1	451.7	0.0	0.0
50.00		83.2	1,184.8					0.0	185.8	83.2	1,370.6	0.0	0.0
53.00	Top - Section 1	67.4	1,106.4					0.0	176.0	67.4	1,282.4	0.0	0.0
55.00		94.1	367.5					0.0	117.4	94.1	484.8	0.0	0.0
60.00		133.8	903.5					0.0	293.4	133.8	1,196.9	0.0	0.0
65.00		132.8	881.8					0.0	293.4	132.8	1,175.2	0.0	0.0
70.00		131.5	860.1					0.0	293.4	131.5	1,153.4	0.0	0.0
75.00		130.1	838.3					0.0	293.4	130.1	1,131.7	0.0	0.0
80.00		128.4	816.6					0.0	293.4	128.4	1,110.0	0.0	0.0
85.00		126.6	794.9					0.0	293.4	126.6	1,088.3	0.0	0.0
90.00	Appurtenance(s)	123.6	773.2	747.5	0.0	0.0	1,886.6	0.0	293.4	871.1	2,953.1	0.0	0.0
94.92	Bot - Section 3	61.8	739.1					0.0	226.1	61.8	965.2	0.0	0.0
95.00		60.7	22.8					0.0	3.8	60.7	26.7	0.0	0.0
99.83	Top - Section 2	61.7	1,305.1					0.0	222.3	61.7	1,527.4	0.0	0.0
100.00		38.5	20.4					0.0	7.7	38.5	28.0	0.0	0.0
103.00	Appurtenance(s)	60.6	363.1	66.5	0.0	143.4	101.5	0.0	138.0	127.1	602.6	0.0	0.0
105.00		83.5	238.5					0.0	91.3	83.5	329.8	0.0	0.0
110.00		117.5	583.5					0.0	228.3	117.5	811.8	0.0	0.0
115.00	Appurtenance(s)	114.9	565.4	1,117.5	0.0	789.9	2,494.3	0.0	228.3	1,232.4	3,288.0	0.0	0.0
120.00		112.2	547.3					0.0	138.4	112.2	685.7	0.0	0.0
125.00	Appurtenance(s)	109.4	529.2	755.5	0.0	568.7	1,734.6	0.0	138.4	864.9	2,402.2	0.0	0.0
130.00		106.5	511.1					0.0	74.7	106.5	585.8	0.0	0.0
135.00	Appurtenance(s)	103.5	493.0	474.3	0.0	406.3	1,680.0	0.0	74.7	577.8	2,247.7	0.0	0.0
140.00		100.4	474.9					0.0	37.8	100.4	512.7	0.0	0.0
145.00		77.4	456.8					0.0	37.8	77.4	494.6	0.0	0.0
147.90		28.1	256.6					0.0	21.9	28.1	278.5	0.0	0.0
147.92		0.2	1.5					0.0	0.0	0.2	1.5	0.0	0.0
								Totals:		6,787.93	39,896.7	0.00	0.00

Load Case: 1.0D + 1.0W Serviceability 60 mph 21 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	-42.07	-7.67	0.00	-783.31	0.00	783.31	4,345.86	2,172.93	10,048.4	5,031.69	0.00	0.00	0.165
5.00	-40.94	-7.57	0.00	-744.99	0.00	744.99	4,297.95	2,148.97	9,746.71	4,880.60	0.02	-0.04	0.162
10.00	-39.53	-7.47	0.00	-707.14	0.00	707.14	4,248.67	2,124.33	9,446.21	4,730.12	0.09	-0.08	0.159
15.00	-38.15	-7.38	0.00	-669.78	0.00	669.78	4,198.03	2,099.01	9,147.11	4,580.35	0.19	-0.12	0.155
20.00	-36.79	-7.27	0.00	-632.90	0.00	632.90	4,146.02	2,073.01	8,849.60	4,431.38	0.35	-0.16	0.152
25.00	-35.45	-7.17	0.00	-596.53	0.00	596.53	4,092.65	2,046.33	8,553.86	4,283.29	0.54	-0.21	0.148
30.00	-34.14	-7.06	0.00	-560.69	0.00	560.69	4,037.92	2,018.96	8,260.08	4,136.18	0.78	-0.25	0.144
35.00	-32.84	-6.94	0.00	-525.40	0.00	525.40	3,981.83	1,990.91	7,968.43	3,990.14	1.06	-0.29	0.140
40.00	-31.57	-6.83	0.00	-490.68	0.00	490.68	3,924.37	1,962.18	7,679.09	3,845.25	1.39	-0.33	0.136
45.00	-30.32	-6.74	0.00	-456.55	0.00	456.55	3,865.54	1,932.77	7,392.26	3,701.62	1.75	-0.37	0.131
46.83	-29.86	-6.68	0.00	-444.19	0.00	444.19	3,843.63	1,921.82	7,287.75	3,649.29	1.90	-0.39	0.130
50.00	-28.49	-6.60	0.00	-423.02	0.00	423.02	3,805.35	1,902.68	7,108.10	3,559.34	2.17	-0.41	0.126
53.00	-27.21	-6.54	0.00	-403.21	0.00	403.21	3,811.38	1,905.69	7,136.14	3,573.37	2.44	-0.44	0.120
55.00	-26.72	-6.45	0.00	-390.13	0.00	390.13	3,786.98	1,893.49	7,023.15	3,516.80	2.62	-0.46	0.118
60.00	-25.52	-6.33	0.00	-357.87	0.00	357.87	3,725.02	1,862.51	6,742.75	3,376.39	3.12	-0.49	0.113
65.00	-24.34	-6.20	0.00	-326.25	0.00	326.25	3,661.69	1,830.85	6,465.46	3,237.53	3.66	-0.53	0.107
70.00	-23.19	-6.07	0.00	-295.26	0.00	295.26	3,597.00	1,798.50	6,191.44	3,100.32	4.24	-0.57	0.102
75.00	-22.05	-5.94	0.00	-264.91	0.00	264.91	3,530.95	1,765.48	5,920.88	2,964.84	4.85	-0.60	0.096
80.00	-20.94	-5.81	0.00	-235.20	0.00	235.20	3,463.54	1,731.77	5,653.97	2,831.19	5.50	-0.64	0.089
85.00	-19.85	-5.69	0.00	-206.13	0.00	206.13	3,394.76	1,697.38	5,390.88	2,699.44	6.19	-0.67	0.082
90.00	-16.91	-4.79	0.00	-177.70	0.00	177.70	3,324.61	1,662.31	5,131.80	2,569.71	6.91	-0.70	0.074
94.92	-15.94	-4.72	0.00	-154.16	0.00	154.16	3,235.43	1,617.72	4,852.80	2,430.01	7.66	-0.73	0.068
95.00	-15.91	-4.66	0.00	-153.76	0.00	153.76	3,233.85	1,616.93	4,848.03	2,427.62	7.67	-0.73	0.068
99.83	-14.39	-4.58	0.00	-131.23	0.00	131.23	2,561.72	1,280.86	3,809.84	1,907.75	8.42	-0.76	0.074
100.00	-14.36	-4.55	0.00	-130.47	0.00	130.47	2,559.96	1,279.98	3,803.43	1,904.54	8.45	-0.76	0.074
103.00	-13.75	-4.41	0.00	-116.69	0.00	116.69	2,527.98	1,263.99	3,688.52	1,847.00	8.94	-0.78	0.069
105.00	-13.42	-4.33	0.00	-107.86	0.00	107.86	2,506.38	1,253.19	3,612.47	1,808.92	9.26	-0.79	0.065
110.00	-12.61	-4.21	0.00	-86.20	0.00	86.20	2,451.44	1,225.72	3,424.37	1,714.73	10.11	-0.82	0.055
115.00	-9.34	-2.93	0.00	-64.37	0.00	64.37	2,395.13	1,197.56	3,239.31	1,622.06	10.97	-0.84	0.044
120.00	-8.66	-2.81	0.00	-49.72	0.00	49.72	2,337.45	1,168.73	3,057.47	1,531.01	11.86	-0.86	0.036
125.00	-6.27	-1.91	0.00	-35.09	0.00	35.09	2,271.21	1,135.60	2,869.92	1,437.09	12.76	-0.87	0.027
130.00	-5.68	-1.80	0.00	-25.53	0.00	25.53	2,192.15	1,096.08	2,672.64	1,338.31	13.68	-0.88	0.022
135.00	-3.45	-1.19	0.00	-16.14	0.00	16.14	2,113.10	1,056.55	2,482.39	1,243.04	14.61	-0.89	0.015
140.00	-2.93	-1.08	0.00	-10.21	0.00	10.21	2,034.04	1,017.02	2,299.16	1,151.29	15.55	-0.90	0.010
145.00	-2.44	-0.99	0.00	-4.82	0.00	4.82	1,954.99	977.49	2,122.95	1,063.05	16.49	-0.90	0.006
147.90	0.00	0.00	0.00	0.00	0.00	0.00	1,909.14	954.57	2,023.97	1,013.49	17.04	-0.90	0.000
147.92	0.00	0.00	0.00	0.00	0.00	0.00	1,908.87	954.44	2,023.41	1,013.21	17.04	-0.90	0.000

Equivalent Lateral Forces Method Analysis

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

Spectral Response Acceleration for Short Period (S_s):	0.18	
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.06	
Long-Period Transition Period (T_L):	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):	2.05	
Redundancy Factor (p):	1.30	
Seismic Force Distribution Exponent (k):	1.77	
Total Unfactored Dead Load:	42.07	k
Seismic Base Shear (E):	1.82	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)
36	147.91	1	10	0.000	0	2
35	146.45	279	1,937	0.017	31	345
34	142.50	495	3,276	0.029	52	613
33	137.50	513	3,188	0.028	51	635
32	132.50	568	3,305	0.029	53	703
31	127.50	586	3,186	0.028	51	726
30	122.50	668	3,382	0.030	54	827
29	117.50	686	3,226	0.028	51	849
28	112.50	794	3,457	0.030	55	983
27	107.50	812	3,262	0.028	52	1,006
26	104.00	330	1,250	0.011	20	408
25	101.50	501	1,818	0.016	29	621
24	99.92	28	99	0.001	2	35
23	97.42	1,527	5,153	0.045	82	1,892
22	94.96	27	86	0.001	1	33
21	92.46	965	2,968	0.026	47	1,196
20	87.50	1,067	2,974	0.026	47	1,321
19	82.50	1,088	2,734	0.024	43	1,348
18	77.50	1,110	2,496	0.022	40	1,375
17	72.50	1,132	2,261	0.020	36	1,402
16	67.50	1,153	2,030	0.018	32	1,429
15	62.50	1,175	1,804	0.016	29	1,456
14	57.50	1,197	1,585	0.014	25	1,482

13	54.00	485	574	0.005	9	601
12	51.50	1,282	1,396	0.012	22	1,588
11	48.42	1,371	1,338	0.012	21	1,698
10	45.92	452	401	0.004	6	560
9	42.50	1,247	966	0.008	15	1,544
8	37.50	1,269	787	0.007	13	1,571
7	32.50	1,290	621	0.005	10	1,598
6	27.50	1,312	469	0.004	7	1,625
5	22.50	1,334	334	0.003	5	1,652
4	17.50	1,355	217	0.002	3	1,679
3	12.50	1,377	122	0.001	2	1,706
2	7.50	1,399	50	0.000	1	1,733
1	2.50	1,127	6	0.000	0	1,396
Andrew DB844H90E-XY	147.90	112	793	0.007	13	139
Andrew 844G65VTZASX	147.90	64	453	0.004	7	79
Flat Platform w/ Han	147.90	2,000	14,154	0.124	225	2,477
48" x 4" Panel	135.00	180	1,083	0.009	17	223
Flat Low Profile Pla	135.00	1,500	9,028	0.079	144	1,858
Ericsson KRY 112 144	125.00	33	173	0.002	3	41
Ericsson RRUS 11 B12	125.00	152	799	0.007	13	188
Ericsson AIR 21, 1.3	125.00	249	1,307	0.011	21	308
Ericsson AIR-32 B2A/	125.00	397	2,082	0.018	33	491
Round T-Arm	125.00	750	3,938	0.034	63	929
Andrew LNX-6515DS-VT	125.00	154	808	0.007	13	191
Alcatel-Lucent RRH2X	115.00	129	584	0.005	9	160
Alcatel-Lucent RRH2x	115.00	170	770	0.007	12	211
Alcatel-Lucent B66A	115.00	201	910	0.008	14	249
RFS DB-T1-6Z-8AB-0Z	115.00	88	399	0.003	6	109
Amphenol Antel BXA-7	115.00	102	462	0.004	7	126
Commscope SBNHH-1D65	115.00	304	1,378	0.012	22	377
Flat Low Profile Pla	115.00	1,500	6,793	0.059	108	1,858
Stand-Off	103.00	75	279	0.002	4	93
Antel BCD-87010 ___	103.00	26	99	0.001	2	33
DragonWave Horizon C	90.00	21	62	0.001	1	26
Alcatel-Lucent RRH2x	90.00	317	930	0.008	15	393
Alcatel-Lucent 1900M	90.00	180	528	0.005	8	223
18" x 18" x 4" Junct	90.00	21	62	0.001	1	26
Nokia 2.5G MAA - AAH	90.00	311	911	0.008	14	385
Andrew VHLP2-18	90.00	54	158	0.001	3	67
Commscope NNVV-65B-R	90.00	232	681	0.006	11	288
Flat T-Arm	90.00	750	2,199	0.019	35	929
		42,073	114,592	1.000	1,823	52,112

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)
36	147.91	1	10	0.000	0	1
35	146.45	279	1,937	0.017	31	240
34	142.50	495	3,276	0.029	52	426
33	137.50	513	3,188	0.028	51	442
32	132.50	568	3,305	0.029	53	489
31	127.50	586	3,186	0.028	51	505
30	122.50	668	3,382	0.030	54	575
29	117.50	686	3,226	0.028	51	591
28	112.50	794	3,457	0.030	55	684
27	107.50	812	3,262	0.028	52	699
26	104.00	330	1,250	0.011	20	284
25	101.50	501	1,818	0.016	29	432
24	99.92	28	99	0.001	2	24

23	97.42	1,527	5,153	0.045	82	1,316
22	94.96	27	86	0.001	1	23
21	92.46	965	2,968	0.026	47	831
20	87.50	1,067	2,974	0.026	47	919
19	82.50	1,088	2,734	0.024	43	937
18	77.50	1,110	2,496	0.022	40	956
17	72.50	1,132	2,261	0.020	36	975
16	67.50	1,153	2,030	0.018	32	994
15	62.50	1,175	1,804	0.016	29	1,012
14	57.50	1,197	1,585	0.014	25	1,031
13	54.00	485	574	0.005	9	418
12	51.50	1,282	1,396	0.012	22	1,105
11	48.42	1,371	1,338	0.012	21	1,181
10	45.92	452	401	0.004	6	389
9	42.50	1,247	966	0.008	15	1,074
8	37.50	1,269	787	0.007	13	1,093
7	32.50	1,290	621	0.005	10	1,111
6	27.50	1,312	469	0.004	7	1,130
5	22.50	1,334	334	0.003	5	1,149
4	17.50	1,355	217	0.002	3	1,168
3	12.50	1,377	122	0.001	2	1,186
2	7.50	1,399	50	0.000	1	1,205
1	2.50	1,127	6	0.000	0	971
Andrew DB844H90E-XY	147.90	112	793	0.007	13	96
Andrew 844G65VTZASX	147.90	64	453	0.004	7	55
Flat Platform w/ Han	147.90	2,000	14,154	0.124	225	1,723
48" x 4" Panel	135.00	180	1,083	0.009	17	155
Flat Low Profile Pla	135.00	1,500	9,028	0.079	144	1,292
Ericsson KRY 112 144	125.00	33	173	0.002	3	28
Ericsson RRUS 11 B12	125.00	152	799	0.007	13	131
Ericsson AIR 21, 1.3	125.00	249	1,307	0.011	21	214
Ericsson AIR-32 B2A/	125.00	397	2,082	0.018	33	342
Round T-Arm	125.00	750	3,938	0.034	63	646
Andrew LNX-6515DS-VT	125.00	154	808	0.007	13	133
Alcatel-Lucent RRH2X	115.00	129	584	0.005	9	111
Alcatel-Lucent RRH2x	115.00	170	770	0.007	12	147
Alcatel-Lucent B66A	115.00	201	910	0.008	14	173
RFS DB-T1-6Z-8AB-0Z	115.00	88	399	0.003	6	76
Amphenol Antel BXA-7	115.00	102	462	0.004	7	88
Commscope SBNHH-1D65	115.00	304	1,378	0.012	22	262
Flat Low Profile Pla	115.00	1,500	6,793	0.059	108	1,292
Stand-Off	103.00	75	279	0.002	4	65
Antel BCD-87010 ___	103.00	26	99	0.001	2	23
DragonWave Horizon C	90.00	21	62	0.001	1	18
Alcatel-Lucent RRH2x	90.00	317	930	0.008	15	273
Alcatel-Lucent 1900M	90.00	180	528	0.005	8	155
18" x 18" x 4" Junct	90.00	21	62	0.001	1	18
Nokia 2.5G MAA - AAH	90.00	311	911	0.008	14	268
Andrew VHLP2-18	90.00	54	158	0.001	3	47
Commscope NNVV-65B-R	90.00	232	681	0.006	11	200
Flat T-Arm	90.00	750	2,199	0.019	35	646
		42,073	114,592	1.000	1,823	36,241

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	-50.72	-1.83	0.00	-208.30	0.00	208.30	4,345.86	2,172.93	10,048.4	5,031.69	0.00	0.00	0.053
5.00	-48.98	-1.84	0.00	-199.16	0.00	199.16	4,297.95	2,148.97	9,746.71	4,880.60	0.01	-0.01	0.052
10.00	-47.28	-1.84	0.00	-189.99	0.00	189.99	4,248.67	2,124.33	9,446.21	4,730.12	0.02	-0.02	0.051
15.00	-45.60	-1.85	0.00	-180.78	0.00	180.78	4,198.03	2,099.01	9,147.11	4,580.35	0.05	-0.03	0.050
20.00	-43.94	-1.85	0.00	-171.54	0.00	171.54	4,146.02	2,073.01	8,849.60	4,431.38	0.09	-0.04	0.049
25.00	-42.32	-1.85	0.00	-162.30	0.00	162.30	4,092.65	2,046.33	8,553.86	4,283.29	0.14	-0.06	0.048
30.00	-40.72	-1.84	0.00	-153.06	0.00	153.06	4,037.92	2,018.96	8,260.08	4,136.18	0.21	-0.07	0.047
35.00	-39.15	-1.84	0.00	-143.84	0.00	143.84	3,981.83	1,990.91	7,968.43	3,990.14	0.29	-0.08	0.046
40.00	-37.60	-1.83	0.00	-134.65	0.00	134.65	3,924.37	1,962.18	7,679.09	3,845.25	0.37	-0.09	0.045
45.00	-37.04	-1.83	0.00	-125.51	0.00	125.51	3,865.54	1,932.77	7,392.26	3,701.62	0.47	-0.10	0.043
46.83	-35.35	-1.80	0.00	-122.16	0.00	122.16	3,843.63	1,921.82	7,287.75	3,649.29	0.51	-0.11	0.043
50.00	-33.76	-1.78	0.00	-116.45	0.00	116.45	3,805.35	1,902.68	7,108.10	3,559.34	0.59	-0.11	0.042
53.00	-33.16	-1.78	0.00	-111.10	0.00	111.10	3,811.38	1,905.69	7,136.14	3,573.37	0.66	-0.12	0.040
55.00	-31.67	-1.75	0.00	-107.54	0.00	107.54	3,786.98	1,893.49	7,023.15	3,516.80	0.71	-0.12	0.039
60.00	-30.22	-1.73	0.00	-98.78	0.00	98.78	3,725.02	1,862.51	6,742.75	3,376.39	0.84	-0.13	0.037
65.00	-28.79	-1.70	0.00	-90.15	0.00	90.15	3,661.69	1,830.85	6,465.46	3,237.53	0.99	-0.14	0.036
70.00	-27.39	-1.66	0.00	-81.67	0.00	81.67	3,597.00	1,798.50	6,191.44	3,100.32	1.15	-0.16	0.034
75.00	-26.01	-1.62	0.00	-73.37	0.00	73.37	3,530.95	1,765.48	5,920.88	2,964.84	1.32	-0.17	0.032
80.00	-24.66	-1.58	0.00	-65.26	0.00	65.26	3,463.54	1,731.77	5,653.97	2,831.19	1.49	-0.17	0.030
85.00	-23.34	-1.53	0.00	-57.37	0.00	57.37	3,394.76	1,697.38	5,390.88	2,699.44	1.68	-0.18	0.028
90.00	-19.81	-1.39	0.00	-49.72	0.00	49.72	3,324.61	1,662.31	5,131.80	2,569.71	1.88	-0.19	0.025
94.92	-19.78	-1.39	0.00	-42.90	0.00	42.90	3,235.43	1,617.72	4,852.80	2,430.01	2.08	-0.20	0.024
95.00	-17.89	-1.30	0.00	-42.78	0.00	42.78	3,233.85	1,616.93	4,848.03	2,427.62	2.09	-0.20	0.023
99.83	-17.85	-1.30	0.00	-36.51	0.00	36.51	2,561.72	1,280.86	3,809.84	1,907.75	2.29	-0.21	0.026
100.00	-17.23	-1.27	0.00	-36.29	0.00	36.29	2,559.96	1,279.98	3,803.43	1,904.54	2.30	-0.21	0.026
103.00	-16.70	-1.24	0.00	-32.48	0.00	32.48	2,527.98	1,263.99	3,688.52	1,847.00	2.43	-0.21	0.024
105.00	-15.69	-1.19	0.00	-30.00	0.00	30.00	2,506.38	1,253.19	3,612.47	1,808.92	2.52	-0.22	0.023
110.00	-14.71	-1.13	0.00	-24.06	0.00	24.06	2,451.44	1,225.72	3,424.37	1,714.73	2.75	-0.22	0.020
115.00	-10.77	-0.88	0.00	-18.41	0.00	18.41	2,395.13	1,197.56	3,239.31	1,622.06	2.99	-0.23	0.016
120.00	-9.94	-0.83	0.00	-13.99	0.00	13.99	2,337.45	1,168.73	3,057.47	1,531.01	3.24	-0.24	0.013
125.00	-7.07	-0.62	0.00	-9.85	0.00	9.85	2,271.21	1,135.60	2,869.92	1,437.09	3.48	-0.24	0.010
130.00	-6.37	-0.57	0.00	-6.74	0.00	6.74	2,192.15	1,096.08	2,672.64	1,338.31	3.74	-0.24	0.008
135.00	-3.65	-0.34	0.00	-3.91	0.00	3.91	2,113.10	1,056.55	2,482.39	1,243.04	3.99	-0.24	0.005
140.00	-3.04	-0.29	0.00	-2.19	0.00	2.19	2,034.04	1,017.02	2,299.16	1,151.29	4.25	-0.25	0.003
145.00	-2.70	-0.26	0.00	-0.74	0.00	0.74	1,954.99	977.49	2,122.95	1,063.05	4.51	-0.25	0.002
147.90	0.00	0.00	0.00	0.00	0.00	0.00	1,909.14	954.57	2,023.97	1,013.49	4.66	-0.25	0.000
147.92	0.00	0.00	0.00	0.00	0.00	0.00	1,908.87	954.44	2,023.41	1,013.21	4.66	-0.25	0.000

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

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-35.27	-1.83	0.00	-205.97	0.00	205.97	4,345.86	2,172.93	10,048.4	5,031.69	0.00	0.00	0.049
5.00	-34.06	-1.83	0.00	-196.85	0.00	196.85	4,297.95	2,148.97	9,746.71	4,880.60	0.01	-0.01	0.048
10.00	-32.88	-1.83	0.00	-187.69	0.00	187.69	4,248.67	2,124.33	9,446.21	4,730.12	0.02	-0.02	0.047
15.00	-31.71	-1.84	0.00	-178.52	0.00	178.52	4,198.03	2,099.01	9,147.11	4,580.35	0.05	-0.03	0.047
20.00	-30.56	-1.84	0.00	-169.33	0.00	169.33	4,146.02	2,073.01	8,849.60	4,431.38	0.09	-0.04	0.046
25.00	-29.43	-1.83	0.00	-160.15	0.00	160.15	4,092.65	2,046.33	8,553.86	4,283.29	0.14	-0.05	0.045
30.00	-28.32	-1.83	0.00	-150.98	0.00	150.98	4,037.92	2,018.96	8,260.08	4,136.18	0.21	-0.07	0.044
35.00	-27.23	-1.82	0.00	-141.84	0.00	141.84	3,981.83	1,990.91	7,968.43	3,990.14	0.28	-0.08	0.042
40.00	-26.15	-1.81	0.00	-132.74	0.00	132.74	3,924.37	1,962.18	7,679.09	3,845.25	0.37	-0.09	0.041
45.00	-25.76	-1.80	0.00	-123.70	0.00	123.70	3,865.54	1,932.77	7,392.26	3,701.62	0.47	-0.10	0.040
46.83	-24.58	-1.78	0.00	-120.39	0.00	120.39	3,843.63	1,921.82	7,287.75	3,649.29	0.51	-0.10	0.039
50.00	-23.48	-1.76	0.00	-114.74	0.00	114.74	3,805.35	1,902.68	7,108.10	3,559.34	0.58	-0.11	0.038
53.00	-23.06	-1.75	0.00	-109.45	0.00	109.45	3,811.38	1,905.69	7,136.14	3,573.37	0.65	-0.12	0.037
55.00	-22.03	-1.73	0.00	-105.94	0.00	105.94	3,786.98	1,893.49	7,023.15	3,516.80	0.70	-0.12	0.036
60.00	-21.01	-1.70	0.00	-97.29	0.00	97.29	3,725.02	1,862.51	6,742.75	3,376.39	0.83	-0.13	0.034
65.00	-20.02	-1.67	0.00	-88.78	0.00	88.78	3,661.69	1,830.85	6,465.46	3,237.53	0.98	-0.14	0.033
70.00	-19.05	-1.64	0.00	-80.42	0.00	80.42	3,597.00	1,798.50	6,191.44	3,100.32	1.13	-0.15	0.031
75.00	-18.09	-1.60	0.00	-72.24	0.00	72.24	3,530.95	1,765.48	5,920.88	2,964.84	1.30	-0.16	0.029
80.00	-17.15	-1.55	0.00	-64.25	0.00	64.25	3,463.54	1,731.77	5,653.97	2,831.19	1.48	-0.17	0.028
85.00	-16.23	-1.51	0.00	-56.48	0.00	56.48	3,394.76	1,697.38	5,390.88	2,699.44	1.66	-0.18	0.026
90.00	-13.78	-1.37	0.00	-48.95	0.00	48.95	3,324.61	1,662.31	5,131.80	2,569.71	1.86	-0.19	0.023
94.92	-13.75	-1.36	0.00	-42.23	0.00	42.23	3,235.43	1,617.72	4,852.80	2,430.01	2.06	-0.20	0.022
95.00	-12.44	-1.28	0.00	-42.12	0.00	42.12	3,233.85	1,616.93	4,848.03	2,427.62	2.06	-0.20	0.021
99.83	-12.41	-1.28	0.00	-35.94	0.00	35.94	2,561.72	1,280.86	3,809.84	1,907.75	2.26	-0.21	0.024
100.00	-11.98	-1.25	0.00	-35.73	0.00	35.73	2,559.96	1,279.98	3,803.43	1,904.54	2.27	-0.21	0.023
103.00	-11.61	-1.22	0.00	-31.98	0.00	31.98	2,527.98	1,263.99	3,688.52	1,847.00	2.40	-0.21	0.022
105.00	-10.91	-1.17	0.00	-29.54	0.00	29.54	2,506.38	1,253.19	3,612.47	1,808.92	2.49	-0.21	0.021
110.00	-10.23	-1.11	0.00	-23.69	0.00	23.69	2,451.44	1,225.72	3,424.37	1,714.73	2.72	-0.22	0.018
115.00	-7.49	-0.87	0.00	-18.13	0.00	18.13	2,395.13	1,197.56	3,239.31	1,622.06	2.95	-0.23	0.014
120.00	-6.91	-0.82	0.00	-13.78	0.00	13.78	2,337.45	1,168.73	3,057.47	1,531.01	3.19	-0.23	0.012
125.00	-4.92	-0.61	0.00	-9.70	0.00	9.70	2,271.21	1,135.60	2,869.92	1,437.09	3.44	-0.24	0.009
130.00	-4.43	-0.56	0.00	-6.64	0.00	6.64	2,192.15	1,096.08	2,672.64	1,338.31	3.69	-0.24	0.007
135.00	-2.54	-0.34	0.00	-3.85	0.00	3.85	2,113.10	1,056.55	2,482.39	1,243.04	3.94	-0.24	0.004
140.00	-2.11	-0.28	0.00	-2.16	0.00	2.16	2,034.04	1,017.02	2,299.16	1,151.29	4.19	-0.24	0.003
145.00	-1.87	-0.25	0.00	-0.73	0.00	0.73	1,954.99	977.49	2,122.95	1,063.05	4.45	-0.24	0.002
147.90	0.00	0.00	0.00	0.00	0.00	0.00	1,909.14	954.57	2,023.97	1,013.49	4.59	-0.24	0.000
147.92	0.00	0.00	0.00	0.00	0.00	0.00	1,908.87	954.44	2,023.41	1,013.21	4.59	-0.24	0.000

Equivalent Modal Forces Analysis

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

Spectral Response Acceleration for Short Period (S_s):	0.18
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.06
Importance Factor (I_E):	1.00
Site Coefficient F_a:	1.60
Site Coefficient F_v	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.19
Desing Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10
Period Based on Rayleigh Method (sec):	2.05
Redundancy Factor (p):	1.30

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

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
36	147.91	1	1.890	1.979	1.140	0.370	0	2
35	146.45	279	1.853	1.789	1.071	0.346	84	345
34	142.50	495	1.754	1.338	0.900	0.286	122	613
33	137.50	513	1.633	0.885	0.716	0.217	96	635
32	132.50	568	1.517	0.543	0.563	0.157	77	703
31	127.50	586	1.404	0.292	0.436	0.105	53	726
30	122.50	668	1.296	0.115	0.333	0.062	36	827
29	117.50	686	1.193	-0.002	0.249	0.027	16	849
28	112.50	794	1.093	-0.074	0.183	0.000	0	983
27	107.50	812	0.998	-0.110	0.131	-0.019	-13	1,006
26	104.00	330	0.934	-0.120	0.101	-0.027	-8	408
25	101.50	501	0.890	-0.122	0.083	-0.031	-13	621
24	99.92	28	0.862	-0.120	0.074	-0.032	-1	35
23	97.42	1,527	0.820	-0.115	0.060	-0.033	-43	1,892
22	94.96	27	0.779	-0.108	0.048	-0.032	-1	33
21	92.46	965	0.738	-0.098	0.038	-0.029	-24	1,196
20	87.50	1,067	0.661	-0.074	0.023	-0.019	-18	1,321
19	82.50	1,088	0.588	-0.049	0.013	-0.006	-6	1,348
18	77.50	1,110	0.519	-0.023	0.008	0.008	8	1,375
17	72.50	1,132	0.454	0.000	0.006	0.022	21	1,402
16	67.50	1,153	0.394	0.020	0.007	0.033	33	1,429
15	62.50	1,175	0.337	0.036	0.009	0.041	42	1,456
14	57.50	1,197	0.286	0.048	0.014	0.046	48	1,482
13	54.00	485	0.252	0.055	0.017	0.048	20	601
12	51.50	1,282	0.229	0.059	0.020	0.049	54	1,588
11	48.42	1,371	0.202	0.062	0.023	0.049	58	1,698
10	45.92	452	0.182	0.065	0.026	0.049	19	560
9	42.50	1,247	0.156	0.067	0.029	0.048	52	1,544
8	37.50	1,269	0.121	0.070	0.034	0.047	52	1,571
7	32.50	1,290	0.091	0.071	0.038	0.046	51	1,598
6	27.50	1,312	0.065	0.072	0.041	0.045	51	1,625
5	22.50	1,334	0.044	0.071	0.042	0.043	50	1,652
4	17.50	1,355	0.026	0.067	0.040	0.041	48	1,679
3	12.50	1,377	0.013	0.059	0.035	0.036	43	1,706

2	7.50	1,399	0.005	0.044	0.025	0.028	34	1,733
1	2.50	1,127	0.001	0.018	0.010	0.013	13	1,396
Andrew DB844H90E-XY	147.90	112	1.890	1.978	1.139	0.370	36	139
Andrew 844G65VTZASX	147.90	64	1.890	1.978	1.139	0.370	21	79
Flat Platform w/ Han	147.90	2,000	1.890	1.978	1.139	0.370	641	2,477
48" x 4" Panel	135.00	180	1.574	0.701	0.636	0.186	29	223
Flat Low Profile Pla	135.00	1,500	1.574	0.701	0.636	0.186	242	1,858
Ericsson KRY 112 144	125.00	33	1.350	0.195	0.382	0.082	2	41
Ericsson RRUS 11 B12	125.00	152	1.350	0.195	0.382	0.082	11	188
Ericsson AIR 21, 1.3	125.00	249	1.350	0.195	0.382	0.082	18	308
Ericsson AIR-32 B2A/	125.00	397	1.350	0.195	0.382	0.082	28	491
Round T-Arm	125.00	750	1.350	0.195	0.382	0.082	54	929
Andrew LNX-6515DS-VT	125.00	154	1.350	0.195	0.382	0.082	11	191
Alcatel-Lucent RRH2X	115.00	129	1.142	-0.043	0.214	0.012	1	160
Alcatel-Lucent RRH2x	115.00	170	1.142	-0.043	0.214	0.012	2	211
Alcatel-Lucent B66A	115.00	201	1.142	-0.043	0.214	0.012	2	249
RFS DB-T1-6Z-8AB-0Z	115.00	88	1.142	-0.043	0.214	0.012	1	109
Amphenol Antel BXA-7	115.00	102	1.142	-0.043	0.214	0.012	1	126
Commscope SBNHH-	115.00	304	1.142	-0.043	0.214	0.012	3	377
Flat Low Profile Pla	115.00	1,500	1.142	-0.043	0.214	0.012	16	1,858
Stand-Off	103.00	75	0.916	-0.121	0.094	-0.029	-2	93
Antel BCD-87010 ___	103.00	26	0.916	-0.121	0.094	-0.029	-1	33
DragonWave Horizon C	90.00	21	0.700	-0.087	0.030	-0.025	0	26
Alcatel-Lucent RRH2x	90.00	317	0.700	-0.087	0.030	-0.025	-7	393
Alcatel-Lucent 1900M	90.00	180	0.700	-0.087	0.030	-0.025	-4	223
18" x 18" x 4" Junct	90.00	21	0.700	-0.087	0.030	-0.025	0	26
Nokia 2.5G MAA - AAH	90.00	311	0.700	-0.087	0.030	-0.025	-7	385
Andrew VHLP2-18	90.00	54	0.700	-0.087	0.030	-0.025	-1	67
Commscope NNVV-	90.00	232	0.700	-0.087	0.030	-0.025	-5	288
Flat T-Arm	90.00	750	0.700	-0.087	0.030	-0.025	-16	929
		42,073	56.626	14.082	15.487	3.840	2,131	52,112

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)
36	147.91	1	1.890	1.979	1.140	0.370	0	1
35	146.45	279	1.853	1.789	1.071	0.346	84	240
34	142.50	495	1.754	1.338	0.900	0.286	122	426
33	137.50	513	1.633	0.885	0.716	0.217	96	442
32	132.50	568	1.517	0.543	0.563	0.157	77	489
31	127.50	586	1.404	0.292	0.436	0.105	53	505
30	122.50	668	1.296	0.115	0.333	0.062	36	575
29	117.50	686	1.193	-0.002	0.249	0.027	16	591
28	112.50	794	1.093	-0.074	0.183	0.000	0	684
27	107.50	812	0.998	-0.110	0.131	-0.019	-13	699
26	104.00	330	0.934	-0.120	0.101	-0.027	-8	284
25	101.50	501	0.890	-0.122	0.083	-0.031	-13	432
24	99.92	28	0.862	-0.120	0.074	-0.032	-1	24
23	97.42	1,527	0.820	-0.115	0.060	-0.033	-43	1,316
22	94.96	27	0.779	-0.108	0.048	-0.032	-1	23
21	92.46	965	0.738	-0.098	0.038	-0.029	-24	831
20	87.50	1,067	0.661	-0.074	0.023	-0.019	-18	919
19	82.50	1,088	0.588	-0.049	0.013	-0.006	-6	937
18	77.50	1,110	0.519	-0.023	0.008	0.008	8	956
17	72.50	1,132	0.454	0.000	0.006	0.022	21	975
16	67.50	1,153	0.394	0.020	0.007	0.033	33	994
15	62.50	1,175	0.337	0.036	0.009	0.041	42	1,012
14	57.50	1,197	0.286	0.048	0.014	0.046	48	1,031

13	54.00	485	0.252	0.055	0.017	0.048	20	418
12	51.50	1,282	0.229	0.059	0.020	0.049	54	1,105
11	48.42	1,371	0.202	0.062	0.023	0.049	58	1,181
10	45.92	452	0.182	0.065	0.026	0.049	19	389
9	42.50	1,247	0.156	0.067	0.029	0.048	52	1,074
8	37.50	1,269	0.121	0.070	0.034	0.047	52	1,093
7	32.50	1,290	0.091	0.071	0.038	0.046	51	1,111
6	27.50	1,312	0.065	0.072	0.041	0.045	51	1,130
5	22.50	1,334	0.044	0.071	0.042	0.043	50	1,149
4	17.50	1,355	0.026	0.067	0.040	0.041	48	1,168
3	12.50	1,377	0.013	0.059	0.035	0.036	43	1,186
2	7.50	1,399	0.005	0.044	0.025	0.028	34	1,205
1	2.50	1,127	0.001	0.018	0.010	0.013	13	971
Andrew DB844H90E-XY	147.90	112	1.890	1.978	1.139	0.370	36	96
Andrew 844G65VTZASX	147.90	64	1.890	1.978	1.139	0.370	21	55
Flat Platform w/ Han	147.90	2,000	1.890	1.978	1.139	0.370	641	1,723
48" x 4" Panel	135.00	180	1.574	0.701	0.636	0.186	29	155
Flat Low Profile Pla	135.00	1,500	1.574	0.701	0.636	0.186	242	1,292
Ericsson KRY 112 144	125.00	33	1.350	0.195	0.382	0.082	2	28
Ericsson RRUS 11 B12	125.00	152	1.350	0.195	0.382	0.082	11	131
Ericsson AIR 21, 1.3	125.00	249	1.350	0.195	0.382	0.082	18	214
Ericsson AIR-32 B2A/	125.00	397	1.350	0.195	0.382	0.082	28	342
Round T-Arm	125.00	750	1.350	0.195	0.382	0.082	54	646
Andrew LNX-6515DS-VT	125.00	154	1.350	0.195	0.382	0.082	11	133
Alcatel-Lucent RRH2X	115.00	129	1.142	-0.043	0.214	0.012	1	111
Alcatel-Lucent RRH2x	115.00	170	1.142	-0.043	0.214	0.012	2	147
Alcatel-Lucent B66A	115.00	201	1.142	-0.043	0.214	0.012	2	173
RFS DB-T1-6Z-8AB-0Z	115.00	88	1.142	-0.043	0.214	0.012	1	76
Amphenol Antel BXA-7	115.00	102	1.142	-0.043	0.214	0.012	1	88
Commscope SBNHH-	115.00	304	1.142	-0.043	0.214	0.012	3	262
Flat Low Profile Pla	115.00	1,500	1.142	-0.043	0.214	0.012	16	1,292
Stand-Off	103.00	75	0.916	-0.121	0.094	-0.029	-2	65
Antel BCD-87010 ___	103.00	26	0.916	-0.121	0.094	-0.029	-1	23
DragonWave Horizon C	90.00	21	0.700	-0.087	0.030	-0.025	0	18
Alcatel-Lucent RRH2x	90.00	317	0.700	-0.087	0.030	-0.025	-7	273
Alcatel-Lucent 1900M	90.00	180	0.700	-0.087	0.030	-0.025	-4	155
18" x 18" x 4" Junct	90.00	21	0.700	-0.087	0.030	-0.025	0	18
Nokia 2.5G MAA - AAH	90.00	311	0.700	-0.087	0.030	-0.025	-7	268
Andrew VHLP2-18	90.00	54	0.700	-0.087	0.030	-0.025	-1	47
Commscope NNVV-	90.00	232	0.700	-0.087	0.030	-0.025	-5	200
Flat T-Arm	90.00	750	0.700	-0.087	0.030	-0.025	-16	646
		42,073	56.626	14.082	15.487	3.840	2,131	36,241

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	-50.72	-2.12	0.00	-242.45	0.00	242.45	4,345.86	2,172.93	10,048.4	5,031.69	0.00	0.00	0.060
5.00	-48.98	-2.10	0.00	-231.83	0.00	231.83	4,297.95	2,148.97	9,746.71	4,880.60	0.01	-0.01	0.059
10.00	-47.28	-2.07	0.00	-221.33	0.00	221.33	4,248.67	2,124.33	9,446.21	4,730.12	0.03	-0.03	0.058
15.00	-45.60	-2.03	0.00	-211.00	0.00	211.00	4,198.03	2,099.01	9,147.11	4,580.35	0.06	-0.04	0.057
20.00	-43.94	-1.99	0.00	-200.86	0.00	200.86	4,146.02	2,073.01	8,849.60	4,431.38	0.11	-0.05	0.056
25.00	-42.32	-1.94	0.00	-190.93	0.00	190.93	4,092.65	2,046.33	8,553.86	4,283.29	0.17	-0.06	0.055
30.00	-40.72	-1.90	0.00	-181.21	0.00	181.21	4,037.92	2,018.96	8,260.08	4,136.18	0.24	-0.08	0.054
35.00	-39.15	-1.86	0.00	-171.70	0.00	171.70	3,981.83	1,990.91	7,968.43	3,990.14	0.33	-0.09	0.053
40.00	-37.60	-1.81	0.00	-162.43	0.00	162.43	3,924.37	1,962.18	7,679.09	3,845.25	0.44	-0.11	0.052
45.00	-37.04	-1.80	0.00	-153.38	0.00	153.38	3,865.54	1,932.77	7,392.26	3,701.62	0.55	-0.12	0.051
46.83	-35.35	-1.74	0.00	-150.09	0.00	150.09	3,843.63	1,921.82	7,287.75	3,649.29	0.60	-0.12	0.050
50.00	-33.76	-1.69	0.00	-144.59	0.00	144.59	3,805.35	1,902.68	7,108.10	3,559.34	0.69	-0.13	0.049
53.00	-33.16	-1.67	0.00	-139.53	0.00	139.53	3,811.38	1,905.69	7,136.14	3,573.37	0.77	-0.14	0.048
55.00	-31.67	-1.62	0.00	-136.19	0.00	136.19	3,786.98	1,893.49	7,023.15	3,516.80	0.83	-0.15	0.047
60.00	-30.22	-1.58	0.00	-128.08	0.00	128.08	3,725.02	1,862.51	6,742.75	3,376.39	1.00	-0.16	0.046
65.00	-28.79	-1.55	0.00	-120.16	0.00	120.16	3,661.69	1,830.85	6,465.46	3,237.53	1.17	-0.18	0.045
70.00	-27.39	-1.53	0.00	-112.40	0.00	112.40	3,597.00	1,798.50	6,191.44	3,100.32	1.36	-0.19	0.044
75.00	-26.01	-1.53	0.00	-104.73	0.00	104.73	3,530.95	1,765.48	5,920.88	2,964.84	1.57	-0.20	0.043
80.00	-24.66	-1.53	0.00	-97.09	0.00	97.09	3,463.54	1,731.77	5,653.97	2,831.19	1.79	-0.22	0.041
85.00	-23.34	-1.55	0.00	-89.42	0.00	89.42	3,394.76	1,697.38	5,390.88	2,699.44	2.02	-0.23	0.040
90.00	-19.81	-1.61	0.00	-81.65	0.00	81.65	3,324.61	1,662.31	5,131.80	2,569.71	2.27	-0.24	0.038
94.92	-19.78	-1.61	0.00	-73.74	0.00	73.74	3,235.43	1,617.72	4,852.80	2,430.01	2.53	-0.26	0.036
95.00	-17.88	-1.65	0.00	-73.61	0.00	73.61	3,233.85	1,616.93	4,848.03	2,427.62	2.54	-0.26	0.036
99.83	-17.85	-1.65	0.00	-65.65	0.00	65.65	2,561.72	1,280.86	3,809.84	1,907.75	2.80	-0.27	0.041
100.00	-17.23	-1.66	0.00	-65.37	0.00	65.37	2,559.96	1,279.98	3,803.43	1,904.54	2.81	-0.27	0.041
103.00	-16.69	-1.67	0.00	-60.38	0.00	60.38	2,527.98	1,263.99	3,688.52	1,847.00	2.99	-0.28	0.039
105.00	-15.69	-1.68	0.00	-57.04	0.00	57.04	2,506.38	1,253.19	3,612.47	1,808.92	3.11	-0.29	0.038
110.00	-14.70	-1.68	0.00	-48.62	0.00	48.62	2,451.44	1,225.72	3,424.37	1,714.73	3.41	-0.30	0.034
115.00	-10.77	-1.62	0.00	-40.21	0.00	40.21	2,395.13	1,197.56	3,239.31	1,622.06	3.74	-0.31	0.029
120.00	-9.94	-1.58	0.00	-32.11	0.00	32.11	2,337.45	1,168.73	3,057.47	1,531.01	4.07	-0.33	0.025
125.00	-7.07	-1.39	0.00	-24.20	0.00	24.20	2,271.21	1,135.60	2,869.92	1,437.09	4.42	-0.33	0.020
130.00	-6.36	-1.31	0.00	-17.25	0.00	17.25	2,192.15	1,096.08	2,672.64	1,338.31	4.77	-0.34	0.016
135.00	-3.65	-0.93	0.00	-10.71	0.00	10.71	2,113.10	1,056.55	2,482.39	1,243.04	5.14	-0.35	0.010
140.00	-3.04	-0.80	0.00	-6.07	0.00	6.07	2,034.04	1,017.02	2,299.16	1,151.29	5.50	-0.35	0.007
145.00	-2.69	-0.71	0.00	-2.07	0.00	2.07	1,954.99	977.49	2,122.95	1,063.05	5.87	-0.36	0.003
147.90	0.00	0.00	0.00	0.00	0.00	0.00	1,909.14	954.57	2,023.97	1,013.49	6.09	-0.36	0.000
147.92	0.00	0.00	0.00	0.00	0.00	0.00	1,908.87	954.44	2,023.41	1,013.21	6.09	-0.36	0.000

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

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-35.27	-2.12	0.00	-239.54	0.00	239.54	4,345.86	2,172.93	10,048.4	5,031.69	0.00	0.00	0.056
5.00	-34.06	-2.09	0.00	-228.94	0.00	228.94	4,297.95	2,148.97	9,746.71	4,880.60	0.01	-0.01	0.055
10.00	-32.88	-2.06	0.00	-218.46	0.00	218.46	4,248.67	2,124.33	9,446.21	4,730.12	0.03	-0.03	0.054
15.00	-31.71	-2.02	0.00	-208.17	0.00	208.17	4,198.03	2,099.01	9,147.11	4,580.35	0.06	-0.04	0.053
20.00	-30.56	-1.97	0.00	-198.09	0.00	198.09	4,146.02	2,073.01	8,849.60	4,431.38	0.11	-0.05	0.052
25.00	-29.43	-1.93	0.00	-188.23	0.00	188.23	4,092.65	2,046.33	8,553.86	4,283.29	0.17	-0.06	0.051
30.00	-28.32	-1.88	0.00	-178.59	0.00	178.59	4,037.92	2,018.96	8,260.08	4,136.18	0.24	-0.08	0.050
35.00	-27.22	-1.83	0.00	-169.18	0.00	169.18	3,981.83	1,990.91	7,968.43	3,990.14	0.33	-0.09	0.049
40.00	-26.15	-1.79	0.00	-160.01	0.00	160.01	3,924.37	1,962.18	7,679.09	3,845.25	0.43	-0.10	0.048
45.00	-25.76	-1.77	0.00	-151.07	0.00	151.07	3,865.54	1,932.77	7,392.26	3,701.62	0.55	-0.12	0.047
46.83	-24.58	-1.71	0.00	-147.83	0.00	147.83	3,843.63	1,921.82	7,287.75	3,649.29	0.59	-0.12	0.047
50.00	-23.48	-1.66	0.00	-142.40	0.00	142.40	3,805.35	1,902.68	7,108.10	3,559.34	0.68	-0.13	0.046
53.00	-23.06	-1.64	0.00	-137.42	0.00	137.42	3,811.38	1,905.69	7,136.14	3,573.37	0.76	-0.14	0.045
55.00	-22.03	-1.60	0.00	-134.14	0.00	134.14	3,786.98	1,893.49	7,023.15	3,516.80	0.82	-0.15	0.044
60.00	-21.01	-1.56	0.00	-126.16	0.00	126.16	3,725.02	1,862.51	6,742.75	3,376.39	0.98	-0.16	0.043
65.00	-20.02	-1.52	0.00	-118.39	0.00	118.39	3,661.69	1,830.85	6,465.46	3,237.53	1.16	-0.17	0.042
70.00	-19.04	-1.50	0.00	-110.76	0.00	110.76	3,597.00	1,798.50	6,191.44	3,100.32	1.34	-0.19	0.041
75.00	-18.09	-1.50	0.00	-103.24	0.00	103.24	3,530.95	1,765.48	5,920.88	2,964.84	1.55	-0.20	0.040
80.00	-17.15	-1.50	0.00	-95.75	0.00	95.75	3,463.54	1,731.77	5,653.97	2,831.19	1.76	-0.21	0.039
85.00	-16.23	-1.52	0.00	-88.23	0.00	88.23	3,394.76	1,697.38	5,390.88	2,699.44	1.99	-0.23	0.037
90.00	-13.77	-1.58	0.00	-80.61	0.00	80.61	3,324.61	1,662.31	5,131.80	2,569.71	2.24	-0.24	0.036
94.92	-13.75	-1.58	0.00	-72.84	0.00	72.84	3,235.43	1,617.72	4,852.80	2,430.01	2.50	-0.25	0.034
95.00	-12.44	-1.62	0.00	-72.71	0.00	72.71	3,233.85	1,616.93	4,848.03	2,427.62	2.50	-0.25	0.034
99.83	-12.41	-1.62	0.00	-64.87	0.00	64.87	2,561.72	1,280.86	3,809.84	1,907.75	2.76	-0.27	0.039
100.00	-11.98	-1.64	0.00	-64.60	0.00	64.60	2,559.96	1,279.98	3,803.43	1,904.54	2.77	-0.27	0.039
103.00	-11.61	-1.65	0.00	-59.69	0.00	59.69	2,527.98	1,263.99	3,688.52	1,847.00	2.95	-0.28	0.037
105.00	-10.91	-1.66	0.00	-56.40	0.00	56.40	2,506.38	1,253.19	3,612.47	1,808.92	3.06	-0.28	0.036
110.00	-10.22	-1.66	0.00	-48.11	0.00	48.11	2,451.44	1,225.72	3,424.37	1,714.73	3.37	-0.30	0.032
115.00	-7.48	-1.60	0.00	-39.82	0.00	39.82	2,395.13	1,197.56	3,239.31	1,622.06	3.68	-0.31	0.028
120.00	-6.91	-1.56	0.00	-31.82	0.00	31.82	2,337.45	1,168.73	3,057.47	1,531.01	4.01	-0.32	0.024
125.00	-4.91	-1.38	0.00	-23.99	0.00	23.99	2,271.21	1,135.60	2,869.92	1,437.09	4.36	-0.33	0.019
130.00	-4.42	-1.30	0.00	-17.11	0.00	17.11	2,192.15	1,096.08	2,672.64	1,338.31	4.71	-0.34	0.015
135.00	-2.54	-0.92	0.00	-10.63	0.00	10.63	2,113.10	1,056.55	2,482.39	1,243.04	5.06	-0.34	0.010
140.00	-2.11	-0.79	0.00	-6.03	0.00	6.03	2,034.04	1,017.02	2,299.16	1,151.29	5.43	-0.35	0.006
145.00	-1.87	-0.71	0.00	-2.06	0.00	2.06	1,954.99	977.49	2,122.95	1,063.05	5.79	-0.35	0.003
147.90	0.00	0.00	0.00	0.00	0.00	0.00	1,909.14	954.57	2,023.97	1,013.49	6.01	-0.35	0.000
147.92	0.00	0.00	0.00	0.00	0.00	0.00	1,908.87	954.44	2,023.41	1,013.21	6.01	-0.35	0.000

Analysis Summary

	Reactions						Max Usage	
Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.6W	32.58	0.00	50.44	0.00	0.00	3339.60	0.00	0.68
0.9D + 1.6W	32.05	0.00	37.82	0.00	0.00	3263.70	0.00	0.66
1.2D + 1.0Di + 1.0Wi	9.40	0.00	95.43	0.00	0.00	973.87	0.00	0.22
(1.2 + 0.2Sds) * DL + E ELFM	1.83	0.00	50.72	0.00	0.00	208.30	0.00	0.05
(1.2 + 0.2Sds) * DL + E EMAM	2.12	0.00	50.72	0.00	0.00	242.45	0.00	0.06
(0.9 - 0.2Sds) * DL + E ELFM	1.83	0.00	35.27	0.00	0.00	205.97	0.00	0.05
(0.9 - 0.2Sds) * DL + E EMAM	2.12	0.00	35.27	0.00	0.00	239.54	0.00	0.06
1.0D + 1.0W	7.67	0.00	42.07	0.00	0.00	783.31	0.00	0.17

Base Plate & Anchor Rod Analysis

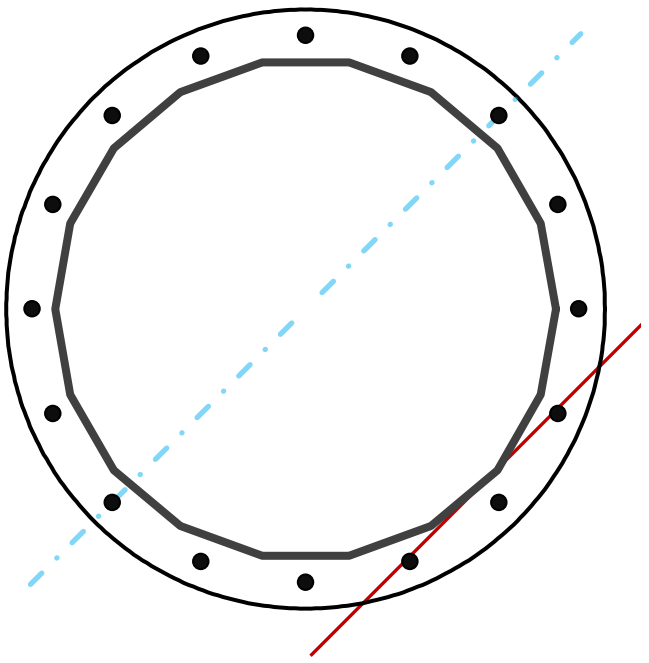
Pole Dimensions		
Number of Sides	18	-
Diameter	56.58	in
Thickness	0.375	in
Orientation Offset		°

Base Reactions		
Moment, Mu	3339.6	k-ft
Axial, Pu	50.4	k
Shear, Vu	32.6	k
Neutral Axis	225	°

Report Capacities		
Component	Capacity	Result
Base Plate	22%	Pass
Anchor Rods	63%	Pass
Dwyidag	-	-

Base Plate		
Shape	Round	-
Diameter, ø	69	in
Thickness	2 1/2	in
Grade	Other	-
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	80	ksi
Clip	N/A	in
Orientation Offset		°
Anchor Rod Detail	d	η=0.5
Clear Distance	3.5	in
Applied Moment, Mu	706.2	k
Bending Stress, ϕMn	3169.7	k

Original Anchor Rods		
Arrangement	Radial	-
Quantity	16	-
Diameter, ø	2 1/4	in
Bolt Circle	63	in
Grade	A615-75	
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Spacing	12.4	in
Orientation Offset		°
Applied Force, Pu	162.1	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	32.6	3339.6	1.00
Anchor Rod Forces	32.6	3339.6	1.00
Additional Bolt (Grp1) Forces	0.0	0.0	0.00
Additional Bolt (Grp2) Forces	0.0	0.0	0.00
Dywidag Forces	0.0	0.0	0.00
Stiffener Forces	0.0	0.0	0.00

Geometric Properties

Section	Gross Area	Net Area	Individual Inertia	Threads per Inch	Moment of Inertia
-	in^2	in^2	in^4	#	in^4
Pole	65.8793	3.6600	0.1721		26017.20
Bolt	3.9761	3.2477	0.8393	4.5	25793.59
Bolt1	0.0000	0.0000	0.0000	0	0.00
Bolt2	0.0000	0.0000	0.0000	0	0.00
Dywidag	0.0000	0.0000	0.0000		0.00
Stiffener	0.0000	0.0000	0.0000		0.00

Base Plate		
Shape	Round	-
Diameter, D	69	in
Thickness, t	2.5	in
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	80	ksi
Base Plate Chord	39.493	in
Detail Type	d	-
Detail Factor	0.50	-
Clear Distance	3.5	-

External Base Plate		
Chord Length AA	32.567	in
Additional AA	5.000	in
Section Modulus, Z	58.698	in^3
Applied Moment, Mu	706.2	k-ft
Bending Capacity, ϕMn	3169.7	k-ft
Capacity, Mu/ϕMn	0.223	OK
Chord Length AB	30.987	in
Additional AB	5.000	in
Section Modulus, Z	56.230	in^3
Applied Moment, Mu	503.7	k-ft
Bending Capacity, ϕMn	3036.4	k-ft
Capacity, Mu/ϕMn	0.166	OK
Bend Line Length	43.091	in
Additional Bend Line	0.000	in
Section Modulus, Z	67.329	in^3
Applied Moment, Mu	706.2	k-ft
Bending Capacity, ϕMn	3635.8	k-ft
Capacity, Mu/ϕMn	0.194	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	63	in
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	162.1	k
Applied Shear, Vu	1.2	k
Compressive Capacity, ϕPn	259.8	k
Tensile Capacity, ϕRnt	0.624	OK
Interaction Capacity	0.633	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	63.46	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

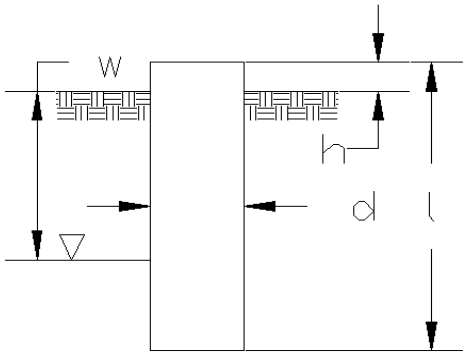
Vertical Weld		
Vert.-to-Stiffener a=e_x/l	#DIV/0!	-
Spacing Ratio, k	#DIV/0!	-
Weld Coefficient, C	#DIV/0!	-
Compressive Capacity, ϕPn	#DIV/0!	k
Vert.-to-Plate a=e_x/l	#DIV/0!	-
Spacing Ratio, k	#DIV/0!	-
Weld Coefficient, C	#DIV/0!	-
Shear Capacity, ϕVn	#DIV/0!	k
$P_u/\phi_P P_n + V_u/\phi_V V_n$	-	

Horizontal Weld		
Horz.-to-Stiffener a=e_x/l	#DIV/0!	-
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 √(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	-	

Site Name:	West Service Road,CT	*Program Last Updated:*	*5/13/2014*
Site Number:	302466	*American Tower Corporation*	
Engineer:	tyler.ferguson		
Engineering Number:	OAA713356		
Date:	06/11/18		



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

Analyze or Design a Foundation?	Analyze	
Foundation Mapped:	N	
Moment (M):	3339.6	k-ft
Shear/Leg (V):	32.6	k
Axial Load (P):	50.4	k
Uplift/Leg (U):	0	k
Tower Type (GT / SST / MP):	MP	
Diameter of Caisson (d):	7	ft
Caisson Embedment (L-h):	33.5	ft
Caisson Height Above Ground (h):	0.5	ft
Depth Below Ground Surface to Water Table (w):	7.5	ft
Unit Weight of Concrete:	150	pcf
Unit Weight of Water:	62.4	pcf
Tension Skin Friction/Compression Skin Friction:	1	
Pullout Angle:	30	degrees

Engineer Notes

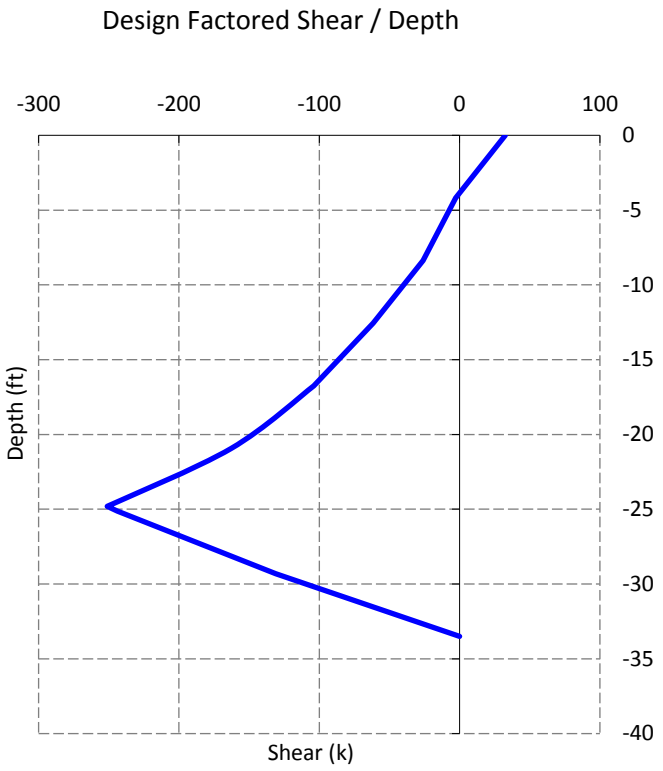
Soil Mechanical Properties

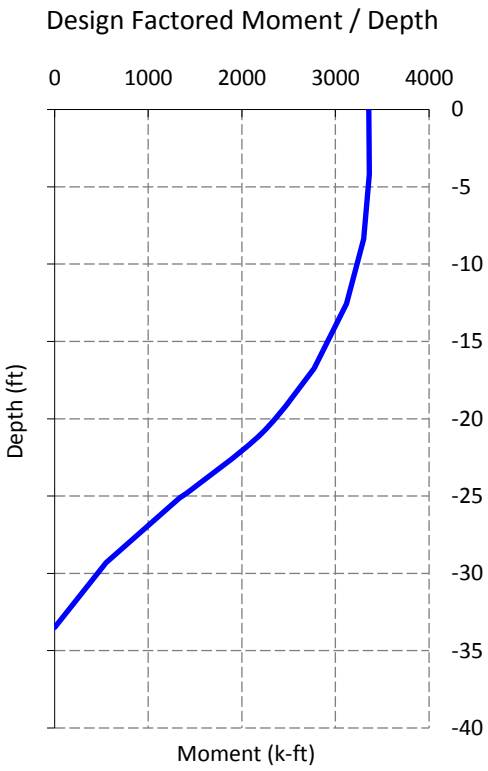
Depth (ft) Top	Depth (ft) Bottom	γ_{Soil} (pcf)	Cohesion (psf)	ϕ (degree)	Ultimate Skin Friction (psf)	Ultimate Bearing Pressure (psf)
0	4	105	0	0	0	0
4	7.5	105	0	28	151	0
7.5	14	106	0	29	412	0
14	17	120	0	33	1180	0
17	19.5	134	0	40	1276	0
19.5	27	133	0	40	1534	0
27	34.5	140	0	40	1738	58590

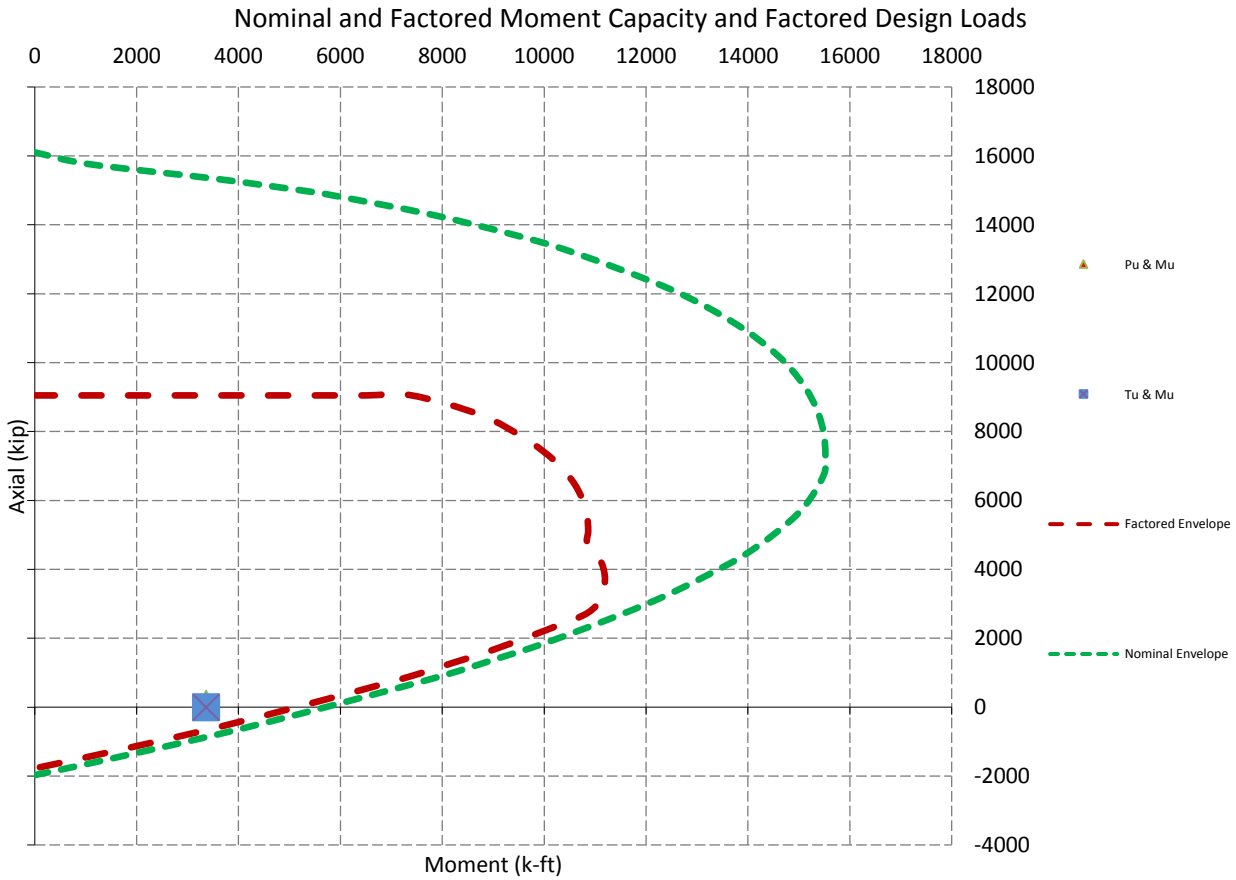
Required Embedment:	23.4	ft - OK, Caisson Embedment Satisfactory
Volume of Concrete:	1308.5	ft^3 = 48.5 yd^3
Weight of Concrete (Buoyancy Effect Considered):	133.8	k
Average Soil Unit Weight:	73.3	pcf
Skin Friction Resistance:	720.0	k
Compressive Bearing Resistance:	2254.8	k
Pullout Weight (Minus Concrete Weight):	1484.8	k
Nominal Uplift Capacity per Leg ($\phi_s T_n$):	640.3	k
Nominal Compressive Capacity per Leg ($\phi_s P_n$):	2231.1	k
P_u:	94.1	k
$T_u/\phi_s T_n$:	0.00	Result: OK
$P_u/\phi_s P_n$:	0.04	Result: OK
Total Lateral Resistance:	2962.6	k
Inflection Point (Below Ground Surface):	24.8	ft
Design Overturning Moment At Inflection Point (M_D):	4164.1	k-ft
Nominal Moment Capacity ($\phi_s M_n$):	13686.4	k-ft
$M_D/\phi_s M_n$:	0.30	Result: OK
ϕ_s:	0.75	

Caisson Strength Capacity

Concrete Compressive Strength (f'_c):	3000	psi
Vertical Steel Rebar Size #:	11	
Vertical Steel Rebar Area:	1.56	in^2
# of Vertical Steel Rebars:	21	
Vertical Steel Rebar Yield Strength (F_y):	60	ksi
Horizontal Tie / Stirrup Size #:	5	
Horizontal Tie / Stirrup Area:	0.31	in^2
Design Horizontal Tie / Stirrup Spacing:	18	in
Horizontal Tie / Stirrup Steel Yield Strength (F_y):	40	ksi
Rebar Cage Diameter:	76.0	in
Strength Bending/Tension Reduction Factor (ϕ_B):	0.90	ACI318-05 - 9.3.2.1
Strength Shear Reduction Factor (ϕ_V):	0.85	ACI318-05 - 9.3.2.3
Strength Compression Reduction Factor (ϕ_V):	0.65	ACI318-05 - 9.3.2.2
Steel Elastic Modulus:	29000	ksi
Design Moment (M_u):	3361.6	k-ft
Nominal Moment Capacity ($\phi_B M_n$):	4963.4	k-ft - ACI318-005 - 10.2
$M_u/\phi_B M_n$:	0.68	Result: OK
Design Shear (V_u):	251.1	k
Nominal Shear Capacity ($\phi_V V_n$):	518.4	k - ACI318-05 - 11.3.1.1 or 11.5.7.2
$V_u/\phi_V V_n$:	0.48	Result: OK
Design Tension (T_u):	0.0	k
Nominal Tension Capacity ($\phi_T T_n$):	1769.0	k - ACI318-05 - 10.2
$T_u/\phi_T T_n$:	0.00	Result: OK
Design Compression (P_u):	94.1	k
Nominal Compression Capacity ($\phi_P P_n$):	7304.9	k - ACI318-05 - 10.3.6.2
$P_u/\phi_P P_n$:	0.01	Result: OK
Bending Reinforcement Ratio:	0.006	ACI318-05 - 10.8.4 & 10.9.1
$M_u/\phi_B M_n + T_u/\phi_T T_n$:	0.68	Result: OK


Design Factored Shear / Depth
-300
-200
-100
0
100
0
-5
-10
-15
-20
-25
-30
-35
-40
Depth (ft)
Shear (k)


Design Factored Moment / Depth
0
1000
2000
3000
4000
0
-5
-10
-15
-20
-25
-30
-35
-40
Depth (ft)
Moment (k-ft)


Nominal and Factored Moment Capacity and Factored Design Loads
0
2000
4000
6000
8000
10000
12000
14000
16000
18000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
-2000
-4000
Axial (kip)
Moment (k-ft)
Pu & Mu
Tu & Mu
Factored Envelope
Nominal Envelope

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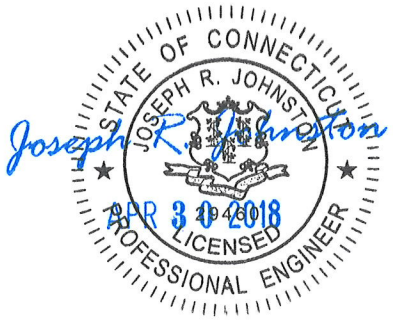
1033 WATERVLIET SHAKER RD, ALBANY, NY 12205

Mount Analysis Report

April 28, 2018

Sprint Site Number	CT52XC051
Infinigy Job Number	526-104
Client	Airosmith Development
Carrier	Sprint
Site Location	305 W. Service Road, Hartford, CT 06120-0001 41.7990° N NAD83 72.6571° W NAD83
Mount Centerline EL.	90.0 ft.
Mount Classification	T-Arm
Failing Structural Usage	**158.7%**
Passing Structural Usage	**65.4%**
Overall Result	**Contingent Pass- See Required Modification Below.**
Notes	**Existing mounts shall be replaced with (3) SitePro1 RMV5-296 T-Arms prior to the installation of the proposed appurtenances.**

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



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

Contents

Introduction

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

Supporting Documentation

Structural Analysis	ATC, Eng #OAA713356_C3_02, dated April 9, 2018

Analysis Code Requirements

Wind Speed	97 mph (3-Second Gust, V_{ASD}) / 125 mph (3-Second Gust, V_{ULT})
Wind Speed w/ ice	50 mph (3-Second Gust, V_{ASD}) w/ 1.0” ice
TIA Revision	ANSI/TIA-222-G
Adopted IBC	2015 IBC/ 2016 Connecticut State Building Code
Structure Class	II
Exposure Category	C
Topographic Category	1
Calculated Crest Height	0 ft

Conclusion

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

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

Nathaniel R Ober E.I.T.
Northeast Structural Region Lead | Infinigy
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(O) (518) 690-0790 | (M) (303) 704-0322
nober@infinigy.com | www.infinigy.com

Final Configuration Loading

Mount CL (ft)	Rad. HT (ft)	Horiz. O/S (ft)*	Qty	Appurtenance	Carrier
90.0	90.0	5.0	3	Commscope NNVV-65B-R4	Sprint
		0.0	3	Nokia AAHC	
		5.0	3	Alcatel-Lucent 1900 MHz RRH	
		0.0, 5.0	6	Alcatel-Lucent 800 MHz 2x50 RRH	
		0.0	2	Andrew VHLP2-18	
		0.0	2	DragonWave Horizon Compact	
		0.0	1	18”x18”x4” Junction Box	

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

Structure Usages Proposed

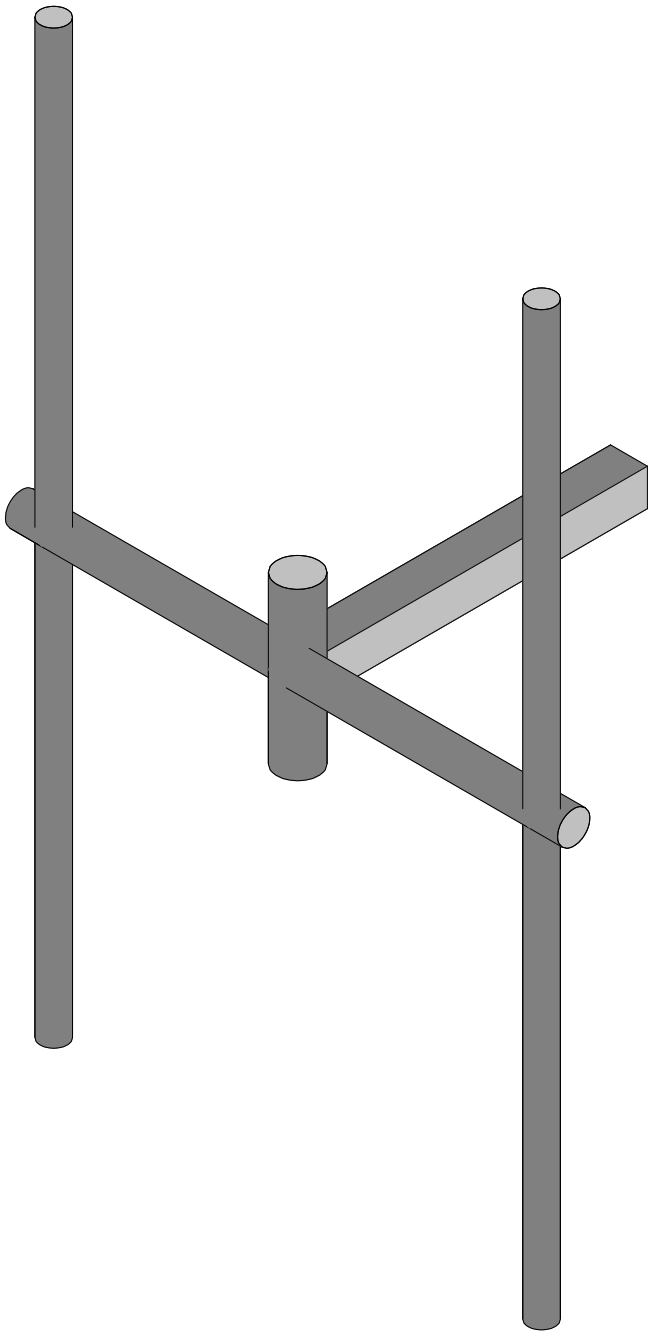
Face Horizontal	45.4%	Pass
Standoff	65.4%	Pass
Mount Pipe	62.4%	Pass
RATING =	**65.4%**	**Pass**

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	RMV5-3096	
NRO		Apr 28, 2018 at 10:55 PM
526-104		RMV5-3096.r3d

Site Name:	CT52XC051
Client:	Airosmith
Carrier:	Sprint
Engineer:	NRO
Date:	4/28/2018

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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 - T-Arm
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):	90.0	ft
Side Face Angle (θ):	60	degrees
Exposure Category:	C	
Topographic Category:	1	

Wind with No Ice		
q_z (psf)	Gh	F_{ST} (psf)
28.33	1.00	**33.99**

Wind with Ice		
q_z (psf)	Gh	F_{ST} (psf)
7.53	1.00	**20.25**

Ice Loading Inputs:

Is Ice Loading Needed?:	Yes	
Ice Wind Velocity:	50	mph (nominal 3-second gust)
Base Ice Thickness:	1.00	in

Input Appurtenance Information and Load Placements:

Appurtenance Name	Elevation (ft)	Total Quantity	Ka	Front Shape	Side Shape	q_z (psf)	EPA (ft^2)	Fz (lbs)	Fx (lbs)	Fz(60) (lbs)	Fx(30) (lbs)
Nokia AAHC	90.0	3	1.00	Flat	Flat	28.33	4.20	119.04	58.59	73.70	103.93
lcatel-Lucent 1900 MHz RRH w/ Solar Shiel	90.0	3	1.00	Flat	Flat	28.33	2.58	73.17	71.99	72.29	72.88
Alcatel-Lucent 800 MHz 2x50 RRH	90.0	6	1.00	Flat	Flat	28.33	2.06	58.30	38.57	43.50	53.37
Commscope NNVV-65B-R4	90.0	3	1.00	Flat	Flat	28.33	12.27	347.58	162.87	209.05	301.41
Andrew VHLP2-18	90.0	2	1.00	Flat	Flat	28.33	5.87	166.26	81.75	102.88	145.14
DragonWave Horizon Compact	90.0	2	1.00	Flat	Flat	28.33	0.72	20.42	10.43	12.92	17.92
18"x18"x4" Junction Box	90.0	1	1.00	Flat	Flat	28.33	2.70	76.48	18.25	32.81	61.92

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N2	N1			HSS 4"x4"x1/4"	Beam	None	A53 Gr.B	Typical
2	M2	N4	N3			3" STD Pipe	Beam	None	A53 Gr.B	Typical
3	M3	N6	N5			4" STD Pipe	Beam	None	A53 Gr.B	Typical
4	MP1	N20	N21			Mount Pipe	Beam	None	A53 Gr.B	Typical
5	MP2	N22	N23			Mount Pipe	Beam	None	A53 Gr.B	Typical

Material Takeoff

	Material	Size	Pieces	Length[in]	Weight[K]
1	Hot Rolled Steel				
2	A53 Gr.B	HSS4x4x4	1	36	0
3	A53 Gr.B	PIPE_2.0	2	192	0
4	A53 Gr.B	PIPE_3.0	1	60	0
5	A53 Gr.B	PIPE_4.0	1	18	0
6	Total HR Steel		5	306	.1

Basic Load Cases

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

Load Combinations

	Description	So..	P...	S...	BLC	Fac..	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																

Load Combinations (Continued)

	Description	So..	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
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...	.096																
40	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5	W...	.083	W...	.048														
41	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5	W...	.048	W...	.083														
42	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5			W...	.096														
43	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5	W...	-.048	W...	.083														
44	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5	W...	-.083	W...	.048														
45	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5	W...	-.096																
46	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5	W...	-.083	W...	-.048														
47	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5	W...	-.048	W...	-.083														
48	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5			W...	-.096														
49	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5	W...	.048	W...	-.083														
50	1.2D + 1.5L + 1.0WL (...	Yes	Y		DL	1.2	LL	1.5	W...	.083	W...	-.048														
51	(1.2+0.2Sds) + 1.0 E A...	Yes	Y		DL	1.2	ELZ	1																		
52	(1.2+0.2Sds) + 1.0 E A...	Yes	Y		DL	1.2	ELZ	.866	ELX	.5																
53	(1.2+0.2Sds) + 1.0 E A...	Yes	Y		DL	1.2	ELZ	.5	ELX	.866																
54	(1.2+0.2Sds) + 1.0 E A...	Yes	Y		DL	1.2			ELX	1																
55	(1.2+0.2Sds) + 1.0 E A...	Yes	Y		DL	1.2	ELZ	-.5	ELX	.866																
56	(1.2+0.2Sds) + 1.0 E A...	Yes	Y		DL	1.2	ELZ	-.866	ELX	.5																
57	(1.2+0.2Sds) + 1.0 E A...	Yes	Y		DL	1.2	ELZ	-1																		
58	(1.2+0.2Sds) + 1.0 E A...	Yes	Y		DL	1.2	ELZ	-.866	ELX	-.5																
59	(1.2+0.2Sds) + 1.0 E A...	Yes	Y		DL	1.2	ELZ	-.5	ELX	-.866																
60	(1.2+0.2Sds) + 1.0 E A...	Yes	Y		DL	1.2			ELX	-1																
61	(1.2+0.2Sds) + 1.0 E A...	Yes	Y		DL	1.2	ELZ	.5	ELX	-.866																
62	(1.2+0.2Sds) + 1.0 E A...	Yes	Y		DL	1.2	ELZ	.866	ELX	-.5																
63	(0.9-0.2Sds) + 1.0E AZ...	Yes	Y		DL	.9	ELZ	1																		
64	(0.9-0.2Sds) + 1.0E AZ...	Yes	Y		DL	.9	ELZ	.866	ELX	.5																
65	(0.9-0.2Sds) + 1.0E AZ...	Yes	Y		DL	.9	ELZ	.5	ELX	.866																
66	(0.9-0.2Sds) + 1.0E AZ...	Yes	Y		DL	.9			ELX	1																
67	(0.9-0.2Sds) + 1.0E AZ...	Yes	Y		DL	.9	ELZ	-.5	ELX	.866																
68	(0.9-0.2Sds) + 1.0E AZ...	Yes	Y		DL	.9	ELZ	-.866	ELX	.5																
69	(0.9-0.2Sds) + 1.0E AZ...	Yes	Y		DL	.9	ELZ	-1																		
70	(0.9-0.2Sds) + 1.0E AZ...	Yes	Y		DL	.9	ELZ	-.866	ELX	-.5																
71	(0.9-0.2Sds) + 1.0E AZ...	Yes	Y		DL	.9	ELZ	-.5	ELX	-.866																
72	(0.9-0.2Sds) + 1.0E AZ...	Yes	Y		DL	.9			ELX	-1																
73	(0.9-0.2Sds) + 1.0E AZ...	Yes	Y		DL	.9	ELZ	.5	ELX	-.866																
74	(0.9-0.2Sds) + 1.0E AZ...	Yes	Y		DL	.9	ELZ	.866	ELX	-.5																

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N1	max	1027.202	5	2436.13	26	1752.438	2	-1335.19	20	3000.868	5	38.652	23
2		min	-1027.202	11	494.786	18	-1752.438	20	-7172.453	27	-2999.216	11	-220.17	30
3	Totals:	max	1027.202	5	2436.13	26	1752.438	2						
4		min	-1027.202	11	494.786	18	-1752.438	20						

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

	Member	Shape	Code Check	Lo...	...	Shear C...	Loc[in]	...	LC	phi*Pnc...	phi*Pnt ...	phi*...	phi*...	...	Eqn
1	M1	HSS4x...	.654	36	...	.105	36	y	30	103155...	106155	1231...	1231...	...	H1-...
2	MP1	PIPE_2.0	.624	48	8	.046	48		8	14916....	32130	1871...	1871...	...	H1-...
3	M2	PIPE_3.0	.454	30	...	.077	30		2	63524....	65205	5748...	5748...	1	H1-...
4	MP2	PIPE_2.0	.437	48	8	.048	48		20	14916....	32130	1871...	1871...	...	H1-...
5	M3	PIPE_4.0	.001	9	7	.001	9		7	92571....	93240	1063...	1063...	...	H1-...

Sprint

PROJECT: DO MACRO UPGRADE

SITE NAME: WHITEYS REPAIR AUTO BODY

SITE CASCADE: CT52XC051

SITE ADDRESS: 305 W. SERVICE RD.
HARTFORD CT 06120-0001

SITE TYPE: MONOPOLE TOWER

MARKET: NORTHERN CONNECTICUT

SITE INFORMATION

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

LATITUDE (NAD83):
41° 47' 56.4" N
41.799

LONGITUDE (NAD83):
72° 39' 25.6" W
-72.6571

COUNTY:
HARTFORD

ZONING JURISDICTION:
CONNECTICUT SITING COUNCIL

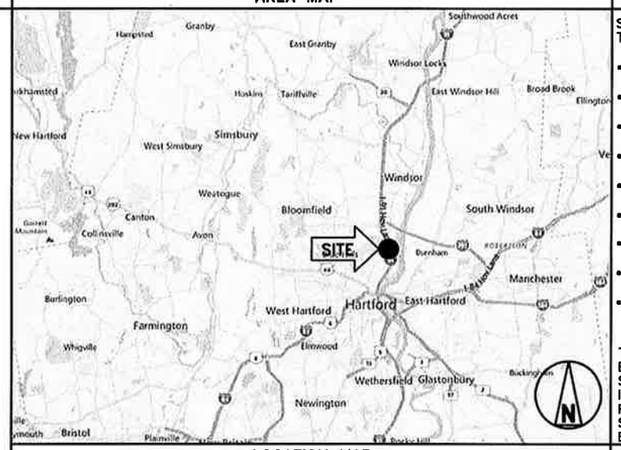
ZONING DISTRICT:
TBD

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

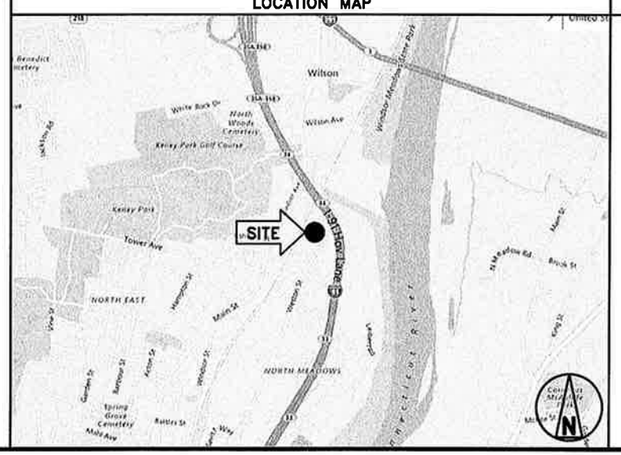
AAV PROVIDER:
TBD

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

AREA MAP



LOCATION MAP



PROJECT DESCRIPTION

SPRINT PROPOSES TO MODIFY AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY.

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

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

APPLICABLE CODES

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

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

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

DRAWING INDEX

SHEET NO.	SHEET TITLE	REV.
T-1	TITLE SHEET & PROJECT DATA	0
SP-1	SPRINT SPECIFICATIONS	0
SP-2	SPRINT SPECIFICATIONS	0
SP-3	SPRINT SPECIFICATIONS	0
A-1	SITE PLAN	0
A-2	TOWER ELEVATION	0
A-3	ANTENNA LAYOUT & MOUNTING DETAILS	0
A-4	EQUIPMENT & MOUNTING DETAILS	0
A-5	EQUIPMENT DETAILS	0
A-6	CIVIL DETAILS	0
A-7	PLUMBING DIAGRAM	0
E-1	ONE LINE & NOTES	0
E-2	ELECTRICAL & GROUNDING DETAILS	0
E-3	ELECTRICAL & GROUNDING DETAILS	0

PLANS PREPARED FOR:
Sprint

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

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

ENGINEERING LICENSE:
STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
LICENSED PROFESSIONAL ENGINEER
JUN 21 2018

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR PERMIT	06/11/18	ETC	0

SITE NAME:
WHITEYS REPAIR AUTO BODY

SITE NUMBER:
CT52XC051

SITE ADDRESS:
305 W. SERVICE RD.
HARTFORD CT 06120-0001

SHEET DESCRIPTION:
TITLE SHEET & PROJECT DATA

SHEET NUMBER:
T-1

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

SECTION 01 100 – SCOPE OF WORK

PART 1 – GENERAL

1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE SPRINT CONSTRUCTION STANDARDS FOR WIRELESS SITES, CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.

1.2 RELATED DOCUMENTS:

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

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

1.3 PRECEDENCE: SHOULD CONFLICTS OCCUR BETWEEN THE STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES INCLUDING THE STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES AND THE CONSTRUCTION DRAWINGS, INFORMATION ON THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE. NOTIFY SPRINT CONSTRUCTION MANAGER IF THIS OCCURS.

1.4 NATIONALLY RECOGNIZED CODES AND STANDARDS:

A. THE WORK SHALL COMPLY WITH APPLICABLE NATIONAL AND LOCAL CODES AND STANDARDS, LATEST EDITION, AND PORTIONS THEREOF, INCLUDED BUT NOT LIMITED TO THE FOLLOWING:

1. GR-63-CORE NEBS REQUIREMENTS: PHYSICAL PROTECTION
5. GR-78-CORE GENERIC REQUIREMENTS FOR THE PHYSICAL DESIGN AND MANUFACTURE OF TELECOMMUNICATIONS EQUIPMENT.
3. GR-1089 CORE, ELECTROMAGNETIC COMPATIBILITY AND ELECTRICAL SAFETY –GENERIC CRITERIA FOR NETWORK TELECOMMUNICATIONS EQUIPMENT.
4. NATIONAL FIRE PROTECTION ASSOCIATION CODES AND STANDARDS (NFPA) INCLUDING NFPA 70 (NATIONAL ELECTRICAL CODE – "NEC") AND NFPA 101 (LIFE SAFETY CODE).
5. AMERICAN SOCIETY FOR TESTING OF MATERIALS (ASTM)
6. INSTITUTE OF ELECTRONIC AND ELECTRICAL ENGINEERS (IEEE)
7. AMERICAN CONCRETE INSTITUTE (ACI)
8. AMERICAN WIRE PRODUCERS ASSOCIATION (AWPA)
9. CONCRETE REINFORCING STEEL INSTITUTE (CRSI)
10. AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)
11. PORTLAND CEMENT ASSOCIATION (PCA)
12. NATIONAL CONCRETE MASONRY ASSOCIATION (NCMA)
13. BRICK INDUSTRY ASSOCIATION (BIA)
14. AMERICAN WELDING SOCIETY (AWS)
15. NATIONAL ROOFING CONTRACTORS ASSOCIATION (NRCA)
16. SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA)
17. DOOR AND HARDWARE INSTITUTE (DHI)
18. OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA)
19. APPLICABLE BUILDING CODES INCLUDING UNIFORM BUILDING CODE, SOUTHERN BUILDING CODE, BOCA, AND THE INTERNATIONAL BUILDING CODE.

1.5 DEFINITIONS:

A. WORK: THE SUM OF TASKS AND RESPONSIBILITIES IDENTIFIED IN THE CONTRACT DOCUMENTS.

B. COMPANY: SPRINT CORPORATION

C. ENGINEER: SYNONYMOUS WITH ARCHITECT & ENGINEER AND "A&E". THE DESIGN PROFESSIONAL HAVING PROFESSIONAL RESPONSIBILITY FOR DESIGN OF THE PROJECT.

D. CONTRACTOR: CONSTRUCTION CONTRACTOR; CONSTRUCTION VENDOR; INDIVIDUAL OR ENTITY WHO AFTER EXECUTION OF A CONTRACT IS BOUND TO ACCOMPLISH THE WORK.

E. THIRD PARTY VENDOR OR AGENCY: A VENDOR OR AGENCY ENGAGED SEPARATELY BY THE COMPANY, A&E, OR CONTRACTOR TO PROVIDE MATERIALS OR TO ACCOMPLISH SPECIFIC TASKS RELATED TO BUT NOT INCLUDED IN THE WORK.

F. OFCI: OWNER FURNISHED, CONTRACTOR INSTALLED EQUIPMENT.

G. CONSTRUCTION MANAGER – ALL PROJECTS RELATED COMMUNICATION TO FLOW THROUGH SPRINT REPRESENTATIVE IN CHARGE OF PROJECT...

1.6 SITE FAMILIARITY: CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS AND DIMENSIONS PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE SPRINT CONSTRUCTION MANAGER PRIOR TO THE COMMENCEMENT OF WORK. NO COMPENSATION WILL BE AWARDED BASED ON CLAIM OF LACK OF KNOWLEDGE OR FIELD CONDITIONS.

1.7 POINT OF CONTACT: COMMUNICATION BETWEEN SPRINT AND THE CONTRACTOR SHALL FLOW THROUGH THE SINGLE SPRINT CONSTRUCTION MANAGER APPOINTED TO MANAGE THE PROJECT FOR SPRINT.

1.8 ON-SITE SUPERVISION: THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE RESPONSIBLE FOR CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL EMPLOY A COMPETENT SUPERINTENDENT WHO SHALL BE IN ATTENDANCE AT THE SITE AT ALL TIMES DURING PERFORMANCE OF THE WORK.

1.9 DRAWINGS, SPECIFICATIONS AND DETAILS REQUIRED AT JOBSITE: THE CONSTRUCTION CONTRACTOR SHALL MAINTAIN A FULL SET OF THE CONSTRUCTION DRAWINGS, STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES AND THE STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES AT THE JOBSITE FROM MOBILIZATION THROUGH CONSTRUCTION COMPLETION.

A. THE JOBSITE DRAWINGS, SPECIFICATIONS AND DETAILS SHALL BE CLEARLY MARKED DAILY IN RED PENCIL WITH ANY CHANGES IN CONSTRUCTION OVER WHAT IS DEPICTED IN THE DOCUMENTS. AT CONSTRUCTION COMPLETION, THIS JOBSITE MARKUP SET SHALL BE DELIVERED TO THE COMPANY OR COMPANY'S DESIGNATED REPRESENTATIVE TO BE FORWARDED TO THE COMPANY'S A&E VENDOR FOR PRODUCTION OF "AS-BUILT" DRAWINGS.

B. DETAILS ARE INTENDED TO SHOW DESIGN INTENT. MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS, AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF THE WORK. CONTRACTOR SHALL NOTIFY SPRINT CONSTRUCTION MANAGER OF ANY VARIATIONS PRIOR TO PROCEEDING WITH THE WORK.

C. DIMENSIONS SHOWN ARE TO FINISH SURFACES UNLESS NOTED OTHERWISE. SPACING BETWEEN EQUIPMENT IS THE REQUIRED CLEARANCE. SHOULD THERE BE ANY QUESTIONS REGARDING THE CONTRACT DOCUMENTS, EXISTING CONDITIONS AND/OR DESIGN INTENT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A CLARIFICATION FROM THE SPRINT CONSTRUCTION MANAGER PRIOR TO PROCEEDING WITH THE WORK.

1.10 USE OF JOB SITE: THE CONTRACTOR SHALL CONFINE ALL CONSTRUCTION AND RELATED OPERATIONS INCLUDING STAGING AND STORAGE OF MATERIALS AND EQUIPMENT, PARKING, TEMPORARY FACILITIES, AND WASTE STORAGE TO THE LEASE PARCEL UNLESS OTHERWISE PERMITTED BY THE CONTRACT DOCUMENTS.

1.11 UTILITIES SERVICES: WHERE NECESSARY TO CUT EXISTING PIPES, ELECTRICAL WIRES, CONDUITS, CABLES, ETC., OF UTILITY SERVICES, OR OF FIRE PROTECTION OR COMMUNICATIONS SYSTEMS, THEY SHALL BE CUT AND CAPPED AT SUITABLE PLACES OR WHERE SHOWN. ALL SUCH ACTIONS SHALL BE COORDINATED WITH THE UTILITY COMPANY INVOLVED:

1.12 PERMITS / FEES: WHEN REQUIRED THAT A PERMIT OR CONNECTION FEE BE PAID TO A PUBLIC UTILITY PROVIDER FOR NEW SERVICE TO THE CONSTRUCTION PROJECT, PAYMENT OF SUCH FEE SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.

1.13 CONTRACTOR SHALL TAKE ALL MEASURES AND PROVIDE ALL MATERIAL NECESSARY FOR PROTECTING EXISTING EQUIPMENT AND PROPERTY.

1.14 METHODS OF PROCEDURE (MOPS) FOR CONSTRUCTION: CONTRACTOR SHALL PERFORM WORK AS DESCRIBED IN THE FOLLOWING INSTALLATION AND COMMISSIONING MOPS.

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

1.15 USE OF ELECTRONIC PROJECT MANAGEMENT SYSTEMS:

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 TEMPORARY UTILITIES AND FACILITIES: THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TEMPORARY UTILITIES AND FACILITIES NECESSARY EXCEPT AS OTHERWISE INDICATED IN THE CONSTRUCTION DOCUMENTS. TEMPORARY UTILITIES AND FACILITIES INCLUDE POTABLE WATER, HEAT, HVAC, ELECTRICITY, SANITARY FACILITIES, WASTE DISPOSAL FACILITIES, AND TELEPHONE/COMMUNICATION SERVICES. PROVIDE TEMPORARY UTILITIES AND FACILITIES IN ACCORDANCE WITH OSHA AND THE AUTHORITY HAVING JURISDICTION. CONTRACTOR MAY UTILIZE THE COMPANY ELECTRICAL SERVICE IN THE COMPLETION OF THE WORK WHEN IT BECOMES AVAILABLE. USE OF THE LESSORS OR SITE OWNER'S UTILITIES OR FACILITIES IS EXPRESSLY FORBIDDEN EXCEPT AS OTHERWISE ALLOWED IN THE CONTRACT DOCUMENTS.

3.2 ACCESS TO WORK: THE CONTRACTOR SHALL PROVIDE ACCESS TO THE JOB SITE FOR AUTHORIZED COMPANY PERSONNEL AND AUTHORIZED REPRESENTATIVES OF THE ARCHITECT/ENGINEER DURING ALL PHASES OF THE WORK.

3.3 TESTING: REQUIREMENTS FOR TESTING BY THIS CONTRACTOR SHALL BE AS INDICATED HEREWITH, ON THE CONSTRUCTION DRAWINGS, AND IN THE INDIVIDUAL SECTIONS OF THESE SPECIFICATIONS. SHOULD COMPANY CHOOSE TO ENGAGE ANY THIRD-PARTY TO CONDUCT ADDITIONAL TESTING, THE CONTRACTOR SHALL COOPERATE WITH AND PROVIDE A WORK AREA FOR COMPANY'S TEST AGENCY.

3.4 DIMENSIONS: VERIFY DIMENSIONS INDICATED ON DRAWINGS WITH FIELD DIMENSIONS BEFORE FABRICATION OR ORDERING OF MATERIALS. DO NOT SCALE DRAWINGS.

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

SECTION 01 200 – COMPANY FURNISHED MATERIAL AND EQUIPMENT

PART 1 – GENERAL

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

1.2 RELATED DOCUMENTS:

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

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

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 RECEIPT OF MATERIAL AND EQUIPMENT:

A. A COMPANY FURNISHED MATERIAL AND EQUIPMENT IS IDENTIFIED ON THE RF DATA SHEET IN THE CONSTRUCTION DOCUMENTS.

B. THE CONTRACTOR IS RESPONSIBLE FOR SPRINT PROVIDED MATERIAL AND EQUIPMENT AND UPON RECEIPT SHALL:

1 ACCEPT DELIVERIES AS SHIPPED AND TAKE RECEIPT.
2. VERIFY COMPLETENESS AND CONDITION OF ALL DELIVERIES.
3. TAKE RESPONSIBILITY FOR EQUIPMENT AND PROVIDE INSURANCE PROTECTION AS REQUIRED IN AGREEMENT.
4. RECORD ANY DEFECTS OR DAMAGES AND WITHIN TWENTY-FOUR HOURS AFTER RECEIPT, REPORT TO SPRINT OR ITS DESIGNATED PROJECT REPRESENTATIVE OF SUCH.
5. PROVIDE SECURE AND NECESSARY WEATHER PROTECTED WAREHOUSING.
6. COORDINATE SAFE AND SECURE TRANSPORTATION OF MATERIAL AND EQUIPMENT, DELIVERING AND OFF-LOADING FROM CONTRACTOR'S WAREHOUSE TO SITE.

3.2 DELIVERABLES:

A. COMPLETE SHIPPING AND RECEIPT DOCUMENTATION IN ACCORDANCE WITH COMPANY PRACTICE.

B. IF APPLICABLE, COMPLETE LOST/STOLEN/DAMAGED DOCUMENTATION REPORT AS NECESSARY IN ACCORDANCE WITH COMPANY PRACTICE, AND AS DIRECTED BY COMPANY.

C. UPLOAD DOCUMENTATION INTO SPRINT SITE MANAGEMENT SYSTEM (SMS) AND/OR PROVIDE HARD COPY DOCUMENTATION AS REQUESTED.

SECTION 01 300 – CELL SITE CONSTRUCTION CO.

PART 1 – GENERAL

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

1.2 RELATED DOCUMENTS:

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

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

1.3 NOTICE TO PROCEED

A. NO WORK SHALL COMMENCE PRIOR TO COMPANY'S WRITTEN NOTICE TO PROCEED AND THE ISSUANCE OF THE WORK ORDER.

B. UPON RECEIVING NOTICE TO PROCEED, CONTRACTOR SHALL FULLY PERFORM ALL WORK NECESSARY TO PROVIDE SPRINT WITH AN OPERATIONAL WIRELESS FACILITY.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 FUNCTIONAL REQUIREMENTS:

A. THE ACTIVITIES DESCRIBED IN THIS PARAGRAPH REPRESENT MINIMUM ACTIONS AND PROCESSES REQUIRED TO SUCCESSFULLY COMPLETE THE WORK. THE ACTIVITIES DESCRIBED ARE NOT EXHAUSTIVE, AND CONTRACTOR SHALL TAKE ANY AND ALL ACTIONS AS NECESSARY TO SUCCESSFULLY COMPLETE THE CONSTRUCTION OF A FULLY FUNCTIONING WIRELESS FACILITY AT THE SITE IN ACCORDANCE WITH COMPANY PROCESSES.

B. SUBMIT SPECIFIC DOCUMENTATION AS INDICATED HEREIN, AND OBTAIN REQUIRED APPROVALS WHILE THE WORK IS BEING PERFORMED.

C. MANAGE AND CONDUCT ALL FIELD CONSTRUCTION SERVICE RELATED ACTIVITIES

D. PROVIDE CONSTRUCTION ACTIVITIES TO THE EXTENT REQUIRED BY THE CONTRACT DOCUMENTS, INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

PLANS PREPARED FOR:

Sprint

PLANS PREPARED BY:

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

PROJECT MANAGER:

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

ENGINEERING LICENSE:

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR PERMIT	06/11/18	ETC	0

SITE NAME:

WHITEYS REPAIR AUTO BODY

SITE NUMBER:

CT52XC051

SITE ADDRESS:

305 W. SERVICE RD.
HARTFORD CT 06120-0001

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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JOB NUMBER 526-104

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

ENGINEERING LICENSE:

STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
PROFESSIONAL ENGINEER
JUN 21 2018

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR PERMIT	06/11/18	ETC	0

SITE NAME:
WHITEYS REPAIR AUTO BODY

SITE NUMBER:
CT52XC051

SITE ADDRESS:
305 W. SERVICE RD.
HARTFORD CT 06120-0001

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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www.infinigy.com
JOB NUMBER 526-104

PROJECT MANAGER:

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

ENGINEERING LICENSE:

STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
JUN 21 2018
LICENSED PROFESSIONAL ENGINEER

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR PERMIT	06/11/18	ETC	0

SITE NAME:

WHITEYS REPAIR AUTO BODY

SITE NUMBER:

CT52XC051

SITE ADDRESS:

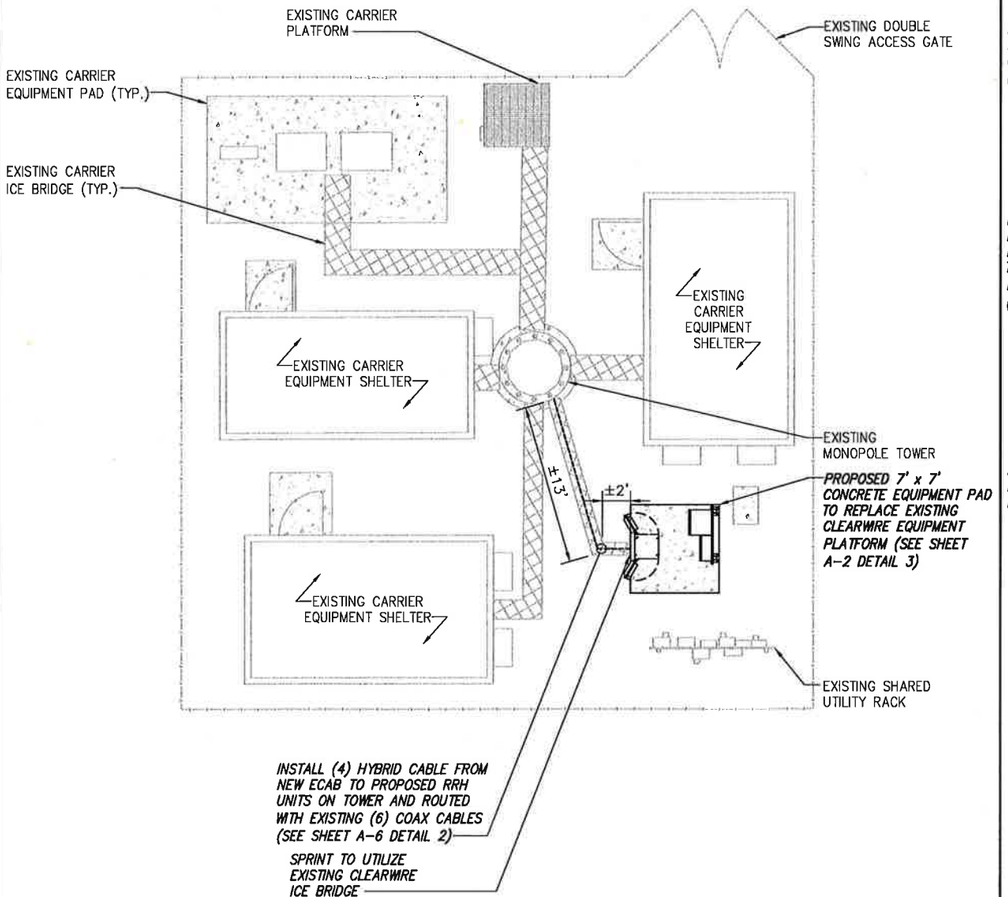
305 W. SERVICE RD.
HARTFORD CT 06120-0001

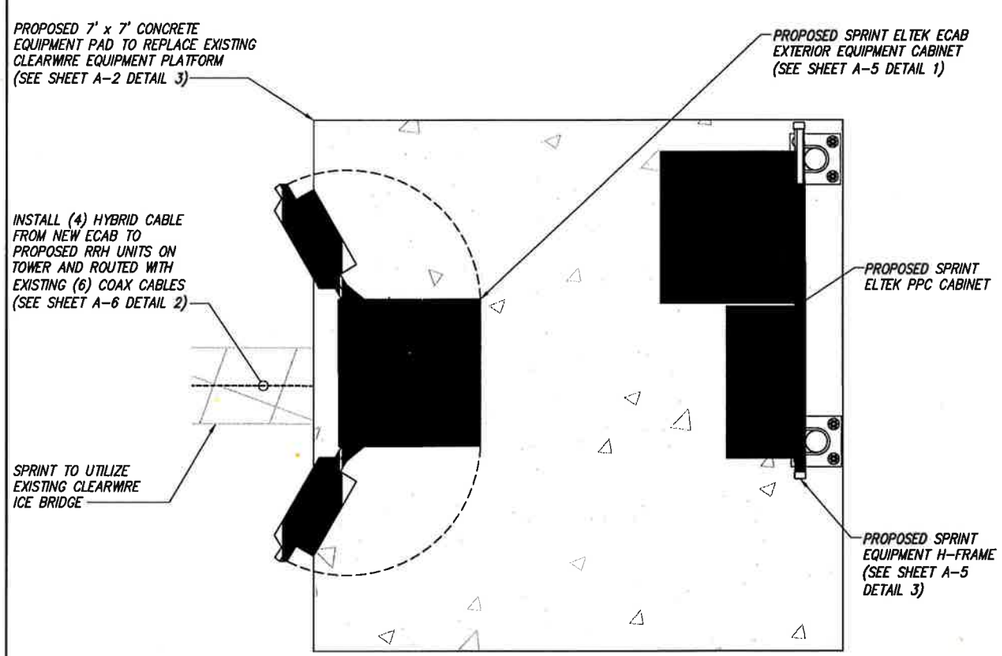
SHEET DESCRIPTION:

SPRINT SPECIFICATIONS

SHEET NUMBER:

SP-3





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

GRAPHIC SCALE:
12' 6' 0 6' 12'
SCALE (11x17): 1" = 12'-0"
SCALE (22x34): 1" = 6'-0"

OVERALL SITE PLAN | SCALE: AS NOTED | 1

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

SPRINT EQUIPMENT PLAN | SCALE: AS NOTED | 2

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

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

ENGINEERING LICENSE:
STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
REGISTERED PROFESSIONAL ENGINEER
JUN 21 2018

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR PERMIT	06/11/18	ETC	0

SITE NAME:
WHITEYS REPAIR AUTO BODY

SITE NUMBER:
CT52XC051

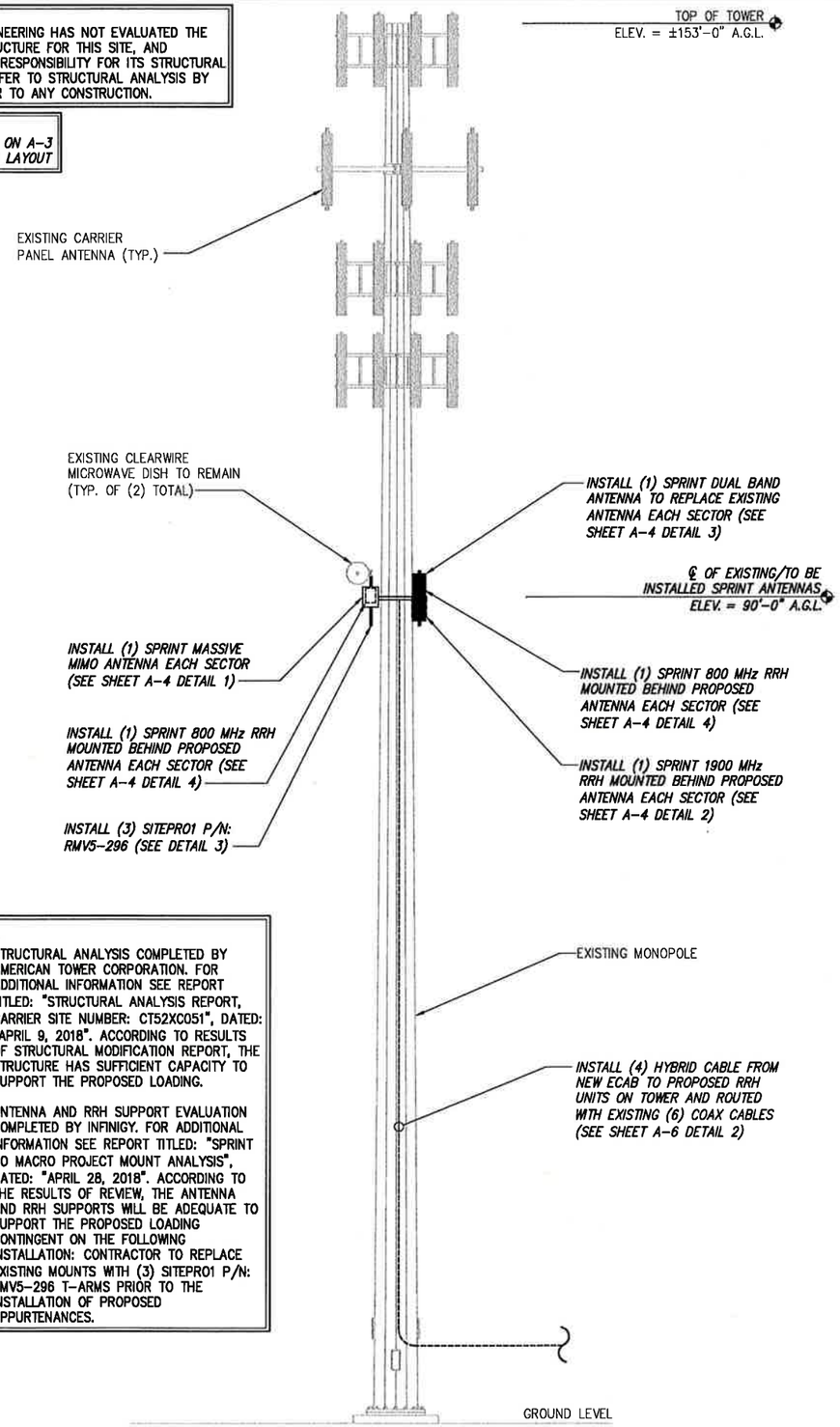
SITE ADDRESS:
305 W. SERVICE RD.
HARTFORD CT 06120-0001

SHEET DESCRIPTION:
SITE PLAN

SHEET NUMBER:
A-1

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

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



NOTE:
- STRUCTURAL ANALYSIS COMPLETED BY AMERICAN TOWER CORPORATION. FOR ADDITIONAL INFORMATION SEE REPORT TITLED: "STRUCTURAL ANALYSIS REPORT, CARRIER SITE NUMBER: CT52XC051", DATED: "APRIL 9, 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: "SPRINT DO MACRO PROJECT MOUNT ANALYSIS", DATED: "APRIL 28, 2018". ACCORDING TO THE RESULTS OF REVIEW, THE ANTENNA AND RRH SUPPORTS WILL BE ADEQUATE TO SUPPORT THE PROPOSED LOADING CONTINGENT ON THE FOLLOWING INSTALLATION: CONTRACTOR TO REPLACE EXISTING MOUNTS WITH (3) SITEPRO1 P/N: RMV5-296 T-ARMS PRIOR TO THE INSTALLATION OF PROPOSED APPURTENANCES.

TOWER ELEVATION | NO SCALE | 1

SITE LOADING CHART

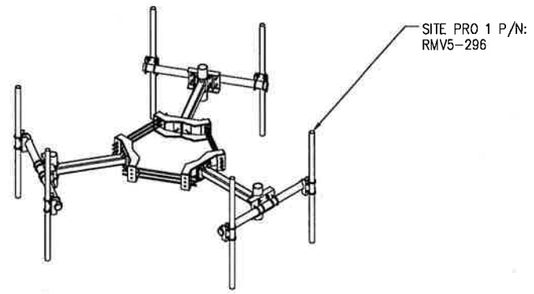
SECTOR	EXISTING/ PROPOSED	ANTENNA MODEL #	VENDOR	AZIMUTH	QTY.	REMAIN/ REMOVED	RRH (QTY/MODEL)	CABLE	CABLE LENGTH	RAD CENTER
ALPHA	PROPOSED	AAHC	NOKIA	0°	1	–	(2) 800 MHZ 2X50W RRH	SEE SHEET A-5 DETAIL 1	±125'*	±90' AGL
	PROPOSED	NNVV-65B-R4	COMMSCOPE	0°	1	–	(1) 1900 MHz 4X45 RRH	SEE SHEET A-5 DETAIL 1		
	EXISTING	LLPX310R	ARGUS	0°	1	REMOVE		EXISTING COAX		
BETA	PROPOSED	AAHC	NOKIA	120°	1	–	(2) 800 MHZ 2X50W RRH	SEE SHEET A-5 DETAIL 1		±90' AGL
	PROPOSED	NNVV-65B-R4	COMMSCOPE	120°	1	–	(1) 1900 MHz 4X45 RRH	SEE SHEET A-5 DETAIL 1		
	EXISTING	LLPX310R	ARGUS	120°	1	REMOVE		EXISTING COAX		
GAMMA	PROPOSED	AAHC	NOKIA	240°	1	–	(2) 800 MHZ 2X50W RRH	SEE SHEET A-5 DETAIL 1		±90' AGL
	PROPOSED	NNVV-65B-R4	COMMSCOPE	240°	1	–	(1) 1900 MHz 4X45 RRH	SEE SHEET A-5 DETAIL 1		
	EXISTING	LLPX310R	ARGUS	240°	1	REMOVE		EXISTING COAX		

PROJECT SCOPE:

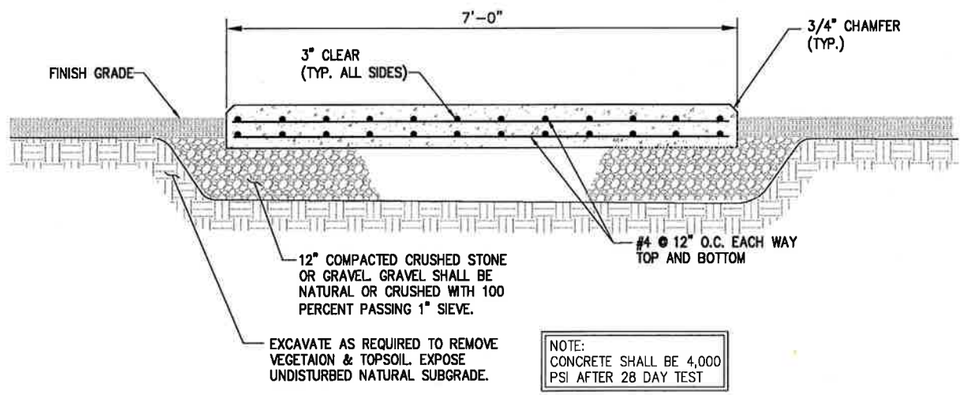
REMOVE: (3) PANEL ANTENNAS INSTALL: (6) PANEL ANTENNAS AND (9) RRH'S

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

SITE LOADING CHART | NO SCALE | 2



PROPOSED MOUNT DETAIL | NO SCALE | 3



EQUIPMENT CABINET FOUNDATION | NO SCALE | 4

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www.infinigy.com

JOB NUMBER 526-104

PROJECT MANAGER:

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

ENGINEERING LICENSE:


DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR PERMIT	06/11/18	ETC	0

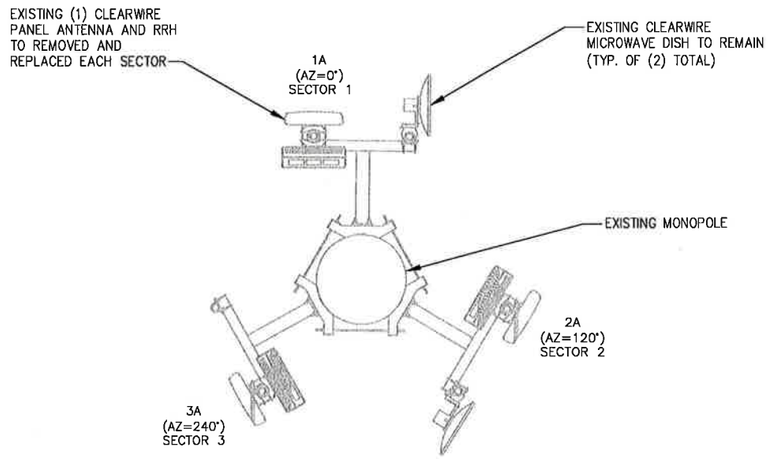
SITE NAME:
WHITEYS REPAIR AUTO BODY

SITE NUMBER:
CT52XC051

SITE ADDRESS:
305 W. SERVICE RD.
HARTFORD CT 06120-0001

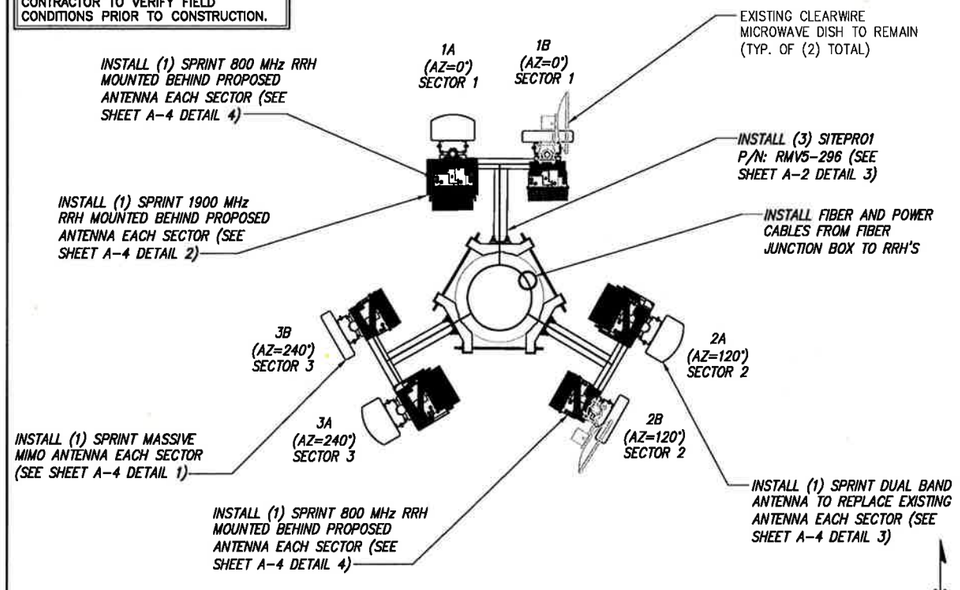
SHEET DESCRIPTION:
TOWER ELEVATION

SHEET NUMBER:
A-2



EXISTING ANTENNA LAYOUT | NO SCALE | 1

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



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

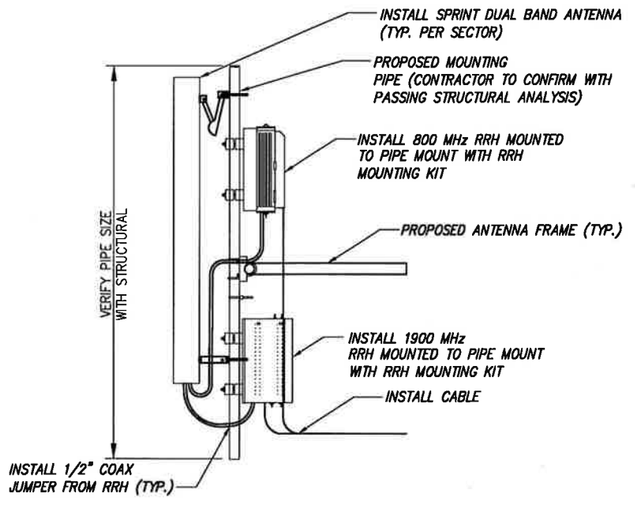
FINAL ANTENNA & RRH LAYOUT | NO SCALE | 2

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

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

NOTES:

1. CUT DC CONDUCTORS TO LENGTH.
2. COIL FIBER CABLE AND SECURE AT SIDE OF RRH.
3. DO NO EXCEED BEND RADIUS.



TYPICAL DUAL BAND ANTENNA & RRH MOUNTING DETAILS | NO SCALE | 3

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

NOTE:
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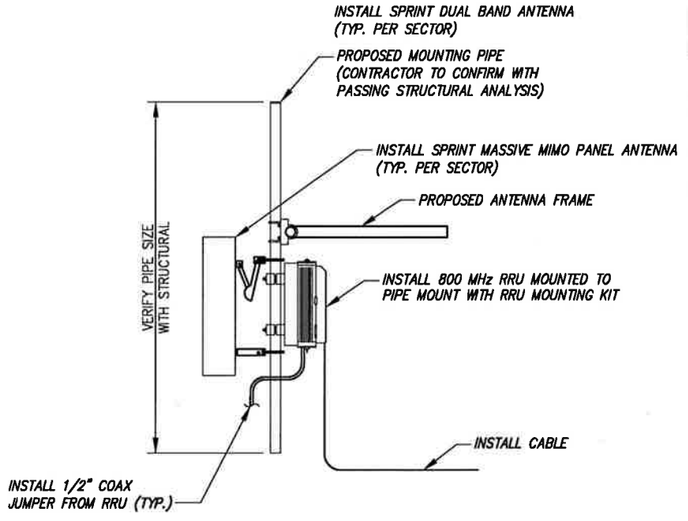
NOTES:

1. CUT DC CONDUCTORS TO LENGTH.
2. COIL FIBER CABLE AND SECURE AT SIDE OF RRH.
3. DO NO EXCEED BEND RADIUS.



TYPICAL MASSIVE MIMO ANTENNA & RRH MOUNTING DETAILS | NO SCALE | 4

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www.infinigy.com
JOB NUMBER 526-104

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

ENGINEERING LICENSE:
STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
JUN 21 2018
PROFESSIONAL ENGINEER

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR PERMIT	06/11/18	ETC	0

SITE NAME:
WHITEYS REPAIR AUTO BODY

SITE NUMBER:
CT52XC051

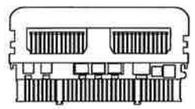
SITE ADDRESS:
305 W. SERVICE RD.
HARTFORD CT 06120-0001

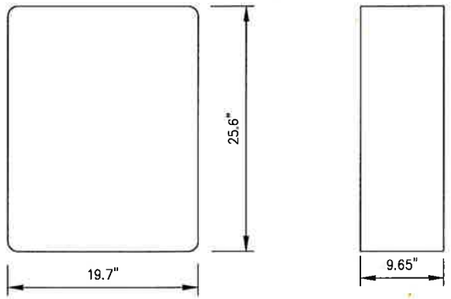
SHEET DESCRIPTION:
ANTENNA LAYOUT & MOUNTING DETAILS

SHEET NUMBER:
A-3

ANTENNA: NOKIA AAHC

RADOME MATERIAL:	FIBERGLASS
RADOME COLOR:	LIGHT GREY
DIMENSIONS, HxWxD.in(mim):	25.6"x19.7"x9.65" (651x501x245mm)
WEIGHT:	103.6 lbs

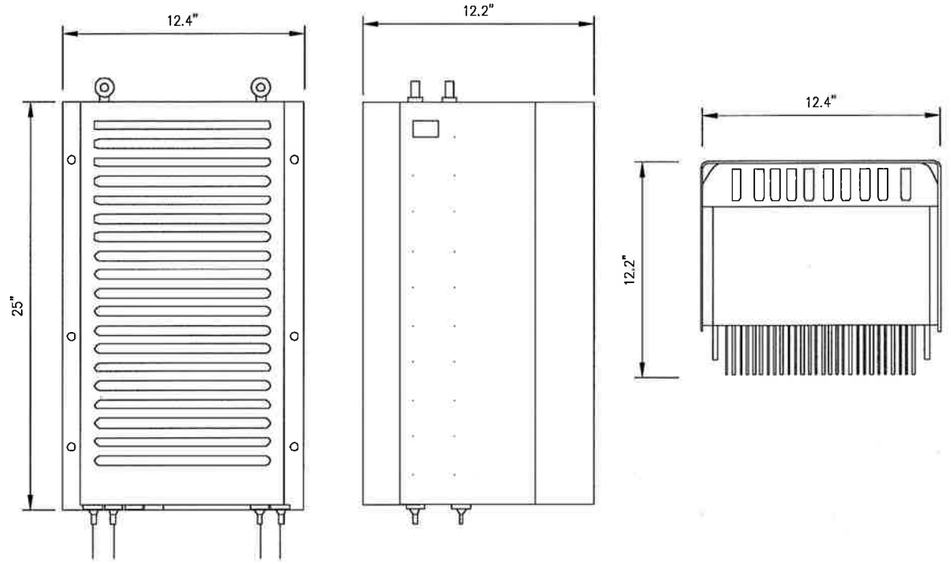




MASSIVE MIMO ANTENNA DETAIL | NO SCALE | 1

RRH: ALCATEL LUCENT 1900 MHz

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

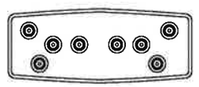


FRONT VIEW | SIDE VIEW | TOP VIEW

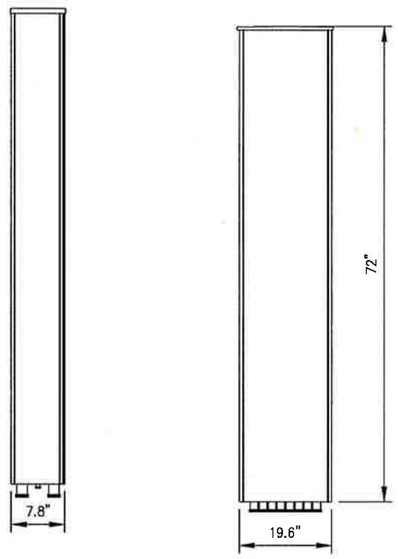
1900 MHz RRH | NO SCALE | 2

ANTENNA COMMSCOPE NNVV-65B-R4

RADOME MATERIAL:	FIBERGLASS
RADOME COLOR:	LIGHT GREY
DIMENSIONS, HxWxD.in(mim):	72"x19.6"x7.8" (1828x498x198mm)
WEIGHT:	77.4 lbs
CONNECTORS:	8 PIN DIN FEMALE 8 PIN DIN MALE



PLAN VIEW

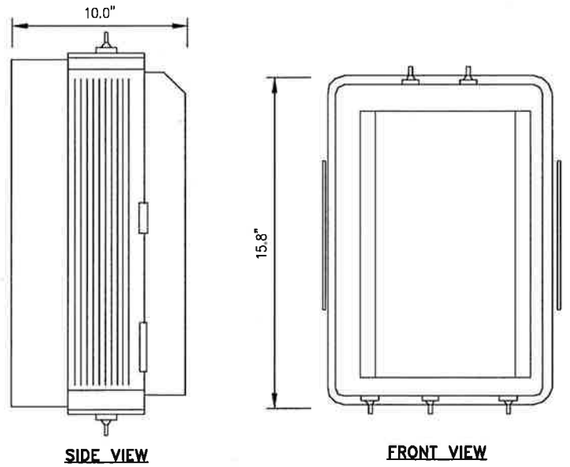


SIDE VIEW | FRONT VIEW

DUAL BAND ANTENNA DETAIL | NO SCALE | 3

RRH: ALCATEL LUCENT RRH 800 MHz 2x50W

COLOR: LIGHT GREY
WEIGHT: 53 LBS.



SIDE VIEW | FRONT VIEW | PLAN VIEW

NOTES

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

800 MHz RRH | NO SCALE | 4

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ENGINEERING LICENSE:
STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
LICENSED PROFESSIONAL ENGINEER
JUN 21 2018

REVISIONS:

DESCRIPTION	DATE	BY	REV.
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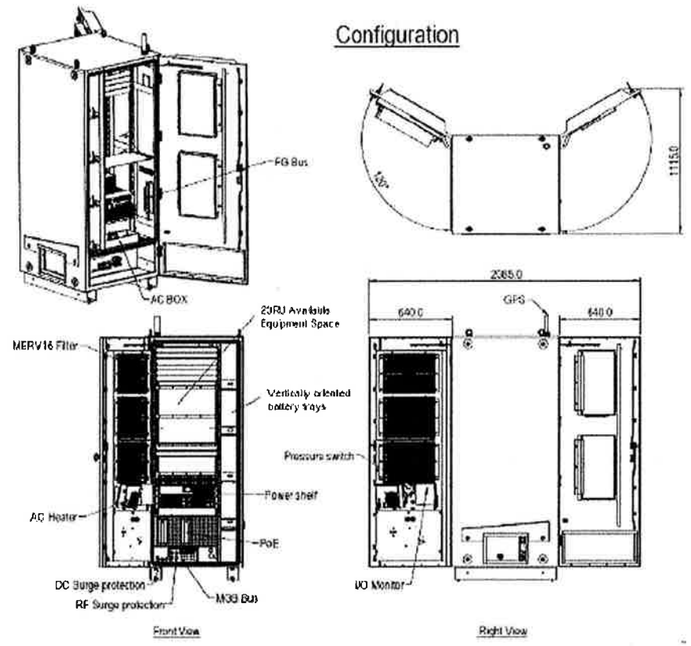
SITE NUMBER:
CT52XC051

SITE ADDRESS:
305 W. SERVICE RD.
HARTFORD CT 06120-0001

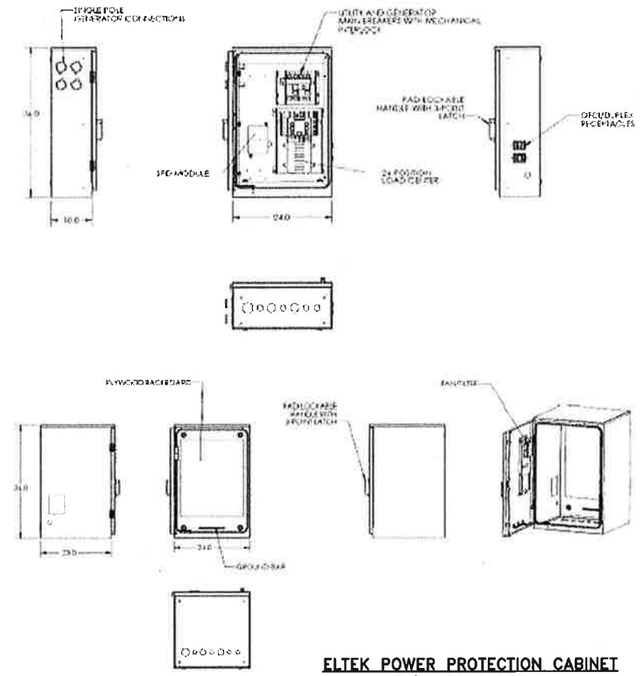
SHEET DESCRIPTION:
EQUIPMENT & MOUNTING DETAILS

SHEET NUMBER:
A-4



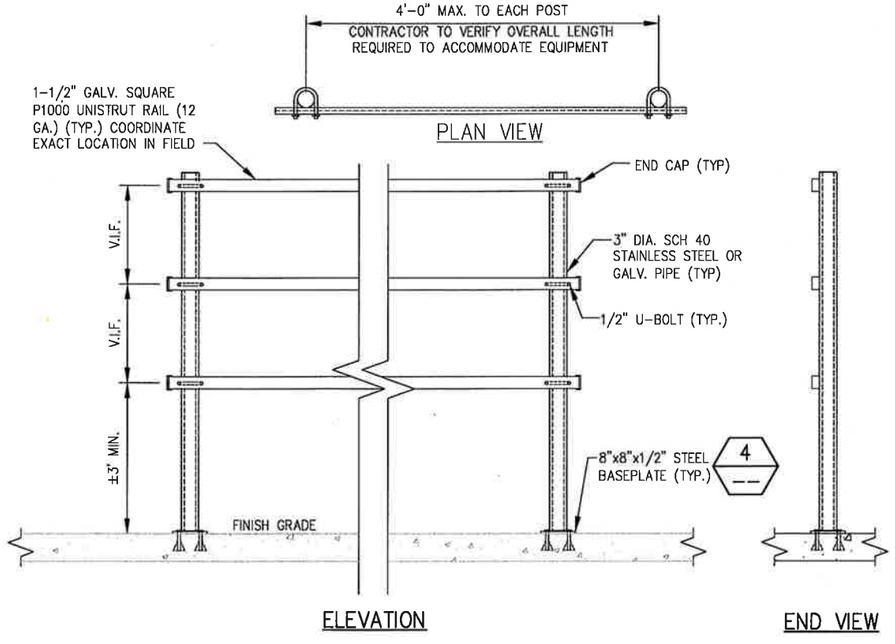
ELTEK ECAB EXTERIOR CABINET
P/N: ESOA220-SCA02

EQUIPMENT CABINET DETAIL	NO SCALE	1

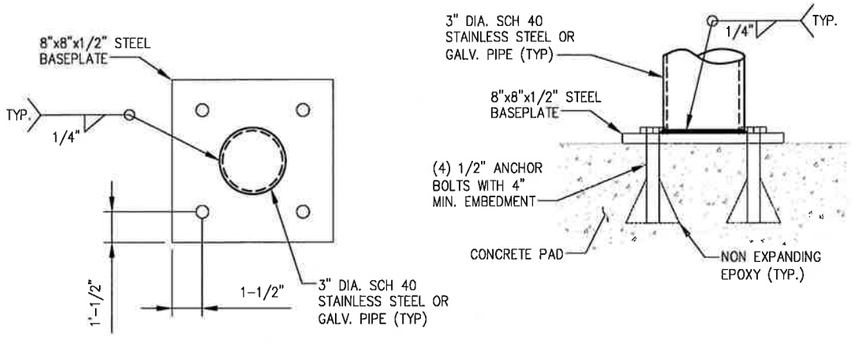


ELTEK POWER PROTECTION CABINET
P/N: 5811122212

EQUIPMENT CABINET DETAIL	NO SCALE	2



H-FRAME DETAIL	NO SCALE	3



SUPPORT POST MOUNTING DETAIL	NO SCALE	4

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JUN 21 2018

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REVISIONS:

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SITE NAME:
WHITEYS REPAIR AUTO BODY

SITE NUMBER:
CT52XC051

SITE ADDRESS:
305 W. SERVICE RD.
HARTFORD CT 06120-0001

SHEET DESCRIPTION:
EQUIPMENT & MOUNTING DETAILS

SHEET NUMBER:
A-5

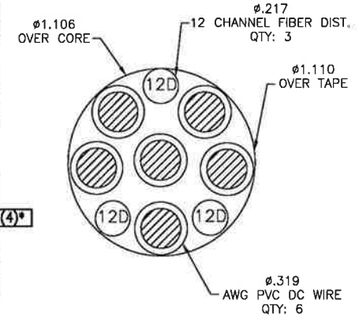
RFS HYBRIFLEX RISER CABLE SCHEDULE

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

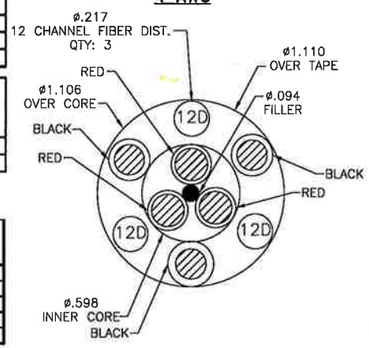
RFS HYBRIFLEX JUMPER CABLE SCHEDULE

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

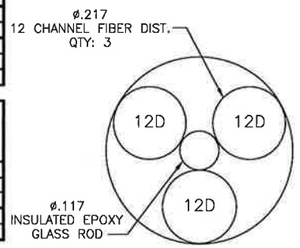
NOTE:
SPRINT CM TO CONFIRM HYBRID OR FIBER RISER CABLE AND HYBRID OR FIBER JUMPER CABLE MODEL NUMBERS IF HYBRID CABLES ARE REQUIRED BEFORE PREPARING BOM.



4 AWG



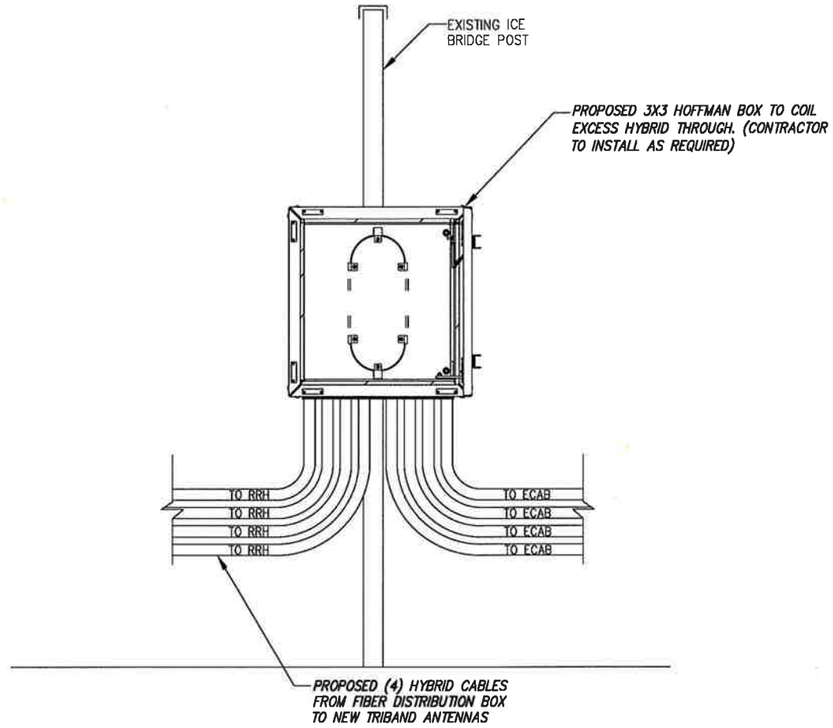
8 & 6 AWG



FIBER ONLY

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

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



OPTIONAL HYBRID SLACK BOX | NO SCALE | 2

DETAIL NOT USED | NO SCALE | 3

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JOHN S. STEVENS
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8/1 2018

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DESCRIPTION	DATE	BY	REV.
ISSUED FOR PERMIT	06/11/18	ETC	0

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WHITEYS REPAIR AUTO BODY

SITE NUMBER:
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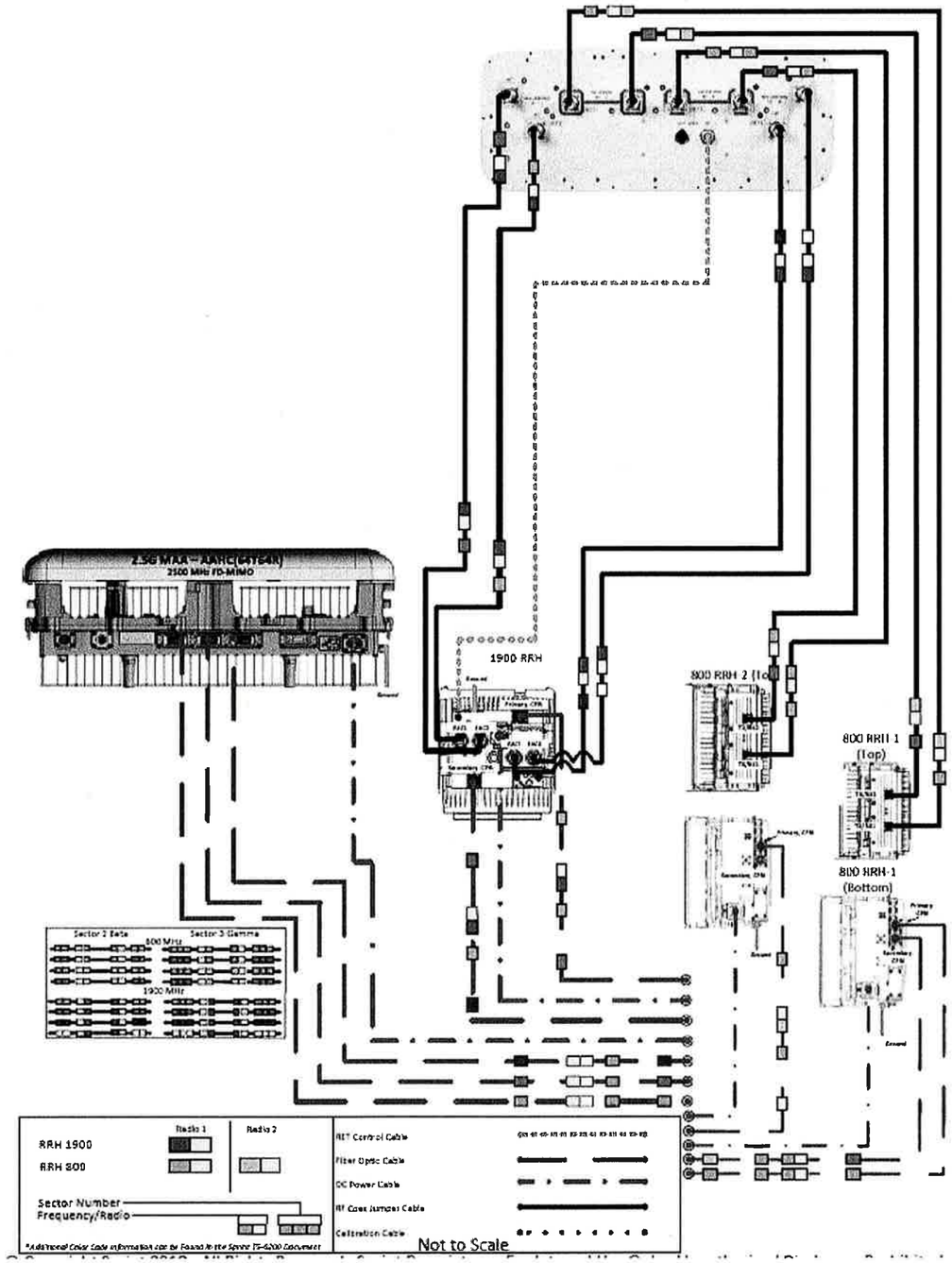
SITE ADDRESS:
305 W. SERVICE RD.
HARTFORD CT 06120-0001

SHEET DESCRIPTION:
CIVIL DETAILS

SHEET NUMBER:
A-6

ALU 21-MIMO NNVV-65B-R4 wo Filters



PLUMBING DIAGRAM | NO SCALE | 1

PLANS PREPARED FOR:

Sprint

PLANS PREPARED BY:

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

ENGINEERING LICENSE:

STATE OF CONNECTICUT
JOHN S. STEVENS
No. 24705
LICENSED
PROFESSIONAL ENGINEER
JUN 21 2018

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR PERMIT	06/11/18	ETC	0

SITE NAME:

WHITEYS REPAIR AUTO BODY

SITE NUMBER:

CT52XC051

SITE ADDRESS:

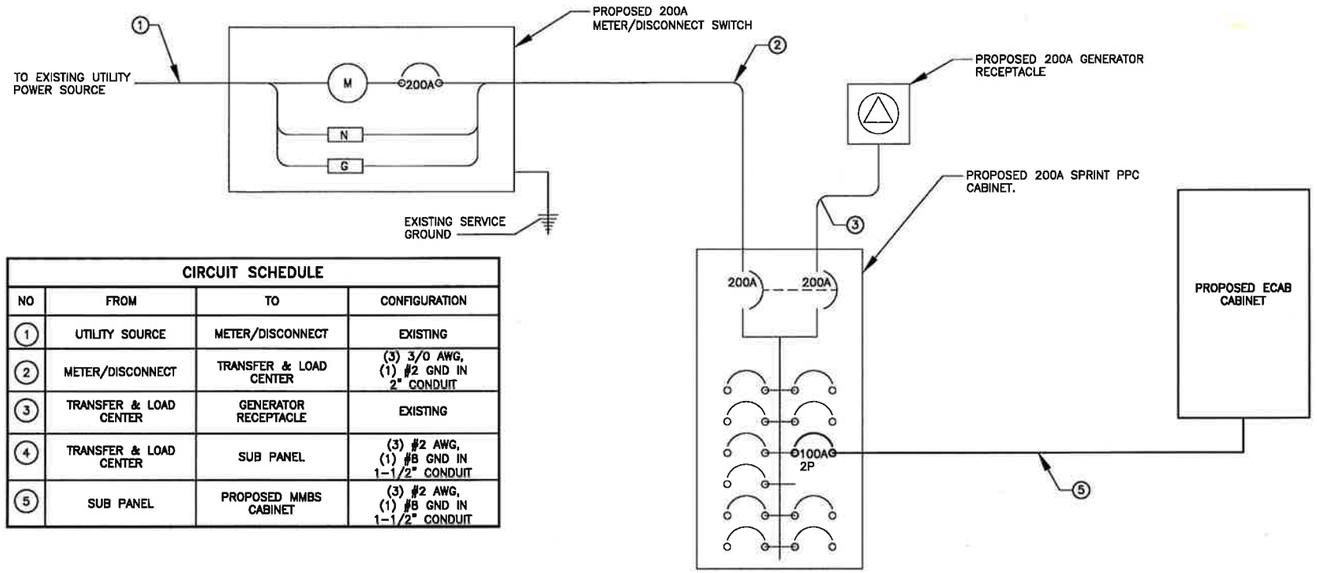
305 W. SERVICE RD.
HARTFORD CT 06120-0001

SHEET DESCRIPTION:

PLUMBING DIAGRAM

SHEET NUMBER:

A-7



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

ONE LINE DIAGRAM | NO SCALE | 1

GENERAL ELECTRICAL NOTES:

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

ELECTRICAL NOTES | NO SCALE | 2

GENERAL GROUNDING NOTES:

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

GROUNDING NOTES | NO SCALE | 3

PLANS PREPARED FOR:
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Phone: 518-690-0790 | Fax: 518-690-0793
www.Infinigy.com
JOB NUMBER 526-104

PROJECT MANAGER:
AIROSMITH DEVELOPMENT
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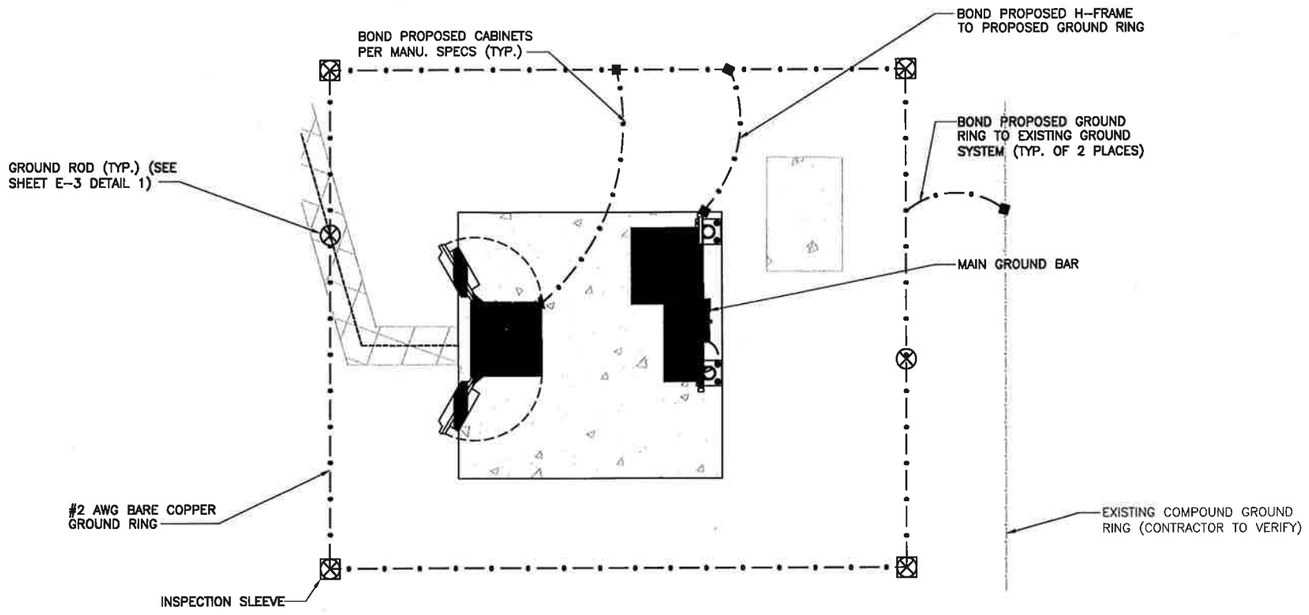
SHEET DESCRIPTION:
ELECTRICAL & GROUNDING PLAN

SHEET NUMBER:
E-1



LEGEND:

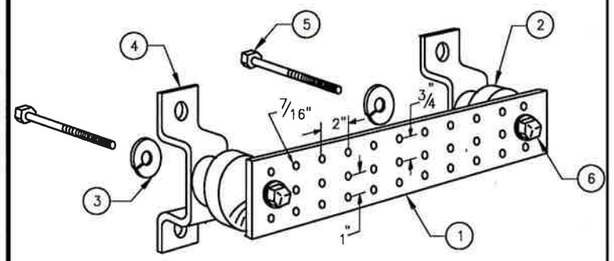
- EXISTING GROUND RING
- CADWELD CONNECTION (EXOTHERMIC WELD)
- MECHANICAL CONNECTION
- GROUND ROD

GROUNDING PLAN

NO SCALE | 1

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.

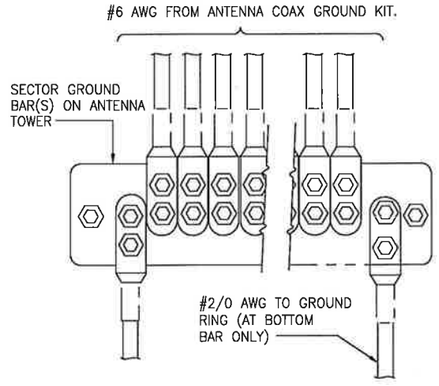


LEGEND

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

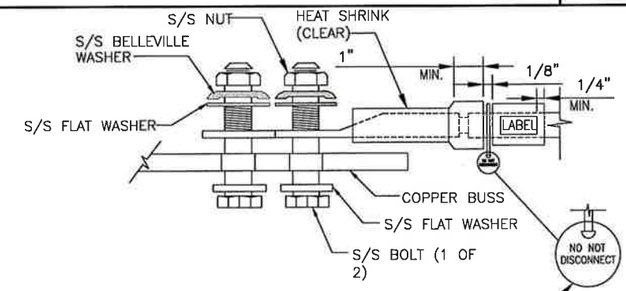
TINNED GROUND BAR DETAIL

NO SCALE | 2



ANTENNA GROUND WIRE INSTALLATION

NO SCALE | 3

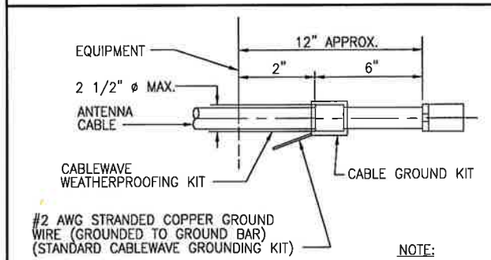


NOTE:
ALL MECHANICAL EXTERNAL TERMINATION SURFACES SHALL BE TREATED WITH T&B KOPR-SHIELD CP8 ANTI-OXIDATION COMPOUND.

"DO NOT DISCONNECT" TAG ON ALL GROUND BAR INTERCONNECTS

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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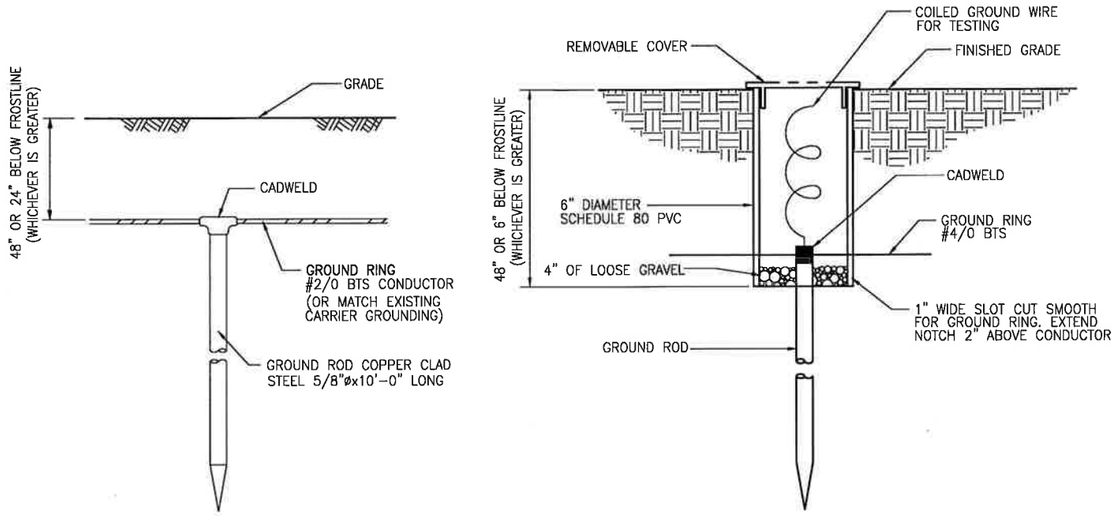
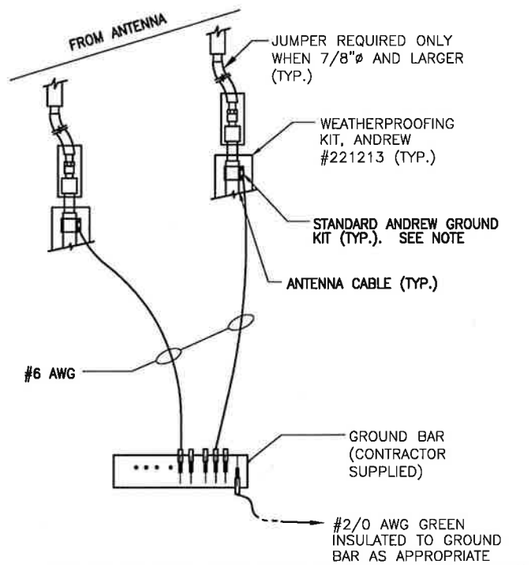
E-2

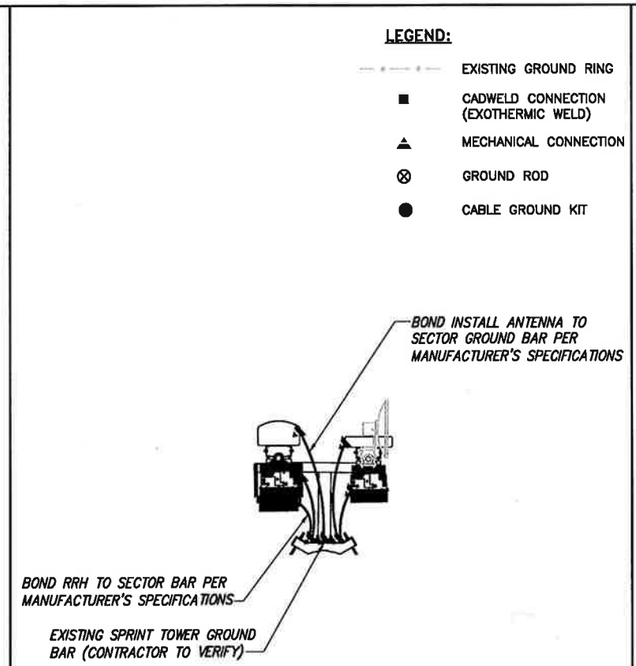


GROUND ROD & INSPECTION SLEEVE DETAIL | NO SCALE | 1

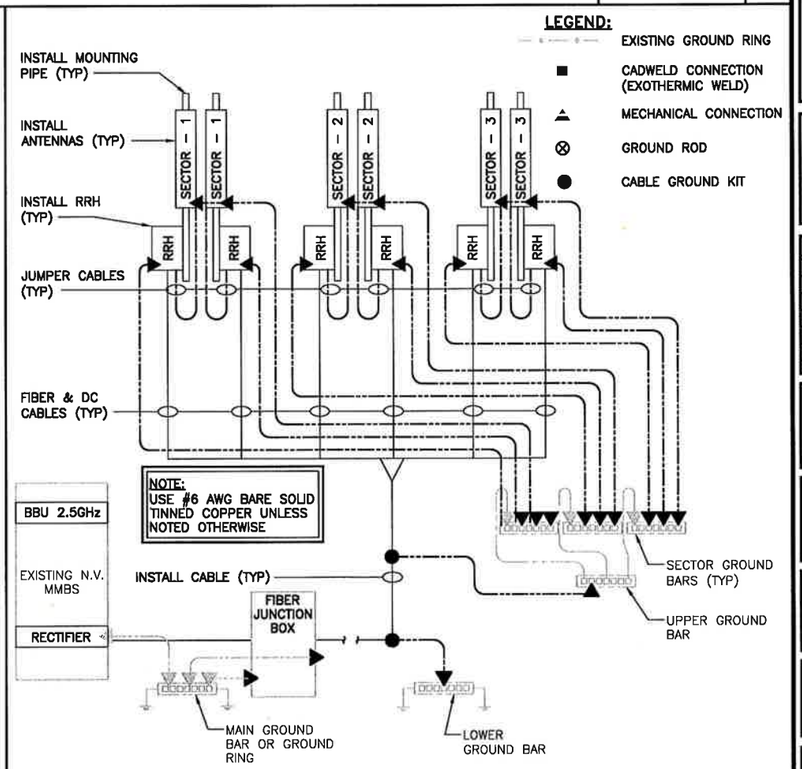


NOTE: DO NOT INSTALL CABLE GROUND KIT AT A BEND ALWAYS DIRECT GROUND WIRE DOWN TO CIGBE

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