



June 5th, 2018

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

RE: Notice of Exempt Modification – Antenna Swap for wireless facility located at 82 NORTH EAGLEVILLE ROAD, CONNECTICUT – CT03XC214 (lat. 41° 48' 52.02" N, long. -72° 15' 35.61" W)

Dear Ms. Bachman:

Sprint Spectrum, LP ("Sprint") currently maintains wireless telecommunications antennas at the (155-foot level) on an existing (165-foot Guyed Tower) at the above-referenced address. The property is owned and tower are owned by the University of Connecticut.

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

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 SCOTT JORDAN, Executive Vice President for Administration & Chief Financial Officer, and LAURA CRUICKSHANK, MASTER PLANNER AND CHIEF ARCHITECT of the UNIVERSITY OF CONNECTICUT. The Tower and Land is owned by the University of Connecticut so Mr. SCOTT JORDAN will already be receiving the notification letter.

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) 350-4222 or email me to aperkowski@airosmithdevelopment.com

Kind Regards,

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

Attachment

CC: SCOTT JORDAN (Executive Vice President for Administration & Chief Financial Officer, University of Connecticut)

LAURA CRUICKSHANK (MASTER PLANNER AND CHIEF ARCHITECT/UNIVERSITY OF CONNECTICUT)

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Sent To: Scott Jordan (CT03X214)
 Street and Apt. No., or PO Box No. 352 Marshall Rd Unit 1122
 City, State, ZIP+4® Sturms, CT 06269

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



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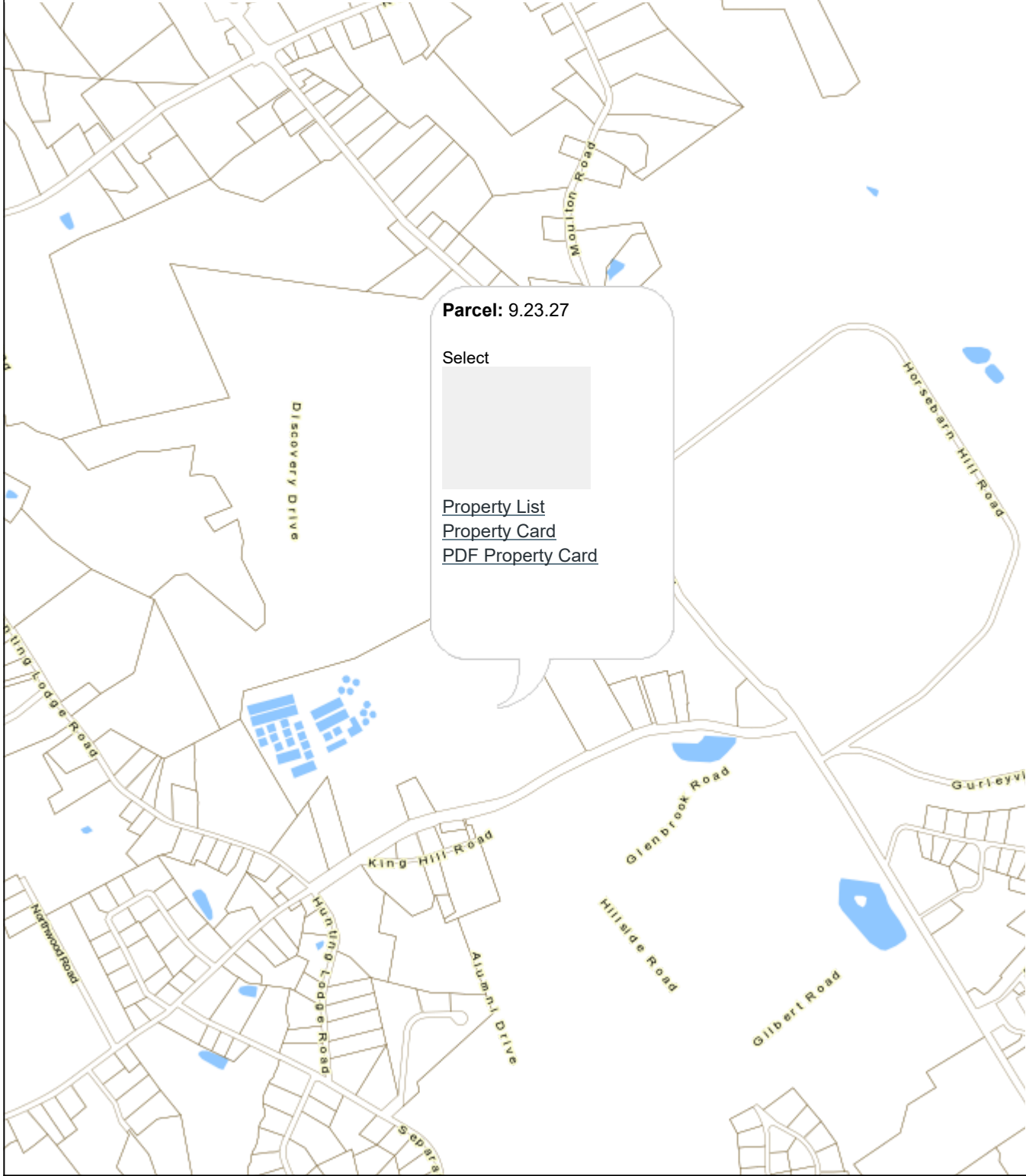
Postage \$0.50
 Total Postage and Fees \$6.70

Sent To: Laven Crickshank (CT03X214)
 Street and Apt. No., or PO Box No. 31 2c Dyl Rd Unit 3038
 City, State, ZIP+4® Sturms, CT 06269

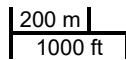
PS Form 3800, April 2015 PSN 7530-02-000-9047 See Reverse for Instructions



CT03XC214 - University of Connecticut



Town of Mansfield, Connecticut



Printed 2/26/2018 from <http://www.mainstreetmaps.com/ct/mansfield/public.asp>

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1033 WATERVLIET SHAKER RD, ALBANY, NY 12205

Mount Analysis Report

May 20, 2018

Sprint Site Number	CT03XC214
Infinigy Job Number	526-104
Client	Airosmith
Carrier	Sprint
Site Location	82 North Eagleville Rd., Storrs, CT 06269 41° 48' 52.02" NNAD83 72° 15' 35.61" WNAD83
Mount Centerline EL.	247.0 ft.
Mount Classification	Sector Frame
Failing Structural Usage	110.1%
Passing Structural Usage	65.6%
Overall Result	Contingent Pass- See Required Modification Below.
Notes	Existing mounts shall be replaced with (3) SitePro1 VFA12-HD prior to the installation of the proposed appurtenances.

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



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

AZ CA CO FL GA MD NC NH NJ NY TX WA

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Introduction

Infinigy Engineering has been requested to perform a mount analysis on the existing Sprint mounts. All supporting documents have been obtained from the client and are assumed to be accurate and applicable to this site. The mount was analyzed using RISA-3D Version 16.0.3 analysis software.

Supporting Documentation

Proposed Loading	Infinigy CT03XC214 CD's, dated February 22, 2018
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Analysis Code Requirements

Wind Speed	101 mph (3-Second Gust, V_{ASD}) / 130 mph (3-Second Gust, V_{ULT})
Wind Speed w/ ice	50 mph (3-Second Gust, V_{ASD}) w/ 1.0" ice
TIA Revision	ANSI/TIA-222-G
Adopted IBC	2015 IBC/ 2016 Connecticut State Building Code
Structure Class	II
Exposure Category	C
Topographic Category	1
Calculated Crest Height	0 ft

Conclusion

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

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

Nathaniel R Ober E.I.T.
 Northeast Structural Region Lead | Infinigy
 1033 Watervliet Shaker Road, Albany, NY 12205
 (O) (518) 690-0790 | (M) (303) 704-0322
nober@infinigy.com | www.infinigy.com

Final Configuration Loading

Mount CL (ft)	Rad. HT (ft)	Horiz. O/S (ft)*	Qty	Appurtenance	Carrier
247.0	247.0	0.0	3	RFS APXVSPP18-C-A20	Sprint
		12.0	3	RFS APXVTM14-ALU-I20	
		0.0	3	Alcatel Lucent TD-RRH8X20	
		12.0	3	Alcatel-Lucent 800 MHz RRH	
		0.0, 12.0	6	Alcatel-Lucent 1900 MHz RRH	

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

Structure Usages

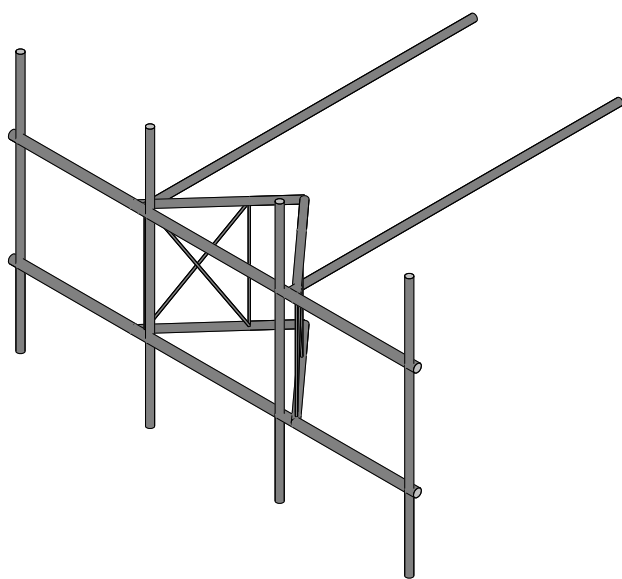
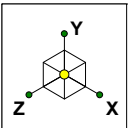
Face Horizontal	50.8	Pass
Standoff	65.6	Pass
Mount Pipe	39.3	Pass
RATING =	65.6	Pass

Assumptions and Limitations

Our structural calculations are completed assuming all information provided to Infinigy Engineering is accurate and applicable to this site. For the purposes of calculations, we assume an overall structure condition of “like new” and all members and connections to be free of corrosion and/or structural defects. The structure owner and/or contractor shall verify the structure’s condition prior to installation of any proposed equipment. If actual conditions differ from those described in this report Infinigy Engineering should be notified immediately to complete a revised evaluation.

Our evaluation is completed using standard TIA, AISC, ACI, and ASCE methods and procedures. Our structural results are proprietary and should not be used by others as their own. Infinigy Engineering is not responsible for decisions made by others that are or are not based on our supplied assumptions and conclusions.

This report is an evaluation of the proposed carriers mount structure only and does not reflect adequacy of the existing tower, other mounts, or coax mounting attachments. These elements are assumed to be adequate for the purposes of this analysis and are assumed to have been installed per their manufacturer requirements.



Envelope Only Solution

Infinigy Engineering PLLC	CT03XC214	
NRO		May 20, 2018 at 6:55 PM
526-104		VFA12-HD.r3d

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N3	N4			2.5" pipe	Beam	None	A53 Gr.B	Typical
2	M2	N1	N2			2.5" pipe	Beam	None	A53 Gr.B	Typical
3	M3	N8	N6			2" pipe	Beam	None	A53 Gr.B	Typical
4	M4	N9	N6			2" pipe	Beam	None	A53 Gr.B	Typical
5	M5	N7	N5			2" pipe	Beam	None	A53 Gr.B	Typical
6	M6	N10	N5			2" pipe	Beam	None	A53 Gr.B	Typical
7	M7	N12	N14			0.625" S.R.	Beam	None	A36 Gr.36	Typical
8	M8	N14	N16			0.625" S.R.	Beam	None	A36 Gr.36	Typical
9	M9	N16	N18			0.625" S.R.	Beam	None	A36 Gr.36	Typical
10	M10	N18	N12			0.625" S.R.	Beam	None	A36 Gr.36	Typical
11	M11	N19	N13			0.625" S.R.	Beam	None	A36 Gr.36	Typical
12	M12	N13	N15			0.625" S.R.	Beam	None	A36 Gr.36	Typical
13	M13	N15	N17			0.625" S.R.	Beam	None	A36 Gr.36	Typical
14	M14	N17	N19			0.625" S.R.	Beam	None	A36 Gr.36	Typical
15	M15	N21	N23			2" pipe	Beam	None	A53 Gr.B	Typical
16	M16	N22	N24			2" pipe	Beam	None	A53 Gr.B	Typical
17	MP4	N37	N33			2" pipe	Beam	None	A53 Gr.B	Typical
18	MP3	N39	N35			2" pipe	Beam	None	A53 Gr.B	Typical
19	MP2	N40	N36			2" pipe	Beam	None	A53 Gr.B	Typical
20	MP1	N38	N34			2" pipe	Beam	None	A53 Gr.B	Typical

Material Takeoff

	Material	Size	Pieces	Length[in]	Weight[K]
1	Hot Rolled Steel				
2	A36 Gr.36	0.625" S.R. HRA	8	353.6	0
3	A53 Gr.B	PIPE 2.0	10	809	.2
4	A53 Gr.B	PIPE 2.5	2	300	.1
5	Total HR Steel		20	1462.6	.4

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut..	Area(M...	Surface...
1	Self Weight	DL		-1			8			
2	Wind Load AZI 000	WLZ					8		1	
3	Wind Load AZI 090	WLX					8		1	
4	Ice Weight	OL1					8	20		
5	Wind + Ice Load AZI 000	OL2					8		1	
6	Wind + Ice Load AZI 090	OL3					8		1	
7	Service Live 1	LL				2				
8	BLC 2 Transient Area Loads	None						10		
9	BLC 3 Transient Area Loads	None						10		
10	BLC 5 Transient Area Loads	None						10		
11	BLC 6 Transient Area Loads	None						10		

Load Combinations

	Description	So..P...	S...	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..
1	1.4D	Yes	Y	DL	1.4									
2	1.2D + 1.6W AZI 000	Yes	Y	DL	1.2	W...	1.6							
3	1.2D + 1.6W AZI 030	Yes	Y	DL	1.2	W...	1.3...	W...	.8					
4	1.2D + 1.6W AZI 060	Yes	Y	DL	1.2	W...	.8	W...	1.3...					
5	1.2D + 1.6W AZI 090	Yes	Y	DL	1.2	W...		W...	1.6					
6	1.2D + 1.6W AZI 120	Yes	Y	DL	1.2	W...	-.8	W...	1.3...					

Load Combinations (Continued)

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

Envelope Joint Reactions

Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC	
1	N6	max	1050.404	17	2620.066	27	3228.647	14	-308.079	20	63.057	15	308.813	6
2		min	-1080.168	11	571.608	20	-4092.16	8	-1542.886	27	-58.924	9	-284.409	24
3	N5	max	782.769	5	107.515	8	1982.028	2	-10.778	14	600.844	5	110.321	18
4		min	-752.533	23	-88.23	14	-1070.158	20	-167.52	33	-589.192	23	-104.056	24
5	N23	max	53.104	5	67.025	37	1702.383	19	0	1	0	1	0	1
6		min	-53.128	23	9.447	18	-1716.446	13	0	1	0	1	0	1
7	N24	max	53.337	16	61.907	29	1298.555	21	0	1	0	1	0	1
8		min	-53.107	11	10.605	22	-1309.891	3	0	1	0	1	0	1

Envelope Joint Reactions (Continued)

Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
9	Totals:	max	1934.904	5	2814.045	29	2554.002	14					
10		min	-1934.904	23	695.78	20	-2554.002	20					

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

Member	Shape	Code Check	Lo...	Shear C...	Loc[in]...	LC	phi*Pnc...	phi*Pnt...	phi*...	phi*...	Eqn	
1	M4	PIPE_2.0	.656	44...	.220	44.7...	30	29772...	32130	1871...	1871...	1 H1-...
2	M3	PIPE_2.0	.616	44...	.207	44.7...	37	29772...	32130	1871...	1871...	1 H1-...
3	M2	PIPE_2.5	.508	10...2	.166	106....	8	41331....	50715	3596...	3596...	1 H1-...
4	M6	PIPE_2.0	.491	0 8	.176	2.798	31	29772....	32130	1871...	1871...	1 H1-...
5	M1	PIPE_2.5	.488	10...8	.178	104....	8	41331....	50715	3596...	3596...	1 H1-...
6	M5	PIPE_2.0	.470	0 8	.157	2.798	35	29772....	32130	1871...	1871...	1 H1-...
7	MP1	PIPE_2.0	.393	28 2	.093	28	2	28122....	32130	1871...	1871...	1 H1-...
8	M16	PIPE_2.0	.357	2.5...8	.169	2.563	7	9362.615	32130	1871...	1871...	1 H1-...
9	MP4	PIPE_2.0	.350	28 ...	.062	28	2	28122....	32130	1871...	1871...	1 H1-...
10	M15	PIPE_2.0	.345	2.5...8	.140	2.563	9	9362.615	32130	1871...	1871...	1 H1-...
11	MP2	PIPE_2.0	.256	68 ...	.076	68	12	28122....	32130	1871...	1871...	1 H1-...
12	MP3	PIPE_2.0	.254	68 ...	.061	68	5	28122....	32130	1871...	1871...	1 H1-...
13	M13	0.625" ...	.194	48.4...	.026	0	7	675.067	9946.8	96.768	96.768	1 H1-...
14	M8	0.625" ...	.179	48.4...	.018	0	9	675.067	9946.8	96.768	96.768	1 H1-...
15	M12	0.625" ...	.015	0 ...	.010	0	20	988.366	9946.8	96.768	96.768	1 H1-...
16	M7	0.625" ...	.014	0 ...	.009	0	18	988.366	9946.8	96.768	96.768	1 H1-...
17	M9	0.625" ...	.000	0 1	.000	0	1	988.366	9946.8	96.768	96.768	1 H1-...
18	M10	0.625" ...	.000	0 1	.000	0	1	675.067	9946.8	96.768	96.768	1 H1-...
19	M11	0.625"000	0 1	.000	0	1	675.067	9946.8	96.768	96.768	1 H1-...
20	M14	0.625"000	0 1	.000	0	1	988.366	9946.8	96.768	96.768	1 H1-...

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FROM ZERO TO INFINIGY
the solutions are endless

1033 WATERVLIET SHAKER RD, ALBANY, NY 12205

Structural Analysis Report

May 25, 2018

Sprint Site ID	CT03XC214
T-Mobile Site ID	CT11303B
Site Name	U-CONN
Infinigy Job Number	526-104
Client	Airosmith
Proposed Carrier	Sprint / T-Mobile
Site Location	82 North Eagleville Rd., Storrs, CT 06269 41° 48' 52.02" NNAD83 72° 15' 35.61" WNAD83
Structure Type	245' Self Support Tower
Structural Usage Ratio	98.1%
Overall Result	Pass

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



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

AZ CA CO FL GA IL MD NC NH NJ NY TN TX WA

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Introduction

Infinigy Engineering has been requested to perform a structural analysis on the existing 245' self support tower. All supporting documents have been obtained from the client and are assumed to be accurate and applicable to this site. The tower was analyzed using tnxTower version 8.0.2.1 tower analysis software.

Supporting Documentation

Tower Drawings	Pirod Drawing #202932-B, dated September 23, 1997
Antenna Loading	Infinigy CDs, dated February 22, 2018
Antenna Loading	T-Mobile CT11303B RFDS, dated April 6, 2018
Previous Analysis	URS Project #36932110.00000, dated December 30, 2014

Analysis Code Requirements

Wind Speed	101 mph (3-Second Gust, V_{ASD}) / 130 mph (3-Second Gust, V_{ULT})
Wind Speed w/ ice	40 mph (3-Second Gust, V_{ASD}) w/ 3/4" ice
TIA Revision	ANSI/TIA-222-G
Adopted IBC	2012 IBC / 2016 Connecticut State Building Code
Structure Class	II
Exposure Category	C
Topographic Category	1
Calculated Crest Height	0 ft.

Conclusion

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

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

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Existing and Reserved Loading

Mount Height (ft)	Qty.	Appurtenance	Mount Type	Coax & Lines	Carrier
247.0	3	RFS APXVSP18-C-A20	Platform w/ Handrails	(3) 1 1/4" Hybrid (6) 1 5/8"	Sprint
	3	Alcatel Lucent TD-RRH8x20-25			
	6	Alcatel Lucent 1900 MHz 4x45 RRH			
232.0	3	Ericsson AIR 21 B2A/B4P	Sector Frames	(12) 1 5/8"	T-Mobile
	3	Ericsson AIR 21 B4A/B2P			
	3	Andrew LNX-6515DS-A1M			
	3	Ericsson RRUS-11			
	3	Generic AWS TMA			
135.0	2	12' Omni	Side Arms	(2) 7/8"	--
125.0	1	20' Omni	Side Arm	(1) 7/8"	
110.0	1	12' Omni	Side Arm	(2) 7/8"	
	1	4' Grid Dish	Dish		
105.0	1	6' Dish w/ Radome	Dish	(1) EW63	
60.0	1	Camera	Leg	(1) 7/8"	
50.0	1	4' Omni	Side Arm	(1) 7/8"	

To be Removed Loading

Mount Height (ft)	Qty.	Appurtenance	Mount Type	Coax & Lines	Carrier
247.0	--	--	Platform w/ Handrails	--	Sprint
232.0	1	Ericsson AIR 21 B2A/B4P	Sector Frame	--	T-Mobile
	1	Ericsson AIR 21 B4A/B2P			
	3	Andrew LNX-6515DS-A1M			
	3	Ericsson RRUS-11			

Proposed Loading

Mount Height (ft)	Qty.	Appurtenance	Mount Type	Coax & Lines	Carrier
247.0	3	RFS APXVTM14-ALU-I20	Sector Frame*	-	Sprint
	3	Alcatel Lucent 800 MHz 2x50W			
232.0	3	RFS APXVAARR24_43-U-NA20	Sector Frame*	--	T-Mobile
	2	Commscope 2HH-38A-R4			
	3	Ericsson 4449			
	4	Ericsson 4415			
	1	RFS 3CX-ATM-A4P4-DBP-1A20			

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Final Configuration

Mount Height (ft)	Qty.	Appurtenance	Mount Type	Coax & Lines	Carrier
247.0	3	RFS APXVTM14-ALU-I20	Sector Frame*	(3) 1 1/4" Hybrid (6) 1 5/8"	Sprint
	3	Alcatel Lucent 800 MHz 2x50W			
	3	RFS APXVSP18-C-A20			
	3	Alcatel Lucent TD-RRH8x20-25.			
	6	Alcatel Lucent 1900 MHz 4x45 RRH			
232.0	2	Ericsson AIR 21 B2A/B4P	Sector Frames*	(12) 1 5/8"	T-Mobile
	2	Ericsson AIR 21 B4A/B2P			
	3	RFS APXVAARR24_43-U-NA20			
	2	Commscope 2HH-38A-R4			
	3	Ericsson 4449			
	4	Ericsson 4415			
	3	Generic AWS TMA			
	1	RFS 3CX-ATM-A4P4-DBP-1A20			
135.0	2	12' Omni	Side Arms	(2) 7/8"	--
125.0	1	20' Omni	Side Arm	(1) 7/8"	
110.0	1	12' Omni	Side Arm	(2) 7/8"	
	1	4' Grid Dish	Dish		
105.0	1	6' Dish w/ Radome	Dish	(1) EW63	
60.0	1	Camera	Leg	(1) 7/8"	
50.0	1	4' Omni	Side Arm	(1) 7/8"	

*Both Carrier mounts need to be removed and replaced with (3) SitePro1 VFA12-HD at their respective heights

Structure Usages

	Summary	
Leg (T13)	92.3	Pass
Diagonal (T12)	98.1	Pass
Horizontal (T3)	39.3	Pass
Secondary Horizontal (T9)	27.9	Pass
Top Girt (T3)	28.2	Pass
Bottom Girt (T1)	39.2	Pass
Bolt Checks	92.0	Pass
RATING =	98.1	Pass

Foundation Reactions

Reaction Data	Design Reactions	Design Reactions x 1.35	Analysis Reactions	Result
Uplift (kip)	422.9	570.9	467.1	81.8%
Axial (kip)	472.0	637.2	522.2	82.0%
Shear (kip)	72.4	97.7	59.4	60.8%

* Design reactions are multiplied by 1.35 per ANSI/TIA-222-G 15.5.1

Tower foundation acceptable per original design reactions as listed in previous analysis. The reactions are considered to be adequate and applicable to the site.

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Deflection, Twist, and Sway

Antenna Elevation (ft)	Deflection (in)	Twist (°)	Sway (°)
247.0	11.651	0.128	0.542
232.0	10.143	0.124	0.526

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

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

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

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

Assumptions and Limitations

Our structural calculations are completed assuming all information provided to Infinigy Engineering is accurate and applicable to this site. For the purposes of calculations, we assume an overall structure condition of “like new” and all members and connections to be free of corrosion and/or structural defects. The structure owner and/or contractor shall verify the structure’s condition prior to installation of any proposed equipment. If actual conditions differ from those described in this report Infinigy Engineering should be notified immediately to complete a revised evaluation.

Our evaluation is completed using standard TIA, AISC, ACI, and ASCE methods and procedures. Our structural results are proprietary and should not be used by others as their own. Infinigy Engineering is not responsible for decisions made by others that are or are not based on our supplied assumptions and conclusions.

This report is an evaluation of the tower structure only and does not reflect adequacy of any existing antenna mounts, mount connections, or cable mounting attachments. These elements are assumed to be adequate for the purposes of this analysis and are assumed to have been installed per their manufacturer requirements.

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(3) Pipe Sector Frame (Sprint)	247	APXVAARR24_43-U-NA20 (T-Mobile)	232
APXVTM14-ALU-120 (Sprint)	247	APXVAARR24_43-U-NA20 (T-Mobile)	232
APXVTM14-ALU-120 (Sprint)	247	APXVAARR24_43-U-NA20 (T-Mobile)	232
APXVTM14-ALU-120 (Sprint)	247	2HH-38A-R4 (T-Mobile)	232
APXVSPP18-C-A20 (Sprint)	247	2HH-38A-R4 (T-Mobile)	232
APXVSPP18-C-A20 (Sprint)	247	4449 (T-Mobile)	232
APXVSPP18-C-A20 (Sprint)	247	4449 (T-Mobile)	232
800 MHz w/ Notch Filter (Sprint)	247	4449 (T-Mobile)	232
800 MHz w/ Notch Filter (Sprint)	247	4415 (T-Mobile)	232
800 MHz w/ Notch Filter (Sprint)	247	4415 (T-Mobile)	232
TD-RRH8x20-25 (Sprint)	247	4415 (T-Mobile)	232
TD-RRH8x20-25 (Sprint)	247	4415 (T-Mobile)	232
TD-RRH8x20-25 (Sprint)	247	Angle Side Arm	135
(2) 1900MHz RRH (Sprint)	247	12' Omni	135
(2) 1900MHz RRH (Sprint)	247	12' Omni	135
(2) 1900MHz RRH (Sprint)	247	Angle Side Arm	135
Pipe Sector Frame	232	20' Omni	125
Pipe Sector Frame	232	Angle Side Arm	125
Pipe Sector Frame	232	12' Omni	110
AIR 21 B2A/B4P	232	Angle Side Arm	110
AIR 21 B2A/B4P	232	4' Grid Dish	110
AIR32 B66A/B2A	232	6' Dish w/ Radome	105
AIR32 B66A/B2A	232	Camera	60
TMA	232	Angle Side Arm	50
TMA	232	4' Omni	50
TMA	232		

SYMBOL LIST

MARK	SIZE	MARK	SIZE
A	Pirod 105245	C	L3x3x5/16
B	2L3 1/2x3 1/2x5/16x3/8		

MATERIAL STRENGTH

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

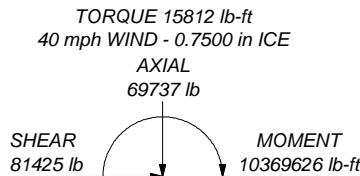
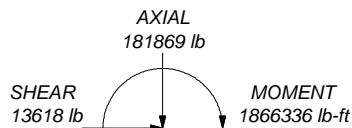
TOWER DESIGN NOTES

1. Tower is located in Tolland County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 101 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 40 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft
8. TOWER RATING: 98.1%

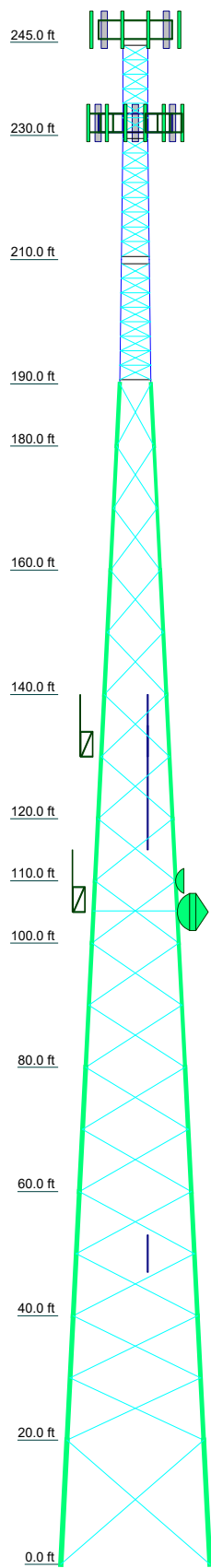
MAX. CORNER REACTIONS AT BASE:

DOWN: 522153 lb
SHEAR: 59378 lb

UPLIFT: -467118 lb
SHEAR: 52813 lb



TORQUE 97722 lb-ft
REACTIONS - 101 mph WIND



Section	T1	T2	T3	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13	T14	24
Legs	SR 1 1/2	SR 2	SR 2 1/2	A	Pirod 105217	Pirod 105218	Pirod 105218	A572-50	L3x3x3/16	L3x3x3/16	L3x3x5/16	A36	N.A.	N.A.	N.A.
Diagonals	SR 3/4	SR 7/8	SR 1	SR 1	L2 1/2x2 1/2x3/16	L3x3x3/16	L3x3x3/16	L3x3x5/16	A36	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Top Girts	SR 7/8	A572-50	SR 1	SR 1	SR 7/8	SR 7/8	SR 7/8	SR 7/8	SR 7/8	SR 7/8	SR 7/8	SR 7/8	SR 7/8	SR 7/8	SR 7/8
Bottom Girts	SR 7/8	SR 1	SR 1	SR 1	SR 7/8	SR 7/8	SR 7/8	SR 7/8	SR 7/8	SR 7/8	SR 7/8	SR 7/8	SR 7/8	SR 7/8	SR 7/8
Horizontals	SR 3/4	SR 7/8	SR 1	SR 1	SR 7/8	SR 7/8	SR 7/8	SR 7/8	SR 7/8	SR 7/8	SR 7/8	SR 7/8	SR 7/8	SR 7/8	SR 7/8
Sec. Horizontals															
Face Width (ft)	4	4.5	4.5	5	6	8	10	12	13	14	16	18	20	22	24
# Panels @ (ft)	6 @ 2.35333	8 @ 2.375	9 @ 2.333						17 @ 10					1 @ 20	
Weight (lb)	612.4	1273.7	1861.9	1237.7	2333.6	2787.9	2962.4	1979.3	2266.8	4112.9	5037.1	5183.7	5204.3	6683.7	43832.5

Infyng Engineering PLLC 1033 Watervliet Shaker Rd Albany, NY 12205 Phone: 518-690-0790 FAX: 518-690-0793		Job: CT03XC214	
		Project: 526-104	
Client: Airosmith	Drawn by: nober	App'd:	
Code: TIA-222-G	Date: 05/25/18	Scale: NTS	
Path: C:\Users\nober\Desktop\Borus Sites 5-20-18\CT03XC214\SAITN\CT03XC214.dwg	Dwg No. E-1		

<i>tnxTower</i> <i>Infingy Engineering PLLC</i> 1033 Watervliet Shaker Rd Albany, NY 12205 Phone: 518-690-0790 FAX: 518-690-0793	Job CT03XC214	Page 1 of 29
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	Client Airosmith	Designed by nober

Tower Input Data

The main tower is a 3x free standing tower with an overall height of 245.00 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 4.00 ft at the top and 24.00 ft at the base.

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

The following design criteria apply:

Tower is located in Tolland County, Connecticut.

Basic wind speed of 101 mph.

Structure Class II.

Exposure Category C.

Topographic Category 1.

Crest Height 0.00 ft.

Nominal ice thickness of 0.7500 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

A wind speed of 40 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 60 mph.

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

Pressures are calculated at each section.

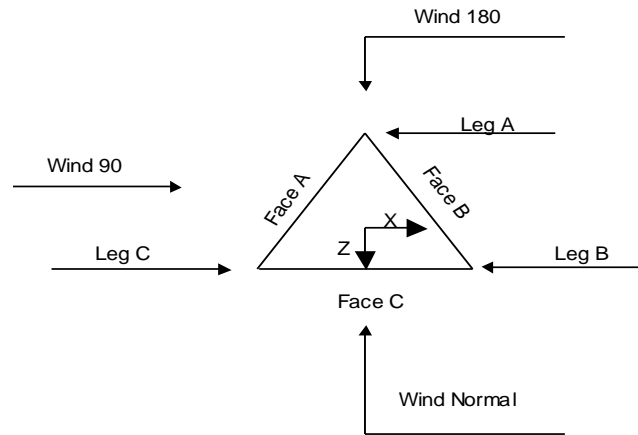
Stress ratio used in tower member design is 1.

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

Options

<ul style="list-style-type: none"> Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification √ Use Code Stress Ratios √ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile √ Include Bolts In Member Capacity Leg Bolts Are At Top Of Section √ Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric 	<ul style="list-style-type: none"> Distribute Leg Loads As Uniform Assume Legs Pinned √ Assume Rigid Index Plate √ Use Clear Spans For Wind Area √ Use Clear Spans For KL/r √ Retension Guys To Initial Tension Bypass Mast Stability Checks √ Use Azimuth Dish Coefficients √ Project Wind Area of Appurt. √ Autocalc Torque Arm Areas Add IBC .6D+W Combination √ Sort Capacity Reports By Component √ Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder 	<ul style="list-style-type: none"> Use ASCE 10 X-Brace Ly Rules √ Calculate Redundant Bracing Forces Ignore Redundant Members in FEA √ SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation √ Consider Feed Line Torque √ Include Angle Block Shear Check Use TIA-222-G Bracing Resist. Exemption Use TIA-222-G Tension Splice Exemption <li style="text-align: center;">Poles Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets Pole Without Linear Attachments Pole With Shroud Or No Appurtenances Outside and Inside Corner Radii Are Known
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	Client Airosmith	Designed by nober



Triangular Tower

Tower Section Geometry

Tower Section	Tower Elevation	Assembly Database	Description	Section Width	Number of Sections	Section Length
	<i>ft</i>			<i>ft</i>		<i>ft</i>
T1	245.00-230.00	pirod	V4 106778	4.00	1	15.00
T2	230.00-210.00		H4.5 100246	4.00	1	20.00
T3	210.00-190.00		H5.0 119703	4.50	1	20.00
T4	190.00-180.00		U6.0 105245	5.00	1	10.00
T5	180.00-160.00		U8.0 105217	6.00	1	20.00
T6	160.00-140.00		U10.0 105218	8.00	1	20.00
T7	140.00-120.00		U12.0 105218	10.00	1	20.00
T8	120.00-110.00		U14.0 105218	12.00	1	10.00
T9	110.00-100.00		U14.0 105218	13.00	1	10.00
T10	100.00-80.00		U16.0 105219	14.00	1	20.00
T11	80.00-60.00		U18.0 105219	16.00	1	20.00
T12	60.00-40.00		U20.0 105219 L3.5x5/16	18.00	1	20.00
T13	40.00-20.00		U22.0 105220 L4x1/4	20.00	1	20.00
T14	20.00-0.00		U22.0 105220 L4x1/4	22.00	1	20.00

Tower Section Geometry (cont'd)

Tower Section	Tower Elevation	Diagonal Spacing	Bracing Type	Has K Brace End Panels	Has Horizontals	Top Girt Offset	Bottom Girt Offset
	<i>ft</i>	<i>ft</i>				<i>in</i>	<i>in</i>
T1	245.00-230.00	2.33	X Brace	No	Steps	6.0000	6.0000

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	Client	Airosmith	Designed by	nober

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
T2	230.00-210.00	2.38	X Brace	No	Steps	6.0000	6.0000
T3	210.00-190.00	2.33	X Brace	No	Steps	8.0160	8.0160
T4	190.00-180.00	10.00	X Brace	No	No	0.0000	0.0000
T5	180.00-160.00	10.00	X Brace	No	No	0.0000	0.0000
T6	160.00-140.00	10.00	X Brace	No	No	0.0000	0.0000
T7	140.00-120.00	10.00	X Brace	No	No	0.0000	0.0000
T8	120.00-110.00	10.00	X Brace	No	No	0.0000	0.0000
T9	110.00-100.00	10.00	X Brace	No	Yes	0.0000	0.0000
T10	100.00-80.00	10.00	X Brace	No	No	0.0000	0.0000
T11	80.00-60.00	10.00	X Brace	No	No	0.0000	0.0000
T12	60.00-40.00	10.00	X Brace	No	No	0.0000	0.0000
T13	40.00-20.00	10.00	X Brace	No	No	0.0000	0.0000
T14	20.00-0.00	20.00	X Brace	No	No	0.0000	0.0000

Tower Section Geometry (cont'd)

Tower Elevation ft	Leg Type	Leg Size	Leg Grade	Diagonal Type	Diagonal Size	Diagonal Grade
T1 245.00-230.00	Solid Round	1 1/2	A572-50 (50 ksi)	Solid Round	3/4	A572-50 (50 ksi)
T2 230.00-210.00	Solid Round	2	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T3 210.00-190.00	Solid Round	2 1/2	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T4 190.00-180.00	Truss Leg	Pirod 105245	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T5 180.00-160.00	Truss Leg	Pirod 105217	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T6 160.00-140.00	Truss Leg	Pirod 105218	A572-50 (50 ksi)	Single Angle	L2 1/2x2 1/2x3/16	A36 (36 ksi)
T7 140.00-120.00	Truss Leg	Pirod 105218	A572-50 (50 ksi)	Single Angle	L3x3x3/16	A36 (36 ksi)
T8 120.00-110.00	Truss Leg	Pirod 105219	A572-50 (50 ksi)	Single Angle	L3x3x5/16	A36 (36 ksi)
T9 110.00-100.00	Truss Leg	Pirod 105219	A572-50 (50 ksi)	Single Angle	L3x3x5/16	A36 (36 ksi)
T10 100.00-80.00	Truss Leg	Pirod 105219	A572-50 (50 ksi)	Single Angle	L3x3x5/16	A36 (36 ksi)
T11 80.00-60.00	Truss Leg	Pirod 105220	A572-50 (50 ksi)	Single Angle	L3 1/2x3 1/2x5/16	A36 (36 ksi)
T12 60.00-40.00	Truss Leg	Pirod 105220	A572-50 (50 ksi)	Single Angle	L3 1/2x3 1/2x5/16	A36 (36 ksi)
T13 40.00-20.00	Truss Leg	Pirod 105220	A572-50 (50 ksi)	Single Angle	L4x4x1/4	A36 (36 ksi)
T14 20.00-0.00	Truss Leg	Pirod 112738	A572-50 (50 ksi)	Double Angle	2L3 1/2x3 1/2x5/16x3/8	A36 (36 ksi)

Tower Section Geometry (cont'd)

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Tower Elevation ft	Top Girt Type	Top Girt Size	Top Girt Grade	Bottom Girt Type	Bottom Girt Size	Bottom Girt Grade
T1 245.00-230.00	Solid Round	7/8	A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T2 230.00-210.00	Solid Round	1	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)
T3 210.00-190.00	Solid Round	1	A572-50 (50 ksi)	Solid Round	1	A572-50 (50 ksi)

Tower Section Geometry (cont'd)

Tower Elevation ft	No. of Mid Girts	Mid Girt Type	Mid Girt Size	Mid Girt Grade	Horizontal Type	Horizontal Size	Horizontal Grade
T1 245.00-230.00	None	Solid Round		A572-50 (50 ksi)	Solid Round	3/4	A572-50 (50 ksi)
T2 230.00-210.00	None	Solid Round		A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)
T3 210.00-190.00	None	Solid Round		A572-50 (50 ksi)	Solid Round	7/8	A572-50 (50 ksi)

Tower Section Geometry (cont'd)

Tower Elevation ft	Secondary Horizontal Type	Secondary Horizontal Size	Secondary Horizontal Grade	Inner Bracing Type	Inner Bracing Size	Inner Bracing Grade
T9 110.00-100.00	Single Angle	L3x3x5/16	A36 (36 ksi)	Single Angle		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 Horizontal in	Double Angle Stitch Bolt Spacing Redundants in
T1 245.00-230.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	36.0000	36.0000	36.0000
T2 230.00-210.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	36.0000	36.0000	36.0000
T3 210.00-190.00	0.00	0.0000	A36 (36 ksi)	1	1	1.02	36.0000	36.0000	36.0000
T4 190.00-180.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T5 180.00-160.00	0.00	0.0000	A36 (36 ksi)	1	1	1.05	36.0000	36.0000	36.0000
T6	0.00	0.0000	A36	1	1	1.05	36.0000	36.0000	36.0000

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¹Note: 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	Truss-Leg K Factors					
	Truss-Legs Used As Leg Members			Truss-Legs Used As Inner Members		
	Leg Panels	X Brace Diagonals	Z Brace Diagonals	Leg Panels	X Brace Diagonals	Z Brace Diagonals
190.00-180.00	1	0.35	0.7	1	0.5	0.85
180.00-160.00	1	0.35	0.7	1	0.5	0.85
160.00-140.00	1	0.35	0.7	1	0.5	0.85
140.00-120.00	1	0.35	0.7	1	0.5	0.85
120.00-110.00	1	0.35	0.7	1	0.5	0.85
110.00-100.00	1	0.35	0.7	1	0.5	0.85
100.00-80.00	1	0.35	0.7	1	0.5	0.85
80.00-60.00	1	0.35	0.7	1	0.5	0.85
60.00-40.00	1	0.35	0.7	1	0.5	0.85
40.00-20.00	1	0.35	0.7	1	0.5	0.85
20.00-0.00	1	0.35	0.7	1	0.5	0.85

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
245.00-230.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
230.00-210.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
210.00-190.00	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
190.00-180.00	0.0000	1	0.0000	0.75	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
180.00-160.00	0.0000	1	0.0000	0.75	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1
160.00-140.00	0.0000	1	0.0000	0.75	0.0000	1	0.0000	1	0.0000	1	0.0000	1	0.0000	1

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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
1 5/8" Coax	A	No	Ar (CaAa)	245.00 - 0.00	-10.0000	0.42	6	3	1.9800	1.9800		0.82
1-1/4" Hybrid	A	No	Ar (CaAa)	245.00 - 0.00	-15.0000	0.4	3	3	1.2500	1.2500		0.83
1/2" Coax	A	No	Ar (CaAa)	245.00 - 0.00	-8.0000	0.45	1	1	0.6300	0.6300		0.15

1 5/8" Coax	B	No	Ar (CaAa)	232.00 - 0.00	-10.0000	0.39	21	11	0.7500	1.9800		0.82

7/8" Coax	A	No	Ar (CaAa)	135.00 - 0.00	-8.0000	0.45	2	2	0.8750	0.8750		0.31

7/8" Coax	A	No	Ar (CaAa)	125.00 - 0.00	-8.0000	0.45	1	1	0.8750	0.8750		0.31
1/2	A	No	Ar (CaAa)	125.00 - 0.00	-8.0000	0.45	1	1	0.5800	0.5800		0.25

7/8" Coax	A	No	Ar (CaAa)	110.00 - 0.00	-8.0000	0.45	2	2	0.8750	0.8750		0.31

EW63	A	No	Ar (CaAa)	105.00 - 0.00	-8.0000	0.45	1	1	1.5742	1.5742		0.51

7/8" Coax	A	No	Ar (CaAa)	60.00 - 0.00	-8.0000	0.45	1	1	0.8750	0.8750		0.31

7/8" Coax	A	No	Ar (CaAa)	50.00 - 0.00	-8.0000	0.45	1	1	0.8750	0.8750		0.31
T-Brackets	A	No	Af (CaAa)	245.00 - 0.00	0.0000	0.45	1	1	1.0000	1.0000		3.65
T-Brackets	B	No	Af (CaAa)	245.00 - 0.00	0.0000	0.45	1	1	1.0000	1.0000		3.65
Waveguide	C	No	Af (CaAa)	245.00 - 0.00	0.0000	0.45	1	1	2.0000	2.0000		3.65

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight lb
T1	245.00-230.00	A	0.000	0.000	26.890	0.000	168.29
		B	0.000	0.000	10.816	0.000	89.19
		C	0.000	0.000	5.000	0.000	54.75
T2	230.00-210.00	A	0.000	0.000	35.853	0.000	224.38
		B	0.000	0.000	86.493	0.000	417.40
		C	0.000	0.000	6.667	0.000	73.00
T3	210.00-190.00	A	0.000	0.000	35.853	0.000	224.38
		B	0.000	0.000	86.493	0.000	417.40
		C	0.000	0.000	6.667	0.000	73.00
T4	190.00-180.00	A	0.000	0.000	17.927	0.000	112.19
		B	0.000	0.000	43.247	0.000	208.70
		C	0.000	0.000	3.333	0.000	36.50
T5	180.00-160.00	A	0.000	0.000	35.853	0.000	224.38
		B	0.000	0.000	86.493	0.000	417.40
		C	0.000	0.000	6.667	0.000	73.00
T6	160.00-140.00	A	0.000	0.000	35.853	0.000	224.38
		B	0.000	0.000	86.493	0.000	417.40
		C	0.000	0.000	6.667	0.000	73.00
T7	140.00-120.00	A	0.000	0.000	39.206	0.000	236.48
		B	0.000	0.000	86.493	0.000	417.40
		C	0.000	0.000	6.667	0.000	73.00
T8	120.00-110.00	A	0.000	0.000	21.132	0.000	123.99
		B	0.000	0.000	43.247	0.000	208.70
		C	0.000	0.000	3.333	0.000	36.50

<p style="text-align: center;">tnxTower</p> <p style="text-align: center;">Infingy Engineering PLLC 1033 Watervliet Shaker Rd Albany, NY 12205 Phone: 518-690-0790 FAX: 518-690-0793</p>	Job	CT03XC214	Page	9 of 29
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Tower Section	Tower Elevation ft	Face	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight lb
T9	110.00-100.00	A	0.000	0.000	23.669	0.000	132.74
		B	0.000	0.000	43.247	0.000	208.70
		C	0.000	0.000	3.333	0.000	36.50
T10	100.00-80.00	A	0.000	0.000	48.912	0.000	270.58
		B	0.000	0.000	86.493	0.000	417.40
		C	0.000	0.000	6.667	0.000	73.00
T11	80.00-60.00	A	0.000	0.000	48.912	0.000	270.58
		B	0.000	0.000	86.493	0.000	417.40
		C	0.000	0.000	6.667	0.000	73.00
T12	60.00-40.00	A	0.000	0.000	51.537	0.000	279.88
		B	0.000	0.000	86.493	0.000	417.40
		C	0.000	0.000	6.667	0.000	73.00
T13	40.00-20.00	A	0.000	0.000	52.412	0.000	282.98
		B	0.000	0.000	86.493	0.000	417.40
		C	0.000	0.000	6.667	0.000	73.00
T14	20.00-0.00	A	0.000	0.000	52.412	0.000	282.98
		B	0.000	0.000	86.493	0.000	417.40
		C	0.000	0.000	6.667	0.000	73.00

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft ²	A_F ft ²	C_{AA} In Face ft ²	C_{AA} Out Face ft ²	Weight lb
T1	245.00-230.00	A	1.827	0.000	0.000	66.269	0.000	1193.84
		B		0.000	0.000	16.477	0.000	341.12
		C		0.000	0.000	10.482	0.000	176.45
T2	230.00-210.00	A	1.813	0.000	0.000	88.057	0.000	1581.34
		B		0.000	0.000	95.453	0.000	2056.71
		C		0.000	0.000	13.920	0.000	233.28
T3	210.00-190.00	A	1.796	0.000	0.000	87.685	0.000	1568.49
		B		0.000	0.000	95.279	0.000	2044.32
		C		0.000	0.000	13.851	0.000	230.85
T4	190.00-180.00	A	1.782	0.000	0.000	43.691	0.000	779.05
		B		0.000	0.000	47.569	0.000	1017.15
		C		0.000	0.000	6.898	0.000	114.45
T5	180.00-160.00	A	1.767	0.000	0.000	87.058	0.000	1546.99
		B		0.000	0.000	94.988	0.000	2023.54
		C		0.000	0.000	13.735	0.000	226.80
T6	160.00-140.00	A	1.745	0.000	0.000	86.582	0.000	1530.78
		B		0.000	0.000	94.766	0.000	2007.82
		C		0.000	0.000	13.648	0.000	223.76
T7	140.00-120.00	A	1.720	0.000	0.000	104.172	0.000	1698.55
		B		0.000	0.000	94.517	0.000	1990.15
		C		0.000	0.000	13.548	0.000	220.36
T8	120.00-110.00	A	1.699	0.000	0.000	60.281	0.000	941.46
		B		0.000	0.000	47.153	0.000	987.63
		C		0.000	0.000	6.732	0.000	108.76
T9	110.00-100.00	A	1.684	0.000	0.000	71.649	0.000	1054.80
		B		0.000	0.000	47.076	0.000	982.18
		C		0.000	0.000	6.701	0.000	107.72
T10	100.00-80.00	A	1.658	0.000	0.000	147.016	0.000	2148.26
		B		0.000	0.000	93.892	0.000	1946.17
		C		0.000	0.000	13.300	0.000	212.01
T11	80.00-60.00	A	1.617	0.000	0.000	145.058	0.000	2095.40
		B		0.000	0.000	93.479	0.000	1917.26
		C		0.000	0.000	13.135	0.000	206.60
T12	60.00-40.00	A	1.564	0.000	0.000	154.522	0.000	2176.88

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Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight lb
T13	40.00-20.00	B		0.000	0.000	92.942	0.000	1879.92
		C		0.000	0.000	12.921	0.000	199.71
		A	1.486	0.000	0.000	154.201	0.000	2115.59
T14	20.00-0.00	B		0.000	0.000	92.161	0.000	1826.13
		C		0.000	0.000	12.610	0.000	190.00
		A	1.331	0.000	0.000	145.630	0.000	1905.12
		B		0.000	0.000	90.613	0.000	1721.21
		C		0.000	0.000	11.991	0.000	171.76

Feed Line Center of Pressure

Section	Elevation ft	CP _X in	CP _Z in	CP _X Ice in	CP _Z Ice in
T1	245.00-230.00	3.4363	-4.6986	2.3179	-4.2284
T2	230.00-210.00	8.0384	3.6065	4.6217	-0.6989
T3	210.00-190.00	8.8571	3.4696	4.9819	-1.0005
T4	190.00-180.00	8.3226	2.8102	3.4871	-0.9149
T5	180.00-160.00	10.8609	2.8103	5.4702	-1.8798
T6	160.00-140.00	13.7094	2.7361	7.7906	-3.1875
T7	140.00-120.00	15.7723	1.6793	9.4628	-6.8830
T8	120.00-110.00	17.2418	0.6716	10.4462	-10.3453
T9	110.00-100.00	16.6847	-0.9324	9.9909	-13.4861
T10	100.00-80.00	19.6202	-1.8241	11.5081	-16.5129
T11	80.00-60.00	20.5376	-2.1852	12.3362	-17.9666
T12	60.00-40.00	22.0831	-3.5518	13.0974	-21.5973
T13	40.00-20.00	22.6125	-4.1714	13.7112	-23.2506
T14	20.00-0.00	27.8186	-5.2090	15.3214	-24.4617

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K _a No Ice	K _a Ice
T1	1	1 5/8" Coax	230.00 - 245.00	0.6000	0.4646
T1	2	1-1/4" Hybrid	230.00 - 245.00	0.6000	0.4646
T1	3	1/2" Coax	230.00 - 245.00	0.6000	0.4646
T1	5	1 5/8" Coax	230.00 - 232.00	0.6000	0.4646
T1	19	T-Brackets	230.00 - 245.00	0.6000	0.4646
T1	20	T-Brackets	230.00 - 245.00	0.6000	0.4646
T1	21	Waveguide	230.00 - 245.00	0.6000	0.4646
T2	1	1 5/8" Coax	210.00 - 230.00	0.6000	0.4704
T2	2	1-1/4" Hybrid	210.00 - 230.00	0.6000	0.4704

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T2	3	1/2" Coax	210.00 - 230.00	0.6000	0.4704
T2	5	1 5/8" Coax	210.00 - 230.00	0.6000	0.4704
T2	19	T-Brackets	210.00 - 230.00	0.6000	0.4704
T2	20	T-Brackets	210.00 - 230.00	0.6000	0.4704
T2	21	Waveguide	210.00 - 230.00	0.6000	0.4704
T3	1	1 5/8" Coax	190.00 - 210.00	0.6000	0.4791
T3	2	1-1/4" Hybrid	190.00 - 210.00	0.6000	0.4791
T3	3	1/2" Coax	190.00 - 210.00	0.6000	0.4791
T3	5	1 5/8" Coax	190.00 - 210.00	0.6000	0.4791
T3	19	T-Brackets	190.00 - 210.00	0.6000	0.4791
T3	20	T-Brackets	190.00 - 210.00	0.6000	0.4791
T3	21	Waveguide	190.00 - 210.00	0.6000	0.4791
T4	1	1 5/8" Coax	180.00 - 190.00	0.6000	0.3137
T4	2	1-1/4" Hybrid	180.00 - 190.00	0.6000	0.3137
T4	3	1/2" Coax	180.00 - 190.00	0.6000	0.3137
T4	5	1 5/8" Coax	180.00 - 190.00	0.6000	0.3137
T4	19	T-Brackets	180.00 - 190.00	0.6000	0.3137
T4	20	T-Brackets	180.00 - 190.00	0.6000	0.3137
T4	21	Waveguide	180.00 - 190.00	0.6000	0.3137
T5	1	1 5/8" Coax	160.00 - 180.00	0.6000	0.4210
T5	2	1-1/4" Hybrid	160.00 - 180.00	0.6000	0.4210
T5	3	1/2" Coax	160.00 - 180.00	0.6000	0.4210
T5	5	1 5/8" Coax	160.00 - 180.00	0.6000	0.4210
T5	19	T-Brackets	160.00 - 180.00	0.6000	0.4210
T5	20	T-Brackets	160.00 - 180.00	0.6000	0.4210
T5	21	Waveguide	160.00 - 180.00	0.6000	0.4210
T6	1	1 5/8" Coax	140.00 - 160.00	0.6000	0.5164
T6	2	1-1/4" Hybrid	140.00 - 160.00	0.6000	0.5164
T6	3	1/2" Coax	140.00 - 160.00	0.6000	0.5164
T6	5	1 5/8" Coax	140.00 - 160.00	0.6000	0.5164
T6	19	T-Brackets	140.00 - 160.00	0.6000	0.5164

tnxTower**Infingy Engineering PLLC**

1033 Watervliet Shaker Rd

Albany, NY 12205

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FAX: 518-690-0793

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<i>Tower Section</i>	<i>Feed Line Record No.</i>	<i>Description</i>	<i>Feed Line Segment Elev.</i>	<i>K_a No Ice</i>	<i>K_a Ice</i>
T6	20	T-Brackets	140.00 - 160.00	0.6000	0.5164
T6	21	Waveguide	140.00 - 160.00	0.6000	0.5164
T7	1	1 5/8" Coax	120.00 - 140.00	0.6000	0.5744
T7	2	1-1/4" Hybrid	120.00 - 140.00	0.6000	0.5744
T7	3	1/2" Coax	120.00 - 140.00	0.6000	0.5744
T7	5	1 5/8" Coax	120.00 - 140.00	0.6000	0.5744
T7	7	7/8" Coax	120.00 - 135.00	0.6000	0.5744
T7	9	7/8" Coax	120.00 - 125.00	0.6000	0.5744
T7	10	1/2	120.00 - 125.00	0.6000	0.5744
T7	19	T-Brackets	120.00 - 140.00	0.6000	0.5744
T7	20	T-Brackets	120.00 - 140.00	0.6000	0.5744
T7	21	Waveguide	120.00 - 140.00	0.6000	0.5744
T8	1	1 5/8" Coax	110.00 - 120.00	0.6000	0.6000
T8	2	1-1/4" Hybrid	110.00 - 120.00	0.6000	0.6000
T8	3	1/2" Coax	110.00 - 120.00	0.6000	0.6000
T8	5	1 5/8" Coax	110.00 - 120.00	0.6000	0.6000
T8	7	7/8" Coax	110.00 - 120.00	0.6000	0.6000
T8	9	7/8" Coax	110.00 - 120.00	0.6000	0.6000
T8	10	1/2	110.00 - 120.00	0.6000	0.6000
T8	19	T-Brackets	110.00 - 120.00	0.6000	0.6000
T8	20	T-Brackets	110.00 - 120.00	0.6000	0.6000
T8	21	Waveguide	110.00 - 120.00	0.6000	0.6000
T9	1	1 5/8" Coax	100.00 - 110.00	0.6000	0.5868
T9	2	1-1/4" Hybrid	100.00 - 110.00	0.6000	0.5868
T9	3	1/2" Coax	100.00 - 110.00	0.6000	0.5868
T9	5	1 5/8" Coax	100.00 - 110.00	0.6000	0.5868
T9	7	7/8" Coax	100.00 - 110.00	0.6000	0.5868
T9	9	7/8" Coax	100.00 - 110.00	0.6000	0.5868
T9	10	1/2	100.00 - 110.00	0.6000	0.5868
T9	12	7/8" Coax	100.00 - 110.00	0.6000	0.5868
T9	14	EW63	100.00 - 105.00	0.6000	0.5868

tnxTower

Infingy Engineering PLLC

1033 Watervliet Shaker Rd

Albany, NY 12205

Phone: 518-690-0790

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T9	19	T-Brackets	100.00 - 110.00	0.6000	0.5868
T9	20	T-Brackets	100.00 - 110.00	0.6000	0.5868
T9	21	Waveguide	100.00 - 110.00	0.6000	0.5868
T10	1	1 5/8" Coax	80.00 - 100.00	0.6000	0.6000
T10	2	1-1/4" Hybrid	80.00 - 100.00	0.6000	0.6000
T10	3	1/2" Coax	80.00 - 100.00	0.6000	0.6000
T10	5	1 5/8" Coax	80.00 - 100.00	0.6000	0.6000
T10	7	7/8" Coax	80.00 - 100.00	0.6000	0.6000
T10	9	7/8" Coax	80.00 - 100.00	0.6000	0.6000
T10	10	1/2	80.00 - 100.00	0.6000	0.6000
T10	12	7/8" Coax	80.00 - 100.00	0.6000	0.6000
T10	14	EW63	80.00 - 100.00	0.6000	0.6000
T10	19	T-Brackets	80.00 - 100.00	0.6000	0.6000
T10	20	T-Brackets	80.00 - 100.00	0.6000	0.6000
T10	21	Waveguide	80.00 - 100.00	0.6000	0.6000
T11	1	1 5/8" Coax	60.00 - 80.00	0.6000	0.6000
T11	2	1-1/4" Hybrid	60.00 - 80.00	0.6000	0.6000
T11	3	1/2" Coax	60.00 - 80.00	0.6000	0.6000
T11	5	1 5/8" Coax	60.00 - 80.00	0.6000	0.6000
T11	7	7/8" Coax	60.00 - 80.00	0.6000	0.6000
T11	9	7/8" Coax	60.00 - 80.00	0.6000	0.6000
T11	10	1/2	60.00 - 80.00	0.6000	0.6000
T11	12	7/8" Coax	60.00 - 80.00	0.6000	0.6000
T11	14	EW63	60.00 - 80.00	0.6000	0.6000
T11	19	T-Brackets	60.00 - 80.00	0.6000	0.6000
T11	20	T-Brackets	60.00 - 80.00	0.6000	0.6000
T11	21	Waveguide	60.00 - 80.00	0.6000	0.6000
T12	1	1 5/8" Coax	40.00 - 60.00	0.6000	0.6000
T12	2	1-1/4" Hybrid	40.00 - 60.00	0.6000	0.6000
T12	3	1/2" Coax	40.00 - 60.00	0.6000	0.6000
T12	5	1 5/8" Coax	40.00 - 60.00	0.6000	0.6000
T12	7	7/8" Coax	40.00 - 60.00	0.6000	0.6000
T12	9	7/8" Coax	40.00 - 60.00	0.6000	0.6000
T12	10	1/2	40.00 - 60.00	0.6000	0.6000
T12	12	7/8" Coax	40.00 - 60.00	0.6000	0.6000
T12	14	EW63	40.00 - 60.00	0.6000	0.6000
T12	16	7/8" Coax	40.00 - 60.00	0.6000	0.6000
T12	18	7/8" Coax	40.00 - 50.00	0.6000	0.6000
T12	19	T-Brackets	40.00 - 60.00	0.6000	0.6000
T12	20	T-Brackets	40.00 - 60.00	0.6000	0.6000
T12	21	Waveguide	40.00 - 60.00	0.6000	0.6000
T13	1	1 5/8" Coax	20.00 - 40.00	0.6000	0.6000
T13	2	1-1/4" Hybrid	20.00 - 40.00	0.6000	0.6000
T13	3	1/2" Coax	20.00 - 40.00	0.6000	0.6000
T13	5	1 5/8" Coax	20.00 - 40.00	0.6000	0.6000
T13	7	7/8" Coax	20.00 - 40.00	0.6000	0.6000
T13	9	7/8" Coax	20.00 - 40.00	0.6000	0.6000
T13	10	1/2	20.00 - 40.00	0.6000	0.6000
T13	12	7/8" Coax	20.00 - 40.00	0.6000	0.6000
T13	14	EW63	20.00 - 40.00	0.6000	0.6000
T13	16	7/8" Coax	20.00 - 40.00	0.6000	0.6000
T13	18	7/8" Coax	20.00 - 40.00	0.6000	0.6000
T13	19	T-Brackets	20.00 - 40.00	0.6000	0.6000
T13	20	T-Brackets	20.00 - 40.00	0.6000	0.6000
T13	21	Waveguide	20.00 - 40.00	0.6000	0.6000
T14	1	1 5/8" Coax	0.00 - 20.00	0.6000	0.6000
T14	2	1-1/4" Hybrid	0.00 - 20.00	0.6000	0.6000
T14	3	1/2" Coax	0.00 - 20.00	0.6000	0.6000
T14	5	1 5/8" Coax	0.00 - 20.00	0.6000	0.6000

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Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
T14	7	7/8" Coax	0.00 - 20.00	0.6000	0.6000
T14	9	7/8" Coax	0.00 - 20.00	0.6000	0.6000
T14	10	1/2	0.00 - 20.00	0.6000	0.6000
T14	12	7/8" Coax	0.00 - 20.00	0.6000	0.6000
T14	14	EW63	0.00 - 20.00	0.6000	0.6000
T14	16	7/8" Coax	0.00 - 20.00	0.6000	0.6000
T14	18	7/8" Coax	0.00 - 20.00	0.6000	0.6000
T14	19	T-Brackets	0.00 - 20.00	0.6000	0.6000
T14	20	T-Brackets	0.00 - 20.00	0.6000	0.6000
T14	21	Waveguide	0.00 - 20.00	0.6000	0.6000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C_{AA} Front	C_{AA} Side	Weight	
			Horz Lateral	Vert						
			ft	ft	°	ft	ft ²	ft ²	lb	
(3) Pipe Sector Frame (Sprint)	A	None			0.0000	247.00	No Ice	14.40	7.20	300.00
							1/2" Ice	19.50	10.50	415.00
							1" Ice	24.60	13.80	530.00
APXVTM14-ALU-120 (Sprint)	A	From Leg	3.00	0.00	0.0000	247.00	No Ice	6.34	3.61	37.00
							1/2" Ice	6.72	3.97	76.53
							1" Ice	7.10	4.33	121.12
APXVTM14-ALU-120 (Sprint)	B	From Leg	3.00	0.00	0.0000	247.00	No Ice	6.34	3.61	37.00
							1/2" Ice	6.72	3.97	76.53
							1" Ice	7.10	4.33	121.12
APXVTM14-ALU-120 (Sprint)	C	From Leg	3.00	0.00	0.0000	247.00	No Ice	6.34	3.61	37.00
							1/2" Ice	6.72	3.97	76.53
							1" Ice	7.10	4.33	121.12
APXVSP18-C-A20 (Sprint)	A	From Leg	3.00	0.00	0.0000	247.00	No Ice	8.02	5.28	57.00
							1/2" Ice	8.48	5.74	106.52
							1" Ice	8.94	6.20	162.12
APXVSP18-C-A20 (Sprint)	B	From Leg	3.00	0.00	0.0000	247.00	No Ice	8.02	5.28	57.00
							1/2" Ice	8.48	5.74	106.52
							1" Ice	8.94	6.20	162.12
APXVSP18-C-A20 (Sprint)	C	From Leg	3.00	0.00	0.0000	247.00	No Ice	8.02	5.28	57.00
							1/2" Ice	8.48	5.74	106.52
							1" Ice	8.94	6.20	162.12
800 MHz w/ Notch Filter (Sprint)	A	From Leg	3.00	0.00	0.0000	247.00	No Ice	2.13	2.50	61.80
							1/2" Ice	2.32	2.69	87.79
							1" Ice	2.51	2.90	117.08
800 MHz w/ Notch Filter (Sprint)	B	From Leg	3.00	0.00	0.0000	247.00	No Ice	2.13	2.50	61.80
							1/2" Ice	2.32	2.69	87.79
							1" Ice	2.51	2.90	117.08
800 MHz w/ Notch Filter (Sprint)	C	From Leg	3.00	0.00	0.0000	247.00	No Ice	2.13	2.50	61.80
							1/2" Ice	2.32	2.69	87.79
							1" Ice	2.51	2.90	117.08
TD-RRH8x20-25 (Sprint)	A	From Leg	3.00	0.00	0.0000	247.00	No Ice	4.05	1.53	70.00
							1/2" Ice	4.30	1.71	97.14
							1" Ice	4.56	1.90	127.80
TD-RRH8x20-25 (Sprint)	B	From Leg	3.00	0.00	0.0000	247.00	No Ice	4.05	1.53	70.00
							1/2" Ice	4.30	1.71	97.14

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	CAAA Front	CAAA Side	Weight	
			Horz	Lateral						
			ft	ft	°	ft	ft ²	ft ²	lb	
TD-RRH8x20-25 (Sprint)	C	From Leg	0.00		0.0000	247.00	1" Ice	4.56	1.90	127.80
			3.00				No Ice	4.05	1.53	70.00
			0.00				1/2" Ice	4.30	1.71	97.14
(2) 1900MHz RRH (Sprint)	A	From Leg	0.00		0.0000	247.00	1" Ice	4.56	1.90	127.80
			3.00				No Ice	2.31	2.38	60.00
			0.00				1/2" Ice	2.52	2.58	83.90
(2) 1900MHz RRH (Sprint)	B	From Leg	0.00		0.0000	247.00	1" Ice	2.73	2.79	111.08
			3.00				No Ice	2.31	2.38	60.00
			0.00				1/2" Ice	2.52	2.58	83.90
(2) 1900MHz RRH (Sprint)	C	From Leg	0.00		0.0000	247.00	1" Ice	2.73	2.79	111.08
			3.00				No Ice	2.31	2.38	60.00
			0.00				1/2" Ice	2.52	2.58	83.90
***			0.00				1" Ice	2.73	2.79	111.08
Pipe Sector Frame	A	From Leg	3.00		0.0000	232.00	No Ice	14.40	7.20	300.00
			0.00				1/2" Ice	19.50	10.50	415.00
			0.00				1" Ice	24.60	13.80	530.00
Pipe Sector Frame	B	From Leg	3.00		0.0000	232.00	No Ice	14.40	7.20	300.00
			0.00				1/2" Ice	19.50	10.50	415.00
			0.00				1" Ice	24.60	13.80	530.00
Pipe Sector Frame	C	From Leg	3.00		0.0000	232.00	No Ice	14.40	7.20	300.00
			0.00				1/2" Ice	19.50	10.50	415.00
			0.00				1" Ice	24.60	13.80	530.00
AIR 21 B2A/B4P	A	From Leg	3.00		0.0000	232.00	No Ice	6.05	4.31	91.00
			0.00				1/2" Ice	6.42	4.66	132.68
			0.00				1" Ice	6.80	5.02	179.47
AIR 21 B2A/B4P	C	From Leg	3.00		0.0000	232.00	No Ice	6.05	4.31	91.00
			0.00				1/2" Ice	6.42	4.66	132.68
			0.00				1" Ice	6.80	5.02	179.47
AIR32 B66A/B2A	A	From Leg	3.00		0.0000	232.00	No Ice	6.51	4.71	132.20
			-6.00				1/2" Ice	6.89	5.07	178.02
			0.00				1" Ice	7.27	5.43	229.11
AIR32 B66A/B2A	C	From Leg	3.00		0.0000	232.00	No Ice	6.51	4.71	132.20
			-6.00				1/2" Ice	6.89	5.07	178.02
			0.00				1" Ice	7.27	5.43	229.11
TMA	A	From Leg	3.00		0.0000	232.00	No Ice	0.72	0.66	20.61
			0.00				1/2" Ice	0.83	0.79	29.38
			0.00				1" Ice	0.95	0.93	40.54
TMA	B	From Leg	3.00		0.0000	232.00	No Ice	0.72	0.66	20.61
			0.00				1/2" Ice	0.83	0.79	29.38
			0.00				1" Ice	0.95	0.93	40.54
TMA	C	From Leg	3.00		0.0000	232.00	No Ice	0.72	0.66	20.61
			0.00				1/2" Ice	0.83	0.79	29.38
			0.00				1" Ice	0.95	0.93	40.54

Angle Side Arm	A	From Leg	3.00		0.0000	135.00	No Ice	0.82	6.23	150.00
			0.00				1/2" Ice	1.10	8.47	230.00
			0.00				1" Ice	1.40	10.20	310.00
Angle Side Arm	C	From Leg	3.00		0.0000	135.00	No Ice	0.82	6.23	150.00
			0.00				1/2" Ice	1.10	8.47	230.00
			0.00				1" Ice	1.40	10.20	310.00
12' Omni	A	From Leg	3.00		0.0000	135.00	No Ice	3.60	3.60	12.00
			0.00				1/2" Ice	4.83	4.83	38.06
			0.00				1" Ice	6.08	6.08	71.92
12' Omni	C	From Leg	3.00		0.0000	135.00	No Ice	3.60	3.60	12.00
			0.00				1/2" Ice	4.83	4.83	38.06
			0.00				1" Ice	6.08	6.08	71.92

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	CAAA Front	CAAA Side	Weight
			Horz	Vert					
			ft	ft	°	ft	ft ²	ft ²	lb

Angle Side Arm	A	From Leg	3.00	0.0000	125.00	No Ice	0.82	6.23	150.00
			0.00			1/2" Ice	1.10	8.47	230.00
			0.00			1" Ice	1.40	10.20	310.00
20' Omni	A	From Leg	3.00	0.0000	125.00	No Ice	6.00	6.00	55.00
			0.00			1/2" Ice	8.03	8.03	98.17
			0.00			1" Ice	10.08	10.08	154.01

Angle Side Arm	C	From Leg	3.00	0.0000	110.00	No Ice	0.82	6.23	150.00
			0.00			1/2" Ice	1.10	8.47	230.00
			0.00			1" Ice	1.40	10.20	310.00
12' Omni	C	From Leg	3.00	0.0000	110.00	No Ice	3.60	3.60	12.00
			0.00			1/2" Ice	4.83	4.83	38.06
			0.00			1" Ice	6.08	6.08	71.92

Camera	A	From Leg	0.00	0.0000	60.00	No Ice	1.20	2.40	15.00
			0.00			1/2" Ice	1.34	2.60	39.92
			0.00			1" Ice	1.48	2.81	68.15

Angle Side Arm	A	From Leg	3.00	0.0000	50.00	No Ice	0.82	6.23	150.00
			0.00			1/2" Ice	1.10	8.47	230.00
			0.00			1" Ice	1.40	10.20	310.00
4' Omni	A	From Leg	3.00	0.0000	50.00	No Ice	1.00	1.00	15.00
			0.00			1/2" Ice	1.25	1.25	23.96
			0.00			1" Ice	1.50	1.50	35.82

APXVAARR24_43-U-NA20 (T-Mobile)	A	From Leg	3.00	0.0000	232.00	No Ice	20.24	8.89	128.00
			6.00			1/2" Ice	20.89	9.49	240.59
			0.00			1" Ice	21.54	10.09	361.72
APXVAARR24_43-U-NA20 (T-Mobile)	B	From Leg	3.00	0.0000	232.00	No Ice	20.24	8.89	128.00
			6.00			1/2" Ice	20.89	9.49	240.59
			0.00			1" Ice	21.54	10.09	361.72
APXVAARR24_43-U-NA20 (T-Mobile)	C	From Leg	3.00	0.0000	232.00	No Ice	20.24	8.89	128.00
			6.00			1/2" Ice	20.89	9.49	240.59
			0.00			1" Ice	21.54	10.09	361.72
2HH-38A-R4 (T-Mobile)	B	From Leg	3.00	0.0000	232.00	No Ice	10.12	4.11	65.50
			0.00			1/2" Ice	10.53	4.42	129.70
			0.00			1" Ice	10.95	4.74	199.45
2HH-38A-R4 (T-Mobile)	B	From Leg	3.00	0.0000	232.00	No Ice	10.12	4.11	65.50
			-6.00			1/2" Ice	10.53	4.42	129.70
			0.00			1" Ice	10.95	4.74	199.45
4449 (T-Mobile)	A	From Leg	2.50	0.0000	232.00	No Ice	1.64	1.29	74.00
			6.00			1/2" Ice	1.80	1.44	91.12
			0.00			1" Ice	1.97	1.59	110.94
4449 (T-Mobile)	B	From Leg	2.50	0.0000	232.00	No Ice	1.64	1.29	74.00
			6.00			1/2" Ice	1.80	1.44	91.12
			0.00			1" Ice	1.97	1.59	110.94
4449 (T-Mobile)	C	From Leg	2.50	0.0000	232.00	No Ice	1.64	1.29	74.00
			6.00			1/2" Ice	1.80	1.44	91.12
			0.00			1" Ice	1.97	1.59	110.94
4415 (T-Mobile)	B	From Leg	2.50	0.0000	232.00	No Ice	1.64	0.68	46.30
			-6.00			1/2" Ice	1.80	0.79	58.71
			0.00			1" Ice	1.97	0.91	73.48
4415 (T-Mobile)	B	From Leg	2.50	0.0000	232.00	No Ice	1.64	0.68	46.30
			-6.00			1/2" Ice	1.80	0.79	58.71
			0.00			1" Ice	1.97	0.91	73.48
4415	B	From Leg	2.50	0.0000	232.00	No Ice	1.64	0.68	46.30

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Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			ft ft ft	°	ft	ft ²	ft ²	lb
(T-Mobile)			0.00		1/2" Ice	1.80	0.79	58.71
			0.00		1" Ice	1.97	0.91	73.48
4415 (T-Mobile)	B	From Leg	2.50	0.0000	232.00	No Ice	0.68	46.30
			0.00		1/2" Ice	1.80	0.79	58.71
			0.00		1" Ice	1.97	0.91	73.48

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert	Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter	Aperture Area	Weight	
				ft ft ft	°	°	ft	ft	ft ²	lb	
4' Grid Dish	B	Grid	From Leg	0.00 0.00 0.00	0.0000		110.00	4.00	No Ice 1/2" Ice 1" Ice	12.57 13.10 13.62	51.00 118.25 185.49

6' Dish w/ Radome	B	Paraboloid w/Radome	From Leg	0.00 0.00 0.00	0.0000		105.00	6.00	No Ice 1/2" Ice 1" Ice	28.27 29.07 29.86	250.00 399.23 548.45

Truss-Leg Properties

Section Designation	Area	Area Ice	Self Weight	Ice Weight	Equiv. Diameter	Equiv. Diameter Ice	Leg Area
	in ²	in ²	lb	lb	in	in	in ²
Pirod 105245	1090.3344	3212.4658	676.81	641.83	7.5718	22.3088	5.3014
Pirod 105217	2130.7479	6595.2465	619.35	1215.29	7.3984	22.9002	5.3014
Pirod 105218	2263.4687	6647.8153	754.52	1213.39	7.8593	23.0827	7.2158
Pirod 105218	2263.4687	6625.8954	754.52	1186.30	7.8593	23.0066	7.2158
Pirod 105219	2397.4053	6679.3632	910.73	1185.43	8.3243	23.1922	9.4248
Pirod 105219	2397.4053	6665.7583	910.73	1168.78	8.3243	23.1450	9.4248
Pirod 105219	2397.4053	6642.9857	910.73	1141.14	8.3243	23.0659	9.4248
Pirod 105220	2533.5832	6678.6036	1088.00	1118.75	8.7972	23.1896	11.9282
Pirod 105220	2533.5832	6631.3031	1088.00	1062.83	8.7972	23.0254	11.9282
Pirod 105220	2533.5832	6562.4670	1088.00	983.76	8.7972	22.7863	11.9282
Pirod 112738	3009.0588	8493.1391	1409.99	1045.55	10.4481	29.4901	14.7262

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice

<p style="text-align: center;"><i>tnxTower</i></p> <p style="text-align: center;"><i>Infingy Engineering PLLC</i> 1033 Watervliet Shaker Rd Albany, NY 12205 Phone: 518-690-0790 FAX: 518-690-0793</p>	Job	CT03XC214	Page	18 of 29
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<i>Comb. No.</i>	<i>Description</i>
3	1.2D+1.6W (pattern 1) 0 deg - No Ice
4	1.2D+1.6W (pattern 2) 0 deg - No Ice
5	0.9 Dead+1.6 Wind 0 deg - No Ice
6	1.2 Dead+1.6 Wind 30 deg - No Ice
7	1.2D+1.6W (pattern 1) 30 deg - No Ice
8	1.2D+1.6W (pattern 2) 30 deg - No Ice
9	0.9 Dead+1.6 Wind 30 deg - No Ice
10	1.2 Dead+1.6 Wind 60 deg - No Ice
11	1.2D+1.6W (pattern 1) 60 deg - No Ice
12	1.2D+1.6W (pattern 2) 60 deg - No Ice
13	0.9 Dead+1.6 Wind 60 deg - No Ice
14	1.2 Dead+1.6 Wind 90 deg - No Ice
15	1.2D+1.6W (pattern 1) 90 deg - No Ice
16	1.2D+1.6W (pattern 2) 90 deg - No Ice
17	0.9 Dead+1.6 Wind 90 deg - No Ice
18	1.2 Dead+1.6 Wind 120 deg - No Ice
19	1.2D+1.6W (pattern 1) 120 deg - No Ice
20	1.2D+1.6W (pattern 2) 120 deg - No Ice
21	0.9 Dead+1.6 Wind 120 deg - No Ice
22	1.2 Dead+1.6 Wind 150 deg - No Ice
23	1.2D+1.6W (pattern 1) 150 deg - No Ice
24	1.2D+1.6W (pattern 2) 150 deg - No Ice
25	0.9 Dead+1.6 Wind 150 deg - No Ice
26	1.2 Dead+1.6 Wind 180 deg - No Ice
27	1.2D+1.6W (pattern 1) 180 deg - No Ice
28	1.2D+1.6W (pattern 2) 180 deg - No Ice
29	0.9 Dead+1.6 Wind 180 deg - No Ice
30	1.2 Dead+1.6 Wind 210 deg - No Ice
31	1.2D+1.6W (pattern 1) 210 deg - No Ice
32	1.2D+1.6W (pattern 2) 210 deg - No Ice
33	0.9 Dead+1.6 Wind 210 deg - No Ice
34	1.2 Dead+1.6 Wind 240 deg - No Ice
35	1.2D+1.6W (pattern 1) 240 deg - No Ice
36	1.2D+1.6W (pattern 2) 240 deg - No Ice
37	0.9 Dead+1.6 Wind 240 deg - No Ice
38	1.2 Dead+1.6 Wind 270 deg - No Ice
39	1.2D+1.6W (pattern 1) 270 deg - No Ice
40	1.2D+1.6W (pattern 2) 270 deg - No Ice
41	0.9 Dead+1.6 Wind 270 deg - No Ice
42	1.2 Dead+1.6 Wind 300 deg - No Ice
43	1.2D+1.6W (pattern 1) 300 deg - No Ice
44	1.2D+1.6W (pattern 2) 300 deg - No Ice
45	0.9 Dead+1.6 Wind 300 deg - No Ice
46	1.2 Dead+1.6 Wind 330 deg - No Ice
47	1.2D+1.6W (pattern 1) 330 deg - No Ice
48	1.2D+1.6W (pattern 2) 330 deg - No Ice
49	0.9 Dead+1.6 Wind 330 deg - No Ice
50	1.2 Dead+1.0 Ice+1.0 Temp
51	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
52	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
53	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
54	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
55	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
56	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
57	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
58	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
59	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
60	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
61	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
62	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
63	Dead+Wind 0 deg - Service
64	Dead+Wind 30 deg - Service

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<i>Comb. No.</i>	<i>Description</i>
65	Dead+Wind 60 deg - Service
66	Dead+Wind 90 deg - Service
67	Dead+Wind 120 deg - Service
68	Dead+Wind 150 deg - Service
69	Dead+Wind 180 deg - Service
70	Dead+Wind 210 deg - Service
71	Dead+Wind 240 deg - Service
72	Dead+Wind 270 deg - Service
73	Dead+Wind 300 deg - Service
74	Dead+Wind 330 deg - Service

Maximum Tower Deflections - Service Wind

<i>Section No.</i>	<i>Elevation ft</i>	<i>Horz. Deflection in</i>	<i>Gov. Load Comb.</i>	<i>Tilt °</i>	<i>Twist °</i>
T1	245 - 230	11.651	67	0.5420	0.1282
T2	230 - 210	9.916	67	0.5222	0.1228
T3	210 - 190	7.773	67	0.4600	0.1030
T4	190 - 180	5.950	67	0.3808	0.0805
T5	180 - 160	5.184	67	0.3392	0.0657
T6	160 - 140	3.903	67	0.2650	0.0470
T7	140 - 120	2.876	67	0.2155	0.0336
T8	120 - 110	2.049	67	0.1687	0.0250
T9	110 - 100	1.706	67	0.1513	0.0225
T10	100 - 80	1.398	67	0.1341	0.0201
T11	80 - 60	0.887	67	0.0999	0.0151
T12	60 - 40	0.503	67	0.0733	0.0108
T13	40 - 20	0.227	67	0.0470	0.0065
T14	20 - 0	0.050	67	0.0207	0.0020

Critical Deflections and Radius of Curvature - Service Wind

<i>Elevation ft</i>	<i>Appurtenance</i>	<i>Gov. Load Comb.</i>	<i>Deflection in</i>	<i>Tilt °</i>	<i>Twist °</i>	<i>Radius of Curvature ft</i>
247.00	(3) Pipe Sector Frame	67	11.651	0.5420	0.1282	72068
232.00	Pipe Sector Frame	67	10.143	0.5260	0.1240	27922
135.00	Angle Side Arm	67	2.651	0.2034	0.0309	24824
125.00	Angle Side Arm	67	2.237	0.1793	0.0266	24130
110.00	4' Grid Dish	67	1.706	0.1513	0.0225	37884
105.00	6' Dish w/ Radome	67	1.548	0.1428	0.0213	36058
60.00	Camera	67	0.503	0.0733	0.0108	43902
50.00	Angle Side Arm	67	0.353	0.0604	0.0087	50728

Maximum Tower Deflections - Design Wind

<i>Section No.</i>	<i>Elevation ft</i>	<i>Horz. Deflection in</i>	<i>Gov. Load Comb.</i>	<i>Tilt °</i>	<i>Twist °</i>
T1	245 - 230	52.575	18	2.4443	0.5836

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Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
T2	230 - 210	44.755	18	2.3548	0.5586
T3	210 - 190	35.091	18	2.0753	0.4685
T4	190 - 180	26.867	18	1.7187	0.3660
T5	180 - 160	23.415	18	1.5302	0.2985
T6	160 - 140	17.632	18	1.1964	0.2133
T7	140 - 120	12.990	18	0.9732	0.1539
T8	120 - 110	9.255	18	0.7618	0.1142
T9	110 - 100	7.709	18	0.6831	0.1024
T10	100 - 80	6.316	18	0.6056	0.0912
T11	80 - 60	4.007	18	0.4512	0.0685
T12	60 - 40	2.273	18	0.3309	0.0490
T13	40 - 20	1.024	18	0.2120	0.0295
T14	20 - 0	0.226	18	0.0933	0.0091

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
247.00	(3) Pipe Sector Frame	18	52.575	2.4443	0.5836	16123
232.00	Pipe Sector Frame	18	45.779	2.3720	0.5641	6246
135.00	Angle Side Arm	18	11.974	0.9185	0.1417	5496
125.00	Angle Side Arm	18	10.106	0.8098	0.1219	5338
110.00	4' Grid Dish	18	7.709	0.6831	0.1024	8390
105.00	6' Dish w/ Radome	18	6.994	0.6449	0.0969	7990
60.00	Camera	18	2.273	0.3309	0.0490	9736
50.00	Angle Side Arm	18	1.595	0.2725	0.0396	11218

Bolt Design Data

Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load per Bolt lb	Ratio Load Allowable	Allowable Ratio	Criteria
T1	245	Leg	A325N	0.6250	5	5451.56	24850.50	0.219	✓	1 Bolt DS
T2	230	Leg	A325N	0.7500	5	18238.90	35784.70	0.510	✓	1 Bolt DS
T4	190	Leg	A325N	1.0000	6	25790.30	53014.40	0.486	✓	1 Bolt Tension
		Diagonal	A325N	1.0000	1	7740.87	9144.14	0.847	✓	1 Member Block Shear
T5	180	Leg	A325N	1.0000	6	31160.40	53014.40	0.588	✓	1 Bolt Tension
		Diagonal	A325N	1.0000	1	6966.46	9144.14	0.762	✓	1 Member Block Shear
T6	160	Leg	A325N	1.0000	6	36206.80	53014.40	0.683	✓	1 Bolt Tension
		Diagonal	A325N	1.0000	1	7396.39	9144.14	0.809	✓	1 Member Block Shear
T7	140	Leg	A325N	1.0000	6	41509.10	53014.40	0.783	✓	1 Bolt Tension
		Diagonal	A325N	1.0000	1	8440.83	10163.70	0.830	✓	1 Member Block Shear
T8	120	Diagonal	A325N	1.2500	1	10037.60	17138.70	0.586	✓	1 Member Block

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Section No.	Elevation ft	Component Type	Bolt Grade	Bolt Size in	Number Of Bolts	Maximum Load per Bolt lb	Allowable Load per Bolt lb	Ratio Load Allowable	Allowable Ratio	Criteria	
T9	110	Leg	A325N	1.2500	6	46706.30	82835.00	0.564	✓	1	Shear Bolt Tension
		Diagonal	A325N	1.2500	1	11841.80	17138.70	0.691	✓	1	Member Block Shear
T10	100	Leg	A325N	1.2500	6	53121.30	82835.00	0.641	✓	1	Bolt Tension
		Diagonal	A325N	1.2500	1	11748.20	17138.70	0.685	✓	1	Member Block Shear
T11	80	Leg	A325N	1.2500	6	59053.60	82835.00	0.713	✓	1	Bolt Tension
		Diagonal	A325N	1.2500	1	12809.20	20537.10	0.624	✓	1	Member Block Shear
T12	60	Leg	A325N	1.2500	6	64956.10	82835.00	0.784	✓	1	Bolt Tension
		Diagonal	A325N	1.2500	1	14004.20	20537.10	0.682	✓	1	Member Block Shear
T13	40	Leg	A325N	1.2500	12	35575.00	82835.00	0.429	✓	1	Bolt Tension
		Diagonal	A325N	1.2500	1	15108.70	16429.70	0.920	✓	1	Member Block Shear
T14	20	Leg	A687	2.0000	6	73866.90	247400.00	0.299	✓	1	Bolt Tension
		Diagonal	A325N	1.0000	2	11549.60	35525.40	0.325	✓	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 lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	245 - 230	1 1/2	15.00	2.33	74.7 K=1.00	1.7672	-23471.10	52899.40	0.444 ¹ ✓
T2	230 - 210	2	20.00	2.38	57.0 K=1.00	3.1416	-86070.20	111473.00	0.772 ¹ ✓
T3	210 - 190	2 1/2	20.00	2.33	44.8 K=1.00	4.9087	-156446.00	190746.00	0.820 ¹ ✓
T4	190 - 180	Pirod 105245	10.02	10.02	37.8 K=1.00	5.3014	-162020.00	214859.00	0.754 ¹ ✓
T5	180 - 160	Pirod 105217	20.03	10.02	37.8 K=1.00	5.3014	-197072.00	214859.00	0.917 ¹ ✓
T6	160 - 140	Pirod 105218	20.03	10.02	32.4 K=1.00	7.2158	-231112.00	300681.00	0.769 ¹ ✓
T7	140 - 120	Pirod 105218	20.03	10.02	32.4 K=1.00	7.2158	-266560.00	300681.00	0.887 ¹ ✓
T8	120 - 110	Pirod 105219	10.02	10.02	28.4 K=1.00	9.4248	-285684.00	399868.00	0.714 ¹ ✓
T9	110 - 100	Pirod 105219	10.02	5.19	28.4 K=1.00	9.4248	-303122.00	399868.00	0.758 ¹ ✓
T10	100 - 80	Pirod 105219	20.03	10.02	28.4	9.4248	-346510.00	399868.00	0.867 ¹ ✓

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T11	80 - 60	Pirod 105220	20.03	10.02	K=1.00 25.2	11.9282	-387795.00	512375.00	0.757 ¹ ✓
T12	60 - 40	Pirod 105220	20.03	10.02	K=1.00 25.2	11.9282	-429294.00	512375.00	0.838 ¹ ✓
T13	40 - 20	Pirod 105220	20.03	10.02	K=1.00 25.2	11.9282	-473027.00	512375.00	0.923 ¹ ✓
T14	20 - 0	Pirod 112738	20.03	20.03	K=1.00 32.6	14.7262	-491561.00	613145.00	0.802 ¹ ✓

¹ P_u / φP_n controls

Truss-Leg Diagonal Data

Section No.	Elevation ft	Diagonal Size	L _d ft	Kl/r	φP _n lb	A in ²	V _u lb	φV _n lb	Stress Ratio
T4	190 - 180	0.5	1.47	98.8	238565.00	0.1963	1248.71	4840.90	0.259 ✓
T5	180 - 160	0.5	1.47	98.8	238565.00	0.1963	765.42	4257.20	0.181 ✓
T6	160 - 140	0.5	1.46	98.0	324713.00	0.1963	356.92	4293.81	0.084 ✓
T7	140 - 120	0.5	1.46	98.0	324713.00	0.1963	585.10	4293.81	0.137 ✓
T8	120 - 110	0.5	1.45	97.2	424115.00	0.1963	905.49	4329.85	0.209 ✓
T9	110 - 100	0.5	1.45	97.2	424115.00	0.1963	3655.39	4329.85	0.844 ✓
T10	100 - 80	0.5	1.45	97.2	424115.00	0.1963	702.13	4329.85	0.163 ✓
T11	80 - 60	0.5	1.43	96.4	536771.00	0.1963	303.50	4365.29	0.071 ✓
T12	60 - 40	0.5	1.43	96.4	536771.00	0.1963	431.88	4365.29	0.100 ✓
T13	40 - 20	0.5	1.43	96.4	536771.00	0.1963	3847.80	4365.29	0.883 ✓
T14	20 - 0	0.75	1.75	78.4	662680.00	0.4418	1914.44	14091.50	0.137 ✓

Diagonal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	245 - 230	3/4	4.63	2.24	K=0.90 129.2	0.4418	-4353.40	5979.01	0.728 ¹ ✓
T2	230 - 210	7/8	5.05	2.45	120.9	0.6013	-6536.32	9300.39	0.703 ¹ ✓

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T3	210 - 190	1	5.11	2.46	K=0.90 107.3	0.7854	-8038.99	15219.40	0.528 ¹ ✓
T4	190 - 180	L2 1/2x2 1/2x3/16	11.42	5.02	K=0.91 121.8	0.9020	-8124.10	13384.50	0.607 ¹ ✓
T5	180 - 160	L2 1/2x2 1/2x3/16	12.50	5.67	K=1.00 137.4	0.9020	-7590.77	10789.60	0.704 ¹ ✓
T6	160 - 140	L2 1/2x2 1/2x3/16	13.80	6.37	K=1.00 154.4	0.9020	-7956.53	8548.61	0.931 ¹ ✓
T7	140 - 120	L3x3x3/16	15.24	7.12	K=1.00 143.4	1.0900	-9007.76	11970.70	0.752 ¹ ✓
T8	120 - 110	L3x3x5/16	16.01	7.49	K=1.00 152.5	1.7800	-10577.50	17281.60	0.612 ¹ ✓
T9	110 - 100	L3x3x5/16	16.80	7.89	K=1.00 160.8	1.7800	-12727.50	15552.60	0.818 ¹ ✓
T10	100 - 80	L3x3x5/16	18.45	8.73	K=1.00 177.8	1.7800	-12276.00	12715.40	0.965 ¹ ✓
T11	80 - 60	L3 1/2x3 1/2x5/16	20.16	9.59	K=1.00 166.8	2.0900	-13201.80	16963.20	0.778 ¹ ✓
T12	60 - 40	L3 1/2x3 1/2x5/16	21.92	10.68	K=0.97 180.1	2.0900	-14272.70	14553.00	0.981 ¹ ✓
T13	40 - 20	L4x4x1/4	22.81	10.93	K=1.00 165.0	1.9400	-15596.80	16089.30	0.969 ¹ ✓
T14	20 - 0	2L3 1/2x3 1/2x5/16x3/8	30.49	14.62	K=0.94 152.4	4.1800	-26689.30	40668.30	0.656 ¹ ✓

¹ P_u / φP_n controls

Horizontal Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	245 - 230	3/4	4.00	3.88	K=0.70 173.6	0.4418	-565.05	3311.71	0.171 ¹ ✓
T2	230 - 210	7/8	4.07	3.91	K=0.70 150.0	0.6013	-1396.63	6040.81	0.231 ¹ ✓
T3	210 - 190	7/8	4.58	4.37	K=0.70 167.7	0.6013	-1898.79	4831.46	0.393 ¹ ✓

¹ P_u / φP_n controls

Secondary Horizontal Design Data (Compression)

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T9	110 - 100	L3x3x5/16	13.48	12.48	146.1 K=0.90	1.7800	-5256.77	18837.50	0.279 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 lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	245 - 230	7/8	4.00	3.88	148.8 K=0.70	0.6013	-1054.36	6135.36	0.172 ¹ ✓
T2	230 - 210	1	4.01	3.85	129.2 K=0.70	0.7854	-2588.48	10626.00	0.244 ¹ ✓
T3	210 - 190	1	4.52	4.31	144.8 K=0.70	0.7854	-2390.39	8466.93	0.282 ¹ ✓

¹ P_u / φP_n controls

Bottom Girt Design Data (Compression)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	245 - 230	7/8	4.00	3.88	148.8 K=0.70	0.6013	-2407.46	6135.36	0.392 ¹ ✓
T2	230 - 210	1	4.49	4.32	145.2 K=0.70	0.7854	-2995.39	8418.14	0.356 ¹ ✓
T3	210 - 190	1	4.98	4.77	160.4 K=0.70	0.7854	-1921.58	6893.04	0.279 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 lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	245 - 230	1 1/2	15.00	0.50	16.0	1.7672	23866.00	79521.60	0.300 ¹ ✓

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T2	230 - 210	2	20.00	0.50	12.0	3.1416	85592.60	141372.00	0.605 ¹ #
T3	210 - 190	2 1/2	20.00	0.67	12.8	4.9087	153478.00	220893.00	0.695 ¹
T4	190 - 180	Pirod 105245	10.02	10.02	37.8	5.3014	154742.00	238565.00	0.649 ¹
T5	180 - 160	Pirod 105217	20.03	10.02	37.8	5.3014	186963.00	238565.00	0.784 ¹
T6	160 - 140	Pirod 105218	20.03	10.02	32.4	7.2158	217241.00	324713.00	0.669 ¹
T7	140 - 120	Pirod 105218	20.03	10.02	32.4	7.2158	249055.00	324713.00	0.767 ¹
T8	120 - 110	Pirod 105219	10.02	10.02	28.4	9.4248	265938.00	424115.00	0.627 ¹
T9	110 - 100	Pirod 105219	10.02	4.82	28.4	9.4248	280884.00	424115.00	0.662 ¹
T10	100 - 80	Pirod 105219	20.03	10.02	28.4	9.4248	318728.00	424115.00	0.752 ¹
T11	80 - 60	Pirod 105220	20.03	10.02	25.2	11.9282	354322.00	536771.00	0.660 ¹
T12	60 - 40	Pirod 105220	20.03	10.02	25.2	11.9282	389736.00	536771.00	0.726 ¹
T13	40 - 20	Pirod 105220	20.03	10.02	25.2	11.9282	426900.00	536771.00	0.795 ¹
T14	20 - 0	Pirod 112738	20.03	20.03	32.6	14.7262	443202.00	662680.00	0.669 ¹

¹ P_u / φP_n controls

Based on net area of leg in section below

Truss-Leg Diagonal Data

Section No.	Elevation ft	Diagonal Size	L _d ft	Kl/r	φP _n lb	A in ²	V _u lb	φV _n lb	Stress Ratio
T4	190 - 180	0.5	1.47	98.8	238565.00	0.1963	1248.71	4840.90	0.259
T5	180 - 160	0.5	1.47	98.8	238565.00	0.1963	765.42	4257.20	0.181
T6	160 - 140	0.5	1.46	98.0	324713.00	0.1963	356.92	4293.81	0.084
T7	140 - 120	0.5	1.46	98.0	324713.00	0.1963	585.10	4293.81	0.137
T8	120 - 110	0.5	1.45	97.2	424115.00	0.1963	905.49	4329.85	0.209
T9	110 - 100	0.5	1.45	97.2	424115.00	0.1963	3655.39	4329.85	0.844
T10	100 - 80	0.5	1.45	97.2	424115.00	0.1963	702.13	4329.85	0.163
T11	80 - 60	0.5	1.43	96.4	536771.00	0.1963	303.50	4365.29	0.071

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Section No.	Elevation ft	Diagonal Size	L_d ft	Kl/r	ϕP_n lb	A in ²	V_u lb	ϕV_n lb	Stress Ratio
T12	60 - 40	0.5	1.43	96.4	536771.00	0.1963	431.88	4365.29	0.100 ✓
T13	40 - 20	0.5	1.43	96.4	536771.00	0.1963	3847.80	4365.29	0.883 ✓
T14	20 - 0	0.75	1.75	78.4	662680.00	0.4418	1914.44	14091.50	0.137 ✓

Diagonal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in ²	P_u lb	ϕP_n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	245 - 230	3/4	4.63	2.24	143.6	0.4418	4382.78	19880.40	0.220 ¹ ✓
T2	230 - 210	7/8	5.05	2.45	134.3	0.6013	6643.27	27059.40	0.246 ¹ ✓
T3	210 - 190	1	5.11	2.46	117.9	0.7854	7672.14	35342.90	0.217 ¹ ✓
T4	190 - 180	L2 1/2x2 1/2x3/16	11.42	5.02	80.1	0.5183	7740.87	22545.90	0.343 ¹ ✓
T5	180 - 160	L2 1/2x2 1/2x3/16	11.93	5.42	86.2	0.5183	6966.46	22545.90	0.309 ¹ ✓
T6	160 - 140	L2 1/2x2 1/2x3/16	13.80	6.37	100.8	0.5183	7396.39	22545.90	0.328 ¹ ✓
T7	140 - 120	L3x3x3/16	15.24	7.12	93.2	0.6593	8440.83	28679.40	0.294 ¹ ✓
T8	120 - 110	L3x3x5/16	16.01	7.49	100.0	1.0127	10037.60	44053.90	0.228 ¹ ✓
T9	110 - 100	L3x3x5/16	16.80	7.89	105.3	1.0127	11841.80	44053.90	0.269 ¹ ✓
T10	100 - 80	L3x3x5/16	18.45	8.73	116.2	1.0127	11748.20	44053.90	0.267 ¹ ✓
T11	80 - 60	L3 1/2x3 1/2x5/16	20.16	9.59	108.8	1.2452	12809.20	54167.70	0.236 ¹ ✓
T12	60 - 40	L3 1/2x3 1/2x5/16	21.92	10.68	118.6	1.2452	14004.20	54167.70	0.259 ¹ ✓
T13	40 - 20	L4x4x1/4	23.71	11.38	111.2	1.1972	15108.70	52077.70	0.290 ¹ ✓
T14	20 - 0	2L3 1/2x3 1/2x5/16x3/8	30.49	14.62	165.7	2.6077	23099.30	113433.00	0.204 ¹ ✓

¹ $P_u / \phi P_n$ controls

Horizontal Design Data (Tension)

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	245 - 230	3/4	4.00	3.88	248.0	0.4418	638.75	19880.40	0.032 ¹
T2	230 - 210	7/8	4.07	3.91	214.2	0.6013	1543.16	27059.40	0.057 ¹
T3	210 - 190	7/8	4.58	4.37	239.5	0.6013	2039.63	27059.40	0.075 ¹

¹ P_u / φP_n controls

Secondary Horizontal Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T9	110 - 100	L3x3x5/16	13.48	12.48	162.4	1.7800	5256.77	57672.00	0.091 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 lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	245 - 230	7/8	4.00	3.88	212.6	0.6013	968.98	27059.40	0.036 ¹
T2	230 - 210	1	4.01	3.85	184.6	0.7854	2738.88	35342.90	0.077 ¹
T3	210 - 190	1	4.52	4.31	206.8	0.7854	2577.00	35342.90	0.073 ¹

¹ P_u / φP_n controls

Bottom Girt Design Data (Tension)

Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
T1	245 - 230	7/8	4.00	3.88	212.6	0.6013	2251.00	27059.40	0.083 ¹
T2	230 - 210	1	4.49	4.32	207.4	0.7854	2839.12	35342.90	0.080 ¹
T3	210 - 190	1	4.98	4.77	229.2	0.7854	2026.22	35342.90	0.057 ¹

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	A in ²	P _u lb	φP _n lb	Ratio $\frac{P_u}{\phi P_n}$
									✓

¹ P_u / φP_n controls

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	φP _{allow} lb	% Capacity	Pass Fail	
T1	245 - 230	Leg	1 1/2	2	-23471.10	52899.40	44.4	Pass	
T2	230 - 210	Leg	2	52	-86070.20	111473.00	77.2	Pass	
T3	210 - 190	Leg	2 1/2	116	-156446.00	190746.00	82.0	Pass	
T4	190 - 180	Leg	Pirod 105245	180	-162020.00	214859.00	75.4	Pass	
T5	180 - 160	Leg	Pirod 105217	189	-197072.00	214859.00	91.7	Pass	
T6	160 - 140	Leg	Pirod 105218	204	-231112.00	300681.00	76.9	Pass	
T7	140 - 120	Leg	Pirod 105218	219	-266560.00	300681.00	88.7	Pass	
T8	120 - 110	Leg	Pirod 105219	234	-285684.00	399868.00	71.4	Pass	
T9	110 - 100	Leg	Pirod 105219	243	-302827.00	399868.00	84.4	Pass	
T10	100 - 80	Leg	Pirod 105219	255	-346510.00	399868.00	86.7	Pass	
T11	80 - 60	Leg	Pirod 105220	270	-387795.00	512375.00	75.7	Pass	
T12	60 - 40	Leg	Pirod 105220	285	-429294.00	512375.00	83.8	Pass	
T13	40 - 20	Leg	Pirod 105220	300	-473027.00	512375.00	92.3	Pass	
T14	20 - 0	Leg	Pirod 112738	315	-491561.00	613145.00	80.2	Pass	
T1	245 - 230	Diagonal	3/4	12	-4353.40	5979.01	72.8	Pass	
T2	230 - 210	Diagonal	7/8	62	-6536.32	9300.39	70.3	Pass	
T3	210 - 190	Diagonal	1	175	-8038.99	15219.40	52.8	Pass	
T4	190 - 180	Diagonal	L2 1/2x2 1/2x3/16	185	-8124.10	13384.50	60.7	Pass	
T5	180 - 160	Diagonal	L2 1/2x2 1/2x3/16	194	-7590.77	10789.60	84.7 (b) 70.4	Pass	
T6	160 - 140	Diagonal	L2 1/2x2 1/2x3/16	209	-7956.53	8548.61	76.2 (b) 93.1	Pass	
T7	140 - 120	Diagonal	L3x3x3/16	223	-9007.76	11970.70	75.2 83.0 (b)	Pass	
T8	120 - 110	Diagonal	L3x3x5/16	238	-10577.50	17281.60	61.2	Pass	
T9	110 - 100	Diagonal	L3x3x5/16	248	-12727.50	15552.60	81.8	Pass	
T10	100 - 80	Diagonal	L3x3x5/16	260	-12276.00	12715.40	96.5	Pass	
T11	80 - 60	Diagonal	L3 1/2x3 1/2x5/16	275	-13201.80	16963.20	77.8	Pass	
T12	60 - 40	Diagonal	L3 1/2x3 1/2x5/16	290	-14272.70	14553.00	98.1	Pass	
T13	40 - 20	Diagonal	L4x4x1/4	311	-15596.80	16089.30	96.9	Pass	
T14	20 - 0	Diagonal	2L3 1/2x3 1/2x5/16x3/8	320	-26689.30	40668.30	65.6	Pass	
T1	245 - 230	Horizontal	3/4	23	-565.05	3311.71	17.1	Pass	
T2	230 - 210	Horizontal	7/8	108	-1396.63	6040.81	23.1	Pass	
T3	210 - 190	Horizontal	7/8	172	-1898.79	4831.46	39.3	Pass	
T9	110 - 100	Secondary Horizontal	L3x3x5/16	251	-5256.77	18837.50	27.9	Pass	
T1	245 - 230	Top Girt	7/8	5	-1054.36	6135.36	17.2	Pass	
T2	230 - 210	Top Girt	1	56	-2588.48	10626.00	24.4	Pass	
T3	210 - 190	Top Girt	1	120	-2390.39	8466.93	28.2	Pass	
T1	245 - 230	Bottom Girt	7/8	9	-2407.46	6135.36	39.2	Pass	
T2	230 - 210	Bottom Girt	1	57	-2995.39	8418.14	35.6	Pass	
T3	210 - 190	Bottom Girt	1	121	-1921.58	6893.04	27.9	Pass	
Summary									
							Leg (T13)	92.3	Pass
							Diagonal (T12)	98.1	Pass
							Horizontal (T3)	39.3	Pass

<p><i>tnxTower</i></p> <p><i>Infingy Engineering PLLC</i> 1033 Watervliet Shaker Rd Albany, NY 12205 Phone: 518-690-0790 FAX: 518-690-0793</p>	Job CT03XC214	Page 29 of 29
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<i>Section No.</i>	<i>Elevation ft</i>	<i>Component Type</i>	<i>Size</i>	<i>Critical Element</i>	<i>P lb</i>	<i>ϕP_{allow} lb</i>	<i>% Capacity</i>	<i>Pass Fail</i>
						Secondary Horizontal (T9)	27.9	Pass
						Top Girt (T3)	28.2	Pass
						Bottom Girt (T1)	39.2	Pass
						Bolt Checks	92.0	Pass
						RATING =	98.1	Pass

Sprint



PROJECT: DO MACRO UPGRADE
 SITE NAME: U-CONN
 SITE CASCADE: CT03XC214
 SITE ADDRESS: 82 NORTH EAGLEVILLE, RD.
 STORRS, CT 06269
 SITE TYPE: SELF SUPPORT TOWER
 MARKET: NORTHERN CONNECTICUT

PLANS PREPARED FOR:



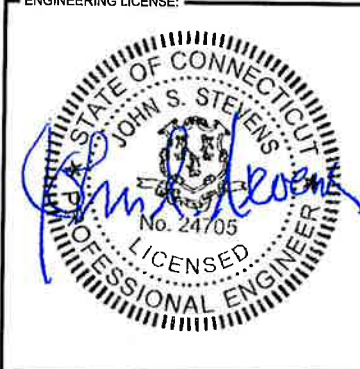
PLANS PREPARED BY:

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

PROJECT MANAGER:

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

ENGINEERING LICENSE:



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REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR PERMIT	2/21/18	JDL	0

SITE NAME:

U-CONN

SITE NUMBER:

CT03XC214

SITE ADDRESS:

82 NORTH EAGLEVILLE, RD.
 STORRS, CT 06269

SHEET DESCRIPTION:

TITLE SHEET
 & PROJECT DATA

SHEET NUMBER:

T-1

SITE INFORMATION	AREA MAP	PROJECT DESCRIPTION	DRAWING INDEX																																							
<p>TOWER OWNER: UNIVERSITY OF CONNECTICUT 352 MANSFIELD ROAD, UNIT 2072 STORRS, CT 06269</p> <p>LATITUDE (NAD83): 41° 48' 52.02" N 41.81444999°</p> <p>LONGITUDE (NAD83): 72° 15' 35.61" W -72.25989166°</p> <p>COUNTY: TOLLAND</p> <p>ZONING JURISDICTION: CONNECTICUT SITING COUNCIL</p> <p>ZONING DISTRICT: TBD</p> <p>POWER COMPANY: CONNECTICUT LIGHT AND POWER PHONE: (800) 286-2000</p> <p>AAV PROVIDER: SAGE TELECOM PHONE: (866) 870-7482</p> <p>PROJECT MANAGER: AIROSMITH DEVELOPMENT TERRI BURKHOLDER (315) 719-2928 TBURKHOLDER@AIROSMITHDEVELOPMENT.COM</p>		<p>SPRINT PROPOSES TO MODIFY AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY.</p> <ul style="list-style-type: none"> INSTALL (3) PANEL ANTENNAS INSTALL (3) 2.5 GHZ RRH'S BEHIND ANTENNAS INSTALL (24) JUMPER CABLES INSTALL (1) HYBRID CABLE INSTALL 2.5 EQUIPMENT INSIDE EXISTING N.V. MMBS CABINET <p>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.</p>	<table border="1"> <thead> <tr> <th>SHEET NO.</th> <th>SHEET TITLE</th> <th>REV.</th> </tr> </thead> <tbody> <tr> <td>T-1</td> <td>TITLE SHEET & PROJECT DATA</td> <td>0</td> </tr> <tr> <td>SP-1</td> <td>SPRINT SPECIFICATIONS</td> <td>0</td> </tr> <tr> <td>SP-2</td> <td>SPRINT SPECIFICATIONS</td> <td>0</td> </tr> <tr> <td>SP-3</td> <td>SPRINT SPECIFICATIONS</td> <td>0</td> </tr> <tr> <td>A-1</td> <td>SITE PLAN</td> <td>0</td> </tr> <tr> <td>A-2</td> <td>TOWER ELEVATION</td> <td>0</td> </tr> <tr> <td>A-3</td> <td>ANTENNA LAYOUT & MOUNTING DETAILS</td> <td>0</td> </tr> <tr> <td>A-4</td> <td>EQUIPMENT & MOUNTING DETAILS</td> <td>0</td> </tr> <tr> <td>A-5</td> <td>CIVIL DETAILS</td> <td>0</td> </tr> <tr> <td>A-6</td> <td>PLUMBING DIAGRAM</td> <td>0</td> </tr> <tr> <td>E-1</td> <td>ELECTRICAL & GROUNDING PLAN</td> <td>0</td> </tr> <tr> <td>E-2</td> <td>ELECTRICAL & GROUNDING DETAILS</td> <td>0</td> </tr> </tbody> </table>	SHEET NO.	SHEET TITLE	REV.	T-1	TITLE SHEET & PROJECT DATA	0	SP-1	SPRINT SPECIFICATIONS	0	SP-2	SPRINT SPECIFICATIONS	0	SP-3	SPRINT SPECIFICATIONS	0	A-1	SITE PLAN	0	A-2	TOWER ELEVATION	0	A-3	ANTENNA LAYOUT & MOUNTING DETAILS	0	A-4	EQUIPMENT & MOUNTING DETAILS	0	A-5	CIVIL DETAILS	0	A-6	PLUMBING DIAGRAM	0	E-1	ELECTRICAL & GROUNDING PLAN	0	E-2	ELECTRICAL & GROUNDING DETAILS	0
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	<p>LOCATION MAP</p>	<p>APPLICABLE CODES</p> <p>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.</p> <ol style="list-style-type: none"> INTERNATIONAL BUILDING CODE (2015 IBC) TIA-222-G OR LATEST EDITION NFPA 780 - LIGHTNING PROTECTION CODE 2011 NATIONAL ELECTRIC CODE OR LATEST EDITION ANY OTHER NATIONAL OR LOCAL APPLICABLE CODES, MOST RECENT EDITIONS CT BUILDING CODE LOCAL BUILDING CODE CITY/COUNTY ORDINANCES 																																								



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

SECTION 01 100 – SCOPE OF WORK

PART 1 – GENERAL

- 1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE SPRINT CONSTRUCTION STANDARDS FOR WIRELESS SITES, CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.
- 1.2 RELATED DOCUMENTS:
 - A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.
 - B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HEREWITH.
- 1.3 PRECEDENCE: SHOULD CONFLICTS OCCUR BETWEEN THE STANDARD CONSTRUCTION SPECIFICATIONS FOR WIRELESS SITES INCLUDING THE STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES AND THE CONSTRUCTION DRAWINGS, INFORMATION ON THE CONSTRUCTION DRAWINGS SHALL TAKE PRECEDENCE. NOTIFY SPRINT CONSTRUCTION MANAGER IF THIS OCCURS.
- 1.4 NATIONALLY RECOGNIZED CODES AND STANDARDS:
 - A. THE WORK SHALL COMPLY WITH APPLICABLE NATIONAL AND LOCAL CODES AND STANDARDS, LATEST EDITION, AND PORTIONS THEREOF, INCLUDED BUT NOT LIMITED TO THE FOLLOWING:
 - 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 (NFA) 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-0508, AND TS-0193
- 1.15 USE OF ELECTRONIC PROJECT MANAGEMENT SYSTEMS:

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

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

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

SECTION 01 200 – COMPANY FURNISHED MATERIAL AND EQUIPMENT

PART 1 – GENERAL

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

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

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

SECTION 01 300 – CELL SITE CONSTRUCTION CO.

PART 1 – GENERAL

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

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

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

PLANS PREPARED FOR:



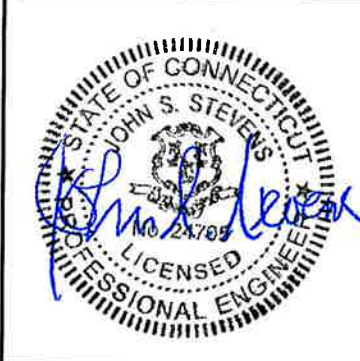
PLANS PREPARED BY:

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

PROJECT MANAGER:

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

ENGINEERING LICENSE:



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REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR PERMIT	2/21/18	JDL	0

SITE NAME:

U-CONN

SITE NUMBER:

CT03XC214

SITE ADDRESS:

82 NORTH EAGLEVILLE, RD.
STORRS, CT 06269

SHEET DESCRIPTION:

SPRINT SPECIFICATIONS

SHEET NUMBER:

SP-1

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

3.2 GENERAL REQUIREMENTS FOR CIVIL CONSTRUCTION:

- A. CONTRACTOR SHALL KEEP THE SITE FREE FROM ACCUMULATING WASTE MATERIAL, DEBRIS, AND TRASH. AT THE COMPLETION OF THE WORK, CONTRACTOR SHALL REMOVE FROM THE SITE ALL REMAINING RUBBISH, IMPLEMENTS, TEMPORARY FACILITIES, AND SURPLUS MATERIALS.
- B. EQUIPMENT ROOMS SHALL AT ALL TIMES BE MAINTAINED "BROOM CLEAN" AND CLEAR OF DEBRIS.
- C. CONTRACTOR SHALL TAKE ALL REASONABLE PRECAUTIONS TO DISCOVER AND LOCATE ANY HAZARDOUS CONDITION.
 1. IN THE EVENT CONTRACTOR ENCOUNTERS ANY HAZARDOUS CONDITION WHICH HAS NOT BEEN ABATED OR OTHERWISE MITIGATED, CONTRACTOR AND ALL OTHER PERSONS SHALL IMMEDIATELY STOP WORK IN THE AFFECTED AREA AND NOTIFY COMPANY IN WRITING. THE WORK IN THE AFFECTED AREA SHALL NOT BE RESUMED EXCEPT BY WRITTEN NOTIFICATION BY COMPANY.
 2. CONTRACTOR AGREES TO USE CARE WHILE ON THE SITE AND SHALL NOT TAKE ANY ACTION THAT WILL OR MAY RESULT IN OR CAUSE THE HAZARDOUS CONDITION TO BE FURTHER RELEASED IN THE ENVIRONMENT, OR TO FURTHER EXPOSE INDIVIDUALS TO THE HAZARD.
- D. CONTRACTOR'S ACTIVITIES SHALL BE RESTRICTED TO THE PROJECT LIMITS. SHOULD AREAS OUTSIDE THE PROJECT LIMITS BE AFFECTED BY CONTRACTOR'S ACTIVITIES, CONTRACTOR SHALL IMMEDIATELY RETURN THEM TO ORIGINAL CONDITION
- E. CONDUCT TESTING AS REQUIRED HEREIN.

3.3 DELIVERABLES:

- A. CONTRACTOR SHALL REVIEW, APPROVE, AND SUBMIT TO SPRINT SHOP DRAWINGS, PRODUCT DATA, SAMPLES, AND SIMILAR SUBMITTALS AS REQUIRED HEREINAFTER
- B. PROVIDE DOCUMENTATION INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING. DOCUMENTATION SHALL BE FORWARDED IN ORIGINAL FORMAT AND/OR UPLOADED INTO SMS.
 1. ALL CORRESPONDENCE AND PRELIMINARY CONSTRUCTION REPORTS.
 2. PROJECT PROGRESS REPORTS.
 3. CIVIL CONSTRUCTION START DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).
 4. ELECTRICAL SERVICE COMPLETION DATE (POPULATE FIELD IN SMS AND/OR FORWARD NOTIFICATION).

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

SECTION 01 400 - SUBMITTALS & TESTS

PART 1 - GENERAL

- 1.1 THE WORK: THESE STANDARD CONSTRUCTION SPECIFICATIONS IN CONJUNCTION WITH THE OTHER CONTRACT DOCUMENTS AND THE CONSTRUCTION DRAWINGS DESCRIBE THE WORK TO BE PERFORMED BY THE CONTRACTOR.
- 1.2 RELATED DOCUMENTS:
 - A. THE REQUIREMENTS OF THIS SECTION APPLY TO ALL SECTIONS IN THIS SPECIFICATION.
 - B. SPRINT "STANDARD CONSTRUCTION DETAILS FOR WIRELESS SITES" ARE INCLUDED IN AND MADE A PART OF THESE SPECIFICATIONS HERewith.
- 1.3 SUBMITTALS:
 - A. THE WORK IN ALL ASPECTS SHALL COMPLY WITH THE CONSTRUCTION DRAWINGS AND THESE SPECIFICATIONS.
 - B. SUBMIT THE FOLLOWING TO COMPANY REPRESENTATIVE FOR APPROVAL.
 1. CONCRETE MIX-DESIGNS FOR TOWER FOUNDATIONS, ANCHORS PIERS, AND CONCRETE PAVING.
 2. CONCRETE BREAK TESTS AS SPECIFIED HEREIN.
 3. SPECIAL FINISHES FOR INTERIOR SPACES, IF ANY.
 4. ALL EQUIPMENT AND MATERIALS SO IDENTIFIED ON THE CONSTRUCTION DRAWINGS.
 5. CHEMICAL GROUNDING DESIGN
 - C. 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:



PLANS PREPARED BY:



PROJECT MANAGER:



ENGINEERING LICENSE:



DRAWING NOTICE:

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REVISIONS:

DESCRIPTION	DATE	BY	REV
ISSUED FOR PERMIT	2/21/18	JL	0

SITE NAME:

U-CONN

SITE NUMBER:

CT03XC214

SITE ADDRESS:

82 NORTH EAGLEVILLE, RD.
STORRS, CT 06269

SHEET DESCRIPTION:

SPRINT SPECIFICATIONS

SHEET NUMBER:

SP-2

CONTINUE FROM SP-2

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

SECTION 01 400 - SUBMITTALS & TESTS

PART 1 - GENERAL

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

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

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

PLANS PREPARED FOR:



PLANS PREPARED BY:



PROJECT MANAGER:



ENGINEERING LICENSE:



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ISSUED FOR PERMIT	2/21/18	JDL	0

SITE NAME:

U-CONN

SITE NUMBER:

CT03XC214

SITE ADDRESS:

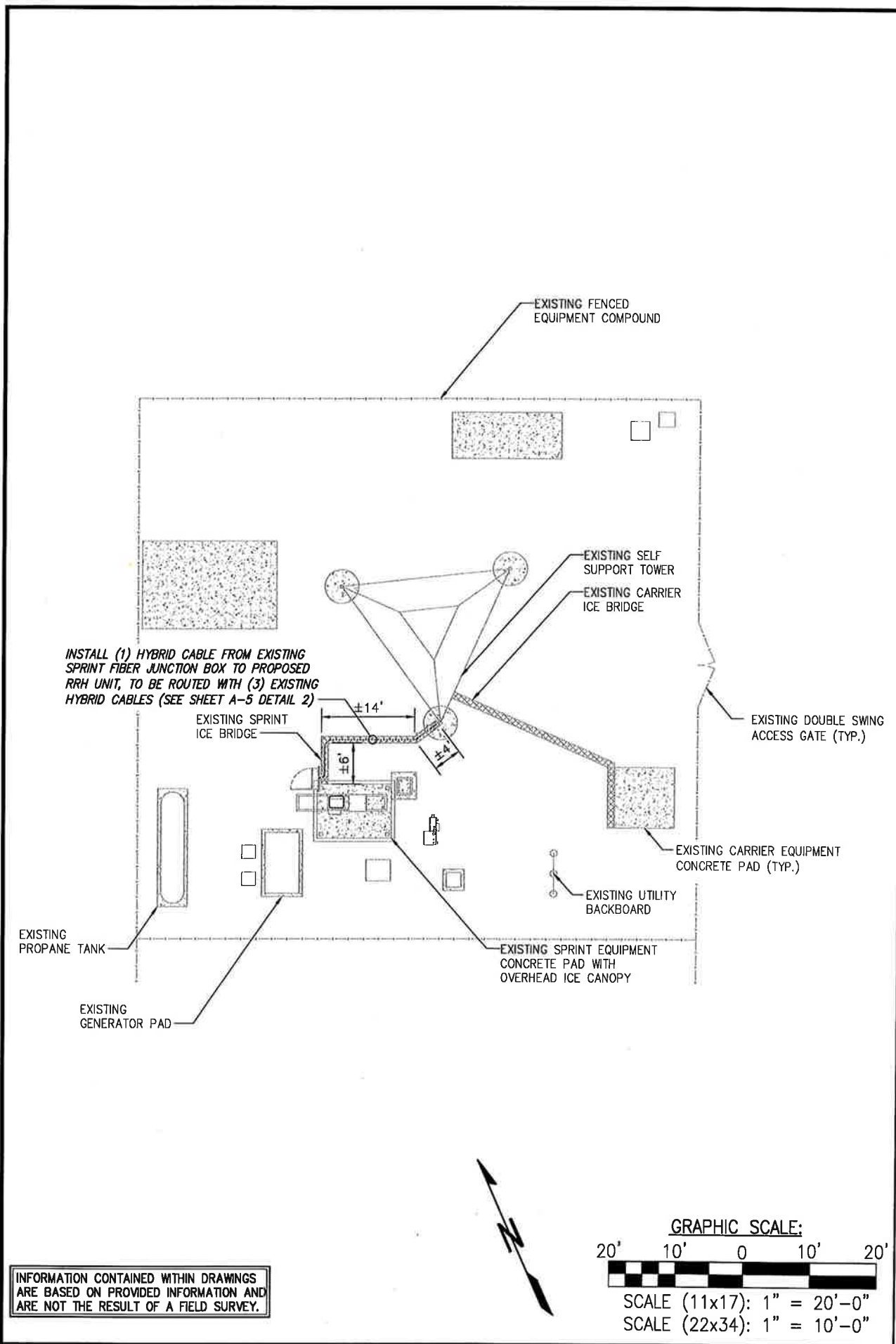
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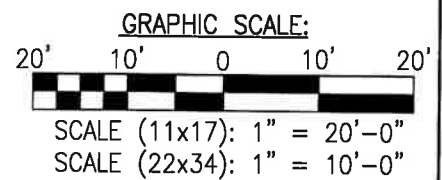
SPRINT SPECIFICATIONS

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SP-3

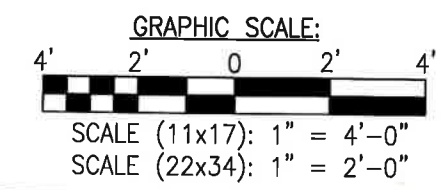
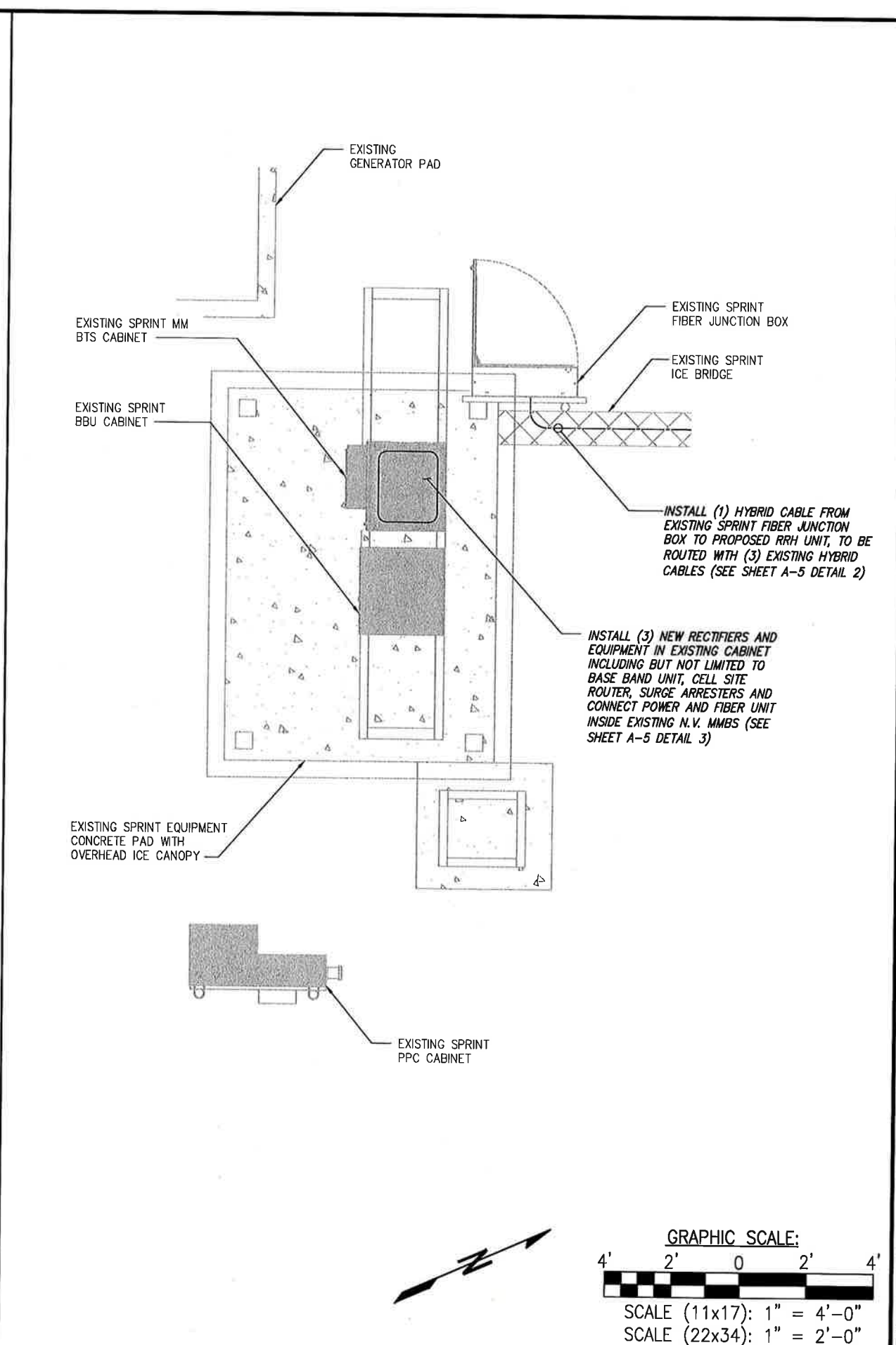


INFORMATION CONTAINED WITHIN DRAWINGS ARE BASED ON PROVIDED INFORMATION AND ARE NOT THE RESULT OF A FIELD SURVEY.



OVERALL SITE PLAN

SCALE: AS NOTED 1



SPRINT EQUIPMENT PLAN

SCALE: AS NOTED 2

PLANS PREPARED FOR:

PLANS PREPARED BY:

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SITE NAME:

U-CONN

SITE NUMBER:

CT03XC214

SITE ADDRESS:

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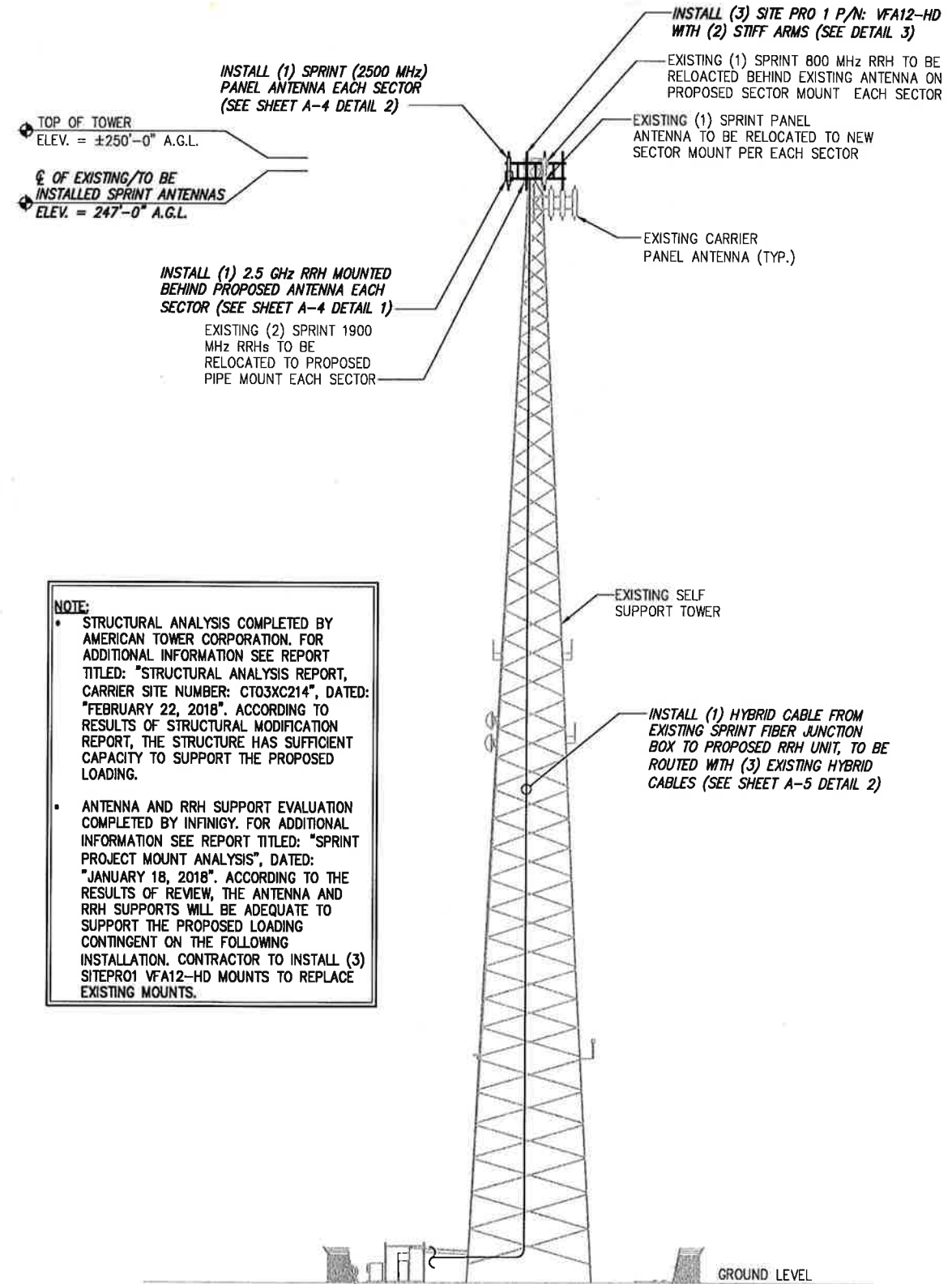
SHEET DESCRIPTION:

SITE PLAN

SHEET NUMBER:

A-1

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



NOTE:

- STRUCTURAL ANALYSIS COMPLETED BY AMERICAN TOWER CORPORATION. FOR ADDITIONAL INFORMATION SEE REPORT TITLED: "STRUCTURAL ANALYSIS REPORT, CARRIER SITE NUMBER: CT03XC214", DATED: "FEBRUARY 22, 2018". ACCORDING TO RESULTS OF STRUCTURAL MODIFICATION REPORT, THE STRUCTURE HAS SUFFICIENT CAPACITY TO SUPPORT THE PROPOSED LOADING.
- ANTENNA AND RRH SUPPORT EVALUATION COMPLETED BY INFINIGY. FOR ADDITIONAL INFORMATION SEE REPORT TITLED: "SPRINT PROJECT MOUNT ANALYSIS", DATED: "JANUARY 18, 2018". ACCORDING TO THE RESULTS OF REVIEW, THE ANTENNA AND RRH SUPPORTS WILL BE ADEQUATE TO SUPPORT THE PROPOSED LOADING CONTINGENT ON THE FOLLOWING INSTALLATION. CONTRACTOR TO INSTALL (3) SITEPRO1 VFA12-HD MOUNTS TO REPLACE EXISTING MOUNTS.

TOWER ELEVATION NO SCALE 1

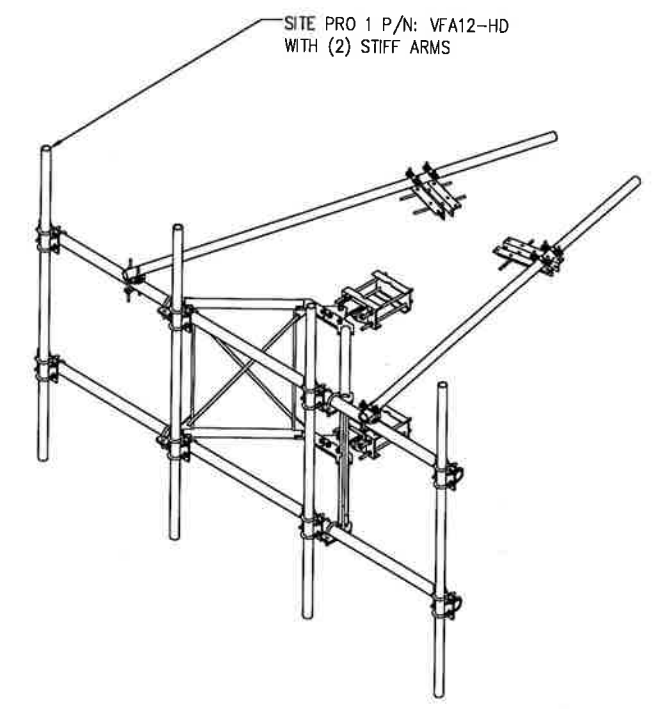
SITE LOADING CHART

SECTOR	EXISTING/PROPOSED	ANTENNA MODEL #	VENDOR	AZIMUTH	QTY.	REMAIN/REMOVED	RRH (QTY/MODEL)	CABLE	CABLE LENGTH	RAD CENTER
ALPHA	PROPOSED	APXVTM14-ALU-I20	RFS	340°	1	-	(1) 800 MHz 2X50W RRH W/ FILTER	SEE SHEET A-5 DETAIL 1	±247' AGL	±247' AGL
	EXISTING	APXVSP18-C-A20	RFS	340°	1	REMAIN	(1) TD-RRH8X20-25 W/ SOLAR SHIELD (2) 1900 MHz 4X45 RRH	EXISTING HYBRID		
BETA	PROPOSED	APXVTM14-ALU-I20	RFS	120°	1	-	(1) 800 MHz 2X50W RRH W/ FILTER	SEE SHEET A-5 DETAIL 1	±293'*	±247' AGL
	EXISTING	APXVSP18-C-A20	RFS	120°	1	REMAIN	(1) TD-RRH8X20-25 W/ SOLAR SHIELD (2) 1900 MHz 4X45 RRH	EXISTING HYBRID		
GAMMA	PROPOSED	APXVTM14-ALU-I20	RFS	260°	1	-	(1) 800 MHz 2X50W RRH W/ FILTER	SEE SHEET A-5 DETAIL 1	±247' AGL	±247' AGL
	EXISTING	APXVSP18-C-A20	RFS	260°	1	REMAIN	(1) TD-RRH8X20-25 W/ SOLAR SHIELD (2) 1900 MHz 4X45 RRH	EXISTING HYBRID		

PROJECT SCOPE:
INSTALL: (3) PANEL ANTENNAS AND (3) RRH'S

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

SITE LOADING CHART NO SCALE 2



V-FRAME ASSEMBLY WITH STIFF ARM DETAIL NO SCALE 3

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PROJECT MANAGER:

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SARATOGA SPRINGS, NY 12866
OFFICER, (518) 306-3740

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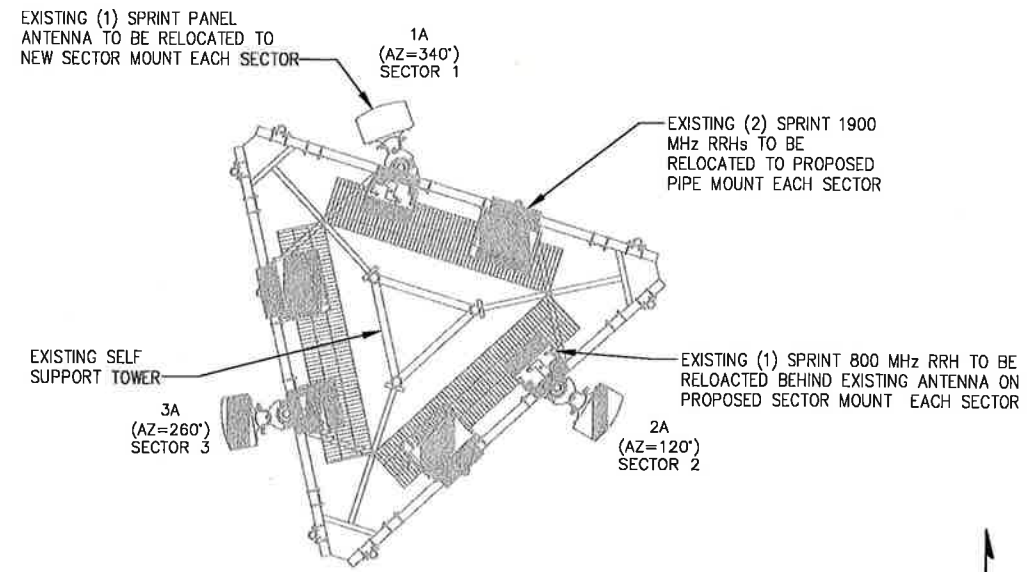
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SITE NUMBER:
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SHEET DESCRIPTION:
TOWER ELEVATION

SHEET NUMBER:
A-2

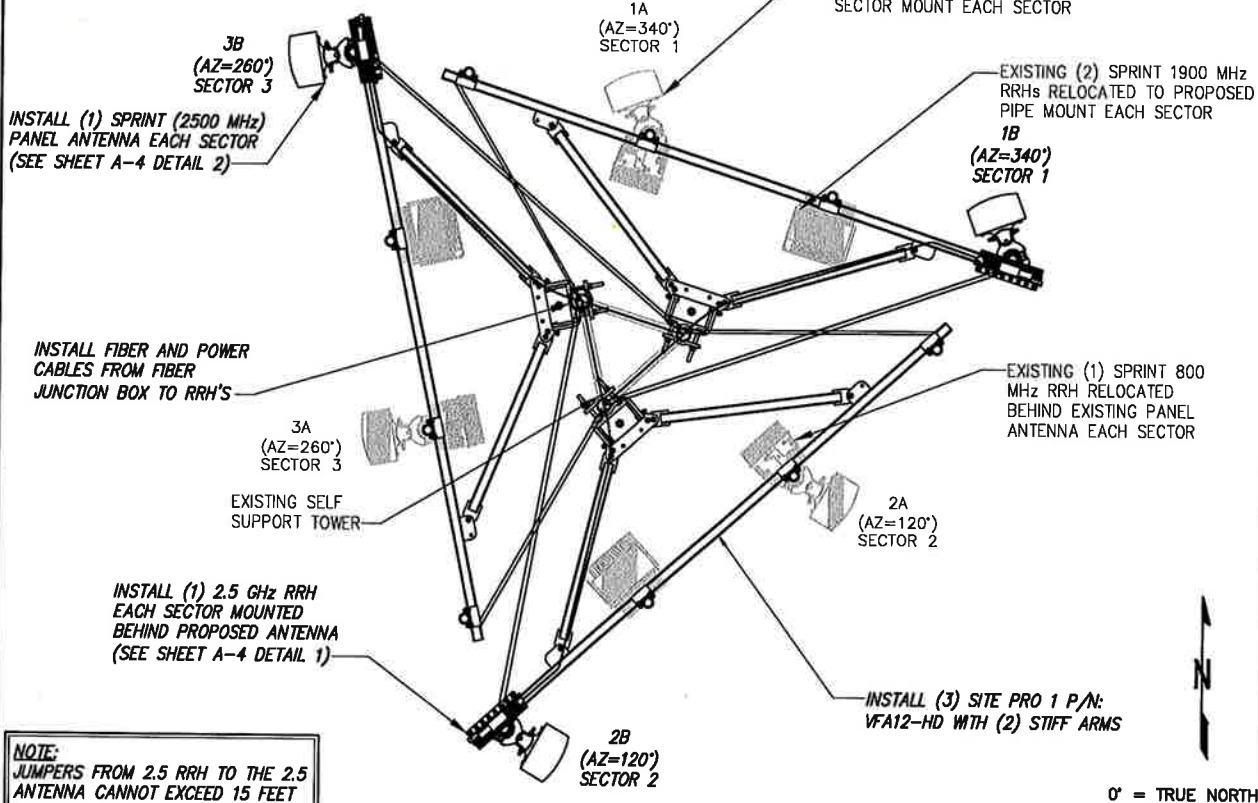


0' = TRUE NORTH

EXISTING ANTENNA LAYOUT

NO SCALE 1

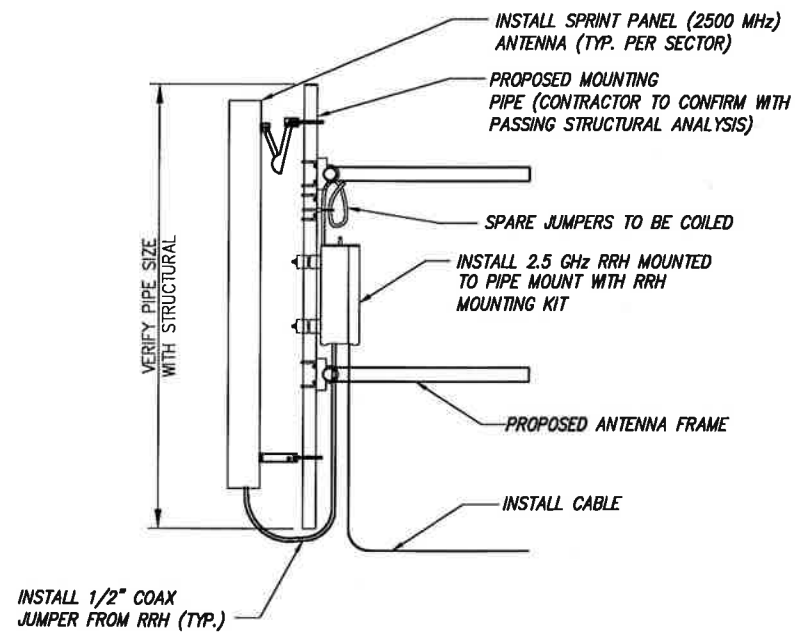
THE CONFIGURATION PLANS ARE BASED ON PROVIDED INFORMATION AND ARE FOR CONCEPTUAL PURPOSES ONLY. CONTRACTOR TO VERIFY FIELD CONDITIONS PRIOR TO CONSTRUCTION.



0' = TRUE NORTH

FINAL ANTENNA & RRH LAYOUT

NO SCALE 2



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

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

- NOTES:
- CUT DC CONDUCTORS TO LENGTH.
 - COIL FIBER CABLE AND SECURE AT SIDE OF RRH.
 - DO NOT EXCEED BEND RADIUS.

TYPICAL ANTENNA & RRH MOUNTING DETAILS

NO SCALE 3

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SHEET DESCRIPTION:

ANTENNA LAYOUT & MOUNTING DETAILS

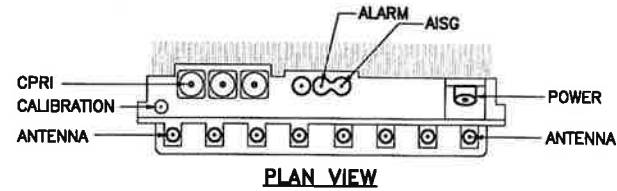
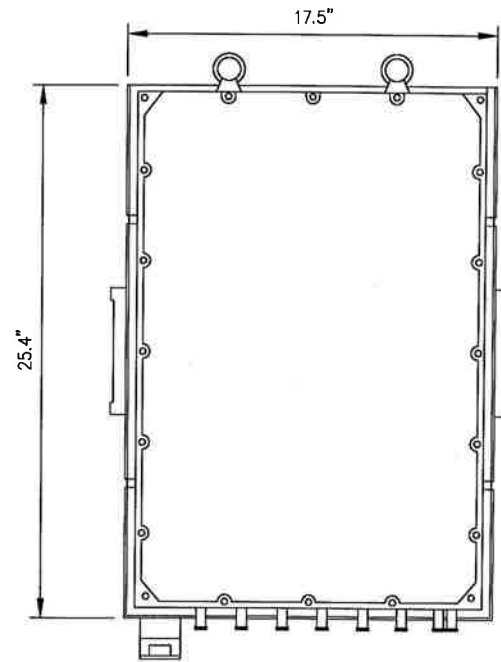
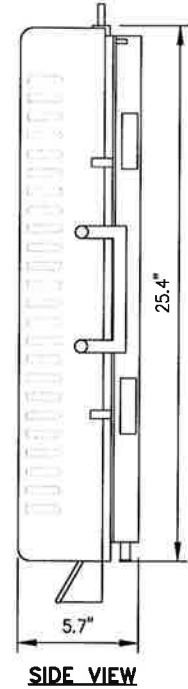
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A-3

DETAIL NOT USED

NO SCALE 4

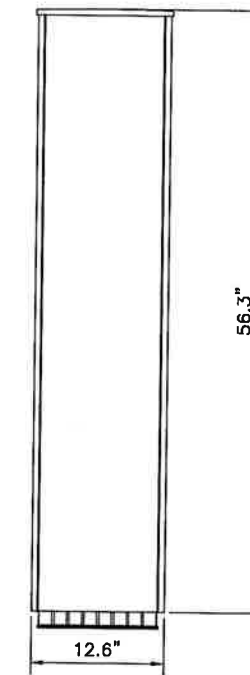
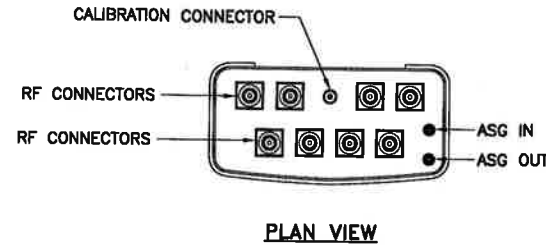
RRH: ALCATEL LUCENT TD-RRH8X20
 COLOR: LIGHT GREY
 WEIGHT: 70 LBS.



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

ANTENNA RFS APXVTM14-ALU-I20

RADOME MATERIAL: ASA
 RADOME COLOR: LIGHT GRAY
 DIMENSIONS, HxWxD.in(mim): 56.3"x12.6"x6.3" (1430x320x160mm)
 WEIGHT: 56.2 lbs
 CONNECTORS: (8) 4.1/9.5 DIN FEMALE
 (1) NF - CALIBRATION CONNECTOR



2.5 GHz RRH

NO SCALE

1

2.5 GHz ANTENNA

NO SCALE

2

DETAIL NOT USED

NO SCALE

3

DETAIL NOT USED

NO SCALE

4

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 DEVELOPMENT
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SITE NUMBER:

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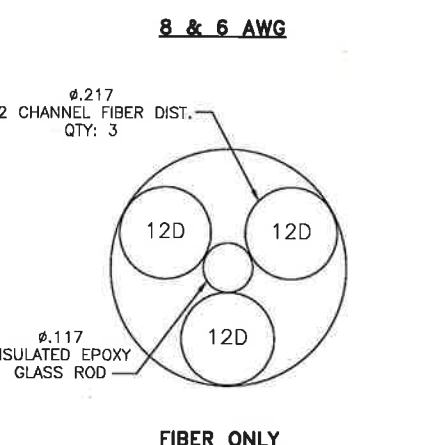
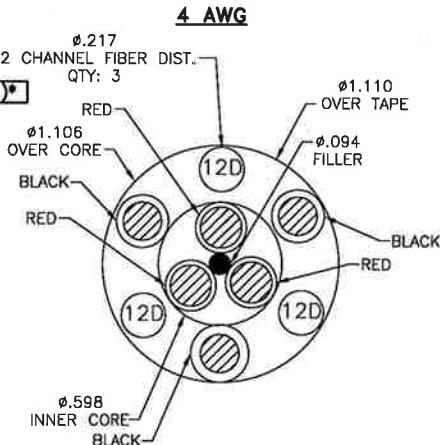
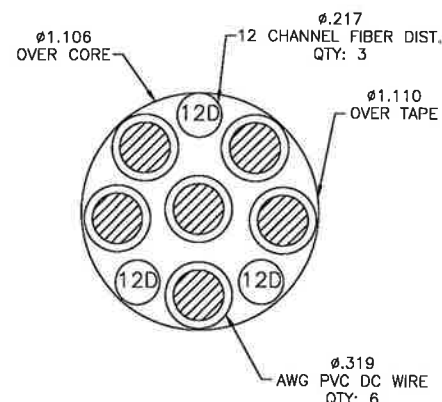
EQUIPMENT &
 MOUNTING DETAILS

SHEET NUMBER:

A-4

RFS HYBRIFLEX RISER CABLE SCHEDULE

Fiber Only (Existing DC Power)	Hybrid cable MN: H B058-M12-050F 12x multi-mode fiber pairs, Top: Outdoor protected connectors, Bottom: LC Connectors, 5/8 cable, 50 ft	50 ft	
	MN: H B058-M12-075F	75 ft	
	MN: H B058-M12-100F	100 ft	
	MN: H B058-M12-125F	125 ft	
	MN: H B058-M12-150F	150 ft	
	MN: H B058-M12-175F	175 ft	
8 AWG Power	Hybrid cable MN: H B114-08U3M12-050F 3x 8 AWG power pairs, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/4 cable, 50 ft	50 ft	
	MN: H B114-08U3M12-075F	75 ft	
	MN: H B114-08U3M12-100F	100 ft	
	MN: H B114-08U3M12-125F	125 ft	
	MN: H B114-08U3M12-150F	150 ft	
	MN: H B114-08U3M12-175F	175 ft	
6 AWG Power	Hybrid cable MN: H B114-13U3M12-225F 3x 6 AWG power pair, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/4 cable, 225 ft	225 ft	
	MN: H B114-13U3M12-250F	250 ft	
	MN: H B114-13U3M12-275F	275 ft	
	MN: H B114-13U3M12-300F	300 ft	
	4 AWG Power	Hybrid cable MN: H B114-21U3M12-325F 3x 4 AWG power pair, 12x multi-mode fiber pairs, Outdoor rated connectors & LC Connectors, 1 1/4 cable, 325 ft	325 ft
		MN: H B114-21U3M12-350F	350 ft
MN: H B114-21U3M12-375F		375 ft	



RFS HYBRIFLEX JUMPER CABLE SCHEDULE

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

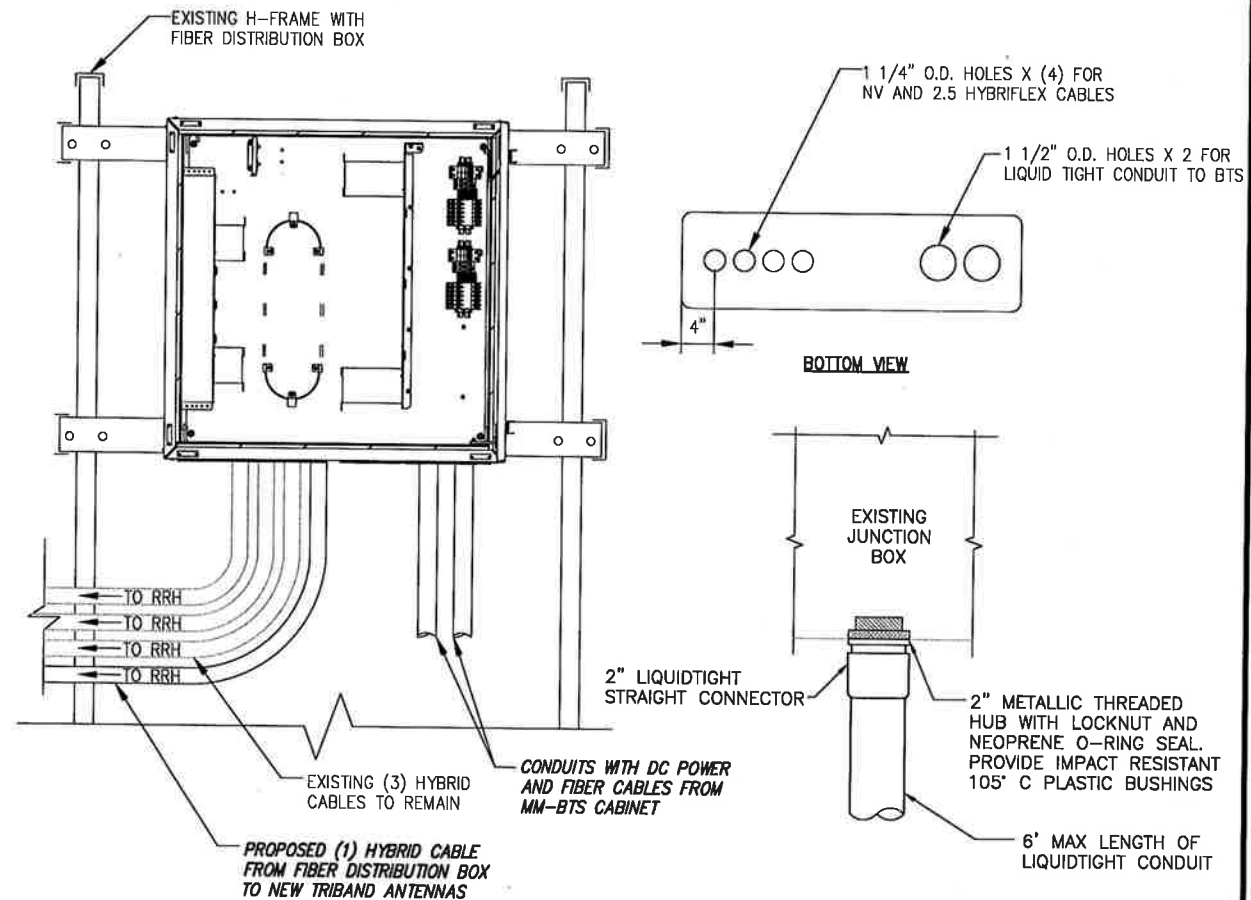
NOTE:
SPRINT CM TO CONFIRM HYBRID OR FIBER RISER CABLE AND HYBRID OR FIBER JUMPER CABLE MODEL NUMBERS IF HYBRID CABLES ARE REQUIRED BEFORE PREPARING BOM.

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

800/1900/2500 CROSS SECTION DATA

NO SCALE

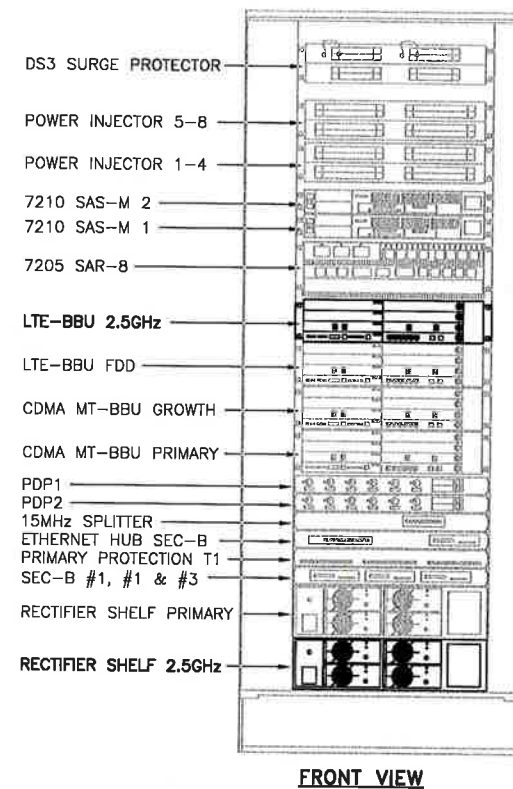
1



FIBER JUNCTION BOX & PENETRATION

NO SCALE

2



FRONT VIEW

NEW EQUIPMENT IN EXISTING CABINET

NO SCALE

3

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PLANS PREPARED BY:

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PROJECT MANAGER:

AIRSMITH DEVELOPMENT
32 CLINTON ST.
SARATOGA SPRINGS, NY 12866
OFFICE# (518) 308-3740

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SITE NAME:

U-CONN

SITE NUMBER:

CT03XC214

SITE ADDRESS:

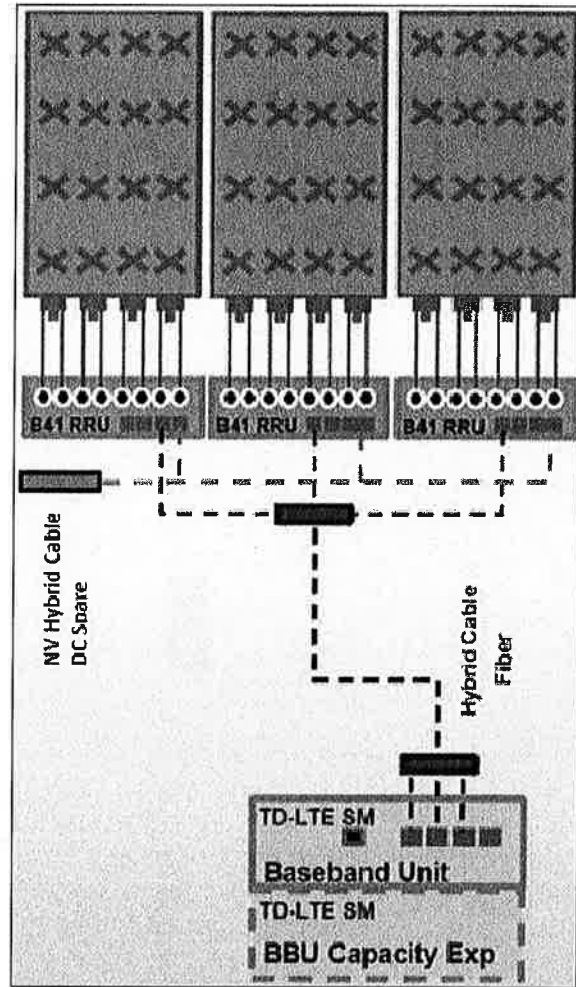
82 NORTH EAGLEVILLE, RD.
STORRS, CT 06269

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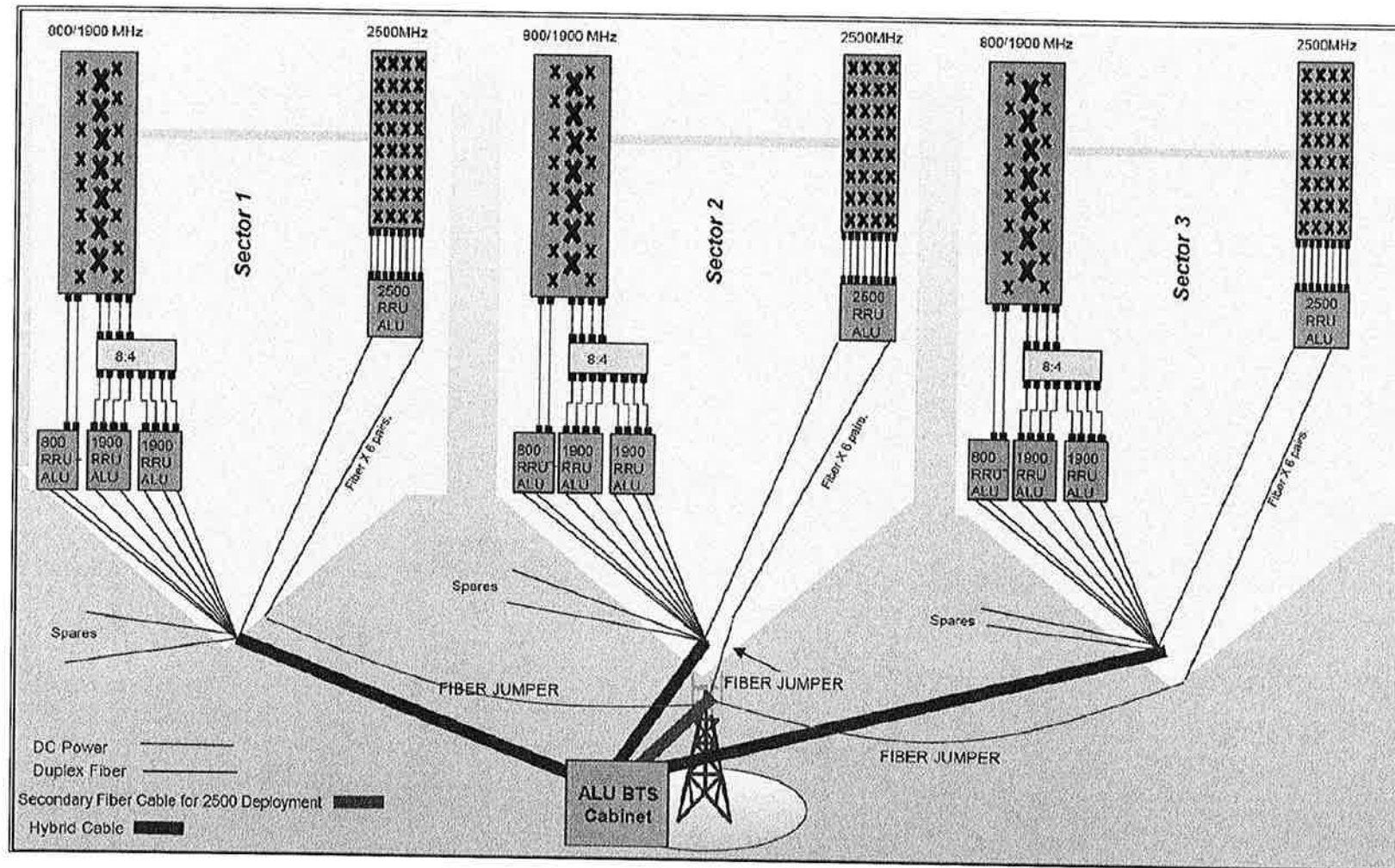
CIVIL DETAILS

SHEET NUMBER:

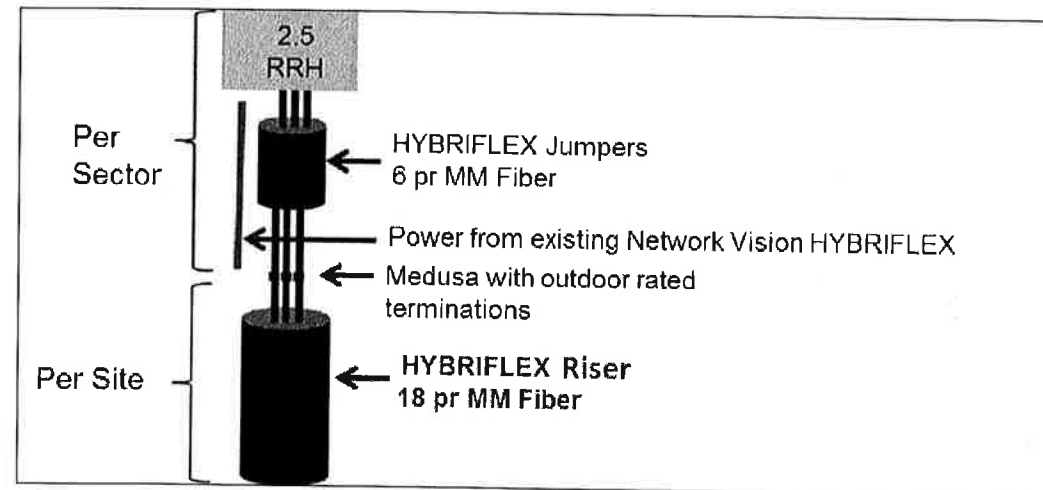
A-5



ALU 2.5 ALU SCENARIO 1



RAN WIRING DIAGRAM



RF 2.5 ALU SCENARIO 1

PLUMBING DIAGRAM

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SITE NUMBER:

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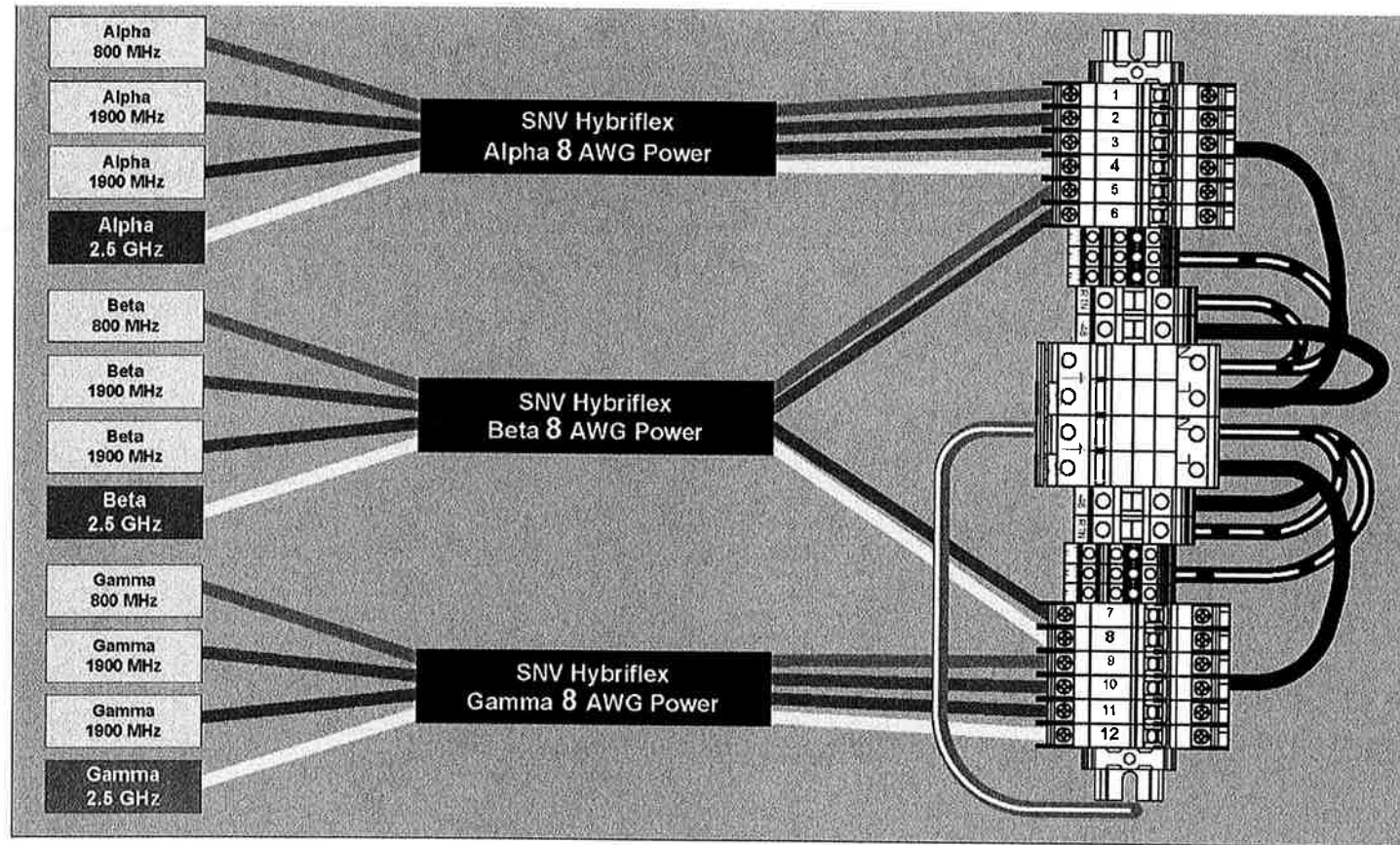
PLUMBING DIAGRAM

SHEET NUMBER:

A-6

NO SCALE

1



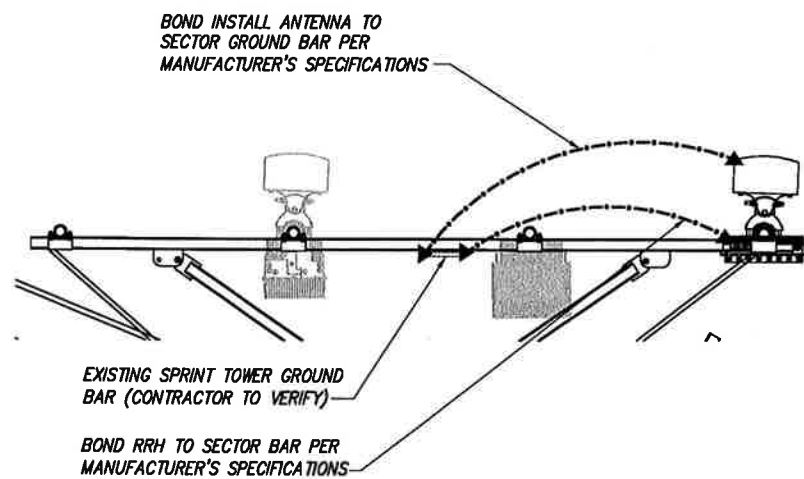
RRH TO DISTRIBUTION BOX POWER CONNECTIVITY

NO SCALE

1

LEGEND:

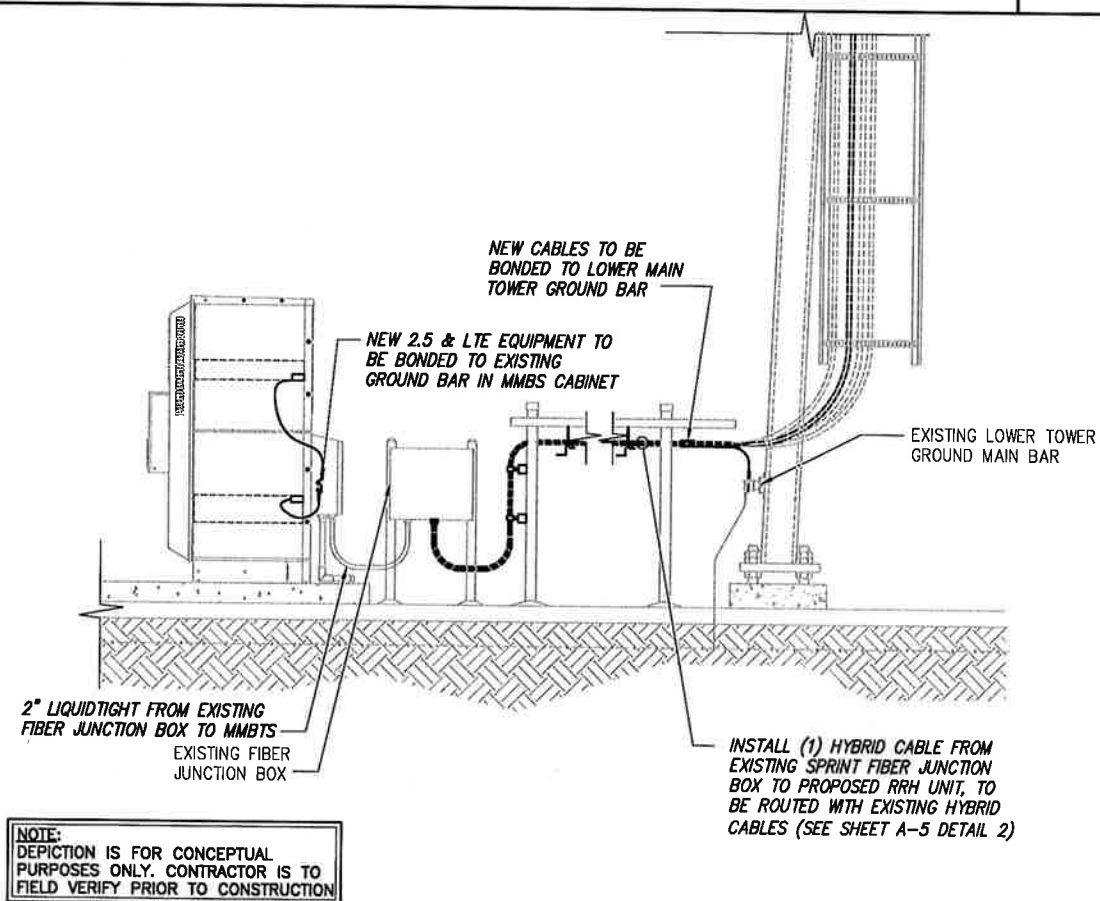
- EXISTING GROUND RING
- CADWELD CONNECTION (EXOTHERMIC WELD)
- ▲ MECHANICAL CONNECTION
- ⊗ GROUND ROD
- CABLE GROUND KIT



TYPICAL ANTENNA GROUNDING PLAN

NO SCALE

2



TYPICAL EQUIPMENT GROUNDING PLAN (ELEVATION)

NO SCALE

3

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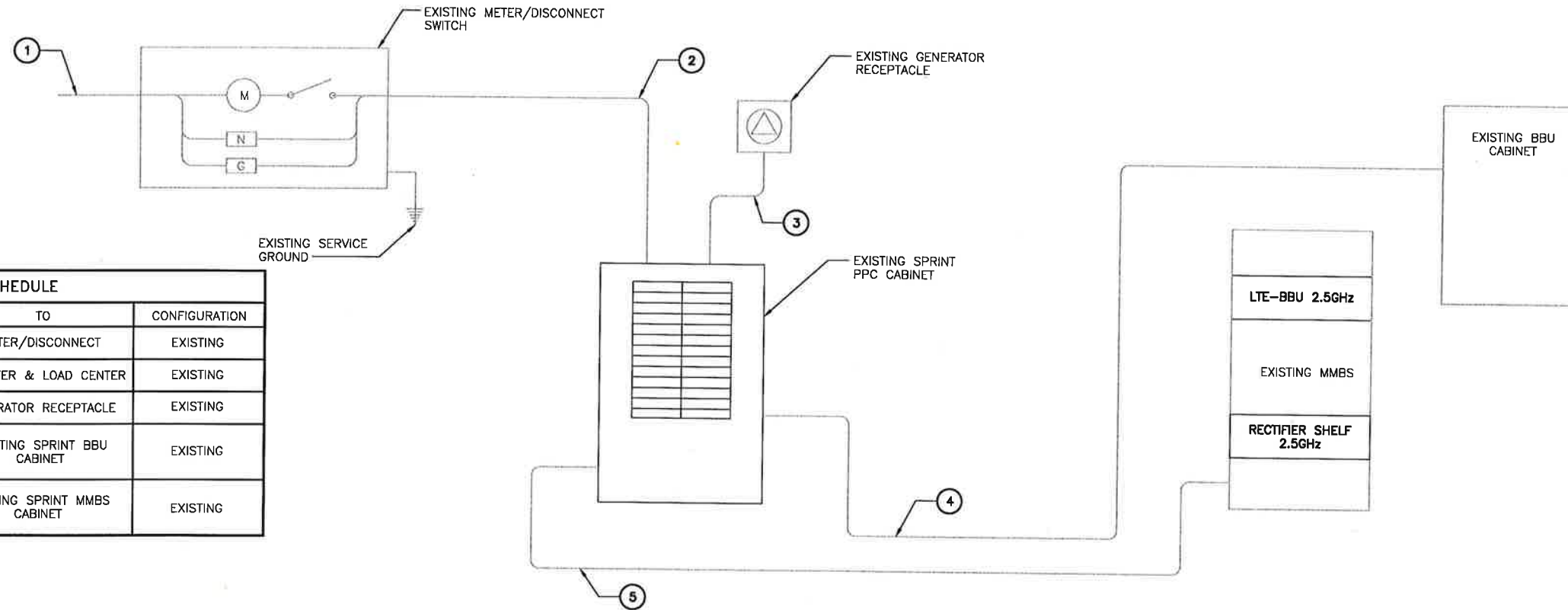
SHEET DESCRIPTION:

ELECTRICAL &
GROUNDING PLAN

SHEET NUMBER:

E-1

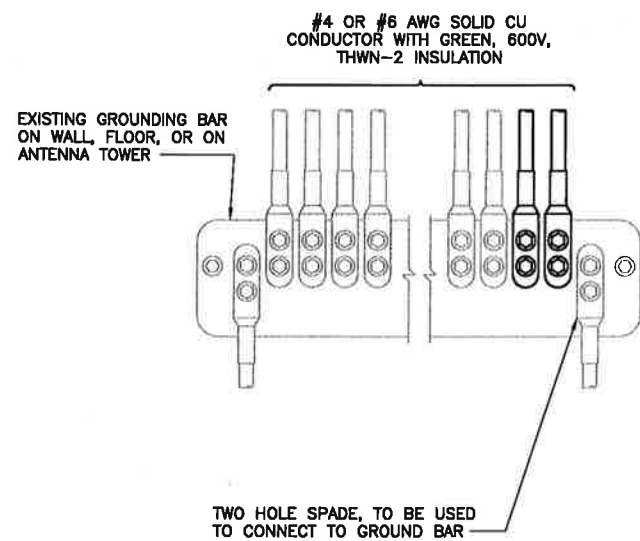
NOTES
 CG SHALL REFERENCE ALL SPECS FOR "CONNECTING THE POWER SUPPLY" OF THE NEW INSTALLATION DOCUMENTS, FOR ALL CONNECTION SPECIFICATIONS.



CIRCUIT SCHEDULE			
NO	FROM	TO	CONFIGURATION
①	UTILITY SOURCE	METER/DISCONNECT	EXISTING
②	METER/DISCONNECT	TRANSFER & LOAD CENTER	EXISTING
③	TRANSFER & LOAD CENTER	GENERATOR RECEPTACLE	EXISTING
④	TRANSFER & LOAD CENTER	EXISTING SPRINT BBU CABINET	EXISTING
⑤	TRANSFER & LOAD CENTER	EXISTING SPRINT MMBS CABINET	EXISTING

ELECTRICAL ONE-LINE DIAGRAM

NO SCALE 1

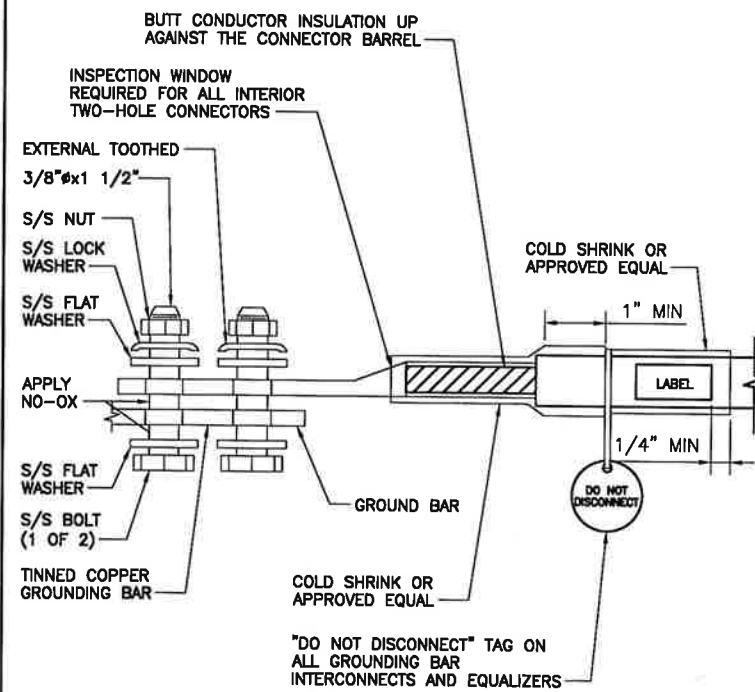


NOTES
 1. APPLY NO-OX TO LUG AND BAR CONTACT SURFACE. DO NOT COAT INLINE LUG.
 2. IF STOLEN GROUND BARS ARE ENCOUNTERED, CONTACT SPRINT CM FOR REPLACEMENT THREADED ROD KIT.

INSTALLATION OF GROUNDING CONDUCTOR TO GROUNDING BAR

NO SCALE

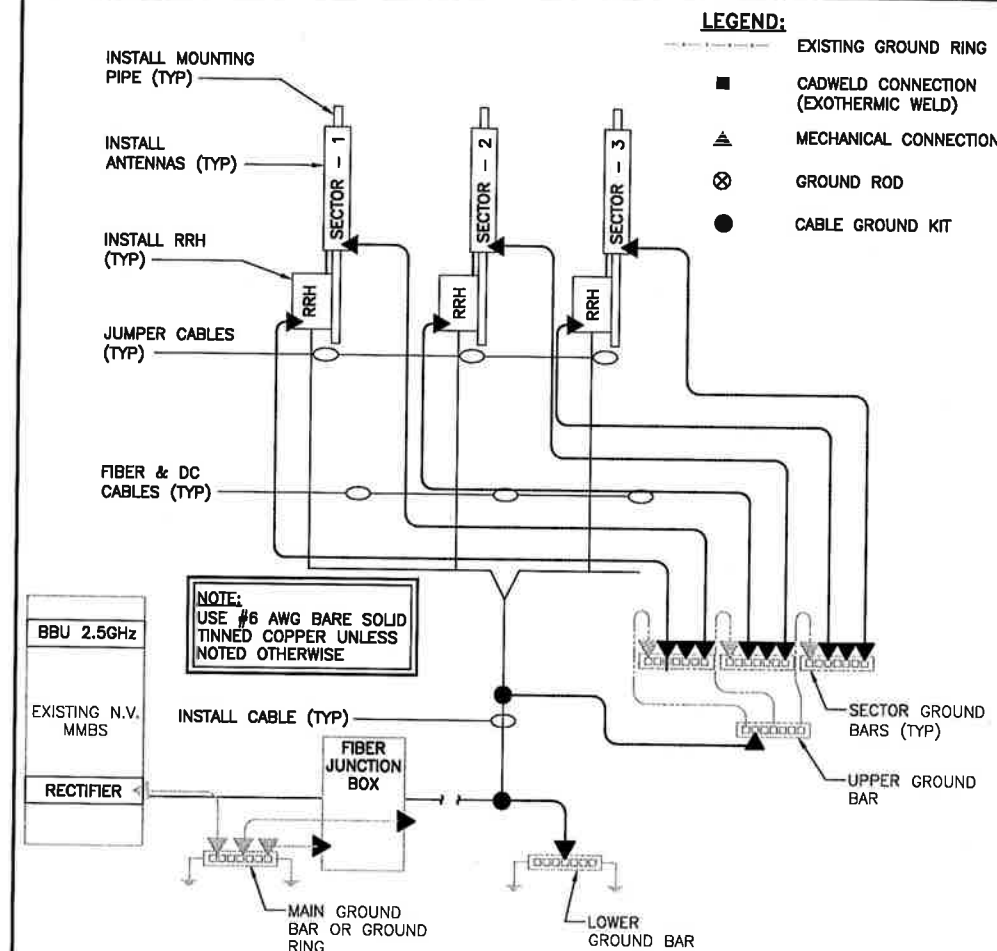
2



TWO HOLE LUG

NO SCALE

3



GROUNDING RISER DIAGRAM

NO SCALE

4

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SITE NUMBER:

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SHEET DESCRIPTION:

ELECTRICAL &
 GROUNDING DETAILS

SHEET NUMBER:

E-2