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 115 BIRCH MOUNTAIN ROAD, GLASTONBURY, CONNECTICUT – CT33XC541 (41°42'32.24"N, - 72°28'24.1"W)

Dear Ms. Bachman:

Sprint Spectrum, LP ("Sprint") currently maintains wireless telecommunications antennas at the (170-foot level) on an existing (200-foot tower) at the above-referenced address. The tower is owned by Crown Castle, and the property is owned by Scarrone Carolyn R Trustee.

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 RICHARD J JOHNSON, Town Manager of the Town of Glastonbury. A copy of this letter is also being sent to SCARRONE CAROLYN R TRUSTEE 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) 306-1711 or email me to aperkowski@airosmithdevelopment.com

Kind Regards,

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

Attachment

CC: SCARRONE CAROLYN R TRUSTEE (Land Owner)
RICHARD J JOHNSON (Town Manager, Glastonbury, CT)
Maryellen Perrotta, Crown Castle (Tower Owner)

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City: Glastonbury, CT 06033
CT33XC541

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115 Birch Mountain Road
City: Glastonbury, CT 06033
CT33XC541

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Street: Crown Castle
Attn: Maryellen Perrotta
City: 12 Gill Street, Suite 5800
Woburn, MA 01801

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

EBI Consulting
environmental | engineering | due diligence

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

SPRINT Existing Facility

Site ID: CT33XC541

Motorola Tower
333 Birch Mountain Road
Glastonbury, CT 06033

April 25, 2017

EBI Project Number: 6217001787

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general public allowable limit:	7.62 %

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

EBI Consulting
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April 25, 2017

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

Emissions Analysis for Site: **CT33XC541 – Motorola Tower**

EBI Consulting was directed to analyze the proposed SPRINT facility located at **333 Birch Mountain Road, Glastonbury, CT**, for the purpose of determining whether the emissions from the Proposed SPRINT Antenna Installation located on this property are within specified federal limits.

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

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

General population/uncontrolled exposure limits apply to situations in which the general 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 ($\mu W/cm^2$). The general population exposure limits for the 850 MHz Band is approximately 567 $\mu W/cm^2$. The general population exposure limit for the 1900 MHz (PCS) band is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed SPRINT Wireless antenna facility located at **333 Birch Mountain Road, Glastonbury, 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) radios are ground mounted there are additional cabling losses accounted for. For each ground mounted RF path the following losses were calculated. 1.68 dB of additional cable loss for all ground mounted 850 MHz Channels and 2.77 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 220 feet of 1-1/4" 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 APXVSPP18-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 **170 feet** above ground level (AGL) for **Sector A**, **170 feet** above ground level (AGL) for **Sector B** and **170 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):	**170 feet**	Height (AGL):	**170 feet**	Height (AGL):	**170 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):	4,592.16	ERP (W):	4,592.16	ERP (W):	4,592.16
Antenna A1 MPE%	**0.70 %**	Antenna B1 MPE%	**0.70 %**	Antenna C1 MPE%	**0.70 %**

Site Composite MPE%	
Carrier	**MPE%**
SPRINT – Max per sector	**0.70 %**
Tilcon Tomasso	0.12 %
Arch Cmcns	0.09 %
SkyTel	0.08 %
Arch Cmcns	0.16 %
US Drug	0.08 %
Internal Revenue	0.08 %
Connecticut Radio	0.12 %
Federal Express	0.08 %
Northeast Paging	0.45 %
Stamm Const.	0.15 %
Unknown	2.16 %
T-Mobile	3.35 %
Site Total MPE %:	**7.62 %**

SPRINT Sector A Total:	0.70 %
SPRINT Sector B Total:	0.70 %
SPRINT Sector C Total:	0.70 %
Site Total:	7.62 %

SPRINT _ Max Values per Frequency Band / Technology	**# Channels**	**Watts ERP (Per Channel)**	**Height (feet)**	**Total Power Density ($\mu W/cm^2$)**	**Frequency (MHz)**	**Allowable MPE ($\mu W/cm^2$)**	**Calculated % MPE**
Sprint 850 MHz CDMA	2	445.78	170	1.19	850 MHz	567	0.21%
Sprint 1900 MHz (PCS) CDMA	2	616.77	170	1.65	1900 MHz (PCS)	1000	0.16%
Sprint 1900 MHz (PCS) LTE	2	1,233.53	170	3.30	1900 MHz (PCS)	1000	0.33%
						Total:	**0.70%**

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:	0.70 %
Sector B:	0.70 %
Sector C:	0.70 %
SPRINT Maximum Total (per sector):	0.70 %
Site Total:	7.62 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **7.62 %** 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: **February 6, 2017**

Kevin Morrow
Crown Castle
3530 Toringdon Way, Suite 300
Charlotte, NC 28277

JACOBS
Jacobs Engineering Group, Inc.
5449 Bells Ferry Road
Acworth, GA 30102
770-701-2500

Subject: **Structural Analysis Report**

Carrier Designation:

***Sprint PCS* Co-Locate**
Carrier Site Number: CT33XC541
Carrier Site Name: MOTOROLA TOWER

Crown Castle Designation:

Crown Castle BU Number: 871584
Crown Castle Site Name: John Tom Hill
Crown Castle JDE Job Number: 414994
Crown Castle Work Order Number: 1347191
Crown Castle Application Number: 372579 Rev. 2

Engineering Firm Designation: **Jacobs Engineering Group, Inc. Project Number:** 1347191

Site Data:

115 Birch Mtn. Road, GLASTONBURY, Hartford County, CT
Latitude *41° 42' 32.24"*, Longitude *-72° 28' 24.41"*
200 Foot - Self Support Tower

Dear Kevin Morrow,

Jacobs Engineering Group, Inc. 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 988961, in accordance with 372579, revision 2.

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:

LC5: Existing + Proposed Equipment **Sufficient Capacity***
Note: See Table I and Table II for the proposed and existing loading, respectively.

*The structure has sufficient capacity once the loading changes, described in the Recommendations section of this report, are completed.

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second gust wind speed of 97 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 and Risk Category II were used in this analysis.

All modifications and equipment proposed in this report shall be installed in accordance with the attached drawings for the determined available structural capacity to be effective.

We at *Jacobs Engineering Group, Inc.* 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:

Philip Lin
Tower Structural Engineer

STATE OF CONNECTICUT
MATTHEW E. WATKINS
No. 29955
LICENSED PROFESSIONAL ENGINEER
02/06/17

Reviewed By:

Matthew E. Watkins, P.E.
Engineering Project Manager

tnxTower Report - version 7.0.7.0

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 200 ft Self Support tower designed by SABRE COMMUNICATIONS in November of 1998. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of TIA-222-G Structural Standard for Antenna Supporting Structures and Antennas using a 3-second gust wind speed of 97 mph with no ice, 50 mph with 1 inch ice thickness and 60 mph under service loads, exposure category C with topographic category 1 and crest height of 0 feet.

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
170.0	171.0	3	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe	6	5/16	-
		3	rfs celwave	FD9R6004/1C-3L			

Table 2 - Existing 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
198.0	208.0	1	rfs celwave	ALR10-O	2 1	7/8 1/2	1
	205.5	1	rfs celwave	PD1107-1	-	-	3
		1	rfs celwave	PD201-7			
		-	-	-	2	7/8	2
	205.0	1	decibel	DB225-A	-	-	1
	204.0	1	scala	OGB6-928N			
	198.0	1	crown mounts	Sector Mount [SM 602-3]			
182.0	183.0	3	commscope	ATBT-BOTTOM-24V	12	1-5/8	1
		3	commscope	LNX-6515DS-VTM w/ Mount Pipe			
		3	ems wireless	RR90-17-02DP w/ Mount Pipe			
		3	ericsson	KRY 112 71			
	182.0	1	crown mounts	Sector Mount [SM 602-3]			
170.0	171.0	6	decibel	DB980H90E-M w/ Mount Pipe	1	1/2	2
	170.0	1	crown mounts	Sector Mount [SM 506-3]	6	1-5/8	1
163.0	163.0	1	crown mounts	Pipe Mount [PM 601-1]	1	1/2	1
		1	kathrein	PR-850			
144.0	155.0	1	sinclair	SRL480N1DT4	-	-	2
	152.0	2	rfs celwave	PD1109-1	3 1	1/2 7/8	1
	150.0	1	celwave	PD156S-4			
	144.0	1	crown mounts	Sector Mount [SM 602-3]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
53.0	55.0	1	lucent	KS24019-L112A	1	1/2	1
	53.0	1	crown mounts	Side Arm Mount [SO 202-1]			

Notes:
1) Existing equipment
2) Equipment to be removed, not considered in this analysis
3) Abandoned equipment, considered in this analysis

Table 3 - Design 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)
180.0	180.0	9	decibel	DB809	9	7/8
160.0	160.0	9	decibel	DB809	9	7/8
140.0	140.0	12	generic	DAPA 2980	12	1-5/8
120.0	120.0	12	generic	DAPA 2980	12	1-5/8
100.0	100.0	12	generic	DAPA 2980	12	1-5/8
80.0	80.0	1	generic	6' Dish	1	EW64
70.0	70.0	1	generic	1 Meter Dish	1	7/8
60.0	60.0	1	generic	1 Meter Dish	1	7/8
50.0	50.0	1	generic	1 Meter Dish	1	7/8

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Dr. Clarence Welti	1404208	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Sabre Communications	1333892	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Sabre Communications	1403674	CCISITES

3.1) Analysis Method

tnxTower (version 7.0.7.0), 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) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.

This analysis may be affected if any assumptions are not valid or have been made in error. Jacobs Engineering Group, Inc. should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
T1	200 - 180	Leg	Pipe 2.875" x 0.375" (2.5 #160)	3	-16.63	95.33	17.4	Pass
T2	180 - 160	Leg	Pipe 3.5" x 0.300" (3 XS)	33	-49.37	110.61	44.6	Pass
T3	160 - 140	Leg	Pipe 4" x 0.318" (3.5 XS)	60	-84.27	141.81	59.4	Pass
T4	140 - 120	Leg	Pipe 4.5" x 0.438" (4 #120)	87	-119.25	200.84	59.4	Pass
T5	120 - 100	Leg	Pipe 5.563" x 0.375" (5 XS)	108	-154.39	239.39	64.5	Pass
T6	100 - 80	Leg	Pipe 5.563" x 0.375" (5 XS)	129	-189.22	239.39	79.0	Pass
T7	80 - 60	Leg	Pipe 6.625" x 0.432" (6 EH)	150	-221.14	303.75	72.8	Pass
T8	60 - 40	Leg	Pipe 8.625" x 0.322" (8 STD)	165	-255.51	334.42	76.4	Pass
T9	40 - 20	Leg	Pipe 8.625" x 0.500" (8 XS)	180	-290.24	505.56	57.4	Pass
T10	20 - 0	Leg	Pipe 8.625" x 0.500" (8 XS)	195	-324.22	506.09	64.1	Pass
T1	200 - 180	Diagonal	L1 3/4x1 3/4x3/16	11	-2.83	10.17	27.9 35.3 (b)	Pass
T2	180 - 160	Diagonal	L1 3/4x1 3/4x3/16	35	-3.91	7.15	54.6	Pass
T3	160 - 140	Diagonal	L1 3/4x1 3/4x3/16	62	-4.89	4.94	99.1	Pass
T4	140 - 120	Diagonal	L2 1/2x2 1/2x3/16	89	-5.96	9.32	64.0	Pass
T5	120 - 100	Diagonal	L2 1/2x2 1/2x3/16	110	-6.58	7.25	90.8	Pass
T6	100 - 80	Diagonal	L3x3x3/16	131	-7.29	9.94	73.4	Pass
T7	80 - 60	Diagonal	L3 1/2x3 1/2x1/4	152	-8.77	14.36	61.1	Pass
T8	60 - 40	Diagonal	L3 1/2x3 1/2x1/4	167	-9.60	12.26	78.3	Pass
T9	40 - 20	Diagonal	L3 1/2x3 1/2x1/4	182	-10.21	10.37	98.4	Pass
T10	20 - 0	Diagonal	L4x4x1/4	197	-11.12	13.38	83.1	Pass
T1	200 - 180	Top Girt	L1 3/4x1 3/4x3/16	4	-0.10	5.86	1.7	Pass
							Summary	
						Leg (T6)	79.0	Pass
						Diagonal (T3)	99.1	Pass
						Top Girt (T1)	1.7	Pass
						Bolt Checks	65.1	Pass
						Rating =	99.1	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC5

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	58.2	Pass
1	Base Foundation (Structural)	0	76.0	Pass
1	Base Foundation (Soil Interaction)	0	63.4	Pass

Structure Rating (max from all components) =	99.1%

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

4.1) Recommendations

The tower and foundation have sufficient capacity to carry the proposed load configuration. In order for the results of this analysis to be considered valid the loading modifications listed below must be completed.

Loading Changes:

1.) Removal of the (2) 7/8" feed lines connected to antennas J and K belonging to Velocita Wireless (antennas must remain) at the 198 ft level.

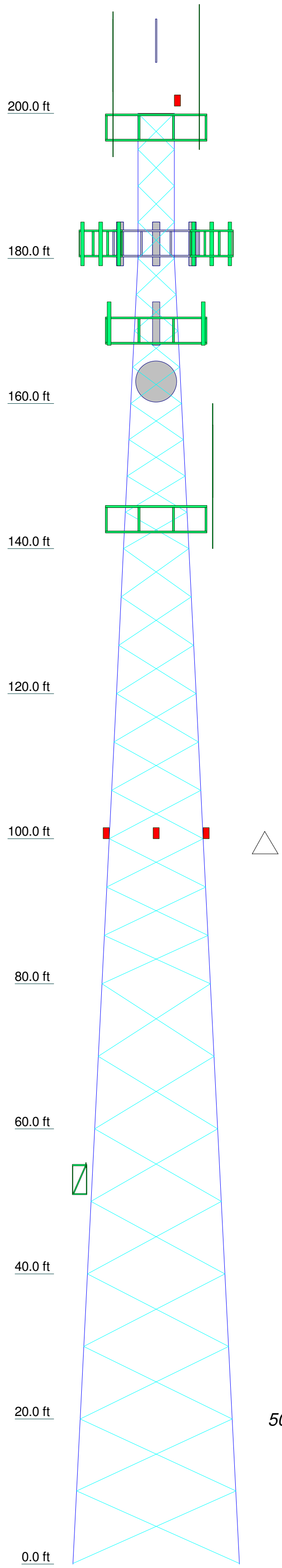
2.) Removal of the (1) Sinclair (SRL480N1DT4) antenna in position J belonging to Fed Ex at the 144 ft level. The (1) 1/2" feed line can either be removed or left on the tower.

No structural modifications are required at this time, provided that the above listed changes are implemented.

APPENDIX A

TNXTOWER OUTPUT

Section	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10
Legs	A	B	C	D	Pipe 5.563" x 0.375" (5 XS)		E	F	Pipe 8.625" x 0.500" (8 XS)	
Leg Grade	A572-50									
Diagonals	L1 3/4x1 3/4x3/16			L2 1/2x2 1/2x3/16		L3x3x3/16	L3 1/2x3 1/2x1/4			L4x4x1/4
Diagonal Grade	A36									
Top Girts	L1 3/4x1 3/4x3/16	N.A.								
Face Width (ft)	5	7	9	11	13	15	17	19	21	23
# Panels @ (ft)	12 @ 5			9 @ 6.66667			6 @ 10			2 @ 9.95833
Weight (K) 25.4	1.0	1.1	1.3	1.9	2.1	2.4	3.2	3.3	4.4	4.7



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Beacon	200	Sector Mount [SM 602-3]	182
PD1107-1	198	APXVSPP18-C-A20 w/ Mount Pipe	170
PD201-7	198	APXVSPP18-C-A20 w/ Mount Pipe	170
DB225-A	198	APXVSPP18-C-A20 w/ Mount Pipe	170
ALR10-O	198	FD9R6004/1C-3L	170
OGB6-928N	198	FD9R6004/1C-3L	170
(4) 6' x 2" Mount Pipe	198	FD9R6004/1C-3L	170
(4) 6' x 2" Mount Pipe	198	(2) 6' x 2" Mount Pipe	170
(4) 6' x 2" Mount Pipe	198	(2) 6' x 2" Mount Pipe	170
Sector Mount [SM 602-3]	198	(2) 6' x 2" Mount Pipe	170
LNX-6515DS-VTM w/ Mount Pipe	182	Sector Mount [SM 506-3]	170
LNX-6515DS-VTM w/ Mount Pipe	182	Pipe Mount [PM 601-1]	163
LNX-6515DS-VTM w/ Mount Pipe	182	PR-850	163
ATBT-BOTTOM-24V	182	PD156S-4	144
ATBT-BOTTOM-24V	182	(2) PD1109-1	144
ATBT-BOTTOM-24V	182	(4) 6' x 2" Mount Pipe	144
KRY 112 71	182	(4) 6' x 2" Mount Pipe	144
KRY 112 71	182	(4) 6' x 2" Mount Pipe	144
KRY 112 71	182	Sector Mount [SM 602-3]	144
RR90-17-02DP w/ Mount Pipe	182	Sidemarker	100
RR90-17-02DP w/ Mount Pipe	182	Sidemarker	100
RR90-17-02DP w/ Mount Pipe	182	Sidemarker	100
6' x 2" Mount Pipe	182	Side Arm Mount [SO 202-1]	53
6' x 2" Mount Pipe	182	KS24019-L112A	53
6' x 2" Mount Pipe	182		

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	Pipe 2.875" x 0.375" (2.5 #160)	D	Pipe 4.5" x 0.438" (4 #120)
B	Pipe 3.5" x 0.300" (3 XS)	E	Pipe 6.625" x 0.432" (6 EH)
C	Pipe 4" x 0.318" (3.5 XS)	F	Pipe 8.625" x 0.322" (8 STD)

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-50	50 ksi	65 ksi	A36	36 ksi	58 ksi

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 97 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 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: 99.1%

ALL REACTIONS ARE FACTORED

MAX. CORNER REACTIONS AT BASE:
DOWN: 333 K
SHEAR: 36 K

UPLIFT: -285 K
SHEAR: 31 K

AXIAL 171 K
SHEAR 19 K
MOMENT 2176 kip-ft
TORQUE 1 kip-ft
50 mph WIND - 1.0000 in ICE

AXIAL 56 K
SHEAR 58 K
MOMENT 6252 kip-ft
TORQUE 10 kip-ft
REACTIONS - 97 mph WIND

JACOBS
Jacobs Engineering Group, Inc.
5449 Bells Ferry Road
Acworth, GA 30102
Phone: 770-701-2500
FAX: 770-701-2501

Job: John Tom Hill		
Project: BU871584_WO1347191		
Client: Crown Castle	Drawn by: LinP	App'd:
Code: TIA-222-G	Date: 02/06/17	Scale: NTS
Path: T:\871584 John Tom Hill\WO 1347191\Analysis\LC5 - Rev 1\Models\BU871584_WO1347191_LC5.eri		Dwg No. E-1

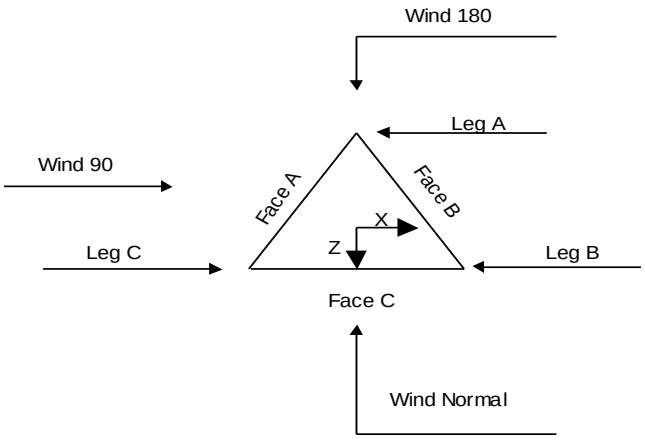
Tower Input Data

The main tower is a 3x free standing tower with an overall height of 200.00 ft above the ground line.
The base of the tower is set at an elevation of 0.00 ft above the ground line.
The face width of the tower is 5.00 ft at the top and 23.00 ft at the base.
This tower is designed using the TIA-222-G standard.
The following design criteria apply:

Tower is located in Hartford County, Connecticut.
Basic wind speed of 97 mph.
Structure Class II.
Exposure Category C.
Topographic Category 1.
Crest Height 0.00 ft.
Nominal ice thickness of 1.0000 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
Pressures are calculated at each section.
Stress ratio used in tower member design is 1.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation ft	Assembly Database	Description	Section Width ft	Number of Sections	Section Length ft
T1	200.00-180.00			5.00	1	20.00
T2	180.00-160.00			5.00	1	20.00
T3	160.00-140.00			7.00	1	20.00
T4	140.00-120.00			9.00	1	20.00
T5	120.00-100.00			11.00	1	20.00
T6	100.00-80.00			13.00	1	20.00
T7	80.00-60.00			15.00	1	20.00
T8	60.00-40.00			17.00	1	20.00
T9	40.00-20.00			19.00	1	20.00
T10	20.00-0.00			21.00	1	20.00

Tower Section Geometry *(cont'd)*

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T1	200.00-180.00	5.00	X Brace	No	No	0.0000	0.0000
T2	180.00-160.00	5.00	X Brace	No	No	0.0000	0.0000
T3	160.00-140.00	5.00	X Brace	No	No	0.0000	0.0000
T4	140.00-120.00	6.67	X Brace	No	No	0.0000	0.0000
T5	120.00-100.00	6.67	X Brace	No	No	0.0000	0.0000

Tower Section	Tower Elevation ft	Diagonal Spacing ft	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset in	Bottom Girt Offset in
T6	100.00-80.00	6.67	X Brace	No	No	0.0000	0.0000
T7	80.00-60.00	10.00	X Brace	No	No	0.0000	0.0000
T8	60.00-40.00	10.00	X Brace	No	No	0.0000	0.0000
T9	40.00-20.00	10.00	X Brace	No	No	0.0000	0.0000
T10	20.00-0.00	9.96	X Brace	No	No	0.0000	1.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 200.00-180.00	Pipe	Pipe 2.875" x 0.375" (2.5 #160)	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T2 180.00-160.00	Pipe	Pipe 3.5" x 0.300" (3 XS)	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T3 160.00-140.00	Pipe	Pipe 4" x 0.318" (3.5 XS)	A572-50 (50 ksi)	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)
T4 140.00-120.00	Pipe	Pipe 4.5" x 0.438" (4 #120)	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T5 120.00-100.00	Pipe	Pipe 5.563" x 0.375" (5 XS)	A572-50 (50 ksi)	Equal Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T6 100.00-80.00	Pipe	Pipe 5.563" x 0.375" (5 XS)	A572-50 (50 ksi)	Equal Angle	L3x3x3/16	A36 (36 ksi)
T7 80.00-60.00	Pipe	Pipe 6.625" x 0.432" (6 EH)	A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T8 60.00-40.00	Pipe	Pipe 8.625" x 0.322" (8 STD)	A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T9 40.00-20.00	Pipe	Pipe 8.625" x 0.500" (8 XS)	A572-50 (50 ksi)	Equal Angle	L3 1/2x3 1/2x1/4	A36 (36 ksi)
T10 20.00-0.00	Pipe	Pipe 8.625" x 0.500" (8 XS)	A572-50 (50 ksi)	Equal Angle	L4x4x1/4	A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 200.00-180.00	Equal Angle	L1 3/4x1 3/4x3/16	A36 (36 ksi)	Solid Round		A36 (36 ksi)

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	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

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	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
T1 200.00-180.00	0.00	0.0000	A36 (36 ksi)	1.03	1	1.05	36.0000	36.0000	36.0000
T2 180.00-160.00	0.00	0.0000	A36 (36 ksi)	1.03	1	1.05	36.0000	36.0000	36.0000
T3 160.00-140.00	0.00	0.0000	A36 (36 ksi)	1.03	1	1.05	36.0000	36.0000	36.0000
T4 140.00-120.00	0.00	0.0000	A36 (36 ksi)	1.03	1	1.05	36.0000	36.0000	36.0000
T5 120.00-100.00	0.00	0.0000	A36 (36 ksi)	1.03	1	1.05	36.0000	36.0000	36.0000
T6 100.00-80.00	0.00	0.0000	A36 (36 ksi)	1.03	1	1.05	36.0000	36.0000	36.0000
T7 80.00-60.00	0.00	0.0000	A36 (36 ksi)	1.03	1	1.05	36.0000	36.0000	36.0000
T8 60.00-40.00	0.00	0.0000	A36 (36 ksi)	1.03	1	1.05	36.0000	36.0000	36.0000
T9 40.00-20.00	0.00	0.0000	A36 (36 ksi)	1.03	1	1.05	36.0000	36.0000	36.0000
T10 20.00-0.00	0.00	0.0000	A36 (36 ksi)	1.03	1	1.05	36.0000	36.0000	36.0000

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Calc K Single Angles	Calc K Solid Rounds	K Factors[1] Legs	X Brace Diags X Y	K Brace Diags X Y	Single Diags X Y	Girts X Y	Horiz. X Y	Sec. Horiz. X Y	Inner Brace X Y
T1	Yes	No	1	1	1	1	1	1	1	1
200.00-180.00				1	1	1	1	1	1	1
T2	Yes	No	1	1	1	1	1	1	1	1
180.00-160.00				1	1	1	1	1	1	1
T3	Yes	No	1	1	1	1	1	1	1	1
160.00-140.00				1	1	1	1	1	1	1
T4	Yes	No	1	1	1	1	1	1	1	1
140.00-120.00				1	1	1	1	1	1	1
T5	Yes	No	1	1	1	1	1	1	1	1
120.00-100.00				1	1	1	1	1	1	1
T6	Yes	No	1	1	1	1	1	1	1	1
100.00-80.00				1	1	1	1	1	1	1
T7	Yes	No	1	1	1	1	1	1	1	1
80.00-60.00				1	1	1	1	1	1	1
T8	Yes	No	1	1	1	1	1	1	1	1
60.00-40.00				1	1	1	1	1	1	1
T9	Yes	No	1	1	1	1	1	1	1	1
40.00-20.00				1	1	1	1	1	1	1
T10	Yes	No	1	1	1	1	1	1	1	1
20.00-0.00				1	1	1	1	1	1	1

[1]*Note: K factors are applied to member segment lengths. K-braces without inner supporting members will have the K factor in the out-of-plane direction applied to the overall length.*

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U	Net Width Deduct in	U
T1 200.00-180.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T2 180.00-160.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T3 160.00-140.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T4 140.00-120.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T5 120.00-100.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T6 100.00-80.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T7 80.00-60.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T8 60.00-40.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T9 40.00-20.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75
T10 20.00-0.00	0.0000	1	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75	0.0000	0.75

Tower Section Geometry *(cont'd)*

Tower Elevation ft	Leg Connection Type	Leg		Diagonal		Top Girt		Bottom Girt		Mid Girt		Long Horizontal		Short Horizontal	
		Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.	Bolt Size in	No.
T1 200.00-180.00	Flange	0.7500 A325N	4	0.6250 A325X	1	0.6250 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T2 180.00-160.00	Flange	1.0000 A325N	4	0.6250 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T3 160.00-140.00	Flange	1.0000 A325N	4	0.6250 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T4 140.00-120.00	Flange	1.2500 A325N	4	0.6250 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T5 120.00-100.00	Flange	1.2500 A325N	4	0.6250 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T6 100.00-80.00	Flange	1.2500 A325N	6	0.7500 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T7 80.00-60.00	Flange	1.2500 A325N	6	0.7500 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T8 60.00-40.00	Flange	1.3750 A325N	6	0.7500 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T9 40.00-20.00	Flange	1.3750 A325N	6	0.7500 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0
T10 20.00-0.00	Flange	0.0000 A572-50	0	0.7500 A325X	1	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0	0.6250 A325N	0

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Face Offset in	Lateral Offset (Frac FW)	#	# Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight plf
** A Face ** **												
** B Face **												
LDF7-50A(1-5/8")	B	No	Ar (CaAa)	182.00 - 0.00	0.0000	-0.15	12	6	0.5000	1.9800		0.82
Feedline Ladder (Af) **	B	No	Af (CaAa)	182.00 - 0.00	0.0000	0	3	3	3.0000	3.0000		8.40
FLC 12-50J(1/2") **	B	No	Ar (CaAa)	163.00 - 0.00	0.0000	0	1	1	0.5000	0.6400		0.17
LDF4-50A(1/2")	B	No	Ar (CaAa)	144.00 - 0.00	0.0000	0.12	3	3	0.5000	0.6300		0.15
LDF4-50A(1/2")	B	No	Ar (CaAa)	198.00 - 0.00	0.0000	0.14	1	1	0.5000	0.6300		0.15
LDF5-50A(7/8")	B	No	Ar (CaAa)	144.00 - 0.00	0.0000	0.13	3	3	0.5000	1.0900		0.33
LDF5-50A(7/8") **	B	No	Ar (CaAa)	198.00 - 144.00	0.0000	0.13	2	2	0.5000	1.0900		0.33
Feedline Ladder (Af)	A	No	Af (CaAa)	183.00 - 0.00	0.0000	0.12	1	1	3.0000	3.0000		8.40
Feedline Ladder (Af)	A	No	Af (CaAa)	145.00 - 0.00	0.0000	-0.12	1	1	3.0000	3.0000		8.40
** C Face **												
ATCB-B01-006(5/16)	C	No	Ar (CaAa)	170.00 - 0.00	-2.0000	0	6	6	0.3150	0.3150		0.07
LDF7-50A(1-5/8")	C	No	Ar (CaAa)	170.00 - 0.00	-1.5000	0	6	5	0.5000	1.9800		0.82
LDF4-50A(1/2")	C	No	Ar (CaAa)	53.00 - 0.00	-1.5000	0	1	1	0.5000	0.6300		0.15
Feedline Ladder (Af) **	C	No	Af (CaAa)	170.00 - 0.00	-1.5000	0	1	1	3.0000	3.0000		8.40
Safety Line 3/8	C	No	Ar (CaAa)	200.00 - 0.00	0.0000	0	1	1	0.3750	0.3750		0.22
Climbing Ladder	C	No	Af (CaAa)	200.00 - 0.00	0.0000	0	1	1	2.5000	2.5000		7.90

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C_AA_A ft^2/ft	Weight plf
** A Face ** **							

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	200.00-180.00	A	0.000	0.000	1.500	0.000	0.03
		B	0.000	0.000	12.810	0.000	0.08

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
		C	0.000	0.000	9.083	0.000	0.16
T2	180.00-160.00	A	0.000	0.000	10.000	0.000	0.17
		B	0.000	0.000	83.332	0.000	0.72
		C	0.000	0.000	27.853	0.000	0.30
T3	160.00-140.00	A	0.000	0.000	12.500	0.000	0.21
		B	0.000	0.000	85.612	0.000	0.72
		C	0.000	0.000	46.623	0.000	0.44
T4	140.00-120.00	A	0.000	0.000	20.000	0.000	0.34
		B	0.000	0.000	90.380	0.000	0.74
		C	0.000	0.000	46.623	0.000	0.44
T5	120.00-100.00	A	0.000	0.000	20.000	0.000	0.34
		B	0.000	0.000	90.380	0.000	0.74
		C	0.000	0.000	46.623	0.000	0.44
T6	100.00-80.00	A	0.000	0.000	20.000	0.000	0.34
		B	0.000	0.000	90.380	0.000	0.74
		C	0.000	0.000	46.623	0.000	0.44
T7	80.00-60.00	A	0.000	0.000	20.000	0.000	0.34
		B	0.000	0.000	90.380	0.000	0.74
		C	0.000	0.000	46.623	0.000	0.44
T8	60.00-40.00	A	0.000	0.000	20.000	0.000	0.34
		B	0.000	0.000	90.380	0.000	0.74
		C	0.000	0.000	47.442	0.000	0.44
T9	40.00-20.00	A	0.000	0.000	20.000	0.000	0.34
		B	0.000	0.000	90.380	0.000	0.74
		C	0.000	0.000	47.883	0.000	0.44
T10	20.00-0.00	A	0.000	0.000	20.000	0.000	0.34
		B	0.000	0.000	90.380	0.000	0.74
		C	0.000	0.000	47.883	0.000	0.44

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T1	200.00-180.00	A	2.383	0.000	0.000	2.930	0.000	0.08
		B		0.000	0.000	41.645	0.000	0.68
		C		0.000	0.000	28.144	0.000	0.68
T2	180.00-160.00	A	2.356	0.000	0.000	19.425	0.000	0.55
		B		0.000	0.000	141.658	0.000	3.14
		C		0.000	0.000	73.366	0.000	1.51
T3	160.00-140.00	A	2.327	0.000	0.000	24.135	0.000	0.68
		B		0.000	0.000	155.186	0.000	3.32
		C		0.000	0.000	118.046	0.000	2.32
T4	140.00-120.00	A	2.294	0.000	0.000	38.351	0.000	1.07
		B		0.000	0.000	175.043	0.000	3.54
		C		0.000	0.000	117.198	0.000	2.29
T5	120.00-100.00	A	2.256	0.000	0.000	38.047	0.000	1.06
		B		0.000	0.000	173.713	0.000	3.49
		C		0.000	0.000	116.223	0.000	2.25
T6	100.00-80.00	A	2.211	0.000	0.000	37.689	0.000	1.04
		B		0.000	0.000	172.146	0.000	3.43
		C		0.000	0.000	115.073	0.000	2.20
T7	80.00-60.00	A	2.156	0.000	0.000	37.250	0.000	1.01
		B		0.000	0.000	170.227	0.000	3.35
		C		0.000	0.000	113.666	0.000	2.14
T8	60.00-40.00	A	2.085	0.000	0.000	36.679	0.000	0.98
		B		0.000	0.000	167.736	0.000	3.25
		C		0.000	0.000	118.078	0.000	2.16

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
T9	40.00-20.00	A	1.981	0.000	0.000	35.848	0.000	0.94
		B		0.000	0.000	164.114	0.000	3.12
		C		0.000	0.000	118.364	0.000	2.09
T10	20.00-0.00	A	1.775	0.000	0.000	34.199	0.000	0.85
		B		0.000	0.000	156.939	0.000	2.85
		C		0.000	0.000	112.272	0.000	1.87

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
T1	200.00-180.00	0.9573	0.2299	0.3564	1.1025
T2	180.00-160.00	2.0122	-1.3067	0.2583	0.2124
T3	160.00-140.00	2.1447	-0.7702	0.3209	0.6335
T4	140.00-120.00	2.2223	-0.9014	-0.0250	0.6376
T5	120.00-100.00	2.5446	-1.0052	-0.0241	0.7654
T6	100.00-80.00	2.8350	-1.0982	-0.0212	0.8831
T7	80.00-60.00	3.1779	-1.2125	-0.0166	1.0350
T8	60.00-40.00	3.3683	-1.2103	-0.0070	1.3496
T9	40.00-20.00	3.6781	-1.2745	0.0094	1.5931
T10	20.00-0.00	3.8963	-1.3378	0.0478	1.6837

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T1	5	LDF7-50A(1-5/8")	180.00 - 182.00	0.6000	0.4895
T1	6	Feedline Ladder (Af)	180.00 - 182.00	0.6000	0.4895
T1	11	LDF4-50A(1/2")	180.00 - 198.00	0.6000	0.4895
T1	13	LDF5-50A(7/8")	180.00 - 198.00	0.6000	0.4895
T1	15	Feedline Ladder (Af)	180.00 - 183.00	0.6000	0.4895
T1	24	Safety Line 3/8	180.00 - 200.00	0.6000	0.4895
T1	25	Climbing Ladder	180.00 - 200.00	0.6000	0.4895
T2	5	LDF7-50A(1-5/8")	160.00 - 180.00	0.6000	0.5530
T2	6	Feedline Ladder (Af)	160.00 - 180.00	0.6000	0.5530
T2	8	FLC 12-50J(1/2")	160.00 - 163.00	0.6000	0.5530
T2	11	LDF4-50A(1/2")	160.00 - 180.00	0.6000	0.5530
T2	13	LDF5-50A(7/8")	160.00 - 180.00	0.6000	0.5530

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T2	15	Feedline Ladder (Af)	160.00 - 180.00	0.6000	0.5530
T2	18	ATCB-B01-006(5/16)	160.00 - 170.00	0.6000	0.5530
T2	20	LDF7-50A(1-5/8")	160.00 - 170.00	0.6000	0.5530
T2	22	Feedline Ladder (Af)	160.00 - 170.00	0.6000	0.5530
T2	24	Safety Line 3/8	160.00 - 180.00	0.6000	0.5530
T2	25	Climbing Ladder	160.00 - 180.00	0.6000	0.5530
T3	5	LDF7-50A(1-5/8")	140.00 - 160.00	0.6000	0.6000
T3	6	Feedline Ladder (Af)	140.00 - 160.00	0.6000	0.6000
T3	8	FLC 12-50J(1/2")	140.00 - 160.00	0.6000	0.6000
T3	10	LDF4-50A(1/2")	140.00 - 144.00	0.6000	0.6000
T3	11	LDF4-50A(1/2")	140.00 - 160.00	0.6000	0.6000
T3	12	LDF5-50A(7/8")	140.00 - 144.00	0.6000	0.6000
T3	13	LDF5-50A(7/8")	144.00 - 160.00	0.6000	0.6000
T3	15	Feedline Ladder (Af)	140.00 - 160.00	0.6000	0.6000
T3	16	Feedline Ladder (Af)	140.00 - 145.00	0.6000	0.6000
T3	18	ATCB-B01-006(5/16)	140.00 - 160.00	0.6000	0.6000
T3	20	LDF7-50A(1-5/8")	140.00 - 160.00	0.6000	0.6000
T3	22	Feedline Ladder (Af)	140.00 - 160.00	0.6000	0.6000
T3	24	Safety Line 3/8	140.00 - 160.00	0.6000	0.6000
T3	25	Climbing Ladder	140.00 - 160.00	0.6000	0.6000
T4	5	LDF7-50A(1-5/8")	120.00 - 140.00	0.6000	0.6000
T4	6	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000
T4	8	FLC 12-50J(1/2")	120.00 - 140.00	0.6000	0.6000
T4	10	LDF4-50A(1/2")	120.00 - 140.00	0.6000	0.6000
T4	11	LDF4-50A(1/2")	120.00 - 140.00	0.6000	0.6000
T4	12	LDF5-50A(7/8")	120.00 - 140.00	0.6000	0.6000
T4	15	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000
T4	16	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000
T4	18	ATCB-B01-006(5/16)	120.00 - 140.00	0.6000	0.6000
T4	20	LDF7-50A(1-5/8")	120.00 - 140.00	0.6000	0.6000
T4	22	Feedline Ladder (Af)	120.00 - 140.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T4	24	Safety Line 3/8	120.00 - 140.00	0.6000	0.6000
T4	25	Climbing Ladder	120.00 - 140.00	0.6000	0.6000
T5	5	LDF7-50A(1-5/8")	100.00 - 120.00	0.6000	0.6000
T5	6	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T5	8	FLC 12-50J(1/2")	100.00 - 120.00	0.6000	0.6000
T5	10	LDF4-50A(1/2")	100.00 - 120.00	0.6000	0.6000
T5	11	LDF4-50A(1/2")	100.00 - 120.00	0.6000	0.6000
T5	12	LDF5-50A(7/8")	100.00 - 120.00	0.6000	0.6000
T5	15	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T5	16	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T5	18	ATCB-B01-006(5/16)	100.00 - 120.00	0.6000	0.6000
T5	20	LDF7-50A(1-5/8")	100.00 - 120.00	0.6000	0.6000
T5	22	Feedline Ladder (Af)	100.00 - 120.00	0.6000	0.6000
T5	24	Safety Line 3/8	100.00 - 120.00	0.6000	0.6000
T5	25	Climbing Ladder	100.00 - 120.00	0.6000	0.6000
T6	5	LDF7-50A(1-5/8")	80.00 - 100.00	0.6000	0.6000
T6	6	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T6	8	FLC 12-50J(1/2")	80.00 - 100.00	0.6000	0.6000
T6	10	LDF4-50A(1/2")	80.00 - 100.00	0.6000	0.6000
T6	11	LDF4-50A(1/2")	80.00 - 100.00	0.6000	0.6000
T6	12	LDF5-50A(7/8")	80.00 - 100.00	0.6000	0.6000
T6	15	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T6	16	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T6	18	ATCB-B01-006(5/16)	80.00 - 100.00	0.6000	0.6000
T6	20	LDF7-50A(1-5/8")	80.00 - 100.00	0.6000	0.6000
T6	22	Feedline Ladder (Af)	80.00 - 100.00	0.6000	0.6000
T6	24	Safety Line 3/8	80.00 - 100.00	0.6000	0.6000
T6	25	Climbing Ladder	80.00 - 100.00	0.6000	0.6000
T7	5	LDF7-50A(1-5/8")	60.00 - 80.00	0.6000	0.6000
T7	6	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T7	8	FLC 12-50J(1/2")	60.00 - 80.00	0.6000	0.6000
T7	10	LDF4-50A(1/2")	60.00 - 80.00	0.6000	0.6000
T7	11	LDF4-50A(1/2")	60.00 - 80.00	0.6000	0.6000
T7	12	LDF5-50A(7/8")	60.00 - 80.00	0.6000	0.6000
T7	15	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T7	16	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T7	18	ATCB-B01-006(5/16)	60.00 - 80.00	0.6000	0.6000
T7	20	LDF7-50A(1-5/8")	60.00 - 80.00	0.6000	0.6000
T7	22	Feedline Ladder (Af)	60.00 - 80.00	0.6000	0.6000
T7	24	Safety Line 3/8	60.00 - 80.00	0.6000	0.6000
T7	25	Climbing Ladder	60.00 - 80.00	0.6000	0.6000
T8	5	LDF7-50A(1-5/8")	40.00 - 60.00	0.6000	0.6000
T8	6	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T8	8	FLC 12-50J(1/2")	40.00 - 60.00	0.6000	0.6000
T8	10	LDF4-50A(1/2")	40.00 - 60.00	0.6000	0.6000
T8	11	LDF4-50A(1/2")	40.00 - 60.00	0.6000	0.6000
T8	12	LDF5-50A(7/8")	40.00 - 60.00	0.6000	0.6000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T8	15	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T8	16	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T8	18	ATCB-B01-006(5/16)	40.00 - 60.00	0.6000	0.6000
T8	20	LDF7-50A(1-5/8")	40.00 - 60.00	0.6000	0.6000
T8	21	LDF4-50A(1/2")	40.00 - 53.00	0.6000	0.6000
T8	22	Feedline Ladder (Af)	40.00 - 60.00	0.6000	0.6000
T8	24	Safety Line 3/8	40.00 - 60.00	0.6000	0.6000
T8	25	Climbing Ladder	40.00 - 60.00	0.6000	0.6000
T9	5	LDF7-50A(1-5/8")	20.00 - 40.00	0.6000	0.6000
T9	6	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T9	8	FLC 12-50J(1/2")	20.00 - 40.00	0.6000	0.6000
T9	10	LDF4-50A(1/2")	20.00 - 40.00	0.6000	0.6000
T9	11	LDF4-50A(1/2")	20.00 - 40.00	0.6000	0.6000
T9	12	LDF5-50A(7/8")	20.00 - 40.00	0.6000	0.6000
T9	15	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T9	16	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T9	18	ATCB-B01-006(5/16)	20.00 - 40.00	0.6000	0.6000
T9	20	LDF7-50A(1-5/8")	20.00 - 40.00	0.6000	0.6000
T9	21	LDF4-50A(1/2")	20.00 - 40.00	0.6000	0.6000
T9	22	Feedline Ladder (Af)	20.00 - 40.00	0.6000	0.6000
T9	24	Safety Line 3/8	20.00 - 40.00	0.6000	0.6000
T9	25	Climbing Ladder	20.00 - 40.00	0.6000	0.6000
T10	5	LDF7-50A(1-5/8")	0.00 - 20.00	0.6000	0.6000
T10	6	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T10	8	FLC 12-50J(1/2")	0.00 - 20.00	0.6000	0.6000
T10	10	LDF4-50A(1/2")	0.00 - 20.00	0.6000	0.6000
T10	11	LDF4-50A(1/2")	0.00 - 20.00	0.6000	0.6000
T10	12	LDF5-50A(7/8")	0.00 - 20.00	0.6000	0.6000
T10	15	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T10	16	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T10	18	ATCB-B01-006(5/16)	0.00 - 20.00	0.6000	0.6000
T10	20	LDF7-50A(1-5/8")	0.00 - 20.00	0.6000	0.6000
T10	21	LDF4-50A(1/2")	0.00 - 20.00	0.6000	0.6000
T10	22	Feedline Ladder (Af)	0.00 - 20.00	0.6000	0.6000
T10	24	Safety Line 3/8	0.00 - 20.00	0.6000	0.6000
T10	25	Climbing Ladder	0.00 - 20.00	0.6000	0.6000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Beacon	B	From Leg	0.50	0.0000	200.00	No Ice	2.00	2.00	0.02
			0.00			1/2" Ice	2.50	2.50	0.03
			1.00			1" Ice	3.00	3.00	0.04
Sidemarker	A	From Leg	0.50	0.0000	100.00	No Ice	0.38	0.38	0.01
			0.00			1/2" Ice	0.63	0.63	0.02
			0.00			1" Ice	0.75	0.75	0.03
Sidemarker	B	From Leg	0.50	0.0000	100.00	No Ice	0.38	0.38	0.01
			0.00			1/2" Ice	0.63	0.63	0.02
			0.00			1" Ice	0.75	0.75	0.03

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Sidemarker	C	From Leg	0.50	0.0000	100.00	No Ice	0.38	0.38	0.01
			0.00			1/2" Ice	0.63	0.63	0.02
			0.00			1" Ice	0.75	0.75	0.03
** 198 **									
PD1107-1	A	From Leg	4.00	0.0000	198.00	No Ice	2.18	2.18	0.01
			0.00			1/2" Ice	3.29	3.29	0.02
			12.00			1" Ice	4.43	4.43	0.05
PD201-7	A	From Leg	4.00	0.0000	198.00	No Ice	1.02	1.02	0.00
			0.00			1/2" Ice	1.81	1.81	0.01
			12.00			1" Ice	2.62	2.62	0.03
DB225-A	B	From Leg	4.00	0.0000	198.00	No Ice	3.21	3.21	0.04
			0.00			1/2" Ice	5.78	5.78	0.05
			7.00			1" Ice	8.35	8.35	0.06
ALR10-O	C	From Leg	4.00	0.0000	198.00	No Ice	6.63	6.63	0.09
			0.00			1/2" Ice	15.31	15.31	0.18
			10.00			1" Ice	17.39	17.39	0.28
OGB6-928N	C	From Leg	4.00	0.0000	198.00	No Ice	0.97	0.97	0.01
			0.00			1/2" Ice	1.33	1.33	0.02
			6.00			1" Ice	1.63	1.63	0.03
(4) 6' x 2" Mount Pipe	A	From Leg	4.00	0.0000	198.00	No Ice	1.43	1.43	0.02
			0.00			1/2" Ice	1.50	1.50	0.03
			0.00			1" Ice	1.57	1.57	0.04
(4) 6' x 2" Mount Pipe	B	From Leg	4.00	0.0000	198.00	No Ice	1.43	1.43	0.02
			0.00			1/2" Ice	1.50	1.50	0.03
			0.00			1" Ice	1.57	1.57	0.04
(4) 6' x 2" Mount Pipe	C	From Leg	4.00	0.0000	198.00	No Ice	1.43	1.43	0.02
			0.00			1/2" Ice	1.50	1.50	0.03
			0.00			1" Ice	1.57	1.57	0.04
Sector Mount [SM 602-3]	C	None		0.0000	198.00	No Ice	33.11	33.11	1.54
						1/2" Ice	44.90	44.90	2.16
						1" Ice	56.69	56.69	2.78
**									
** 182 **									
LNX-6515DS-VTM w/ Mount Pipe	A	From Leg	4.00	0.0000	182.00	No Ice	11.68	9.84	0.08
			0.00			1/2" Ice	12.40	11.37	0.17
			1.00			1" Ice	13.14	12.91	0.27
LNX-6515DS-VTM w/ Mount Pipe	B	From Leg	4.00	0.0000	182.00	No Ice	11.68	9.84	0.08
			0.00			1/2" Ice	12.40	11.37	0.17
			1.00			1" Ice	13.14	12.91	0.27
LNX-6515DS-VTM w/ Mount Pipe	C	From Leg	4.00	0.0000	182.00	No Ice	11.68	9.84	0.08
			0.00			1/2" Ice	12.40	11.37	0.17
			1.00			1" Ice	13.14	12.91	0.27
ATBT-BOTTOM-24V	A	From Leg	4.00	0.0000	182.00	No Ice	0.10	0.06	0.00
			0.00			1/2" Ice	0.15	0.10	0.00
			1.00			1" Ice	0.20	0.15	0.01
ATBT-BOTTOM-24V	B	From Leg	4.00	0.0000	182.00	No Ice	0.10	0.06	0.00
			0.00			1/2" Ice	0.15	0.10	0.00
			1.00			1" Ice	0.20	0.15	0.01
ATBT-BOTTOM-24V	C	From Leg	4.00	0.0000	182.00	No Ice	0.10	0.06	0.00
			0.00			1/2" Ice	0.15	0.10	0.00
			1.00			1" Ice	0.20	0.15	0.01
KRY 112 71	A	From Leg	4.00	0.0000	182.00	No Ice	0.58	0.40	0.01
			0.00			1/2" Ice	0.69	0.49	0.02
			1.00			1" Ice	0.80	0.59	0.03
KRY 112 71	B	From Leg	4.00	0.0000	182.00	No Ice	0.58	0.40	0.01
			0.00			1/2" Ice	0.69	0.49	0.02
			1.00			1" Ice	0.80	0.59	0.03

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
KRY 112 71	C	From Leg	4.00 0.00 1.00	0.0000	182.00	No Ice 1/2" Ice 1" Ice	0.58 0.69 0.80	0.40 0.49 0.59	0.01 0.02 0.03
RR90-17-02DP w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	182.00	No Ice 1/2" Ice 1" Ice	4.59 5.02 5.44	3.32 4.09 4.78	0.03 0.07 0.12
RR90-17-02DP w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	182.00	No Ice 1/2" Ice 1" Ice	4.59 5.02 5.44	3.32 4.09 4.78	0.03 0.07 0.12
RR90-17-02DP w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	182.00	No Ice 1/2" Ice 1" Ice	4.59 5.02 5.44	3.32 4.09 4.78	0.03 0.07 0.12
6' x 2" Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	182.00	No Ice 1/2" Ice 1" Ice	1.43 1.50 1.57	1.43 1.50 1.57	0.02 0.03 0.04
6' x 2" Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	182.00	No Ice 1/2" Ice 1" Ice	1.43 1.50 1.57	1.43 1.50 1.57	0.02 0.03 0.04
6' x 2" Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	182.00	No Ice 1/2" Ice 1" Ice	1.43 1.50 1.57	1.43 1.50 1.57	0.02 0.03 0.04
Sector Mount [SM 602-3]	C	None		0.0000	182.00	No Ice 1/2" Ice 1" Ice	33.11 44.90 56.69	33.11 44.90 56.69	1.54 2.16 2.78
**									
** 170 **									
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	170.00	No Ice 1/2" Ice 1" Ice	8.26 8.82 9.35	6.95 8.13 9.02	0.08 0.15 0.23
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	170.00	No Ice 1/2" Ice 1" Ice	8.26 8.82 9.35	6.95 8.13 9.02	0.08 0.15 0.23
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	170.00	No Ice 1/2" Ice 1" Ice	8.26 8.82 9.35	6.95 8.13 9.02	0.08 0.15 0.23
FD9R6004/1C-3L	A	From Leg	4.00 0.00 1.00	0.0000	170.00	No Ice 1/2" Ice 1" Ice	0.31 0.39 0.47	0.08 0.12 0.17	0.00 0.00 0.01
FD9R6004/1C-3L	B	From Leg	4.00 0.00 1.00	0.0000	170.00	No Ice 1/2" Ice 1" Ice	0.31 0.39 0.47	0.08 0.12 0.17	0.00 0.00 0.01
FD9R6004/1C-3L	C	From Leg	4.00 0.00 1.00	0.0000	170.00	No Ice 1/2" Ice 1" Ice	0.31 0.39 0.47	0.08 0.12 0.17	0.00 0.00 0.01
(2) 6' x 2" Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	170.00	No Ice 1/2" Ice 1" Ice	1.43 1.50 1.57	1.43 1.50 1.57	0.02 0.03 0.04
(2) 6' x 2" Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	170.00	No Ice 1/2" Ice 1" Ice	1.43 1.50 1.57	1.43 1.50 1.57	0.02 0.03 0.04
(2) 6' x 2" Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	170.00	No Ice 1/2" Ice 1" Ice	1.43 1.50 1.57	1.43 1.50 1.57	0.02 0.03 0.04
Sector Mount [SM 506-3]	C	None		0.0000	170.00	No Ice 1/2" Ice 1" Ice	35.47 50.60 65.73	35.47 50.60 65.73	1.74 2.35 2.95
**									

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
** 163 **									
Pipe Mount [PM 601-1]	A	From Leg	0.50	0.0000	163.00	No Ice	3.00	0.90	0.07
			0.00			1/2" Ice	3.74	1.12	0.08
			0.00			1" Ice	4.48	1.34	0.09
**									
** 144 **									
PD156S-4	B	From Leg	4.00	0.0000	144.00	No Ice	0.44	0.44	0.01
			0.00			1/2" Ice	0.79	0.79	0.01
			6.00			1" Ice	1.14	1.14	0.01
(2) PD1109-1	B	From Leg	4.00	0.0000	144.00	No Ice	2.83	2.83	0.02
			0.00			1/2" Ice	3.89	3.89	0.04
			8.00			1" Ice	4.97	4.97	0.07
(4) 6' x 2" Mount Pipe	A	From Leg	4.00	0.0000	144.00	No Ice	1.43	1.43	0.02
			0.00			1/2" Ice	1.50	1.50	0.03
			0.00			1" Ice	1.57	1.57	0.04
(4) 6' x 2" Mount Pipe	B	From Leg	4.00	0.0000	144.00	No Ice	1.43	1.43	0.02
			0.00			1/2" Ice	1.50	1.50	0.03
			0.00			1" Ice	1.57	1.57	0.04
(4) 6' x 2" Mount Pipe	C	From Leg	4.00	0.0000	144.00	No Ice	1.43	1.43	0.02
			0.00			1/2" Ice	1.50	1.50	0.03
			0.00			1" Ice	1.57	1.57	0.04
Sector Mount [SM 602-3]	C	None		0.0000	144.00	No Ice	33.11	33.11	1.54
						1/2" Ice	44.90	44.90	2.16
						1" Ice	56.69	56.69	2.78
**									
** 53 **									
KS24019-L112A	C	From Leg	1.00	0.0000	53.00	No Ice	0.14	0.14	0.01
			0.00			1/2" Ice	0.20	0.20	0.01
			2.00			1" Ice	0.26	0.26	0.01
Side Arm Mount [SO 202-1]	C	From Leg	2.00	0.0000	53.00	No Ice	2.96	2.53	0.11
			0.00			1/2" Ice	4.10	3.51	0.13
			0.00			1" Ice	5.24	4.49	0.16
**									

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
** 163 **											
PR-850	A	Grid	From Leg	1.00	60.0000		163.00	5.67	No Ice	25.22	0.04
				0.00					1/2" Ice	25.97	0.17
				0.00					1" Ice	26.71	0.30

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 90 deg - No Ice
5	0.9 Dead+1.6 Wind 90 deg - No Ice
6	1.2 Dead+1.6 Wind 180 deg - No Ice
7	0.9 Dead+1.6 Wind 180 deg - No Ice
8	1.2 Dead+1.0 Ice+1.0 Temp
9	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
10	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
11	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
12	Dead+Wind 0 deg - Service
13	Dead+Wind 90 deg - Service
14	Dead+Wind 180 deg - Service

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	200 - 180	5.213	12	0.2414	0.0037
T2	180 - 160	4.201	12	0.2333	0.0061
T3	160 - 140	3.253	12	0.2055	0.0070
T4	140 - 120	2.431	12	0.1705	0.0063
T5	120 - 100	1.746	12	0.1422	0.0049
T6	100 - 80	1.177	12	0.1132	0.0036
T7	80 - 60	0.732	12	0.0820	0.0024
T8	60 - 40	0.416	12	0.0581	0.0017
T9	40 - 20	0.198	12	0.0333	0.0011
T10	20 - 0	0.064	12	0.0168	0.0005

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
200.00	Beacon	12	5.213	0.2414	0.0037	295775
198.00	PD1107-1	12	5.111	0.2411	0.0039	295775
182.00	LNX-6515DS-VTM w/ Mount Pipe	12	4.301	0.2349	0.0059	82139
170.00	APXVSPP18-C-A20 w/ Mount Pipe	12	3.715	0.2216	0.0070	48683
163.00	PR-850	12	3.388	0.2106	0.0072	38244
144.00	PD156S-4	12	2.584	0.1771	0.0064	33189
100.00	Sidemarker	12	1.177	0.1132	0.0036	37643
53.00	KS24019-L112A	12	0.330	0.0491	0.0015	53578

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T1	200 - 180	21.735	2	1.0084	0.0195

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T2	180 - 160	17.514	2	0.9730	0.0257
T3	160 - 140	13.561	2	0.8560	0.0292
T4	140 - 120	10.134	2	0.7101	0.0262
T5	120 - 100	7.281	2	0.5923	0.0204
T6	100 - 80	4.907	2	0.4718	0.0148
T7	80 - 60	3.056	2	0.3418	0.0101
T8	60 - 40	1.735	2	0.2419	0.0073
T9	40 - 20	0.828	2	0.1387	0.0047
T10	20 - 0	0.267	2	0.0701	0.0022

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
200.00	Beacon	2	21.735	1.0084	0.0195	73319
198.00	PD1107-1	2	21.309	1.0068	0.0191	73319
182.00	LNX-6515DS-VTM w/ Mount Pipe	2	17.928	0.9798	0.0247	20343
170.00	APXVSPP18-C-A20 w/ Mount Pipe	2	15.486	0.9234	0.0295	11558
163.00	PR-850	2	14.125	0.8775	0.0299	9180
144.00	PD156S-4	2	10.772	0.7377	0.0269	7969
100.00	Sidemarker	2	4.907	0.4718	0.0148	9039
53.00	KS24019-L112A	2	1.376	0.2047	0.0064	12863

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load / Allowable	Allowable Ratio	Criteria
T1	200	Leg	A325N	0.7500	4	3.33	29.82	0.112 ✔	1	Bolt Tension
		Diagonal	A325X	0.6250	1	2.69	7.61	0.353 ✔	1	Member Block Shear
		Top Girt	A325X	0.6250	1	0.10	13.05	0.008 ✔	1	Member Bearing
T2	180	Leg	A325N	1.0000	4	10.37	53.01	0.196 ✔	1	Bolt Tension
		Diagonal	A325X	0.6250	1	3.96	7.61	0.520 ✔	1	Member Block Shear
T3	160	Leg	A325N	1.0000	4	18.12	53.01	0.342 ✔	1	Bolt Tension
		Diagonal	A325X	0.6250	1	4.86	7.61	0.638 ✔	1	Member Block Shear
T4	140	Leg	A325N	1.2500	4	25.92	82.83	0.313 ✔	1	Bolt Tension
		Diagonal	A325X	0.6250	1	5.94	10.67	0.556 ✔	1	Member Block Shear
T5	120	Leg	A325N	1.2500	4	33.71	82.83	0.407 ✔	1	Bolt Tension
		Diagonal	A325X	0.6250	1	6.55	10.67	0.613 ✔	1	Member Block Shear
T6	100	Leg	A325N	1.2500	6	27.54	82.83	0.332 ✔	1	Bolt Tension
		Diagonal	A325X	0.7500	1	7.28	11.18	0.651 ✔	1	Member Block Shear

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt K	Allowable Load K	Ratio Load / Allowable	Allowable Ratio	Criteria
T7	80	Leg	A325N	1.2500	6	32.08	82.83	0.387 ✔	1	Bolt Tension
		Diagonal	A325X	0.7500	1	8.73	18.64	0.468 ✔	1	Member Block Shear
T8	60	Leg	A325N	1.3750	6	36.93	100.23	0.368 ✔	1	Bolt Tension
		Diagonal	A325X	0.7500	1	9.51	18.64	0.510 ✔	1	Member Block Shear
T9	40	Leg	A325N	1.3750	6	41.72	100.23	0.416 ✔	1	Bolt Tension
		Diagonal	A325X	0.7500	1	10.06	18.64	0.539 ✔	1	Member Block Shear
T10	20	Diagonal	A325X	0.7500	1	10.92	18.64	0.586 ✔	1	Member Block Shear

Compression Checks

Leg Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	200 - 180	Pipe 2.875" x 0.375" (2.5 #160)	20.00	5.00	67.1 K=1.00	2.9452	-16.63	95.33	0.174 [1] ✔
T2	180 - 160	Pipe 3.5" x 0.300" (3 XS)	20.03	5.01	52.9 K=1.00	3.0159	-49.37	110.61	0.446 [1] ✔
T3	160 - 140	Pipe 4" x 0.318" (3.5 XS)	20.03	5.01	46.0 K=1.00	3.6784	-84.27	141.81	0.594 [1] ✔
T4	140 - 120	Pipe 4.5" x 0.438" (4 #120)	20.03	6.68	55.5 K=1.00	5.5894	-119.25	200.84	0.594 [1] ✔
T5	120 - 100	Pipe 5.563" x 0.375" (5 XS)	20.03	6.68	43.6 K=1.00	6.1120	-154.39	239.39	0.645 [1] ✔
T6	100 - 80	Pipe 5.563" x 0.375" (5 XS)	20.03	6.68	43.6 K=1.00	6.1120	-189.22	239.39	0.790 [1] ✔
T7	80 - 60	Pipe 6.625" x 0.432" (6 EH)	20.03	10.02	54.8 K=1.00	8.4049	-221.14	303.75	0.728 [1] ✔
T8	60 - 40	Pipe 8.625" x 0.322" (8 STD)	20.03	10.02	40.9 K=1.00	8.3993	-255.51	334.42	0.764 [1] ✔
T9	40 - 20	Pipe 8.625" x 0.500" (8 XS)	20.03	10.02	41.8 K=1.00	12.7627	-290.24	505.56	0.574 [1] ✔
T10	20 - 0	Pipe 8.625" x 0.500" (8 XS)	20.03	9.97	41.6 K=1.00	12.7627	-324.22	506.09	0.641 [1] ✔

[1] P_u / ϕP_n controls

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	200 - 180	L1 3/4x1 3/4x3/16	7.07	3.20	113.8 K=1.02	0.6211	-2.83	10.17	0.279 [1] ✔
T2	180 - 160	L1 3/4x1 3/4x3/16	8.40	4.01	140.0 K=1.00	0.6211	-3.91	7.15	0.546 [1] ✔
T3	160 - 140	L1 3/4x1 3/4x3/16	10.08	4.82	168.6 K=1.00	0.6211	-4.89	4.94	0.991 [1] ✔
T4	140 - 120	L2 1/2x2 1/2x3/16	12.58	6.10	147.9 K=1.00	0.9020	-5.96	9.32	0.640 [1] ✔
T5	120 - 100	L2 1/2x2 1/2x3/16	14.32	6.92	167.7 K=1.00	0.9020	-6.58	7.25	0.908 [1] ✔
T6	100 - 80	L3x3x3/16	16.11	7.82	157.4 K=1.00	1.0900	-7.29	9.94	0.734 [1] ✔
T7	80 - 60	L3 1/2x3 1/2x1/4	19.30	9.43	163.1 K=1.00	1.6900	-8.77	14.36	0.611 [1] ✔
T8	60 - 40	L3 1/2x3 1/2x1/4	21.03	10.20	176.4 K=1.00	1.6900	-9.60	12.26	0.783 [1] ✔
T9	40 - 20	L3 1/2x3 1/2x1/4	22.81	11.10	191.9 K=1.00	1.6900	-10.21	10.37	0.984 [1] ✔
T10	20 - 0	L4x4x1/4	24.60	11.99	181.0 K=1.00	1.9400	-11.12	13.38	0.831 [1] ✔

[1] P_u / ϕP_n controls

Top Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	200 - 180	L1 3/4x1 3/4x3/16	5.00	4.43	154.7 K=1.00	0.6211	-0.10	5.86	0.017 [1] ✔

[1] P_u / ϕP_n controls

Tension Checks

Leg Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	200 - 180	Pipe 2.875" x 0.375" (2.5 #160)	20.00	5.00	67.1	2.9452	13.33	132.54	0.101 [1] ✔
T2	180 - 160	Pipe 3.5" x 0.300" (3 XS)	20.03	5.01	52.9	3.0159	41.50	135.72	0.306 [1] ✔

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T3	160 - 140	Pipe 4" x 0.318" (3.5 XS)	20.03	5.01	46.0	3.6784	72.46	165.53	0.438 [1] ✔
T4	140 - 120	Pipe 4.5" x 0.438" (4 #120)	20.03	6.68	55.5	5.5894	103.69	251.52	0.412 [1] ✔
T5	120 - 100	Pipe 5.563" x 0.375" (5 XS)	20.03	6.68	43.6	6.1120	134.83	275.04	0.490 [1] ✔
T6	100 - 80	Pipe 5.563" x 0.375" (5 XS)	20.03	6.68	43.6	6.1120	165.22	275.04	0.601 [1] ✔
T7	80 - 60	Pipe 6.625" x 0.432" (6 EH)	20.03	10.02	54.8	8.4049	192.49	378.22	0.509 [1] ✔
T8	60 - 40	Pipe 8.625" x 0.322" (8 STD)	20.03	10.02	40.9	8.3993	221.57	377.97	0.586 [1] ✔
T9	40 - 20	Pipe 8.625" x 0.500" (8 XS)	20.03	10.02	41.8	12.7627	250.29	574.32	0.436 [1] ✔
T10	20 - 0	Pipe 8.625" x 0.500" (8 XS)	20.03	0.08	0.3	12.7627	285.93	574.32	0.498 [1] ✔

[1] P_u / ϕP_n controls

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	200 - 180	L1 3/4x1 3/4x3/16	7.07	3.20	75.2	0.3604	2.69	15.68	0.171 [1] ✔
T2	180 - 160	L1 3/4x1 3/4x3/16	8.40	4.01	93.3	0.3604	3.96	15.68	0.253 [1] ✔
T3	160 - 140	L1 3/4x1 3/4x3/16	10.08	4.82	111.6	0.3604	4.86	15.68	0.310 [1] ✔
T4	140 - 120	L2 1/2x2 1/2x3/16	12.58	6.10	96.6	0.5710	5.94	24.84	0.239 [1] ✔
T5	120 - 100	L2 1/2x2 1/2x3/16	14.32	6.92	109.3	0.5710	6.55	24.84	0.264 [1] ✔
T6	100 - 80	L3x3x3/16	16.11	7.82	102.0	0.6945	7.28	30.21	0.241 [1] ✔
T7	80 - 60	L3 1/2x3 1/2x1/4	19.30	9.43	105.9	1.1034	8.73	48.00	0.182 [1] ✔
T8	60 - 40	L3 1/2x3 1/2x1/4	21.03	10.20	114.4	1.1034	9.51	48.00	0.198 [1] ✔
T9	40 - 20	L3 1/2x3 1/2x1/4	22.81	11.10	124.2	1.1034	10.06	48.00	0.209 [1] ✔
T10	20 - 0	L4x4x1/4	24.60	11.99	116.9	1.2909	10.92	56.16	0.194 [1] ✔

[1] P_u / ϕP_n controls

Top Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
T1	200 - 180	L1 3/4x1 3/4x3/16	5.00	4.43	106.4	0.3604	0.04	15.68	0.003 [1] ✔

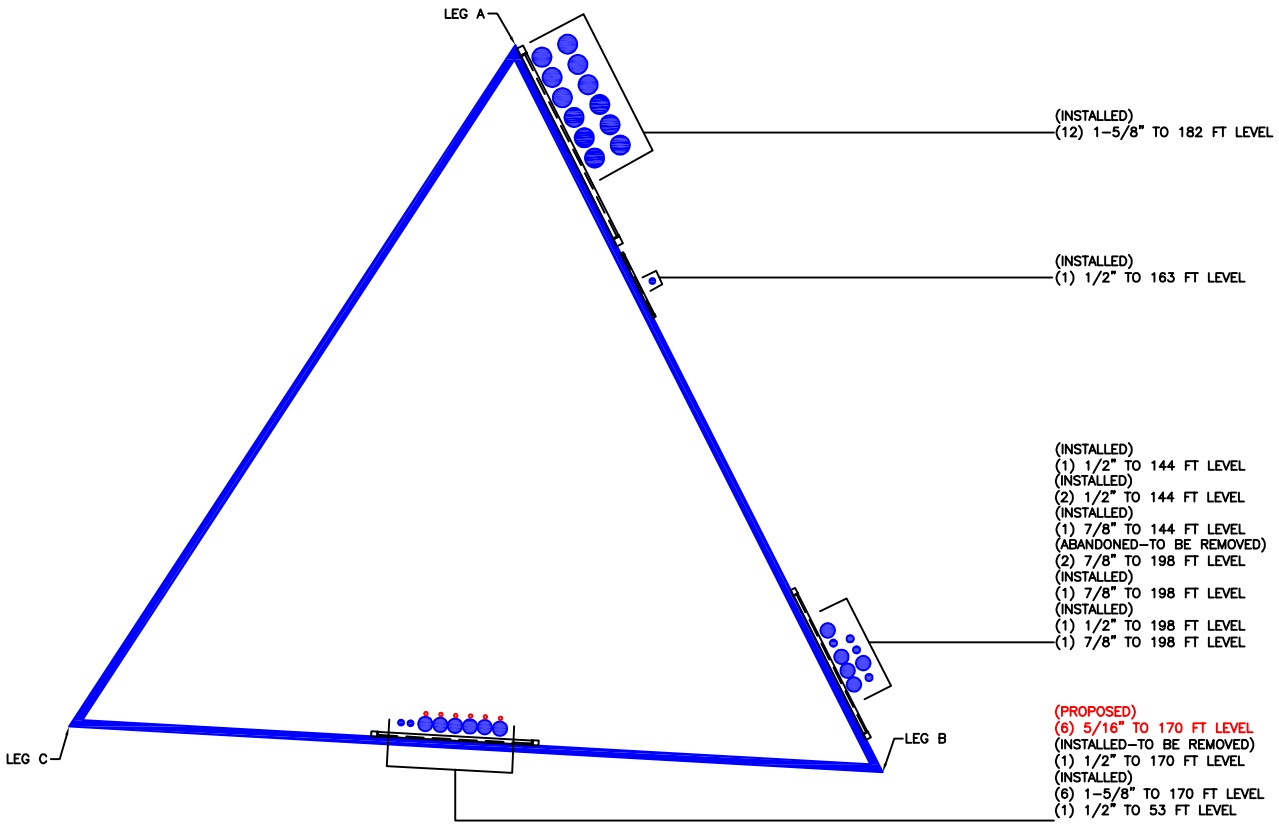
[1] P_u / ϕP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
T1	200 - 180	Leg	Pipe 2.875" x 0.375" (2.5 #160)	3	-16.63	95.33	17.4	Pass
T2	180 - 160	Leg	Pipe 3.5" x 0.300" (3 XS)	33	-49.37	110.61	44.6	Pass
T3	160 - 140	Leg	Pipe 4" x 0.318" (3.5 XS)	60	-84.27	141.81	59.4	Pass
T4	140 - 120	Leg	Pipe 4.5" x 0.438" (4 #120)	87	-119.25	200.84	59.4	Pass
T5	120 - 100	Leg	Pipe 5.563" x 0.375" (5 XS)	108	-154.39	239.39	64.5	Pass
T6	100 - 80	Leg	Pipe 5.563" x 0.375" (5 XS)	129	-189.22	239.39	79.0	Pass
T7	80 - 60	Leg	Pipe 6.625" x 0.432" (6 EH)	150	-221.14	303.75	72.8	Pass
T8	60 - 40	Leg	Pipe 8.625" x 0.322" (8 STD)	165	-255.51	334.42	76.4	Pass
T9	40 - 20	Leg	Pipe 8.625" x 0.500" (8 XS)	180	-290.24	505.56	57.4	Pass
T10	20 - 0	Leg	Pipe 8.625" x 0.500" (8 XS)	195	-324.22	506.09	64.1	Pass
T1	200 - 180	Diagonal	L1 3/4x1 3/4x3/16	11	-2.83	10.17	27.9 35.3 (b)	Pass
T2	180 - 160	Diagonal	L1 3/4x1 3/4x3/16	35	-3.91	7.15	54.6	Pass
T3	160 - 140	Diagonal	L1 3/4x1 3/4x3/16	62	-4.89	4.94	99.1	Pass
T4	140 - 120	Diagonal	L2 1/2x2 1/2x3/16	89	-5.96	9.32	64.0	Pass
T5	120 - 100	Diagonal	L2 1/2x2 1/2x3/16	110	-6.58	7.25	90.8	Pass
T6	100 - 80	Diagonal	L3x3x3/16	131	-7.29	9.94	73.4	Pass
T7	80 - 60	Diagonal	L3 1/2x3 1/2x1/4	152	-8.77	14.36	61.1	Pass
T8	60 - 40	Diagonal	L3 1/2x3 1/2x1/4	167	-9.60	12.26	78.3	Pass
T9	40 - 20	Diagonal	L3 1/2x3 1/2x1/4	182	-10.21	10.37	98.4	Pass
T10	20 - 0	Diagonal	L4x4x1/4	197	-11.12	13.38	83.1	Pass
T1	200 - 180	Top Girt	L1 3/4x1 3/4x3/16	4	-0.10	5.86	1.7	Pass
							Summary	
						Leg (T6)	79.0	Pass
						Diagonal (T3)	99.1	Pass
						Top Girt (T1)	1.7	Pass
						Bolt Checks	65.1	Pass
						RATING =	**99.1**	**Pass**

APPENDIX B

BASE LEVEL DRAWING



BUSINESS UNIT: 871584 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

Anchor Rod Check for Self Supporting Towers

TIA-222-G, Section 4.9.9 Rev. 6.1

Site Data	
BU#:	**871584**
Site Name:	**John Tom Hill**
App #:	**372579 Rev 2**

Anchor Rod Data		
Qty:	**8**	
Diam:	**1.5**	in
Rod Material:	**A572 Gr. 50**	
Strength (Fu):	65	ksi
Yield (Fy):	50	ksi

* Rod Circle:		in
* e:		in
* # of Rods		1 or 2

Mu= Pu x e:		ft-kips

** Only enter rod circle, offset (e) and number of anchor rods at the extreme fiber to consider if eccentric load due to leg reinforcement exist.*

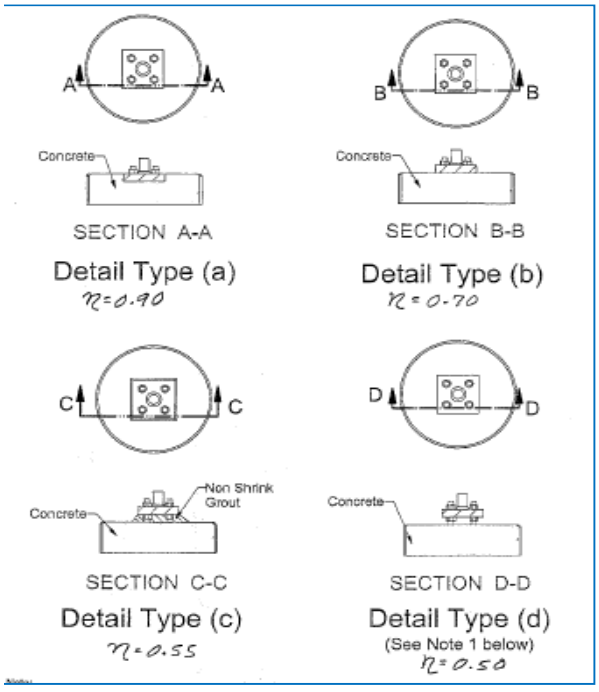


Figure 4-4 of TIA-222-G

Reactions		
Eta Factor, η	**0.55**	Detail Type
Uplift, Pu:	**285**	kips
Shear, Vu:	**31**	kips

I_{ar}:		in
$Mu = 0.65*I_{ar}*V_u$		ft-kips

Anchor Rod Results:

Max Rod (Cu+ Vu/ή):	42.7	Kips
Design Axial, Φ*Fu*Anet:	73.3	Kips
Anchor Rod Stress Ratio:	58.2%	

If Applicable;

Anchor Rod Results with Bending Considered:

When the clear distance from the top of concrete to the bottom of level nut excceeds 1.0 times the diameter of the anchor rod, the following interaction equation shall also be satisfied (see Figure 4-4 of Rev. G):

$$(V_u/\phi R_{nv})^2 + [(P_u/\phi R_{nt}) + (M_u/\phi R_{nm})]^2 <= 1$$

$\phi R_{nv}=\phi*0.45*F_{ub}*A_b=$		kips
$\phi R_{nt}=\phi*F_u*A_{net}=$		kips
$\phi R_{nm}=\phi*F_y*Z=$		ft-kips

Maximum Acceptable Ratio:	**105**	%
Governing Stress Ratio:	**58.2%**	**Pass**

Project Name:	John Tom Hill	Created On:	6/3/2014
Project Number:	BU 871584	Checked By:	SMR / DW
Job Number:	WO 1347191	Revised On:	8/25/2016
Date:	2/6/2017	Revision No.:	7.2

JACOBS®
Jacobs Engineering Group. Inc.

Self Support Tower Pad-Pier Foundation

Load		
Code	G	
Compression	333	kips
Shear (comp)	36	kips
Uplift	285	kips
Shear (uplift)	31	kips
Soil Unit Weight	135	pcf
Friction Angle	36	
Cohesion	0	psf

Pad		
Thickness	1.75	ft
Bearing Depth	10	ft
Width	15	ft
Top Rebar Size	7	
Top Rebar Quantity	20	
Bottom Rebar Size	7	
Bottom Rebar Quantity	20	

Pier		
Pier type	Circle	
Diameter	3.5	ft
Height above Grade	0.5	ft
Rebar Size	7	
Rebar Quantity	14	
Tie Size	3	
Tie C/C Spacing	12	in

Material		
Concrete Strength (F'c)	3000	psi
Concrete Density	150	pcf
Rebar Tensile (Fy)	60	ksi
Clear Cover	3	in

Soil		
Bearing Type From Geo	Net Allowable	
Bearing Capacity From Geo	4	ksf
Safety Factor From Geo	2	
Gross Ultimate Bearing Cap.	9.267917	ksf
Allowable Bearing Capacity	6.950938	ksf
Frost Depth	40	in
Water Table Depth	99	ft

Structural Capacity	76.0%	Pass
Soil Interaction Capacity	63.4%	Pass
Overall Foundation Capacity	76.0%	Pass

Compression		
Pad Beam Shear Capacity	246.8	kips
Pad Beam Shear	173.0	kips
Pad Beam Shear Check	70.1%	Pass
Punching Shear Capacity	505.6	kips
Punching Shear	384.0	kips
Punching Shear Check	76.0%	Pass
Pad Bending Moment Capacity	858.8	k-ft
Pad Bending Moment	509.9	k-ft
Pad Bending Moment Check	59.4%	Pass
Pier Beam Shear Capacity	92.2	kips
Pier Beam Shear	36.0	kips
Pier Beam Shear Check	39.1%	Pass
Peir Bending Moment Capacity	981.1	k-ft
Peir Bending Moment	201.8	k-ft
Pier Bending Moment Check	20.6%	Pass
Pad-Pier Bearing Capacity	4592.7	kips
Pad-Pier Bearing	706.9	kips
Pad-Pier Bearing Check	15.4%	Pass

Uplift		
Steel Rupture Capacity	453.6	kips
Steel Rupture Force	273.6	kips
Steel Rupture Check	60.3%	Pass
Pad Bending Moment Capacity	858.8	k-ft
Pad Bending Moment	78.8	k-ft
Pad Bending Moment Check	9.2%	Pass
Pier Beam Shear Capacity	92.2	kips
Pier Beam Shear	31.0	kips
Pier Beam Shear Check	33.6%	Pass
Peir Bending Moment Capacity	255.9	k-ft
Peir Bending Moment	165.7	k-ft
Pier Bending Moment Check	64.8%	Pass

Soil Interaction		
Compression Capacity	6.95	ksf
Compression Force	3.53	ksf
Compression Check	50.8%	Pass
Uplift Capacity	449.5	kips
Uplift Force	285	kips
Uplift Check	63.4%	Pass
Lateral Capacity	124.56	kips
Lateral Force	36	kips
Lateral Check	28.9%	Pass

Project Name:	John Tom Hill	JACOBS® Jacobs Engineering Group. Inc.	Created On: 5/28/2014
Project Number:	BU 871584		Checked By:
Job Number:	WO 1347191		Revised On: 8/25/2016
Date:	2/6/2017		Revision No.: 7.1
Leg:	-		
Boring Number:	-		

Self Support Tower Pad - Pier Foundation

Code :	G

UPLIFT CHECK

Uplift Force (k)	285	
	(Ultimate)	(Allowable)
Wt. Concrete (k):	71.69	64.52
Wt. Soil (k):	409.29	368.36
Friction (k):	22.16	16.62
Total (k)		449.50
% Capacity		
63.4%	PASS	

COMPRESSION CHECK

Comp. Force (k)	333	
	Gross Ultimate	Allowable
Bearing Cap. (ksf):	9.27	6.95
	Weights	Factored Wt.
Gross Concrete (k):	71.69	86.03
Soil (k):	222.20	266.64
% Capacity		
50.8%	PASS	

FOUNDATION INFORMATION

Density Concrete (pcf):	150
Pier Shape (R or S):	R
Pier Diameter/Width (ft):	3.5
Pier Area (ft^2):	9.62
Pier Height Above Grade (ft):	0.50
Pad Width/Length (ft):	15.00
Pad Thickness (ft):	1.75
Pad Bearing Depth (ft):	10.00
Frost Depth (ft):	3.33
Water Table Depth (ft):	99.00

SOIL INFORMATION

Number of Layers Above Pad:	2
Number of Layers Adjacent Pad:	1
Total Number of Layers:	3
Number of Layers Check	OK
Pad Check	OK
Frost Depth Check	OK
Water Table Check	OK

Soil Profile

Soil Layer Number.	Layer Thickness (ft)	Depth at Bot. (ft)	Soil Type (C/S)	Unit Weight. (pcf)	Frict. Angle (°)	Cohesion (psf)
1	3.33	3.33	S	125	0	0
2	4.92	8.25	S	125	36	0
3	1.75	10.00	S	135	36	0
4	N/A	N/A	N/A	N/A	N/A	N/A
5	N/A	N/A	N/A	N/A	N/A	N/A
6	N/A	N/A	N/A	N/A	N/A	N/A

8/20/2014	SMR
8/21/2014	SMR
8/21/2014	SMR
8/22/2014	JTE
9/11/2014	JTE
9/11/2014	SMR
9/15/2014	SMR
9/16/2014	SMR
9/26/2014	SMR
9/29/2014	SMR
11/21/2014	JTE
3/30/2016	DMC
8/25/2016	DMC
11/15/2016	VJ

Added Square Pier Moment Capacity Sheet
Removed Uplift Shear Check (Redundant and wont control) and added Pad-Pier Bearing Check per Crown Foundati
Added Soil Resistance to Pier for Max Moment Calculation
Added Soil checks in the structural tab
Change Soil input location
Updated Tie Quantity to Tie C/C Spacing and updated Vs accordingly
Added option to resist punching shear with steel dowel resistance
Removed weight of soil from punching shear q Update: 5.1
Accounted for the weight of the concrete pad when calculating bending moment and shear in the pad. Update 5.2
Adjusted Soil calcs to account for when zero shear does not occur along pier depth. Update 5.3
Adjusted soil calcs to account for a reduced pad width and adjusted conditional formatting in the structural checks ta
The tool previously used a soil prism above the pad for calculating soil weight acting on the pad in uplift and compres
Updated gross/net bearing inputs and calculations. Added contribution of shear reaction to the max bearing pressur
Patched on Structural Checks sheet to match soil checks results from previous update. Unprotected soil inputs yello

ion Criteria (ACI 10.14.1)

b. Update 5.4
ssion. The sheet was updated to only consider the weight of soil directly above the pad for the compression load ca
e calculation for soil compression check. Used plastic section modulus for bearing.
w boxes on Structural Checks.

ase. Skin friction and adhesion resistance acting on the side of the pad were removed for the compression load cas

se per Crown Castles 3.10.2016 updated foundation criteria.

115 BIRCH MOUNTAIN RD

Location	115 BIRCH MOUNTAIN RD	**M/B/L/U**	N6/ 2920/ E0001C/ /
Acct#	29203387	**Owner**	SCARRONE CAROLYN R TRUSTEE
Assessment	$489,200	**Appraisal**	$698,800
PID	13487	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$800	$698,000	$698,800
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$600	$488,600	$489,200

Owner of Record

Owner	SCARRONE CAROLYN R TRUSTEE	**Sale Price**	$0
Co-Owner		**Certificate**	
		Book & Page	1829/0101
		Sale Date	06/03/2003
		Instrument	79

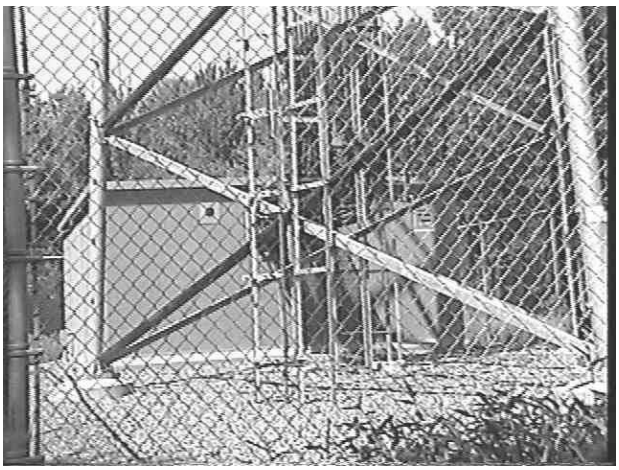
Building Information

Building 1 : Section 1

Year Built:
Living Area: 0

Building Attributes	
Field	**Description**
Style	Vacant Land
Model	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure:	
Roof Cover	
Interior Wall 1	

Building Photo



(http://images.vgsi.com/photos2/GlastonburyCTPhotos//\02\00\(

Interior Wall 2	
Floor/Cover 1	
Floor/Cover 2	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Rooms:	
Bath Qlty:	
Kitchen Qlty:	
Extra Kitchens	
Style Sub Class	
Bsmt Garages	
Fireplaces	

Building Layout

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code 350V
Description Cell Tower 00 MDL
Zone RR

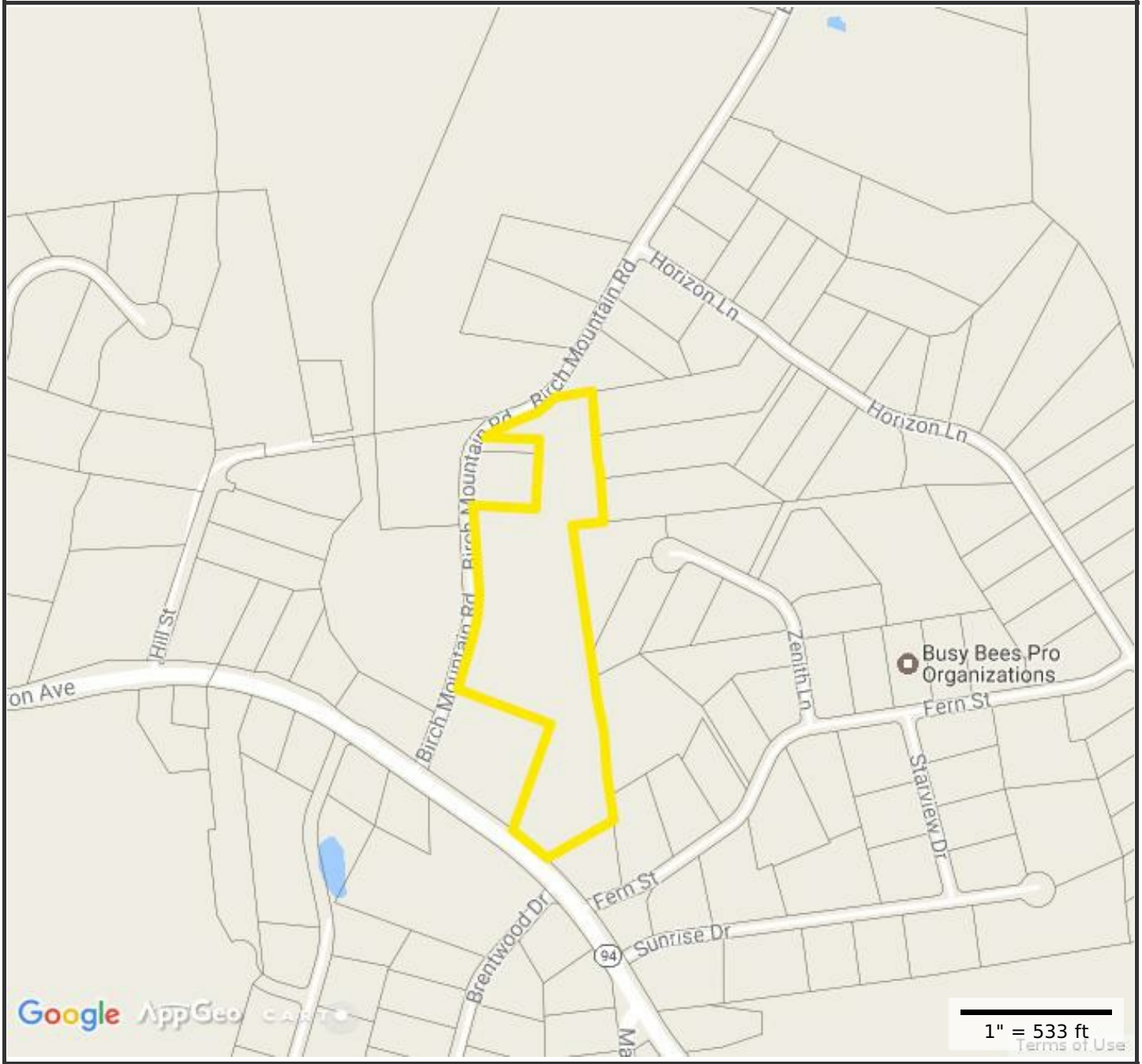
Land Line Valuation

Size (Acres) 11.54
Depth
Assessed Value $488,600
Appraised Value $698,000

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
SHD2	Shed-Metal-Storage			168 S.F.	$800	1

Glastonbury Map



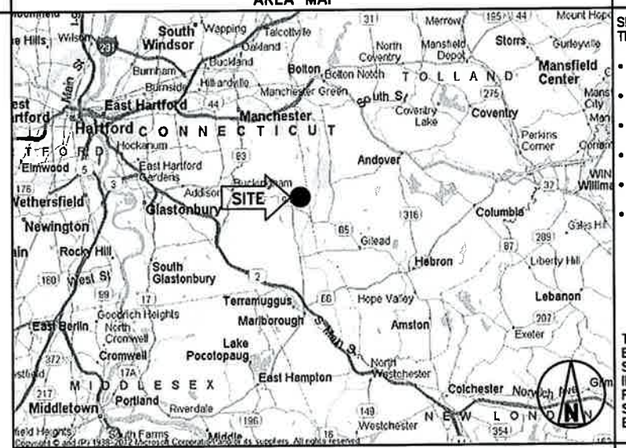
Property Information

Property ID	09003054-04200115
Location	115 BIRCH MOUNTAIN RD
Owner	Current Owner

CRCOG CAPITOL REGION COUNCIL OF GOVERNMENTS
Working together for a better region.

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

CRCOG makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.



Sprint

PROJECT:	DO ESS GROUND MOUNT OPTION 2
SITE NAME:	MOTOROLA TOWER
SITE CASCADE:	CT33XC541
SITE ADDRESS:	333 BIRCH MOUNTAIN ROAD GLASTONBURY, CT 06033
SITE TYPE:	SELF SUPPORT TOWER
MARKET:	NORTHERN CONNECTICUT

SITE INFORMATION

TOWER OWNER:

CROWN ATLANTIC COMPANY LLC.
2000 CORPORATE DRIVE
CANONSBURG, PA 15317
(704) 405-6555

LATITUDE (NAD83):

41° 42' 29.988" N
41.70833000°

LONGITUDE (NAD83):

72° 28' 26.004" W
-72.47389000°

COUNTY:

HARTFORD

ZONING JURISDICTION:

CONNECTICUT SITING COUNCIL

ZONING DISTRICT:

N/A

PROJECT MANAGER:

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

AREA MAP

LOCATION MAP

PROJECT DESCRIPTION

SPRINT PROPOSES TO MODIFY AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY.

- REMOVE (6) PANEL ANTENNAS
- INSTALL (3) PANEL ANTENNAS
- INSTALL (3) DIPLEXERS TO TOWER TOP
- INSTALL (3) DIPLEXERS TO EXISTING H-FRAME
- INSTALL (3) RRH'S TO EXISTING H-FRAME
- INSTALL (6) RET CABLES

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

APPLICABLE CODES

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

1. INTERNATIONAL BUILDING CODE (2012 IBC)
2. TIA-EIA-222-F OR LATEST EDITION
3. NFPA 780 - LIGHTNING PROTECTION CODE
4. 2011 NATIONAL ELECTRIC CODE OR LATEST EDITION
5. ANY OTHER NATIONAL OR LOCAL APPLICABLE CODES, MOST RECENT EDITIONS
6. CT BUILDING CODE
7. CITY/COUNTY ORDINANCES

Know what's below.
Call before you dig.
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DRAWING INDEX

SHEET NO:	SHEET TITLE	REV
T-1	TITLE SHEET & PROJECT DATA	0
SP-1	SPRINT SPECIFICATIONS	0
SP-2	SPRINT SPECIFICATIONS	0
SP-3	SPRINT SPECIFICATIONS	0
A-1	OVERALL SITE PLAN	0
A-2	SITE PLAN	0
A-3	TOWER ELEVATION & ANTENNA LAYOUT	0
A-4	ANTENNA LOADING AND COLOR CODING CHART	0
A-5	EQUIPMENT & MOUNTING DETAILS	0
A-6	H-FRAME DETAILS	0
A-7	SCENARIO 354 V2.5 SPECIFICATIONS	0
A-8	SCENARIO 354 V2.5 SPECIFICATIONS	0
E-1	ELECTRICAL & GROUNDING PLAN	0

PLANS PREPARED FOR:

Sprint

PLANS PREPARED BY:

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

PROJECT MANAGER:

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

ENGINEERING LICENSE:

JOHN S. STEVENS
No. 24705

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REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR PERMIT	02/13/17	JLM	0
REVISED PER COMMENTS	2/2/17	JLM	B
ISSUED FOR REVIEW	1/20/17	JLM	A

SITE NAME:

MOTOROLA TOWER

SITE NUMBER:

CT33XC541

SITE ADDRESS:

333 BIRCH MOUNTAIN RD.
GLASTONBURY, CT 06033

SHEET DESCRIPTION:

TITLE SHEET
& PROJECT DATA

SHEET NUMBER:

T-1

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

SECTION 01 100 – SCOPE OF WORK

PART 1 – GENERAL

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

1.2 RELATED DOCUMENTS:

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

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

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

1.4 NATIONALLY RECOGNIZED CODES AND STANDARDS:

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

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

1.5 DEFINITIONS:

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

B. COMPANY: SPRINT CORPORATION

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

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

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

F. OFCI: OWNER FURNISHED, CONTRACTOR INSTALLED EQUIPMENT.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

1.15 USE OF ELECTRONIC PROJECT MANAGEMENT SYSTEMS:

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

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

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

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

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

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

SECTION 01 200 – COMPANY FURNISHED MATERIAL AND EQUIPMENT

PART 1 – GENERAL

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

1.2 RELATED DOCUMENTS:

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

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

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 RECEIPT OF MATERIAL AND EQUIPMENT:

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

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

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

3.2 DELIVERABLES:

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

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

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

SECTION 01 300 – CELL SITE CONSTRUCTION CO.

PART 1 – GENERAL

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

1.2 RELATED DOCUMENTS:

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

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

1.3 NOTICE TO PROCEED

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

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

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:

Sprint

PLANS PREPARED BY:

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

PROJECT MANAGER:

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

ENGINEERING LICENSE:

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR PERMIT	02/13/17	JLM	0
REVISED PER COMMENTS	2/2/17	JLM	B
ISSUED FOR REVIEW	1/20/17	JLM	A

SITE NAME:

MOTOROLA TOWER

SITE NUMBER:

CT33XC541

SITE ADDRESS:

333 BIRCH MOUNTAIN RD.
GLASTONBURY, CT 06033

SHEET DESCRIPTION:

SPRINT SPECIFICATIONS

SHEET NUMBER:

SP-1

CONTINUE FROM SP-1

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

3.2 GENERAL REQUIREMENTS FOR CIVIL CONSTRUCTION:

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

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

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

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

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

E. CONDUCT TESTING AS REQUIRED HEREIN.

3.3 DELIVERABLES:

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

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

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

SECTION 01 400 - SUBMITTALS & TESTS

PART 1 - GENERAL

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

1.2 RELATED DOCUMENTS:

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

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

1.3 SUBMITTALS:

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

B. SUBMIT THE FOLLOWING TO COMPANY REPRESENTATIVE FOR APPROVAL.

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

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

1.4 TESTS AND INSPECTIONS:

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

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

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

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

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

1.5 COMMISSIONING: PERFORM ALL COMMISSIONING AS REQUIRED BY APPLICABLE MOPs

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

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.1 REQUIREMENTS FOR TESTING:

A. THIRD PARTY TESTING AGENCY:

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

3.2 REQUIRED TESTS:

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

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

3.3 REQUIRED INSPECTIONS

A. SCHEDULE INSPECTIONS WITH COMPANY REPRESENTATIVE.

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

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

PLANS PREPARED FOR:

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PLANS PREPARED BY:

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Phone: 518-690-0790 | Fax: 518-690-0793
www.infinigy.com
JOB NUMBER 514-000

PROJECT MANAGER:

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

ENGINEERING LICENSE:

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR PERMIT	02/13/17	JLM	0
REVISED PER COMMENTS	2/2/17	JLM	B
ISSUED FOR REVIEW	1/20/17	JLM	A

SITE NAME:

MOTOROLA TOWER

SITE NUMBER:

CT33XC541

SITE ADDRESS:

333 BIRCH MOUNTAIN RD.
GLASTONBURY, CT 06033

SHEET DESCRIPTION:

SPRINT SPECIFICATIONS

SHEET NUMBER:

SP-2

CONTINUE FROM SP-2

7. VERIFICATION DOCUMENTED WITH THE ANTENNA CHECKLIST REPORT, BY A&E, SITE DEVELOPMENT REP, OR RF REP.

8. FINAL INSPECTION CHECKLIST AND HANDOFF WALK (HOC.). SIGNED FORM SHOWING ACCEPTANCE BY FIELD OPS IS TO BE UPLOADED INTO SMS.

9. COAX SWEEP AND FIBER TESTING DOCUMENTS SUBMITTED VIA SMS FOR RF APPROVAL.

10. SCAN-ABLE BARCODE PHOTOGRAPHS OF TOWER TOP AND INACCESSIBLE SERIALIZED EQUIPMENT

11. ALL AVAILABLE JURISDICTIONAL INFORMATION

12. PDF SCAN OF REDLINES PRODUCED IN FIELD

C. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL CORRECTIONS TO ANY WORK IDENTIFIED AS UNACCEPTABLE IN SITE INSPECTION ACTIVITIES AND/OR AS A RESULT OF TESTING.

D. CONSTRUCTION INSPECTIONS AND CORRECTIVE MEASURES SHALL BE DOCUMENTED BY THE CONTRACTOR WITH WRITTEN REPORTS AND PHOTOGRAPHS. PHOTOGRAPHS MUST BE DIGITAL AND OF SUFFICIENT QUALITY TO CLEARLY SHOW THE SITE CONSTRUCTION. PHOTOGRAPHS MUST CLEARLY IDENTIFY THE PHOTOGRAPHED ITEM AND BE LABELED WITH THE SITE CASCADE NUMBER, SITE NAME, DESCRIPTION, AND DATE.

3.4 DELIVERABLES: TEST AND INSPECTION REPORTS AND CLOSEOUT DOCUMENTATION SHALL BE UPLOADED TO THE SMS AND/OR FORWARDED TO SPRINT FOR INCLUSION INTO THE PERMANENT SITE FILES.

A. THE FOLLOWING TEST AND INSPECTION REPORTS SHALL BE PROVIDED AS APPLICABLE.

1. CONCRETE MIX AND CYLINDER BREAK REPORTS.

2. STRUCTURAL BACKFILL COMPACTION REPORTS.

3. SITE RESISTANCE TO EARTH TEST.

4. ANTENNA AZIMUTH AND DOWN TILT VERIFICATION

5. TOWER ERECTION INSPECTIONS AND MEASUREMENTS DOCUMENTING TOWER INSTALLED PER SUPPLIER'S REQUIREMENTS AND THE APPLICABLE SECTIONS HEREIN.

6. COAX CABLE SWEEP TESTS PER COMPANY'S "ANTENNA LINE ACCEPTANCE STANDARDS".

B. REQUIRED CLOSEOUT DOCUMENTATION INCLUDES THE FOLLOWING;

1. TEST WELLS AND TRENCHES: PHOTOGRAPHS OF ALL TEST WELLS; PHOTOGRAPHS SHOWING ALL OPEN EXCAVATIONS AND TRENCHING PRIOR TO BACKFILLING SHOWING A TAPE MEASURE VISIBLE IN THE EXCAVATIONS INDICATING DEPTH.

2. CONDUITS, CONDUCTORS AND GROUNDING: PHOTOGRAPHS SHOWING TYPICAL INSTALLATION OF CONDUCTORS AND CONNECTORS; PHOTOGRAPHS SHOWING TYPICAL BEND RADIUS OF INSTALLED GROUND WIRES AND GROUND ROD SPACING;

3. CONCRETE FORMS AND REINFORCING: CONCRETE FORMING AT TOWER AND EQUIPMENT/SHELTER PAD/FOUNDATIONS – PHOTOGRAPHS SHOWING ALL REINFORCING STEEL, UTILITY AND CONDUIT STUB OUTS; PHOTOGRAPHS SHOWING CONCRETE POUR OF SHELTER SLAB/FOUNDATION, TOWER FOUNDATION AND GUY ANCHORS WITH VIBRATOR IN USE; PHOTOGRAPHS SHOWING EACH ANCHOR ON GUYED TOWERS, BEFORE CONCRETE POUR.

4. TOWER, ANTENNAS AND MAINLINE: INSPECTION AND PHOTOGRAPHS OF SECTION STACKING; INSPECTION AND PHOTOGRAPHS OF PLATFORM COMPONENT ATTACHMENT POINTS; PHOTOGRAPHS OF TOWER TOP GROUNDING; PHOTOS OF TOWER COAX LINE COLOR CODING AT THE TOP AND AT GROUND LEVEL; INSPECTION AND PHOTOGRAPHS OF OPERATIONAL OF TOWER LIGHTING, AND PLACEMENT OF FAA REGISTRATION SIGN; PHOTOGRAPHS SHOWING ADDITIONAL GROUNDING POINTS FOR TOWERS GREATER THAN 200 FEET.; PHOTOS OF ANTENNA GROUND BAR, EQUIPMENT GROUND BAR, AND MASTER GROUND BAR; PHOTOS OF GPS ANTENNA(S); PHOTOS OF EACH SECTOR OF ANTENNAS; ONE PHOTOGRAPH LOOKING AT THE SECTOR AND ONE FROM BEHIND SHOWING THE PROJECTED COVERAGE AREA; PHOTOS OF COAX WEATHERPROOFING – TOP AND BOTTOM; PHOTOS OF COAX GROUNDING--TOP AND BOTTOM; PHOTOS OF ANTENNA AND MAST GROUNDING; PHOTOS OF COAX CABLE ENTRY INTO SHELTER; PHOTOS OF PLATFORM MECHANICAL CONNECTIONS TO TOWER/MONOPOLE.

5. ROOF TOPS: PRE-CONSTRUCTION AND POST-CONSTRUCTION VISUAL INSPECTION AND PHOTOGRAPHS OF THE ROOF AND INTERIOR TO DETERMINE AND DOCUMENT CONDITIONS; ROOF TOP CONSTRUCTION INSPECTIONS AS REQUIRED BY THE JURISDICTION; PHOTOGRAPHS OF CABLE TRAY AND/OR ICE BRIDGE; PHOTOGRAPHS OF DOGHOUSE/CABLE EXIT FROM ROOF;

6. SITE LAYOUT – PHOTOGRAPHS OF THE OVERALL COMPOUND, INCLUDING EQUIPMENT PLATFORM FROM ALL FOUR CORNERS.

7. FINISHED UTILITIES: CLOSE-UP PHOTOGRAPHS OF THE PPC BREAKER PANEL; CLOSE-UP PHOTOGRAPH OF THE INSIDE OF THE TELCO PANEL AND NIU; CLOSE-UP PHOTOGRAPH OF THE POWER METER AND DISCONNECT; PHOTOS OF POWER AND TELCO ENTRANCE TO COMPANY ENCLOSURE; PHOTOGRAPHS AT METER BOX AND/OR FACILITY DISTRIBUTION PANEL.

8. REQUIRED MATERIALS CERTIFICATIONS: CONCRETE MIX DESIGNS; MILL CERTIFICATION FOR ALL REINFORCING AND STRUCTURAL STEEL; AND ASPHALT PAVING MIX DESIGN.

9. ANY AND ALL SUBMITTALS BY THE JURISDICTION OR COMPANY.

SECTION 01 400 – SUBMITTALS & TESTS

PART 1 – GENERAL

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

1.2 RELATED DOCUMENTS:

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

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

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.1 WEEKLY REPORTS:

A. CONTRACTOR SHALL PROVIDE SPRINT WITH WEEKLY REPORTS SHOWING PROJECT STATUS. THIS STATUS REPORT FORMAT WILL BE PROVIDED TO THE CONTRACTOR BY SPRINT. THE REPORT WILL CONTAIN SITE ID NUMBER, THE MILESTONES FOR EACH SITE, INCLUDING THE BASELINE DATE, ESTIMATED COMPLETION DATE AND ACTUAL COMPLETION DATE.

B. REPORT INFORMATION WILL BE TRANSMITTED TO SPRINT VIA ELECTRONIC MEANS AS REQUIRED. THIS INFORMATION WILL PROVIDE A BASIS FOR PROGRESS MONITORING AND PAYMENT.

3.2 PROJECT CONFERENCE CALLS:

A. SPRINT MAY HOLD WEEKLY PROJECT CONFERENCE CALLS. CONTRACTOR WILL BE REQUIRED TO COMMUNICATE SITE STATUS, MILESTONE COMPLETIONS AND UPCOMING MILESTONE PROJECTIONS, AND ANSWER ANY OTHER SITE STATUS QUESTIONS AS NECESSARY.

3.3 PROJECT TRACKING IN SMS:

A. CONTRACTOR SHALL PROVIDE SCHEDULE UPDATES AND PROJECTIONS IN THE SMS SYSTEM ON A WEEKLY BASIS.

3.4 ADDITIONAL REPORTING:

A. ADDITIONAL OR ALTERNATE REPORTING REQUIREMENTS MAY BE ADDED TO THE REPORT AS DETERMINED TO BE REASONABLY NECESSARY BY COMPANY.

3.5 PROJECT PHOTOGRAPHS:

A. FILE DIGITAL PHOTOGRAPHS OF COMPLETED SITE IN JPEG FORMAT IN THE SMS PHOTO LIBRARY FOR THE RESPECTIVE SITE. PHOTOGRAPHS SHALL BE CLEARLY LABELED WITH SITE NUMBER, NAME AND DESCRIPTION, AND SHALL INCLUDE AT A MINIMUM THE FOLLOWING AS APPLICABLE:

1. 1SHELTER AND TOWER OVERVIEW.

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

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

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

5. PHOTOS OF TOWER SECTION STACKING.

6. CONCRETE TESTING / SAMPLES.

7. PLACING OF ANCHOR BOLTS IN TOWER FOUNDATION.

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

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

10. SHELTER FOUNDATION POUR WITH VIBRATOR IN USE.

11. COAX CABLE ENTRY INTO SHELTER.

12. PLATFORM MECHANICAL CONNECTIONS TO TOWER/MONOPOLE.

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

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

15. PHOTOS OF ALL APPROPRIATE COMPANY OR REGULATORY SIGNAGE.

16. PHOTOS OF EQUIPMENT BOLT DOWN INSIDE SHELTER.

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

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

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

20. TELCO TRENCH WITH TELEPHONE / CONDUIT BEFORE BACKFILL.

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

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

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

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

25. ALL BTS GROUND CONNECTIONS.

26. ALL GROUND TEST WELLS.

27. ANTENNA GROUND BAR AND EQUIPMENT GROUND BAR.

28. ADDITIONAL GROUNDING POINTS ON TOWERS ABOVE 200'.

29. HVAC UNITS INCLUDING CONDENSERS ON SPLIT SYSTEMS.

30. GPS ANTENNAS.

31. CABLE TRAY AND/OR WAVEGUIDE BRIDGE.

32. DOGHOUSE/CABLE EXIT FROM ROOF.

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

34. MASTER BUS BAR.

35. TELCO BOARD AND NIU.

36. ELECTRICAL DISTRIBUTION WALL.

37. CABLE ENTRY WITH SURGE SUPPRESSION.

38. ENTRANCE TO EQUIPMENT ROOM.

39. COAX WEATHERPROOFING--TOP AND BOTTOM OF TOWER.

40. COAX GROUNDING --TOP AND BOTTOM OF TOWER.

41. ANTENNA AND MAST GROUNDING.

42. LANDSCAPING – WHERE APPLICABLE.

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

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www.Infinigy.com
JOB NUMBER 514-000

PROJECT MANAGER:

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

ENGINEERING LICENSE:

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR PERMIT	02/13/17	JLM	0
REVISED PER COMMENTS	2/2/17	JLM	B
ISSUED FOR REVIEW	1/20/17	JLM	A

SITE NAME:

MOTOROLA TOWER

SITE NUMBER:

CT33XC541

SITE ADDRESS:

333 BIRCH MOUNTAIN RD.
GLASTONBURY, CT 06033

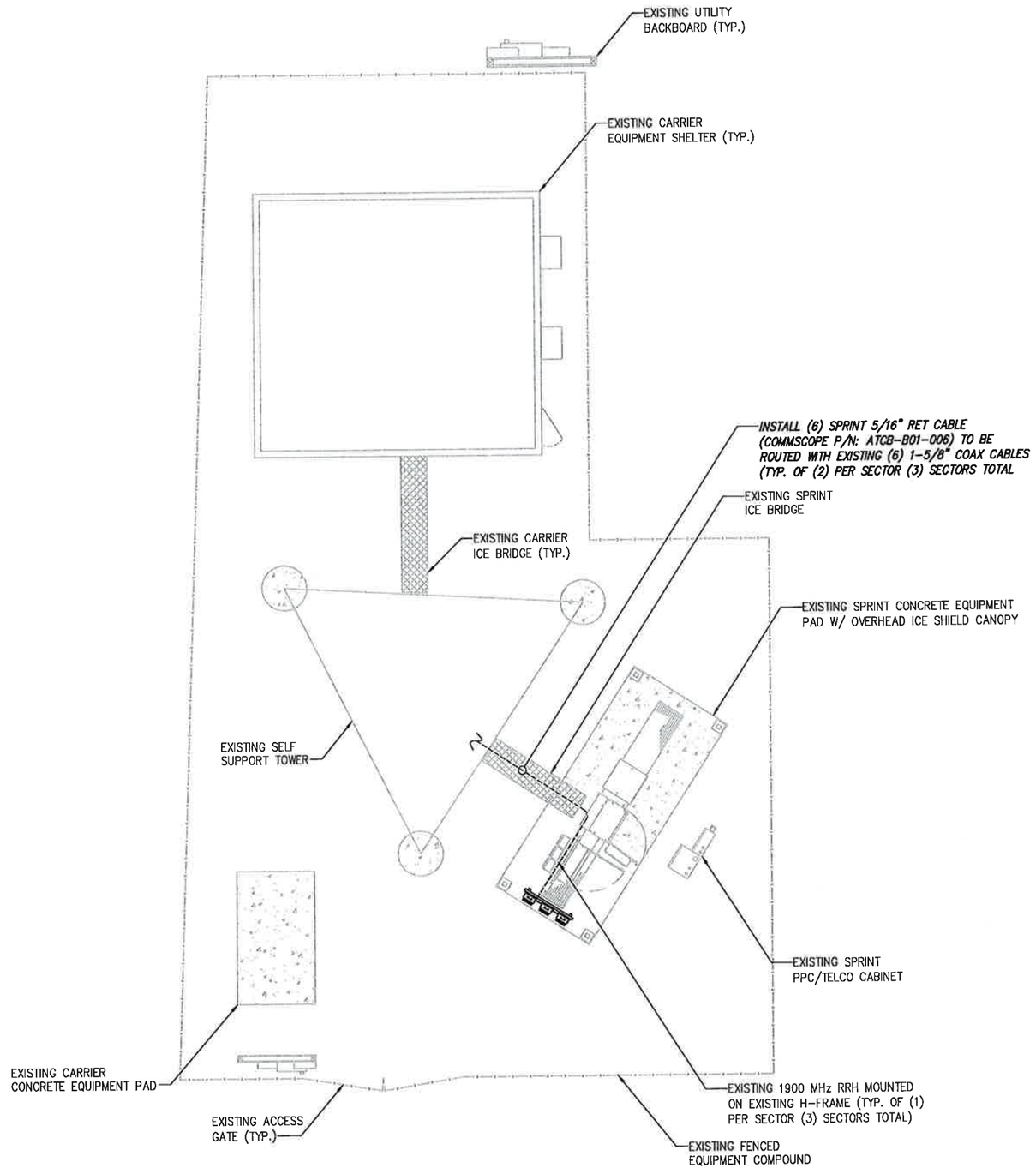
SHEET DESCRIPTION:

SPRINT SPECIFICATIONS

SHEET NUMBER:

SP-3

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



N

GRAPHIC SCALE:

10' 5' 0 5' 10'

SCALE (11x17): 1" = 10'-0"
SCALE (22x34): 1" = 5'-0"

OVERALL SITE PLAN

SCALE: AS NOTED | 1

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MOTOROLA TOWER

SITE NUMBER:

CT33XC541

SITE ADDRESS:

333 BIRCH MOUNTAIN RD.
GLASTONBURY, CT 06033

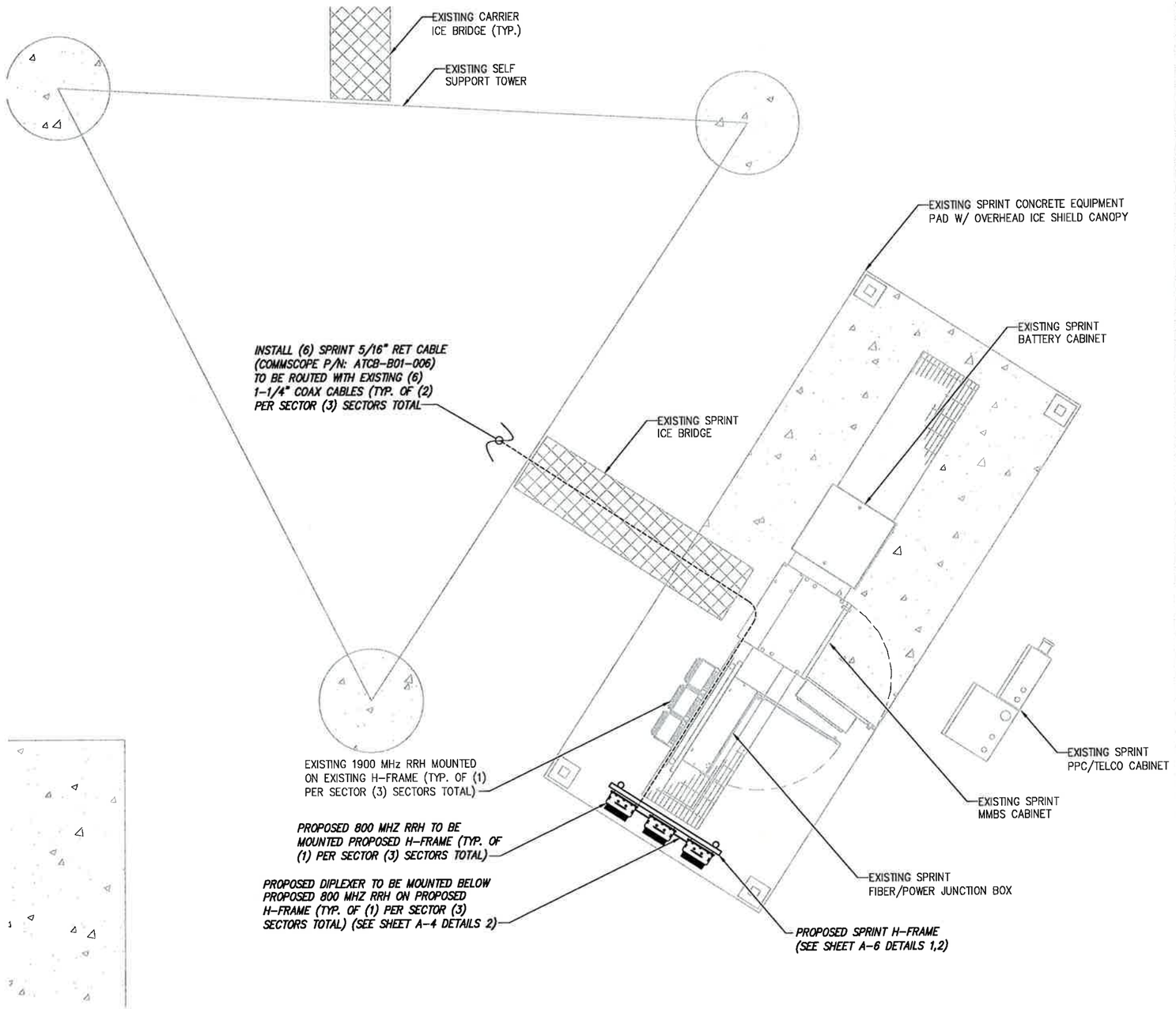
SHEET DESCRIPTION:

OVERALL SITE PLAN

SHEET NUMBER:

A-1

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



N

GRAPHIC SCALE:

4' 2' 0 2' 4'

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

SPRINT SITE PLAN | SCALE: AS NOTED | 1

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GLASTONBURY, CT 06033

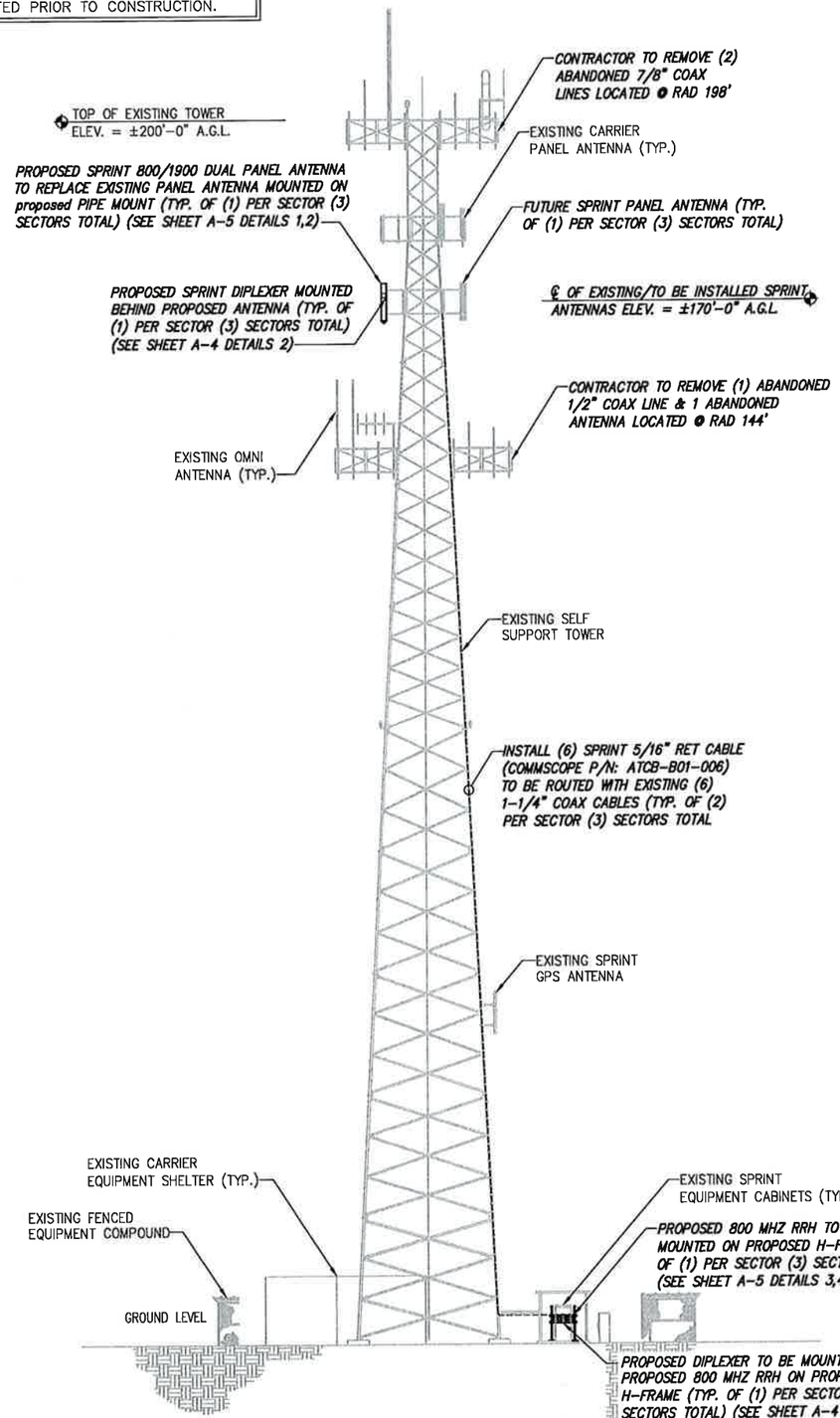
SHEET DESCRIPTION:

SITE PLAN

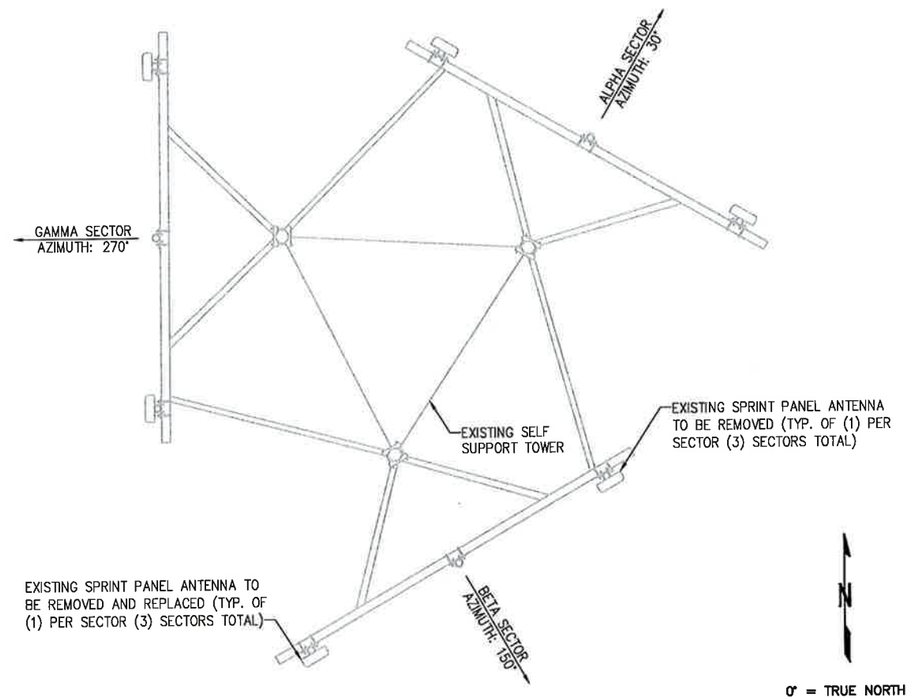
SHEET NUMBER:

A-2

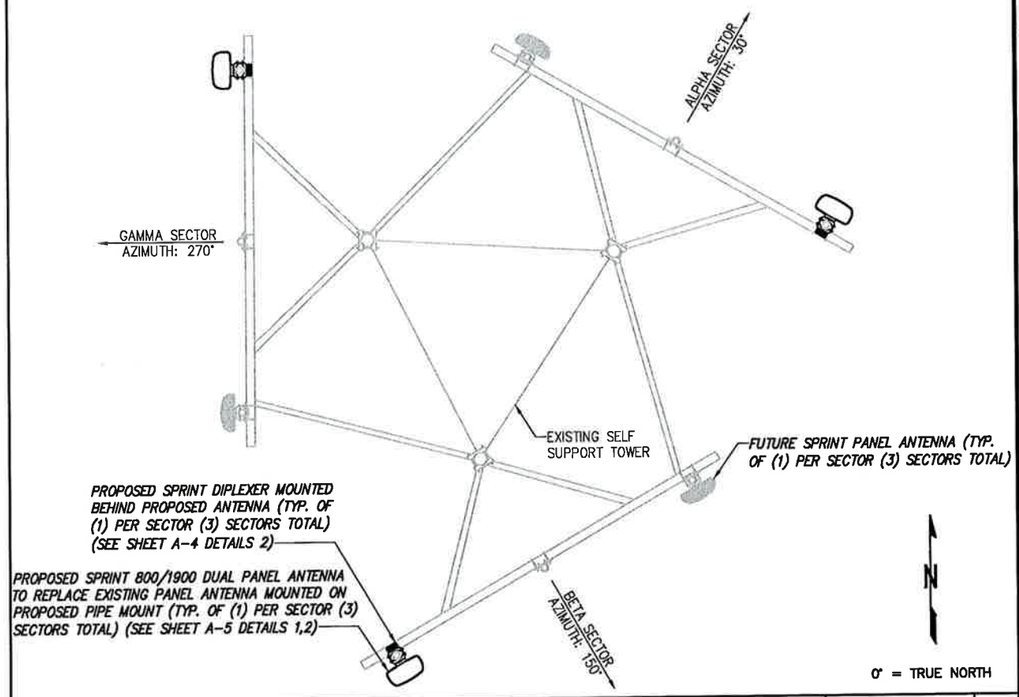
STRUCTURAL ANALYSIS NOT COMPLETED AT TIME OF ISSUANCE OF THESE DRAWINGS. THE STRUCTURAL ANALYSIS MUST BE COMPLETED PRIOR TO CONSTRUCTION.



TOWER ELEVATION | NO SCALE | 1



EXISTING ANTENNA LAYOUT | NO SCALE | 2



PROPOSED ANTENNA LAYOUT | NO SCALE | 3

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MOTOROLA TOWER

SITE NUMBER:

CT33XC541

SITE ADDRESS:

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GLASTONBURY, CT 06033

SHEET DESCRIPTION:

TOWER ELEVATION & ANTENNA LAYOUT

SHEET NUMBER:

A-3

EXISTING AND PROPOSED ANTENNA AND RRH MODEL NUMBERS

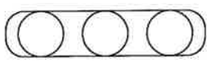
SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	ANTENNA ℄ HEIGHT	AZIMUTH	RRH	JUNCTION CYLINDERS	CABLE	CABLE LENGTH
ALPHA	FUTURE	--	--	--	--	--	--	--	--
	PROPOSED	*800MHZ / 1900MHZ*	*RFS/CELWAVE APXVSPP18-C-A20*	*170'-0"*	*30°*	*(P) GROUND MOUNTED 800 MHZ RRH* (E) GROUND MOUNTED 1900 MHZ RRH	--	*(2) (P) RET CABLES* (2) (E) 1-1/4" COAX	*±220'* EXISTING
BETA	FUTURE	--	--	--	--	--	--	--	
	PROPOSED	*800MHZ / 1900MHZ*	*RFS/CELWAVE APXVSPP18-C-A20*	*170'-0"*	*150°*	*(P) GROUND MOUNTED 800 MHZ RRH* (E) GROUND MOUNTED 1900 MHZ RRH	--	*(2) (P) RET CABLES* (2) (E) 1-1/4" COAX	*±220'* EXISTING
GAMMA	FUTURE	--	--	--	--	--	--	--	
	PROPOSED	*800MHZ / 1900MHZ*	*RFS/CELWAVE APXVSPP18-C-A20*	*170'-0"*	*270°*	*(P) GROUND MOUNTED 800 MHZ RRH* (E) GROUND MOUNTED 1900 MHZ RRH	--	*(2) (P) RET CABLES* (2) (E) 1-1/4" COAX	*±220'* EXISTING

ANTENNA LOADING CHART

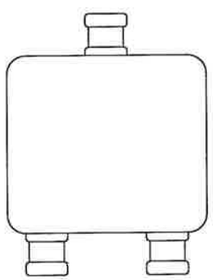
NO SCALE | 1

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



TOP VIEW



FRONT VIEW

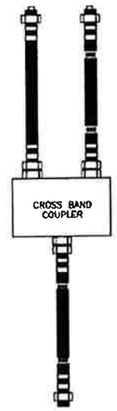
SIDE VIEW

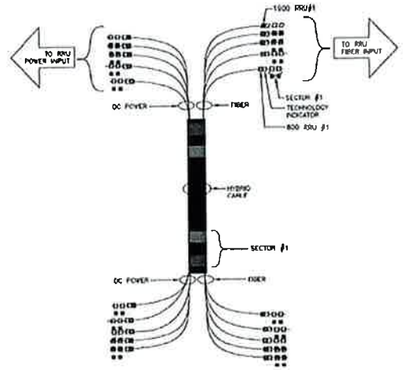
DIPLEXER DETAIL

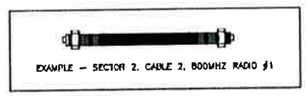
NO SCALE | 2

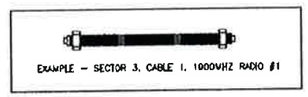
SECTOR	CABLE	FIRST RING	SECOND RING	THIRD RING
1 ALPHA	1	GREEN	NO TAPE	NO TAPE
1	2	BLUE	NO TAPE	NO TAPE
1	3	BROWN	NO TAPE	NO TAPE
1	4	WHITE	NO TAPE	NO TAPE
1	5		NO TAPE	NO TAPE
1	6	SLATE	NO TAPE	NO TAPE
1	7	PURPLE	NO TAPE	NO TAPE
1	8	ORANGE	NO TAPE	NO TAPE
2 BETA	1	GREEN	GREEN	NO TAPE
2	2	BLUE	BLUE	NO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

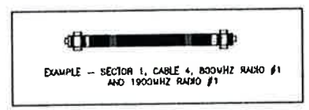
FREQUENCY COLOR CODE		
FREQUENCY	INDICATOR	ID
800#1	YELLOW	
1900#1	YELLOW	RED
1900#2	YELLOW	
RESERVED	YELLOW	
RESERVED	YELLOW	
RESERVED	YELLOW	
RESERVED	YELLOW	WHITE
1600#1	YELLOW	











COLOR CODING CHARTS

NO SCALE | 3

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OFFICE#. (518) 306-3740

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

DRAWING NOTICE:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR PERMIT	02/13/17	JLM	0
REVISED PER COMMENTS	2/2/17	JLM	B
ISSUED FOR REVIEW	1/20/17	JLM	A

SITE NAME:
MOTOROLA TOWER

SITE NUMBER:
CT33XC541

SITE ADDRESS:
333 BIRCH MOUNTAIN RD.
GLASTONBURY, CT 06033

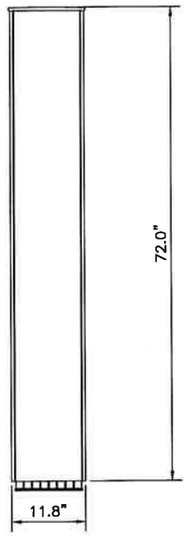
SHEET DESCRIPTION:
ANTENNA LOADING & COLOR CODING CHARTS

SHEET NUMBER:
A-4

ANTENNA: RFS/CELWAVE APXVSPP18-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

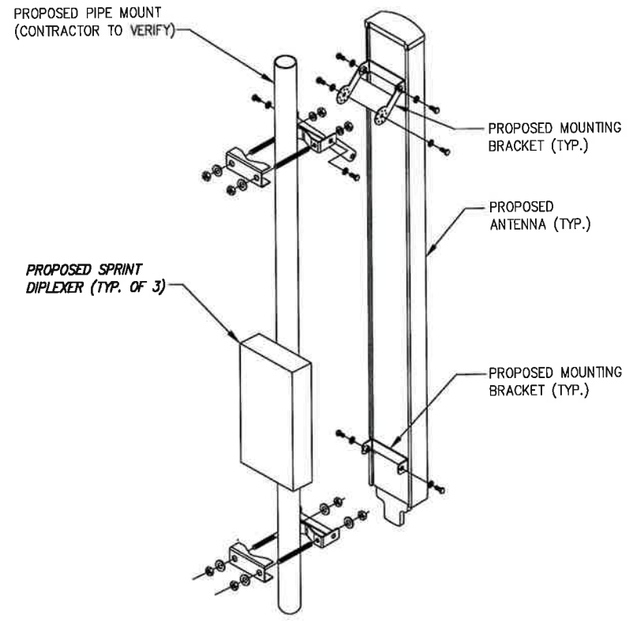
BOTTOM VIEW



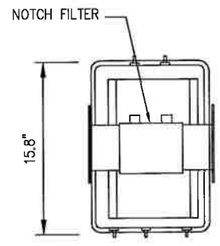
FRONT VIEW

SIDE VIEW

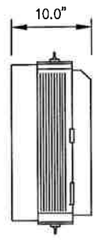
PANEL ANTENNA DETAIL | NO SCALE | 1



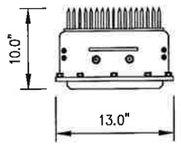
PANEL ANTENNA MOUNTING DETAIL | NO SCALE | 2



FRONT VIEW



SIDE VIEW

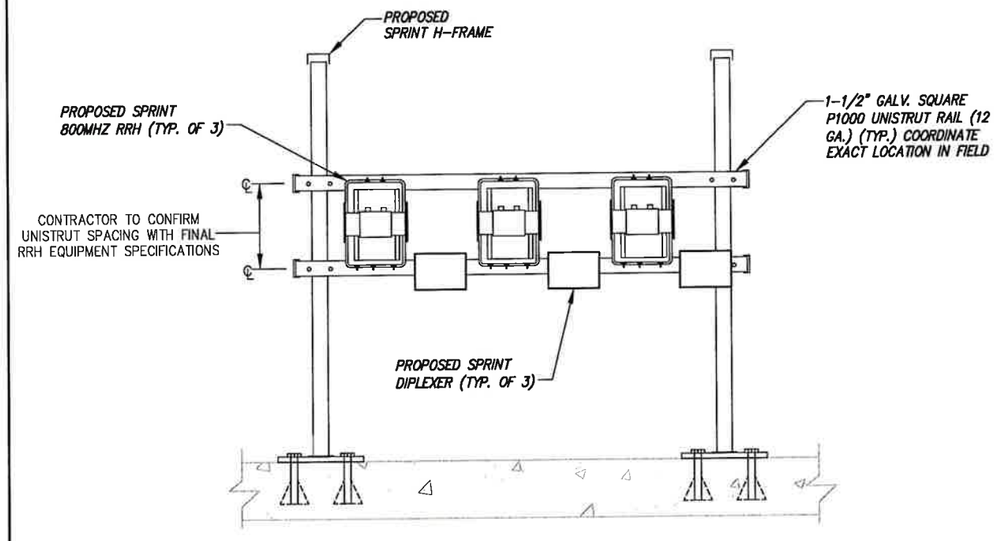


TOP VIEW

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

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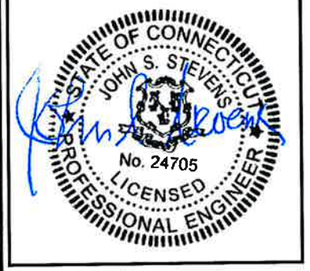

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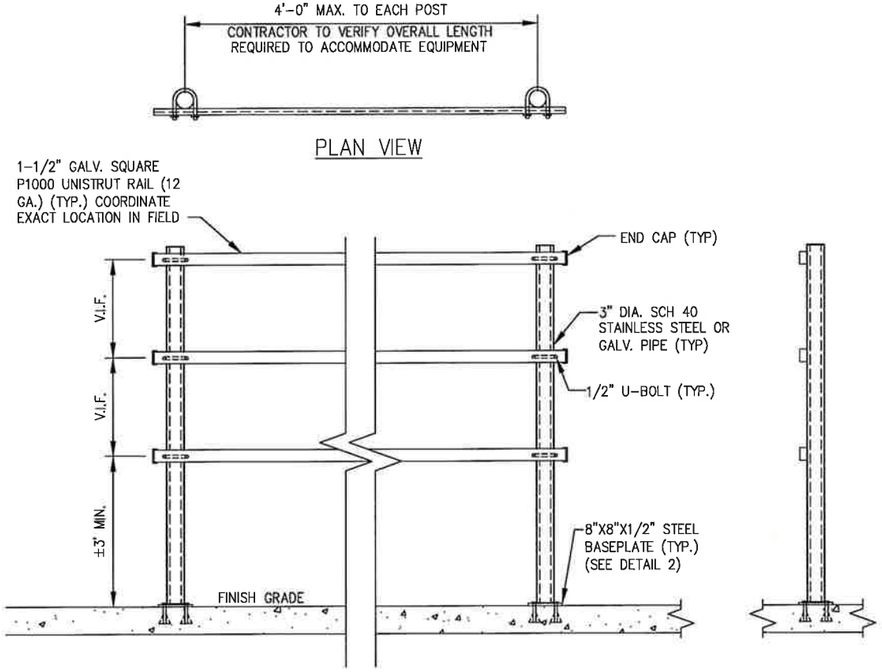
SHEET DESCRIPTION:

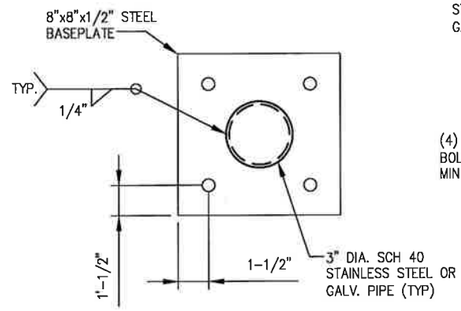
EQUIPMENT
& MOUNTING DETAILS

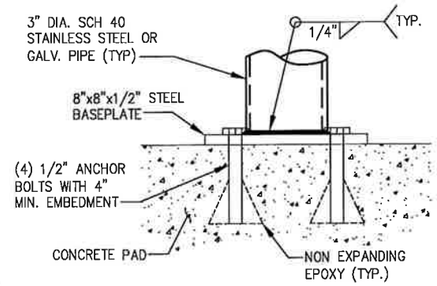
SHEET NUMBER:

A-5



H-FRAME FABRICATION DETAIL | NO SCALE | 1





SUPPORT POST MOUNTING DETAIL | NO SCALE | 2

DETAIL NOT USED | NO SCALE | 3

DETAIL NOT USED | NO SCALE | 4

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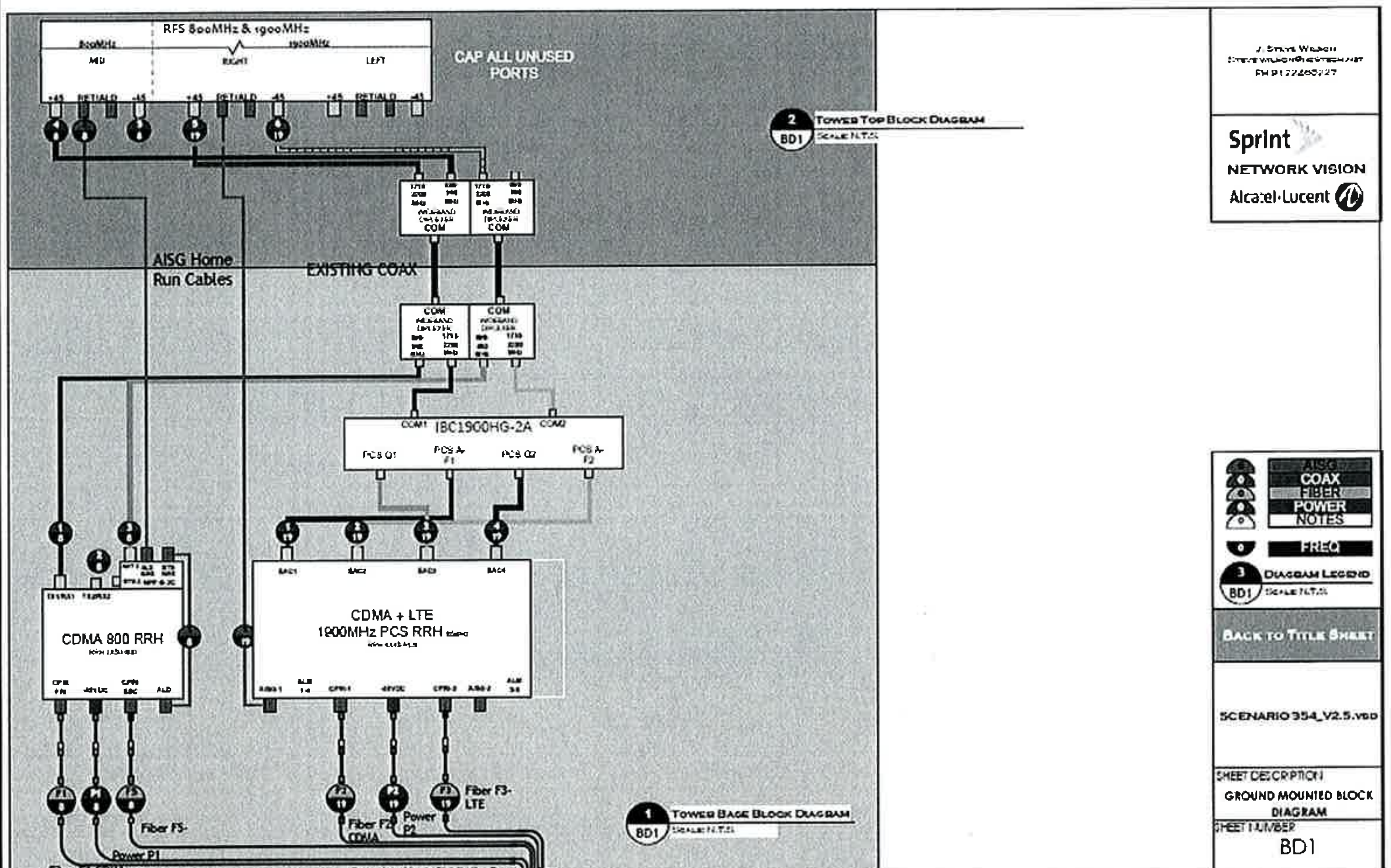
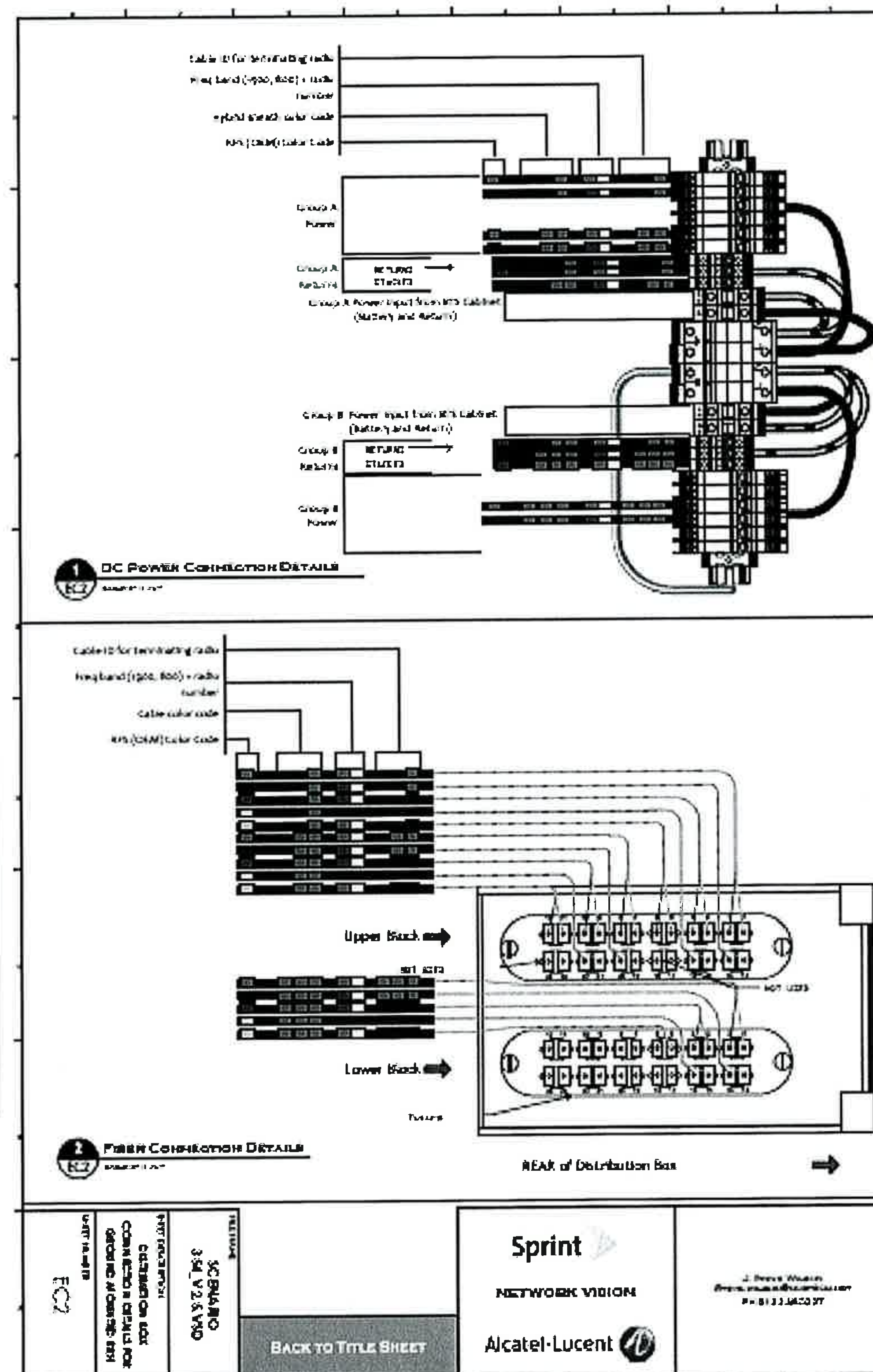
SHEET DESCRIPTION:

H-FRAME DETAILS

SHEET NUMBER:

A-6





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SHEET DESCRIPTION:

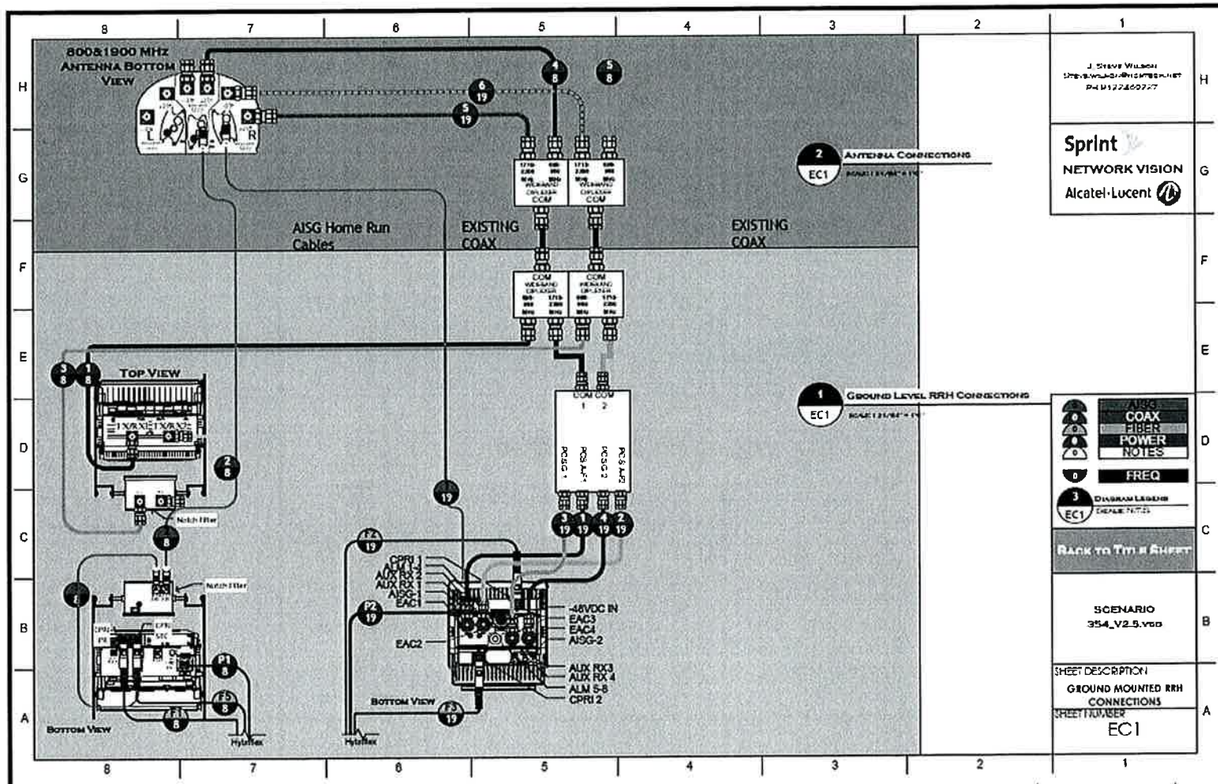
SCENARIO 354 V2.5 SPECIFICATIONS

SHEET NUMBER:

A-7

SCENARIO 354 V2.5 SPECIFICATIONS

NO SCALE | 1



2 EC1 Antenna Connections

1 EC1 Ground Level RRH Connections

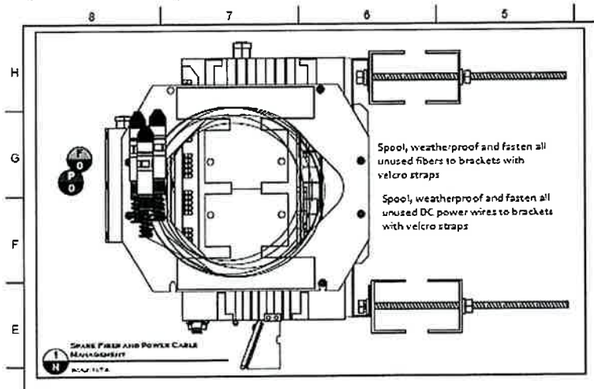
3 EC1 Diagram Legend

Back to Title Sheet

SCENARIO
354_V2.5.vso

SHEET DESCRIPTION
GROUND MOUNTED RRH CONNECTIONS

SHEET NUMBER
EC1



1 N Spare Fiber and Power Cable Management

4 N RET Motor Connector Detail

3 Spare Fiber Pairs & DC Power terminated, weatherproofed, spooled and tie wrapped to side of 800Mhz RRH (cable management)
4 RFS ACU-A20-N RET Motor connection details

Back to Title Sheet

SCENARIO
354_V2.5.vso

SHEET DESCRIPTION
DRAWING NOTES

SHEET NUMBER
N1

SCENARIO 354 V2.5 SPECIFICATIONS

NO SCALE

1

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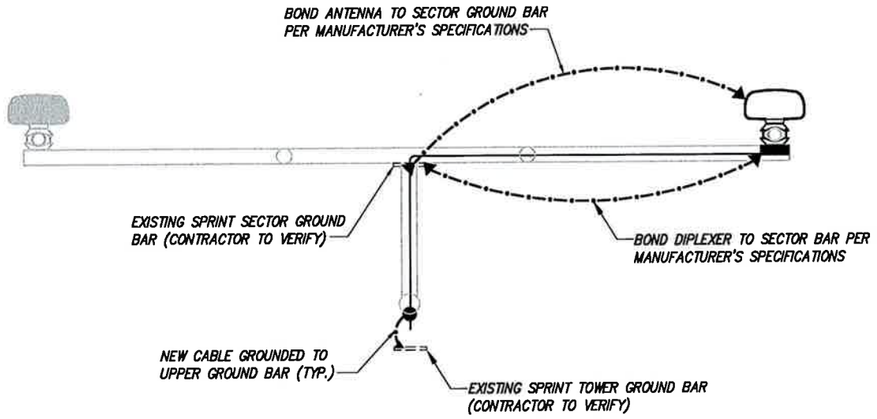
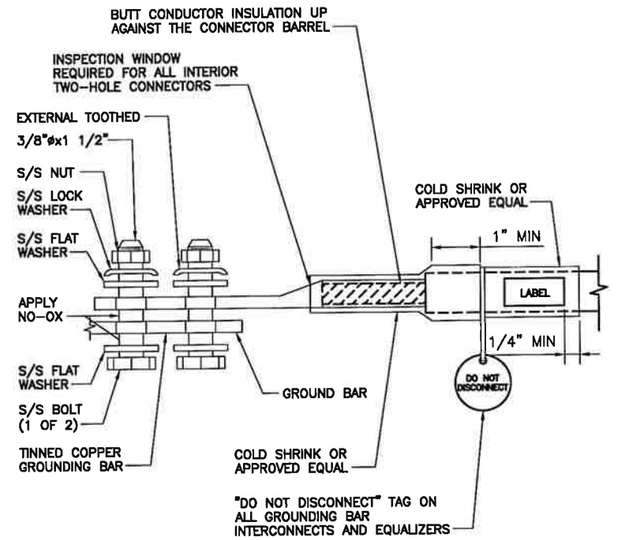
SCENARIO 354 V2.5
SPECIFICATIONS

SHEET NUMBER:

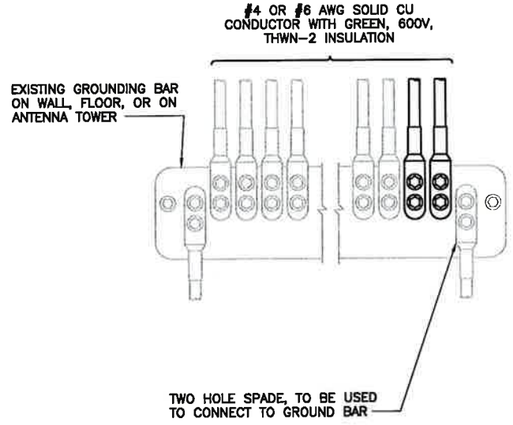
A-8



TYPICAL ANTENNA TOP GROUNDING PLAN | NO SCALE | 1



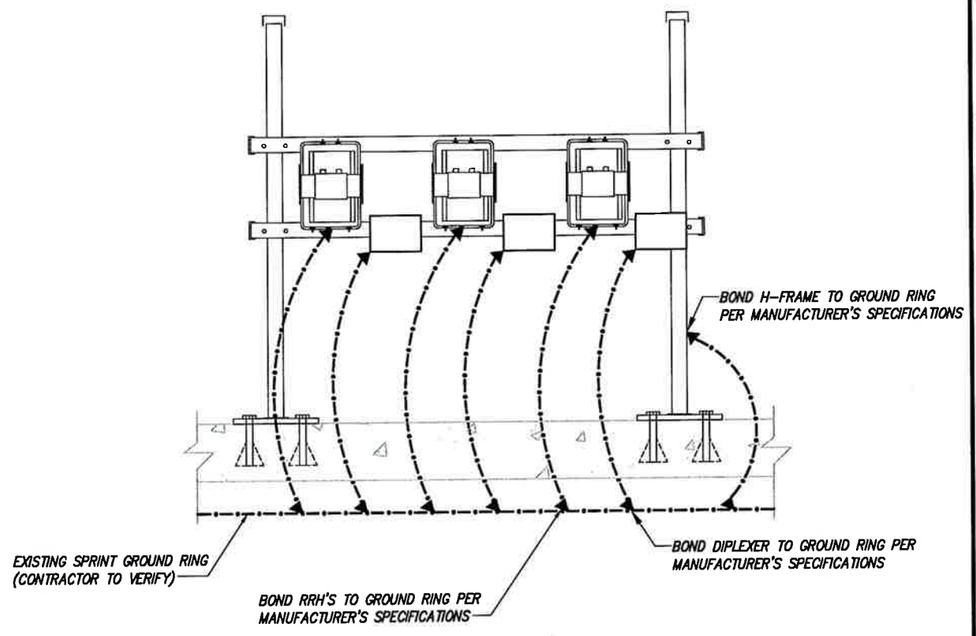
TWO HOLE LUG | NO SCALE | 2



NOTES

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

INSTALLATION OF GROUNDING CONDUCTOR TO GROUNDING BAR | NO SCALE | 3



TYPICAL RRH GROUNDING PLAN | NO SCALE | 4

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SHEET DESCRIPTION:

ELECTRICAL & GROUNDING PLAN

SHEET NUMBER:

E-1