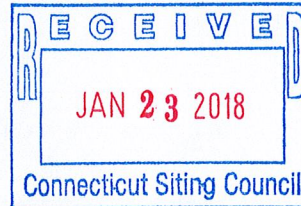




January 5th, 2018

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



RE: Notice of Exempt Modification – Antenna Swap for wireless facility located at 79 Putnam Pike, Killingly, CONNECTICUT – CT23XC408 (lat. 41° 50' 50.63" N, long. -71° 52' 44.24" W)

Dear Ms. Bachman:

EM-SPRINT-069-180123

Sprint Spectrum, LP ("Sprint") currently maintains wireless telecommunications antennas at the (150-foot level) on an existing (150-foot monopole tower) at the above-referenced address. The property is owned, and the tower are owned by the Town of Killingly.

Sprint's proposed work involves antenna replacement and tower work. Sprint intends to replace three (3) antennas and add twelve (12) RRHs onto the tower. All the proposed work is contained within the existing fenced area. Please refer to the attached drawings for site plans prepared by Infinigy Engineering.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to ROBERT MAYNARD, FIRST SELECTMAN of the Town of EAST WINDSOR. A copy of this letter is also being sent to DEAN & CAREN RASMUSSEN the owner of the property on which the tower is located, and JUSTINE PAUL the manager for AMERICAN TOWER CORPORATION who manages the site.

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

1. The proposed modifications will not result in an increase in the height of the existing tower.
2. The antennas work is a one-for-one replacement of facility components.
3. The proposed modifications will include the addition of ground base equipment as depicted on the attached drawings; however, the proposed equipment will not require

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





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,

A handwritten signature in blue ink, appearing to read 'Arthur Perkowski', enclosed within a large, hand-drawn oval.

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: Sean Hendricks (Town Manager, KILLINGLY, CT)



EBI Consulting

environmental | engineering | due diligence

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

SPRINT Existing Facility

Site ID: CT23XC408

Killingly
79 Putnam Pike
Killingly, CT 06239

January 12, 2018

EBI Project Number: 6218000061

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	12.45 %

7017 1450 0002 2926 7748

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DANIELSON CT 06239

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- ☐ Certified Mail Restricted Delivery \$0.00
- ☐ Adult Signature Required \$0.00
- ☐ Adult Signature Restricted Delivery \$0.00

Postage \$0.49

Total Postage and Fee \$6.39

0867
77

Postmark
Here

01/28/2018

Sent To Sean Hendricks - Town Manager
Street and Apt. No., or PO Box No. 172 Main Street, Second floor
City, State, ZIP+4[®] Zillah CT 06239 (CT023948)

PS Form 3800, April 2015 PSN 7530-02-000-9047

See Reverse for Instructions

Situs : 79 PUTNAM PIKE

Map ID: 006994

Class : Town of Killingly

Card: 1 of 1

Printed: April 27, 2017

CURRENT OWNER

KILLINGLY TOWN OF-081
HIGHWAY GARAGE
172 MAIN ST
KILLINGLY CT 06239

GENERAL INFORMATION

Living Units 302
Neighborhood 106-42
Alternate Id 34/1
Vol / Pg 2
District GENERAL COMMERCIAL
Zoning EXEMPT
Class

Property Notes

79-GARAGE 105-DOG PND 125-TRAN



Land Information

Type	Size	Influence Factors	Influence %	Value
Primary	AC	3.0000		600,000
Rear	AC	3.7000		5,550

Total Acres: 6.7
Spot: Location:

Assessment Information

	Assessed	Appraised	Cost	Income	Market
Land	423,920	605,600	605,600	605,600	0
Building	374,570	535,100	535,100	270,700	0
Total	798,490	1,140,700	1,140,700	876,300	0

Value Flag COST APPROACH
150' MONOPOLE 115125
Manual Override Reason
Base Date of Value 10/01/2013
Effective Date of Value 10/01/2017

Entrance Information

Date	ID	Entry Code	Source
06/29/16	CLP	Exterior	Asmt Staff
11/25/09	MHB	View ed	Asmt Staff
12/27/06	DH	Complete	Asmt Staff

Permit Information

Date Issued	Number	Price	Purpose	% Complete
10/20/15	23978	285	88 CHET	997
07/01/15	23714	60,000	97 BPP	995
04/09/15	23485	15,000	BLDG	996
12/02/14	23332	1,000	BLDG	997
11/13/14	23297	6,800	81 CELE	996

Sales/Ownership History

Transfer Date	Price Type	Validity	Deed Reference	Deed Type	Grantee
---------------	------------	----------	----------------	-----------	---------

Inspection Witnessed By _____

Situs : 79 PUTNAM PIKE

Parcel Id: 006994

Class : Town of Killingly

Card: 1 of 1

Printed: April 27, 2017

Building Information	
Year Built/Eff Year	1960 /
Building #	1
Structure Type	Auto Service Garag
Identical Units	1
Total Units	
Grade	C
# Covered Parking	
# Uncovered Parking	
DBA	TOWN
GARAGE&PCS EQU	

Building Other Features	
Line Type	+/- Meas1 Meas2 # Stops Ident Units

Interior/Exterior Information									
Line	Level	From - To	Int Fin	Area	Perim	Use Type	Wall Height	Ext Walls	Construction
1	01	01	100	11,520	464	Auto Parts/Service	16	Brick Venee	Pre-Engineered Stee
2	M1	M1	100	1,200	120	Multi-Use Office	8	Enclosure	Fire Resistant
3	01	01	100	1,540	158	Auto Parts/Service	16	Brick Venee	Fire Resistant
4	02	02	100	1,540	158	Support Area	8	Brick Venee	Fire Resistant

Interior/Exterior Valuation Detail									
Line	Area	Use Type	% Good	% Complete	Use Value/RCNLD	Line	Type	Yr Blt	Meas1
1	11,520	Auto Parts/Service	45		240,440	1	Asph Pav	1960	60
2	1,200	Multi-Use Office	45		37,630	2	Mas Garage	1960	22
3	1,540	Auto Parts/Service	45		53,920	3	Kennel	2009	50
4	1,540	Support Area	45		34,780	4	Br/St Shed	2014	30

Outbuilding Data									
Line	Type	Qty	Area	Grade	Phy Fun	Value	Line	Type	Qty
1	Asph Pav	1	20,000	C	3	24,000	1	Asph Pav	1
2	Mas Garage	1	1,320	C	3	17,950	2	Mas Garage	1
3	Kennel	1	900	D	3	5,800	3	Kennel	1
4	Br/St Shed	1	360	C	3	5,470	4	Br/St Shed	1

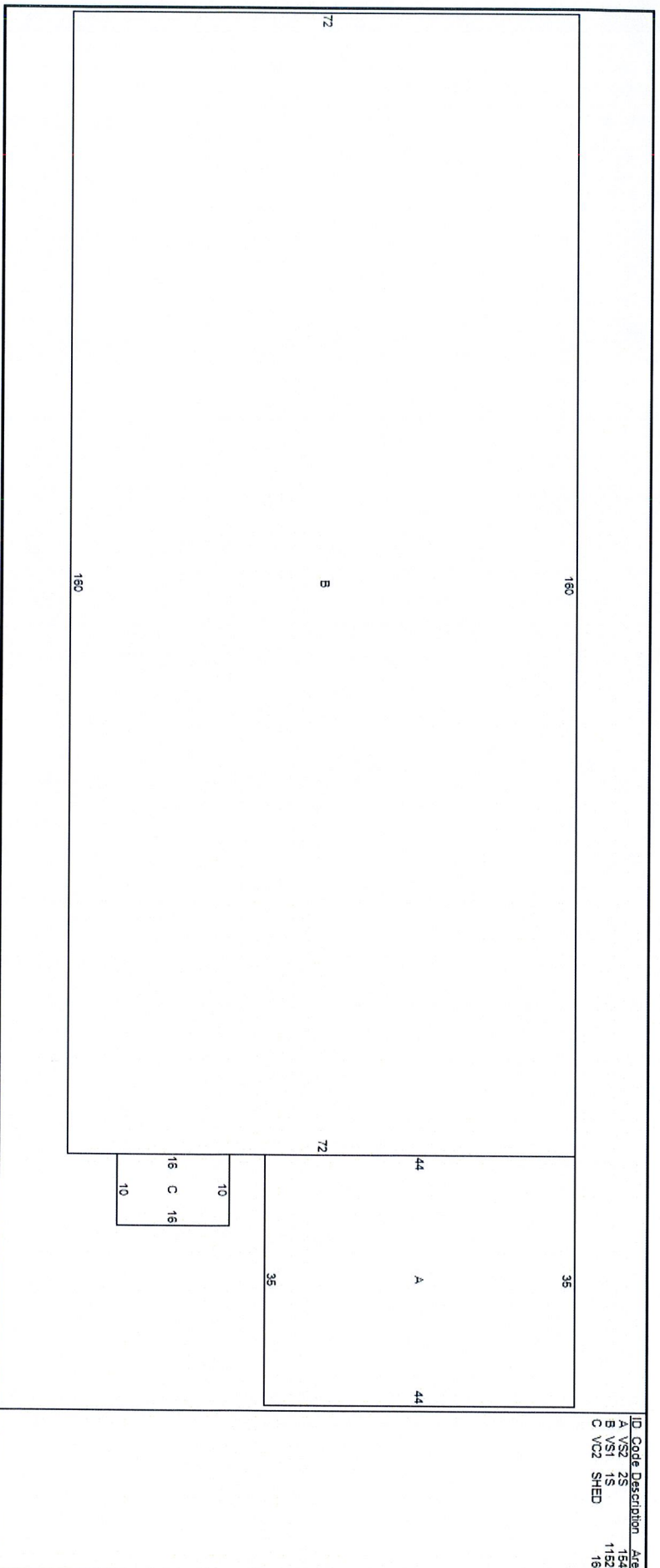
Situs : 79 PUTNAM PIKE

Parcel Id: 006994

Class : Town of Killingly

Card: 1 of 1

Printed: April 27, 2017



Additional Property Photos



Situs : 79 PUTNAM PIKE

Parcel Id: 006994

Class : Town of Killingly

Card: 1 of 1

Printed: April 27, 2017

Income Detail (Includes all Buildings on Parcel)

Use Mod	Inc Model	Units	Net Area	Income Rate	Econ Adjust	Potential Gross Income	Vac Model	Vac Adj	Additional Income	Effective Gross Income	Expense Model %	Expense Adj %	Expense Adj	Other Expenses	Total Expenses	Operating Income	Net
00	S	001	Support Or Municipal Prode	0		1,540			0								
11	S	001	Auto Service	0		13,060	8.00		0		96,644	15		14,497	14,497	82,147	
22	S	001	Mult Use Office	0		1,200	8.50		0		8,925	35		3,124	3,124	5,801	

Apartment Detail - Building 1 of 1

Line	Use Type	Per Bldg	Beds	Baths	Units	Rent	Income
------	----------	----------	------	-------	-------	------	--------

Building Cost Detail - Building 1 of 1

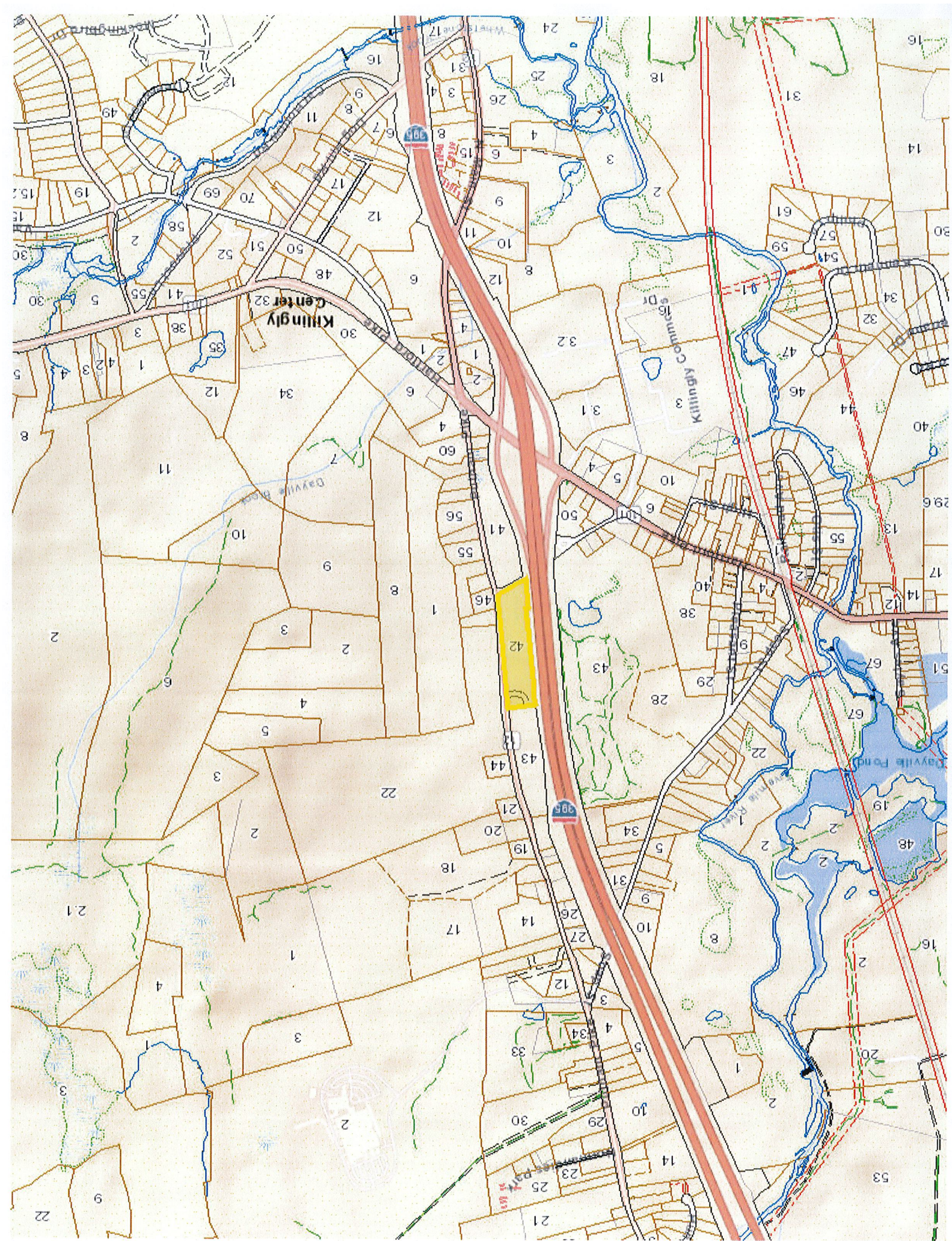
Total Gross Building Area	15,800
Replace, Cost New Less Depr	366,770
Percent Complete	100
Num ber of Identical Units	1
Economic Condition Factor	
Final Building Value	366,770
Value per SF	23.21

Notes - Building 1 of 1

SP #00-755 DOG POUND ADDN

Income Summary (Includes all Building on Parcel)

Total Net Income	87,948
Capitalization Rate	0.101000
Sub total	870,770
Residual Land Value	5,550
Final Income Value	876,320
Total Gross Rent Area	14,260
Total Gross Building Area	15,800





January 12, 2018

SPRINT

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

Emissions Analysis for Site: **CT23XC408 – Killingly**

EBI Consulting was directed to analyze the proposed SPRINT facility located at **79 Putnam Pike, Killingly, CT**, for the purpose of determining whether the emissions from the Proposed SPRINT Antenna Installation located on this property are within specified federal limits.

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

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

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

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



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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed SPRINT Wireless antenna facility located at **79 Putnam Pike, Killingly, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since SPRINT is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

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



- 6) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 7) For the following calculations the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 8) The antennas used in this modeling are the **KMW ETCR-654L12H6** for transmission in the 850 MHz, 1900 MHz (PCS) and 2500 MHz (BRS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 9) The antenna mounting height centerlines of the proposed antennas are **140 feet** above ground level (AGL) for **Sector A**, **140 feet** above ground level (AGL) for **Sector B** and **140 feet** above ground level (AGL) for Sector C.
- 10) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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



EBI Consulting

environmental | engineering | due diligence

SPRINT Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	KMW ETCR-654L12H6	Make / Model:	KMW ETCR-654L12H6	Make / Model:	KMW ETCR-654L12H6
Gain:	13.35 / 15.25 / 15.05 dBd	Gain:	13.35 / 15.25 / 15.05 dBd	Gain:	13.35 / 15.25 / 15.05 dBd
Height (AGL):	140 feet	Height (AGL):	140 feet	Height (AGL):	140 feet
Frequency Bands	850 MHz / 1900 MHz (PCS) / 2500 MHz (BRS)	Frequency Bands	850 MHz / 1900 MHz (PCS) / 2500 MHz (BRS)	Frequency Bands	850 MHz / 1900 MHz (PCS) / 2500 MHz (BRS)
Channel Count	18	Channel Count	18	Channel Count	18
Total TX Power(W):	380 Watts	Total TX Power(W):	380 Watts	Total TX Power(W):	380 Watts
ERP (W):	11,775.31	ERP (W):	11,775.31	ERP (W):	11,775.31
Antenna A1 MPE%	2.56 %	Antenna B1 MPE%	2.56 %	Antenna C1 MPE%	2.56 %

****** There is one Decibel DB980H90E remaining per sector. These antennas appear to be dormant with all channels broadcast from the single multiband antenna per sector ******

Site Composite MPE%	
Carrier	MPE%
SPRINT – Max per sector	2.56 %
AT&T	0.80 %
Verizon Wireless	5.31 %
MetroPCS	0.57 %
T-Mobile	1.51 %
Town	1.70 %
Site Total MPE %:	12.45 %

SPRINT Sector A Total:	2.56 %
SPRINT Sector B Total:	2.56 %
SPRINT Sector C Total:	2.56 %
Site Total:	12.45 %

SPRINT _ Frequency Band / Technology (All Sectors)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
Sprint 850 MHz CDMA	1	432.54	140	0.87	850 MHz	567	0.15%
Sprint 850 MHz LTE	2	432.54	140	1.73	850 MHz	567	0.31%
Sprint 1900 MHz (PCS) CDMA	5	535.94	140	5.37	1900 MHz (PCS)	1000	0.54%
Sprint 1900 MHz (PCS) LTE	2	1,339.86	140	5.37	1900 MHz (PCS)	1000	0.54%
Sprint 2500 MHz (BRS) LTE	8	639.78	140	10.25	2500 MHz (BRS)	1000	1.02%
						Total:	2.56%



Summary

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

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

SPRINT Sector	Power Density Value (%)
Sector A:	2.56 %
Sector B:	2.56 %
Sector C:	2.56 %
SPRINT Maximum Total (per sector):	2.56 %
Site Total:	12.45 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **12.45 %** 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.

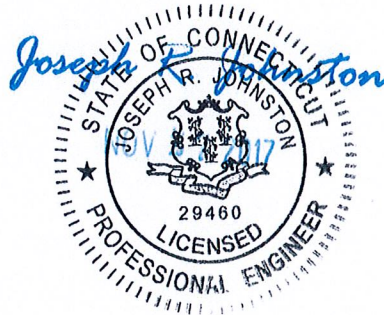
FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100%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

Structural Analysis Report

November 18, 2017

Site Name	CT23XC408
Infinigy Job Number	526-104
Client	Airosmith
Proposed Carrier	Sprint
Site Location	79 Putnam Pike, Killingly, CT 06241 41° 50' 51.7" N NAD83 71° 52' 46.1" W NAD83
Structure Type	150' Monopole
Structural Usage Ratio	72.1%
Overall Result	Pass

Upon reviewing the results of this analysis, it is our opinion that the structure meets the specified TIA code requirements. The tower and foundations are therefore deemed adequate to support the existing and proposed loading as listed in this report.



M. Brad Davenport
Senior Structural Engineer | INFINIGY

Contents

Introduction.....	3
Supporting Documentation.....	3
Analysis Code Requirements.....	3
Conclusion.....	3
Existing and Reserved Loading.....	4
To Be Removed Loading.....	4
Proposed Loading.....	4
Final Configuration.....	5
Structure Usages.....	5
Foundation Reactions.....	5
Deflection, Twist, and Sway.....	6
Assumptions and Limitations.....	6
Calculations.....	Appended

November 18, 2017

Introduction

Infinigy Engineering has been requested to perform a structural analysis on the existing 150' Monopole. All supporting documents have been obtained from the client and are assumed to be accurate and applicable to this site. The tower was analyzed using tnxTower version 7.0.7.0 tower analysis software.

Supporting Documentation

Construction Drawing:	Infinigy CD Site #CT23XC408, dated September 27, 2017
Previous Analysis	EBI Project #81150114, dated February 17, 2015

Analysis Code Requirements

Wind Speed	101 mph (3-Second Gust, Vasd) / 129 mph (3-Second Gust, Vult)
Wind Speed w/ ice	50 mph (3-Second Gust, Vasd) w/ 3/4" Ice
TIA Revision	ANSI/TIA-222-G
Adopted IBC	2012 IBC
Jurisdictional Code	2016 Connecticut State Building Code
Structure Class	II
Exposure Category	B
Topographic Category	1
Calculated Crest Height	0 ft.

Conclusion

Upon reviewing the results of this analysis, it is our opinion that the structure meets the specified TIA code requirements. The tower and foundations are therefore deemed adequate to support the existing and proposed loading 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:

M. Brad Davenport
Senior Structural Engineer | INFINIGY
1033 Watervliet Shaker Road, Albany, NY 12205
(518) 690-0790
BDavenport@infinigy.com | www.infinigy.com

November 18, 2017

Existing and Reserved Loading

Mount Height (ft)	Qty.	Appurtenance	Mount Type	Coax & Lines	Carrier
153.0	2	4' Omni	Side Arm	(2) 7/8"	--
150.0	3	Commscope LNX-6515DS-VTM	Sector Frame	(12) 1-5/8"	--
	3	EMS RV90-17-02-DP			
140.0	6	Decibel DB980H90E-M	Sector Frame	(6) 1 5/8"	Sprint
130.0	3	Ericsson RRUS-32	Low Profile Platform	(2) 1/2" (13) 1-5/8"	--
	3	Ericsson RRUS-E2			
	3	Surge Suppressor			
	3	TMA			
	3	Powerwave 7700			
	6	Ericsson RRUS-11			
	6	Ericsson RRUS-12			
	6	A2			
	6	Diplexer			
	9	CCI HPA-65R-BUU-H8			
119.0	2	4' Omni	Side Arm	(2) 1/2"	--
106.0	6	Ericsson RRUS-11	Low Profile Platform	(12) 1 5/8"	
	12	73"x12"x7" Panel			

To Be Removed Loading

Mount Height (ft)	Qty.	Appurtenance	Mount Type	Coax & Lines	Carrier
140.0	3	Decibel DB980H90E-M	--	(6) 1 5/8"	Sprint

November 18, 2017

Proposed Loading

Mount Height (ft)	Qty.	Appurtenance	Mount Type	Coax & Lines	Carrier
140.0	3	KMW ETCR654L12H6	--	(4) 1.54" Hybriflex	Sprint
	6	Alcatel Lucent 800 RRH 2x50W			
	3	Alcatel Lucent 1900 MHz RRH			
	3	Alcatel Lucent 2.5 RRUS 8x20-25			

Final Configuration

Mount Height (ft)	Qty.	Appurtenance	Mount Type	Coax & Lines	Carrier
153.0	2	4' Omni	Side Arm	(2) 7/8"	--
150.0	3	Commscope LNX-6515DS-VTM	Sector Frame	(12) 1-5/8"	
	3	EMS RV90-17-02-DP			
140.0	3	Decibel DB980H90E-M	Sector Frame	(4) 1.54" Hybriflex	Sprint
	3	KMW ETCR654L12H6			
	6	Alcatel Lucent 800 RRH 2x50W			
	3	Alcatel Lucent 1900 MHz RRH			
	3	Alcatel Lucent 2.5 RRUS 8x20-25			
130.0	3	Ericsson RRUS-32	Low Profile Platform	(2) 1/2" (13) 1-5/8"	--
	3	Ericsson RRUS-E2			
	3	Surge Suppressor			
	3	TMA			
	3	Powerwave 7700.0			
	6	Ericsson RRUS-11			
	6	Ericsson RRUS-12			
	6	A2			
	6	Diplexer			
	9	CCI HPA-65R-BUU-H8			
119.0	2	4' Omni	Side Arm	(2) 1/2"	--
106.0	6	Ericsson RRUS-11	Low Profile Platform	(12) 1 5/8"	
	12	73"x12"x7" Panel			

Install proposed coax inside monopole.

Structure Usages

Summary		
Pole (L6)	72.1	Pass
RATING =	72.1	Pass

Foundation Reactions

Reaction Data	Design Reactions
Moment (kip-ft)	4340.0
Shear (kip)	44.2
Axial (kip)	64.3

Tower base reactions are acceptable through rigorous structural analysis.

Deflection, Twist, and Sway

Antenna Elevation (ft)	Deflection (in)	Twist (°)	Sway (°)
140.0	7.247	0.006	0.476

*Per ANSI/TIA-222-G Section 2.8.2 maximum serviceability structural deflection limit is 3% of structure height.

*Per ANSI/TIA-222-G Section 2.8.2 maximum serviceability structural twist and sway limit is 4 degrees.

*Per ANSI/TIA-222-G Section 2.8.3 deflection, Twist, and sway values were calculated using a basic 3-second gust wind speed of 60 mph.

*It is the responsibility of the client to ensure their proposed and/or existing equipment will meet ANSI/TIA-222-G Annex D or other appropriate microwave signal degradation limits based on the provided values above.

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 tower structure only and does not reflect adequacy of any existing antenna mounts, mount connections, 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.

0.0 ft



tnxTower Infinigy Engineering 1033 Watervliet Shaker Rd. Albany, NY 12205 Phone: (518) 690-0790 FAX:	Job	526-104	Page	1 of 31
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Tower Input Data

There is a pole section.

This tower is designed using the TIA-222-G standard.

The following design criteria apply:

Tower is located in Windham County, Connecticut.

Basic wind speed of 101 mph.

Structure Class II.

Exposure Category B.

Topographic Category 1.

Crest Height 0.00 ft.

Nominal ice thickness of 0.7500 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

A wind speed of 50 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 60 mph.

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in pole design is 1.

Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs	Distribute Leg Loads As Uniform	Use ASCE 10 X-Brace Ly Rules
Consider Moments - Horizontals	Assume Legs Pinned	√ Calculate Redundant Bracing Forces
Consider Moments - Diagonals	√ Assume Rigid Index Plate	Ignore Redundant Members in FEA
Use Moment Magnification	√ Use Clear Spans For Wind Area	SR Leg Bolts Resist Compression
√ Use Code Stress Ratios	√ Use Clear Spans For KL/r	√ All Leg Panels Have Same Allowable
√ Use Code Safety Factors - Guys	√ Retension Guys To Initial Tension	Offset Girt At Foundation
Escalate Ice	Bypass Mast Stability Checks	Consider Feed Line Torque
Always Use Max Kz	√ Use Azimuth Dish Coefficients	Include Angle Block Shear Check
Use Special Wind Profile	√ Project Wind Area of Appurt.	Use TIA-222-G Bracing Resist. Exemption
√ Include Bolts In Member Capacity	√ Autocalc Torque Arm Areas	Use TIA-222-G Tension Splice Exemption
√ Leg Bolts Are At Top Of Section	Add IBC .6D+W Combination	Poles
√ Secondary Horizontal Braces Leg	Sort Capacity Reports By Component	√ Include Shear-Torsion Interaction
Use Diamond Inner Bracing (4 Sided)	√ Triangulate Diamond Inner Bracing	Always Use Sub-Critical Flow
SR Members Have Cut Ends	Treat Feed Line Bundles As Cylinder	Use Top Mounted Sockets
SR Members Are Concentric		

Tapered Pole Section Geometry

Section	Elevation	Section Length	Splice Length	Number of Sides	Top Diameter	Bottom Diameter	Wall Thickness	Bend Radius	Pole Grade
	ft	ft	ft		in	in	in	in	
L1	150.00-130.00	20.00	5.00	12	27.8125	34.3125	0.2500	1.0000	A36M-45 (45 ksi)
L2	130.00-115.00	20.00	0.00	12	32.1875	38.6875	0.2500	1.0000	A36M-45 (45 ksi)

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Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L3	115.00-95.00	20.00	6.00	12	38.6875	45.1875	0.3125	1.2500	A36M-45 (45 ksi)
L4	95.00-91.00	10.00	0.00	12	42.6125	45.8125	0.3125	1.2500	A36M-45 (45 ksi)
L5	91.00-51.00	40.00	8.00	12	45.8125	58.8750	0.3750	1.5000	A36M-45 (45 ksi)
L6	51.00-40.00	19.00	0.00	12	55.5125	61.6875	0.3750	1.5000	A36M-45 (45 ksi)
L7	40.00-19.00	21.00	9.00	12	61.6875	68.5000	0.4375	1.7500	A36M-45 (45 ksi)
L8	19.00-0.00	28.00		12	64.7054	73.8125	0.4375	1.7500	A36M-45 (45 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	It/Q in ²	w in	w/t
L1	28.7936	22.1878	2151.4817	9.8674	14.4069	149.3372	4359.4852	10.9202	6.7838	27.135
	35.5229	27.4203	4060.7980	12.1944	17.7739	228.4700	8228.2777	13.4954	8.5258	34.103
L2	35.0053	25.7097	3347.2225	11.4336	16.6731	200.7556	6782.3803	12.6535	7.9562	31.825
	40.0522	30.9422	5835.0856	13.7606	20.0401	291.1701	11823.4654	15.2288	9.6982	38.793
L3	40.0522	38.6148	7258.3350	13.7382	20.0401	362.1901	14707.3546	19.0051	9.5307	30.498
	46.7815	45.1555	11606.6056	16.0652	23.4071	495.8578	23518.1297	22.2241	11.2728	36.073
L4	46.1034	42.5644	9721.0448	15.1434	22.0733	440.3988	19697.4723	20.9489	10.5826	33.864
	47.4286	45.7844	12098.3469	16.2890	23.7309	509.8146	24514.5309	22.5337	11.4403	36.609
L5	47.4286	54.8658	14458.2714	16.2666	23.7309	609.2599	29296.3778	27.0033	11.2728	30.061
	60.9519	70.6388	30856.0755	20.9430	30.4973	1011.7658	62522.7744	34.7662	14.7735	39.396
L6	60.1625	66.5785	25835.3472	19.7392	28.7555	898.4497	52349.4177	32.7679	13.8724	36.993
	63.8636	74.0348	35523.8611	21.9499	31.9541	1111.7144	71980.9737	36.4377	15.5273	41.406
L7	63.8636	86.2859	41317.8922	21.9275	31.9541	1293.0378	83721.2515	42.4673	15.3598	35.108
	70.9164	95.8830	56694.8448	24.3664	35.4830	1597.8030	114879.126	47.1907	17.1855	39.281
							2			
L8	70.0185	90.5373	47731.0881	23.0079	33.5174	1424.0700	96716.1251	44.5597	16.1685	36.957
	76.4163	103.3670	71033.6649	26.2682	38.2349	1857.8239	143933.463	50.8741	18.6092	42.535
							2			

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A _f	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft ²	in					in	in	in
L1 150.00-130.00				1	1	1			
L2 130.00-115.00				1	1	1			
L3 115.00-95.00				1	1	1			
L4 95.00-91.00				1	1	1			
L5 91.00-51.00				1	1	1			
L6 51.00-40.00				1	1	1			
L7 40.00-19.00				1	1	1			
L8 19.00-0.00				1	1	1			

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Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C _A A _A ft ² /ft	Weight plf
7/8 (Sprint)	A	No	Inside Pole	150.00 - 7.00	2	No Ice	0.00	0.54
						1/2" Ice	0.00	0.54
						1" Ice	0.00	0.54
1 5/8 (Sprint)	A	No	Inside Pole	150.00 - 7.00	12	No Ice	0.00	1.04
						1/2" Ice	0.00	1.04
						1" Ice	0.00	1.04
1 5/8	A	No	Inside Pole	138.00 - 7.00	6	No Ice	0.00	1.04
						1/2" Ice	0.00	1.04
						1" Ice	0.00	1.04
1 5/8	A	No	Inside Pole	130.00 - 7.00	13	No Ice	0.00	1.04
						1/2" Ice	0.00	1.04
						1" Ice	0.00	1.04
1/2	A	No	Inside Pole	130.00 - 7.00	2	No Ice	0.00	0.25
						1/2" Ice	0.00	0.25
						1" Ice	0.00	0.25
1/2	A	No	Inside Pole	119.00 - 7.00	2	No Ice	0.00	0.25
						1/2" Ice	0.00	0.25
						1" Ice	0.00	0.25
1 5/8	A	No	Inside Pole	106.00 - 7.00	12	No Ice	0.00	1.04
						1/2" Ice	0.00	1.04
						1" Ice	0.00	1.04
1.54" Hybriflex	C	No	Inside Pole	140.00 - 0.00	4	No Ice	0.00	0.55
						1/2" Ice	0.00	0.55
						1" Ice	0.00	0.55

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight lb
L1	150.00-130.00	A	0.000	0.000	0.000	0.000	321.12
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	22.00
L2	130.00-115.00	A	0.000	0.000	0.000	0.000	509.30
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	33.00
L3	115.00-95.00	A	0.000	0.000	0.000	0.000	823.68
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	44.00
L4	95.00-91.00	A	0.000	0.000	0.000	0.000	187.20
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	8.80
L5	91.00-51.00	A	0.000	0.000	0.000	0.000	1872.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	88.00
L6	51.00-40.00	A	0.000	0.000	0.000	0.000	514.80
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	24.20
L7	40.00-19.00	A	0.000	0.000	0.000	0.000	982.80
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	46.20
L8	19.00-0.00	A	0.000	0.000	0.000	0.000	561.60
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.000	41.80

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Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight lb
L1	150.00-130.00	A	1.733	0.000	0.000	0.000	0.000	321.12
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	22.00
L2	130.00-115.00	A	1.710	0.000	0.000	0.000	0.000	509.30
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	33.00
L3	115.00-95.00	A	1.684	0.000	0.000	0.000	0.000	823.68
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	44.00
L4	95.00-91.00	A	1.664	0.000	0.000	0.000	0.000	187.20
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	8.80
L5	91.00-51.00	A	1.618	0.000	0.000	0.000	0.000	1872.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	88.00
L6	51.00-40.00	A	1.549	0.000	0.000	0.000	0.000	514.80
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	24.20
L7	40.00-19.00	A	1.482	0.000	0.000	0.000	0.000	982.80
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	46.20
L8	19.00-0.00	A	1.322	0.000	0.000	0.000	0.000	561.60
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.000	41.80

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
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Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight lb
4' Omni	B	From Leg	2.00	0.0000	153.00	No Ice	1.00	15.00
			0.00			1/2" Ice	1.25	23.96
			0.00			1" Ice	1.50	35.82
4' Omni	C	From Leg	2.00	0.0000	153.00	No Ice	1.00	15.00
			0.00			1/2" Ice	1.25	23.96
			0.00			1" Ice	1.50	35.82
Pipe Side Arm	B	From Leg	2.00	0.0000	153.00	No Ice	0.46	150.00
			0.00			1/2" Ice	0.62	175.00
			0.00			1" Ice	0.78	200.00

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight lb
Pipe Side Arm	C	From Leg	2.00 0.00 0.00	0.0000	153.00	No Ice 1/2" Ice 1" Ice	0.46 0.62 0.78	3.55 4.93 5.89	150.00 175.00 200.00

RV90-17-DP	A	From Leg	2.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	4.36 4.70 5.06	1.97 2.31 2.66	18.00 40.42 67.36
RV90-17-DP	B	From Leg	2.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	4.36 4.70 5.06	1.97 2.31 2.66	18.00 40.42 67.36
RV90-17-DP	C	From Leg	2.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	4.36 4.70 5.06	1.97 2.31 2.66	18.00 40.42 67.36
LNx-6515DS-VTM	A	From Leg	2.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	11.45 12.06 12.69	7.70 8.29 8.89	63.00 128.87 202.41
LNx-6515DS-VTM	B	From Leg	2.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	11.45 12.06 12.69	7.70 8.29 8.89	63.00 128.87 202.41
LNx-6515DS-VTM	C	From Leg	2.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	11.45 12.06 12.69	7.70 8.29 8.89	63.00 128.87 202.41
Angle Sector Frame	A	From Leg	2.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	17.90 22.20 26.50	8.95 13.00 17.05	400.00 510.00 620.00
Angle Sector Frame	B	From Leg	2.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	17.90 22.20 26.50	8.95 13.00 17.05	400.00 510.00 620.00
Angle Sector Frame	C	From Leg	2.00 0.00 0.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	17.90 22.20 26.50	8.95 13.00 17.05	400.00 510.00 620.00

Angle Sector Frame (Sprint)	A	From Leg	2.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	17.90 22.20 26.50	8.95 13.00 17.05	400.00 510.00 620.00
Angle Sector Frame (Sprint)	B	From Leg	2.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	17.90 22.20 26.50	8.95 13.00 17.05	400.00 510.00 620.00
Angle Sector Frame (Sprint)	C	From Leg	2.00 0.00 0.00	0.0000	140.00	No Ice 1/2" Ice 1" Ice	17.90 22.20 26.50	8.95 13.00 17.05	400.00 510.00 620.00

7770.00	A	From Leg	2.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	5.61 5.99 6.38	4.12 4.77 5.43	53.25 99.17 151.35
7770.00	B	From Leg	2.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	5.61 5.99 6.38	4.12 4.77 5.43	53.25 99.17 151.35
7770.00	C	From Leg	2.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	5.61 5.99 6.38	4.12 4.77 5.43	53.25 99.17 151.35
(3) HPA-65R-BUU-H8	A	From Leg	2.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	9.66 10.13 10.61	6.45 6.91 7.38	51.00 113.99 183.38
(3) HPA-65R-BUU-H8	B	From Leg	2.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	9.66 10.13 10.61	6.45 6.91 7.38	51.00 113.99 183.38

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight lb
(3) HPA-65R-BUU-H8	C	From Leg	2.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	9.66 10.13 10.61	6.45 6.91 7.38	51.00 113.99 183.38
TMA	A	From Leg	2.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	0.72 0.83 0.95	0.66 0.79 0.93	20.61 29.38 40.54
TMA	B	From Leg	2.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	0.72 0.83 0.95	0.66 0.79 0.93	20.61 29.38 40.54
TMA	C	From Leg	2.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	0.72 0.83 0.95	0.66 0.79 0.93	20.61 29.38 40.54
(2) 10" x 5" x 3" Diplexer	A	From Leg	2.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	0.42 0.50 0.60	0.26 0.33 0.41	50.00 53.69 58.75
(2) 10" x 5" x 3" Diplexer	B	From Leg	2.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	0.42 0.50 0.60	0.26 0.33 0.41	50.00 53.69 58.75
(2) 10" x 5" x 3" Diplexer	C	From Leg	2.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	0.42 0.50 0.60	0.26 0.33 0.41	50.00 53.69 58.75
20"x18"x8" Surge Protector	A	From Leg	2.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	3.00 3.21 3.44	1.33 1.49 1.66	30.00 53.04 79.26
20"x18"x8" Surge Protector	B	From Leg	2.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	3.00 3.21 3.44	1.33 1.49 1.66	30.00 53.04 79.26
20"x18"x8" Surge Protector	C	From Leg	2.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	3.00 3.21 3.44	1.33 1.49 1.66	30.00 53.04 79.26
(2) RRUS-11	A	From Leg	2.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	3.79 4.04 4.29	1.46 1.63 1.81	55.00 80.77 109.98
(2) RRUS-11	B	From Leg	2.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	3.79 4.04 4.29	1.46 1.63 1.81	55.00 80.77 109.98
(2) RRUS-11	C	From Leg	2.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	3.79 4.04 4.29	1.46 1.63 1.81	55.00 80.77 109.98
(2) A2	A	From Leg	2.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	1.87 2.20 2.53	0.00 0.00 0.00	30.00 0.00 0.00
(2) A2	B	From Leg	2.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	1.87 2.20 2.53	0.00 0.00 0.00	30.00 0.00 0.00
(2) A2	C	From Leg	2.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	1.87 2.20 2.53	0.00 0.00 0.00	30.00 0.00 0.00
(2) RRUS-12	A	From Leg	2.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	3.15 3.36 3.59	1.29 1.44 1.60	50.00 73.22 99.64
(2) RRUS-12	B	From Leg	2.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	3.15 3.36 3.59	1.29 1.44 1.60	50.00 73.22 99.64
(2) RRUS-12	C	From Leg	2.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	3.15 3.36 3.59	1.29 1.44 1.60	50.00 73.22 99.64

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight lb
RRUS- E2	A	From Leg	2.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	3.40 3.63 3.86	1.82 2.09 2.38	76.98 108.45 144.12
RRUS- E2	B	From Leg	2.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	3.40 3.63 3.86	1.82 2.09 2.38	76.98 108.45 144.12
RRUS- E2	C	From Leg	2.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	3.40 3.63 3.86	1.82 2.09 2.38	76.98 108.45 144.12
RRUS- 32	A	From Leg	2.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	2.69 2.91 3.14	1.92 2.23 2.56	67.30 93.17 123.05
RRUS- 32	B	From Leg	2.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	2.69 2.91 3.14	1.92 2.23 2.56	67.30 93.17 123.05
RRUS- 32	C	From Leg	2.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	2.69 2.91 3.14	1.92 2.23 2.56	67.30 93.17 123.05
Angle Low Profile Platform	A	From Leg	2.00 0.00 0.00	0.0000	130.00	No Ice 1/2" Ice 1" Ice	26.10 31.60 37.10	26.10 31.60 37.10	1500.00 1700.00 1900.00

4' Omni	B	From Leg	2.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice	1.00 1.25 1.50	1.00 1.25 1.50	15.00 23.96 35.82
4' Omni	C	From Leg	2.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice	1.00 1.25 1.50	1.00 1.25 1.50	15.00 23.96 35.82
Pipe Side Arm	B	From Leg	2.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice	0.46 0.62 0.78	3.55 4.93 5.89	150.00 175.00 200.00
Pipe Side Arm	C	From Leg	2.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice	0.46 0.62 0.78	3.55 4.93 5.89	150.00 175.00 200.00
Angle Side Arm	A	From Leg	2.00 0.00 0.00	0.0000	119.00	No Ice 1/2" Ice 1" Ice	0.82 1.10 1.40	6.23 8.47 10.20	150.00 230.00 310.00

(4) 73"x12"x7" Panel	A	From Leg	2.00 0.00 0.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	8.13 8.59 9.05	4.70 5.15 5.60	45.00 92.28 145.59
(4) 73"x12"x7" Panel	A	From Leg	2.00 0.00 0.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	8.13 8.59 9.05	4.70 5.15 5.60	45.00 92.28 145.59
(4) 73"x12"x7" Panel	A	From Leg	2.00 0.00 0.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	8.13 8.59 9.05	4.70 5.15 5.60	45.00 92.28 145.59
(2) RRUS-11	A	From Leg	2.00 0.00 0.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	3.79 4.04 4.29	1.46 1.63 1.81	55.00 80.77 109.98
(2) RRUS-11	B	From Leg	2.00 0.00 0.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	3.79 4.04 4.29	1.46 1.63 1.81	55.00 80.77 109.98
(2) RRUS-11	C	From Leg	2.00 0.00 0.00	0.0000	106.00	No Ice 1/2" Ice 1" Ice	3.79 4.04 4.29	1.46 1.63 1.81	55.00 80.77 109.98
Angle Low Profile Platform	A	From Leg	2.00	0.0000	106.00	No Ice	26.10	26.10	1500.00

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C _A A _A Front ft ²	C _A A _A Side ft ²	Weight lb
			0.00			1/2" Ice	31.60	31.60	1700.00
			0.00			1" Ice	37.10	37.10	1900.00

DB980H90E-M (Sprint)	A	From Leg	2.00	0.0000	140.00	No Ice	3.80	2.19	8.50
			0.00			1/2" Ice	4.18	2.56	28.62
			0.00			1" Ice	4.56	2.92	53.41
DB980H90E-M (Sprint)	B	From Leg	2.00	0.0000	140.00	No Ice	3.80	2.19	8.50
			0.00			1/2" Ice	4.18	2.56	28.62
			0.00			1" Ice	4.56	2.92	53.41
DB980H90E-M (Sprint)	C	From Leg	2.00	0.0000	140.00	No Ice	3.80	2.19	8.50
			0.00			1/2" Ice	4.18	2.56	28.62
			0.00			1" Ice	4.56	2.92	53.41
ETCR-654L12H6	A	From Leg	2.00	0.0000	140.00	No Ice	15.71	6.00	84.90
			0.00			1/2" Ice	16.28	6.52	167.97
			0.00			1" Ice	16.86	7.05	258.50
ETCR-654L12H6	B	From Leg	2.00	0.0000	140.00	No Ice	15.71	6.00	84.90
			0.00			1/2" Ice	16.28	6.52	167.97
			0.00			1" Ice	16.86	7.05	258.50
ETCR-654L12H6	C	From Leg	2.00	0.0000	140.00	No Ice	15.71	6.00	84.90
			0.00			1/2" Ice	16.28	6.52	167.97
			0.00			1" Ice	16.86	7.05	258.50
TD-RRH8X20	A	From Leg	2.00	0.0000	140.00	No Ice	3.70	1.29	66.14
			0.00			1/2" Ice	3.95	1.46	90.08
			0.00			1" Ice	4.20	1.64	117.36
TD-RRH8X20	B	From Leg	2.00	0.0000	140.00	No Ice	3.70	1.29	66.14
			0.00			1/2" Ice	3.95	1.46	90.08
			0.00			1" Ice	4.20	1.64	117.36
TD-RRH8X20	C	From Leg	2.00	0.0000	140.00	No Ice	3.70	1.29	66.14
			0.00			1/2" Ice	3.95	1.46	90.08
			0.00			1" Ice	4.20	1.64	117.36
1900MHz RRH w/ Solar Shield	A	From Leg	2.00	0.0000	140.00	No Ice	2.58	2.54	60.00
			0.00			1/2" Ice	2.79	2.75	86.47
			0.00			1" Ice	3.01	2.97	116.36
1900MHz RRH w/ Solar Shield	B	From Leg	2.00	0.0000	140.00	No Ice	2.58	2.54	60.00
			0.00			1/2" Ice	2.79	2.75	86.47
			0.00			1" Ice	3.01	2.97	116.36
1900MHz RRH w/ Solar Shield	C	From Leg	2.00	0.0000	140.00	No Ice	2.58	2.54	60.00
			0.00			1/2" Ice	2.79	2.75	86.47
			0.00			1" Ice	3.01	2.97	116.36
(2) 800 MHz 2x50W RRH	A	From Leg	2.00	0.0000	140.00	No Ice	2.06	1.93	64.00
			0.00			1/2" Ice	2.24	2.11	86.12
			0.00			1" Ice	2.43	2.29	111.30
(2) 800 MHz 2x50W RRH	B	From Leg	2.00	0.0000	140.00	No Ice	2.06	1.93	64.00
			0.00			1/2" Ice	2.24	2.11	86.12
			0.00			1" Ice	2.43	2.29	111.30
(2) 800 MHz 2x50W RRH	C	From Leg	2.00	0.0000	140.00	No Ice	2.06	1.93	64.00
			0.00			1/2" Ice	2.24	2.11	86.12
			0.00			1" Ice	2.43	2.29	111.30

Tower Pressures - No Ice

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$$G_H = 1.100$$

Section Elevation	z	K _Z	q _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
ft	ft		psf	ft ²		ft ²	ft ²	ft ²			
L1 150.00-130.00	139.65	1.087	27	53.597	A	0.000	53.597	53.597	100.00	0.000	0.000
					B	0.000	53.597		100.00	0.000	0.000
					C	0.000	53.597		100.00	0.000	0.000
L2 130.00-115.00	122.33	1.047	26	46.911	A	0.000	46.911	46.911	100.00	0.000	0.000
					B	0.000	46.911		100.00	0.000	0.000
					C	0.000	46.911		100.00	0.000	0.000
L3 115.00-95.00	104.74	1.001	25	72.361	A	0.000	72.361	72.361	100.00	0.000	0.000
					B	0.000	72.361		100.00	0.000	0.000
					C	0.000	72.361		100.00	0.000	0.000
L4 95.00-91.00	92.99	0.968	24	15.589	A	0.000	15.589	15.589	100.00	0.000	0.000
					B	0.000	15.589		100.00	0.000	0.000
					C	0.000	15.589		100.00	0.000	0.000
L5 91.00-51.00	70.57	0.895	22	180.634	A	0.000	180.634	180.634	100.00	0.000	0.000
					B	0.000	180.634		100.00	0.000	0.000
					C	0.000	180.634		100.00	0.000	0.000
L6 51.00-40.00	45.45	0.789	20	56.845	A	0.000	56.845	56.845	100.00	0.000	0.000
					B	0.000	56.845		100.00	0.000	0.000
					C	0.000	56.845		100.00	0.000	0.000
L7 40.00-19.00	29.32	0.7	17	117.933	A	0.000	117.933	117.933	100.00	0.000	0.000
					B	0.000	117.933		100.00	0.000	0.000
					C	0.000	117.933		100.00	0.000	0.000
L8 19.00-0.00	9.36	0.7	17	115.928	A	0.000	115.928	115.928	100.00	0.000	0.000
					B	0.000	115.928		100.00	0.000	0.000
					C	0.000	115.928		100.00	0.000	0.000

Tower Pressure - With Ice

$$G_H = 1.100$$

Section Elevation	z	K _Z	q _z	t _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
ft	ft		psf	in	ft ²		ft ²	ft ²	ft ²			
L1 150.00-130.00	139.65	1.087	7	1.7328	59.373	A	0.000	59.373	59.373	100.00	0.000	0.000
						B	0.000	59.373		100.00	0.000	0.000
						C	0.000	59.373		100.00	0.000	0.000
L2 130.00-115.00	122.33	1.047	6	1.7100	51.243	A	0.000	51.243	51.243	100.00	0.000	0.000
						B	0.000	51.243		100.00	0.000	0.000
						C	0.000	51.243		100.00	0.000	0.000
L3 115.00-95.00	104.74	1.001	6	1.6837	77.974	A	0.000	77.974	77.974	100.00	0.000	0.000
						B	0.000	77.974		100.00	0.000	0.000
						C	0.000	77.974		100.00	0.000	0.000
L4 95.00-91.00	92.99	0.968	6	1.6637	16.711	A	0.000	16.711	16.711	100.00	0.000	0.000
						B	0.000	16.711		100.00	0.000	0.000
						C	0.000	16.711		100.00	0.000	0.000
L5 91.00-51.00	70.57	0.895	5	1.6185	191.424	A	0.000	191.424	191.424	100.00	0.000	0.000
						B	0.000	191.424		100.00	0.000	0.000
						C	0.000	191.424		100.00	0.000	0.000
L6 51.00-40.00	45.45	0.789	5	1.5488	59.812	A	0.000	59.812	59.812	100.00	0.000	0.000
						B	0.000	59.812		100.00	0.000	0.000
						C	0.000	59.812		100.00	0.000	0.000
L7 40.00-19.00	29.32	0.7	4	1.4824	123.121	A	0.000	123.121	123.121	100.00	0.000	0.000
						B	0.000	123.121		100.00	0.000	0.000
						C	0.000	123.121		100.00	0.000	0.000

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Section Elevation	z	K _z	q _z	t _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
ft	ft		psf	in	ft ²		ft ²	ft ²	ft ²			
L8 19.00-0.00	9.36	0.7	4	1.3224	120.622	A	0.000	120.622	120.622	100.00	0.000	0.000
						B	0.000	120.622		100.00	0.000	0.000
						C	0.000	120.622		100.00	0.000	0.000

Tower Pressure - Service

$$G_H = 1.100$$

Section Elevation	z	K _z	q _z	A _G	F a c e	A _F	A _R	A _{leg}	Leg %	C _A A _A In Face ft ²	C _A A _A Out Face ft ²
ft	ft		psf	ft ²		ft ²	ft ²	ft ²			
L1 150.00-130.00	139.65	1.087	9	53.597	A	0.000	53.597	53.597	100.00	0.000	0.000
					B	0.000	53.597		100.00	0.000	0.000
					C	0.000	53.597		100.00	0.000	0.000
L2 130.00-115.00	122.33	1.047	8	46.911	A	0.000	46.911	46.911	100.00	0.000	0.000
					B	0.000	46.911		100.00	0.000	0.000
					C	0.000	46.911		100.00	0.000	0.000
L3 115.00-95.00	104.74	1.001	8	72.361	A	0.000	72.361	72.361	100.00	0.000	0.000
					B	0.000	72.361		100.00	0.000	0.000
					C	0.000	72.361		100.00	0.000	0.000
L4 95.00-91.00	92.99	0.968	8	15.589	A	0.000	15.589	15.589	100.00	0.000	0.000
					B	0.000	15.589		100.00	0.000	0.000
					C	0.000	15.589		100.00	0.000	0.000
L5 91.00-51.00	70.57	0.895	7	180.634	A	0.000	180.634	180.634	100.00	0.000	0.000
					B	0.000	180.634		100.00	0.000	0.000
					C	0.000	180.634		100.00	0.000	0.000
L6 51.00-40.00	45.45	0.789	6	56.845	A	0.000	56.845	56.845	100.00	0.000	0.000
					B	0.000	56.845		100.00	0.000	0.000
					C	0.000	56.845		100.00	0.000	0.000
L7 40.00-19.00	29.32	0.7	5	117.933	A	0.000	117.933	117.933	100.00	0.000	0.000
					B	0.000	117.933		100.00	0.000	0.000
					C	0.000	117.933		100.00	0.000	0.000
L8 19.00-0.00	9.36	0.7	5	115.928	A	0.000	115.928	115.928	100.00	0.000	0.000
					B	0.000	115.928		100.00	0.000	0.000
					C	0.000	115.928		100.00	0.000	0.000

Tower Forces - No Ice - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb				psf			ft ²	lb	plf	
L1 150.00-130.00	343.12	1688.06	A	1	1	27	1	1	53.597	1590.16	79.51	C
			B	1	1		1	1	53.597			
			C	1	1		1	1	53.597			
L2 130.00-115.00	542.30	1927.74	A	1	1	26	1	1	46.911	1340.12	89.34	C
			B	1	1		1	1	46.911			
			C	1	1		1	1	46.911			
L3 115.00-95.00	867.68	2850.52	A	1	1	25	1	1	72.361	1977.49	98.87	C
			B	1	1		1	1	72.361			
			C	1	1		1	1	72.361			

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Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
L4 95.00-91.00	196.00	1503.16	A	1	1	24	1	1	15.589	411.76	102.94	C
			B	1	1		1	1	15.589			
			C	1	1		1	1	15.589			
L5 91.00-51.00	1960.00	8541.29	A	1	1	22	1	1	180.634	4393.44	109.84	C
			B	1	1		1	1	180.634			
			C	1	1		1	1	180.634			
L6 51.00-40.00	539.00	4545.53	A	1	1	20	1	1	56.845	1223.75	111.25	C
			B	1	1		1	1	56.845			
			C	1	1		1	1	56.845			
L7 40.00-19.00	1029.00	6508.75	A	1	1	17	1	1	117.933	2252.84	107.28	C
			B	1	1		1	1	117.933			
			C	1	1		1	1	117.933			
L8 19.00-0.00	603.40	9237.39	A	1	1	17	1	1	115.928	2214.54	116.55	C
			B	1	1		1	1	115.928			
			C	1	1		1	1	115.928			
Sum Weight:	6080.50	36802.43						OTM	1083870.1 3 lb-ft	15404.09		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
L1 150.00-130.00	343.12	1688.06	A	1	1	27	1	1	53.597	1590.16	79.51	C
			B	1	1		1	1	53.597			
			C	1	1		1	1	53.597			
L2 130.00-115.00	542.30	1927.74	A	1	1	26	1	1	46.911	1340.12	89.34	C
			B	1	1		1	1	46.911			
			C	1	1		1	1	46.911			
L3 115.00-95.00	867.68	2850.52	A	1	1	25	1	1	72.361	1977.49	98.87	C
			B	1	1		1	1	72.361			
			C	1	1		1	1	72.361			
L4 95.00-91.00	196.00	1503.16	A	1	1	24	1	1	15.589	411.76	102.94	C
			B	1	1		1	1	15.589			
			C	1	1		1	1	15.589			
L5 91.00-51.00	1960.00	8541.29	A	1	1	22	1	1	180.634	4393.44	109.84	C
			B	1	1		1	1	180.634			
			C	1	1		1	1	180.634			
L6 51.00-40.00	539.00	4545.53	A	1	1	20	1	1	56.845	1223.75	111.25	C
			B	1	1		1	1	56.845			
			C	1	1		1	1	56.845			
L7 40.00-19.00	1029.00	6508.75	A	1	1	17	1	1	117.933	2252.84	107.28	C
			B	1	1		1	1	117.933			
			C	1	1		1	1	117.933			
L8 19.00-0.00	603.40	9237.39	A	1	1	17	1	1	115.928	2214.54	116.55	C
			B	1	1		1	1	115.928			
			C	1	1		1	1	115.928			
Sum Weight:	6080.50	36802.43						OTM	1083870.1 3 lb-ft	15404.09		

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Tower Forces - No Ice - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
L1 150.00-130.00	343.12	1688.06	A	1	1	27	1	1	53.597	1590.16	79.51	C
			B	1	1		1	1	53.597			
			C	1	1		1	1	53.597			
L2 130.00-115.00	542.30	1927.74	A	1	1	26	1	1	46.911	1340.12	89.34	C
			B	1	1		1	1	46.911			
			C	1	1		1	1	46.911			
L3 115.00-95.00	867.68	2850.52	A	1	1	25	1	1	72.361	1977.49	98.87	C
			B	1	1		1	1	72.361			
			C	1	1		1	1	72.361			
L4 95.00-91.00	196.00	1503.16	A	1	1	24	1	1	15.589	411.76	102.94	C
			B	1	1		1	1	15.589			
			C	1	1		1	1	15.589			
L5 91.00-51.00	1960.00	8541.29	A	1	1	22	1	1	180.634	4393.44	109.84	C
			B	1	1		1	1	180.634			
			C	1	1		1	1	180.634			
L6 51.00-40.00	539.00	4545.53	A	1	1	20	1	1	56.845	1223.75	111.25	C
			B	1	1		1	1	56.845			
			C	1	1		1	1	56.845			
L7 40.00-19.00	1029.00	6508.75	A	1	1	17	1	1	117.933	2252.84	107.28	C
			B	1	1		1	1	117.933			
			C	1	1		1	1	117.933			
L8 19.00-0.00	603.40	9237.39	A	1	1	17	1	1	115.928	2214.54	116.55	C
			B	1	1		1	1	115.928			
			C	1	1		1	1	115.928			
Sum Weight:	6080.50	36802.43						OTM	1083870.1 3 lb-ft	15404.09		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
L1 150.00-130.00	343.12	3111.26	A	1	1.2	7	1	1	59.373	518.04	25.90	C
			B	1	1.2		1	1	59.373			
			C	1	1.2		1	1	59.373			
L2 130.00-115.00	542.30	3146.99	A	1	1.2	6	1	1	51.243	430.51	28.70	C
			B	1	1.2		1	1	51.243			
			C	1	1.2		1	1	51.243			
L3 115.00-95.00	867.68	4689.85	A	1	1.2	6	1	1	77.974	626.66	31.33	C
			B	1	1.2		1	1	77.974			
			C	1	1.2		1	1	77.974			
L4 95.00-91.00	196.00	1893.46	A	1	1.2	6	1	1	16.711	129.81	32.45	C
			B	1	1.2		1	1	16.711			
			C	1	1.2		1	1	16.711			
L5 91.00-51.00	1960.00	12915.85	A	1	1.2	5	1	1	191.424	1369.24	34.23	C
			B	1	1.2		1	1	191.424			
			C	1	1.2		1	1	191.424			
L6 51.00-40.00	539.00	5856.45	A	1	1.2	5	1	1	59.812	378.68	34.43	C
			B	1	1.2		1	1	59.812			

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Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
L1 150.00-130.00	343.12	3111.26	A	1	1.2	7	1	1	59.373	518.04	25.90	C
			B	1	1.2		1	1	59.373			
			C	1	1.2		1	1	59.373			
L2 130.00-115.00	542.30	3146.99	A	1	1.2	6	1	1	51.243	430.51	28.70	C
			B	1	1.2		1	1	51.243			
			C	1	1.2		1	1	51.243			
L3 115.00-95.00	867.68	4689.85	A	1	1.2	6	1	1	77.974	626.66	31.33	C
			B	1	1.2		1	1	77.974			
			C	1	1.2		1	1	77.974			
L4 95.00-91.00	196.00	1893.46	A	1	1.2	6	1	1	16.711	129.81	32.45	C
			B	1	1.2		1	1	16.711			
			C	1	1.2		1	1	16.711			
L5 91.00-51.00	1960.00	12915.85	A	1	1.2	5	1	1	191.424	1369.24	34.23	C
			B	1	1.2		1	1	191.424			
			C	1	1.2		1	1	191.424			
L6 51.00-40.00	539.00	5856.45	A	1	1.2	5	1	1	59.812	378.68	34.43	C
			B	1	1.2		1	1	59.812			
			C	1	1.2		1	1	59.812			
L7 40.00-19.00	1029.00	9103.95	A	1	1.2	4	1	1	123.121	691.68	32.94	C
			B	1	1.2		1	1	123.121			
			C	1	1.2		1	1	123.121			
L8 19.00-0.00	603.40	11504.20	A	1	1.2	4	1	1	120.622	677.64	35.67	C
			B	1	1.2		1	1	120.622			
			C	1	1.2		1	1	120.622			
Sum Weight:	6080.50	52222.01						OTM	343181.03 lb-ft	4822.27		

Tower Forces - Service - Wind Normal To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
L1 150.00-130.00	343.12	1688.06	A	1	1	9	1	1	53.597	502.11	25.11	C
			B	1	1		1	1	53.597			
			C	1	1		1	1	53.597			
L2 130.00-115.00	542.30	1927.74	A	1	1	8	1	1	46.911	423.15	28.21	C
			B	1	1		1	1	46.911			
			C	1	1		1	1	46.911			
L3 115.00-95.00	867.68	2850.52	A	1	1	8	1	1	72.361	624.41	31.22	C
			B	1	1		1	1	72.361			
			C	1	1		1	1	72.361			
L4 95.00-91.00	196.00	1503.16	A	1	1	8	1	1	15.589	130.02	32.50	C
			B	1	1		1	1	15.589			
			C	1	1		1	1	15.589			
L5 91.00-51.00	1960.00	8541.29	A	1	1	7	1	1	180.634	1387.26	34.68	C
			B	1	1		1	1	180.634			
			C	1	1		1	1	180.634			
L6 51.00-40.00	539.00	4545.53	A	1	1	6	1	1	56.845	386.41	35.13	C
			B	1	1		1	1	56.845			
			C	1	1		1	1	56.845			
L7 40.00-19.00	1029.00	6508.75	A	1	1	5	1	1	117.933	711.35	33.87	C
			B	1	1		1	1	117.933			
			C	1	1		1	1	117.933			

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Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
L8 19.00-0.00	603.40	9237.39	A	1	1	5	1	1	115.928	699.26	36.80	C
			B	1	1		1	1	115.928			
			C	1	1		1	1	115.928			
Sum Weight:	6080.50	36802.43						OTM	342241.23 lb-ft	4863.97		

Tower Forces - Service - Wind 60 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
L1 150.00-130.00	343.12	1688.06	A	1	1	9	1	1	53.597	502.11	25.11	C
			B	1	1		1	1	53.597			
			C	1	1		1	1	53.597			
L2 130.00-115.00	542.30	1927.74	A	1	1	8	1	1	46.911	423.15	28.21	C
			B	1	1		1	1	46.911			
			C	1	1		1	1	46.911			
L3 115.00-95.00	867.68	2850.52	A	1	1	8	1	1	72.361	624.41	31.22	C
			B	1	1		1	1	72.361			
			C	1	1		1	1	72.361			
L4 95.00-91.00	196.00	1503.16	A	1	1	8	1	1	15.589	130.02	32.50	C
			B	1	1		1	1	15.589			
			C	1	1		1	1	15.589			
L5 91.00-51.00	1960.00	8541.29	A	1	1	7	1	1	180.634	1387.26	34.68	C
			B	1	1		1	1	180.634			
			C	1	1		1	1	180.634			
L6 51.00-40.00	539.00	4545.53	A	1	1	6	1	1	56.845	386.41	35.13	C
			B	1	1		1	1	56.845			
			C	1	1		1	1	56.845			
L7 40.00-19.00	1029.00	6508.75	A	1	1	5	1	1	117.933	711.35	33.87	C
			B	1	1		1	1	117.933			
			C	1	1		1	1	117.933			
L8 19.00-0.00	603.40	9237.39	A	1	1	5	1	1	115.928	699.26	36.80	C
			B	1	1		1	1	115.928			
			C	1	1		1	1	115.928			
Sum Weight:	6080.50	36802.43						OTM	342241.23 lb-ft	4863.97		

Tower Forces - Service - Wind 90 To Face

Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E	F	w	Ctrl. Face
ft	lb	lb							ft ²	lb	plf	
L1 150.00-130.00	343.12	1688.06	A	1	1	9	1	1	53.597	502.11	25.11	C
			B	1	1		1	1	53.597			
			C	1	1		1	1	53.597			
L2	542.30	1927.74	A	1	1	8	1	1	46.911	423.15	28.21	C

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Section Elevation	Add Weight	Self Weight	F a c e	e	C _F	q _z psf	D _F	D _R	A _E ft ²	F lb	w plf	Ctrl. Face
130.00-115.00			B	1	1		1	1	46.911			
L3	867.68	2850.52	C	1	1		1	1	46.911			
115.00-95.00			A	1	1	8	1	1	72.361	624.41	31.22	C
			B	1	1		1	1	72.361			
L4	196.00	1503.16	C	1	1		1	1	72.361			
95.00-91.00			A	1	1	8	1	1	15.589	130.02	32.50	C
			B	1	1		1	1	15.589			
			C	1	1		1	1	15.589			
L5	1960.00	8541.29	A	1	1	7	1	1	180.634	1387.26	34.68	C
91.00-51.00			B	1	1		1	1	180.634			
			C	1	1		1	1	180.634			
L6	539.00	4545.53	A	1	1	6	1	1	56.845	386.41	35.13	C
51.00-40.00			B	1	1		1	1	56.845			
			C	1	1		1	1	56.845			
L7	1029.00	6508.75	A	1	1	5	1	1	117.933	711.35	33.87	C
40.00-19.00			B	1	1		1	1	117.933			
			C	1	1		1	1	117.933			
L8 19.00-0.00	603.40	9237.39	A	1	1	5	1	1	115.928	699.26	36.80	C
			B	1	1		1	1	115.928			
			C	1	1		1	1	115.928			
Sum Weight:	6080.50	36802.43						OTM	342241.23 lb-ft	4863.97		

Force Totals

Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Overturning Moments, M _x lb-ft	Sum of Overturning Moments, M _z lb-ft	Sum of Torques lb-ft
Leg Weight	36802.43					
Bracing Weight	0.00					
Total Member Self-Weight	36802.43			-12187.02	0.00	
Total Weight	53561.97			-12187.02	0.00	
Wind 0 deg - No Ice		0.00	-27621.42	-2672226.41	0.00	0.00
Wind 30 deg - No Ice		13344.64	-23920.86	-2315848.71	-1278831.87	-4812.86
Wind 60 deg - No Ice		23113.59	-13810.71	-1342206.71	-2215001.77	-8336.13
Wind 90 deg - No Ice		26689.28	0.00	-12187.02	-2557663.74	-9625.73
Wind 120 deg - No Ice		23113.59	13810.71	1317832.68	-2215001.77	-8336.13
Wind 150 deg - No Ice		13344.64	23920.86	2291474.68	-1278831.87	-4812.86
Wind 180 deg - No Ice		0.00	27621.42	2647852.38	0.00	0.00
Wind 210 deg - No Ice		-13344.64	23920.86	2291474.68	1278831.87	4812.86
Wind 240 deg - No Ice		-23113.59	13810.71	1317832.68	2215001.77	8336.13
Wind 270 deg - No Ice		-26689.28	0.00	-12187.02	2557663.74	9625.73
Wind 300 deg - No Ice		-23113.59	-13810.71	-1342206.71	2215001.77	8336.13
Wind 330 deg - No Ice		-13344.64	-23920.86	-2315848.71	1278831.87	4812.86
Member Ice	15419.58					
Total Weight Ice	85295.56			-24786.21	0.00	
Wind 0 deg - Ice		0.00	-9213.93	-940119.01	0.00	0.00
Wind 30 deg - Ice		4487.58	-7979.50	-817487.67	-444106.48	-1795.69
Wind 60 deg - Ice		7772.72	-4606.97	-482452.61	-769214.98	-3110.22
Wind 90 deg - Ice		8975.16	0.00	-24786.21	-888212.95	-3591.37
Wind 120 deg - Ice		7772.72	4606.97	432880.19	-769214.98	-3110.22
Wind 150 deg - Ice		4487.58	7979.50	767915.25	-444106.48	-1795.69
Wind 180 deg - Ice		0.00	9213.93	890546.59	0.00	0.00

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Load Case	Vertical Forces lb	Sum of Forces X lb	Sum of Forces Z lb	Sum of Overturning Moments, M_x lb-ft	Sum of Overturning Moments, M_z lb-ft	Sum of Torques lb-ft
Wind 210 deg - Ice		-4487.58	7979.50	767915.25	444106.48	1795.69
Wind 240 deg - Ice		-7772.72	4606.97	432880.19	769214.98	3110.22
Wind 270 deg - Ice		-8975.16	0.00	-24786.21	888212.95	3591.37
Wind 300 deg - Ice		-7772.72	-4606.97	-482452.61	769214.98	3110.22
Wind 330 deg - Ice		-4487.58	-7979.50	-817487.67	444106.48	1795.69
Total Weight	53561.97			-12187.02	0.00	
Wind 0 deg - Service		0.00	-8721.70	-852117.11	0.00	0.00
Wind 30 deg - Service		4213.68	-7553.21	-739587.81	-403802.05	-1519.70
Wind 60 deg - Service		7298.31	-4360.85	-432152.06	-699405.67	-2632.20
Wind 90 deg - Service		8427.37	0.00	-12187.02	-807604.11	-3039.41
Wind 120 deg - Service		7298.31	4360.85	407778.03	-699405.67	-2632.20
Wind 150 deg - Service		4213.68	7553.21	715213.78	-403802.05	-1519.70
Wind 180 deg - Service		0.00	8721.70	827743.08	0.00	0.00
Wind 210 deg - Service		-4213.68	7553.21	715213.78	403802.05	1519.70
Wind 240 deg - Service		-7298.31	4360.85	407778.03	699405.67	2632.20
Wind 270 deg - Service		-8427.37	0.00	-12187.02	807604.11	3039.41
Wind 300 deg - Service		-7298.31	-4360.85	-432152.06	699405.67	2632.20
Wind 330 deg - Service		-4213.68	-7553.21	-739587.81	403802.05	1519.70

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp

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Comb. No.	Description
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 130	8.252	39	0.4811	0.0052
L2	135 - 115	6.749	39	0.4723	0.0055
L3	115 - 95	4.857	39	0.4180	0.0047
L4	101 - 91	3.706	39	0.3647	0.0038
L5	91 - 51	2.970	39	0.3314	0.0031
L6	59 - 40	1.206	39	0.1941	0.0013
L7	40 - 19	0.544	39	0.1283	0.0007
L8	28 - 0	0.277	39	0.0842	0.0004

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
153.00	4' Omni	39	8.252	0.4811	0.0052	161578
150.00	RV90-17-DP	39	8.252	0.4811	0.0052	161578
140.00	Angle Sector Frame	39	7.247	0.4775	0.0055	80789
130.00	7770.00	39	6.257	0.4634	0.0054	30636
119.00	4' Omni	39	5.215	0.4323	0.0050	15730
106.00	(4) 73"x12"x7" Panel	39	4.100	0.3831	0.0042	16711

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 130	40.921	2	2.3746	0.0267
L2	135 - 115	33.513	2	2.3266	0.0280

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Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L3	115 - 95	24.184	2	2.0664	0.0240
L4	101 - 91	18.490	2	1.8077	0.0195
L5	91 - 51	14.839	2	1.6473	0.0159
L6	59 - 40	6.042	2	0.9712	0.0066
L7	40 - 19	2.728	2	0.6432	0.0038
L8	28 - 0	1.390	2	0.4223	0.0023

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
153.00	4' Omni	2	40.921	2.3746	0.0267	32409
150.00	RV90-17-DP	2	40.921	2.3746	0.0267	32409
140.00	Angle Sector Frame	2	35.967	2.3528	0.0279	16204
130.00	7770.00	2	31.088	2.2835	0.0276	6268
119.00	4' Omni	2	25.952	2.1351	0.0252	3259
106.00	(4) 73"x12"x7" Panel	2	20.443	1.8973	0.0212	3483

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
L1	150 - 149	TP34.3125x27.8125x0.25	20.00	150.00	180.3	22.4494	-5045.76	156022.00	0.032
	149 - 148					22.7111	-5229.50	161541.00	0.032
	148 - 147					22.9727	-5414.31	167188.00	0.032
	147 - 146					23.2343	-5600.19	172965.00	0.032
	146 - 145					23.4959	-5736.55	178874.00	0.014
	145 - 144					23.7576	-5876.76	184916.00	0.014
	144 - 143					24.0192	-5976.03	191093.00	0.014
	143 - 142					24.2808	-6076.35	197405.00	0.015
	142 - 141					24.5424	-6176.72	203855.00	0.015
	141 - 140					24.8041	-6278.15	210445.00	0.015
	140 - 139					25.0657	-6379.89	217174.00	0.026
	139 - 138					25.3273	-6480.81	224046.00	0.026
	138 - 137					25.5889	-6580.86	231061.00	0.026
	137 - 136					25.8506	-6682.06	238221.00	0.026
	136 - 135					26.1122	-6783.39	245527.00	0.025
	135 - 130					27.4203	-7444.77	284306.00	0.013
L2	135 - 130	TP38.6875x32.1875x0.25	20.00	150.00	149.8	27.0178	-3651.35	271969.00	0.013
	130 - 129					27.2794	-11843.80	279947.00	0.042
	129 - 128					27.5411	-11997.00	288079.00	0.042
	128 - 127					27.8027	-12151.50	296367.00	0.041
	127 - 126					28.0643	-12307.40	304812.00	0.040
	126 - 125					28.3259	-12464.50	313417.00	0.040
	125 - 124					28.5876	-12623.00	322181.00	0.039
	124 - 123					28.8492	-12782.90	331108.00	0.039

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Section No.	Elevation	Size	L	L _u	Kl/r	A	P _u	φP _u	Ratio
	ft		ft	ft		in ²	lb	lb	$\frac{P_u}{\phi P_u}$
L3	123 - 122	TP45.1875x38.6875x0.3125	20.00	150.00	129.9	29.1108	-12944.00	340198.00	0.038
	122 - 121					29.3724	-13106.40	349453.00	0.038
	121 - 120					29.6341	-13270.10	358875.00	0.037
	120 - 119					29.8957	-13435.10	368464.00	0.036
	119 - 118					30.1573	-14162.90	378222.00	0.037
	118 - 117					30.4189	-14330.60	388151.00	0.037
	117 - 116					30.6806	-14499.70	398253.00	0.036
	116 - 115					30.9422	-14670.00	408528.00	0.036
	115 - 114					38.9419	-14881.20	521194.00	0.029
	114 - 113					39.2689	-15093.30	534436.00	0.028
	113 - 112					39.5959	-15306.90	547900.00	0.028
	112 - 111					39.9230	-15522.00	561588.00	0.028
	111 - 110					40.2500	-15738.60	575502.00	0.027
	110 - 109					40.5770	-15956.60	589644.00	0.027
	109 - 108					40.9041	-16176.20	604016.00	0.027
	108 - 107					41.2311	-16397.20	618620.00	0.027
	107 - 106					41.5581	-16619.70	633457.00	0.026
	106 - 105					41.8852	-19516.60	648529.00	0.030
	105 - 104					42.2122	-19744.00	663839.00	0.030
	104 - 103					42.5392	-19973.00	679388.00	0.029
	103 - 102					42.8662	-20203.50	695177.00	0.029
L4	102 - 101	TP45.8125x42.6125x0.3125	10.00	150.00	113.7	43.1933	-20435.60	711210.00	0.029
	101 - 95					45.1555	-11595.90	811272.00	0.014
	101 - 95					44.4964	-11288.50	777540.00	0.015
	95 - 94					44.8184	-23143.00	794370.00	0.029
	94 - 93					45.1404	-23392.00	810516.00	0.029
L5	93 - 92	TP58.875x45.8125x0.375	40.00	150.00	109.3	45.4624	-23642.60	826632.00	0.029
	92 - 91					45.7844	-23894.60	842714.00	0.028
	91 - 89.3158					55.5299	-24379.60	1049300.00	0.023
	89.3158 - 87.6316					56.1940	-24872.20	1084920.00	0.023
	87.6316 - 85.9474					56.8582	-25369.70	1120490.00	0.023
	85.9474 - 84.2632					57.5223	-25872.30	1155990.00	0.022
	84.2632 - 82.5789					58.1864	-26379.90	1191390.00	0.022
	82.5789 - 80.8947					58.8505	-26892.50	1226670.00	0.022
	80.8947 - 79.2105					59.5147	-27410.10	1261800.00	0.022
	79.2105 - 77.5263					60.1788	-27932.60	1296760.00	0.022
	77.5263 - 75.8421					60.8429	-28460.10	1331530.00	0.021
	75.8421 - 74.1579					61.5070	-28992.60	1366100.00	0.021
	74.1579 - 72.4737					62.1712	-29530.00	1400440.00	0.021
	72.4737 - 70.7895					62.8353	-30072.40	1434540.00	0.021
	70.7895 - 69.1053					63.4994	-30619.70	1468370.00	0.021
	69.1053 - 67.4211					64.1635	-31171.90	1501940.00	0.021
	67.4211 - 65.7368					64.8277	-31729.10	1535210.00	0.021
	65.7368 - 64.0526					65.4918	-32291.20	1568190.00	0.021
	64.0526 -					66.1559	-32858.20	1600840.00	0.021

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Pole Bending Design Data

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			lb-ft	lb-ft	$\frac{M_{ix}}{\phi M_{ix}}$	lb-ft	lb-ft	$\frac{M_{iy}}{\phi M_{iy}}$
L1	150 - 149	TP34.3125x27.8125x0.25	2673.75	633313.33	0.004	0.00	633313.33	0.000
	149 - 148		3623.99	645657.50	0.006	0.00	645657.50	0.000
	148 - 147		4599.53	658055.83	0.007	0.00	658055.83	0.000
	147 - 146		5600.63	670506.67	0.008	0.00	670506.67	0.000
	146 - 145		20216.08	683006.67	0.030	0.00	683006.67	0.000
	145 - 144		24282.75	695555.00	0.035	0.00	695555.00	0.000
	144 - 143		28475.75	708148.33	0.040	0.00	708148.33	0.000
	143 - 142		32796.50	720785.83	0.046	0.00	720785.83	0.000
	142 - 141		37246.17	733465.00	0.051	0.00	733465.00	0.000
	141 - 140		41826.17	746183.33	0.056	0.00	746183.33	0.000
	140 - 139		50689.00	758939.17	0.067	0.00	758939.17	0.000
	139 - 138		59684.42	771730.83	0.077	0.00	771730.83	0.000
	138 - 137		68814.00	784555.83	0.088	0.00	784555.83	0.000
	137 - 136		78078.83	797411.67	0.098	0.00	797411.67	0.000
	136 - 135		87480.83	810296.67	0.108	0.00	810296.67	0.000
	135 - 130		70012.17	875091.67	0.080	0.00	875091.67	0.000
L2	135 - 130	TP38.6875x32.1875x0.25	66630.17	855100.00	0.078	0.00	855100.00	0.000
	130 - 129		158776.67	868083.33	0.183	0.00	868083.33	0.000
	129 - 128		176054.17	881091.67	0.200	0.00	881091.67	0.000
	128 - 127		193470.83	894116.67	0.216	0.00	894116.67	0.000
	127 - 126		211028.33	907158.33	0.233	0.00	907158.33	0.000
	126 - 125		228726.67	920208.33	0.249	0.00	920208.33	0.000
	125 - 124		246568.33	933266.67	0.264	0.00	933266.67	0.000
	124 - 123		264553.33	946333.33	0.280	0.00	946333.33	0.000
	123 - 122		282683.33	959408.33	0.295	0.00	959408.33	0.000
	122 - 121		300959.17	972483.33	0.309	0.00	972483.33	0.000
	121 - 120		319381.67	985558.33	0.324	0.00	985558.33	0.000
	120 - 119		337952.50	998641.67	0.338	0.00	998641.67	0.000
	119 - 118		357010.00	1011708.33	0.353	0.00	1011708.33	0.000
	118 - 117		376280.83	1024783.33	0.367	0.00	1024783.33	0.000
	117 - 116		395702.50	1037841.67	0.381	0.00	1037841.67	0.000
	116 - 115		415277.50	1050900.00	0.395	0.00	1050900.00	0.000
L3	115 - 114	TP45.1875x38.6875x0.3125	435002.50	1468691.67	0.296	0.00	1468691.67	0.000
	114 - 113		454878.33	1488641.67	0.306	0.00	1488641.67	0.000
	113 - 112		474905.83	1508633.33	0.315	0.00	1508633.33	0.000
	112 - 111		495085.00	1528666.67	0.324	0.00	1528666.67	0.000
	111 - 110		515418.33	1548750.00	0.333	0.00	1548750.00	0.000
	110 - 109		535905.00	1568858.33	0.342	0.00	1568858.33	0.000
	109 - 108		556548.33	1589008.33	0.350	0.00	1589008.33	0.000
	108 - 107		577347.50	1609191.67	0.359	0.00	1609191.67	0.000
	107 - 106		598305.00	1629400.00	0.367	0.00	1629400.00	0.000
	106 - 105		633776.67	1649641.67	0.384	0.00	1649641.67	0.000
	105 - 104		660266.67	1669916.67	0.395	0.00	1669916.67	0.000
	104 - 103		686915.83	1690208.33	0.406	0.00	1690208.33	0.000
	103 - 102		713725.83	1710525.00	0.417	0.00	1710525.00	0.000
	102 - 101		740698.33	1730866.67	0.428	0.00	1730866.67	0.000
	101 - 95		463301.67	1853216.67	0.250	0.00	1853216.67	0.000
L4	101 - 95	TP45.8125x42.6125x0.3125	442850.83	1812075.00	0.244	0.00	1812075.00	0.000
	95 - 94		934341.67	1832166.67	0.510	0.00	1832166.67	0.000
	94 - 93		962683.33	1852275.00	0.520	0.00	1852275.00	0.000
	93 - 92		991191.67	1872391.67	0.529	0.00	1872391.67	0.000
L5	92 - 91	TP58.875x45.8125x0.375	1019866.67	1892508.33	0.539	0.00	1892508.33	0.000
	91 - 89.3158		1068525.00	2497991.67	0.428	0.00	2497991.67	0.000
	89.3158 - 87.6316		1117650.00	2546508.33	0.439	0.00	2546508.33	0.000
	87.6316 -		1167250.00	2595175.00	0.450	0.00	2595175.00	0.000

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	85.9474							
	85.9474 - 84.2632		1217316.67	2643983.33	0.460	0.00	2643983.33	0.000
	84.2632 - 82.5789		1267850.00	2692933.33	0.471	0.00	2692933.33	0.000
	82.5789 - 80.8947		1318866.67	2742008.33	0.481	0.00	2742008.33	0.000
	80.8947 - 79.2105		1370350.00	2791200.00	0.491	0.00	2791200.00	0.000
	79.2105 - 77.5263		1422316.67	2840491.67	0.501	0.00	2840491.67	0.000
	77.5263 - 75.8421		1474766.67	2889883.33	0.510	0.00	2889883.33	0.000
	75.8421 - 74.1579		1527691.67	2939358.33	0.520	0.00	2939358.33	0.000
	74.1579 - 72.4737		1581100.00	2988908.33	0.529	0.00	2988908.33	0.000
	72.4737 - 70.7895		1634991.67	3038525.00	0.538	0.00	3038525.00	0.000
	70.7895 - 69.1053		1689375.00	3088191.67	0.547	0.00	3088191.67	0.000
	69.1053 - 67.4211		1744241.67	3137908.33	0.556	0.00	3137908.33	0.000
	67.4211 - 65.7368		1799591.67	3187658.33	0.565	0.00	3187658.33	0.000
	65.7368 - 64.0526		1855441.67	3237433.33	0.573	0.00	3237433.33	0.000
	64.0526 - 62.3684		1911775.00	3287225.00	0.582	0.00	3287225.00	0.000
	62.3684 - 60.6842		1968608.33	3337016.67	0.590	0.00	3337016.67	0.000
	60.6842 - 59		2025941.67	3386808.33	0.598	0.00	3386808.33	0.000
L6	59 - 51	TP61.6875x55.5125x0.375	1176200.00	3622941.67	0.325	0.00	3622941.67	0.000
	59 - 51		1129233.33	3554125.00	0.318	0.00	3554125.00	0.000
	51 - 50		2341208.33	3583466.67	0.653	0.00	3583466.67	0.000
	50 - 49		2377141.67	3612791.67	0.658	0.00	3612791.67	0.000
	49 - 48		2413241.67	3642100.00	0.663	0.00	3642100.00	0.000
	48 - 47		2449508.33	3671383.33	0.667	0.00	3671383.33	0.000
	47 - 46		2485941.67	3700641.67	0.672	0.00	3700641.67	0.000
	46 - 45		2522533.33	3729875.00	0.676	0.00	3729875.00	0.000
	45 - 44		2559300.00	3759075.00	0.681	0.00	3759075.00	0.000
	44 - 43		2596233.33	3788250.00	0.685	0.00	3788250.00	0.000
	43 - 42		2633333.33	3817383.33	0.690	0.00	3817383.33	0.000
	42 - 41		2670600.00	3846483.33	0.694	0.00	3846483.33	0.000
	41 - 40		2708041.67	3875550.00	0.699	0.00	3875550.00	0.000
L7	40 - 39	TP68.5x61.6875x0.4375	2745641.67	4931275.00	0.557	0.00	4931275.00	0.000
	39 - 38		2783400.00	4971191.67	0.560	0.00	4971191.67	0.000
	38 - 37		2821308.33	5011125.00	0.563	0.00	5011125.00	0.000
	37 - 36		2859375.00	5051066.67	0.566	0.00	5051066.67	0.000
	36 - 35		2897600.00	5091025.00	0.569	0.00	5091025.00	0.000
	35 - 34		2935983.33	5130983.33	0.572	0.00	5130983.33	0.000
	34 - 33		2974516.67	5170958.33	0.575	0.00	5170958.33	0.000
	33 - 32		3013208.33	5210925.00	0.578	0.00	5210925.00	0.000
	32 - 31		3052058.33	5250908.33	0.581	0.00	5250908.33	0.000
	31 - 30		3091075.00	5290883.33	0.584	0.00	5290883.33	0.000
	30 - 29		3130241.67	5330858.33	0.587	0.00	5330858.33	0.000
	29 - 28		3169575.00	5370833.33	0.590	0.00	5370833.33	0.000
	28 - 19		1801058.33	5730074.67	0.314	0.00	5730074.67	0.000
L8	28 - 19	TP73.8125x64.7054x0.4375	1730233.33	5623491.33	0.308	0.00	5623491.33	0.000
	19 - 18		3572350.00	5663483.33	0.631	0.00	5663483.33	0.000

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	ft		lb-ft	lb-ft	$\frac{M_{ux}}{\phi M_{ux}}$	lb-ft	lb-ft	$\frac{M_{uy}}{\phi M_{uy}}$
	18 - 17		3613575.00	5703450.00	0.634	0.00	5703450.00	0.000
	17 - 16		3654958.33	5743391.33	0.636	0.00	5743391.33	0.000
	16 - 15		3696508.33	5783308.00	0.639	0.00	5783308.00	0.000
	15 - 14		3738225.00	5823200.00	0.642	0.00	5823200.00	0.000
	14 - 13		3780108.33	5863066.67	0.645	0.00	5863066.67	0.000
	13 - 12		3822158.33	5902891.33	0.648	0.00	5902891.33	0.000
	12 - 11		3864375.00	5942691.33	0.650	0.00	5942691.33	0.000
	11 - 10		3906758.33	5982458.00	0.653	0.00	5982458.00	0.000
	10 - 9		3949316.67	6022183.33	0.656	0.00	6022183.33	0.000
	9 - 8		3992033.33	6061866.67	0.659	0.00	6061866.67	0.000
	8 - 7		4034933.33	6101516.67	0.661	0.00	6101516.67	0.000
	7 - 6		4077991.67	6141116.67	0.664	0.00	6141116.67	0.000
	6 - 5		4121225.00	6180674.67	0.667	0.00	6180674.67	0.000
	5 - 4		4164633.33	6220183.33	0.670	0.00	6220183.33	0.000
	4 - 3		4208216.67	6259633.33	0.672	0.00	6259633.33	0.000
	3 - 2		4251966.67	6299041.33	0.675	0.00	6299041.33	0.000
	2 - 1		4295891.67	6338400.00	0.678	0.00	6338400.00	0.000
	1 - 0		4340000.00	6377691.33	0.680	0.00	6377691.33	0.000

Pole Shear Design Data

Section No.	Elevation	Size	Actual V_u	ϕV_n	Ratio	Actual T_u	ϕT_n	Ratio
	ft		lb	lb	$\frac{V_u}{\phi V_n}$	lb-ft	lb-ft	$\frac{T_u}{\phi T_n}$
L1	150 - 149	TP34.3125x27.8125x0.25	938.93	557930.00	0.002	0.00	1284158.33	0.000
	149 - 148		964.15	562195.00	0.002	0.00	1309191.67	0.000
	148 - 147		989.63	566409.00	0.002	0.00	1334333.33	0.000
	147 - 146		1015.38	570571.00	0.002	0.00	1359575.00	0.000
	146 - 145		4004.43	574681.00	0.007	0.00	1384925.00	0.000
	145 - 144		4130.09	578740.00	0.007	0.00	1410366.67	0.000
	144 - 143		4257.11	582748.00	0.007	0.00	1435900.00	0.000
	143 - 142		4385.47	586704.00	0.007	0.00	1461525.00	0.000
	142 - 141		4515.18	590608.00	0.008	0.00	1487241.67	0.000
	141 - 140		4646.23	594461.00	0.008	0.00	1513025.00	0.000
	140 - 139		8929.93	598262.00	0.015	0.00	1538891.67	0.000
	139 - 138		9063.45	602012.00	0.015	0.00	1564833.33	0.000
	138 - 137		9198.25	605710.00	0.015	0.00	1590833.33	0.000
	137 - 136		9334.34	609357.00	0.015	0.00	1616900.00	0.000
	136 - 135		9471.71	612952.00	0.015	0.00	1643033.33	0.000
	135 - 130		5386.53	630154.00	0.009	0.00	1774408.33	0.000
L2	135 - 130	TP38.6875x32.1875x0.25	4815.14	624998.00	0.008	0.00	1733866.67	0.000
	130 - 129		17211.40	628363.00	0.027	0.00	1760208.33	0.000
	129 - 128		17350.40	631677.00	0.027	0.00	1786583.33	0.000
	128 - 127		17490.40	634939.00	0.028	0.00	1812991.67	0.000
	127 - 126		17631.60	638150.00	0.028	0.00	1839433.33	0.000
	126 - 125		17773.80	641309.00	0.028	0.00	1865891.67	0.000
	125 - 124		17917.10	644416.00	0.028	0.00	1892375.00	0.000
	124 - 123		18061.50	647472.00	0.028	0.00	1918866.67	0.000
	123 - 122		18206.90	650476.00	0.028	0.00	1945375.00	0.000
	122 - 121		18353.50	653429.00	0.028	0.00	1971891.67	0.000
	121 - 120		18501.20	656330.00	0.028	0.00	1998408.33	0.000
	120 - 119		18649.90	659180.00	0.028	0.00	2024925.00	0.000
	119 - 118		19200.80	661978.00	0.029	0.00	2051433.33	0.000
	118 - 117		19351.60	664725.00	0.029	0.00	2077933.33	0.000
	117 - 116		19503.40	667420.00	0.029	0.00	2104425.00	0.000
	116 - 115		19656.30	670064.00	0.029	0.00	2130891.67	0.000

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L3	115 - 114	TP45.1875x38.6875x0.3125	19805.60	931551.00	0.021	0.00	2978041.67	0.000
	114 - 113		19956.50	936279.00	0.021	0.00	3018491.67	0.000
	113 - 112		20108.50	940957.00	0.021	0.00	3059041.67	0.000
	112 - 111		20261.50	945582.00	0.021	0.00	3099666.67	0.000
	111 - 110		20415.60	950156.00	0.021	0.00	3140375.00	0.000
	110 - 109		20570.80	954679.00	0.022	0.00	3181158.33	0.000
	109 - 108		20727.00	959150.00	0.022	0.00	3222008.33	0.000
	108 - 107		20884.30	963570.00	0.022	0.00	3262933.33	0.000
	107 - 106		21042.60	967938.00	0.022	0.00	3303925.00	0.000
	106 - 105		26417.60	972254.00	0.027	0.00	3344966.67	0.000
	105 - 104		26577.10	976519.00	0.027	0.00	3386066.67	0.000
	104 - 103		26737.50	980732.00	0.027	0.00	3427216.67	0.000
	103 - 102		26898.90	984894.00	0.027	0.00	3468416.67	0.000
	102 - 101		27061.40	989004.00	0.027	0.00	3509650.00	0.000
	101 - 95		14617.70	1012580.00	0.014	0.00	3757750.00	0.000
L4	101 - 95	TP45.8125x42.6125x0.3125	13500.70	1004870.00	0.013	0.00	3674316.67	0.000
	95 - 94		28275.20	1008670.00	0.028	0.00	3715066.67	0.000
	94 - 93		28437.10	1012410.00	0.028	0.00	3755833.33	0.000
	93 - 92		28599.80	1016100.00	0.028	0.00	3796616.67	0.000
	92 - 91		28763.50	1019750.00	0.028	0.00	3837408.33	0.000
L5	91 - 89.3158	TP58.875x45.8125x0.375	29039.30	1333440.00	0.022	0.00	5065150.00	0.000
	89.3158 - 87.6316		29317.50	1343140.00	0.022	0.00	5163516.67	0.000
	87.6316 - 85.9474		29596.70	1352700.00	0.022	0.00	5262200.00	0.000
	85.9474 - 84.2632		29876.90	1362110.00	0.022	0.00	5361175.00	0.000
	84.2632 - 82.5789		30158.10	1371370.00	0.022	0.00	5460433.33	0.000
	82.5789 - 80.8947		30440.40	1380480.00	0.022	0.00	5559941.67	0.000
	80.8947 - 79.2105		30723.60	1389440.00	0.022	0.00	5659674.67	0.000
	79.2105 - 77.5263		31007.80	1398260.00	0.022	0.00	5759633.33	0.000
	77.5263 - 75.8421		31293.00	1406930.00	0.022	0.00	5859774.67	0.000
	75.8421 - 74.1579		31579.30	1415450.00	0.022	0.00	5960100.00	0.000
	74.1579 - 72.4737		31866.50	1423830.00	0.022	0.00	6060566.67	0.000
	72.4737 - 70.7895		32154.70	1432050.00	0.022	0.00	6161174.67	0.000
	70.7895 - 69.1053		32443.90	1440130.00	0.023	0.00	6261883.33	0.000
	69.1053 - 67.4211		32734.10	1448060.00	0.023	0.00	6362691.33	0.000
	67.4211 - 65.7368		33025.20	1455850.00	0.023	0.00	6463574.67	0.000
	65.7368 - 64.0526		33317.40	1463490.00	0.023	0.00	6564500.00	0.000
	64.0526 - 62.3684		33610.50	1470970.00	0.023	0.00	6665458.00	0.000
	62.3684 - 60.6842		33904.70	1478320.00	0.023	0.00	6766433.33	0.000
	60.6842 - 59		34199.80	1485510.00	0.023	0.00	6867391.33	0.000
	59 - 51		18581.50	1517660.00	0.012	0.00	7346200.00	0.000
L6	59 - 51	TP61.6875x55.5125x0.375	17138.00	1508620.00	0.011	0.00	7206650.00	0.000
	51 - 50		35867.40	1512510.00	0.024	0.00	7266150.00	0.000
	50 - 49		36031.40	1516350.00	0.024	0.00	7325624.67	0.000

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L7	49 - 48	TP68.5x61.6875x0.4375	36196.20	1520130.00	0.024	0.00	7385050.00	0.000
	48 - 47		36361.70	1523870.00	0.024	0.00	7444424.67	0.000
	47 - 46		36527.90	1527550.00	0.024	0.00	7503750.00	0.000
	46 - 45		36694.90	1531180.00	0.024	0.00	7563024.67	0.000
	45 - 44		36862.60	1534760.00	0.024	0.00	7622233.33	0.000
	44 - 43		37031.10	1538290.00	0.024	0.00	7681383.33	0.000
	43 - 42		37200.30	1541760.00	0.024	0.00	7740466.67	0.000
	42 - 41		37370.20	1545190.00	0.024	0.00	7799474.67	0.000
	41 - 40		37540.90	1548560.00	0.024	0.00	7858400.00	0.000
	40 - 39		37693.30	1963940.00	0.019	0.00	9999083.33	0.000
	39 - 38		37847.50	1969390.00	0.019	0.00	10080000.00	0.000
	38 - 37		38002.30	1974790.00	0.019	0.00	10161000.00	0.000
	37 - 36		38157.80	1980130.00	0.019	0.00	10242000.00	0.000
	36 - 35		38313.90	1985430.00	0.019	0.00	10323000.00	0.000
	35 - 34		38470.60	1990670.00	0.019	0.00	10404000.00	0.000
	34 - 33		38627.90	1995860.00	0.019	0.00	10485083.33	0.000
	33 - 32		38785.90	2001000.00	0.019	0.00	10566166.67	0.000
	32 - 31		38944.50	2006090.00	0.019	0.00	10647166.67	0.000
	31 - 30		39103.70	2011130.00	0.019	0.00	10728250.00	0.000
	30 - 29		39263.60	2016110.00	0.019	0.00	10809333.33	0.000
L8	29 - 28	TP73.8125x64.7054x0.4375	39424.00	2021050.00	0.020	0.00	10890333.33	0.000
	28 - 19		21307.10	2063150.00	0.010	0.00	11618833.33	0.000
	28 - 19		19710.10	2051080.00	0.010	0.00	11402666.67	0.000
	19 - 18		41154.00	2055650.00	0.020	0.00	11483749.33	0.000
	18 - 17		41317.80	2060160.00	0.020	0.00	11564833.33	0.000
	17 - 16		41482.20	2064630.00	0.020	0.00	11645833.33	0.000
	16 - 15		41647.30	2069050.00	0.020	0.00	11726749.33	0.000
	15 - 14		41813.00	2073410.00	0.020	0.00	11807666.67	0.000
	14 - 13		41979.30	2077720.00	0.020	0.00	11888500.00	0.000
	13 - 12		42146.30	2081980.00	0.020	0.00	11969249.33	0.000
	12 - 11		42313.90	2086190.00	0.020	0.00	12049916.00	0.000
	11 - 10		42482.10	2090350.00	0.020	0.00	12130582.67	0.000
	10 - 9		42650.90	2094450.00	0.020	0.00	12211082.67	0.000
	9 - 8		42820.40	2098510.00	0.020	0.00	12291582.67	0.000
	8 - 7		42990.50	2102510.00	0.020	0.00	12372000.00	0.000
	7 - 6		43161.30	2106460.00	0.020	0.00	12452249.33	0.000
	6 - 5		43332.70	2110360.00	0.021	0.00	12532500.00	0.000
	5 - 4		43504.70	2114210.00	0.021	0.00	12612582.67	0.000
	4 - 3		43677.30	2118000.00	0.021	0.00	12692582.67	0.000
	3 - 2		43850.60	2121750.00	0.021	0.00	12772500.00	0.000
	2 - 1		44024.40	2125440.00	0.021	0.00	12852249.33	0.000
	1 - 0		44198.90	2129080.00	0.021	0.00	12932000.00	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio P_u ϕP_n	Ratio M_{ux} ϕM_{nx}	Ratio M_{uy} ϕM_{ny}	Ratio V_u ϕV_n	Ratio T_u ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	150 - 149	0.032	0.004	0.000	0.002	0.000	0.037	1.000	4.8.2 ✓
	149 - 148	0.032	0.006	0.000	0.002	0.000	0.038	1.000	4.8.2 ✓
	148 - 147	0.032	0.007	0.000	0.002	0.000	0.039	1.000	4.8.2 ✓

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	147 - 146	0.032	0.008	0.000	0.002	0.000	0.041	1.000	4.8.2 ✓
	146 - 145	0.014	0.030	0.000	0.007	0.000	0.044	1.000	4.8.2 ✓
	145 - 144	0.014	0.035	0.000	0.007	0.000	0.049	1.000	4.8.2 ✓
	144 - 143	0.014	0.040	0.000	0.007	0.000	0.055	1.000	4.8.2 ✓
	143 - 142	0.015	0.046	0.000	0.007	0.000	0.060	1.000	4.8.2 ✓
	142 - 141	0.015	0.051	0.000	0.008	0.000	0.066	1.000	4.8.2 ✓
	141 - 140	0.015	0.056	0.000	0.008	0.000	0.071	1.000	4.8.2 ✓
	140 - 139	0.026	0.067	0.000	0.015	0.000	0.093	1.000	4.8.2 ✓
	139 - 138	0.026	0.077	0.000	0.015	0.000	0.104	1.000	4.8.2 ✓
	138 - 137	0.026	0.088	0.000	0.015	0.000	0.114	1.000	4.8.2 ✓
	137 - 136	0.026	0.098	0.000	0.015	0.000	0.124	1.000	4.8.2 ✓
	136 - 135	0.025	0.108	0.000	0.015	0.000	0.134	1.000	4.8.2 ✓
	135 - 130	0.013	0.080	0.000	0.009	0.000	0.093	1.000	4.8.2 ✓
L2	135 - 130	0.013	0.078	0.000	0.008	0.000	0.091	1.000	4.8.2 ✓
	130 - 129	0.042	0.183	0.000	0.027	0.000	0.226	1.000	4.8.2 ✓
	129 - 128	0.042	0.200	0.000	0.027	0.000	0.242	1.000	4.8.2 ✓
	128 - 127	0.041	0.216	0.000	0.028	0.000	0.258	1.000	4.8.2 ✓
	127 - 126	0.040	0.233	0.000	0.028	0.000	0.274	1.000	4.8.2 ✓
	126 - 125	0.040	0.249	0.000	0.028	0.000	0.289	1.000	4.8.2 ✓
	125 - 124	0.039	0.264	0.000	0.028	0.000	0.304	1.000	4.8.2 ✓
	124 - 123	0.039	0.280	0.000	0.028	0.000	0.319	1.000	4.8.2 ✓
	123 - 122	0.038	0.295	0.000	0.028	0.000	0.333	1.000	4.8.2 ✓
	122 - 121	0.038	0.309	0.000	0.028	0.000	0.348	1.000	4.8.2 ✓
	121 - 120	0.037	0.324	0.000	0.028	0.000	0.362	1.000	4.8.2 ✓
	120 - 119	0.036	0.338	0.000	0.028	0.000	0.376	1.000	4.8.2 ✓
	119 - 118	0.037	0.353	0.000	0.029	0.000	0.391	1.000	4.8.2 ✓

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L3	118 - 117	0.037	0.367	0.000	0.029	0.000	0.405	1.000	4.8.2 ✓
	117 - 116	0.036	0.381	0.000	0.029	0.000	0.419	1.000	4.8.2 ✓
	116 - 115	0.036	0.395	0.000	0.029	0.000	0.432	1.000	4.8.2 ✓
	115 - 114	0.029	0.296	0.000	0.021	0.000	0.325	1.000	4.8.2 ✓
	114 - 113	0.028	0.306	0.000	0.021	0.000	0.334	1.000	4.8.2 ✓
	113 - 112	0.028	0.315	0.000	0.021	0.000	0.343	1.000	4.8.2 ✓
	112 - 111	0.028	0.324	0.000	0.021	0.000	0.352	1.000	4.8.2 ✓
	111 - 110	0.027	0.333	0.000	0.021	0.000	0.361	1.000	4.8.2 ✓
	110 - 109	0.027	0.342	0.000	0.022	0.000	0.369	1.000	4.8.2 ✓
	109 - 108	0.027	0.350	0.000	0.022	0.000	0.377	1.000	4.8.2 ✓
	108 - 107	0.027	0.359	0.000	0.022	0.000	0.386	1.000	4.8.2 ✓
	107 - 106	0.026	0.367	0.000	0.022	0.000	0.394	1.000	4.8.2 ✓
	106 - 105	0.030	0.384	0.000	0.027	0.000	0.415	1.000	4.8.2 ✓
	105 - 104	0.030	0.395	0.000	0.027	0.000	0.426	1.000	4.8.2 ✓
	104 - 103	0.029	0.406	0.000	0.027	0.000	0.437	1.000	4.8.2 ✓
	103 - 102	0.029	0.417	0.000	0.027	0.000	0.447	1.000	4.8.2 ✓
	102 - 101	0.029	0.428	0.000	0.027	0.000	0.457	1.000	4.8.2 ✓
L4	101 - 95	0.014	0.250	0.000	0.014	0.000	0.264	1.000	4.8.2 ✓
	101 - 95	0.015	0.244	0.000	0.013	0.000	0.259	1.000	4.8.2 ✓
	95 - 94	0.029	0.510	0.000	0.028	0.000	0.540	1.000	4.8.2 ✓
	94 - 93	0.029	0.520	0.000	0.028	0.000	0.549	1.000	4.8.2 ✓
	93 - 92	0.029	0.529	0.000	0.028	0.000	0.559	1.000	4.8.2 ✓
L5	92 - 91	0.028	0.539	0.000	0.028	0.000	0.568	1.000	4.8.2 ✓
	91 - 89.3158	0.023	0.428	0.000	0.022	0.000	0.451	1.000	4.8.2 ✓
	89.3158 - 87.6316	0.023	0.439	0.000	0.022	0.000	0.462	1.000	4.8.2 ✓
	87.6316 - 85.9474	0.023	0.450	0.000	0.022	0.000	0.473	1.000	4.8.2 ✓

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Section No.	Elevation ft	Ratio P_u ϕP_n	Ratio M_{ux} ϕM_{nx}	Ratio M_{uy} ϕM_{ny}	Ratio V_u ϕV_n	Ratio T_u ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	85.9474 - 84.2632	0.022	0.460	0.000	0.022	0.000	0.483	1.000	4.8.2 ✓
	84.2632 - 82.5789	0.022	0.471	0.000	0.022	0.000	0.493	1.000	4.8.2 ✓
	82.5789 - 80.8947	0.022	0.481	0.000	0.022	0.000	0.503	1.000	4.8.2 ✓
	80.8947 - 79.2105	0.022	0.491	0.000	0.022	0.000	0.513	1.000	4.8.2 ✓
	79.2105 - 77.5263	0.022	0.501	0.000	0.022	0.000	0.523	1.000	4.8.2 ✓
	77.5263 - 75.8421	0.021	0.510	0.000	0.022	0.000	0.532	1.000	4.8.2 ✓
	75.8421 - 74.1579	0.021	0.520	0.000	0.022	0.000	0.541	1.000	4.8.2 ✓
	74.1579 - 72.4737	0.021	0.529	0.000	0.022	0.000	0.551	1.000	4.8.2 ✓
	72.4737 - 70.7895	0.021	0.538	0.000	0.022	0.000	0.560	1.000	4.8.2 ✓
	70.7895 - 69.1053	0.021	0.547	0.000	0.023	0.000	0.568	1.000	4.8.2 ✓
	69.1053 - 67.4211	0.021	0.556	0.000	0.023	0.000	0.577	1.000	4.8.2 ✓
	67.4211 - 65.7368	0.021	0.565	0.000	0.023	0.000	0.586	1.000	4.8.2 ✓
	65.7368 - 64.0526	0.021	0.573	0.000	0.023	0.000	0.594	1.000	4.8.2 ✓
	64.0526 - 62.3684	0.021	0.582	0.000	0.023	0.000	0.603	1.000	4.8.2 ✓
	62.3684 - 60.6842	0.020	0.590	0.000	0.023	0.000	0.611	1.000	4.8.2 ✓
	60.6842 - 59	0.020	0.598	0.000	0.023	0.000	0.619	1.000	4.8.2 ✓
	59 - 51	0.011	0.325	0.000	0.012	0.000	0.336	1.000	4.8.2 ✓
L6	59 - 51	0.011	0.318	0.000	0.011	0.000	0.329	1.000	4.8.2 ✓
	51 - 50	0.022	0.653	0.000	0.024	0.000	0.676	1.000	4.8.2 ✓
	50 - 49	0.022	0.658	0.000	0.024	0.000	0.681	1.000	4.8.2 ✓
	49 - 48	0.022	0.663	0.000	0.024	0.000	0.685	1.000	4.8.2 ✓
	48 - 47	0.022	0.667	0.000	0.024	0.000	0.690	1.000	4.8.2 ✓
	47 - 46	0.022	0.672	0.000	0.024	0.000	0.694	1.000	4.8.2 ✓
	46 - 45	0.022	0.676	0.000	0.024	0.000	0.699	1.000	4.8.2 ✓
	45 - 44	0.022	0.681	0.000	0.024	0.000	0.703	1.000	4.8.2 ✓
	44 - 43	0.022	0.685	0.000	0.024	0.000	0.708	1.000	4.8.2 ✓

inxTower Infinigy Engineering 1033 Watervliet Shaker Rd. Albany, NY 12205 Phone: (518) 690-0790 FAX:	Job	526-104	Page	30 of 31
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	Client	Sprint	Designed by	BDavenport

Section No.	Elevation ft	Ratio P_u ϕP_n	Ratio M_{ux} ϕM_{nx}	Ratio M_{uy} ϕM_{ny}	Ratio V_u ϕV_n	Ratio T_u ϕT_n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L7	43 - 42	0.022	0.690	0.000	0.024	0.000	0.712	1.000	4.8.2 ✓
	42 - 41	0.022	0.694	0.000	0.024	0.000	0.717	1.000	4.8.2 ✓
	41 - 40	0.022	0.699	0.000	0.024	0.000	0.721	1.000	4.8.2 ✓
	40 - 39	0.018	0.557	0.000	0.019	0.000	0.575	1.000	4.8.2 ✓
	39 - 38	0.018	0.560	0.000	0.019	0.000	0.578	1.000	4.8.2 ✓
	38 - 37	0.018	0.563	0.000	0.019	0.000	0.581	1.000	4.8.2 ✓
	37 - 36	0.018	0.566	0.000	0.019	0.000	0.585	1.000	4.8.2 ✓
	36 - 35	0.018	0.569	0.000	0.019	0.000	0.588	1.000	4.8.2 ✓
	35 - 34	0.018	0.572	0.000	0.019	0.000	0.591	1.000	4.8.2 ✓
	34 - 33	0.018	0.575	0.000	0.019	0.000	0.594	1.000	4.8.2 ✓
	33 - 32	0.018	0.578	0.000	0.019	0.000	0.597	1.000	4.8.2 ✓
	32 - 31	0.018	0.581	0.000	0.019	0.000	0.600	1.000	4.8.2 ✓
	31 - 30	0.018	0.584	0.000	0.019	0.000	0.603	1.000	4.8.2 ✓
	30 - 29	0.018	0.587	0.000	0.019	0.000	0.606	1.000	4.8.2 ✓
	29 - 28	0.018	0.590	0.000	0.020	0.000	0.609	1.000	4.8.2 ✓
	28 - 19	0.010	0.314	0.000	0.010	0.000	0.324	1.000	4.8.2 ✓
L8	28 - 19	0.010	0.308	0.000	0.010	0.000	0.318	1.000	4.8.2 ✓
	19 - 18	0.020	0.631	0.000	0.020	0.000	0.651	1.000	4.8.2 ✓
	18 - 17	0.020	0.634	0.000	0.020	0.000	0.654	1.000	4.8.2 ✓
	17 - 16	0.020	0.636	0.000	0.020	0.000	0.657	1.000	4.8.2 ✓
	16 - 15	0.020	0.639	0.000	0.020	0.000	0.660	1.000	4.8.2 ✓
	15 - 14	0.020	0.642	0.000	0.020	0.000	0.663	1.000	4.8.2 ✓
	14 - 13	0.020	0.645	0.000	0.020	0.000	0.665	1.000	4.8.2 ✓
	13 - 12	0.020	0.648	0.000	0.020	0.000	0.668	1.000	4.8.2 ✓
	12 - 11	0.020	0.650	0.000	0.020	0.000	0.671	1.000	4.8.2 ✓
	11 - 10	0.020	0.653	0.000	0.020	0.000	0.674	1.000	4.8.2 ✓

tnxTower Infinigy Engineering 1033 Watervliet Shaker Rd. Albany, NY 12205 Phone: (518) 690-0790 FAX:	Job	526-104	Page	31 of 31
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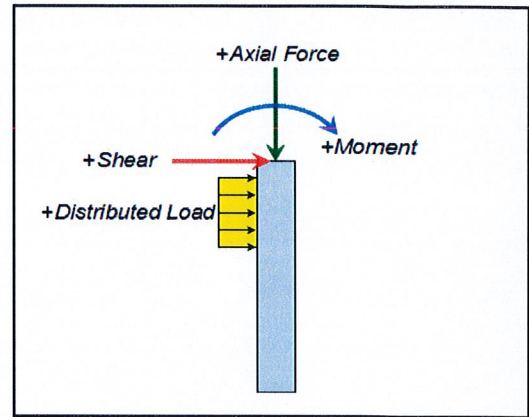
Section No.	Elevation ft	Ratio P_u	Ratio M_{ux}	Ratio M_{uy}	Ratio V_u	Ratio T_u	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		ϕP_n	ϕM_{ux}	ϕM_{uy}	ϕV_n	ϕT_n			
10 - 9		0.020	0.656	0.000	0.020	0.000	0.677	1.000	4.8.2 ✓
9 - 8		0.020	0.659	0.000	0.020	0.000	0.679	1.000	4.8.2 ✓
8 - 7		0.020	0.661	0.000	0.020	0.000	0.682	1.000	4.8.2 ✓
7 - 6		0.020	0.664	0.000	0.020	0.000	0.685	1.000	4.8.2 ✓
6 - 5		0.020	0.667	0.000	0.021	0.000	0.688	1.000	4.8.2 ✓
5 - 4		0.021	0.670	0.000	0.021	0.000	0.690	1.000	4.8.2 ✓
4 - 3		0.021	0.672	0.000	0.021	0.000	0.693	1.000	4.8.2 ✓
3 - 2		0.021	0.675	0.000	0.021	0.000	0.696	1.000	4.8.2 ✓
2 - 1		0.021	0.678	0.000	0.021	0.000	0.699	1.000	4.8.2 ✓
1 - 0		0.021	0.680	0.000	0.021	0.000	0.702	1.000	4.8.2 ✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	ϕP_{allow} lb	% Capacity	Pass Fail
L1	150 - 130	Pole	TP34.3125x27.8125x0.25	1	-6234.39	245527.00	13.4	Pass
L2	130 - 115	Pole	TP38.6875x32.1875x0.25	2	-14670.00	408528.00	43.2	Pass
L3	115 - 95	Pole	TP45.1875x38.6875x0.3125	3	-20435.60	711210.00	45.7	Pass
L4	95 - 91	Pole	TP45.8125x42.6125x0.3125	4	-23894.60	842714.00	56.8	Pass
L5	91 - 51	Pole	TP58.875x45.8125x0.375	5	-34007.00	1665170.00	61.9	Pass
L6	51 - 40	Pole	TP61.6875x55.5125x0.375	6	-42994.50	1960840.00	72.1	Pass
L7	40 - 19	Pole	TP68.5x61.6875x0.4375	7	-48192.60	2639060.00	60.9	Pass
L8	19 - 0	Pole	TP73.8125x64.7054x0.4375	8	-64267.50	3109770.00	70.2	Pass
							Summary	
							Pole (L6)	72.1 Pass
							RATING =	72.1 Pass

Date: 11/22/2017
 Site Name: CT23XC408
 Client: Sprint
 Engineering #: 514-000
 Analysis/Design: Analysis
 Tower Type: Monopole

Infinigy Engineering PLLC
 Drilled Shaft Calculations
 ACI 318-11
 Ensoft L-Pile 1212.6.37
 Ensoft Shaft 2012.7.8



Loading Data				
TIA Code Revision:	ANSI/TIA-222-G			
Factored Moment:	4340	kip-ft	From ATC Tower	
Factored Uplift:	0	kips		
Factored Axial:	64.3	kips		
Factored Shear:	44.2	kips		
Service Moment:	863	kip-ft		
Service Uplift:	0	kips		
Service Axial:	53.6	kips		
Service Shear:	8.7	kips		

Concrete Strength Check				
Bending Reduction Factor:	0.90			
Unfactored Ultimate Moment Capacity:	11172.0	k-ft	From L-Pile	
Maximum Moment In Shaft:	833.4	k-ft		
Depth of Maximum Moment in Shaft:	5.76	ft		
Drilled Shaft Strength Usage:	8.29	%		

Soil Stability Check				
Allowable Service Pile Head Deflection:	0.75	in		
Maximum Service Pile Head Deflection:	0.1619	in	From L-Pile	
Deflection Ratio:	22	%		
Ultimate Pile Head Deflection:	3	in		
Maximum Design Pile Head Deflection:	0.84	in	From L-Pile	
Deflection Ratio:	28	%		

CT23XC408.lp6o

LPile Plus for Windows, Version 2012-06.037

Analysis of Individual Piles and Drilled Shafts
Subjected to Lateral Loading Using the p-y Method

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Infinigy Engineering, PLLC
Albany, NY

Serial Number of Security Device: 140966619
Company Name Stored in Security Device: Infinigy

Files Used for Analysis

Path to file locations: C:\Users\Ocalc1\Desktop\Old Documents\CT23XC408\
Name of input data file: CT23XC408.lp6d
Name of output report file: CT23XC408.lp6o
Name of plot output file: CT23XC408.lp6p
Name of runtime message file: CT23XC408.lp6r

Date and Time of Analysis

Date: November 22, 2017 Time: 12:44:33

Problem Title

Project Name: CT23XC408

Job Number: 514-000

Client: Sprint

Engineer: BD

Description:

Program Options

Engineering units are US Customary Units: pounds, inches, feet

Basic Program Options:

This analysis computes pile response to lateral loading and will compute nonlinear moment-curvature and nominal moment capacity for section types with nonlinear properties.

Computation Options:

- Analysis does not use p-y multipliers (individual pile or shaft only)
- Analysis assumes no shear resistance at pile tip
- Analysis for fixed-length pile or shaft only
- No computation of foundation stiffness matrix values
- Report pile response for full length of pile
- Analysis assumes no loading by soil movements acting on pile
- No p-y curves to be computed and reported for user-specified depths

Solution Control Parameters:

- | | | |
|--|---|---------------|
| - Number of pile increments | = | 100 |
| - Maximum number of iterations allowed | = | 100 |
| - Deflection tolerance for convergence | = | 1.0000E-04 in |
| - Maximum allowable deflection | = | 100.0000 in |

Pile Response Output Options:

- Values of pile-head deflection, bending moment, shear force, and soil reaction are printed for full length of pile.
- Printing Increment (nodal spacing of output points) = 1

 Pile Structural Properties and Geometry

Total number of pile sections = 1
 Total length of pile = 24.00 ft
 Depth of ground surface below top of pile = 0.00 ft

Pile diameter values used for p-y curve computations are defined using 2 points.

p-y curves are computed using pile diameter values interpolated with depth over the length of the pile.

Point	Depth X ft	Pile Diameter in
1	0.00000	99.0000000
2	24.00000	99.0000000

Input Structural Properties:

Pile Section No. 1:

Section Type	= Drilled Shaft (Bored Pile)
Section Length	= 24.00000000 ft
Section Diameter	= 99.00000000 in

 Ground Slope and Pile Batter Angles

Ground Slope Angle	= 0.000 degrees
	= 0.000 radians
Pile Batter Angle	= 0.000 degrees
	= 0.000 radians

 Soil and Rock Layering Information

The soil profile is modelled using 6 layers

Layer 1 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	=	0.0000	ft
Distance from top of pile to bottom of layer	=	5.00000	ft
Effective unit weight at top of layer	=	123.00000	pcf
Effective unit weight at bottom of layer	=	123.00000	pcf
Friction angle at top of layer	=	25.00000	deg.
Friction angle at bottom of layer	=	25.00000	deg.
Subgrade k at top of layer	=	0.0000	pci
Subgrade k at bottom of layer	=	0.0000	pci

NOTE: Internal default values for subgrade k will be computed for the above soil layer.

Layer 2 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	=	5.00000	ft
Distance from top of pile to bottom of layer	=	8.00000	ft
Effective unit weight at top of layer	=	123.00000	pcf
Effective unit weight at bottom of layer	=	123.00000	pcf
Friction angle at top of layer	=	38.00000	deg.
Friction angle at bottom of layer	=	38.00000	deg.
Subgrade k at top of layer	=	0.0000	pci
Subgrade k at bottom of layer	=	0.0000	pci

NOTE: Internal default values for subgrade k will be computed for the above soil layer.

Layer 3 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	=	8.00000	ft
Distance from top of pile to bottom of layer	=	11.50000	ft
Effective unit weight at top of layer	=	123.00000	pcf
Effective unit weight at bottom of layer	=	123.00000	pcf
Friction angle at top of layer	=	38.00000	deg.
Friction angle at bottom of layer	=	38.00000	deg.
Subgrade k at top of layer	=	0.0000	pci
Subgrade k at bottom of layer	=	0.0000	pci

NOTE: Internal default values for subgrade k will be computed for

the above soil layer.

Layer 4 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	=	11.50000 ft
Distance from top of pile to bottom of layer	=	15.00000 ft
Effective unit weight at top of layer	=	123.00000 pcf
Effective unit weight at bottom of layer	=	123.00000 pcf
Friction angle at top of layer	=	38.00000 deg.
Friction angle at bottom of layer	=	38.00000 deg.
Subgrade k at top of layer	=	0.0000 pci
Subgrade k at bottom of layer	=	0.0000 pci

NOTE: Internal default values for subgrade k will be computed for the above soil layer.

Layer 5 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	=	15.00000 ft
Distance from top of pile to bottom of layer	=	18.00000 ft
Effective unit weight at top of layer	=	60.00000 pcf
Effective unit weight at bottom of layer	=	60.00000 pcf
Friction angle at top of layer	=	38.00000 deg.
Friction angle at bottom of layer	=	38.00000 deg.
Subgrade k at top of layer	=	0.0000 pci
Subgrade k at bottom of layer	=	0.0000 pci

NOTE: Internal default values for subgrade k will be computed for the above soil layer.

Layer 6 is sand, p-y criteria by Reese et al., 1974

Distance from top of pile to top of layer	=	18.00000 ft
Distance from top of pile to bottom of layer	=	24.00000 ft
Effective unit weight at top of layer	=	60.00000 pcf
Effective unit weight at bottom of layer	=	60.00000 pcf
Friction angle at top of layer	=	38.00000 deg.
Friction angle at bottom of layer	=	38.00000 deg.
Subgrade k at top of layer	=	0.0000 pci
Subgrade k at bottom of layer	=	0.0000 pci

NOTE: Internal default values for subgrade k will be computed for the above soil layer.

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(Depth of lowest soil layer extends 0.00 ft below pile tip)

Summary of Soil Properties

Layer kpy Num. pci	Layer Soil Type (p-y Curve Criteria)	Layer Depth ft	Effective Unit Wt. pcf	Angle of Friction deg.
1 default	Sand (Reese, et al.)	0.00	123.000	25.000
default		5.000	123.000	25.000
2 default	Sand (Reese, et al.)	5.000	123.000	38.000
default		8.000	123.000	38.000
3 default	Sand (Reese, et al.)	8.000	123.000	38.000
default		11.500	123.000	38.000
4 default	Sand (Reese, et al.)	11.500	123.000	38.000
default		15.000	123.000	38.000
5 default	Sand (Reese, et al.)	15.000	60.000	38.000
default		18.000	60.000	38.000
6 default	Sand (Reese, et al.)	18.000	60.000	38.000
default		24.000	60.000	38.000

Loading Type

Static loading criteria were used when computing p-y curves for all analyses.

Pile-head Loading and Pile-head Fixity Conditions

Number of loads specified = 1

Load No.	Load Compute Type	Condition 1	Condition 2	Axial Thrust Force, lbs
1	1	V = 8700.00000 lbs	M = 10356000. in-lbs	53.60000000

Top y vs. Pile Length

No

V = perpendicular shear force applied to pile head

M = bending moment applied to pile head

y = lateral deflection relative to pile axis

S = pile slope relative to original pile batter angle

R = rotational stiffness applied to pile head

Axial thrust is assumed to be acting axially for all pile batter angles.

Computations of Nominal Moment Capacity and Nonlinear Bending Stiffness

Axial thrust force values were determined from pile-head loading conditions

Number of Pile Sections Analyzed = 1

Pile Section No. 1:

Dimensions and Properties of Drilled Shaft (Bored Pile):

Length of Section	=	24.00000000 ft
Shaft Diameter	=	99.00000000 in
Concrete Cover Thickness	=	3.00000000 in
Number of Reinforcing Bars	=	66 bars
Yield Stress of Reinforcing Bars	=	60.00000000 ksi
Modulus of Elasticity of Reinforcing Bars	=	29000. ksi
Gross Area of Shaft	=	7697.68739946 sq. in.
Total Area of Reinforcing Steel	=	52.14000000 sq. in.

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Area Ratio of Steel Reinforcement	=	0.68 percent
Edge-to-Edge Bar Spacing	=	3.37753626 in
Maximum Concrete Aggregate Size	=	0.75000000 in
Ratio of Bar Spacing to Aggregate Size	=	4.50
Offset of Rebar Cage Center from Center of Pile	=	0.00000000 in

Axial Structural Capacities:

Nom. Axial Structural Capacity = $0.85 F_c A_c + F_y A_s$	=	29123.262 kips
Tensile Load for Cracking of Concrete	=	-3354.303 kips
Nominal Axial Tensile Capacity	=	-3128.400 kips

Reinforcing Bar Dimensions and Positions Used in Computations:

Bar Number	Bar Diam. inches	Bar Area sq. in.	X inches	Y inches
-----	-----	-----	-----	-----
1	1.00000	0.79000	46.00000	0.00000
2	1.00000	0.79000	45.79171	4.37258
3	1.00000	0.79000	45.16872	8.70556
4	1.00000	0.79000	44.13668	12.95970
5	1.00000	0.79000	42.70492	17.09647
6	1.00000	0.79000	40.88643	21.07842
7	1.00000	0.79000	38.69766	24.86948
8	1.00000	0.79000	36.15844	28.43531
9	1.00000	0.79000	33.29177	31.74363
10	1.00000	0.79000	30.12359	34.76448
11	1.00000	0.79000	26.68262	37.47049
12	1.00000	0.79000	23.00000	39.83717
13	1.00000	0.79000	19.10909	41.84307
14	1.00000	0.79000	15.04513	43.47004
15	1.00000	0.79000	10.84491	44.70333
16	1.00000	0.79000	6.54648	45.53179
17	1.00000	0.79000	2.18877	45.94790
18	1.00000	0.79000	-2.18877	45.94790
19	1.00000	0.79000	-6.54648	45.53179
20	1.00000	0.79000	-10.84491	44.70333
21	1.00000	0.79000	-15.04513	43.47004
22	1.00000	0.79000	-19.10909	41.84307
23	1.00000	0.79000	-23.00000	39.83717
24	1.00000	0.79000	-26.68262	37.47049
25	1.00000	0.79000	-30.12359	34.76448
26	1.00000	0.79000	-33.29177	31.74363
27	1.00000	0.79000	-36.15844	28.43531
28	1.00000	0.79000	-38.69766	24.86948
29	1.00000	0.79000	-40.88643	21.07842

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30	1.00000	0.79000	-42.70492	17.09647
31	1.00000	0.79000	-44.13668	12.95970
32	1.00000	0.79000	-45.16872	8.70556
33	1.00000	0.79000	-45.79171	4.37258
34	1.00000	0.79000	-46.00000	0.00000
35	1.00000	0.79000	-45.79171	-4.37258
36	1.00000	0.79000	-45.16872	-8.70556
37	1.00000	0.79000	-44.13668	-12.95970
38	1.00000	0.79000	-42.70492	-17.09647
39	1.00000	0.79000	-40.88643	-21.07842
40	1.00000	0.79000	-38.69766	-24.86948
41	1.00000	0.79000	-36.15844	-28.43531
42	1.00000	0.79000	-33.29177	-31.74363
43	1.00000	0.79000	-30.12359	-34.76448
44	1.00000	0.79000	-26.68262	-37.47049
45	1.00000	0.79000	-23.00000	-39.83717
46	1.00000	0.79000	-19.10909	-41.84307
47	1.00000	0.79000	-15.04513	-43.47004
48	1.00000	0.79000	-10.84491	-44.70333
49	1.00000	0.79000	-6.54648	-45.53179
50	1.00000	0.79000	-2.18877	-45.94790
51	1.00000	0.79000	2.18877	-45.94790
52	1.00000	0.79000	6.54648	-45.53179
53	1.00000	0.79000	10.84491	-44.70333
54	1.00000	0.79000	15.04513	-43.47004
55	1.00000	0.79000	19.10909	-41.84307
56	1.00000	0.79000	23.00000	-39.83717
57	1.00000	0.79000	26.68262	-37.47049
58	1.00000	0.79000	30.12359	-34.76448
59	1.00000	0.79000	33.29177	-31.74363
60	1.00000	0.79000	36.15844	-28.43531
61	1.00000	0.79000	38.69766	-24.86948
62	1.00000	0.79000	40.88643	-21.07842
63	1.00000	0.79000	42.70492	-17.09647
64	1.00000	0.79000	44.13668	-12.95970
65	1.00000	0.79000	45.16872	-8.70556
66	1.00000	0.79000	45.79171	-4.37258

NOTE: The positions of the above rebars were computed by LPile

Minimum spacing between any two bars not equal to zero = 3.37754 inches
between Bars 65 and 66

Spacing to aggregate size ratio = 4.50338

Concrete Properties:


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Compressive Strength of Concrete          =      4.00000000 ksi
Modulus of Elasticity of Concrete        =     3604.99653259 ksi
Modulus of Rupture of Concrete           =     -0.47434164 ksi
Compression Strain at Peak Stress         =       0.00188627
Tensile Strain at Fracture of Concrete    =     -0.00011537
Maximum Coarse Aggregate Size            =       0.75000000 in

```

Number of Axial Thrust Force Values Determined from Pile-head Loadings = 1

```

Number      Axial Thrust Force
              kips
-----
      1              0.054

```

Definitions of Run Messages and Notes:

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C = concrete in section has cracked in tension.
Y = stress in reinforcing steel has reached yield stress.
T = ACI 318-08 criteria for tension-controlled section met, tensile strain in
    reinforcement exceeds 0.005 while simultaneously compressive strain in
    concrete more than 0.003. See ACI 318-08, Section 10.3.4.
Z = depth of tensile zone in concrete section is less than 10 percent of section
    depth.

```

Bending Stiffness (EI) = Computed Bending Moment / Curvature.
 Position of neutral axis is measured from edge of compression side of pile.
 Compressive stresses and strains are positive in sign.
 Tensile stresses and strains are negative in sign.

Axial Thrust Force = 0.054 kips

Bending Max Concrete Curvature Stress rad/in. ksi	Bending Max Steel Moment Stress in-kip ksi	Bending Run Stiffness Msg kip-in2	Depth to N Axis in	Max Comp Strain in/in	Max Tens Strain in/in
0.000000313	6660.3734169	21313194934.	49.5051329	0.0000155	
-0.0000155	0.0646927	0.4441543			
0.000000625	13286.	21258257241.	49.5026063	0.0000309	

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-0.0000309	0.1288513	0.8882629		
0.000000938	19878.	21203319543.	49.5017643	0.0000464
-0.0000464	0.1924827	1.3323714		
0.000001250	26435.	21148381844.	49.5013434	0.0000619
-0.0000619	0.2555868	1.7764800		
0.000001563	32959.	21093444146.	49.5010910	0.0000773
-0.0000773	0.3181635	2.2205885		
0.000001875	39447.	21038506446.	49.5009229	0.0000928
-0.0000928	0.3802129	2.6646971		
0.000002188	45902.	20983568747.	49.5008029	0.0001083
-0.0001083	0.4417351	3.1088056		
0.000002500	45902.	18360622654.	21.1287832	0.0000528
-0.0001947	0.2157871	-5.6097757 C		
0.000002813	45902.	16320553470.	21.1352653	0.0000594
-0.0002190	0.2424147	-6.3104690 C		
0.000003125	45902.	14688498123.	21.1418369	0.0000661
-0.0002433	0.2689661	-7.0110367 C		
0.000003438	45902.	13353180112.	21.1484779	0.0000727
-0.0002676	0.2954411	-7.7114783 C		
0.000003750	45902.	12240415102.	21.1551749	0.0000793
-0.0002919	0.3218395	-8.4117935 C		
0.000004063	45902.	11298844710.	21.1619188	0.0000860
-0.0003162	0.3481613	-9.1119818 C		
0.000004375	45902.	10491784374.	21.1687028	0.0000926
-0.0003405	0.3744063	-9.8120427 C		
0.000004688	45902.	9792332082.	21.1755222	0.0000993
-0.0003648	0.4005743	-10.5119759 C		
0.000005000	45902.	9180311327.	21.1823734	0.0001059
-0.0003891	0.4266653	-11.2117808 C		
0.000005313	45902.	8640293013.	21.1892537	0.0001126
-0.0004134	0.4526791	-11.9114572 C		
0.000005625	45902.	8160276735.	21.1961610	0.0001192
-0.0004376	0.4786156	-12.6110044 C		
0.000005938	45902.	7730788486.	21.2030936	0.0001259
-0.0004619	0.5044747	-13.3104220 C		
0.000006250	45902.	7344249061.	21.2100502	0.0001326
-0.0004862	0.5302561	-14.0097096 C		
0.000006563	45902.	6994522916.	21.2170298	0.0001392
-0.0005105	0.5559599	-14.7088668 C		
0.000006875	45902.	6676590056.	21.2240316	0.0001459
-0.0005347	0.5815857	-15.4078931 C		
0.000007188	45902.	6386303532.	21.2310549	0.0001526
-0.0005590	0.6071336	-16.1067879 C		
0.000007500	45902.	6120207551.	21.2380990	0.0001593
-0.0005832	0.6326034	-16.8055510 C		
0.000007813	45902.	5875399249.	21.2451637	0.0001660
-0.0006075	0.6579948	-17.5041817 C		
0.000008125	45902.	5649422355.	21.2522485	0.0001727

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-0.0006317	0.6833079	-18.2026796	C		
0.000008438	45902.	5440184490.		21.2593531	0.0001794
-0.0006559	0.7085424	-18.9010442	C		
0.000008750	45902.	5245892187.		21.2664773	0.0001861
-0.0006802	0.7336982	-19.5992751	C		
0.000009063	45902.	5064999353.		21.2736208	0.0001928
-0.0007044	0.7587752	-20.2973718	C		
0.000009375	45902.	4896166041.		21.2807836	0.0001995
-0.0007286	0.7837732	-20.9953338	C		
0.000009688	45902.	4738225201.		21.2878132	0.0002062
-0.0007528	0.8086866	-21.6932034	C		
0.0000100	45902.	4590155663.		21.2946438	0.0002129
-0.0007771	0.8335121	-22.3910033	C		
0.0000103	45902.	4451060037.		21.3014914	0.0002197
-0.0008013	0.8582574	-23.0886743	C		
0.0000106	45902.	4320146507.		21.3083561	0.0002264
-0.0008255	0.8829223	-23.7862159	C		
0.0000109	45902.	4196713749.		21.3152378	0.0002331
-0.0008497	0.9075067	-24.4836277	C		
0.0000113	45902.	4080138367.		21.3221364	0.0002399
-0.0008739	0.9320105	-25.1809093	C		
0.0000116	45902.	3969864358.		21.3290519	0.0002466
-0.0008981	0.9564335	-25.8780601	C		
0.0000119	45902.	3865394243.		21.3359843	0.0002534
-0.0009223	0.9807755	-26.5750798	C		
0.0000122	45902.	3766281570.		21.3429337	0.0002601
-0.0009464	1.0050365	-27.2719678	C		
0.0000128	45902.	3582560518.		21.3568831	0.0002736
-0.0009948	1.0533146	-28.6653474	C		
0.0000134	45902.	3415929796.		21.3709003	0.0002872
-0.0010431	1.1012667	-30.0581947	C		
0.0000141	46649.	3317279738.		21.3849856	0.0003007
-0.0010915	1.1488915	-31.4505061	C		
0.0000147	48703.	3315937058.		21.3991391	0.0003143
-0.0011398	1.1961880	-32.8422778	C		
0.0000153	50755.	3314589351.		21.4133614	0.0003279
-0.0011880	1.2431549	-34.2335060	C		
0.0000159	52805.	3313236527.		21.4276528	0.0003415
-0.0012363	1.2897910	-35.6241867	C		
0.0000166	54853.	3311878499.		21.4420137	0.0003551
-0.0012846	1.3360951	-37.0143159	C		
0.0000172	56899.	3310515184.		21.4564447	0.0003688
-0.0013328	1.3820659	-38.4038896	C		
0.0000178	58944.	3309146505.		21.4709464	0.0003825
-0.0013810	1.4277023	-39.7929037	C		
0.0000184	60987.	3307772387.		21.4855192	0.0003961
-0.0014292	1.4730029	-41.1813541	C		
0.0000191	63028.	3306392758.		21.5001638	0.0004098

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-0.0014773	1.5179665	-42.5692365	C		
0.0000197	65067.	3305007546.		21.5148807	0.0004236
-0.0015255	1.5625918	-43.9565467	C		
0.0000203	67105.	3303616682.		21.5296707	0.0004373
-0.0015736	1.6068775	-45.3432805	C		
0.0000209	69140.	3302220277.		21.5445343	0.0004511
-0.0016217	1.6508223	-46.7294327	C		
0.0000216	71174.	3300817914.		21.5594723	0.0004649
-0.0016698	1.6944249	-48.1150003	C		
0.0000222	73206.	3299409697.		21.5744853	0.0004787
-0.0017179	1.7376838	-49.4999780	C		
0.0000228	75236.	3297995561.		21.5895741	0.0004925
-0.0017659	1.7805979	-50.8843614	C		
0.0000234	77263.	3296575438.		21.6047393	0.0005064
-0.0018140	1.8231656	-52.2681459	C		
0.0000241	79290.	3295149264.		21.6199818	0.0005202
-0.0018620	1.8653856	-53.6513267	C		
0.0000247	81314.	3293716971.		21.6353023	0.0005341
-0.0019099	1.9072566	-55.0338991	C		
0.0000253	83336.	3292278493.		21.6507016	0.0005480
-0.0019579	1.9487770	-56.4158584	C		
0.0000259	85356.	3290833763.		21.6661804	0.0005620
-0.0020058	1.9899455	-57.7971995	C		
0.0000266	87374.	3289382715.		21.6817396	0.0005759
-0.0020538	2.0307605	-59.1779177	C		
0.0000272	89390.	3287925279.		21.6973801	0.0005899
-0.0021017	2.0712208	-60.0000000	CY		
0.0000278	91405.	3286461390.		21.7131026	0.0006039
-0.0021495	2.1113246	-60.0000000	CY		
0.0000284	93262.	3279539399.		21.7166137	0.0006176
-0.0021977	2.1500624	-60.0000000	CY		
0.0000291	94812.	3262357321.		21.6966727	0.0006306
-0.0022466	2.1864654	-60.0000000	CY		
0.0000297	96211.	3240797758.		21.6662858	0.0006432
-0.0022958	2.2215593	-60.0000000	CY		
0.0000303	97475.	3215656712.		21.6270729	0.0006556
-0.0023454	2.2554547	-60.0000000	CY		
0.0000309	98631.	3188081808.		21.5815062	0.0006677
-0.0023951	2.2883427	-60.0000000	CY		
0.0000316	99723.	3159526080.		21.5330728	0.0006796
-0.0024450	2.3205126	-60.0000000	CY		
0.0000322	100728.	3129410635.		21.4801376	0.0006914
-0.0024952	2.3518181	-60.0000000	CY		
0.0000328	101691.	3099151358.		21.4263086	0.0007031
-0.0025454	2.3825715	-60.0000000	CY		
0.0000334	102568.	3067459502.		21.3680529	0.0007145
-0.0025958	2.4124600	-60.0000000	CY		
0.0000341	103416.	3036062564.		21.3099862	0.0007259

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-0.0026463	2.4418941	-60.0000000	CY		
0.0000347	104216.	3004414849.		21.2484350	0.0007371
-0.0026970	2.4705455	-60.0000000	CY		
0.0000353	104953.	2972121662.		21.1826606	0.0007480
-0.0027479	2.4983436	-60.0000000	CY		
0.0000359	105681.	2940681705.		21.1187177	0.0007590
-0.0027989	2.5258445	-60.0000000	CY		
0.0000366	106384.	2909636521.		21.0551714	0.0007698
-0.0028499	2.5529244	-60.0000000	CY		
0.0000372	107005.	2877446072.		20.9870912	0.0007805
-0.0029011	2.5791264	-60.0000000	CY		
0.0000397	109324.	2754609374.		20.7249544	0.0008225
-0.0031065	2.6804520	-60.0000000	CY		
0.0000422	111298.	2638166517.		20.4696858	0.0008636
-0.0033130	2.7756355	-60.0000000	CY		
0.0000447	113013.	2528971667.		20.2208449	0.0009036
-0.0035204	2.8650229	-60.0000000	CY		
0.0000472	114452.	2425481606.		19.9667291	0.0009422
-0.0037294	2.9477771	-60.0000000	CY		
0.0000497	115753.	2329620175.		19.7285546	0.0009803
-0.0039388	3.0263982	-60.0000000	CY		
0.0000522	116912.	2240236832.		19.5034469	0.0010178
-0.0041487	3.1009438	-60.0000000	CY		
0.0000547	117953.	2156846865.		19.2894295	0.0010549
-0.0043592	3.1715192	-60.0000000	CY		
0.0000572	118868.	2078569192.		19.0716189	0.0010907
-0.0045709	3.2368279	-60.0000000	CY		
0.0000597	119736.	2006044385.		18.8694749	0.0011263
-0.0047828	3.2991824	-60.0000000	CY		
0.0000622	120465.	1937120116.		18.6718993	0.0011612
-0.0049954	3.3576455	-60.0000000	CY		
0.0000647	121187.	1873425497.		18.4911036	0.0011961
-0.0052079	3.4137211	-60.0000000	CY		
0.0000672	121857.	1813686471.		18.3203578	0.0012309
-0.0054207	3.4668820	-60.0000000	CY		
0.0000697	122414.	1756620126.		18.1396692	0.0012641
-0.0056350	3.5152360	-60.0000000	CY		
0.0000722	122962.	1703373892.		17.9718750	0.0012973
-0.0058492	3.5613301	-60.0000000	CY		
0.0000747	123505.	1653617057.		17.8164543	0.0013307
-0.0060634	3.6052354	-60.0000000	CY		
0.0000772	123979.	1606208511.		17.6650465	0.0013635
-0.0062780	3.6462369	-60.0000000	CY		
0.0000797	124402.	1561118065.		17.5188890	0.0013960
-0.0064930	3.6845877	-60.0000000	CY		
0.0000822	124821.	1518737747.		17.3828949	0.0014287
-0.0067079	3.7208559	-60.0000000	CY		
0.0000847	125230.	1478727339.		17.2493190	0.0014608

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-0.0069233	3.7544105	-60.0000000	CY		
0.0000872	125608.	1440670228.		17.1165406	0.0014923
-0.0071392	3.7852296	-60.0000000	CY		
0.0000897	125934.	1404140499.		16.9858561	0.0015234
-0.0073556	3.8135475	-60.0000000	CY		
0.0000922	126237.	1369346047.		16.8607176	0.0015543
-0.0075722	3.8397436	-60.0000000	CY		
0.0000947	126537.	1336365902.		16.7432339	0.0015854
-0.0077887	3.8640351	-60.0000000	CY		
0.0000972	126835.	1305059676.		16.6328258	0.0016165
-0.0080051	3.8864029	-60.0000000	CY		
0.0000997	127132.	1275301063.		16.5289727	0.0016477
-0.0082213	3.9068275	-60.0000000	CY		
0.0001022	127405.	1246779372.		16.4285432	0.0016788
-0.0084378	3.9251314	-60.0000000	CY		
0.0001047	127667.	1219503080.		16.3323390	0.0017098
-0.0086543	3.9414048	-60.0000000	CY		
0.0001072	127875.	1193003380.		16.2257210	0.0017392
-0.0088724	3.9549707	-60.0000000	CY		
0.0001097	128082.	1167695679.		16.1248331	0.0017687
-0.0090904	3.9667899	-60.0000000	CY		
0.0001122	128286.	1143500031.		16.0293023	0.0017983
-0.0093083	3.9768445	-60.0000000	CY		
0.0001147	128489.	1120343454.		15.9387887	0.0018280
-0.0095261	3.9851163	-60.0000000	CY		
0.0001172	128691.	1098159190.		15.8529815	0.0018578
-0.0097438	3.9915868	-60.0000000	CY		
0.0001197	128888.	1076867297.		15.7712530	0.0018876
-0.0099614	3.9962319	-60.0000000	CY		
0.0001222	129076.	1056373756.		15.6926389	0.0019174
-0.0101791	3.9990342	-60.0000000	CY		
0.0001247	129262.	1036686927.		15.6179929	0.0019474
-0.0103967	3.9999996	-60.0000000	CY		
0.0001272	129410.	1017472801.		15.5419850	0.0019767
-0.0106148	3.9913726	-60.0000000	CY		
0.0001297	129553.	998961197.		15.4690917	0.0020061
-0.0108329	3.9940567	-60.0000000	CY		
0.0001322	129694.	981138546.		15.3996483	0.0020356
-0.0110509	3.9975242	-60.0000000	CY		
0.0001347	129832.	963952610.		15.3318839	0.0020650
-0.0112690	3.9994914	-60.0000000	CY		
0.0001372	129960.	947318955.		15.2601327	0.0020935
-0.0114881	3.9989011	-60.0000000	CY		
0.0001522	130682.	858693204.		14.8906496	0.0022662
-0.0128004	3.9989855	60.0000000	CY		
0.0001672	131207.	784788300.		14.5798196	0.0024376
-0.0141140	3.9991179	60.0000000	CY		
0.0001822	131670.	722717274.		14.3264048	0.0026101

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-0.0154265	3.9913287	60.0000000	CY		
0.0001972	132037.	669602266.		14.0890234	0.0027782
-0.0167434	3.9957868	60.0000000	CY		
0.0002122	132271.	623366705.		13.8989045	0.0029492
-0.0180574	3.9903896	60.0000000	CY		
0.0002272	132453.	583012234.		13.7422214	0.0031221
-0.0193695	3.9999983	60.0000000	CYT		
0.0002422	132591.	547471083.		13.6261611	0.0033001
-0.0206765	3.9764734	60.0000000	CYT		
0.0002572	132718.	516036118.		13.5301111	0.0034798
-0.0219818	3.9957483	60.0000000	CYT		
0.0002722	132794.	487876984.		13.4523755	0.0036616
-0.0232850	3.9925472	60.0000000	CYT		
0.0002872	132833.	462530342.		13.3815480	0.0038430
-0.0245885	3.9659228	60.0000000	CYT		

Summary of Results for Nominal (Unfactored) Moment Capacity for Section 1

Moment values interpolated at maximum compressive strain = 0.003
or maximum developed moment if pile fails at smaller strains.

Load No.	Axial Thrust kips	Nominal Mom. Cap. in-kip	Max. Comp. Strain
----	-----	-----	-----
1	0.054	132324.266	0.00300000

Note note that the values of moment capacity in the table above are not factored by a strength reduction factor (ϕ -factor).

In ACI 318-08, the value of the strength reduction factor depends on whether the transverse reinforcing steel bars are tied hoops (0.65) or spirals (0.70).

The above values should be multiplied by the appropriate strength reduction factor to compute ultimate moment capacity according to ACI 318-08, Section 9.3.2.2 or the value required by the design standard being followed.

The following table presents factored moment capacities and corresponding bending stiffnesses computed for common resistance factor values used for reinforced concrete sections.

Axial (Factored) Load Capacity No.	Resistance Bending Stiffness Factor at Ult. Mom. Cap. for Moment	Nominal Moment Capacity in-kip	Ultimate (Factored) Axial Thrust kips	Ultimate Moment
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in-kip		kip-in^2	
1	0.65	132324.266	0.035
86010.770		3290363002.679	
1	0.70	132324.266	0.038
92626.985		3281905812.634	
1	0.75	132324.266	0.040
99243.199		3172069341.948	

Computed Values of Pile Loading and Deflection
for Lateral Loading for Load Case Number 1

Pile-head conditions are Shear and Moment (Loading Type 1)

Shear force at pile head = 8700.000 lbs
Applied moment at pile head = 10356000.000 in-lbs
Axial thrust load on pile head = 53.600 lbs

Depth Res. Soil	Deflect. Spr. y	Bending Distrib. Lat. Load	Shear Force	Slope S	Total Stress	Bending Stiffness	Soil p
X Es*h feet lb/in	inches lb/inch	in-lbs lb/inch	lbs	radians	psi*	lb-in^2	
0.00	0.1619	10356000.	8700.0000	-0.000845	0.000	2.127E+13	
0.000	0.000	0.000					
0.240	0.1595	10381056.	8692.6915	-0.000843	0.000	2.127E+13	
-5.0741	91.6291	0.000					
0.480	0.1571	10406070.	8670.9957	-0.000842	0.000	2.127E+13	
-9.9937	183.2583	0.000					
0.720	0.1546	10431001.	8635.3513	-0.000840	0.000	2.127E+13	
-14.7594	274.8874	0.000					
0.960	0.1522	10455810.	8586.2030	-0.000839	0.000	2.127E+13	
-19.3714	366.5166	0.000					
1.200	0.1498	10480458.	8523.9928	-0.000838	0.000	2.127E+13	
-23.8302	458.1457	0.000					
1.440	0.1474	10504909.	8449.1612	-0.000836	0.000	2.127E+13	
-28.1362	549.7749	0.000					

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1.680	0.1450	10529126.	8362.1481	-0.000835	0.000	2.127E+13
-32.2897	641.4040	0.000				
1.920	0.1426	10553075.	8263.3917	-0.000833	0.000	2.127E+13
-36.2911	733.0332	0.000				
2.160	0.1402	10576723.	8153.3295	-0.000832	0.000	2.127E+13
-40.1409	824.6623	0.000				
2.400	0.1378	10600038.	8032.3978	-0.000830	0.000	2.127E+13
-43.8395	916.2915	0.000				
2.640	0.1354	10622990.	7901.0316	-0.000829	0.000	2.127E+13
-47.3871	1007.9206	0.000				
2.880	0.1330	10645548.	7759.6647	-0.000828	0.000	2.127E+13
-50.7843	1099.5498	0.000				
3.120	0.1306	10667686.	7608.7301	-0.000826	0.000	2.127E+13
-54.0314	1191.1789	0.000				
3.360	0.1283	10689375.	7448.6592	-0.000825	0.000	2.127E+13
-57.1289	1282.8081	0.000				
3.600	0.1259	10710590.	7279.8826	-0.000823	0.000	2.127E+13
-60.0771	1374.4372	0.000				
3.840	0.1235	10731307.	7102.8296	-0.000822	0.000	2.127E+13
-62.8764	1466.0664	0.000				
4.080	0.1212	10751503.	6917.9284	-0.000820	0.000	2.127E+13
-65.5272	1557.6955	0.000				
4.320	0.1188	10771155.	6725.6060	-0.000819	0.000	2.127E+13
-68.0300	1649.3247	0.000				
4.560	0.1164	10790243.	6526.2881	-0.000817	0.000	2.127E+13
-70.3852	1740.9538	0.000				
4.800	0.1141	10808746.	6320.3994	-0.000816	0.000	2.127E+13
-72.5930	1832.5830	0.000				
5.040	0.1117	10826648.	5400.0991	-0.000814	0.000	2.127E+13
-566.5043	14602.	0.000				
5.280	0.1094	10839851.	3731.2897	-0.000813	0.000	2.127E+13
-592.3911	15596.	0.000				
5.520	0.1071	10848141.	1990.2215	-0.000812	0.000	2.127E+13
-616.6840	16590.	0.000				
5.760	0.1047	10851315.	181.4787	-0.000810	0.000	2.127E+13
-639.3874	17585.	0.000				
6.000	0.1024	10849186.	-1690.3672	-0.000809	0.000	2.127E+13
-660.5056	18579.	0.000				
6.240	0.1001	10841579.	-3620.7575	-0.000807	0.000	2.127E+13
-680.0431	19573.	0.000				
6.480	0.0977	10828331.	-5605.1457	-0.000806	0.000	2.127E+13
-698.0043	20568.	0.000				
6.720	0.0954	10809294.	-7638.9984	-0.000804	0.000	2.127E+13
-714.3934	21562.	0.000				
6.960	0.0931	10784331.	-9717.7940	-0.000803	0.000	2.127E+13
-729.2147	22556.	0.000				
7.200	0.0908	10753319.	-11837.	-0.000801	0.000	2.127E+13
-742.4727	23551.	0.000				

			CT23XC408.lp6o			
7.440	0.0885	10716150.	-13992.	-0.000800	0.000	2.127E+13
-754.1714	24545.	0.000				
7.680	0.0862	10672725.	-16179.	-0.000798	0.000	2.127E+13
-764.3152	25539.	0.000				
7.920	0.0839	10622960.	-18392.	-0.000797	0.000	2.127E+13
-772.9082	26534.	0.000				
8.160	0.0816	10566785.	-20625.	-0.000795	0.000	2.127E+13
-777.6951	27448.	0.000				
8.400	0.0793	10504159.	-22873.	-0.000794	0.000	2.127E+13
-783.2621	28443.	0.000				
8.640	0.0770	10435036.	-25135.	-0.000793	0.000	2.127E+13
-787.2905	29437.	0.000				
8.880	0.0747	10359383.	-27406.	-0.000791	0.000	2.127E+13
-789.7841	30431.	0.000				
9.120	0.0725	10277180.	-29682.	-0.000790	0.000	2.127E+13
-790.7469	31426.	0.000				
9.360	0.0702	10188417.	-31958.	-0.000788	0.000	2.128E+13
-790.1826	32420.	0.000				
9.600	0.0679	10093101.	-34231.	-0.000787	0.000	2.128E+13
-788.0951	33414.	0.000				
9.840	0.0657	9991248.	-36495.	-0.000786	0.000	2.128E+13
-784.4879	34409.	0.000				
10.080	0.0634	9882888.	-38747.	-0.000784	0.000	2.128E+13
-779.3648	35403.	0.000				
10.320	0.0611	9768063.	-40982.	-0.000783	0.000	2.128E+13
-772.7290	36397.	0.000				
10.560	0.0589	9646830.	-43196.	-0.000782	0.000	2.128E+13
-764.5842	37392.	0.000				
10.800	0.0566	9519254.	-45384.	-0.000780	0.000	2.128E+13
-754.9335	38386.	0.000				
11.040	0.0544	9385417.	-47542.	-0.000779	0.000	2.128E+13
-743.7803	39380.	0.000				
11.280	0.0522	9245411.	-49666.	-0.000778	0.000	2.128E+13
-731.1275	40375.	0.000				
11.520	0.0499	9099340.	-51741.	-0.000777	0.000	2.128E+13
-709.5849	40943.	0.000				
11.760	0.0477	8947384.	-53762.	-0.000775	0.000	2.129E+13
-694.2731	41937.	0.000				
12.000	0.0454	8789669.	-55738.	-0.000774	0.000	2.129E+13
-677.4700	42931.	0.000				
12.240	0.0432	8626335.	-57662.	-0.000773	0.000	2.129E+13
-659.1782	43926.	0.000				
12.480	0.0410	8457533.	-59532.	-0.000772	0.000	2.129E+13
-639.4003	44920.	0.000				
12.720	0.0388	8283428.	-61343.	-0.000771	0.000	2.129E+13
-618.1388	45914.	0.000				
12.960	0.0366	8104196.	-63091.	-0.000770	0.000	2.129E+13
-595.3958	46909.	0.000				

			CT23XC408.lp6o			
13.200	0.0343	7920026.	-64771.	-0.000769	0.000	2.130E+13
-571.1736	47903.	0.000				
13.440	0.0321	7731118.	-66379.	-0.000768	0.000	2.130E+13
-545.4743	48897.	0.000				
13.680	0.0299	7537685.	-67910.	-0.000766	0.000	2.130E+13
-518.2998	49892.	0.000				
13.920	0.0277	7339954.	-69362.	-0.000765	0.000	2.130E+13
-489.6517	50886.	0.000				
14.160	0.0255	7138161.	-70729.	-0.000765	0.000	2.131E+13
-459.5319	51880.	0.000				
14.400	0.0233	6932557.	-72007.	-0.000764	0.000	2.131E+13
-427.9417	52875.	0.000				
14.640	0.0211	6723403.	-73192.	-0.000763	0.000	2.131E+13
-394.8827	53869.	0.000				
14.880	0.0189	6510974.	-74279.	-0.000762	0.000	2.131E+13
-360.3559	54863.	0.000				
15.120	0.0167	6295556.	-75265.	-0.000761	0.000	2.131E+13
-324.6184	55902.	0.000				
15.360	0.0145	6077445.	-76146.	-0.000760	0.000	2.131E+13
-287.1259	56896.	0.000				
15.600	0.0123	5856953.	-76917.	-0.000759	0.000	2.131E+13
-248.1686	57890.	0.000				
15.840	0.0102	5634402.	-77574.	-0.000758	0.000	2.131E+13
-207.7473	58885.	0.000				
16.080	0.007977	5410129.	-78112.	-0.000758	0.000	2.131E+13
-165.8625	59879.	0.000				
16.320	0.005796	5184479.	-78527.	-0.000757	0.000	2.131E+13
-122.5147	60874.	0.000				
16.560	0.003617	4957813.	-78815.	-0.000756	0.000	2.131E+13
-77.7041	61868.	0.000				
16.800	0.001440	4730503.	-78972.	-0.000756	0.000	2.131E+13
-31.4308	62862.	0.000				
17.040	-0.000735	4502933.	-78994.	-0.000755	0.000	2.131E+13
16.3050	63857.	0.000				
17.280	-0.002909	4275497.	-78876.	-0.000754	0.000	2.131E+13
65.5035	64851.	0.000				
17.520	-0.005081	4048605.	-78615.	-0.000754	0.000	2.131E+13
116.1649	65845.	0.000				
17.760	-0.007251	3822676.	-78205.	-0.000753	0.000	2.131E+13
168.2894	66840.	0.000				
18.000	-0.009420	3598143.	-77634.	-0.000753	0.000	2.131E+13
228.1120	69740.	0.000				
18.240	-0.0116	3375502.	-76896.	-0.000752	0.000	2.131E+13
284.5988	70734.	0.000				
18.480	-0.0138	3155222.	-75993.	-0.000752	0.000	2.131E+13
342.5496	71729.	0.000				
18.720	-0.0159	2937783.	-74921.	-0.000752	0.000	2.131E+13
401.9651	72723.	0.000				

CT23XC408.lp6o						
18.960	-0.0181	2723678.	-73676.	-0.000751	0.000	2.131E+13
462.8463	73717.	0.000				
19.200	-0.0202	2513412.	-72253.	-0.000751	0.000	2.131E+13
525.1942	74712.	0.000				
19.440	-0.0224	2307502.	-70648.	-0.000750	0.000	2.131E+13
589.0097	75706.	0.000				
19.680	-0.0246	2106478.	-68858.	-0.000750	0.000	2.131E+13
654.2941	76700.	0.000				
19.920	-0.0267	1910881.	-66877.	-0.000750	0.000	2.131E+13
721.0485	77695.	0.000				
20.160	-0.0289	1721264.	-64703.	-0.000750	0.000	2.131E+13
789.2740	78689.	0.000				
20.400	-0.0310	1538194.	-62329.	-0.000749	0.000	2.131E+13
858.9721	79683.	0.000				
20.640	-0.0332	1362248.	-59753.	-0.000749	0.000	2.131E+13
930.1440	80678.	0.000				
20.880	-0.0354	1194018.	-56969.	-0.000749	0.000	2.131E+13
1002.7910	81672.	0.000				
21.120	-0.0375	1034105.	-53975.	-0.000749	0.000	2.131E+13
1076.9144	82666.	0.000				
21.360	-0.0397	883125.	-50764.	-0.000749	0.000	2.131E+13
1152.5156	83661.	0.000				
21.600	-0.0418	741703.	-47334.	-0.000749	0.000	2.131E+13
1229.5959	84655.	0.000				
21.840	-0.0440	610481.	-43680.	-0.000749	0.000	2.131E+13
1308.1566	85649.	0.000				
22.080	-0.0461	490109.	-39797.	-0.000748	0.000	2.131E+13
1388.1988	86644.	0.000				
22.320	-0.0483	381251.	-35681.	-0.000748	0.000	2.131E+13
1469.7239	87638.	0.000				
22.560	-0.0505	284584.	-31329.	-0.000748	0.000	2.131E+13
1552.7328	88632.	0.000				
22.800	-0.0526	200796.	-26736.	-0.000748	0.000	2.131E+13
1637.2267	89627.	0.000				
23.040	-0.0548	130588.	-21897.	-0.000748	0.000	2.131E+13
1723.2063	90621.	0.000				
23.280	-0.0569	74672.	-16808.	-0.000748	0.000	2.131E+13
1810.6726	91615.	0.000				
23.520	-0.0591	33775.	-11465.	-0.000748	0.000	2.131E+13
1899.6261	92610.	0.000				
23.760	-0.0612	8634.3413	-5863.7723	-0.000748	0.000	2.131E+13
1990.0674	93604.	0.000				
24.000	-0.0634	0.000	0.000	-0.000748	0.000	2.131E+13
2081.9967	47299.	0.000				

* This analysis makes computations of pile response using nonlinear moment-curvature relationships.

The above values of total stress are computed for combined axial and bending

stress in elastic

sections and do not equal actual stresses in concrete and steel in the range of nonlinear bending.

Output Summary for Load Case No. 1:

```

Pile-head deflection          =      0.1619134 inches
Computed slope at pile head   =     -0.0008446 radians
Maximum bending moment        =     10851315. inch-lbs
Maximum shear force           =      -78994. lbs
Depth of maximum bending moment =    69.1200000 inches below pile head
Depth of maximum shear force   =    204.4800000 inches below pile head
Number of iterations          =              6
Number of zero deflection points =            1

```

Summary of Pile Response(s)

Definitions of Pile-head Loading Conditions:

```

Load Type 1: Load 1 = Shear, lbs, and Load 2 = Moment, in-lbs
Load Type 2: Load 1 = Shear, lbs, and Load 2 = Slope, radians
Load Type 3: Load 1 = Shear, lbs, and Load 2 = Rotational Stiffness, in-lbs/radian
Load Type 4: Load 1 = Top Deflection, inches, and Load 2 = Moment, in-lbs
Load Type 5: Load 1 = Top Deflection, inches, and Load 2 = Slope, radians

```

Maximum Load	Load	Pile-head Maximum Condition 1	Pile-head Condition 2	Axial	Pile-head	Moment
	Type	Shear V(lbs) or in Pile y(inches) lbs	Pile-head in-lb, rad., Rotation or in-lb/rad. radians		Deflection	in
Case Pile No.	No.			Loading lbs	inches	in-lbs
1	1	V = 8700.0000 10851315.	M = 10356000. -0.00084461	53.60000000	0.16191339	

The analysis ended normally.

Sprint



PROJECT: DO MACRO UPGRADE
SITE NAME: KILLINGLY
SITE CASCADE: CT23XC408
SITE ADDRESS: 79 PUTNAM PIKE
KILLINGLY, CT 06239
SITE TYPE: MONOPOLE
MARKET: NORTHERN CONNECTICUT



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JOB NUMBER 514-104

PROJECT MANAGER:
AIROSMITH
DEVELOPMENT
32 CLINTON ST.
SARATOGA SPRINGS, NY 12866
OFFICE: (518) 308-3740



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REVISIONS:			
DESCRIPTION	DATE	BY	REV
ISSUED FOR PERMIT	12/26/17	JOL	0

SITE NAME:
KILLINGLY

SITE NUMBER:
CT23XC408

SITE ADDRESS:
**79 PUTNAM PIKE
KILLINGLY, CT 06239**

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

SHEET NUMBER:
T-1

SITE INFORMATION	AREA MAP	PROJECT DESCRIPTION	DRAWING INDEX																																							
TOWER OWNER: TOWN OF KILLINGLY 172 MAIN STREET KILLINGLY, CT 06239 LATITUDE (NAD83): 41° 50' 50.63" N 41.84739722° LONGITUDE (NAD83): 71° 52' 44.24" W -71.8789555 COUNTY: WINDHAM COUNTY ZONING JURISDICTION: CONNECTICUT SITING COUNCIL ZONING DISTRICT: GC - (GENERAL COMMERCIAL) POWER COMPANY: NIMO PHONE: (800) 642-4272 AAV PROVIDER: VERIZON PHONE: (800) 870-6464 PROJECT MANAGER: AIROSMITH DEVELOPMENT TERRI BURKHOLDER (315) 719-2928 TBURKHOLDER@AIROSMITHDEVELOPMENT.COM		SPRINT PROPOSES TO MODIFY AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY. - REMOVE (3) EXISTING PANEL ANTENNAS - INSTALL (3) PANEL ANTENNAS - RELOCATE (3) 1900 MHz RRHS BEHIND ANTENNAS - INSTALL (3) 2.5 GHz & (8) 800 MHz RRH'S BEHIND ANTENNAS - INSTALL (48) JUMPER CABLES - INSTALL (4) HYBRID CABLES - INSTALL 2.5 EQUIPMENT INSIDE EXISTING N.V. MMBS CABINET THESE PLANS HAVE BEEN DEVELOPED FOR THE MODIFICATION OF AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY OWNED OR LEASED BY SPRINT IN ACCORDANCE WITH THE SCOPE OF WORK PROVIDED BY SPRINT. INFINIGY HAS INCORPORATED THIS SCOPE OF WORK IN THE PLANS. THESE PLANS ARE NOT FOR CONSTRUCTION UNLESS ACCOMPANIED BY A PASSING STRUCTURAL STABILITY ANALYSIS PREPARED BY A LICENSED STRUCTURAL ENGINEER. STRUCTURAL ANALYSIS MUST INCLUDE BOTH TOWER AND MOUNT.	<table><thead><tr><th>SHEET NO.</th><th>SHEET TITLE</th><th>REV.</th></tr></thead><tbody><tr><td>T-1</td><td>TITLE SHEET & PROJECT DATA</td><td>0</td></tr><tr><td>SP-1</td><td>SPRINT SPECIFICATIONS</td><td>0</td></tr><tr><td>SP-2</td><td>SPRINT SPECIFICATIONS</td><td>0</td></tr><tr><td>SP-3</td><td>SPRINT SPECIFICATIONS</td><td>0</td></tr><tr><td>A-1</td><td>SITE PLAN</td><td>0</td></tr><tr><td>A-2</td><td>TOWER ELEVATION</td><td>0</td></tr><tr><td>A-3</td><td>ANTENNA LAYOUT & MOUNTING DETAILS</td><td>0</td></tr><tr><td>A-4</td><td>EQUIPMENT & MOUNTING DETAILS</td><td>0</td></tr><tr><td>A-5</td><td>CIVIL DETAILS</td><td>0</td></tr><tr><td>A-6</td><td>PLUMBING DIAGRAM</td><td>0</td></tr><tr><td>E-1</td><td>ELECTRICAL & GROUNDING PLAN</td><td>0</td></tr><tr><td>E-2</td><td>ELECTRICAL & GROUNDING DETAILS</td><td>0</td></tr></tbody></table>	SHEET NO.	SHEET TITLE	REV.	T-1	TITLE SHEET & PROJECT DATA	0	SP-1	SPRINT SPECIFICATIONS	0	SP-2	SPRINT SPECIFICATIONS	0	SP-3	SPRINT SPECIFICATIONS	0	A-1	SITE PLAN	0	A-2	TOWER ELEVATION	0	A-3	ANTENNA LAYOUT & MOUNTING DETAILS	0	A-4	EQUIPMENT & MOUNTING DETAILS	0	A-5	CIVIL DETAILS	0	A-6	PLUMBING DIAGRAM	0	E-1	ELECTRICAL & GROUNDING PLAN	0	E-2	ELECTRICAL & GROUNDING DETAILS	0
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E-2	ELECTRICAL & GROUNDING DETAILS	0																																								
	LOCATION MAP	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. - INTERNATIONAL BUILDING CODE (2015 IBC) - TIA-222-G OR LATEST EDITION - NFPA 780 - LIGHTNING PROTECTION CODE 2011 NATIONAL ELECTRIC CODE OR LATEST EDITION - ANY OTHER NATIONAL OR LOCAL APPLICABLE CODES, MOST RECENT EDITIONS - CT BUILDING CODE - LOCAL BUILDING CODE - CITY/COUNTY ORDINANCES																																								



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:
- GR-63-CORE NEBS REQUIREMENTS: PHYSICAL PROTECTION
 - GR-78-CORE GENERIC REQUIREMENTS FOR THE PHYSICAL DESIGN AND MANUFACTURE OF TELECOMMUNICATIONS EQUIPMENT.
 - GR-1089 CORE, ELECTROMAGNETIC COMPATIBILITY AND ELECTRICAL SAFETY -GENERIC CRITERIA FOR NETWORK TELECOMMUNICATIONS EQUIPMENT.
 - NATIONAL FIRE PROTECTION ASSOCIATION CODES AND STANDARDS (NFPA) INCLUDING NFPA 70 (NATIONAL ELECTRICAL CODE - "NEC") AND NFPA 101 (LIFE SAFETY CODE).
 - AMERICAN SOCIETY FOR TESTING OF MATERIALS (ASTM)
 - INSTITUTE OF ELECTRONIC AND ELECTRICAL ENGINEERS (IEEE)
 - AMERICAN CONCRETE INSTITUTE (ACI)
 - AMERICAN WIRE PRODUCERS ASSOCIATION (AWPA)
 - CONCRETE REINFORCING STEEL INSTITUTE (CRSI)
 - AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS (AASHTO)
 - PORTLAND CEMENT ASSOCIATION (PCA)
 - NATIONAL CONCRETE MASONRY ASSOCIATION (NCMA)
 - BRICK INDUSTRY ASSOCIATION (BIA)
 - AMERICAN WELDING SOCIETY (AWS)
 - NATIONAL ROOFING CONTRACTORS ASSOCIATION (NRCA)
 - SHEET METAL AND AIR CONDITIONING CONTRACTORS' NATIONAL ASSOCIATION (SMACNA)
 - DOOR AND HARDWARE INSTITUTE (DHI)
 - OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA)
 - 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:
- ACCEPT DELIVERIES AS SHIPPED AND TAKE RECEIPT.
 - VERIFY COMPLETENESS AND CONDITION OF ALL DELIVERIES.
 - TAKE RESPONSIBILITY FOR EQUIPMENT AND PROVIDE INSURANCE PROTECTION AS REQUIRED IN AGREEMENT.
 - RECORD ANY DEFECTS OR DAMAGES AND WITHIN TWENTY-FOUR HOURS AFTER RECEIPT, REPORT TO SPRINT OR ITS DESIGNATED PROJECT REPRESENTATIVE OF SUCH.
 - PROVIDE SECURE AND NECESSARY WEATHER PROTECTED WAREHOUSING.
 - COORDINATE SAFE AND SECURE TRANSPORTATION OF MATERIAL AND EQUIPMENT, DELIVERING AND OFF-LOADING FROM CONTRACTOR'S WAREHOUSE TO SITE.
- 3.2 DELIVERABLES:
- A. COMPLETE SHIPPING AND RECEIPT DOCUMENTATION IN ACCORDANCE WITH COMPANY PRACTICE.
- B. IF APPLICABLE, COMPLETE LOST/STOLEN/DAMAGED DOCUMENTATION REPORT AS NECESSARY IN ACCORDANCE WITH COMPANY PRACTICE, AND AS DIRECTED BY COMPANY.
- C. UPLOAD DOCUMENTATION INTO SPRINT SITE MANAGEMENT SYSTEM (SMS) AND/OR PROVIDE HARD COPY DOCUMENTATION AS REQUESTED.

SECTION 01 300 - CELL SITE CONSTRUCTION CO.

PART 1 - GENERAL

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

PART 2 - PRODUCTS (NOT USED)

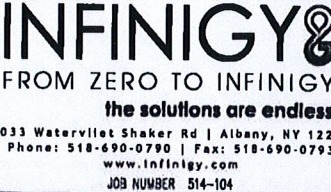
PART 3 - EXECUTION

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

PLANS PREPARED FOR:



PLANS PREPARED BY:



PROJECT MANAGER:



ENGINEERING LICENSE:



DRAWING NOTICE:

THESE DOCUMENTS ARE CONFIDENTIAL AND ARE THE SOLE PROPERTY OF SPRINT AND MAY NOT BE REPRODUCED, DISSEMINATED OR REDISTRIBUTED WITHOUT THE EXPRESS WRITTEN CONSENT OF SPRINT.

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR PERMIT	12/26/17	JL	0

SITE NAME:

KILLINGLY

SITE NUMBER:

CT23XC408

SITE ADDRESS:

79 PUTNAM PIKE
KILLINGLY, CT 06239

SHEET DESCRIPTION:

SPRINT SPECIFICATIONS

SHEET NUMBER:

SP-1

CONTINUE FROM SP-1

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

3.2 GENERAL REQUIREMENTS FOR 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. 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, AZL - UPLOAD REPORT FROM ANTENNA ALIGNMENT TOOL TO SITERRA TASK 465. INSTALLED AZIMUTH, DOWNTILT, AND AZL MUST CONFORM TO THE RF DATA SHEETS. SWEEP AND FIBER TESTS
 2. SCANABLE BARCODE PHOTOGRAPHS OF TOWER TOP AND INACCESSIBLE SERIALIZED EQUIPMENT
 3. ALL AVAILABLE JURISDICTIONAL INFORMATION
 4. PDF SCAN OF REDLINES PRODUCED IN FIELD

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

1.5 COMMISSIONING: PERFORM ALL COMMISSIONING AS REQUIRED BY APPLICABLE MOPs

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

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 REQUIREMENTS FOR TESTING:

A. THIRD PARTY TESTING AGENCY:

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

3.2 REQUIRED TESTS:

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

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

3.3 REQUIRED INSPECTIONS

A. SCHEDULE INSPECTIONS WITH COMPANY REPRESENTATIVE.

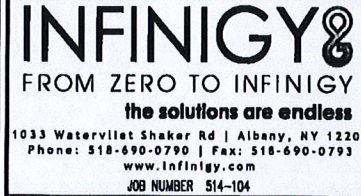
B. CONDUCT INSPECTIONS INCLUDING BUT NOT LIMITED TO THE FOLLOWING:

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

PLANS PREPARED FOR:



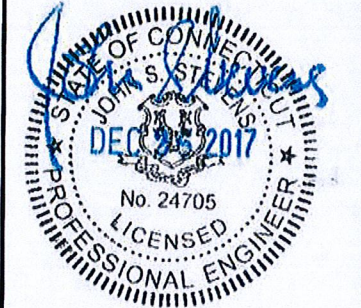
PLANS PREPARED BY:



PROJECT MANAGER:



ENGINEERING LICENSE:



DRAWING NOTICE:

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REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR PERMIT	12/26/17	JOL	0

SITE NAME:

KILLINGLY

SITE NUMBER:

CT23XC408

SITE ADDRESS:

79 PUTNAM PIKE
KILLINGLY, CT 06239

SHEET DESCRIPTION:

SPRINT SPECIFICATIONS

SHEET NUMBER:

SP-2

CONTINUE FROM SP-2

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

SECTION 01 400 - SUBMITTALS & TESTS

PART 1 - GENERAL

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

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

- 3.1 WEEKLY REPORTS:
- A. CONTRACTOR SHALL PROVIDE SPRINT WITH WEEKLY REPORTS SHOWING PROJECT STATUS. THIS STATUS REPORT FORMAT WILL BE PROVIDED TO THE CONTRACTOR BY SPRINT. THE REPORT WILL CONTAIN SITE ID NUMBER, THE MILESTONES FOR EACH SITE, INCLUDING THE BASELINE DATE, ESTIMATED COMPLETION DATE AND ACTUAL COMPLETION DATE.
- B. REPORT INFORMATION WILL BE TRANSMITTED TO SPRINT VIA ELECTRONIC MEANS AS REQUIRED. THIS INFORMATION WILL PROVIDE A BASIS FOR PROGRESS MONITORING AND PAYMENT.
- 3.2 PROJECT CONFERENCE CALLS:
- A. SPRINT MAY HOLD WEEKLY PROJECT CONFERENCE CALLS. CONTRACTOR WILL BE REQUIRED TO COMMUNICATE SITE STATUS, MILESTONE COMPLETIONS AND UPCOMING MILESTONE PROJECTIONS, AND ANSWER ANY OTHER SITE STATUS QUESTIONS AS NECESSARY.
- 3.3 PROJECT TRACKING IN SMS:
- A. CONTRACTOR SHALL PROVIDE SCHEDULE UPDATES AND PROJECTIONS IN THE SMS SYSTEM ON A WEEKLY BASIS.
- 3.4 ADDITIONAL REPORTING:
- A. ADDITIONAL OR ALTERNATE REPORTING REQUIREMENTS MAY BE ADDED TO THE REPORT AS DETERMINED TO BE REASONABLY NECESSARY BY COMPANY.
- 3.5 PROJECT PHOTOGRAPHS:
- A. FILE DIGITAL PHOTOGRAPHS OF COMPLETED SITE IN JPEG FORMAT IN THE SMS PHOTO LIBRARY FOR THE RESPECTIVE SITE. PHOTOGRAPHS SHALL BE CLEARLY LABELED WITH SITE NUMBER, NAME AND DESCRIPTION, AND SHALL INCLUDE AT A MINIMUM THE FOLLOWING AS APPLICABLE:
1. SHELTER AND TOWER OVERVIEW.
 2. TOWER FOUNDATION(S) - FORMS AND STEEL BEFORE POUR (EACH ANCHOR ON GUYED TOWERS).
 3. TOWER FOUNDATION(S) POUR WITH VIBRATOR IN USE (EACH ANCHOR ON GUYED TOWERS).
 4. TOWER STEEL AS BEING INSTALLED INTO HOLE (SHOW ANCHOR STEEL ON GUYED TOWERS).
 5. PHOTOS OF TOWER SECTION STACKING.
 6. CONCRETE TESTING / SAMPLES.
 7. PLACING OF ANCHOR BOLTS IN TOWER FOUNDATION.
 8. BUILDING/WATER TANK FROM ROAD FOR TENANT IMPROVEMENTS OR COMMENTS.
 9. SHELTER FOUNDATION--FORMS AND STEEL BEFORE POURING.
 10. SHELTER FOUNDATION POUR WITH VIBRATOR IN USE.
 11. COAX CABLE ENTRY INTO SHELTER.
 12. PLATFORM MECHANICAL CONNECTIONS TO TOWER/MONOPOLE.
 13. ROOFTOP PRE AND POST CONSTRUCTION PHOTOS TO INCLUDE PENETRATIONS AND INTERIOR CEILING.
 14. PHOTOS OF TOWER TOP COAX LINE COLOR CODING AND COLOR CODING AT GROUND LEVEL.
 15. PHOTOS OF ALL APPROPRIATE COMPANY OR REGULATORY SIGNAGE.
 16. PHOTOS OF EQUIPMENT BOLT DOWN INSIDE SHELTER.
 17. POWER AND TELCO ENTRANCE TO COMPANY ENCLOSURE AND POWER AND TELCO SUPPLY LOCATIONS INCLUDING METER/DISCONNECT.
 18. ELECTRICAL TRENCH(S) WITH ELECTRICAL / CONDUIT BEFORE BACKFILL.
 19. ELECTRICAL TRENCH(S) WITH FOIL-BACKED TAPE BEFORE FURTHER BACKFILL.
 20. TELCO TRENCH WITH TELEPHONE / CONDUIT BEFORE BACKFILL.
 21. TELCO TRENCH WITH FOIL-BACKED TAPE BEFORE FURTHER BACKFILL.
 22. SHELTER GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADI).
 23. TOWER GROUND-RING TRENCH WITH GROUND-WIRE BEFORE BACKFILL (SHOW ALL CAD WELDS AND BEND RADI).

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

PLANS PREPARED FOR:



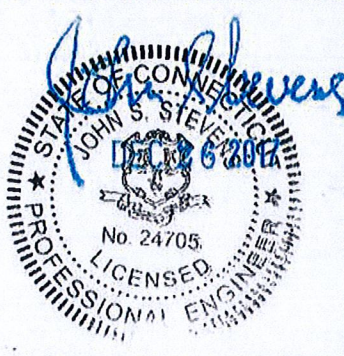
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www.infinigy.com
JOB NUMBER 514-104

PROJECT MANAGER:

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OFFICE: (518) 306-3740

ENGINEERING LICENSE:



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REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR PERMIT	12/26/17	JOL	0

SITE NAME:

KILLINGLY

SITE NUMBER:

CT23XC408

SITE ADDRESS:

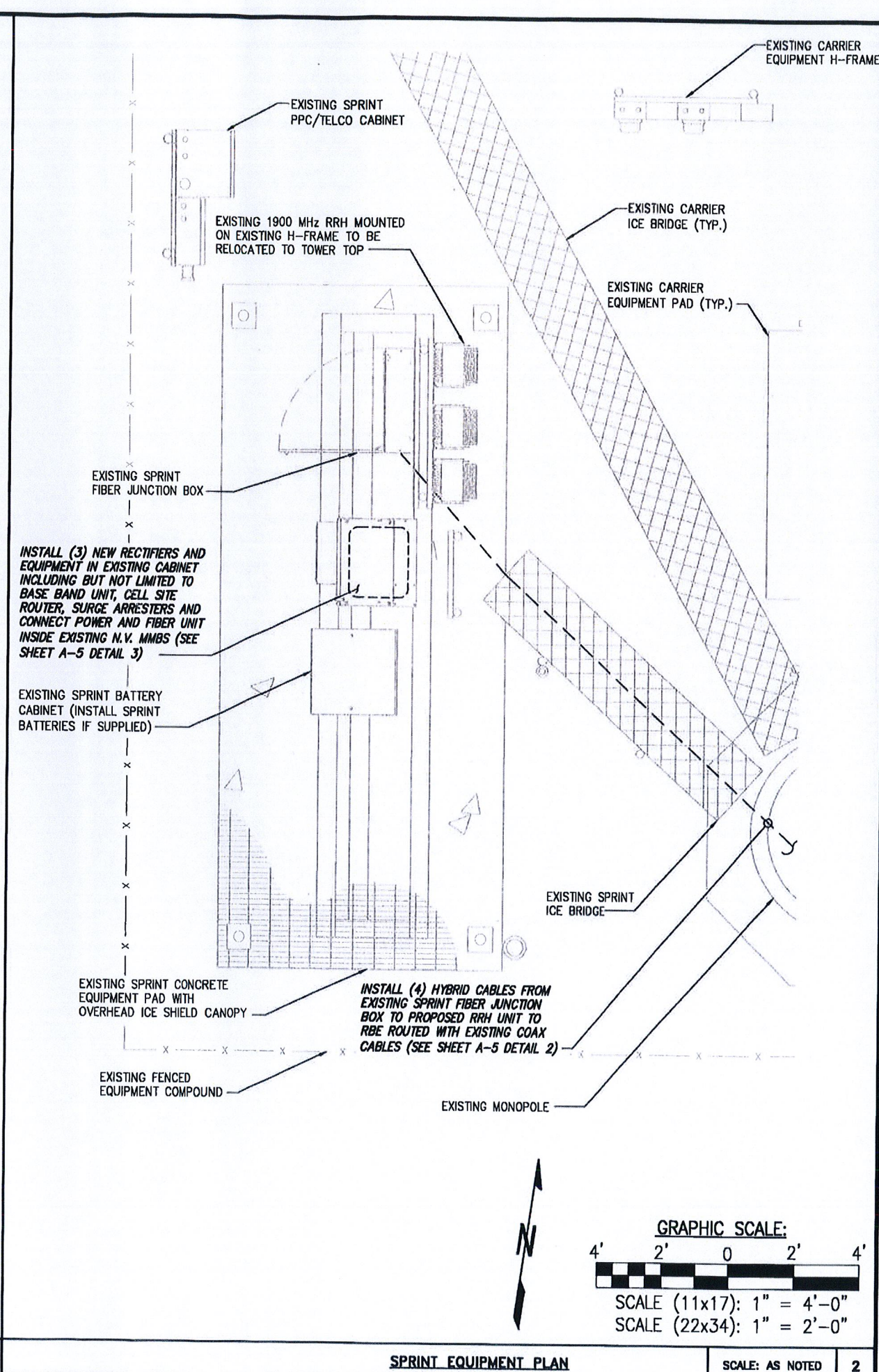
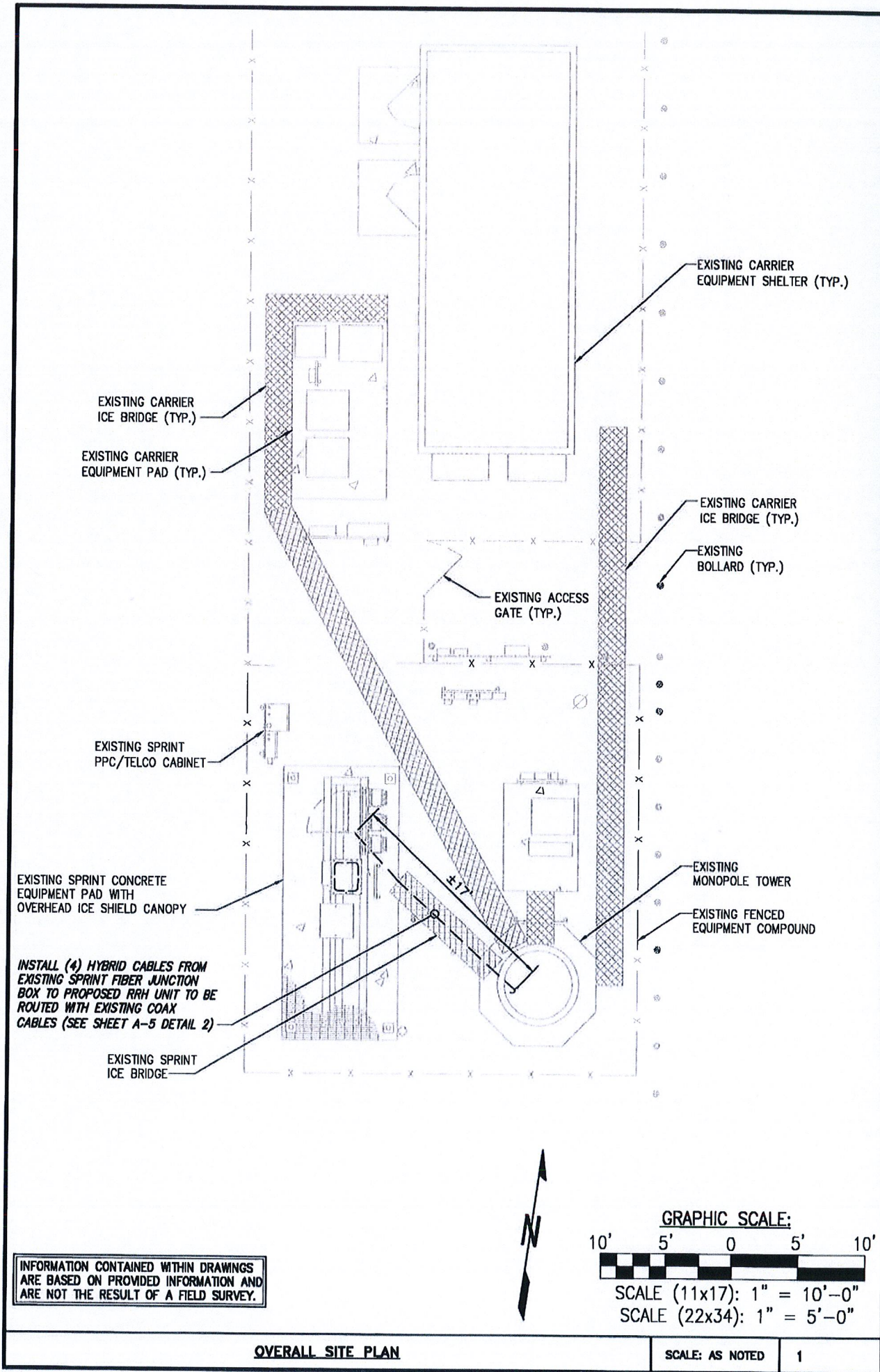
79 PUTNAM PIKE
KILLINGLY, CT 06239

SHEET DESCRIPTION:

SPRINT SPECIFICATIONS

SHEET NUMBER:

SP-3



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PROJECT MANAGER:

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OFFICER, (518) 308-3740

ENGINEERING LICENSE:

John S. Stevens
STATE OF CONNECTICUT
JOHN S. STEVENS
DEC 2017
No. 24705
LICENSED PROFESSIONAL ENGINEER

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SITE NAME:

KILLINGLY

SITE NUMBER:

CT23XC408

SITE ADDRESS:

**79 PUTNAM PIKE
KILLINGLY, CT 06239**

SHEET DESCRIPTION:

SITE PLAN

SHEET NUMBER:

A-1

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

INSTALL (1) SPRINT 800MHz RRH MOUNTED
BEHIND PROPOSED ANTENNAS EACH
SECTOR (SEE SHEET A-4 DETAIL 4)

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

TOP OF TOWER
ELEV. = ±150'-0" A.G.L.

OF EXISTING/TO BE
INSTALLED SPRINT ANTENNAS
ELEV. = 140' A.G.L.

INSTALL (1) SPRINT TRIBAND ANTENNA
EACH SECTOR TO REPLACE EXISTING PANEL
ANTENNA (SEE SHEET A-4 DETAIL 3)

INSTALL (1) SPRINT 800 MHz
RRH MOUNTED BEHIND EXISTING
PANEL ANTENNA EACH SECTOR
(SEE SHEET A-4 DETAIL 4)

EXISTING (1) SPRINT GROUND
MOUNTED 1900 MHz RRH RELOCATED
FROM H-FRAME (PER SECTOR)

EXISTING (1) SPRINT PANEL
ANTENNA TO REMAIN (PER SECTOR)

INSTALL (1) THREE SECTOR HEAVY 12
FRAME AND MONOPOLE ATTACHMENT
HARDWARE, SITE PRO P/N:
VFA12-HD3L4NP SEE DETAIL 3

EXISTING CARRIER PANEL
ANTENNA (TYP.)

EXISTING MONOPOLE

INSTALL (4) HYBRID CABLES FROM
EXISTING SPRINT FIBER JUNCTION
BOX TO PROPOSED RRH UNIT TO
BE ROUTED WITH EXISTING COAX
CABLES (SEE SHEET A-5 DETAIL 2)

GROUND LEVEL

NOTE:

- STRUCTURAL ANALYSIS COMPLETED BY
INFINIGY. FOR ADDITIONAL INFORMATION SEE
REPORT TITLED: "STRUCTURAL ANALYSIS
REPORT, SITE NAME: CT23XC408", DATED:
"NOVEMBER 18, 2017".
ACCORDING TO RESULTS OF STRUCTURAL
MODIFICATION REPORT, THE STRUCTURE HAS
SUFFICIENT CAPACITY TO SUPPORT THE
PROPOSED LOADING.
- ANTENNA AND RRH SUPPORT EVALUATION
COMPLETED BY INFINIGY. FOR ADDITIONAL
INFORMATION SEE REPORT TITLED: "DO
MACRO PROJECT MOUNT REPLACEMENT
CERTIFICATION", DATED: "DECEMBER 6,
2017". ACCORDING TO THE RESULTS OF
REVIEW, THE ANTENNA AND RRH SUPPORTS
WILL NOT BE ADEQUATE TO SUPPORT THE
PROPOSED LOADING. CONTRACTOR TO
INSTALL HEAVY DUTY V-FRAME ASSEMBLY
WITH TWO STIFF ARMS, SITE PRO VFA12-HD.

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	KMW ETCR-654L12H6	KMW	20°	1	-	(2) 800 MHz 2X50W RRH W/ FILTER	SEE SHEET A-5 DETAIL 1	±140' AGL	±140' AGL
	EXISTING	DB980H90E-M	DECIBEL	20°	1	REMOVE	(1) TD-RRH8X20-25 W/ SOLAR SHIELD	---		
	EXISTING	DB980H90E-M	DECIBEL	20°	1	REMAIN	(1) 1900 MHz 4X45 RRH	EXISTING COAX		
BETA	PROPOSED	KMW ETCR-654L12H6	KMW	120°	1	-	(2) 800 MHz 2X50W RRH W/ FILTER	SEE SHEET A-5 DETAIL 1	±187'	±140' AGL
	EXISTING	DB980H90E-M	DECIBEL	120°	1	REMOVE	(1) TD-RRH8X20-25 W/ SOLAR SHIELD	---		
	EXISTING	DB980H90E-M	DECIBEL	120°	1	REMAIN	(1) 1900 MHz 4X45 RRH	EXISTING COAX		
GAMMA	PROPOSED	KMW ETCR-654L12H6	KMW	210°	1	-	(2) 800 MHz 2X50W RRH W/ FILTER	SEE SHEET A-5 DETAIL 1	±140' AGL	±140' AGL
	EXISTING	DB980H90E-M	DECIBEL	210°	1	REMOVE	(1) TD-RRH8X20-25 W/ SOLAR SHIELD	---		
	EXISTING	DB980H90E-M	DECIBEL	210°	1	REMAIN	(1) 1900 MHz 4X45 RRH	EXISTING COAX		

PROJECT SCOPE:

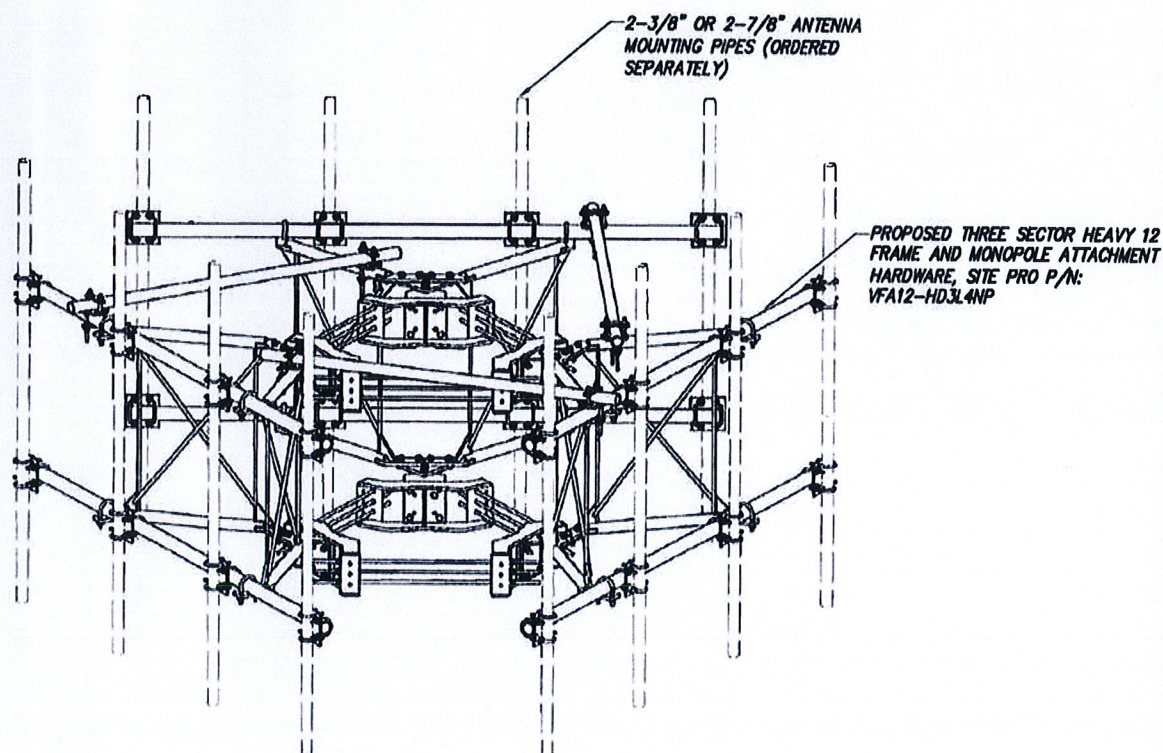
REMOVE: (3) PANEL ANTENNAS INSTALL: (3) PANEL ANTENNAS AND (9) RRH'S RELOCATE: (3) EXISTING RRH'S

- * 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



V-FRAME ASSEMBLY WITH STIFF ARM DETAIL

NO SCALE

3

PLANS PREPARED FOR:

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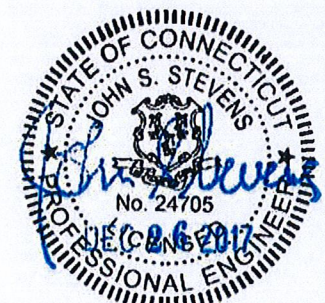
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REVISIONS:	DESCRIPTION	DATE	BY	REV
ISSUED FOR PERMIT		12/26/17	JDL	0

SITE NAME:

KILLINGLY

SITE NUMBER:

CT23XC408

SITE ADDRESS:

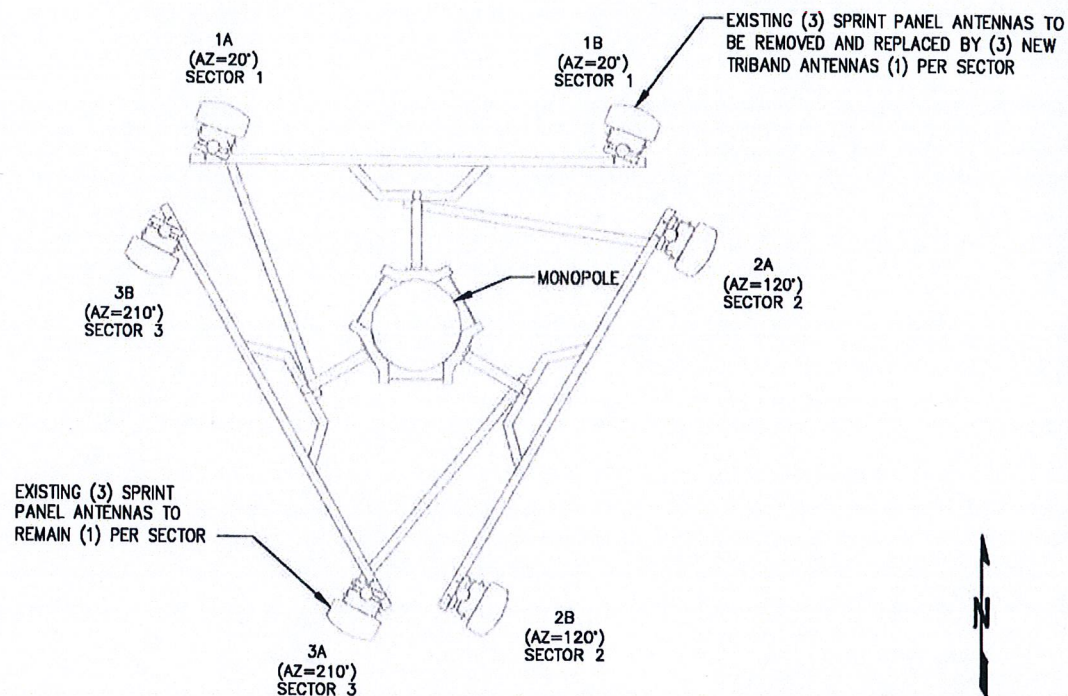
79 PUTNAM PIKE
KILLINGLY, CT 06239

SHEET DESCRIPTION:

TOWER ELEVATION

SHEET NUMBER:

A-2

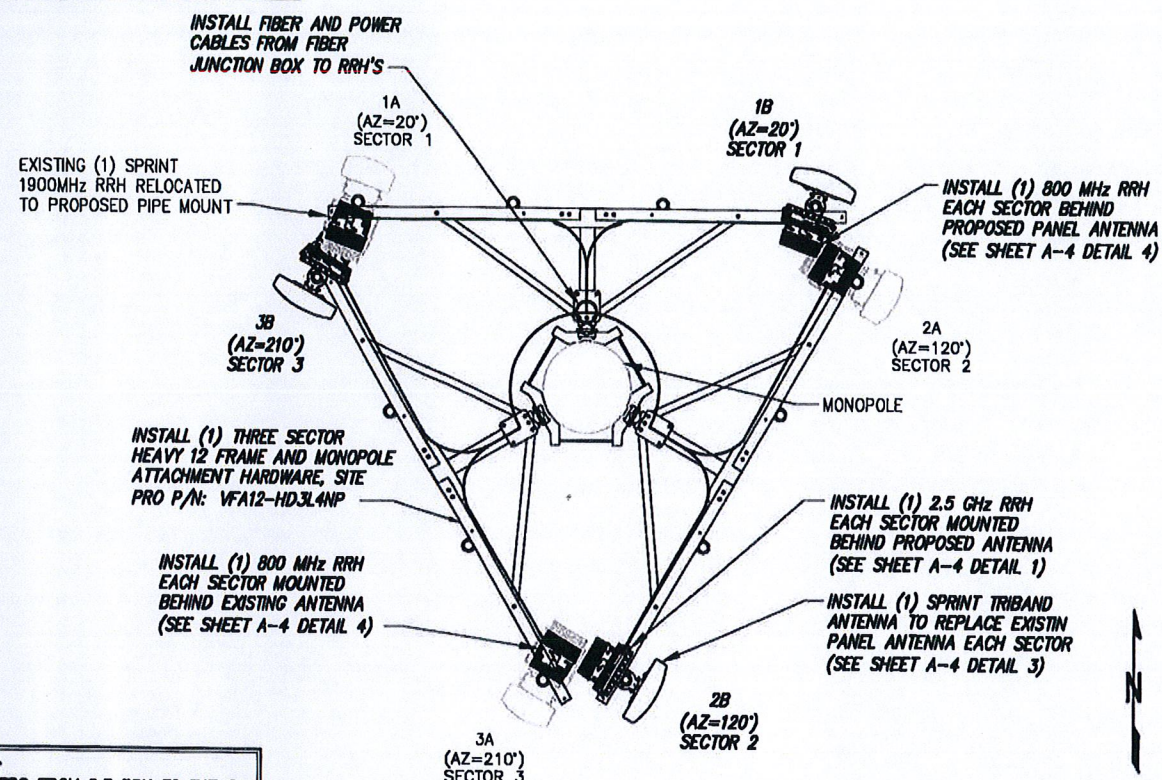


EXISTING ANTENNA LAYOUT

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.



FINAL ANTENNA & RRH LAYOUT

NO SCALE

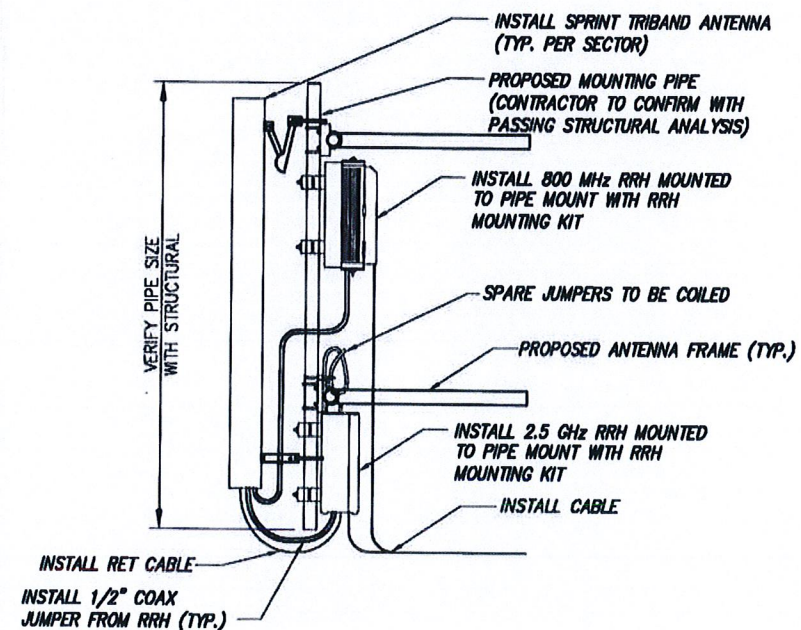
2

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 ANTENNA & RRH MOUNTING DETAILS

NO SCALE

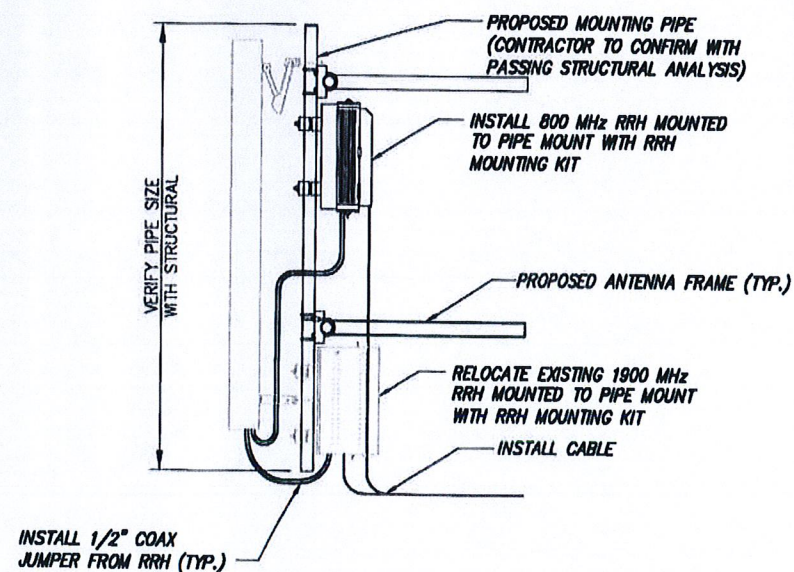
3

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

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

NOTES:

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



TYPICAL RRH MOUNTING DETAILS

NO SCALE

4

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REVISIONS:	DESCRIPTION	DATE	BY	REV.
ISSUED FOR PERMIT		12/26/17	JDL	0

SITE NAME:

KILLINGLY

SITE NUMBER:

CT23XC408

SITE ADDRESS:

79 PUTNAM PIKE
KILLINGLY, CT 06239

SHEET DESCRIPTION:

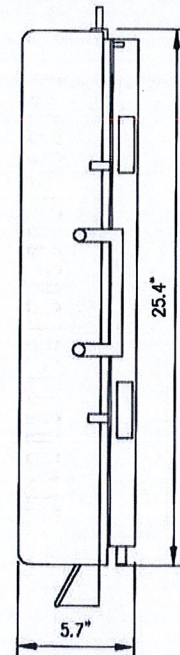
ANTENNA LAYOUT
& MOUNTING DETAILS

SHEET NUMBER:

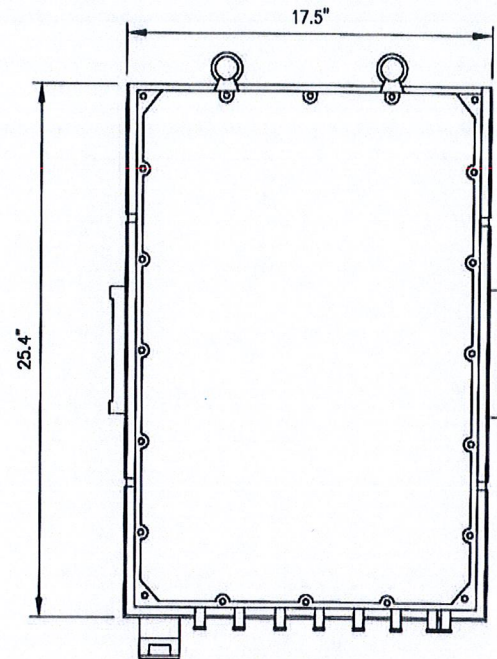
A-3

RRH: ALCATEL LUCENT TD-RRH8X20

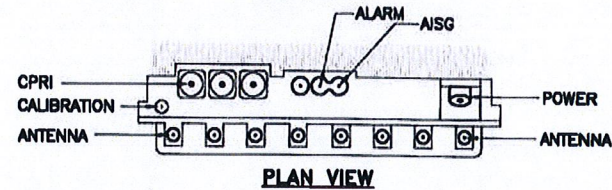
COLOR: LIGHT GREY
WEIGHT: 70 LBS.



SIDE VIEW



FRONT VIEW



PLAN VIEW

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

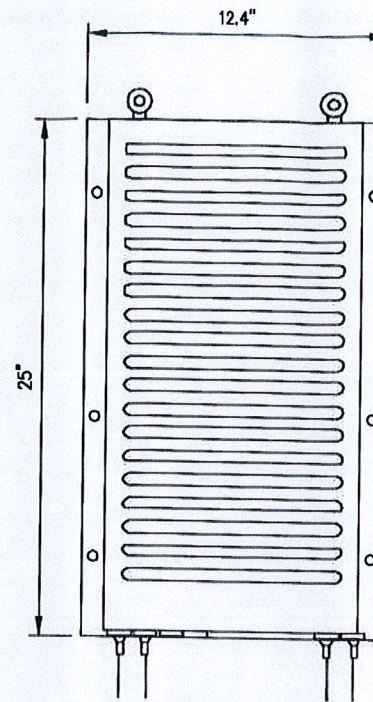
2.5 RRH

NO SCALE

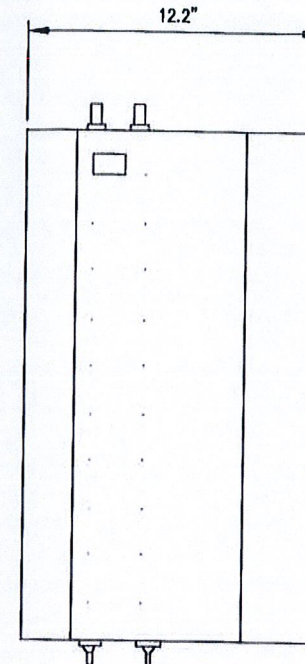
1

RRH: ALCATEL LUCENT 1900 MHz

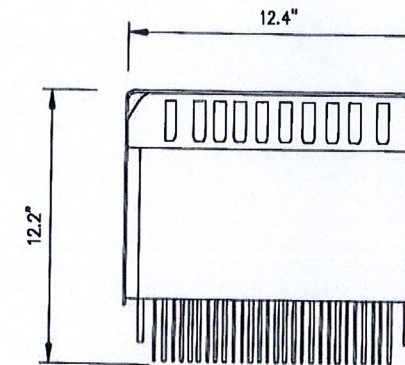
COLOR: LIGHT GREY
WEIGHT: 70 LBS.
(INCLUDING OPTIONAL SOLAR SHIELD)



FRONT VIEW



SIDE VIEW



TOP VIEW

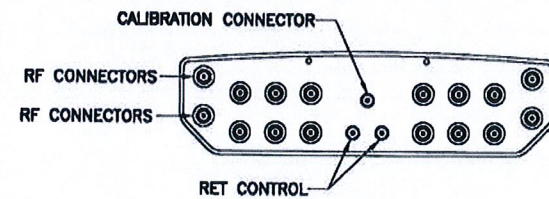
1900 MHz RRH

NO SCALE

2

ANTENNA KMW ETCR-654L12H6

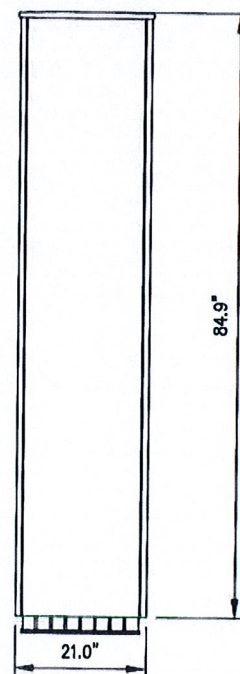
RADOME MATERIAL: ASA
RADOME COLOR: LIGHT GREY
DIMENSIONS, HxWxD.in(m/m): 84.9"x21.0"x6.3" (2156x533x160mm)
WEIGHT: 84.9 lbs
CONNECTORS: (8) 7/16" DIN FEMALE
(8) MINI DIN FEMALE
(1) N TYPE(CAL PORT, FEMALE)



PLAN VIEW



SIDE VIEW



FRONT VIEW

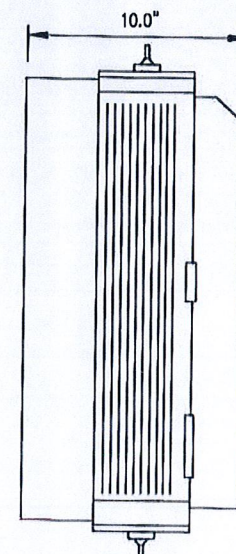
TRIBAND ANTENNA

NO SCALE

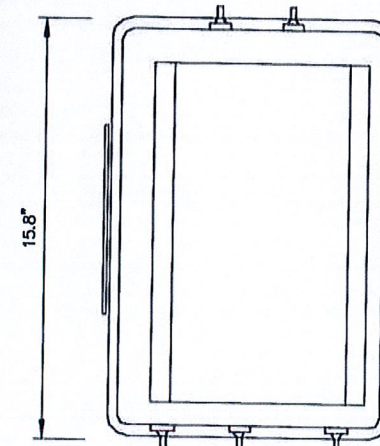
3

RRH: ALCATEL LUCENT RRH 800 MHz 2x50W

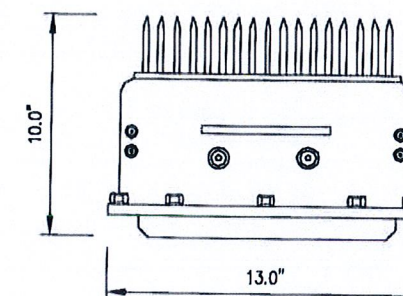
COLOR: LIGHT GREY
WEIGHT: 53 LBS.



SIDE VIEW



FRONT VIEW



PLAN VIEW

800 MHz RRH

NO SCALE

4

NOTES

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

PLANS PREPARED FOR:

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PLANS PREPARED BY:

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www.infinigy.com
JOB NUMBER 514-104

PROJECT MANAGER:

AIRSMITH
DEVELOPMENT
92 CLINTON ST.
SARATOGA SPRINGS, NY 12868
OFFICE: (518) 308-3740

ENGINEERING LICENSE:



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REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR PERMIT	12/28/17	JOL	0

SITE NAME:

KILLINGLY

SITE NUMBER:

CT23XC408

SITE ADDRESS:

79 PUTNAM PIKE
KILLINGLY, CT 06239

SHEET DESCRIPTION:

EQUIPMENT &
MOUNTING DETAILS

SHEET NUMBER:

A-4

RFS HYBRIFLEX RISER CABLE SCHEDULE

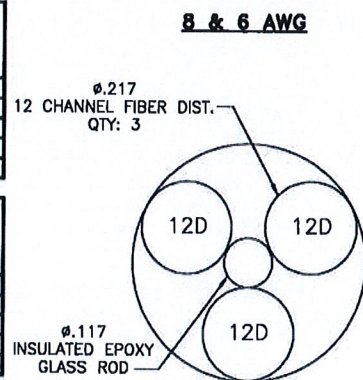
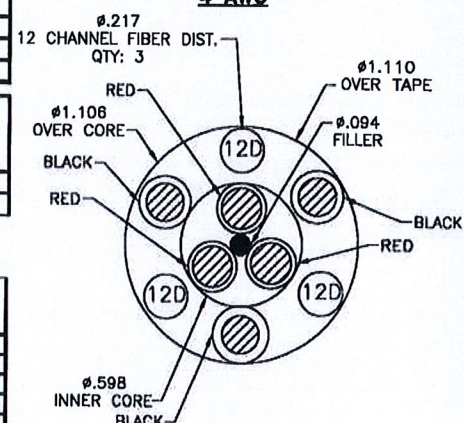
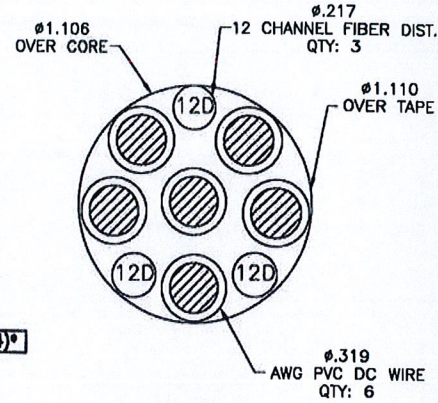
Fiber Only (Existing DC Power)	Hybrid cable MN: HB058-M12-050F 12x multi-mode fiber pairs, Top: Outdoor protected connectors, Bottom: LC Connectors, 5/8 cable, 50 ft	50 ft
	MN: HB058-M12-075F	75 ft
	MN: HB058-M12-100F	100 ft
	MN: HB058-M12-125F	125 ft
	MN: HB058-M12-150F	150 ft
	MN: HB058-M12-175F	175 ft
8 AWG Power	Hybrid cable MN: HB114-08U3M12-050F 3x 8 AWG power pairs, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/4 cable, 50 ft	50 ft
	MN: HB114-08U3M12-075F	75 ft
	MN: HB114-08U3M12-100F	100 ft
	MN: HB114-08U3M12-125F	125 ft
	MN: HB114-08U3M12-150F	150 ft
	MN: HB114-08U3M12-175F	175 ft
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.

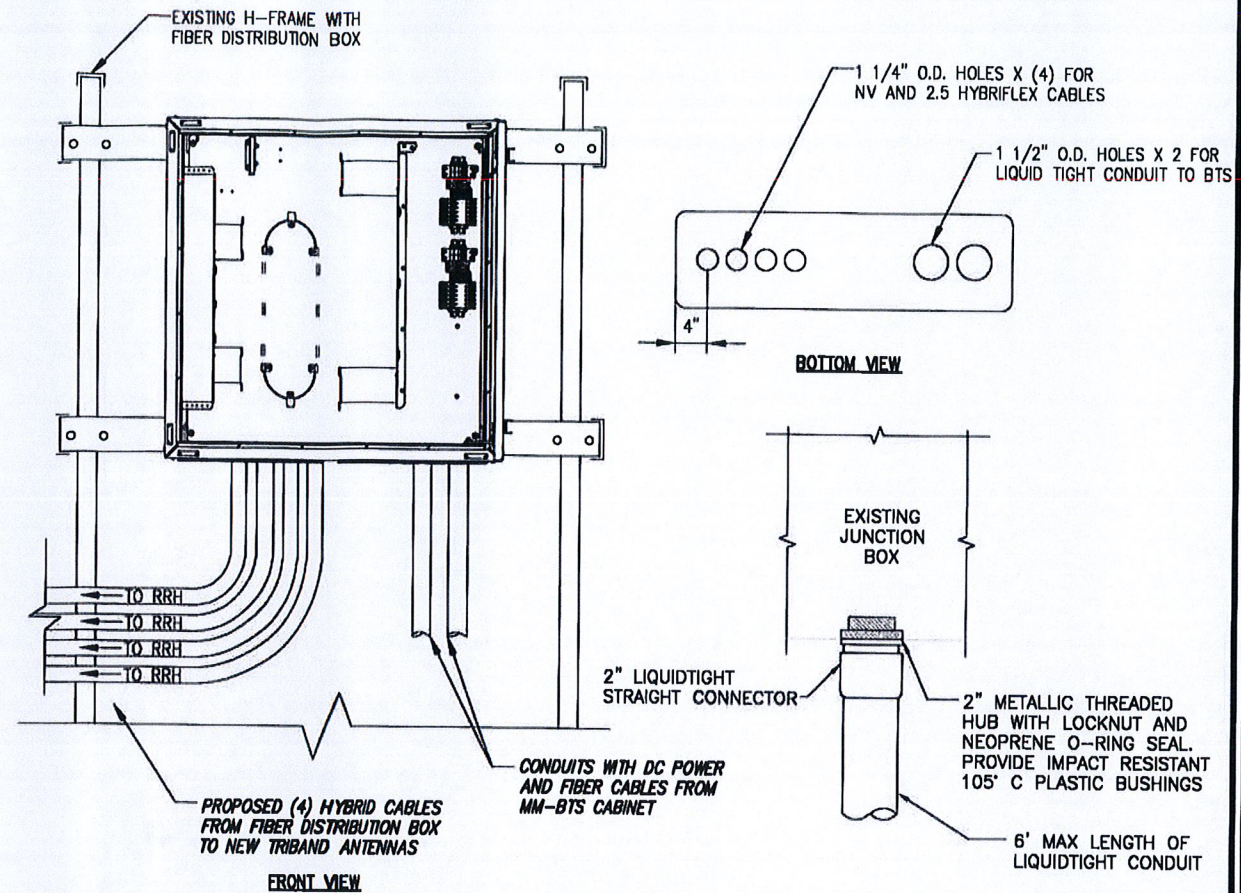
* PROPOSED CABLE LENGTH WAS DETERMINED USING THE SUM OF THE RAD CENTER OF
ANTENNAS, AND DISTANCE FROM EXISTING EQUIPMENT AREA TO TOWER BASE WITH AN
ADDITIONAL 20' BUFFER. LENGTH TO BE VERIFIED IN FIELD PRIOR TO ORDERING MATERIALS.



800/1900/2500 CROSS SECTION DATA

NO SCALE

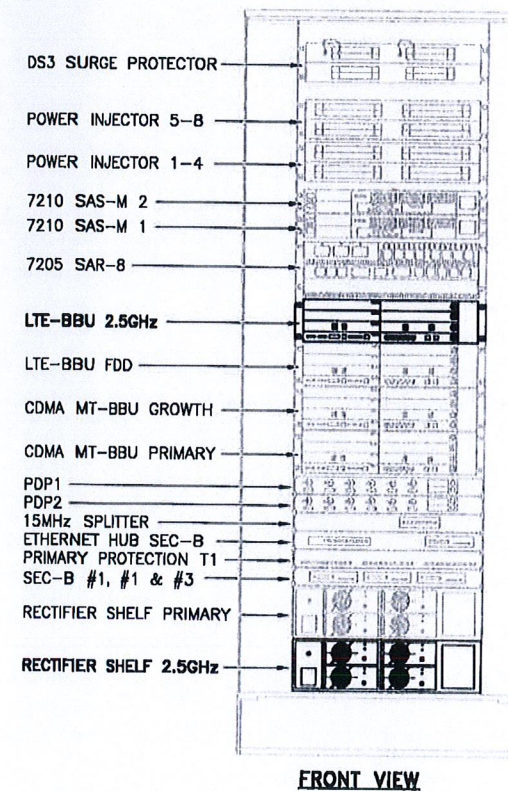
1



FIBER JUNCTION BOX & PENETRATION

NO SCALE

2



FRONT VIEW

NEW EQUIPMENT IN EXISTING CABINET

NO SCALE

3

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DEVELOPMENT
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REVISIONS:	DESCRIPTION	DATE	BY	REV.
ISSUED FOR PERMIT		12/28/17	JOL	0

SITE NAME:

KILLINGLY

SITE NUMBER:

CT23XC408

SITE ADDRESS:

79 PUTNAM PIKE
KILLINGLY, CT 06239

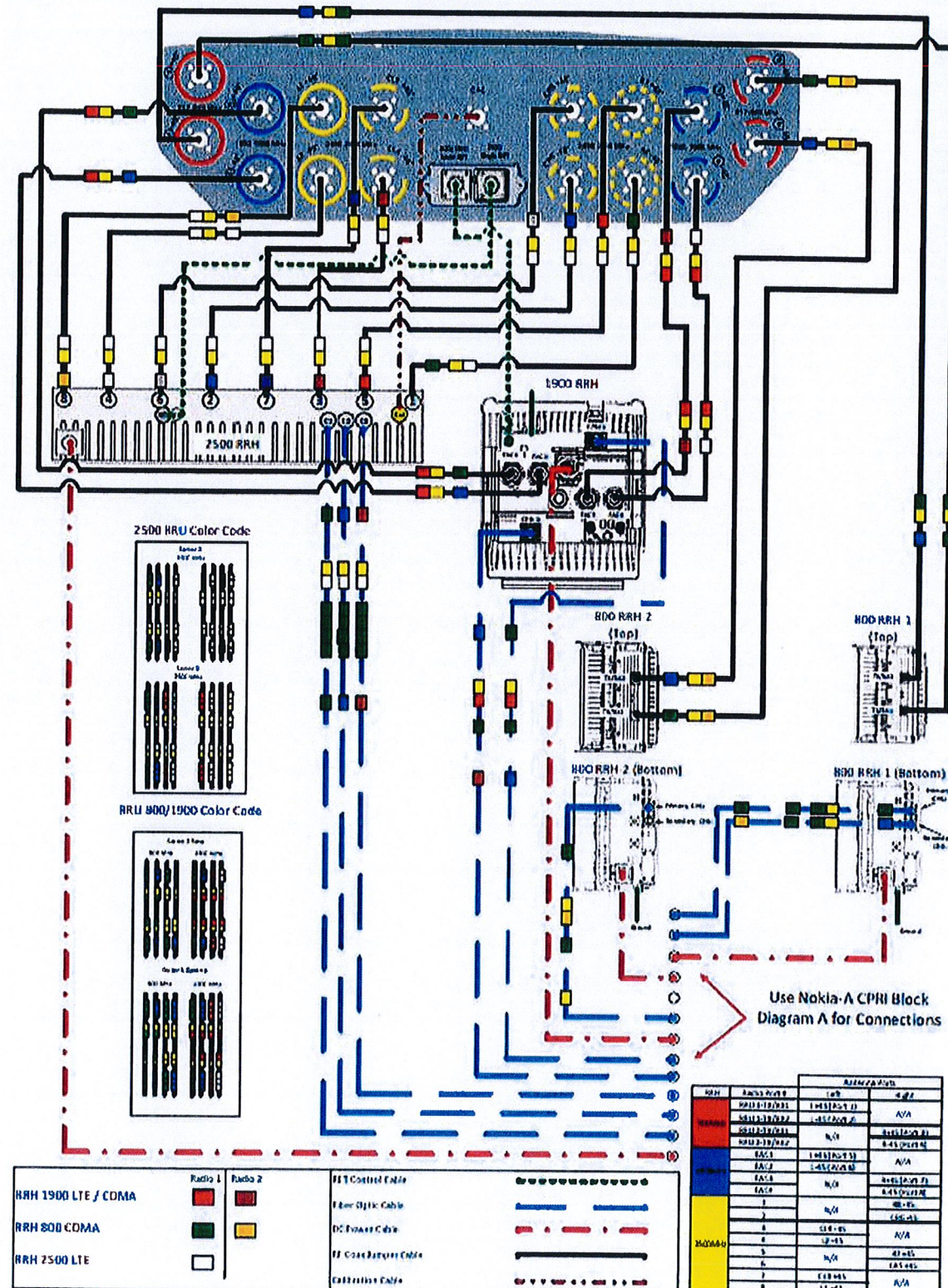
SHEET DESCRIPTION:

CIVIL DETAILS

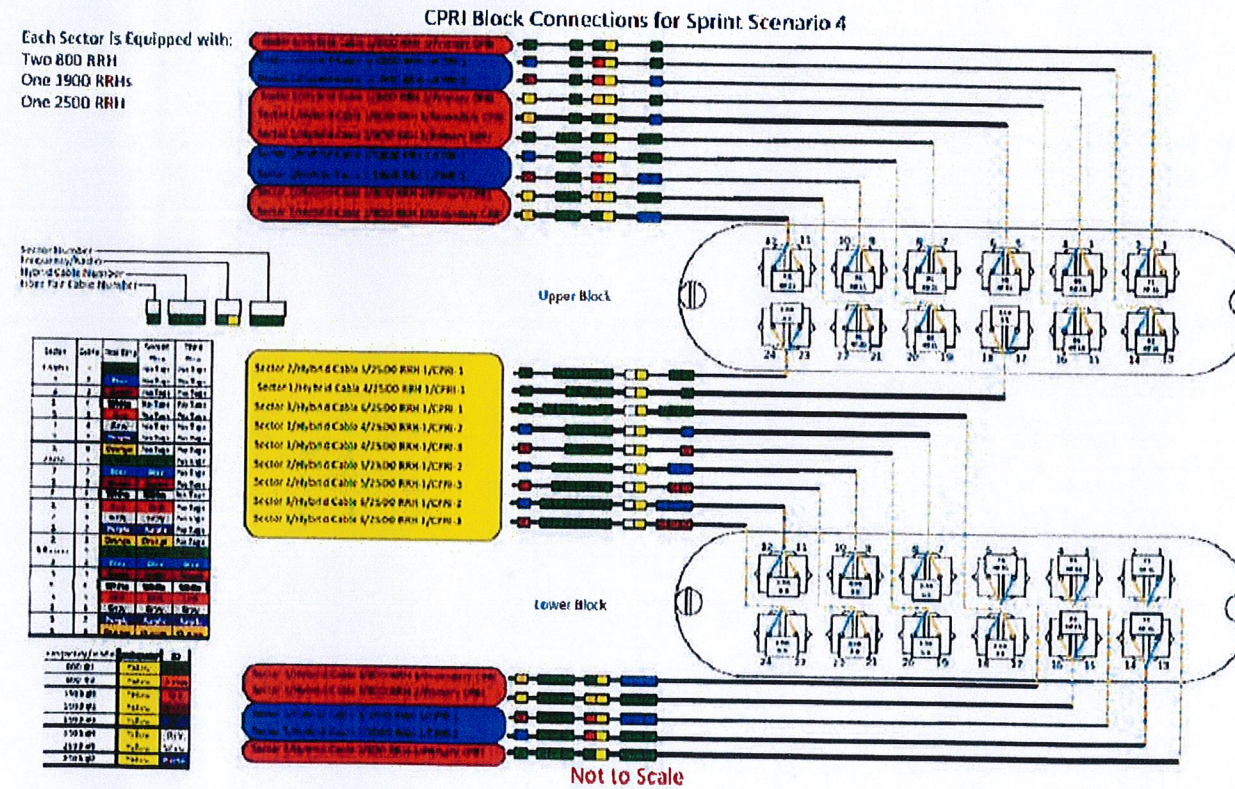
SHEET NUMBER:

A-5

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



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



RRH	Port	Port	Port
RRH 1900	1	2	3
RRH 800	4	5	6
RRH 2500	7	8	9
RRH 1900	10	11	12
RRH 800	13	14	15
RRH 2500	16	17	18

PLUMBING DIAGRAM

NO SCALE

1

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PLANS PREPARED BY:

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DESCRIPTION	DATE	BY	REV

ISSUED FOR PERMIT

12/26/17

JDL

0

SITE NAME:

KILLINGLY

SITE NUMBER:

CT23XC408

SITE ADDRESS:

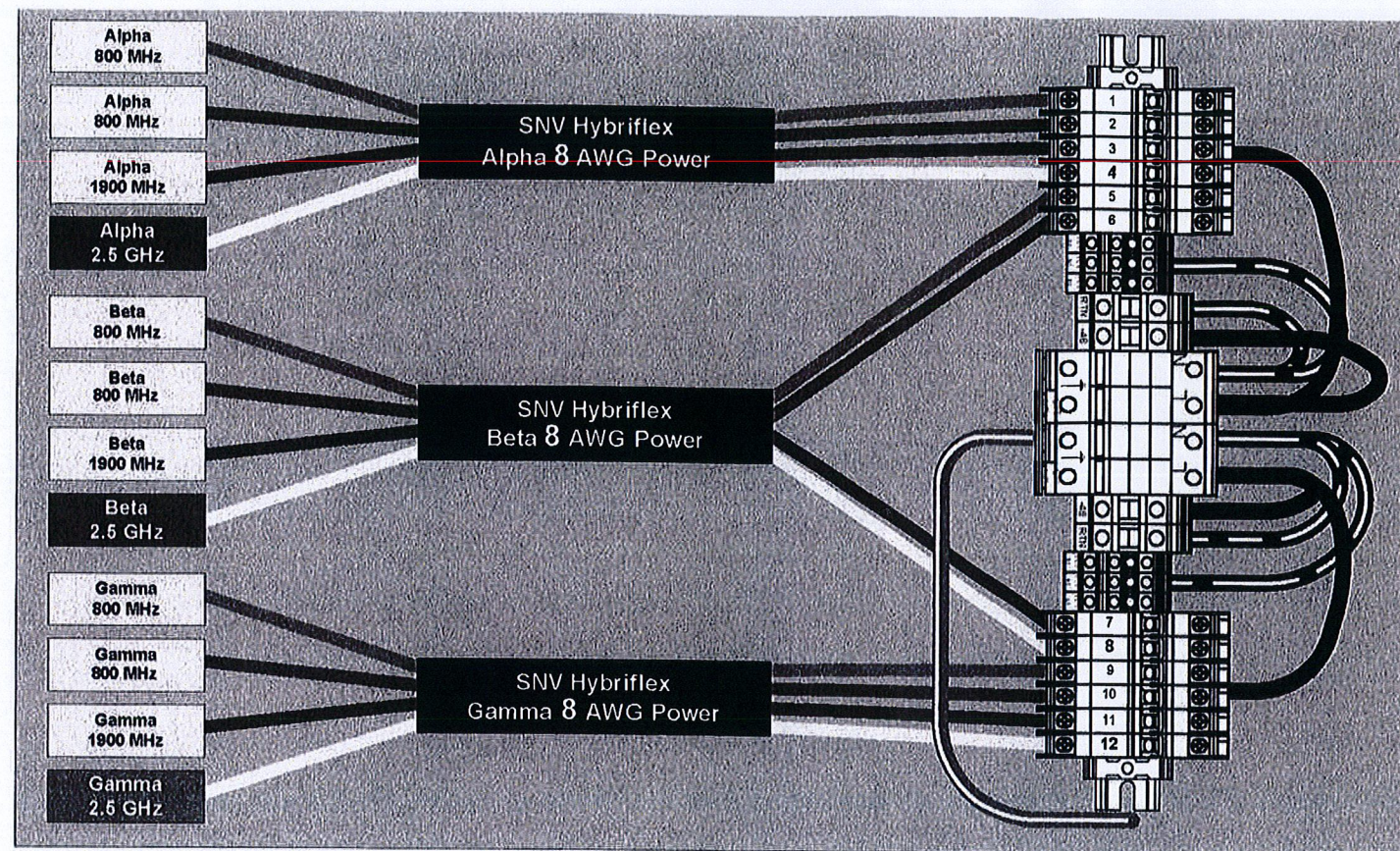
79 PUTNAM PIKE
KILLINGLY, CT 06239

SHEET DESCRIPTION:

PLUMBING DIAGRAM

SHEET NUMBER:

A-6



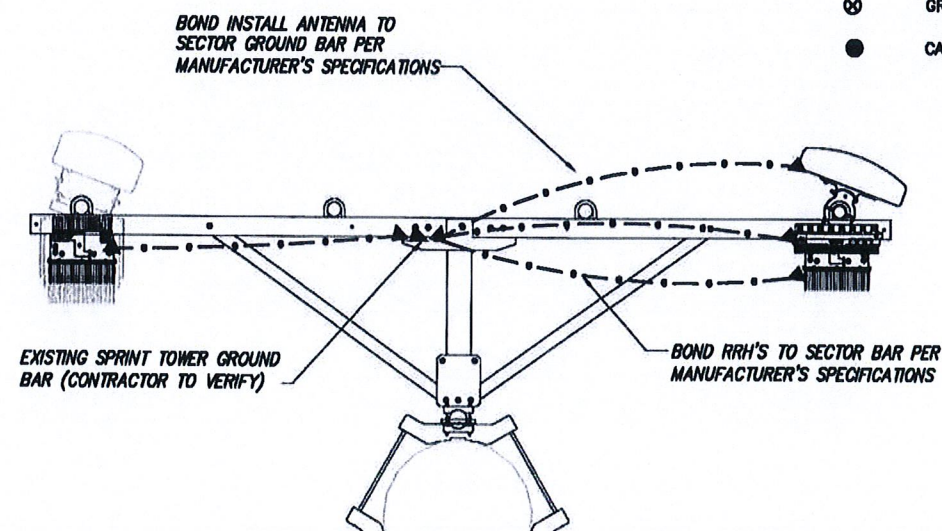
RRH TO DISTRIBUTION BOX POWER CONNECTIVITY

NO SCALE

1

LEGEND:

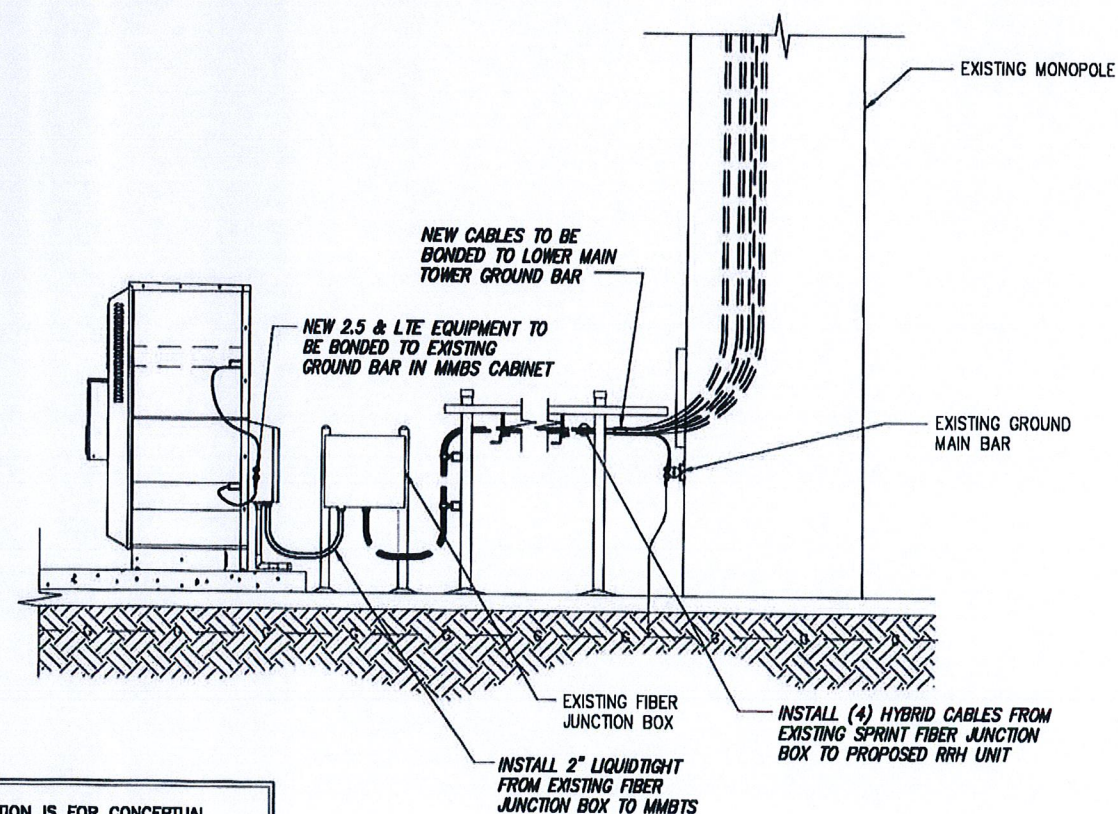
- EXISTING GROUND RING
- CADWELD CONNECTION (EXOTHERMIC WELD)
- ▲ MECHANICAL CONNECTION
- ⊗ GROUND ROD
- CABLE GROUND KIT



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE

2



NOTE:
DEPICTION IS FOR CONCEPTUAL
PURPOSES ONLY. CONTRACTOR IS TO
FIELD VERIFY PRIOR TO CONSTRUCTION

TYPICAL EQUIPMENT GROUNDING PLAN (ELEVATION)

NO SCALE

3

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SITE NAME:

KILLINGLY

SITE NUMBER:

CT23XC408

SITE ADDRESS:

**79 PUTNAM PIKE
KILLINGLY, CT 06239**

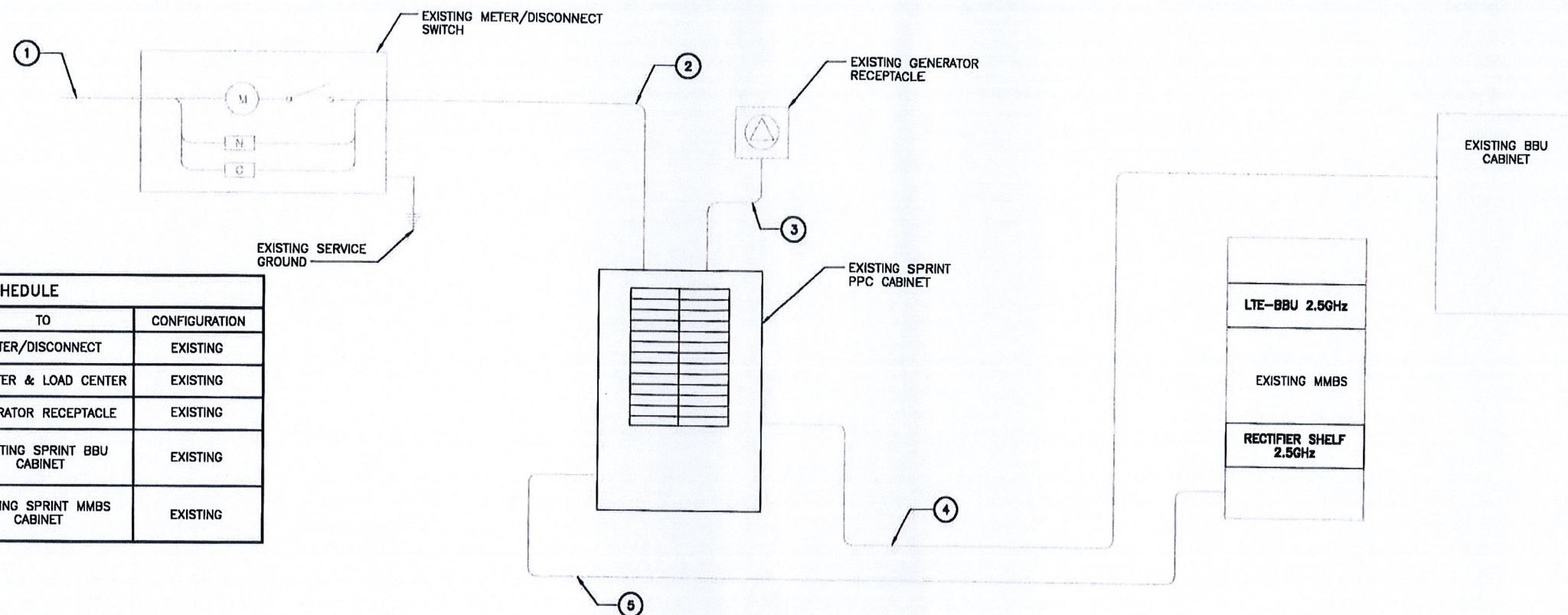
SHEET DESCRIPTION:

**ELECTRICAL &
GROUNDING PLAN**

SHEET NUMBER:

E-1

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



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www.infinigy.com
JOB NUMBER 514-104

PROJECT MANAGER:
AIRSMITH
DEVELOPMENT
32 CLINTON ST.
SARATOGA SPRINGS, NY 12868
OFFICE: (518) 306-3740

ENGINEERING LICENSE:
JOHN S. STEVENS
DESIGN 2017
No. 24705
PROFESSIONAL ENGINEER

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DESCRIPTION	DATE	BY	REV.	
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SITE NAME:
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SITE NUMBER:
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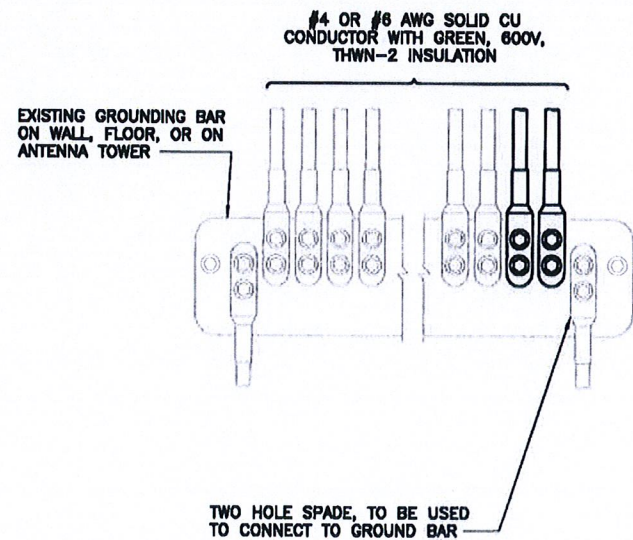
SITE ADDRESS:
**79 PUTNAM PIKE
KILLINGLY, CT 06239**

SHEET DESCRIPTION:
**ELECTRICAL &
GROUNDING DETAILS**

SHEET NUMBER:
E-2

ELECTRICAL ONE-LINE DIAGRAM

NO SCALE 1



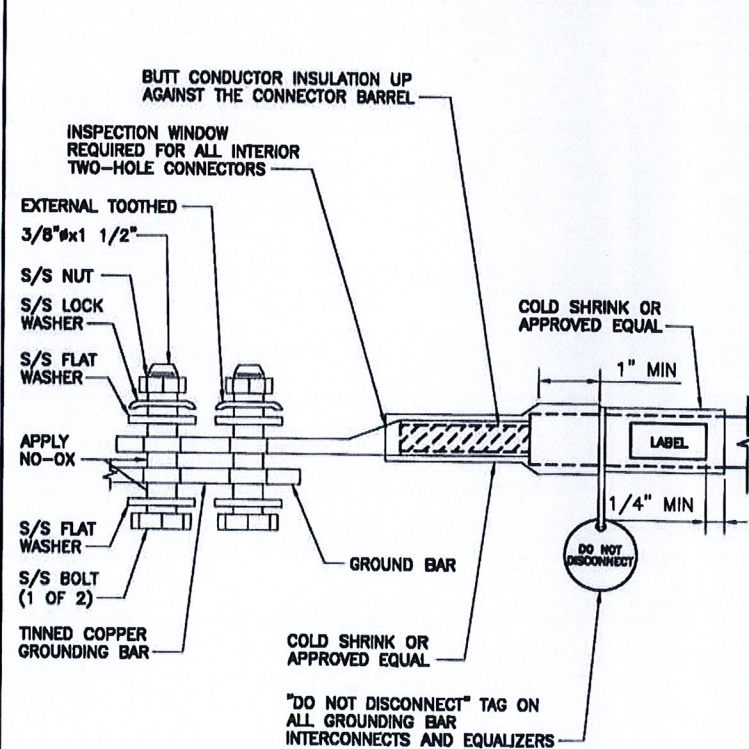
NOTES

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

**INSTALLATION OF GROUNDING
CONDUCTOR TO GROUNDING BAR**

NO SCALE

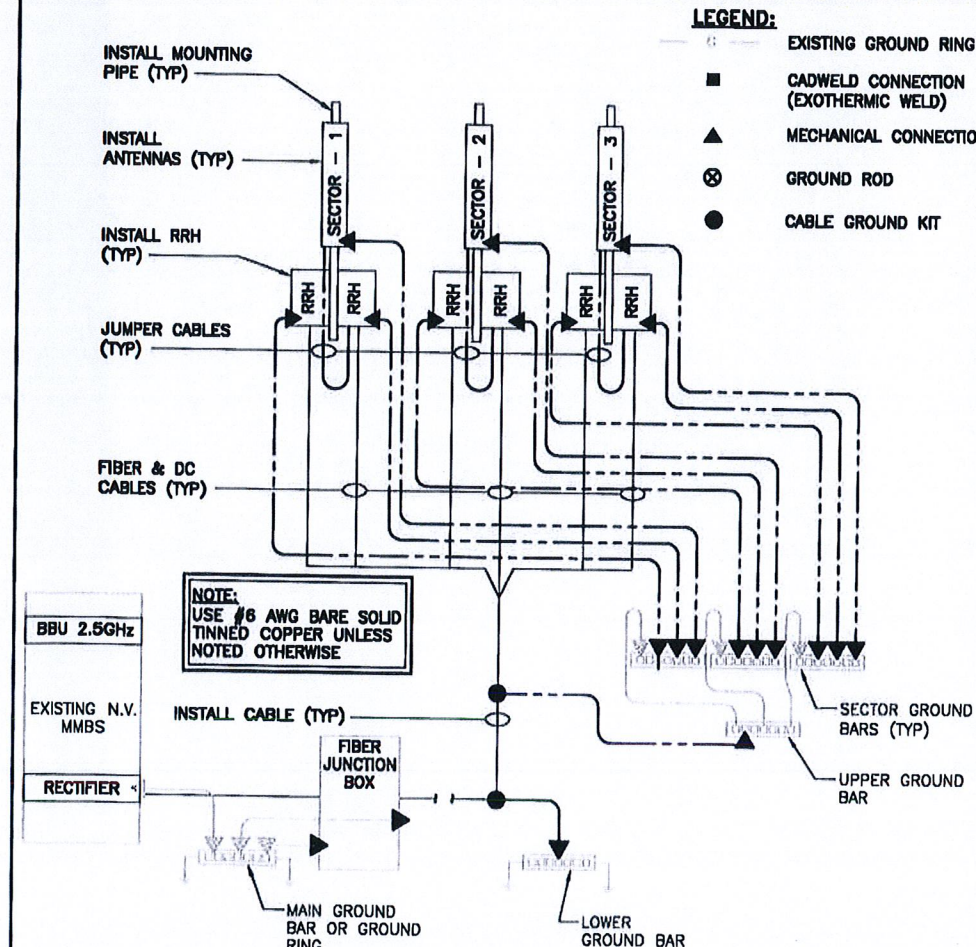
2



TWO HOLE LUG

NO SCALE

3



GROUNDING RISER DIAGRAM

NO SCALE

4