



May 8th, 2017

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

RE: Notice of Exempt Modification – Antenna Swap & Additional Ground Based Equipment for wireless facility located at 1969 SAYBROOK ROAD, MIDDLETOWN, CONNECTICUT - CT03XC169 (41° 30' 38.304" N, -72° 35' 36.1" W)

Dear Ms. Bachman:

Sprint Spectrum, LP ("Sprint") currently maintains wireless telecommunications antennas at the (150-foot level) on an existing (150-foot tower) at the above-referenced address. The tower is owned by Crown Castle. The property is owned by Regowset Ridge LLC.

Sprint's proposed work involves antenna replacement and tower work. Sprint intends to replace three (3) antennas and add six (6) RET Cables, (3) Diplexers on the tower. Sprint is also proposing to add three (3) ground based remote radio heads (RRH's) and (3) Diplexers to an existing H frame. 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 DANIEL T. DREW, Mayor of the City of Middletown. A copy of this letter is also being sent to REGOWSET RIDGE, LLC the owner of the property on which the tower is located.

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

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



an extension of the site boundaries.

4. The proposed modifications will not increase noise levels at the facility by six decibels or more.
5. The additional ground based equipment will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) adopted safety standard.

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

If you have any questions or require any additional information regarding this request, please do not hesitate to give me a call at (518) 306-1751 or email me to rperry@airosmithdevelopment.com

Kind Regards,

Ray Perry
Airosmith Development Inc.
32 Clinton Street
Saratoga Springs, NY 12866
518-306-1751 desk & fax
rperry@airosmithdevelopment.com

Attachment

CC: REGOWSET RIDGE, LLC (Land Owner)
DANIEL T. DREW (Mayor, Middletown, CT)
Maryellen Perrotta, Crown Castle (Tower Owner)

7016 0910 0001 7545 5283

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

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

PORTLAND, CT 06480

Certified Mail Fee	\$3.35
Extra Services & Fees (check box, add fee as appropriate)	\$2.75
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00
Postage	\$0.49
Total Postage and Fees	\$8.59



Sent To
Regowset Ridge LLC
88 High Street
Portland, CT 06480
CT 03XC169

PS Form 3800, April 2015 PSN 7530-02-000-9017 See Reverse for Instructions

7016 0910 0001 7545 9106

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

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

MIDDLETOWN, CT 06457

Certified Mail Fee	\$3.35
Extra Services & Fees (check box, add fee as appropriate)	\$2.75
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00
Postage	\$0.49
Total Postage and Fees	\$6.59



Sent To
Daniel Drew
245 deKoven Drive, Room 209
Middletown, CT 06457
CT 03XC169

PS Form 3800, April 2015 PSN 7530-02-000-9017 See Reverse for Instructions

7016 0910 0001 7545 9090

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

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

WOBURN, MA 01801

Certified Mail Fee	\$3.35
Extra Services & Fees (check box, add fee as appropriate)	\$2.75
<input type="checkbox"/> Return Receipt (hardcopy)	\$0.00
<input type="checkbox"/> Return Receipt (electronic)	\$0.00
<input type="checkbox"/> Certified Mail Restricted Delivery	\$0.00
<input type="checkbox"/> Adult Signature Required	\$0.00
<input type="checkbox"/> Adult Signature Restricted Delivery	\$0.00
Postage	\$1.61
Total Postage and Fees	\$7.71



Sent To
Mr
Crown Castle
Attn: Maryellen Perrotta
12 Gill Street, Suite 5800
Woburn, MA 01801

PS Form 3800, April 2015 PSN 7530-02-000-9017 See Reverse for Instructions



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

SPRINT Existing Facility

Site ID: CT03XC169

Middletown 2 - Marino Property
1969 Saybrook Road
Middletown, CT 06457

April 24, 2017

EBI Project Number: 6217001783

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	9.38 %



April 24, 2017

SPRINT

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

Emissions Analysis for Site: **CT03XC169 – Middletown 2 - Marino Property**

EBI Consulting was directed to analyze the proposed SPRINT facility located at **1969 Saybrook Road, Middletown, 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 public 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 public 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.

Public 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) band 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 **1969 Saybrook Road, Middletown, 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) 2 CDMA channels (850 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 2) 2 CDMA channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 3) 2 LTE channels (1900 MHz (PCS)) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 4) Since the Remote Radio Heads (RRH) are ground mounted there are additional cabling losses accounted for. For each ground mounted RF path the following losses were calculated. 1.24 dB of additional cable loss for all ground mounted 850 MHz Channels and 2.07 dB of additional cable loss for all ground mounted 1900 MHz channels were factored into the calculations used for this analysis. This is based on manufacturers Specifications for 210 feet of 1-5/8" coax cable on each path



- 5) 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.
- 6) 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.
- 7) The antennas used in this modeling are the **RFS APXVSP18-C-A20** for transmission in the 850 MHz and 1900 MHz (PCS) 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.
- 8) The antenna mounting height centerlines of the proposed antennas are **150 feet** above ground level (AGL) for **Sector A**, **150 feet** above ground level (AGL) for **Sector B** and **150 feet** above ground level (AGL) for Sector C.
- 9) 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 public threshold limits.



SPRINT Site Inventory and Power Data by Antenna

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	RFS APXVSPP18-C-A20	Make / Model:	RFS APXVSPP18-C-A20	Make / Model:	RFS APXVSPP18-C-A20
Gain:	13.4 / 15.9 dBd	Gain:	13.4 / 15.9 dBd	Gain:	13.4 / 15.9 dBd
Height (AGL):	150 feet	Height (AGL):	150 feet	Height (AGL):	150 feet
Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)	Frequency Bands	850 MHz / 1900 MHz (PCS)
Channel Count	6	Channel Count	6	Channel Count	6
Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts	Total TX Power(W):	240 Watts
ERP (W):	5,334.45	ERP (W):	5,334.45	ERP (W):	5,334.45
Antenna A1 MPE%	1.06 %	Antenna B1 MPE%	1.06 %	Antenna C1 MPE%	1.06 %

Site Composite MPE%	
Carrier	MPE%
SPRINT – Max per sector	1.06 %
AT&T	4.69 %
MetroPCS	0.51 %
Voicestream (T-Mobile)	0.62 %
Verizon Wireless	2.50 %
Site Total MPE %:	9.38 %

SPRINT Sector A Total:	1.06 %
SPRINT Sector B Total:	1.06 %
SPRINT Sector C Total:	1.06 %
Site Total:	9.38 %

SPRINT _ Max Values per Frequency Band / Technology	# 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	2	493.31	150	1.71	850 MHz	567	0.30%
Sprint 1900 MHz (PCS) CDMA	2	724.64	150	2.51	1900 MHz (PCS)	1000	0.25%
Sprint 1900 MHz (PCS) LTE	2	1,449.28	150	5.03	1900 MHz (PCS)	1000	0.50%
						Total*:	1.06%

*NOTE: Totals may vary by 0.01% due to summing of remainders



Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general public 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 public exposure to RF Emissions are shown here:

SPRINT Sector	Power Density Value (%)
Sector A:	1.06 %
Sector B:	1.06 %
Sector C:	1.06 %
SPRINT Maximum Total (per sector):	1.06 %
Site Total:	9.38 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **9.38 %** of the allowable FCC established general public 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.



Date: January 23, 2017

Charles McGuirt
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277
704.405.6607

Paul J Ford and Company
250 E. Broad Street, Suite 600
Columbus, OH 43215
614.221.6679
rkoors@pjfweb.com

Subject: **Structural Analysis Report**

Carrier Designation: *Sprint PCS Co-Locate*
Carrier Site Number: CT03XC169
Carrier Site Name: Middletown 2 – Marino Property

Crown Castle Designation:
Crown Castle BU Number: 876341
Crown Castle Site Name: Middletown 2 – Marino Property
Crown Castle JDE Job Number: 413363
Crown Castle Work Order Number: 1350182
Crown Castle Application Number: 372434 Rev. 0

Engineering Firm Designation: Paul J Ford and Company Project Number: 37517-0297.001.7805

Site Data: 1969 Saybrook Road, MIDDLETOWN, Middlesex County, CT
Latitude 41° 30' 38.3", Longitude -72° 35' 36.1"
150 Foot - Monopole Tower

Dear Charles McGuirt,

Paul J Ford and Company is pleased to submit this "Structural Analysis Report" to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 991504, in accordance with application 372434, revision 0.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

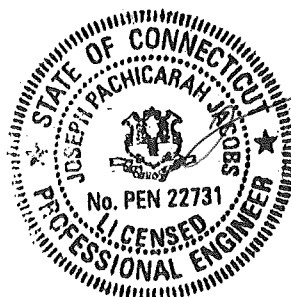
LC7: Existing + Reserved + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

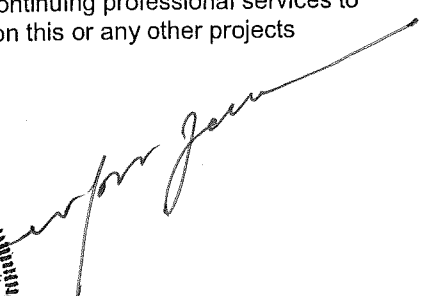
This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 130 mph converted to a nominal 3-second gust wind speed of 101 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category C with a maximum topographic factor, Kzt, of 1.0 and Risk Category II was/were used in this analysis.

We at Paul J Ford and Company appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully submitted by:


Bob Koors, E.I.
Structural Designer





Date: **January 23, 2017**

Charles McGuirt
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277
704.405.6607

Paul J Ford and Company
250 E. Broad Street, Suite 600
Columbus, OH 43215
614.221.6679
rkoors@pjfweb.com

Subject: Structural Analysis Report

Carrier Designation: **Sprint PCS Co-Locate**
Carrier Site Number: CT03XC169
Carrier Site Name: Middletown 2 – Marino Property

Crown Castle Designation: **Crown Castle BU Number:** 876341
Crown Castle Site Name: Middletown 2 – Marino Property
Crown Castle JDE Job Number: 413363
Crown Castle Work Order Number: 1350182
Crown Castle Application Number: 372434 Rev. 0

Engineering Firm Designation: **Paul J Ford and Company Project Number:** 37517-0297.001.7805

Site Data: **1969 Saybrook Road, MIDDLETOWN, Middlesex County, CT**
Latitude 41° 30' 38.3", Longitude -72° 35' 36.1"
150 Foot - Monopole Tower

Dear Charles McGuirt,

Paul J Ford and Company is pleased to submit this “**Structural Analysis Report**” to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural ‘Statement of Work’ and the terms of Crown Castle Purchase Order Number 991504, in accordance with application 372434, revision 0.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC7: Existing + Reserved + Proposed Equipment

Sufficient Capacity

Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 130 mph converted to a nominal 3-second gust wind speed of 101 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category C with a maximum topographic factor, Kzt, of 1.0 and Risk Category II was/were used in this analysis.

We at *Paul J Ford and Company* appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully submitted by:

Bob Koors, E.I.
Structural Designer

TABLE OF CONTENTS

1) INTRODUCTION

2) ANALYSIS CRITERIA

Table 1 - Proposed Antenna and Cable Information

Table 2 - Existing and Reserved Antenna and Cable Information

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

3.1) Analysis Method

3.2) Assumptions

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Table 5 – Tower Components vs. Capacity

5) APPENDIX A

tnxTower Output

6) APPENDIX B

Base Level Drawing

7) APPENDIX C

Additional Calculations

1) INTRODUCTION

This tower is a 150 ft Monopole tower designed by SUMMIT in March of 1997. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 130 mph converted to a nominal 3-second gust wind speed of 101 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category C with a maximum topographic factor, Kzt, of 1.0 and Risk Category II was/were used in this analysis.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
150.0	151.0	3	rfs celwave	APXVSP18-C w/ Mount Pipe	6	5/16	-
		3	rfs celwave	FD9R6004/1C-3L			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note	
150.0	151.0	6	decibel	DB980H90E-M w/ Mount Pipe	-	-	3	
	150.0	1	tower mounts	Platform Mount [LP 1201-1]	6	1-5/8	1	
141.0	142.0	3	alcatel lucent	RRH2X60-AWS BAND 4	1	1-5/8	2	
		3	alcatel lucent	RRH2X60-PCS				
		6	andrew	HBXX-6517DS-A2M w/ Mount Pipe				
		3	antel	BXA-70063-6CF-EDIN-0 w/ Mount Pipe				
	145.0	141.0	1	rfs celwave	DB-T1-6Z-8AB-0Z	12	1/2 1-5/8	1
			6	rfs celwave	FD9R6004/2C-3L			
			6	rfs celwave	APL868013-42T0 w/ Mount Pipe			
			1	lucent	KS24019-L112A			
		1	tower mounts	Platform Mount [LP 1201-1]				

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
129.0	132.0	6	cci antennas	OPA-65R-LCUU-H6 w/ Mount Pipe	12	3/8 3/4 1-5/8	1
		3	ericsson	RRUS-11 1900MHz			
		3	powerwave technologies	7770.00 w/ Mount Pipe			
		1	raycap	DC6-48-60-18-8F			
		3	ericsson	RRUS 12 B2			
		3	ericsson	RRUS A2 MODULE			
		6	powerwave technologies	LGP21401			
	129.0	1	tower mounts	Platform Mount [LP 713-1]			
122.0	122.0	3	rfs celwave	APXV18-206517S-C w/ Mount Pipe	6	1-5/8	1
		1	tower mounts	Pipe Mount [PM 601-3]			
111.0	111.0	4	ems wireless	RR65-18-02DP w/ Mount Pipe	8	1-5/8	1
		4	remec	S20057A1			
		2	tower mounts	T-Arm Mount [TA 601-1]			
104.0	104.0	1	lucent	KS24019-L112A	1	1/2	1
		1	tower mounts	Side Arm Mount [SO 701-1]			

- Notes:
 1) Existing Equipment
 2) Reserved Equipment
 3) Equipment To Be Removed

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	CHA, 5835.07.34, 12/11/1996	1532967	CCISITES
4-POST-MODIFICATION INSPECTION	IETS, 2009-70565, 09/16/2009	2504220	CCISITES
4-POST-MODIFICATION INSPECTION	SGS, 145061, 09/10/2014	5311239	CCISITES
4-POST-MODIFICATION INSPECTION	ETS, 150745.01, 08/03/2015	5810606	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	PJF, 29297-081, 03/03/1997	1613596	CCISITES
4-TOWER MANUFACTURER DRAWINGS	PJF, 29297-081, 03/03/1997	1614554	CCISITES

3.1) Analysis Method

tnxTower (version 7.0.5.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

- 1) Monopole was fabricated and installed in accordance with the manufacturer's specifications.
- 2) Monopole has been properly maintained in accordance with manufacturer's specifications.
- 3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
- 4) Monopole was reinforced in conformance with the referenced modification drawings.

This analysis may be affected if any assumptions are not valid or have been made in error. Paul J Ford and Company should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	150 - 108	Pole	TP30.401x22x0.25	1	-12.95	1459.26	70.0	Pass
L2	108 - 89.5	Pole	TP33.602x29.1509x0.3125	2	-18.02	2151.91	83.9	Pass
L3	89.5 - 69.75	Pole	TP37.553x33.602x0.4809	3	-22.20	2660.61	86.4	Pass
L4	69.75 - 67.42	Pole	TP37.394x35.6411x0.375	4	-24.96	3157.72	80.5	Pass
L5	67.42 - 56.42	Pole	TP39.5943x37.394x0.477	5	-28.34	3117.01	92.5	Pass
L6	56.42 - 32.5	Pole	TP44.379x39.5943x0.5633	6	-35.17	3698.87	92.5	Pass
L7	32.5 - 26.5	Pole	TP44.8292x42.1523x0.6201	7	-41.67	4217.02	90.4	Pass
L8	26.5 - 0	Pole	TP50.13x44.8292x0.6585	8	-54.31	5104.63	88.4	Pass
							Summary	
						Pole (L5)	92.5	Pass
						RATING =	92.5	Pass

Table 5 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	99.0	Pass
1	Base Plate	0	73.7	Pass
1	Base Foundation Steel	0	62.2	Pass
1	Base Foundation Soil Interaction	0	55.8	Pass

Structure Rating (max from all components) =	99.0%
---	--------------

Notes:

- 1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

APPENDIX A
TNXTOWER OUTPUT

Tower Input Data

There is a pole section.
 This tower is designed using the TIA-222-G standard.
 The following design criteria apply:

- 1) Tower is located in Middlesex County, Connecticut.
- 2) ASCE 7-10 Wind Data is used (wind speeds converted to nominal values).
- 3) Basic wind speed of 101 mph.
- 4) Structure Class II.
- 5) Exposure Category C.
- 6) Topographic Category 1.
- 7) Crest Height 0.00 ft.
- 8) Nominal ice thickness of 0.7500 in.
- 9) Ice thickness is considered to increase with height.
- 10) Ice density of 56 pcf.
- 11) A wind speed of 50 mph is used in combination with ice.
- 12) Temperature drop of 50 °F.
- 13) Deflections calculated using a wind speed of 60 mph.
- 14) A non-linear (P-delta) analysis was used.
- 15) Pressures are calculated at each section.
- 16) Stress ratio used in pole design is 1.
- 17) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification ✓ Use Code Stress Ratios ✓ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric	Distribute Leg Loads As Uniform Assume Legs Pinned ✓ Assume Rigid Index Plate ✓ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retension Guys To Initial Tension ✓ Bypass Mast Stability Checks ✓ Use Azimuth Dish Coefficients ✓ Project Wind Area of Appurt. Autocalc Torque Arm Areas Add IBC .6D+W Combination Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder	Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation ✓ Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-G Bracing Resist. Exemption Use TIA-222-G Tension Splice Exemption <div style="text-align: center; background-color: #e0e0e0; padding: 2px;">Poles</div> ✓ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets
--	--	---

Tapered Pole Section Geometry

Section	Elevation <i>ft</i>	Section Length <i>ft</i>	Splice Length <i>ft</i>	Number of Sides	Top Diameter <i>in</i>	Bottom Diameter <i>in</i>	Wall Thickness <i>in</i>	Bend Radius <i>in</i>	Pole Grade
L1	150.00-108.00	42.00	3.75	12	22.0000	30.4010	0.2500	1.0000	A607-60 (60 ksi)
L2	108.00-89.50	22.25	0.00	12	29.1509	33.6020	0.3125	1.2500	A607-60 (60 ksi)
L3	89.50-69.75	19.75	4.75	12	33.6020	37.5530	0.4809	1.9234	Reinf 41.95 ksi (42 ksi)
L4	69.75-67.42	7.08	0.00	12	35.6411	37.3940	0.3750	1.5000	A607-65 (65 ksi)
L5	67.42-56.42	11.00	0.00	12	37.3940	39.5943	0.4770	1.9080	Reinf 45.75 ksi

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
L6	56.42-32.50	23.92	5.50	12	39.5943	44.3790	0.5633	2.2532	(46 ksi) Reinf 42.10 ksi (42 ksi)
L7	32.50-26.50	11.50	0.00	12	42.1523	44.8292	0.6201	2.4802	Reinf 42.13 ksi (42 ksi)
L8	26.50-0.00	26.50		12	44.8292	50.1300	0.6585	2.6342	Reinf 42.91 ksi (43 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	22.7761	17.5087	1057.2060	7.7865	11.3960	92.7699	2142.1860	8.6173	5.2260	20.904
	31.4734	24.2716	2816.3524	10.7941	15.7477	178.8419	5706.6935	11.9457	7.4775	29.91
L2	30.9559	29.0187	3080.3905	10.3242	15.1002	203.9971	6241.7063	14.2821	6.9749	22.32
	34.7874	33.4976	4738.2072	11.9176	17.4058	272.2194	9600.8925	16.4865	8.1678	26.137
L3	34.7874	51.2827	7180.7211	11.8574	17.4058	412.5466	14550.087	25.2398	7.7167	16.048
	38.8777	57.4002	10069.195	13.2718	19.4525	517.6311	20402.919	28.2506	8.7755	18.25
L4	38.1159	42.5838	6759.9625	12.6253	18.4621	366.1540	13697.516	20.9584	8.5468	22.791
	38.7131	44.7004	7818.9266	13.2528	19.3701	403.6598	15843.265	22.0002	9.0166	24.044
L5	38.7131	56.7011	9863.4910	13.2163	19.3701	509.2124	19986.106	27.9066	8.7433	18.33
	40.9911	60.0806	11734.341	14.0040	20.5099	572.1318	23776.956	29.5698	9.3329	19.566
L6	40.9911	70.7942	13765.877	13.9731	20.5099	671.1835	27893.399	34.8428	9.1017	16.158
	45.9445	79.4727	19474.370	15.6860	22.9883	847.1419	39460.354	39.1140	10.3840	18.434
L7	44.9647	82.9229	18257.052	14.8685	21.8349	836.1418	36993.737	40.8121	9.6350	15.539
	46.4106	88.2676	22019.657	15.8269	23.2215	948.2442	44617.795	43.4426	10.3525	16.696
L8	46.4106	93.6637	23325.151	15.8131	23.2215	1004.4634	47263.080	46.0984	10.2493	15.564
	51.8984	104.9042	32770.884	17.7108	25.9673	1262.0039	66402.696	51.6306	11.6700	17.721

Tower Elevation ft	Gusset Area (per face) ft ²	Gusset Thickness in	Gusset Grade	Adjust. Factor A _r	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in	Double Angle Stitch Bolt Spacing Redundants in
L1 150.00-108.00				1	1	1			
L2 108.00-89.50				1	1	1			
L3 89.50-69.75				1	1	1			
L4 69.75-67.42				1	1	1			
L5 67.42-56.42				1	1	1			
L6 56.42-32.50				1	1	1			
L7 32.50-26.50				1	1	1			
L8 26.50-0.00				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter r in	Weight plf
**										

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		
ATCB-B01-006(5/16)	C	No	Inside Pole	150.00 - 0.00	6	No Ice	0.00	0.07		
						1/2" Ice	0.00	0.07		
						1" Ice	0.00	0.07		
LDF7-50A(1-5/8)	C	No	Inside Pole	150.00 - 0.00	6	No Ice	0.00	0.82		
						1/2" Ice	0.00	0.82		
						1" Ice	0.00	0.82		
**										
HB158-1-08U8-S8J18(1-5/8)	C	No	Inside Pole	141.00 - 0.00	1	No Ice	0.00	1.30		
						1/2" Ice	0.00	1.30		
						1" Ice	0.00	1.30		
LDF4-50A(1/2)	C	No	Inside Pole	141.00 - 0.00	1	No Ice	0.00	0.15		
						1/2" Ice	0.00	0.15		
						1" Ice	0.00	0.15		
LDF7-50A(1-5/8)	C	No	Inside Pole	141.00 - 0.00	12	No Ice	0.00	0.82		
						1/2" Ice	0.00	0.82		
						1" Ice	0.00	0.82		
**										
FB-L98B-002-50000(3/8)	C	No	Inside Pole	129.00 - 0.00	1	No Ice	0.00	0.06		
						1/2" Ice	0.00	0.06		
						1" Ice	0.00	0.06		
WR-VG86ST-BRD(3/4)	C	No	Inside Pole	129.00 - 0.00	2	No Ice	0.00	0.58		
						1/2" Ice	0.00	0.58		
						1" Ice	0.00	0.58		
FXL 1873 PE(1-5/8)	C	No	Inside Pole	129.00 - 0.00	12	No Ice	0.00	0.67		
						1/2" Ice	0.00	0.67		
						1" Ice	0.00	0.67		
**										
AVA7-50(1-5/8)	C	No	CaAa (Out Of Face)	122.00 - 0.00	5	No Ice	0.00	0.70		
						1/2" Ice	0.00	2.23		
						1" Ice	0.00	4.38		
AVA7-50(1-5/8)	C	No	CaAa (Out Of Face)	122.00 - 0.00	1	No Ice	0.20	0.70		
						1/2" Ice	0.30	2.23		
						1" Ice	0.40	4.38		
**										
LDF7-50A(1-5/8)	C	No	Inside Pole	111.00 - 0.00	8	No Ice	0.00	0.82		
						1/2" Ice	0.00	0.82		
						1" Ice	0.00	0.82		
**										
LDF4-50A(1/2)	C	No	Inside Pole	104.00 - 0.00	1	No Ice	0.00	0.15		
						1/2" Ice	0.00	0.15		
						1" Ice	0.00	0.15		
**										

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 K
L1	150.00-108.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.814	0.87

Tower Section n	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 K
L2	108.00-89.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	3.719	0.68
L3	89.50-69.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	3.970	0.73
L4	69.75-67.42	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.468	0.09
L5	67.42-56.42	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.211	0.40
L6	56.42-32.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	4.808	0.88
L7	32.50-26.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.206	0.22
L8	26.50-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	5.327	0.98

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section n	Tower Elevation ft	Face or Leg	Ice Thickness in	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 K
L1	150.00-108.00	A	1.718	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	7.624	1.55
L2	108.00-89.50	A	1.673	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	10.074	1.58
L3	89.50-69.75	A	1.638	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	10.439	1.63
L4	69.75-67.42	A	1.614	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.232	0.19
L5	67.42-56.42	A	1.597	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	5.725	0.89
L6	56.42-32.50	A	1.545	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	12.197	1.89
L7	32.50-26.50	A	1.483	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	3.060	0.47
L8	26.50-0.00	A	1.367	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	12.570	1.92

Feed Line Center of Pressure

Section	Elevation ft	CP _X in	CP _Z in	CP _X Ice in	CP _Z Ice in
L1	150.00-108.00	-0.0904	0.0522	-0.2089	0.1206
L2	108.00-89.50	-0.2350	0.1357	-0.5243	0.3027
L3	89.50-69.75	-0.2367	0.1367	-0.5259	0.3036
L4	69.75-67.42	-0.2373	0.1370	-0.5304	0.3062
L5	67.42-56.42	-0.2378	0.1373	-0.5280	0.3048

Section	Elevation	CP _x	CP _z	CP _x Ice	CP _z Ice
	ft	in	in	in	in
L6	56.42-32.50	-0.2390	0.1380	-0.5280	0.3048
L7	32.50-26.50	-0.2396	0.1383	-0.5325	0.3074
L8	26.50-0.00	-0.2404	0.1388	-0.5081	0.2933

Shielding Factor Ka

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

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustmen t °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K
Top Hat 18" Diameter x 2' 6" Tall	C	None		0.0000	150.00	No Ice	1.88	0.10
						1/2"	2.86	0.14
						Ice	3.11	0.18
						1" Ice		
**								
APXVSPP18-C w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	150.00	No Ice	8.26	0.08
						1/2"	8.82	0.15
						Ice	9.35	0.23
						1" Ice		
APXVSPP18-C w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	150.00	No Ice	8.26	0.08
						1/2"	8.82	0.15
						Ice	9.35	0.23
						1" Ice		
APXVSPP18-C w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	150.00	No Ice	8.26	0.08
						1/2"	8.82	0.15
						Ice	9.35	0.23
						1" Ice		
FD9R6004/1C-3L	A	From Leg	4.00 0.00 1.00	0.0000	150.00	No Ice	0.31	0.00
						1/2"	0.39	0.00
						Ice	0.47	0.01
						1" Ice		
FD9R6004/1C-3L	B	From Leg	4.00 0.00 1.00	0.0000	150.00	No Ice	0.31	0.00
						1/2"	0.39	0.00
						Ice	0.47	0.01
						1" Ice		
FD9R6004/1C-3L	C	From Leg	4.00 0.00 1.00	0.0000	150.00	No Ice	0.31	0.00
						1/2"	0.39	0.00
						Ice	0.47	0.01
						1" Ice		
Platform Mount [LP 1201-1]	C	None		0.0000	150.00	No Ice	23.10	2.10
						1/2"	26.80	2.50
						Ice	30.50	2.90
						1" Ice		
(3) 2.375" OD x 6' Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	150.00	No Ice	1.43	0.03
						1/2"	1.92	0.04
						Ice	2.29	0.05
						1" Ice		
(3) 2.375" OD x 6' Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	150.00	No Ice	1.43	0.03
						1/2"	1.92	0.04
						Ice	2.29	0.05
						1" Ice		
(3) 2.375" OD x 6' Mount Pipe	C	From Leg	4.00 0.00	0.0000	150.00	No Ice	1.43	0.03
						1/2"	1.92	0.04

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K	
			Horz ft	Lateral Vert ft						
				2.00						
2.375" OD x 6' Mount Pipe	A	From Leg		4.00	0.0000	150.00	Ice	2.29	2.29	0.05
				0.00			1" Ice	1.43	1.43	0.03
				2.00			No Ice	1.92	1.92	0.04
2.375" OD x 6' Mount Pipe	B	From Leg		4.00	0.0000	150.00	Ice	2.29	2.29	0.05
				0.00			1" Ice	1.43	1.43	0.03
				2.00			No Ice	1.92	1.92	0.04
2.375" OD x 6' Mount Pipe	C	From Leg		4.00	0.0000	150.00	Ice	2.29	2.29	0.05
				0.00			1" Ice	1.43	1.43	0.03
				2.00			No Ice	1.92	1.92	0.04
**										
(2) APL868013-42T0 w/ Mount Pipe	A	From Leg		4.00	0.0000	141.00	No Ice	2.87	3.61	0.02
				0.00			1/2"	3.18	3.92	0.05
				1.00			Ice	3.49	4.23	0.07
(2) APL868013-42T0 w/ Mount Pipe	B	From Leg		4.00	0.0000	141.00	1" Ice			
				0.00			No Ice	2.87	3.61	0.02
				1.00			1/2"	3.18	3.92	0.05
(2) APL868013-42T0 w/ Mount Pipe	C	From Leg		4.00	0.0000	141.00	Ice	3.49	4.23	0.07
				0.00			1" Ice	2.87	3.61	0.02
				1.00			1/2"	3.18	3.92	0.05
KS24019-L112A	A	From Leg		4.00	0.0000	141.00	No Ice	0.14	0.14	0.01
				0.00			1/2"	0.20	0.20	0.01
				4.00			Ice	0.26	0.26	0.01
(2) FD9R6004/2C-3L	A	From Leg		4.00	0.0000	141.00	1" Ice			
				0.00			No Ice	0.31	0.08	0.00
				1.00			1/2"	0.39	0.12	0.01
(2) FD9R6004/2C-3L	B	From Leg		4.00	0.0000	141.00	Ice	0.47	0.17	0.01
				0.00			1" Ice	0.31	0.08	0.00
				1.00			1/2"	0.39	0.12	0.01
(2) FD9R6004/2C-3L	C	From Leg		4.00	0.0000	141.00	No Ice	0.31	0.08	0.00
				0.00			1/2"	0.39	0.12	0.01
				1.00			Ice	0.47	0.17	0.01
(2) HBXX-6517DS-A2M w/ Mount Pipe	A	From Leg		4.00	0.0000	141.00	1" Ice			
				0.00			No Ice	8.77	6.96	0.07
				1.00			1/2"	9.34	8.18	0.14
(2) HBXX-6517DS-A2M w/ Mount Pipe	B	From Leg		4.00	0.0000	141.00	Ice	9.89	9.14	0.21
				0.00			1" Ice	8.77	6.96	0.07
				1.00			1/2"	9.34	8.18	0.14
(2) HBXX-6517DS-A2M w/ Mount Pipe	C	From Leg		4.00	0.0000	141.00	No Ice	8.77	6.96	0.07
				0.00			1/2"	9.34	8.18	0.14
				1.00			Ice	9.89	9.14	0.21
BXA-70063-6CF-EDIN-0 w/ Mount Pipe	A	From Leg		4.00	0.0000	141.00	1" Ice			
				0.00			No Ice	7.81	5.80	0.04
				1.00			1/2"	8.36	6.95	0.10
BXA-70063-6CF-EDIN-0 w/ Mount Pipe	B	From Leg		4.00	0.0000	141.00	Ice	8.87	7.82	0.17
				0.00			1" Ice	7.81	5.80	0.04
				1.00			1/2"	8.36	6.95	0.10
BXA-70063-6CF-EDIN-0 w/ Mount Pipe	C	From Leg		4.00	0.0000	141.00	No Ice	7.81	5.80	0.04
				0.00			1/2"	8.36	6.95	0.10

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment t °	Placement ft	C _{AA} Front ft ²	C _{AA} Side ft ²	Weight K				
			1.00			Ice 8.87	7.82	0.17				
RRH2X60-PCS	A	From Leg	4.00	0.0000	141.00	1" Ice	2.20	1.72	0.06			
			0.00			No Ice						
			1.00			1/2"				2.39	1.90	0.08
			1.00			Ice	2.59	2.09	0.10			
						1" Ice						
			4.00			No Ice				2.20	1.72	0.06
RRH2X60-PCS	B	From Leg	4.00	0.0000	141.00	1" Ice	2.20	1.72	0.06			
			0.00			No Ice						
			1.00			1/2"				2.39	1.90	0.08
			1.00			Ice	2.59	2.09	0.10			
						1" Ice						
			4.00			No Ice				2.20	1.72	0.06
RRH2X60-PCS	C	From Leg	4.00	0.0000	141.00	1" Ice	2.20	1.72	0.06			
			0.00			No Ice						
			1.00			1/2"				2.39	1.90	0.08
			1.00			Ice	2.59	2.09	0.10			
						1" Ice						
			4.00			No Ice				2.20	1.72	0.06
RRH2X60-AWS BAND 4	A	From Leg	4.00	0.0000	141.00	1" Ice	3.36	2.00	0.06			
			0.00			No Ice						
			1.00			1/2"				3.61	2.24	0.08
			1.00			Ice	3.88	2.48	0.11			
						1" Ice						
			4.00			No Ice				3.36	2.00	0.06
RRH2X60-AWS BAND 4	B	From Leg	4.00	0.0000	141.00	1" Ice	3.36	2.00	0.06			
			0.00			No Ice						
			1.00			1/2"				3.61	2.24	0.08
			1.00			Ice	3.88	2.48	0.11			
						1" Ice						
			4.00			No Ice				3.36	2.00	0.06
RRH2X60-AWS BAND 4	C	From Leg	4.00	0.0000	141.00	1" Ice	3.36	2.00	0.06			
			0.00			No Ice						
			1.00			1/2"				3.61	2.24	0.08
			1.00			Ice	3.88	2.48	0.11			
						1" Ice						
			4.00			No Ice				3.36	2.00	0.06
DB-T1-6Z-8AB-0Z	B	From Leg	4.00	0.0000	141.00	1" Ice	4.80	2.00	0.04			
			0.00			No Ice						
			1.00			1/2"				5.07	2.19	0.08
			1.00			Ice	5.35	2.39	0.12			
						1" Ice						
			4.00			No Ice				4.80	2.00	0.04
Platform Mount [LP 1201-1]	C	None		0.0000	141.00	1" Ice	23.10	23.10	2.10			
						No Ice						
						1/2"				26.80	26.80	2.50
						Ice	30.50	30.50	2.90			
						1" Ice						
**												
(2) OPA-65R-LCUU-H6 w/ Mount Pipe	A	From Leg	4.00	0.0000	129.00	No Ice	9.90	7.18	0.10			
			0.00			1/2"				10.47	8.36	0.18
			3.00			Ice				11.01	9.26	0.26
(2) OPA-65R-LCUU-H6 w/ Mount Pipe	B	From Leg	4.00	0.0000	129.00	1" Ice	9.90	7.18	0.10			
			0.00			No Ice						
			3.00			1/2"				10.47	8.36	0.18
			3.00			Ice	11.01	9.26	0.26			
						1" Ice						
			4.00			No Ice				9.90	7.18	0.10
(2) OPA-65R-LCUU-H6 w/ Mount Pipe	C	From Leg	4.00	0.0000	129.00	1" Ice	9.90	7.18	0.10			
			0.00			No Ice						
			3.00			1/2"				10.47	8.36	0.18
			3.00			Ice	11.01	9.26	0.26			
						1" Ice						
			4.00			No Ice				9.90	7.18	0.10
7770.00 w/ Mount Pipe	A	From Leg	4.00	0.0000	129.00	1" Ice	5.80	4.56	0.09			
			0.00			No Ice						
			3.00			1/2"				6.27	5.51	0.14
			3.00			Ice	6.70	6.21	0.21			
						1" Ice						
			4.00			No Ice				5.80	4.56	0.09
7770.00 w/ Mount Pipe	B	From Leg	4.00	0.0000	129.00	1" Ice	5.80	4.56	0.09			
			0.00			No Ice						
			3.00			1/2"				6.27	5.51	0.14
			3.00			Ice	6.70	6.21	0.21			
						1" Ice						
			4.00			No Ice				5.80	4.56	0.09
7770.00 w/ Mount Pipe	C	From Leg	4.00	0.0000	129.00	1" Ice	5.80	4.56	0.09			
			0.00			No Ice						
			3.00			1/2"				6.27	5.51	0.14
			3.00			Ice	6.70	6.21	0.21			
						1" Ice						
			4.00			No Ice				5.80	4.56	0.09
DC6-48-60-18-8F	A	From Leg	4.00	0.0000	129.00	1" Ice	0.92	0.92	0.02			
			0.00			No Ice						
			3.00			1/2"				1.46	1.46	0.04
			3.00			Ice	1.64	1.64	0.06			
						1" Ice						
			4.00			No Ice				0.92	0.92	0.02
RRUS-11 1900MHz	A	From Leg	4.00	0.0000	129.00	1" Ice	2.52	1.02	0.04			
			0.00			No Ice						
						1/2"	2.72	1.16	0.06			

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 K	
			3.00			Ice 2.92	1.30	0.09	
RRUS-11 1900MHz	B	From Leg	4.00	0.0000	129.00	1" Ice			
			0.00			No Ice	2.52	1.02	0.04
			3.00			1/2"	2.72	1.16	0.06
RRUS-11 1900MHz	C	From Leg	4.00	0.0000	129.00	Ice	2.92	1.30	0.09
			0.00			1" Ice			
			3.00			No Ice	2.52	1.02	0.04
(2) LGP21401	A	From Leg	4.00	0.0000	129.00	1/2"	1.24	0.44	0.02
			0.00			Ice	1.38	0.54	0.03
			3.00			1" Ice			
(2) LGP21401	B	From Leg	4.00	0.0000	129.00	No Ice	1.10	0.35	0.01
			0.00			1/2"	1.24	0.44	0.02
			3.00			Ice	1.38	0.54	0.03
(2) LGP21401	C	From Leg	4.00	0.0000	129.00	1" Ice			
			0.00			No Ice	1.10	0.35	0.01
			3.00			1/2"	1.24	0.44	0.02
RRUS 12 B2	A	From Leg	4.00	0.0000	129.00	Ice	1.38	0.54	0.03
			0.00			1" Ice			
			3.00			No Ice	3.14	1.28	0.05
RRUS 12 B2	B	From Leg	4.00	0.0000	129.00	1/2"	3.36	1.43	0.07
			0.00			Ice	3.59	1.60	0.10
			3.00			1" Ice			
RRUS 12 B2	C	From Leg	4.00	0.0000	129.00	No Ice	3.14	1.28	0.05
			0.00			1/2"	3.36	1.43	0.07
			3.00			Ice	3.59	1.60	0.10
RRUS A2 MODULE	A	From Leg	4.00	0.0000	129.00	1" Ice			
			0.00			No Ice	1.60	0.38	0.02
			3.00			1/2"	1.76	0.47	0.03
RRUS A2 MODULE	B	From Leg	4.00	0.0000	129.00	Ice	1.92	0.57	0.04
			0.00			1" Ice			
			3.00			No Ice	1.60	0.38	0.02
RRUS A2 MODULE	C	From Leg	4.00	0.0000	129.00	1/2"	1.76	0.47	0.03
			0.00			Ice	1.92	0.57	0.04
			3.00			1" Ice			
Platform Mount [LP 713-1]	C	None		0.0000	129.00	No Ice	31.27	31.27	1.51
						1/2"	39.68	39.68	1.93
						Ice	48.09	48.09	2.35
** APXV18-206517S-C w/ Mount Pipe	A	From Leg	4.00	0.0000	122.00	1" Ice			
			0.00			No Ice	5.40	4.70	0.05
			0.00			1/2"	5.96	5.86	0.10
APXV18-206517S-C w/ Mount Pipe	B	From Leg	4.00	0.0000	122.00	Ice	6.48	6.73	0.15
			0.00			1" Ice			
			0.00			No Ice	5.40	4.70	0.05
APXV18-206517S-C w/ Mount Pipe	C	From Leg	4.00	0.0000	122.00	1/2"	5.96	5.86	0.10
			0.00			Ice	6.48	6.73	0.15
			0.00			1" Ice			
Pipe Mount [PM 601-3]	C	None		0.0000	122.00	No Ice	4.39	4.39	0.20
						1" Ice			
						1/2"	5.48	5.48	0.24

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 K	
						Ice 1" Ice	6.57 6.57	0.28	
** (2) RR65-18-02DP w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	111.00	No Ice 1/2" Ice 1" Ice	4.59 5.02 4.78	3.32 4.09 4.78	0.03 0.07 0.12
(2) RR65-18-02DP w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	111.00	No Ice 1/2" Ice 1" Ice	4.59 5.02 4.78	3.32 4.09 4.78	0.03 0.07 0.12
(2) S20057A1	A	From Leg	4.00 0.00 0.00	0.0000	111.00	No Ice 1/2" Ice 1" Ice	0.70 0.82 0.54	0.35 0.44 0.54	0.01 0.02 0.02
(2) S20057A1	B	From Leg	4.00 0.00 0.00	0.0000	111.00	No Ice 1/2" Ice 1" Ice	0.70 0.82 0.54	0.35 0.44 0.54	0.01 0.02 0.02
T-Arm Mount [TA 601-1]	A	None		0.0000	111.00	No Ice 1/2" Ice 1" Ice	6.67 8.82 10.97	3.02 4.20 5.38	0.24 0.31 0.38
T-Arm Mount [TA 601-1]	B	None		0.0000	111.00	No Ice 1/2" Ice 1" Ice	6.67 8.82 10.97	3.02 4.20 5.38	0.24 0.31 0.38
**									

Tower Pressures - No Ice

$G_H = 1.100$

Section Elevation ft	z ft	K _Z	q _z psf	A _G ft ²	F a c e	A _F ft ²	A _R ft ²	A _{leg} ft ²	Leg %	C _{AA} In Face ft ²	C _{AA} Out Face ft ²
L1 150.00-108.00	128.06	1.333	33	94.937	A	0.000	94.937	94.937	100.00	0.000	0.000
					B	0.000	94.937		100.00	0.000	0.000
					C	0.000	94.937		100.00	0.000	2.814
L2 108.00-89.50	98.57	1.262	31	50.677	A	0.000	50.677	50.677	100.00	0.000	0.000
					B	0.000	50.677		100.00	0.000	0.000
					C	0.000	50.677		100.00	0.000	3.719
L3 89.50-69.75	79.44	1.206	30	60.620	A	0.000	60.620	60.620	100.00	0.000	0.000
					B	0.000	60.620		100.00	0.000	0.000
					C	0.000	60.620		100.00	0.000	3.970
L4 69.75-67.42	68.58	1.169	29	7.459	A	0.000	7.459	7.459	100.00	0.000	0.000
					B	0.000	7.459		100.00	0.000	0.000
					C	0.000	7.459		100.00	0.000	0.468
L5 67.42-56.42	61.87	1.144	28	36.531	A	0.000	36.531	36.531	100.00	0.000	0.000
					B	0.000	36.531		100.00	0.000	0.000
					C	0.000	36.531		100.00	0.000	2.211
L6 56.42-32.50	44.23	1.066	26	86.646	A	0.000	86.646	86.646	100.00	0.000	0.000
					B	0.000	86.646		100.00	0.000	0.000
					C	0.000	86.646		100.00	0.000	4.808
L7 32.50-26.50	29.48	0.979	24	22.844	A	0.000	22.844	22.844	100.00	0.000	0.000
					B	0.000	22.844		100.00	0.000	0.000
					C	0.000	22.844		100.00	0.000	1.206
L8 26.50-0.00	13.00	0.85	21	108.549	A	0.000	108.549	108.549	100.00	0.000	0.000
					B	0.000	108.549		100.00	0.000	0.000
					C	0.000	108.549		100.00	0.000	5.327

Tower Pressure - With Ice

$G_H = 1.100$

Section Elevation ft	z ft	K_Z	q_z psf	t_z in	A_G ft ²	Face	A_F ft ²	A_R ft ²	A_{leg} ft ²	Leg %	C_{AA} In Face ft ²	C_{AA} Out Face ft ²
L1 150.00-108.00	128.06	1.333	8	1.7178	106.961	A	0.000	106.961	106.961	100.00	0.000	0.000
						B	0.000	106.961	106.961	100.00	0.000	0.000
						C	0.000	106.961	106.961	100.00	0.000	7.624
L2 108.00-89.50	98.57	1.262	8	1.6735	55.974	A	0.000	55.974	55.974	100.00	0.000	0.000
						B	0.000	55.974	55.974	100.00	0.000	0.000
						C	0.000	55.974	55.974	100.00	0.000	10.074
L3 89.50-69.75	79.44	1.206	7	1.6377	66.011	A	0.000	66.011	66.011	100.00	0.000	0.000
						B	0.000	66.011	66.011	100.00	0.000	0.000
						C	0.000	66.011	66.011	100.00	0.000	10.439
L4 69.75-67.42	68.58	1.169	7	1.6138	8.095	A	0.000	8.095	8.095	100.00	0.000	0.000
						B	0.000	8.095	8.095	100.00	0.000	0.000
						C	0.000	8.095	8.095	100.00	0.000	1.232
L5 67.42-56.42	61.87	1.144	7	1.5973	39.459	A	0.000	39.459	39.459	100.00	0.000	0.000
						B	0.000	39.459	39.459	100.00	0.000	0.000
						C	0.000	39.459	39.459	100.00	0.000	5.725
L6 56.42-32.50	44.23	1.066	6	1.5446	92.804	A	0.000	92.804	92.804	100.00	0.000	0.000
						B	0.000	92.804	92.804	100.00	0.000	0.000
						C	0.000	92.804	92.804	100.00	0.000	12.197
L7 32.50-26.50	29.48	0.979	6	1.4832	24.388	A	0.000	24.388	24.388	100.00	0.000	0.000
						B	0.000	24.388	24.388	100.00	0.000	0.000
						C	0.000	24.388	24.388	100.00	0.000	3.060
L8 26.50-0.00	13.00	0.85	5	1.3666	114.585	A	0.000	114.585	114.585	100.00	0.000	0.000
						B	0.000	114.585	114.585	100.00	0.000	0.000
						C	0.000	114.585	114.585	100.00	0.000	12.570

Tower Pressure - Service

$G_H = 1.100$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft ²	Face	A_F ft ²	A_R ft ²	A_{leg} ft ²	Leg %	C_{AA} In Face ft ²	C_{AA} Out Face ft ²
L1 150.00-108.00	128.06	1.333	10	94.937	A	0.000	94.937	94.937	100.00	0.000	0.000
					B	0.000	94.937	94.937	100.00	0.000	0.000
					C	0.000	94.937	94.937	100.00	0.000	2.814
L2 108.00-89.50	98.57	1.262	10	50.677	A	0.000	50.677	50.677	100.00	0.000	0.000
					B	0.000	50.677	50.677	100.00	0.000	0.000
					C	0.000	50.677	50.677	100.00	0.000	3.719
L3 89.50-69.75	79.44	1.206	9	60.620	A	0.000	60.620	60.620	100.00	0.000	0.000
					B	0.000	60.620	60.620	100.00	0.000	0.000
					C	0.000	60.620	60.620	100.00	0.000	3.970
L4 69.75-67.42	68.58	1.169	9	7.459	A	0.000	7.459	7.459	100.00	0.000	0.000
					B	0.000	7.459	7.459	100.00	0.000	0.000
					C	0.000	7.459	7.459	100.00	0.000	0.468
L5 67.42-56.42	61.87	1.144	9	36.531	A	0.000	36.531	36.531	100.00	0.000	0.000
					B	0.000	36.531	36.531	100.00	0.000	0.000
					C	0.000	36.531	36.531	100.00	0.000	2.211
L6 56.42-32.50	44.23	1.066	8	86.646	A	0.000	86.646	86.646	100.00	0.000	0.000
					B	0.000	86.646	86.646	100.00	0.000	0.000
					C	0.000	86.646	86.646	100.00	0.000	4.808
L7 32.50-26.50	29.48	0.979	8	22.844	A	0.000	22.844	22.844	100.00	0.000	0.000
					B	0.000	22.844	22.844	100.00	0.000	0.000
					C	0.000	22.844	22.844	100.00	0.000	1.206
L8 26.50-0.00	13.00	0.85	7	108.549	A	0.000	108.549	108.549	100.00	0.000	0.000
					B	0.000	108.549	108.549	100.00	0.000	0.000
					C	0.000	108.549	108.549	100.00	0.000	5.327

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
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 Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	150 - 108	Pole	Max Tension	1	0.00	0.0	0.0
			Max. Compression	26	-31.95	-0.1	-0.3
			Max. Mx	8	-12.96	-601.8	-1.9
			Max. My	14	-12.97	-2.1	-599.7
			Max. Vy	8	23.66	-601.8	-1.9
			Max. Vx	14	23.59	-2.1	-599.7
			Max. Torque	25			-1.3
L2	108 - 89.5	Pole	Max Tension	1	0.00	0.0	0.0
			Max. Compression	26	-40.78	-1.1	0.2

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L3	89.5 - 69.75	Pole	Max. Mx	8	-18.04	-1205.8	-4.9
			Max. My	2	-18.04	4.6	1203.9
			Max. Vy	8	28.96	-1205.8	-4.9
			Max. Vx	14	28.98	-5.4	-1203.6
			Max. Torque	25			-2.3
			Max Tension	1	0.00	0.0	0.0
			Max. Compression	26	-46.56	-0.1	-0.4
			Max. Mx	8	-22.22	-1658.6	-7.0
			Max. My	2	-22.21	6.8	1657.2
			Max. Vy	8	31.48	-1658.6	-7.0
L4	69.75 - 67.42	Pole	Max. Vx	14	31.51	-7.5	-1657.0
			Max. Torque	25			-2.0
			Max Tension	1	0.00	0.0	0.0
			Max. Compression	26	-50.47	0.4	-0.6
			Max. Mx	8	-24.98	-1886.1	-8.1
			Max. My	2	-24.98	7.9	1884.8
			Max. Vy	8	32.76	-1886.1	-8.1
			Max. Vx	14	32.79	-8.5	-1884.7
			Max. Torque	25			-1.7
			Max Tension	1	0.00	0.0	0.0
L5	67.42 - 56.42	Pole	Max. Compression	26	-54.94	1.1	-1.1
			Max. Mx	8	-28.35	-2256.0	-9.7
			Max. My	14	-28.35	-10.0	-2255.1
			Max. Vy	8	34.55	-2256.0	-9.7
			Max. Vx	14	34.58	-10.0	-2255.1
			Max. Torque	25			-1.7
			Max Tension	1	0.00	0.0	0.0
			Max. Compression	26	-63.66	2.4	-1.8
			Max. Mx	8	-35.17	-2919.2	-12.4
			Max. My	14	-35.17	-12.4	-2919.0
L6	56.42 - 32.5	Pole	Max. Vy	20	-37.52	2919.0	12.3
			Max. Vx	14	37.55	-12.4	-2919.0
			Max. Torque	25			-1.5
			Max Tension	1	0.00	0.0	0.0
			Max. Compression	26	-71.87	3.3	-2.3
			Max. Mx	8	-41.68	-3362.2	-14.0
			Max. My	14	-41.68	-14.0	-3362.4
			Max. Vy	20	-39.45	3362.1	13.9
			Max. Vx	14	39.48	-14.0	-3362.4
			Max. Torque	25			-1.1
L7	32.5 - 26.5	Pole	Max Tension	1	0.00	0.0	0.0
			Max. Compression	26	-86.94	5.1	-3.4
			Max. Mx	20	-54.31	4452.8	17.4
			Max. My	14	-54.31	-17.4	-4453.8
			Max. Vy	20	-42.91	4452.8	17.4
			Max. Vx	14	42.93	-17.4	-4453.8
			Max. Torque	25			-1.0
			Max Tension	1	0.00	0.0	0.0
			Max. Compression	26	-86.94	5.1	-3.4
			Max. Mx	20	-54.31	4452.8	17.4
L8	26.5 - 0	Pole	Max. My	14	-54.31	-17.4	-4453.8
			Max. Vy	20	-42.91	4452.8	17.4
			Max. Vx	14	42.93	-17.4	-4453.8
			Max. Torque	25			-1.0
			Max Tension	1	0.00	0.0	0.0
			Max. Compression	26	-86.94	5.1	-3.4
			Max. Mx	20	-54.31	4452.8	17.4
			Max. My	14	-54.31	-17.4	-4453.8
			Max. Vy	20	-42.91	4452.8	17.4
			Max. Vx	14	42.93	-17.4	-4453.8

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	26	86.94	0.00	-0.00
	Max. H _x	21	40.74	42.88	0.14
	Max. H _z	3	40.74	0.14	42.91
	Max. M _x	2	4453.1	0.14	42.91
	Max. M _z	8	4452.4	-42.88	-0.14
	Max. Torsion	15	0.6	-0.14	-42.91
	Min. Vert	9	40.74	-42.88	-0.14
	Min. H _x	9	40.74	-42.88	-0.14
	Min. H _z	15	40.74	-0.14	-42.91
	Min. M _x	14	-4453.8	-0.14	-42.91
	Min. M _z	20	-4452.8	42.88	0.14

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Min. Torsion	3	-0.7	0.14	42.91

Tower Mast Reaction Summary

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
Dead Only	45.27	0.00	0.00	0.2	0.2	0.0
1.2 Dead+1.6 Wind 0 deg - No Ice	54.33	-0.14	-42.91	-4453.1	17.8	0.6
0.9 Dead+1.6 Wind 0 deg - No Ice	40.74	-0.14	-42.91	-4412.7	17.6	0.7
1.2 Dead+1.6 Wind 30 deg - No Ice	54.33	21.32	-37.09	-3848.0	-2211.0	0.5
0.9 Dead+1.6 Wind 30 deg - No Ice	40.74	21.32	-37.09	-3813.0	-2190.9	0.5
1.2 Dead+1.6 Wind 60 deg - No Ice	54.33	37.07	-21.34	-2211.4	-3847.4	0.2
0.9 Dead+1.6 Wind 60 deg - No Ice	40.74	37.07	-21.34	-2191.3	-3812.4	0.2
1.2 Dead+1.6 Wind 90 deg - No Ice	54.33	42.88	0.14	17.8	-4452.4	-0.2
0.9 Dead+1.6 Wind 90 deg - No Ice	40.74	42.88	0.14	17.6	-4412.0	-0.2
1.2 Dead+1.6 Wind 120 deg - No Ice	54.33	37.21	21.57	2242.3	-3865.0	-0.5
0.9 Dead+1.6 Wind 120 deg - No Ice	40.74	37.21	21.57	2221.8	-3829.8	-0.5
1.2 Dead+1.6 Wind 150 deg - No Ice	54.33	21.56	37.23	3866.0	-2241.5	-0.6
0.9 Dead+1.6 Wind 150 deg - No Ice	40.74	21.56	37.23	3830.7	-2221.1	-0.6
1.2 Dead+1.6 Wind 180 deg - No Ice	54.33	0.14	42.91	4453.8	-17.4	-0.6
0.9 Dead+1.6 Wind 180 deg - No Ice	40.74	0.14	42.91	4413.1	-17.3	-0.6
1.2 Dead+1.6 Wind 210 deg - No Ice	54.33	-21.32	37.09	3848.4	2211.5	-0.5
0.9 Dead+1.6 Wind 210 deg - No Ice	40.74	-21.32	37.09	3813.3	2191.2	-0.5
1.2 Dead+1.6 Wind 240 deg - No Ice	54.33	-37.07	21.34	2211.8	3847.8	-0.2
0.9 Dead+1.6 Wind 240 deg - No Ice	40.74	-37.07	21.34	2191.6	3812.7	-0.2
1.2 Dead+1.6 Wind 270 deg - No Ice	54.33	-42.88	-0.14	-17.4	4452.8	0.2
0.9 Dead+1.6 Wind 270 deg - No Ice	40.74	-42.88	-0.14	-17.3	4412.3	0.2
1.2 Dead+1.6 Wind 300 deg - No Ice	54.33	-37.21	-21.57	-2241.9	3865.4	0.5
0.9 Dead+1.6 Wind 300 deg - No Ice	40.74	-37.21	-21.57	-2221.5	3830.1	0.5
1.2 Dead+1.6 Wind 330 deg - No Ice	54.33	-21.56	-37.23	-3865.5	2242.0	0.6
0.9 Dead+1.6 Wind 330 deg - No Ice	40.74	-21.56	-37.23	-3830.3	2221.5	0.6
1.2 Dead+1.0 Ice+1.0 Temp	86.94	-0.00	0.00	3.4	5.1	0.0
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	86.94	-0.01	-9.47	-1039.0	7.4	-0.1
1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp	86.94	4.72	-8.19	-898.3	-514.7	-0.0
1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp	86.94	8.20	-4.72	-515.9	-897.4	0.0
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	86.94	9.47	0.01	5.6	-1038.3	0.0
1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp	86.94	8.21	4.75	526.6	-899.5	0.1

Load Combination	Vertical K	Shear _x K	Shear _z K	Overturning Moment, M _x kip-ft	Overturning Moment, M _z kip-ft	Torque kip-ft
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 150	86.94	4.75	8.21	907.4	-518.3	0.1
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 180	86.94	0.01	9.47	1046.0	3.2	0.1
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 210	86.94	-4.72	8.19	905.3	525.2	0.0
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 240	86.94	-8.20	4.72	523.0	907.9	-0.0
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 270	86.94	-9.47	-0.01	1.4	1048.8	-0.0
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 300	86.94	-8.21	-4.75	-519.6	910.0	-0.1
deg+1.0 Ice+1.0 Temp						
1.2 Dead+1.0 Wind 330	86.94	-4.75	-8.21	-900.4	528.8	-0.1
deg+1.0 Ice+1.0 Temp						
Dead+Wind 0 deg - Service	45.27	-0.03	-8.47	-874.6	3.6	0.5
Dead+Wind 30 deg - Service	45.27	4.21	-7.32	-755.8	-434.2	0.3
Dead+Wind 60 deg - Service	45.27	7.31	-4.21	-434.2	-755.6	0.0
Dead+Wind 90 deg - Service	45.27	8.46	0.03	3.6	-874.5	-0.2
Dead+Wind 120 deg - Service	45.27	7.34	4.26	440.6	-759.0	-0.4
Dead+Wind 150 deg - Service	45.27	4.25	7.35	759.6	-440.2	-0.5
Dead+Wind 180 deg - Service	45.27	0.03	8.47	875.0	-3.3	-0.5
Dead+Wind 210 deg - Service	45.27	-4.21	7.32	756.0	434.5	-0.3
Dead+Wind 240 deg - Service	45.27	-7.31	4.21	434.6	755.9	-0.0
Dead+Wind 270 deg - Service	45.27	-8.46	-0.03	-3.3	874.8	0.2
Dead+Wind 300 deg - Service	45.27	-7.34	-4.26	-440.3	759.5	0.4
Dead+Wind 330 deg - Service	45.27	-4.25	-7.35	-759.1	440.5	0.5

Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.00	-45.27	0.00	-0.00	45.27	0.00	0.000%
2	-0.14	-54.33	-42.91	0.14	54.33	42.91	0.005%
3	-0.14	-40.74	-42.91	0.14	40.74	42.91	0.004%
4	21.32	-54.33	-37.09	-21.32	54.33	37.09	0.000%
5	21.32	-40.74	-37.09	-21.32	40.74	37.09	0.000%
6	37.07	-54.33	-21.34	-37.07	54.33	21.34	0.000%
7	37.07	-40.74	-21.34	-37.07	40.74	21.34	0.000%
8	42.89	-54.33	0.14	-42.88	54.33	-0.14	0.005%
9	42.89	-40.74	0.14	-42.88	40.74	-0.14	0.004%
10	37.21	-54.33	21.57	-37.21	54.33	-21.57	0.000%
11	37.21	-40.74	21.57	-37.21	40.74	-21.57	0.000%
12	21.56	-54.33	37.23	-21.56	54.33	-37.23	0.000%
13	21.56	-40.74	37.23	-21.56	40.74	-37.23	0.000%
14	0.14	-54.33	42.91	-0.14	54.33	-42.91	0.002%
15	0.14	-40.74	42.91	-0.14	40.74	-42.91	0.001%
16	-21.32	-54.33	37.09	21.32	54.33	-37.09	0.000%
17	-21.32	-40.74	37.09	21.32	40.74	-37.09	0.000%
18	-37.07	-54.33	21.34	37.07	54.33	-21.34	0.000%
19	-37.07	-40.74	21.34	37.07	40.74	-21.34	0.000%
20	-42.89	-54.33	-0.14	42.88	54.33	0.14	0.005%
21	-42.89	-40.74	-0.14	42.88	40.74	0.14	0.004%
22	-37.21	-54.33	-21.57	37.21	54.33	21.57	0.000%
23	-37.21	-40.74	-21.57	37.21	40.74	21.57	0.000%
24	-21.56	-54.33	-37.23	21.56	54.33	37.23	0.000%
25	-21.56	-40.74	-37.23	21.56	40.74	37.23	0.000%
26	0.00	-86.94	0.00	0.00	86.94	-0.00	0.000%

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
27	-0.01	-86.94	-9.47	0.01	86.94	9.47	0.000%
28	4.72	-86.94	-8.19	-4.72	86.94	8.19	0.000%
29	8.20	-86.94	-4.72	-8.20	86.94	4.72	0.000%
30	9.47	-86.94	0.01	-9.47	86.94	-0.01	0.000%
31	8.21	-86.94	4.75	-8.21	86.94	-4.75	0.000%
32	4.75	-86.94	8.21	-4.75	86.94	-8.21	0.000%
33	0.01	-86.94	9.47	-0.01	86.94	-9.47	0.000%
34	-4.72	-86.94	8.19	4.72	86.94	-8.19	0.000%
35	-8.20	-86.94	4.72	8.20	86.94	-4.72	0.000%
36	-9.47	-86.94	-0.01	9.47	86.94	0.01	0.000%
37	-8.21	-86.94	-4.75	8.21	86.94	4.75	0.000%
38	-4.75	-86.94	-8.21	4.75	86.94	8.21	0.000%
39	-0.03	-45.27	-8.47	0.03	45.27	8.47	0.003%
40	4.21	-45.27	-7.32	-4.21	45.27	7.32	0.001%
41	7.32	-45.27	-4.21	-7.31	45.27	4.21	0.003%
42	8.46	-45.27	0.03	-8.46	45.27	-0.03	0.003%
43	7.34	-45.27	4.26	-7.34	45.27	-4.26	0.003%
44	4.26	-45.27	7.35	-4.25	45.27	-7.35	0.001%
45	0.03	-45.27	8.47	-0.03	45.27	-8.47	0.003%
46	-4.21	-45.27	7.32	4.21	45.27	-7.32	0.003%
47	-7.32	-45.27	4.21	7.31	45.27	-4.21	0.003%
48	-8.46	-45.27	-0.03	8.46	45.27	0.03	0.003%
49	-7.34	-45.27	-4.26	7.34	45.27	4.26	0.001%
50	-4.26	-45.27	-7.35	4.25	45.27	7.35	0.003%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.0000001	0.0000001
2	Yes	13	0.00005423	0.00012639
3	Yes	13	0.00003620	0.00010435
4	Yes	17	0.00000001	0.00012037
5	Yes	17	0.00000001	0.00008383
6	Yes	17	0.00000001	0.00011904
7	Yes	17	0.00000001	0.00008286
8	Yes	13	0.00005423	0.00005945
9	Yes	13	0.00003620	0.00005510
10	Yes	17	0.00000001	0.00012026
11	Yes	17	0.00000001	0.00008358
12	Yes	17	0.00000001	0.00012358
13	Yes	17	0.00000001	0.00008598
14	Yes	14	0.00000001	0.00009619
15	Yes	14	0.00000001	0.00007423
16	Yes	17	0.00000001	0.00011801
17	Yes	17	0.00000001	0.00008213
18	Yes	17	0.00000001	0.00011945
19	Yes	17	0.00000001	0.00008317
20	Yes	13	0.00005423	0.00014514
21	Yes	13	0.00003620	0.00011646
22	Yes	17	0.00000001	0.00012323
23	Yes	17	0.00000001	0.00008574
24	Yes	17	0.00000001	0.00011980
25	Yes	17	0.00000001	0.00008326
26	Yes	6	0.00000001	0.00000001
27	Yes	15	0.00000001	0.00014030
28	Yes	16	0.00000001	0.00006642
29	Yes	16	0.00000001	0.00006640
30	Yes	15	0.00000001	0.00014059
31	Yes	16	0.00000001	0.00006694
32	Yes	16	0.00000001	0.00006712
33	Yes	15	0.00000001	0.00014081
34	Yes	16	0.00000001	0.00006673
35	Yes	16	0.00000001	0.00006682
36	Yes	15	0.00000001	0.00014088
37	Yes	16	0.00000001	0.00006706
38	Yes	16	0.00000001	0.00006682

39	Yes	12	0.00012324	0.00005903
40	Yes	13	0.00000001	0.00006829
41	Yes	12	0.00012314	0.00013912
42	Yes	12	0.00012327	0.00005062
43	Yes	12	0.00012312	0.00012949
44	Yes	13	0.00000001	0.00007478
45	Yes	12	0.00012322	0.00006078
46	Yes	12	0.00012309	0.00012929
47	Yes	12	0.00012309	0.00014197
48	Yes	12	0.00012323	0.00005155
49	Yes	13	0.00000001	0.00007272
50	Yes	12	0.00012309	0.00012692

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 108	20.878	43	1.2844	0.0024
L2	111.75 - 89.5	11.202	43	1.0432	0.0020
L3	89.5 - 69.75	6.896	43	0.7765	0.0011
L4	74.5 - 67.42	4.684	44	0.6305	0.0008
L5	67.42 - 56.42	3.784	44	0.5714	0.0007
L6	56.42 - 32.5	2.604	44	0.4532	0.0005
L7	38 - 26.5	1.181	44	0.2848	0.0003
L8	26.5 - 0	0.572	44	0.2083	0.0002

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
150.00	Top Hat 18" Diameter x 2' 6" Tall	43	20.878	1.2844	0.0024	37408
141.00	(2) APL868013-42T0 w/ Mount Pipe	43	18.468	1.2453	0.0024	20782
129.00	(2) OPA-65R-LCUU-H6 w/ Mount Pipe	43	15.336	1.1825	0.0024	8906
122.00	APXV18-206517S-C w/ Mount Pipe	43	13.592	1.1349	0.0023	6679
111.00	(2) RR65-18-02DP w/ Mount Pipe	43	11.037	1.0353	0.0020	4930

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 108	106.135	10	6.5420	0.0087
L2	111.75 - 89.5	57.004	10	5.3147	0.0075
L3	89.5 - 69.75	35.110	10	3.9562	0.0033
L4	74.5 - 67.42	23.851	10	3.2124	0.0020
L5	67.42 - 56.42	19.267	12	2.9115	0.0017
L6	56.42 - 32.5	13.258	12	2.3086	0.0011
L7	38 - 26.5	6.012	12	1.4507	0.0005
L8	26.5 - 0	2.914	12	1.0606	0.0003

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
150.00	Top Hat 18" Diameter x 2' 6" Tall	10	106.135	6.5420	0.0087	7532
141.00	(2) APL868013-42T0 w/ Mount	10	93.903	6.3433	0.0089	4184

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
129.00	Pipe (2) OPA-65R-LCUU-H6 w/ Mount	10	78.002	6.0237	0.0090	1790
122.00	Pipe APXV18-206517S-C w/ Mount	10	69.143	5.7813	0.0086	1341
111.00	Pipe (2) RR65-18-02DP w/ Mount	10	56.163	5.2743	0.0074	987

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	KI/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	150 - 108 (1)	TP30.401x22x0.25	42.00	0.00	0.0	23.667 7	-12.95	1459.26	0.009
L2	108 - 89.5 (2)	TP33.602x29.1509x0.312 5	22.25	0.00	0.0	33.497 6	-18.02	2151.91	0.008
L3	89.5 - 69.75 (3)	TP37.553x33.602x0.4809	19.75	0.00	0.0	55.928 9	-22.20	2660.61	0.008
L4	69.75 - 67.42 (4)	TP37.394x35.6411x0.375	7.08	0.00	0.0	44.700 4	-24.96	3157.72	0.008
L5	67.42 - 56.42 (5)	TP39.5943x37.394x0.477	11.00	0.00	0.0	60.080 6	-28.34	3117.01	0.009
L6	56.42 - 32.5 (6)	TP44.379x39.5943x0.563 3	23.92	0.00	0.0	77.477 2	-35.17	3698.87	0.010
L7	32.5 - 26.5 (7)	TP44.8292x42.1523x0.62 01	11.50	0.00	0.0	88.267 6	-41.67	4217.02	0.010
L8	26.5 - 0 (8)	TP50.13x44.8292x0.6585	26.50	0.00	0.0	104.90 40	-54.31	5104.63	0.011

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{rx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{rx}}$	M_{uy} kip-ft	ϕM_{ry} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ry}}$
L1	150 - 108 (1)	TP30.401x22x0.25	603.0	873.6	0.690	0.0	873.6	0.000
L2	108 - 89.5 (2)	TP33.602x29.1509x0.312 5	1209.6	1457.3	0.830	0.0	1457.3	0.000
L3	89.5 - 69.75 (3)	TP37.553x33.602x0.4809	1664.5	1947.5	0.855	0.0	1947.5	0.000
L4	69.75 - 67.42 (4)	TP37.394x35.6411x0.375	1892.9	2376.3	0.797	0.0	2376.3	0.000
L5	67.42 - 56.42 (5)	TP39.5943x37.394x0.477	2264.3	2473.5	0.915	0.0	2473.5	0.000
L6	56.42 - 32.5 (6)	TP44.379x39.5943x0.563 3	2930.0	3202.1	0.915	0.0	3202.1	0.000
L7	32.5 - 26.5 (7)	TP44.8292x42.1523x0.62 01	3374.6	3775.2	0.894	0.0	3775.2	0.000
L8	26.5 - 0 (8)	TP50.13x44.8292x0.6585	4468.8	5117.4	0.873	0.0	5117.4	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	150 - 108 (1)	TP30.401x22x0.25	23.70	729.63	0.032	0.1	1771.3	0.000
L2	108 - 89.5 (2)	TP33.602x29.1509x0.312 5	29.09	1075.95	0.027	1.7	2954.9	0.001

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio V_u ϕV_n	Actual T_u kip-ft	ϕT_n kip-ft	Ratio T_u ϕT_n
L3	89.5 - 69.75 (3)	TP37.553x33.602x0.4809	31.62	1330.31	0.024	1.5	3949.0	0.000
L4	69.75 - 67.42 (4)	TP37.394x35.6411x0.375	32.90	1578.86	0.021	1.4	4818.3	0.000
L5	67.42 - 56.42 (5)	TP39.5943x37.394x0.477	34.69	1558.51	0.022	1.2	5015.6	0.000
L6	56.42 - 32.5 (6)	TP44.379x39.5943x0.563 3	37.65	1849.44	0.020	1.0	6492.9	0.000
L7	32.5 - 26.5 (7)	TP44.8292x42.1523x0.62 01	39.59	2108.51	0.019	1.0	7655.0	0.000
L8	26.5 - 0 (8)	TP50.13x44.8292x0.6585	43.05	2552.32	0.017	0.7	10376.5	0.000

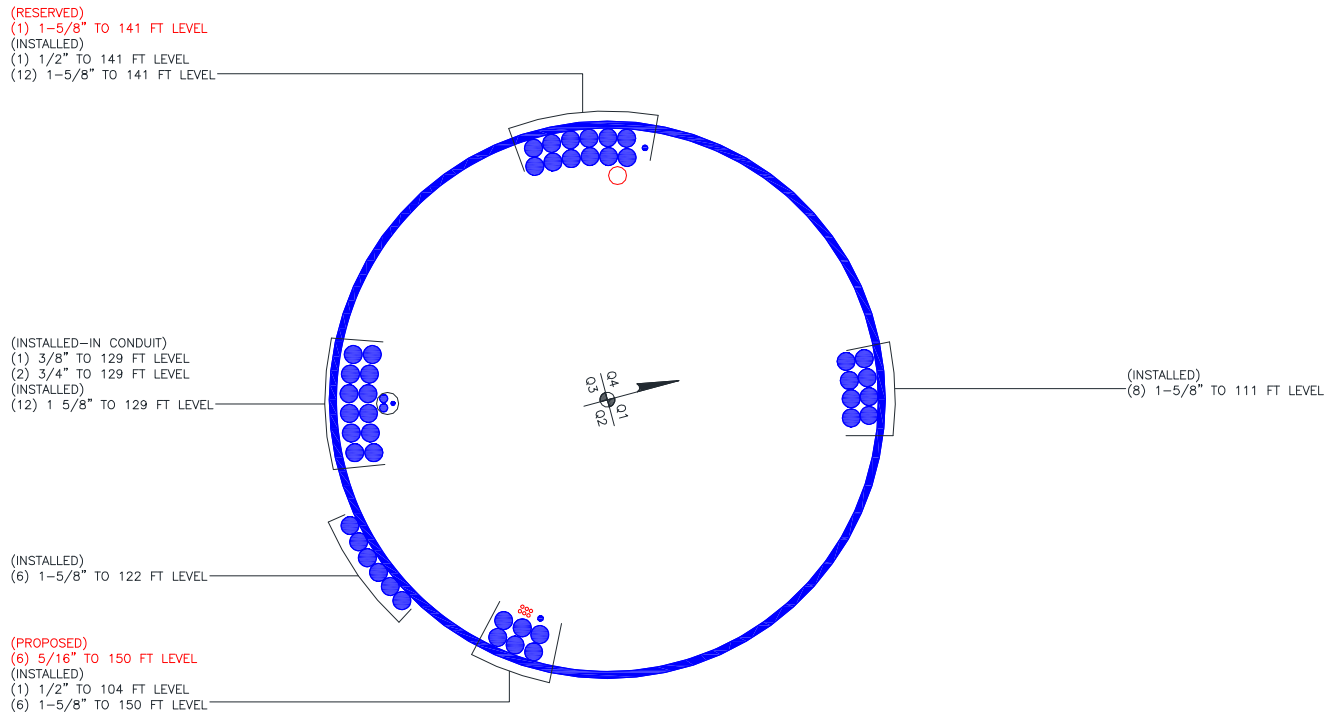
Pole Interaction Design Data

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 - 108 (1)	0.009	0.690	0.000	0.032	0.000	0.700	1.000	4.8.2 ✓
L2	108 - 89.5 (2)	0.008	0.830	0.000	0.027	0.001	0.839	1.000	4.8.2 ✓
L3	89.5 - 69.75 (3)	0.008	0.855	0.000	0.024	0.000	0.864	1.000	4.8.2 ✓
L4	69.75 - 67.42 (4)	0.008	0.797	0.000	0.021	0.000	0.805	1.000	4.8.2 ✓
L5	67.42 - 56.42 (5)	0.009	0.915	0.000	0.022	0.000	0.925	1.000	4.8.2 ✓
L6	56.42 - 32.5 (6)	0.010	0.915	0.000	0.020	0.000	0.925	1.000	4.8.2 ✓
L7	32.5 - 26.5 (7)	0.010	0.894	0.000	0.019	0.000	0.904	1.000	4.8.2 ✓
L8	26.5 - 0 (8)	0.011	0.873	0.000	0.017	0.000	0.884	1.000	4.8.2 ✓

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail	
L1	150 - 108	Pole	TP30.401x22x0.25	1	-12.95	1459.26	70.0	Pass	
L2	108 - 89.5	Pole	TP33.602x29.1509x0.3125	2	-18.02	2151.91	83.9	Pass	
L3	89.5 - 69.75	Pole	TP37.553x33.602x0.4809	3	-22.20	2660.61	86.4	Pass	
L4	69.75 - 67.42	Pole	TP37.394x35.6411x0.375	4	-24.96	3157.72	80.5	Pass	
L5	67.42 - 56.42	Pole	TP39.5943x37.394x0.477	5	-28.34	3117.01	92.5	Pass	
L6	56.42 - 32.5	Pole	TP44.379x39.5943x0.5633	6	-35.17	3698.87	92.5	Pass	
L7	32.5 - 26.5	Pole	TP44.8292x42.1523x0.6201	7	-41.67	4217.02	90.4	Pass	
L8	26.5 - 0	Pole	TP50.13x44.8292x0.6585	8	-54.31	5104.63	88.4	Pass	
							Summary		
							Pole (L5)	92.5	Pass
							RATING =	92.5	Pass

APPENDIX B
BASE LEVEL DRAWING



APPENDIX C
ADDITIONAL CALCULATIONS

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Top Hat 18" Diameter x 2' 6" Tall	150	RRH2X60-AWS BAND 4	141
APXVSPP18-C w/ Mount Pipe	150	RRH2X60-AWS BAND 4	141
APXVSPP18-C w/ Mount Pipe	150	DB-T1-6Z-8AB-0Z	141
APXVSPP18-C w/ Mount Pipe	150	Platform Mount [LP 1201-1]	141
FD9R6004/1C-3L	150	(2) OPA-65R-LCUU-H6 w/ Mount Pipe	129
FD9R6004/1C-3L	150	(2) OPA-65R-LCUU-H6 w/ Mount Pipe	129
FD9R6004/1C-3L	150	(2) OPA-65R-LCUU-H6 w/ Mount Pipe	129
Platform Mount [LP 1201-1]	150	7770.00 w/ Mount Pipe	129
(3) 2.375" OD x 6' Mount Pipe	150	7770.00 w/ Mount Pipe	129
(3) 2.375" OD x 6' Mount Pipe	150	7770.00 w/ Mount Pipe	129
(3) 2.375" OD x 6' Mount Pipe	150	DC6-48-60-18-8F	129
2.375" OD x 6' Mount Pipe	150	RRUS-11 1900MHz	129
2.375" OD x 6' Mount Pipe	150	RRUS-11 1900MHz	129
2.375" OD x 6' Mount Pipe	150	RRUS-11 1900MHz	129
(2) APL868013-42T0 w/ Mount Pipe	141	(2) LGP21401	129
(2) APL868013-42T0 w/ Mount Pipe	141	(2) LGP21401	129
(2) APL868013-42T0 w/ Mount Pipe	141	(2) LGP21401	129
KS24019-L112A	141	RRUS 12 B2	129
(2) FD9R6004/2C-3L	141	RRUS 12 B2	129
(2) FD9R6004/2C-3L	141	RRUS 12 B2	129
(2) FD9R6004/2C-3L	141	RRUS A2 MODULE	129
(2) HBXX-6517DS-A2M w/ Mount Pipe	141	RRUS A2 MODULE	129
(2) HBXX-6517DS-A2M w/ Mount Pipe	141	RRUS A2 MODULE	129
(2) HBXX-6517DS-A2M w/ Mount Pipe	141	Platform Mount [LP 713-1]	129
BXA-70063-6CF-EDIN-0 w/ Mount Pipe	141	APXV18-206517S-C w/ Mount Pipe	122
BXA-70063-6CF-EDIN-0 w/ Mount Pipe	141	APXV18-206517S-C w/ Mount Pipe	122
BXA-70063-6CF-EDIN-0 w/ Mount Pipe	141	APXV18-206517S-C w/ Mount Pipe	122
BXA-70063-6CF-EDIN-0 w/ Mount Pipe	141	Pipe Mount [PM 601-3]	122
RRH2X60-PCS	141	(2) RR65-18-02DP w/ Mount Pipe	111
RRH2X60-PCS	141	(2) RR65-18-02DP w/ Mount Pipe	111
RRH2X60-PCS	141	(2) S20057A1	111
RRH2X60-PCS	141	(2) S20057A1	111
RRH2X60-AWS BAND 4	141	T-Arm Mount [TA 601-1]	111
RRH2X60-AWS BAND 4	141	T-Arm Mount [TA 601-1]	111

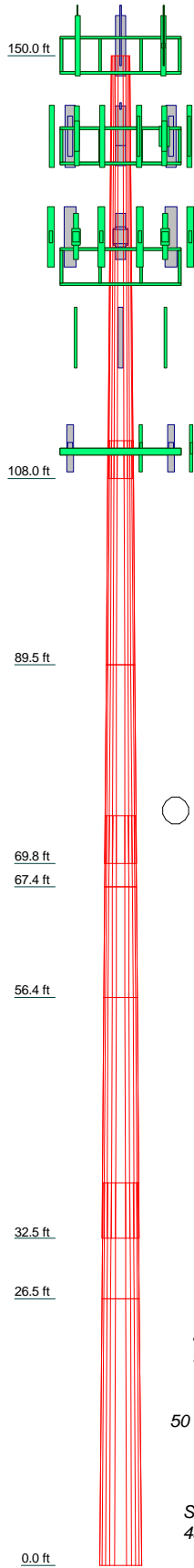
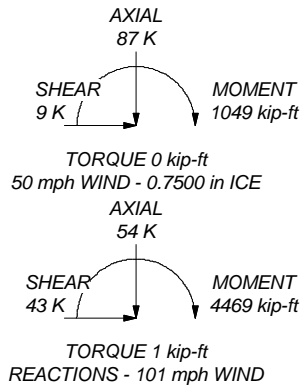
MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-60	60 ksi	75 ksi	Reinf 42.10 ksi	42 ksi	53 ksi
Reinf 41.95 ksi	42 ksi	53 ksi	Reinf 42.13 ksi	42 ksi	53 ksi
A607-65	65 ksi	80 ksi	Reinf 42.91 ksi	43 ksi	54 ksi
Reinf 45.75 ksi	46 ksi	58 ksi			

TOWER DESIGN NOTES

1. Tower is located in Middlesex County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 101 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 92.5%

ALL REACTIONS ARE FACTORED



Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	42.00	12	0.2500	3.75	22.0000	30.4010	A607-60	3.0
2	22.25	12	0.3125	29.1509	33.6020	33.6020	A607-60	2.4
3	19.75	12	0.4809	33.6020	37.5530	37.5530	Reinf 41.95 ksi	3.7
4	7.08	12	0.3750	35.6411	37.3940	37.3940	A607-65	1.1
5	11.00	12	0.4770	37.3940	39.5943	39.5943	Reinf 45.75 ksi	2.2
6	23.92	12	0.5633	39.5943	44.3790	44.3790	Reinf 42.10 ksi	6.1
7	11.50	12	0.6201	42.1523	44.8292	44.8292	Reinf 42.91 ksi	3.3
8	26.50	12	0.6585	44.8292	50.1300	50.1300	Reinf 42.13 ksi	9.0
								30.7

Paul J Ford and Company
 250 E. Broad Street Suite 600
 Columbus, OH 43215
 Phone: 614.221.6679
 FAX: 614.448.4105

Job: **150' Monpole / Middletown 2 - Marino Property**
 Project: **PJF 37517-0297 / BU 876341**
 Client: **Crown Castle** Drawn by: **Robert Koors** App'd:
 Code: **TIA-222-G** Date: **01/23/17** Scale: **NTS**
 Path: Dwg No. **E-1**

v4.4 - Effective 7-12-13

Asymmetric Anchor Rod Analysis

Moment = 4469 k-ft
 Axial = 54.0 kips
 Shear = 43.0 kips
 Anchor Qty = 20

TIA Ref. = G
 ASIF = N/A
 Max Ratio = 105.0%

Location = Base Plate
 η = 0.55 for BP, Rev. G Sect. 4.9.9
 Threads = N/A for FP, Rev. G

**** For Post Installed Anchors: Check anchors for embedment, epoxy/grout bond, and capacity based on proof load. ****

Item	Nominal Anchor Dia, in	Spec	Fy, ksi	Fu, ksi	Location, degrees	Anchor Circle, in	Area Override, in ²	Area, in ²	Max Net Compression, kips	Max Net Tension, kips	Load for Capacity Calc, kips	Capacity Override, kips	Capacity, kips	Capacity Ratio
1	2.250	#18J A615 Gr 75	75	100	27.2	58.00	0.00	3.98	183.78	178.38	187.69	0.00	260.00	72.2%
2	2.250	#18J A615 Gr 75	75	100	39.1	58.00	0.00	3.98	183.78	178.38	187.69	0.00	260.00	72.2%
3	2.250	#18J A615 Gr 75	75	100	50.9	58.00	0.00	3.98	183.78	178.38	187.69	0.00	260.00	72.2%
4	2.250	#18J A615 Gr 75	75	100	62.8	58.00	0.00	3.98	183.78	178.38	187.69	0.00	260.00	72.2%
5	2.250	#18J A615 Gr 75	75	100	117.2	58.00	0.00	3.98	183.78	178.38	187.69	0.00	260.00	72.2%
6	2.250	#18J A615 Gr 75	75	100	129.1	58.00	0.00	3.98	183.78	178.38	187.69	0.00	260.00	72.2%
7	2.250	#18J A615 Gr 75	75	100	140.9	58.00	0.00	3.98	183.78	178.38	187.69	0.00	260.00	72.2%
8	2.250	#18J A615 Gr 75	75	100	152.8	58.00	0.00	3.98	183.78	178.38	187.69	0.00	260.00	72.2%
9	2.250	#18J A615 Gr 75	75	100	207.2	58.00	0.00	3.98	183.78	178.38	187.69	0.00	260.00	72.2%
10	2.250	#18J A615 Gr 75	75	100	219.1	58.00	0.00	3.98	183.78	178.38	187.69	0.00	260.00	72.2%
11	2.250	#18J A615 Gr 75	75	100	230.9	58.00	0.00	3.98	183.78	178.38	187.69	0.00	260.00	72.2%
12	2.250	#18J A615 Gr 75	75	100	242.8	58.00	0.00	3.98	183.78	178.38	187.69	0.00	260.00	72.2%
13	2.250	#18J A615 Gr 75	75	100	297.2	58.00	0.00	3.98	183.78	178.38	187.69	0.00	260.00	72.2%
14	2.250	#18J A615 Gr 75	75	100	309.1	58.00	0.00	3.98	183.78	178.38	187.69	0.00	260.00	72.2%
15	2.250	#18J A615 Gr 75	75	100	320.9	58.00	0.00	3.98	183.78	178.38	187.69	0.00	260.00	72.2%
16	2.250	#18J A615 Gr 75	75	100	332.8	58.00	0.00	3.98	183.78	178.38	187.69	0.00	260.00	72.2%
17	2.250	#18J A615 Gr 75	75	100	0.0	61.00	0.00	3.98	193.15	187.75	197.06	199.00	199.00	99.0%
18	2.250	#18J A615 Gr 75	75	100	90.0	61.00	0.00	3.98	193.15	187.75	197.06	199.00	199.00	99.0%
19	2.250	#18J A615 Gr 75	75	100	180.0	61.00	0.00	3.98	193.15	187.75	197.06	199.00	199.00	99.0%
20	2.250	#18J A615 Gr 75	75	100	270.0	61.00	0.00	3.98	193.15	187.75	197.06	199.00	199.00	99.0%

79.60

DRILLED PIER SOIL AND STEEL ANALYSIS - TIA-222-G

Factored Base Reactions from RISA

	Comp. (+)	Tension (-)	
Moment, Mu =	4469.0		k-ft
Shear, Vu =	43.0		kips
Axial Load, Pu1 =	54.0		kips (from 1.2D + 1.6W)*
Axial Load, Pu2 =	40.5	0.0	kips (from 0.9D + 1.6W)**
OTMu =	4490.5	0.0	k-ft @ Ground

*Axial Load, Pu1 will be used for Soil Compression Analysis.

**Axial Load, Pu2 will be used for Steel Analysis.

Drilled Pier Parameters

Diameter =	7	ft
Height Above Grade =	0.5	ft
Depth Below Grade =	18.5	ft
fc' =	3	ksi
εc =	0.003	in/in
L / D Ratio =	2.71	

Mat Ftdn. Cap Width =		ft
Mat Ftdn. Cap Length =		ft
Depth Below Grade =		ft

Steel Parameters

Number of Bars =	32	
Rebar Size =	#11	
Rebar Fy =	60	ksi
Rebar MOE =	29000	ksi
Tie Size =	#5	
Side Clear Cover to Ties =	4	in

Direct Embed Pole Shaft Parameters

Dia @ Grade =		in
Dia @ Depth Below Grade =		in
Number of Sides =		
Thickness =		in
Fy =		ksi
Backfill Condition =		

Define Soil Layers

Note: Cohesion = Undrained Shear Strength = Unconfined Compressive Strength / 2

Layer	Thickness ft	Unit Weight pcf	Cohesion psf	Friction Angle degrees	Soil Type	Ultimate End Bearing psf	Comp. Ult. Skin Friction psf	Tension Ult. Skin Friction psf	Depth ft
1	4	120		32	Sand				4
2	20	125	4000		Clay	14285			24
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									

Soil Results: Overturning

Depth to COR =	11.44	ft, from Grade
Bending Moment, Mu =	4982.63	k-ft, from COR
Resisting Moment, ΦMn =	8925.57	k-ft, from COR

MOMENT RATIO = 55.8% OK

Shear, Vu =	43.00	kips
Resisting Shear, ΦVn =	77.03	kips

SHEAR RATIO = 55.8% OK

Soil Results: Uplift

Uplift, Tu =	0.00	kips
Uplift Capacity, ΦTn =	98.71	kips

UPLIFT RATIO = 0.0% OK

Soil Results: Compression

Compression, Cu =	54.00	kips
Comp. Capacity, ΦCn =	386.57	kips

COMPRESSION RATIO = 14.0% OK

Steel Results (ACI 318-05):

Minimum Steel Area =	18.47	sq in
Actual Steel Area =	49.92	sq in

Axial, ΦPn (min) =	-2695.68	kips, Where ΦMn = 0 k-ft
Axial, ΦPn (max) =	8839.70	kips, Where ΦMn = 0 k-ft

Axial Load, Pu =	65.18	kips @ 4.25 ft Below Grade
Moment, Mu =	4667.14	k-ft @ 4.25 ft Below Grade
Moment, ΦMn =	7508.59	k-ft

MOMENT RATIO = 62.2% OK

Safety Factors / Load Factors / Φ Factors

Tower Type =	Monopole DP
ACI Code =	ACI 318-05
Seismic Design Category =	D
Reference Standard =	TIA-222-G
Use 1.3 Load Factor?	No
Load Factor =	1.00

	Safety Factor	Φ Factor
Soil Lateral Resistance =	2.00	0.75
Skin Friction =	2.00	0.75
End Bearing =	2.00	0.75
Concrete Wt. Resist Uplift =	1.25	

Load Combinations Checked per TIA-222-G

- (0.75) Ult. Skin Friction + (0.75) Ult. End Bearing + (1.2) Effective Soil Wt. - (1.2) Buoyant Conc. Wt. ≥ Comp.
- (0.75) Ult. Skin Friction + (0.9) Buoyant Conc. Wt. ≥ Uplift

Soil Parameters

Water Table Depth =	99.00	ft
Depth to Ignore Soil =	3.50	ft
Depth to Full Cohesion =	0	ft
Full Cohesion Starts at?*	Ground	

Above Full Cohesion Lateral Resistance = 4(Cohesion)(Dia)(H)
 Below Full Cohesion Lateral Resistance = 8(Cohesion)(Dia)(H)

Maximum Capacity Ratios

Maximum Soil Ratio =	110.0%
Maximum Steel Ratio =	105.0%

*Note: The drilled pier foundation was analyzed using the methodology in the software 'PLS-Caisson' (Version 8.10, or newer, by Power Line Systems, Inc.). Per the methods in PLS-Caisson, the soil reactions of cohesive soils are calculated using 8CD independent of the depth of the soil layer. The depth of soil to be ignored at the top of the drilled pier is based on the recommendations of the site specific geotechnical report. In the absence of any recommendations, the frost depth at the site or one half of the drilled pier diameter (whichever is greater) shall be ignored.

Moment Capacity of Drilled Concrete Shaft (Caisson) for TIA Rev F or G

Note: Shaft assumed to have ties, not spiral, transverse reinforcing

Site Data

BU#: BU 876341
Site Name: Middletown 2 - Marino Property
App #:

Loads Already Factored		
For M (WL)	1	<----Disregard
For P (DL)	1	<----Disregard

Pier Properties	
Concrete:	
Pier Diameter =	7.0 ft
Concrete Area =	5541.8 in ²
Reinforcement:	
Clear Cover to Tie=	4.00 in
Horiz. Tie Bar Size=	5
Vert. Cage Diameter =	6.11 ft
Vert. Cage Diameter =	73.34 in
Vertical Bar Size =	11
Bar Diameter =	1.41 in
Bar Area =	1.56 in ²
Number of Bars =	32
As Total=	49.92 in ²
A s/ Aconc, Rho:	0.0090 0.90%

ACI 10.5 , ACI 21.10.4, and IBC 1810.

Min As for Flexural, Tension Controlled, Shafts:

$$(3) * (\text{Sqrt}(f'c) / F_y) = 0.0027$$

$$200 / F_y = 0.0033$$

Minimum Rho Check:

Actual Req'd Min. Rho:	0.33%	Flexural
Provided Rho:	0.90%	OK

Ref. Shaft Max Axial Capacities, ϕ Max(Pn or Tn):		
Max Pu = ($\phi=0.65$) Pn.		
Pn per ACI 318 (10-2)	8839.70	kips
at Mu=($\phi=0.65$)Mn=	5309.39	ft-kips
Max Tu, ($\phi=0.9$) Tn =	2695.68	kips
at Mu= $\phi=(0.90)$ Mn=	0.00	ft-kips

Maximum Shaft Superimposed Forces

TIA Revision:	G	
Max. Factored Shaft Mu:	4667.14	ft-kips (* Note)
Max. Factored Shaft Pu:	65.18	kips
Max Axial Force Type:	Comp.	

(* Note: Max Shaft Superimposed Moment does not necessarily equal to the shaft top reaction moment

Load Factor	Shaft Factored Loads	
1.00	Mu:	4667.14 ft-kips
1.00	Pu:	65.18 kips

Material Properties

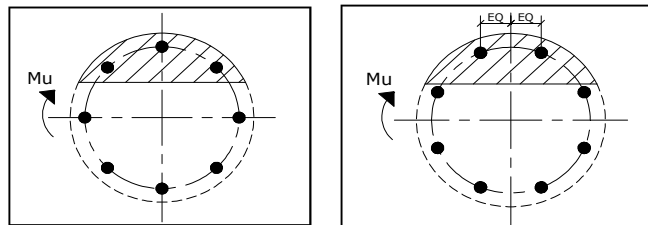
Concrete Comp. strength, f'c =	3000	psi
Reinforcement yield strength, Fy =	60	ksi
Reinforcing Modulus of Elasticity, E =	29000	ksi
Reinforcement yield strain =	0.00207	
Limiting compressive strain =	0.003	
ACI 318 Code		
Select Analysis ACI Code=	2005	
Seismic Properties		
Seismic Design Category =	D	
Seismic Risk =	High	

Solve
(Run)

<-- Press Upon Completing All Input

Results:

Governing Orientation Case: 2



Case 1

Case 2

Dist. From Edge to Neutral Axis: 16.96 in

Extreme Steel Strain, ϵ_t : 0.0109

$\epsilon_t > 0.0050$, Tension Controlled

Reduction Factor, ϕ : 0.900

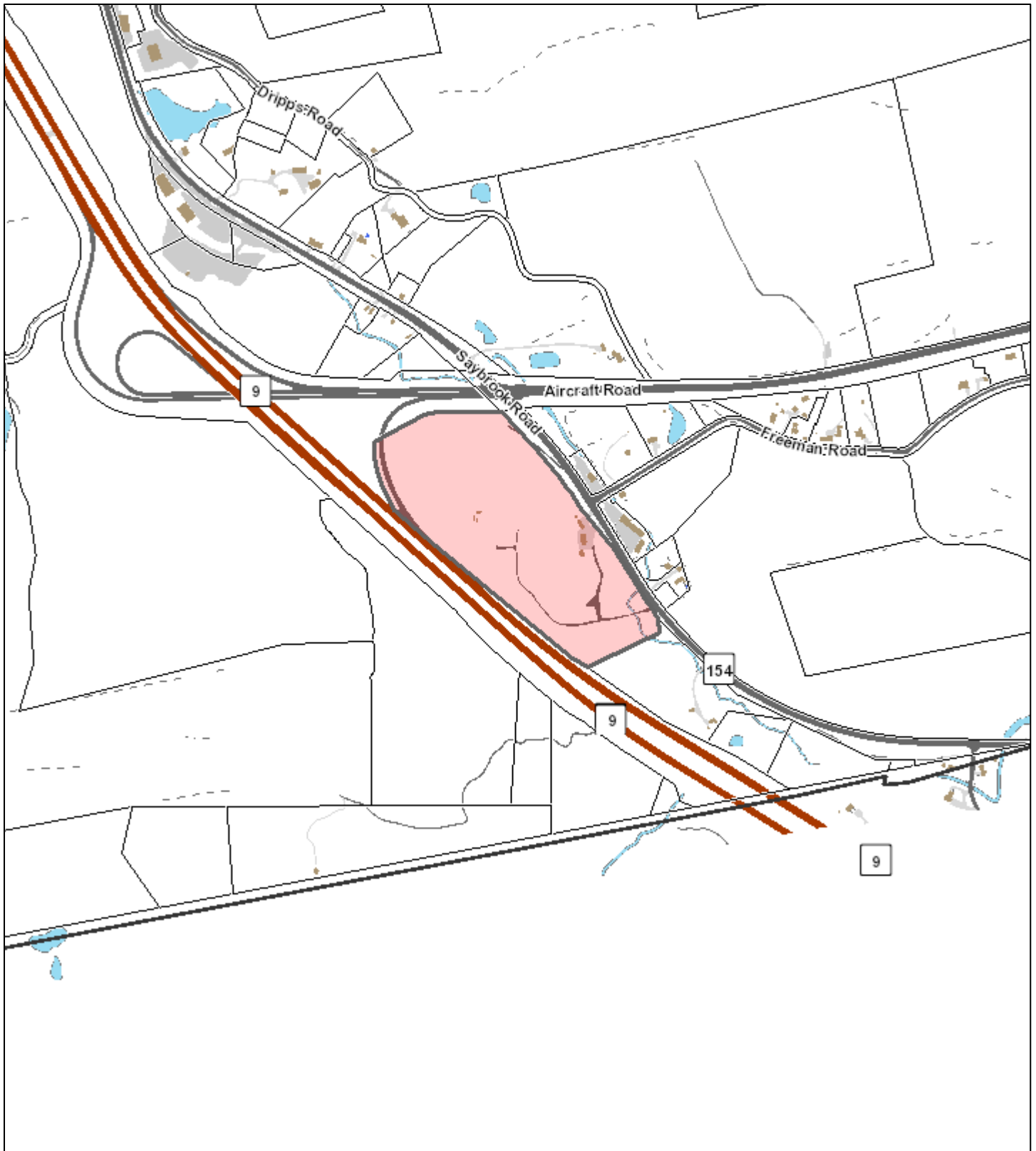
Output Note: Negative Pu=Tension

For Axial Compression, ϕ Pn = Pu: 65.18 kips

Drilled Shaft Moment Capacity, ϕ Mn: 7508.59 ft-kips

Drilled Shaft Superimposed Mu: 4667.14 ft-kips

(Mu/ ϕ Mn, Drilled Shaft Flexure CSR: 62.2%

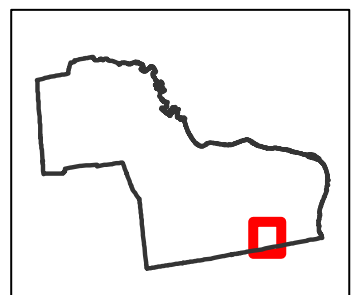


City of Middletown, Connecticut

Map generated 5/10/2017

Map Legend: <http://gis.cityofmiddletown.com/middletownct/legend.pdf>
 Property Card: <http://gis.vgsi.com/MiddletownCT/Parcel.aspx?pid=8044>

0 245 490 980 1,470 1,960 Feet 1 in = 750 ft



MAP FOR REFERENCE ONLY - NOT A LEGAL DOCUMENT

Because of different update schedules, current property assessments may not reflect recent changes to property boundaries. Check with the Board of Assessors to confirm boundaries uses at the time of assessment.

1987 SAYBROOK RD

Location 1987 SAYBROOK RD

Mblu 49 / / 0015 / /

Acct# R07180

Owner REGOWSET RIDGE LLC

Assessment \$486,390

Appraisal \$694,850

PID 8044

Building Count 1

Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2013	\$162,310	\$532,540	\$694,850

Assessment			
Valuation Year	Improvements	Land	Total
2013	\$113,610	\$372,780	\$486,390

Owner of Record

Owner REGOWSET RIDGE LLC
Co-Owner
Address 88 HIGH ST
PORTLAND, CT 06480

Sale Price \$0
Certificate
Book & Page 1753/ 973
Sale Date 04/17/2012
Instrument 29

Ownership History

Ownership History					
Owner	Sale Price	Certificate	Book & Page	Instrument	Sale Date
REGOWSET RIDGE LLC	\$0		1753/ 973	29	04/17/2012
MARINO SEBASTIAN G (EST) (ETALS)	\$0		1753/ 970	29	04/17/2012
MARINO SEBASTIAN G (EST) (ETALS)	\$0		1753/ 967	29	04/17/2012
MARINO SEBASTIAN G (EST) (2/4 INT)	\$0		1753/ 964	29	04/17/2012
MARINO SEBASTIAN G (EST) (3/4 INT) &	\$0		1753/ 961	29	04/17/2012

Building Information

Building 1 : Section 1

Year Built: 1965
Living Area: 2,800
Replacement Cost: \$228,971

Building Percent Good: 65

Replacement Cost

Less Depreciation: \$148,830

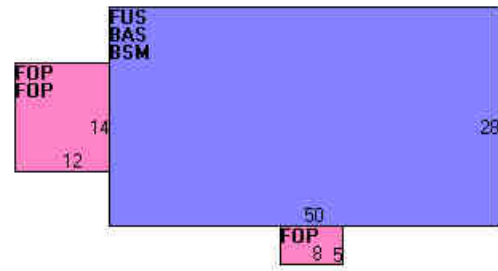
Building Attributes	
Field	Description
Style	Two Family
Model	Multi-Family
Grade	C
Stories	2 Stories
Occupancy	2
Exterior Wall 1	Vinyl Siding
Exterior Wall 2	
Roof Structure	Gable
Roof Cover	Asphalt Shingl
Interior Wall 1	Plastered
Interior Wall 2	
Interior Floor 1	Hardwood
Interior Floor 2	
Heat Fuel	Oil
Heat Type	Hot Water
Bedrooms	6
Full Baths	2
Half Baths	0
Extra Fixtures	0
Total Rooms	10
Bath Remodel	Not Updated
Kitchen Remodel	Not Updated
Extra Kitchens	2
Fireplaces	1
Extra Openings	1
Gas Fireplace	0
Int vs Ext	Same
A/C Type	None
A/C %	0
Fin Bsmt Area	0
Bsmt Garage	0

Building Photo



(http://images.vgsi.com/photos/MiddletownCTPhotos//\00\03\1

Building Layout



Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	1,400	1,400
FUS	Finished Upper Story	1,400	1,400
BSM	Basement	1,400	0
FOP	Framed Open Porch	376	0
		4,576	2,800

Extra Features

Extra Features	Legend

No Data for Extra Features

Land

Land Use

Use Code 102
Description 2 Family
Zone R-60
Neighborhood 12
Alt Land Appr Category No

Land Line Valuation

Size (Acres) 55.3
Frontage 0
Depth 0
Assessed Value \$372,780
Appraised Value \$532,540

Outbuildings

Outbuildings						<u>Legend</u>
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
FGR1	Garage			520 UNITS	\$6,760	1
FGR2	Garage W/ Loft			480 UNITS	\$6,720	1

Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2015	\$162,310	\$532,540	\$694,850
2014	\$162,310	\$532,540	\$694,850
2013	\$162,310	\$532,540	\$694,850

Assessment			
Valuation Year	Improvements	Land	Total
2015	\$113,610	\$372,780	\$486,390
2014	\$113,610	\$372,780	\$486,390
2013	\$113,610	\$372,780	\$486,390

(c) 2016 Vision Government Solutions, Inc. All rights reserved.

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

SECTION 01 100 – SCOPE OF WORK

PART 1 – GENERAL

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

1.5 DEFINITIONS:

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

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

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

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

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

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

SECTION 01 200 – COMPANY FURNISHED MATERIAL AND EQUIPMENT

PART 1 – GENERAL

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

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

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

SECTION 01 300 – CELL SITE CONSTRUCTION CO.

PART 1 – GENERAL

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

TOWER OWNER NOTIFICATION
 ONCE THE CONTRACTOR HAS RECEIVED AND ACCEPTED THE NOTICE TO PROCEED, CONTRACTOR WILL CONTACT THE CROWN CASTLE CONSTRUCTION MANAGER OF RECORD (NOTED ON THE FIRST PAGE ON THIS CONSTRUCTION DRAWING) A MINIMUM OF 48 HOURS PRIOR TO WORK START. UPON ARRIVAL TO THE JOB SITE, CONTRACTOR CREW IS REQUIRED CALL 1-800-788-7011 TO NOTIFY THE CROWN CASTLE NOC WORK HAS BEGUN.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

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

PLANS PREPARED FOR:



PLANS PREPARED BY:

INFINIGY
 FROM ZERO TO INFINIGY
 the solutions are endless
 1033 Watervliet Shaker Rd | Albany, NY 12209
 Phone: 518-690-0790 | Fax: 518-690-0793
 www.infinigy.com
 JOB NUMBER 514-000

PROJECT MANAGER:

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

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 CONSTRUCTION	02/08/17	J.M	0
ISSUED FOR REVIEW	01/19/17	SKB	A

SITE NAME:

MIDDLETOWN 2 - MARINO PROPERTY

SITE NUMBER:

CT03XC169

SITE ADDRESS:

**1969 SAYBROOK ROAD
 MIDDLETOWN, CT 06457**

SHEET DESCRIPTION:

SPRINT SPECIFICATIONS

SHEET NUMBER:

SP-1

CONTINUE FROM SP-1

1. PERFORM ANY REQUIRED SITE ENVIRONMENTAL MITIGATION.
 2. PREPARE GROUND SITES; PROVIDE DE-GRUBBING; AND ROUGH AND FINAL GRADING, AND COMPOUND SURFACE TREATMENTS.
 3. MANAGE AND CONDUCT ALL ACTIVITIES FOR INSTALLATION OF UTILITIES INCLUDING ELECTRICAL AND TELCO BACKHAUL.
 4. INSTALL UNDERGROUND FACILITIES INCLUDING UNDERGROUND POWER AND COMMUNICATIONS CONDUITS, AND UNDERGROUND GROUNDING SYSTEM.
 5. INSTALL ABOVE GROUND GROUNDING SYSTEMS.
 6. PROVIDE NEW HVAC INSTALLATIONS AND MODIFICATIONS.
 7. INSTALL "H-FRAMES", CABINETS AND SHELTERS AS INDICATED.
 8. INSTALL ROADS, ACCESS WAYS, CURBS AND DRAINS AS INDICATED.
 9. ACCOMPLISH REQUIRED MODIFICATION OF EXISTING FACILITIES.
 10. PROVIDE ANTENNA SUPPORT STRUCTURE FOUNDATIONS.
 11. PROVIDE SLABS AND EQUIPMENT PLATFORMS.
 12. INSTALL COMPOUND FENCING, SIGHT SHIELDING, LANDSCAPING AND ACCESS BARRIERS.
 13. PERFORM INSPECTION AND MATERIAL TESTING AS REQUIRED HEREINAFTER.
 14. CONDUCT SITE RESISTANCE TO EARTH TESTING AS REQUIRED HEREINAFTER
 15. INSTALL FIXED GENERATOR SETS AND OTHER STANDBY POWER SOLUTIONS.
 16. INSTALL TOWERS, ANTENNA SUPPORT STRUCTURES AND PLATFORMS ON EXISTING TOWERS AS REQUIRED.
 17. INSTALL CELL SITE RADIOS, MICROWAVE, GPS, COAXIAL MAINLINE, ANTENNAS, CROSS BAND COUPLERS, TOWER TOP AMPLIFIERS, LOW NOISE AMPLIFIERS AND RELATED EQUIPMENT.
 18. PERFORM, DOCUMENT, AND CLOSE OUT ANY CONSTRUCTION CONTROL DOCUMENTS THAT MAY BE REQUIRED BY GOVERNMENT AGENCIES AND LANDLORDS.
 19. PERFORM ANTENNA AND COAX SWEEP TESTING AND MAKE ANY AND ALL NECESSARY CORRECTIONS.
 20. REMAIN ON SITE MOBILIZED THROUGHOUT HAND-OFF AND INTEGRATION TO ASSIST AS NEEDED UNTIL SITE IS DEEMED SUBSTANTIALLY COMPLETE AND PLACED "ON AIR."
- 3.2 GENERAL REQUIREMENTS FOR CIVL CONSTRUCTION:**
- A. CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH. AT THE COMPLETION OF THE WORK, CONTRACTOR SHALL REMOVE FROM THE SITE ALL REMAINING RUBBISH, IMPLEMENTS, TEMPORARY FACILITIES, AND SURPLUS MATERIALS.
 - B. EQUIPMENT ROOMS SHALL AT ALL TIMES BE MAINTAINED "BROOM CLEAN" AND CLEAR OF DEBRIS.
 - C. CONTRACTOR SHALL TAKE ALL REASONABLE PRECAUTIONS TO DISCOVER AND LOCATE ANY HAZARDOUS CONDITION.
 1. IN THE EVENT CONTRACTOR ENCOUNTERS ANY HAZARDOUS CONDITION WHICH HAS NOT BEEN ABATED OR OTHERWISE MITIGATED, CONTRACTOR AND ALL OTHER PERSONS SHALL IMMEDIATELY STOP WORK IN THE AFFECTED AREA AND NOTIFY COMPANY IN WRITING. THE WORK IN THE AFFECTED AREA SHALL NOT BE RESUMED EXCEPT BY WRITTEN NOTIFICATION BY COMPANY.
 2. CONTRACTOR AGREES TO USE CARE WHILE ON THE SITE AND SHALL NOT TAKE ANY ACTION THAT WILL OR MAY RESULT IN OR CAUSE THE HAZARDOUS CONDITION TO BE FURTHER RELEASED IN THE ENVIRONMENT, OR TO FURTHER EXPOSE INDIVIDUALS TO THE HAZARD.
 - D. CONTRACTOR'S ACTIVITIES SHALL BE RESTRICTED TO THE PROJECT LIMITS. SHOULD AREAS OUTSIDE THE PROJECT LIMITS BE AFFECTED BY CONTRACTOR'S ACTIVITIES, CONTRACTOR SHALL IMMEDIATELY RETURN THEM TO ORIGINAL CONDITION
 - E. CONDUCT TESTING AS REQUIRED HEREIN.
- 3.3 DELIVERABLES:**
- A. CONTRACTOR SHALL REVIEW, APPROVE, AND SUBMIT TO SPRINT SHOP DRAWINGS, PRODUCT DATA, SAMPLES, AND SIMILAR SUBMITTALS AS REQUIRED HEREINAFTER
 - B. PROVIDE DOCUMENTATION INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING. DOCUMENTATION SHALL BE FORWARDED IN ORIGINAL FORMAT AND/OR UPLOADED INTO SMS.
 1. ALL CORRESPONDENCE AND PRELIMINARY CONSTRUCTION REPORTS.
 2. PROJECT PROGRESS REPORTS.
 3. CIVL CONSTRUCTION START DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
 4. ELECTRICAL SERVICE COMPLETION DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).

5. LINES AND ANTENNA INSTALL DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
6. POWER INSTALL DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
7. TELCO READY DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
8. PPC (OR SHELTER) INSTALL DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
9. TOWER CONSTRUCTION START DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
10. TOWER CONSTRUCTION COMPLETE DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
11. BTS AND RADIO EQUIPMENT DELIVERED AT SITE DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
12. NETWORK OPERATIONS HANDOFF CHECKLIST (HOC WALK) COMPLETE (UPLOAD FORM IN SMS)
13. CIVL CONSTRUCTION COMPLETE DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
14. SITE CONSTRUCTION PROGRESS PHOTOS UNLOADED INTO SMS.

SECTION 01 400 - SUBMITTALS & TESTS

PART 1 - GENERAL

- 1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.
- 1.2 RELATED DOCUMENTS:
 - A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.
 - B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.
- 1.3 SUBMITTALS:
 - A. THE WORK IN ALL ASPECTS SHALL COMPLY WITH THE CONSTRUCTION DRAWINGS AND THESE SPECIFICATIONS.
 - B. SUBMIT THE FOLLOWING TO COMPANY REPRESENTATIVE FOR APPROVAL.
 1. CONCRETE MIX-DESIGNS FOR TOWER FOUNDATIONS, ANCHORS PIERS, AND CONCRETE PAVING.
 2. CONCRETE BREAK TESTS AS SPECIFIED HEREIN.
 3. SPECIAL FINISHES FOR INTERIOR SPACES, IF ANY.
 4. ALL EQUIPMENT AND MATERIALS SO IDENTIFIED ON THE CONSTRUCTION DRAWINGS.
 5. CHEMICAL GROUNDING DESIGN
 - D. ALTERNATES: AT THE COMPANY'S REQUEST, ANY ALTERNATIVES TO THE MATERIALS OR METHODS SPECIFIED SHALL BE SUBMITTED TO SPRINT'S CONSTRUCTION MANAGER FOR APPROVAL PRIOR TO BEING SHIPPED TO SITE. SPRINT WILL REVIEW AND APPROVE ONLY THOSE REQUESTS MADE IN WRITING. NO VERBAL APPROVALS WILL BE CONSIDERED. SUBMITTAL FOR APPROVAL SHALL INCLUDE A STATEMENT OF COST REDUCTION PROPOSED FOR USE OF ALTERNATE PRODUCT.

1.4 TESTS AND INSPECTIONS:

- A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION TESTS, INSPECTIONS AND PROJECT DOCUMENTATION.
- B. CONTRACTOR SHALL ACCOMPLISH TESTING INCLUDING BUT NOT LIMITED TO THE FOLLOWING:
 1. COAX SWEEPS AND FIBER TESTS PER TS-0200 REV 4 ANTENNA LINE ACCEPTANCE STANDARDS.
 2. AGL, AZIMUTH AND DOWNTILT USING ELECTRONIC COMMERCIAL MADE-FOR-THE-PURPOSE ANTENNA ALIGNMENT TOOL.
 3. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CORRECTIONS TO ANY WORK IDENTIFIED AS UNACCEPTABLE IN SITE INSPECTION ACTIVITIES AND/OR AS A RESULT OF TESTING.
- C. REQUIRED CLOSEOUT DOCUMENTATION INCLUDES, BUT IS NOT LIMITED TO THE FOLLOWING:
 1. AZIMUTH, DOWNTILT, AGL - UPLOAD REPORT FROM ANTENNA ALIGNMENT TOOL TO SITERRA TASK 465. INSTALLED AZIMUTH, DOWNTILT, AND AGL MUST CONFORM TO THE RF DATA SHEETS. SWEEP AND FIBER TESTS
 2. SCANABLE BARCODE PHOTOGRAPHS OF TOWER TOP AND INACCESSIBLE SERIALIZED EQUIPMENT
 3. ALL AVAILABLE JURISDICTIONAL INFORMATION
 4. PDF SCAN OF REDLINES PRODUCED IN FIELD

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

1.5 COMMISSIONING: PERFORM ALL COMMISSIONING AS REQUIRED BY APPLICABLE MOPs

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

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 REQUIREMENTS FOR TESTING:

A. THIRD PARTY TESTING AGENCY:

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

PLANS PREPARED FOR:



PLANS PREPARED BY:

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless
1033 Watervliet Shaker Rd | Albany, NY 12209
Phone: 518-690-0790 | Fax: 518-690-0793
www.infinigy.com
JOB NUMBER 514-000

PROJECT MANAGER:

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

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 CONSTRUCTION		02/08/17	JM	0
ISSUED FOR REVIEW		01/19/17	SKB	A

SITE NAME:

MIDDLETOWN 2 - MARINO PROPERTY

SITE NUMBER:

CT03XC169

SITE ADDRESS:

**1969 SAYBROOK ROAD
MIDDLETOWN, CT 06457**

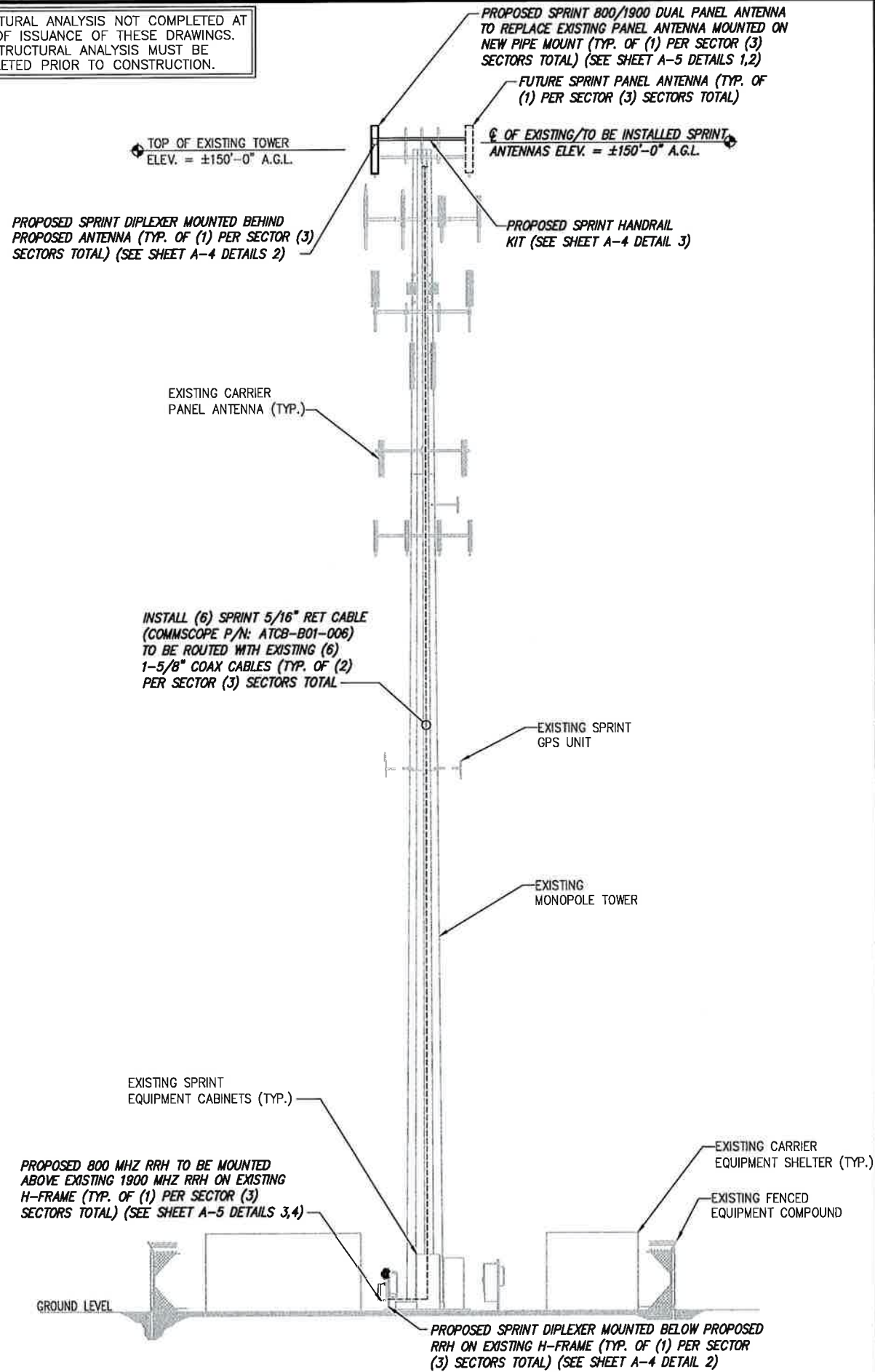
SHEET DESCRIPTION:

SPRINT SPECIFICATIONS

SHEET NUMBER:

SP-2

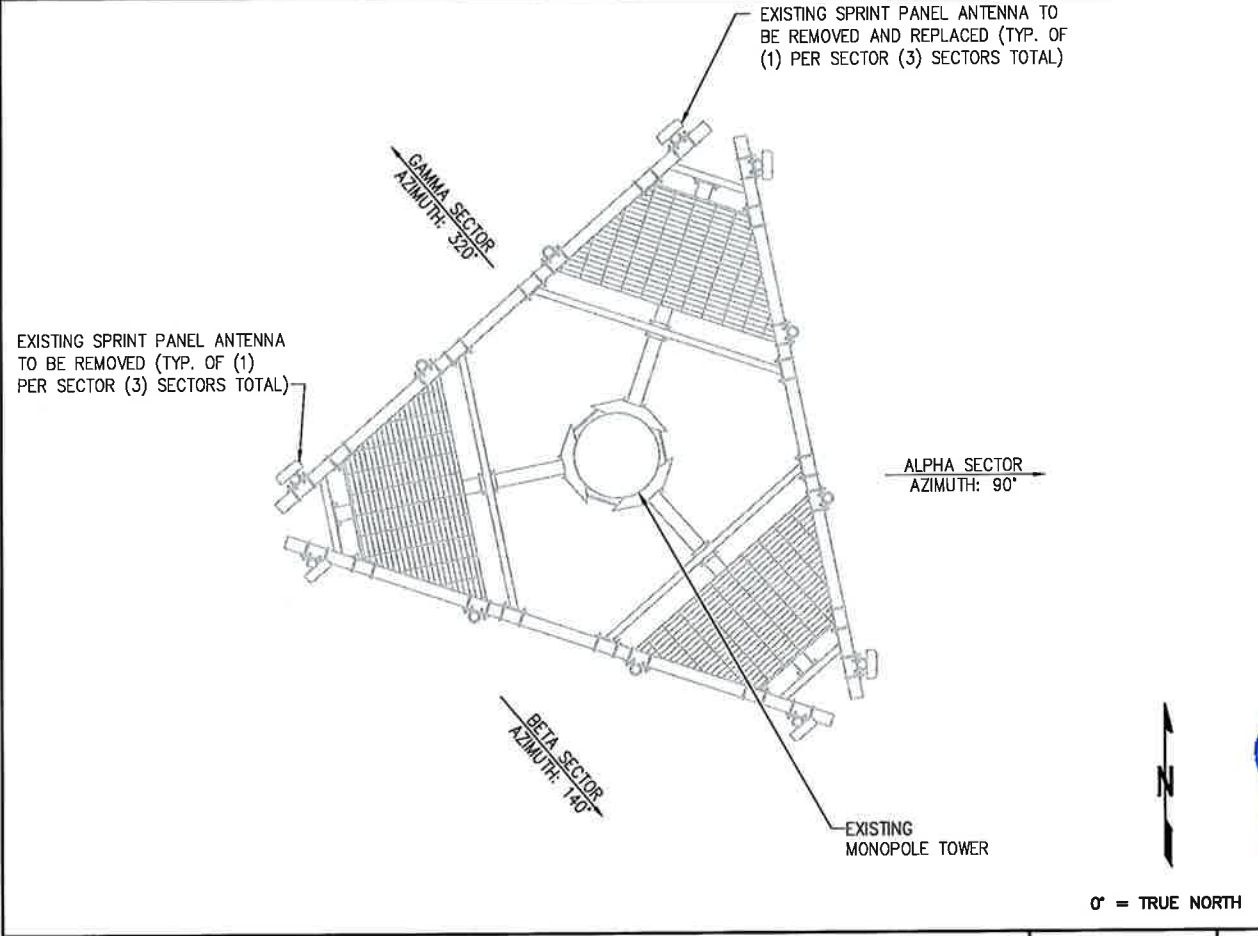
STRUCTURAL ANALYSIS NOT COMPLETED AT TIME OF ISSUANCE OF THESE DRAWINGS. THE STRUCTURAL ANALYSIS MUST BE COMPLETED PRIOR TO CONSTRUCTION.



TOWER ELEVATION

NO SCALE

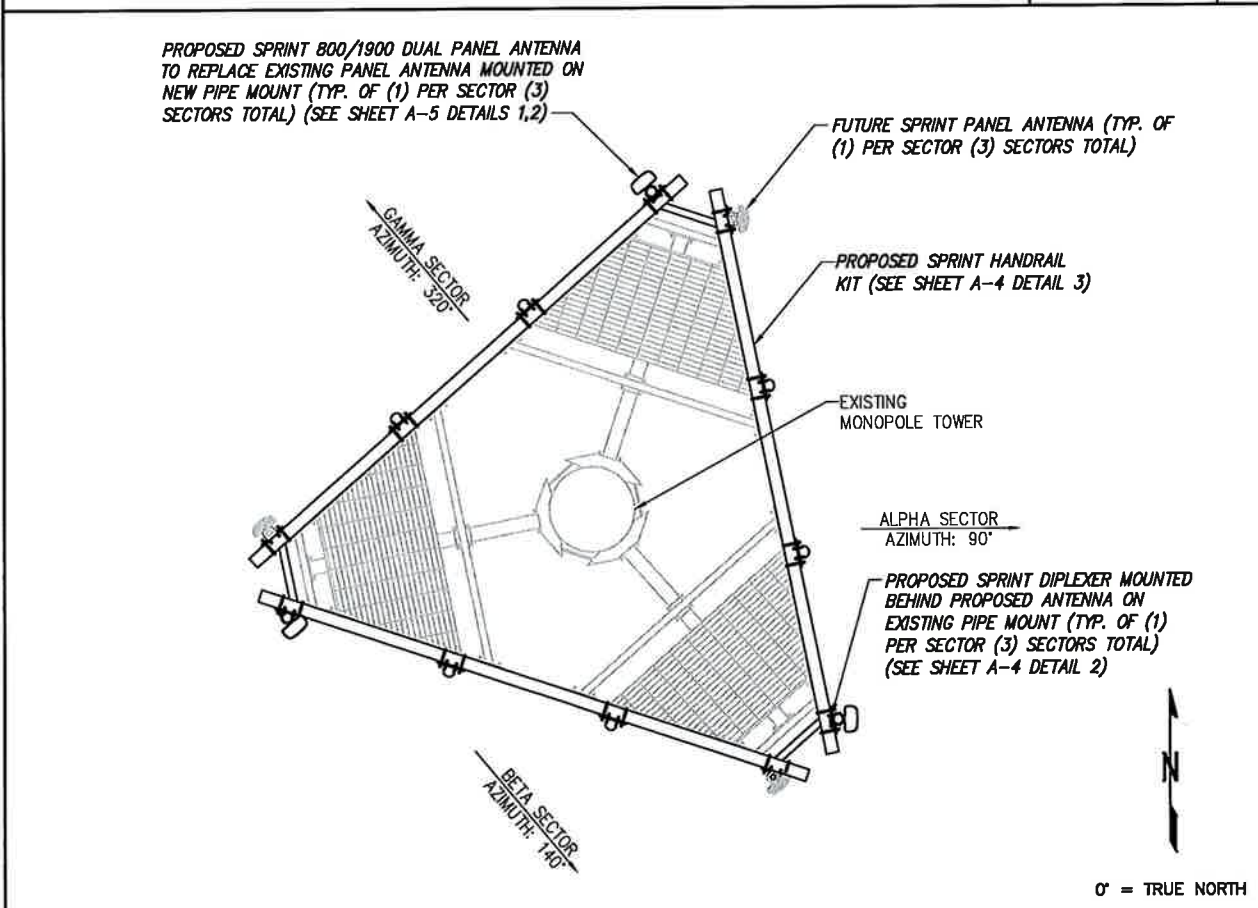
1



EXISTING ANTENNA LAYOUT

NO SCALE

2



PROPOSED ANTENNA LAYOUT

NO SCALE

3

PLANS PREPARED FOR:

PLANS PREPARED BY:

INFINIGY
FROM ZERO TO INFINIGY
the solutions are endless
1033 Watervliet Shaker Rd | Albany, NY 12205
Phone: 518-690-0790 | Fax: 518-690-0793
www.infinigy.com
JOB NUMBER 514-000

PROJECT MANAGER:

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

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 CONSTRUCTION	02/08/17	JM	0
ISSUED FOR REVIEW	01/19/17	SKB	A

SITE NAME:
MIDDLETOWN 2 - MARINO PROPERTY

SITE NUMBER:
CT03XC169

SITE ADDRESS:
**1969 SAYBROOK ROAD
MIDDLETOWN, CT 06457**

SHEET DESCRIPTION:
TOWER ELEVATION & ANTENNA LAYOUT

SHEET NUMBER:
A-3



INFINIGY
 FROM ZERO TO INFINIGY
 the solutions are endless
 1033 Watervliet Shaker Rd | Albany, NY 12205
 Phone: 518-690-0790 | Fax: 518-690-0793
 www.infinigy.com
 JOB NUMBER 514-000

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



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 CONSTRUCTION		02/08/17	JJM	0
ISSUED FOR REVIEW		01/19/17	SKB	A

SITE NAME:
MIDDLETOWN 2 - MARINO PROPERTY

SITE NUMBER:
CT03XC169

SITE ADDRESS:
**1969 SAYBROOK ROAD
 MIDDLETOWN, CT 06457**

SHEET DESCRIPTION:
ANTENNA LOADING & COLOR CODING CHARTS

SHEET NUMBER:
A-4

EXISTING AND PROPOSED ANTENNA AND RRH MODEL NUMBERS

SECTOR	EXISTING/PROPOSED	BAND	ANTENNA	ANTENNA C. HEIGHT	AZIMUTH	RRH	JUNCTION CYLINDERS	CABLE	CABLE LENGTH
ALPHA	FUTURE	---	---	---	---	---	---	---	---
	PROPOSED	800MHZ / 1900MHZ	RFS/CELWAVE APXVSPP18-C-A20	150'-0"	320°	(P) GROUND MOUNTED 800 MHZ RRH (E) GROUND MOUNTED 1900 MHZ RRH	---	(2) (P) RET CABLES (2) (E) 1-5/8" COAX	±201' EXISTING
BETA	FUTURE	---	---	---	---	---	---	---	---
	PROPOSED	800MHZ / 1900MHZ	RFS/CELWAVE APXVSPP18-C-A20	150'-0"	90°	(P) GROUND MOUNTED 800 MHZ RRH (E) GROUND MOUNTED 1900 MHZ RRH	---	(2) (P) RET CABLES (2) (E) 1-5/8" COAX	±201' EXISTING
GAMMA	FUTURE	---	---	---	---	---	---	---	---
	PROPOSED	800MHZ / 1900MHZ	RFS/CELWAVE APXVSPP18-C-A20	150'-0"	210°	(P) GROUND MOUNTED 800 MHZ RRH (E) GROUND MOUNTED 1900 MHZ RRH	---	(2) (P) RET CABLES (2) (E) 1-5/8" COAX	±201' EXISTING

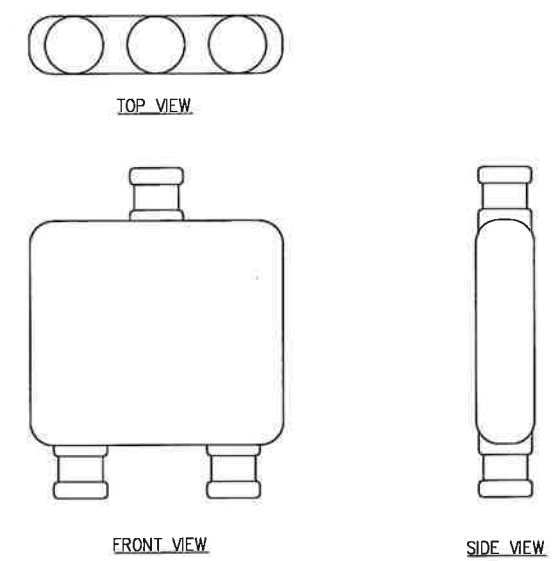
SECTOR	CABLE	FIRST RING	SECOND RING	THIRD RING
1 ALPHA	1	GREEN	NO TAPE	NO TAPE
1	2	BLUE	NO TAPE	NO TAPE
1	3	BROWN	NO TAPE	NO TAPE
1	4	WHITE	NO TAPE	NO TAPE
1	5	---	NO TAPE	NO TAPE
1	6	SLATE	NO TAPE	NO TAPE
1	7	PURPLE	NO TAPE	NO TAPE
1	8	ORANGE	NO TAPE	NO TAPE
2 BETA	1	GREEN	GREEN	NO TAPE
2	2	BLUE	BLUE	NO TAPE
2	3	BROWN	BROWN	NO TAPE
2	4	---	---	NO TAPE
2	5	---	---	NO TAPE
2	6	SLATE	SLATE	NO TAPE
2	7	PURPLE	PURPLE	NO TAPE
2	8	ORANGE	ORANGE	NO TAPE
3 GAMMA	1	GREEN	GREEN	GREEN
3	2	BLUE	BLUE	BLUE
3	3	BROWN	BROWN	BROWN
3	4	---	---	---
3	5	---	---	---
3	6	SLATE	SLATE	SLATE
3	7	PURPLE	PURPLE	PURPLE
3	8	ORANGE	ORANGE	ORANGE

ANTENNA LOADING CHART

NO SCALE 1

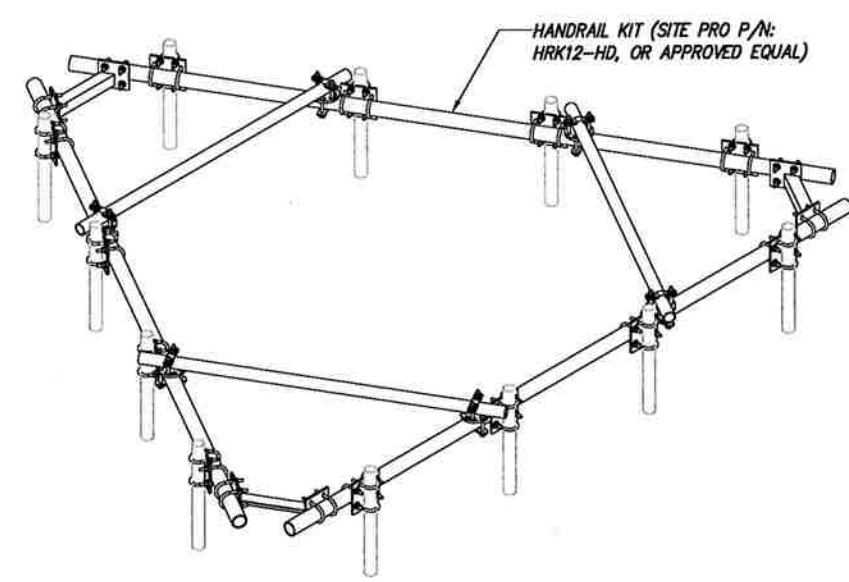
DIPLEXER: RFS/CELWAVE FD9R6004/1C-3L

HOUSING: ALUMINUM
 DIMENSIONS, HxWxD.in(mim): 5.8"x6.5"x1.5" (147x164x37mm)
 WEIGHT, kg (lb) 1.2 (2.6 lb)
 CONNECTORS: in-line long-neck 7-16-female



DIPLEXER DETAIL

NO SCALE 2

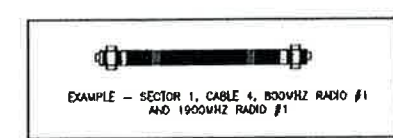
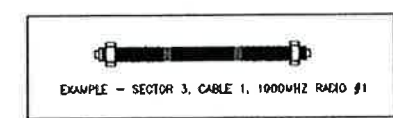
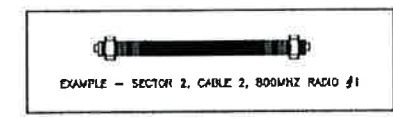
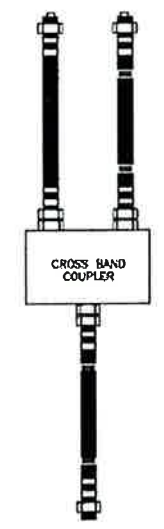
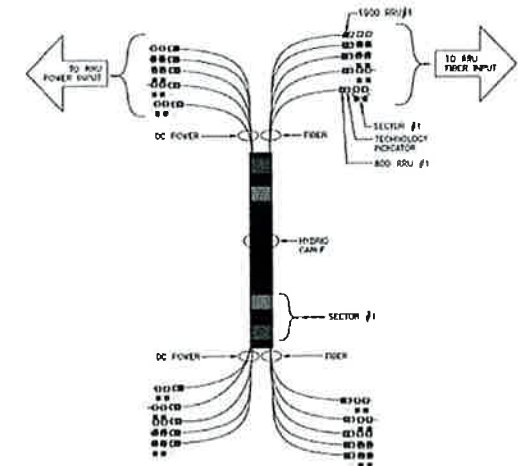


HANDRAIL KIT DETAIL

NO SCALE 3

FREQUENCY COLOR CODE

FREQUENCY	INDICATOR	ID
800#1	YELLOW	---
1900#1	YELLOW	RED
1900#2	YELLOW	---
RESERVED	YELLOW	---
RESERVED	YELLOW	SLATE
RESERVED	YELLOW	---
RESERVED	YELLOW	WHITE
1600#1	YELLOW	---

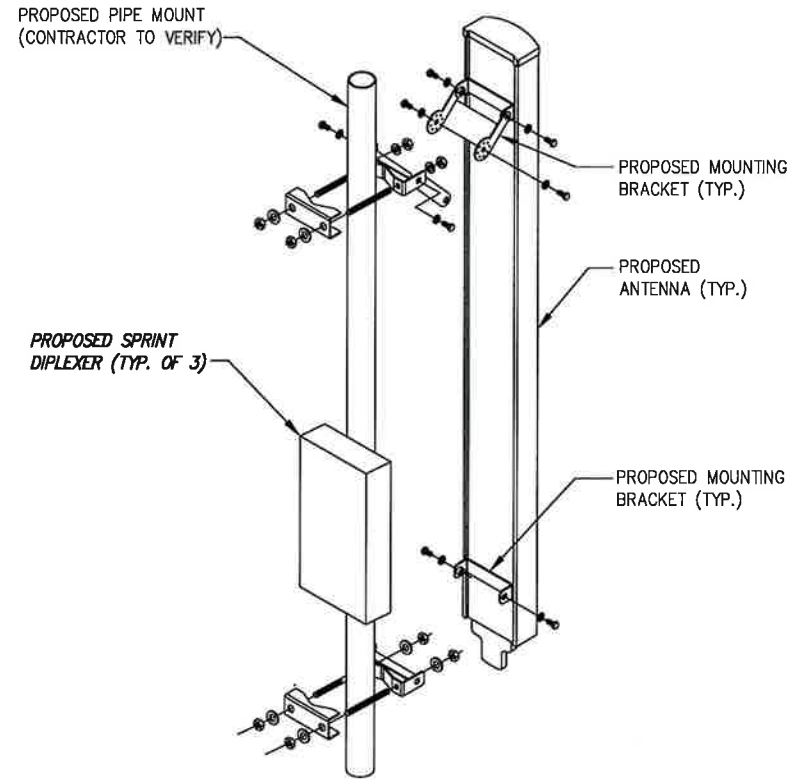
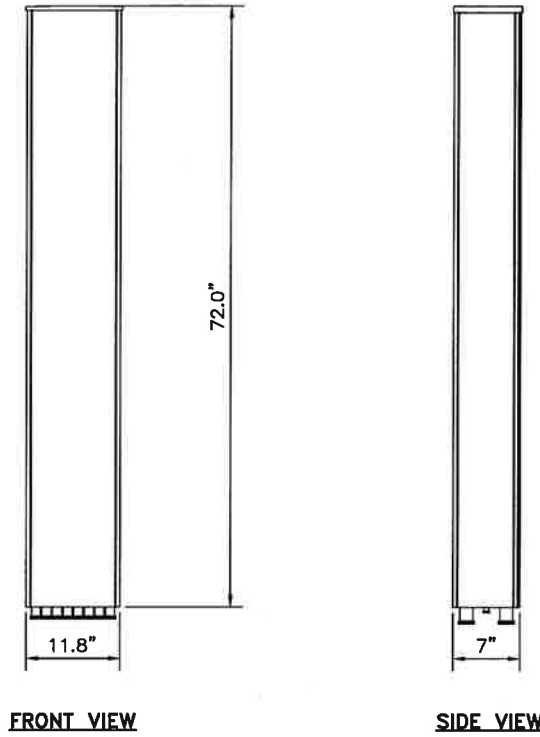


COLOR CODING CHARTS

NO SCALE 4

ANTENNA: RFS/CELWAVE APXVSP18-C-A20

RADOME MATERIAL: ASA
 RADOME COLOR: LIGHT GRAY
 DIMENSIONS, HxWxD.in(mim): 72.0"x11.8"x7" (1829x302x178mm)
 WEIGHT: 25.8 lbs
 CONNECTORS: (6) 7/16" DIN FEMALE/BOTTOM



PANEL ANTENNA DETAIL

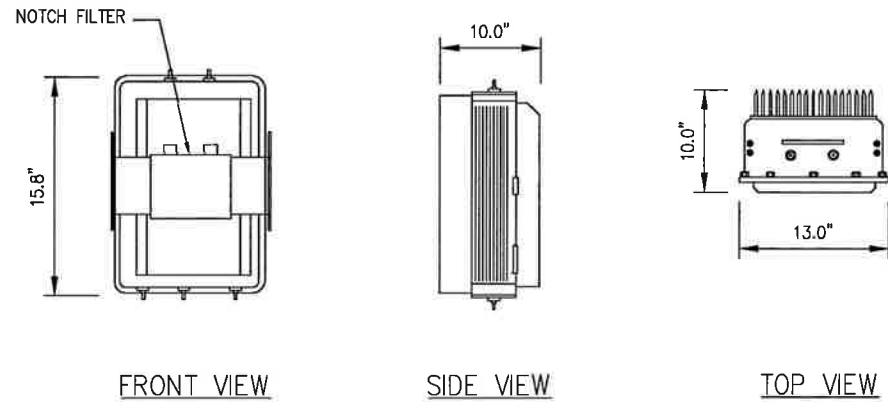
NO SCALE

1

PANEL ANTENNA MOUNTING DETAIL

NO SCALE

2



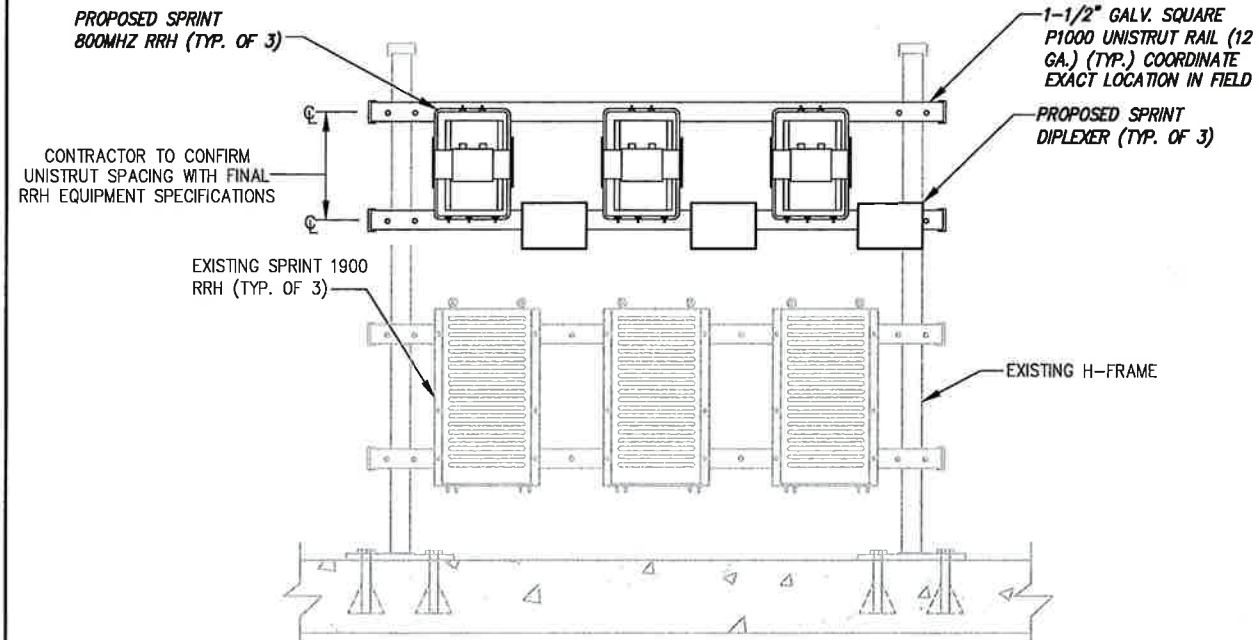
800 MHz RRH
 (ALU)
 WEIGHT = 53 LBS.

NOTE:
 REFER TO R.F. SYSTEM SCHEDULE FOR EXACT
 RRH SPECIFICATIONS AND QUANTITIES.

RRH DETAIL

NO SCALE

3



RRH MOUNTING DETAILS

NO SCALE

4

PLANS PREPARED FOR:



PLANS PREPARED BY:

INFINIGY
 FROM ZERO TO INFINIGY
 the solutions are endless
 1033 Watervliet Shaker Rd | Albany, NY 12205
 Phone: 518-690-0790 | Fax: 518-690-0793
 www.infinigy.com
 JOB NUMBER 514-000

PROJECT MANAGER:

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

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 CONSTRUCTION		02/08/17	JLM	0
ISSUED FOR REVIEW		01/19/17	SKB	A

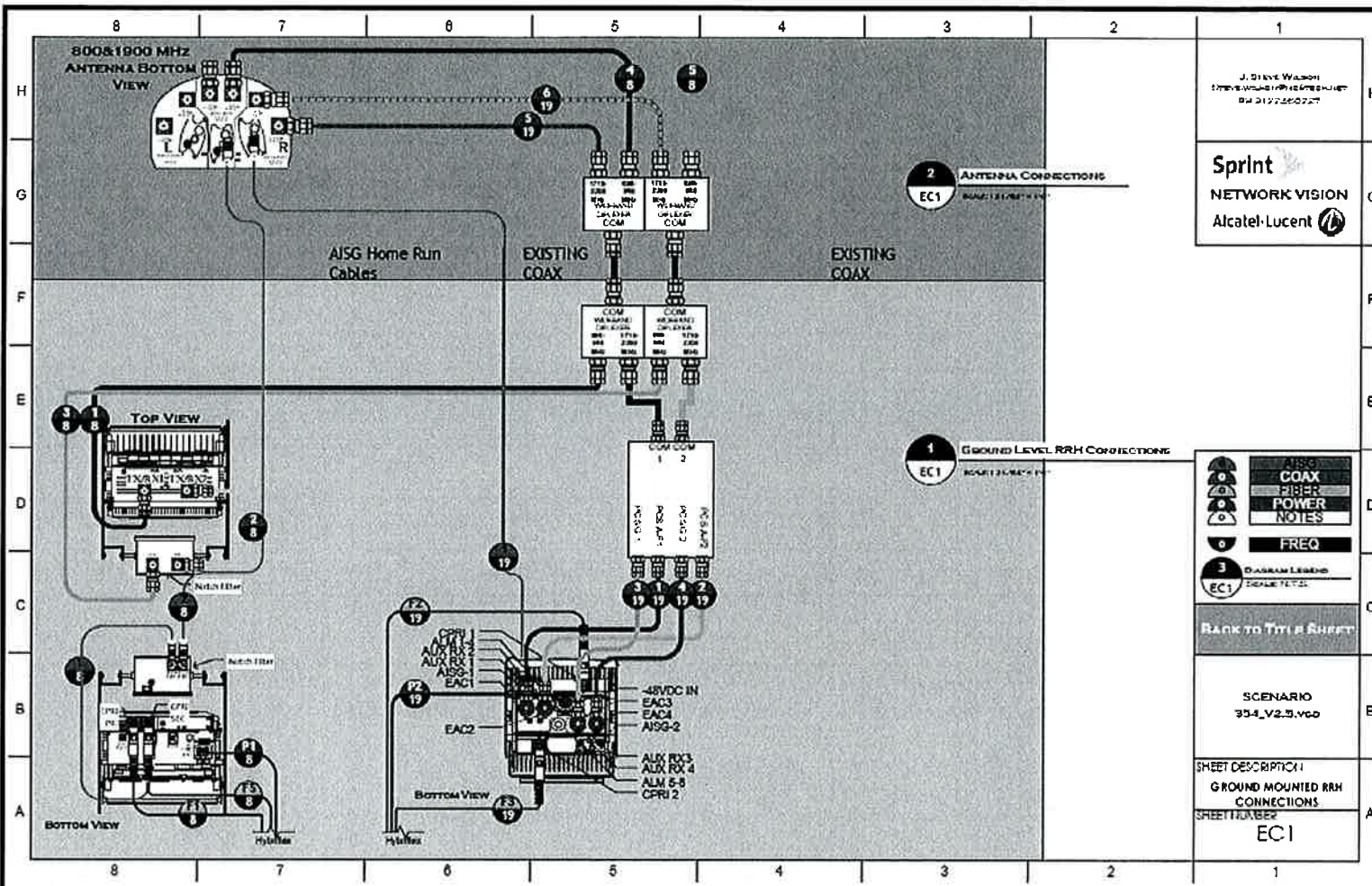
SITE NAME:
MIDDLETOWN 2 - MARINO PROPERTY

SITE NUMBER:
CT03XC169

SITE ADDRESS:
**1969 SAYBROOK ROAD
 MIDDLETOWN, CT 06457**

SHEET DESCRIPTION:
EQUIPMENT & MOUNTING DETAILS

SHEET NUMBER:
A-5



J. STEVE WILLARD
 JTW@WILLARDENGINEERING.NET
 846.212.2502/27

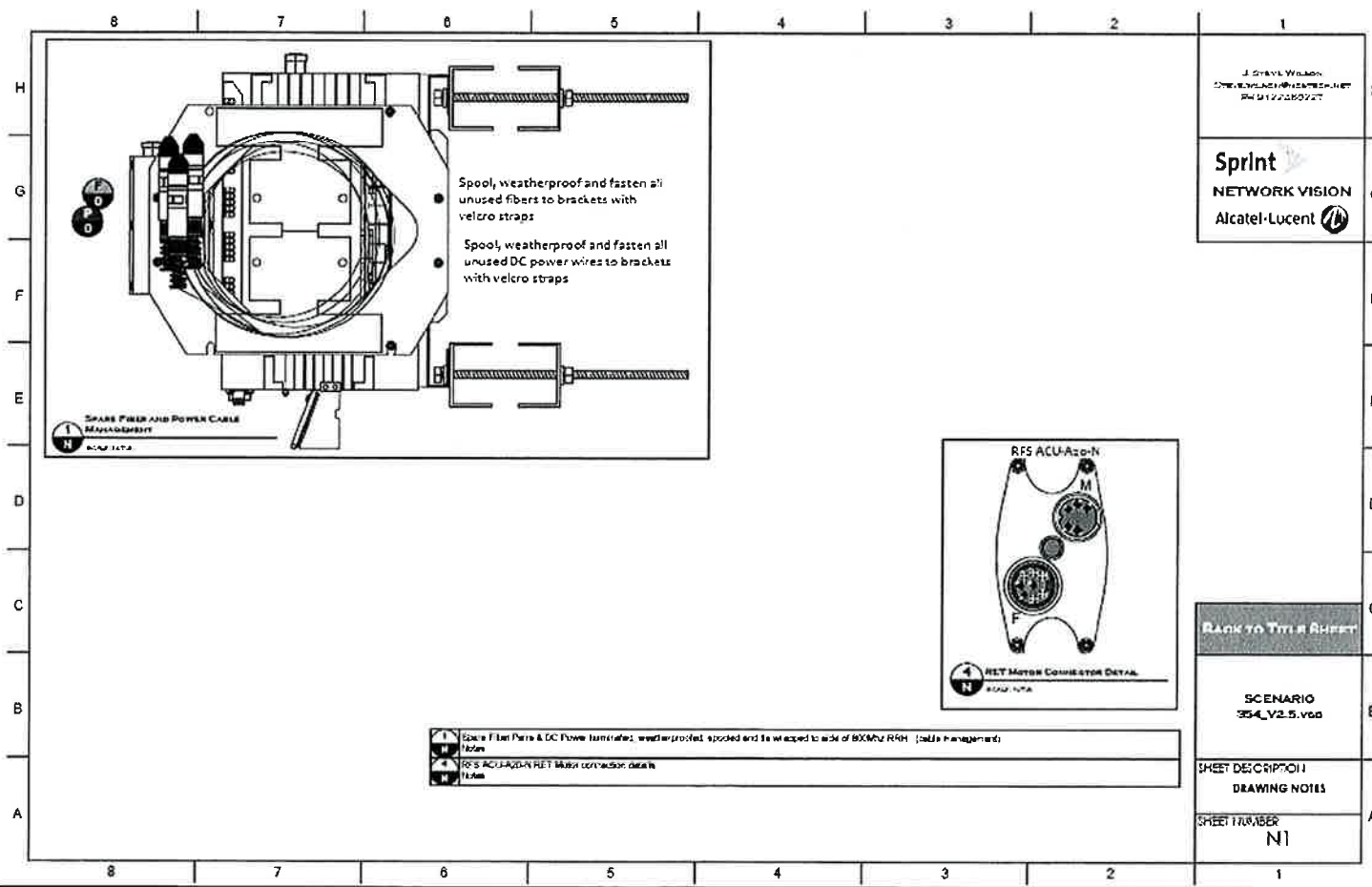


- 1 COAX
- 2 POWER
- 3 NOTES
- 4 FREQ
- 5 DIAGRAM LEGEND
- 6 SCALE 1:1

BACK TO TITLE SHEET

SCENARIO
 354_V2.5_v00

SHEET DESCRIPTION:
 GROUND MOUNTED RRH CONNECTIONS
 SHEET NUMBER:
 EC1



J. STEVE WILLARD
 JTW@WILLARDENGINEERING.NET
 846.212.2502/27



BACK TO TITLE SHEET

SCENARIO
 354_V2.5_v00

SHEET DESCRIPTION:
 DRAWING NOTES
 SHEET NUMBER:
 N1

- 1 Spare Fiber Patch & DC Power terminated, weatherproof, spooled and be wrapped to side of 800MHz RRH (call to management)
- 2 Fiber
- 3 RFS ACU-As-n RET Mount connection detail
- 4 Fiber



PLANS PREPARED FOR:

PLANS PREPARED BY:

FROM ZERO TO INFINIGY
 the solutions are endless

1033 Watervliet Shaker Rd | Albany, NY 12205
 Phone: 518-690-0790 | Fax: 518-690-0793
 www.infinigy.com
 JOB NUMBER 514-000

PROJECT MANAGER:

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

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 CONSTRUCTION		02/08/17	JLM	0
ISSUED FOR REVIEW		01/19/17	SKB	A

SITE NAME:
MIDDLETOWN 2 - MARINO PROPERTY

SITE NUMBER:
CT03XC169

SITE ADDRESS:
**1969 SAYBROOK ROAD
 MIDDLETOWN, CT 06457**

SHEET DESCRIPTION:
SCENARIO 354 V2.5 SPECIFICATIONS

SHEET NUMBER:
A-7

